METTLER TOLEDO

8450

Programmable Scale/Printer

Service Manual

F14715500A
(2/01).00

METTLER TOLEDO®

Customer Feedback

Attention: Retail Quality Manager - MTWR

If you have a problem with one of our products or publications, or just a suggestion on how we can serve you better, please fill out this form and send it to the address on the opposite side of this page (U.S. postage paid), or fax it to us at **(614) 438-4355**. Your feedback will help us to improve product performance, quality, and service.

Part / Product Name:	
Part / Model Number:	**Date:**
Provided By:	
Customer Name:	
Address:	
Phone Number:	**Fax Number:**

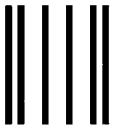
Your comments:

Do not write in space below. For METTLER TOLEDO use only. Response (if appropriate) and corrective action taken.

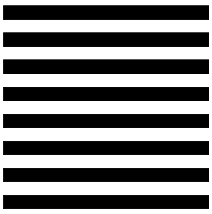
METTLER TOLEDO Model 8450 Service Manual F14715500A 2/01

METTLER TOLEDO
1900 Polaris Parkway
Columbus, Ohio 43240

FOLD THIS FLAP FIRST



NO POSTAGE
NECESSARY IF
MAILED IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 414 COLUMBUS, OH

POSTAGE WILL BE PAID BY ADDRESSEE

Mettler-Toledo, Inc.
Retail Quality Manager - MTWR
P.O. Box 1705
Columbus, OH 43216
USA

Please seal with tape.

Training

This publication is provided as a guide for individuals who have received Technical Training in servicing the METTLER TOLEDO product. Information regarding METTLER TOLEDO Technical Training may be obtained by calling (614) 438-4940 or writing to:

METTLER TOLEDO, Training Dept., 1900 Polaris Parkway, Columbus, Ohio 43240

FCC Notice

This device complies with Part 15 of the FCC Rules and the Radio Interference Requirements of the Canadian Department of Communications. Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. 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.

Publication Revision History

Part Number	Date	Revisions
D14715500A	**12/99**	Add Ethernet information and updated software data.
E14715500A	**5/00**	Add new RF sections. Added Frequent Shopper Setup in Chapter 3.
F14715500A	**2/01**	Added new SSW for SSP, DHCP Ethernet Setup, and new RF Module.

PRECAUTIONS

READ this manual BEFORE operating or servicing this equipment.

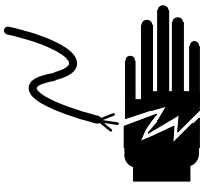
FOLLOW these instructions carefully.

SAVE this manual for future reference.

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

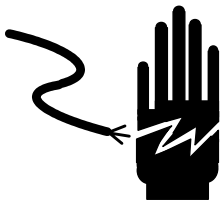
ALWAYS DISCONNECT this equipment from the power source before cleaning or performing maintenance.

CALL METTLER TOLEDO for parts, information, and service.



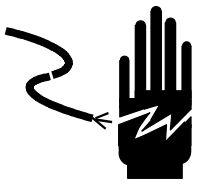
WARNING

POWER OUTLETS MUST BE EASILY ACCESSIBLE AND LOCATED NO FURTHER THAN THE LENGTH OF THE POWER CORD SUPPLIED WITH THE PRODUCT. FAILURE TO DO SO COULD RESULT IN PERSONNEL INJURY AND/OR PROPERTY DAMAGE.



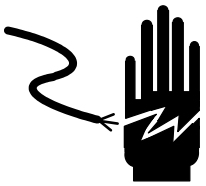
WARNING

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 AND/OR PROPERTY DAMAGE.



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 REMOVING THE FUSE OR SERVICING.

CAUTION

BEFORE CONNECTING OR 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.

CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

CONTENTS

1 Specifications

General Description

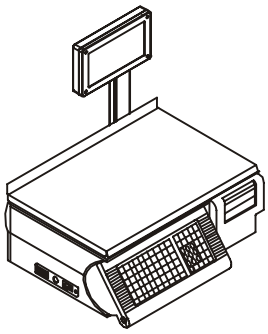


Figure 1-1: Model 8450 Scale/Printer

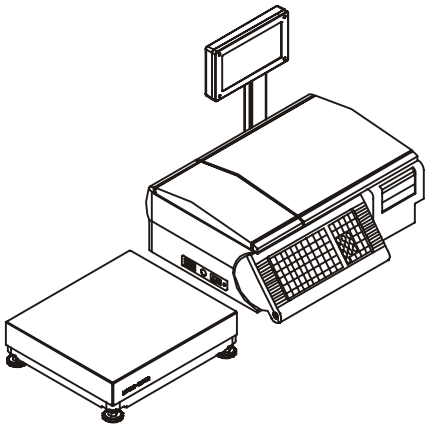


Figure 1-2: Model 8450 Dead Deck w/Model 8270 Scale

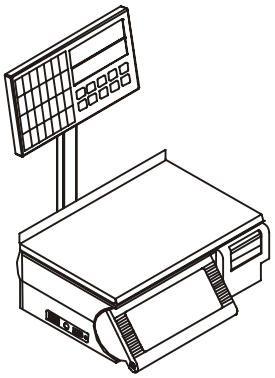


Figure 1-3: 8450SSP (Self Service Pictogram)

The METTLER TOLEDO® Model 8450 is a digital computing scale with an integrated thermal label printer. The Model 8450 weighing capacity is 30 x .01 lb U.S., or 15 x .005 kg or dual internal scale capacity 6 x .002 kg/15 x .005 kg on export versions. The Model 8450 is also available as a Dead Deck version without the internal load cell or platter (Figure 1-2). The Dead Deck version can be used for label printing only applications, or can be used with the Model 8270 Scale base for weight input. When used with the Model 8270 base, the capacity is 50 x .01 lb or 20 x .005 kg. Ethernet RF options are also available for the Model 8450.

Ethernet Client

The Model 8450 Ethernet Client is designed to connect to a METTLER TOLEDO® Scale Server or the STEM (**Smart*Touch®*** Ethernet Master) on an Ethernet network. The Scale Server or STEM contains the database for the PLU, Extra Text, NutriFacts, and Graphics files. Satellites on the network access the files through the network as they are needed. No records are stored locally at the satellite, except backup records that are used if the PC goes off-line.

TNET Satellite

The Model 8450 TNET Satellite is designed to connect to the **Smart*Touch®*** TNET Master or the TNET connections of the STEM (**Smart*Touch®*** Ethernet Master) through a wired RS422/RS485 high-speed network (TNET is a proprietary **T**oledo **Net**work). The Model 8450 can also connect to the 8422-Type Nutrifact Master with limited functionality. The master contains the database containing the PLU, Extra Text, Nutrifacts, and Graphics files. Satellites on the network access the files through the network, as they are needed. No records are stored locally on the satellite, except backup records that are used in the event the master goes off-line. The satellites are connected to the master controller with standard phone cable using an RS485 multidrop high-speed communications network. The maximum line length for the scale network is 1500 feet. Each master can support up to 24 satellite scales.

Standalone

The Model 8450 is available as a Standalone or Ethernet Standalone version. The Model 8450 SA (Stand Alone) version is available from the factory or by adding an optional Standalone kit to the satellite or client scale. The standalone version has the necessary hardware to store records locally in battery backed RAM. The standalone version is available with 2M or 4 Meg of memory for database storage.

SSP

The Model 8450 SSP (Self Service Pictogram) Scale (Figure 1-3) features a large tower mounted keyboard, with preset keys large enough to include pictures of the products. The 8450 SSP is available in standalone and satellite configurations.

Component and Control Locations

External Components

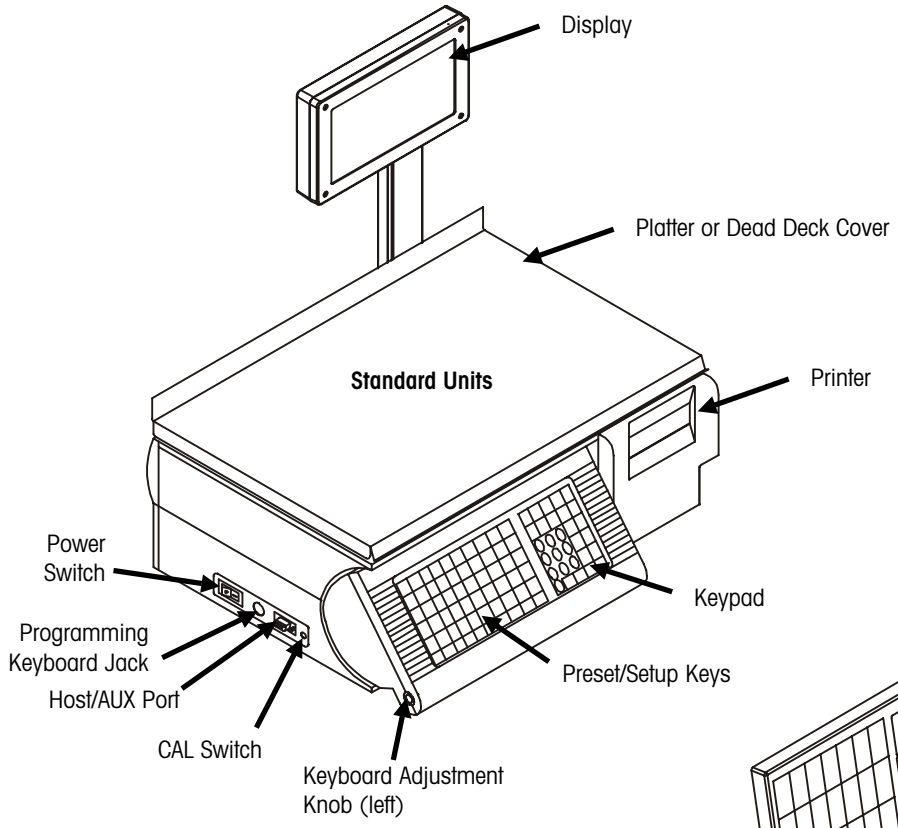


Figure 1-4: Standard Model 8450

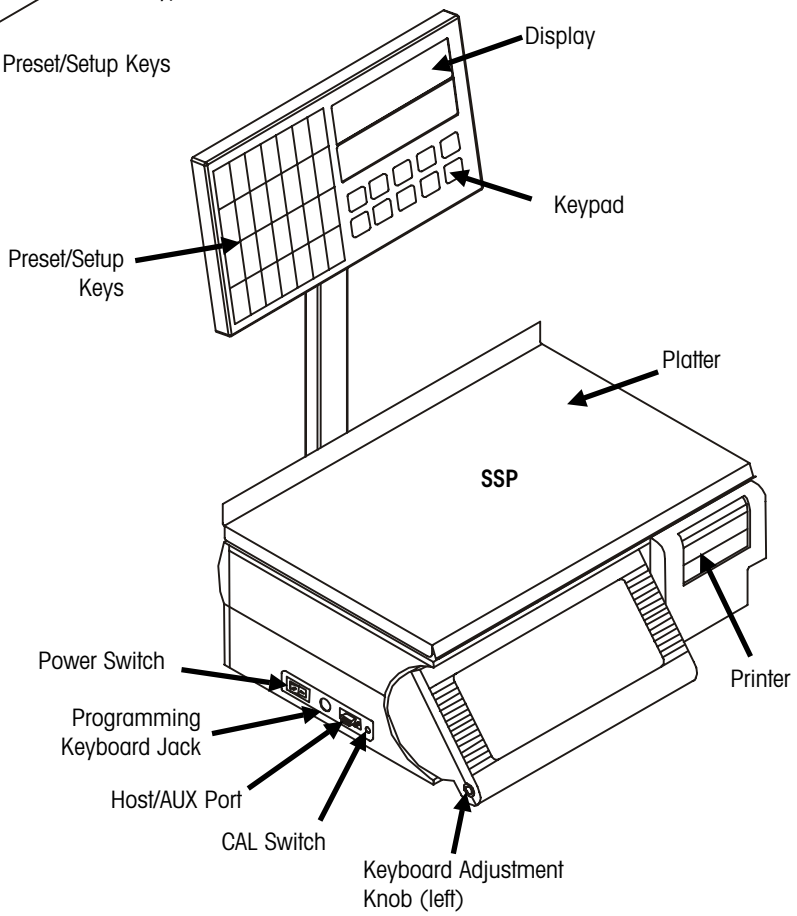


Figure 1-5: Model 8450 SSP (Self Service Pictogram)

Internal Components

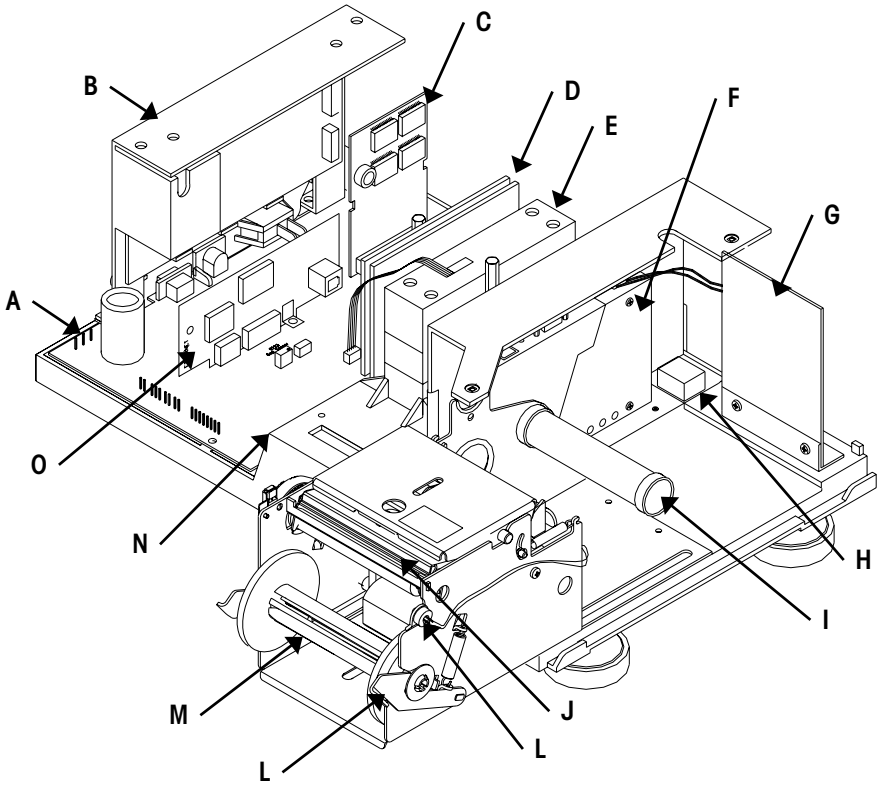


Figure 1-6: Internal Components

Ref	Description
A	Voltage Test Points on Mother PCB
B	+21 VDC Power Supply
C	Memory PCB (Standalone Only)
D	Ethernet RF Hub PCB
E	Eagle Load Cell (except on Dead Deck versions)
F	Mercury-PC RF Radio
G	RF Antenna
H	Battery, RAM Memory Backup
I	Label Supply Spool
J	Thermal Print Head, 8 dots/mm
K	Take Label Sensor
L	Printer/Take Up Release Lever
M	Liner Take Up Spool
N	Main Logic PCB
O	Ethernet PCB (standard units), or Ethernet-Serial PCB (Dead Deck), or Serial PCB (Dead Deck)

Displays

Four displays are mounted in the tower (two on SSP); two on the customer side and two on the vendor side. The bottom display shows the commodity description when a particular PLU is called, or if no commodity is called, it shows **READY**. If programmed, a marquee message scrolls across this display when the scale is not in use.

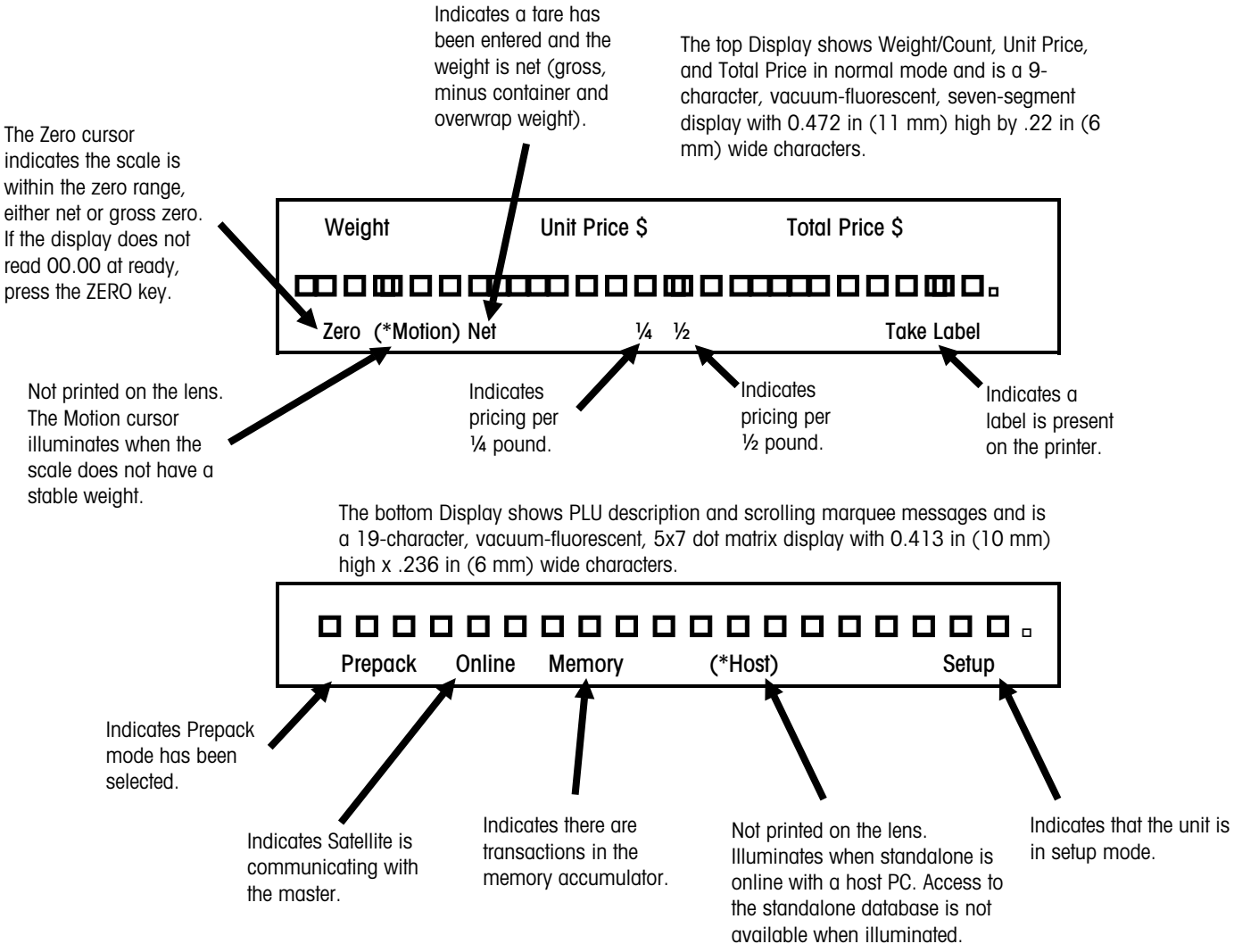


Figure 1-7: Model 8450 Displays

Keyboards

Standard Keyboard

A 30-key basic keypad is used for operating the scale and a 48-key area is used for preset quick keys for fast PLU retrieval.

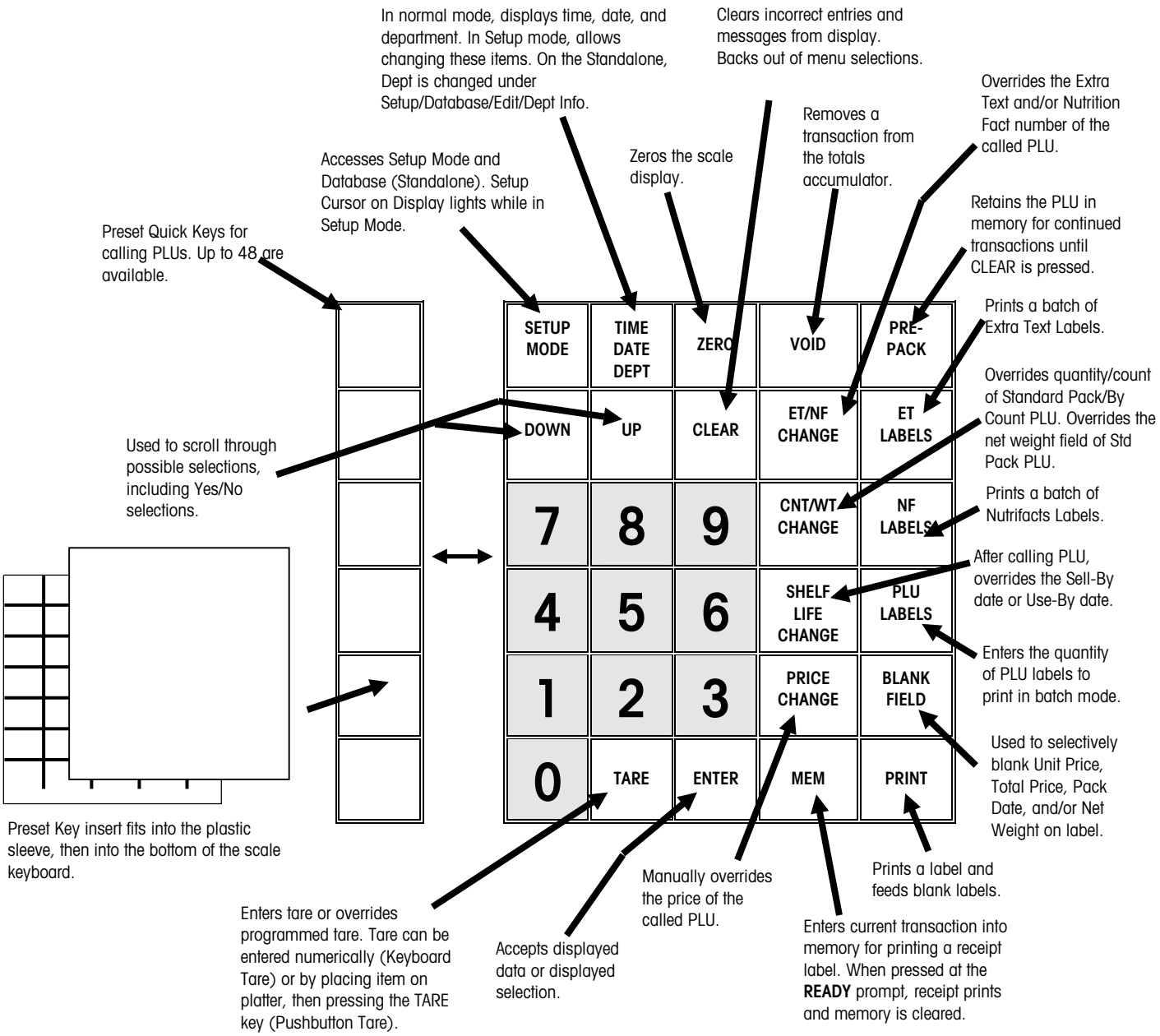


Figure 1-8: Standard Keyboard

SSP Keyboard

The Model 8450 SSP (Self Service Pictogram) Scale is designed for quick and easy call-up of PLUs. This unit is ideal for customer use in produce or bulk food areas. Graphics and a template for creating the preset key layout are available from METTLER TOLEDO®.

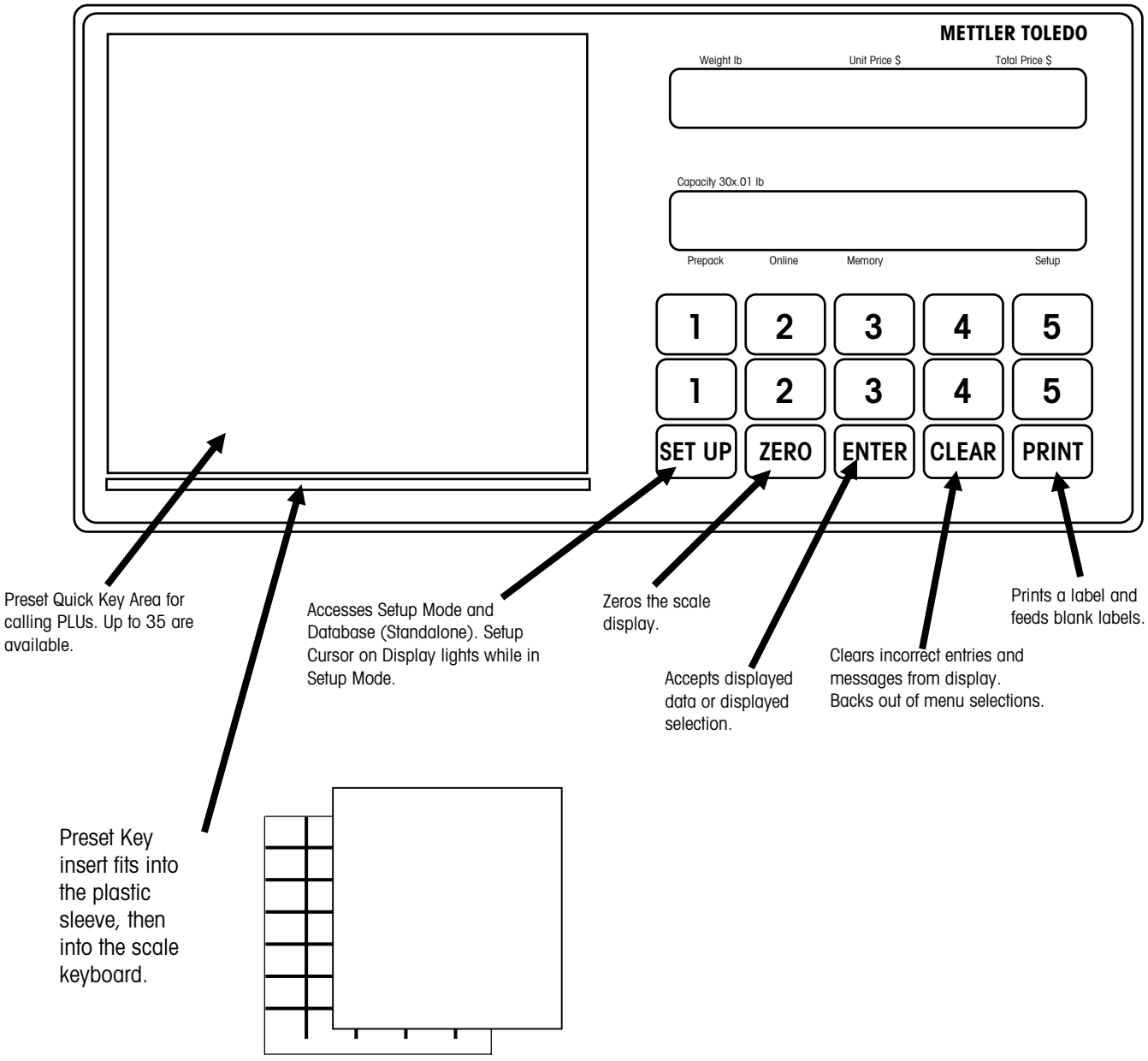


Figure 1-9: SSP Keyboard

Weighing Capacity

The Model 8450 can be configured for 30 x .01 lb, 5 x .005 kg, or 6 x .002 kg/15 x .005 kg dual range capacity. When the Model 8450 Dead Deck is used with the optional Model 8270 scale base, the capacity is 50 x .01 lb or 20 x .005 kg. The internal scale is designed to withstand static overloads up to five times the rated capacity without sustaining permanent damage. A weight greater than five increments over capacity causes the weight display to blank and printing is inhibited. If the scale is under zero by more than five increments, the weight field will display dashes (------). When zero cannot be captured, the weight field will display **EEEEEE**.

Agency Approvals

ISO9001
This product was developed, produced and tested in a Mettler Toledo facility that has been audited and registered according to international (ISO 9001) quality standards.

The Model 8450 is designed to meet the requirements of the following agencies:

UL - UL1950 Information Technology Equipment

cUL - CSA Std. C22.2 No. 950 Information Technology Equipment.

NIST - NTEP requirements for Class III weight device.
NTEP/California Electronic Cash Registers General Code Requirements.

FCC Requirements for FCC Conducted Emissions and Radiated Emissions for a Class A device.

Tare

Tare is limited to a maximum of 30 lb or 9.995 kg. The value is set in setup.

Memory Specifications

A Supercap on the Main Logic PCB and an alkaline battery mounted to the base retains backup PLU's and the time/date in the SRAM memory for a minimum of 60 days. On the standalone version backup of the time/date and the PLU, ET, NF, and Graphics files are retained also for a minimum of 60 days. The Main Logic PCB contains 512 kilobytes of SRAM memory that automatically backs up the last 250 PLU's. The Flash Memory retains other data, including calibration constants, and requires no battery for retention.

Label Printer

The Model 8450 printer is a thermal self-adhesive label printer that will print labels in a stripped or unstripped mode. In stripped mode, the labels automatically peel from the backing liner. In the unstripped mode, the label and liner will be delivered. A tear bar allows continuous stock to be torn to exact length needed.

PRINTHEAD TYPE: Thick Film Smart Thermal Printhead

DOT DENSITY: 8 Dots/mm

PRINT SPEEDS: Five Speed/Power selections from 101 mm/sec to 122.5 mm/sec. (Note: the Speed/Power setting depends on the quality of the label stock for optimum printing.)

Label Formats

Label formatting is flexible with the Model 8450. Many different types of labels can be used. Table 1-3 shows standard label sizes available from Mettler Toledo and general guidelines for fields on the labels.

Label Length	Label Width	# Lines of Text
1.9 in/48 mm	2.63 in/66.8mm	N/A
2.1in/53 mm	2.63 in/66.8mm	N/A
2.4 in/61mm	2.63 in/66.8mm	5
3.3 in/83 mm	2.63 in/66.8mm	7/10
3.7 in/94 mm	2.63 in/66.8mm	11/15
4.2 in/107 mm	2.63 in/66.8mm	15/20
4.7 in/119 mm	2.63 in/66.8 mm	20/25
5.1 in/129 mm	2.63 in/66.8mm	22/30
Roll Stock (Cont)	2.63 in/66.8mm	60 Max.

Table 1-1: Label Sizes Inch/Millimeter

Electrical

Power outlets must be easily accessible and located no further than the length of the power cord supplied with the product. Failure to do so could result in result in personnel injury and/or property damage. The Model 8450 requires a dedicated grounded 100-240 VAC, 50/60 Hz supply, and draws 0.5 amps @ 120 VAC (scale/printer versions.) The AC line (including ground) must not be shared with noise and surge generating equipment such as, electric motors, compressors, thermostats, fluorescent lights, etc. A line-conditioning device is recommended to provide protection from surges and spikes.

The Power Supply uses an electronic thermal overload protection circuit designed to protect the internal electrical components. When an overload exists, the power supply output will be significantly lowered until the overload condition is corrected. When this condition exists, the unit power should be turned off for a few minutes to allow cooling to reset the thermal fuse.

Index Of Specifications

8450 - X X X X - X X X

Memory

0 = NONE
1 = 256 k Standalone*
2 = 512 k Standalone*
3 = 1 Meg Standalone*
4 = 2 Meg Standalone/Backup
5 = 4 Meg Standalone/Backup

Software

0 = TNET Satellite*
1 = Standalone*
2 = TNET Satellite Self-Serve
3 = Standalone Self-Serve*
4 = TNET Satellite (FS SW)* (Note 1)
5 = Standalone (FS SW)*
6 = TNET Satellite SS Pictogram
7 = Standalone SS Pictogram*
A = Ethernet Client (Version 1)*
B = Ethernet Standalone (Version 1)*
C = Ethernet Client Self-Serve
D = Standalone Self-Serve TNET/Ethernet
E = Satellite TNET/Ethernet (w/FS)
F = Ethernet Standalone (Version 2 w/FS)
G = Ethernet Client SSP Ethernet
H = Standalone SSP TNET/Ethernet

Printer/Color/RF

0 = NORMAL / GRAY UNIT
1 = N/A*
2 = NORM/GRAY/SPEC24 802.11 FH
3 = NORM/GRAY/TELXON 2.4 TMA
4 = NORM/GRAY/SPEC24 SPRING
5 = NORM/GRAY/TELXON 802.11 DS
6 = NORM/GRAY/MECURY MODULE
A = NORMAL / BLACK UNIT
B = N/A*
C = NORM/BLACK/SPEC24 802.11 FH
D = NORM/BLACK/TELXON 2.4 TMA
E = NORM/BLACK/SPEC24 SPRING
F = NORM/BLACK/TELXON 802.11 DS
G = NORM/BLACK/MERCURY MOD

Type

1 = Single Range Scale
2 = Dead Deck
3 = Dead Deck w/Scale Interface installed
4 = Multi-range

Market

000 USA, English, lb
010 Australia, English, kg
020 Canada, French, kg
087 Spanish, lb
088 Spanish, kg
089 Canada, English, kg

Note 1: Frequent Shopper software is standard on unit built starting on January 1, 2000.

* No longer available

Table 1-2: Model 8450 Index of Specifications

Index Of Accessories

Part #	Description	Factory #
(*)13698700A	Keyboard, PC-AT Programming Keyboard	0977-0025
N/A	Remote Scale Base w/feet and platter. Remote Scale Base w/o feet and platter.	8270-2010 8270-3000
(*)14582600A	Cable, Model 8450 to Model 8270 Scale Base, 6 ft/1.8 m	0900-0305
*13816300A	Cable, PC DB25 Serial Port to Model 8450 SA/SAT, 10 ft (3 m)	0900-0286
*14102800A	Cable, PC DB25 Serial Port to Model 8450 SA/SAT, 25 ft (7.62 m)	0900-0298
*13816200A	Cable, PC DB9 Serial Port to Model 8450 SA/SAT, 10 ft (3 m)	0900-0285
*14102600A	Cable, PC DB9 Serial Port to Model 8450 SA/SAT, 25 ft (7.62 m)	0900-0297
*13698600A	Stainless Steel Fish Pan Kit	0906-0137
*14025900A	Stainless Steel Lobster Pan Kit	0906-0139
*14087900A	Stainless Steel Produce Pan Kit	0906-0140
*14088000A	Replacement Foot for Accessory Pans	N/A
*14773500A *14773600A *14930200A	Preset Envelope Kit (Standard Keyboard), English Preset Envelope Kit (Standard Keyboard), Spanish Preset Envelope Kit (Standard Keyboard), French	0977-0033 0977-0035 0977-0037
(*)14613600A (*)14613700A (*)14613800A (*)15830600A (*)15830700A	Standalone Kit w/256k Memory Standalone Kit w/512k Memory Standalone Kit w/1 Meg Memory Standalone Kit w/2 Meg Memory Standalone Kit w/4 Meg Memory	0977-0029 0977-0030 0977-0031 0977-0091 0977-0092
(*)13954100A	DataBack Software	0918-0027
(*)14613200A	Scale Interface Kit	0977-0032
	8450/8461 RF-Ready Upgrade Kit (Radio not included)	09770099
	8450/8461 Upgrade Kit with Symbol® 802.11 FH	09770101
	8450/8461 Upgrade Kit with Telxon™ 2.4 DS TMA Upgrade Kit	09770103
	8450/8461 Upgrade Kit with Symbol® Spring Upgrade Kit	09770105
	8450/8461 Upgrade Kit with Telxon™ 802.11 DS Upgrade Kit	09770107

Table 1-3: Accessories

***** Indicates may have letter prefix.

Operating & Storage Temperature

Operating Range: 0°C to 40°C (32°F to 104°F), humidity from 5% to 95% non-condensing.

Storage Range: 0°C to 70°C (32°F to 158°F), with humidity from 5% to 95% non-condensing.

Reliability

The printer electronics have demonstrated an MTBF of 17,520 hours. The printer mechanism (including printhead and platen) has demonstrated a minimum life of 2 million inches of standard label stock (non-synthetic).

Ethernet Communications

The Model 8450 Client or Ethernet Standalone can use any standard Ethernet wiring scheme to connect to the server, but connections at the scale must use 10BASE-T. Refer to Chapter 5 for details.

TNET Communications

(TNET Satellite Versions) The master/satellite communication network (TNET) uses RS485 Synchronous Data Link Communication (SDLC) at 345k baud. A transformer provides isolation with no DC connection between the scales. A four-conductor modular connector telephone cable is used to connect each scale to the network. The maximum recommended data cable length is 1500 feet (457 meters), including the 25-ft scale drops. The ends of the main data cable must be terminated using a 113-ohm resistor (P/N 12839300A provided with each master) to provide impedance matching. The master can be located at any point on the network. However, when nearing the maximum cable length of 1500 feet, the master should reside near the middle.

Dimensions

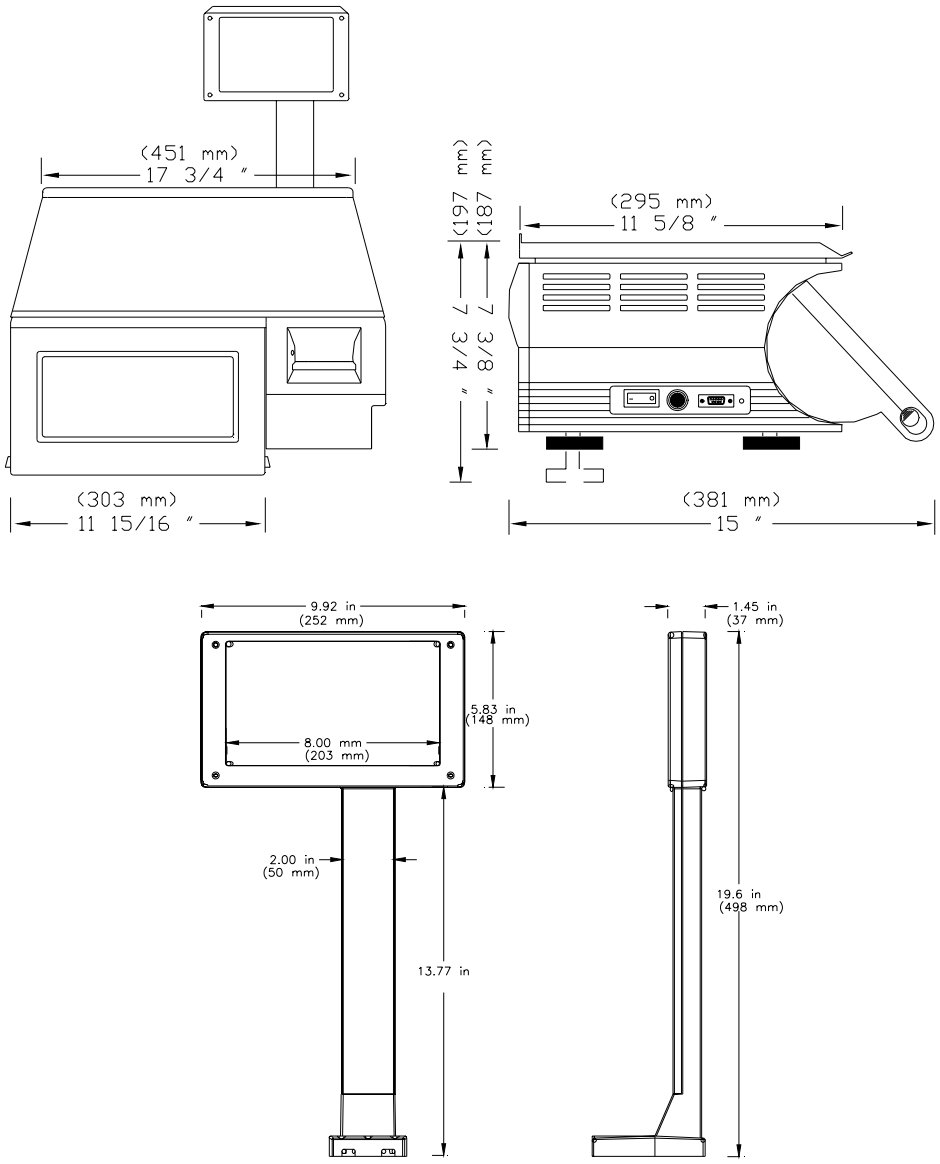


Figure 1-10: External Dimensions

Bar Code Symbols

The printer is capable of printing UPC or EAN-13 bar code symbols. The following samples are of **UPC Type-2** and **UPC Type-0** bar codes. The bar code must be set up correctly to work with the store's scanner. In addition, the UPC Type-2 and EAN-13 bar codes include an optional price check digit (PCD) that must match the scanner's settings.

UPC Type-0 Bar Code

The illustration below shows an example UPC Type-0 Bar Code. The Type-0 bar code is used for general grocery, drug, or other prepackaged items. This type of bar code provides the register with a 10-digit Item Number. The number is then used to retrieve the item's description and price. The symbol contains 12 digits. The first position from the left is always the Bar Code Type. Positions 2 through 11 (from left to right) are reserved for data, in this case the 10 digit Item Number. When a Manufacturer Number is used, it will show up at positions 2-6, and the last five digits, positions 7-11, will be the Item Number. Position 12, the last position on the right, is reserved for the Symbol Check Digit.

Note: If the Manufacturer Number is set to any value greater than zero, it will replace the first five MSD (Most Significant Digits) of the Item Number.

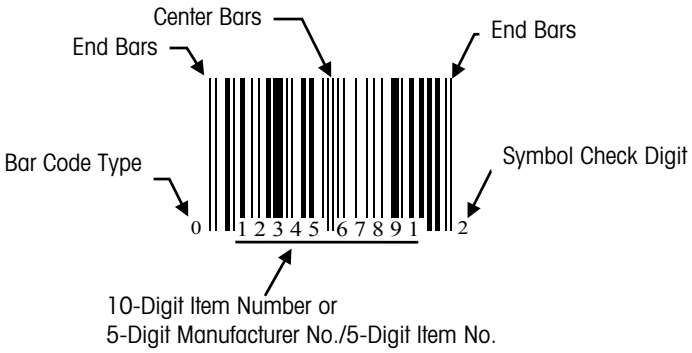


Figure 1-11: Standard UPC Type-0 Bar Code

UPC-A Type-2 and EAN-13 Bar Code

The UPC Type-2 bar code and the EAN-13 Flag 20 bar code are used when the total price of the product varies from package-to-package, such as products sold by quantity, weight, etc. The UPC-A Type-2 bar code is actually a subset of the EAN-13 bar code. The EAN-13 Flag 20 bar code differs only from the UPC-A Type-2 bar code by having a 13th digit called Flag 1. The UPC-A symbols use twelve digits and EAN-13 uses thirteen digits. Since no standard total price can be set, the total price is encoded in the bar code symbol, along with the Item Number. When this type of bar code is scanned, the Item Number is used to retrieve the product description. The UPC Type-2 and EAN-13 bar codes will print a 5 or 6-digit Item Number (with no price check digit) and a 4 or 5-digit total price to be encoded in the bar code symbol. Refer to the UPC and EAN Bar Code Setup section in Chapter 3 for bar code formats.

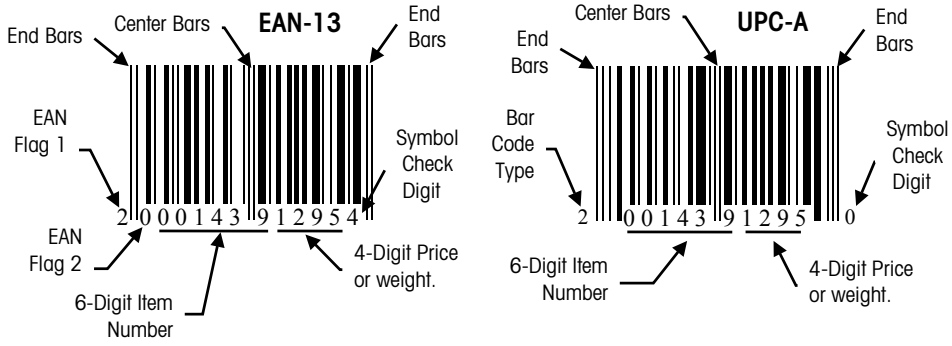


Figure 1-12: Bar Code Symbols/No Price Check Digit

A Price Check Digit (PCD) is also available as an option in the UPC Type-2 and the EAN-13 bar code. The PCD is used as a secondary check for the total price. When enabled, the PCD takes the place of the last position in the Item Number, shifts the Item Number one position to the left, and limits the Item Number to five digits. The PCD will print in the first position to the right of the center bars and shifts the Item Number one position to the left.

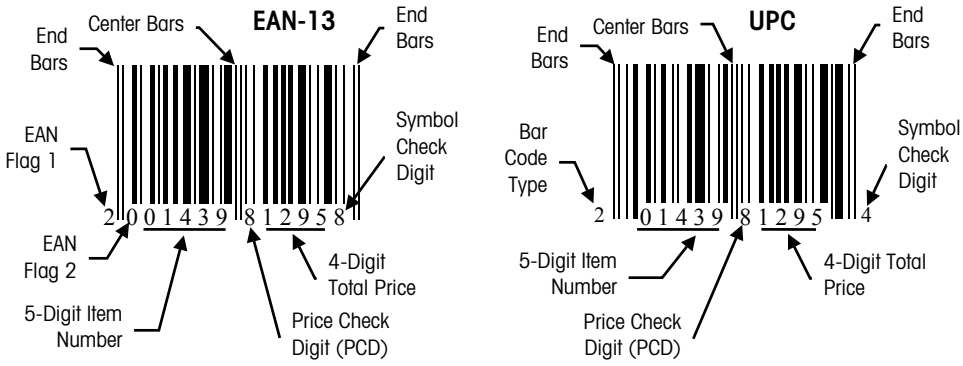
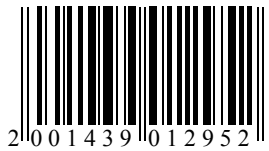


Figure 1-13: Bar Code Symbols/Price Check Digit (PCD) Enabled

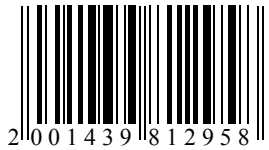
UPC/EAN Bar Code Symbol Examples

EAN 20 Flag
4D Item (1439)
6D Price (000759)
Symbol Check Digit (2)

EAN 20 Flag
5D Item (01439)
5D Price (01295)
Symbol Check Digit (2)



EAN 20 Flag
5D Item (01439)
Price Check (8)
4D Price (1295)
BC Check Digit (8)



UPC Type-0
10D Item
(1234567891)
BC Check Digit (2)

UPC Type-2
5D Item (01439)
Price Check (0)
4D Price (1099)
BC Check Digit (2)

UPC Type-2
6D Item (001439)
4D Price (1099)
BC Check Digit (4)

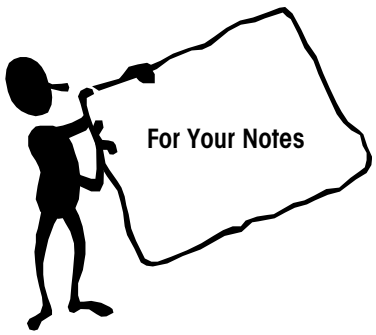
UPC Type-3
10D Item
(1234567890)

UPC Type-4
10D Item
(1234567890)

UPC Type-5
10D Item
(1234567890)

UPC Type-6
10D Item
(1234567890)
Same as Type-0

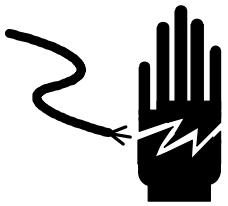
UPC Type-7
10D Item
(1234567890)
Same as Type-0


For Your Notes

2 Installation

Unpacking

Note: If you choose to dispose of the package, please recycle the materials. The packaging is recyclable natural fiber with biodegradable adhesives.



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.

Remove the Model 8450 and accessories from the shipping carton and inspect for damage. Report any damage to the carrier promptly. **DO NOT LIFT THE SCALE USING THE SPIDER**. Verify you received the accessories listed below in Figure 2-1.

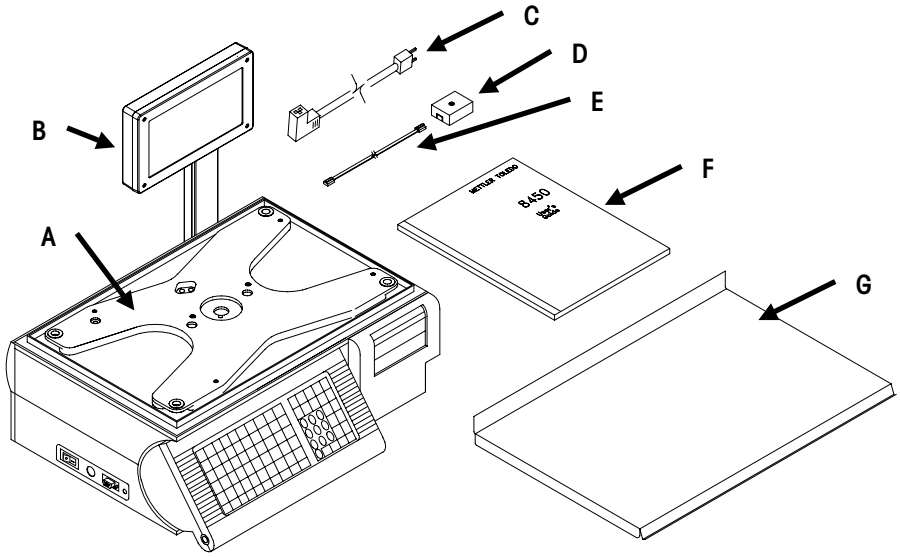


Figure 2-1: Model 8450 and Accessories

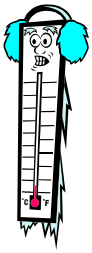
Not shown:
(*)14529600A Keypad Envelope
(*)14551300A (Qty=5) Keypad Insert
(*)14736100A Programmed Disk
(*)14530200A Foot Clamp
(*)12363300A Security Seal
(*)12745800A Quality Feedback Card
(*)14526000A Data Label Shield
(*)14882300A Lead Wire Seal
A12800700A Label Form
R0514000A (Qty 3) Screws
R0369800A (Qty=2) Screws
R0531100A Sealing Screw

Ref	Description
A	Model 8450 or Model 8450 Dead Deck
B	Display Tower or SSP Display/Keyboard Tower
C	Power Cord (*)10944500A U.S. or (*)13902200A
D	Phone Jack (*)12716300A Phone Jack TNET (Satellite Only)
E	25 ft/7.62 m TNET Cable (*)12716300A (TNET Satellite Only)
F	Operator Manual
G	Stainless Steel Platter (or Plastic Cover w/Dead Deck)

(*) Indicates may have letter prefix.

Unit Installation

Standard Unit Assembly



Note: If the unit has been stored or transported in below freezing temperatures, allow the unit to warm up to room temperature before turning on AC power.

Install any optional kits first. After any optional kits are installed, mount the Display Tower (Figure 2-2) using the supplied screws (A in Figure 2-3). Connect the display harness into the Display Jack (6-Position Phone Jack) on the bottom on the unit (B in Figure 2-3).

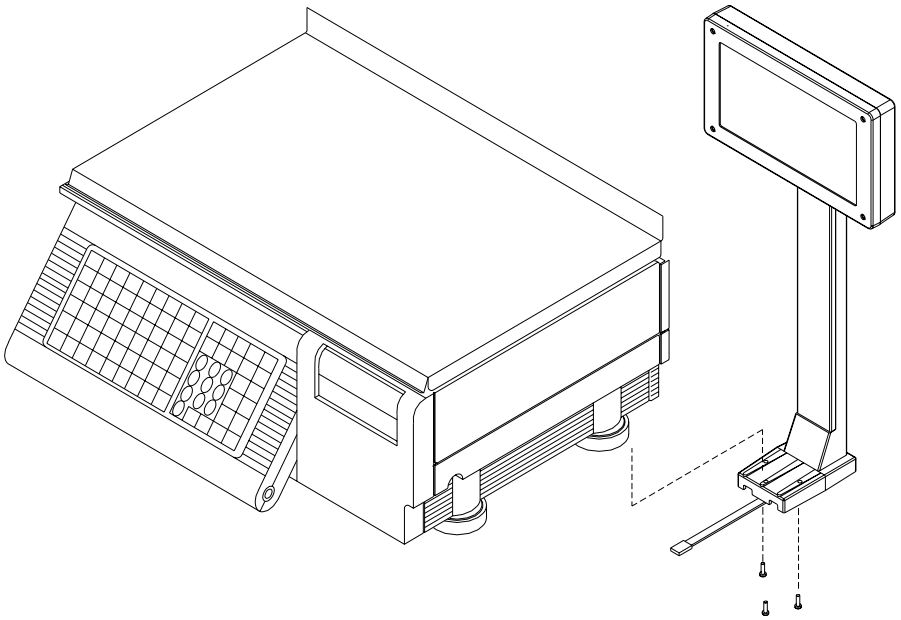


Figure 2-2 Mounting the Display Tower (Except SSP)

A - 3 Mounting Screws R0514000A
B - Display Jack (6-Position)

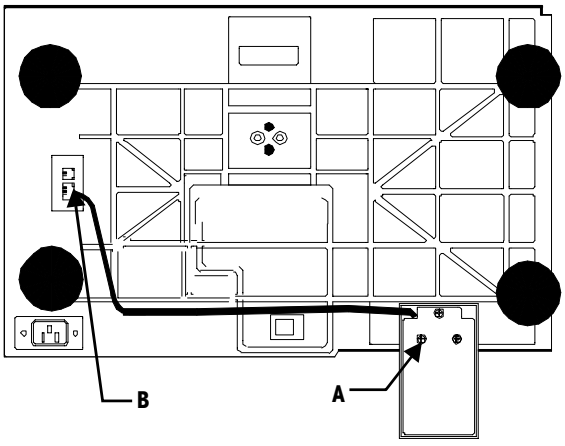


Figure 2-3 - Display Tower Mount and Harness Installation

Place the Model 8450 on a stable surface. Level the unit using the feet for adjustment and the bubble indicator (A in Figure 2-4) as a guide. Adjustment is correct when the bubble is centered within the circle, as shown in Figure 2-4, and the scale does not rock

in any direction. When the adjustment is complete, tighten the foot lock nuts. Install the scale platter on the spider.

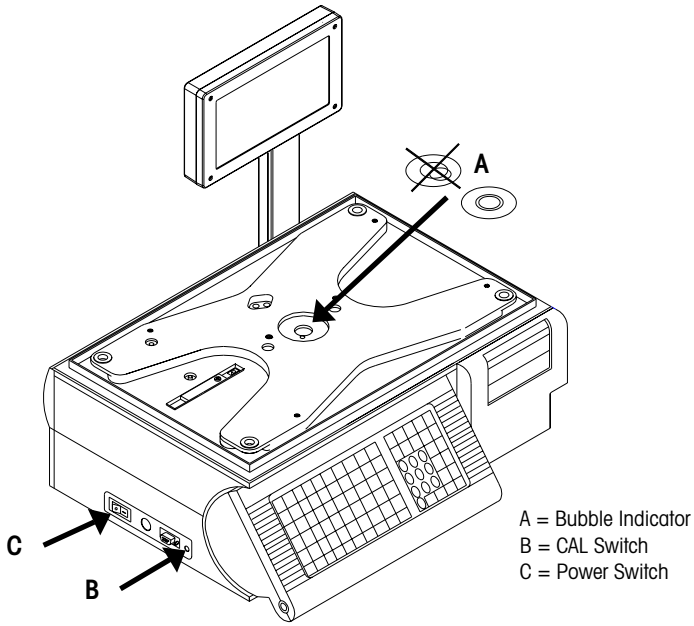


Figure 2-4: Level Indicator, CAL Switch, and Power Switch

SSP Assembly

Follow Step 1 through Step 6, as shown in the next two illustrations.

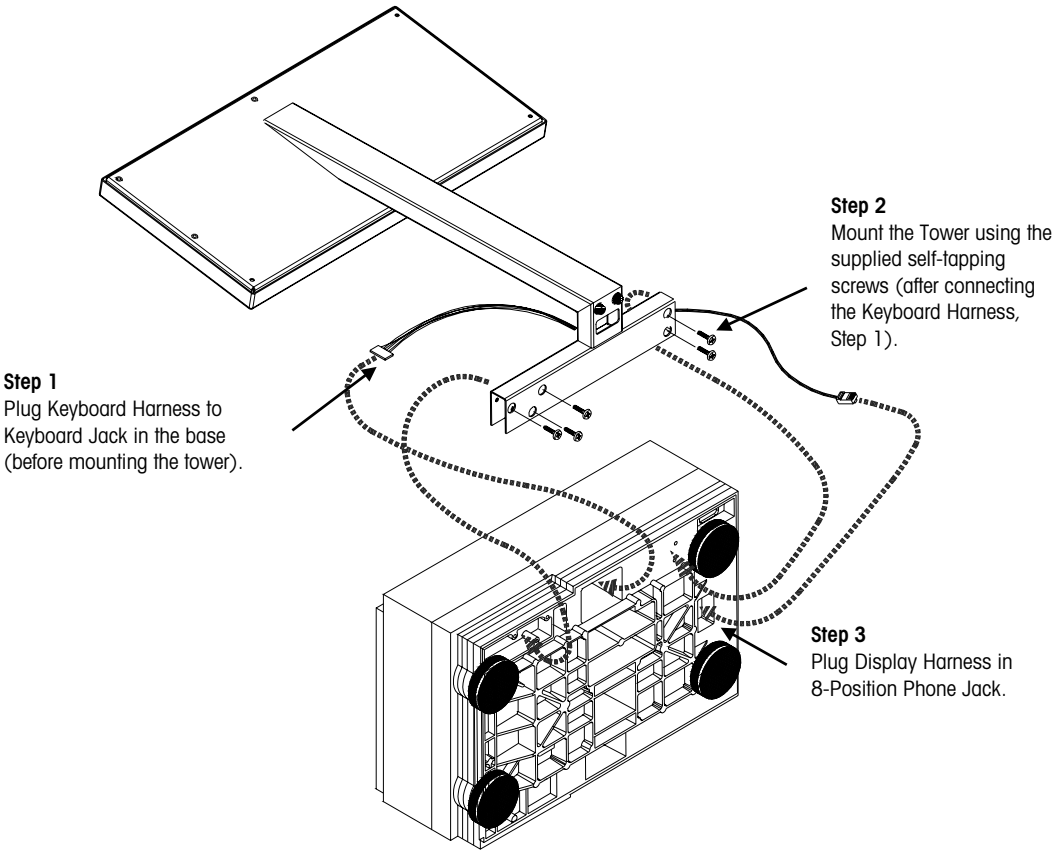


Figure 2-5: SSP Tower Installation

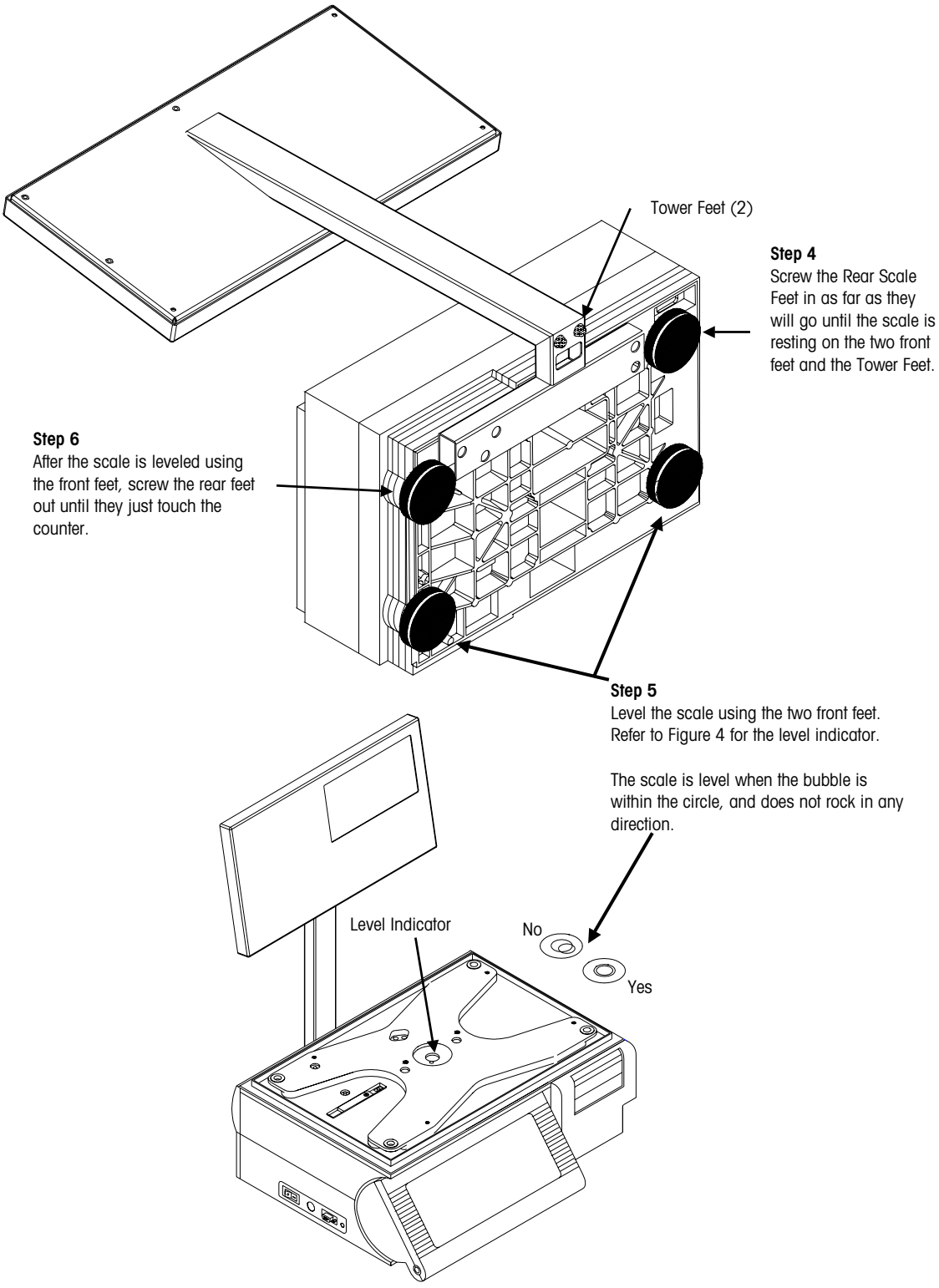


Figure 2-6: Leveling the Scale

Network Connections

If the unit has Ethernet Software installed connect the Ethernet cable to the Ethernet jack. If the unit has TNET software installed, connect the TNET cable to the TNET jack on the bottom of the unit, as shown in Figure 2-7 (do not connect both). Install the power cord in the receptacle on the bottom of the scale, as shown in Figure 2-7. (If units have been stored or transported in below freezing temperatures, allow the units to warm up to room temperature before turning on AC power.) Connect the power cord to AC power. Set the power switch (C in Figure 2-4) to the ON position (press the - on the switch for ON). Allow at least 30 minutes warm-up time before initial calibration. The SuperCap on the Main Logic PCB will charge up within five minutes after powerup.

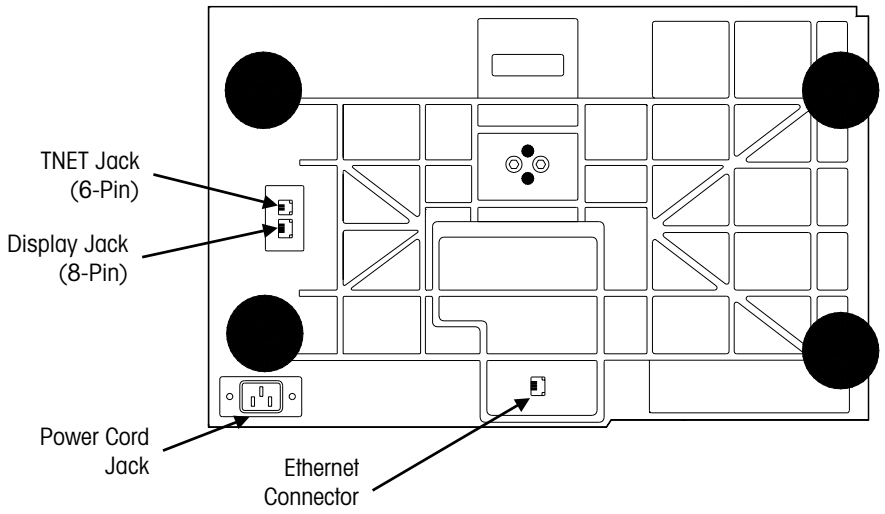
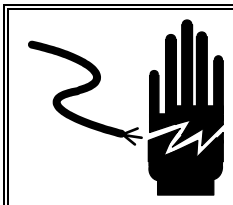


Figure 2-7: Bottom View

Adjusting Label Width Guides

Tools are required to adjust the label width guides. The guides are preset at the factory for standard Mettler Toledo labels and can only be adjusted using a 90° angled screw driver to loosen the three screws located on the bottom of the label guide directly below the printhead. After making the adjustments as needed, the screws must be re-tightened.

Setup Checklist



⚠ WARNING

Power outlets must be easily accessible and located no further than the length of the power cord supplied with the product. Failure to do so could result in result in personnel injury and/or property damage.

Note: After performing Reset Ram, **you must reset the printhead resistance and print speed/power setting, and the Scale ID.**

Note: A question mark following a message on the left side of the display means the Model 8450 expects you to enter a number or select an option followed by pressing ENTER. A colon means the data on the right of the display is the current setting. Pressing ENTER will allow you to change it.

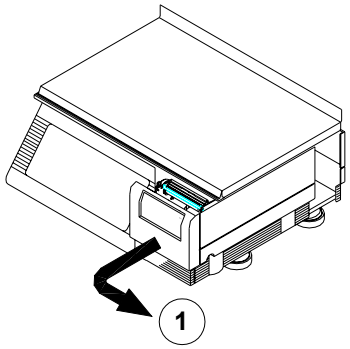
1. **Reset Ram** - The Model 8450 RAM must be initialized. To initialize the Model 8450 and reset all softswitches to factory defaults, press the SETUP MODE key. Next, press the CAL Switch. The display will show **Sure?? No**. Press the DOWN/UP keys to toggle to **Yes**. Press ENTER with **Yes** displayed to initialize, or press ENTER with **No** displayed to abort. Cycle power when complete. Continue setup in the following order:
2. **Configure Printer** - Set the print speed/power setting and the print head resistance.
3. **Unit ID and Network Setup**

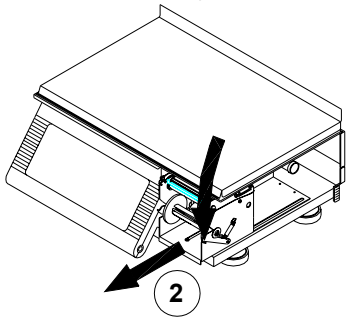
   Unit ID - Set the Unit ID on the TNET satellite. Do not duplicate ID numbers.

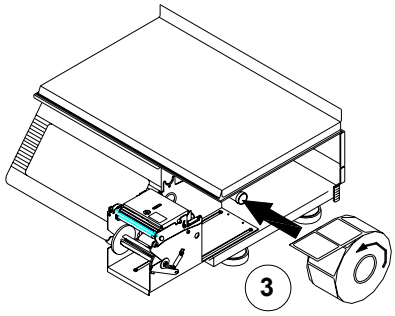
   or

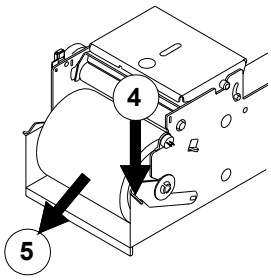
   IP Address - Set the Ethernet Client and Server IP address. Do not duplicate any IP numbers on the network or communications errors will occur.
4. **Protocol** – If connecting to an Ethernet Network, set the protocol to TCP/IP for use with Scale Server Software.
5. **Calibrate** - Refer to Calibration Instructions.
6. **Password** - To bypass the Unit Password, press the **CAL** switch when the display prompts for the password.
7. **Install Labels** - Install labels in the printer. Refer to Label Installation.
8. **Softswitches** - Scale options must be configured, such as Bar Code settings, Label Size, Label Formats, and IP number. Refer to the softswitches section.
9. **DataBack** - Use DataBack to backup and restore the presets, custom label formats, label styles, and Misc.
10. **Ethernet RF** – If Ethernet RF is used, refer to Chapter 4 to configure the Mercury-PC.

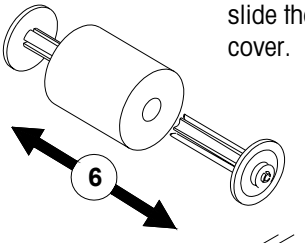
Label Installation

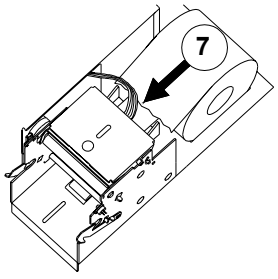


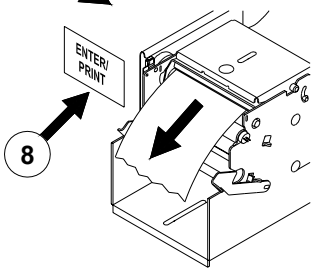


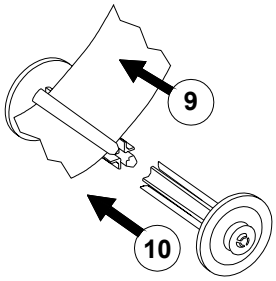


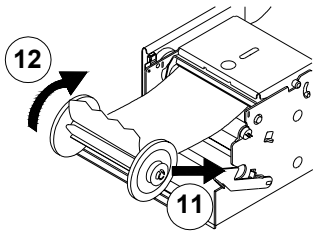






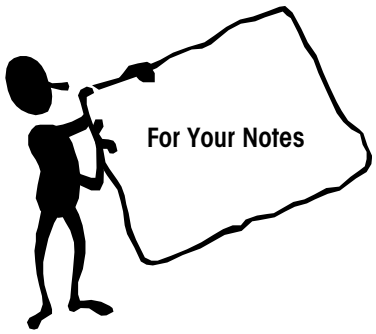






Follow the instructions below and the illustrations to install labels. (It is not necessary to unlock the printhead to load labels). The labels can be loaded in a stripped mode or unstripped mode. The default is stripped mode. This must also match the DELIVERY option in **Printer Setup.**

1. Remove the Printer Door.
2. Press the Release Lever and pull the printer forward.
3. Install the labels on the supply spool.
4. Press the release lever. If installing for unstripped mode, skip to Step 7.
5. Remove the liner take-up spool from the printer mechanism.
6. Slide the two halves of the liner take-up spool apart and discard any spent liner.
7. Insert the end of the paper into the rear chute and through the Gap Sensor. Feed labels into the chute until they stop at the platen roller.
8. Press the ENTER/PRINT key to feed the labels, while gently pushing the label stock into the rear chute until the label feeds out the front of the mechanism. If the label stock will not feed out the front, there may be a label jam inside the mechanism. In this case, unlock and lift the printhead to clear the jam. If the delivery method is unstripped you are done loading labels and can push the printer back in until it locks and install the printer cover.
9. If you are using loading labels in a stripped delivery mode, insert the label liner through the fingers of one half of the liner take-up spool.
10. Reassemble the two halves of the liner take-up spool.
11. Reinstall the liner take-up spool into the printer mechanism.
12. Wind the spool upwards until the slack is taken up on the liner. When complete, slide the printer back inside until the locking lever engages and reinstall the printer cover.


For Your Notes

3

Prompts that appear on the display will be shown here in **BOLD** type. Keys are shown as UPPERCASE CHARACTERS.

Unit Set Up

Unit Setup Mode is used to change options of the Model 8450. While in Setup Mode, the "Setup" cursor will be lit on the lower display.

Setup Overlay

Before entering Unit Setup Mode, insert the Setup overlay (Figure 3-1) in the slit below the preset keys. This overlay identifies which preset keys correspond with the available options. The key descriptions are shown in order starting with the left most columns and working down. (Note: The EDIT, QUICK CHANGE, PRINT, and CLEAR keys are for the standalone versions only and do not apply to the client.)

14551300A							
PLU PRESET	UNIT ID	RESET LABELS	LABEL PRINTER	LABEL SIZE	ENABLE MODIFY	VERIFY LABELS	PASS-WORDS
PRESET REACT.	CAL	DEFAULTS	HOST	LABEL FORMAT	ENABLE FUNC	***EDIT***	BEEPER
ID PRESET	CURRENCY	RESET RAM UNIT		STRIP		***QUICK CHANGE***	
MARQUEE	PLU SETTING			GAP LENGTH		***PRINT***	
MARQUEE SPEED	BAR CODE SETTING			IMAGE OFFSET		***CLEAR***	
				EJECT LENGTH			TIME DATE FORMAT

PROGR TECLA RAPIDA	ID UNIDAD	VUELTA ETQTA. DE FCA.	INPRS. ETQTA.	TAMAÑO ETQTA.	ACTIVE MODIF.	ETQTA. VERIF.	CONTRA-SEÑA
REACC TECLA RAPIDA	CAL	VALOR FCA.	HOST	FORMAT ETQTA.	ACTIVE FNCION	EDIT	BEEPER
FIJAR TECLA OPRDOR	MONEDA	VUELTA A RAM DE FCA.		DESPE-GADA		CAMBIO RAPIDO	
MARQUE-SINA	CONFIG PLU			ESPCIO. ENTRE ETQTAS		IMPR.	
VELOC. MARQUE-SINA	CONFIG CODIGO BARRAS			SENSOR ESPCIO.		BORRE	
				COMPEN ETQTA.			FECHA HORA

A14638100A

Figure 3-1: Setup Mode Overlay (Standard versions) English (above) and Spanish (left)

156483100A

EDIT	UNIT ID	RESET LABELS	LABEL PRINTER	LABEL SIZE
PRINT	CAL	DEFAULTS	HOST	LABEL FORMAT
CLEAR	CURRENCY	RESET RAM UNIT	VERIFY LABELS	TIME DATE DEPT.
MARQUEE	PLU SETTING	ENABLE MODIFY	PASSWORDS	TIME DATE FORMAT
MARQUEE SPEED	BAR CODE SETTINGS	ENABLE FUNCTION	BEEPER	PREPACK
PLU PRESET	PRESET REACT	ID PRESETS	EJECT LENGTH	QUICK CHANGE
STRIP	GAP LENGTH	IMAGE OFFSET	DOWN	UP

Figure 3-2a: Setup Overlay SSP (Self Serve Pictogram)

P/N A15062300A

EDIT	UNIT ID	RESET LABELS	LABEL PRINTER	LABEL SIZE
PRINT	CAL	DE-FAULTS	HOST	LABEL FORMAT
CLEAR	CUR-RENCY	RESET RAM UNIT	VERIFY LABELS	TIME DATE DEPT
MAR-QUEE	PLU SETTING	ENABLE MODIFY	PASS-WORDS	TIME DATE FORMAT
MAR-QUEE SPEED	BAR CODE SETTING	ENABLE FUNC	BEEPER	PREPACK
DOWN	UP	ENTER	SETUP	ZERO

Figure 3-2b: Setup Overlay SS (Self Serve)

Enter Unit Setup

To enter Unit Setup mode, press the SETUP MODE key. If a password has been programmed, key in the password, then press ENTER.

Exiting Unit Setup

Press the CLEAR key to return to the first option in the current menu. Press CLEAR again to return to the previous menu or the **SELECT FUNCTION** prompt. To exit out of Setup mode, press CLEAR when the display shows **SELECT FUNCTION**.

Time Date Depart Key

Pressing this key displays the Time, Date, and Department. In Setup Mode, this key is used to set the time, date, and department. The department setting of the unit determines the PLU's that can be accessed from the master scale.

To change the Time, Date, or Department, press the SETUP MODE key. When prompted to **SELECT FUNCTION**, press the TIME DATE DEPT key. Press the DOWN or UP keys to toggle between **TIME**, **DATE**, and **DEPT**. When all the changes have been made, press CLEAR (two times) to return to **SELECT FUNCTION**.

Date Change

After toggling to **DATE**, press ENTER. Key in the date in the format **MMDDYY** then press ENTER.

DEPT then appears. Use the DOWN and UP keys to toggle between **TIME**, **DATE**, and **DEPT**.

Department Change

After toggling to **DEPT**, press ENTER. Press the DOWN and UP keys to move between available departments or key in the department number. When the desired department name or number displays, press ENTER.

When **TIME** appears, you can toggle between **TIME**, **DATE**, and **DEPT** using the DOWN and UP keys.

Time Change

After toggling to **TIME**, press ENTER. Key in the time in the format **HHMM** on a 24 hour clock, then press ENTER.

DATE then appears. Use the DOWN and UP keys to toggle between **TIME**, **DATE**, and **DEPT**.

Preset Keys

Forty-eight keys are provided for use as preset PLU keys (except SSP). The SSP has 35 preset keys available. Several paper overlays and a clear plastic envelope are provided to label and protect the preset keys. Each preset key may be programmed for a single PLU. The reaction when a preset key is pressed may be set to either print a label immediately or require the operator to press the ENTER key before printing a label (See Preset React Key).

Programming Preset Keys

To assign a PLU to a preset key, press the SETUP MODE key. When prompted to **SELECT FUNCTION**, press the PLU PRESET key on the Setup overlay. When the prompt **PRESS PRESET KEY** displays, press the preset key you would like to use for the PLU. **PLU** then displays. Key in the PLU number, then press ENTER.

The prompt **PRESS PRESET KEY** then displays again. You may then set another preset key. This message will appear each time you complete entering a preset number. To exit, press CLEAR to return to the **SELECT FUNCTION** display, and CLEAR again to return to normal mode.

Preset React Key

When PRINT is selected, this eliminates keystrokes, however, the operator may not use the override functions for PLU's retrieved using the preset keys.

To change the preset key reaction, while in Setup mode and prompted to **SELECT FUNCTION**, press the PRESET REACT key on the Setup overlay. Use the DOWN and UP keys to toggle between **PRINT** and **ENTER**. The **PRINT** option will set the scale to automatically print a label after a preset key is pressed. The **ENTER** option sets the scale to wait until the operator presses PRINT to print a label. For By Weight PLUs, a label will not print until weight is on the scale, even with PRESET REACT set to **PRINT**.

ID Preset Key

This setup key is currently not used.

Marquee Key

The Marquee will not function if the scale is off line.

A marquee is a message that scrolls across the display if the scale detects no activity for about five seconds and no PLU displays. The marquee texts are Type 3 Action Codes programmed at the server. This function selects which Action Codes you wish to display. You may choose up to ten Marquee messages, numbered 0 through 9 that will sequentially scroll across the display.

When in the Unit Setup mode and prompted to **SELECT FUNCTION**, press MARQUEE on the Setup overlay. You may select up to ten (0-9) action codes to scroll across the screen. Use UP or DOWN to toggle between these.

To select a marquee, toggle to the marquee number you wish to change and press ENTER. Key in the desired Action code number (or "0" for no marquee), then press ENTER. You may now change more marquees, or press CLEAR two times to finish. The marquee messages will then scroll across the display in their respective numbered order when the scale is idle.

Marquee Speed Key

In Setup Mode at the prompt **SELECT FUNCTION**, press the MARQUEE SPEED key on the Setup overlay. Enter the speed from 0-9 (0 = slowest speed and 9 =fastest speed.) Press ENTER to keep the displayed value. The default is 5.

Unit ID Key

The UNIT ID key allows configuring the following options.

TNET Satellite

Unit ID - The unit ID identifies the satellite on the TNET master/satellite network.

PROTOCOL? - Set the satellite protocol for SMARTTOUCH for use with the **Smart*Touch*®** Master or 4Digit and 6Digit for use with a Model 8422-Type NF Master.

Standalone

Unit ID - The unit ID identifies the satellite on the TNET master/satellite network.

PROTOCOL? - Set the satellite protocol for SMARTTOUCH for use with the **Smart*Touch*®** Master or 4Digit and 6Digit for use with a Model 8422-Type NF Master.

Ethernet Client or Ethernet Standalone, Version 1

SCL? - The IP Address identifies the client on the network. The IP Address is a unique number consisting of four parts separated by periods. (Ex: 146.207.40.1)

GW? – Gateway IP address is used if the server is on a different network.

Use the following key sequence to set the client IP address and Gateway address. The example shows setting the IP address to 146.208.104.015.

Press:	SETUP
Press:	ENTER
Press:	UNIT ID
Display:	**SCL 255.255.255.255**
Press:	ENTER
Display:	**SCL? 255.255.255.255** (SCL is this scale's IP.)
Key In:	**146 208 104 015** (no spaces or .'s needed)
Press:	ENTER
Display:	**Port 0**
Press	ENTER
Display:	**Port ? 0**
Key In:	**2305** (always set to this number)
Press:	ENTER
Display:	**GW 255.255.255.255** (GW is the Gateway's IP.)
Press:	ENTER
Display:	**GW? 255.255.255.255**
Key In:	146 208 104 100 (no spaces or .'s needed)
Press:	ENTER
Display:	**SCL 146.208.104.015** (where xxx shows the new number entered)
Press:	CLEAR to exit setup mode.

Turn power off and back on to reset the scale with the new data.

Ethernet Client or Ethernet Standalone, Version 2

The new DHCP features in the Version 2 software allow the Ethernet scale to obtain initial TCP/IP parameters from a DHCP or BOOTP server on the Ethernet network instead of manually setting these parameters.

To enter into the setup menus, enter the following:

[SETUP MODE]

[ENTER]

[UNIT ID]

The following setup menu will be then display, one line at a time.

NETWORK: AUTOMATIC
SCL:207.142.140.102
SCL NAME:
SCL MAC:
SERVER: AUTOMATIC
SVR:207.142.140.100
SVR NAME:
MSK:255.255.255.000
RTR:207.142.140.001
DCP:207.142.140.002
DNS:207.142.140.003

Press the "UP" and "DOWN" buttons to advance to the next setup menu item. Press the "ENTER" button to select or change.

You must first select the network boot type, **Manual** or **Automatic**. Automatic is the default. Automatic will use DHCP to automatically obtain the network boot information from a DHCP server. The parameter details are explained below.

Network	When **Automatic** is selected, the DHCP feature will be used. The "SERVER IP", "SERVER MAC", "SUBNET MASK", "ROUTER", "DHCP SERVER", and "DNS SERVER" fields will display but cannot be changed. Changes are allowed in the "Scale Name" and "Server Name" fields. If **Manual** is selected, then the DHCP feature is disabled and the TCP/IP parameters must be entered manually. The "Server MAC" field will display but no changes are allowed. The "DHCP Server" and "DNS Server" fields will not display and changes are not allowed to these fields. Changes are allowed in the "SCALE IP", "SCALE NAME", "SERVER IP", "SERVER NAME", "SUBNET MASK", and "ROUTER" fields.
SCL (SCALE IP)	This is the current scale IP address. If the "Network" is set to "Automatic" this field cannot be changed. If the "Network" is set to "Manual" then this field may be changed. The IP address is entered one octet at a time. The default value for this field is 255.255.255.000.
SCL Name	This is the local domain name to given to the Client scale. All other devices on the network will reference the scale by using this name when the "NETWORK" is set to "AUTOMATIC". The default value for this field is "Scale01".

SCL MAC	This is the hardware MAC (Media Access Control) address. The MAC address will be displayed but cannot be changed.
Server	This is the client scale's server configuration setting. The server (STEM or PC scale sever) IP address may be configured to be "AUTOMATIC" or "MANUAL". If the "SERVER" is set to "AUTOMATIC", the scale server IP address will be obtained automatically using the "SRR NAME" through the DNS server and/or with a SARP on the local network. If the "SERVER" is set to "MANUAL", the scale server IP address used will be the one set in the "SVR". The "SVR NAME" will not be used.
SVR	This is the STEM or PC Scale Server current IP address. If the "NETWORK" is set to "AUTOMATIC" then this field cannot be changed. If the "NETWORK" is set to "MANUAL" then this field may be changed. The IP address will be entered as currently done, which is four octets, each separated by a decimal. The default value is 255.255.255.000.
SVR NAME	This is the local domain name of the scale server, which may be a STEM or PC. The scale will use this name when the "NETWORK" is set to "AUTOMATIC". The default value is "MTMaster01".
MSK	The Subnet Mask is used to identify the local network when accessing IP address on the Ethernet network. If the "Network" is set to "Automatic" this field can not be changed. If the "Network" is set to "Manual" thee field may be changed. The mask is entered one octet at a time. The default value is 255.255.255.000.
RTR	The router's (default gateway) IP address. The router is used when accessing devices outside of the local network. If the "Network" is set to "Automatic" this field cannot be changed. If the "Network" is set to "Manual" this field may be changed. The IP address is entered one octet at a time. The default value is 255.255.255.000.
DCP	This is the current IP address of the local network's DHCP server. This field only displays when the "Network" is set to "Automatic" and can not be changed.
DNS	This is the current IP address of the local network's DNS server. This field only displays when the "Network" is set to "Automatic" and cannot be changed.

CAL Key

The CAL key is used to access the calibration menu. Test weights are required to calibrate the Model 8450. You may have to remove the Calibration Seal (if used) in order to press the CAL switch. In Setup mode at the prompt **SELECT FUNCTION**, press the CAL key on the Setup overlay. You will then be prompted to press the CAL switch. The CAL switch is located in the access hole shown in Figure 3-3. Insert a non-metallic object in the hole to press the switch.

TIP: To enable x10 Expand Mode:

- Press SETUP MODE key (SA: when UNIT displays, press ENTER key)
- Press CAL key, then CAL setup switch.
- Unit displays Load Cell INT.
- Press TARE key for expand mode.
- Press CLEAR key to exit Expand Mode.

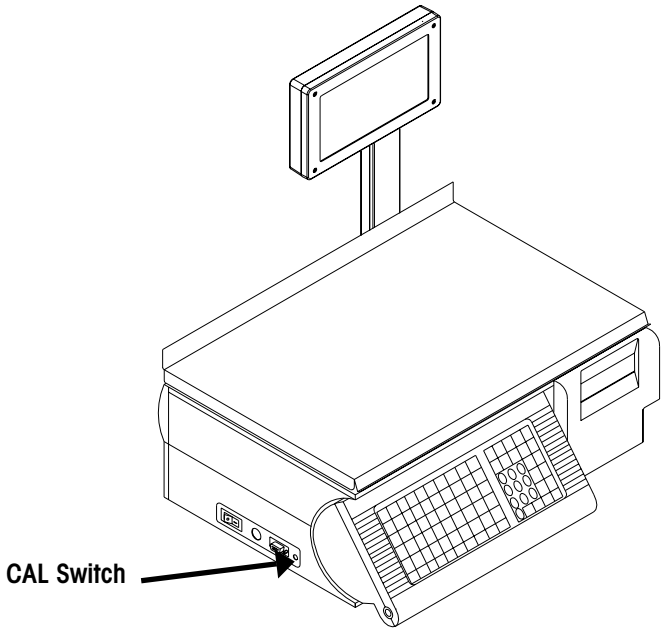


Figure 3-3: CAL Switch

After pressing the CAL Switch, you will be presented the following calibration menu. Press the DOWN and UP keys to navigate through the menu. Press the ENTER key followed by the DOWN and UP keys to change the displayed options, then press ENTER again to accept the displayed selection.

Calibration Menu

KG DUAL RANGE affects other settings, including the Units setting. When **KG DUAL RANGE** is set to **YES**, **UNITS** will automatically be set to **KG**. **UNITS** may *not* be set to **LB** unless **KG DUAL RANGE** is *first* set to **NO**.

Display Prompt	Description
Load Cell	Select **Int-Eagle** for units with built in scale**.** Select **Ext-8270** for Dead Deck units with an attached Model 8270 scale base, or **None**.
Units	Weight is pounds (**lb**) or kilograms (**kg**).
KG Dual Range	Dual range weighs items under 6 kg in increments of 0.002 and above 6 kg in increments of 0.005 kg. Select **Yes** for dual range of 15 x .005 or 6 x .002 kg. Select **No** for single range 15 x .005 kg.
Canadian Tare	Set to **Yes** is installed in Canada, otherwise set to **No.**
Weight Separator	Select either the period (.) or comma (,) as a decimal separator for weight.
Capacity	The capacity used in the calibration mode. Set to 30 lb or 15 kg for internal load cell units.
Increment	Increment size used with the capacity. Automatically set to 0.010 in pounds, and 0.005 in kilograms.
Tare Limit	Default is 15.00. Maximum is scale capacity in lb and 9.995 in metric.
Motion Sense	Used to filter out movement or vibration that may affect the weight. Set the value higher for minimum filtering, and lower for maximum filtering. The range is 1-20.00 d. (Default is 1). This is the range within which the difference of the current weight and the last weight must be to count as motion reads.
Motion Reads	0-50 sets the sensitivity of the weight readings. A high value is most sensitive. A low value can be used to compensate for vibration, etc. (Default is 5). This is the number of consecutive valid motion reads necessary to set the no-motion flag (and cause auto-print in Prepack).
Min Print	The minimum weight that must be on the platter before a label prints. The default value (in divisions) is 20 (ex: .20 lb.) The PRINT key will override this.
AZM Rate	Automatic Zero Maintenance compensates for minor differences in zero. The rate can be set from 0.00 (off) to 30.00 d/second. (Default is 0.1d)

By-Weight Per Unit Method
Valid entries are 0 and 1. When selecting "0", the dollars/cents saved value is calculated first, then the member total price is calculated. When selecting "1", the member total price is calculated first, then the dollars/cents saved value is calculated. These calculations apply only for the $/cents off the unit price for a By-Weight PLU.

Sp. Price

Special Price Mode.

BW:Total Price	3
BW: Calc Wt	0
BW: Per Unit Mtd	1
% discount	0
BC: Total Price	4

The number entered performs the following rounding method:
0: FIVE UP (2.5350 ROUNDS TO 2.54)
1: FIVE DOWN (2.5350 ROUNDS TO 2.53)
2: IEEE ROUNDING (EVEN)
(2.5350 ROUNDS TO 2.54, and 2.5450 ROUNDS TO 2.54)
3: TRUNC DOWN (2.5374 ROUNDS TO 2.53)
4: TRUNC UP (2.5315 ROUNDS TO 2.54)

POS Calculations for "Member Pricing"

The rules for rounding and weight calculations made at the POS (Point Of Sale) system must agree with the rounding calculations in the scale.

total price = Rnd(price * weight)
calculated weight = Rnd(total price/unit price)
Rnd: Rounded value (Specified in the scale: even, up, down

The goal of the rounding method in the scale is to match the POS calculations for computing the Frequent Shopper (member) total price and the total discount for the package.

The total price is encoded in the bar code and not the member price, so the member total price and the "you save" amount has to be calculated consistently in both the scale and the POS system.

The tabular format mentioned below shows the calculations for each of the Frequent Shopper types identified in the scale.

Frequent Shopper Type	Calculations performed in the scale and the POS system.
1. Enter the member unit price (xxxx.xx)	Member total price = Rnd(calculated weight * member unit price) You save = total price - Member total price
2. Enter the Percent Discount (1 - 99) off the total price.	Example: 25% Discount on package = (.25 * Total Price) Member Total Price = (Total Price - Discount on package) You Save = Discount on package
3. Enter the discount per pack (xxxx.xx)	Member Total Price = Rnd(Total Price - discount) You save = Value entered for the discount.
4. Discount per unit price	Discount on package = Rnd(calculated weight * unit discount) You save = discount on package Member total price = Total price - discount on package

Calibrate Enables the calibration mode. Press ENTER to start.

When **CALIBRATE** displays, press ENTER to start the calibration procedure.

1. The display will show **Empty Scale, Enter.** Make sure scale pan is empty, then press the ENTER key (Figure 3-4).
2. The display shows **Capturing Zero...** and the top display counts down from 15 while setting zero.
3. The scale will next ask for amount of test weight: **Load: 10.00**. Recommended minimum test weights are 20 lb or 10 kg (Figure 3-5). Place the test weight on the scale pan. Enter the amount of the test weight, then press the ENTER key (or just press ENTER if the displayed value is correct). The display will show **Capturing Span…,** and the top display will count down from 15 while setting span (full capacity).
4. When calibration is complete, the display shows **Calibrated!!!**.

Filtering Used to filter out vibration, etc. Default is None. Selections are None, Light, Medium, Heavy, Very Heavy, and Custom. Use Motion Read and Motion Sense before changing the filtering, as the filters increase settling time of the scale.

Press CLEAR four times until the display shows **Ready**. Delays are normal as the scale stores the calibration information before leaving the setup mode.

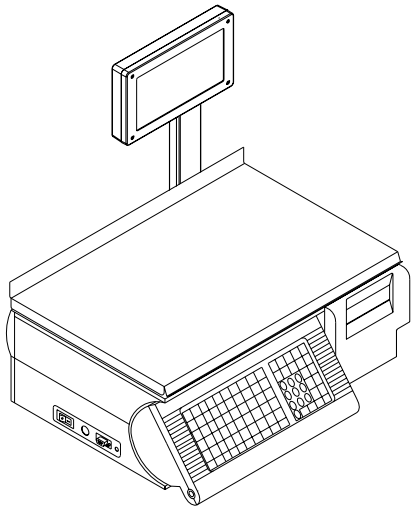


Figure 3-4: Empty Platter

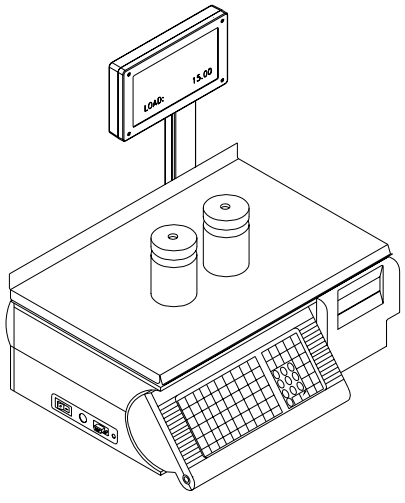


Figure 3-5: Add Weights

Currency Key

This key allows selecting the currency increment, symbol, and separator.

When in the Unit Setup mode and prompted to **SELECT FUNCTION**, press the CURRENCY key on the Setup overlay. Press UP or DOWN to toggle between **CURRENCY INC** (currency increment), **CURRENCY SYMBOL**, and **CURRENCY SEPARAT** (separator).

Currency Increment

After toggling to **CURRENCY INC**, press ENTER. Enter the increment value then press ENTER. The range is from 0.001 to 99.999. The default is 0.01. The currency increment sets two values: (1) Decimal point to round to, and (2) Amount to round with.

The decimal point is determined by the digit where the last nonzero number is located. For example, if the increment is 00.020, the price displays as XXXX.XX. If the increment is 00.100, the price displays as XXXXX.X.

The value to round to is determined by the value entered into the currency increment. The following example explains this in detail using a By Weight PLU with a Unit Price of 2.99.

Increment	Weight	Unit Price	Total Price
00.010	.44	2.99	1.32
00.050	.44	3.00	1.30
00.002	.44	2.990	1.316
00.100	.44	3	1

When the display shows **CURRENCY SYMBOL,** use the DOWN and UP keys to toggle between **CURRENCY SYMBOL**, **CURRENCY SEPARAT** and **CURRENCY INC**.

Currency Symbol

The currency symbol that precedes the Unit and Total Price on the label can be changed. Up to three characters can be used.

After toggling to **CURRENCY SYMBOL**, press ENTER. The display will show **DECIMAL:000 000 000**. Using the keypad, key in the three-digit ASCII character code for the desired symbol. The following table shows a complete listing of the characters and the corresponding three-digit codes. The code for a dollar sign ($) with a space before and after is: **032 036 032**. The code for no symbol is **032 032 032**. Press ENTER.

Please note the following rules:

- Leading spaces are ignored
- Trailing blanks are ignored
- Leading blanks will blank out the entire currency symbol
- Trailing spaces will print. They use a character position in the unit and total price fields. This can lead to a field full of *'s if there are more characters than the fields will allow. (Total Price field allows 7 spaces including the decimal point.)

* Anything after a NULL is ignored.

Example:
036 000 049
Prints as $ only
(1 space on the label.)

032 036 032
Prints as Space, $, Space
(3 spaces on label.)

The following ASCII table gives the decimal (Dec.) code for each printable character.

Char.	Dec.
* NUL	000
SP	032
!	033
"	034
#	035
$	036
%	037
&	038
'	039
(	040
)	041
*	042
+	043
,	044
-	045
.	046
/	047
0	048
1	049
2	050
3	051
4	052
5	053
6	054
7	055
8	056
9	057
:	058
;	059
<	060
=	061
>	062
?	063

Char.	Dec.
@	064
A	065
B	066
C	067
D	068
E	069
F	070
G	071
H	072
I	073
J	074
K	075
L	076
M	077
N	078
O	079
P	080
Q	081
R	082
S	083
T	084
U	085
V	086
W	087
X	088
Y	089
Z	090
[	091
\	092
]	093
^	094
_	095

Char.	Dec.
`	096
a	097
b	098
c	099
d	100
e	101
f	102
g	103
h	104
i	105
j	106
k	107
l	108
m	109
n	110
o	111
p	112
q	113
r	114
s	115
t	116
u	117
v	118
w	119
x	120
y	121
z	122
{	123
|	124
}	125
~	126
	127

You will now be able to toggle between **CURRENCY SYMBOL**, **CURRENCY SEPARAT** and **CURRENCY INC**.

Currency Separator

After toggling to **CURRENCY SEPARAT**, press ENTER.

Using the DOWN and UP keys, toggle to the preferred decimal indicator, either a period (**.**) or a comma (**,**). Press ENTER to accept the displayed value.

The display will now show **CURRENCY INC.** Use the DOWN and UP keys to toggle between **CURRENCY SYMBOL**, **CURRENCY SEPARAT** and **CURRENCY INC**.

PLU Setting Key

Note: In this section, depending on the 8450 software version you are using, not all of the softswitches listed may be available.

The PLU SETTING key allows you to change several options relating to PLU's. The procedure for changing these features is as follows.

In Setup mode at the prompt **SELECT FUNCTION**, press the PLU SETTING key on the Setup overlay.

Press the DOWN and UP keys to toggle between **PLU/ITEM**, **TARE FIELD**, **PROP TARE**, **MANUAL MODE TYPES**, **DEFAULT MODE**, and **CHNG DATE BY**. The details on the options are described in the following sections.

PLU/Item

While operating the scale, you can call up the programmed information either by PLU (Price Look Up) or by Item number. Also, while in Operator mode the prompt will be either **PLU?** or **ITEM?.** To change this, toggle to **PLU/ITEM:** then press ENTER.

The display will show **CALL BY**. Use the DOWN and UP keys to toggle between **PLU** and **ITEM**. After displaying the desired selection, press ENTER. You can now toggle between other PLU settings.

Tare Field

This option selects which tare field is used, either *Tare1* or *Tare2*. After toggling to **TARE FIELD**, press ENTER. Use UP or DOWN to toggle between **TARE 1** or **TARE 2**. When your selection is displayed, press ENTER. You can now toggle between other PLU settings.

PROP Tare

To select proportional tare, toggle to **PROP TARE**, then press ENTER. **YES** allows proportional tares; **NO** prohibits the use of proportional tares. Use the DOWN key to display the desired selection, then press ENTER. You can now toggle between other PLU settings.

If Proportional Tare is used, it is stored in the Tare 2 field. By-Weight tares are stored in the Tare 1 field. The Net Weight will be the gross weight minus the By-Weight Tare 1, minus the proportional Tare 2, times the Gross Weight, minus By-Weight Tare 1 value. The mathematical representation is as follows:

Net Weight = (Gross Wgt - Tare 1) - (Tare 2 x (Gross Wgt - Tare 1))

Manual Mode Types

PLU's can be programmed as a "Manual Mode" PLU requiring the operator to key in the product's price. This option also allows or prohibits the use of "price per ¼ pound", "price per ½ pound", and "Pounds For pricing" when a Manual mode PLU is retrieved.

To change the settings, press ENTER when **MANUAL MODE TYPES** displays. You can now toggle between **LB FOR**, **¼ LB**, and **½ LB** using the DOWN and UP keys. A **Y** indicates that the operator will have the option to price this way; an **N** indicates the operator will not have the option to price this way for manual PLU's. When the pricing type you would like to change displays, press ENTER. Use the DOWN key to change the configuration to either **Y** or **N,** then press ENTER. You can now change more pricing types, or press CLEAR to exit.

Prepack Mode Keys

Not applicable in 8450 SA.

Print After Motion When this selection is set to YES, a label is issued automatically when an item is placed on the scale platter. When set to NO, the PRINT key must be pressed to print a label.

Print Key Active When this selection is set to YES, multiple labels can be printed after a PLU is called by pressing the PRINT key. When set to no, only one label will be printed per PLU when PRINT is pressed.

Default Mode

After toggling to the **DEFAULT MODE** display, press ENTER.

Use the DOWN and UP keys to toggle to the preferred default mode, either **PREPK**, **SERV** (Service counter), or **LAST**.

SERV (Service) Clears the PLU after printing.

PREPK (Prepack) Retains PLU until clear is touched.

LAST Remembers the mode used in the last transaction, either Service or Prepack.

After you have made your selection, press ENTER. You can now toggle between other PLU settings. Press CLEAR TO exit to the **SELECT FUNCTION** display.

Change Date By

When overriding the shelf life (if allowed) or Use-By date, the date can be changed either by entering the *actual date* (in the format MMDDYY*)* or by entering the *number of days* until the shelf life date.

To change this option, toggle to the **CHNGE DATE BY** display, then press ENTER. Use UP or DOWN to toggle to **DATE** or **DAYS**. Press ENTER to accept the displayed option. You can now toggle between other PLU settings or press CLEAR to exit.

WGT in Bycount

Yes allows viewing and printing a By-count item's weight when placed on the scale platter. (Note: Weight field must be added to the custom label.)

Aust. Mode

8450 SA Version must be V2.2 or higher.

Default is NO for standard tare operation. YES selects the following (required for units sold in Australia):

- Disables preprogrammed tare.
- By-Count PLUs are not allowed.
- Fractional or "kg For" pricing is not allowed.
- Enables increasing tare requirement. (The next platter tare taken must be higher that the value on the display.)

Auto Sense

8450 SS and SSP only. Select the number of digits 1-6 where the unit will automatically call the PLU without the need to press the Enter key. For example, if the PLUs are 4-digit and Auto Sense is set to four digits, when the 4th digit is pressed, the PLU will be called without pressing Enter to complete the entry.

Timer

8450 SS and SSP only. Enter the time in seconds, from 4 to 99, the unit will be allowed to retain a called PLU before returning to the Ready mode.

Shrink Mode

8450 SA SS (Version 2.2) Only

Shrink Mode - Select Yes to turn Shrink Mode on. You must return to this selection to turn Shrink Mode off.

8450 SS and SSP only

Shrink ON/Shrink OFF – Enter the number to use to turn shrink mode on or off from the Ready prompt.

Auto Shrink – This works the same as Auto Sense, only while you are in Shrink Mode.

Shrink ACC – Select the accumulator to use while in Shrink Mode, auto or manual.

Future Pack Date

Standalone Version 2.2, Satellite Ver 4.3 and Client only

Enables or disables Pack Date changes by the operator. When this switch is set to YES, and the switch "Enable Pack Date" is set to YES, the Pack Date can be changed by the operator under Shelf Life Changes. When this switch is set to NO, and Enable Pack Date is set to YES, and attempts to enter a pack date later than the current date will give the error message "Invalid Date". When changing the Pack Date, the entry must be in a date format mm/dd/yy.

CK Backup Mem

When this switch is set to YES, when a PLU is entered, the satellite will first check the master database. If the PLU is not found in the master, or if the master is off-line, it will then check the satellite backup memory database and pull the PLU information from there if it is found. If it is not found in the backup database, the PLU will go to manual operation. When this switch is set to NO, when a PLU is called, the satellite will first check the master and if it is not found there, the PLU will go into manual operation.

RSTOR Dept PLUs

Standalone Version 2.2,
Satellite Ver 4.3 and Client only

When this is enabled, and a Memory Board is installed, the unit will download the Department's complete PLU file instead of refreshing the 250 most used backup PLUs.

Bar Code Setting Key

In Unit Setup mode with **SELECT FUNCTION** displayed, press the BAR CODE SETTINGS key on the Setup overlay. Use UP or DOWN to toggle **UPC** or **EAN**. When the desired selection displays, press ENTER.

UPC

UPC bar codes are used for standard USA Bar Codes. When **UPC** is selected, the following options are given by pressing UP or DOWN. Press ENTER to change. Key in the selection number, then press ENTER again.

BY WEIGHT TYPE

Default is 2. The selections are as follows:

0 = Ten digit Item Number. (No Price is encoded)
1 = Not identified.
2 = Item number and total price encoded.
3 = Drug and health items. Similar to type 0.
4 = In-Store Marking.
5 = Coupons.
6 = Ten digit Item Number. (5d Manufacturer #/5d Item if Manufacturer # is used)
7 = Ten digit Item Number. (5d Manufacturer #/5d Item if Manufacturer # is used)

BY COUNT TYPE

Default is 2. Refer to By Weight bar codes.

STD PACK TYPE

Default is 2. Refer to By Weight bar codes.

RUN TOTAL TYPE

This also sets the type for the Memory mode labels. Default is 2. Refer to By Weight bar codes.

RAND WGT FORMAT

The Random Weight Format selects the format of the type 2 and 6 barcodes. The default is 1. The selections are:

Note:
N =Item Number
C = Check Digit
$=Total Price
#=Weight
X =Bar Code Check Digit.

0 = NNNNN C$$$$ X (5-D Item/Price Check Digit/4-D Price)
1 = NNNNN O$$$$ X (5-D Item/Zero Price Check/4-D Price)
2 = NNNNN N$$$$ X (6-D Item/No Price Check//4-D Price)
3 = NNNNN $$$$$ X (5-D Item/No Price Check//5-D Price)
4 = NNNNN C#### X (5-D Item/Weight Check Digit/4-D Weight)
5 = NNNNN O#### X (5-D Item/Zero Price Check/4-D Weight)
6 = NNNNN N#### X (6-D Item/No Price Check/4-D Weight)
7 = NNNNN ##### X (5-D Item/No Price Check/5-D Weight)

RUN TOT WGT FMT

Select Run Totals/Memory Mode Barcode Format for types 2/6. Refer to RAND WGT FORMAT for available selections.

MFG NUMBER

This selection allows for a default five-digit manufacturer number. When not set to zero, the manufacturer number replaces the first five (MSD) digits of the Item Number in bar code types 0, 1, 3, 5, 6, or 7.

EAN

EAN bar codes are used for applications outside the US. When the **EAN** is selected, the following options are given by pressing the DOWN and UP keys. Each may be edited by pressing ENTER, keying in the selection number, then pressing ENTER again.

BY WGT PREFIX

Enter the EAN Prefix 2 digit to be used for By Weight labels (0-9).

BY CNT PREFIX

Enter the EAN Prefix 2 digit to be used for By Count labels (0-9).

STD PCK PREFIX

Enter EAN Prefix 2 digit to be used for standard pack labels (0-9).

RUN TOT PREFIX

This also sets the type for Memory mode labels. Enter EAN Prefix 2 digit to be used for standard pack labels (0-9).

BY WGT FORMAT

Select the format of the By-Weight bar code. The selections are:

Note:
N =Item Number
C =Price Check Digit
$=Total Price
#=Weight
X =Symbol Check Digit.

0 = NNNNN N$$$$X (6D Item/No Price Check Digit/4D Price)
1 = NNNNN $$$$$X (5D Item/No Price Check Digit/5D Price)
2 = NNNN$ $$$$$X (4D Item/No Price Check Digit/6D Price)
3 = NNNNN C$$$$X (5D Item/Price Check Digit/4D Price)
4 = NNNNC $$$$$X (4D Item/Price Check Digit/5D Price)
5 = NNNNN #####X (5D Item/No Price Check Digit/5D Weight)
6 = NNNNC #####X (4D Item/Weight Check Digit/5D Weight)

BY CNT FORMAT

By Count Format. Refer to By Weight Format.

STD PCK FORMAT

Standard Pack Format. Refer to By Weight Format.

RUN TOT FORMAT

Run Totals Label Bar Code Format. This also sets the format for Memory mode labels. Refer to By Weight Format.

Reset Labels Key

CAUTION!!! This function will reset the label formats to the factory defaults erasing any custom label formats and resetting the label size to 48.3 mm.

In Unit Setup mode when **SELECT FUNCTION** displays, press the RESET LABELS key on the Setup overlay. You will then be asked to confirm this action. Press the DOWN and UP keys to toggle between **NO** and **YES**. After you have made your selection, press ENTER.

Defaults Key

In Unit Setup mode when **SELECT FUNCTION** displays, press the DEFAULTS key on the Setup overlay. Press ENTER to choose the default language. Use the DOWN and UP keys to toggle between **ENGLISH**, **SPANISH**, and **FRENCH**. After you have made your selection, press ENTER.

Reset RAM Unit Key

CAUTION!!! This function will clear the memory and reset all formats and options to the factory defaults. This function should be used when setting up a new unit, or if the Main Logic PCB or battery is replaced.

(Note: This function does not change the label printer settings, Unit ID or Protocol, or CAL Menu settings. See "Setup Checklist." This function will set the department to 0 and will clear the department information for all departments.)

In Unit Setup mode when **SELECT FUNCTION** displays, press the RESET RAM UNIT key on the Setup overlay. You will then be asked to confirm this action. Press the DOWN and UP keys to toggle between **NO** and **YES**.

After you have made your selection, press ENTER.

Label Printer Key

This selection is used to change the print speed/density, and printhead Ohms. In the Unit Setup mode when prompted to **SELECT FUNCTION**, press the LABEL PRINTER key on the Setup overlay. Press the DOWN and UP keys to toggle between **PRINT** (Speed/Density) and **HEAD** (Printhead Ohms).

Print

Note: These settings are not changed when RESET LABELS is pressed.

This selection is used to control the speed and density of the label printer. After toggling to **PRINT**, press ENTER. The first number corresponds to the speed (mm/s) of the printer followed by the print density (low, medium, or high).

A faster speed and a lower density setting should be used with a high quality thermal paper. A lower speed and higher density setting should be used with a lower quality thermal paper. You may want to test a few different settings to determine your optimum speed and density.

Use the DOWN and UP keys to toggle between the selections listed below (1 inch = 25.4 mm):

- 122.5 mm/s HIGH
- 122.5 mm/s HIGH-MEDIUM
- 122.5 mm/s LOW-MEDIUM
- 122.5 mm/s LOW
- 101.6 mm/s HIGH

After toggling to your selection, press ENTER.

Head

This function should only be used if the scale's printhead is replaced and a new Ohms rating needs to be selected. After toggling to **HEAD**, press ENTER.

Use the DOWN and UP keys to toggle between the selections listed below. Choose the Ohms Rating marked on the printhead. You can view the rating by unlocking and raising the printhead. The Ohms rating is printed on a tag affixed to the front edge of the printhead.

- >683 Ohms
- 676-683 Ohms
- 669-675 Ohms
- 661-668 Ohms
- 654-660 Ohms
- 646-653 Ohms
- 646-653 Ohms
- 639-645 Ohms
- 631-638 Ohms
- 624-630 Ohms
- <624 Ohms

After toggling to your selection, press ENTER.

Host Key

Refer to the DATABACK Version 4.0 (and later) manual for specifics on using it with the Model 8450.

HOST allows you to change the communications options for the Model 8450. While in the unit setup mode and prompted to **SELECT FUNCTION**, press the HOST key on the setup overlay. You will now be able to toggle through and change the following: **BAUD RATE**, **PARITY**, **STOP BITS**, **DATA BITS**, **FLOW CONTROL**, **TIMEOUT**, and **HOST ID**.

Baud Rate

Toggle to **BAUD RATE,** then press ENTER. Use DOWN/UP toggle baud rates. Press ENTER when the desired baud rate is displayed. Default setting is 9600.

Parity

Toggle to **PARITY,** then press ENTER. Use DOWN/UP to toggle **EVEN**, **ODD**, **LOW**, **HIGH**, and **OFF**. Press ENTER to accept. Default setting is EVEN.

Stop Bits

Toggle to **STOP BITS**, then press ENTER. Use DOWN/UP to toggle **1**, **1.5**, and **2**. When the desired selection is displayed, press ENTER. Default setting is 1.

Data Bits

Toggle to **DATA BITS,** then press ENTER. Enter 5, 6, 7, or 8 then press ENTER. Default setting is 7.

Flow Control

Toggle to **FLOW CNTRL,** then press ENTER. Use DOWN/UP to toggle **NONE**, **XON/XOFF**, and **RTS/CTS**. Press ENTER to accept. Default setting is NONE.

Timeout

Toggle to **TIMEOUT,** then press ENTER. Key in the desired time out, in milliseconds, then press ENTER. Default setting is 20,000 (20 seconds).

Host ID

To change the host identification number, toggle to **HOST ID**, then press ENTER. Key in the desired host ID number and press ENTER. The default is **1**.

Label Size Key

The LABEL SIZE key is used to quickly change the default label size without going through the LABEL FORMAT Key Menu. In Unit Setup mode with the prompt **SELECT FUNCTION** displayed, press the LABEL SIZE key on the Setup overlay. Using the DOWN and UP keys, you may choose between the following selections.

- 48.3 mm (= 1.9 in)
- 53.3 mm (= 2.1 in)
- 61.0 mm (= 2.4 in)
- 83.8 mm (= 3.3 in)
- 94.0 mm (= 3.7 in)
- 106.7 mm (= 4.2 in)
- 119.4 mm (=4.7 in)
- 129.5 mm (= 5.1 in)
- CONT (Roll Stock)

After toggling to the correct label size, press ENTER.

Label Format Key

This key is used to select the format for a given "Label Size" setting. Complete label setups can be programmed using the LABEL SIZE key. If a single label specification needs to be changed, this can be done quickly using the quick keys on the Setup overlay. The keys are STRIP, GAP LENGTH, IMAGE OFFSET, and EJECT LENGTH.

First set the label size, select the label formats and then set the label specifications. When done, return to Operator mode. The scale will auto-measure two labels on the first print. To set the label size see the **MEASURE LABEL** prompt under the LABEL FORMAT key or the LABEL SIZE key.

Standard Label Formats

After selecting the label specifications, you may select the label formats. You may choose a separate label format for each of the following label types:

By-Weight, Prepack, By-Count, Standard Pack, Receipt, Verification, Run Total, Nutrition Facts (second label), and Extra Text.

There are several default label formats for each label size. The "Label Formats" Chapter at the end of the manual contains examples of each of the label formats and their corresponding numbers. Custom label formats may be created using a Model 8360, 8460, or 8461 scale and downloaded into the Model 8450 with DATABACK software (V4.0 and greater).

To specify a format for a particular label type, at the prompt **SELECT FUNCTION**, press LABEL FORMAT on the Setup overlay. Using the DOWN and UP keys, you can toggle between several options. The first nine options are label types. When the label type you wish to change is displayed, press ENTER. Key in the desired format number (see Label Formats Chapter), then press ENTER.

The following selections are available after pressing the Label Format key. Use UP or DOWN to toggle through the selections. Press ENTER when a selection is display to modify the setting. For the label format codes, refer to the Label Formats chapter.

BY WEIGHT STYLES

Format for Random Weight labels (0-7).

PREPACK STYLES

Format for Random Weight Prepack labels (0-7).

BY COUNT STYLES

Format for By-Count labels (0-7).

STD PACK

Format for Standard Pack labels.

RECEIPT

Format for Receipt (memory mode) labels.

VERIFICATION

Format for Verification labels.

RUN TOTAL

Format for the Run Totals labels.

NF 2ND LABEL

Format for the second label (separate Nutrifacts label) and for the Nutrifact only labels.

ET FORMAT

Label format for printing extra text labels.

GRAPHIC FORMAT

Label format for graphic verification labels.

LABEL LENGTH

Enter a length up to 152 mm (6 inches). The default is 48.3 mm. For reference, standard size lengths are:

1.9 in/48.3 mm
2.1 in/53.3 mm
2.4 in/61.0 mm
3.3 in/83.3 mm
3.7 in/94.0 mm
4.2 in/107.7 mm
4.7 in/119.4 mm
5.1 in/129.5 mm

Continuous Strip is set to 0.0.

GAP LENGTH

The gap length of the label (mm) is used to compensate for variances in different label suppliers. To change the gap length, use DOWN and UP until **GAP LENGTH** appears on the display, then press ENTER. Key in the desired gap length (mm), then press ENTER. (Standard gap length for Mettler Toledo specified die cut labels is 3.2 mm, and 0.0 for continuous strip.)

DELIVERY

Select the delivery mode of the label printer. Stripped will deliver the label to the operator without the label backing. Unstripped will deliver the label to the operator on the label backing. Unstripped mode also turns the label taken sensor off allowing you to print another label before the first is removed from the printer.

Use the DOWN or UP keys until **DELIVERY** appears on the display. Press ENTER. Use DOWN and UP to select either **STRIPPED** or **UNSTRIPPED**. When the desired delivery mode is displayed, press ENTER.

LABEL TYPE

This selection is used to select the type of labels, either continuous or die cut labels. To change this entry, press ENTER when **LABEL TYPE** is displayed. Use the DOWN and UP keys to toggle between **DIE CUT** and **CONTINOUS**. When the correct label type is displayed, press ENTER.

MEASURE LABEL

When setting up a custom size label, use this function to measure the label. To measure the label, toggle to **MEASURE LABEL** then press ENTER. Two labels will be ejected. The measured values are automatically entered into the **LABEL LENGTH** and **GAP LENGTH** values, replacing current settings, however these values will not appear in the setup menu until setup is exited and re-entered.

EJECT LENGTH

The Eject Length (in mm) is the distance the label is ejected out beyond the print head. The default is 2.2 mm. If this value is set higher, the labels will eject farther. If set too high, while in stripped mode, the labels may fall completely off the liner. Also, if this value is set too high, printing in this region may be lost or printed on the bottom of the next label.

If Eject Length value is set too low, if using die cut labels in stripped mode, too much of the label may remain on the stripper bar, making it difficult to peel off the liner.

To change this value, when **EJECT LENGTH** is displayed, press ENTER. Key in the desired value (in mm), then press ENTER.

LABEL WIDTH

This function is used to set the label width. The default is 64 mm. The label format is centered based on this setting. Increasing the width will shift text to the left of the label. Decreasing the width will shift text to the right of the label.

To change this setting, press ENTER when **LABEL WIDTH** appears on the display. Key in the new width (mm), then press ENTER.

IMAGE OFFSET

The Image Offset (in mm) is used to offset the printed image on the label referenced to a point above the label. The default is 5.2 mm. To raise the image on a label, lower the Image Offset value. To lower the image on a label, increase the Image Offset value.

To change the Image Offset value, press ENTER when **IMAGE OFFSET** is displayed. Key in the desired value (in mm), then press ENTER.

Standalone Version 2.2, Satellite Ver 4.3 and Client only

VARIABLE GRAPHIC

Select variable for fixed graphic.

Standalone Version 2.2, Satellite Ver 4.3 and Client only

STORE LOGO

Select the graphic to be used for a store logo that will print on all labels (when configured).

Strip Key

The STRIP key is used to quickly change the delivery mode of the label printer. **Stripped** will deliver the label to the operator without the label backing. **Unstripped** will deliver the label to the operator with the label backing.

In Setup mode at the prompt **SELECT FUNCTION**, press STRIP on the Setup overlay. Press the DOWN or UP key to toggle between **STRIPPED** and **UNSTRIPPED**. When the desired delivery mode is selected, press ENTER.

Gap Length Key

The GAP LENGTH Key is used to quickly change the gap length without going through the Label Format menu. The gap length is the distance (in mm) between die cut labels. This length can be adjusted to compensate for variances in different label suppliers. In Setup Mode, at the prompt **SELECT FUNCTION**, press GAP LENGTH on the Setup overlay. Key in the desired gap length (mm), then press ENTER. The standard gap length for Mettler Toledo specified die cut labels is 3.2 mm.

Image Offset Key

The IMAGE OFFSET Key is used to quickly change the image offset without going through the Label Format menu. The Image Offset (in mm) is used to offset the printed image on the labels. The default is 5.2 mm. To raise the image on a label, lower the Image Offset value. To lower the image on a label, increase the Image Offset value.

To change this value, in Setup mode at the prompt **SELECT FUNCTION**, press the IMAGE OFFSET key on the Setup overlay. Key in the desired value (in mm), then press ENTER.

Eject Length Key

The EJECT LENGTH Key is used to quickly change the eject length without going through the Label Format menu. The Eject Length (in mm) is the distance the label is ejected out beyond the print head. The default is 2.2 mm. If this value is set higher, the labels will eject farther. If set too high, while in stripped mode, the labels may fall completely off the liner. Also, if this value is set too high, printing in this region may be lost or printed on the bottom of the next label.

If Eject Length value is set too low, if using die cut labels in stripped mode, too much of the label may remain on the stripper bar, making it difficult to peel off the liner.

To change this value, in Setup mode at the prompt **SELECT FUNCTION**, press the EJECT LENGTH key on the Setup overlay. Key in the new value (in mm), then press ENTER.

Enable Modify Key

The ENABLE MODIFY key controls whether the operator may or may not modify the following values during a transaction: shelf life, use by date, net weight, price, quantity/count, or extra text/nutrition fact number.

To change these settings, enter Unit Setup mode, and at the prompt **SELECT FUNCTION**, press the ENABLE MODIFY key on the Setup overlay.

You are now able to toggle between the following: **SHELF LIFE**, **USE BY** (use by date), **NET WEIGHT**, **PRICE**, **QTY/COUNT**, and **EX/NF#** (Extra Text/Nutrition Fact Number). **YES** allows the operator to override the programmed value; **NO** prohibits the operator from overriding the programmed value.

When the field you wish to change appears on the display, press ENTER. Press the DOWN key to toggle between **YES** and **NO**. When the desired appears on the display, press ENTER. You may now continue with more fields. When completed, press CLEAR to escape.

Enable Func Key

The ENABLE FUNC setup key is used to either allow or prohibit the operator to carry out certain scale functions. The functions are as follows: blank out fields on a label, print batch PLU labels, print batch Nutrition Fact labels, print batch Extra Text labels, enter a Prepack mode, void transactions, memory mode, and auto clear By Count or Standard pack PLU's.

In Unit Setup mode at the prompt **SELECT FUNCTION**, press the ENABLE FUNC key. Use the DOWN and UP keys to toggle between the following options: **ENABLE BLANK** (blank a field on a label), **ENABLE BATCH PLU**, **ENABLE BATCH NF** (Nutrition Fact), **ENABLE BATCH ET** (Extra Text), **ENABLE PREPACK**, **ENABLE VOID**, **ENABLE MEMORY, ENABLE OP TOTAL** (Operator Totals - not available), **BY CNT AUTO CLR** (auto clear for By Count or Standard Pack PLU's), **WEIGHT AUTO CLEAR** (auto clear for by weight PLUs), **BLANK UNDER ZERO** (SA only), **ENABLE FORCE CNT** (SA SS and SS only), **ENABLE DUAL** (dual weight)**,** and **BY CNT CHANGE CNT**.

YES (or **Y**) allows the function to be used in Operator mode. **NO** (or **N**) prohibits the function to be used.

To change an option, press the DOWN or UP key until the option displays, then press ENTER. Use the DOWN or UP key to switch to the desired setting, then press ENTER.

Note the **ENABLE MEM** option allows three settings: **LOC** (local scale memory), **DEPT** (not available), and **NO** (disables Memory function). When your desired selection is displayed, press ENTER.

Verify Labels Key

This function allows the user to print out labels of all (or selected) PLU's in a particular department. The format of these labels is determined in the LABEL FORMAT Setup.

In Unit Setup mode at the prompt **SELECT FUNCTION**, press the VERIFY LABELS key on the Setup overlay.

Key in the department number, then press ENTER. Key in the number of the first PLU you would like printed (default is 1), then press ENTER. Key in the number of the last PLU you would like printed (default is 999999), then press ENTER. You will then be asked if you want to start printing. Press ENTER to begin printing. Press CLEAR to cancel.
If the client is off line, the back-up PLU's will be printed. If the unit is on line, the PLU's from the Scale Server will be printed.

Passwords Key

The password is a numeric number between 1 and 9999. The unit setup options can be password protected by pressing the PASSWORD key at the **Select Function** prompt. To clear a password, enter a zero. To bypass the password, press the ***CAL*** switch at the **Password** display.

Beeper Key

At the prompt **SELECT FUNCTION**, press the BEEPER key on the Setup overlay.

The current beeper duration will be displayed. Enter a number between 0 and 10, then press ENTER. 0 is off, 1 the shortest duration, and 9 the longest duration.

Time Date Format Key

This key is used to select the format of the time, date, and symbol used for displaying the date. In Unit Setup Mode at the prompt **SELECT FUNCTION**, press the TIME DATE FORMAT key on the setup overlay. Use the UP or DOWN keys to toggle between **DATE**, **TIME**, and **DATE SEPARATOR**.

The following selections are available:

Date Format

MM/DD/YY	(10/27/99)
DD/MM/YY	(27/10/99)
YY/MM/DD	(99/10/27)
YY/MMM/DD	(99 JAN 30)

Time Format

Select 12 or 24 hours.

Date Separator

/, -

Ethernet RF

Introduction

For more information on Symbol® RF, see www.symbol.com, or for Telxon see www.telxon.com, or for Aironet® see www.aironet.com on the world wide web.

The 802.11 Standard for wireless local area networking.

The IEEE 802.11 standard supports transmission in infrared light and two types of radio transmission within the unlicensed 2.4GHz frequency band: Frequency Hopping Spread Spectrum (FHSS) and Direct Sequence Spread Spectrum (DSSS).

The Mercury-PC supports the following technologies:

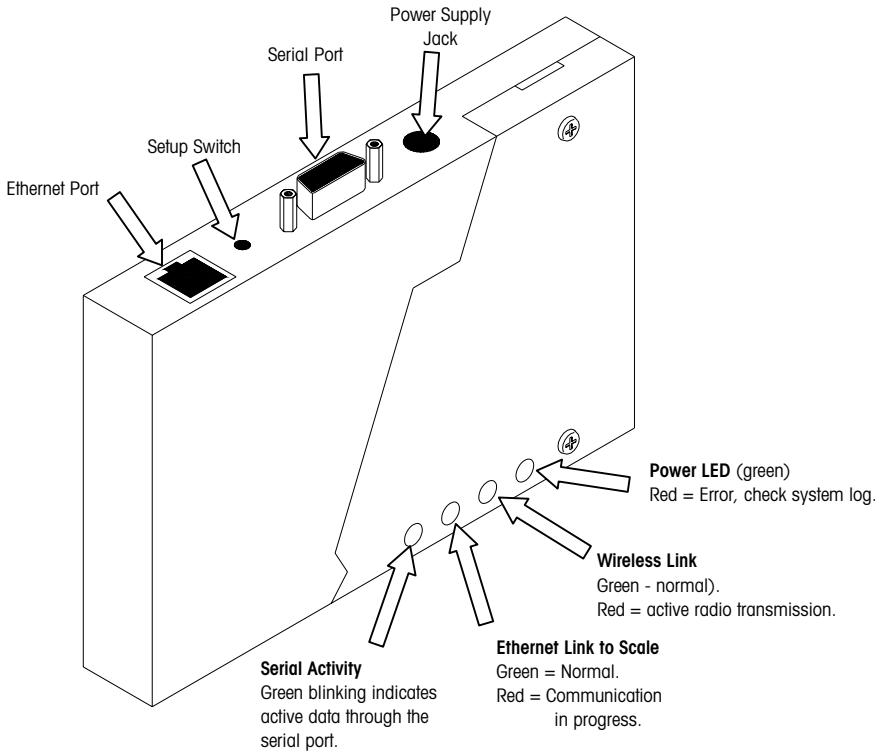
Symbol® Spectrum24 802.11 FH
Symbol® Spectrum24
Aironet™/Telxon 2.4 TMA
Aironet™/Telxon 802.11 DS

Radio Manufacturer's Notes and Recommendations

- Do not touch or move the RF antenna while the unit is transmitting or receiving.
- Do not operate a portable transmitter near unshielded blasting caps or in an explosive environment unless it is a type especially qualified for such use.
- Do not operate the radio or attempt to transmit data unless the antenna is connected. If the antenna is not connected, the radio may be damaged.

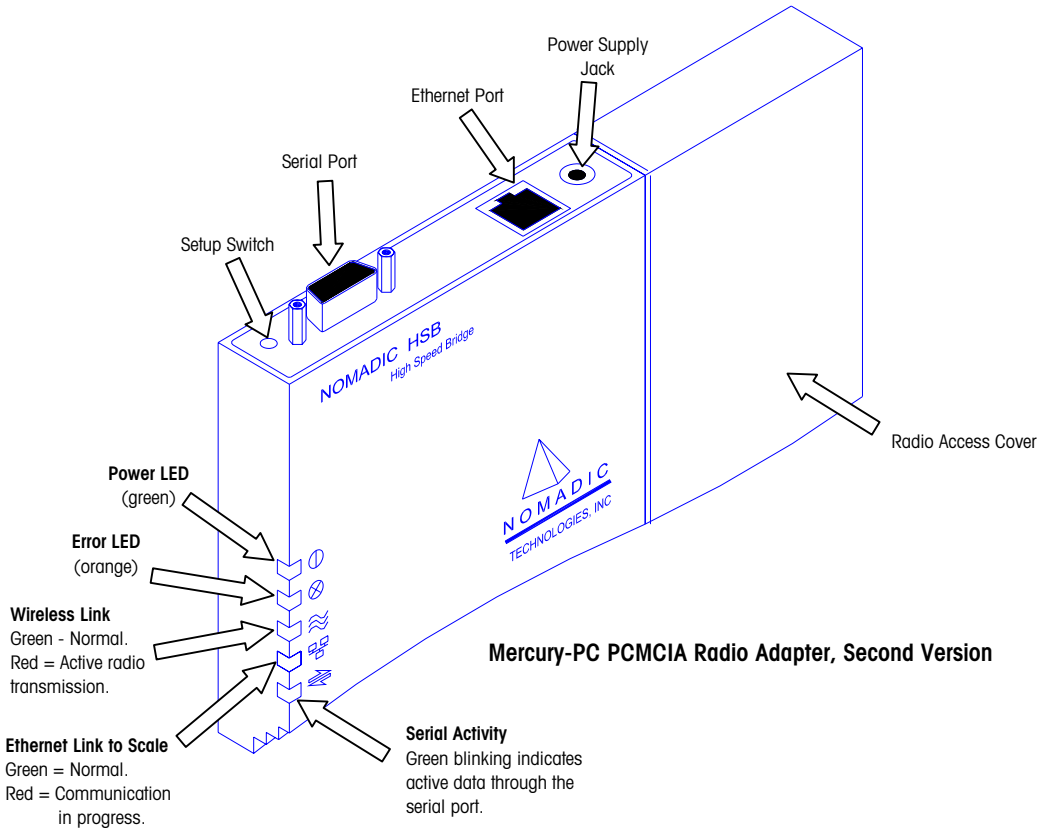
Certain **METTLER TOLEDO®** Ethernet scales are available with the Mercury-PC PCMCIA Ethernet to Wireless Adapter. The Mercury-PC will accept PCMCIA radios, such as Symbol® and Aironet™/Telxon.

The Mercury-PC supports a radio frequency receiver/transmitter that communicates through the store's Access Point via radio waves. The Mercury-PC connects to the scale's Ethernet jack and converts the Ethernet signals to radio signals. The store Access Point then converts the radio signals back into standard Ethernet signals for transmission on the wired network. The Access Point may forward this information to another wireless device or it may be connected to a token ring network.



Mercury-PC PCMCIA Radio Adapter, First Version

Only the Symbol® 802.11 radio supports bridging of multiple Ethernet devices. When the STEM is installed in an Ethernet Client, it will require multiple IP addresses which only the Symbol® supports. Refer to the configuration section for information on the Symbol® 802.11 network. If the radio will not support multiple devices, the STEM must be installed in a TNET satellite.



Mercury-PC PCMCIA Radio Adapter, Second Version

Serial Cable for Mercury-PC Module

The serial cable is wired to be a standard 9-pin straight-thru from a computer or terminal. The computer or terminal transmits data on pin 3 and receives data on pin 2. Similarly, the Mercury unit receives data on pin 3 and transmits data on pin 2. The pin connections at the Mercury-PC are shown in the box to the right.

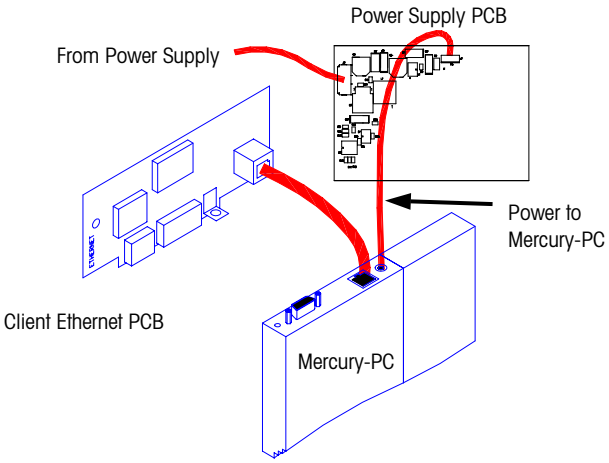
The Mercury is configured to support two sets of handshake lines for flow control: RTS/CTS (Request to Send/Clear to Send), and DTR/DSR (Data Terminal Ready/Data Set Ready).

1 Configure
2 Received Data RD
3 Transmitted Data TD
4 Data Terminal Ready DTR
5 Signal Ground
6 Data Set Ready DSR
7 Request To Send RTS
8 Clear To Send CTS
9 Reset

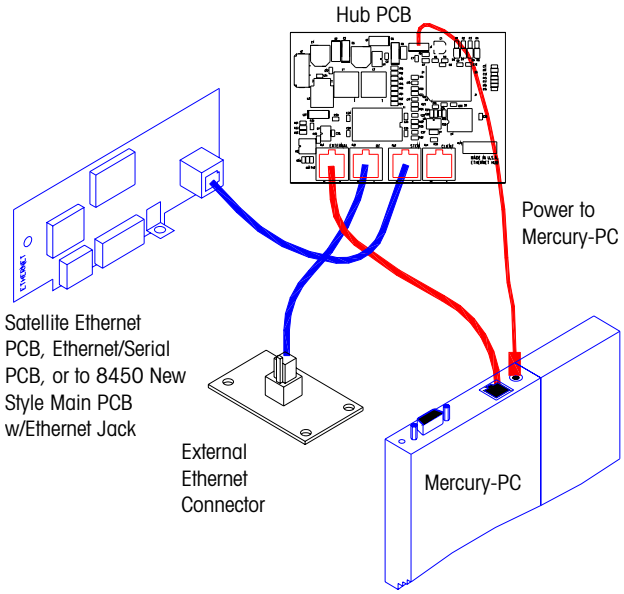
There are two pins you should be aware of and make sure they are not connected on the Mercury-PC side. Pin 1 is the Configure pin. Grounding and then bringing this pin high will cause the Setup Mode main menu to come up in the same way that pressing the Configure button will. If the pin is left grounded, the Mercury-PC will be in a constant state of trying to bring up the menu. Do not connect this pin. Pin 9 is the Reset pin. Forcing this pin to ground and back to 5V will reset the Mercury in the same way it would if power were turned off and back on. If this pin left grounded, the Mercury will be in a constant reset state. Do not connect this pin.

Ethernet Cable Connections

Wiring Diagrams for Ethernet Client using a Symbol® or Telxon™ radio.

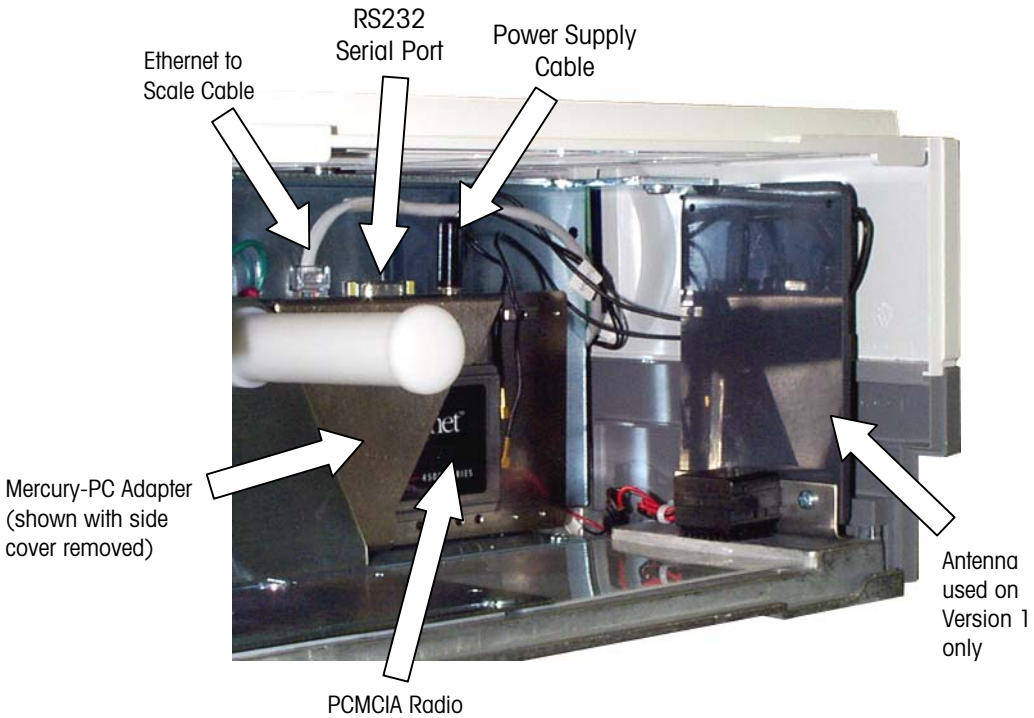


Version 2 – No external Ethernet jack used on factory installed RF on units built after March 2001



Version 1 – Includes Hub PCB with an external Ethernet jack

Components



Version 1 Mercury-PC Components (Printer cover removed)

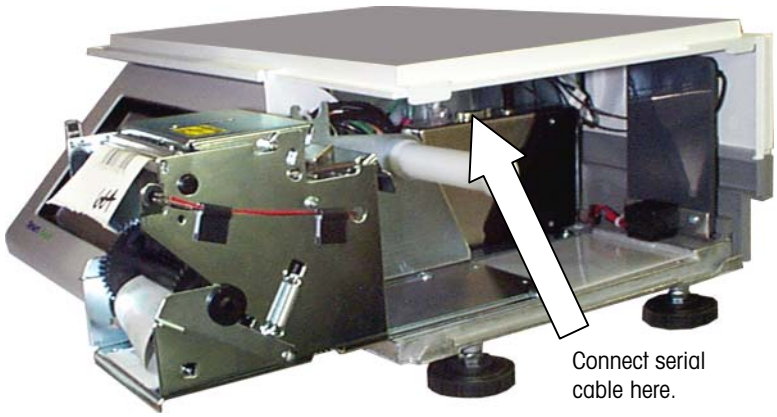
Mercury-PC Setup

When installing an RF scale, you will set up the unit's Ethernet parameters, then set up the Mercury-PC.

Serial Cable to Mercury-PC

You will need a PC and a serial cable to set up the Mercury-PC. The Mercury-PC is installed behind the printer. For access to the Mercury-PC, remove the printer door, press down on the release lever, and slide the printer forward. The Mercury-PC is mounted on the vertical frame behind the printer using a snap on bracket. Turn the power to the scale off before connecting the cable to the Mercury-PC Adapter. If a flat cable (P/N 15138600A) is not used, the module may need to be tilted outward to plug in the serial cable.

The PC RS232 to Mercury-PC cable is a DB9 M-to-F straight through cable. A flat cable, P/N 15138600A is available from **METTLER TOLEDO®** that will allow connection to the serial port without tilting the Mercury-PC adapter.



Connecting a Serial Cable to Mercury-PC Module

Mercury-PC Setup Main Menu

Use a communications program such as Windows® HyperTerminal or ProComm® to communicate with the Mercury-PC. The communications protocol for the Mercury-PC is: 9600, N, 8, 1.

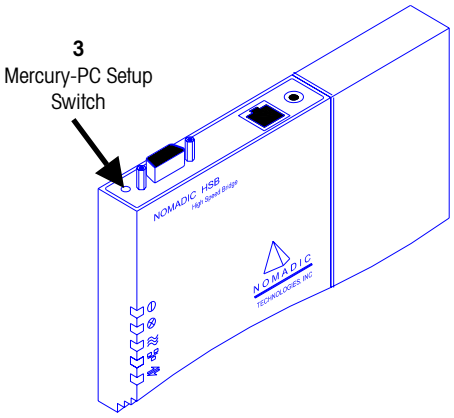
With the cable plugged in, the scale power on, and your communications software running and properly configured (9600, N, 8, 1), use a tool such as a paper clip to press the setup switch in the access hole (see below). The Main Menu should display. If it doesn't, press the up arrow key a few times.

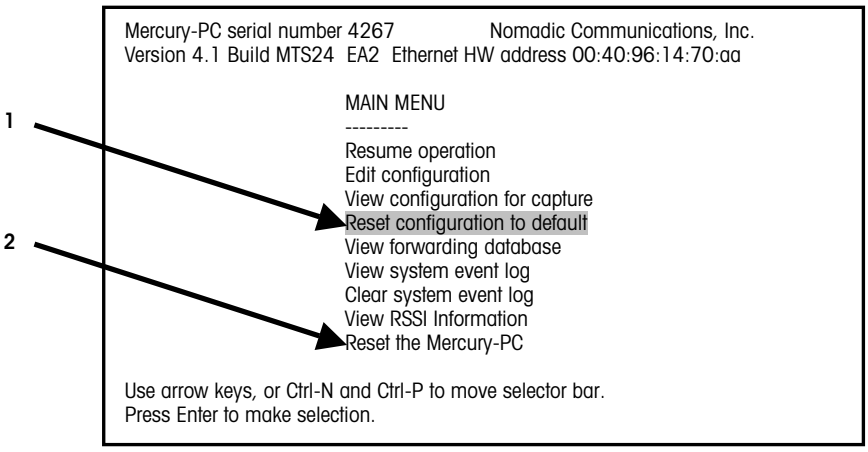
```
Mercury-PC serial number 4267              Nomadic Communications, Inc.
Version 4.1 Build MTS24  EA2  Ethernet HW address 00:40:96:14:70:aa

                          MAIN MENU
                          ---------
                          Resume operation
                          Edit configuration
                          View configuration for capture
                          Reset configuration to default
                          View forwarding database
                          View system event log
                          Clear system event log
                          View RSSI Information
                          Reset the Mercury-PC

Use arrow keys, or Ctrl-N and Ctrl-P to move selector bar.
Press Enter to make selection.
```

Mercury-PC Adapter Setup Screen

Initialize the Mercury-PC

For new scale setup, or anytime a radio is replaced, first select (1) "Reset configuration to default", then select (2) "Reset the Mercury-PC". This will initialize the adapter and configure it for the correct radio. Then (3) press the setup switch again to re-enter the setup menu.





Mercury-PC Configuration

Select "Edit configuration" on the Main Menu.

```
Mercury-PC serial number 4267              Nomadic Communications, Inc.
Version 4.1 Build MTS24  EA2  Ethernet HW address 00:40:96:14:70:aa

                              MAIN MENU
                              ---------
                              Resume operation
                              Edit configuration
                              View configuration for capture
                              Reset configuration to default
                              View forwarding database
                              View system event log
                              Clear system event log
                              View RSSI Information
                              Reset the Mercury-PC

Use arrow keys, or Ctrl-N and Ctrl-P to move selector bar.
Press Enter to make selection.
```

Next, select "Bridged Ethernet (lan0)".

```
Mercury-PC serial number 4267              Nomadic Communications, Inc.
Version 4.1 Build MTS24  EA2  Ethernet HW address 00:40:96:14:70:aa


                               SELECT A FILE
                              -------------
                              Return to Main Menu
                              system
                              RS-232 port (uart0)
                              Bridged Ethernet (lan0)

Use arrow keys, or Ctrl-N and Ctrl-P to move selector bar.
Press Enter to make selection.
```

This is where the various parameters specific to the radio are configured. The following screen shows the setup parameters with an Aironet™ PCMCIA radio installed.

Note for Aironet™/Telxon™ 2500 radios:

The SSID for these radios is a three-byte even hex value in the range 0x000002 to 0xFFFFFE. You cannot use three byte SSIDs and no SSIDs with the low byte equal to 0xFE (ex 0x12FE).

(Example: 254, 510, 766, 1022)

0x = Hex
FF is a byte
Even bytes end in 2, 4, 6, 8, A, C, or E

```
[hardware]
# If you are using a PC4500, the SSID may be either a string of up to
# 32 characters, or it may be a hex number. If you are using a
# PC2500, it must be an even hex number
SSID1 = 0x8
node name = Mercury-PC
# A MAC address can be specified as in the following example:
# mac address = 00a0cc2c2480
mac address = detect save
operating mode = ess

[rmp]
ethertype = 0x4e43

[ip]
ip address = 10.10.10.128
netmask = 255.255.255.0
broadcast = automatic
route = automatic
gateway = none

 File: lan0          Line #: 1
^P: up  ^N: down  ^B: back  ^F: forward  ^W: write file  ^X: exit w/out saving
```

Bridged Ethernet Setup Screen for Aironet™/Telxon

Under [hardware], the SSID1 is the wireless network system ID. This must match the system ID of the Access Point. The Service Set Identifier (SSID) controls access to a given wireless network. This value MUST match the SSID of any/all Access Points with

which you will communicate. If the value does not match, access to the system is not granted. The SSID can be up to 32 characters (case sensitive).

The "node name" is registered at the Access Point. The station name is displayed in the table of connected devices on the Access Point. It provides a logical name to determine which machines are connected without having to memorize every MAC address. The name can be up to 16 characters.

The "ip address" and "netmask" are optional and are used only for remote management of the wireless bridge through the network using a Telnet session. Press Control-W to save and exit the screen or Control-X to exit without saving changes. The following screen shows the setup parameters with a Symbol® PCMCIA radio installed.

Note: On a Symbol® 802.11 network, a single node is supported when "dsmu = no". To support bridging of multiple Ethernet devices, change to "dsmu = yes" in the screen to the right. In the Access Point, you WLAP mode must be enabled.

To use both antennas, you must add the line "diversity = yes" as shown to the right, which may increase the distance that scale can be located away from the Access Point.

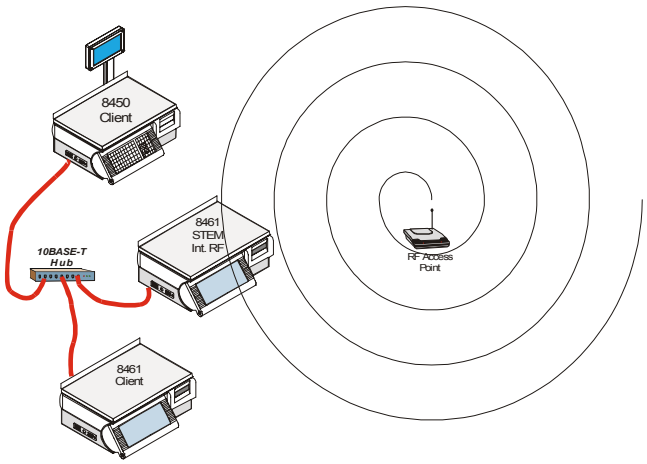
```
[hardware]
network id = 101
mac address = detect save
# station or microap
radio mode = station
dsmu = no
transmit rate = 1 2
diversity = yes

[rmp]
ethertype = 0x4e43

[ip]
ip address = 10.10.10.128
netmask = 255.255.255.0
broadcast = automatic
route = automatic
gateway = none

File: lan0          Line #: 1
 ^P: up  ^N: down  ^B: back  ^F: forward  ^W: write file  ^X: exit w/out saving
```

Bridged Ethernet Setup Screen for Symbol® Radio

Ethernet Hub Port on RF Scales

The RF scales have an active 10BASE-T hub port on the bottom of the scale. You can use this port to connect the scale as a standard wired Ethernet scale or it can be used to connect multiple Ethernet scales using one wireless radio on the Symbol® 802.11 network, as shown below. Up to ten nodes can be connected in this manner.

Note: To connect a single Ethernet Scale to an Ethernet RF scale, a crossover patch cable can be used instead of the hub.

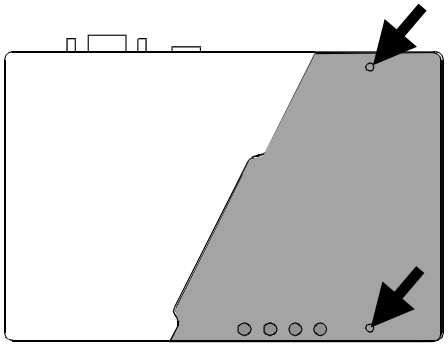


Symbol® RF Supporting Multiple Wired Ethernet Nodes

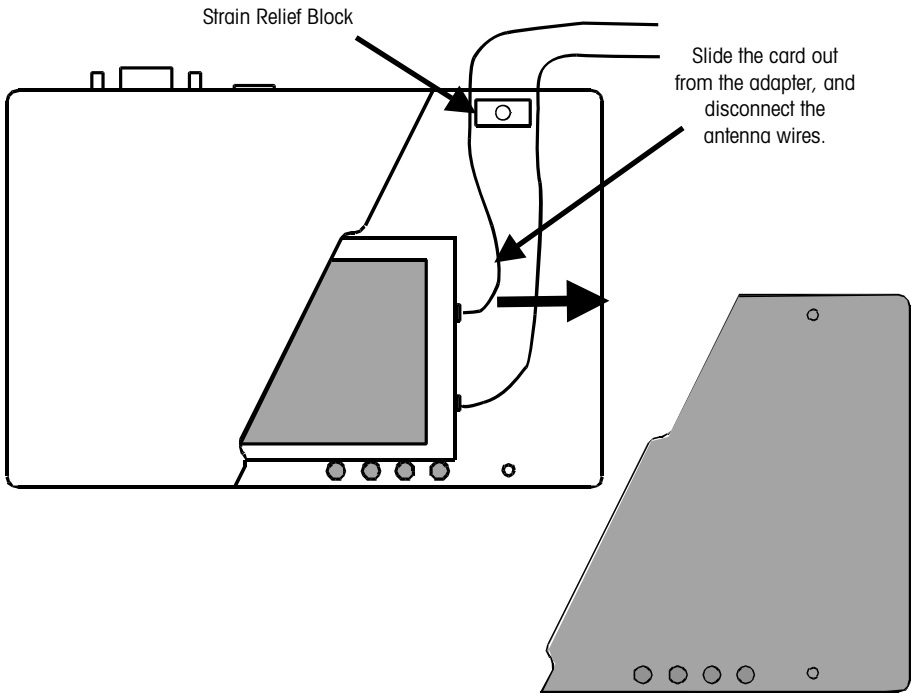
Changing the PCMCIA Radio

First Version Mercury-PC

The first version of the Mercury-PC module used a metal housing and external antennas. The radio in the Mercury-PC adapter is a PCMCIA card. To change the radio, first remove the two cover screws as shown below and then remove the cover.



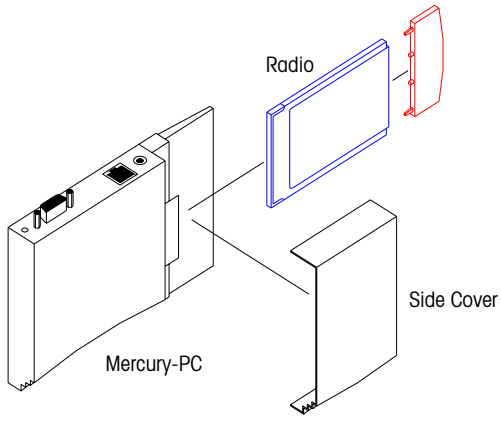
Next, slide the PCMCIA card out from the adapter. Disconnect the antenna leads from the card. Reconnect the antenna leads to the new radio card, then slide the new radio card in the adapter. Push the card in until you can feel the card plug into the receptacle. Route the antenna leads out the top of the adapter and on top of the strain relief block so they are clamped in place when the cover is installed (see below).



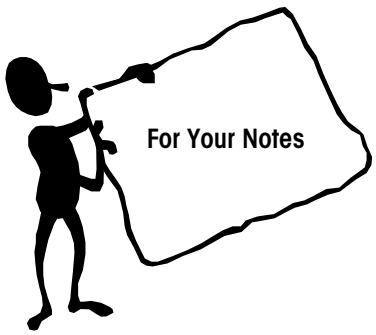
Replace the adapter cover. See the previous section "Mercury-PC PCMCIA EAB Setup" to initialize and configure the new radio.

Second Version Mercury-PC

The second version of the Mercury-PC module uses a molded plastic housing and an internal antenna that connects directly to the radio. The side cover of the Mercury-PC Module snaps off. With the cover removed, slide the radio and antenna into the module until it is securely seated in the connector. Snap the cover back onto the module.

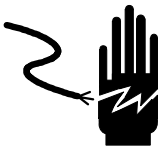


Installing a radio and antenna in the Second version Mercury-PC


For Your Notes

4 PC and Network Interfacing

Master/Satellite TNET Network Installation



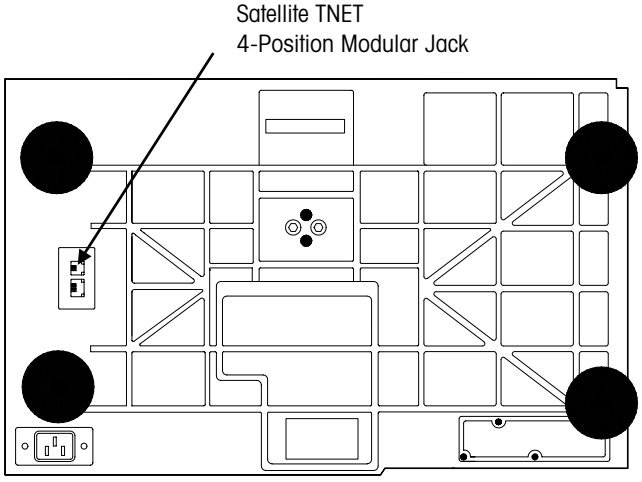
WARNING

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.

TNET Satellite Connection

The TNET Satellite must be connected to a master scale (**Smart***Touch*®) to access the master database. When a PLU number is called, it is retrieved from the master and added to a local backup PLU table. On power-up, the backup table, action code table, grade table, and department configuration is updated. If the master is off-line, satellites can operate with backup information until the master goes back on-line.

The scale TNET network connects all the TNET scales to the master. Each TNET satellite is shipped with a modular phone jack box and a 25 ft (7.62 m) communication cable that connects the box to the TNET connector on the bottom of the scale, as shown below. The 25-ft (7.62 m) communication cable has a 4-position modular phone plug on one end, and a 6-position modular plug on the other. Connect the 4-position end to TNET jack, and the 6-position end to the supplied phone jack. The total data-cable length of the network, including the main data cable and 25 ft (7.62 m) scale drop cables is limited to 1500 feet (457 meters).



Model 8450 Satellite TNET Connector (Bottom View)

TNET Hardware

The maximum cable length of the Master/Satellite TNET network, which includes the main data cable and all 25 ft (7.62 m) scale drop cables, is limited to 1500 feet (457 meters). Use only approved or equivalent UTP (unshielded twisted pair) cable. The use of unapproved cable may result in data communications errors.

If the cable will be routed through a plenum area or in ceilings, check the local electrical/fire codes. Special UTP non-flammable/non-smoking plenum-cable may be required.

The table below lists the METTLER TOLEDO® wiring specifications.

Two-Pair UTP (Unshielded Twisted Pair) Category 2 (or higher), 22-24 Gauge, Solid Core Cable is required for the master/satellite network.

Material	Approved Vendors	Specifications
Phone jack	• METTLER TOLEDO P/N (*)12716300A • Allen Tel. Prod. #AT468-4 (or equivalent)	Wall mount telephone jack with screw terminals and one RJ-45 modular jack.
Terminating Resistor	METTLER TOLEDO P/N (*)12839300A. or equivalent	1/4 Watt, Metal Film, Tolerance ±1%.
UTP Data Cable	Belden 1227A AT&T 1005 002A W1000	Solid-Core (22-24 gauge), Two-Pair UTP (Unshielded Twisted Pair) EIA Category 2 or higher or UTP Telephone Cable. • Category 2 or higher • Maximum 1500 feet (457 m) cable length (including drops) • 22-24 AWG Solid Core • 2-Pair UTP (Unshielded Twisted Pair) • N.E.C. type CM • Nominal Capacitance **16-18** pf/ft **max**.

TNET Hardware Specifications

TNET Wiring

The maximum cable length, including the main data cable and 25 ft (7.62 m) scale drop cables is limited to 1500 feet (457 meters).

Only one twisted pair will be used. The other pair is not connected and can be used as a spare.

The main data cable must be run so it is located within 25 ft (7.62 m) of each scale on the network. Once the cable is routed, a modular phone jack (P\N 12716300A) must be attached to the main data cable at each scale location. The phone jack must be located within 25 ft (7.62 m) of the scale to allow connecting the 25 ft (7.62 m) communication cable between the phone jack and the scale. Each scale is shipped with a 25-ft (7.62 m) communication cable (P/N 12716500A) which connects the scale communication port to the phone jack. Refer to the illustration below that gives an example of the scale network wiring in detail. ***The main data line must be terminated at the ends by connecting the supplied 113 ohm resister (P/N 12839300A) between the Green and Red terminals in the phone jacks. The terminating resistors are supplied with each master scale. Use only one twisted pair to connect to the Green and Red terminals in the phone jack. Do not use a wire from each pair.***

NOTE 1: The 25-ft (7.62 m) Communication Cable, P/N 12716500A, and the Phone Jack, P/N 12716300A, are supplied with each scale. The four-position modular phone connector plugs in the scale TNET connector, and the six-position modular phone connector plugs into the phone jack.

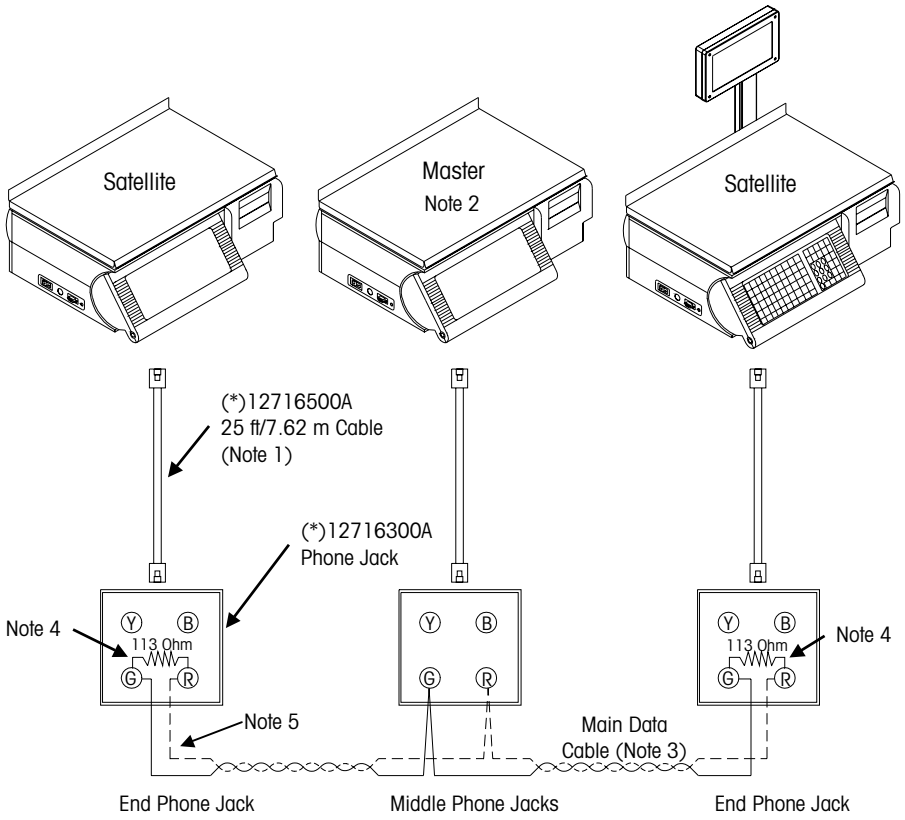
NOTE 2: The Master can be installed at any location on the network. In this example, the Master is installed near the middle of the main cable. When the cable length approaches near maximum, it is recommended the master be located near the middle of the network. Up to 24 satellites are supported.

NOTE 3: All phone jacks must be installed on the main data line which runs to each location. This main data line must not branch off into multiple sub-networks from one phone jack. The total cable length, including the 25 ft (7.62 m) scale communication cables must not exceed 1500 feet (457 meters). The cable must meet the local building code requirements and meet NFPA requirements.

NOTE 4: The 12839300A 113 ohm Terminating Resistor MUST BE INSTALLED BETWEEN THE GREEN AND RED TERMINALS OF THE PHONE JACK AT BOTH ENDS OF THE MAIN DATA CABLE. Trim any excess cable beyond the last connection.

NOTE 5: Use only one twisted pair to make the connections. Leave the other twisted pair for a spare. Do not use one wire from each twisted pair.

(*) = May have letter prefix.



Master/Satellite TNET Wiring

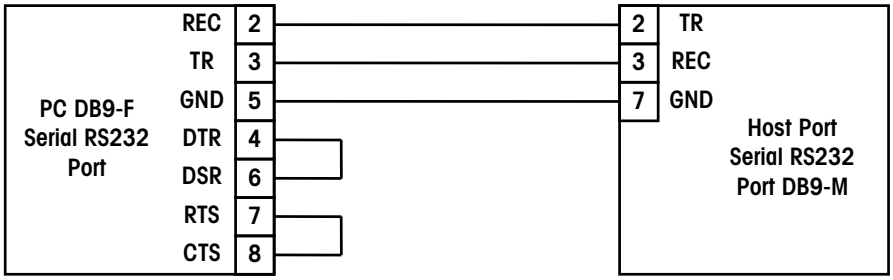
Connecting the Model 8450 to a PC

When connecting the Model 8450 to a host PC using programs such as Intelli-Net or DataBack, two types of interfaces are available on the Master Host Port: RS232 and RS422. The interface is selected simply by connecting to the appropriate pins.

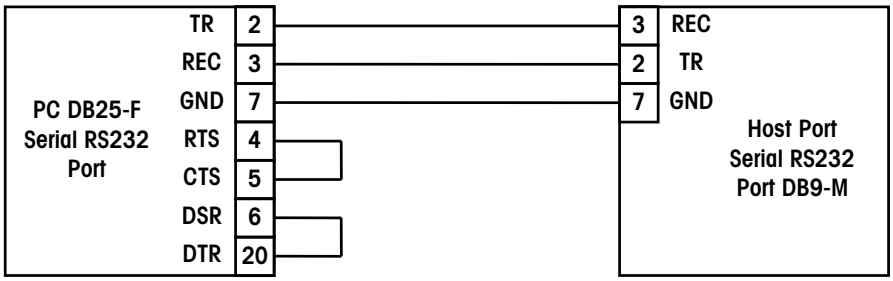
RS232 Interface

When using RS232, a single unit can be connected to a PC RS232 serial port for distances up to 100 feet (30 meters). The illustration below shows a typical RS232 connection to a PC serial-port.

0900-0285 (*13816200A) Cable, PC DB9 to Scale 10 ft/3 m
0900-0297 (*14102600A) Cable, PC DB9 to Scale 25 ft/7.62 m



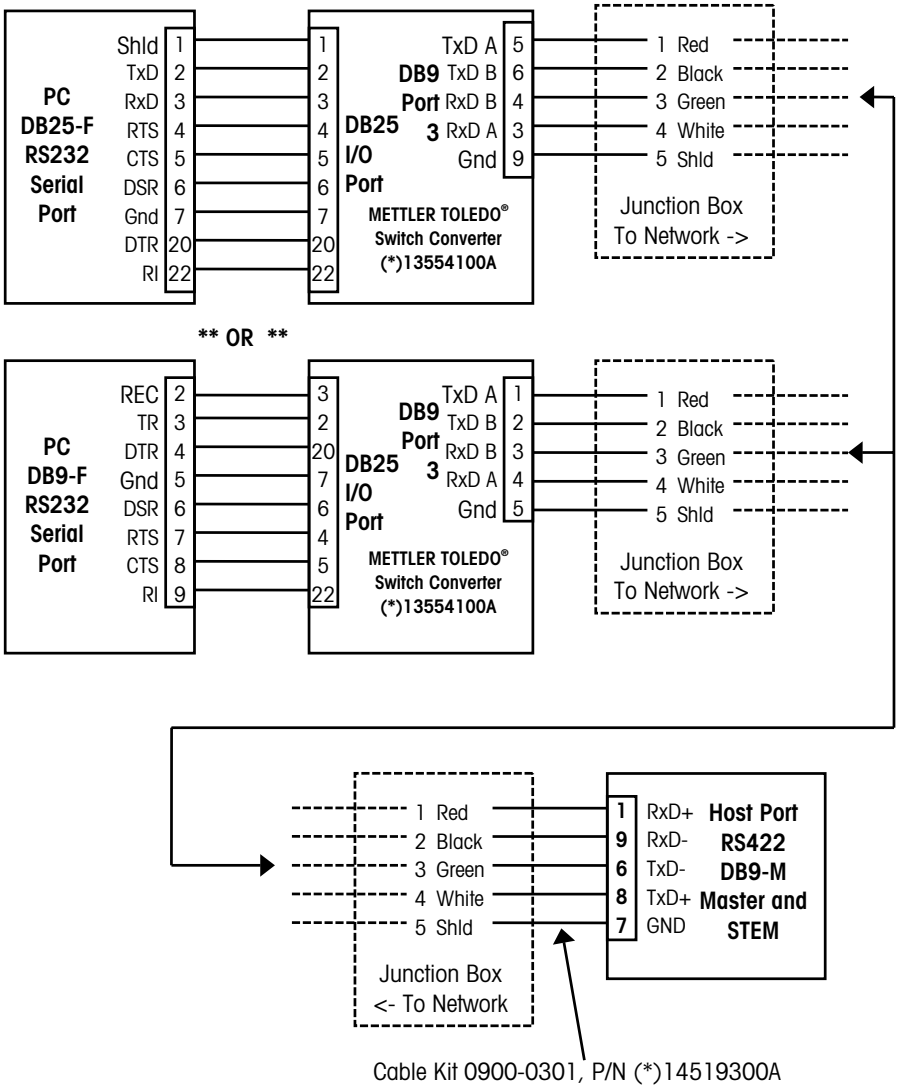
0900-0286 (*13816300A) Cable, PC DB25 to Scale 10 ft/3 m
0900-0298 (*14102800A) Cable, PC DB25 to Scale 25 ft/7.62 m



Model 8450 to PC RS232 Serial Port Wiring

RS422 Interface

When the cable length will exceed 100 feet, or if multi-drop capability is needed (for connecting more than one scale to the network), RS422 must be used. ***The maximum cable length for RS422 is 1200 feet (366 meters).*** A wiring diagram is shown in below using the METTLER TOLEDO® RS232 to RS422 Converter.



Model 8450 RS422 to METTLER TOLEDO® Converter Wiring

DataBack Backup & Restore

Notes:

Model 8460 to Model 355/2450/8450 conversions:

Only the Model 8460 labels/cassettes data can be converted for Model 355/2450/8450 use. This must be run through a conversion program that generates the Model 355/2450/8450 "Labels" file. (Label2mm.exe).

Model 8360 custom label formats can be directly backed up and restored to a Model 355/2450/8450 "Labels" file without any conversions.

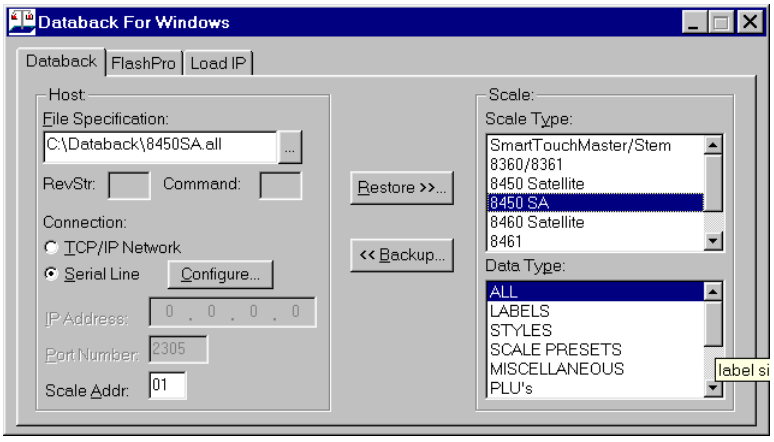
The Model 355/2450/8450 use the same Databack files.

The setup data from the Model 355/2450/8450 and the standalone database can be backed up or restored to a PC (Personal Computer) using the Mettler Toledo program DataBack (Version 4 or later) or Databack for Windows. Databack for Windows can communicate using serial RS232 or Ethernet TCP/IP. The following categories of can be backed up or restored:

ALL	Includes all data sets below.
LABELS	Includes custom label formats and programmable text.
STYLES	Includes the information for each of nine label sizes, such as: assigned formats, label width, label length, gap length, image offset, etc.
SCALE PRESETS	Includes the user defined preset keys.
MISCELLANEOUS	Includes Grade Table, Action Code Table, PLU Settings, TNET Protocol, Department ID and records, Marquee messages, Accumulator Setup, and other settings.
PLU	(Standalone) Includes the PLU data files for the selected dept.
EXTRA TEXT	(Standalone) Includes the Extra Text files.
NUTRITION FACTS	(Standalone) Includes the Nutrition Facts files.
GRAPHICS	(Standalone) Includes Graphics files.
DATABASE PARAMETERS	(Standalone) Includes Host Protocol, Department Table, Store Record, Grade Table, Message Table, Operator Totals Table, Operator Record Table, Printer Setup, Serial Device Setup, and other database functions.

To backup satellite/standalone data:

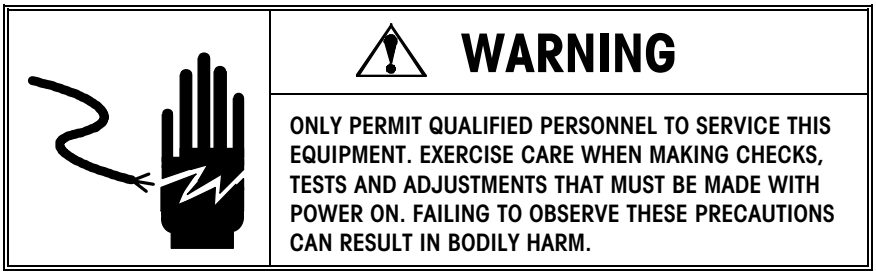
1. Connect the PC to the unit using the PC's serial port and AUX/HOST port or to the Ethernet network to backup/restore an Ethernet client.
2. Start DataBack. When connecting serially, the units host interface must be configured to match the Databack setup. When connecting through the Ethernet network, enter the correct IP address.
3. In DataBack, select Backup at the Main Menu, then **8450 Satellite** or **8450sa**. Next, select the data to backup. Make your selection, type in the file name and press ENTER.
4. In Databack for Windows, select the scale type, verify the file name, then click on **Backup** or **Restore**.



Flashing Software

Warning: Setup data is erased when the operating system is updated!

Note: Always reset to factory defaults after flashing the Satellite. Always **Clear All** in database functions and **Reset To Factory Defaults** in a Standalone. Always reset print head resistance (HEAD) and print speed/power (SPEED) after flashing.



The System Software is retained in Flash EPROM's on the Main Logic PCB. The EPROM's can be reprogrammed using a PC downloader program called FLASHPRO.EXE or Databack for Windows.

Software Diskette

The software is distributed in a compressed format and will need to be uncompressed before using the files. To uncompress the file to a subdirectory called C:\FLASH, type the path and file name as follows:

A:\filename C:\FLASH

(Note: Check the file name on the diskette. The uncompressed file will then be copied to your hard disk drive.)

Using FLASHPRO.EXE

Tip: Make a batch file that contains the command line with the file name typed into the command line. Name the batch file by the model of the unit you are flashing. Ex: 8450.bat.

FLASHPRO.EXE uses the COM1 RS232 Serial Port as a default. If COM2 is used, add **-COM2** on the command line. Typing *flashpro* alone displays a help screen. The FLASHPRO command line for a cable connected to the PC COM1 is as follows:

flashpro -t*filename.xxx*

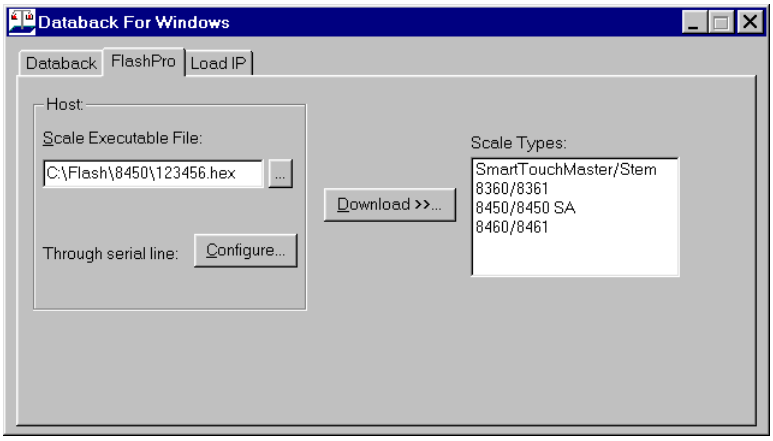
The FLASHPRO command line for a cable connected to the PC COM2 is as follows:

flashpro -t*filename.xxx* **-COM2**

(Replace *filename.hex* with the actual file name on the distribution diskette. Example: FLASHPRO -t123456R.hex.) If you get a DOS Bad command or file name error, check to make sure you have not mis-typed the file name (ex: FLASHPRO), and the file FLASHPRO.EXE is in your PC's path or current directory. If you get a **Checksum Error**, you may be using the wrong file, or you are trying to use the compressed file. Make sure you uncompress the file before attempting to use it. If the error persists, the file may be corrupt.

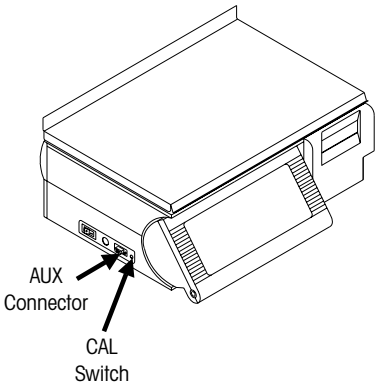
Using Databack for Windows/FlashPro

Databack for Windows can be used to flash software by clicking the "FlashPro" tab. Select the scale type and file, then click "Download" to download the software.



Databack for Windows FlashPro screen

Flashing Software



To flash software into the unit, follow this procedure:

- Turn the power switch to off.
- Connect the cable end marked PC to the PC's serial port and the other end to the HOST/AUX Port on the side of the unit.
- Press and hold the *CAL* Switch while pressing the power switch to ON.
- Release the *Cal* switch when the display shows **Download Program**.
- Next, type in the command line on the PC and press ENTER if using FLASHPRO.EXE or click Download in Databack for Windows/FlashPro.
- During normal downloading, FLASHPRO.EXE will display **A**'s during the download process, indicating *Acknowledgment*. If **N**'s are displayed on the PC, this indicates *NonAcknowledgment,* which is an error. Databack for Windows will show a download status window, also.
- When the download is complete, FLASHPRO and Databack will a message indicating the download is complete.

Troubleshooting

If a **UART Error** is displayed on the PC, check that the cable is connected to COM1 or COM2 and matches the command line used. Make sure the correct cable is used.

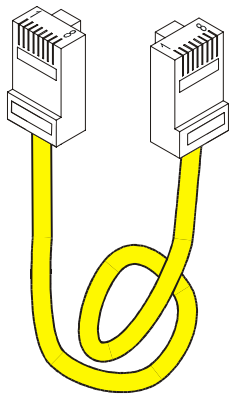
If you see a lot of N's, try adding **-S2** at the end of the command line in FLASHPRO.EXE.

Ethernet Network Cabling Systems

An easy way to tell which type of Ethernet network is being used is by checking the connector to a network card. If it has a telephone-style plug, it is 10BaseT. The cable for 10BaseT looks the same as telephone cable. If the network has a D-shaped connector with many pins in it, it is 10Base5. A 10Base2 network has a connector similar to a cable TV coaxial connector, except it locks into place. The 10Base2 connector is always circular

METTLER TOLEDO® Ethernet cabling specifications follow established industry standards. Additional information on Ethernet networks can be found on the Internet, bookstores, or at most libraries. Ethernet networks can use UTP (Unshielded Twisted Pair), coaxial, or fiber optic cabling. The IEEE (Institute of Electrical and Electronic Engineers) created Standard 802.3 that describes the operation of 10 Mbps networks. Different versions of Standard 802.3 exist depending on the type of cabling used. METTLER TOLEDO® Ethernet scales require a 10BASE-T connection.

METTLER TOLEDO® Ethernet Client Scales require UTP **10BASE-T** cables, **Category 5** (CAT 5) or higher, wired in a **Star topology**. Each node on the 10BASE-T network has its own cable that connects to a common hub. The cable from the node to the hub (segment) can be up to 100 meters (328 feet) in length. The hub serves as a central switching station that controls the incoming and outgoing signals. When using star topology if a station goes down it does not affect the rest of the network. Typically an RJ45 connector is connected to UTP cabling and is run straight from the hub to the device on the network.



RJ-45 Connectors used on UTP 10BASE-T networks. METTLER TOLEDO® clients and the STEM use this connector.

The ***10*** is for 10 Megabits per second (Mbps) operation, ***Base*** is for baseband operation, and ***T*** is for the twisted pair cable used for the network. 10BASE-T uses unshielded twisted pair (UTP) cabling. METTLER TOLEDO® recommends using **Category 5** (sometimes referred to as CAT 5) or higher wiring for the scale systems. Each node on the network has its own cable that connects to a common hub. The cable from the node (Scale, PC, or other device) to the hub can be up to 100 meters (328 feet) in length.

The following basic rules apply to a 10BASE-T network.

- Maximum length per 10BASE-T segment is 100 meters or 328 feet.
- Maximum of two devices per segment; one is the station and the other is the hub.
- Maximum of four hubs can be connected without using a bridge or switch. (Consult the hub vendor for their specific specifications.)
- 10Base-T Hubs can connect to fiber optic 10BASE-FL or to 10BASE-2 or 10BASe-5 coax networks that can be used to extend the distance of the network. Special hubs will be needed for this application.
- UTP (Unshielded Twisted Pair) cable. Category 5 or higher is recommended.
- UTP cabling is not recommended for areas with high electromagnetic or radio frequency interference (EMI/RFI).

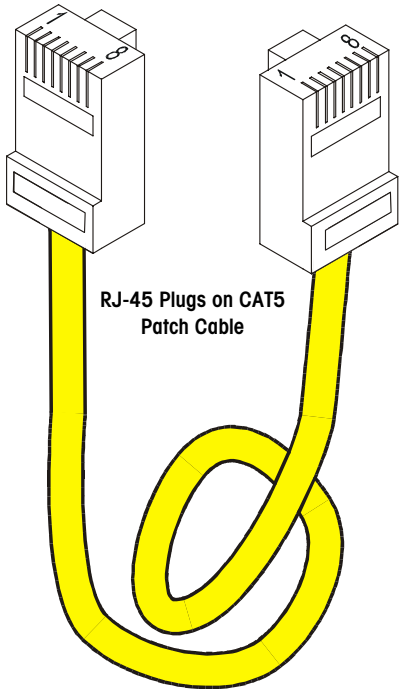
Patch Cables

10BASE-T Straight-Through Patch Cable

Patch cables connect devices to hubs. METTLER TOLEDO® Ethernet Clients require a CAT5 (Category 5) 10BASE-T UTP Straight-Through Patch Cable conforming to the EIA standard 568A or 568B. The only difference between 568A and 568B is the color code positions (green and orange wires are swapped). It is best not to mix 568A and 568B cables in a system to avoid confusion with the color codes (however, complete cables of both types will interchange). 10BASE-T segments are limited to 328 feet (100 m). The CAT5 Straight-Through Patch Cable has four pairs of wires connecting to the same pins on both ends of an RJ-45 connector. Pairs 2 and 3 are used for the 10BASE-T signals, as shown below.

	Plug A	Color Code 568A	Color Code 568B	Plug B
Pair 3	1 - TD+	White/Green	White/Orange	1 - TD+
	2 - TD-	Green	Orange	2 - TD-
Pair 2	3 - RD+	White/Orange	White/Green	3 - RD+
Pair 1	4 - Not Used	Blue	Blue	4 - Not Used
	5 - Not Used	White/Blue	White/Blue	5 - Not Used
Pair 2	6 - RD-	Orange	Green	6 - RD-
Pair 4	7 - Not Used	White/Brown	White/Brown	7 - Not Used
	8 - Not Used	Brown	Brown	8 - Not Used

Pin connections for 568A and 568B cables.



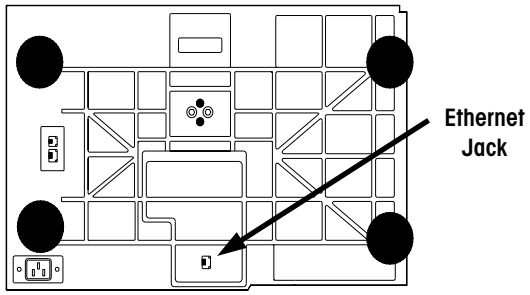
RJ-45 Plugs on CAT5 Patch Cable

Scale Ethernet Connections

The Ethernet jacks on all METTLER TOLEDO® Clients use standard Ethernet Wiring configurations. This wiring configuration allows the use of standard Ethernet straight-through patch-cables from a hub to the client. The Ethernet connection jack is shown below.

Ethernet RJ45 Jack

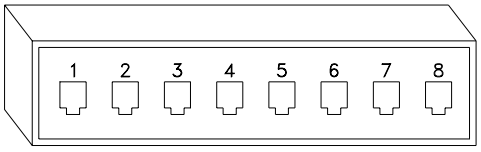
Pin 1 - TD+
Pin 2 - TD-
Pin 3 - RD+
Pin 6 - RD-



Hubs

Ethernet is easily expandable with devices that provide multiple Ethernet ports. These devices are known as "hubs" since they provide the central portion, or hub, of a network system. Hubs can be connected to each other extending the network. Check with the Hub manufacturer or the documentation shipped with the hub to determine the maximum number of hubs that can be connected together. Depending on the manufacturer, up to four hubs can be connected. To further extend the size or distance of a network, a switch or repeater can also be purchased.

Hubs can be purchased with five, eight, and sixteen or more ports. Hubs can also be purchased that can connect a 10BASE-T network to other cable types, such as 10BASE2. A vendor, Network Administrator, or System Engineer should be consulted to determine the best configuration for your application.



Example 8-Port 10BASE-T Hub (RJ-45 Connectors)

TCP/IP

TCP/IP is used for communication on an Ethernet Network between a host and client, such as a PC or METTLER TOLEDO® Ethernet scale.

TCP/IP is software that provides a method for transferring data from one machine to another. **T**ransmission **C**ontrol **P**rotocol (the TCP part of TCP/IP) is a communications protocol that provides reliable data transfer. Data is transmitted by assembling the data into packets (smaller chunks of data). **I**nternet **P**rotocol (IP) is responsible for routing and moving the packets of data across networks. IP uses a set of unique addresses for every device on the network to determine routing and destinations. When packets are received, TCP reassembles the packets into the original data form.

Ethernet Scale Network

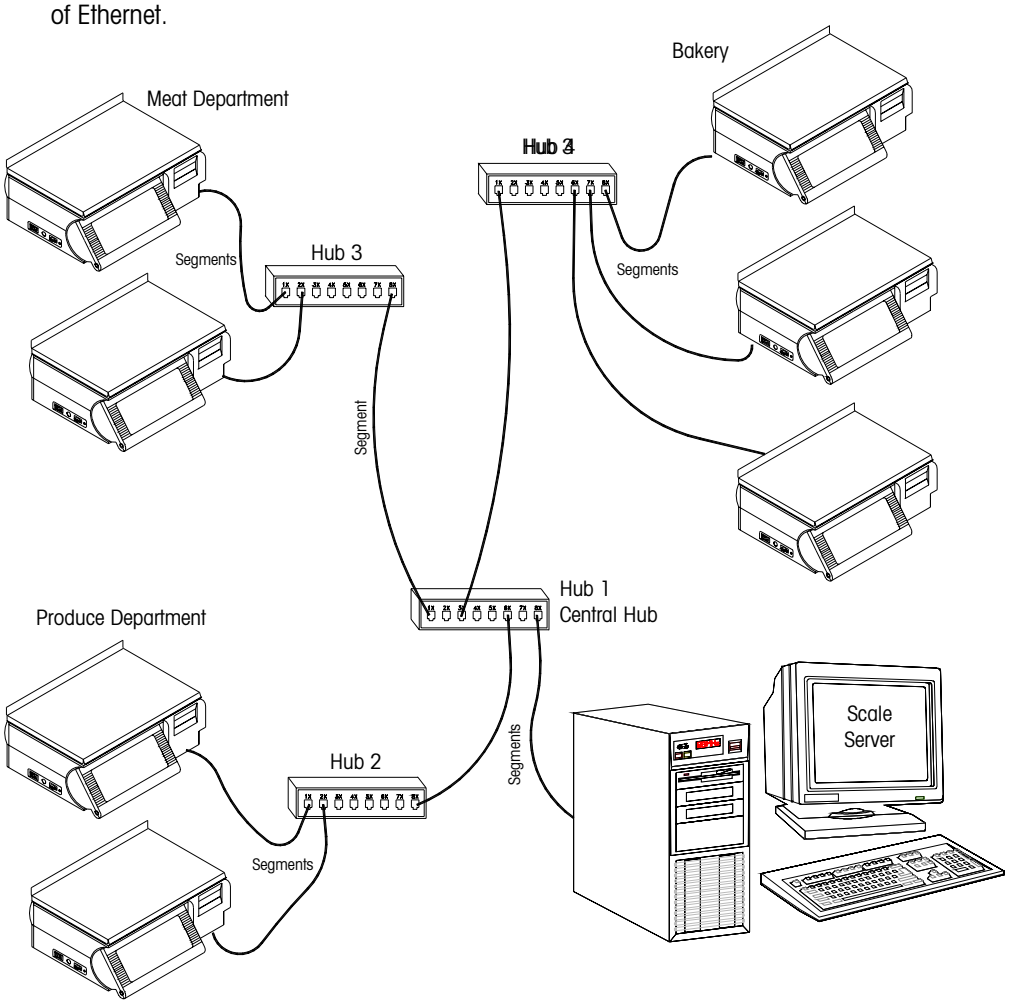
The illustration below shows an example Ethernet Scale Network using the PC Scale Server. A Network Administrator or System Engineer should be consulted prior to purchasing any equipment. Many other configurations are possible due to the flexibility of Ethernet.

10BASE-T Segments are limited to 328 ft (100 m). Cat-5 (Category 5) Cable is recommended.

Check with the Hub manufacturer or documentation to determine how many Hubs can be connected between devices. Normally, up to 4 Hubs can be connected together. When the maximum is reached, a switch must be used to extend the network.

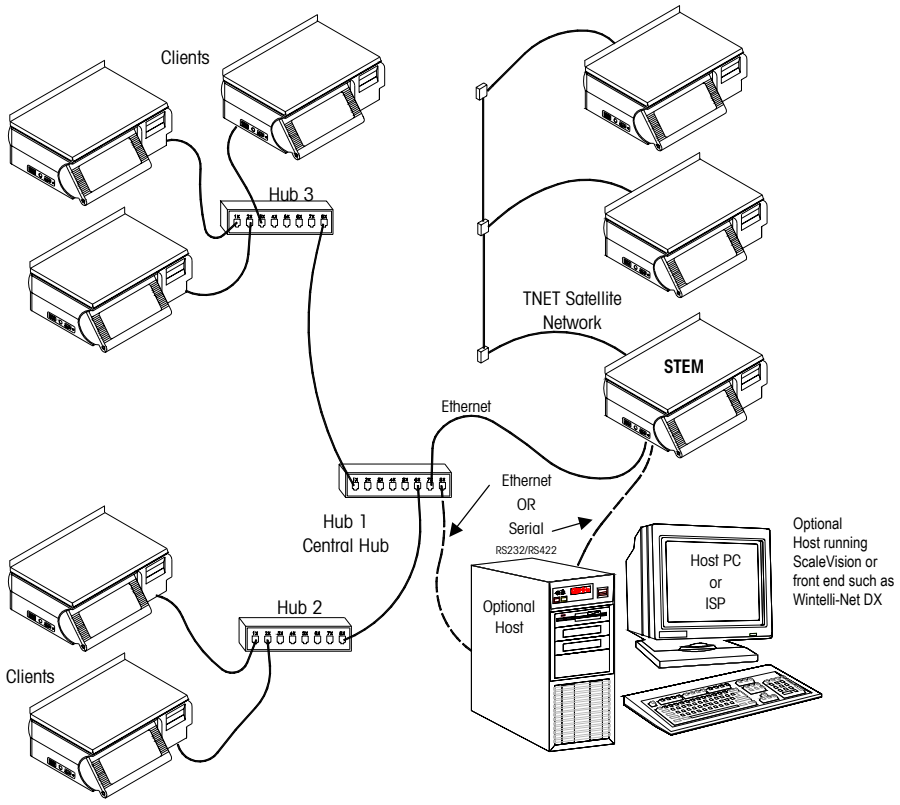
Some common hub manufacturers web pages are:

http://www.linksys.com
http://www.3com.com



Example Client/Server Scale Network

The figure below shows an example network using the STEM (**Smart*Touch*®** Ethernet Master) as the Server. The STEM can support up to 25 Ethernet Client scales and 25 TNET Satellites simultaneously.



Example STEM Network, Ethernet and TNET

IP Address

Note: **Do not duplicate any ID/IP numbers on the network**. If the STEM will be supporting both TNET Satellites and Ethernet Clients, the following guidelines should be followed.

TNET Unit ID - 1 to 30

Ethernet Clients - xxx.xxx.xxx.031 to xxx.xxx.xxx.254

The Client's Unit ID and server IP are used to identify each of the devices on the network. The numbers must be unique on the network (no duplicates). If connected to the METTLER TOLEDO® STEM with TNET Satellites, no Client Unit ID's and TNET Satellite ID's can be duplicated. If the network is separate from any other networks, the IP address can be any address other than 0.0.0.0 and 255. 255. 255. 255. If the unit is installed on an existing network, the network manager should supply the IP address.

Local Networks

When connecting clients to a local Ethernet network (not on the Internet, etc.) using a Scale Server PC or STEM, arbitrary numbers can be selected for the IP Addresses. The IP Address consists of a group of four numbers from 0 to 255, separated by periods, for example: 207.142.140.101. Do not duplicate any numbers on the network. The Server IP is the IP Number assigned to the STEM or Scale Server PC.

Use on Networks Connected to the Internet

If the network connects to the Internet, network IP addresses must be obtained and registered with American Registry for Internet Numbers (ARIN) (http://www.arin.net). The IP Address is used to specify hosts and networks. IP (Internet Protocol) addresses are part of a global, standardized scheme to identify devices connecting to the Internet. A Network Administrator or System Engineer should be consulted on these issues.

A gateway and submask number can also be used if the units are on different networks, but connected to a WAN or to the Internet.

Subnet Mask

A Subnet Mask is used with an IP address to subdivide a network into smaller networks, allowing a greater number of nodes on a network with a single IP address. The Subnet Mask is the part of the IP address used to represent a subnetwork within a logical network. By using Subnet Masks, network address space is available that would normally be unavailable. Subnet Masks also ensure broadcasts are not sent to the whole network unless intended.

The default Subnet Mask, 255.255.255.0, is recommended to reduce network traffic. When Subnet Mask, 255.255.255.0 is used, the broadcast range would be the local subnet only as follows:

255.255.255.0 Subnet Mask
207.142.140.XXX IP Address with a broadcast range of XXX.

255.255.0.0 Subnet Mask
207.142.XXX.XXX IP Address with a broadcast range of XXX.XXX

Using the Subnet Mask, 255.255.255.0, improves network performance by reducing broadcast traffic.

Default Gateway (or Default Router)

If the server (Scale Server or STEM) is on a different network (see Subnet Mask), the client will access the server by routing the request to the Default Gateway IP Address. The Gateway will route the request to other devices on the network to deliver the request to the server. The requested data from the server will then be routed through the Gateway to the requesting client. The Gateway must be on the same local network as the client.

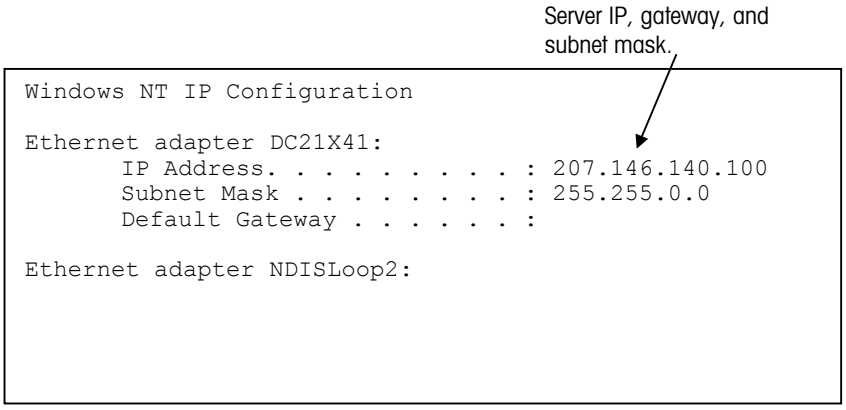
Server IP Address using Scale Server

If METTLER TOLEDO® Scale Server software is in use, this section describes the procedure for obtaining and setting the server IP.

Determining the Server IP Address using a Scale Server

To display the Server IP at the Server or Workstation, click START, PROGRAMS, COMMAND PROMPT. At the DOS prompt, type **IPCONFIG** and press ENTER.

The IP Address will be displayed as follows:



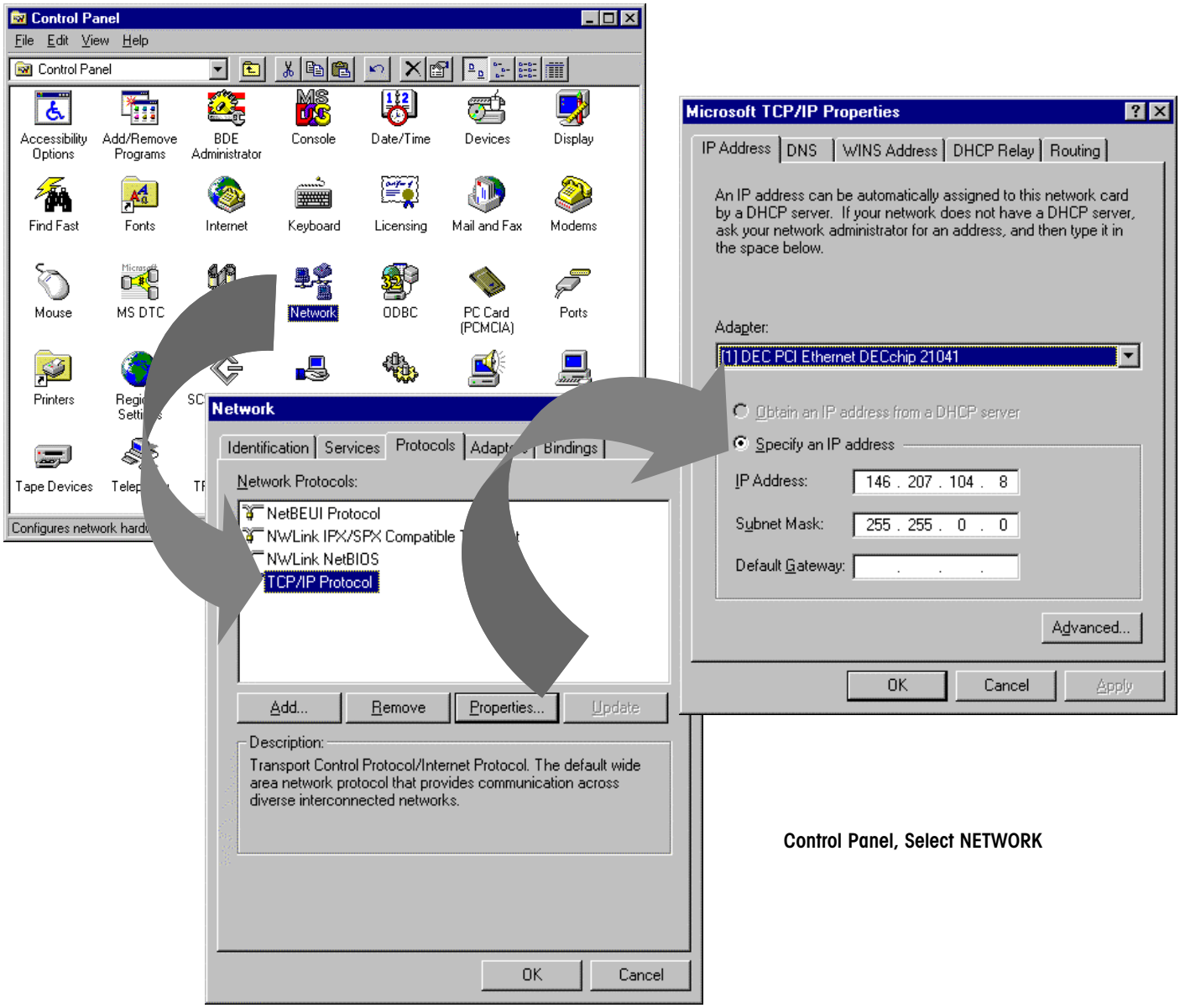
IP Address Display

If the Server IP Address has not yet been configured, refer to the following section, "Entering the Server IP Address".

Entering the Server IP Address on a Scale Server

If the Server IP Address has not been configured on the NT Server or Workstation running METTLER TOLEDO® Scale Server Software, open Control Panel (click START, SETTINGS, CONTROL PANEL). Next, double click on NETWORK.

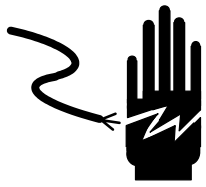
The window for Network setup will display (below right). Click on TCP/IP Protocol, then click PROPERTIES. The window for "Microsoft TCP/IP Properties" will open (below right). Click on the IP Address tab if it is not displayed on top. Click on **Specify an IP address**, then enter the IP Address. Enter the Default Gateway and Submask numbers if required. When done, click **OK**.



Control Panel, Select NETWORK

5 Troubleshooting

Troubleshooting Guide



⚠ 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.

Following is a list of symptoms that could occur, and the recommended action to correct the problem.

General Scale Symptoms

Symptom	Solution
Scale Inoperative/Blank Displays	• Check AC power at outlet. • Check Voltage Test Points on Main Logic PCB. If voltages are zero, check Power Supply. • If test point voltage is good, replace Main Logic PCB. • Check Display Cable at base of scale and in Display Tower. Check Display PCB.
Keyboard Inoperative	• Check Keyboard connection on Main Logic PCB. • Replace Keyboard.
Scale Won't Zero (Displays "------" In Weight Field)	• Check platter and spider for obstructions. Turn power off, then back on. • Check Motion Readings Setting in Calibration Menu. Zero setting will cause this symptom. • Re-calibrate. • Check Load Cell power supply voltage. • Replace Load Cell.
Unable To Calibrate/Won't Recognize Load Cell	• Initialize RAM. • To initialize, press the SETUP MODE key, then press the CAL Switch (in the access hole next to the AUX/HOST Port Connector). The display will show [Sure?? No]. Press the DOWN/UP keys to toggle to Yes. Press ENTER when Yes is displayed to continue. Cycle power on/off when done. Reset printer Speed/Power and Load Cell settings. • If problem persists, replace load cell.
SATELLITE OFF-LINE WITH MASTER	• Are other satellites On-Line? If not, check master. • Check Satellite ID Number. Must be between 1 and 25. • Check for duplicate Scale ID on another satellite. • Check TNET wiring. Disconnect all satellites from main cable. At one end, remove the terminating resistor from

Symptom	Solution
	phone jack and check wiring with meter. There should be from 113 to 180 ohms between the red and green terminals of phone jack. If zero ohms, a wire is shorted. If excessively high, check for bad connections. • Reconnect one satellite. If On-Line, connect another satellite and observe On-Line status. If one unit takes the others Off-Line, check that unit. • Check 25-ft communication cable between scale and phone jack. • Check the Model 8450 Main Logic PCB.
All SATELLITES OFF-LINE WITH MASTER	• Disconnect satellites from Master. Does master come back On-Line? If so check TNET wiring. Disconnect all satellites from main cable. At one end, remove the terminating resistor from phone jack and check wiring with meter. There should be from 113 to 180 ohms between the red and green terminals of phone jack. If zero ohms, a wire is shorted. If excessively high, check for bad connections. NOTE: Each terminating resistor must read approximately 113 ohms. • Check the master.
Client Off-Line With PC Server	• Are other clients on-line? If not, check PC. • Check for duplicate IP on another client. • Check wiring. Check for continuity and other problems with Ethernet Cable Tester. Check polarity of cables. • Check hubs, any RF nodes especially if all scales are served by one hub are off line. • Check 25-ft communication cable between scale and hub or RF node. • Check Model 8450 Main PCB.
Losing Setup Data	• Check Main Logic voltage at test points. • Check External Battery Voltage. Replace battery if necessary. • Replace Main Logic PCB.

Ethernet Networking

Ethernet Networks	Solution
One or more Clients offline.	1. Are other clients online? 2. Is the hub link light on? Check the hub and any RF nodes especially if all scales served by one hub off line. Refer to Chapter 4 "Networking the Model 8461 Client" and Chapter 6 "Ethernet Network Troubleshooting". 3. Check polarity of patch cable. The patch cable from Hub to Client or RF node must be a straight through UTP patch cable. 4. Check for duplicate IP on another client. 5. Verify the IP address of the NT Server or Workstation match the Server IP in the client. 6. Check Ethernet PCB.

Ethernet Networks	Solution
All Clients offline.	1. If the NT PC is on a network with other PCs, PING another PC on the network (refer to Chapter 5 "Ethernet Network Troubleshooting"). Observe the LEDs on the NIC (Network Interface Card). When a ping is started, the activity, transmit and receive LEDs should be active when the PC and NIC are working properly. If the transmit LED does not light, troubleshoot the PC and NIC. 2. Attempt to ping the NT PC from another PC on the network. 3. Check the NT Server or workstation. Shut Down the NT PC, turn power off, then reapply power. 4. Recycle power to the hub. 5. If communication cannot be established with any other device on the network, replace the Ethernet Card (NIC) in the PC.
Hub link light blinking or off. **(Hub to Node)**	1. Is the Patch Cable connected at the hub and node (client for RF node)? 2. Check power to the client or RF node. 3. Remove power to client or RF node for 30 seconds, then reconnect power. 4. Is the correct patch cable used? The cable must be straight through from hub to node. 5. Check power to hub and to client or RF node. 6. Plug the patch cord into a different port. If the link is good on another port, the hub may be damaged. 7. If the problem persists, plug another known working node (client or RF node) into the suspect port. If this works, check the client or RF node. Areas to check include the Ethernet jack and internal cable to the Ethernet PCB; the Ethernet PCB, and the Main PCB.
Hub link light is blinking or off. **(Hub to Hub)**	1. Is the Patch Cable connected at both hubs? 2. Verify the correct patch cable is used. Hubs with an internal crossover (crossover ports are sometimes marked with an X), an uplink port, or a switchable port use a straight through patch. Hubs without any crossover capability use a crossover patch cable. 3. Remove power to both hubs for 30 seconds, then reconnect power. 4. Replace the hub(s).
Hub Partition light is on.	1. This indicates a problem with the node or wiring between the port and the node. 2. Remove power to the hub and node for 30 seconds, then reconnect power. 3. Plug the node into a different port. 4. Replace the patch cable. 5. Verify cable is not running close to a high EMI source (electrical magnetic interference). 6. Troubleshoot the client or node.

Ethernet Networks	Solution
Hub Collision light is on.	1. Indicates two or more nodes are attempting to transmit at the same time causing a "collision". 2. Some collision is normal and the light may turn on briefly from time to time. If the light stays on first check the patch cables from the hub to the nodes. Use of a crossover instead of straight through patch cable can cause this condition. 3. Remove power to all of the clients and RF nodes for 30 seconds, then reconnect power to each client and node one at a time to isolate which client or RF node is causing this condition. 4. If the Collision light stays on when a particular client or RF node is powered up, troubleshoot that unit. For the RF node, replace the unit. Areas to check in the client include the Ethernet jack and internal cable to the Ethernet PCB; the Ethernet PCB, and the Main PCB.
RF Not Communicating	1. Turn the power on and check the Mercury-PC status LED's. The Power LED and Ethernet Link to Scale LED should be ON (green). 2. The Wireless Link LED should be green when the scale is within range of an Access Point. The Wireless Link and Ethernet Link LED's will turn red when activity is present. 3. If the Power LED is red, this indicates an error. Check the error log if you can access the configuration menu. 4. Disconnect power to unit and make sure the radio is seated securely in the socket. 5. Check all internal Ethernet/RF connections. 6. Turn power back to ON and recheck the Mercury-PC. If the error persists, either the radio or the Mercury-PC may be defective.

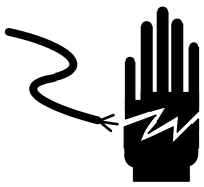
Printing Problems

Printing Problems	Solution
Printer won't deliver a label.	1. Check Take Label cursor on display. If the cursor is ON: -Check Label Taken Sensor for obstructions. -Clean Label Taken Sensor lens on transmitter and receiver. -Test Label Taken Sensor. 2. Check harnesses from printer to Main PCB. 3. Check Label Stepper Motor, Pulley, and Belt. 4. Replace Main PCB.

Printing Problems	Solution
Incorrectly indexes labels.	1. Check label installation. Verify that the label guides are set to correct width. 2. Check for a label stuck in Gap Sensor. 3. Check label format and label size. 4. Clean Gap Sensor lens. 5. Check and clean platen roller, stripper bar, and delivery path Using MT Cleaning Pen P/N 082287020. 6. Adjust Offset Length. 7. Replace Gap Sensor. 8. Replace Main PCB.
Labels dark or missing dots.	1. If labels are printed correctly, but are excessively dark, check the Label Printer Print Speed/Density setting in Unit Setup, under Printer Setup. 2. If the labels are streaked by lines from top to bottom, replace the Printhead. 3. If characters are cut off, check label format programming, including Offset Length. If OK, replace Printhead.
Labels are excessively light or dark.	1. Check Print Speed and Density Setting in Unit Setup, under Printer Setup. 2. Check with other known good label stock. 3. If light print, check and clean printhead resistor line and platen. 4. Check printhead harness for loose wires. 5. Check Main PCB voltages. If OK, replace Printhead.
Print on the label is mottled with light spots.	1. Check with other known good label stock. 2. Check and clean printhead resistor line and platen. 3. Replace printhead.
Labels not stripping correctly.	1. Check with other known good label stock. 2. Check label format programming and Eject length. 3. Check stripper bar for wear. 4. Check Take Up roller/motor. 5. Check set screws on Take Up Motor Gear.
Labels printed even if one is not yet taken.	1. Check setting of stripped/un-stripped option in Printer Setup. 2. Check Label Taken Sensor. 3. Check Main PCB.
Out of Labels errors.	1. Make sure labels are correctly threaded through the Gap Sensor. 2. Clean/Check Gap Sensor. 3. Adjust Image offset. 4. Replace Gap Sensor. 5. Replace Main PCB.

Power Supply

Testing the Power Supply



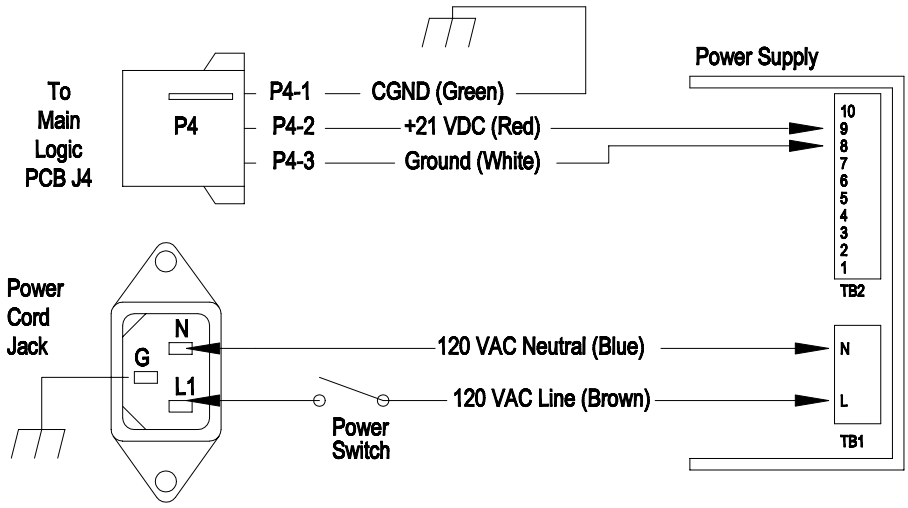
WARNING

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.

First, check the AC input power from the AC outlet. If the input AC voltage is between 85 VAC to 264 VAC (continuous steady voltage), proceed with the following voltage tests.

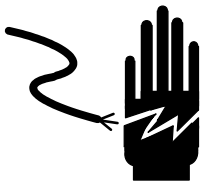
Place the Power Switch to the OFF position. Remove the platter, spider, and top cover. Disconnect the LCD/IR harnesses. Place the power switch to ON, then check the +21 VDC output voltage at the Power Supply terminal strip TB2-9 to ground, or at plug P4 Pin 2 to ground, as shown below. The acceptable output range for the +21 VDC output is +20.5 to +21.5VDC.

If the voltage is high or low, adjust potentiometer P1 for the +21 VDC output. If the output voltage cannot be adjusted to within tolerance with P1, or if the output voltage is zero volts, replace the Power Supply.



Power Supply Test Points

Main Logic PCB



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.

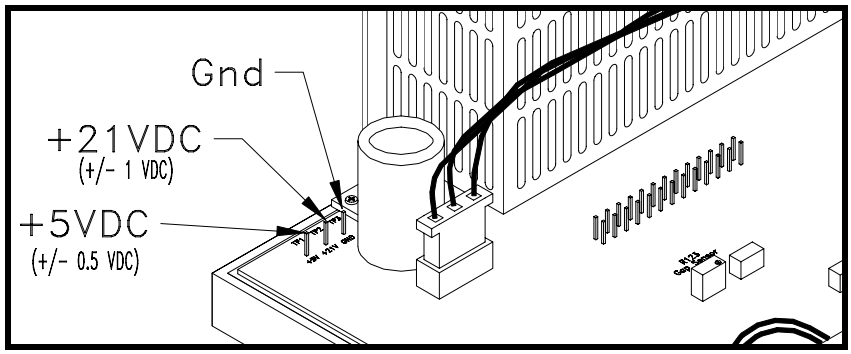
CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

Note: When replacing the Main Logic PCB, the unit must be flashed with software.

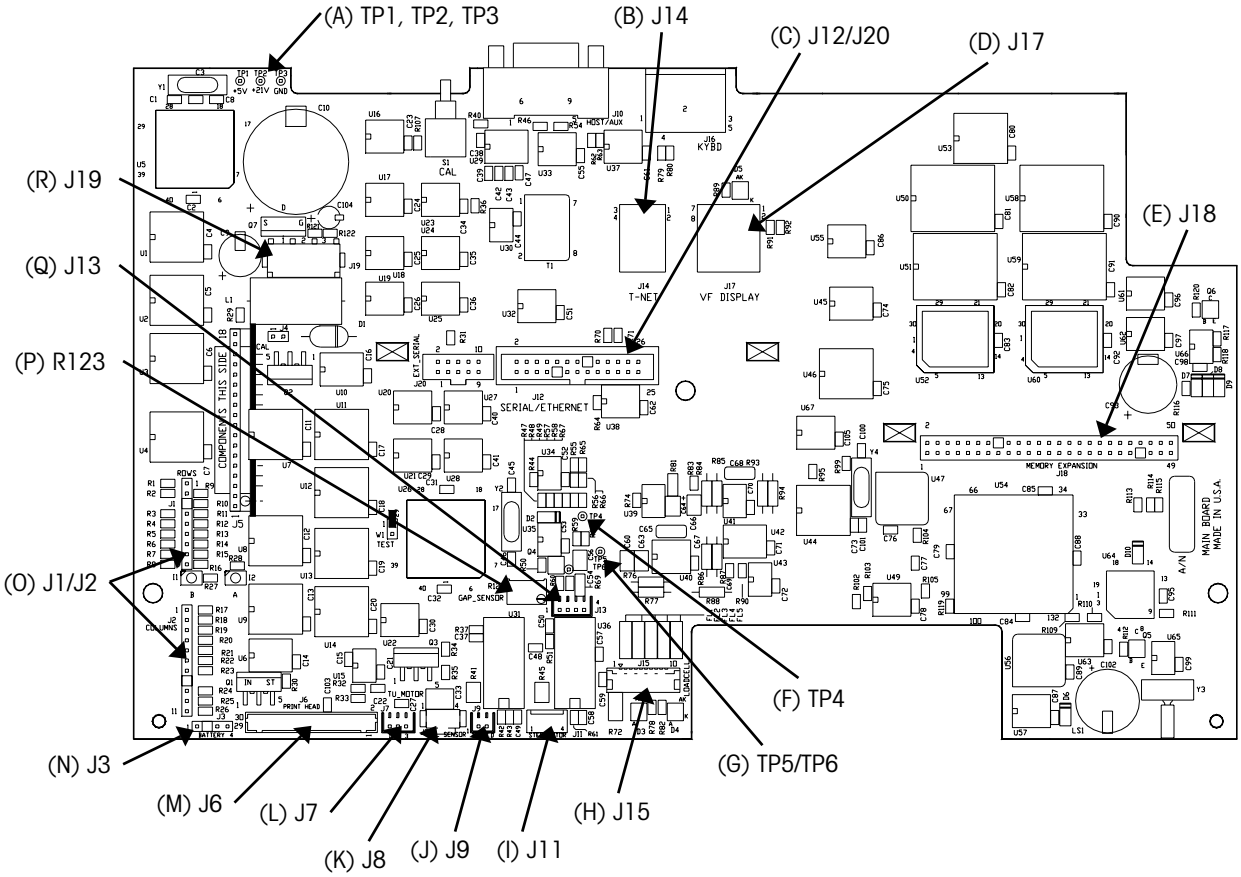
The Main Logic PCB receives +21 VDC from the power supply and uses this to supply +21 VDC and +5 VDC to other components. The Main Logic PCB controls all functions in the unit including the thermal printer. Inputs and outputs to the Main Logic include the Label Taken Sensor, Gap Sensor, Printhead, Label Stepper Motor, Take-up Motor, and Load Cell. The SuperCap and external battery attached to J3 are used to backup setup data and the standalone database in the event AC power is lost. The illustration below shows the locations of the voltage test points on the Main Logic PCB.

The voltage test points on the Main Logic PCB are accessible after removing the top cover. If the test point voltages are not correct, and the Power Supply voltage is correct, replace the Main Logic PCB.



Voltage Test Points on Main Logic PCB

Main Logic PCB Component Map

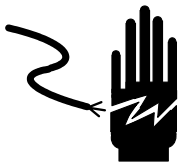


Main Logic PCB (15138700A) Component Map

Ref	Description
A	Voltage Test Points TP1 (5VDC), TP2 (21VDC), TP3 (GND)
B	TNET Jack
C	Serial I/O PCB or Ethernet PCB Connector J12/J20
D	Display Jack J17
E	Memory/Standalone PCB J18
F	Test Point TP4
G	Test Point TP5/TP6
H	Load Cell Connector J15
I	Label Stepper Motor Connector J11
J	Take Label LED Connector J9
K	Take Label Sensor Connector J8
L	Liner Takeup Motor Connector J7
M	Printhead Connector J6
N	Battery Connector J3
O	Keyboard Connector J1/J2
P	Gap Sensor Pot R123
Q	Gap Sensor Connector J13
R	+21VDC Supply from Power Supply Connector J19

Label Stepper Motor

Before proceeding, set the power switch to OFF and disconnect the power cord from the AC outlet.



WARNING

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

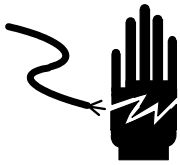
CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

The Label Stepper Motor can be tested with a volt-ohm meter by disconnecting it from the Main Logic PCB at connector J11. Set the meter to read ohms. Connect the meter leads between pins 1 and 2. You should read between 2.43 ohms and 2.97 ohms. Next, connect the ohmmeter between pins 3 and 4. You should read between 2.43 ohms and 2.97 ohms. If the tests indicate the motor resistance is out of the acceptable range, replace the motor. If the motor resistance is within the acceptable range and does not appear to have a mechanical bind, replace the Main Logic PCB.

Take Up Motor

Before proceeding, set the power switch to OFF and disconnect the power cord from the AC outlet.



WARNING

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

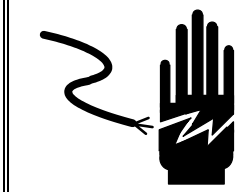
CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

NOTE: The take up motor does not run when the strip function is set to unstripped.

The Liner Take Up Motor can be tested with a volt-ohm meter by disconnecting the motor from the Main Logic PCB at connector J7. Set the meter to read ohms. Connect an ohmmeter across pins 2 and 3. It should read between 78.3 ohms to 96 ohms. If the tests indicate the motor resistance is out of the acceptable range, replace the motor. If the motor resistance is within the acceptable range and does not appear to have a mechanical bind, replace the Main Logic PCB.

Take Label Sensor



⚠ 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.

Tip: The Take Label Sensor can be temporarily by-passed by disconnecting the harness at J8 and shorting J8 pin 2 to J8 pin 3. You can also disable the Take Label sensor by setting delivery to unstripped mode as a temporary fix.

The Take Label Sensor detects the presence of a label in the printer to prevent multiple labels issuing in Prepack mode or demand mode when the labels are being stripped. The sensor locations are shown below. The Take Label Sensor can be tested with a volt-ohm meter as follows:

Clean the Take Label Sensor Lens

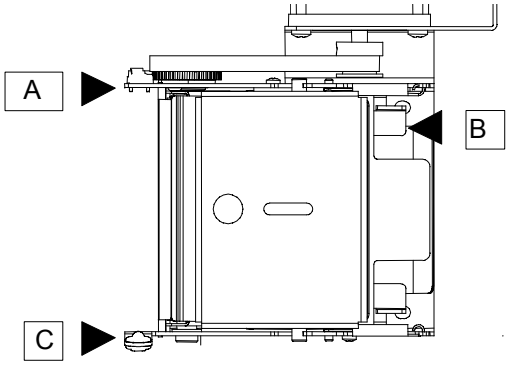
Before proceeding, set the power switch to OFF and disconnect the power cord from the AC outlet. Always make sure the sensor lens' are clean before troubleshooting Take Label problems.

The following voltage test is performed with the power ON.

Connect the power cord to the AC outlet, and then place the power switch to ON. This test checks the Take Label Sensor Receiver voltage. Set the meter to read DC volts. Place your positive meter lead on J8 pin 3 and the negative meter lead on J8 pin 2 (or chassis ground). You should read +5 VDC when the take label sensor is blocked and near 0 VDC when it is not blocked.

The following Ohms test is performed with the power OFF.

Before proceeding, set the power switch to OFF and disconnect the power cord from the AC outlet. If the Take Label Sensor fails the preceding voltage test, check the Take Label Transmitter resistance by disconnecting the harness at J9. Set the meter to read ohms. Place the ohm meter negative lead on the harness removed from J9 pin 1 and the positive meter lead on pin 2. You should read some resistance. Reverse the meter leads. You should then read open. If the transmitter fails this test, replace the Transmitter. If it passes this test replace the Take Label Sensor Receiver.



A = Take Label Sensor Receiver.
B = Gap Sensor
C = Take Label Sensor Emitter.

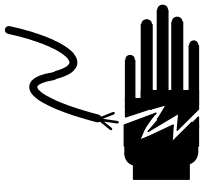
Take Label and Gap Sensor Locations (Top View)

Label Gap Sensor

This section covers electrical and mechanical adjustments to the Label Gap Sensor.

Electrical Adjustments

The Gap Sensor can be tested with a volt-ohmmeter as follows:



⚠ 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.

Mode 1

Automatic level adjusted (Default Factory Setting).

Note: Readings can be taken with or without labels or backing present in gap sensor.

Remove AC Power

Remove AD power from the unit. Set the meter to read ohms. Place the positive meter lead on TP4 and the negative meter lead on ground or TP5. The ohms reading of potentiometer R123 should be +60K ohms -5K ohms.

Reconnect AC Power

With the power ON, the output voltage measured across TP4 and TP5 should be +1.9 VDC, ± 0.2 VDC.

Mode 2

Fixed Level Output (should be used with black preprinted labels that pass through the sensor).

If the Mode 1 tests are within specification, and you are still experiencing problems, place the white area of label stock and liner within the gap sensor and adjust R123 to an output voltage of +1.3 VDC, ± 0.2 VDC, measured across TP4 and TP5.

Locking Label Width Adjustment

NOTE: From June 1996, the label guides in the Model 355/8450 are set to a fixed label width at the factory. If adjustments need to be made to the label guides, you must loosen the three screws (Figure 6-5) to make your adjustments. Then tighten the screws.

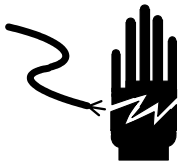
If you are experiencing problems with the gap sensor bracket (label guide) vibrating away from the label and causing printer errors, there is a modification that can be made to lock the gap sensor bracket (label guide) into place.

To lock the adjustable label guides into place:

Tools Required: Screw Driver.
3 R0253900A Washers

Note: This modification can be performed without disassembly by using a right angle screwdriver.

To Lock the Adjustable Label Guides into place:

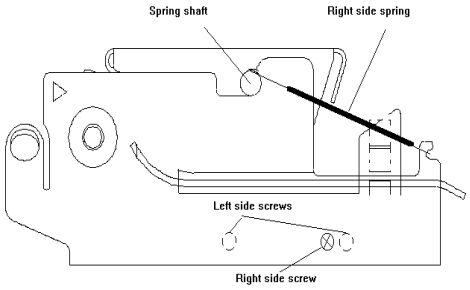


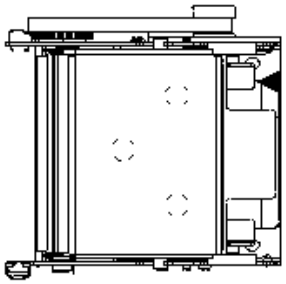
WARNING

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

CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

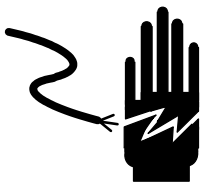




1. Disconnect AC power.
2. Disconnect printhead harness and gap sensor harness from the Main Logic PCB.
3. Unlock printhead assembly and remove both right and left side springs. Remove the right side screw and both left side screws. Remove spring shaft (shown at left) and remove printer mechanism.
4. With a screw driver, remove the three screws shown in the illustration at the left.. These screws are located on the bottom side of the gap sensor bracket toward the front of the printer.
5. Replace the existing washers with flat washer P/N R0253900A and reinstall the screws and washers. Do not tighten at this time.
6. Install labels and adjust the gap sensor bracket (label guide) to the width of the label and tighten the three screws reinstalled in Step 5.
7. Reinstall printer mechanism, right side screw, and both left side screws removed in step 3.
8. Reinstall spring shaft and springs removed in step 3.

Load Cell

Testing the load cell voltage



⚠ WARNING

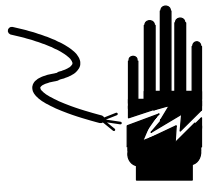
ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM.

The internal load cell can be tested for proper analog voltage input and millivolt output by measuring the voltage at connector J15 on the Main Logic PCB. To check the input voltage across +EXC & -EXC, set your meter on volts and put the positive lead on J15-6 and the negative lead on J15-9. You should be reading a steady +5.0VDC (± 0.2).

If the Excitation voltage is good, the signal output can be checked across +SIG & -SIG. Set the meter to read in millivolts (mV). Put the positive lead on J15-10 and the negative lead on J15-8. With no weight on the platter, you should read near zero volts. As you add weight to the platter, the voltage should rise and be linear if equal weight is added each time. For example, adding one pound each time should increment the voltage approximately 0.02 each time. If the output is linear and correct, but no weight is displayed, replace the Main Logic PCB. If there is no output from the load cell, but correct input voltage, replace the load cell.

Display PCB

The Display PCB voltage can be tested at the display as shown below. If the correct voltage is present at connector J1, but the display is blank, replace the Display PCB.

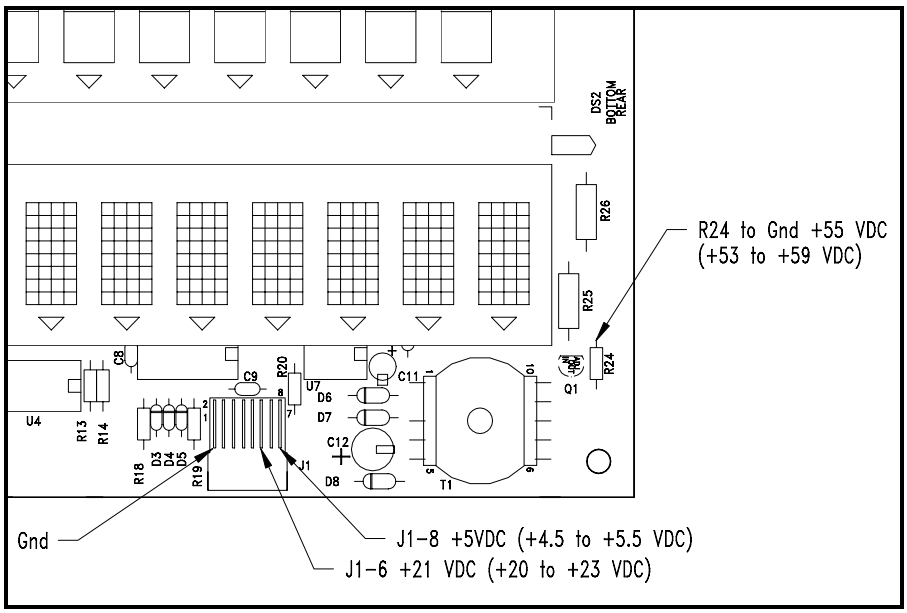


WARNING

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.

CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.



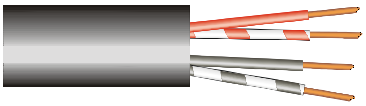
Display PCB Voltage Test Points

Testing the M/S TNET Network Wiring

When troubleshooting M/S (Master/Satellite) network online/offline symptoms, the M/S TNET (Toledo NETwork) wiring should be tested as shown in the following Test 1, Test 2, and Test 3. All scales must be disconnected from the phone jacks before making the tests. (Note: verify the cable is unshielded phone cable (UTP Category 2 or higher) as specified in Chapter 4).

Always verify the correct wire is used and that the network is wired correctly. Refer to the TNET hardware specifications in Chapter 4.

(*)=May have letter prefix.

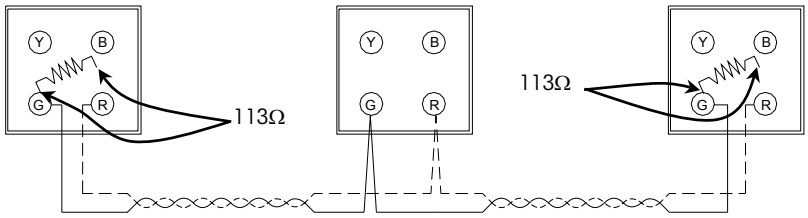


Two-Pair UTP (Unshielded Twisted Pair) Category 2 (or higher), 22-24 Gauge Cable is required for the master/satellite network.

Only one pair is used. The other pair is a spare. Do not use one wire from each pair.

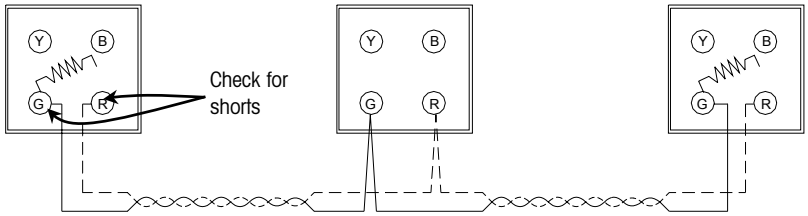
Test 1

Remove both (*)12839300A terminating resistors from one terminal in the end phone jacks. Check both terminating resistors with a meter. Each resistor must read 113 ohms (±2 ohms). If not replace the resistor.



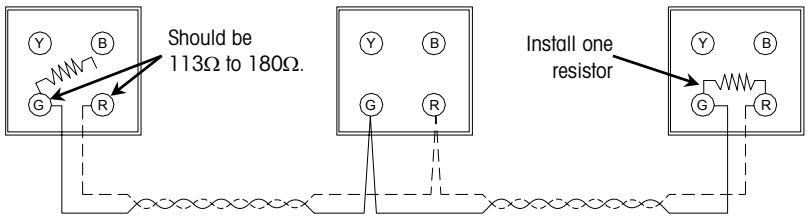
Test 2

Disconnect all scales from the network. While the resistors are off, check across the *Red* and *Green* terminals for shorts. If there is continuity or low resistance between the red and green terminals, there is a short. Isolate the short by disconnecting and testing sections of wire between phone jacks.



Test 3

With all scales disconnected from the network, install one resistor. Check the resistance between the *Red* and *Green* terminals at the end where the resistor is off. You should read between 113 and 180 ohms (depending on the cable length). Zero indicates a short in the cable or resistor. Very high or infinity resistance indicates a defective resistor or break in the cable.



Completion

Reconnect the scales to the network. Before connecting each scale, check the AC outlet with a GOT (Grounded Outlet Tester) to find any faults such as reverse polarity and bad grounds. Report any faulty outlets to the appropriate personnel for repair.

RS422 Cable Test

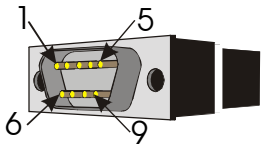
Disconnect all of the scales from the network before performing this test procedure.

Test for Shorts

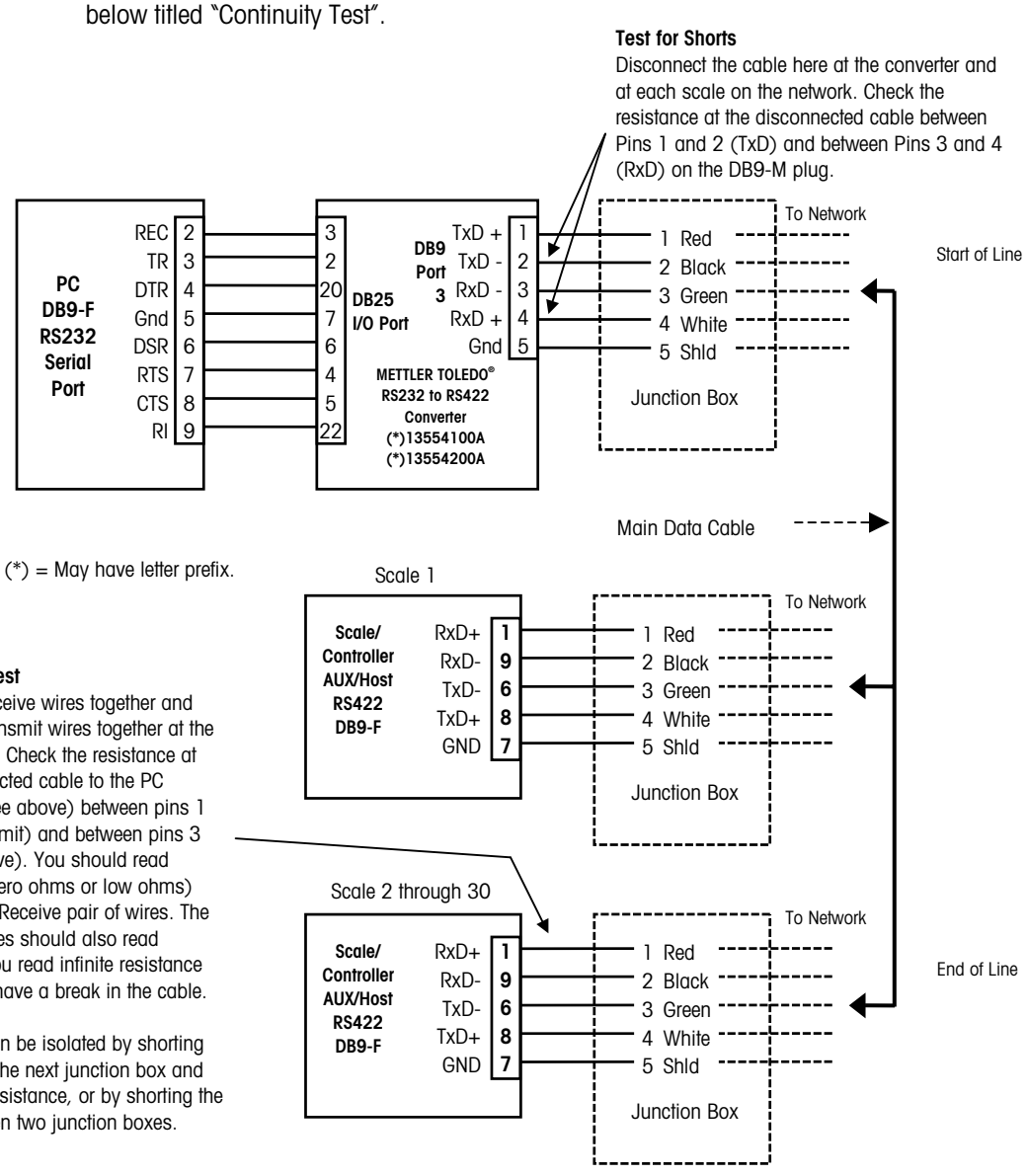
Disconnect all scales from the network at the host port (including any protection devices, converter boxes, etc.), and at the host PC. Check the resistance between all of the wires in the communication cable. Any resistance less than infinite resistance (open) indicates a possible short somewhere in the cable. If there is a short, you can isolate the short by disconnecting sections from the network and checking the resistance of the individual sections one at a time. See below "Test for Shorts".

Continuity Test

If you are experiencing off line conditions with certain scales and you have checked all other possibilities, the problem could be caused by a break in the communication cables. All of the scales must be disconnected from the network at the host port (including any protection devices, converter boxes, etc.). See the text in the illustration below titled "Continuity Test".



DB9-M Plug



Testing the RS422 Wiring

Ethernet Network Troubleshooting

General Troubleshooting

Make sure that any excess network cabling isn't coiled. This can create electromagnetic fields that could interfere with data transfers. Try to keep cables away from florescent lighting, UPS (uninterruptible power supplies), AC outlets and other sources that may produce significant electromagnetic interference.

When connecting a node to a hub, the patch cable must be straight through. Pins 1, 2, 3, and 6 at the PC should line up pin-for-pin at the other end. Category 5 cables are recommended. When connecting two hubs together with 10Base-T cables, the patch cable may need to be a crossover cable. Check with the documentation that comes with the hub.

A 10Mb hub can't connect to a 100Mb hub unless a switch is used to translate the packets between the two speeds. Some hubs can also switch between the two speeds.

10BASE-T Segments (node to hub or hub to hub) are limited to 328 ft (100 m).

A Thin Ethernet Coax backbone can be used for hub to hub connections (if the hubs have a BNC connector) up to 606 ft (185 m). If Thin Ethernet is used the coax cable must be terminated at both ends with a 50-ohm resistor.

There is a maximum of two Inter-Repeater Links between devices without using bridge or switch (A hub is a repeater) and a maximum of 4 hubs and 5 segments between any two nodes.

Hubs

Since each node on a 10 Base-T network has its own cable connecting it to a central hub, it not likely that any node can cause the entire network to fail. Most hubs have a "partitioning" function that can detect a problem on any of its ports. If a problem is found, the node is disconnected from the rest of the network to isolate the node until the problem can be corrected.

Hubs also have LEDs that indicate the status of the hub and ports. Refer to the documentation that comes with the hub for additional information.

The partitioning function built in to most hubs and the star-wired topology makes it easy to troubleshoot a 10 Base-T network. Troubleshooting can be as simple as disconnecting nodes from the hub one at a time until the network recovers. Usually, the hub will give an indication as to which node is causing a problem.

Disconnecting a node from the network will have no effect whatsoever on the rest of the network. Moving an attached device is simply a matter of unplugging it from the hub and reconnecting it somewhere else.

Most hubs have a Collision LED that indicates packet collisions are occurring. This means that two or more devices are attempting to communicate at the same time. Some collision activity is normal.

Always refer to the User's Guide shipped with the hub for detailed information on the operation and description of the LED indicators.

Some of the common LED indicators on a hub are:

Power Indicates power is on to the hub.

Link or Activity Indicates the communication between the hub's port and the transmitting node is good. Most hubs will indicate a good connection by turning the Link LED ON. If the Link LED is OFF, check the cable connections and check that you are not using the wrong cable. Try another cable on the same port. If it works, replace the cable. If the problem persists, plug the cable into another port. If it works on another port, the port may be defective. If all port Line LEDs are off, replace the hub. If the problem still persists for this one unit, check the internal connections from the Ethernet PCB to the Ethernet Jack or replace the Ethernet PCB.

Collision Indicates two or more nodes are attempting to transmit on the network at the same time. Check the cable from the hub to the node. Using a crossover cable instead of a straight through cable can cause this condition. Turn the units off, then turn them back on one at a time.

Partition Some hubs have specific partition LEDs. Others may indicate a partition by a blinking LED. If a problem is found, the node is disconnected from the rest of the network until the problem is corrected.

PING

Refer to the next section HOSTS File for additional information on PING.

Ping (Packet InterNet Groper) is a program that can be used to test the communication on a TCP/IP network by sending an echo request to a client or host. The responding unit will reply if the communication and the unit are working properly.

Ping can be run from any Windows 95® or Windows NT® PC on the network. Ping is run from the MSDOS™ Prompt or NT Command Prompt. The command line for ping is as follows:

ping *ipaddress*

(Where *ipaddress* is the IP Address number of the client or host.)

An example ping command from an NT host at the command prompt to a client with the address **109.205.104.25** is as follows:

ping 109.205.104.25

When the communications are working properly, the responding client will send a reply back to the NT host as follows:

```
Microsoft(R) Windows NT(TM)
(C) Copyright 1985-1996 Microsoft Corp.

C:\>ping 109.205.104.25

Pinging 109.205.104.25 with 32 bytes of data:

Reply from 109.205.104.25: bytes=32 time<10ms TTL=64
Reply from 109.205.104.25: bytes=32 time<10ms TTL=64
Reply from 109.205.104.25: bytes=32 time<10ms TTL=64
Reply from 109.205.104.25: bytes=32 time<10ms TTL=64

C:\>
```

Example from NT command prompt when the client does not respond:

```
C:\>ping 109.205.104.25

Pinging 109.205.104.25 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

C:\>
```

If the client does not respond, verify that the client and server IP (at the client) are correct. Try pinging another client nearby. If that unit responds, connect the patch cable from the working client to the client that does not respond. Ping the client again. If it responds suspect the patch cable or the hub. To check the hub, plug the client's patch cord at the hub to another known working port and ping the client again. If it now responds, suspect the hub port. If it still doesn't respond, replace the Ethernet PCB and retest.

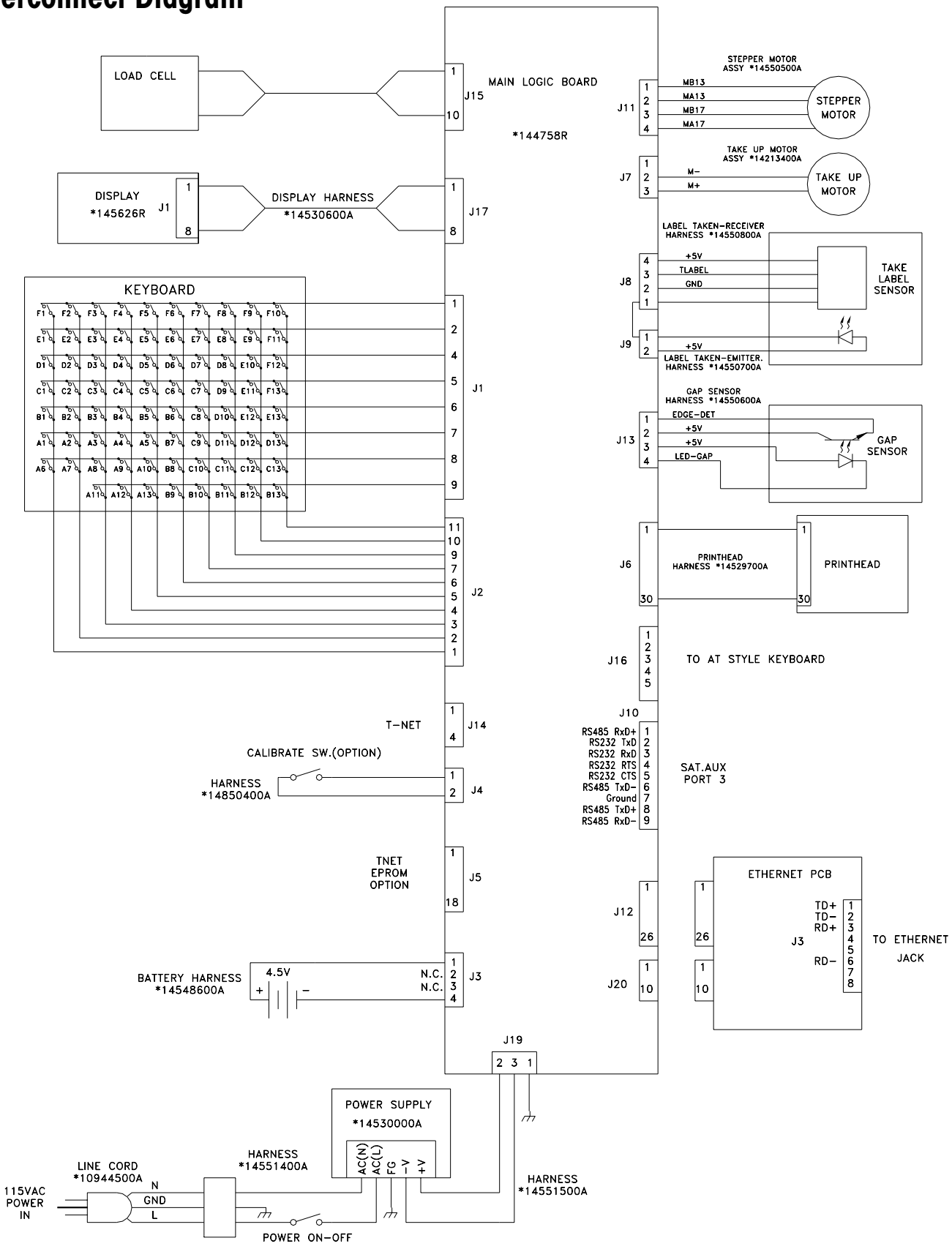
Program Error Messages

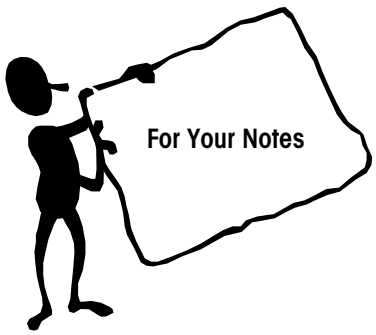
Messages preceded by an asterisk (*) are errors that require a service call.

ENGLISH	SPANISH	FRENCH	ERROR MEANING
B_GetMsg OK	B_GetMsg OK	B_GetMsg OK	Application debugging information message. Should not be seen in normal operation.
B_GetMsg ORDER *	B_GetMsg ORDER	B_GetMsg ORDER	Application debugging information message. Should not be seen in normal operation.
B_GetMsg OVERFLOW *	B_GetMsg OVERFLOW	B_GetMsg OVERFLOW	The low level assembly routine for the TNET controller has experienced an overflow of a memory location.
B_GetMsg PARAMETER *	B_GetMsg PARAMETER	B_GetMsg PARAMETER	Application debugging information message. Should not be seen in normal operation.
B_SDLC STATUS ERROR *	B_SDLC STATUS ERROR	B_SDLC STATUS ERROR	An error has occurred regarding TNET communication. **Clear** should clear the error. Check network configuration and report error.
BOUNDS *	BOUNDS.	BOUNDS.	The microprocessor has received an invalid OPCODE (instruction). The software will restart.
Command Q Overflow*	COMMAND Q OVERFLOW	COMMAND Q OVERFLOW	An overflow of commands waiting to be executed in the main microprocessor has occurred.
CONTINUOUS NT SET	ETQTA CONT NO FIJADA	CONTINUOUS NT SET	The printer has determined that continuous stock is loaded in the printer but is not selected in the software. Continuous selection will be selected.
DB REQUEST *	DB REQUEST	DB REQUEST	The application has had an error regarding a database request and will restart.
DB SYNC *	DB SYNC	DB SYNC	The application has had an error regarding the synchronization of the TNET network and will restart.
DMA TIMEOUT ERROR*	ERROR DMA	DMA TIMEOUT ERROR	Direct memory transfer between internal parts of the Satellite has taken too long. The primary communication is between the main microprocessor and the printer microprocessor. Check harnesses to the printer.
ERR:HANDLE NT FOUND *			An applicable translated message could not be found.
ESCAPE OPCODE *	ESCAPE OPCODE.	ESCAPE OPCODE.	The microprocessor has received an invalid OPCODE. The software will restart.
FLASH has errors. *	FLASH tiene error	FLASH has errors.	The FLASH has errors either writing or reading which is causing checksum errors to occur.
FLASH ver change.	FLASH ver change.	FLASH ver change.	The FLASH version number has changed. This is not an error but a statement of fact caused by a new version of software.
INT DIV BY ZERO! *	INT DIV BY ZERO!	INT DIV BY ZERO!	The microprocessor has attempted to do a division by zero. This is an application error, the software will restart.
LABEL SIZE ERROR!	ERROR TANO¥O ETQTA!	LABEL SIZE ERROR!	The printer software was unable to correctly determine when the length of the label in the printer matches the length of the label in the program. Possible causes are incorrect label size, bad gap sensors, incorrect paper path, and incorrectly adjusted sensors.
LOW STOCK!	POCAS ETQTAS!	LOW STOCK!	The printer has determined that the label stock has run out.
MISC BRAM ERROR *	ERROR BRAM MISC.	MISC BRAM ERROR	The BRAM memory area that stores miscellaneous data has had a checksum error.
NMI / FP *	NMI / FP *	NMI / FP *	Non-maskable interrupt/floating point error has occurred. Software will restart.
NO MARQUEES FOUND!	NO MARQUEES FOUND!	NO MARQUEES FOUND!	The Master has responded to the Satellites request for Marquees and reported there are none.
OVERFLOW ERROR. *	OVERFLOW ERROR.	OVERFLOW ERROR.	An overflow of a memory locations ability to store numbers has occurred. The software will restart.

ENGLISH	SPANISH	FRENCH	ERROR MEANING
PRINTER ERROR!*	ERROR IMPRESORA!	PRINTER ERROR!	The printer has not successfully completed the print task. Check the printer software and harnesses.
PTR TIMEOUT ERROR*	PTR TIMEOUT ERROR	PTR TIMEOUT ERROR	The printer microprocessor has not completed the printing tasks within the predetermined amount of time. Check harnesses to the printer.
REMOVE LABEL	RETIRE ETQTA	REMOVE LABEL	There is an obstruction to the label taken sensor on the printer mechanism.
RESTARTING... *	REINICIANDO...	RESTARTING...	Events have occurred that the application code has determined would have negative results on continued operation of the scale. The software will restart and try to correct the condition.
SW bld date change.	SW bld date change.	SW bld date change.	The build date of the application software has changed. This is a fact caused by a new version of software.
T DECREMENT ERROR *	T DECREMENT ERROR	T DECREMENT ERROR	The multi-tasker has experienced an error when switching between tasks. This is an application error.
T INCREMENT ERROR *	T INCREMENT ERROR	T INCREMENT ERROR	The multi-tasker has experienced an error when switching between tasks. This is an application error.
T_RELMEM *	T_RELMEM	T_RELMEM	The application has had an error regarding the release of memory and will restart.
T_RELRES *	T_RELRES	T_RELRES	The application has had a problem releasing resources. TNET will restart.
T_RUNTSK *	T_RUNTSK	T_RUNTSK	The application has had an error regarding a task and will restart.
TREQMEM OPCODE *	TREQMEM OPCODE.	TREQMEM OPCODE.	The microprocessor has received an invalid OPCODE. The software will restart.
TSNDMSG OPCODE *	TSNDMSG OPCODE.	TSNDMSG OPCODE.	The microprocessor has received an invalid OPCODE (instruction). The software will restart.
UNUSED OPCODE *	UNUSED OPCODE.	UNUSED OPCODE.	The microprocessor has received an invalid OPCODE (instruction), the software will restart.

Interconnect Diagram

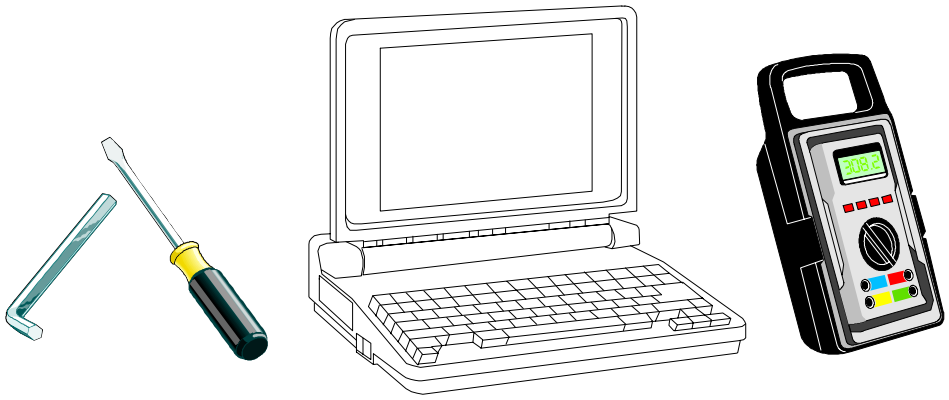



For Your Notes

6 Parts Replacement & Adjustments

Service Tools

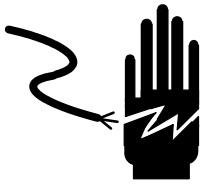
Following is a recommended list of tools that may be required to service the Model 8450.



lbf.ft = foot-pounds of torque
lbf.in = inch-pounds of torque
N.m = Newton meters of torque (S.I.)

- Metric Hex (Allen) Wrench Set (up to 6 mm) and 1/8 and 3/16 inch Hex wrenches.
- Multi-Meter for measuring volts and ohms.
- ¼ in. Nutdriver.
- Torque Wrench (Metric or SAE) for measuring up to 15 N.m, 250 lbf.in, or 25 lbf.ft.
- PC with serial ports for running Databack Software for backup and restore, and Flashpro Software for downloading the operating system software into Flash Memory.
- PC to scale cable (Refer to Chapter 5).
- Standard Slotted Screwdriver.
- #1 and #2 Phillips Screwdriver.
- Right Angle Phillips Screwdriver.
- Needle Nose Pliers.
- Static Protection Kit.
- Test weights, 30 lb or 15 kg.
- Loctite® 242 (Blue) or 243.
- 1/8 and 3/16 inch Hex Driver.
- Service Platter with holes and weight position circles (METTLER TOLEDO® part number 15368000A) for setting overload-stop gaps.
- Grounded outlet tester.

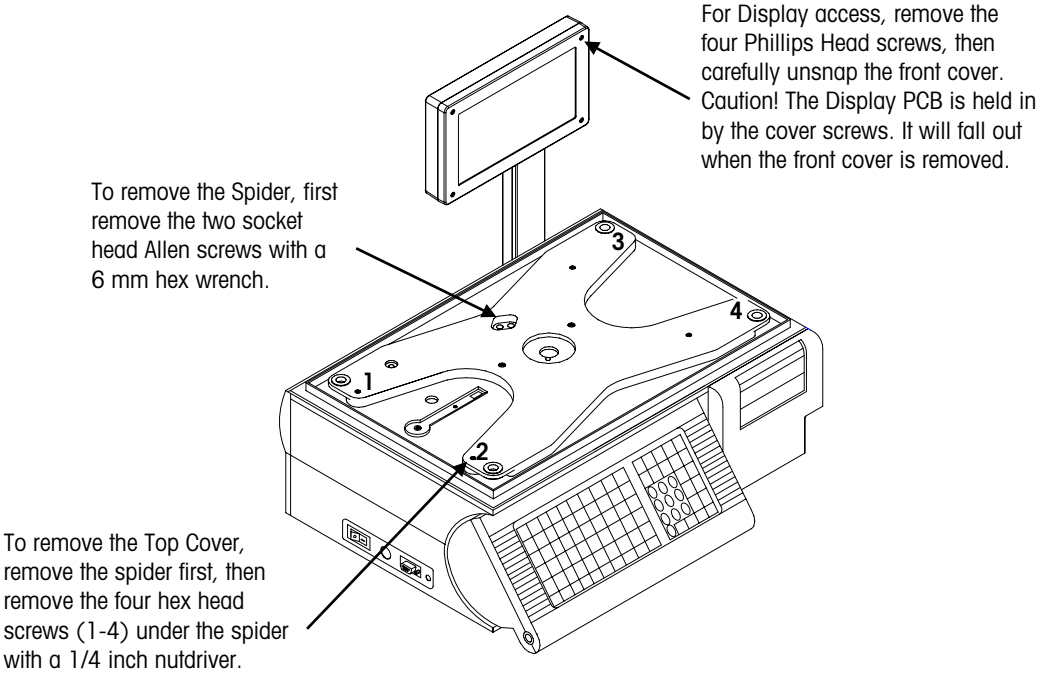
Cover Removal



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.

Refer to the illustration below for access to the Display PCB and the scale base. When removing the top cover, slightly lift the cover and disconnect the keyboard harnesses before lifting the cover off the base. When removing the display front cover, *the Display PCB must be supported before taking the cover completely off.*

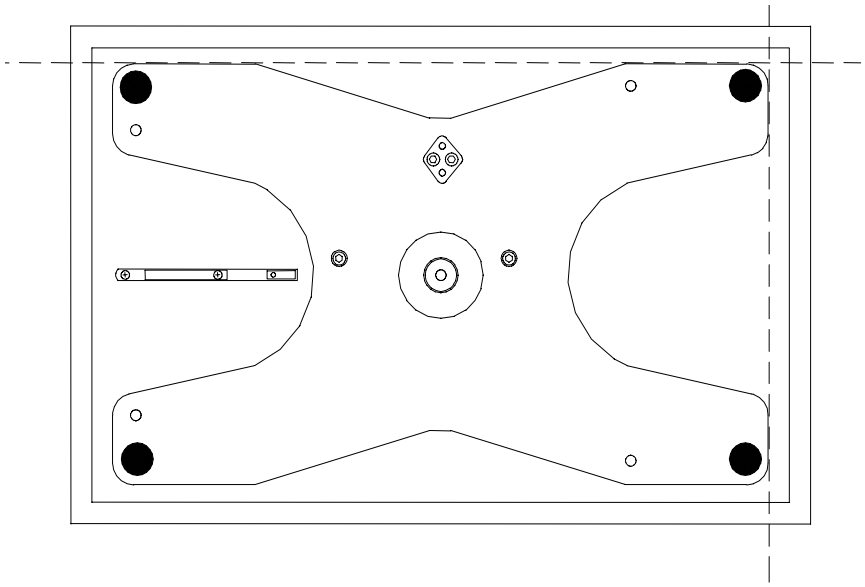


Cover Removal

Spider Replacement

lbf.in = inch-pounds of torque
lbf.ft = foot-pounds of torque
N.m = Newton-meters of torque

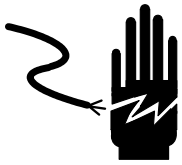
The Spider can be removed using a 6mm Hex Wrench (Allen) to remove the two M8 X 65 socket head mounting cap screws. The cap screws should be tightened to 150 - 200 lbf.in (12.5 - 17 lbf.ft, or 17 - 23 N.m) with a torque wrench. If the Spider is removed or replaced it must be installed so it is square to the top cover assembly, as shown below. ***IF THE SPIDER IS REPLACED, THE OVERLOAD STOPS MUST BE CHECKED AND ADJUSTED TO FACTORY SPECIFICATIONS AS DESCRIBED IN FOLLOWING SECTIONS.***



Aligning Spider

Load Cell Replacement

Before proceeding, set the power switch to OFF and disconnect the power cord from the AC outlet.



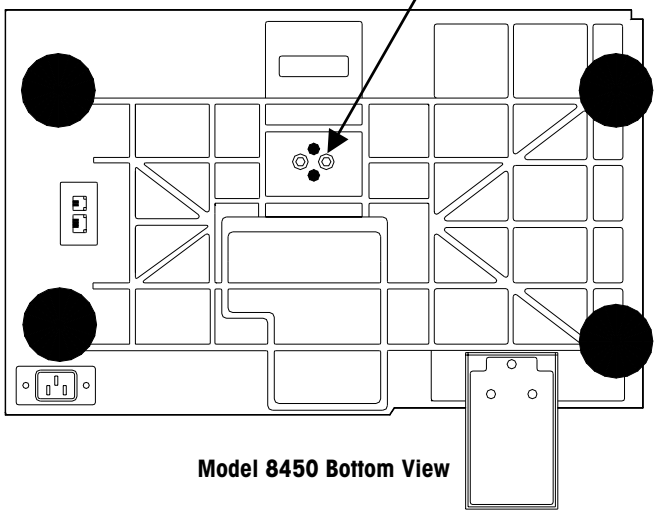
WARNING

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

lbf.in = inch-pounds of torque
lbf.ft = foot-pounds of torque
N.m = Newton-meters of torque

The Load Cell can be removed by first removing the spider, load cell spacer, and top cover, disconnecting the Load Cell harness, then removing the two socket head set screws with a 6mm Hex Wrench, as shown below. If the Load Cell is removed or replaced, it must be installed square to the base. The cap screws should be tightened to 150 - 200 lbf.in (12.5 - 17 lbf.ft, or 17 - 23 N.m) with a torque wrench. ***IF THE LOAD CELL IS REPLACED, THE OVERLOAD STOPS MUST BE CHECKED AND ADJUSTED TO FACTORY SPECIFICATIONS AS DESCRIBED IN FOLLOWING SECTIONS.***

To remove the load cell, use a 6 mm Hex Wrench to remove the two socket head Allen screws.



Model 8450 Bottom View

Overload Stops

If the Load Cell, Spider, Power Supply, or Printer assembly is replaced, the overload-stop gaps must be checked and adjusted per factory specifications. The overload protection is provided by setscrews in the spider that are designed to contact stops in the frame in the event of an overload condition. ***FAILURE TO PROPERLY CHECK AND SET THE OVERLOAD GAPS MAY RESULT IN SEVERE DAMAGE TO THE LOAD CELL IN THE EVENT OF AN OVERLOAD CONDITION.***

Tools Required

- Loctite® 242 (Blue) or 243.
- 1/8 and 3/16 inch Hex Driver.
- Three 10 lb or six 5 lb weights when calibrating in pounds, or three 5 kg weights when calibrating in kilograms.
- Service Platter with holes and weight position circles (Mettler Toledo part number 15368000A).
- Torque Wrench.

Adjustment Procedure

lbf.in = inch-pounds of torque
lbf.ft = foot-pounds of torque
N.m = Newtonmeters of torque

1. Before adjusting the overload stops, the load cell and spider mounting bolts must be torqued to 150 - 200 lbf.in (12.5 - 17 lbf.ft, or 17 - 23 N.m).
2. Install the service platter with holes (P/N 15368000A) and calibrate the scale using the test weights (20 lb or 10 kg) stacked at the center of the platter when setting span. Place the weights gently on the platter since there is no overload protection at this point. Remove the weights when calibration is complete.
3. Apply Loctite® to the adjustment screws as follows:

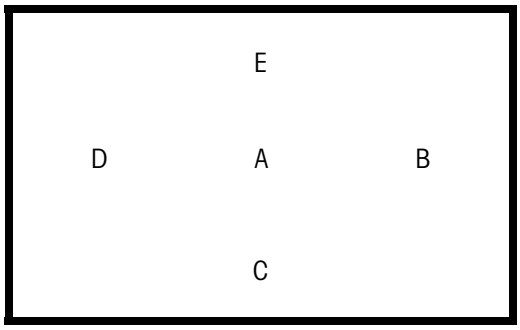
   New spiders: Apply a bead of Loctite® (Blue #242 or 243) along the full length of each of the six overload stop adjusting screws and screw them into the spider. Stop when the tip of the screw just begins to protrude from the bottom of the spider. It is not necessary to completely cover the screw threads with Loctite®, but it is important to apply it along the full length of the screw.

   Existing Spiders: When re-adjusting the stops on an existing spider, remove the adjusting screws and clean off any old Loctite from the threads. Re-apply a bead of Loctite® (Blue #242 or 243) along the full length of each of the six overload stop adjusting screws and screw them into the spider. Stop when the tip of the screw just begins to protrude from the bottom of the spider.
4. Stack the weights (six 5 lb, three 10 lb, or three 5 kg weights) at the left circle on the service platter. This position is one half the distance from the center to the edge of the platter. Apply the weights gently since there is still no overload protection.
5. Place the 1/8 inch hex driver in the left rear overload stop adjusting screw and observe that the weight display blanks with the additional weight of the tool. Turn the screw slowly clockwise until it just contacts the overload stop (indicated by the weight display showing less than 30 lb or 15 kg). Throughout this adjustment procedure, it will be necessary to remove your hand from the hex driver after turning the screw to read the display. Turn the screw counter-clockwise in very slight increments until the display just blanks. At this point, the overload stop has just disengaged. Leave the screw set at this point.

6. With the weights still on the left circle on the platter, repeat step 5 for the left front overload stop adjusting screw.
7. With the weights still on the left circle on the platter, place the 3/16 inch hex driver in the left center overload stop screw. Observe that the weight display blanks with the added weight of the tool. Turn the screw very slowly clockwise until it just contacts the overload stop (indicated by the weight display showing something less than 30 lb or 15 kg). It is important to turn this screw slowly and in small increments since the load cell can be over loaded in the upward direction if the screw is turned too far. Next, turn the setscrew counter-clockwise in very slight increments until the display just blanks. At this point, turn the screw an additional 1/8 turn counter-clockwise to provide clearance.
8. Gently place the test weights in the right circle on the special platter and repeat steps 5, 6, and 7 for the three adjusting screws on the right side of the spider.
9. Remove the weights and the special platter, and wipe any excess Loctite® from the spider. Install the standard platter and zero the scale.
10. Check the scale using the stacked weights. The scale should display 30 lb or 15 kg with the weights at the center and when the weights are located at half the distance from the center to the edge of the platter (where the circles were on the special platter). If the weights are moved closer to the edge of the platter, the scale will display less than 30 lb or 15 kg. If the scale displays 30 lb or 15 kg with the weights at the left or right edge of the platter, the overload stops are likely set with too much clearance and should be re-adjusted.

Shift Test

The shift test should be performed after calibration. Place 15 lb or 7.5 kg of test weight (½ capacity at ½ the distance) on the scale platter at point A, as shown below. Proceed with the test at points B through E, as shown in the illustration. Points B through E are midway between the center of the platter and the edge of the platter. The NIST H-44 acceptance tolerance is ±0.01 lb of any of the points B through E compared to A (1d @ ½ capacity).

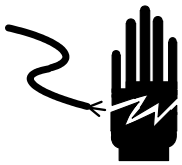


Shift Test

If the scale fails the meet the specified tolerance at one or more test points, check the load cell overload stop screws for proper adjustment and check top scale cover for proper seating and possible interference with sub-platter. If none of the above conditions exist, replace the load cell, recalibrate the scale, and recheck the shift.

Printhead Replacement

Before proceeding, turn the power switch to off, then disconnect the power cord from the AC outlet.



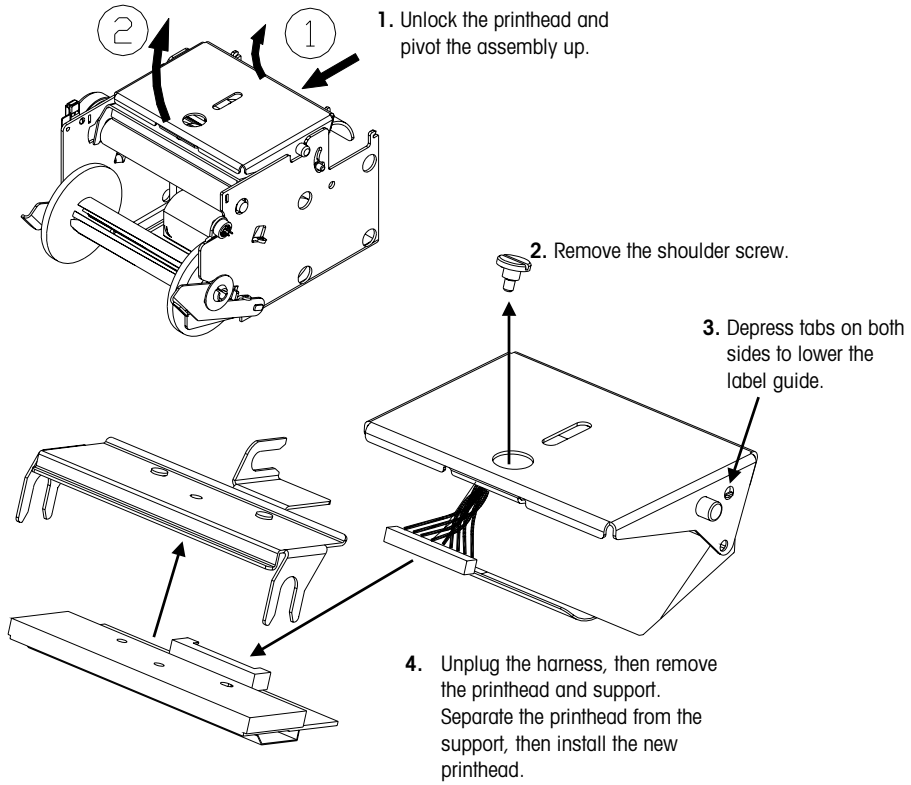
WARNING

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

CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

To replace the Printhead in the printer, follow the steps shown in the illustration below. After replacing the head, compare the Printhead Resistance Rating on the front of the Printhead with the old Printhead. If the resistance rating is different, it must be set to match the new printhead's rating.



Printhead Replacement

PRINT SPEED/DENSITY
(Varies the print speed and power to the printhead to adjust print quality.)

122.5 mm/s HIGH
122.5 mm/s HIGH-MEDIUM
122.5 mm/s LOW-MEDIUM
122.5 mm/s LOW
101.6 mm/s HIGH

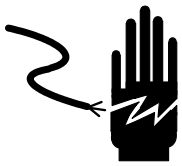
HEAD
(Select Ohms marked on the Print Head.)

>683
676-683 Ohms
669-675 Ohms
661-668 Ohms
654-660 Ohms
646-653 Ohms
639-645 Ohms
631-638 Ohms
624-630 Ohms
<624 Ohms

To set the printhead resistance for the new printhead, first press the SETUP MODE key, then press the LABEL PRINTER key. This selection is used to select the print speed, density, and resistance. Select the new setting by using the DOWN/UP keys, and ENTER to modify the selection. The selections are shown on the left.

Takeup Motor Replacement

Before proceeding, turn the power switch to off, then disconnect the power cord from the AC outlet.



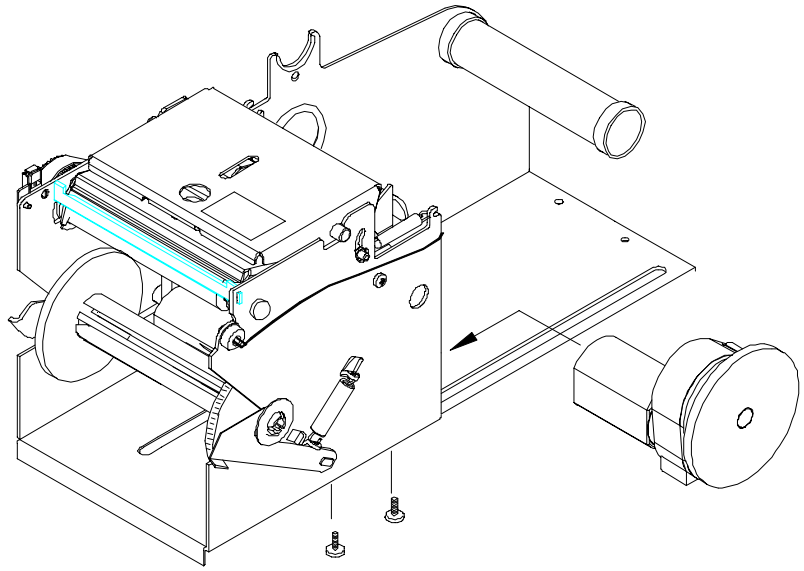
WARNING

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

CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

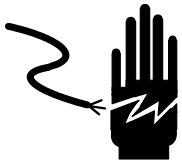
To remove the Takeup Motor assembly, remove the platter, spider, and top cover. Slide the printer forward and remove the two mounting screws on the bottom of the printer frame. Slide the motor out from the rear and disconnect the harness at the Main Logic PCB. Reverse the steps to install the new motor. Make sure gear meshes with the take up roll gear without slipping.



Takeup Motor Replacement

Stepper Motor Replacement

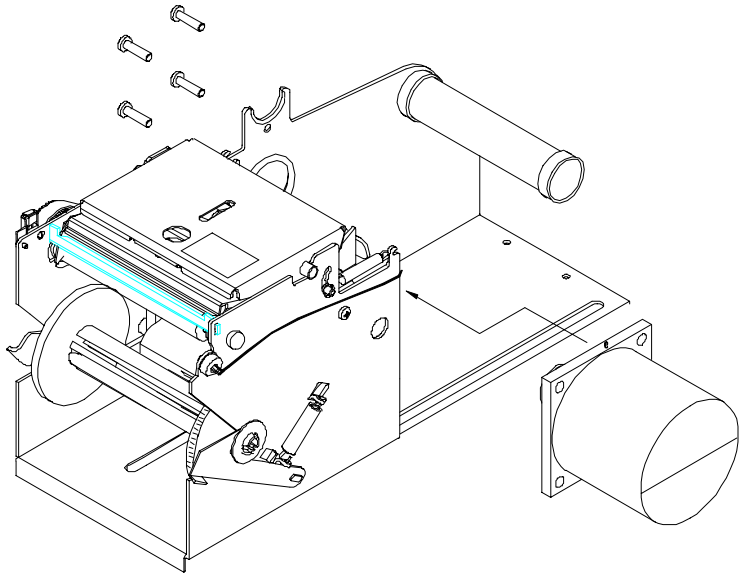
Before proceeding, turn the power switch to off, then disconnect the power cord from the AC outlet.



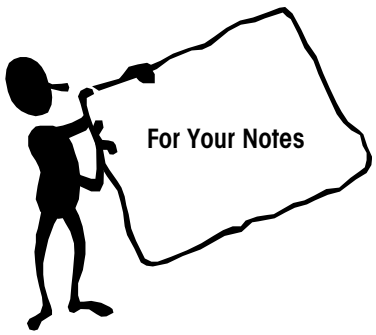
WARNING

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

To remove the Label Stepper Motor, remove the platter, spider, and top cover. Slide the printer forward. Remove the four Phillips-head screws, disconnect the motor from the Main Logic PCB, and slide the motor out the rear. Reverse the steps to install the new motor.



Stepper Motor Replacement

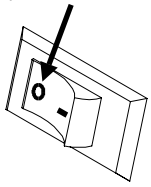

For Your Notes

7 Maintenance

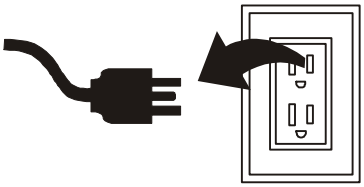
Before Performing Maintenance!

"Disconnect power" means: "*Press the **O** on the Power Switch to turn power off (1), then disconnect the AC power cord from the AC outlet (2).*"

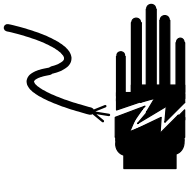
1. Press OFF on the power switch.



2. Remove the power cord from the AC outlet.



External Cleaning



⚠ WARNING

DISCONNECT ALL POWER TO THIS UNIT BEFORE INSTALLING, SERVICING, CLEANING, OR REMOVING THE FUSE. FAILURE TO DO SO COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE. DO NOT SPRAY OR WASH DOWN. HAZARD OF ELECTRICAL SHOCK OR BURN.

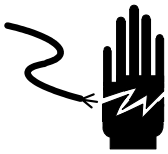
- Disconnect power.
- Use a soft clean cloth dampened with mild detergent and water, or with mild cleaner to wipe the exterior surfaces.
- **Do not spray directly on the unit**. A mild spray cleaner can be used by spraying the cleaning cloth.
- Do not use solvent or commercial cleaners on the unit. They may harm the surfaces or damage the Touchscreen.

Cleaning the Printer

Do not use a metal device to remove labels from any components. This may cause severe damage.

Do not scrape the printhead with any object to remove glue or label debris.

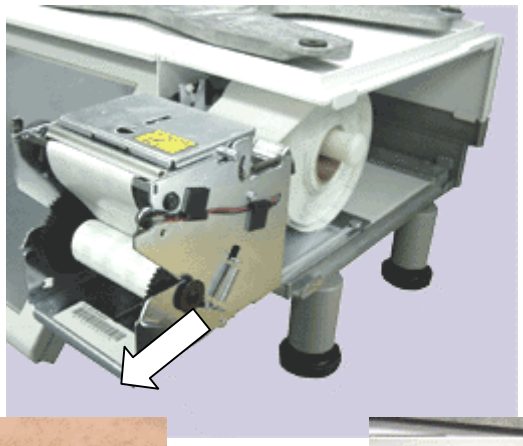
Note: Before pressing the printhead down, hold the bottom of the printer to prevent the scale from tipping if the foot clamp is not used.



⚠ WARNING

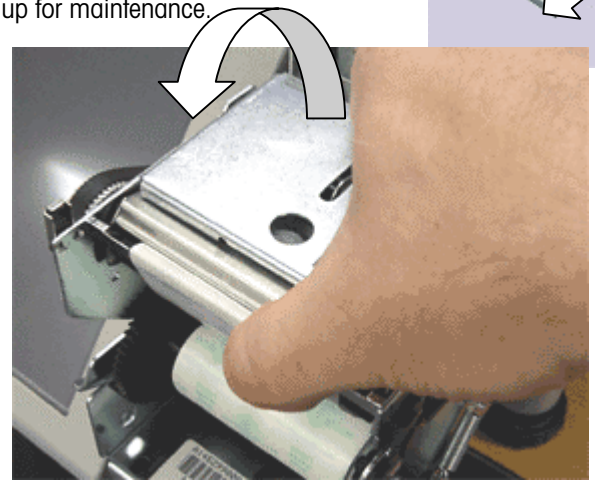
DISCONNECT ALL POWER TO THIS UNIT BEFORE INSTALLING, SERVICING, CLEANING, OR REMOVING THE FUSE. FAILURE TO DO SO COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.

- Disconnect power.
- Remove the printer access cover.
- Unlock the printhead by lifting the rear of the printhead assembly forward and up at the same time. Once the rear of the assembly is unlocked, lift the front of the printhead assembly (refer to illustrations below).
- Remove the paper stock.
- Clean the printhead, stripper edge, platen roller, and paper path. Clean the printer using the METTLER TOLEDO Cleaning Pen (P/N 082287020) or use a soft clean cloth soaked in isopropyl alcohol or METTLER TOLEDO Liquid Cleaner (P/N 12587500A) or equivalent (ISC108-B).
- To lock the printhead back down into the printing position, first lower the front of the printhead assembly down onto the platen roller. Once the front of the printhead assembly is down on the platen roller, firmly press the rear of the printhead assembly down until it snaps into place. Use even pressure across the rear of the printhead assembly so that both assemblies snap down.

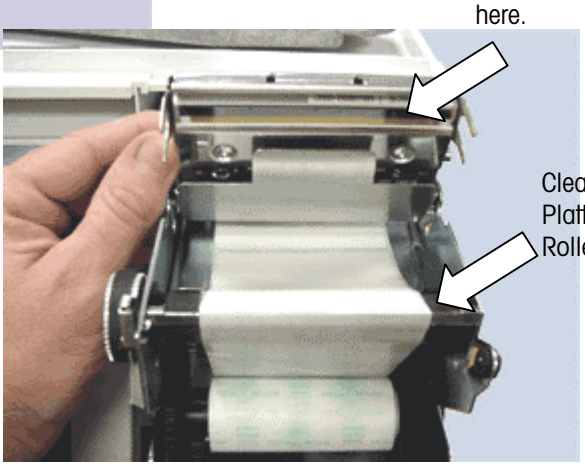


Slide the printer out for access to the printhead.

Lift the rear of the printhead assembly to unlock and pivot up for maintenance.



Clean printhead here.



Clean Platten Roller

8

Replacement Parts

This chapter lists replacement parts available from METTLER TOLEDO® Aftermarket.

The Aftermarket Operation at METTLER TOLEDO® is dedicated to satisfying every customer every time. The ISO registered facility provides quick, efficient and quality service. Aftermarket services include everything from daily parts shipments and product repairs to load cells and overhaul kits compatible with most scale manufacturers.

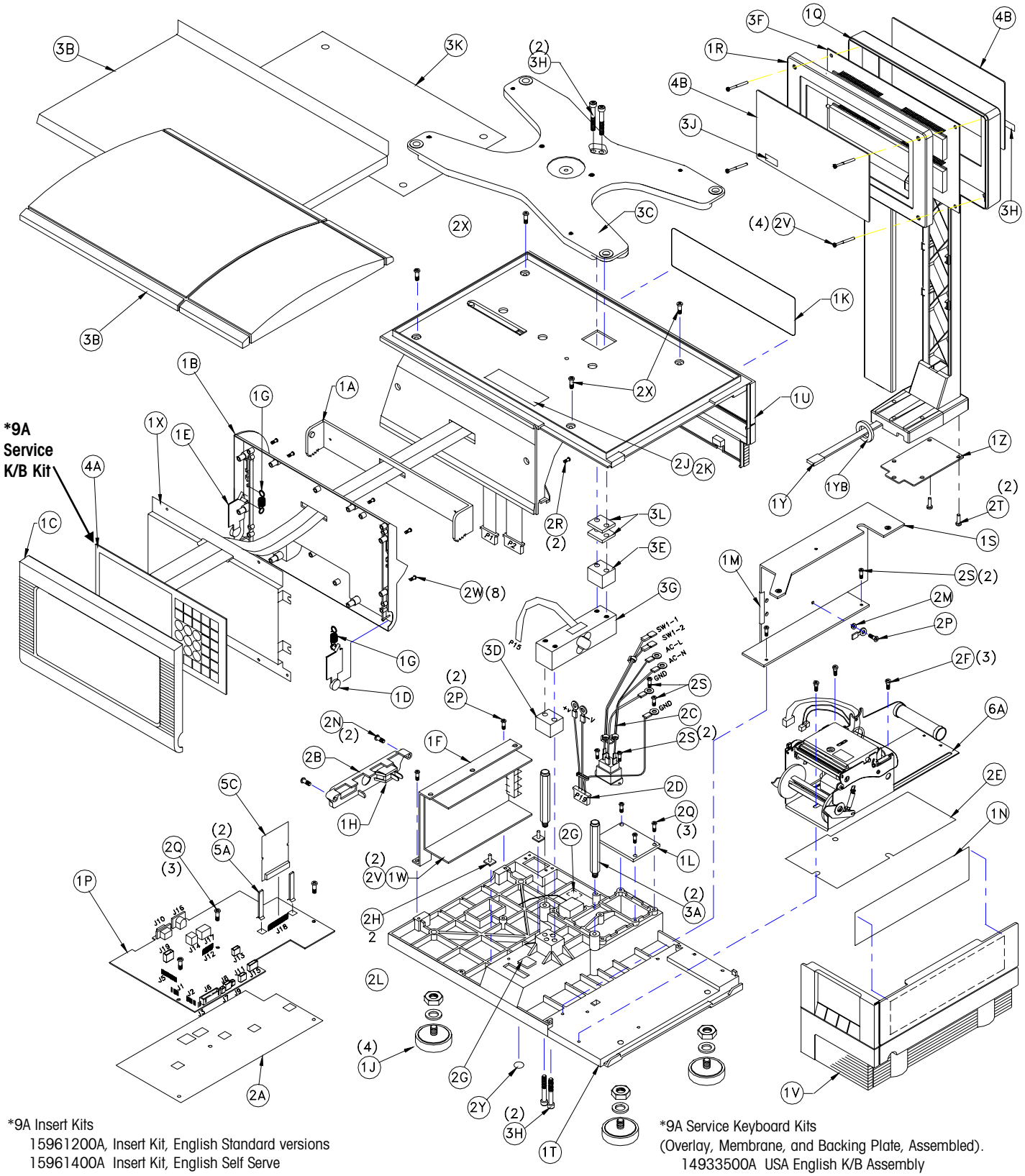
Aftermarket Services:

- Same day replacement parts shipment
- Full service repair center
- Printed circuit board repair and exchange program
- Load cell weighing solutions
- Load cell exchange program
- Mechanical scale overhaul kits
- Rental scales

Mettler-Toledo, Inc.
Aftermarket
60 Collegeview Road
Westerville, Ohio 43081
Tel: (800) 848-3992
(614) 430-2555
Fax: (800) 405-6312
(614) 438-4921

Rental
Tel: (800) 428-4310
Fax: (614) 841-5185
E-mail: rental@mt.com

8450 Base



*9A Insert Kits
15961200A, Insert Kit, English Standard versions
15961400A Insert Kit, English Self Serve
A14638100A Insert Kit, Spanish Standard versions
15648300A Insert Kit, English SSP (Self Serve Pictogram)

*9A Service Keyboard Kits
(Overlay, Membrane, and Backing Plate, Assembled).
14933500A USA English K/B Assembly
14933600A French K/B Assembly
14933700A Spanish K/B Assembly
15390600A English K/B Assembly, 8450 SS (Self Serve)

8450 Base Parts List

COMMON PARTS:			
SYM	QTY.	PART NUMBER	DESCRIPTION
1A	1	A13501200A	PIVOT
1B	1	B13501300A	BOTTOM COVER, KEYPAD
1C	1	B13501400B	TOP COVER, KEYPAD
1D	1	A13501500A	ACTUATOR, RIGHT
1E	1	A13501600A	ACTUATOR, LEFT
1F	1	13502300A	BRACKET, POWER SUPPLY
1G	2	13687300A	SPRING EXTENSION
1H	1	13688900A	SWITCH, ROCKER, SPST, 10A
1J	4	A13864600A	FOOT/NUT ASSY, 5/16-18
1K	1	14130600A	BEZEL, DECORATIVE
1L	1	14133500A	PLATE, I/O COVER
1M	3"	14166900A	TAPE, GLASS YARN
1N	1	14268000A	LABEL, LABEL THREADING
1P	1	15666800A	PCB ASSY, MAIN LOGIC (See Notes)
		A14963200A	PCB ASSY, MAIN LOGIC (See Notes)
1Q	1	14516300A	TOWER HOUSING, REAR
1R	1	14516400A	TOWER HOUSING, FRONT
1S	1	B14528900A	BRACKET, TOP COVER
1T	1	A14529100A	BASE
1U	1	E13687000A	TOP COVER ASSEMBLY
1V	1	14529500A	PRINTER DOOR ASSEMBLY
1W	1	14530000A	POWER SUPPLY
1X	1	A14530100A	BRACKET, KEYPAD BACKER
1Y	1	14530600A	HARNESS, VF DISPLAY (See Notes)
		15689200A	HARNESS, VF DISPLAY (See Notes)
1YB	1	15689400A	FERRITE BLOCK (See Notes)
1Z	1	14531000A	PLATE, BOTTOM
2A	1	14531100A	INSULATOR, MAIN PCB
2B	1	B14551200A	CONNECTOR COVER, W/SW HOLE
2C	1	A14551400A	HARNESS, A.C. POWER IN
2D	1	14551500A	HARNESS, D.C. POWER OUT
2E	1	14571800A	PRINTER FRAME SHEET
2F	3	14572100A	SCREW, 8-32 SHOULDER
2G	2	14665400A	CABLE CLAMP, FLAT
2H	2	14687900B	STANDOFF, .625 PCB
2J	1	14800000A	LABEL, DATA
2K	1	14801800A	SHIELD, LABEL, DATA
2L	1	14548600A	BATTERY, ALKALINE 4.5V
2M	1	R00589130	LOCKWASHER, #8 INT.TOOTH
2N	2	R01881130	SCREW, 8-32 X 5/8 PH.HD.
2P	3	R02180050	SCREW, 8-32 X 3/8 TAPTITE
2Q	6	R0255900A	SCREW, 8-32 X 5/16 TAP.
2R	2	R0303000A	SCREW, 8-32 X 1/2 PH.PAN ST
2S	6	R0309000A	SCREW, 6-32 X 3/8 TAP
2T	2	R0371400A	SCREW, #6 X 1/2 PH.PAN HD.
2U	2	R0374900A	SCREW, M3 X 6 PH.PAN W/LW
2V	4	R0401600A	SCREW, #4 X 1-1/4 PH.PAN HD.
2W	8	R0505900A	SCREW, 4-40 X 3/4 PH.PAN HD.
2X	4	R0517000A	SCREW, 8-32 X 3/8 HEX HD.
2Y	1	14531400A	LABEL, GROUND
(*)	1	B12363300A	SECURITY SEAL
(*)	1	12716300A	PHONE JACK, WALL MTG.
(*)	1	12716500A	CABLE, PHONE
(*)	1	A12745800A	CARD, QUALITY FEEDBACK
(*)	1	A12800700A	LABEL FORM
(*)	1	14529600A	KEYPAD ENVELOPE
(*)	1	14530200A	CLAMP, FOOT
(*)	1	B14736100A	DISK, PROGRAMMED
(*)	2	R0369800A	SCREW, 8X5/8 SELF TAP PAN HD.
(*)	3	R0514000A	SCREW, 8-32X1 PH.TT
(*)	1	14882300A	COVER, SEAL
(*)	1	R0531100A	SCREW, 8-32 X 3/4 HD.DRILLED

ADD FOR SCALE UNITS			
SYM	QTY.	PART NUMBER	DESCRIPTION
3A	2	13689200A	OVERLOAD POST ASSEMBLY
3B	1	A14529000A	PLATTER ASSEMBLY
3C	1	14529300A	SPIDER ASSEMBLY
3D	1	14529800A	SPACER, LOAD CELL
3E	1		
3F	1	B15514100A	PCB ASSEMBLY,QUAD DISP.(See Notes)
		14562700A	PCB ASSEMBLY,QUAD DISP. (See Notes)
3G	1	15515100A	LOAD CELL ASSY 22KG (See Notes)
		B14621100B	LOAD CELL ASSY 22KG (See Notes)
3H	4	R0519500A	SCREW, M8-1.25 X 65 SHCS

ADD FOR MULTI-RANGE UNITS			
SYM	QTY.	PART NUMBER	DESCRIPTION
3A	2	13689200A	OVERLOAD POST ASSEMBLY
3B	1	15110200A	PLATTER ASSEMBLY
3C	1	14529300A	SPIDER ASSEMBLY
3D	1	14529800A	SPACER, LOAD CELL
3E	1	14948900A	SPACER, LOAD CELL
3F	1	B15514100A	PCB ASSEMBLY, QUAD DISP.
3G	1	15515100B	LOAD CELL ASSY 22KG (See Notes)
		B14621100B	LOAD CELL ASSY 22KG (See Notes)
3H	4	R0519500A	SCREW, M8-1.25 X 65 SHCS
3K	1	14935100A	SHIELD, PLATTER, THERMAL
3L	2	A14647700A	SPACER, LOADCELL, EPOXY BD.

ADD FOR DEAD DECK UNITS			
SYM	QTY.	PART NUMBER	DESCRIPTION
3B	1	14075200A	DEAD DECK COVER
3F	1	B15514200A	PCB ASSEMBLY, DUAL DISP.
3J	2	14643300A	LABEL,CAPACITY 50LB/20KG

ADD FOR KEYBOARD OVERLAY/DISPLAY LENS			
SYM	QTY.	PART NUMBER	DESCRIPTION
4A	1	15119200A	OVERLAY, KEYBOARD ENGLISH
		14630000A	OVERLAY, KEYBOARD SPANISH
		14572000A	OVERLAY, KEYBOARD FRENCH
4B	2	14530900A	LENS, DISPLAY ENGLISH LB
		14943100A	LENS, DISPLAY ENGLISH KG, MR
		14627600A	LENS, DISPLAY SPANISH LB
		14627500A	LENS, DISPLAY SPANISH KG
		A14571900A	LENS, DISPLAY FRENCH KG

ADD FOR MEMORY CAPACITY			
SYM	QTY.	PART NUMBER	DESCRIPTION
5A	2	12977700A	CARD GUIDE
5C	1	14557400A	PCB ASSEMBLY, MEMORY 256K
		14613900A	PCB ASSEMBLY, MEMORY 512K
		14614000A	PCB ASSEMBLY, MEMORY 1 MEG

ADD FOR LINECORDS			
SYM	QTY.	PART NUMBER	DESCRIPTION
(*)	1	10944500A	LINECORD, RIGHT ANGLE N.AMERICA
		13902200A	LINECORD, RIGHT ANGLE EUROPE

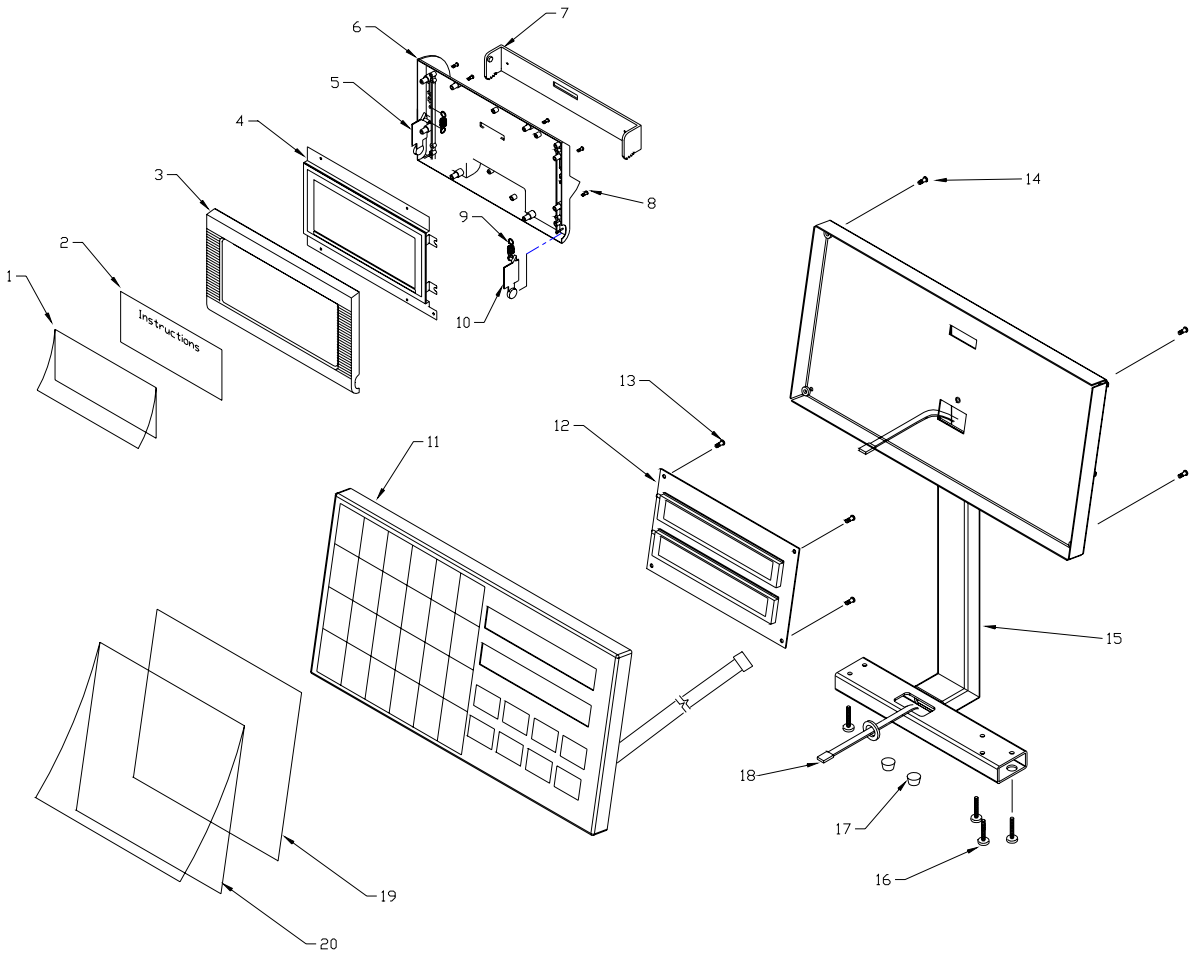
ADD FOR SOFTWARE			
SYM	QTY.	PART NUMBER	DESCRIPTION
	0	147356R	PGM,MEDIA IMAGE,SATELLITE
	0	A147046R	PGM,MEDIA IMAGE,STANDALONE

Notes for Main PCB, Load Cell, Display Harness, and Display PCB

Starting September 1, 1999 (Date Code HA or later), a new Main PCB, Load Cell, Display Harness, Ferrite Block, and Display PCB were introduced. The Display Harness with Ferrite Block and the Display PCB must be used with the new Main PCB, but are compatible with the earlier Main PCB. The Display Harness has shielded connectors and has an additional ferrite block. Do not use any of the earlier parts with the new parts. The Load Cell and Main PCB are not compatible with the earlier Load Cell and Main PCB.

8450 SSP Parts

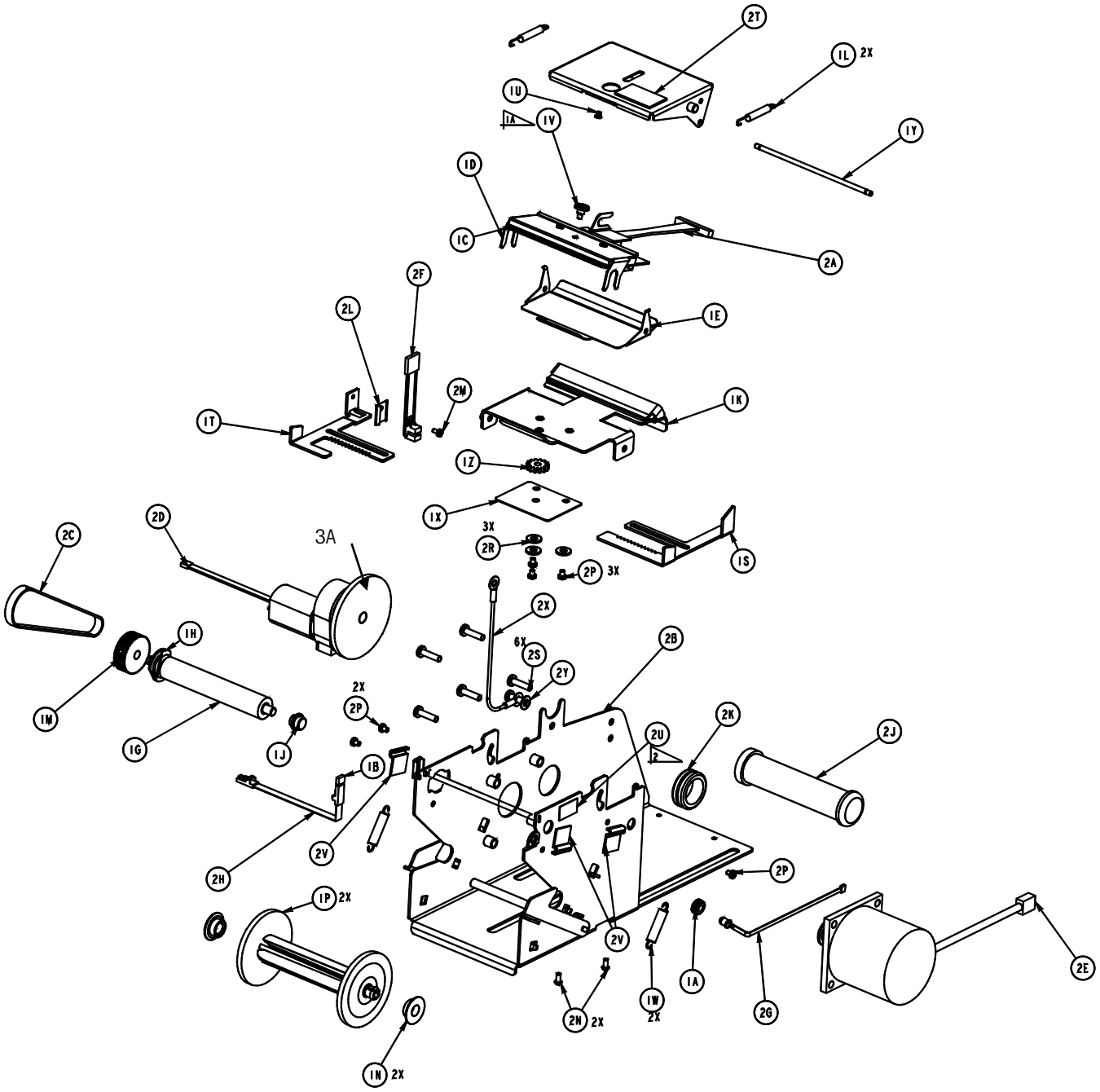
These parts are used on the 8450 SSP (Self Serve Pictogram) Scale. Refer to the main drawing for all other parts.



8450 SSP Parts List

Ref #	Part Number	Description	Qty
1	(*)15648200A	Envelope, Pocket, Base	1
2	(*)15648100A	Instructions Insert	1
3	(*)13501400B	Top Cover, Gray	1
4	(*)15647800A	Pocket Assembly	1
5	(*)13501600A	Actuator, Left	1
6	(*)13501300A	Bottom Cover, Gray	1
7	(*)13501200A	Pivot	1
8	R0505900A	Screw, 4-40 x 3/4″ PH, Pan Head	8
9	(*)13687300A	Spring	2
10	(*)13501500A	Actuator, Right	1
11	(*)15644100A	Keyboard Assembly, Gray	1
	(*)15644100B	Keyboard Assembly, White	
12	(*)15514200A	Dual Display PCB	1
13	R0516800A	Screw, M4 x 8	2
14	R0513100A	Screw, M4 x 16	5
15	(*)15629600A	Tower, Rear, Gray	1
	(*)15629600B	Tower, Rear, White	
16	R0218000A	Screw, Tower Mounting 8-32 x 3/8″	5
17	(*)10839700A	Feet, Stick On	2
18	(*)15653800A	Cable, Display, 39″	1
19	(*)15648300A	Insert, Keypad Setup	1
20	(*)15648400A	Envelope, Pocket, Keypad	1

Printer Engine
(*)14529900A



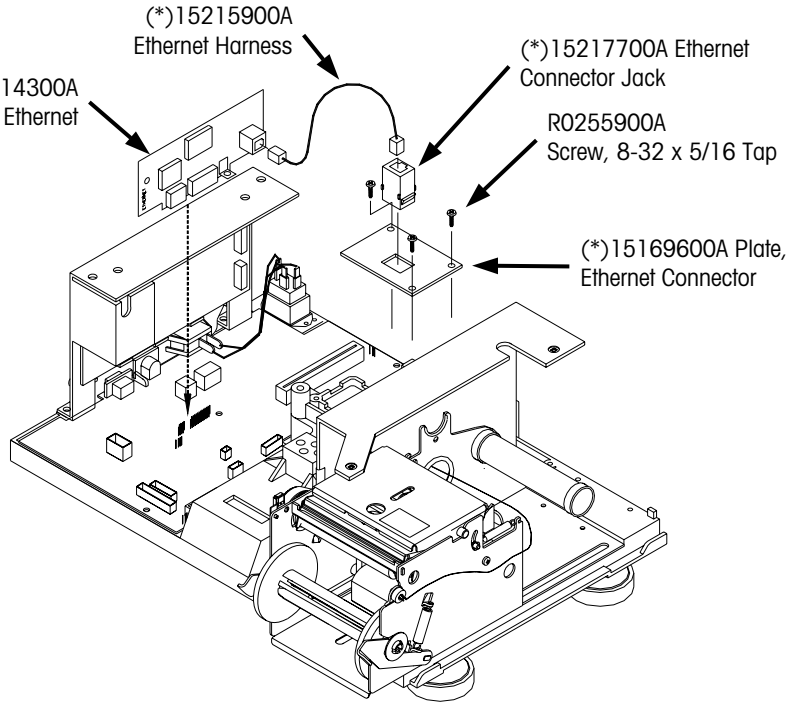
Printer Engine Parts List (*)14529900A

CONSISTS OF			
SYM	QTY	PART NUMBER	DESCRIPTION
1A	1	12462200A	GROMMET .12 ID
1B	1	14156600A	IC, OTIC, IS47IF
1C	1	A14180600A	PRINTHEAD ASSY
1D	1	A14203500A	BRACKET, PRINTHEAD MTG.
1E	1	14572200A	GUIDE, UPPER
1F	1	14203800A	BRACKET ASSY, FORCE
1G	1	14211500A	PLATEN
1H	1	A14211600A	BEARING, LEFT PLATEN
1J	1	A14211700A	BEARING, RIGHT PLATEN
1K	1	A14655600A	PAPER GUIDE ASSY, LOWER
1L	2	14212000A	SPRING, EXTENSION
1M	1	14212300A	PULLEY, PLATEN
1N	2	14212600A	BEARING, SPOOL
1P	2	14212700A	SPOOL, TAKEUP
1S	1	14213000A	GUIDE, RIGHT
1T	1	14572300A	GUIDE, LEFT
1U	1	14247900A	BUTTON
1V	1	14262600A	SCREW, PRINTHEAD MTG.
1W	2	14262700A	SPRING, EXTENSION
1X	1	14270900A	PLATE, COVER
1Y	1	14286000A	SHAFT, SPRING
1Z	1	14306900A	GEAR, RACK
2A	1	14529700A	HARNESS, PRINTHEAD
2B	1	A14550100A	FRAME ASSEMBLY
2C	1	14550200A	BELT, TIMING
2D	1	14550400A	MOTOR ASSY, LABEL TAKE-UP
2E	1	14550500A	MOTOR ASSY, STEPPER
2F	1	14550600A	HARNESS, GAP SENSOR
2G	1	14550700A	HARNESS, EMITTER, LABEL
2H	1	14550800A	HARNESS, RECEIVER, LABEL
2J	1	14551100A	HOLDER, LABEL SPOOL
2K	1	14571400A	GROMMET, .88 DIA
2L	1	14625000A	CLIP, SENSOR
2M	1	R0521700A	SCREW, PH PAN HD, M2.5 x 5
2N	2	R0521600A	SCREW, PH FL HD, 4 x .38
2P	6	R0379300A	SCREW, PH PAN HD, M3 x 4
2R	3	R0253900A	WASHER, NO.8 FLAT
2S	6	R0515100A	SCREW, PH PAN HD, M4 x 16
2T	1	12801200A	LABEL, CAUTION HOT
2U	1	13134200A	LABEL
	3	09591500A	CLAMP, BAND, 2.88"
2V	3	14274800A	CLIP, HALF U, .125 DIA
	0	14930800A	FIXTURE, LABEL GUIDE
2X	1	14833100A	ESD GND WIRE
2Y	1	R00589130	LOCK WASHER #8

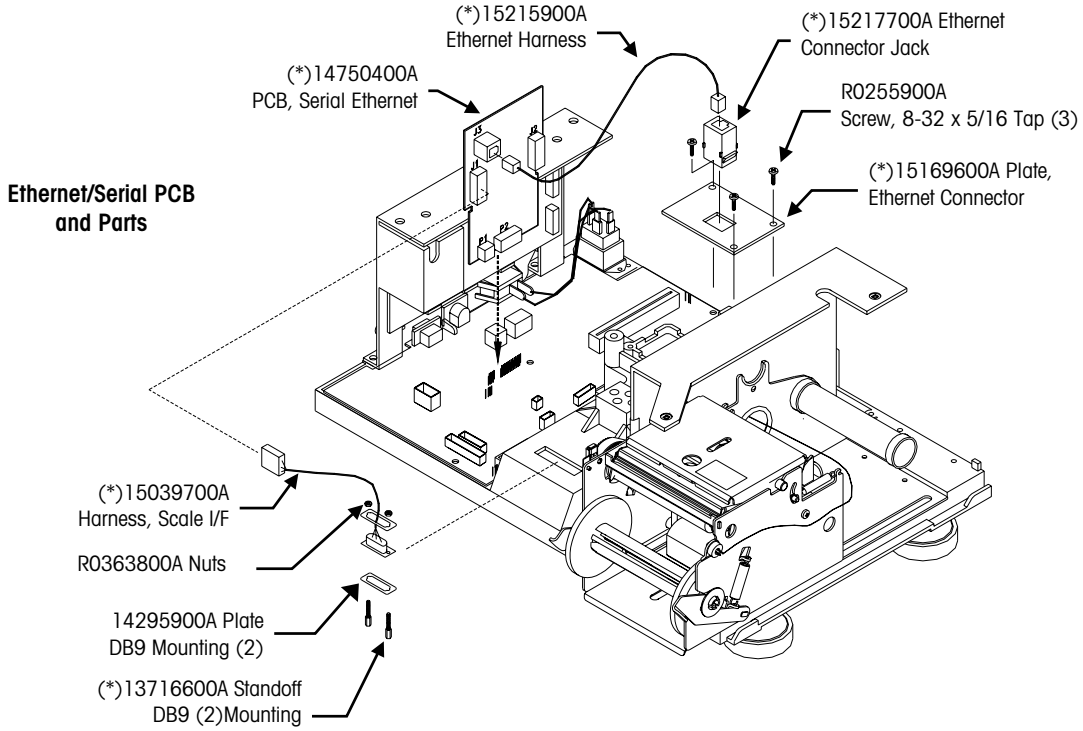
3A Gear Only 14551000A
Set Screw R0375600A

Ethernet Parts

Ethernet PCB and Parts



Ethernet/Serial PCB and Parts



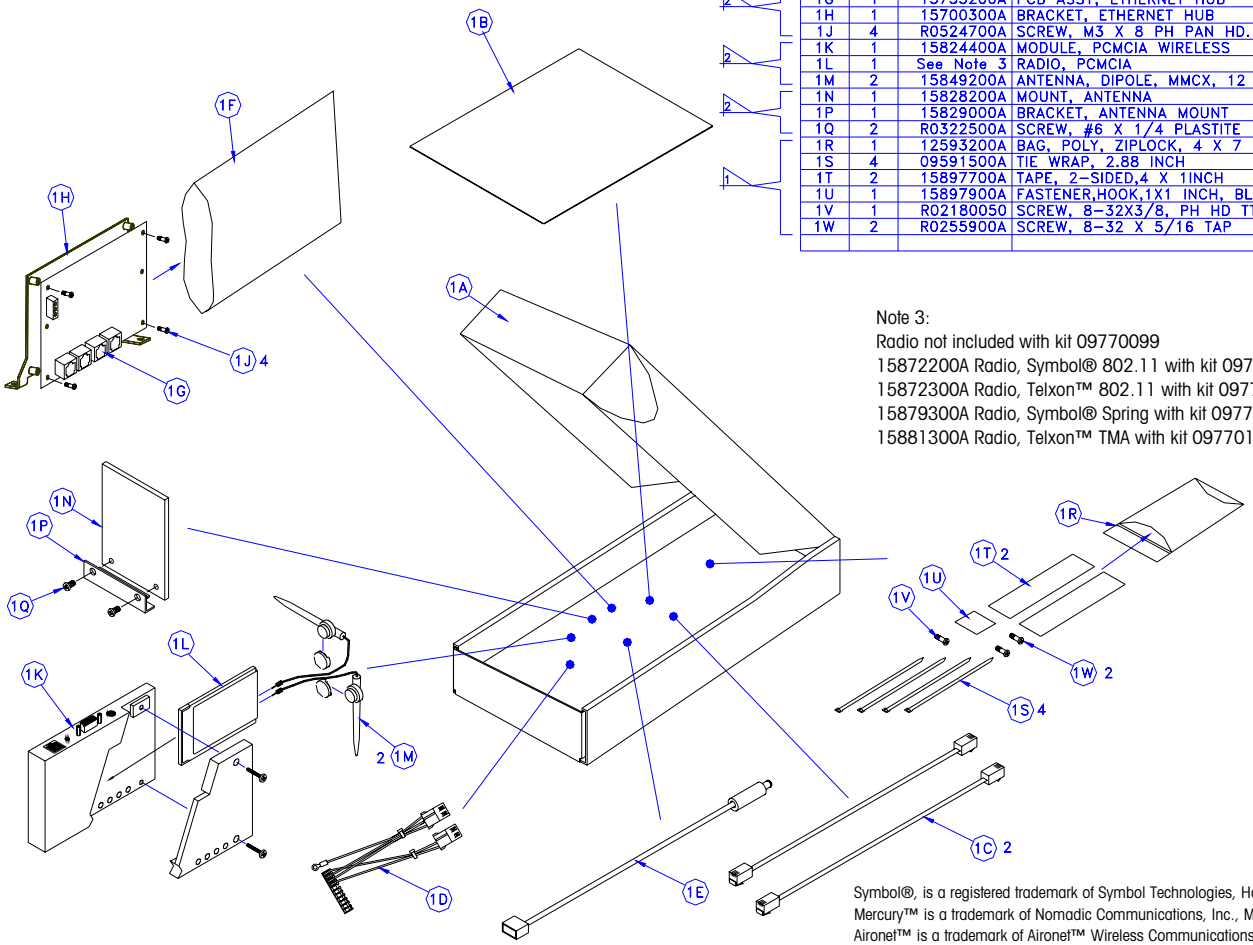
Ethernet RF Parts

First Version

NOTES (UNLESS OTHERWISE SPECIFIED)

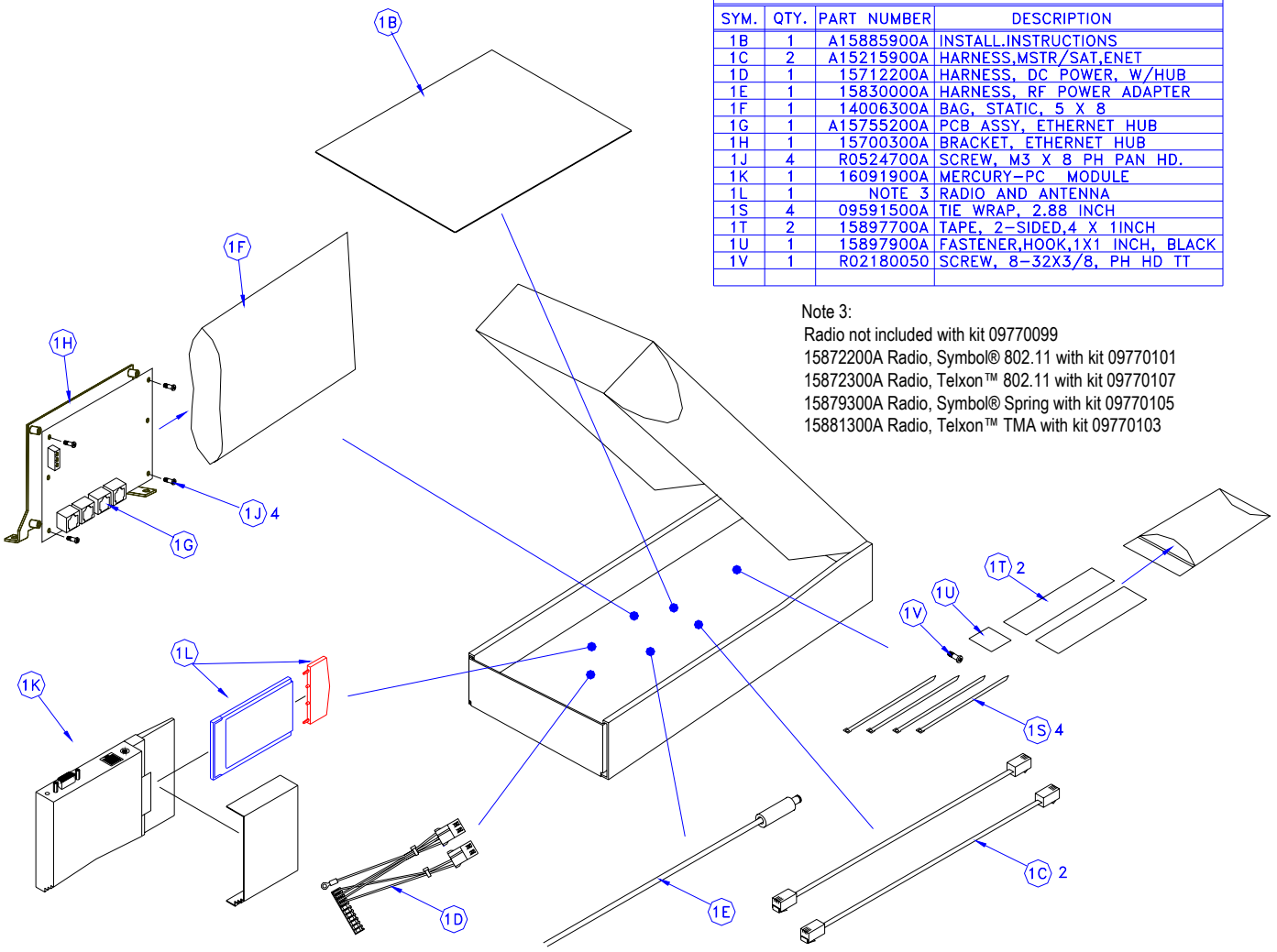
1. PACKAGE PARTS IN SMALL PLASTIC BAG.
2. ASSEMBLE THESE PARTS TOGETHER PRIOR TO SHIPPING.

SYM.	QTY.	PART NUMBER	DESCRIPTION
1A	1	13768100A	SHIPPING CONTAINER 15x8x2
1B	1	15885900A	INSTALL.INSTRUCTIONS
1C	2	15215900A	HARNESS,MSTR/SAT,ENET
1D	1	15712200A	HARNESS, DC POWER, W/HUB
1E	1	15830000A	HARNESS, RF POWER ADAPTER
1F	1	14006300A	BAG, STATIC, 5 X 8
1G	1	15755200A	PCB ASSY, ETHERNET HUB
1H	1	15700300A	BRACKET, ETHERNET HUB
1J	4	R0524700A	SCREW, M3 X 8 PH PAN HD.
1K	1	15824400A	MODULE, PCMCIA WIRELESS
1L	1	See Note 3	RADIO, PCMCIA
1M	2	15849200A	ANTENNA, DIPOLE, MMCX, 12 IN.
1N	1	15828200A	MOUNT, ANTENNA
1P	1	15829000A	BRACKET, ANTENNA MOUNT
1Q	2	R0322500A	SCREW, #6 X 1/4 PLASTITE
1R	1	12593200A	BAG, POLY, ZIPLOCK, 4 X 7
1S	4	09591500A	TIE WRAP, 2.88 INCH
1T	2	15897700A	TAPE, 2-SIDED,4 X 1INCH
1U	1	15897900A	FASTENER,HOOK,1X1 INCH, BLACK
1V	1	R02180050	SCREW, 8-32X3/8, PH HD TT
1W	2	R0255900A	SCREW, 8-32 X 5/16 TAP



Note 3:
Radio not included with kit 09770099
15872200A Radio, Symbol® 802.11 with kit 09770101
15872300A Radio, Telxon™ 802.11 with kit 09770107
15879300A Radio, Symbol® Spring with kit 09770105
15881300A Radio, Telxon™ TMA with kit 09770103

Second Version



CONSISTS OF:			
SYM.	QTY.	PART NUMBER	DESCRIPTION
1B	1	A15885900A	INSTALL.INSTRUCTIONS
1C	2	A15215900A	HARNESS,MSTR/SAT,ENET
1D	1	15712200A	HARNESS, DC POWER, W/HUB
1E	1	15830000A	HARNESS, RF POWER ADAPTER
1F	1	14006300A	BAG, STATIC, 5 X 8
1G	1	A15755200A	PCB ASSY, ETHERNET HUB
1H	1	15700300A	BRACKET, ETHERNET HUB
1J	4	R0524700A	SCREW, M3 X 8 PH PAN HD.
1K	1	16091900A	MERCURY-PC MODULE
1L	1	NOTE 3	RADIO AND ANTENNA
1S	4	09591500A	TIE WRAP, 2.88 INCH
1T	2	15897700A	TAPE, 2-SIDED,4 X 1INCH
1U	1	15897900A	FASTENER,HOOK,1X1 INCH, BLACK
1V	1	R02180050	SCREW, 8-32X3/8, PH HD TT

Note 3:
Radio not included with kit 09770099
15872200A Radio, Symbol® 802.11 with kit 09770101
15872300A Radio, Telxon™ 802.11 with kit 09770107
15879300A Radio, Symbol® Spring with kit 09770105
15881300A Radio, Telxon™ TMA with kit 09770103

9 Label Formats

Abbreviations

The following abbreviations will be used in the default label style list.

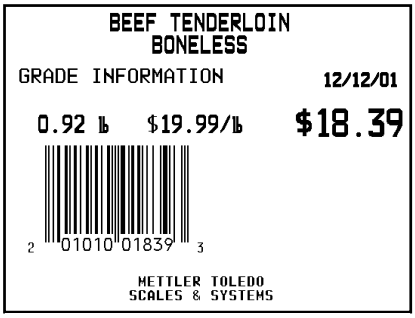
BCB	Bar Code on Bottom
By Cnt	By Count Pricing
By Wght	By Weight Pricing
Cont	Continuous Strip Label
Grd	Grade
NF	Nutrifact Text
Pack	Pack Date
Sell	Sell By Date
SH	Safe Handling Text Printed by 8461.
SHS	Safe Handling Space on Preprinted labels.
Std Pck	Standard Pack Pricing

Cross Reference

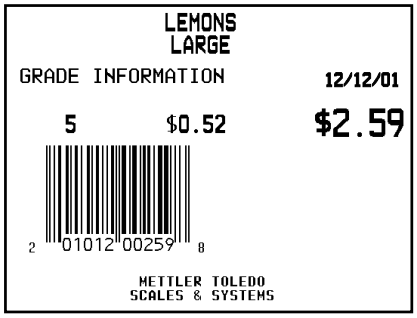
8450 Reference Number	Size	Type	Date	Other Info	BC Position	8461 Reference Name
31	1.9"	By Wght	Sell	Grd		1.9" By Wght Sell Grd
32	1.9"	By Cnt	Sell	Grd		1.9" By Cnt Sell Grd
33	1.9"	Std Pck	Sell	Grd		1.9" Std Pck Sell Grd
34	1.9"	By Wght				1.9" By Wght
35	1.9"	By Cnt				1.9" By Cnt
36	1.9"	Std Pck				1.9" Std Pck
37	1.9"	By Wght	Pack	Grd		1.9" By Wght Pack Grd
38	1.9"	By Cnt	Pack	Grd		1.9" By Cnt Pack Grd
39	1.9"	Std Pck	Pack	Grd		1.9" Std Pck Pack Grd
40	2.1"	By Wght	Sell	Grd		2.1" By Wght Sell Grd
41	2.1"	By Cnt	Sell	Grd		2.1" By Cnt Sell Grd
42	2.1"	Std Pck	Sell	Grd		2.1" Std Pck Sell Grd
43	2.1"	By Wght				2.1" By Wght
44	2.1"	By Cnt				2.1" By Cnt
45	2.1"	Std Pck				2.1" Std Pck
46	2.1"	By Wght	Pack	Grd		2.1" By Wght Pack Grd
47	2.1"	By Cnt	Pack	Grd		2.1" By Cnt Pack Grd
48	2.1"	Std Pck	Pack	Grd		2.1" Std Pck Pack Grd
49	2.4"	By Wght	Sell	Grd		2.4" By Wght Sell Grd
50	2.4"	By Cnt	Sell	Grd		2.4" By Cnt Sell Grd
51	2.4"	Std Pck	Sell	Grd		2.4" Std Pck Sell Grd
52	2.4"	By Wght	Sell	Grd	BCB	2.4" By Wght Sell Grd BCB
53	2.4"	By Cnt	Sell	Grd	BCB	2.4" By Cnt Sell Grd BCB
54	2.4"	Std Pck	Sell	Grd	BCB	2.4" Std Pck Sell Grd BCB
55	2.4"	By Wght	Sell	Grd		2.4" By Wght Sell Grd
56	2.4"	By Cnt	Sell	Grd		2.4" By Cnt Sell Grd
57	2.4"	Std Pck	Sell			2.4" Std Pck Sell
58	2.4"	BW	Sell	Grd	BCB	2.4" BW Sell Grd BCB
59	2.4"	By Cnt	Sell	Grd	BCB	2.4" By Cnt Sell Grd BCB
60	2.4"	Std Pck	Sell		BCB	2.4" Std Pck Sell BCB
61	2.4"	By Wght	Sell	Grd	SH	2.4" By Wght Sell Grd SH
62	2.4"	By Wght	Sell	Grd	SHS	2.4" By Wght Sell Grd SHS
63	3.3"	By Wght	Sell	Grd		3.3" By Wght Sell Grd
64	3.3"	By Cnt	Sell	Grd		3.3" By Cnt Sell Grd
65	3.3"	Std Pck	Sell	Grd		3.3" Std Pck Sell Grd
66	3.3"	By Wght	Sell	Grd	BCB	3.3" By Wght Sell Grd BCB
67	3.3"	By Cnt	Sell	Grd	BCB	3.3" By Cnt Sell Grd BCB
68	3.3"	Std Pck	Sell	Grd	BCB	3.3" Std Pck Sell Grd BCB
69	3.3"	By Wght	Sell	Grd	SH	3.3" By Wght Sell Grd SH
70	3.3"	By Wght	Sell	Grd	SHS	3.3" By Wght Sell Grd SHS
71	3.7"	By Wght	Sell	Grd		3.7" By Wght Sell Grd
72	3.7"	By Cnt	Sell	Grd		3.7" By Cnt Sell Grd
73	3.7"	Std Pck	Sell	Grd		3.7" Std Pck Sell Grd
74	3.7"	By Wght	Sell	Grd	BCB	3.7" By Wght Sell Grd BCB
75	3.7"	By Cnt	Sell	Grd	BCB	3.7" By Cnt Sell Grd BCB
76	3.7"	Std Pck	Sell	Grd	BCB	3.7" Std Pck Sell Grd BCB
77	3.7"	By Wght	Sell	Grd	SH	3.7" By Wght Sell Grd SH
78	3.7"	By Wght	Sell	Grd	SHS	3.7" By Wght Sell Grd SHS
79	3.7"	By Wght	Sell	NF		3.7" By Wght Sell NF
80	3.7"	By Cnt	Sell	NF		3.7" By Cnt Sell NF

8450 Reference Number	Size	Type	Date	Other Info	BC Position	8461 Reference Name
81	4.2"	By Wght	Sell	Grd		4.2" By Wght Sell Grd
82	4.2"	By Cnt	Sell	Grd		4.2" By Cnt Sell Grd
83	4.2"	Std Pck	Sell	Grd		4.2" Std Pck Sell Grd
84	4.2"	By Wght	Sell	Grd	BCB	4.2" By Wght Sell Grd BCB
85	4.2"	By Cnt	Sell	Grd	BCB	4.2" By Cnt Sell Grd BCB
86	4.2"	Std Pck	Sell	Grd	BCB	4.2" Std Pck Sell Grd BCB
87	4.2"	By Wght	Sell	Grd	SH	4.2" By Wght Sell Grd SH
88	4.2"	By Wght	Sell	Grd	SHS	4.2" By Wght Sell Grd SHS
89	4.2"	By Wght	Sell	Grd	NF	4.2" By Wght Sell Grd NF
90	4.2"	By Cnt	Sell	Grd	NF	4.2" By Cnt Sell Grd NF
91	4.2"	Std Pck	Sell	NF		4.2" Std Pck Sell NF
92	4.7"	By Wght	Sell	Grd		4.7" By Wght Sell Grd
93	4.7"	By Cnt	Sell	Grd		4.7" By Cnt Sell Grd
94	4.7"	Std Pck	Sell	Grd		4.7" Std Pck Sell Grd
95	4.7"	By Wght	Sell	Grd	BCB	4.7" By Wght Sell Grd BCB
96	4.7"	By Cnt	Sell	Grd	BCB	4.7" By Cnt Sell Grd BCB
97	4.7"	Std Pck	Sell	Grd	BCB	4.7" Std Pck Sell Grd BCB
98	4.7"	By Wght	Sell	Grd	SH	4.7" By Wght Sell Grd SH
99	4.7"	By Wght	Sell	Grd	SHS	4.7" By Wght Sell Grd SHS
100	4.7"	By Wght	Sell	Grd	NF	4.7" By Wght Sell Grd NF
101	4.7"	By Cnt	Sell	Grd	NF	4.7" By Cnt Sell Grd NF
102	4.7"	Std Pck	Sell	Grd	NF	4.7" Std Pck Sell Grd NF
103	5.1"	By Wght	Sell	Grd		5.1" By Wght Sell Grd
104	5.1"	By Cnt	Sell	Grd		5.1" By Cnt Sell Grd
105	5.1"	Std Pck	Sell	Grd		5.1" Std Pck Sell Grd
106	5.1"	By Wght	Sell	Grd	BCB	5.1" By Wght Sell Grd BCB
107	5.1"	By Cnt	Sell	Grd	BCB	5.1" By Cnt Sell Grd BCB
108	5.1"	Std Pck	Sell	Grd	BCB	5.1" Std Pck Sell Grd BCB
109	5.1"	By Wght	Sell	Grd	SH	5.1" By Wght Sell Grd SH
110	5.1"	By Wght	Sell	Grd	SHS	5.1" By Wght Sell Grd SHS
111	5.1"	By Wght	Sell	Grd	NF	5.1" By Wght Sell Grd NF
112	5.1"	By Cnt	Sell	Grd	NF	5.1" By Cnt Sell Grd NF
113	5.1"	Std Pck	Sell	Grd	NF	5.1" Std Pck Sell Grd NF
114	Cont	By Wght	Sell	BCB		Cont By Wght Sell BCB
115	Cont	By Cnt	Sell	BCB		Cont By Cnt Sell BCB
116	Cont	Std Pck	Sell	BCB		Cont Std Pck Sell BCB
117	Cont	By Wght	Sell	SH	BCB	Cont By Wght Sell SH BCB
118	Cont	By Wght	Sell	NF	BCB	Cont By Wght Sell NF BCB
119	Cont	By Cnt	Sell	NF	BCB	Cont By Cnt Sell NF BCB
120	Cont	Std Pck	Sell	NF	BCB	Cont Std Pck Sell NF BCB
121	Receipt					Receipt

1.9 Inch (48.3 mm) Label Formats

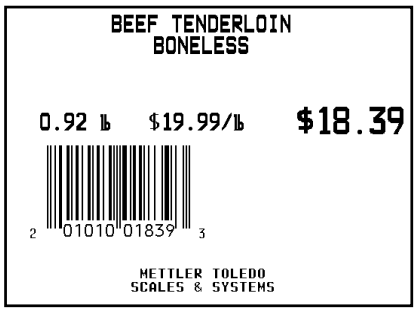


31 By Weight/Prepack (Sell By Date)

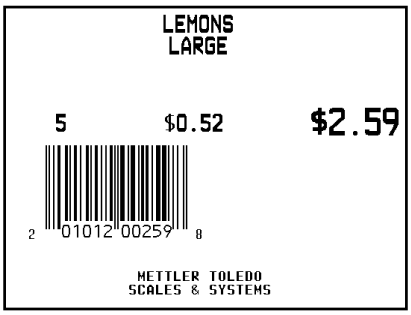


32 - By Count (Sell By Date)

33 - Standard Pack (Sell By Date)

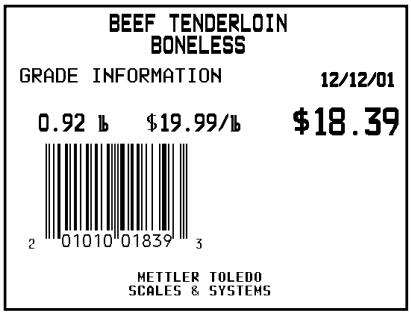


34 - By Weight/Prepack

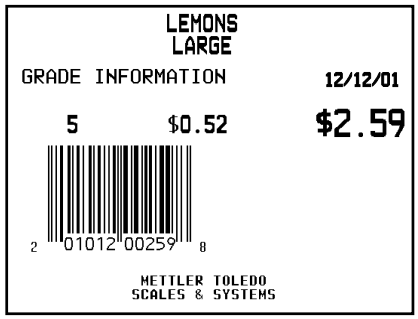


35 - By Count

36 - Standard Pack



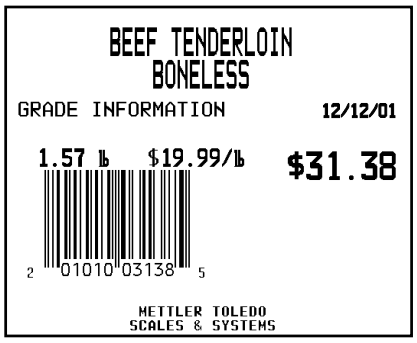
37 - By Weight/Prepack (Pack Date)



38 - By Count (Pack Date)

39 - Standard Pack (Pack Date)

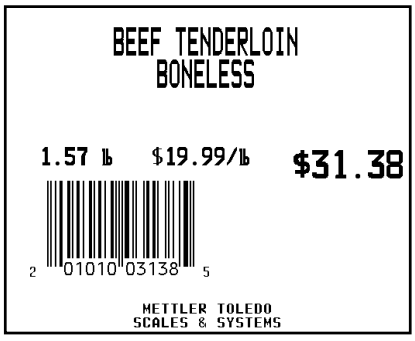
2.1 Inch (53.3 mm) Label Formats



40 By Weight/Prepack (Sell By Date)

41 By Count (Sell By Date)

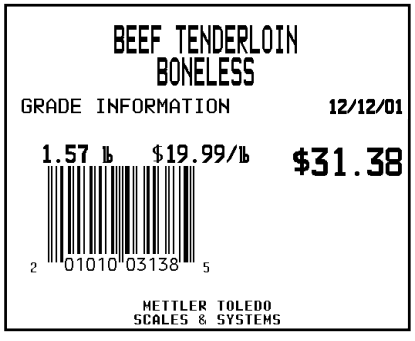
42 Standard Pack (Sell By Date)



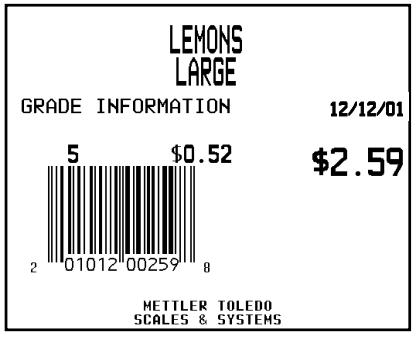
43 By Weight/Prepack

44 By Count

45 Standard Pack



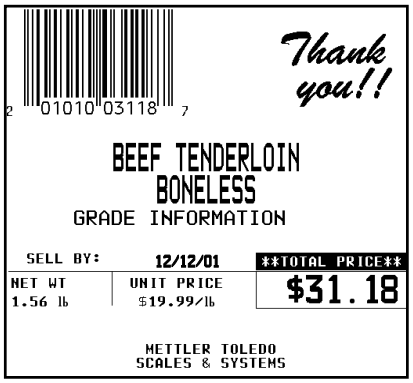
46 By Weight/Prepack (Pack Date)



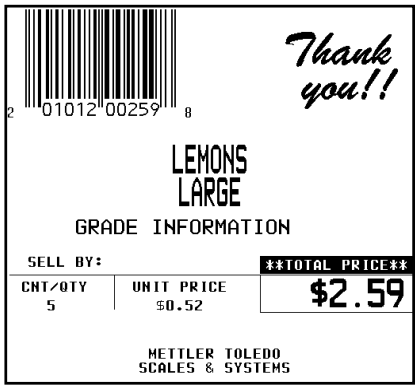
47 By Count (Pack Date)

48 Standard Pack (Pack Date)

2.4 Inch (61.0 mm) Label Formats

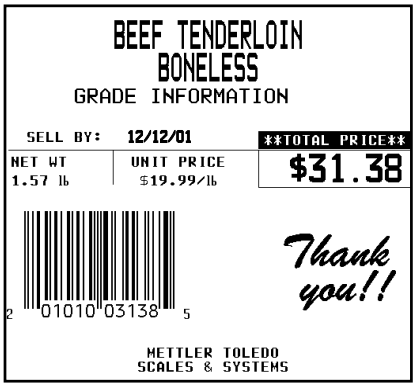


49 By Weight/Prepack

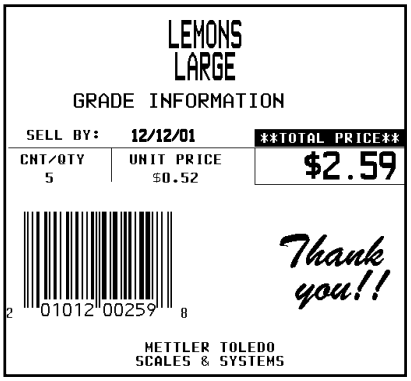


50 By Count

51 Standard Pack

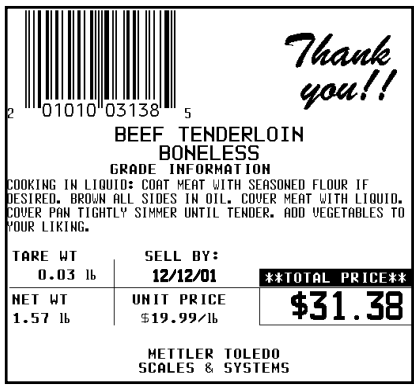


52 By Weight/Prepack

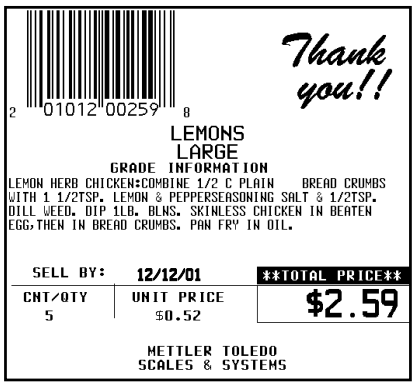


53 By Count

54 Standard Pack

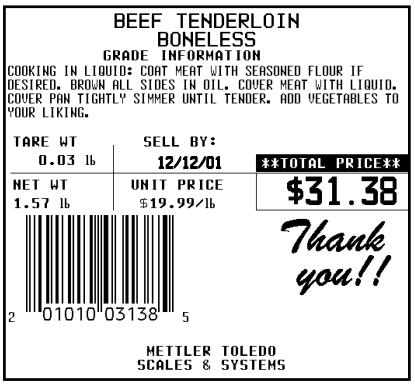


55 By Weight/Prepack

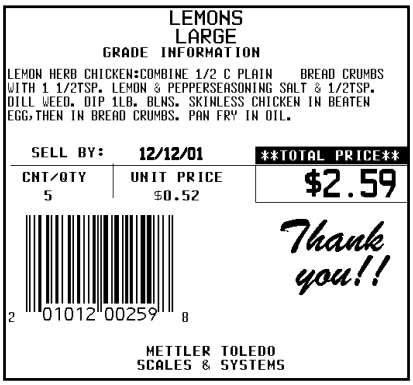


56 By Count

57 Standard Pack



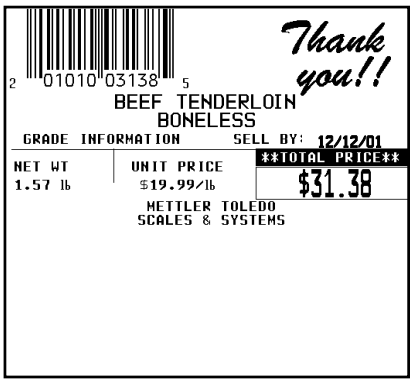
58 By Weight/Prepack



59 By Count

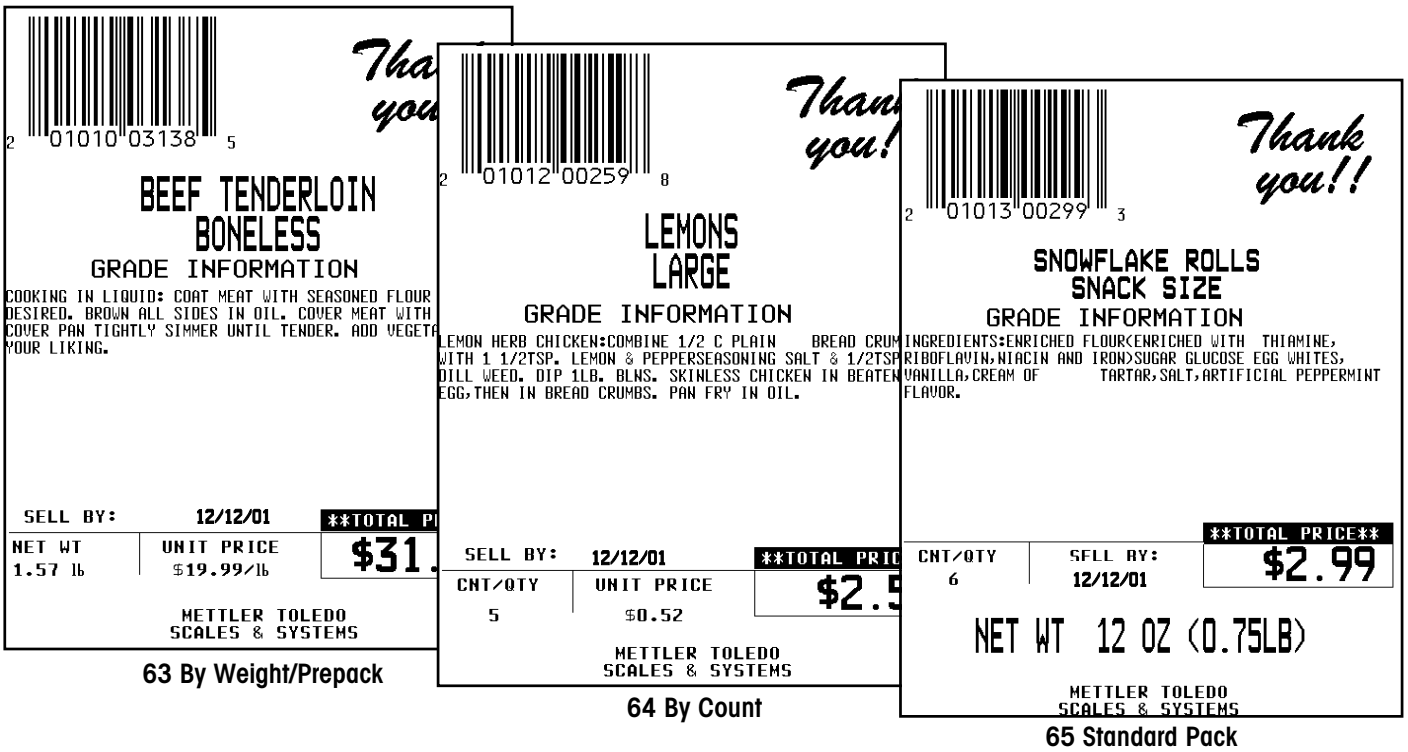
60 Standard Pack

61 By Weight/Prepack



62 By Weight/Prepack

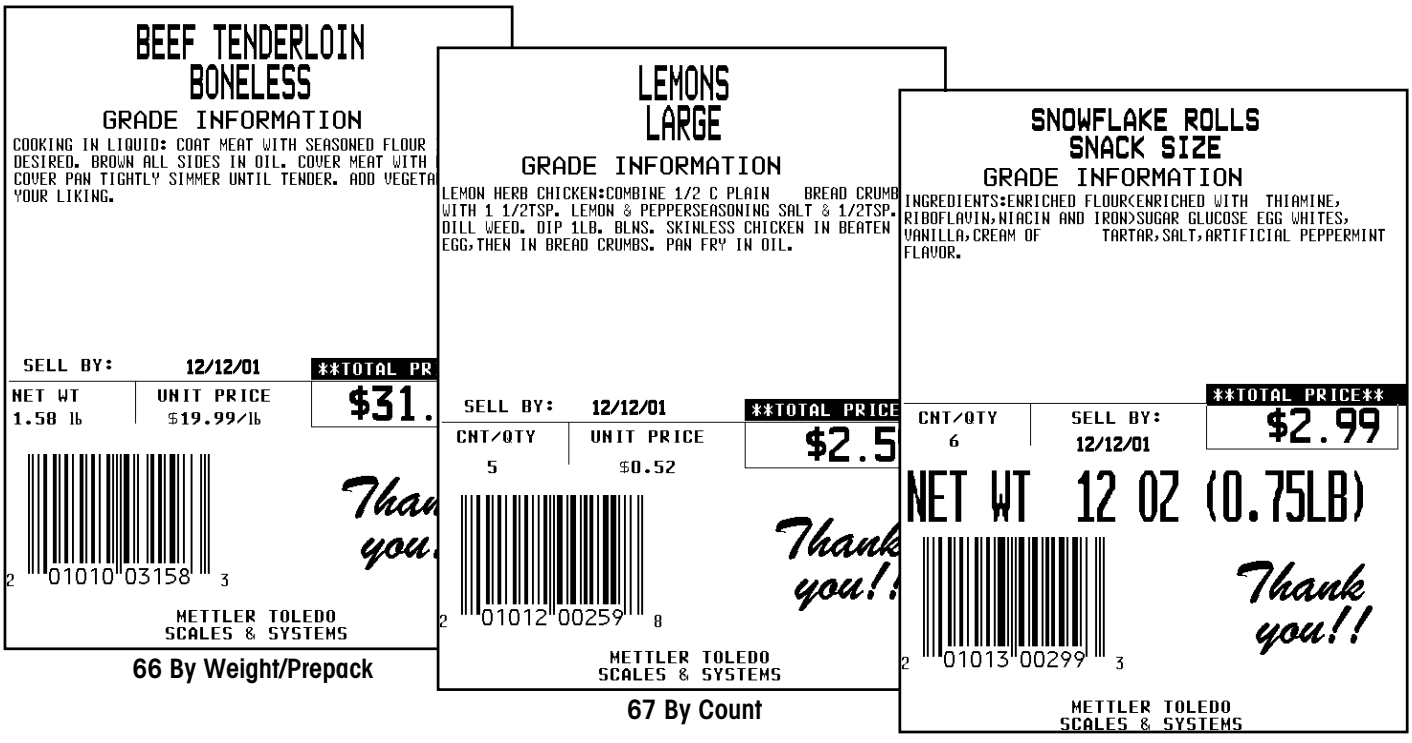
3.3 Inch (83.8 mm) Label Formats



63 By Weight/Prepack

64 By Count

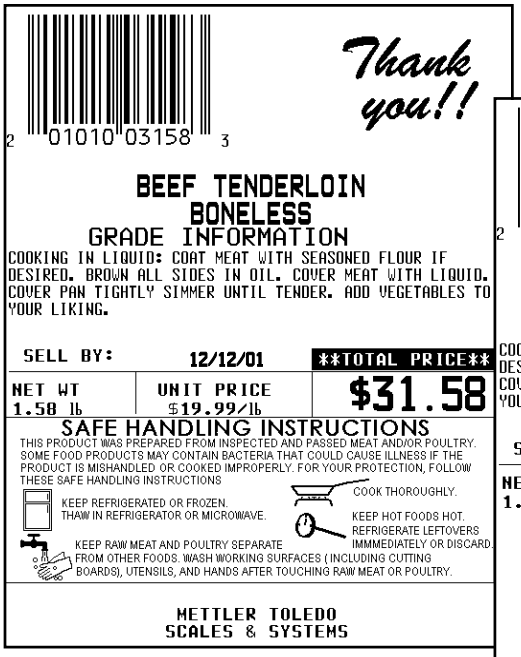
65 Standard Pack



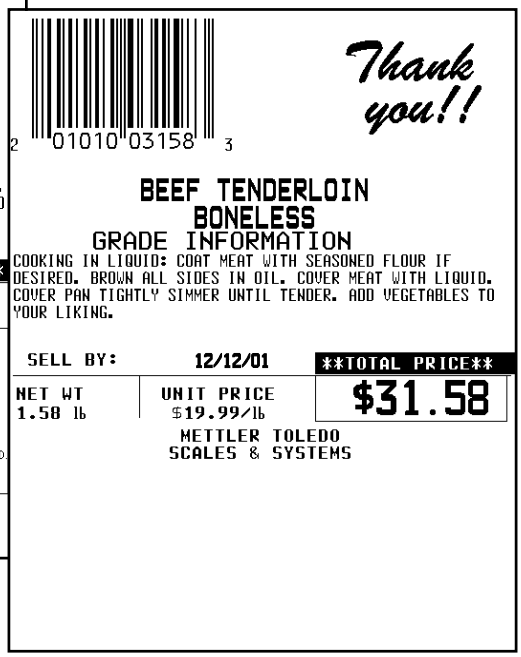
66 By Weight/Prepack

67 By Count

68 Standard Pack

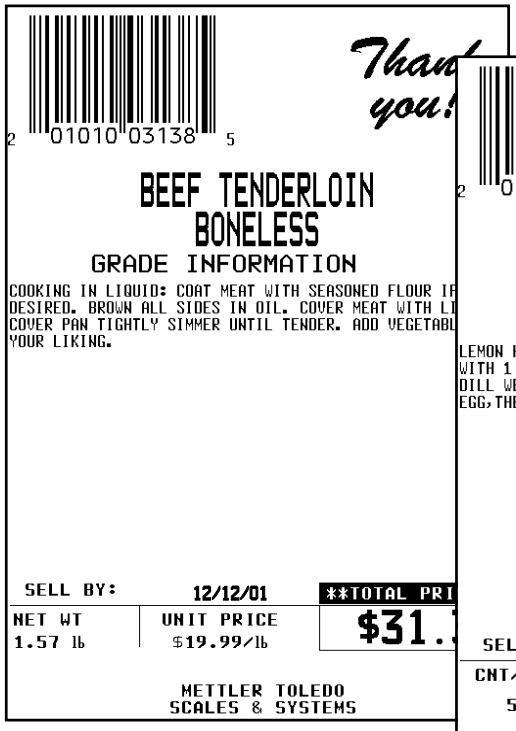


69 By Weight/Prepack

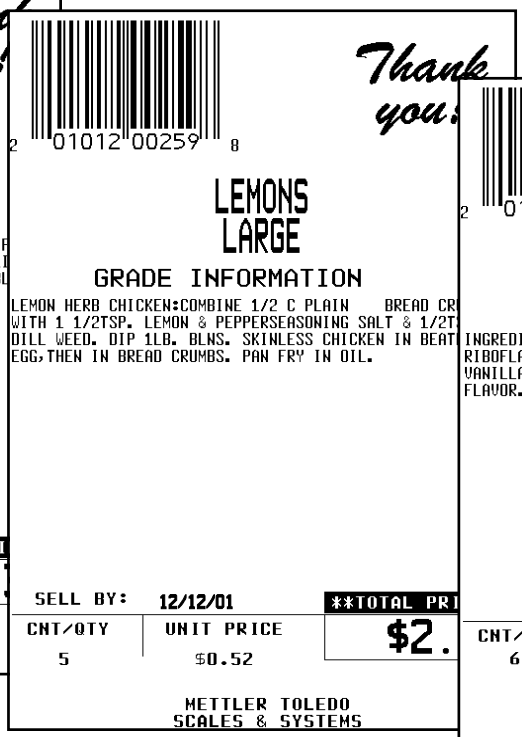


70 By Weight/Prepack

3.7 Inch (94.0 mm) Label Formats

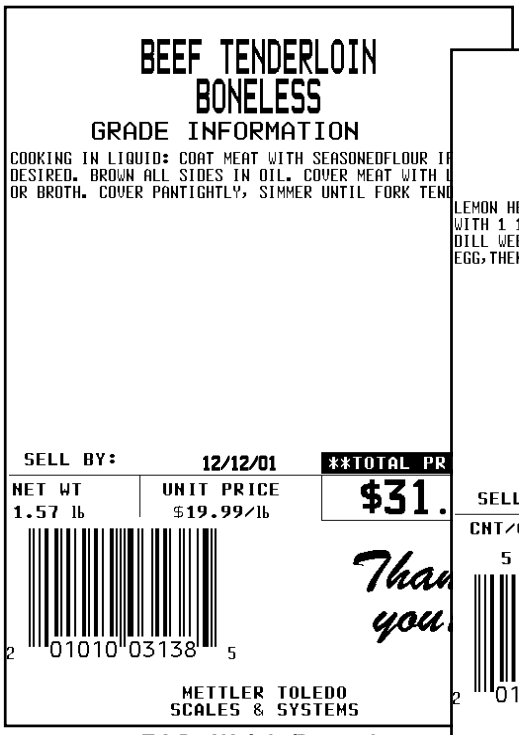


71 By Weight/Prepack

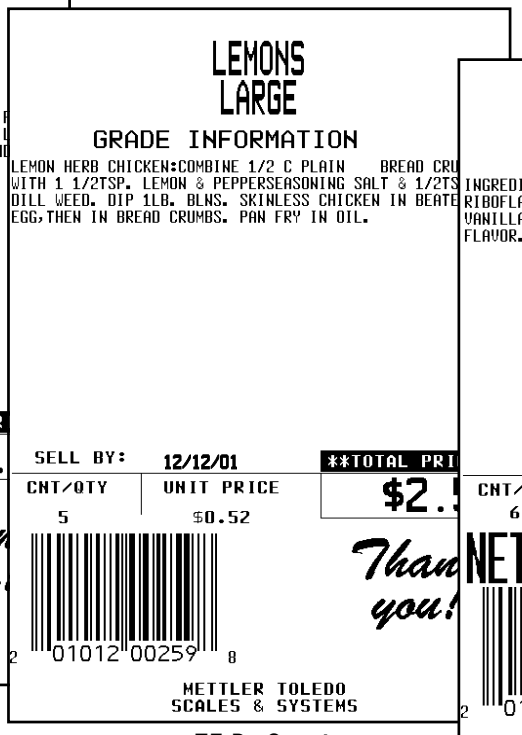


72 By Count

73 Standard Pack



74 By Weight/Prepack

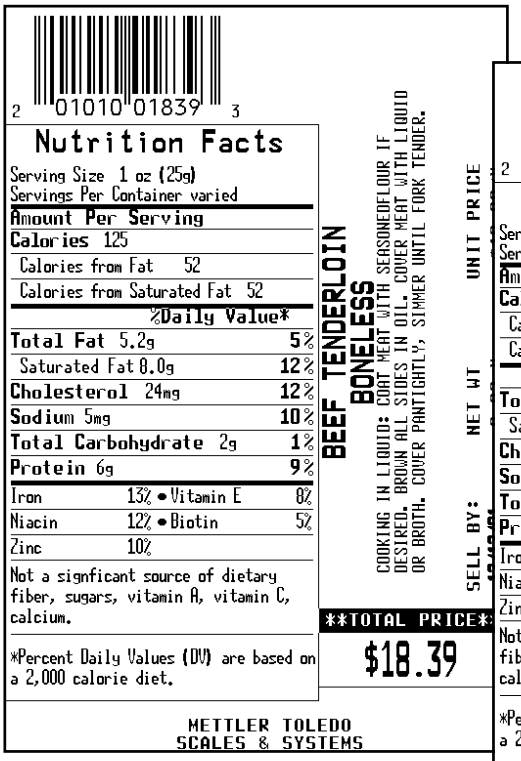


75 By Count

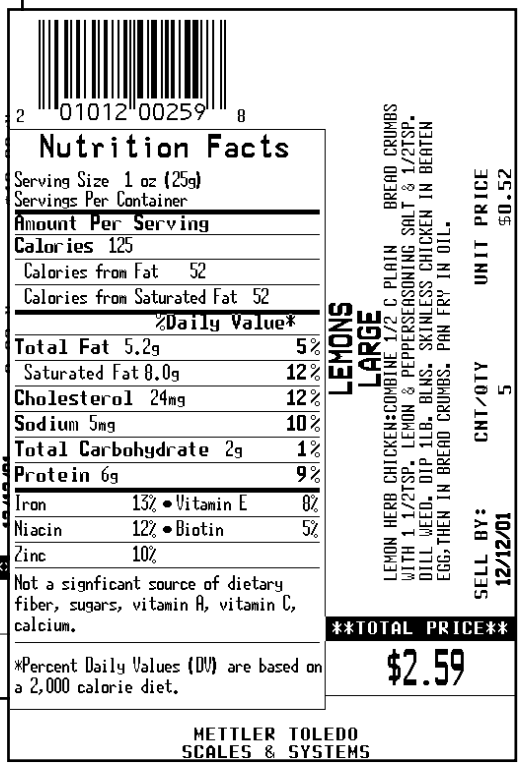
76 Standard Pack

77 By Weight/Prepack

78 By Weight/Prepack

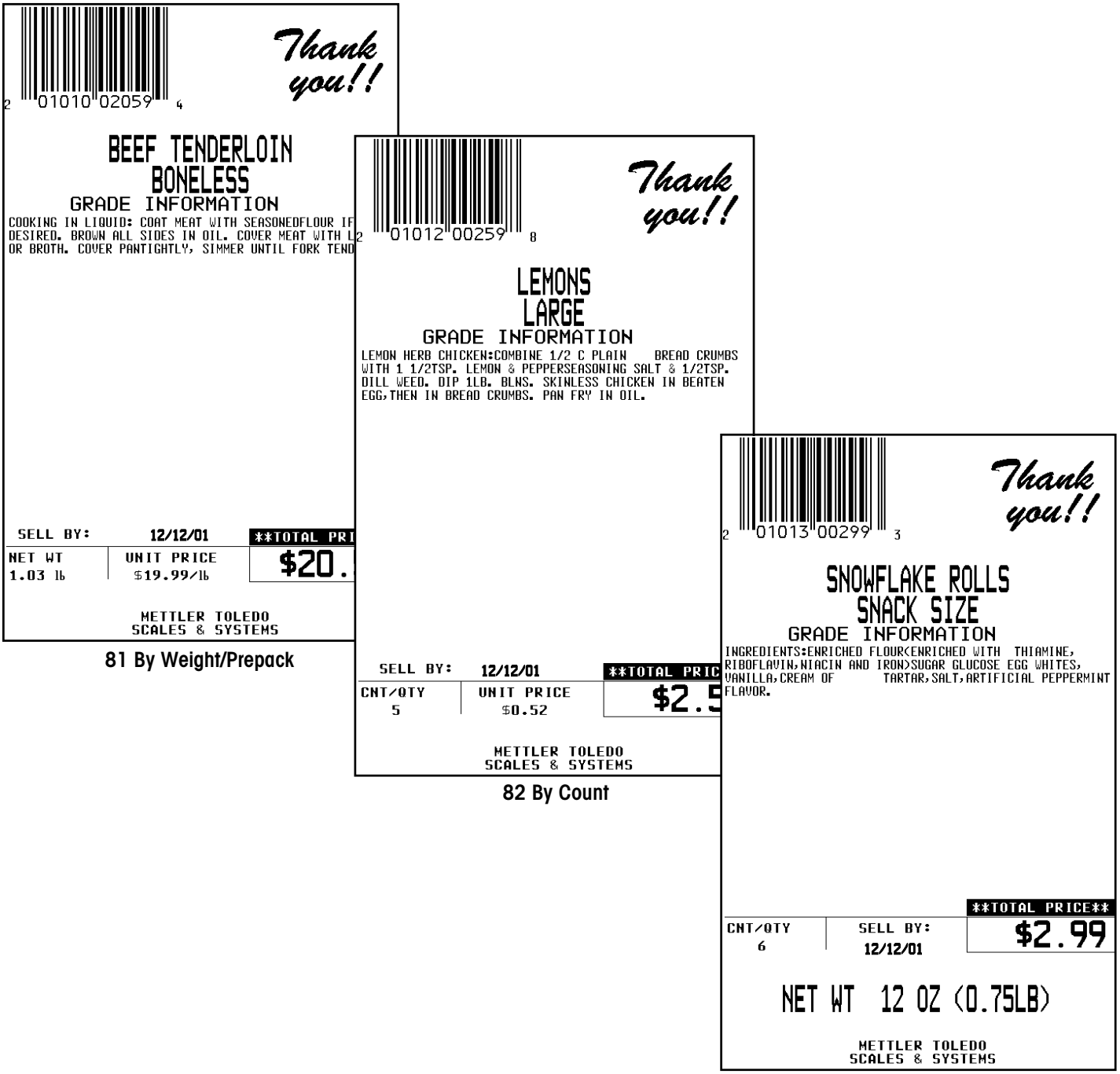


79 By Weight/Prepack



80 By Count

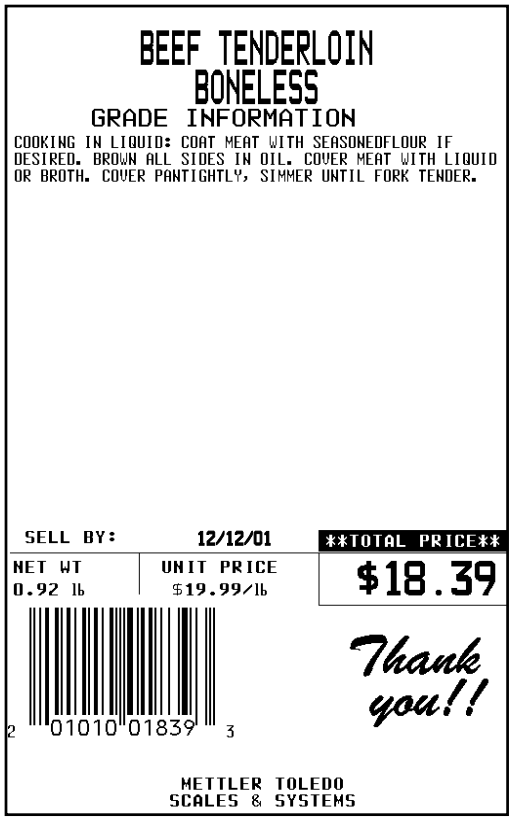
4.2 Inch (106.7 mm) Label Formats



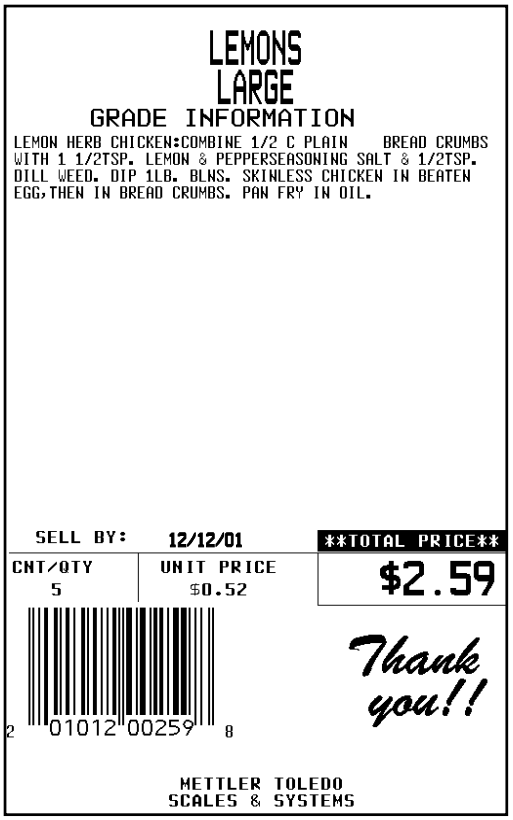
81 By Weight/Prepack

82 By Count

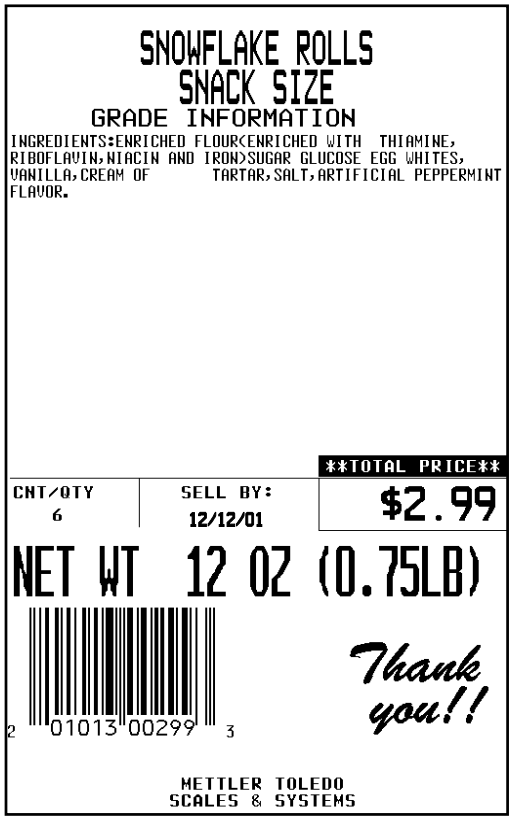
83 Standard Pack



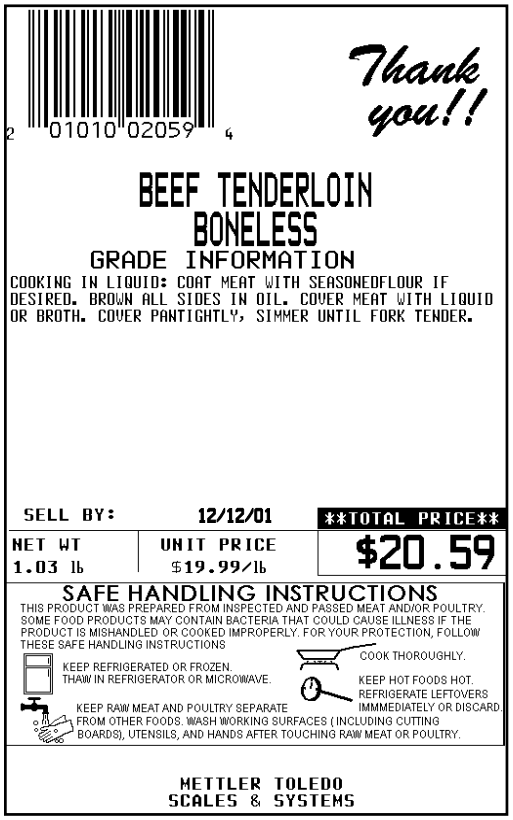
84 By Weight/Prepack



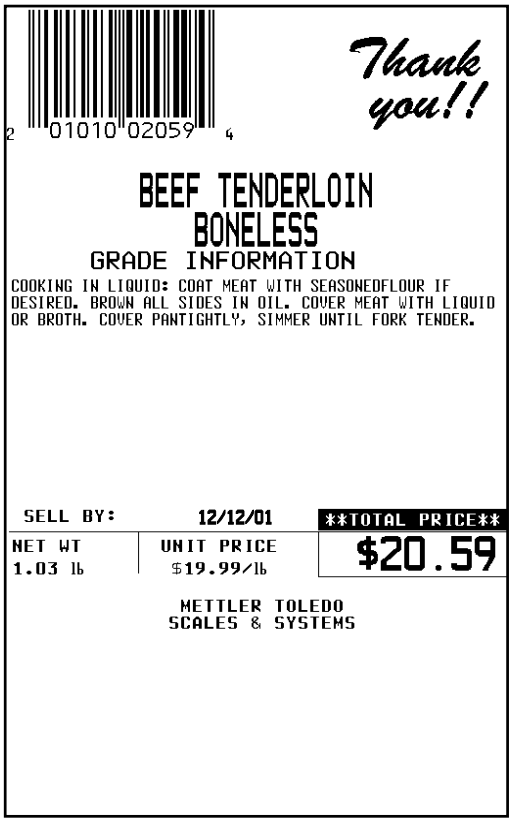
85 By Count



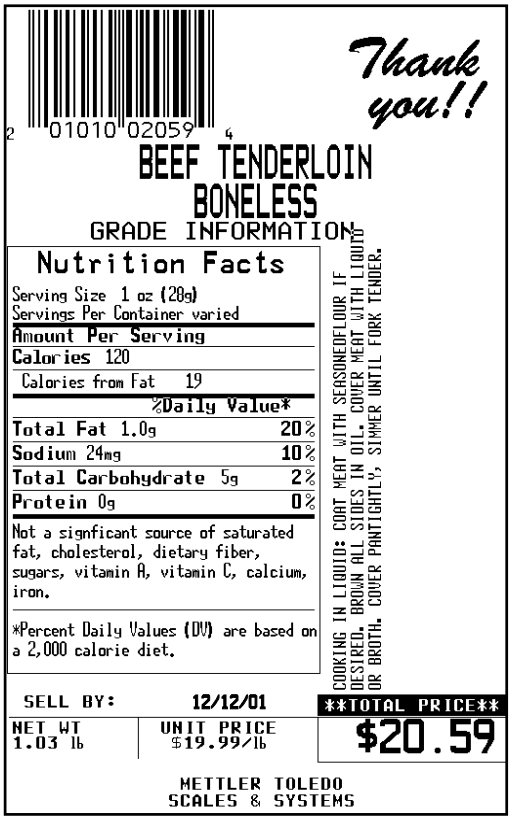
86 Standard Pack



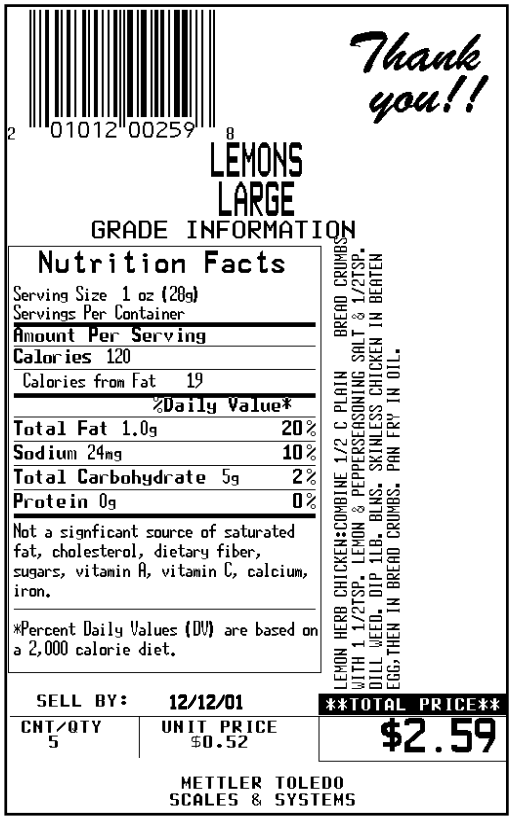
87 By Weight/Prepack



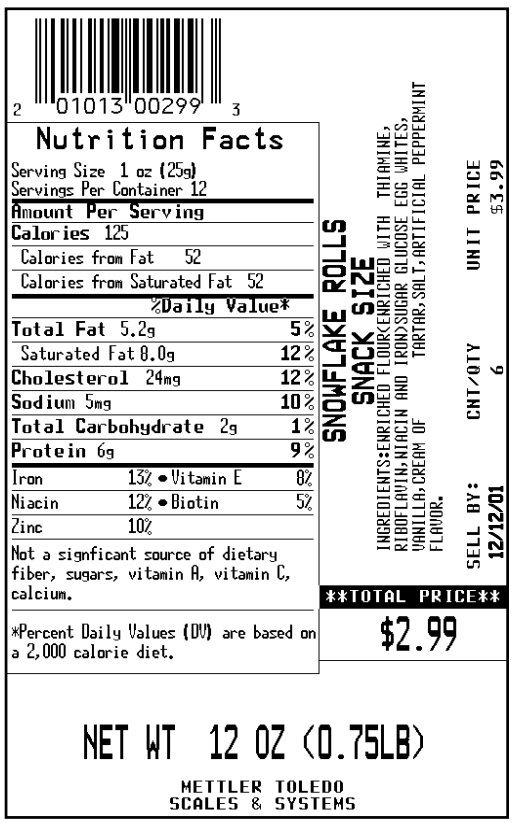
88 By Weight/Prepack



89 By Weight/Prepack

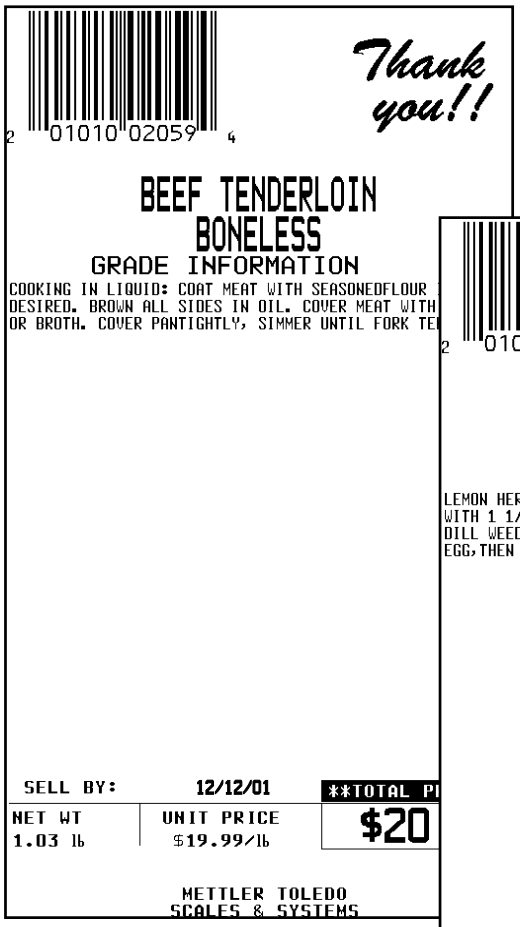


90 By Count

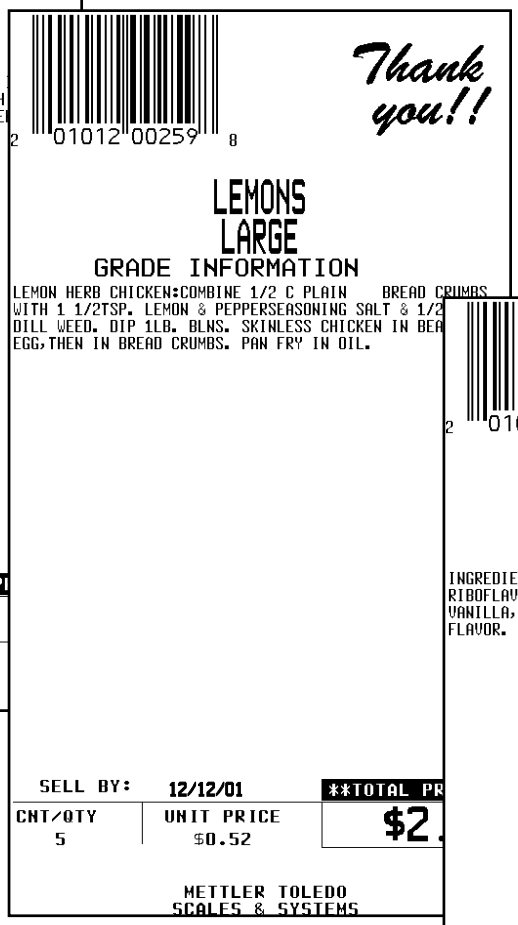


91 Standard Pack

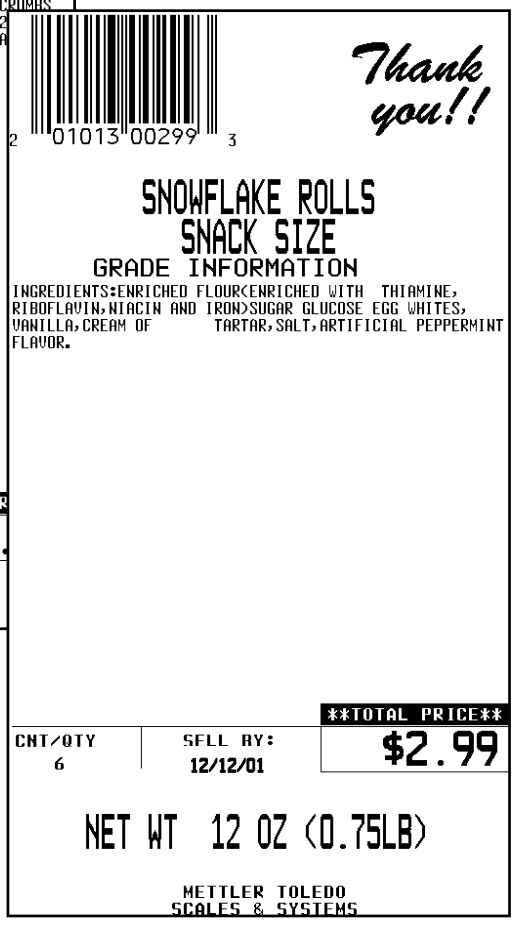
4.7 Inch (119.4 mm) Label Formats



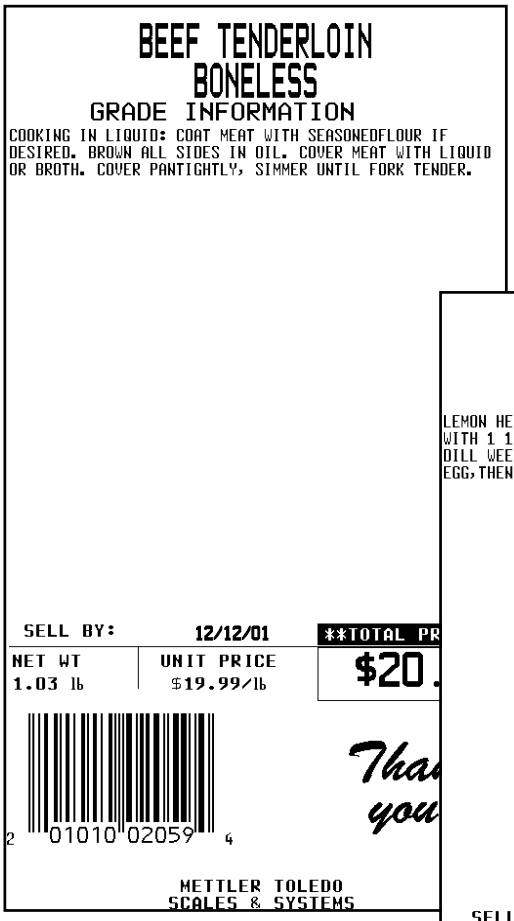
92 By Weight/Prepack



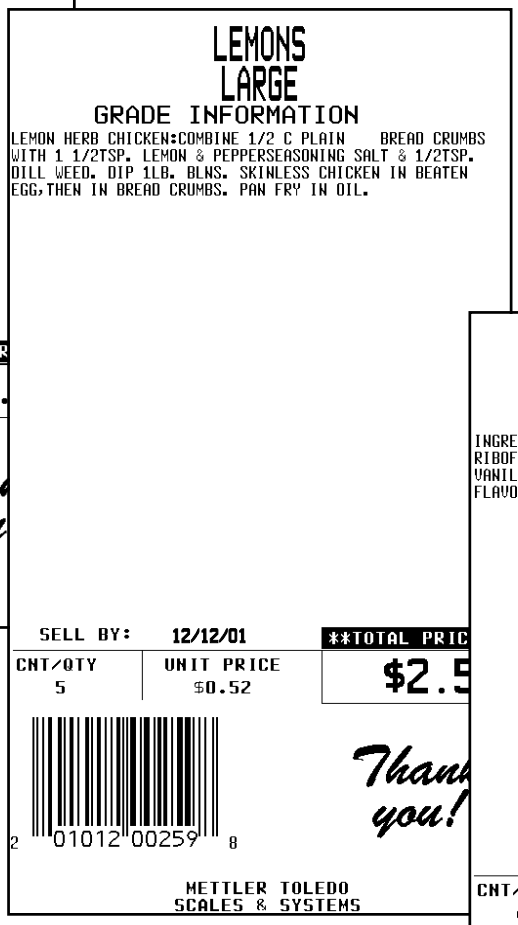
93 By Count



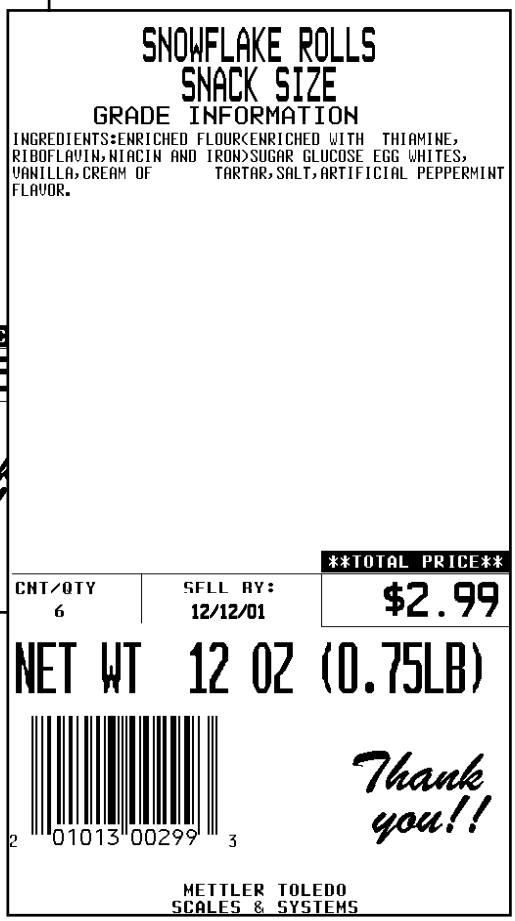
94 Standard Pack



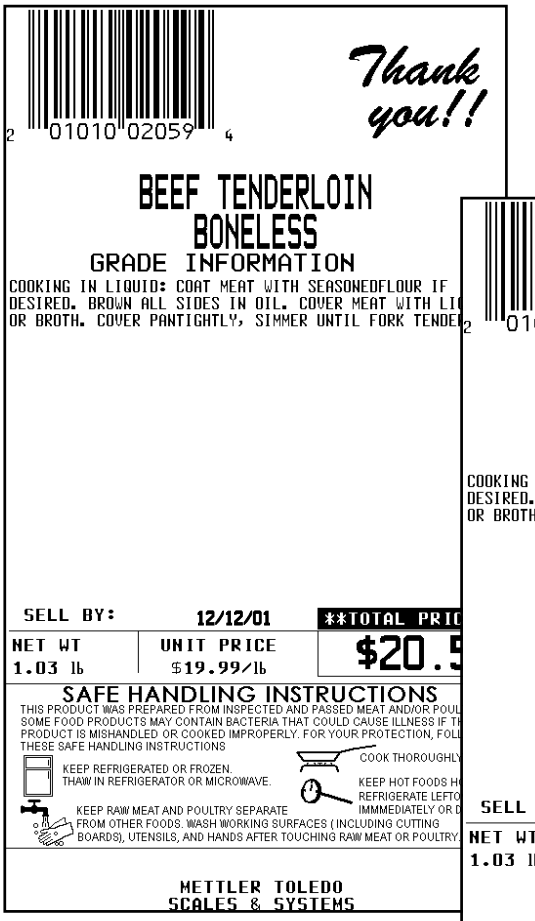
95 By Weight/Prepack



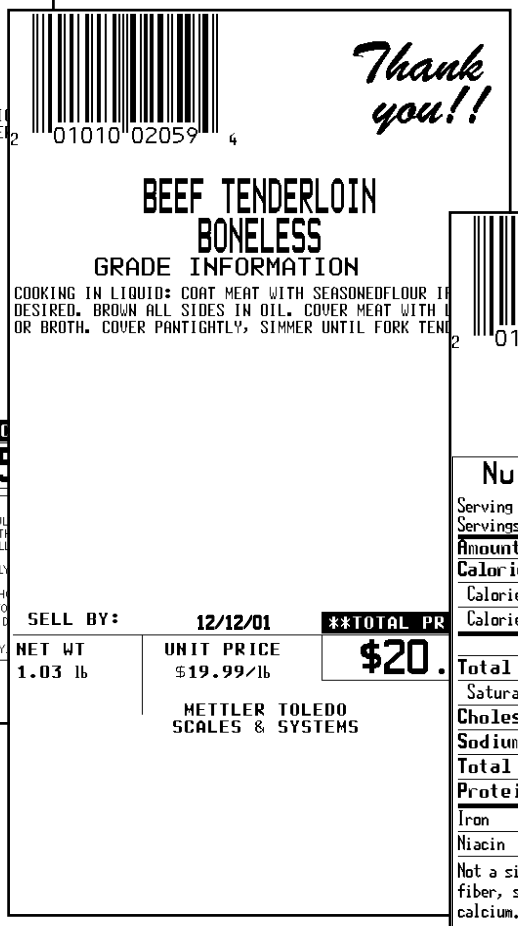
96 By Count



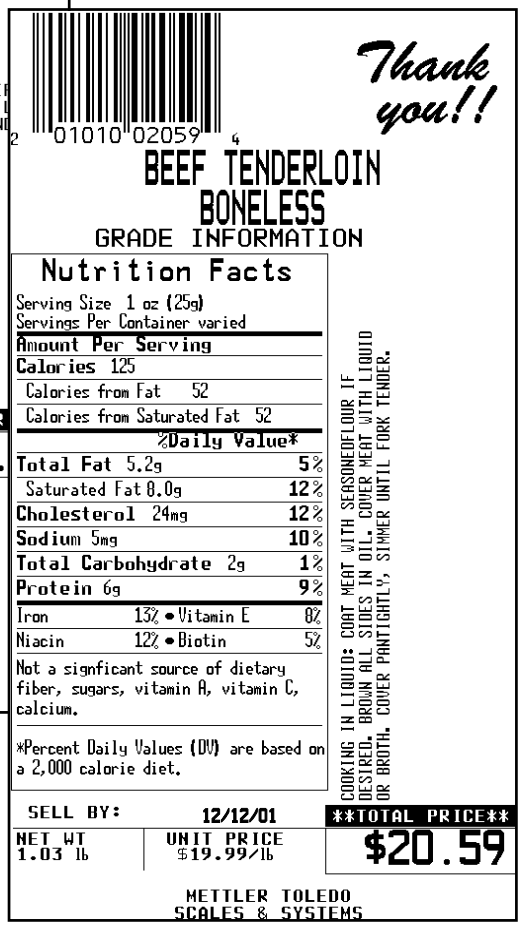
97 Standard Pack



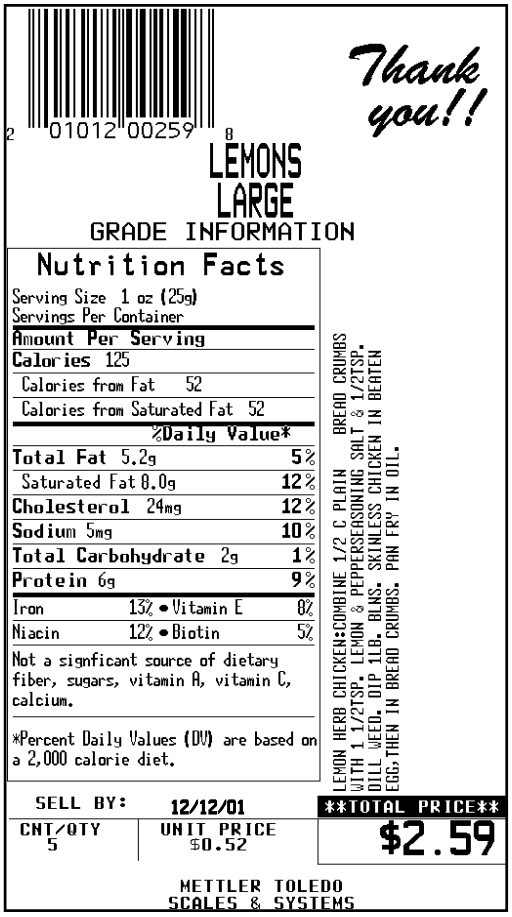
98 By Weight/Prepack



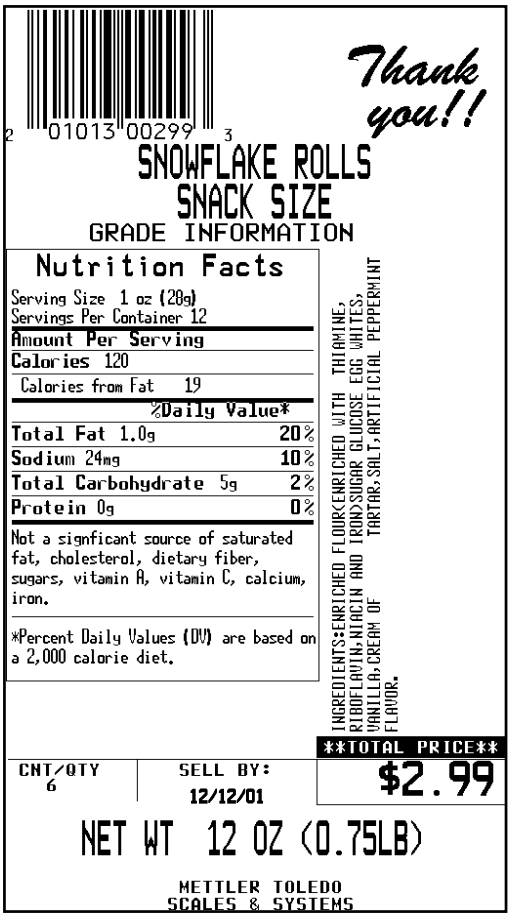
99 By Weight/Prepack



100 By Weight/Prepack

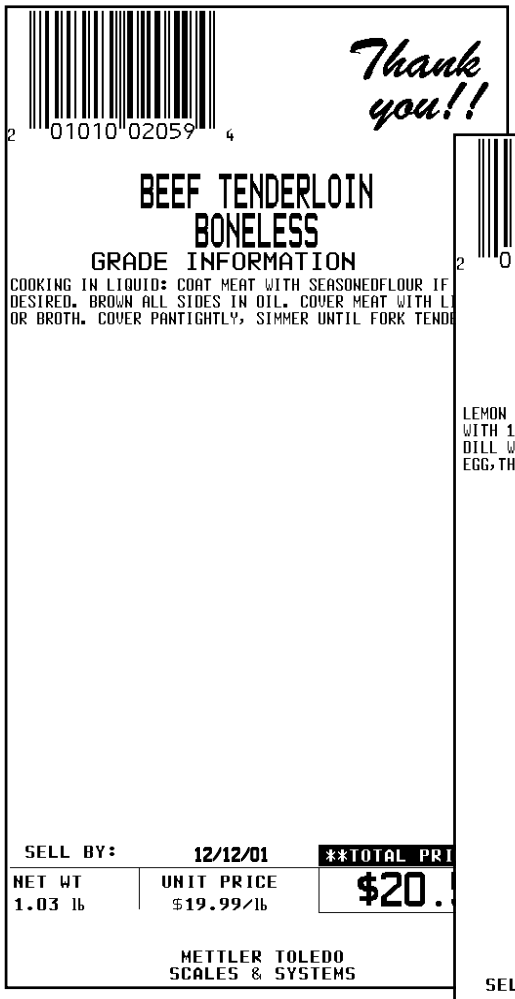


101 By Count

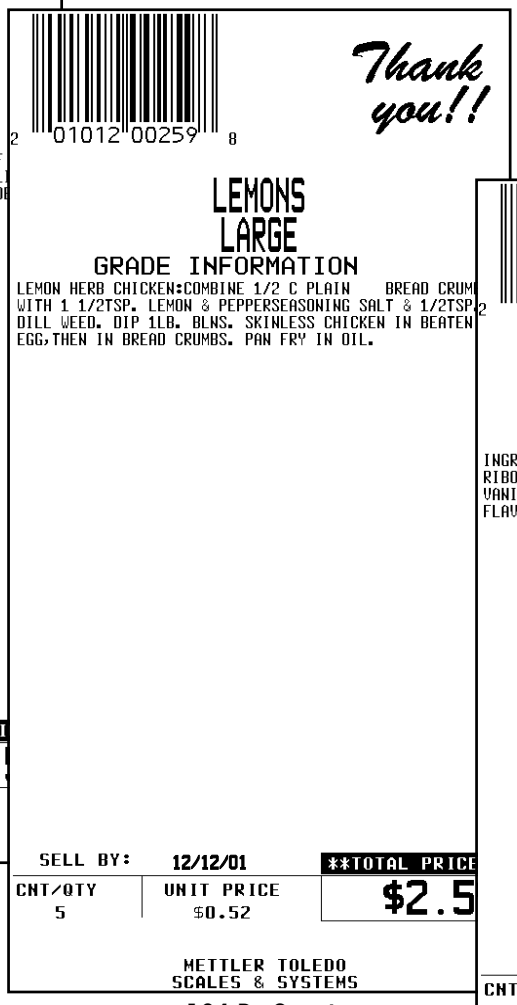


102 Standard Pack

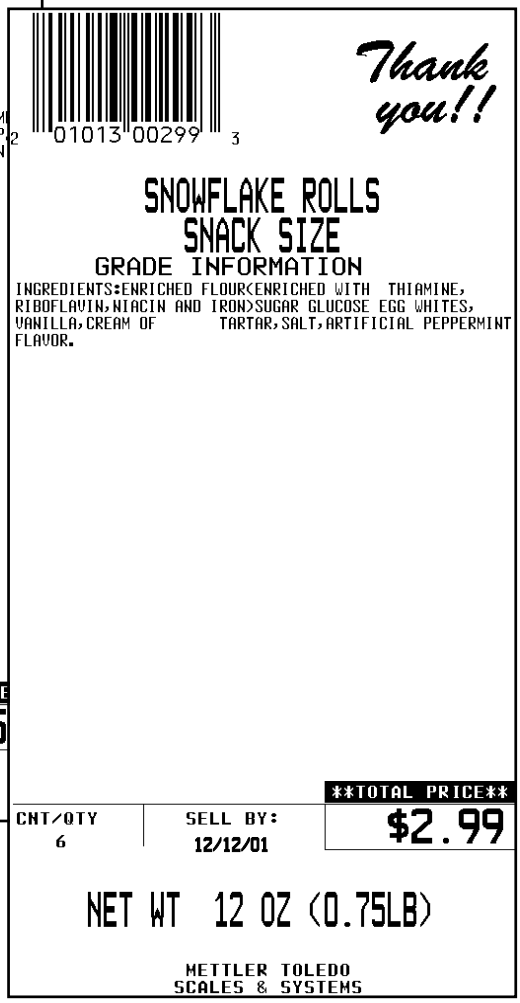
5.1 Inch (129.5 mm) Label Formats



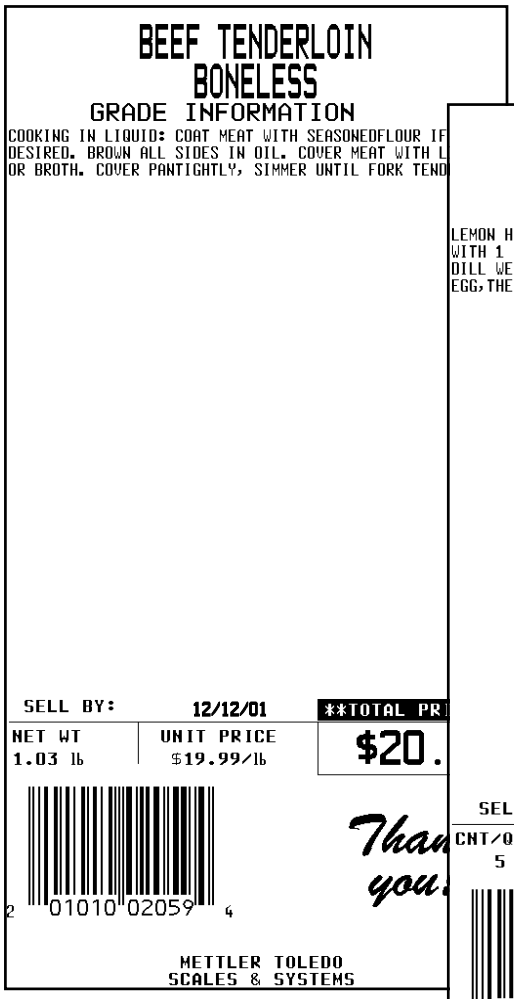
103 By Weight/Prepack



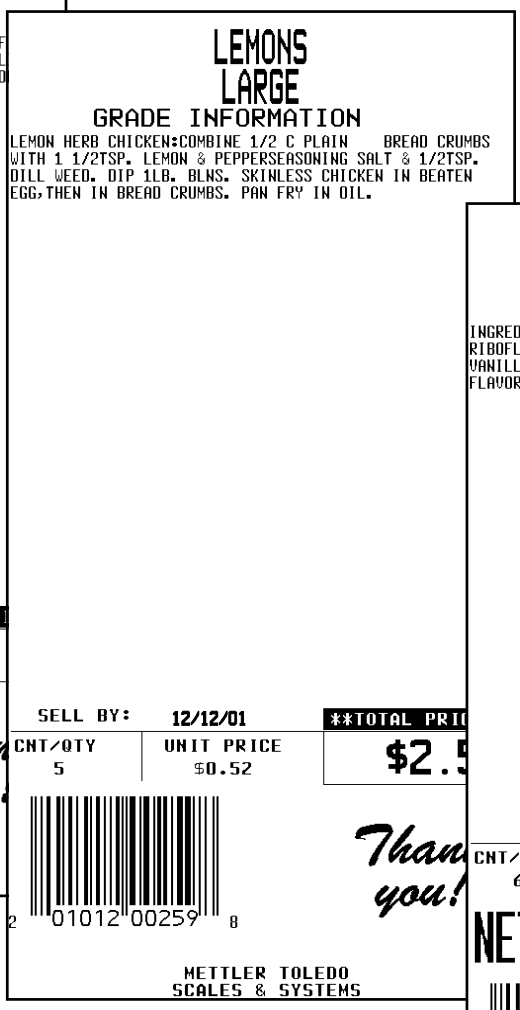
104 By Count



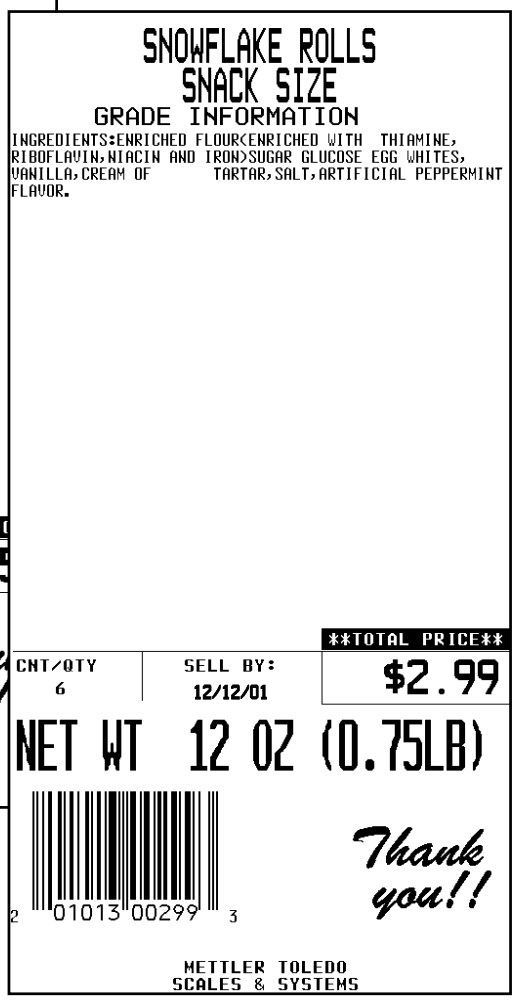
105 Standard Pack



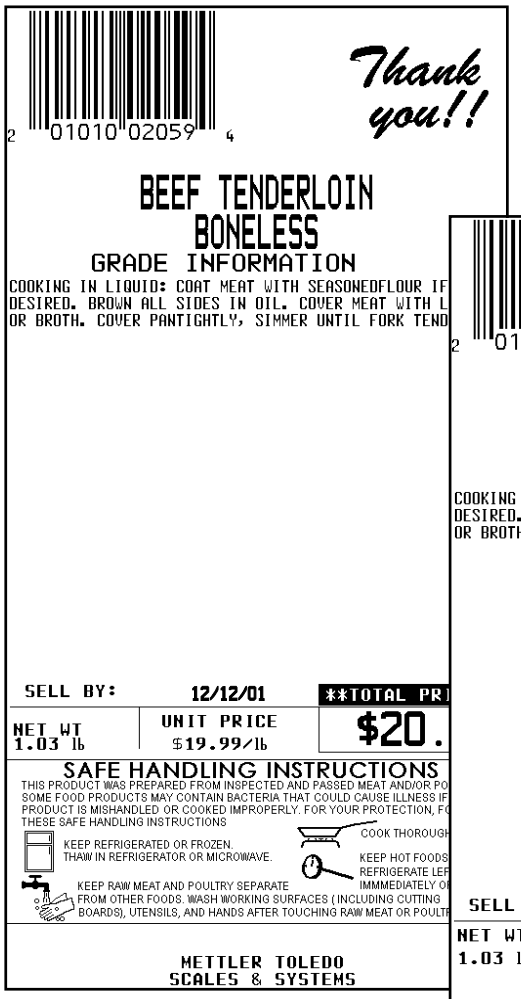
106 By Weight/Prepack



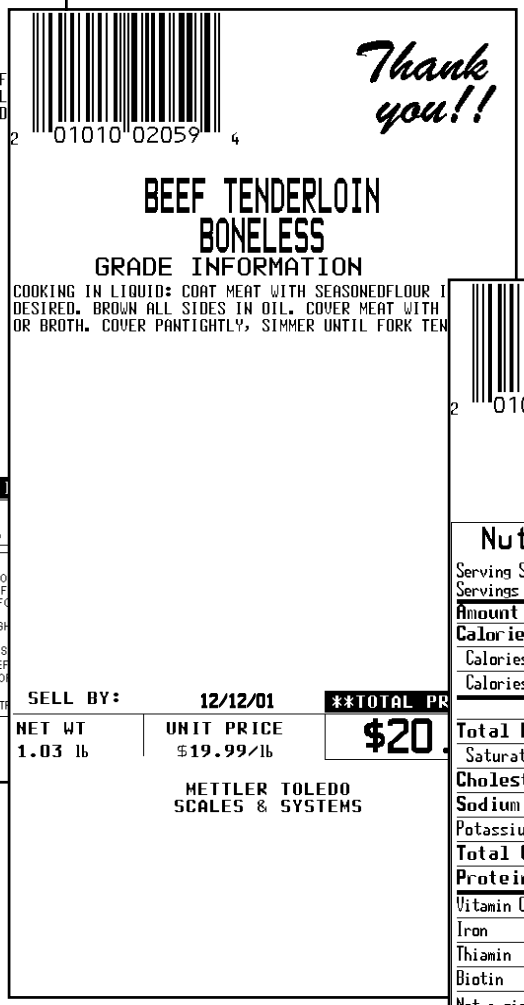
107 By Count



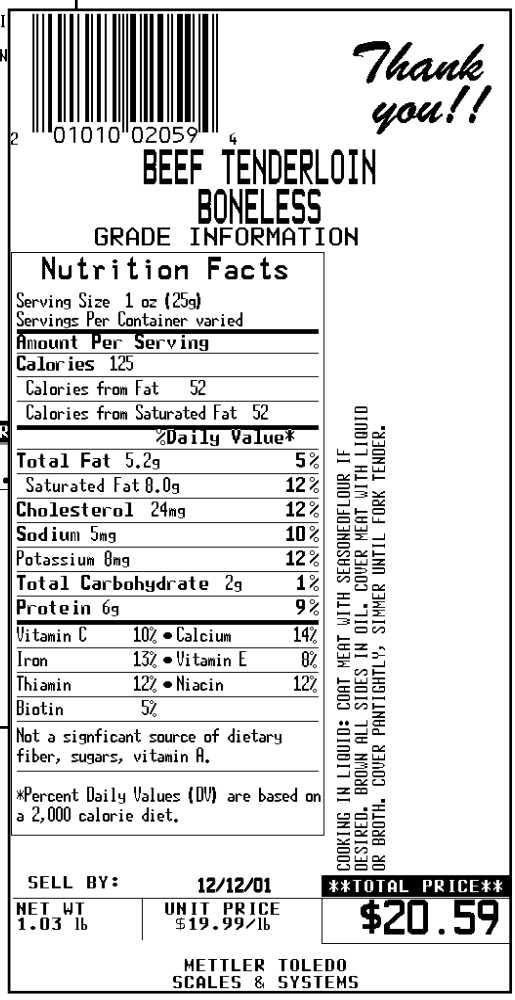
108 Standard Pack



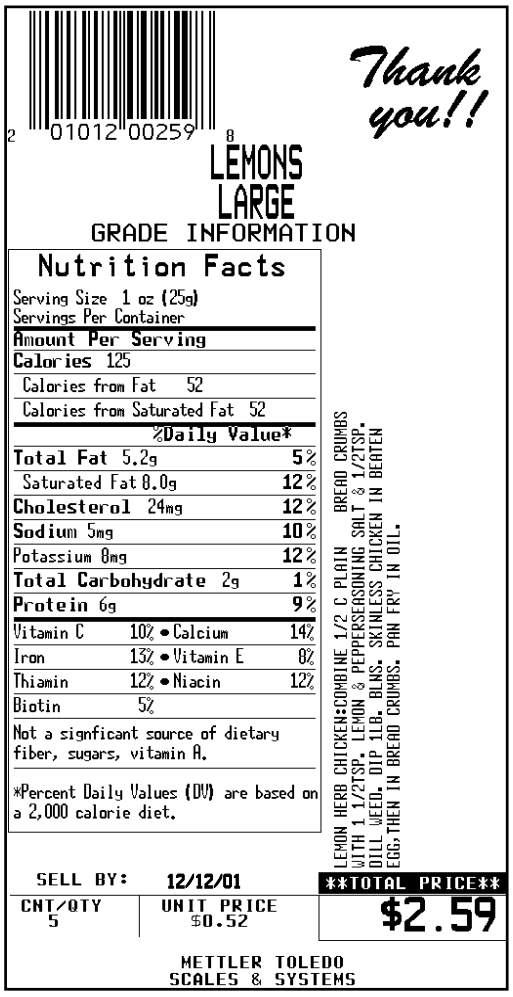
109 By Weight/Prepack



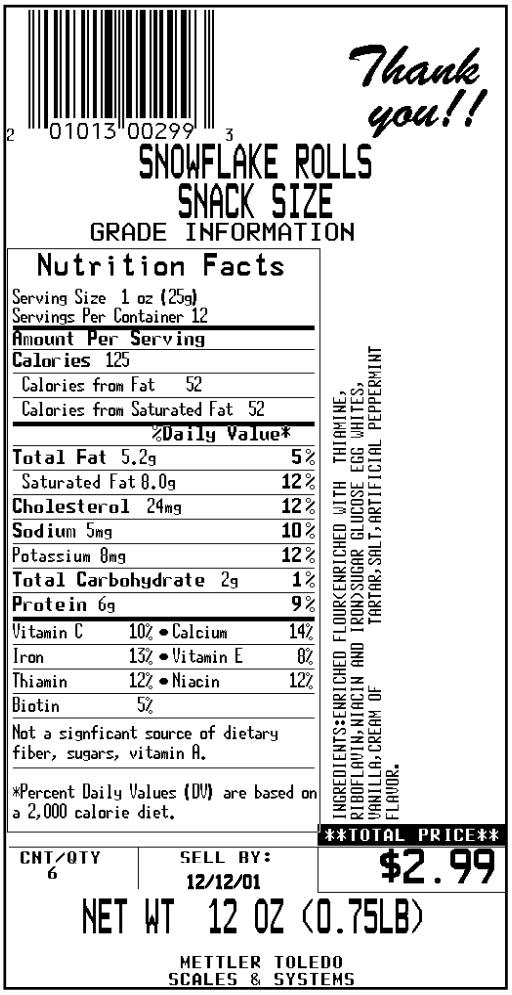
110 By Weight/Prepack



111 By Weight/Prepack



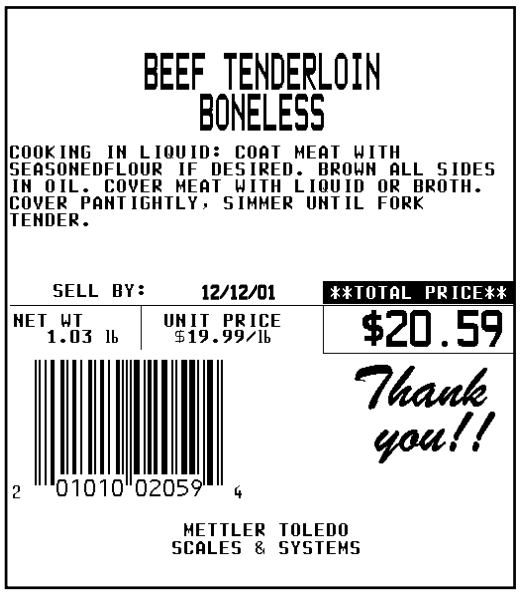
112 By Count



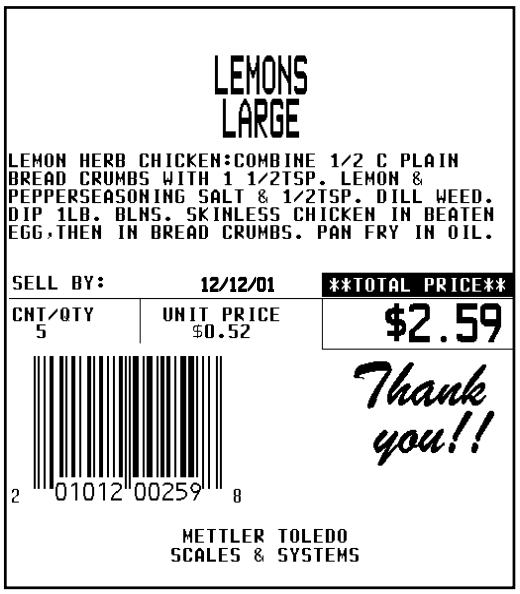
113 Standard Pack

Continuous Label Formats

Maximum of 6 inches for continuous strip labels.

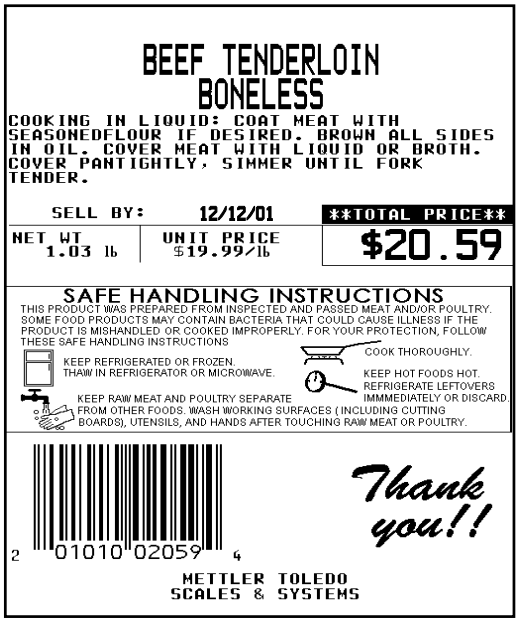


114 By Weight/Prepack

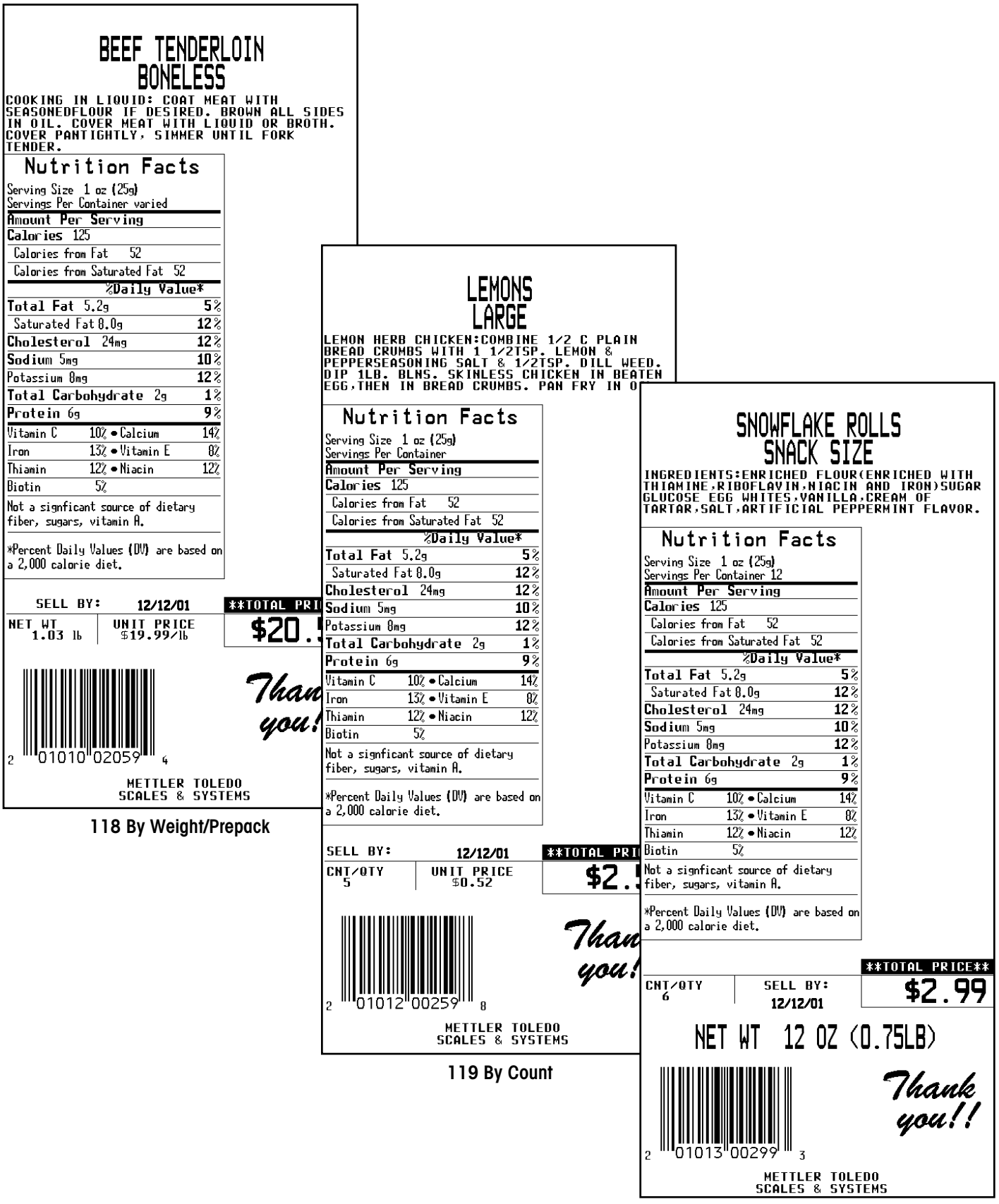


115 By Count

116 Standard Pack



117 By Weight/Prepack



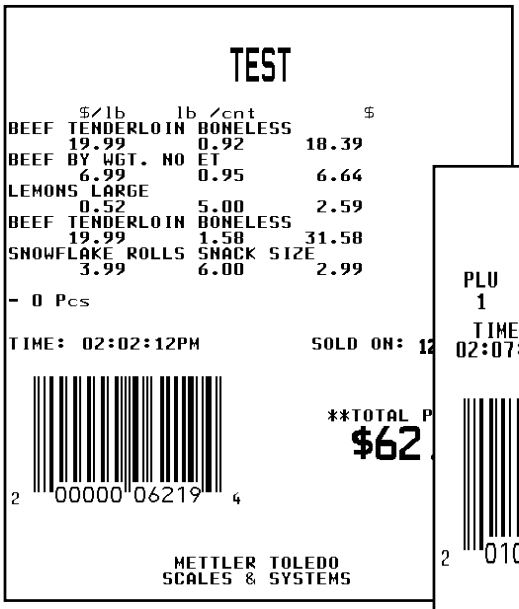
118 By Weight/Prepack

119 By Count

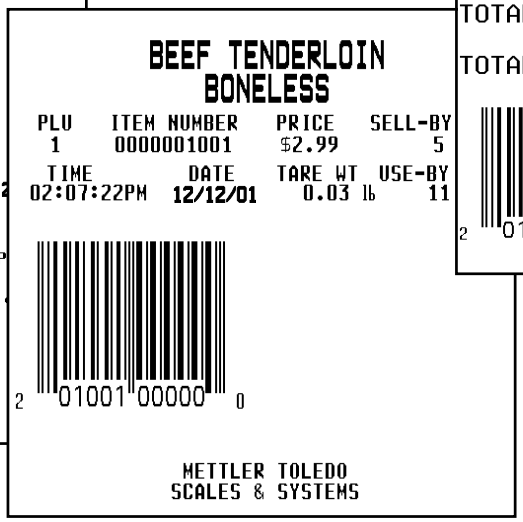
120 Standard Pack

Other Label Formats

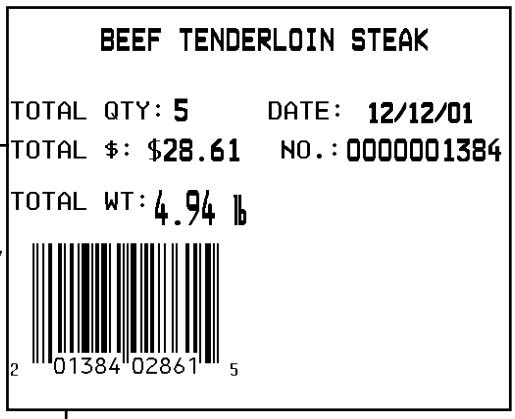
Maximum of 6 inches for continuous strip labels.



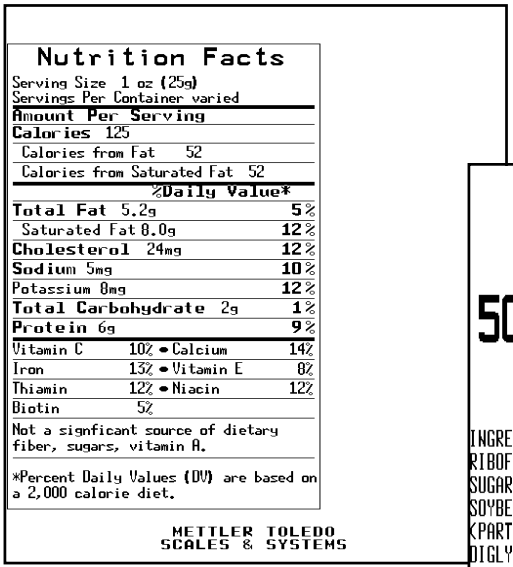
121 Receipt



122 Verification Label

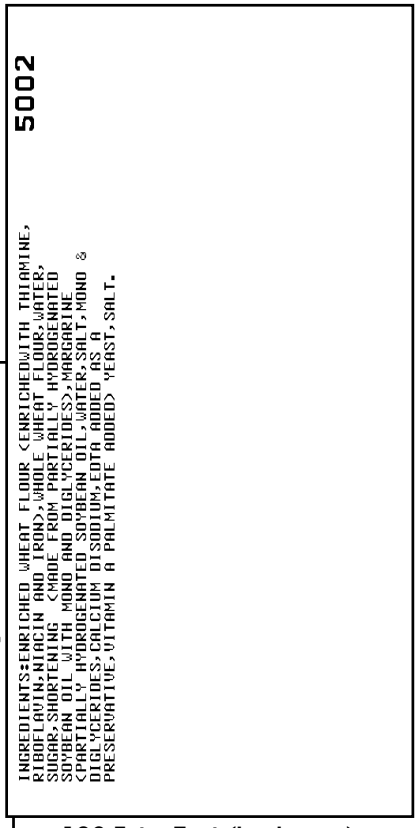


123 Run Total



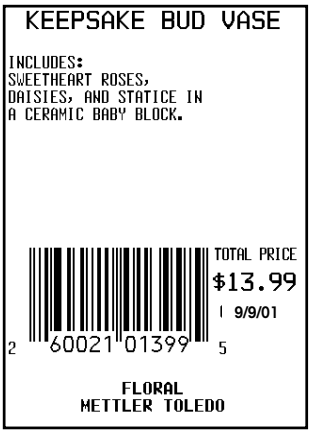
124 Nutrition Facts

125 Extra Text

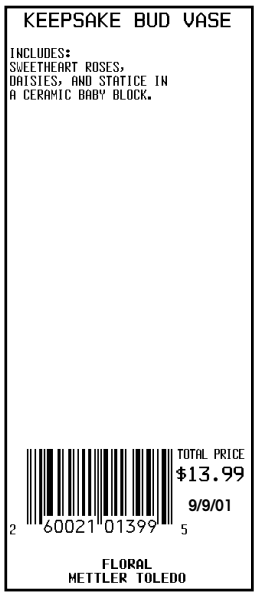


126 Extra Text (landscape)

Floral Label Formats



130 By Count
(2.2 inch/55.9 mm)



131 By Count
(3.8 inch/96.5 mm)

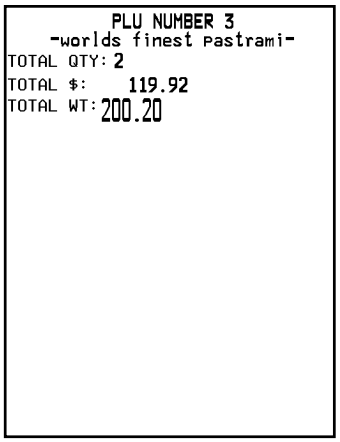
132 By Count
(1.5 inch/38.1 mm)

133 By Count
(0.9 inch/22.9 mm)

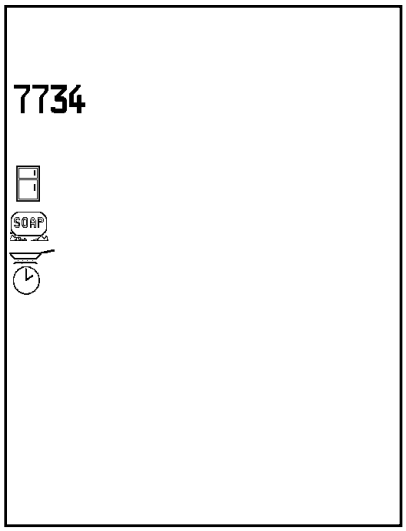
134 By Weight/Prepack
(1.5 inch/38.1 mm)

Stand Alone Label Formats

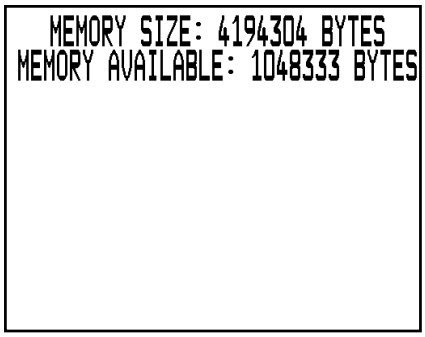
(Can be used in Satellite but normally used for Stand Alone functions)



127 Report Totals



128 Graphics Verification

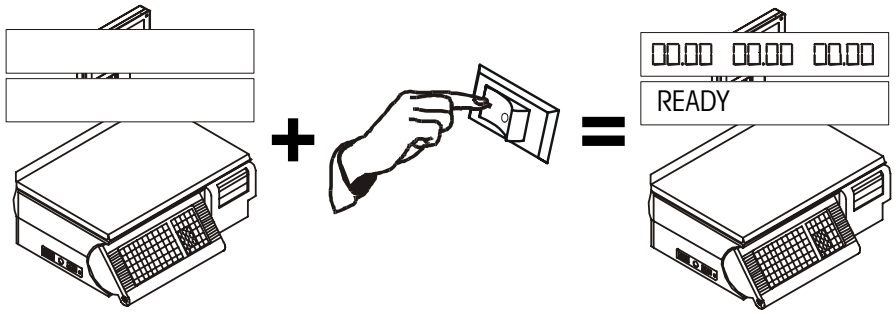


129 Memory Report Format

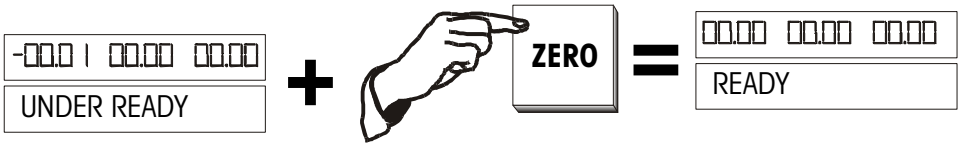
10 Operating the Scale

Basic Functions

Starting the Model 8450

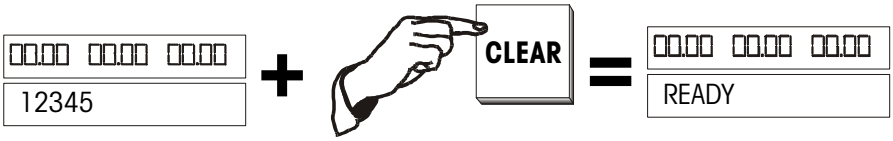


Zero



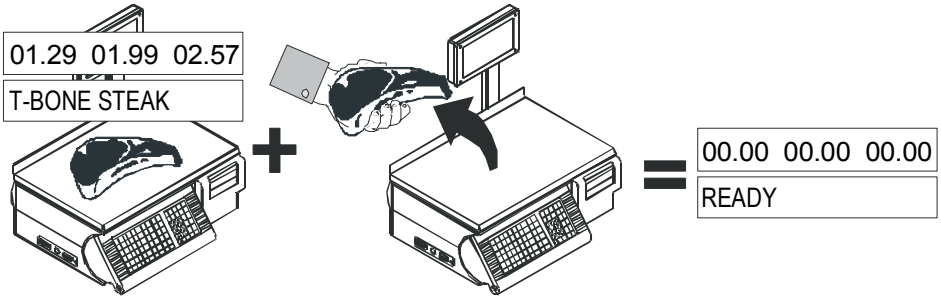
Clear

Manual Clear

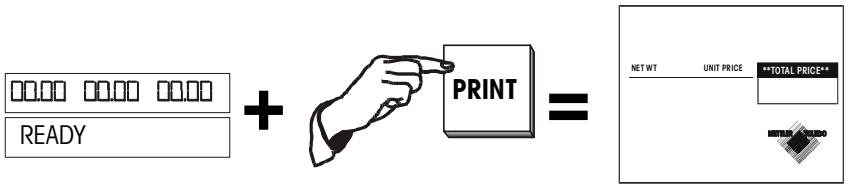


Automatic Clear

In the Service Mode, after a label is printed for a By Weight PLU, and the item is removed from the platter, the display will automatically clear the PLU and return to the **READY** prompt.

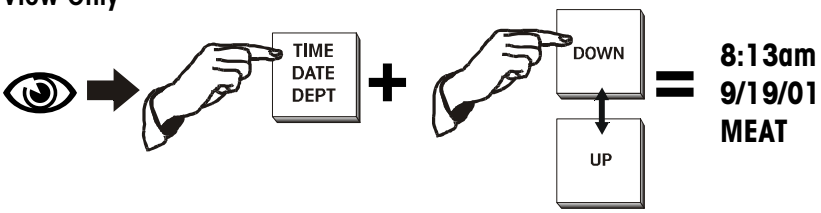


Label Feed

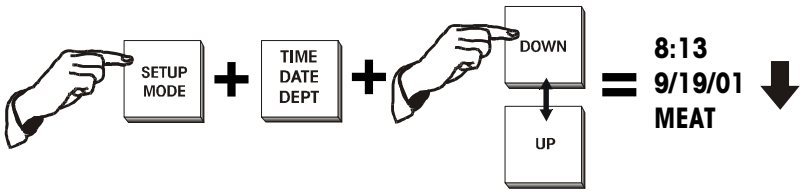


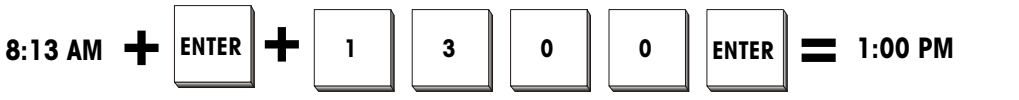
Time, Date, Department

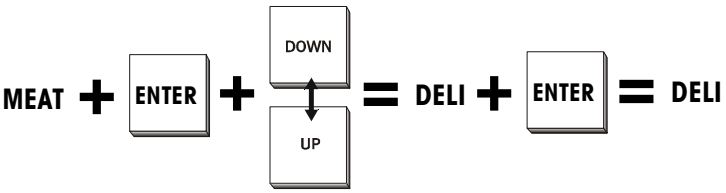
View Only

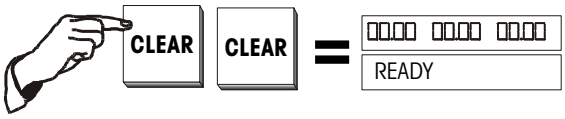


Change





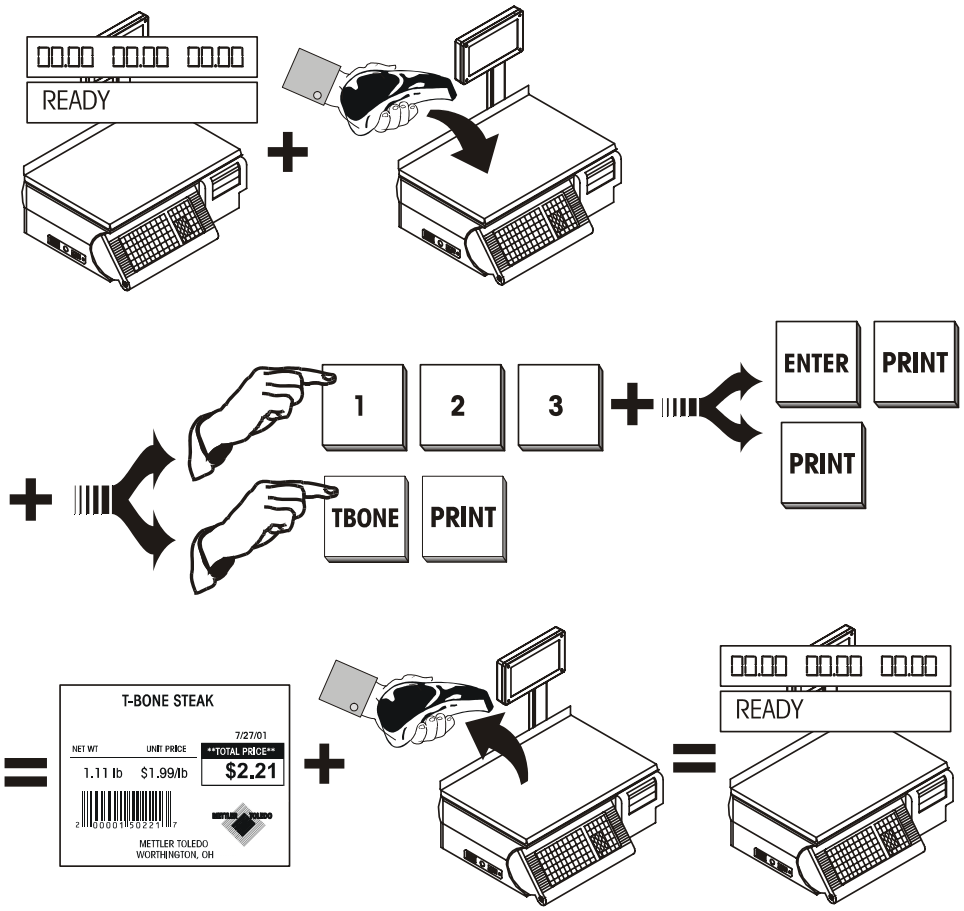




Calling a PLU and Printing Labels

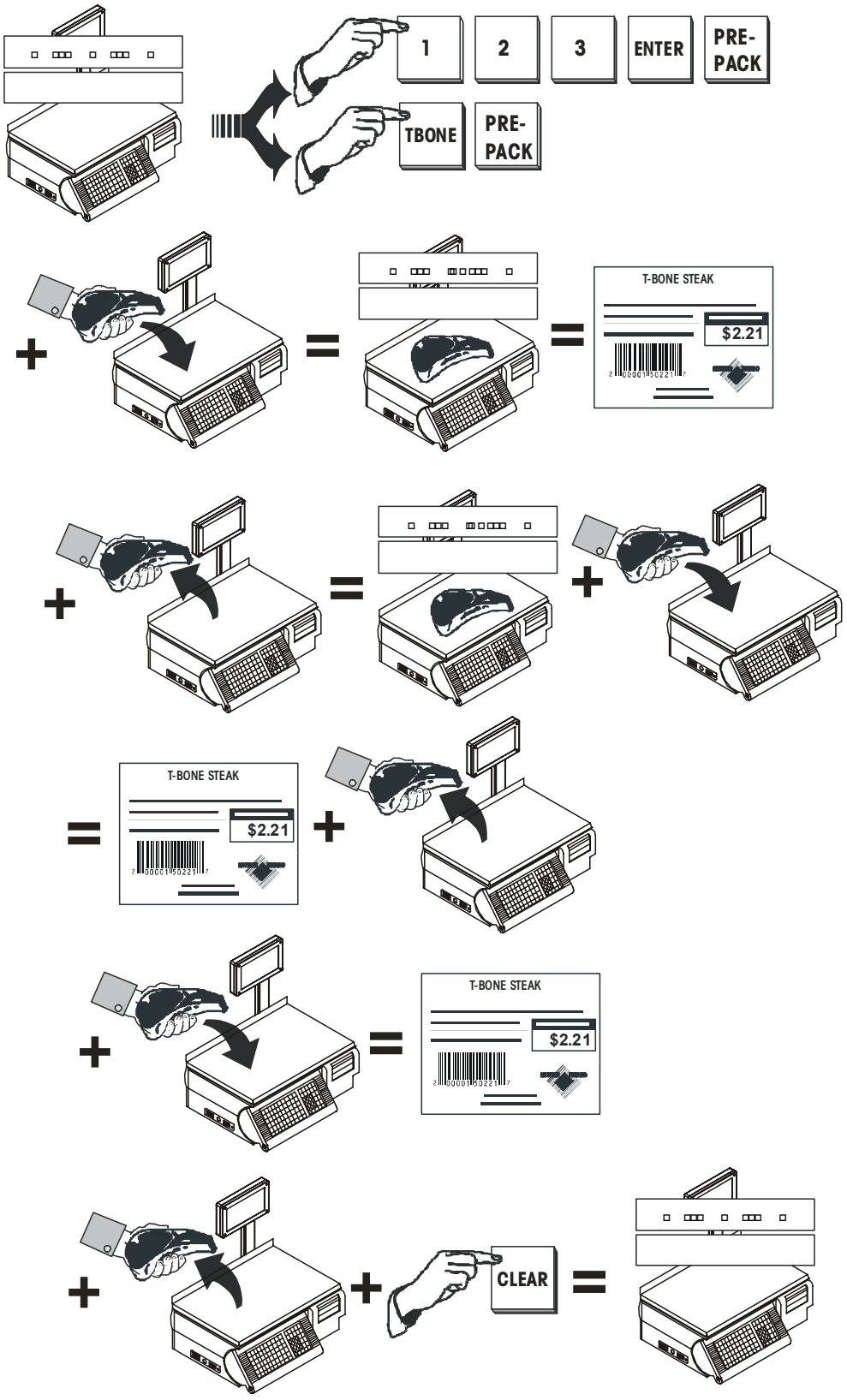
By-Weight PLU Service Mode

To print a single By-Weight label, follow this procedure. If the READY prompt is not displayed, press the CLEAR key before starting.



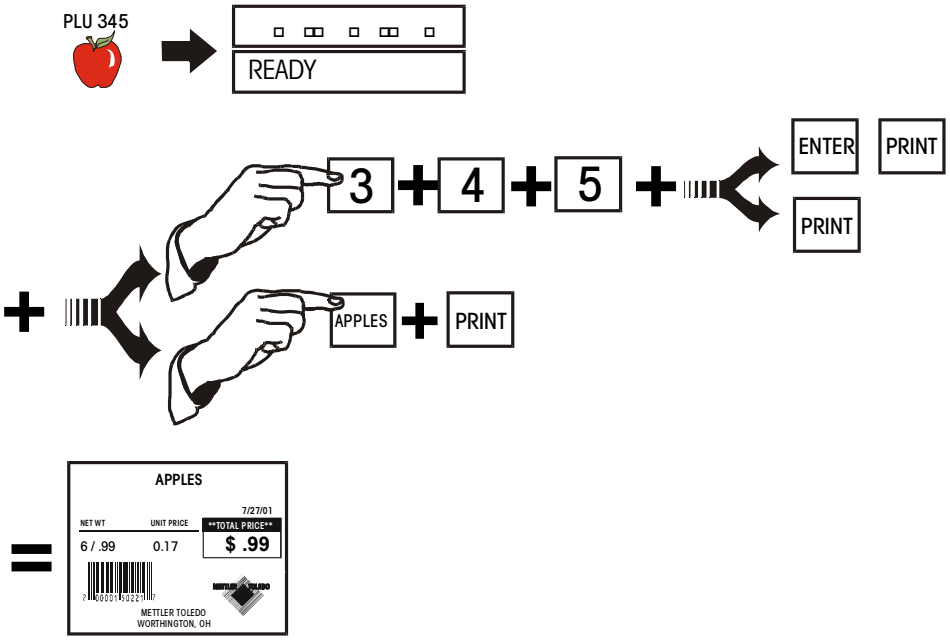
By-Weight PLU Prepack Mode

To print a run of labels (multiple labels of the same PLU number), use the Prepack Mode. Prepack mode retains the PLU in memory until you press the CLEAR key to end the run. If the READY prompt is not displayed, press the CLEAR key before starting.

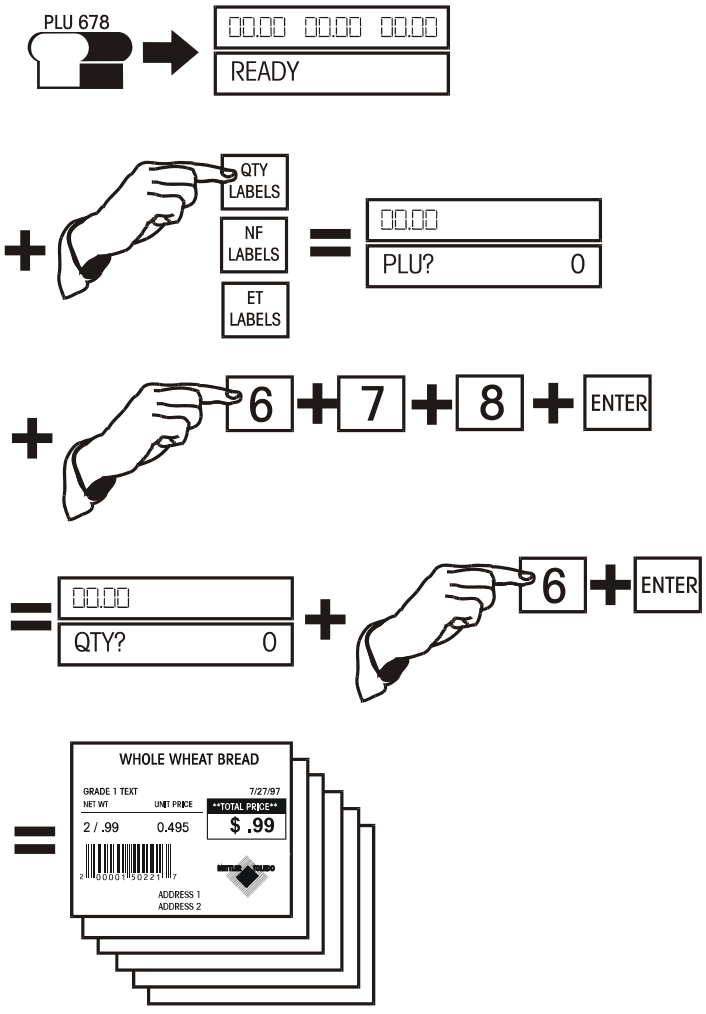


By-Count and Standard Pack (Single Label)

To print a single By-Count or Standard Pack label, follow this procedure. If the READY prompt is not displayed, press the CLEAR key before starting.

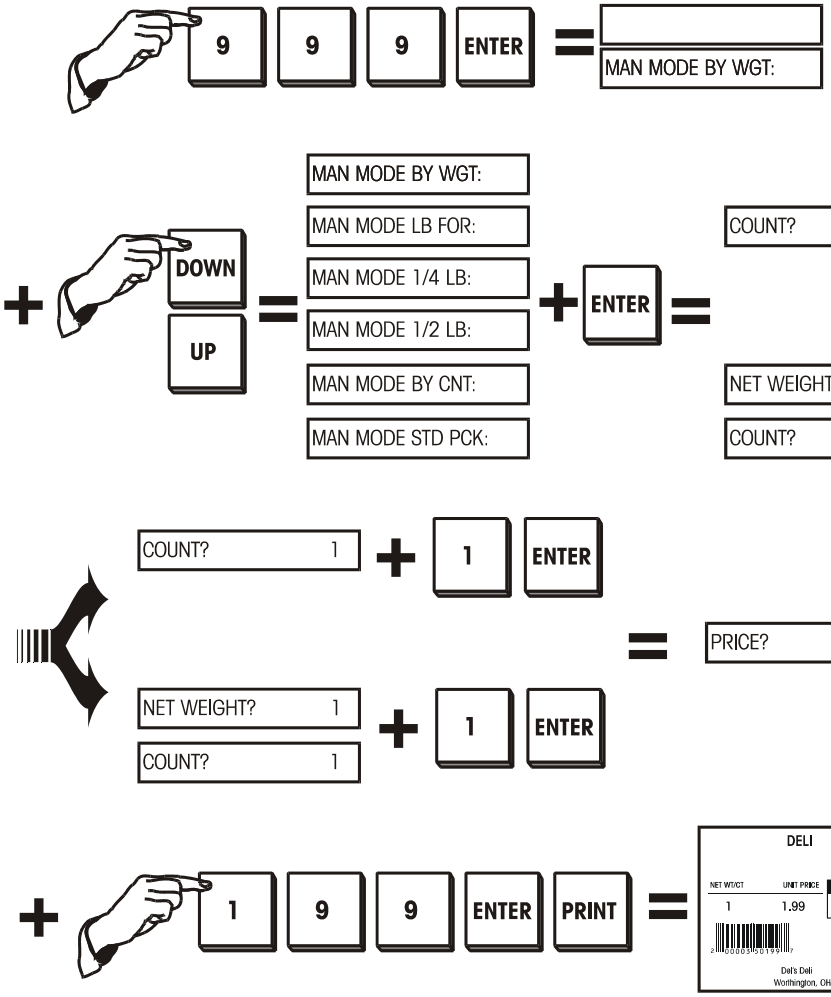


Batch Printing (By-Count and Standard Pack Only)

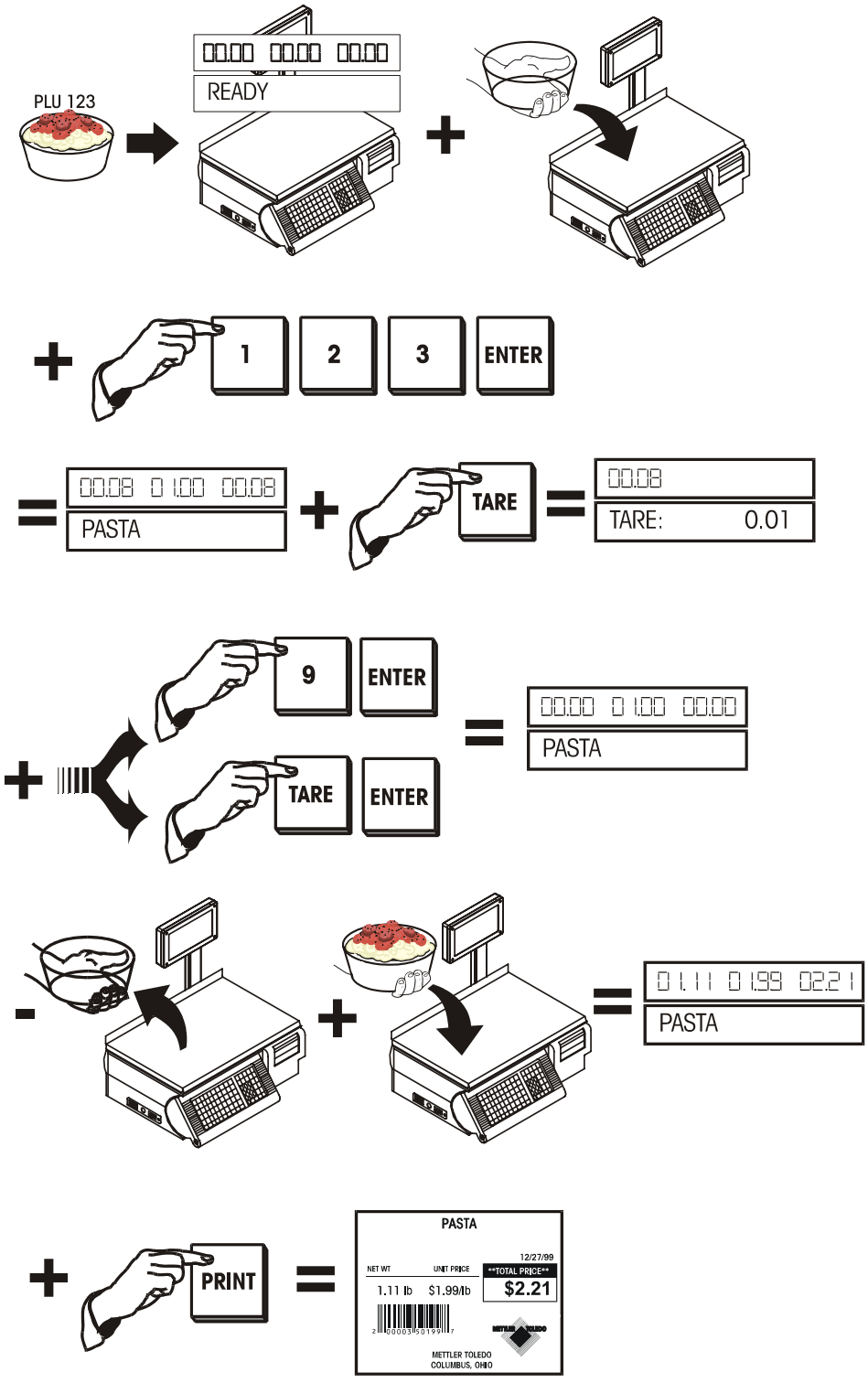


Manual Mode PLU Label Printing

If a PLU number is not available, a temporary pricing mode is available, as follows.



Manual Tare and Tare Override



Tare

PLU Stored Tare

A tare may be stored with a PLU. In this case, when the PLU is called and no weight is on the platter, the weight display will show a negative number (the tare weight) and a cursor will appear over Net.

Proportional Tare

Proportional tares may be used when supported by the master scale and the PLU is programmed for a proportional tare. This calculation is done automatically by the scale.

Forced Tare

Some items will *require* the operator to enter a tare to complete a transaction. This is called a "forced tare."

Select the PLU.

The bottom display will show **TARE**. You can either key in the tare and press ENTER, or place the tare on the platter and press ENTER. If no tare is desired, press TARE, then ENTER, then place the item on the platter.

Pushbutton Tare

A tare can be manually entered by the following procedure using the TARE button.

Select the PLU (either by entering the number or pressing the preset key).

Press the TARE key.

Place the container on the platter and press TARE.

Keyboard Tare

Select the PLU (either by entering the number or pressing the preset key).

Press the TARE key.

Key in the tare weight. Press ENTER.

Place the item on platter.

If the Canadian Tare is set to YES in the Calibration Settings then the platter must be empty when keying in the tare, and you cannot clear the Tare by entering 0.00.

Memory Mode

When enabled, the Memory mode feature is an alternative to printing individual labels and allows accumulating multiple items for a customer. A receipt label can be printed showing the grand total and a department bar code.

Call the PLU, and place the item on the scale.

The MEM key can act as an ENTER/MEM key. To eliminate keystrokes, press MEM after keying in the PLU to immediately enter the transaction into the scale's memory.

Press the MEM key to enter the current transaction into memory. The cursor over "Memory" on the Display tower will light.

Remove the item from the platter and repeat for the desired number of transactions, pressing the MEM key after each transaction.

When all items are entered for a particular customer, clear the platter and press the MEM key.

If Continuous stock is used the label shows a line of description and the price information for up to 15 items.

You will be prompted to print the total. Press ENTER to print the accumulated total price.

You are then asked **PRINT OK?** If the printing was successful, press the DOWN key to answer **YES**, then press ENTER; the memory is now cleared and the cursor over "Memory" will turn off.

If the printing was not okay, or you do not want to clear the memory, press the DOWN key until **NO** appears, then press ENTER. You may then either print again or add additional transactions to the accumulator.

At the initial **PRINT?** prompt, after pressing MEM with an empty platter, you can scroll with the UP and DOWN keys to **CANCEL?** or **CONTINUE?.** At the **CANCEL?** prompt, pressing ENTER will bring up the **CLEAR MEMORY? NO** prompt. Toggle between **YES** and **NO** here to clear the memory. At the **CONTINUE?** prompt, pressing ENTER will retain the current memory as is so that more items can be added.

Void

The last ten transactions can be voided from the totals accumulators using this function.

Press the VOID key and use the DOWN and UP keys to display previous transactions.

The transactions will be displayed as follows: the top display will show the number of transactions/labels printed, item number, and total price.

The lower display will show the product description and whether it has been voided or not (Y/N). When the transaction you wish to void is displayed, press ENTER.

The display will ask if you want to void the transaction. Use the DOWN key to change your response to **Y,** then press ENTER.

You may either continue to void other transactions or press CLEAR to return to the **READY** prompt.

Manual Override Functions

Certain information can be overridden after the PLU has been called. These changes are temporary and last only for a single transaction or a single "run" in Prepack mode. Some or all of these overrides may be disabled through Unit Setup.

Tare Override

When the unit setup allows for programmed tares to be overridden, the desired tare can be entered as if there were no preprogrammed tare.

Keypad Tare

Call the PLU. If a tare is programmed in the PLU the Weight display will show the tare as a negative number and the "Net" cursor will light.

Press TARE.

Enter in the desired tare weight, then press ENTER.

Pushbutton Tare

Call the PLU.

Press TARE.

Place the container on the platter, then press TARE.

Place the item on the platter.

Price Override

When allowed by the unit set up, prices may be overridden by the operator with either of the following procedures:

Place the item on the platter.

Select the PLU.

Key in the new price, and press ENTER.

or

Call the PLU.

Press PRICE CHANGE.

Key in the new price. Press ENTER.

Place the item on the platter.

ET, NF Record Override

Extra Text and Nutrition Facts records are linked to a PLU using Extra text and Nutrition Fact record numbers programmed into the PLU record in the master database. These Record numbers can be overridden using the ET/NF CHANGE key.

Extra Text Change

When allowed by the unit set up, the Extra Text for a single transaction or Prepack "run" may be changed.

Call the PLU.

Press the ET/NF CHANGE key.

Using the DOWN and UP keys, you will be able to toggle between **ET** (Extra Text) and **NF** (Nutrition Facts). When **ET** is displayed, press ENTER.

The current Extra Text number will be displayed. Key in the new Extra Text number, then press ENTER.

Place the item on the platter (if By Weight item).

Press PRINT to print the label (if in Service mode).

Nutrition Fact Change

When allowed by the unit set up, the Nutrition Facts may be changed.

Call the PLU.

Press the ET/NF CHANGE key.

Using the DOWN and UP keys, you will be able to toggle between **ET** (Extra Text) and **NF** (Nutrition Facts). When **NF** is displayed, press ENTER.

The current Nutrition Fact number will be displayed. Key in the new Nutrition Fact number, then press ENTER.

Place the item on the platter (if By Weight item).

Press PRINT to print the label (if in Service mode).

Net Weight, Count Override

Standard Pack Weight/Count Change

For Standard Pack items, the count and/or the Net weight may be changed. When the count is changed, a new total price and net weight will be calculated from the unit price and new count value. When the Net weight is changed, the total price does not change, however a new unit price is calculated from the total price and new Net weight.

To change the quantity or weight of the item, press the CNT/WT CHANGE key.

Use the DOWN and UP keys to toggle between **QTY** (quantity, count) and **WEIGHT**.

To change the quantity of the pack, press ENTER when **QTY** is displayed. Key in the new quantity, then press ENTER.

To change the total weight, press ENTER when **WEIGHT** is displayed.

Key in the new weight (in ounces), then press ENTER.

Press CLEAR to return to the Item Description display.

Press PRINT to print a label.

By Count Change

For products that are priced By Count (e.g., 10 biscuits for $5.00), the count (10 biscuits) may be changed; a new price will then be calculated (e.g., 5 biscuits would be $2.50).

Retrieve the PLU. Press the CNT/WT CHANGE key.

The current quantity will be displayed and you will be prompted to enter the new quantity. Key in the new quantity; press ENTER.

The new quantity and the adjusted price will appear on the display and will also be printed on the label.

Press PRINT to print a label.

Shelf Life Override

After calling up the PLU, press the SHELF LIFE CHANGE key.

You are prompted to enter the new Sell By date. Depending on the unit setup, you will enter in the new date one of two ways: if your display reads **ENTER DAYS**, enter the number of days *until* the desired Sell By date. If the display reads **ENTER DATE**, enter the date of the desired Sell By date in the format of MMDDYY, then press ENTER.

Place the item on the platter (if By Weight item).

Press PRINT to print the label (if in Service mode).

Blank Label Fields

When allowed by the unit setup, certain fields on the labels may be temporarily blanked out. Select the PLU. Press the BLANK FIELD key.

Use the DOWN and UP keys to toggle between **BLANK PACK DATE**, **BLANK NET WEIGHT**, **BLANK UNIT PRICE**, **BLANK TOTAL PRICE**, **BLANK SHELF LIFE**, **BLANK USE BY** (date).

When you have the field you would like to blank out displayed, press ENTER.

The display will ask you if you want the field blanked. Press the DOWN and UP keys to change the answers to **YES,** then press ENTER.

You may continue to blank other fields or press CLEAR two times when you are done.

Place the item on the platter (if By Weight item).

Press PRINT to print the label (if in Service mode).

Master Off Line

Not Applicable to SA (StandAlone) model.

During scale operations, the satellite relies on the master to supply PLU files and record the PLU accumulators after a transaction. When PLU's are retrieved from the master scale, the satellite scale makes a backup record of the PLU information.

If the master is turned off, or the connecting cables to the master are disconnected or broken the unit will be off line.

When the master is off line and a PLU is called, the display shows **SEARCHING...** for a few seconds, the Online cursor is removed, and the satellite searches its backup files for the PLU record.

The satellite does not store the PLU accumulators for later transmission to the master during off line operation.

If a PLU is called and no backup file exists, the scale will default to "manual PLU's." The PLU is then treated as a "Manual PLU."

The display will show **MANUAL MODE BY WGT**. Use the DOWN and UP keys to select between **BY WEIGHT**, **LB FOR**, **¼ LB**, **½ LB**, **BY COUNT**, or **STD PACK** pricing. Place the item on the platter. (For Standard Pack items, the weight must first be entered, in ounces, then press ENTER). Key in the price, then press ENTER.

To print a label, press PRINT. A label will be printed with the department name in the product description field and department UPC in the Item number field of the bar code.

11 Standalone Database Functions

General Description

The Model 8450 Standalone stores and maintains its own database of PLU information, extra text, nutrifacts, and graphics. It is available with 256K, 512K or 1M, 2M, or 4M capacity memory. The following table details the amount of records each size of memory can hold.

	PLUs (223 bytes each)	ET Records (540 bytes each)	NF Records (383 bytes each)
4 Meg	18400	0	0
	5400	5400	0
	3600	3600	3600
	6800	0	6800
2 Meg	9200	0	0
	2700	2700	0
	1800	1800	1800
	3400	0	3400
1 Meg	4600	0	0
	1350	1350	0
	900	900	900
	1700	0	1700
512K	2300	0	0
	675	675	0
	450	450	450
	850	0	850
256K	1150	0	0
	335	335	0
	225	225	225
	425	0	425
ET recs + NF Recs + Graphic Recs = 7280 Max			

Table 4-1: Approximate Memory Capacities

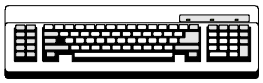
More than one department of information can be stored in memory but only the current department's information can be accessed at a time. For example, if department 1 is the current department, only PLUs entered in department 1 will be accessible. The department can be changed in either the Unit Setup Mode or in the Database Setup Mode.

Standalone Database Functions

The following is an overview of the database setup structure, with the first row showing the major headings. The columns below each heading show specific commands available under that function. The UP/DOWN key scrolls through the selections. The ENTER key allows changes to the selected function.

EDIT	QUICK	PRINT	CLEAR
PLU	PRICE	PLU TOTALS	CLEAR PLU/ITEM
ET	TARE 1	GROUP TOTALS	CLEAR ET
NF	ET #	HOURLY TOTAL	CLEAR NF
ACTION CODE	NF #	GRAND TOTALS	CLEAR GR
GRADE	SHELF LIFE	MEM AVAILABLE	CLEAR PLU/ITEM TOTALS
GROUP	USE BY		CLEAR GROUP TOTALS
DEPT INFO	GROUP		HOURLY ACCUMULATORS
- DEPT #	ACTION CODE		VOID ACCUMULATORS
- DEPT NAME	ITEM #		COMPRESS DATABASE
- DEPT ADDR	GRADE #		CLEAR ALL
- DEPT UPC			
ITEM # DUPE			

Table 4-2: Database Functions



Required

Editing any of the alphabetical fields, such as Description and Extra Text, requires a programming keyboard.

Database Setup Mode

To access the database setup, press the SETUP MODE key. Use UP/DOWN to toggle to **DATABASE,** then press ENTER. If a password has been set up for the database mode, key in the password and press ENTER.

Passwords

To change the password for database access, press the PASSWORDS key. At the **PASSWORD** prompt**,** enter a number between 1 and 9999. To disable the password enter 0.

Edit

This function allows you to edit records in the database. The fields that are editable vary depending on the type of PLU. For example, a Standard Pack PLU will not need a Tare or Unit Price field.

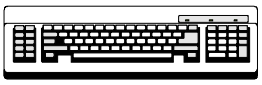
PLU

Press ENTER at the **PLU** prompt to change or to add a new PLU record. Enter the PLU you wish to edit or add. If it is a new PLU, the prompt **PLU NT FD! ADD ACTV** will appear. To continue and add a new active record press ENTER**,** otherwise press CLEAR. Respond to each of the following prompts by pressing ENTER to update it, or DOWN or UP to scroll to the next.

PLU NUMBER:
Enter a new PLU number from 1 - 999999.

ITEM:
Enter an item number between 0 - 9999999999. This number is used in the Bar Code symbol.

DESC 1 and DESC 2:


Required

These fields are edited by pressing ENTER at the **DESC1** or **DESC2** prompt. Changes must be made on the programming keyboard that is connected to the jack on the bottom of the Model 8450. The Desc1 line displays when that PLU is called up. There is a maximum of 32 alphanumeric characters per description field.

PLU TYPE:
Choose **BY WGT, LB FOR, BY 1/2, BY 1/4, BY CNT, STD PACK** or **MANUAL** by toggling to that prompt and pressing ENTER.

TARE1/COUNT:
Toggle between **FORCED** or a numeric value. For the numeric value, enter the value of these tares with the numeric keypad and press ENTER. For a forced tare, toggle to **FORCED** and press ENTER.

TARE/PROP TARE:
Toggle between **FORCED, PROP,** or a numeric value. For the numeric value, enter the value of these tares with the numeric keypad and press ENTER. For a forced tare, toggle to **FORCED** and press ENTER. For **PROP** proportional tare, press ENTER and then enter the percentage for the proportional tare as a value between 0 and 99.99. For example, if 10.00 is entered, the proportional tare is 10%.

UNIT/TOTAL PRICE:
Enter 6 digits 0 - 999999 or **FORCED** price for By-Weight, lb/for, ¼, ½, total price for By-Count, and Standard Pack. To change the currency increments, enter the currency function under Unit Setup.

SHELF LIFE:
0 - 999 days used to calculate Sell By date printed on the label.

USE BY:
0 - 999 days used to calculate Use By date printed on the label.

GROUP #:
Items can be categorized by groups within a department. For example, in a bakery there could be a group for cookies and a group for pies. This allows various reports to be printed based on each group. To change this enter a new value between 0 - 500 with the numeric keypad and press ENTER.

GRADE #:
Lines of text with grade information can be linked to each PLU. Enter the number of the Grade text between 0 - 16 to be linked to this PLU with the numeric keypad and press ENTER. 0 means no grade is selected.

ET #:
Lines of extra text can be linked to each PLU. Enter the number of the Extra Text record between 0 - 999999 to be linked with this PLU with the numeric keypad and press ENTER. 0 means no ET is selected.

NF #:
Nutrition Fact information can be linked to each PLU. Enter the number of the Nutrition Fact record between 0 - 999999 to be linked with this PLU with the numeric keypad and press ENTER. 0 means no NF is selected.

GRAPHIC:
Graphics can be linked to each PLU and will be printed if a label format that prints a graphic is selected. Enter the number of the graphic record between 0 - 999999 to be linked with this PLU with the numeric keypad and press ENTER. 0 means no Graphic is selected.

ACTION CODE #:
Action codes can be linked to each PLU which will replace the store address, display a different PLU description, or can be used to scroll a marquee. Enter the number of the Action Code record between 0 - 50 to be linked with this PLU with the numeric keypad and press ENTER. 0 means no Action Code is selected.

BARCODE:

The barcode to be printed on the label is determined by this setting. This menu is different depending on the Unit Setup for barcode type, **EAN** or **UPC**.

At the prompt you can choose from **USE SCL SETTING** or choose a type from the **TYPE?** List. These types include **GEN MERCH** (0)**, NOT IDENT** (1)**, RAND WT** (2)**, DRUG & HEALTH** (3)**, STORE MARK** (4)**, COUPONS** (5)**, PRICE ENCODED** (6) and **NOT IDENT** (7)**.** (The numbers in parentheses correspond to the values of these bar code types in the master units.) If **RAND WT** or **PRICE ENCODED** types are selected, a format string can be selected from the **FORMAT?** prompt list. For **RAND WT** and **PRICE ENCODED** these format strings are:

Note:
N = Item Number
C = Price Check Digit
$= Total Price
# = Weight
W = Weight Check Digit
X = Bar Code Check Digit.

0: NNNNN C$$$$ X
1: NNNNN O$$$$ X
2: NNNNN N$$$$ X
3: NNNNN $$$$$ X
4: NNNNN W#### X
5: NNNNN O#### X
6: NNNNN N#### X
7: NNNNN ##### X

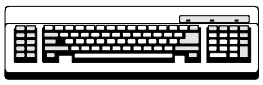
If the Unit Setup barcode type is EAN, you can first choose **USE SCL SETTING**. There is an additional field called **PREFIX**. There will be BY_WGT_PREFIX, BY_CNT_PREFIX, STD_PACK_PREFIX, and RUN_TOT_PREFIX. Both the first and second digit of the EAN barcode can be changed. To change the prefix, follow the example below.

	Display
	BY_WGT_PREFIX: 5_3
Press ENTER	**BY_WGT_PREFIX? 5_3**
Enter digits 2 and 4	**BY_WGT_PREFIX? 2_4**
Press ENTER	

The digits 2 and 4 are now set as the first and second digit of the "BY_WGT_PREFIX" prompt. The display now shows the next prompt "BY_CT_PREFIX 5_3: 2_1". Use the same procedure to set the other barcode prefix for the other PLU types.

BLANK:

This allows you to blank one of the following fields on a label: **PACK DATE**, **NET WEIGHT**, **UNIT PRICE**, or **TOTAL PRICE**. To blank one of these fields, press ENTER at that prompt and toggle **YES** or **NO**. When these fields are blanked, only the values are blanked and not the legends.


Required

Extra Text

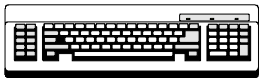
This allows you to add a new or edit an existing extra text record. Press ENTER at the **EXTRA TEXT** prompt. With the numeric keypad, enter the number of the extra text record to be edited (6 digit number 1-999999).

New Extra Text Records

If it is a new record, the prompt will display **XT NT FD! ADD XT**. To add the new extra text, press ENTER, otherwise press CLEAR. At the **CHAR PER LINE** prompt, enter a number between 1 and 99. 54 is the maximum number of characters per line without wrapping the line around. The most common numbers are 32, 42 and 54 characters per line.

Entering the Extra Text

Now you should be able to begin typing in the extra text with the programming keyboard. If the extra text was not a new record, the current text will be displayed on the screen and ready for editing. Otherwise, type in the new extra text. *Press [F10] on the keyboard when finished*. You will be prompted to **SAVE CHANGES**. Pressing ENTER will result in a **SURE? YES** prompt and require one more ENTER to save or CLEAR to exit without saving. Pressing CLEAR at the **SAVE CHANGES** prompt will exit without saving.


Required

Nutrition Facts

This allows you to edit a current or add a new nutrition facts record. The first prompt requests a nutrition facts record number (6 digit number 1-999999). If it is a new Nutrition Facts record, the display will read **NF NT FD! ADD NF**. Pressing ENTER here will continue and add a new record as the following describes. Pressing CLEAR will leave the nutrition facts editing.

LABEL?

At this prompt, choose the type of label for the nutrition facts to be printed on by toggling through the choices and pressing ENTER. **SINGLE** will print the nutrition facts on the label with all the rest of the PLU information. **ALT PLU/NF** will print a PLU label followed by a nutrition facts label, while **ALT NF/PLU** will print a nutrition facts label followed by a PLU label. **BATCH PLU/NF** and **BATCH NF/PLU** will do the same but in a batch process. The second nutrition facts only label will be printed according to the label format selected in the Unit Setup Label Format menu.

FORMAT?

The format for the nutrition facts record can be chosen by toggling through the following choices and pressing ENTER: **VRT STD** (vertical standard), **VERT SIMP** (vertical simplified), **TABULAR, LINR LND** (linear landscape), and **LINR PRT** (linear portrait).

SERV UNITS?

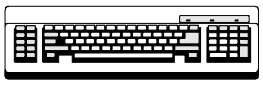
This will select the serving units used to calculate servings per container by toggling through the following prompts: **OZ** (numeric entry for By Weight and Standard Pack PLUs only), **PIECES** (numeric entry for by Count or Standard Pack PLUs ony), or **TEXT** (alphanumeric entry, entered for both serving units and servings per container). This is done by pressing ENTER on the prompt and entering in the requested information followed by ENTER. Table 4-3 lists the fields that are required (R) and voluntary (V) along with the insignificant value (when applicable).

Nutrition Field	Type	Insig. Amount
Calories	R	<=5
Calories from fat	R	<=5*
Calories from saturated	V	
Total fat (g)	R	<=0.5
Total fat (%)	R	
Saturated fat (g)	R	<=0.5
Saturated fat (%)	R	
Polyunsaturated fat (g)	V	
Monounsaturated fat(g)	V	
Cholesterol (mg)	R	<=2*
Cholesterol (%)	R	*
Sodium (mg)	R	<=5
Sodium (%)	R	
Potassium (mg)	V	
Potassium (%)	V	
Total carbohydrate (g)	R	<=1
Total carbohydrate (%)	R	
Dietary fiber (g)	R	<=1*
Dietary fiber (%)	R	*
Soluble fiber (g)	V	
Insoluble fiber (g)	V	
Sugar (g)	R	0*
Sugar Alcohol	V	
Other carbohydrates (g)	V	
Protein (g)	R	<=1
Protein (%)	V	
Vitamin A (%)	R	<=2%*
Beta-carotene (%)	V	
Vitamin C (%)	R	<=2%*
Calcium (%)	R	<=2%*
Iron (%)	R	<=2%*
Vitamin D (%)	V	
Vitamin E (%)	V	
Thiamin (%)	V	
Riboflavin (%)	V	
Niacin (%)	V	
Vitamin B6 (%)	V	
Folate (%)	V	
Vitamin B12 (%)	V	
Biotin (%)	V	
Pantothenic acid (%)	V	
Phosphorus (%)	V	
Iodine (%)	V	
Magnesium (%)	V	
Zinc (%)	V	
Copper (%)	V	

* = For the Vertical Simple template, these fields are not printed in the main Nutrition Facts table when they have insignificant values. They are printed in the footnote, following the words "Not a significant source of . . ." with the other fields that contain insignificant amounts. See 21 CFR part 101.9(f).

Table 4-3 NF Record

Press CLEAR to exit the nutrition facts setup. A prompt to **SAVE CHANGES** will be displayed. Press ENTER to save and exit. Press CLEAR to exit without saving.


Required

Action Code

Action Code records can be linked to a PLU to do one of three things, print a store address line, print a PLU description or scroll a marquee. Press ENTER at the **ACTION CODE** prompt to enter into this function. Type a current action code record number or a new record number and press ENTER (2 digit number 1-50). The next prompt, **TYPE**?, will toggle through the three types. Press ENTER to choose one of the types described below.

STORE ADDR

This type will print a store address at the bottom of a label. After pressing ENTER, the prompt **LINE 1** will appear. Press ENTER and type the **LINE 1** text on the programming keyboard followed by ENTER. The prompt **LINE 2** will then appear. Enter the **LINE 2** text followed by ENTER. At the **SAVE CHANGES** prompt, press ENTER to save and exit, or press CLEAR to exit without saving.

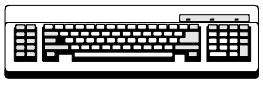
PLU DESCR

This type will override the PLU description that is normally displayed on the lower scale display. It does not change the description printed on the label. It can be used to display a special message for the customer or operator. After pressing ENTER, the prompt **LINE 1** will appear. Press ENTER here and type the text on the programming keyboard followed by ENTER. At the **SAVE CHANGES** prompt, press ENTER to save and exit, or press CLEAR to exit without saving.

MARQUEE

This type of action code will define the text for a scrolling marquee. After pressing ENTER, a cursor will appear waiting for text input from the PCAT keyboard. Enter the marquee text and press ENTER. At the **SAVE CHANGES** prompt, press ENTER to save and exit, or press CLEAR to exit without saving.

Grade

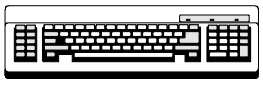

Required

This function is used to program Grade Text. After pressing ENTER, enter the record number of the grade text to be edited (2 digit number 0-16). A cursor will appear waiting for text input from the programming keyboard. Enter the grade text and press ENTER. At the **SAVE CHANGES** prompt, press ENTER to save and exit and CLEAR to exit without saving.

Group

This function will assign a text string to a group number. This text string will then be printed on the Group Totals report heading. After pressing ENTER, enter the record number of the group text to be edited. A cursor will appear waiting for text input from the programming keyboard. Enter the group text and press ENTER. At the **SAVE CHANGES** prompt, press ENTER to save and exit and CLEAR to exit without saving.

Department Info


Required

This allows information about the department to be entered. At each of the prompts, enter the requested information followed by ENTER. **DEPT NAME** and **DEPT ADDR** are alphanumeric entries from the programming keyboard. The **DEPT ADDR** can have 2 lines. The **DEPT UPC** is a generic UPC number for totals labels for that department.

Item # Duplication

This function simply toggles **YES** and **NO** entries. Selecting **YES** allows different PLU records to have the same item number. Selecting **NO** does not allow this.

Quick Change

This function allows you to change one of the following fields of a PLU without having to go through all of the other fields at the same time: **PRICE, TARE, ET #, NF #, SHELF LIFE, USE BY, GROUP #, ACTION CODE, ITEM**, and **GRADE #**. The **QUICK PRICE** changes the **UNIT PRICE** field for By Weight PLUs and the **TOTAL PRICE** field for Standard Pack and By Count PLUs. The **QUICK TARE** changes the **TARE1** field.

Print

This function will print reports for the following: **PLU TOTALS, GROUP TOTALS, HOURLY TOTALS, GRAND TOTALS**, and **MEMORY AVAILABLE**. The reports are printed on labels the format of which is chosen in the Unit Setup Label Format function. Refer to Appendix 2 for the label formats for reports. To print one of these reports, press ENTER at that prompt. The results are displayed on the tower display. To print, press the PRINT key (exception: Hourly totals will print automatically). To stop printing in the middle of a run, press the CLEAR key.

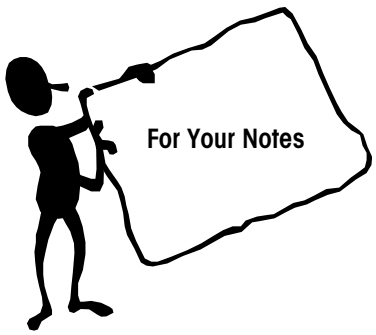
Clear

This function allows you to clear out or delete various parts of the database. The first 4 choices**, CLEAR PLU\ITEM, CLEAR EXTRA TEXT, CLEAR NUTRIFACT**, and **CLEAR GRAPHIC**, will clear individual records in each of those areas. Press ENTER at the prompt. The next prompt can be toggled between **ALL** and the record type. For example, press ENTER at the **CLEAR PLU/ITEM** prompt. Now you can toggle between **PLU/ITEM** and **ALL**. Pressing ENTER at **PLU/ITEM**, will request a PLU number to delete. Pressing ENTER at **ALL** will clear all PLU records. Both cases will prompt with **SURE?? NO** before continuing. The other 3 choices work the same way but with the other record types of extra text, nutrifact, and graphic.

The next four choices, **CLEAR PLU\ITEM TOT, CLR GROUP TOTALS, HOURLY ACCUMULATORS**, and **VOID ACCUMULATORS**, will clear the totals for each of those areas. **CLEAR PLU/ITEM TOT** works as described in the above paragraph where there is a choice between clearing totals for **ALL** PLUs or for just one PLU. **CLR GROUP TOTALS** requests a group number to be entered. Both end with a **SURE?? NO** prompt. The two accumulators display a prompt with the current department number and a toggle between **YES** and **NO**. There is no **SURE?** prompt to double check on clearing accumulators.

The next choice, **COMPRESS DATABASE**, should be used if any 'Out of Memory' errors are displayed. Press ENTER at the prompt and toggle **YES** and **NO** at the **SURE??** prompt to continue.

The final choice, **CLEAR ALL**, will clear everything from the database completely including all PLU, Extra Text, Nutrition Facts and Graphic records and accumulators. There is a **SURE?? NO** prompt to make sure this is what you want to do.


For Your Notes

12 Glossary

This glossary defines standard terms and some of the specialized terminology and concepts that are used in the weighing industry.

Accumulator—A database that holds a value such as total dollars, total weight, etc.

802.11 - The IEEE standard that specifies a carrier sense media access control and physical layer specifications for 1 and 2 megabit per second wireless LANs.

802.11b - The IEEE standard that specifies a carrier sense media access control and physical layer specifications for 5.5 and 11 megabit per second wireless LANs.

802.3 - The IEEE standard that specifies carrier sense media access control and physical layer specifications for Ethernet LANs.

Access Point - A wireless LAN transceiver that acts as a center point and bridges between wireless and wired networks.

Accuracy—Capability of a measuring device to provide measured values without systematic measurement deviations. The ratio of the error to the full-scale output.

Ambient Conditions—The conditions (humidity, pressure, temperature, etc.) of the medium surrounding a device.

Ambient Temperature—The temperature of the medium surrounding a device.

Analog-Digital Converter—An electronic device designed to convert analog signals (voltages) into digital signals. This type of circuit is used in scales and digital voltmeters.

Analog—In communications, transmission employing variable and continuous wave forms to represent information values, where interpretation by the receiver is an approximation of the encoded value; compare with **Digital**.

ANSI (American National Standards Institute)—The principal standards development body supported by over 1000 trade organizations, professional societies and companies. USA's member body to ISO (International Standards Organization).

ASCII (American Standard Code for Information Interchange)—A system used to represent alphanumeric data; a 7-bit-plus-parity character set established by ANSI and used for data communications and data processing; ASCII allows compatibility among data services; one of two such codes (see EBCDIC) used in data interchange, ASCII is normally used for asynchronous transmission.

Asynchronous—Data transmission that is not related to the timing, or a specific frequency, of a transmission facility; transmission characterized by individual characters, or bytes, encapsulated with start and stop bits, from which a receiver derives the necessary timing for sampling bits; also, start/stop transmission.

Attenuation—The deterioration of signal strength, measured in decibels; opposite of gain.

Auto Zero Maintenance (AZM)—AZM is a way for the scale to gradually re-zero itself to compensate for small changes in zero. Class III, legal-for-trade scales typically use an AZM range of ±0.5 display increments. AZM is active any time the weight on the scale is stable and is within the AZM range near gross zero.

Autotare—An autotare is taken by pressing the TARE key with the empty container on the scale. The scale then displays a zero weight with the net cursor illuminated.

Bandwidth - Specifies the amount of the frequency spectrum that is usable for data transfer. It identifies the maximum data rate that a signal can attain on the medium without encountering significant loss of power.

Bandwidth—The range of frequencies available for signaling; the difference expressed in Hertz between the highest and lowest frequencies of a band.

Baud/baud Rate—Unit of the transmission rate in serial data transmission expressed in bits per second.

Beamwidth - The angle of signal coverage provided by a radio. Beamwidth may by decreased by a directional antenna to increase gain.

Bit (Binary Digit)—The smallest unit of information in a binary system; a 1 or 0 condition.

Bit Parallel, Character Serial—This is a combination of parallel and serial transmission methods where characters are transmitted one at a time using nine wires.

Bit Serial, 20 mA or RS232—A transmission method where each character is transmitted sequentially.

Boot Protocol (BOOTP) - The protocol used for the static assignment of IP addresses to devices on the network.

BPS (Bits Per Second)—The basic unit of measure for serial data-transmission capacity; Kbps for kilo (thousands of) bits per second; Mbps for mega (millions of) bits per second; Gbps for giga (billions of) bits per second; Tbps for tera (trillions of) bits per second.

Bridge - A device used to connect LANs by forwarding packets across connections at the Media Access Control (MAC) layer.

Byte—Data word of length 8 bits, allows the encoding of 256 different characters. All common microprocessors possess a byte structure or a multiple of it in their data words.

Calibration—The comparison and adjustment of load cell outputs against standard test loads. A certified test weight is used in calibration as a known value that is compared with the displayed weight. The scale then adjusts the displayed weight accordingly.

Capacity—The maximum load that can be weighed on a particular scale.

Certificate of Conformance (COC)—A certificate and number issued by NIST under the National Type Evaluation Program that states a submitted device complies with applicable technical requirements of Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices".

Certification Seal—A stamp or seal applied by the weights and measures department to the tested weighing device to attest that certification has been carried out.

Certification—Official testing and sealing of an instrument (balances, weights) according to the certification requirements. The seal (Certification Seal) attests that the instrument has satisfied the certification requirements with respect to its design and metrological characteristics and, in particular, that it conforms with the Calibration Tolerance Limits.

Chain Tare— If a tare is entered using the numeric keypad with the scale in the net weight mode, then the tare value entered is added to the current tare weight value.

Character—Letter, number, punctuation, or any other symbol contained in a message.

Checksum—The total of a group of data items or a segment of data that is used for error-checking purposes. Both numeric and alphabetic fields can be used in calculating a checksum, since the binary content of the data can be added. Just as a check digit tests the accuracy of a single number, a checksum serves to test an entire set of data that has been transmitted or stored. Checksum can detect single-bit errors and some multiple-bit errors.

Class, Scale—An NIST classification system that separates scale types into groups.

Class	**Application or Scale Type** (Reference: 1999 Handbook 44)
I	Precision laboratory weighing.
II	Laboratory weighing, precious metals and gem weighing, grain test scales.
III	All commercial weighing not otherwise specified, grain test scales, retail precious metals and semi-precious gem weighing, animal scales, postal scales, scales used to determine laundry charges, and vehicle on-board weighing systems.
III L	Vehicle, axle load, livestock, railway track scales, crane, hopper (other than grain hopper) scales, and vehicle on-board weighing systems.
IIII	Wheel-load weighers and portable axle-load weighers used for highway weight enforcement.

Clock—An oscillator-generated signal that provides a timing reference for a transmission link; used to control the timing of functions such as sampling interval, signaling rate, and duration of signal elements; an "enclosed" digital network typically has only one master clock.

Communication Protocol—The rules governing the exchange of information between devices on a data link.

Computing Scale—A scale that indicates the money values of amount of commodity weighed at predetermined unit prices.

Conversion Formulas—Useful conversion formulas are as follows:

lb = kg x 2.205
kg = lb x 0.4536
mm = in. x 25.4
in. = mm x 0.03937
ºC = (ºF - 32) / 1.8
ºF = (ºC x 1.8) + 32

Counting Scale—A scale used to count a number of pieces all having the same weight. Electronic counting scales determine the mean individual weight and the weight of all counted parts, and supply the piece number by arithmetic division.

Counts—The total number of display increments available on a particular scale, which is determined by simply dividing the scale capacity by its readability. A scale with a capacity of 10 lb and a resolution of .001 lb would have 10,000 counts.

Creep Error—The change in load cell output occurring with time while under load and with all environmental conditions and other variables remaining the same.—Drift.

Current Loop Interface (20 mA)—Digital peripheral interface for serial data transmission in which the logic states 0 and 1 are represented by the currents 0 mA and 20 mA, e.g. TTY interface in teletype.

Data Bus (serial)—A data bus represents the electrical connection between several components. Bus multipoint connections have a long main cable to which the

participants are attached via short spur lines. In contrast to star or ring structures, the bus structure represents a multipoint connection. It can be used for the connection of computers, peripherals and measuring instruments.

Data Link—Any serial data-communications transmission path, generally between two adjacent nodes or devices and without intermediate switching nodes.

Data—Information represented in digital form, including voice, text, facsimile, and video.

Data-Transfer Rate—The average number of bits, characters, or blocks per unit of time transferred from a data source to a data sink.

dBi - A ratio of decibels to an isotropic antenna that is commonly used to measure antenna gain. The greater the dBi value, the higher the gain and, as such, the more acute the angle of coverage.

Declaration of Conformity—Statement by a supplier, claiming under his sole responsibility that a product, process or service is in conformity with a specific standard or other normative document.

Density—The density ("p") of a substance is the quotient of its mass ("m") and volume ("V"); p = m/V.

Department—A grouping of data files that contains similar items, such as produce, meat, seafood, etc.

Differential Quadrature Phase Shift Keying (DQPSK) - Modulation technique used by IEEE 802.11-compliant wireless LANs for transmission at 2Mbps.

Digital Filter—Software-based filtering of very low frequency to negate the effects of vibrations, drafts, etc. for the purpose of achieving more stable indications.

Digital—Referring to communications procedures, techniques, and equipment by which information is encoded as either a binary one (1) or zero (0); the representation of information in digits.

Dip Switches—Switches that are usually in banks of two or more and normally mounted directly to a circuit board that are used to enable or disable certain options or functions.

Dipole - A type of low gain (2.2 dBi) antenna consisting of two (often internal) elements.

Direct Sequence Spread Spectrum (DSSS) - A type of spread spectrum radio transmission that spreads its signal continuously over a wide frequency band.

Directional Antenna - An antenna that concentrates transmission power into a direction thereby increasing coverage distance at the expense of coverage angle. Directional antenna types include yagi, patch and parabolic dish.

Discrimination—Ability of an instrument to react to small variations of load. The discrimination threshold, for a given load, is the value of the smallest additional load that, when gently deposited on or removed from the load receptor, causes a perceptible change in the indication.

Diversity Antennas - An intelligent system of two antennas that continually senses incoming radio signals and automatically selects the antenna best positioned to receive it.

Dot Matrix—(e.g. 5x7 dots) Type of alphanumeric character indication—Display. Also used describe a printer—dot matrix printer.

Downloading—The process of sending data, operating software or other data from a host to another device.

Drift—Slow change with time in the value of a metrological characteristic (e.g. in the display) of a measuring device at constant loading.

Dynamic Host Configuration Protocol (DHCP) - A protocol available with many operating systems that automatically issues IP addresses within a specified range to devices on a network. The device retains the assigned address for a specific administrator-defined period.

Dynamic Weighing— When there is relative motion between the weighing object and the scale during the weighing process. The mass (weight) is recorded while the object is in motion.

EBCDIC (Extended Binary Coded Decimal Interchange Code)—An eight-bit code used primarily in IBM® equipment. The code has 256 characters in the set.

Edit—The process of adding, modifying, or deleting data in a file.

EEPROM (Electrically Erasable Programmable Read Only Memory)— Ready-only, non-volatile, semi-conductor memory that is erasable via a signal input to a certain pin and re-programmable.—See ROM.

EMI (Electromagnetic Interference)—A device's radiation leakage that couples onto a transmission medium, resulting (mainly) from the use of high-frequency-wave energy and signal modulation; reduced by shielding; minimum acceptable levels are detailed by the FCC, based on type of device and operating frequency.

Emulation—The imitation of all or part of one device, terminal, or computer by another, so that the imitating device accepts the same data, performs the same functions, and appears to other network devices as if it were the imitated device.

EPROM (Erasable Programmable Read-Only Memory)—Ready-only, non-volatile, semi-conductor memory that is erasable via ultra violet light and re-programmable.—See ROM.

Erasable Storage—A storage device whose contents can be modified (e.g., Random Access Memory, or RAM) as contrasted with read-only storage (e.g., Read-Only Memory, or ROM).

Ethernet—A popular local area network design (originally designed by Xerox® Corp.) characterized by 10-Mbps baseband transmission over a shielded coaxial cable and employing CSMA/CD as the access control mechanism; standardized by the IEEE as specification IEEE 802.3; referring to the Ethernet design or as compatible with Ethernet.

Even Parity—Data verification method in which each character must have an even number of "on" bits.

Excitation Voltage—The electrical voltage applied to a transducer or load cell for proper operation.

File—A collection of data stored in memory or other storage device such as a floppy or hard disk.

Filter—An electrical circuit designed to pass through certain frequencies and reject others.

Floppy Disk—A removable storage device used on a PC. The most common in use now is the 1.44-megabyte floppy disk.

Flow Control—The procedure or technique used to regulate the flow of data between devices; prevents the loss of data once a device's buffer has reached its capacity.

Frequency Hopping Spread Spectrum (FHSS) - A type of spread spectrum radio transmission in which the transmitter and receiver hop in synchronization from one frequency to another according to a prearranged pattern.

Fresnel Effect - A phenomenon related to line of sight whereby an object that does not obstruct the visual line of sight obstructs the line of transmission for radio frequencies.

Full Duplex (FDX)—Transmission in either direction, at the same time.

Gain - A method of increasing the transmission distance of a radio by the concentration its signal in a single direction, typically through the use of a directional antenna. Gain does not increase a radio's signal strength, but simply redirects it. Therefore, as gain increases, the decrease in angle of coverage is inversely proportional.

Gain—Increased signal power, usually the result of amplification; see Attenuation.

Gateway—A conceptual or logical network station that serves to interconnect two otherwise incompatible networks, network nodes, sub-networks, or devices; performs a protocol-conversion operation across numerous communications layers.

Gigabyte—A term used to express the storage capacity of disk drives, RAM memory, etc. One Gigabyte is equivalent to one billion bytes of data. Commonly referred to as a "Gig"; one Gig, two Gigs, etc.

Gigahertz (GHz) - One billion cycles per second. A unit of measure for frequency.

Gram —The gram (unit symbol g) is the one thousandth part of a kilogram.

Gross Value (G or B)—Indication of the weight of a load on an instrument, with no tare or preset tare device in operation.

Gross Weight—Mass of the weighing sample (net weight) including its container or packaging (tare weight).

Ground—An electrical connection or common conductor that, at some point, connects to the earth. The reference point of an electrical system.

Half Duplex (HDX)—Transmission in either direction, but not at the same time.

Handbook 44—A series of regulations adopted by NIST (National Institute of Standards & Technology) to control the consistency of weighing and measuring devices.

Handshake—One or more special control lines for the timed coordination of the data flow in parallel and serial interfaces by acknowledgments between sender and transmitter. Example: The data receiver reports readiness to receive, the data transmitter then reports that the data are ready for transmission.

Hanging Scale—A scale designed to be hung from an overhead support where the load is suspended below the scale.

Hard Disk—Usually a permanent non-removable storage device used on PC's, usually with a great amount of storage capacity.

Hertz (Hz) - Cycles per second. A unit of measure for frequency.

Hertz (Hz)—A measure of frequency or bandwidth. The same as cycles per second.

Hidden Node - A station on a wireless LAN that attempts to transmit data to another station but, due to its location relative to the others, cannot sense that there is a third station simultaneously communicating with the intended recipient. Lost message and multiple retries is the result.

Humidity, Relative—The moisture content of air relative to the maximum that the air can contain at the same pressure and temperature.

Hysteresis—The maximum difference between load cell output readings for the same applied load. One reading is obtained by increasing the load from zero, and the other by decreasing the load from rated capacity. Usually measured at half rated capacity and expressed in percent of rated capacity.

I/O—Input/Output.

Increasing Load Test—The performance of a scale as increments of test load are successively added to the scale.

Increment—The value of the smallest value that can be reported by the scale (displayed or printed).

Institute of Electrical and Electronic Engineers (IEEE) - A professional society serving electrical engineers through its publications, conferences, and standards development activities. The body responsible for the Ethernet 802.3 and wireless LAN 802.11 specifications.

Interface—A shared boundary; a physical point of demarcation between two devices, where the electrical signals, connectors, timing, and handshaking are defined; the procedures, codes, and protocols that enable two entities to interact for a meaningful exchange of information.

International Organization for Legal Metrology (OIML)—Abbreviation for Organization Internationale de Metrologie Legale. The main task of the OIML involves unification of the administrative and technical regulations for measurement methods and measuring instruments for the field of legal metrology at an international level.

International Standard—An ISO standards document that has been approved in final balloting.

Intrinsically Safe—An instrument that will not produce any spark or thermal effects under normal or abnormal conditions that will ignite a specified gas mixture.

IPX (Internet Packet Exchange)—A product of Novell, Inc. that represents a network protocol for delivery of data packets from one network node to one or more other nodes. It does not provide guarantee of delivery (see SPX).

IR—Abbreviation for InfraRed. Light lying at the extreme range of red and outside of the visible range. The type of light emitted by an LED (Light Emitting Diode).

ISO (International Standards Organization)—This organization handles the international standardization of terms, measurement methods, tolerances and the like in the industrial field.

Isotropic - An antenna (or a theoretic construct of an antenna) that radiates its signal 360 degrees both vertically and horizontally-- a perfect sphere.

Item Number—The number programmed in a PLU file that is used to encode into a printed bar code symbol. The item number is then used by a bar code scanner to identify the commodity (item).

Jitter—The slight movement of a transmission signal in time or phase that can introduce errors and loss of synchronization in high-speed synchronous communications.

Jumper—(1) A wire which connects a number of pins on one end of a cable only, such a looping back Request to Send from Clear to Send. (2) Connector on a printed circuit board of an electronic circuit used to set or initiate certain functions. A jumper is either ON/SHORTED or OFF/OPEN.

Keyboard (keypad)—A device consisting of an array of keys used to initiate functions and/or enter alphanumeric data and special characters.

Keyboard Tare—Keyboard entered tare is used when the empty weight of a container is a known value. The known tare weight is entered using the numeric keys, and the TARE key is pressed.

Kilogram—the kilogram (unit symbol kg) is the base unit of mass in the metric system.

LAN—Local Area Network. Data link between individual computers at different locations, e.g. in an office or throughout the grounds of a factory, typically up to 1 km. The data

transmission rate lies between 100 KB/s and 20 MB/s. Local networks are multipoint connections. They operate with serial data transmission and are independent of the post office lines.

LCD—Abbreviation for Liquid Crystal Display; a type of display used many types of devices, including scales, calculators, notebook PC's, etc.

LED (Light Emitting Diode)—Also called light diode or luminescence diode. Available colors: red, green, yellow, and orange. An LED is a semiconductor diode that emits light when a current of about 10 mA flows through it. Its illuminating power is high, but its current consumption is also relatively high. Can be read without external light.—Readout.

Line of Sight - An unobstructed straight line between two transmitting devices. Line of sight is typically required for long-range directional radio transmission. Due to the curvature of the earth, the line of sight for devices not mounted on towers is limited to 16 miles (26km).

Linearity—Linearity is a measure of how well the scale is capable of following the linear relationship between the loaded weight and the display value. The characteristic curve of a balance is envisaged as a straight line between zero and maximum load. The non-linearity defines the width of the band within which a plus or minus deviation of the measured value from the ideal characteristic line can occur.

Linearization—The non-linearity of the characteristic curve of a weighing cell leads to measurement errors and various measures are thus employed in an attempt to keep the linearity error small. Modern linearizations are, e.g. correction of the characteristic curve by corrections stored in the microprocessor or built-in calibration weights that are weighed singly and together in the calibration process. The microprocessor determines the actual linearity deviation and then corrects it.

Load Cell—A device that produces an electrical output signal proportional to the applied weight or force.

Load—The weight or force applied to the load cell.

Loopback—Type of diagnostic test in which the transmitted signal is returned to the sending device after passing through all, or a portion of, a data communications link or network.

Loss—Reduction in signal strength, expressed in decibels; also, Attenuation; opposite of gain.

Manual Tare (Keyboard Tare)—The operator enters a tare value manually and presses the TARE key.

Mark—Presence of signal. In telegraph communication, a mark represents the closed condition or current flowing. A mark impulse is equivalent to a binary 1.

Mass—The physical quantity mass (m) is the property of matter of a body expressed in terms of both its inertial effects with respect to a change in its state of motion and the attraction it exerts on other bodies. The mass of an object is independent of its location. If is determined by comparison with bodies of known mass, for example by weighing. The embodiment of a unit of mass and its fractions or multiples is called weights or weight pieces. The base unit of mass is the kilogram or kg.

Master—In a scale network, the master acts like a PC File Server. The master contains all of the data records. A satellite on the network can retrieve the record and use it locally for a transaction. The master on the network keeps track on each transaction and adds it into an accumulator database. The METTLER TOLEDO master/satellite network is commonly called a TNET (Toledo Network). The TNET can support up to 24 satellites.

Maximum Capacity (Max)—Maximum weighing capacity, not taking into account the additive tare capacity.

Maximum Load Capacity—The maximum load a balance or scale can accommodate without damage. It is always greater or equal to the maximum load plus the maximum tare load. Abbreviation: Lim.

Maximum Load—Upper limit of the weighing range without consideration of the additional maximum tare.

Maximum Safe Load (Lim)—Maximum static load that can be carried by the instrument without permanently altering its metrological qualities.

Megabyte—A term used to express the storage capacity of disk drives, RAM memory, etc. One Megabyte is equivalent to one million bytes of data. Commonly referred to as a "Meg"; one Meg, two Megs, etc.

Megahertz (MHz) - One million cycles per second. A unit of measure for frequency.

MELSI—Mettler Large Scale Integration. A proprietary circuit that performs analog-to-digital weight conversion.

Memory—A type of storage used in PC's and scales, generally referred to as RAM (Random Access Memory). The RAM in a PC will only store data as long as the power is on. The RAM used for data storage in scales is usually battery backed in case of a power loss.

Menu—A group of selections or options on a screen.

Metric Weight—A unit of weight based on the kilogram (1,000 grams).

Metrology—The science of measurement, measurement systems, and units.

Minimum Capacity (Min)—Value of the load below, which the weighing results, may be subject to an excessive relative error.

M—Mega; designation for one million (e.g., Mbps or megabyte).

m—Milli; designation for one thousandth.

Modem (Modulator-Demodulator)—A device used to convert serial digital data from a transmitting terminal to a signal for transmission over a telephone channel, or to reconvert the transmitted signal to serial digital data for acceptance by a receiving terminal.

Modulation - Any of several techniques for combining user information with a transmitter's carrier signal.

Monitor—A display screen used on PC's and other devices.

Motion Detection—The process of sensing a rate of change of applied load to determine when a given weighing system has reached a state of equilibrium.

Multipath - The echoes created as a radio signal bounces off of physical objects.

MultiRange—A scale whose weighing range is divided into partial weighing ranges with different scale division values. Switching of the division values occurs automatically with increasing and decreasing load at the same display values. **n = (max.)/d**

Net Weight—The weight of a weighing sample after deduction of the weight of its packaging or of the transport device (tare weight) with which it had previously been weighed.

Network—An interconnected group of Nodes; a series of points, nodes, or stations connected by communications channels; the assembly of equipment through which connections are made between data stations.

NIST—Abbreviation for the National Institute of Standards & Technology.

Noise—An unwanted signal that can contribute to errors in measurement.

Notch Filter—A tunable filter used to filter out one specific frequency below the lowpass filter frequency.

NTEP—Abbreviation for the National Type Evaluation Program. An NIST procedure where devices submitted to NTEP are evaluated using Handbook 44 as a reference. See Certificate of Conformance (COC).

Number of Scale Divisions—Quotient calculated from maximum load (max.) and scale division

Odd Parity— A data verification method in which each character must have and odd number of "on" bits.

Omni-Directional Antenna- An antenna that provides a 360 degree transmission pattern. These types of antennas are used when coverage in all directions is required.

Optical Isolation—Two networks or devices that are connected only through and LED transmitter and photoelectric receiver and with no electrical continuity between the two devices.

Over/Under Indication—A scale that is capable of indicating weights greater or lesser than a predetermined weight.

Overload Rating, Safe—Maximum load in percent of rated capacity which can be safely applied without damaging or producing a permanent shift in performance characteristics beyond those specified.

Parabolic - A concave or dish-shaped object. Often refers to dish antennas. Peer-to-Peer Network: A network design in which each computer shares and uses devices on an equal basis.

Parallel Transmission—Transmission mode that sends a number of bits simultaneous over separate lines.

Parity Bit—A bit that is set at "0" or "1" in a character to ensure that the total number of "on" bits in the data field is even or odd. (See Even/Odd Parity)

Parity Check—The addition of non-information bits that make up a transmission block to ensure that the total number of 1s is always either even or odd.

Password—A set of characters or numbers that must be typed in to gain access to certain functions on a scale or computer.

PC—A common term referring to a Personal Computer.

Pending File—A temporary file that will be used to update a regular file.

Pin Assignment—In electronic instruments, this term refers to the assignment of the individual connector contacts to certain signals. Some types of commonly used connectors used on PC's and peripherals are internationally standardized.

Platter—The platform of a scale on which the load is placed.

PLU—Abbreviation for Price Look Up. The PLU number is a data record's index number used to store it in a data file, and by an operator to retrieve the record.

Poise—A moveable weight mounted upon or suspended from a weighbeam bar and used in combination with graduations on the bar to indicate weight values.

Polarity—Any condition in which there are two opposing voltage levels or changes, such as positive and negative.

Port—A point of access into a computer, a network, or other electronic device; the physical or electrical interface through which one gains access; the interface between a process and a communications or transmission facility.

Precision—The degree to which a scale conforms to a predetermined specification as well as its ability to successfully repeat actions within closely specified limits.

Prepackaging Scale, Prepack—A scale or weighing mode designed for weighing random weight prepackaged items.

PROM (Programmable Read Only Memory)—Nonvolatile memory device which retains its contents when the power supply is switched off. They can be only read (i.e. not written to) by the processor and contain programs and important device parameters. They are installed as integrated components.

Proportional Tare—Proportional Tare (SmartTouch Master must be Version 3.0 or later) is stored in the Tare2 field. By-Weight tares are stored in the Tare1 field. The Net Weight will be the gross weight minus the By-Weight Tare, minus the proportional tare, times the Gross Weight, minus By-Weight Tare value. The mathematical representation is as follows: Net Weight = (Gross Wgt - Tare1) - (Tare2 x (Gross Wgt - Tare1))

Protocol—Formal set of rules governing the format, timing, sequencing, and error control of exchanged messages on a data network; may be oriented toward data transfer over an interface, between two logical units directly connected, or on an end-to-end basis between two users over a large and complex network.

Pushbutton Zero—Pushbutton zero is a way for the operator to capture a new gross zero reference point. The weight on the scale must be stable and within the pushbutton zero capture range of the original zero recorded during calibration.

Radio Frequency (RF) - A generic term for radio-based technology.

RAM (Random Access Memory)—Storage device into which data can be entered (written) and read; compare with ROM.

Range - A linear measure of the distance that a transmitter can send a signal.

Readability—The smallest possible weight change detectable on the scale readout and a function of the external resolution.

Receiver Sensitivity - A measurement of the weakest signal a receiver can receive and still correctly translate it into data.

Repeatability, Reproducibility—The ability of a scale to duplicate the same value when identical samples are loaded and reloaded in succession. Simply put, it's getting the same value repeatedly.

Resolution—The smallest possible weight change detectable on the scale readout. A function of the external resolution.

Reverse Polarity TNC (RP-TNC) - A connector type unique to Aironet radios and antennas. Part 15.203 of the FCC rules covering spread-spectrum devices limits the types of antennas that may be used with transmission equipment. In compliance with this rule, Aironet, like all other wireless LAN providers, equips its radios and antennas with a unique connector to prevent attachment of non-approved antennas to radios.

RFI—Radio Frequency Interference

Roaming - A feature of some access points that allow users to move through a facility while maintaining unbroken connection to the LAN.

ROM (Read-Only-Memory)—A data storage device, the contents of which cannot normally be altered; storage in which writing-over is prevented; also, permanent storage; compare with RAM.

RS-232 Interface—A digital serial synchronous interface complies with the EIA RS-232 standard for modem connections for data transmission over the telephone lines. The standard is suitable for the description of computer interfaces as, e.g. connector design, pin assignment and signals are described. The use of modem control lines is not defined for the connection of computers and often leads to difficulties in data transmission.

RS-422—Electrical characteristics of balanced-voltage digital interface circuits.

RS-423—Electrical characteristics of unbalanced-voltage digital interface circuits.

RS-485—An interface similar to RS422 that has improved drive capabilities and can be used for multiple device networking.

Sample Rate—The number of samples per unit of time that a circuit or device measures the input signal.

Scale divisions, Number of (n)—The quotient of the capacity divided by the value of the scale division (e). **n = Capacity / e**

Scale Divisions, Value of (d)—The value of the scale division, expressed in units of mass, is the smallest subdivision of the scale.

Scale division—Smallest weighing increment of a scale.

Sealing, Security Seal—1. Eliminating access to certain components by attaching objects (seals) that are usually metallic. A safety seal is stamped on these objects by means of pliers (lead-sealing pliers). 2.The official process of attaching a seal to a measuring instrument, e.g. the main seal or the EC certification seal after an instrument has been certified, or any required safety seal. A locking seal is understood to refer to the kind of seal that simultaneously secures the housing of a balance to prevent it being opened.

Sensitivity—The smallest possible weight change detectable on the scale readout. A function of the external resolution.

Serial Data Transfer—The consecutive transmission of data over one or several lines.—Data Transmission.

Serial Transmission—The most common transmission mode in which information bits are sent sequentially on a single data channel.

Shielding—Protective enclosure or surrounding for and electrical circuit or transmission medium, such as coaxial cable, designed to minimize electromagnetic and radio frequency leakage and interference.

Shift Test—A test intended to disclose the weighing performance of a scale under off-center loading.

SI Units—Units of the International System of Units (SI = Systeme International d'Unites). The system consists of seven base units (meter, kilogram, second, ampere, Kelvin, mol, candela), a number of derived units (created by combining several base units e.g. Newton $N=m \cdot kg \cdot s^{-2}$), and certain supplementary units (e.g. radian rad for a plane angle).

Span Stability—The capability of an instrument to maintain the difference between the indication of weight at maximum capacity and the indication at zero over a period of use within specified limits.

Span—The full scale capacity less the zero or minimum value.

Specific Gravity—The ratio or mass of any material to the mass of the same volume of pure water at 4ºC.

Spread Spectrum - A radio transmission technology that "spreads" the user information over a much wider bandwidth than otherwise required in order to gain benefits such as improved interference tolerance and unlicensed operation.

Stability—The measure of a scale's ability to give the same weight or count reading at different points in time. Phenomena affecting stability include creep, vibration, temperature, and humidity.

Start Bit—In asynchronous transmission, the first bit or element in each character, normally a space, which prepares the receiving, equipment for the reception of a character.

Static Weighing— When an object is placed on the scale either manually or automatically for a sufficient time to record the mass (weight). After the weight is recorded, it is removed from the scale.

Stop Bit—In asynchronous transmission, the last bit, used to indicate the end of a character.

Strain Gage—A measuring element for converting force, pressure, tension, etc. into an electrical signal, usually by a change in resistance of the device.

String—Any combination of alphanumeric characters (letters, numbers and special characters.)

Tare—Tare is the empty weight of a container or vehicle. Tare is normally used to determine the net weight of the contents of the container. Tare is used in several different ways.

Temperature Range, Compensated—The range of temperature over which the load cell is compensated to maintain the rated output and zero balance within specified limits.

Test Weight—A calibrated weight used to calibrate scales.

Timeout—Expiration of predefined time period, at which point some specified action occurs. In communications, timeouts are employed to avoid unnecessary delays and improve traffic flow. They are used, for example, to specify maximum response times to polling and addressing before a procedure is automatically reinitiated.

TNET—Toledo Network. An RS485 communications network used in the Retail Master/Satellite network where a single master supports up to 24 satellites. The satellites retrieve PLU data from the master through the high-speed network as needed. The standard TNET runs at 345k baud.

Tolerance—A value fixing the limit of allowable error or departure from true performance or value, as established by authority of usage.

Tonne—A special name for the megagram (unit symbol t) which is equivalent to one thousand kilograms: $1\ t = 10^3\ kg$.

Troy Weight—A series of units of weight based on a twelve ounce pound using ounces of 20 pennyweight or 480 grams.

TTL—Transistor-to-Transistor logic. A type of solid state logic that uses only transistors to form the logic gates.

Vacuum Florescent Display—A type of display that illuminates like a light bulb. VFD displays are used when visibility is required in both brightly lit and dimly lit areas.

Weighing Range—The range, within which, a balance may be used for weighing. The limits of a weighing range are called minimum load (lower limit) and maximum load (upper limit).

Weighing—Determining the mass (weight) of an object. Weight force as the product of the mass of a body and the local acceleration due to Gravity. Weight or weight piece as

the embodiment of a mass unit. In commerce and industry, the result of a weighing can continue to be referred to as weight (DIN 1305).

Weighment—A single complete weighing operation.

Weight Tolerance—A term which describes the difference between the admissible plus or minus deviations and a specified weight value.

Weight Value—(lb or kg, etc.)

Wired Equivalent Privacy (WEP) - Optional security mechanism defined within the 802.11 standard designed to make the link integrity of the wireless medium equal to that of a cable.

X-ON/X-OFF (Transmitter On/Transmitter Off)—Control Characters in a serial communication data stream used for flow control, instructing a terminal to start transmission (X-ON) and end transmission (X-OFF).

Yagi - A type of often cylindrical directional antennas.

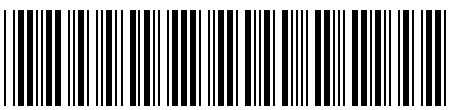
Zero Capture at Power-up—The scale attempts to capture a new center of zero when power is applied. Weight on the scale must be stable and within the zero capture range at power-up. The zero capture range is symmetrical around the original zero recorded during calibration.

Zero—Zero is the empty weight of the scale platform. The gross zero reference is recorded during the calibration procedure. The zero reference recorded during calibration can be modified to compensate for changes that are due to material buildup on the scale or temperature change.

METTLER TOLEDO
1900 Polaris Parkway
Columbus, Ohio 43240
www.mt.com

P/N: F14715500A

(2/01).00



F14715500A