8461

Smart*Touch*®
Scale/Printer

Service Manual

D15038200A
(2/01).00

METTLER TOLEDO®

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

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METTLER TOLEDO Model 8461 Service Manual D15038200A 1/01

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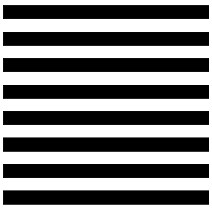

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METTLER TOLEDO, Training Dept., 1900 Polaris Parkway, Columbus, Ohio 43240

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
A15038200A	**8/99**	Updated Database Records page 1-10. Added Touchscreen Operation page 2-6. Corrected and updated setup screens in Chapter 3. Revised TNET wiring specs in Chapter 4. Corrected 8270 jumpers in chapter 5. Added +56/+11 VCD test points to Main PCB in Chapter 6. Added Customer Display to troubleshooting. Corrected reference from Pot R123 to R37 page 6-12. Added Chapter 13 COC, updated parts list.
B15038200A	**1/00**	Added Ethernet Client, and STEM (**Smart*Touch*®** Ethernet Master). Added Frequent Shopper Service Information. Added Batch Queue Instructions. Added Ethernet sections to Chapter 4 and 6. Updated Chapter 5 and 6. Removed Optional Kits Chapter.
C15038200A	**3/00**	Added Ethernet RF and DHCP information.
D15038200A	**2/01**	Added Standalone and updated RF module sections.

Change Notice

METTLER TOLEDO® reserves the right to make refinements or changes without notice.

PRECAUTIONS

READ this manual BEFORE operating or servicing this equipment.

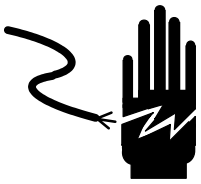
FOLLOW these instructions carefully.

SAVE this manual for future reference.

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

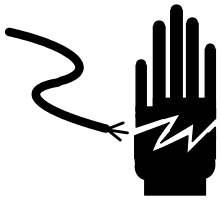
ALWAYS DISCONNECT this equipment from the power source before cleaning or performing maintenance.

CALL METTLER TOLEDO for parts, information, and service.



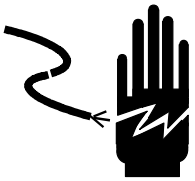
WARNING

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 result in personnel injury and/or property damage.



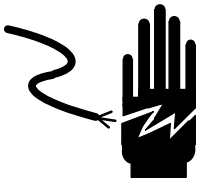
WARNING

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.

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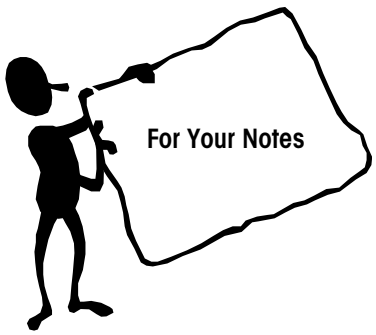

For Your Notes

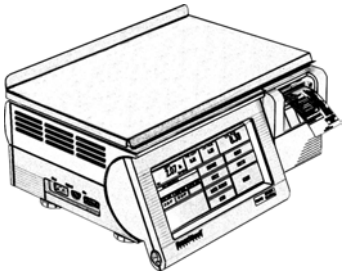
1 Introduction

General Description

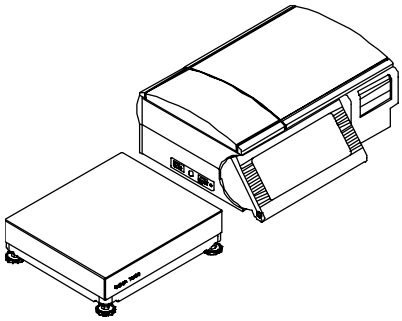
The **Smart*Touch*®** Ethernet Master will be referred to in this manual as either **Smart*Touch*®** Ethernet Master or STEM.

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.



Model 8461 Scale/Printer
Figure 1-1



Model 8461 Dead Deck w/optional Model 8270 Scale
Figure 1-2

The METTLER TOLEDO® Model 8461 **Smart*Touch*®** is a digital scale with a built-in thermal label printer. The Model 8461 is available as a TNET Satellite/Ethernet Client or Standalone Scale/Printer or a TNET Satellite/Ethernet Client or Standalone Dead Deck Printer (see Figure 1-1 and 1-2). Both the satellite and client are available with a **Smart*Touch*® TNET** Master or STEM (**Smart*Touch*®** Ethernet Master). Ethernet RF options are also available for the Model 8461. In addition, the satellite or client (with correct software) can be changed to a standalone version in setup mode and with the addition of a memory board (if not installed).

The Model 8461 **Smart*Touch*® TNET Satellite** is designed for connection to a **Smart*Touch*®** Master through a wired RS485 high-speed network. Each master can support up to 24 satellite scales. Any **Smart*Touch*®** satellite on the network can access the master editor for setup and programming.

The Model 8461 **Smart*Touch*® Ethernet Client** is designed for connection to a PC Scale Server or STEM through an Ethernet network. The satellite communicates to the server on the Ethernet network using TCP/IP protocol. The satellite can be run in a standalone mode that will store the database on a local Memory Board.

The **Smart*Touch*®** TNET Master or STEM (**Smart*Touch*®** Ethernet Master) can be installed in any satellite. The STEM will support TNET and Ethernet scales. Programming functions are identical to the **Smart*Touch*®** Master. The client can be run in a standalone mode that will store the database on a local Memory Board.

The Model 8461 **Smart*Touch*®** features an easy-to-use Graphical Touchscreen. The Touchscreen is an LCD panel with an infrared keyboard. Pull down menus and a word processor type Extra Text editor reduce operator-training time. The customer display is a dot matrix vacuum fluorescent display built into the top cover. Label formats are programmable allowing for many custom label variations.

The Model 8270 scale can be used for remote weight input on the Dead Deck Version (with optional Quad Serial I/O Kit and Interface Harness). The Model 8461 internal scale weighing capacity is 30 x .01 lb U.S., or 15 x .005 kg, or dual internal scale capacity 6 x .002/15 x .005 kg on export versions. When used with the Model 8270 Scale Base, the Model 8461 can be calibrated for either 50 x .01 lb or 20 x .005 kg.

Customer Display

The customer display is located at the rear of the scale built into the top cover. An optional display tower is available (Figure 1-4). The standard customer display and tower displays use a 19-character vacuum-fluorescent dot matrix display. Each character is made up of 5 x 7 dots with a comma, decimal point and cursor. Characters are .413" H x .236" W. Figure 1-3 shows the layout of the customer display and lens.

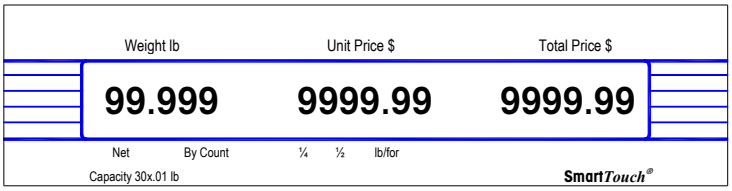


Figure 1-3: Customer Display

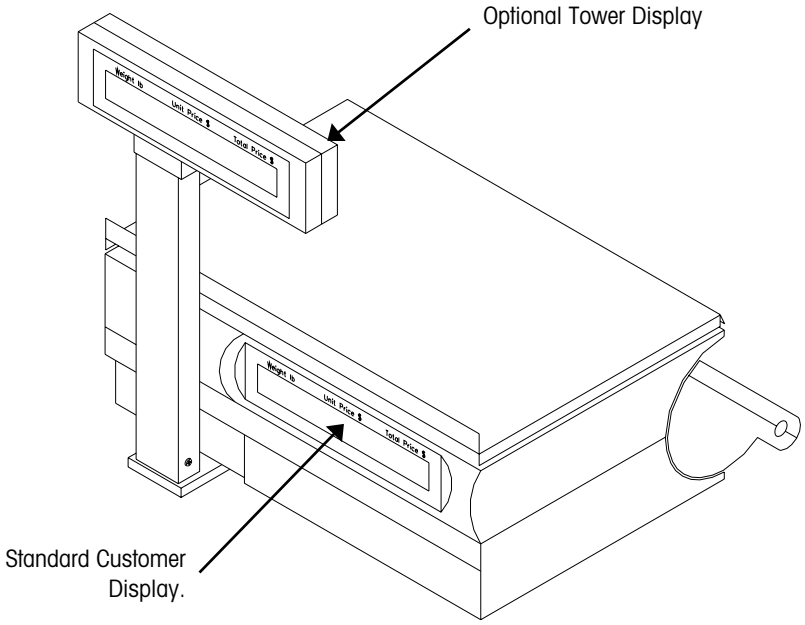


Figure 1-4: Model 8461 (Shown with Optional Tower Display)

Operator Touchscreen

The operator Touchscreen consists of an LCD Screen and Infrared Keyboard.

Specifications:

- **LCD** - 4 in x 9 in, 640 X 200 pixel, backlit Liquid Crystal Display (LCD)
- **Infrared Keyboard -** 40 X 17 infrared LED transmitter/receiver array that provides keyboard input. When key input is required, the key functions are drawn on the LCD for operator selection. When touching the key area, an invisible infrared beam is blocked creating a key entry. The fingertip must be withdrawn each time to reestablish the beam before another key entry can be made. There are two types of entries. One type senses the fingertip as it touches the key on entry. The other type is used on lists where the fingertip touches boxes in a list and is moved until the desired box is highlighted. When the fingertip is removed, key entry is made. Help information screens are available by touching the upper left corner of the screen.

Figure 1-5 shows the Home Screens for the TNET and Ethernet Client versions. The only difference between the home screens is the Unit ID number.

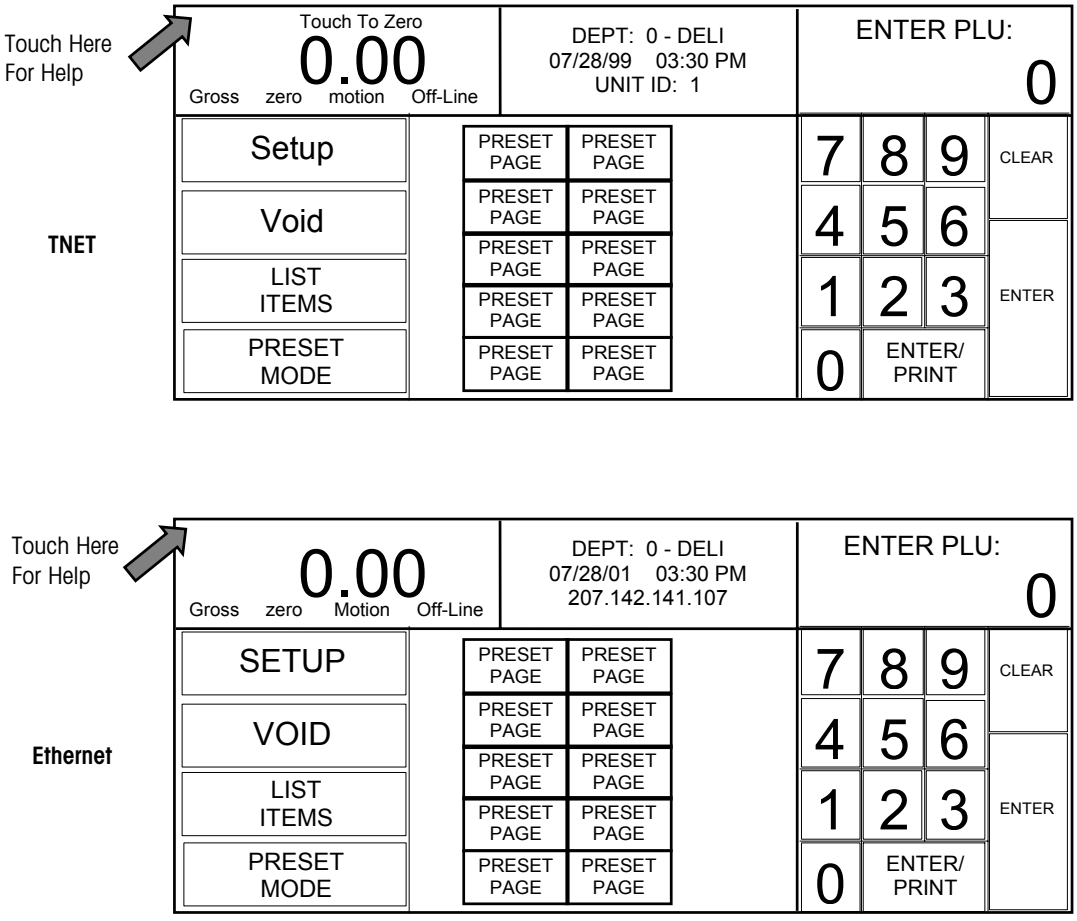


Figure 1-5: Home Screens – TNET Satellite (top) and Ethernet Client (bottom)

Capacity, Overloading, and Zero

The internal scale can be calibrated in 30 x 0.01 lb or 15 x 0.005 kg weighing modes. When used with the Model 8270 Scale Base, the Model 8461 can be calibrated for either 50 x .01 lb or 20 x .005 kg. The built-in scale is designed to withstand static overloads up to five times the rated capacity without sustaining permanent damage. A weight greater than capacity plus .05 lb or .025 kg blanks the display inhibits printing. 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**.

Tare

Tare is limited to a maximum of 30 lb or 9.995 kg.

Agency Approvals

The Model 8461 is designed to meet the requirements of the following agencies:

UL UL114 Office Appliances and Business Equipment. UL746.51 Test for Polymeric Enclosure for Portable Electrical Appliances.

CSA CSA Std. C22.2 No. 0 Definitions And General Requirements. CSA Std. C22.2 No 143 - 175 Office Machines.

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.

NTEP A Certificate of Conformance, number 97-129, has been issued for the Model 8461.

TNET Master/Satellite Communications

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.

Ethernet Communications

The STEM and Ethernet Clients communicate using TCP/IP protocol over a standard Ethernet network at 10 Mbps. Refer to Chapter 4 for details.

Ethernet RF

The Mercury-PC supports the following technologies:

Symbol® Spectrum24 802.11 FH

Symbol® Spectrum24

Aironet™/Telxon™ 2.4 TMA

Aironet™/Telxon™ 802.11 DS

Label Printer

The thermal label printer can use label sizes ranging from 1.5 to 7.9 inches, and continuous strip stock. Labels can be loaded in a stripped mode where labels automatically peel from the liner, or in unstripped mode where the label and liner are delivered. When using continuous stock, the tear/stripper bar can be used to tear to the exact length needed. Print specifications for the thermal printer are as follows:

(Note: the Speed/Power setting depends on the quality of the label stock for optimum printing.)

PRINTHEAD TYPE: Thick Film Preheated Thermal Printhead

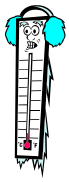
DOT DENSITY: 8 Dots/mm

PRINT SPEED: Speed/Power selections from 101.6 mm/sec to 122.5 mm/sec.

Electrical

The Model 8461 Power Supply is autoswitching. The AC supply voltage must be within the range of 85 VAC to 264 VAC, 50/60 Hz. Power usage on scale/printer versions is 0.75 amps. ***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.

Operating/Storage Temperature



Operating Range: 10ºC to 40ºC (50ºF to 104ºF), humidity from 5% to 95% non-condensing.

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

Reliability

The electronics, including the printhead drive electronics have demonstrated an MTBF of 17,520 hours with the power cycled off/on once per day. The printhead life is estimated at 1 million 50mm long labels.

Dimensions

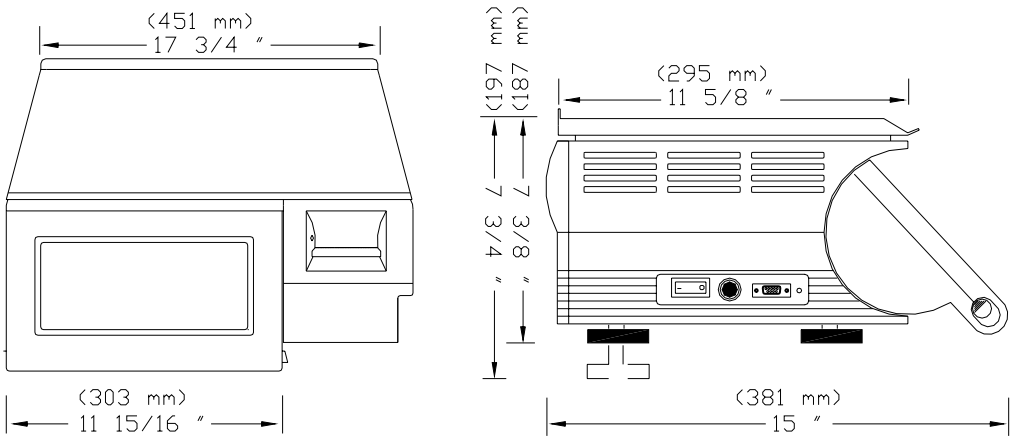
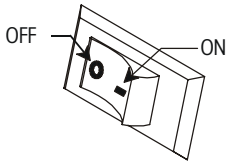


Figure 1-6: External Dimensions Model 8461

Major Component Map

Figures 1-7 and 1-8 illustrate the locations of Model 8461 major components described in this manual.

External Components



Power Switch (H)
Press **0** for OFF
Press - for ON

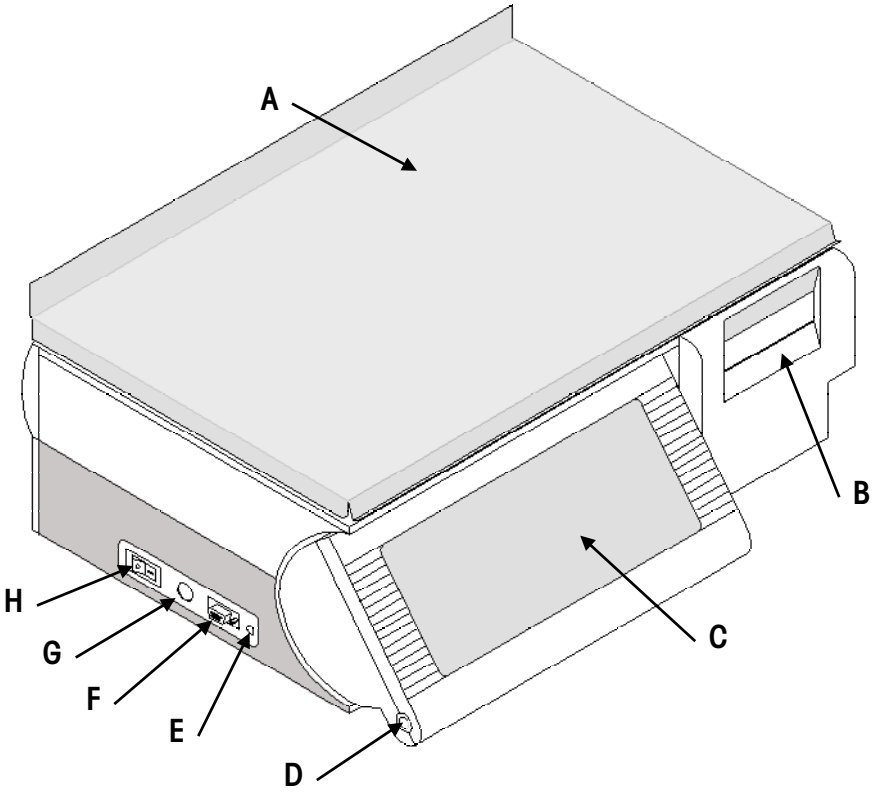
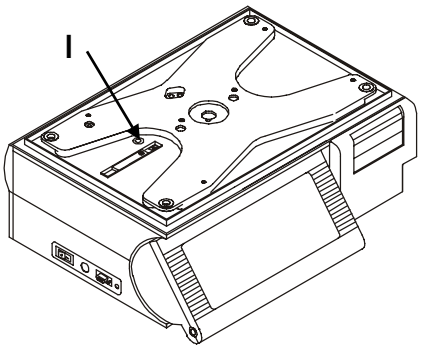


Figure 1-7: External Components



Ref	Description
A	Stainless Steel Platter (Or Dead Deck Cover)
B	Printer
C	Operator Touchscreen
D	Touchscreen Angle Adjustment Lock (Left)
E	CAL Switch Access Hole
F	Host/AUX Port
G	Programming Keyboard Jack (used with master)
H	Power Switch
I	**Smart*Touch*®** Master or STEM Setup Switch

Internal Components

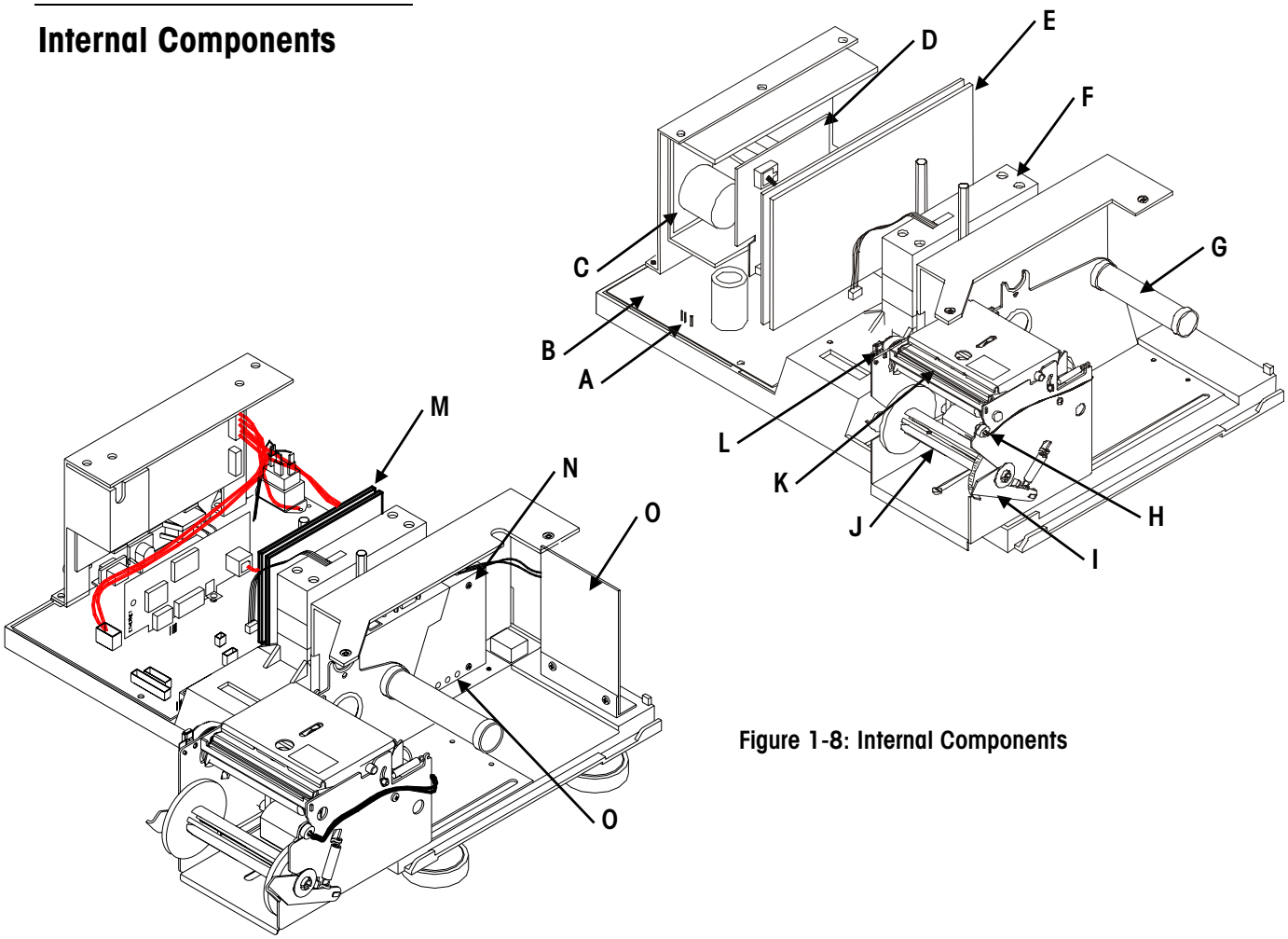


Figure 1-8: Internal Components

Ref	Description
A	Voltage Test Points for +5 and +12 VDC on Main PCB
B	Main PCB
C	+21 VDC Power Supply
D	Client - Ethernet PCB, or Serial/Ethernet PCB Satellite - Optional Serial PCB
E	**Smart*Touch*®** TNET Master or STEM: Master CPU/Memory PCB, or Satellite: Optional Satellite Memory PCB
F	Eagle Load Cell
G	Label Spool Holder
H	Take Label Sensor (Transmitter)
I	Take Up Spool Release Lever
J	Liner Take Up Spool
K	Thermal Print Head, 8 dots/mm
L	Take Label Sensor (Receiver)
M	Ethernet RF Hub PCB Assembly
N	Mercury-PC Radio Adapter
O	RF Antenna (First Version Mercury-PC)
P	Mercury-PC Status LED's

Main PCB Layout

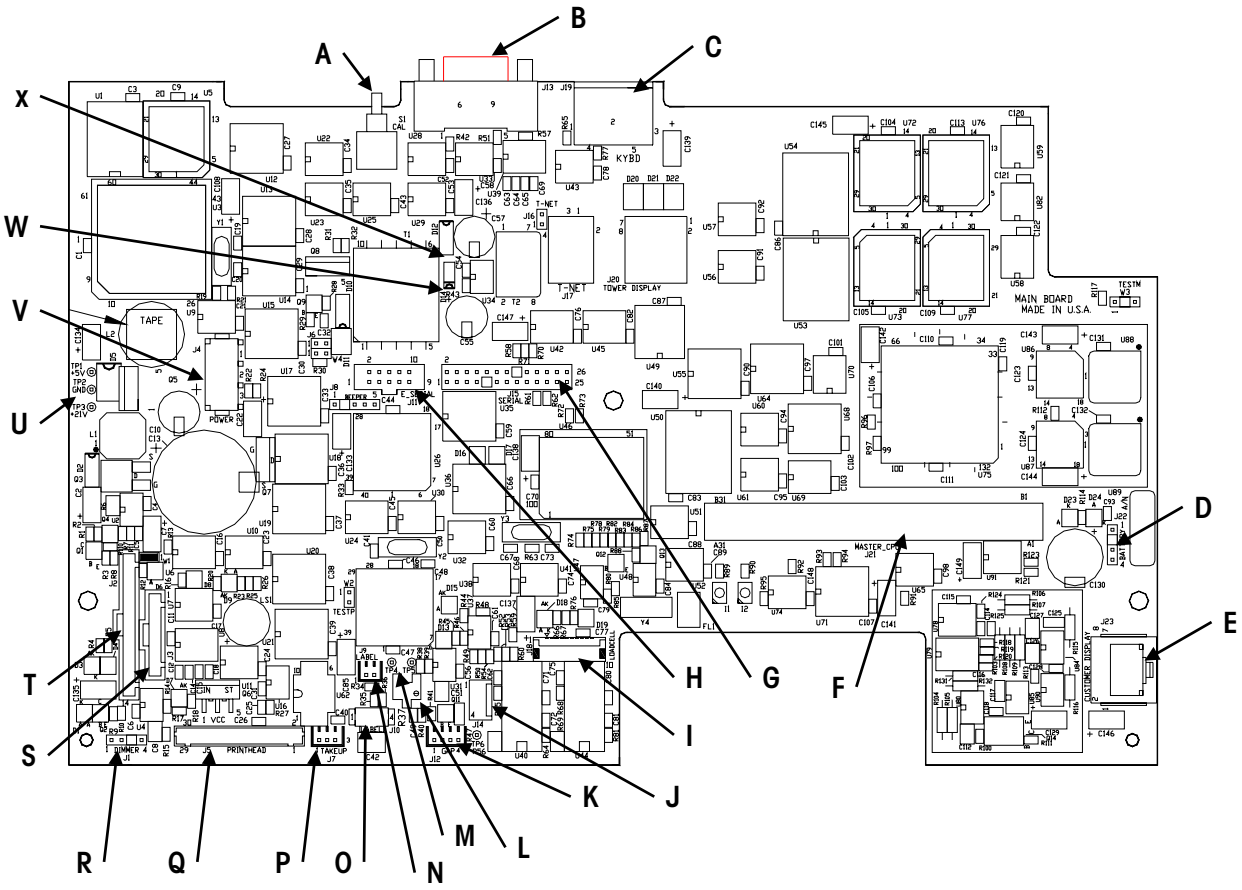


Figure 1-9: Main PCB Layout

Ref	Description	Ref	Description
A	CAL Switch S1	**N**	J9 Take Label Sensor (Transmitter)
B	J13 AUX Connector	**O**	J10 Take Label Sensor (Receiver)
C	J19 Programming Keyboard Connector	**P**	J7 Take Up Motor Connector
D	J22 Battery Connector	**Q**	J5 Printhead Connector
E	J23 Customer Display Jack	**R**	J1 Inverter PCB Connector
F	J21 Master CPU/Sat Memory PCB Connector	**S**	J2 IR Keyboard Connector
G & H	J11/J15 Ethernet/Serial PCB Connector	**T**	J3 LCD Display Connector
I	J18 Load Cell Connector	**U**	Test Points TP1/TP21/TP3 (+5/+12 VDC)
J	J14 Label Stepper Motor	**V**	J4 +21VDC From Power Supply
K	J12 Gap Sensor Connector	**W**	+56VDC Test Point, D14
L	R37 Gap Sensor Adjustment Pot	**X**	+11VDC Test Point, D12
M	Gap Sensor Test Points TP4/TP5		

PLU Field Descriptions

The PLU record consists of the following fields:

Action Code Two-digit number from 0 to 50 used to link an Action Message to the PLU record.

Activation Date The date for activation of a Pending Record.

Activation Hour The hour for activation of a Pending Record (0-23).

Bar Code EAN or UPC bar code determined by Setup. EAN, first enter the prefix, then select format.

UPC Bar Code Types

0 GENERAL MERCHANDISE
1 NOT IDENTIFIED
2 RAND. WT. (PRICE ENCODED)
3 NATIONAL DRUG AND HEALTH
4 IN-STORE MARKING
5 COUPONS
6 GENERAL MERCHANDISE
7 GENERAL MERCHANDISE
8 USE SCALE SETTING

EAN Bar Codes

The EAN bar codes are configured for in-store code and price marking. The first flag (f1) is set for 2. The second flag (f2) can be entered for By-Weight, By-Count, Std Pack, or Run Total. Normally the 2_0 indicates In-Store bar codes. Select the Bar Code Format below.

Bar Code Format When a Type-2 UPC Bar Code is selected or if the Bar Code is configured as EAN, the format of the symbol must be configured, as follows: (N=Item Number, C=Price/Weight Check Digit, $=Total Price, X=Bar Code Check Digit, #=Weight).

UPC Formats

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

EAN Formats

0 = NNNNN N$$$$ X
1 = NNNNN $$$$$ X
2 = NNNN$ $$$$$ X
3 = NNNNN C$$$$ X
4 = NNNNC $$$$$ X
5 = NNNNN ##### X
6 = NNNNC ##### X

Blank Blank Pack Date, Net Weight, Unit Price, or Total Price.

Date Forward	This field tells the satellite whether to advance the date one-day at the selected hour that is programmed in the satellite.
DayGlo Number	This is for the linked graphics number for the Model 8360/8361 DayGlo label.
Description	Text used to describe the product. Normally two lines of 32 characters.
Description Line 2	This field defines the size of the second description line. The line can be larger, smaller or the same size as the first description line.
Extra Text	A six-digit number between 1 and 999999 used to link an Extra Text Record to the PLU record.
Grade	Two-digit number 0-16 linking preprogrammed grade descriptions to the PLU record. 0 means no grade is selected.
Graphics	Six digit number 0-999999 linking a graphic to the PLU record.
Group Number	Three digit number 0-500 used to separate PLU's within a department for reports. 0 means no group is selected.
Item Number	The Item Number is encoded in the UPC or EAN Bar Code symbol. Bar Code Types 2, six digits maximum (five digits with price check digit enabled), between 0 and 999999. Bar Code Type 0, 6,and 7 ten digits (except when using a five digit manufacturer number which replaces the first five digits of the item number in the bar code.)
Label Style	Select which label style (0-7) will be used with this PLU. This is determined by the setup in the satellite.
NutriFacts	A six-digit number 0-999999 used to link a Nutrifact Record to the PLU record.
PLU Number	A six digit Price Look Up Number 1-999999 used for database indexing and record call-up.
PLU Type	Pricing mode used for the PLU. This will affect which options are presented in the master editor. Select By-Weight, lb/kg-For, By-½, By-¼, By-Count, Standard Pack.
Price Modifier	Depending on the PLU type, this field is used for the weight for lb/kg-for pricing or the count for By-Count or Standard Pack pricing.
Security Lab	Security Label Field is used with the Model 8361 and the Model 702. When set to YES, the model 702 will apply a label. When set to NO, no label is applied by the Model 702.
Shelf Life	0 to 999 days, used to calculate Sell-By date printed on the label.
Special Price (Freq. Shopper Only)	When Frequent Shopper software is used and depending on the Special Price Type, this field is used to enter the special pricing amount or percentages.

Special Price Type (Freq. Shopper Only)	When the Frequent Shopper software is used, this field contains the pricing types. The selections include: **List Price** - Mfg. Suggested List Price. **Member Price** - Discounted price for By-Weight, By-Count, or Std. Pack PLUs. **Percent Discount** - 1-99% off the Total Price for By-Weight, By-Count, or Std. Pack PLUs. **Discount Per Unit** - A specific amount off the Unit Price for By-Weight PLUs. **None** - Disables Special Pricing.
Tare 1/Oz/Gr	Up to 50.00 lb or 9.995 kg when the PLU type is By-Weight. When the PLU type is Standard Pack, this field is used for the ounces or grams for the net weight statement.
Tare 2/Prop Tare	0-50.00 lb or 9.995 kg as By-Weight, 0.0 to 99.9 as proportional tare.
Turn Label	Yes or No to turn the label 90º. This is used by the Model 8360 and 8361 to control the label applicator.
Unit/Total Price	Six digits 0-999999.
Use-By	0 to 999 days, used to calculate Use-By date printed on the label.

Label Specifications

Label formatting is flexible with the Model 8461. Many different sizes of labels can be used. Table 1-1 shows standard label sizes available from METTLER TOLEDO® and general guidelines for fields on the labels.

Standard Labels	Extra Text Labels	Label Width	UPC Symbol	# Lines of Text
1.5 in		2.63 in	No	N/A
1.7 in		2.63 in	No	N/A
1.9 in		2.63 in	Yes	N/A
2.1 in		2.63 in	Yes	N/A
	2.4 in	2.63 in	Yes	5
	3.3 in	2.63 in	Yes	7/10
	3.7 in	2.63 in	Yes	11/15
	4.2 in	2.63 in	Yes	15/20
	5.1 in	2.63 in	Yes	22/30
	5.5 in	2.63 in	Yes	30/36
	7.9 in	2.63 in	Yes	40/50
	Roll Stock	2.63 in	Yes	60 Max.

Table 1-1: Label Formatting General Guidelines

Master or Standalone Memory

The **Smart*Touch*® TNET** Master and STEM is available with 2 MB, 4 MB, or 8 MB (MB = megabyte) battery-backed RAM Memory PCB's. The standalone uses the satellite/client Memory Board for record storage. The Memory Board is also available in 2 MB, 4 MB, or 8 MB (MB = megabyte) battery-backed RAM. The battery-backed memory is supported when AC power is disconnected from the unit for up to two years (depending on the time the unit is disconnected from AC power). The alkaline battery is not recharged on the PCB. Size requirements can be computed using the following record size specifications.

- Each PLU record uses 223 bytes.
- Extra Text uses up to 3240 bytes (not including 13 bytes overhead). The extra text formula is: ***(Lines x #characters per line)+ 13= #bytes required***. For example: 10 lines x 42 char/line = 420 bytes per record. (60 lines max.)
- Nutrifact records use 393 bytes per record.
- Graphics can be up to 6k per record.

For example, 1000 PLU records would use 223,000 bytes (223k) of space. 100 ET records with 420 bytes (+13) per ET record would use (420 + 13 x 100 = 43,300 bytes, or 43.3k). If the total memory capacity were 512k, subtracting 43.3k of ET records from 512k would leave 468k free for the PLU records. The remaining 468k would allow for 2098 PLU records.

Master and Standalone Host Interface

Two types of hardware interfaces are available on the TNET master host port: RS232 and RS422 Multidrop. The STEM has RS232/RS422 and Ethernet Host interfaces. The standalone has RS232 or Ethernet available for the host. The serial interface on the master is selected by connecting to the appropriate pins on the DB9 connector on the I/O Connector PCB. The RS232 interface is for a single device connected directly to a host computer or modem for full asynchronous communication. The cable length using the RS232 interface is limited to 100 feet (30.5 meters). RS422 must be used when the distance of the cable may exceed 100 feet, or if there will be more than one master or standalone scale connected on the host network. The maximum cable length when using RS422 is 1200 feet (366 meters). The master is multi-tasking and can perform complete host communication in the background while servicing requests from the satellite scales.

Index of Specifications

8461 - X X X X - X X X

Memory

0 = NONE
1 = 512K MSTR*
2 = 1M MSTR MEM*
3 = 2M MSTR MEM
4 = 4M MSTR MEM
5 = 8M MSTR MEM

Satellite/Master/Color

0 = Gray Satellite
1 = Gray TNET Master*
2 = Gray Ethernet Master
A = Black Satellite
B = Black TNET Master*
C = Black Ethernet Master

Printer/RF Radio

0 = Normal (with printer)
2 = None (no printer)
A = Normal/With Spectrum24® 802.11 FH RF
B = None / With Spectrum24® 802.11 FH RF
C = Normal/ With Telxon® 2.4 TMA RF
D = None / With Telxon® 2.4 TMA RF
E = Normal/ With Spectrum24® Spring RF
F = None / With Spectrum24® Spring RF
G = Normal/ With Telxon® 802.11 DS RF
H = None / With Telxon® 802.11 DS RF
J = None / Mercury-PC module (no radio)
K = Normal / With Mercury-PC module (no radio)
N = Normal / RF Ready, No Mercury-PC module (no radio)
P = None RF Ready, No Mercury-PC module (no radio)

Type

1 = TNET Scale, lb/kg*
2 = TNET Dead Deck*
3 = TNET Dead Deck w/Scale I/F*
4 = TNET Scale Multi-Range kg (Market 010, 020, 089 only)
5 = TNET Scale, Single range, lb/kg (Market 000, 010, 087, 088)
6 = TNET, Dead Deck
7 = TNET Dead Deck w/Scale I/F
D = Ethernet Multi-Range kg (Market 10, 20, 89)
E = Ethernet Scale, lb/kg ((Market 000, 010, 087, 088)
F = Ethernet, Dead Deck
G = Ethernet Dead Deck w/Scale I/F
H = Standalone Ethernet Scale, Multi-Range, (Mkt 010, 020, 089)
J = Standalone Ethernet Scale, Single Range, (Market 000, 010, 087, 088)
K = Standalone Ethernet Dead Deck
L = Standalone Ethernet Dead Deck with Scale I/F kit

Market

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

* No longer available

Factory Numbers for Accessories

FACTORY #	DESCRIPTION	PART #
0900-0209	Cable, **Smart*Touch*®** Master to Serial Line Printer, 10 ft/3 m	(*)12716400A
0900-0213	Cable, **Smart*Touch*®** Master to Serial Line Printer, 25 ft/7.62 m	(*)12717700A
0900-0285	Cable, PC DB9 to Master or AUX Port, 10 ft/3 m	(*)13816200A
0900-0286	Cable, PC DB25 to Master or AUX Port, 10 ft/3 m	(*)13816300A
0900-0297	Cable, PC DB9 to Master or AUX Port, 25 ft/7.62 m	(*)14102500A
0900-0298	Cable, PC DB25 to Master or AUX Port, 25 ft/7.62 m	(*)14102700A
0900-0305	Cable, Model 8270 to Model 8461	(*)14691600A
0906-0137	Stainless Steel Fish Pan Kit	(*)13698600A
0906-0139	Stainless Steel Lobster Pan Kit	(*)14025900A
0906-0140	Stainless Steel Produce Pan Kit	(*)14087900A
N/A	Replacement Foot for Accessory Pans	(*)14088000A
0918-0027	DataBack Software and Manual (3.5″ Disk)	(*)13954100A
0977-0010	**Smart*Touch*®** TNET Master Upgrade Kit (Installs in Satellite)	(*)14316900A
0977-0017	Master Memory PCB Kit 2 Meg	(*)14318300A
0977-0018	Master Memory PCB Kit 4 Meg	(*)14318400A
0977-0025	Keyboard, Programming (for 355, 8360, 8450, 8460, 8461)	(*)13698700A
0977-0040	Master Memory PCB Kit 8 Meg	(*)15097000A
0977-0044	Serial Interface Kit, TNET, for use w/remote 8270 base (Note: TNET Software must be Version 1.2 or higher.)	(*)15285400A
0977-0046	Customer Display Tower (U.S./English 30 x .01 lb)	(*)15206600A
0977-0049	Customer Display Tower (Spanish 15 x .005 kg)	(*)15207000A
0977-0050	Customer Display Tower (Spanish 30 x .01 lb)	(*)15207200A
0977-0051	Ethernet Kit, 8461/8450	
0977-0052	Serial/Ethernet Interface Kit (for use w/remote 8270 base)	(*)15303600A
0977-0079	RS422 Surge Protector Kit	
0977-0082	STEM Kit (**Smart*Touch*®** Ethernet Master)	(*)15637900A
8270-3000 8270-2010	Remote Scale Base Model 8270-3000 (w/o Feet or Platter). Remote Scale Base Model 8270-2010 (w/Feet and Platter). (Requires 0977-0044 Serial Interface Kit for TNET or 0977-0052 Serial/Ethernet Interface Kit for Ethernet interface.)	N/A
	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

(*)=May have letter prefix

Table 1-2: Accessories

Bar Code Symbols

The Model 8461 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

Figure 1-10 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.

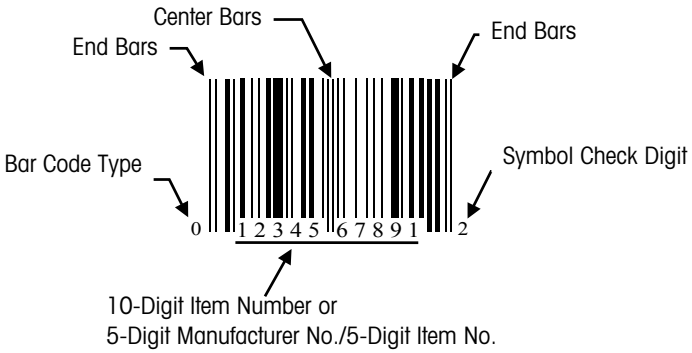


Figure 1-10: Standard UPC Type-0 Bar Code

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 (Figure 1-11). Refer to the UPC and EAN Bar Code Setup section in Chapter 3 for bar code formats.

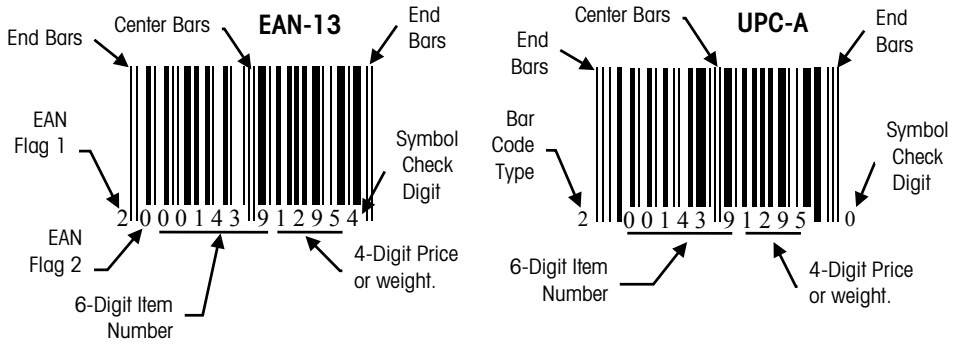


Figure 1-11: Bar Code Symbols/No Price Check Digit

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 1-12).

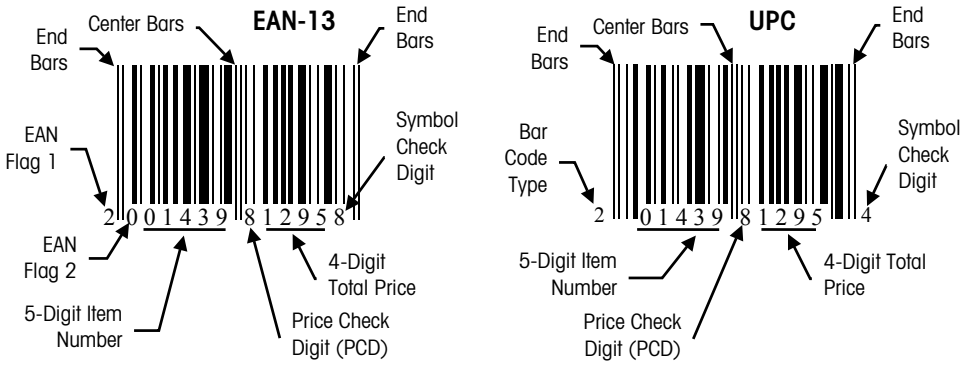
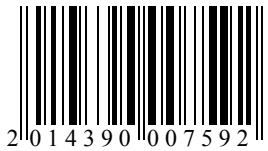


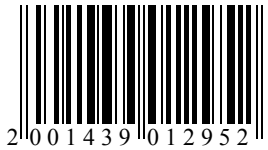
Figure 1-12: Bar Code Symbols/Price Check Digit (PCD) Enabled

UPC/EAN Bar Code Symbol Examples

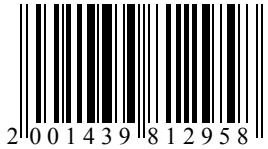
EAN 20 Flag
4D Item (1439)
6D Price (000759)
Symbol Check Digit (2)



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

2 Installation

Unpacking

Remove the Model 8461 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.

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

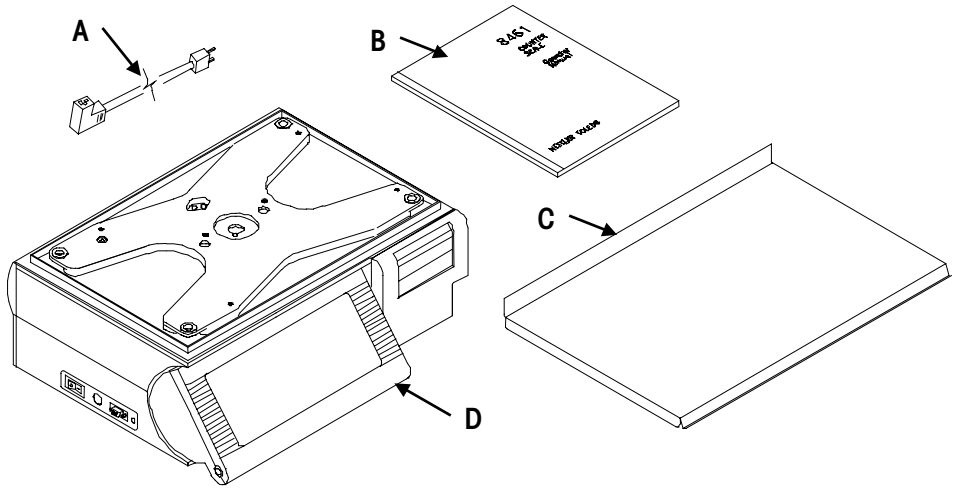


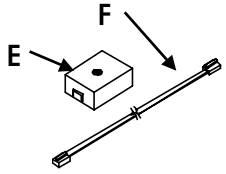
Figure 2-1: Items Shipped with Master and Satellite

Not shown:
(*)14530200A Foot Clamp
(*)R0356600A (Qty=2) Screws
A12800700A Label Form
(*)12363300A Security Seal
(*)12745800A Quality Feedback Card.

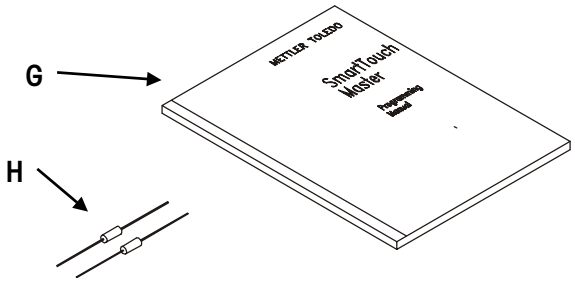
Includes one of the following:
(*)15038700A Programmed Disk, English
(*)15039500A Programmed Disk, Spanish
(*)15039600A Programmed Disk, French

(*) May have letter prefix.

Ref	Description
A	Power Cord *10944500A
B	Operator Manual
C	Stainless Steel Platter (or Plastic Cover w/Dead Deck)
D	Model 8461 or Model 8461 Dead Deck
E	TNET Phone Jack *12716300A
F	25 ft/7.62 m TNET Cable *12716500A
G	Master Programming Manual (Master Only)
H	Resistor, Terminating (Master Only, Qty 2)



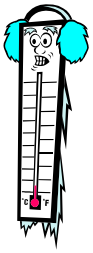
Additional items shipped with Satellite



Additional items shipped with Smart*Touch*® Master

Unit Installation

(Scale/Printer Units) Place the Model 8461 on a stable surface. Level the unit using the feet for adjustment and the bubble indicator (Figure 2-2) as a guide. Adjustment is correct when the bubble indicator is as shown in Figure 2-2 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.



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.

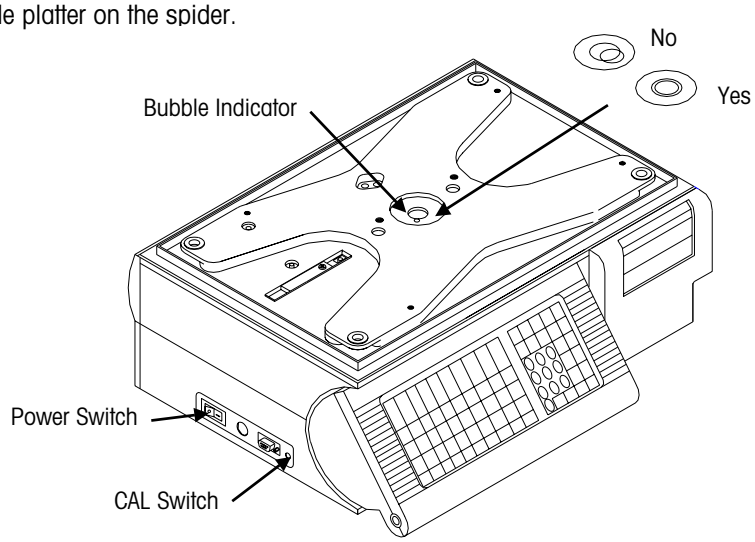


Figure 2-2: Level, Power Switch, and CAL Switch Locations

TNET Satellite

Connect the scale TNET network cable, P/N 12716500A, in the TNET connector on the bottom of the unit, as shown in Figure 2-3. (Refer to the Interfacing chapter for scale networks wiring.)

Install the power cord in the receptacle on the bottom of the scale, as shown in Figure 2-3, Figure 2-4, 2-5, and Figure 2-6. (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 to the ON position. (Refer to Figure 2-2. Press the "-" on the switch for ON.) Allow at least 30 minutes warm-up time before initial calibration.

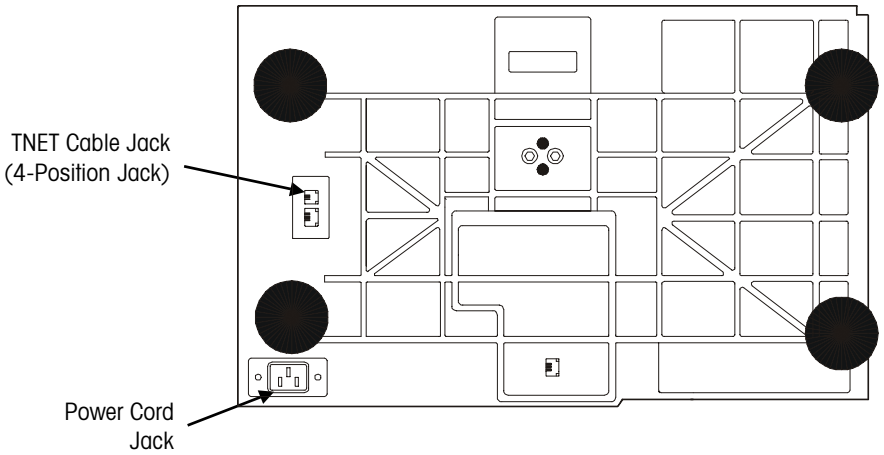


Figure 2-3: TNET Satellite bottom view, TNET Harness and Power Cord Jack

Smart*Touch*® TNET Master

Connect the scale network TNET cable, P/N 12716500A to the 2nd TNET Jack on the bottom of the unit, as shown in Figure 2-4. (Refer to the Chapter 4 for scale network wiring instructions.)

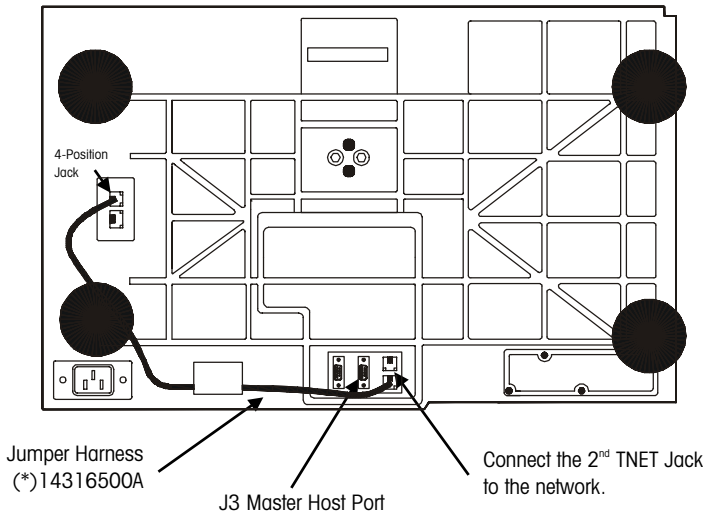


Figure 2-4: TNET Master Bottom View, TNET Jack and Power Cord Jack

Ethernet Client and Ethernet Standalone

Connect the Ethernet cable to the Ethernet connector on the bottom of the unit, as shown in Figure 2-5. Refer to Chapter 4 for additional information on Ethernet wiring.

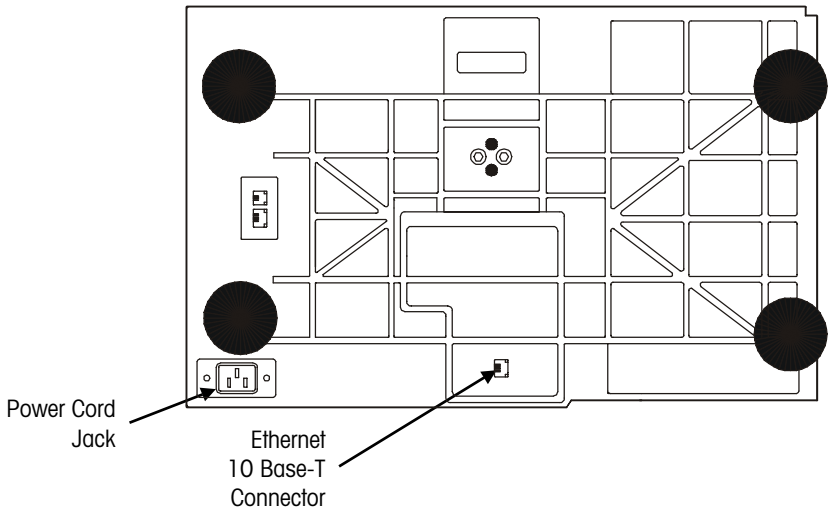


Figure 2-5: Ethernet Client/Standalone Bottom View, Power and Ethernet Connectors

STEM (Smart*Touch*® Ethernet Master)
Connect the Ethernet cables to the Ethernet connectors on the bottom of the unit, as shown in Figure 2-6. When the STEM resides in a **Smart*Touch*®** Ethernet Client, two Ethernet patch cables are required; one for the Satellite and one for STEM. Refer to Chapter 4 for additional information on Ethernet wiring.

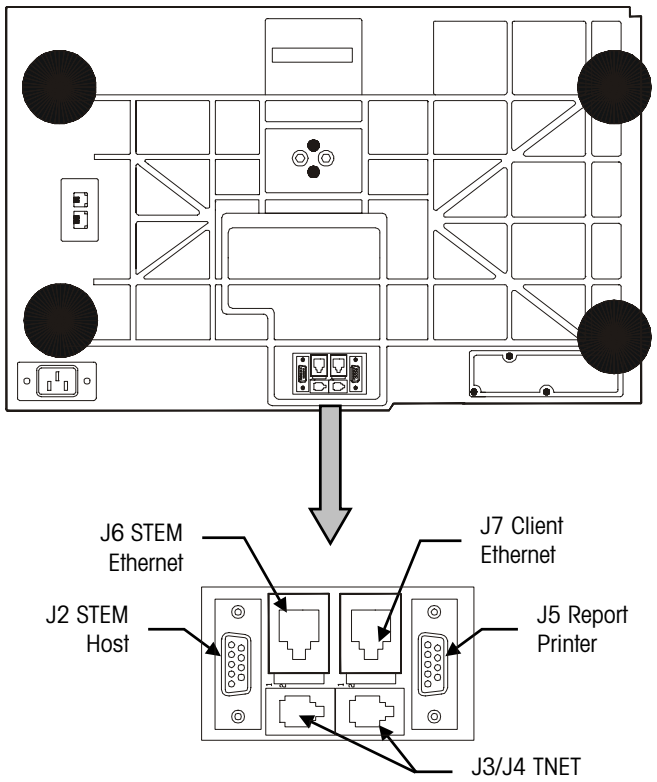
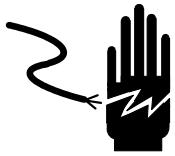


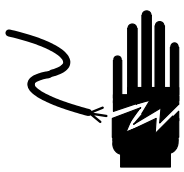
Figure 2-6: STEM Bottom View/Connector PCB Layout

Installation Checklist



⚠ WARNING

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



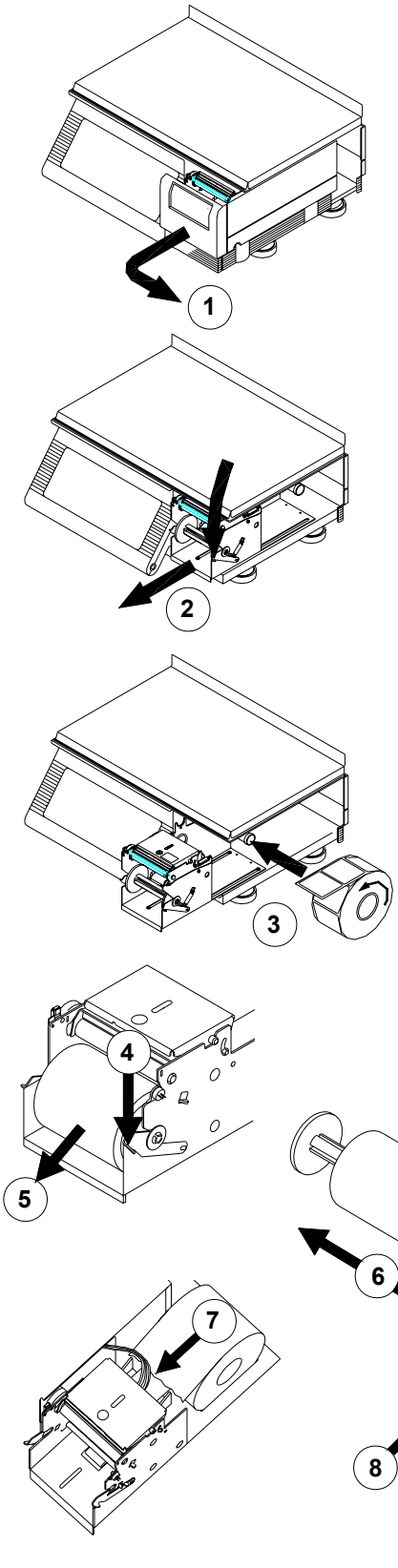
⚠ WARNING

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.

- *Install any optional kits.*

- ***Install TNET Scale Network Cable****. (Refer to Chapter 4)*
  – OR -
  Install Ethernet cable. *(Refer to Chapter 4)*
  STEM - Connect Satellite and STEM Ethernet cables and TNET cable (as necessary). *(Refer to Figure 2-6 and Chapter 4, Ethernet Networking and TNET Network Installation.)*
- ***Install Power Cord, Connect to AC Power, Turn power ON.***
- ***Unit ID -*** The TNET Satellite Unit ID must be set to a unique number on the network. Do not duplicate any numbers on the network or communications errors will occur. Refer to Chapter 3 Setup, Calibrate/Install Unit.
- ***STEM and Ethernet Client –*** Network setup. Use LOADIP.EXE to set the STEM (**Smart*Touch*®** Ethernet Master) IP Number if satellite and STEM are not communicating. Refer to Chapter 3.
- ***Units with Ethernet RF*** – Refer to Chapter 3 to set up the Mercury-PC radio.
- ***Protocol - (TNET Satellite)*** When using the Model 8461 with the **Smart*Touch*®** Master, set the TNET Protocol to **SMARTTOUCH**. When using the Model 8461 with the Standard 8422 Type Master, select **PLU 4** or **PLU 6**.
- ***Install Labels -*** Install labels in the printer. Refer to Label Installation in Chapter 2.
- ***Set up Printer -*** Set the print speed/power setting and the print head resistance.
- ***Calibrate -*** New scales must be calibrated on site. Refer to Calibration Instructions.
- ***Password -*** To bypass the password, if a Unit Password has been programmed, press the CAL switch (Figure 2-2) when the display prompts for the password. To bypass the Master password, enter 7627.
- ***Scale Options -*** Scale options must be configured, such as Bar Code settings, Label Size, Label Formats, ID number, etc. Refer to the Unit Setup and Calibration Chapter.
- ***DataBack -*** The DataBack Program can be used to backup and restore Presets, Custom Label Formats, Label Size/Styles, and Miscellaneous categories from another Model 8461 (see the DataBack section in Chapter 4).
- ***Standalone Operation*** – The unit must have an optional memory board installed if it will be used for standalone operation. To set up the unit for standalone operation, touch Setup/Unit/Calibrate Install Unit, press the CAL switch, touch DOWN, touch "Standalone Operation", and then touch "Yes". The database must be downloaded to the standalone using an external host program such as Databack, Wintelli-Net™ or Intelli-Net™.

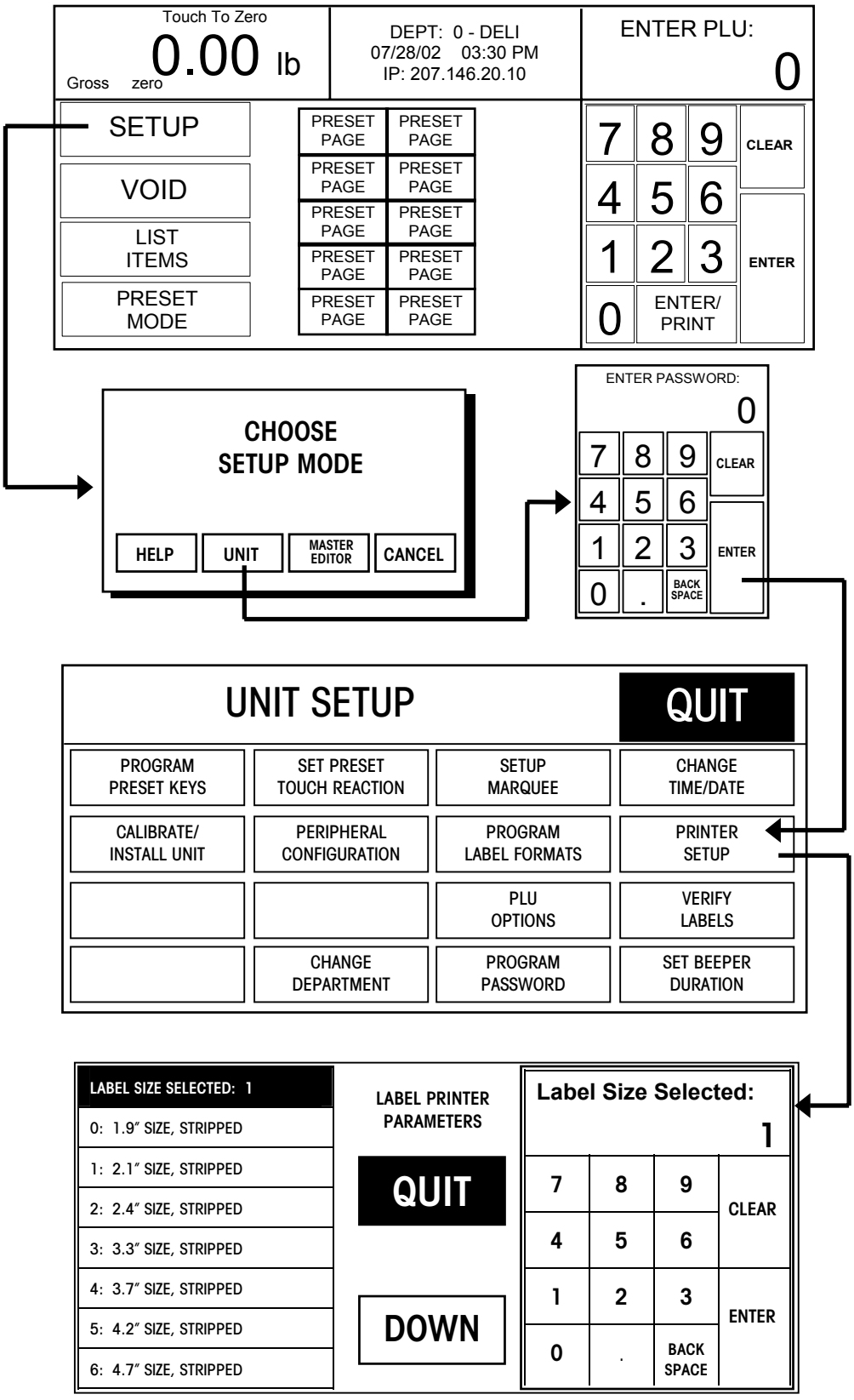
Label Installation



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 Printer Door.
2. Press the release lever and pull 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. Touch 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.

After installing the labels, select the label size as shown below. Refer to Chapter 3 for information on programming custom labels.



Label Guide Adjustment

The label guides are preset at the factory and can only be adjusted using a 90° angled screwdriver 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.

Note: The label guide screws are located on the bottom of the printhead in the approximate locations shown in Figure 2-6.

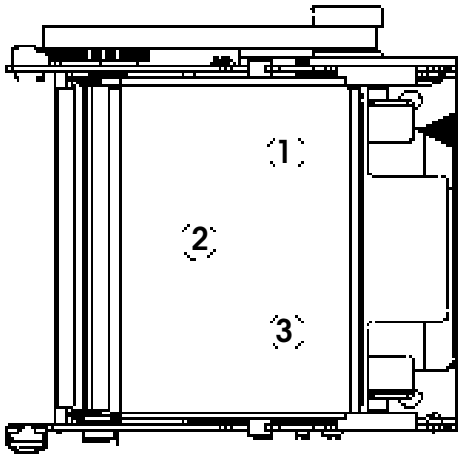


Figure 2-6: Label Guide Screw Locations

3 Setup

Unit Setup

Touch the SETUP key to access the Unit Setup Screen (Figure 3-1).

If no password has been configured, the ENTER PASSWORD screen will be bypassed. The Unit Password has two levels of access: Supervisor or Operator. The supervisor password allows entry into all of the setup functions. The operator password allows access only to functions that the supervisor allows. Disabled functions are indicated by grayed key areas. Refer to the Program Password section at the end of this chapter.

For clarification, Unit represents either TNET or Ethernet Client. Instructions that will pertain to only one version will be pointed out in the manual. The terms "**Smart*Touch*®** Master" or "Master" will represent the **Smart*Touch*®** Master that can be installed in any satellite. The acronym STEM stands for **Smart*Touch*®** Ethernet Master.

During setup, you may be presented with paging keys, as shown below. Use the keys to view all available options.

- ⏫ To Top of List
- ▲ One Page Up
- ▼ One Page Down
- ⏬ To Bottom of List

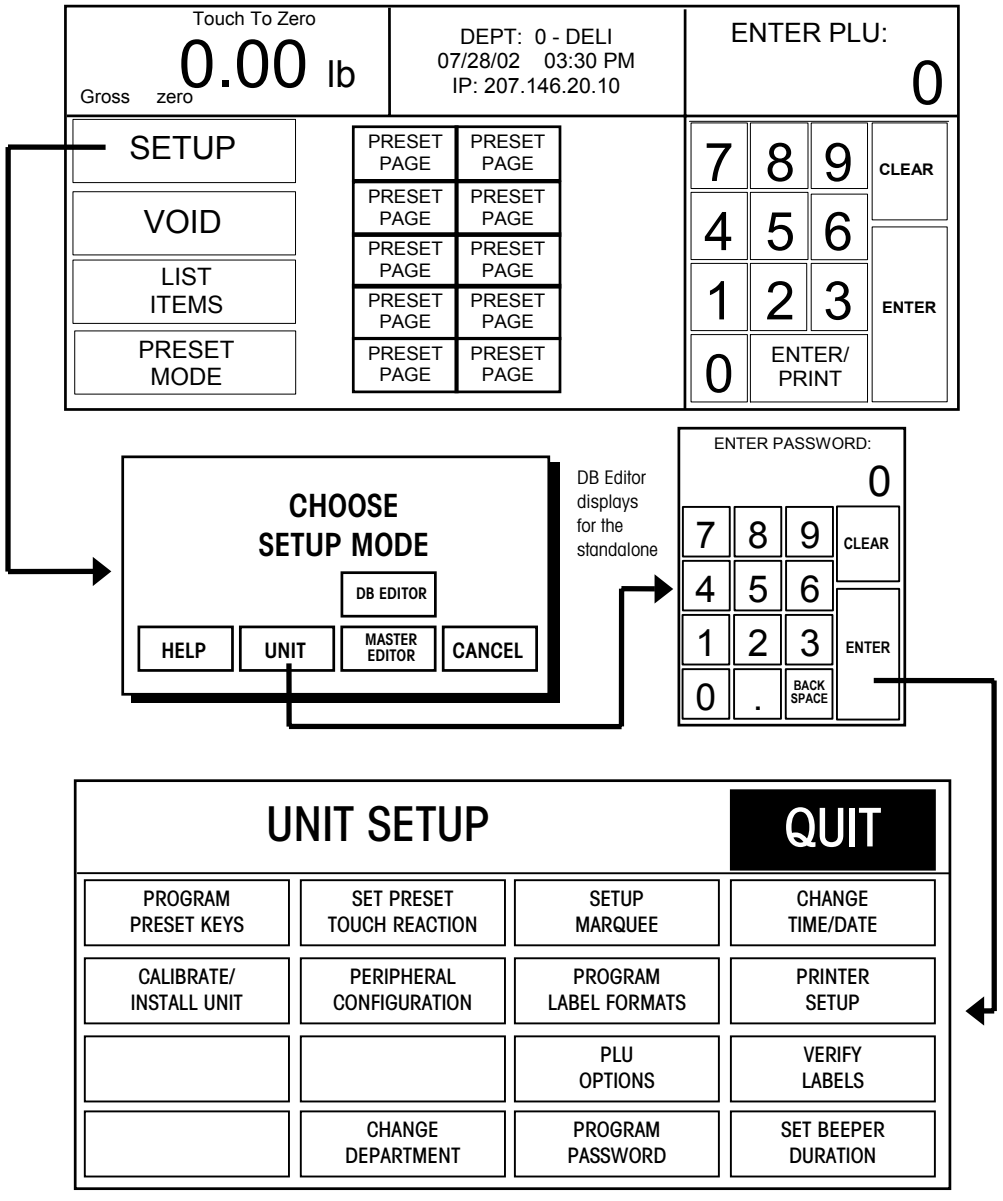


Figure 3-1: Unit Setup

The following sections describe the different options available under Unit Setup.

Program Presets

Preset Keys allow calling a PLU record with one touch of a programmed key. From the Unit Setup screen, touch PROGRAM PRESET KEYS to bring up the PRESET PAGES edit screen. Each of the 10 pages can contain up to 35 preset keys for 350 presets.

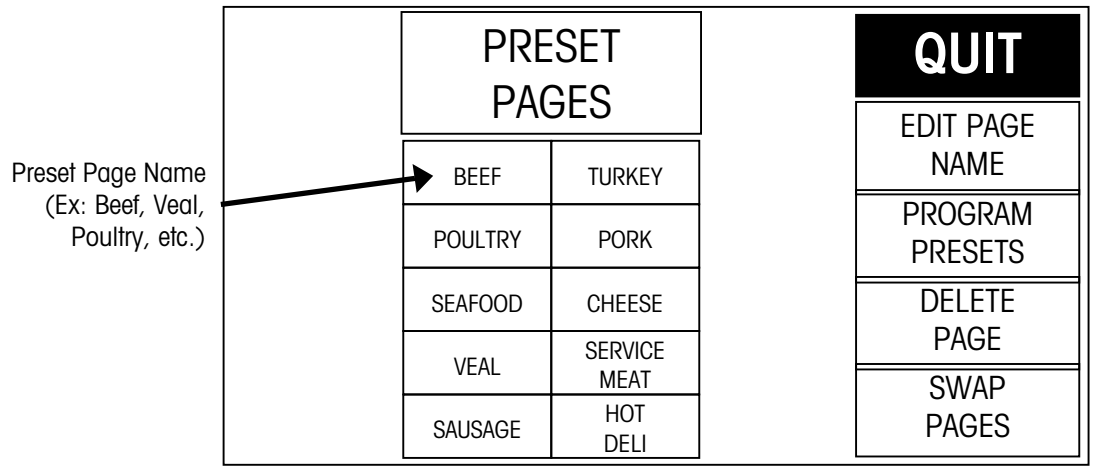


Figure 3-2: Program Presets Screen

To **delete** an entire Preset Page, touch the DELETE PAGE key, and then touch the page you wish to delete. Complete or cancel the deletion as prompted.

To **swap** preset page key positions, touch the SWAP PAGES key, and then touch the first key you want to swap followed by the second key you want to swap.

To **edit** the page name, touch EDIT PAGE NAME, and then touch the key you wish to edit. Type the name you wish to appear on key. Use the BACKSPACE key to delete existing characters, or SHIFT BACKSPACE to delete a complete line. One line of 7-8 large characters or two lines of 10 characters can be displayed. To move to the second line, touch NEW LINE.

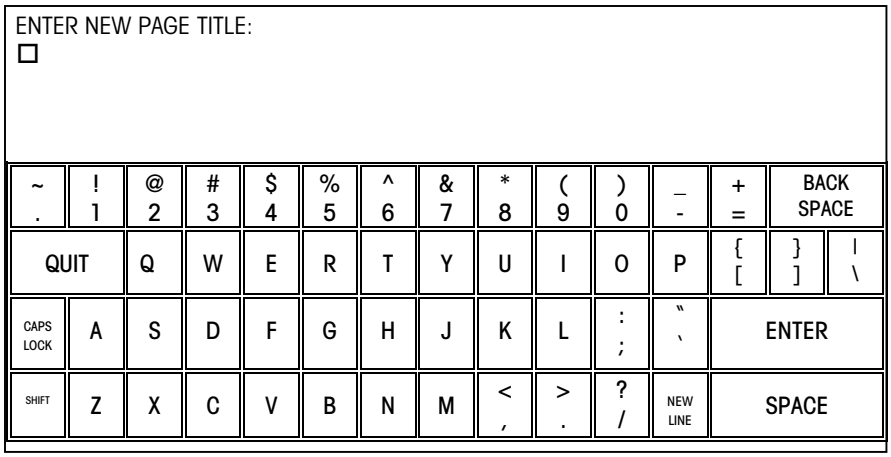


Figure 3-3: Keyboard to edit Preset Page Names

To **program** PLUs into a page, touch PROGRAM PRESETS, and then touch one of the ten preset page keys (Figure 3-2). The Preset Menu shown below will then appear.

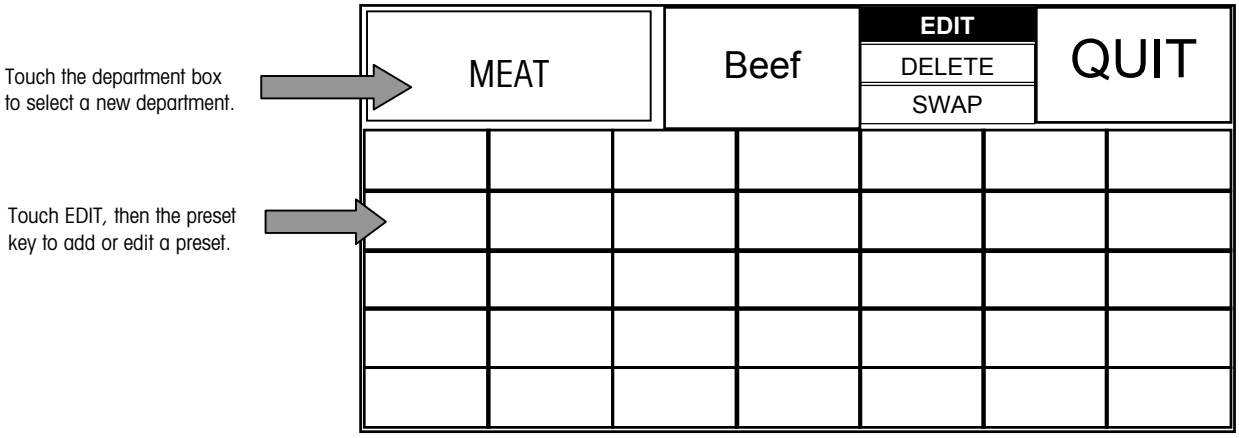


Figure 3-4: Program Presets Menu

To change the **department** that you are selecting PLUs from, touch the DEPARTMENT box (upper left corner). A list of the departments with descriptions will display. Page through the list to find the desired department, and then touch to select it.

To **delete** an existing preset key, touch DELETE (at the top of the screen) followed by the preset key you wish to delete. Complete or cancel the deletion as prompted.

To **swap** the key locations of two preset keys on the preset page, touch SWAP (at the top of the screen), then touch the first key you want to swap followed by the second key you want to swap.

To **add** a new preset key or **edit** an existing preset key, touch EDIT followed by the preset key you wish to program. The numeric keyboard will display. Type in the PLU number or touch LOOK-UP to generate a list of PLU numbers from the current department. Page through the list of PLUs to locate the item and touch to select it.

The alphanumeric keyboard (below) will display, and the preset key description for the item will show in the upper left hand corner of the display. The second line of text in the left-hand corner is the description editor. On new preset keys, the preset key description will default to the PLU description.

Use the keyboard to edit the preset key description. The BACKSPACE key to erases one character at a time, and SHIFT BACKSPACE erases the complete line. Up to three lines of 12 characters per line are allowed. Touch the ENTER key when you are finished.

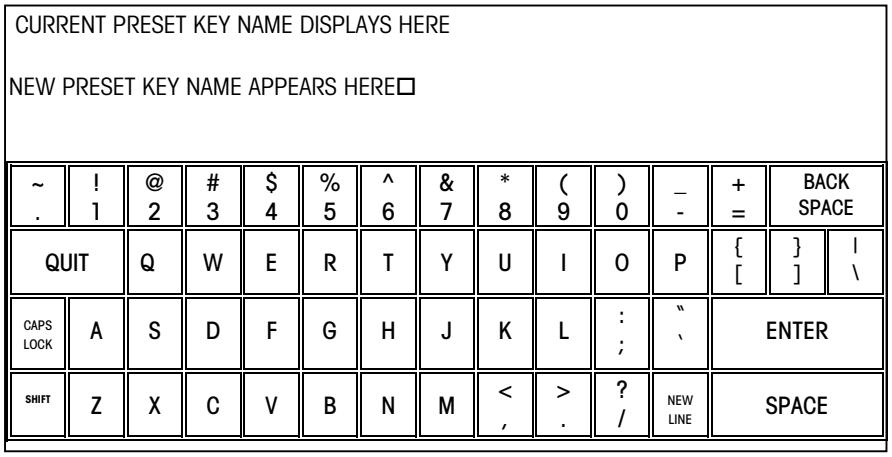


Figure 3-5: Keyboard to enter Preset Key Names

Set Preset Touch Reaction

PRESET TOUCH REACTION configures how the preset keys react when touched.

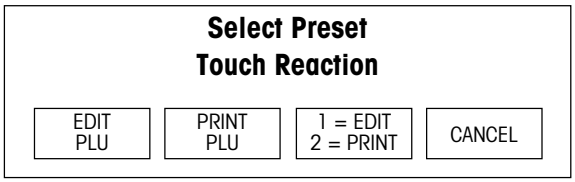


Figure 3-6: Preset Touch Reaction

EDIT PLU — When a preset key is touched the PLU Edit screen displays, allowing the user to make changes, then touch PRINT.

PRINT PLU — When a preset key is touched it will call the PLU and automatically print a label. The PLU Edit screen is bypassed.

1 = EDIT
2 = PRINT — Touch the preset key once to call the PLU and display the PLU Edit screen. Touch the preset key twice in rapid succession to bypass the PLU Edit screen and the print automatically.

Setup Marquee

From the Unit Setup screen, touch SETUP MARQUEE to display the Marquee Setup screen. The messages shown on the Marquee list will scroll on the customer display when the marquee is active. Any changes made at the unit will not affect the marquees stored in the master/server database. The marquee starts automatically if there is no activity on the unit after approximately fifteen minutes. When the Touchscreen is touched, or if weight is added to the platter, the marquee will be suspended.

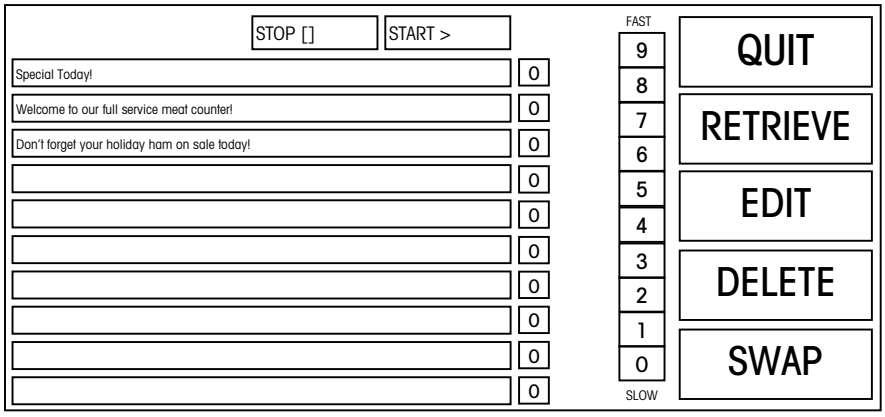


Figure 3-7: Setup Marquee Screen

Retrieve — To retrieve a marquee from the master/server database, first touch RETRIEVE, and then touch any of the 10 boxes to the left. Touch the desired action code to select it. If no marquees (Type 3 Action codes) were located at the master/server, a blank list is displayed.

Edit — To edit or create a message, touch the EDIT key and marquee box you wish to edit.

Delete — To delete a message, touch the DELETE key followed by the marquee message you wish to delete.

Swap	To swap the position of a marquee with another, touch SWAP, touch the marquee to move, then touch the new location.
0-9	To adjust the marquee scrolling speed, change the number in the FAST/SLOW column by touching the desired speed 0-9.
Start/Stop	Starts or stops the marquee for testing purposes.
Line Spacing	Change the number of blank spaces between the messages.

Change Time/Date

From the Unit Setup screen, touch CHANGE TIME/DATE to bring up the Time and Date screen. To make changes, touch the appropriate menu option window and follow the instructions indicated below.

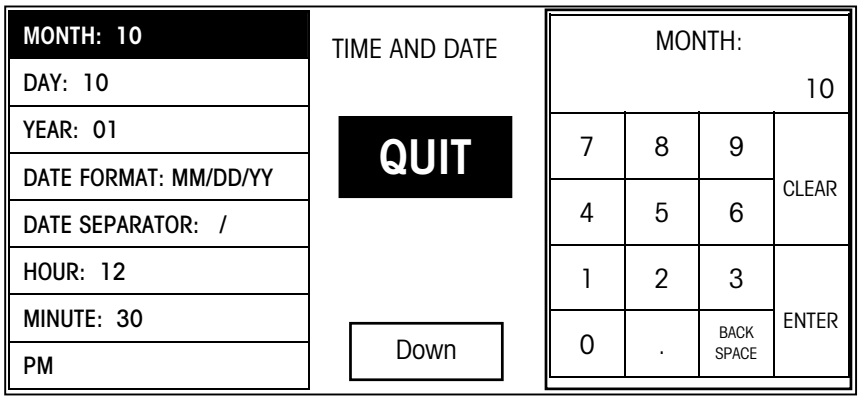


Figure 3-8: Change Time/Date

Month	Numeric month 1-12.
Day	Numeric day 1-31.
Year	Last two digits of the current year 00-99.
Date Format	Date format (MM/DD/YY, DD/MM/YY, YY/MM/DD, or YY/Mon/DD).
Date Separator	Select **/**, **-**, or **.**
Hour	Current hour (1-12) through the numeric keyboard.
Minute	Current minute (00 - 59) through the numeric keyboard.
PM/AM	Select AM or PM by touching the appropriate window.
Time Format	Select between12 or 24 hour formats.
Send Time & Date To Master	(Touch DOWN to display) Sends the time and date to a **Smart*Touch*®** master or STEM.

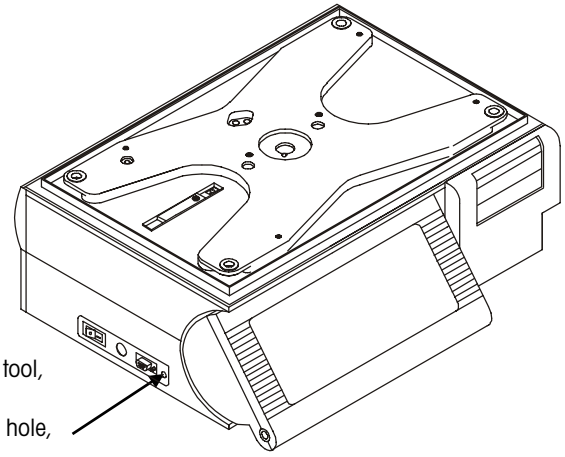
Calibrate/Install Unit

Calibrate/Install is used to calibrate the scale, set the unit ID, configure currency, select PLU options, configure bar codes, and to initialize the unit.

⚠ 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.

From the Unit Setup Screen (shown in Figure 3-1), touch the CALIBRATE/INSTALL UNIT key then press the **CAL** switch in the access hole using a non-metallic tool. The following sections explain the System Configuration Menu.



Using a non-metallic tool, press the CAL Switch located in the access hole, to enter the System Configuration Menu.

Figure 3-9: Unit CAL Switch Location

Unit ID-TNET Satellite and Standalone

The Unit ID number identifies the unit on the network. Every satellite or standalone must have a unique ID number between 1 and 30. Key in the number and touch ENTER. If the unit is off-line, or is not responding to commands, verify that the Unit ID is not duplicated and is within 1-30.

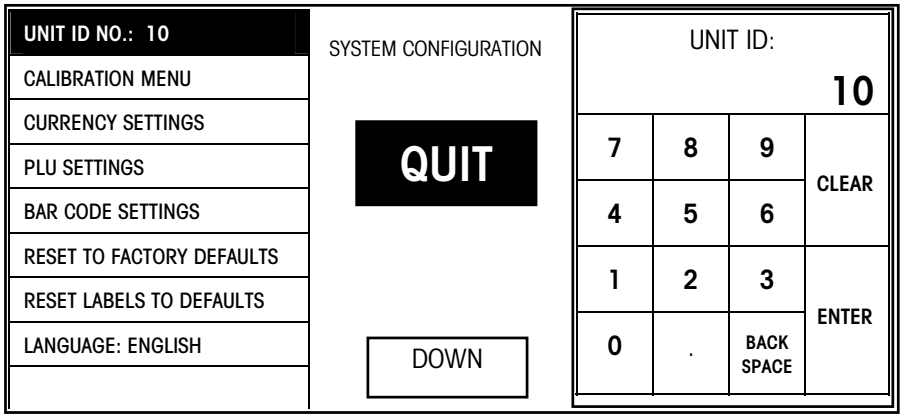


Figure 3-10: Unit ID, TNET Satellite

Network Setup - Ethernet Client, Version 1

The Unit ID Number is a unique IP number (Internet Protocol) that identifies the client on the Ethernet network. After entering the Unit ID number, you must enter the Server IP number, Router (Gateway), and Subnet Mask (below).

If the network is local, arbitrary numbers can be selected for the IP Address. An 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 numbers on the network. To enter the numbers, key in the numbers starting at the MSD (left Most Significant Digit) number. The periods are not entered in this procedure. Enter numbers lower than 100 with preceding zeros (Example: 10 is entered as 010). To exit without saving, touch CLEAR.

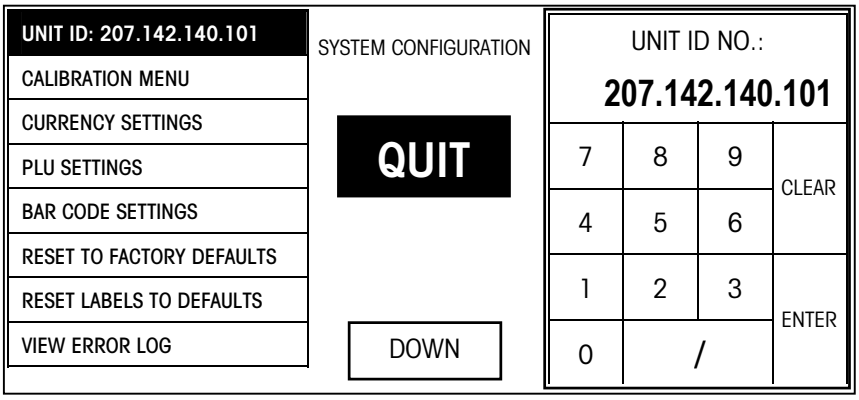


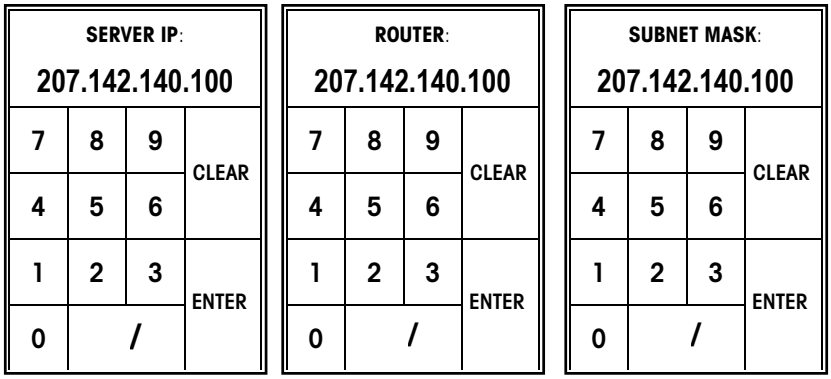
Figure 3-11: System Configuration Menu, Ethernet Client

Unit ID Number, Client

Power the unit down after changing the IP address for the new changes to take effect.

To find the Windows NT Server IP address, refer to Chapter 4.

Refer to Chapter 4 for additional information on IP address numbers and Ethernet or the **METTLER TOLEDO®** Connectivity Guide.



Server IP, Router (Gateway), and Subnet Mask Numbers, Ethernet Client

UNIT ID	This is the scale IP address. The IP address is entered one octet at a time. The default value for this field is 255.255.255.000.
SERVER IP	This is the STEM or PC Scale Server current IP address. The default value is 255.255.255.000.
ROUTER	The router's (default gateway) IP address. The router is used when accessing devices outside of the local network. The IP address is entered one octet at a time. The default value is 255.255.255.000.
SUBNET MASK	The mask that is used to identify the local network when accessing IP address on the Ethernet network. The mask is entered one octet at a time. The default value is 255.255.255.000.

Network Setup-Ethernet Client, Version 2

The network configuration must be selected for the Client under the NEWORK SETUP function. To enter setup mode, touch SETUP, UNIT, CALIBRATE/INSTALL UNIT, then press the CAL switch. Version 2 added DHCP.

If the client/server network is local, arbitrary numbers can be selected for the IP Address. An 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 numbers on the network. To enter the numbers in the Model 8361/8461, key in the numbers starting at the MSD (left Most Significant Digit) number. The periods are not entered in this procedure. Enter numbers lower than 100 with preceding zeros (Example: 10 is entered as 010). To exit without saving, touch CLEAR.

Power the unit down after changing the IP address for the new changes to take effect.

To find the Windows NT Server IP address, refer to Chapter 4.

Refer to Chapter 4 for additional information on IP address numbers and Ethernet or the **METTLER TOLEDO®** Connectivity Guide.

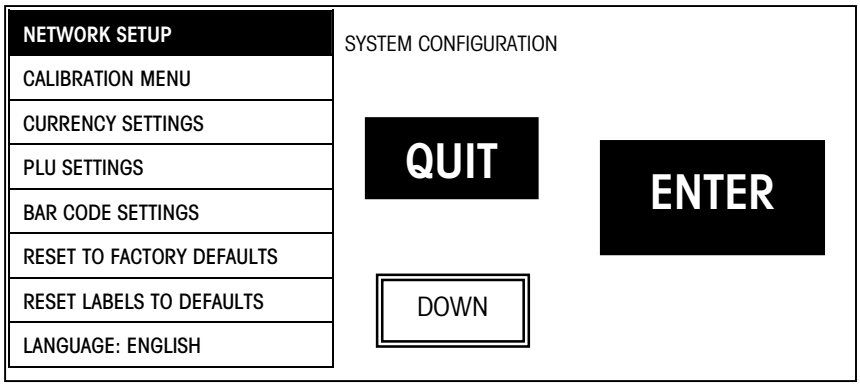


Figure 3-12: System Configuration Menu, Ethernet Client

Touch NETWORK SETUP, then touch ENTER.

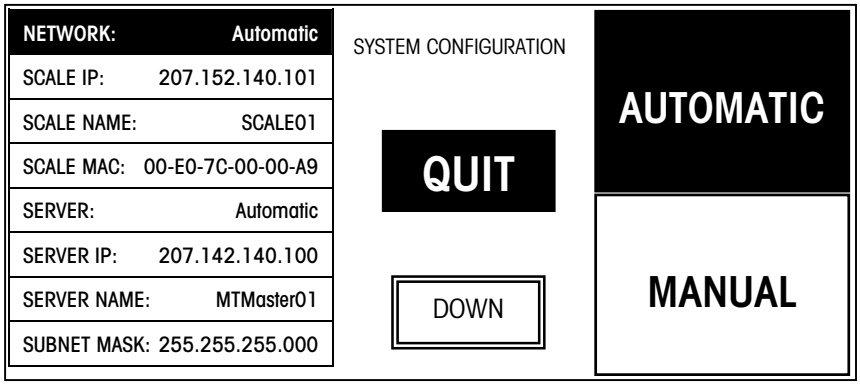


Figure 3-13: Network Setup Menu Screen One

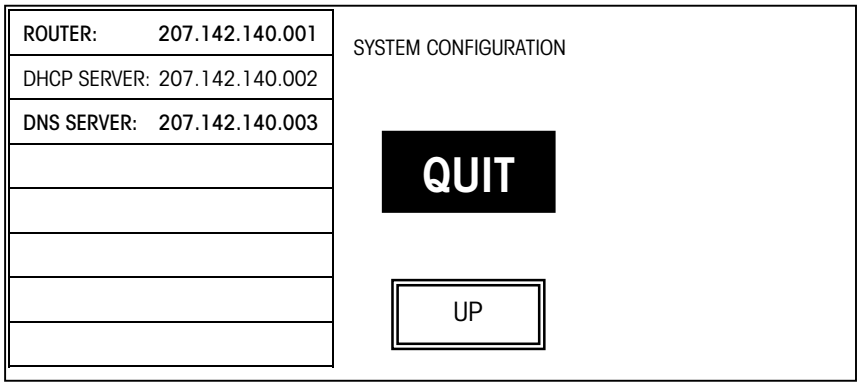


Figure 3-14: Network Setup Menu Screen Two

The network configuration parameters are described in the following section.

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.
SCALE IP	This is the current scale IP address. If the "Network" is set to "Automatic" this field can not 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.
SCALE 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".
SERVER IP	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.
SERVER 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".
SUBNET MASK	The mask that 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.
ROUTER	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.
DHCP Server	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 Server	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.

Network Setup-Ethernet Standalone

The network configuration must be selected for the standalone under the SYSTEM CONFIGURATION function. To enter setup mode, touch SETUP, UNIT, CALIBRATE/INSTALL UNIT, then press the CAL switch.

If the network is local, arbitrary numbers can be selected for the IP Address. An 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 numbers on the network. To enter the numbers, key in the numbers starting at the MSD (left Most Significant Digit) number. The periods are not entered in this procedure. Enter numbers lower than 100 with preceding zeros (Example: 10 is entered as 010). To exit without saving, touch CLEAR.

Power the unit down after changing the IP address for the new changes to take effect.

Refer to Chapter 4 for additional information on IP address numbers and Ethernet or the **METTLER TOLEDO®** Connectivity Guide.

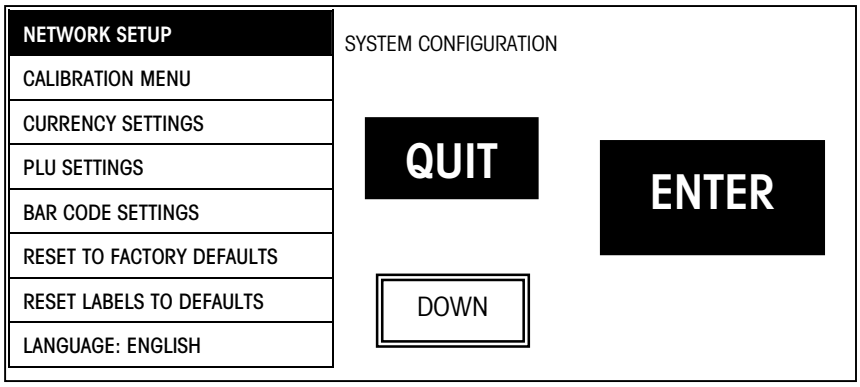


Figure 3-15: System Configuration Menu, Ethernet Standalone Mode

Touch NETWORK SETUP, then touch ENTER.

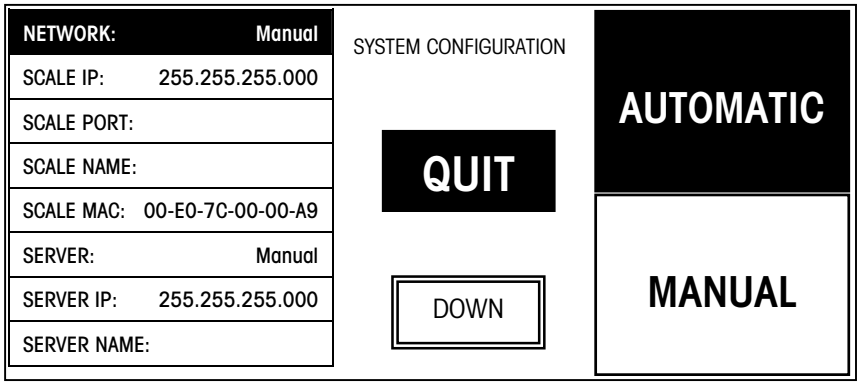


Figure 3-16: Network Setup Menu Screen One, Standalone Mode

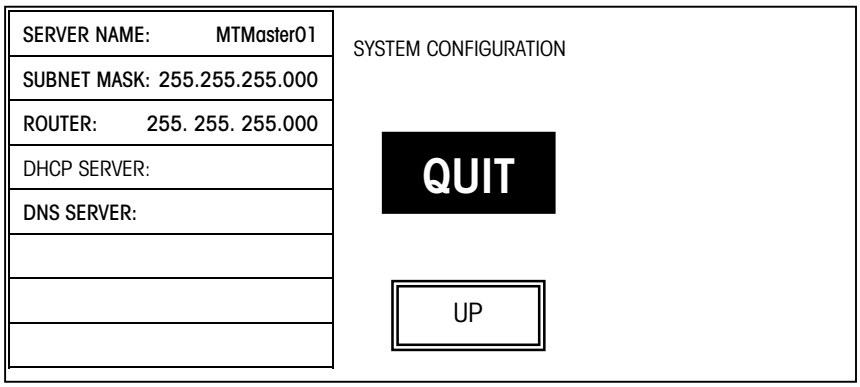


Figure 3-17: Network Setup Menu Screen Two, Standalone Mode

The network configuration parameters are described in the following section.

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. 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 display but changes are not allowed to these fields.
SCALE IP	This is the standalone 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.
SCALE PORT	Used in the standalone mode. This is the TCP/IP Host Port number used to communicate with the Standalone scale.
SCALE NAME	This is the local domain name to given to the standalone scale. Devices on the network can reference the scale by using this name.
SCALE MAC	Hardware Media Access Control (MAC) address. Each Ethernet device has a unique 6-byte MAC address. This field is displayed but cannot be changed.
SERVER	Select Automatic or Manual. If you wish to set the Subnet Mask and Router fields, set this function to Manual.
SERVER IP	This may be displayed, but is not used in the standalone mode.
SERVER NAME	This may be displayed, but is not used in the standalone mode.
SUBNET MASK	The mask that is used to identify the local network when accessing an 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.
ROUTER	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 can not 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.
DHCP Server	Display only. 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 cannot be changed.
DNS Server	Display only. 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.

Calibration Menu

From the System Configuration Menu, touch CALIBRATION MENU then ENTER. From this menu you can select various weighing parameters and calibrate the scale.

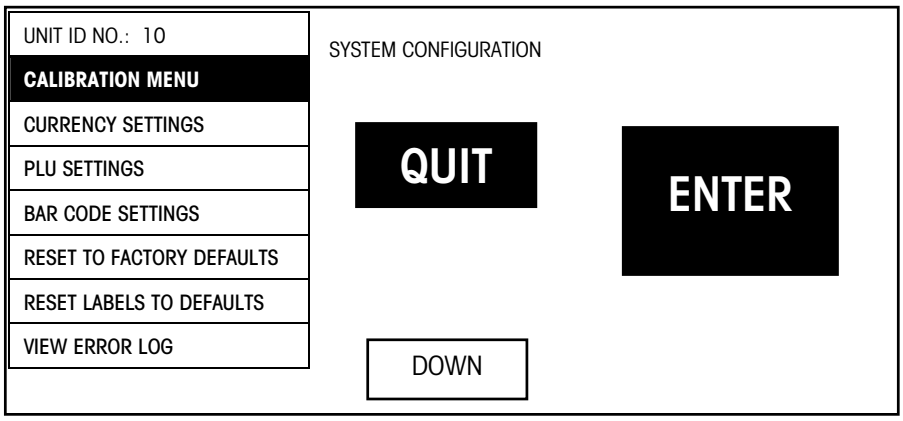


Figure 3-18: Calibration Menu

Explanations and default values for standard unit configuration are as follows:

LOAD CELL: INT-EAGLE	Select **NONE**, **INT-EAGLE** for the standard internal scale, **EXT-8213** for the Model 8213 Scale base, or **EXT-8270** for the Model 8270 Scale base.
WEIGHING UNITS: lb	Select the weight unit and build. **lb** = pounds. **kg** = kilograms.
KG DUAL RANGE: NO	Select single range (NO) or dual range (YES) for metric modes.
WEIGHT SEPARATOR: .	Select (.) decimal point or (,) comma as the decimal separator.
SCALE CAPACITY: 30.00	Use 30 x .01 lb, 15 x .005 kg, or dual range metric 6 x .002/15 x .005 kg for units with internal load cells. Use 50 x .01 lb or 20 x .005 kg for dead deck units with the external Model 8270 Scale Base.
INCREMENT SIZE: 0.010	Default is 0.10 lb or 0.005 kg.
TARE WEIGHT LIMIT: 15.000	Limits the amount that can be tared. (Note: kg tare limit is 9.995 kg).
MOTION SENSITIVITY: 1.00 div	Sets the motion sensitivity at which the scale will not print or continue operation. (If the weight varies more than 1.00 div, the scale will wait for the weight to settle).
MOTION READINGS: 5	Determines the amount of consecutive motion readings required to print a label or to continue.
MINIMUM PRINT INC: 20 div	Minimum weight below which no label prints.
AZM Rate 0.10 (d/sec)	Rate of Auto Zero Maintenance, which determines how often the Zero center of the scale is updated (divisions per second). Use 0.10 for most conditions.
CALIBRATE	Calibrate new scales on site. Calibration is required if the load cell or Main PCB is replaced, if the scale will not zero, or if the scale is not weighing accurately. Instructions shown in Figures 3-15, 3-16, and 3-17.

WEIGHT Raw Counts, for Factory Use only.

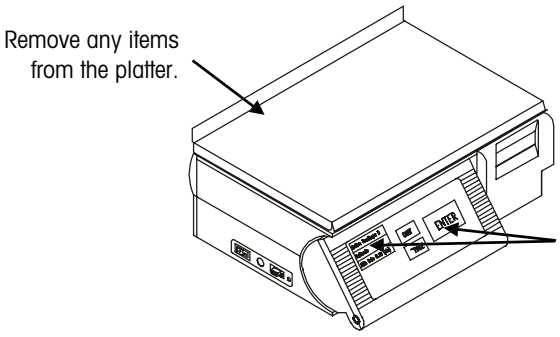


Figure 3-19: Start Calibration

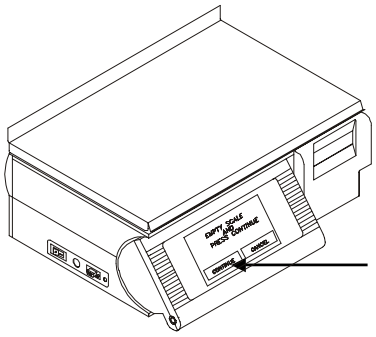


Figure 3-20: Set Zero

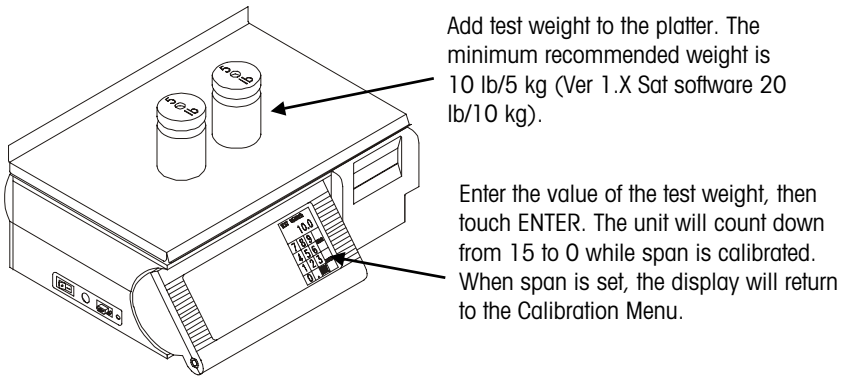


Figure 3-21: Add Test Weight

Currency Settings

Options and the typical values for currency configuration are:

CURRENCY INC: 0.010 Select the currency increment and decimal point position.

CURRENCY SYMBOL: $ Select the currency symbol (up to 3 characters).

PLU Settings

Selections and the typical settings for standard unit configuration are:

If the unit is an Ethernet Client, the protocol does not display. It is automatically set for TCP/IP.

PROTOCOL (TNET Only)	**SmartTouch**	Use with a **Smart*Touch*®** Master. (default)
	4 Digit PLU	Use with a Model 8305/8422/8423 4-Digit PLU Master.
	6 Digit PLU	Use with a Model 8305/8422/8423 6-Digit PLU Master
CALL BY ITEM: NO	No = Call by PLU (default). Yes = Call by Item Number.	
TARE FIELD TO USE: TARE1	Select **TARE1** (default), **TARE 2** (Refer to Chapter 1, "PLU Record Fields"), or **NONE** (see AUST. MODE ENABLE option next page). NONE disables the preprogrammed tare field in the PLU record. Use only TARE1 with 8422-type master.	
VOID AVAILABLE: YES	YES = Enable (default) and No = Disable the void transaction function and key. Void is used to subtract a transaction from the totals accumulator.	
PROP TARE AVAILABLE: NO	**Yes** to enable, or **No** (default) to disable proportional tare. If Proportional Tare is used (**Smart*Touch*®** Master must be Version 3.0 or later), it 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 - Tare 1) - (Tare 2 x (Gross Wgt - Tare 1))	
MANUAL MODE KEYS	Yes = Enable or No = Disable pricing mode keys (**POUNDS FOR**, **BY QTR**, **BY HALF**) available for manual (off-line) operation. Select only those mode keys that are required and legal for your application. Touch the corresponding box to toggle YES/NO. Yes is default.	
SERVICE MODE KEYS **PREPACK MODE KEYS**	Configure printing conditions for Prepack and Service mode. Touch the box to toggle YES/NO.	
	PRINT AFTER MOTION - After placing an item on the platter a label prints automatically, (weight must exceed minimum print increment value). Normally set to NO for Service Mode (default), YES for Prepack (default). **PRINT KEY ALWAYS ACTIVE -** When set to "YES" the print key remains active and allows multiple labels to be printed when a PLU is called. When set to "NO" printing is only allowed once (unless with weight applied, a new motion, no motion condition occurs). Normally set to NO for Service mode (default) and YES for Prepack (default).	
DEFAULT BY WT. MODE	SERVICE (default), PREPACK, or LAST USED mode to be used each time a new By Weight PLU is called.	

NAME ACCUMULATORS

Edit the names of 5 accumulators selectable through the **ACCUMULATOR** key on the PLU screen. These should match the names in the Master. Defaults are: Auto, Manual, Rewrap, Combination, and Inventory. The fifth accumulator, Inventory, is not available in Model 8422/23/8305 Masters.

DEFINE ACCUMULATORS

Define the order and availability of accumulator types for Auto Price and Manual Price items. During operation, the user will have the ability to scroll through up to 5 accumulator types (depending on the choices made here). For Auto Price, the box immediately below contains the first Accumulator option and the remaining boxes below contain the four following options. To configure, touch the appropriate box to toggle through the accumulator options until the desired one is found, and continue until the desired number and order of accumulators has been set. Repeat for Manual Price.

SP. PRICE SETTINGS

(Frequent Shopper software only.) This selection defines the rules for rounding weight calculations, unit price, count, and discounts. These settings must match the store POS (Point Of Sale) setup.

BW: TOTAL PRICE	Select Rounding Method 0-4 below.
BW: CALC WT	Select Rounding Method 0-4 below.
BW: PER UNIT MTD.	By-Weight Per Unit Method. Valid entries are **0: USAVE FIRST** and **1: MEM. FIRST**. 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. The calculations apply only for the $/cents off the unit price for a By-Weight PLU.
% DISCOUNT	Select Rounding Method 0-4 below.
BC: TOTAL PRICE	Select Rounding Method 0-4 below.

Rounding Methods 0-4

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)

STORE LOGO

This selection is used to select a store logo graphic from the master or server and download it to the satellite/client.

AUST. MODE ENABLE	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.) For Australia, also set the option **TARE FIELD TO USE** to **NONE**.
ENABLE WEIGHT 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.)
MEMODE PRINT PLU LABELS	If memory mode is enabled, and this function is set to YES, a label will be printed for each transaction, in addition to the receipt label.
PREVENT FUTURE PACK DATE	When this function is set to YES, a pack date later than the original cannot be entered.

Bar Code Settings

Touch BAR CODE SETTINGS, and then ENTER to configure the Bar Code settings. The Model 8461 can be set up to print either UPC-A or EAN-13 bar code symbols. The Bar Code Settings selections are determined by the last item on the menu (Bar Code Type), which selects either **UPC** or **EAN** bar code symbols. When UPC is selected, only valid UPC settings will display. When EAN is selected, only valid EAN settings will display.

UPC Bar Code Setup

By-Weight Bar Code	Select the By-Weight bar code type. The default is 2. The selections are as follows: 0 General Merchandise. (No price is encoded) 1 Not identified. 2 Random-Weight. Item number with total price encoded. 3 National Drug and Health items. Similar to Type-0. 4 In-Store Marking. 5 Coupons. 6 General Merchandise. (No price is encoded) 7 General Merchandise. (No price is encoded)
By-Count Bar Code	Refer to By-Weight Bar Codes. (Default = 2).
Std. Pack Bar Code	Refer to By-Weight Bar Codes. (Default = 2).
Run Total Bar Code	Refer to By-Weight Bar Codes. (Default = 2).

Bar Code Format Codes:
N Item number Digits.
C Check Digit.
0 The number zero.
$ Total Price Digits.
# Weight Digits.
X Symbol Check Digit.
D Digit.

Random Weight Type	Select the format of the bar code when a Type-2 bar code is selected. Refer to the code explanations on the left. 0 NNNNN C$$$$ X (5-D Item/C/4-D Price) 1 NNNNN O$$$$ X (5-D Item/0/4-D Price) 2 NNNNN N$$$$ X (6-D Item/4-D Price) 3 NNNNN $$$$$ X (5-D Item/5-D Price) 4 NNNNN C#### X (5-D Item/C/4-D Wgt) 5 NNNNN O#### X (5-D Item/0/4-D Wgt) 6 NNNNN N#### X (6-D Item/4-D Wgt) 7 NNNNN ##### X (5-D Item/5-D Wgt)
Run Tot/Mem Type	Sets the format of the bar code when Type-2 is selected for Run Totals or Receipt labels. Refer to By-Weight Bar Code for available selections.
Manufacturer Num	This selection allows for a default five-digit manufacturer number, when used with type 0, 1, 3, 5, 6, or 7 bar codes, replacing the first five MSD digits of the item number.
Hard 0 => PC 6 Digit Item => PC	When a PLU contains a command to turn off the price check digit, (Ex: Action Code 49), this selection determines what will print in the price check digit space. A hard zero or a six-digit item number can be selected.
Barcode Type	Select UPC Barcode (Std. U.S.), or EAN for EAN-13 Barcode applications.

EAN Bar Code Setup

EAN Bar Code Setup displays only when EAN Bar Code type is selected.

By-Weight Bar Code	***EAN Flag 2*** digit to be used for By-Weight labels (0-9).
By-Count Bar Code	***EAN Flag 2*** digit to be used for By-Count labels (0-9).
Std. Pack Bar Code	***EAN Flag 2*** digit to be used for Standard Pack labels (0-9).
Run Total Bar Code	Refer to By-Weight Bar Codes.

Bar Code Format Codes:
N Item number Digits.
C Check Digit.
0 The number zero.
$ Total Price Digits.
# Weight Digit.
X Symbol Check Digit.
D Digit.

By-Weight Format	Select the By-Weight bar code format. Refer to the code explanations on the left. **0** NNNNN N$$$$ X (6-D Item/4-D Price) **1** NNNNN $$$$$ X (5-D Item/5-D Price) **2** NNNN$ $$$$$ X (4-D Item/6-D Price) **3** NNNNN C$$$$ X (5-D Item/C/4-D Price) **4** NNNNC $$$$$ X (4-D Item/C /5-D Price) **5** NNNNN ##### X (5-D Item/5-D Wgt) **6** NNNNC ##### X (4-D Item/C/5-D Wgt)
By-Count Format	Refer to By-Weight Bar Codes. (Default = 2).
Standard Pack Format	Refer to By-Weight Bar Codes. (Default = 2).
Run Tot/Mem Format	Refer to By-Weight Bar Codes. (Default = 2).

Barcode Type	Select UPC Barcode (Std. U.S.), or EAN for EAN-13 Barcode applications.

Reset To Factory Defaults

Touch RESET TO FACTORY DEFAULTS, then RESET to reset (clear) all battery backed memory. ***Warning! All user programmed label formats, presets, backup PLUs, marquees, etc. will be erased and replaced with factory default settings.***

Reset Labels To Defaults

Touch RESET LABELS TO DEFAULTS (box will highlight), touch ENTER, then touch RESET to reset (clear) all custom label formats and replace them with the default label formats. ***Warning! All custom label format settings will be cleared!***

Language

Select English, Spanish, or French for the scale operation.

Restore Dept Records

When this function is set to YES, upon power up, or at 2:00 AM, the satellite unit will request all of the department PLU records for the currently set department. When set to NO, the satellite will request the last PLU used (which can be in different departments). Note: If a satellite Memory PCB is not used, only the last 250 PLU records only (excluding ET and NF) will be refreshed. Satellite Memory PCB's are available in 2, 4, and 8 MEG versions.

Standalone Operation

When this function is set to YES, the unit will operate in a Standalone Mode. A Memory PCB is required to store extra text and nutrifacts. PLU records, graphics, Extra Text and Nutrifacts must be downloaded from an external host source, such as Databack, Intelli-Net™ or Wintelli-Net™. Limited quick-change edit functions are available under Setup/DB Editor such as Price Changes, Tare Changes, Shelf Life Changes, and Use-By Changes. Any other changes must be made from the external source and downloaded via host mode.

View Error Log

This is a factory diagnostic tool. Touch VIEW ERROR LOG, then ENTER to view the error log. When in the view screen, touch the screen once to advance to the next page and then touch the screen again from the last page to exit the error screen.

Clear Error Log

Touch CLEAR ERROR LOG, and then CLEAR to clear all error log codes. There is no confirmation to clear errors, so be certain before touching CLEAR.

Peripheral Configuration

From the Unit Setup screen (shown in Figure 3-1), touch PERIPHERAL CONFIGURATION for the unit Host Communications setup menu. The AUX Port is an RS232 serial port located on the left side of the scale. The AUX port is used for DataBack, a PC program used to backup the unit setup information (label formats, etc.). DataBack is available as METTLER TOLEDO® Kit 0918-0027. The AUX port setup and DataBack must always match. Normally, the default settings do not need to be changed. DataBack defaults to the same values as the Model 8461.

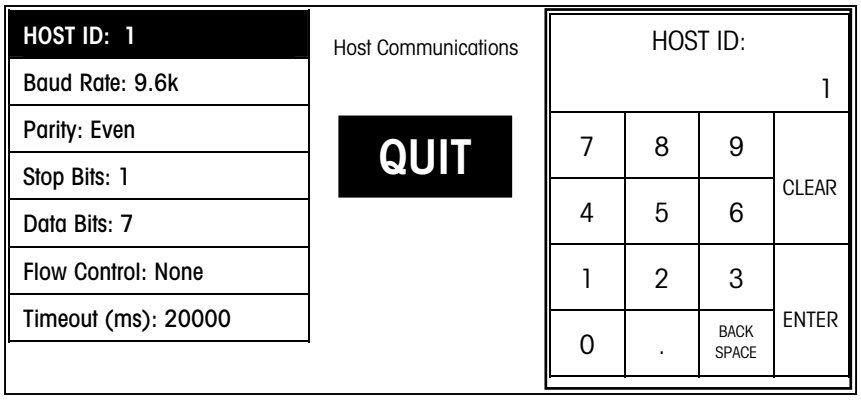


Figure 3-22: Host Communications Setup

Host ID	Two-digit ID. Must match DataBack.
Baud Rate	Default is 9.6k baud. Must match the baud rate in DataBack.
Parity	Default is EVEN for use with DataBack. Other selections are Even, Odd, Low, High, and Off.
Stop Bits	Default is 1 for use with DataBack. Other selections are 1.5 and 2.
Data Bits	Default is 7 for use with DataBack. Other selections are 5, 6, and 8.
Flow Control	Default is None for use with DataBack. Other selections are XON/XOFF, and RTS/CTS.
Timeout	Default is 20000ms for use with DataBack.

Program Label Formats

Before beginning a custom label format, the proper label size must be installed in the printer. From the Unit Setup screen, touch PROGRAM LABEL FORMATS to enter the Label Formats screen.

Label Formats Screen

The **Label Formats** screen is shown below. From this screen, you can edit formats, create new formats, copy formats (default or custom), delete formats, and print test labels. To make a format the default, assign the format as the default in the Printer Setup screens.

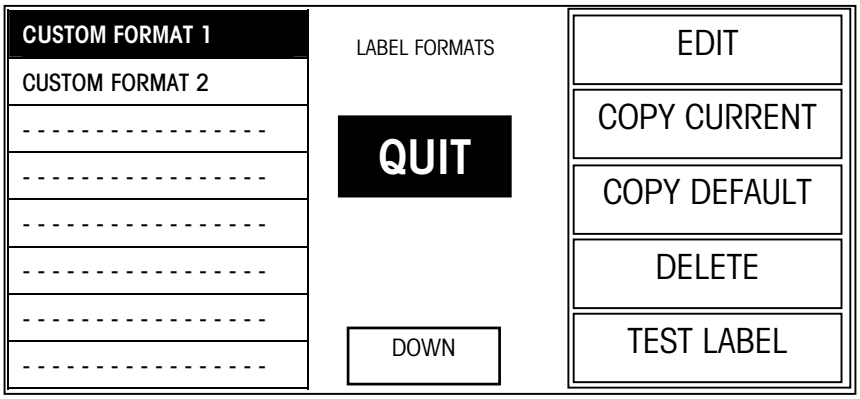


Figure 3-23: Program Label Formats Main Menu Screen

EDIT Used to create new formats from a blank template, and to modify existing custom formats.

To modify an existing format, touch the format you wish to edit and then touch EDIT.

To create a new format from scratch, touch an unused box (one with dashes), then touch EDIT.

When complete, go to the **Edit a Label Format** section and immediately name your label.

COPY CURRENT Duplicates a custom format.

To create a new format starting with an existing custom format, touch the format you wish to copy, and then touch COPY CURRENT. An copy of the format with the name "!New Format!" will appear in the next available box. Touch the "!New Format!" box, then EDIT to modify the format.

When complete, go to the **Edit a Label Format** section and immediately rename the format.

COPY DEFAULT Use to create a new format using the label format templates.

To create a new format starting with a default format, touch an empty box, then the COPY DEFAULT key. (If you touch a box that contains an existing label format, it will be overwritten.)

A list of default formats will then appear. Touch the format you wish to copy. A copy of this format with the name **!New Format!** will appear in the box you selected. Touch the **!New Format!** box, then EDIT to modify the label format.

Samples of all the default label formats are in Chapter 11.

When completed, go to **Edit a Label Format** section and immediately rename your label.

DELETE Deletes custom formats.

To delete a custom label format, touch the format you wish to delete, then DELETE. You will then receive the message **DELETE FORMAT ARE YOU SURE?.** Touch YES to delete or NO to continue.

TEST LABEL To print a test label, touch the label format you wish to view, then touch TEST LABEL.

Edit a Label Format

From the Label Formats screen, touch the desired label format, then EDIT. The Label Setup screen, (below) will appear. (If it is a new format, all of the boxes will be blank.) The first box represents the name of the format, and the remaining boxes represent entities on the label.

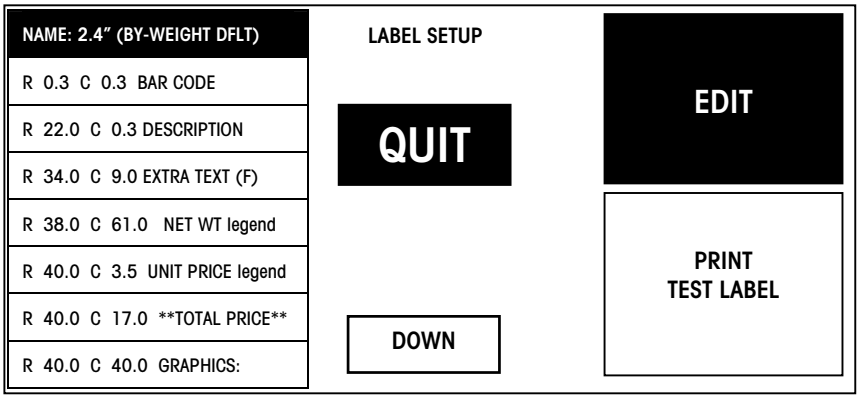


Figure 3-24: Edit a Label Format Screen

Rename new formats to avoid confusion. Touch the NAME box and EDIT change the name. To delete the entire line, touch SHIFT then BACKSPACE. Touch ENTER when done. The Label Setup screen will return, with the second box highlighted and different options on the right side of the screen (see below). You can now begin creating, editing, and deleting label entities.

At any time, touch PRINT TEST LABEL to print a test label.

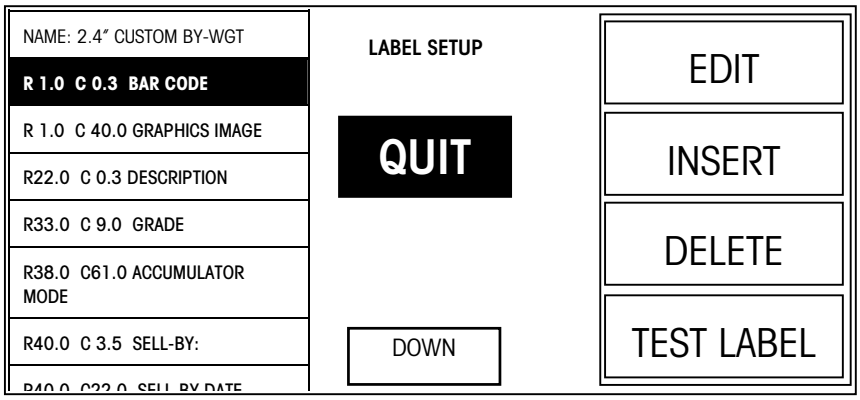


Figure 3-25: Edit Label Entities

DELETE To delete an existing entity, touch the entity box, then DELETE. The prompt **DELETE FIELD ARE YOU SURE?** will appear. Touch YES to delete or NO to abort.

EDIT/INSERT To add a new entity, touch a blank **[----------]** box, then touch EDIT or INSERT, A new field **[----------]** will appear above the highlighted field. The Field Setup screen will appear with the top box highlighted (below).

EDIT To modify an entity, touch that box then EDIT. The Field Setup screen (below) will appear below with the top box highlighted. The top box is the entity type and the boxes below are the physical characteristics (location and size) of the entity.

The current entity name and type will be highlighted when first entering this screen.

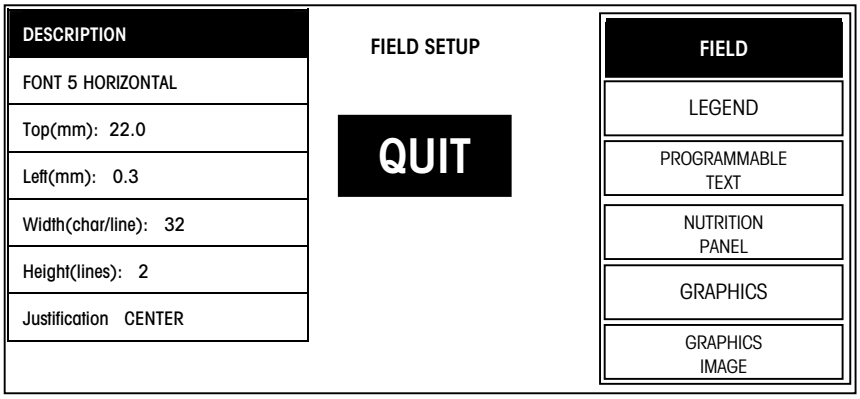


Figure 3-26: Field Setup Screen

To select a different entity type, touch the top box, and then touch one of the types on the right. The following section explains the different Label Entity types.

Label Entity Types

Field

A Field represents data from the PLU record that will print on a label. To select (or change) a field type, touch the top box, then the FIELD key. The list of available fields will display. Touch the box to select it.

Fields: Net Wt, Net Wt & Units, Gross Wt, Gross Wt & Units, Tare Wt, Tare Wt & Units, Unit Price, Total Price, Count/Packages, Net Wt Statement, Pack Date, Julian Pack Date, Sell-By Date, Sell-By Days, Use-By Date, Use-By Days, Pack Time, Bar Code, Description, Grade, Extra Text (F), Extra Text (V), Address, Current Date, Current Time, Scale Units, Currency Symbol, Accumulator Mode, Operator No., Operator Name, PLU Number, Item Number, PLU_Dept. No., Grade Number, Text Number, Action Number, (Frequent Shopper Only - MEM/LIST T.PRICE, USAVE PRICE).

Legend

A Legend is text that appears as a caption to explain a field (i.e., "Unit Price", "Net Weight"). To select a legend, touch the top box, then the LEGEND key. A list of available legends will appear. Page through the menu to find the desired legend and touch it to select.

Programmable Text

Programmable text can be a custom legend or message. To select or program text, touch the top box, then the PROGRAMMABLE TEXT key. A list of text entries will appear. To edit an existing text, touch the text box, and then EDIT. To create new text, touch a blank box **[----------],** then EDIT. After the text is created or edited, select the text by touching the desired text and then SELECT.

Nutrition Panel

Positions a Nutrition Text Panel using standard panel templates. To place a panel on the label format, touch the top box, then the NUTRITION PANEL key to configure the location (mm from top and left). The other selections do not affect the Nutritional Fact panel.

The format of the text is configured in the PLU record. Five formats are available: Vertical Standard, Vertical Simplified, Linear Landscape, Linear Landscape, and Tabular.

Graphics

To place graphics in the format, touch the top box, then the GRAPHICS key. Select one of the graphics types on the right. Graphics boxes can have text inside of them. Text positioned inside a Filled Box will be black with white text. To achieve this, place the text and the box location in the same place. The Font and Justification selections do not affect the graphics. Width and Height, Top and Left, settings are the dimensions in millimeters.

Graphics include a Horizontal line, Vertical Line, Diagonal Line, Empty Box, Filled Box.

Graphics Image

In master software Version 4, the maximum recommended size of a graphic image was increased from 3k to 6k. The model 8461 software Version 2 or later can use the larger graphics up to approximately 6k.

Positions a Graphics Image on the label that has been assigned in the PLU record. Only the location of the top left corner of the graphic image (in millimeters) can be set up. The rest of the characteristic selections do not affect the graphic image. Graphics Images cannot be scaled. The size is fixed when they are downloaded to the master from Intelli-Net. (See Master Programming Manual or Intelli-Net manual for details.)

Physical Characteristics

To edit a Physical Characteristics (location, size, etc.), touch the entity and one of the characteristics explained below. An example label is shown on the next page.

Font H1-H7 are horizontal fonts and V1-V7 are vertical fonts, with V1 and H1 being the smallest fonts. Font V6 or H6 (Vertical or Horizontal) is a numeric font only. This characteristic does not affect Nutritional Panels, Graphics, or Graphics Images.

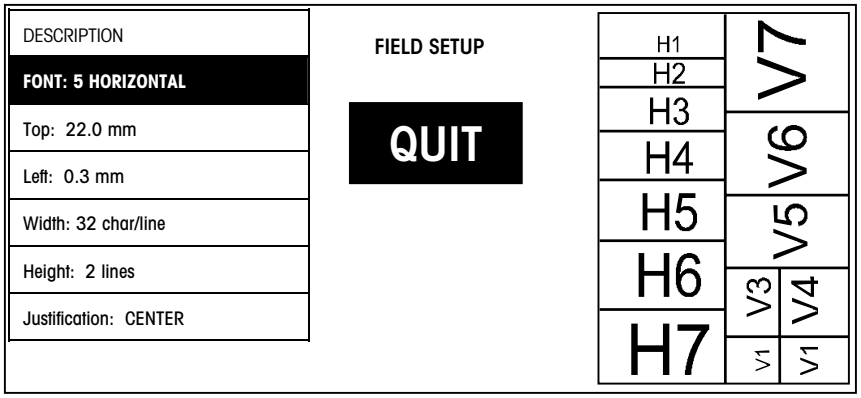


Figure 3-27: Field Setup Screen

Top, Left Top is the number of mm (millimeters) down from the top edge of the label. Left is the position in mm to the right, from the left edge of the label.

Width, Height The function of **Width** and **Height** depend on the type of entity selected. A default value is automatically set for fields, legends, and programmable text. Changing the height allows for multiple lines of extra text and changes the UPC symbol size. The Width and Height keys do not affect Nutrition panels. The size of the panel is determined by the NF template chosen in the PLU record as shown below.

Panel Template	Width (mm)	Height (mm)
Vertical Standard	40	Variable
Vertical Simplified	40	Variable
Tabular	24	91
Linear Landscape	Variable	64
Linear Portrait	64	Variable

All values refer to templates with all the "required fields", but without any "voluntary" information. If voluntary information is included, the dimension will be larger.

Width and Height do not affect Graphics Images. The size of the image is fixed once it is downloaded to the master. The size of the graphics image is set when it is scanned or created. (For details on creating and loading graphics images, see the Intelli-Net User's Guide or the Master Programming Manual.)

Justification Justification determines the horizontal alignment of text. Justification does not affect Nutrition Panels, Graphics, or Graphics Images.

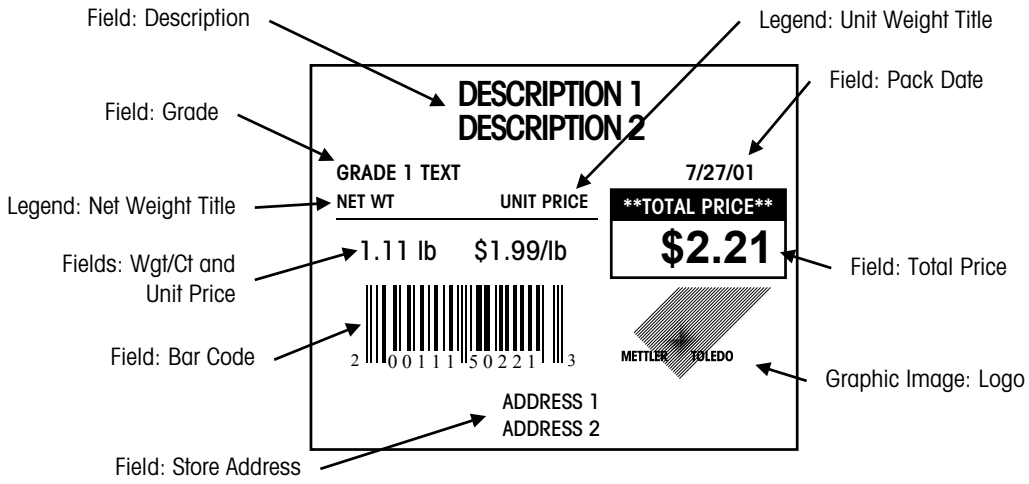


Figure 3-28: Sample Label

Exiting from Editing Label Formats

When you are finished creating custom labels touch QUIT. A reminder will display the message **Remember to Assign Format!.** Touch the CONTINUE to exit. The message is only a reminder to assign the format to a pricing mode (By-Weight, By-Count, etc.). Once a label format is created, it is not active until it is assigned through the Printer Setup menu.

Printer Setup

This section explains the functions of the Label Printer Parameters screens (below). Label sizes, style defaults, printing, and delivery options are explained.

This section covers Printer Setup with the Model 8461 Satellite Version 2 (or higher software) or any version of the Client. The Satellite Version 2 and Client use label styles similar to the Model 8360 and 8361. For Satellite units with Version 1 software, use Service Manual 15038200A.

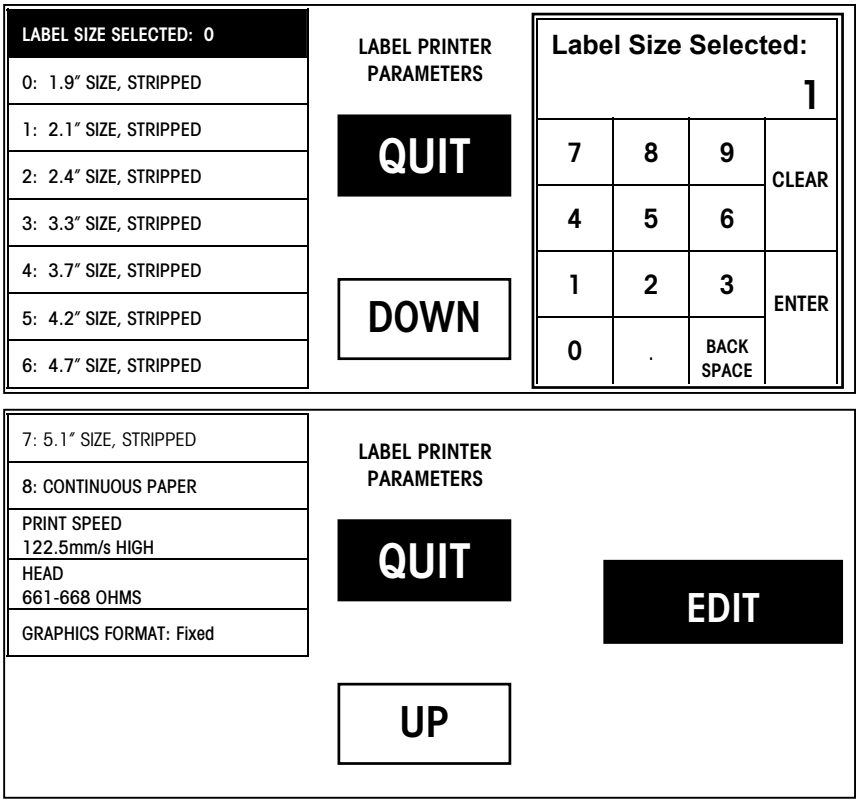


Figure 3-29: Label Printer Parameters Screen 1 and 2

Label Size Selected

From the Unit Setup screen, touch PRINTER SETUP to display Screen 1 of Label Printer Parameters (below). This screen is used to assign label formats and other functions. Label format 0 is used if the value of the LABEL STYLE field in the PLU record is zero. Formats 1-7 are used for alternate formats. To select a new label size, touch the top box LABEL SIZE SELECTED and enter the label size number (corresponding to the sizes on the left). Touch DOWN to display the second and third screen.

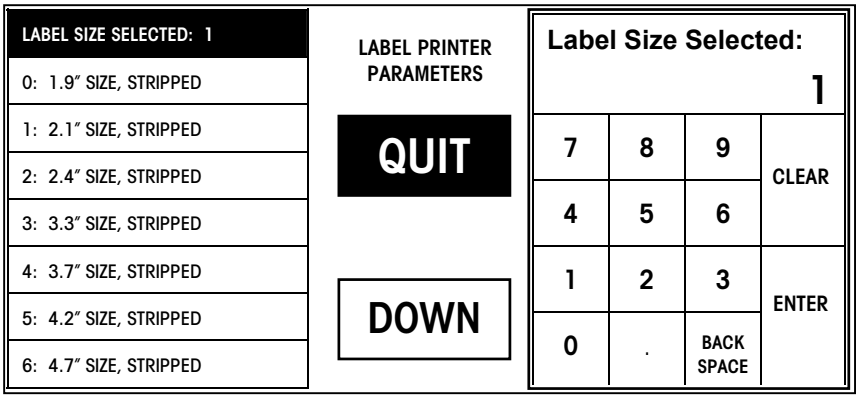


Figure 3-30: Label Size Selected

Label Sizes 0-8

The boxes 0-8 on screen 1 and 2 are assigned label sizes. To edit a label size, touch that label size (1 below) then touch ENTER (2 below).

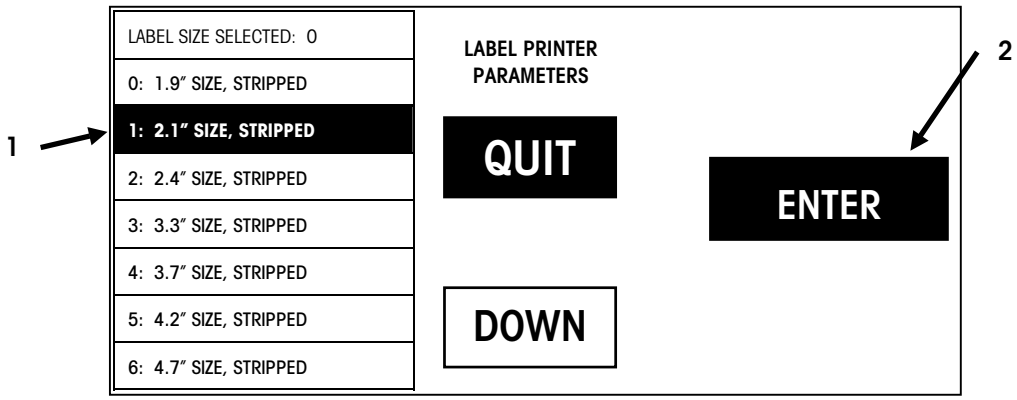
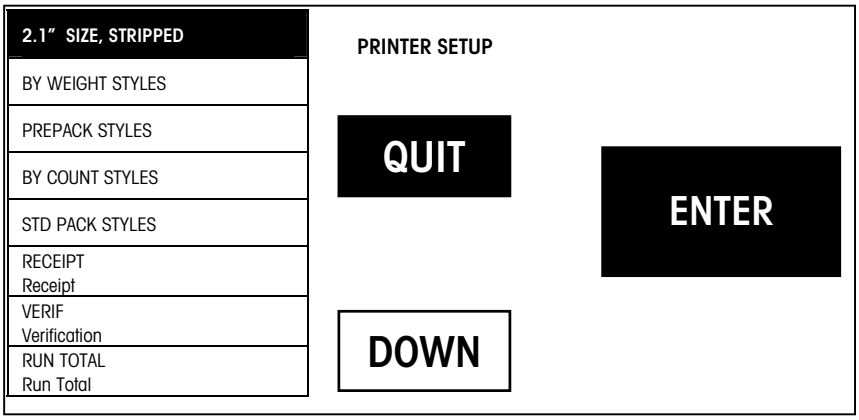


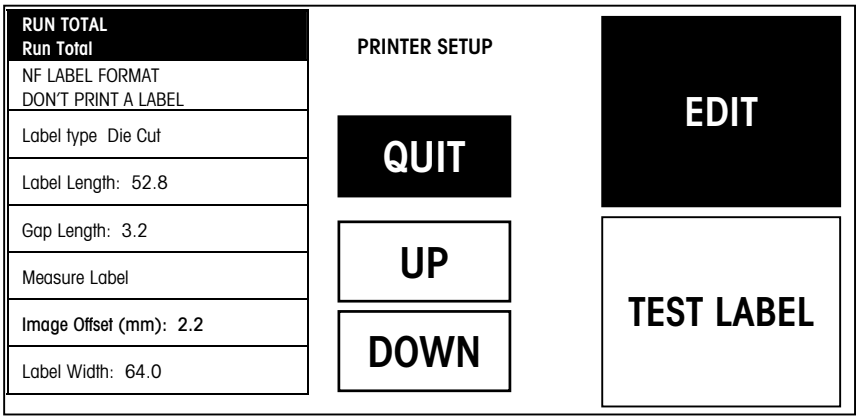
Figure 3-31: Select Label Size to Edit

After selecting a label size to edit, the following screens will be available. Touch DOWN to display screen 2 and 3. The top box on Screen 1 shows the label style assigned to Style 1. To edit the name of the style, touch the top box then touch ENTER.

Screen 1



Screen 2



Screen 3

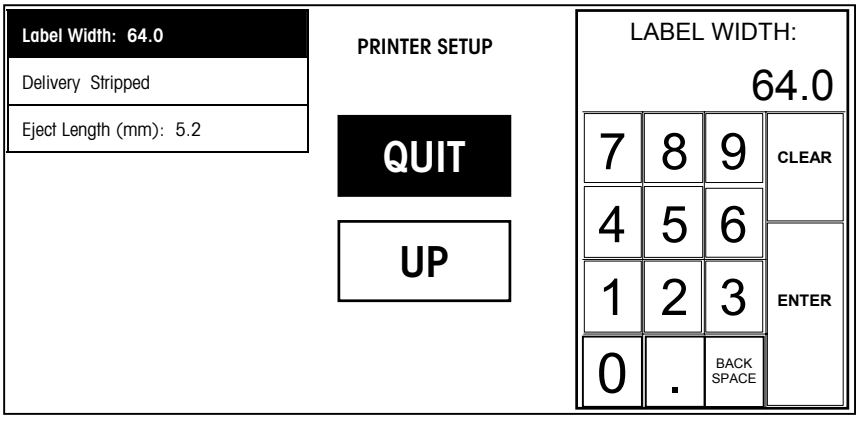


Figure 3-32: Printer Setup Screen 1, 2, and 3

To assign a format to the default format (0), or one of the alternate formats (1-7), first select one of the label styles (BY WEIGHT STYLES, PREPACK STYLES, etc. shown on Screen 1). Next, select the label style number you wish to edit (0-7 in next figure), then touch ENTER to select a new label format from the format list.

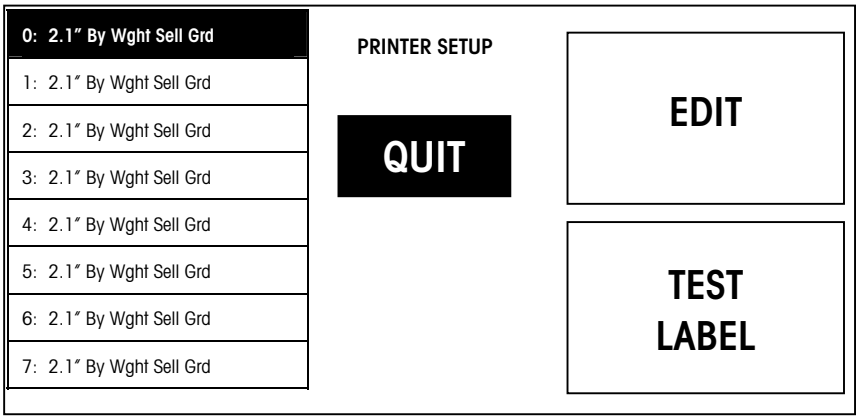


Figure 3-33: Select a new Label Format or Print Test Label

Touching EDIT will display a list of available label formats. Touch a label format to select that format for the current label style. Touch QUIT to return to the previous screen.

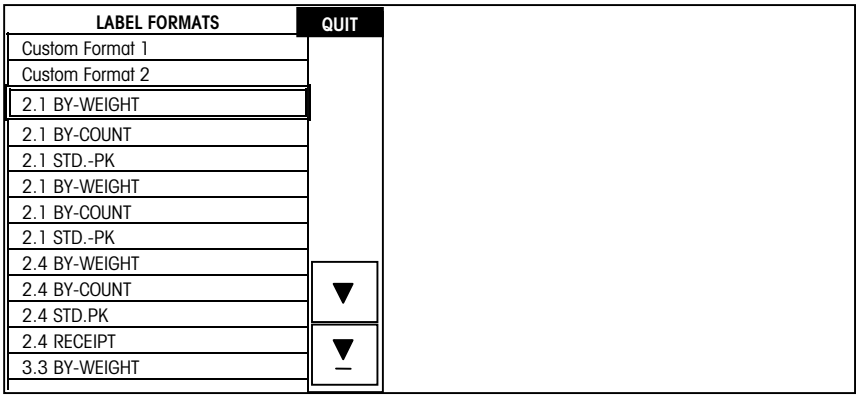


Figure 3-34: Selecting a Label Format from the Format List

Additional formats can be assigned for RECEIPT, VERIF (Verification Labels), RUN TOTAL, and NF LABEL FORMAT. Touch EDIT to modify the label format for each of these types of labels. Touch TEST LABEL to print a label of the current label format.

Label Type
Select Die Cut or Continuous labels. Die Cut labels are individual labels. Continuous is one continuous thermal strip that is printed and torn off one at a time. Continuous lengths can vary in length depending on the length of Extra Text or Nutrifacts. (Refer to Figure 3-28, Screen 2.)

Label Length
Custom label lengths (in mm) can be entered here. When a certain default label size is selected, the default length for that label size will be automatically entered into this field. Lengths from 0 to 203 mm (7.9 in) are accepted. (Screen 2.)

Gap Length
The Gap Length is the space (in mm) between die cut labels and is used to compensate for variances in different label suppliers. The standard Gap Length for **METTLER**

TOLEDO® specified labels are 3.2 mm. Note: 0.0 mm is used for continuous strip labels. Gap Lengths from 0 to 99.9 are accepted. (Refer to Screen 2.)

Measure Label
This selection will measure the die cut label in the printer and enter the measured value in the Label Length Field (Refer to Screen 2.)

Image Offset
The Image Offset (in mm) is used to raise or lower the printed image on the label referenced to a point above the label. The range is 0.0 to 31.9 mm. The label length determines the upper limit. Shorter labels will have a lower upper limit. To raise the image on a label, lower the value. To lower the image on a label, increase the value. (Refer to Screen 2.) The default for die cut labels is 2.2 and for continuous 0.

Label Width
This function is used to set the label width (in mm). The default is 64 mm. The range is from 0.0 to 80.0 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. (Refer to Screen 3.)

Delivery
Stripped delivers the labels peeled from the liner, with the liner wound up on the take up roller. **Unstripped** delivers the label to the operator with the liner attached to the labels. In the unstripped mode, multiple labels can be preprinted and attached to the package later. (Refer to Screen 3.)

Eject Length
The Eject Length (in mm) is used to adjust where the label stops after printing. This value is the distance from the gap sensor to the edge of the stripper bar. Adjustment range is from 0 to 6.4. The default for die cut labels is 5.2 and the default for continuous strip is 0. (Refer to Screen 3.)

Print Speed

For optimal printing, the speed must match the type of labels used. Higher speed settings can be used with higher-quality labels. If the print density is light, set the print speed to a slower setting. The selections are as follows:

122.5 mm/sec Low
122.5 mm/sec Low-Med
122.5 mm/sec High-Med
122.5 mm/s High
101.6 mm/sec High

Head

Head is the resistance in ohms that must match the rated resistance of the installed printhead. The resistance must be set whenever the unit is flashed with software, reset to factory defaults, or when a new printhead is installed. The printhead resistance (in ohms) is printed on a tag affixed to the front of the printhead.

The selections are as follows (Sat Version 2 and higher. For Version 1.X, refer to manual 15038200A):

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

Graphics Format

This selection affects Continuous Strip labels only. Select **Fixed** or **Variable**. When **Fixed** is selected, any data after a graphic image remains at a fixed location even if the graphic is not printed. When **Variable** is selected, data is placed relative to a graphics image. If the image is deleted, the data will move up.

PLU Options

From the Unit Setup screen (shown in Figure 3-1), touch PLU OPTIONS to configure PLU options. Touch the boxes to toggle the selections. YES means enabled or allowed and NO means disabled or not allowed. AVAILABLE means the key will display and NOT AVAILABLE means the key will not appear on the Touchscreen. When any of the Modify selections (Modify Use By Date, etc) are set to YES, the box they are displayed in will have a double line. Items that cannot be modified (set to NO) will have a single line box. See the notes below for MIXED NET WT. STATEMENT, MEMORY, OPERATOR TOTALS, and BATCH QUEUE. Default selections are shown below.

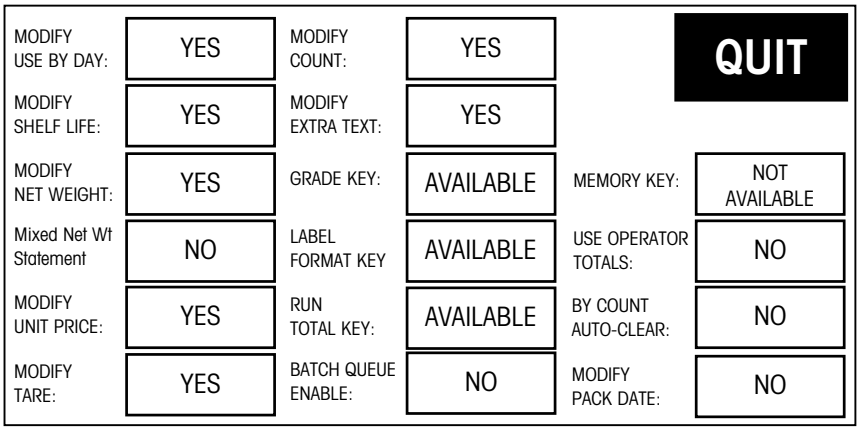


Figure 3-35: PLU Options Menu

Notes:

Mixed Net Wt Statement

This function only takes effect when the scale is calibrated in pounds. When **Mixed Net Wt Statement** is set to NO, the net weight statement on a Standard Pack label will print in ounces and pounds (ex: *NET WT. 56 oz (3.50lb)*). When **Mixed Net Wt Statement** is set to YES, the net weight statement on a Standard Pack label will print in pounds and kilograms (ex: *NET WT. 3.50 lb (1.59kg)*).

MEMORY KEY The MEMORY Key toggles between:

- **NOT AVAILABLE** - No Memory Key or function available.
- **LOCAL** - Local memory available. The **Ent/Mem**, **Subtotal**, and **Print Mem** keys will be active.
- **DEPARTMENT** - The department selection is also known as roving operator and allows an operator to use multiple scales in a department for the memory function. Using the Department settings requires operator numbers that must be set up in the SmartTouch® master or scale server. When DEPARTMENT memory mode is selected, the **Ent/Mem**, **Subtotal**, and **Print Mem** keys will be active.

OPERATOR TOTALS Allows totals to be recorded for up to 30 operators per department.

BATCH QUEUE By-Count and Standard Pack PLUs can be added into a queue, then printed as one batch using PRINT QUEUE key.

Verify Labels

VERIFY LABELS is used to print verification labels for the PLUs in a department..

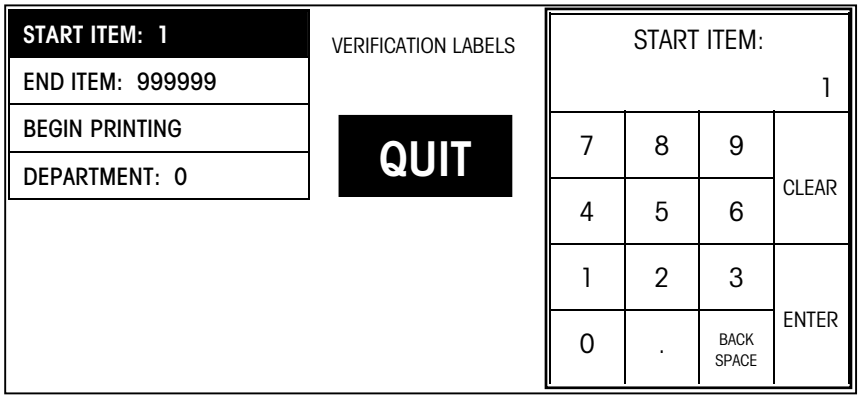


Figure 3-36: Verify Labels Screen

Change Department

From the Unit Setup screen (shown in Figure 3-1), touch CHANGE DEPARTMENT to select a different department. The current department will be double boxed. To select a new department, touch it. To exit without changing the department, touch QUIT. The department information is updated when a new department is selected.

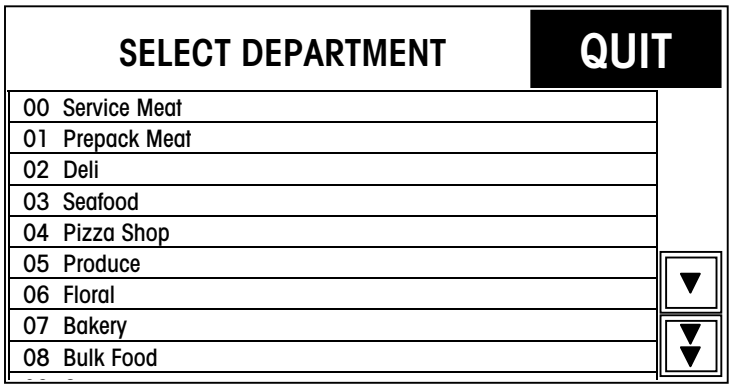


Figure 3-37: Select Department Screen

Program Password

PROGRAM PASSWORD is used to change the password to limiting access to the Unit Setup Screen. Type in the new 1-4 digit password number, then touch ENTER. To disable the password function, touch CLEAR then ENTER. *(For service use, to bypass the password, press the unit Setup Switch when asked for the password.)*

Set Beeper Duration

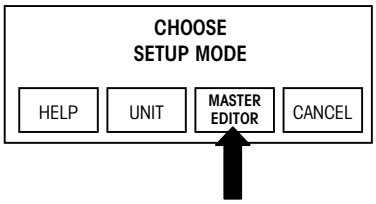
From the Unit Setup screen, touch SET BEEPER DURATION to adjust the duration of the Touchscreen beeper sound. Type in a value (0-10), with 0=no beep and 10=long beep, then touch ENTER.

Smart*Touch*® Master and STEM Master Editor

For **Smart*Touch*®** Master Operating and Programming Instructions, refer to the **Smart*Touch*®** Master User's Guide A14736800A.

Any **Smart*Touch*®** Satellite or Ethernet Client on the network can access the **Smart*Touch*®** Master or STEM database and configuration. Only one satellite or client at a time can access the master. The master will send the message **Master Editor Currently Unavailable** to the other satellite attempting access. Refer to the **Smart*Touch*®** Master User's Guide for instructions for the other functions, Edit, Quick, Print, Report, Clear, and Copy.

There are three levels of password-protected access to the master: Master Access, Department Access, and Operator Access. Master Access allows access to all functions. Department Access allows access for any department that matches the department password. Operator Access allows only viewing and printing data. No changes can be made with Operator Access. If no passwords are programmed, anyone at any station can make changes in the master editor for any department.



To access the master editor, touch SETUP then touch MASTER EDITOR (shown at left). When asked for the master password, touch ENTER (if no password has been programmed) or enter the password if passwords have been configured. ***(Note: If the master password is not known, use the service password 7627.)*** The Master Editor screen is shown below.

Edit	Quick	Print	Report	Clear	copY	conFig	QUIT ESC
Master access	Current Dept: 1	VER: X.XX	X123456R	Date: 12/12/01			

Figure 3-38: Smart*Touch*® Master or STEM Master Editor Screen

To configure the master, first touch **conFig** to display the drop down menu.

Edit	Quick	Print	Report	Clear	copY	ConFig	Quit
					pLu record defaults		
					PAsswords		
					Store/department info.		
					Department number		
					auTo configure rate		
					Master peripherals		
					dataBase diagnostics		
					setUp master		
					Initialize RAM		
Master access	Current Dept: 1	VER: X.XX	XXXXXXXR	Date: 12/12/01			

Figure 3-39: Configure Master

The configuration options under the CONFIG key are as follows and explained in detail in the following sections:

PLU Record Defaults	Configure Accumulator Names and enable/disable duplicate Item Numbers.
Passwords	Set the Master and Department passwords. To clear a password, enter a zero.
Store/Department Info	Configure the Store Name and Address (used on reports), Department Name and Address (used on labels), Department UPC, and Operator Name and Number.
Department Number	Used to select the Current Department (shown at the bottom of the screen) for programming and configuration in the Master Editor.
Auto Configure Rate	Auto Configure Rate is the automatic transmission of satellite addresses (along with a request for connection command) to addresses not yet connected to the network. This eliminates the need to enter all of the Unit ID's manually. This value (1 to 5) is the number of seconds between network auto configure sequences. The default is 5.
Master Peripherals	Configure the master report printer and host serial ports
Database Diagnostics	Used for factory testing only.
Setup Master	Select the weight increment, currency symbol, date format, date separator, time format, barcode style, obsolete PLUs, and Master Network Setup.
Initialize Ram	***WARNING! This selection clears all records from the database.*** This selection must be used to set up new masters before programming records or downloading files. This selection can also be used to clear the RAM if a corruption is suspected in the database. If attempting to salvage records due to a corruption, first use Intelli-Net or Databack to backup any usable records, then reload the database after initializing.

PLU Record Defaults

Touch CONFIG followed by PLU RECORD DEFAULTS to present a **SELECT DEFAULT OPTION** message with three options. Touch PLU ACCUMULATOR NAMES to edit the accumulator names, ITEM NUMBER DUPLICATION to set the item number default, or CANCEL to return to the Master Editor Menu.

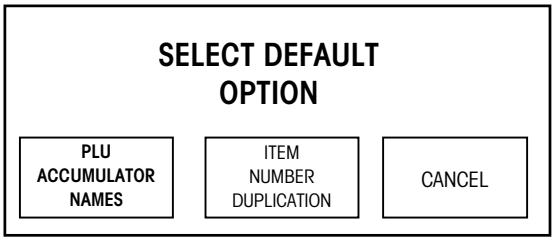


Figure 3-40: Configure PLU Record Defaults Screen

PLU Accumulator Names

When this option is chosen, a screen is displayed with a list of the five default accumulator names to be used on reports. Touch the accumulator you wish to edit, and make changes to the accumulator name (up to 15 characters). Touch QUIT when you are finished editing to return to the Master Editor Menu.

Item Number Duplication

When this option is chosen, an **ALLOW ITEM NO. DUPLICATION** message is presented with three options. Touch YES to allow item number duplication, NO to require unique item numbers, or CANCEL to return to the Master Editor Menu without making a change. Note: If the Satellite Unit utilizes the "Call By Item Number" option for PLUs, the Item Numbers must be unique.

Passwords

To change Master and Department passwords, touch CONFIG followed by PASSWORDS to display a list of passwords. (The Master Password will be first followed by all of the department passwords.)

Locate the password you wish to change and touch that line. Enter the new password (up to 4 digits) through the numeric keyboard. When finished editing passwords, touch QUIT to save the changes and return to the Master Editor Menu. Note: If the password is '0', then access to the Master Editor for that level can be gained by touching ENTER at the "Enter Password numeric keyboard" without entering a '0'.

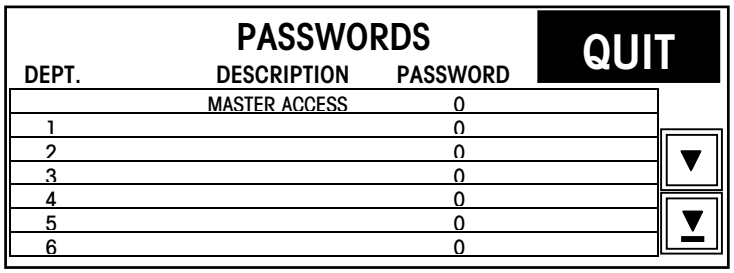


Figure 3-41: Configure Password Screen

Store/Department Info

Touch CONFIG followed by STORE / DEPARTMENT INFO to display the Information Edit screen.

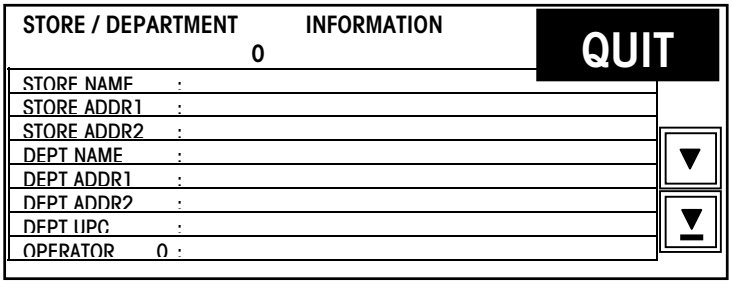


Figure 3-42: Store Information Edit Screen

To edit the field, touch the corresponding line and follow the editing instructions. When you are finished editing, touch QUIT to save the changes.

Edit Name/Address Information

To edit the store or current department Name or Address, touch the corresponding line and make the changes through the alphanumeric keyboard. The names can be up to 12 characters, while the address lines can be up to 32 characters.

Edit Current Department Bar Code Number

To edit the UPC number, touch the **DEPT UPC** line and then enter the Bar Code number for the current department. This number can be used in place of the Item Number for some Bar Code formats, and can be up to 10 digits.

Edit Operator Names

Operator Totals allow totals to be recorded for up to 30 operators per department. The operator numbers can be any 1 to 4-digit number from 1-9999 and do not need to be sequential. To enter new operator names, touch one of the **OPERATOR** lines and then enter the desired operator number (1-9999) through the numeric keyboard. When the alphanumeric keyboard displays, enter the operator name (up to 20 characters). Note: The operator slots that are not defined have an Operator Number of 0. Up to 30 operators can be defined per department. (Page through the list to find additional operator slots.) The operator totals must be enabled in each satellite for accumulation to take place in the master.

Department Number

To change the Master Editor current department, enter the new department number through the numeric keyboard or choose from the list. The new current department number will be displayed at the bottom of the Master Editor Menu screen.

Auto Configuration Rate

This section is used to set the rate of Autoconfiguration. Autoconfiguration is the transmission of satellite addresses (along with a request for connection command) to addresses not yet connected to the network. This permits addition of new satellites to the network without having to manually tell the Master about the new satellite. The autoconfigure rate is the time (in seconds) between each network autoconfiguration sequence. To set the auto configure rate, touch CONFIG followed by AUTO CONFIGURE RATE and enter the desired number of seconds (4-60) through the numeric keyboard. Setting the rate low may slow network response. The default is 5.

Master Peripherals

Touch Master Peripherals to configure the master serial ports for the report printer and host. Select PRINTER to configure the Master Report Printer or HOST to configure host communication parameters to a computer or modem.

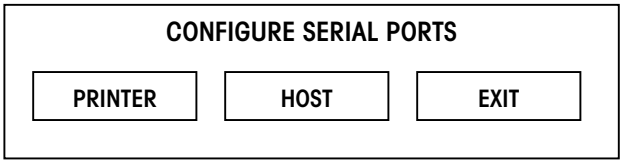
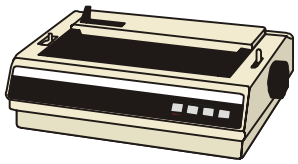


Figure 3-43: Master Peripheral Selection Screen

PRINTER

Touching PRINTER will open the Printer Setup screen below.



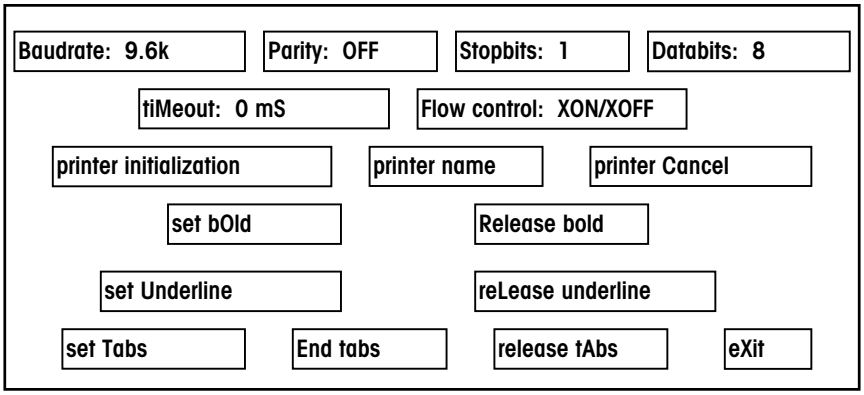
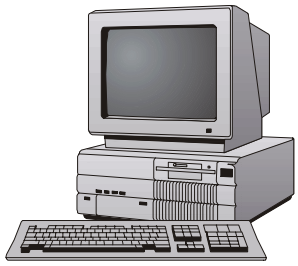


Figure 3-44: Printer Port Setup Screen

The options for the RS-232 serial-printer port are as follows (See the defaults listed in the Master Report Printer Setup section):

Baud Rate	From 1.2k to 115k. This must match the printer. Default is 9.6k baud.
Parity	Even, Odd, Low, High, or Off (no) parity. Use Off for the 88XX Printers. When using 7 data bits, select Even Parity, and when using Off, select 8 data bits.
Stop Bits	Selections are 1, 1.5, and 2. Use 1 Stop Bit for the 88XX Document Printers. Most applications use 1 stop bit.
Data Bits	Selections are 5, 6, 7, and 8 data bits (sometimes-called word length). Use 8 data bits for the 88XX Document Printers.
Time Out	This selection is not used for normal printing functions. The default is zero.
Flow Control	Type of control between the host device and a peripheral that will start and stop data transfer to prevent an overflow condition. XON/XOFF is software handshaking and should be selected for the 88XX Document Printers.
Printer Initialization	This selection is used to enter printer Hex Control Codes used to set up the printer before printing a document. The standard initialization code for the 88XX is: 18,1B,40,1B,39,1B,49,00,1B,4D,0F,1B,42,3C.
Printer Name	This is used for reference only.
Printer Cancel	This hex code is used to stop or cancel whatever the printer is doing. The 8842/8843/8844/8845 use hex code 18 for cancel.
Set Bold	This hex code is used to turn on bold or emphasized printing. The 8842/8843/8844/8845 use 1B,45 for bold print.
Release Bold	This hex code is used to return the print to regular (non-emphasized) print mode. The 8842/8843/8844/8845 use 1B,46 for release bold.
Set Underline	This hex code is used to turn on underline printing. The 8842/8843/8844/8845 use 1B,2D,31 for underline print.
Release Underline	This hex code is used to turn off underline printing. The 8842/8843/8844/8845 printers use 1B,2D,30 for underline print.
Set Tabs	Tab spacing. The 8842/8843/8844/8845 use 1B,44 to set tabs.
End Tabs	End tabs are not normally used with the master reports.
Release Tabs	Releases tab spacing. The 8842/8843/8844/8845 printers use 1B,52.



HOST

Touching HOST will display the Host Port Setup screen below and allow configuration of the serial port for a host PC and DataBack.

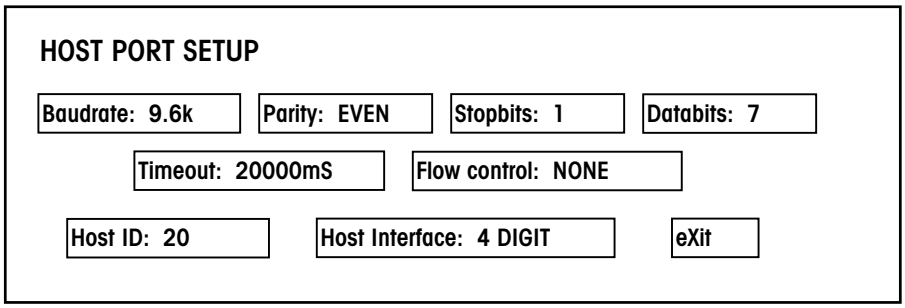


Figure 3-45: Host Port Setup Screen

The selections for the Host Port configuration are as follows:

Baud Rate — The baud rate (in Kilobytes) can be selected from 1.2k to 115.2k. This must match the baud rate of the host or DataBack. The default is 9600 baud. Note: High speed UARTS are recommended on the PC serial port for speeds above 9.6k baud.

Parity — Select Even, Odd, Low, High, and Off can be selected. Use EVEN parity for Intelli-Net and DataBack. (Note: Off and No parity are the same.) The default is EVEN.

Stop Bits — Selections are 1, 1.5, and 2. Use 1 Stop Bit for Intelli-Net or DataBack. The default is 1.

Data Bits — Selections are 5, 6, 7, and 8 data bits (sometimes called "word length"). Use 7 data bits for Intelli-Net or DataBack. The default is 7.

Time Out — This selection is used to end host communications if no response is detected. The default is 20000mS (milliseconds).

Flow Control — This selects hardware, software, or no handshaking. Flow Control sets up communication between the host device and a peripheral that will start and stop data transfer to prevent an overflow condition. Use NONE with Intelli-Net or DataBack. The default is NONE.

Host ID — The Host ID is used by a host computer to communicate with a specific device. This number must match the number programmed at the host to identify this master. ID numbers from 1 to 99 can be used, but must not be duplicated if other units are connected to the host. ***NOTE: POWER MASTER DOWN AFTER CHANGING THE HOST ID TO RESET THE ID IN MEMORY.*** The default is 01. The Ethernet Host communication will also use this address to identify the master.

Host Interface — If using an old host protocol (host thinks master is an 8422-type master), this selection is used to configure the external host communications for a **6-digit PLU** or a **4-digit PLU** database.

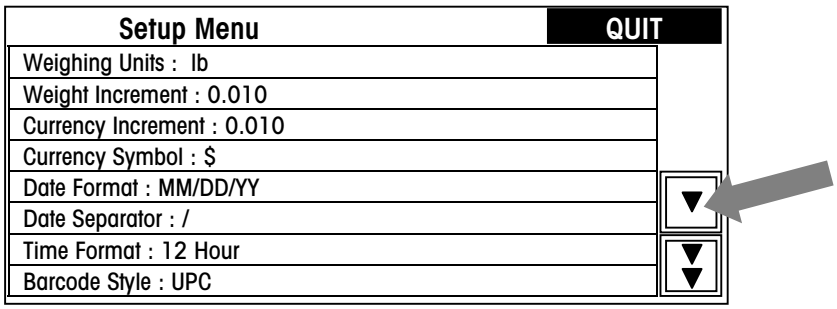
Database Diagnostics

This section is used for a factory diagnostic tool and should not be changed.

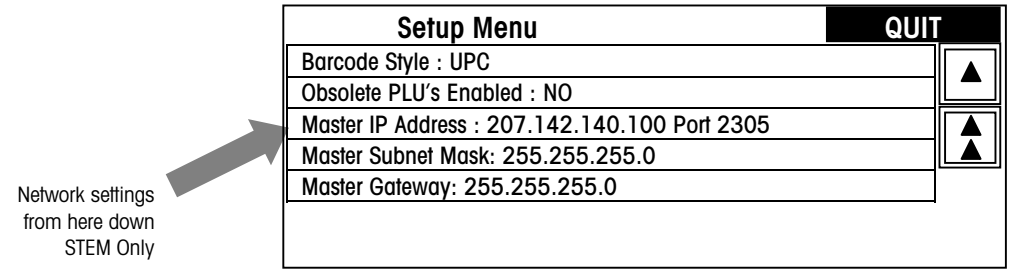
Setup Master

This section is defines master defaults including Weighing Units (lb/kg), Weight Increment, Currency increment, Currency Symbol, Date Format, Date Separator, and Time Format. Touch the Page Down key to display Barcode Style, Obsolete PLUs, and Master IP Address (STEM). When Obsolete PLUs are enabled, creating a regular pending PLU or PCO (Price Change Only) PLU will automatically create an Obsolete PLU with the old price, accumulators, effective time/date. The new PLU will have zero accumulators.

TNET Master and Version 1 STEM



Setup Menu - Screen One



Setup Menu - Screen Two

Figure 3-46: Setup Master Screens, Version 1 STEM

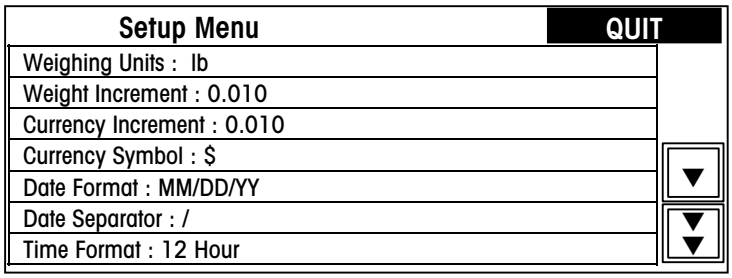
The selections on the setup screens are explained below.

Selection	Description
Weighing Units	This must match the weighing mode of the Clients and Satellites, either lb or kg.
Weight Increment	This must match the weighing mode of the Clients and Satellites. Normally 0.010 lb or 0.005 kg.
Currency Increment	The smallest division of the local currency.
Currency Symbol	When selected, the Alphanumeric keyboard will display. The symbol can be any character on the keyboard.
Date Format	Select from four different formats. MM/DD/YY, DD/MM/YY, YY/MM/DD, YY/MON/DD. Default is MM/DD/YY.
Date Separator	Select the slash "/", dash "-", or period "." for a date separator.
Time Format	Select either 12 hour or 24 hour time.
Barcode Style	Select UPC or EAN barcodes.
Obsolete PLU's Enabled	Enable or Disable obsolete PLUs. Obsolete accumulators are accumulators that are saved when weekly data for PLU's are updated.

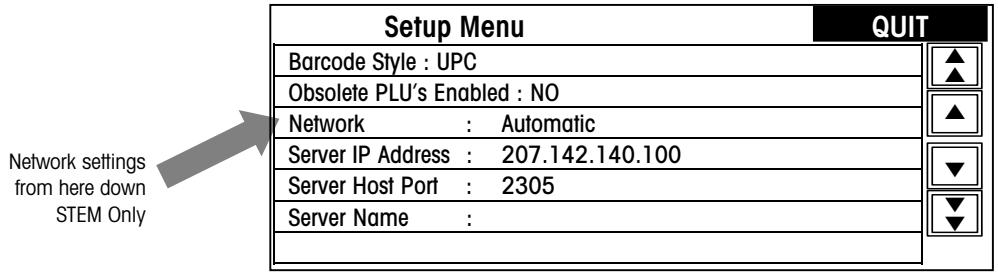
Selection	Description
Master IP Address	This is the STEM's IP address and port number. The IP address is entered one octet at a time. The default value for this field is 255.255.255.000. The STEM's TCP port number used for host communications. A 4-digit value may be entered from the numeric screen. The default value for the port is 2305 should be used in most configurations. **Local Use Networks** - If the Ethernet network is local, arbitrary numbers can be selected for the IP Address. 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 numbers on the network. **Use on Networks Connected to the Internet** - If the network connects to the Internet, the network IP addresses must be obtained and registered with American Registry for Internet Numbers (ARIN, http://www.arin.net). When used on the Internet, the IP Address is used to specify hosts and networks. Internet Protocol (IP) numbers are part of a global, standardized scheme for identifying machines that are connected to the Internet. Consult your Network Administrator on these issues.
Subnet Mask	The Subnet Mask is used to identify the local network when accessing an IP address on the Ethernet network. The mask is entered one octet at a time. 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 sub-network 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.
Gateway	The router's default Gateway IP Address. A router is used when accessing devices outside of the local network. The IP address is entered one octet at a time. The default value for this field is 255.255.255.000.

Version 2 STEM with DHCP

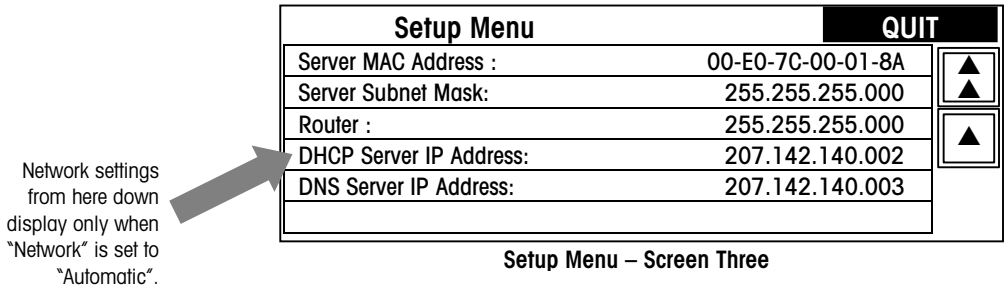
The new DHCP features will allow the client scale or scale server to obtain initial TCP/IP parameters from a DHCP or BOOTP server on the Ethernet network instead of manually setting these parameters.



Setup Menu - Screen One



Setup Menu - Screen Two



Setup Menu – Screen Three

Figure 3-47: Setup Master Screens, Version 2 STEM

The selections on the setup screens are explained below.

Selection	Description
Weighing Units	This must match the weighing mode of the Clients and Satellites, either lb or kg.
Weight Increment	This must match the weighing mode of the Clients and Satellites. Normally 0.010 lb or 0.005 kg.
Currency Increment	The smallest division of the local currency.
Currency Symbol	When selected, the Alphanumeric keyboard will display. The symbol can be any character on the keyboard.
Date Format	Select from four different formats. MM/DD/YY, DD/MM/YY, YY/MM/DD, YY/MON/DD. Default is MM/DD/YY.
Date Separator	Select the slash "/", dash "-", or period "." for a date separator.
Time Format	Select either 12-hour or 24-hour time.
Barcode Style	Select UPC or EAN barcodes.

Selection	Description
Obsolete PLU's Enabled	Enable or Disable obsolete PLUs. Obsolete accumulators are accumulators that are saved when weekly data for PLU's are updated.
Network	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. 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 will be allowed in the "Server Host Port" 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 will be allowed in the "Server IP", "Server Host Port", "Server Name", "Subnet Mask", and "Router" fields.
Server IP	This is the STEM's current 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. **Local Use Networks** - If the Ethernet network is local, arbitrary numbers can be selected for the IP Address. 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 numbers on the network. **Use on Networks Connected to the Internet** - If the network connects to the Internet, the network IP addresses must be obtained and registered with American Registry for Internet Numbers (ARIN, http://www.arin.net). When used on the Internet, the IP Address is used to specify hosts and networks. Internet Protocol (IP) numbers are part of a global, standardized scheme for identifying machines that are connected to the Internet. A Network Administrator or System Engineer should be consulted on these issues.
Server Host Port	The STEM's TCP port number used for host communications. A 4-digit value may be entered from the numeric screen. The default value for this field is 2305 and should not be changed for most configurations.
Server Name	Local domain name for the STEM. All other devices on the network will reference the STEM by using this name when the "Network" is set to "Automatic". If more than one STEM is used on a network, each STEM must have a unique name. If not, only one STEM will be functional and allow connection by clients.
Server MAC	This is the STEM's hardware Media Access Control (MAC) address. Each Ethernet device has a unique 6-byte MAC address. This field is displayed but cannot be changed.

Selection	Description
Subnet Mask	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 cannot be changed. If the "Network" is set to "Manual" this field may be changed. The mask is entered one octet at a time. The default value for this field will be 255.255.255.000. For a Subnet Mask on a local network, use an unused address such as 255.255.255.0. 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 sub network 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.
Router	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 for this field will be 255.255.255.000.
DHCP Server	This is the current IP address of the local network's DHCP server. This field will only be displayed when the "Network" is set to "Automatic" and cannot be changed.
DNS Server	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.

Config-Initialize RAM

This function will reset the master to factory defaults and ***will clear out all database files*** (PLU, NF, ET, Graphics, Totals, etc.). To access this function, select SETUP, MASTER EDITOR. Enter the password, and then select CONFIG/INITIALIZE RAM. This displays a warning screen with a confirmation to reset the scale to factory defaults.

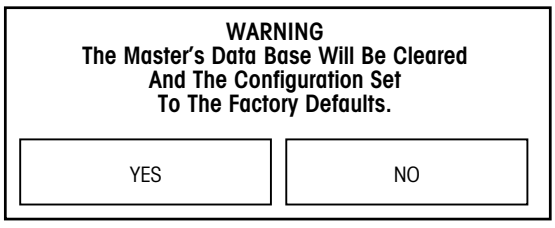


Figure 3-48: Initialize RAM selection screen

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:

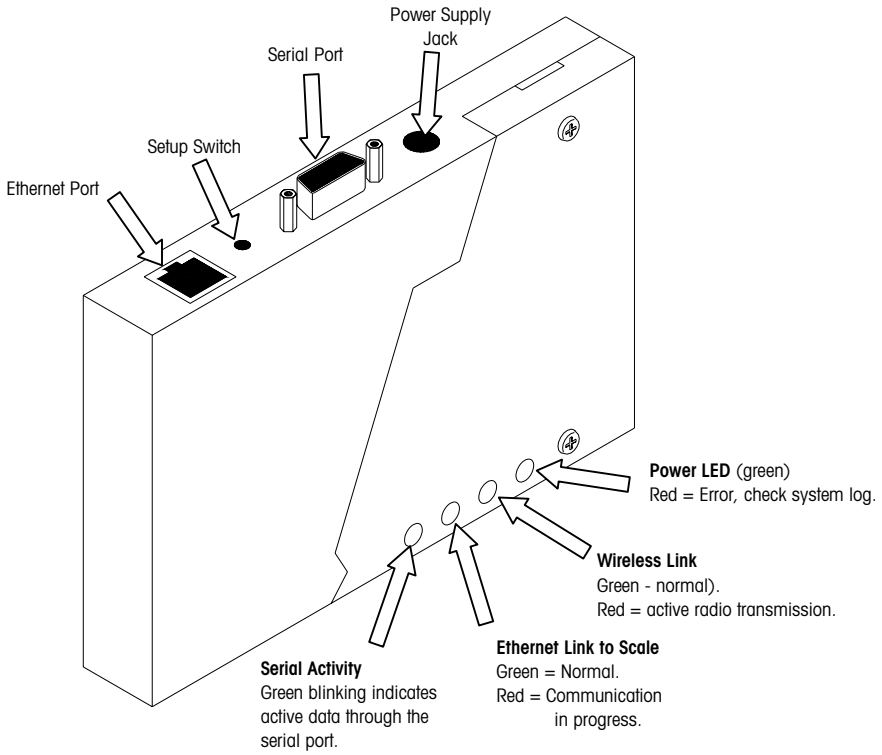
Symbol® Spectrum24 802.11 FH
Symbol® Spectrum24
Aironet™/Telxon 2.4 TMA
Aironet™/Telxon 802.11 DS

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.

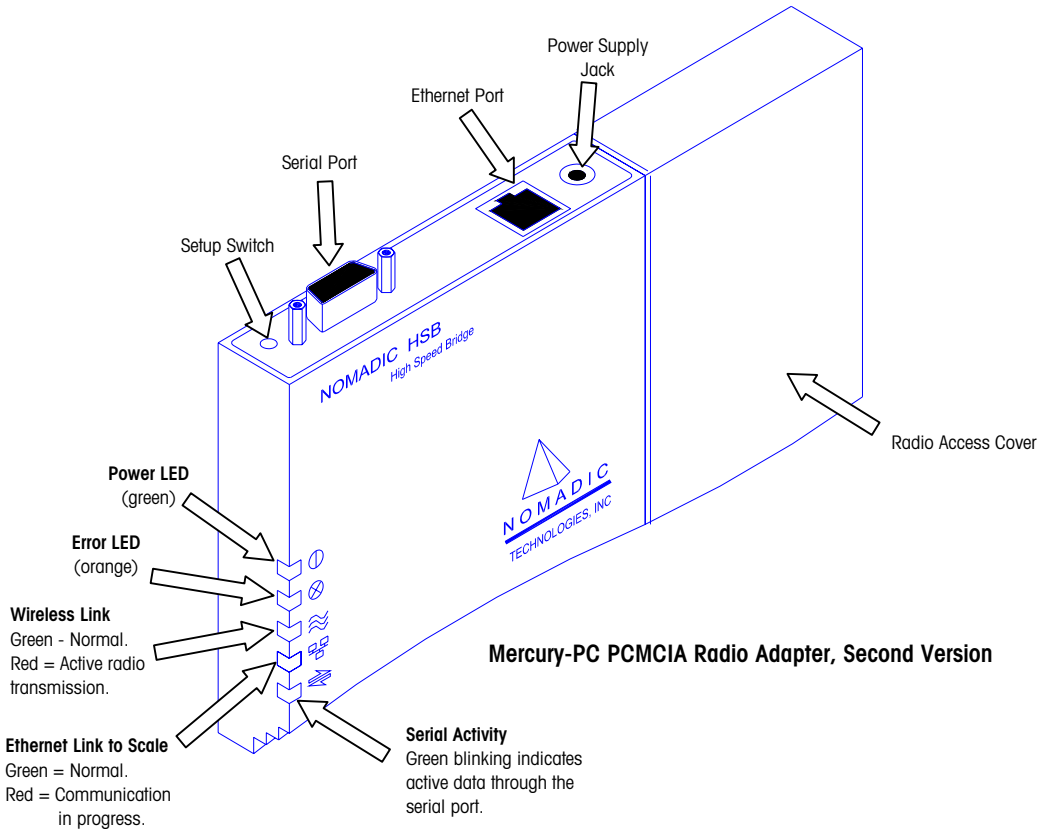
Certain **METTLER TOLEDO®** Ethernet scales are available with the Mercury-PC PCMCIA Ethernet to Wireless Adapter. The Mercury-PC will accept PCMCIA radios, such as Symbol® and Aironet™/Telxon.

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 Mercury-PC uses a standard 9-Pin straight-through serial cable from the Mercury-PC serial port to a computer or terminal RS232 serial port. The computer or terminal transmits data on pin 3 and receives data on pin 2. The Mercury-PC 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.

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

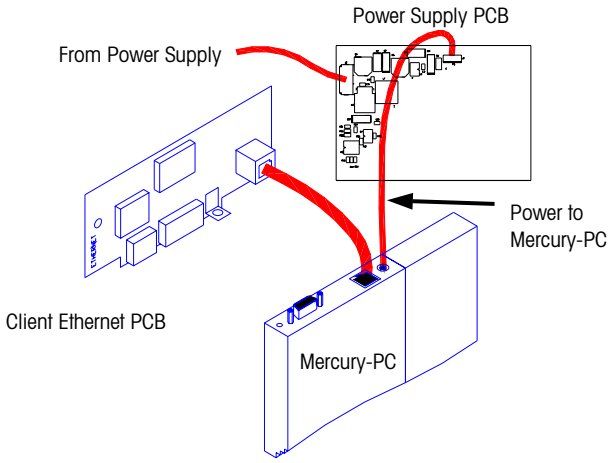
The Mercury-PC is configured to support two sets of handshake lines for flow control: RTS/CTS (Request to Send/Clear to Send), and DTR/DSR (Data Terminal Ready/Data Set Ready).

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. If you ground this pin, the Mercury-PC will enter Setup Mode in the same way as pressing the setup switch. If the pin is left grounded, the Mercury-PC will attempt to enter setup mode continuously. Therefore, **do not connect this pin**. Pin 9 is a signal. If this pin is grounded, the Mercury-PC will reset in the same way it would if power were turned off and back on. If this pin is left grounded, the Mercury will be in a constant reset state. Again, **do not connect this pin**.

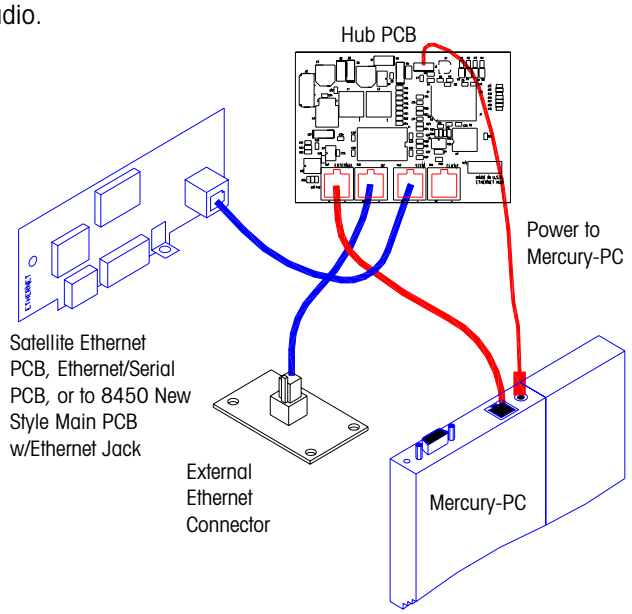
Ethernet Cable Connections

Ethernet Client

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



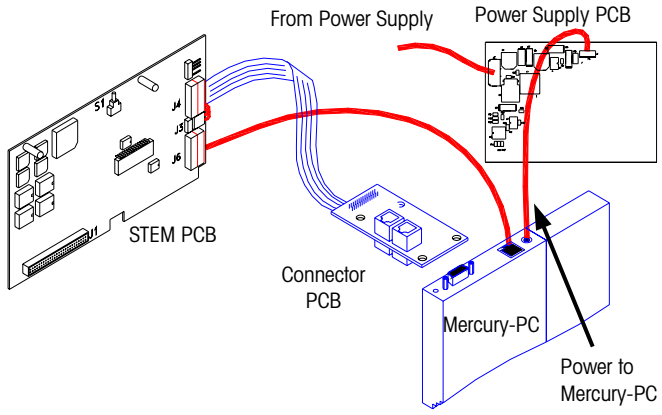
Version 2 – No external Ethernet jack used on factory installed RF on units built after March 2001



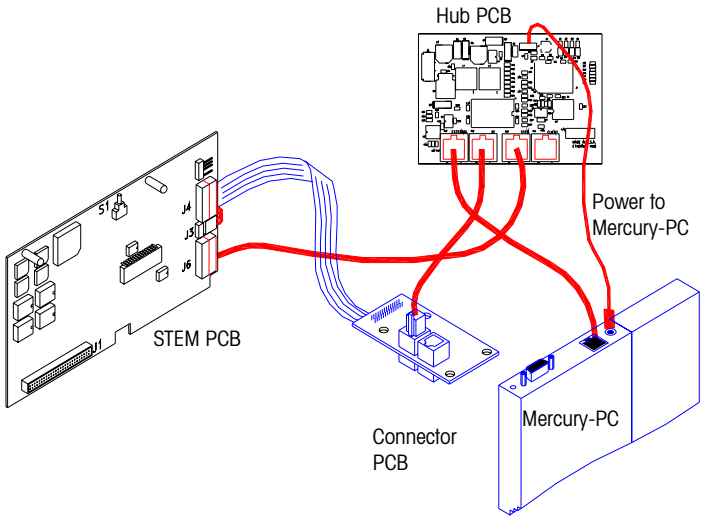
Version 1 – Includes Hub PCB with an external Ethernet jack

STEM (Installed in TNET Satellite)

Wiring diagram for RF kit installed in a STEM with a TNET Satellite using a Symbol® or Telxon™ radio.



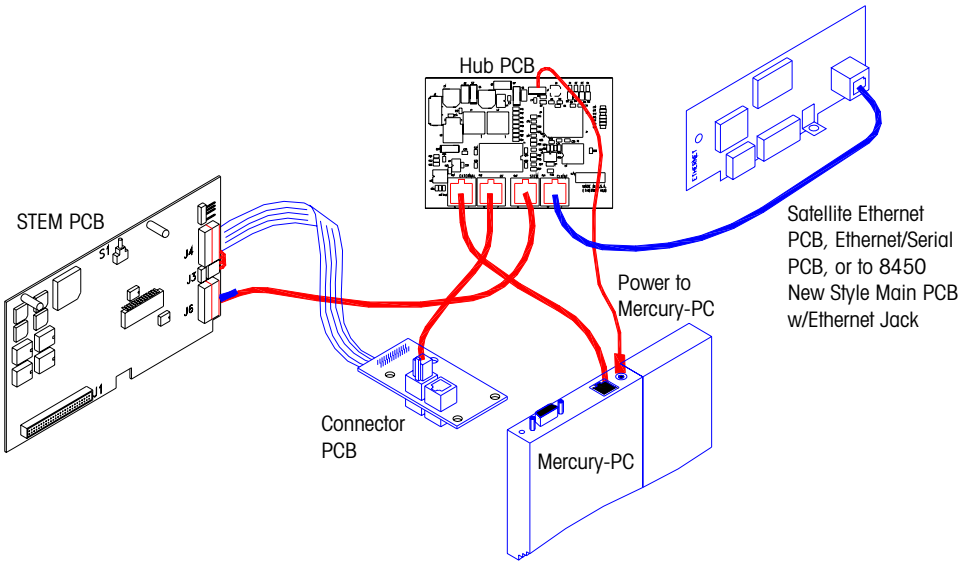
Version 2 – Power Supply PCB and no external Ethernet jack used on factory installed RF on units built after March 2001



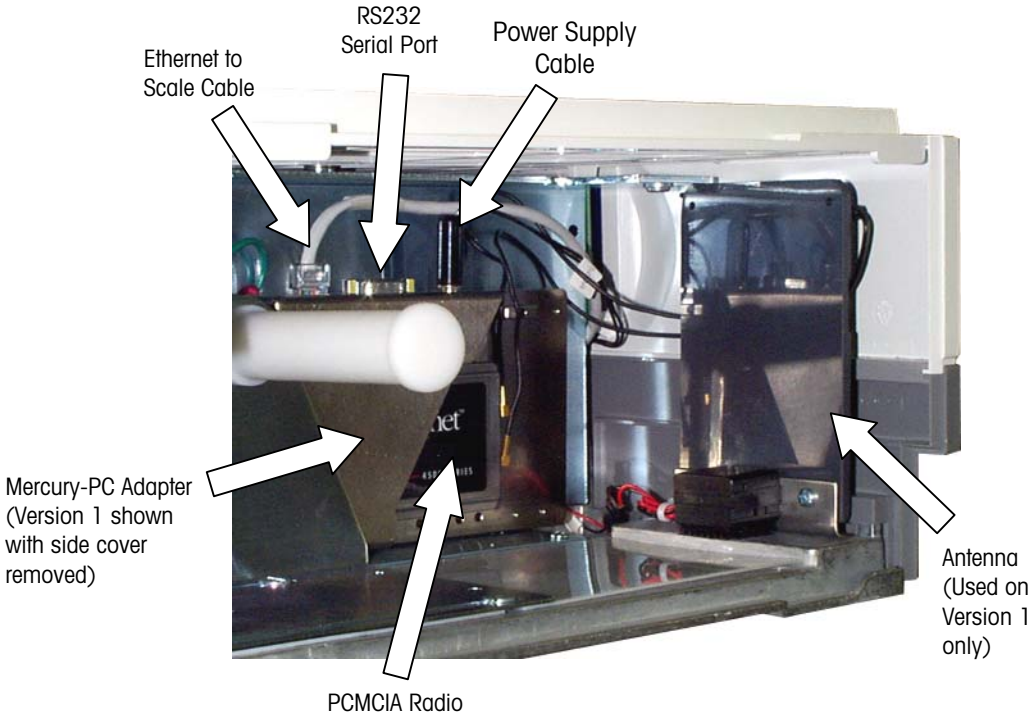
Version 1 – Includes Hub PCB with an external Ethernet jack

STEM (Installed in Ethernet Client)

Wiring diagram for STEM installed in an Ethernet Satellite and using a Symbol® radio that supports multiple nodes. In order to use the STEM installed in an Ethernet Satellite, you must use a Symbol® radio that supports bridging of multiple Ethernet devices. 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.



Components



Mercury-PC Components (Printer cover removed)

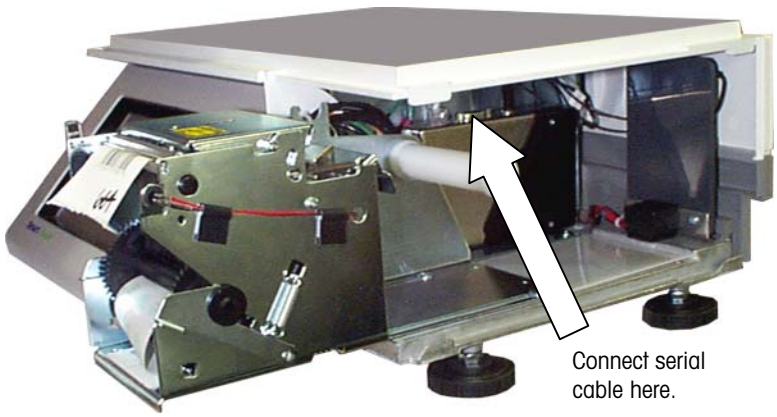
Mercury-PC Setup

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

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.

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.



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.

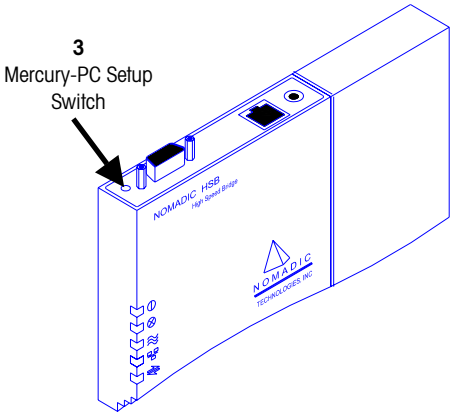
With the cable plugged in, the scale power on, and your communications software running and properly configured (9600, N, 8, 1), use a tool such as a paper clip to press the setup switch in the access hole (see below). The Main Menu should display. If it doesn't, press the up arrow key a few times.

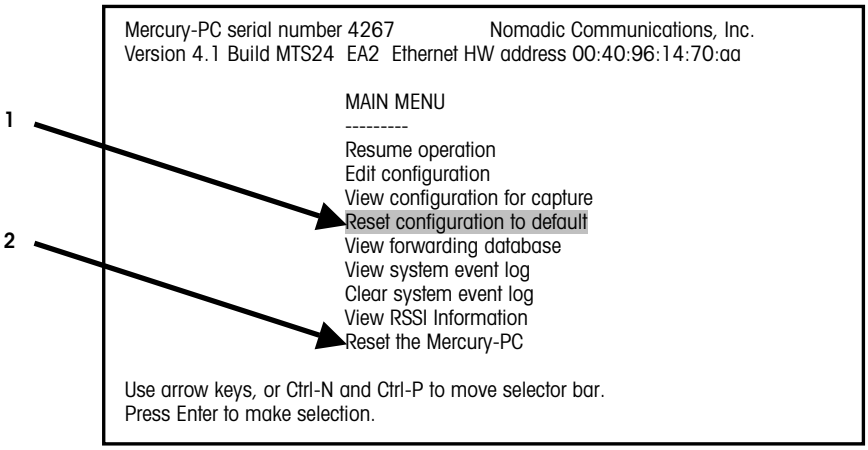
```
Mercury-PC serial number 4267              Nomadic Communications, Inc.
Version 4.1 Build MTS24  EA2  Ethernet HW address 00:40:96:14:70:aa

                              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.

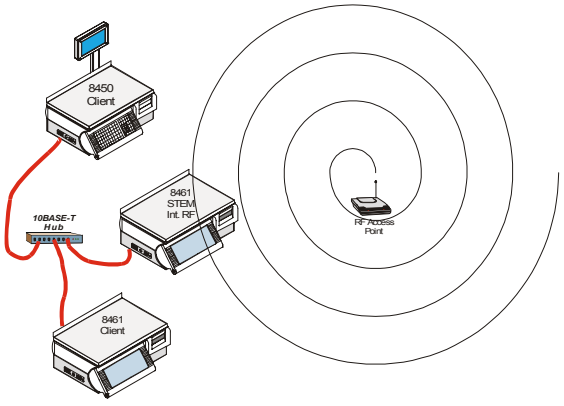
```
[hardware]
network id = 101
mac address = detect save
# station or microap
radio mode = station
dsmu = no
transmit rate = 1 2
diversity = yes

[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.

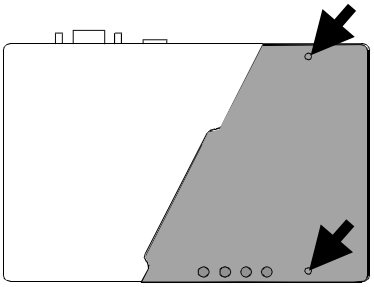


Symbol® RF Supporting Multiple Wired Ethernet Nodes

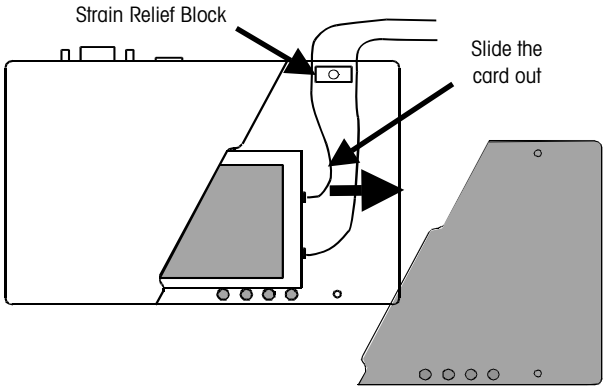
Changing the PCMCIA Radio

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.



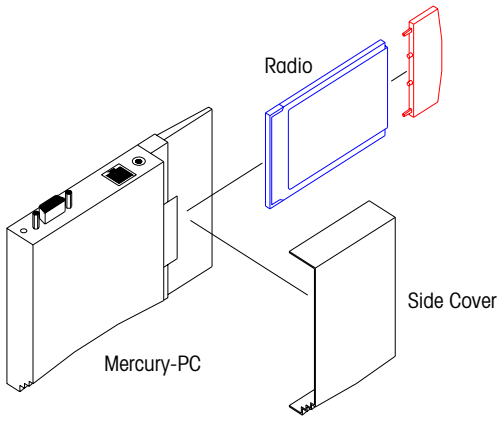
Next, slide the PCMCIA card out from the adapter. Disconnect the antenna leads from the card. Reconnect the antenna leads to the new radio card, then slide the new radio card in the adapter. Push the card in until you can feel the card plug into the receptacle. Route the antenna leads out the top of 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

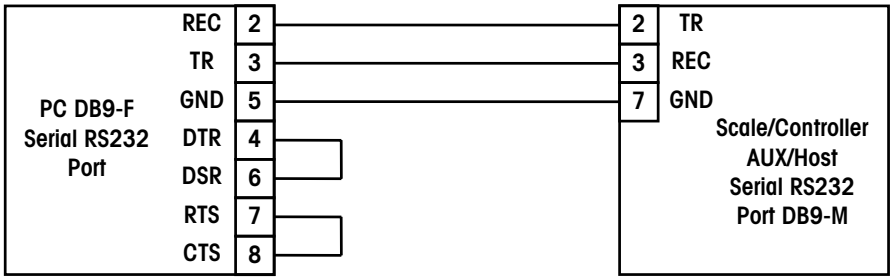
4 PC and Network Interfacing

DataBack Backup and Restore

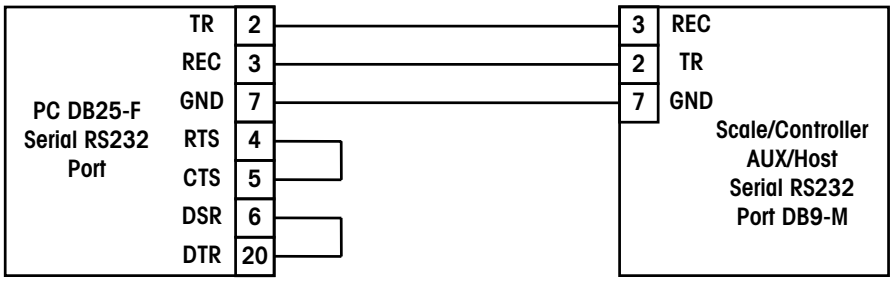
A PC running the METTLER TOLEDO® program, DataBack (Version 4.1 or later) or Databack for Windows® can be used to upload or download data to and from the Model 8461. New scales can be easily set up by using files backed up from other Model 8461 (compatible) units. Databack for Windows® can connect using serial RS232 or through an Ethernet network connection using TCP/IP.

Factory serial RS232 cables are shown below using a 25-pin or a 9-pin PC Serial Port to the 9-pin connector at the scale. (Note: Cables are the same as used for Models 355, 8360, 8361, 8422, 8423, 8305, 8450, 8460.)

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



PC RS232 to Host/AUX Port Cables

Satellite/Client Backup/Restore

Conversion Notes:

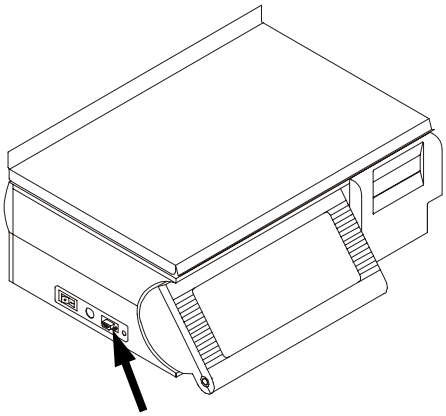
Model 8460 to Model 8360/8361/8461/8450:

Only the custom label formats and programmed text from the Model 8460 Labels/Cassette data can be converted for use with the Model 8461. This file must be converted using a conversion program called **LBL2MM_1.EXE** that generates the Model 8360/8361/8450/8461 label formats.

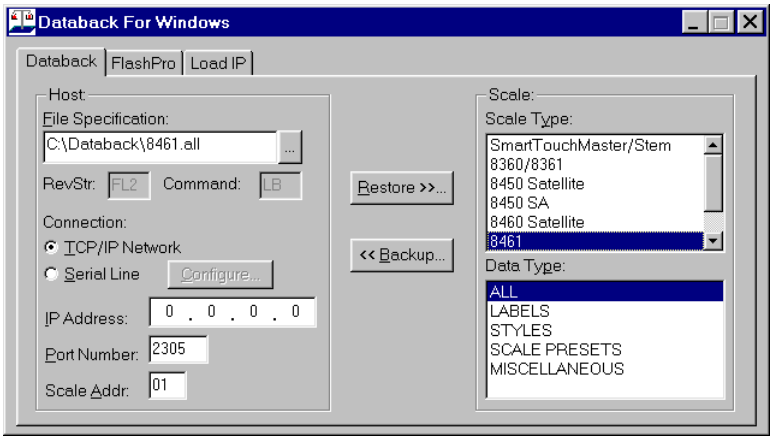
Using DataBack (Version 4.1 or later) or Databack for Windows®, four categories of satellite and client data can be backed up or restored:

ALL	Includes all data sets below. ***Use this only when backing up and restoring to similar Model 8461 units.*** Not compatible with any other scale types. It is recommended to use individual categories to provide compatibility with other scale types.
LABEL FORMATS	Includes custom label formats and programmable text. Compatible with 8450/8360. Model 8460 formats must be converted. See notes at left.
LABEL SIZE/STYLES	Includes information on all label sizes, format #'s, width, length, etc. Not compatible with other types.
SCALE PRESETS	Includes only the user defined preset keys. Compatible with Model 8460/8360.
MISCELLANEOUS	Includes Grade Table, Action Code Table, PLU Settings, TNET Protocol, Department ID and records, Marquee messages, Accumulator Setup, and other Softswitch Settings. Not compatible with any other scale types.

To backup data using a serial connection, connect the data cable to the PC's serial port and to the Model 8461 **AUX** Port on the left side of the scale (see below). Start DataBack. The AUX port must be configured to match the settings in DataBack. In DataBack, select **BACKUP** at the Main Menu, then **8461s**. Next, select the type of backup. Make your selection, type in the file name and press ENTER. Press any key to continue. To restore data to the Model 8461, select **RESTORE** from the DataBack menu, select scale type **8461s**, type in the file name, then follow the same steps. In Databack for Windows®, select the "Scale Type", the "Data Type", the "File Specification", then click on the "Restore" or "Backup" buttons (see below). When using an Ethernet TCP/IP Network connection, the PC can be located anywhere on the network. Enter the "IP Address" to match the settings in the Ethernet Client. Leave the "Port Number" as 2305, and enter the host address of the scale into the "Scale Addr" field.



AUX Connector for Satellite/Client/Standalone

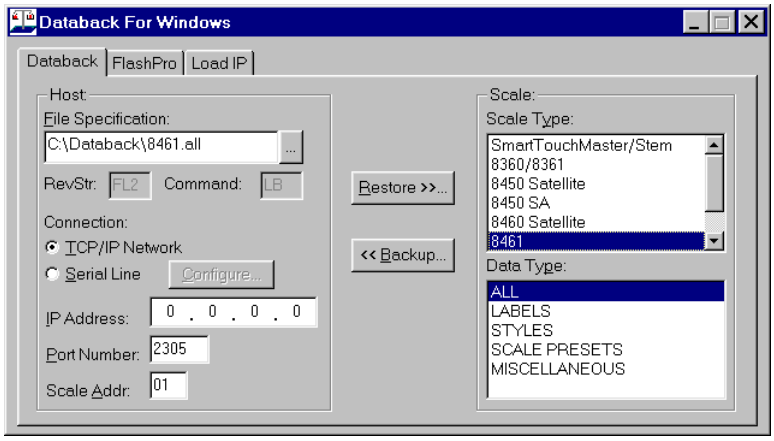


Databack for Windows® Screen

Backup/Restore SmartTouch® Master and Standalone

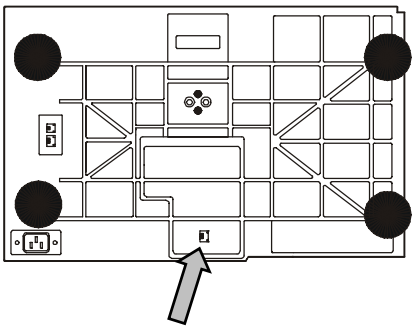
Using DataBack (Version 4.1 or later) or Databack for Windows® the following Master/Standalone categories can be backed up or restored:

PLU	Includes only the PLU data files.
EXTRA TEXT	Includes only the Extra Text File.
NUTRITION FACTS	Includes only the Nutrition Text.
GRAPHICS	Includes only Graphics files.
MISCELLANEOUS	Includes Cutting test info, Accumulator Names, Host ID, Weight Increment, Currency Increment, Tare Limit, Currency DP, Currency Symbol, Host Protocol, Master Editor Password, Department Table, Store Record, Grade Table, Group Table, Message Table, Operator Totals Table, Operator Records Table, Item Number Duplication status, Printer Setup, Serial Device Setup.
ALL	Includes PLU, Extra Text, Nutritional Text, Graphics, and Miscellaneous.



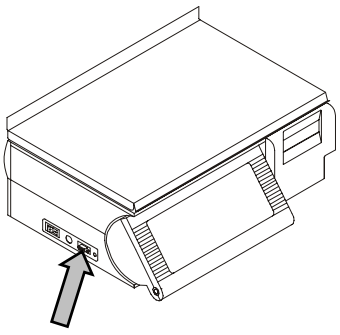
Databack for Windows® Screen

Model 8461 Bottom View

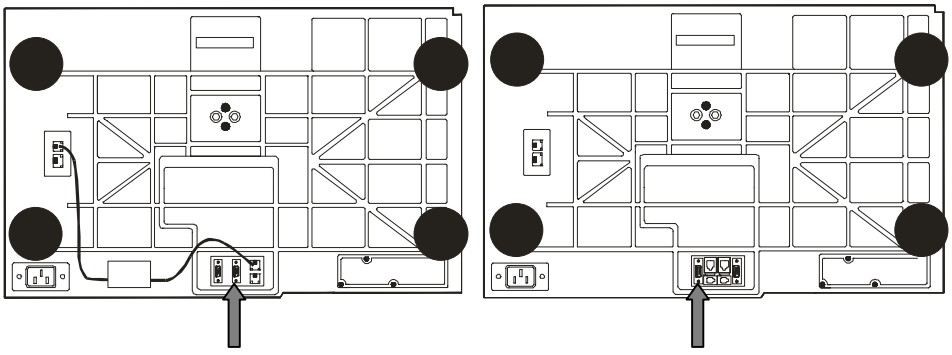


Standalone Ethernet Port

To backup data from the **SmartTouch®** TNET Master or STEM or Standalone using Databack for Windows®, connect the PC to with a serial cable or to an Ethernet network using TCP/IP (STEM or Standalone only). Start up DataBack and select **BACKUP** and **SmartTouch Master** from the menu to backup, or **RESTORE** and **SmartTouch Master** to restore files to the master.



Standalone Serial Host Port



TNET Master Host Port

STEM Host Port or Ethernet Port

Master Bottom View, Master Connections

Flashing Software

WARNING

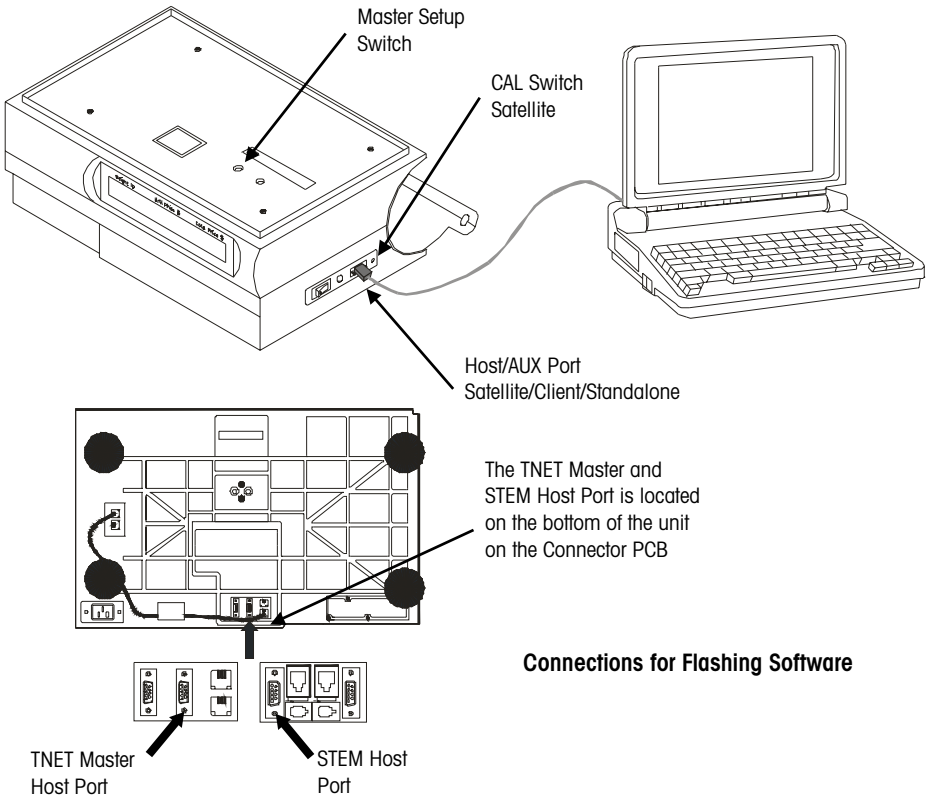
ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM.

EEPROM - Electrically Erasable Programmable Read Only Memory.

The software can only be downloaded using a serial connection.

Note: setup data is erased when flashing software!

The Operating System Software for the Satellite/Client is stored in Flash EEPROM's on the Main PCB. The Operating System Software for the master is stored in Flash EEPROM's on the Master CPU PCB. The operating system software is downloaded through the unit's RS232 serial port from a PC using a downloader program called FLASHPRO that is available as a standalone file or in Databack for Windows®. The cables and components are the same as used with DataBack.



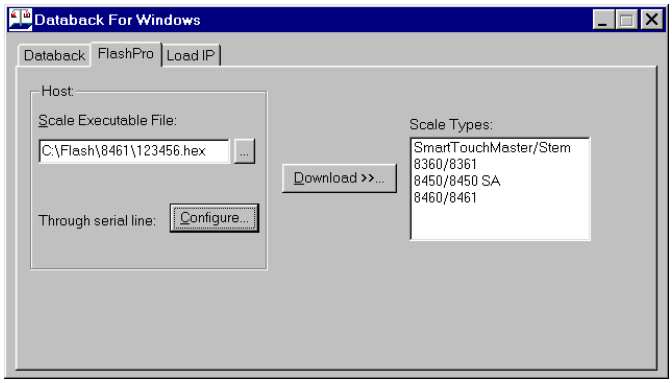
Connections for Flashing Software

Software Files

The software distribution files may be compressed. If the software has a ".EXE" extension, execute the file (double click in Windows® or type the file name in DOS) to uncompress the software files. New files will be created, as they are uncompressed on your PC. The new files will be the software files. The new files can then be used by FLASHPRO or Databack for Windows®.

DataBack for Windows®

Click the FlashPro tab, select the "Scale Executable File", click the "Scale Type", then click the "Download >>" button. Refer to the following section "Downloading Software".



Databack for Windows®

FLASHPRO.EXE Instructions

From the MSDOS prompt, a batch file can be created using the following command line parameters set up for COM1: **flashpro -t*filename.hex* -B115.2 -COM1 -PE -D7 -S2**

Replace ***filename.hex*** with the software file name.

(Example: FLASHPRO -t123456R.hex)

FLASHPRO uses the PC's COM1 RS232 Serial Port as a default. When using the PC's COM2 Serial Port, the "-COM1" parameter must be changed to "-COM2". Type FLASHPRO with no parameters to display a help screen.

The following parameters are optional. The "-B115.2" sets the baud rate to 115.2k baud. The "-S2" sets the number of stop bits to 2. The "-PE" sets the parity to even and the "-D7" sets the data bits to 7. When these parameters are not typed into the command line, they default to these values.

Downloading Software

To download the software:

1. Turn the unit's power switch OFF.
2. Connect the RS232 cable. Plug the end marked PC to the PC's serial port and the other end to the **AUX** Port to flash Satellite or Client Software, or to the **Master Host Port** to flash TNET Master or STEM (Ethernet Master) software.
3. Press and hold the ***CAL*** Switch (satellite/client) or the Master Setup Switch (TNET Master and STEM).
4. Turn the unit's power switch ON.
5. Release the switch when the unit's display shows **Download Program** (satellite/client) or after 4 seconds on a master.
6. Type in the FLASHPRO command line on the PC and press ENTER. If using Databack for Windows, select the "Scale Type" and the "Scale Executable File" then click the "Download" button.
7. FLASHPRO.EXE will display **A**'s during the download process, (Acknowledgment). When the download is complete, FLASHPRO will display the message "File Transfer Successful". Databack for Windows will indicate the status of the download and will display a message when it is finished with the download.

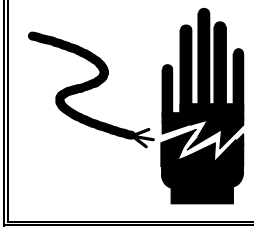
NOTE: Always reset to factory defaults after flashing the Satellite or Client software or initialize the master after flashing master software.

NOTE: Always reset print head resistance and print speed/power after flashing.

If you are experiencing problems downloading the software, check the following:

- "***Bad command or file name error",*** you may have typed the file name incorrectly or the file FLASHPRO.EXE is not in your PC's path or current directory.
- If "UART Error" displays, make sure the cable is connected to the correct Serial Port on the PC and the correct cable is used. COM1 is used as a default. If you are using COM2, you must add the parameter "-COM2" to the command line. An error could also be encountered if the serial port is in use by another Window program.
- FLASHPRO.EXE will display an **N** indicating Non-Acknowledgement (it did not receive a response from the device) if any errors are encountered. Some N's are normal during transmissions. A large number of N's indicates a communication problem. This could be caused by a defective cable or serial port. Also, older PC's may not have a high-speed serial port (UART) that could cause this type of error.
- If the software will not download, the Main PCB or Master CPU could be defective. Replace and retry the download.

TNET Network Installation



WARNING

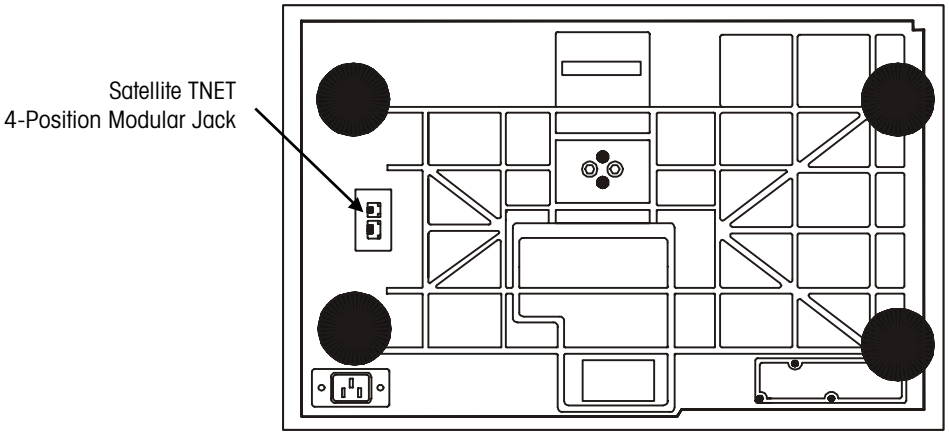
ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM.

TNET Satellite Network Connections

The TNET satellite must be connected to a TNET master or STEM to access the master database. When a PLU number is called, it is retrieved from the master database 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 TNET network connects all the satellite scales to the master scale. Each 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 the TNET jack, and the 6-position end to the 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).

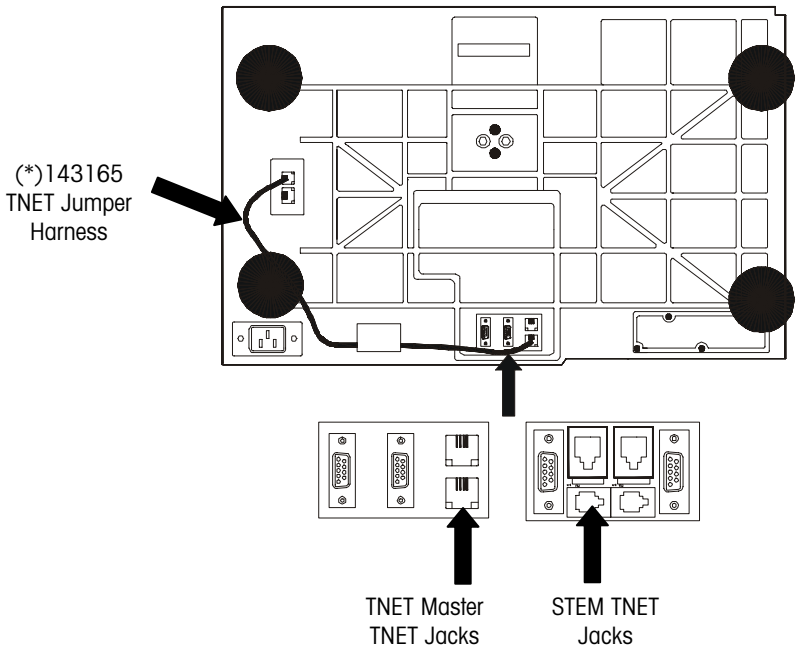


Model 8461 Satellite TNET Connector (Bottom View)

Smart*Touch*® Master TNET Network Connections

The **Smart*Touch*®** Master connects to the network using the 25-ft/7.62 m communication cable and phone jack (shipped with each unit). If the master is installed in a TNET Satellite, a jumper cable connects the satellite TNET jack to a TNET jack on the connector board from the master. The network cable then connects to the spare jack, as shown below.

The STEM (**Smart*Touch*®** Ethernet Master) can support up to 25 TNET Satellites, in addition to the Ethernet Clients. The TNET jacks on the STEM Connector PCB are shown below. Connection can be made on either jack.



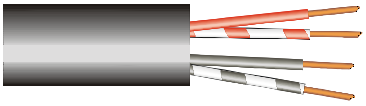
Smart*Touch*® Master TNET Connectors (Bottom View shown)

TNET Hardware

The maximum cable length of the TNET network, which includes the main data cable and all 25 ft (7.62 m) communication 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 following table 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 and 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 unit's location. The phone jack must be located within 25 ft (7.62 m) of the unit 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 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.

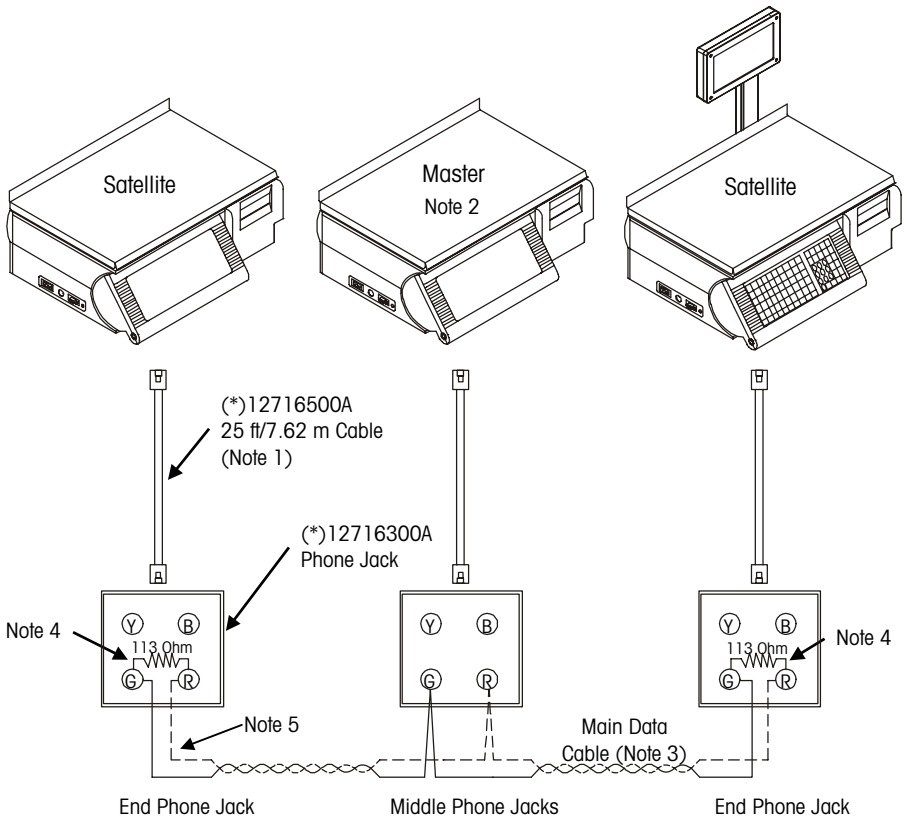
NOTE 2: The master can be installed at any location on the network. In this example, the Master is installed near the middle of the main cable. When the cable length approaches near maximum, it is recommended the master be located near the middle of the network. Up to 24 satellites are supported.

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 local building code and 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.



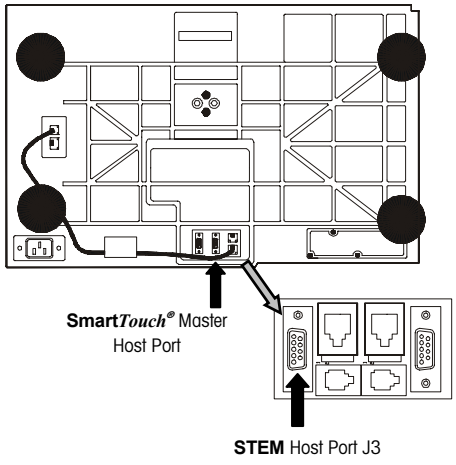
TNET Network Wiring

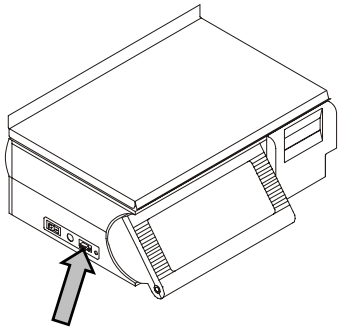
Serial Connections for Master or Standalone to a PC

A TNET master or STEM has two types of interfaces available on the Master Host Port: RS232 and RS422. The interface is selected simply by connecting to the appropriate pins. On the standalone, only RS232 is available.

RS232 Interface

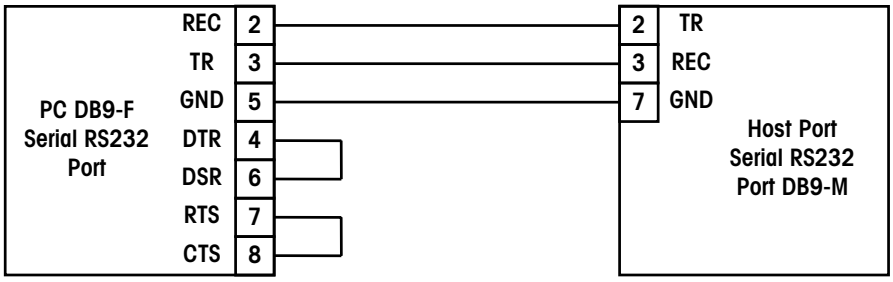
When using RS232, a single master or standalone can be connected to a PC RS232 serial port for distances up to 100 feet (30 meters). The illustration below shows a typical RS232 connection to a PC serial-port.



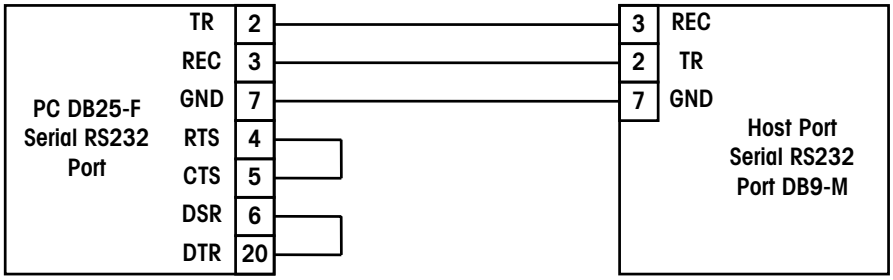


Standalone Serial Host Port

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



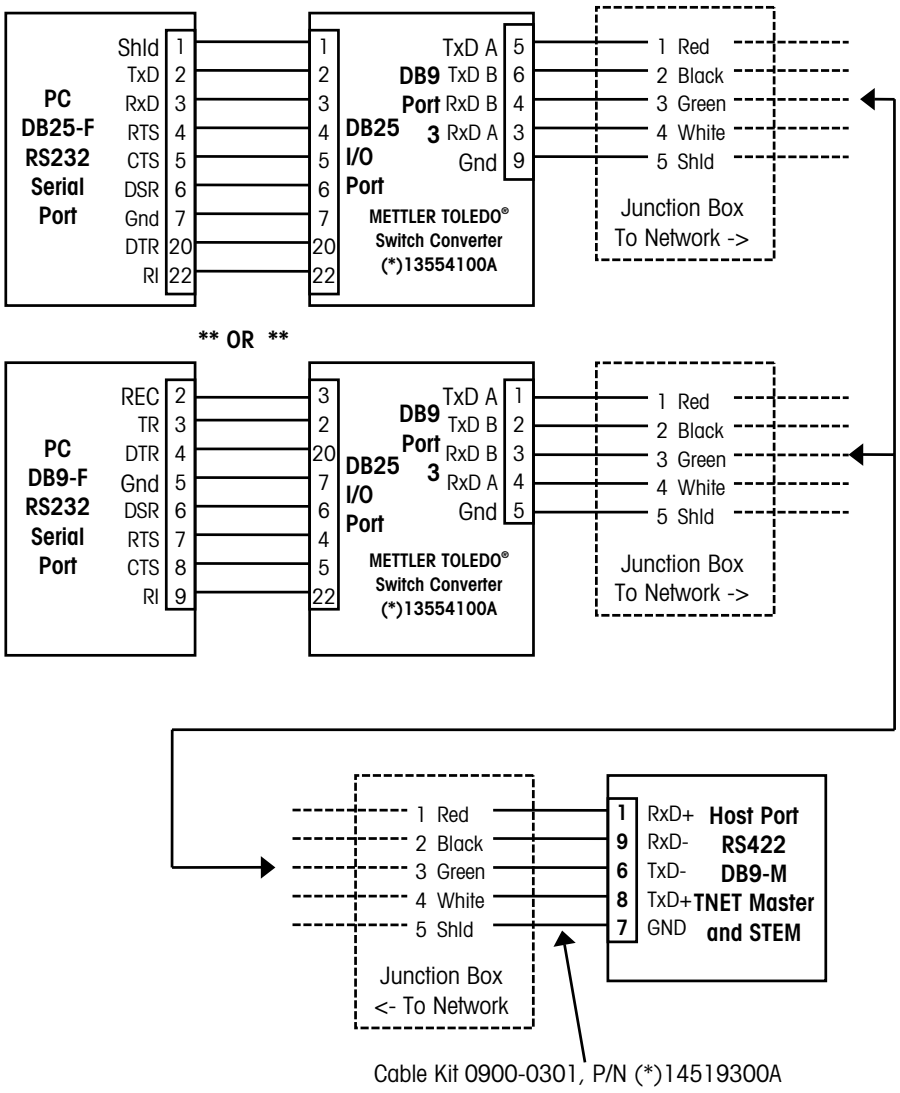
0900-0286 (*13816300A) Cable, PC DB25 to Scale 10 ft/3 m
0900-0298 (*14102800A) Cable, PC DB25 to Scale 25 ft/7.62 m



SmartTouch® TNET Master, STEM, or Standalone 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), the RS422 interface 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 (not available on Standalone).

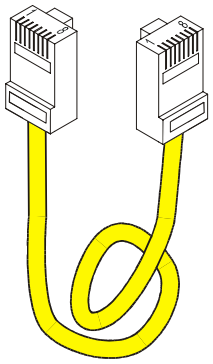


TNET Master or STEM RS422 to METTLER TOLEDO® Converter Wiring

Ethernet Network Cabling Systems

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. Ethernet networks can also use RF (radio frequency) to connect nodes without running wiring between them. 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 scales and the STEM require UTP (Unshielded Twisted Pair) **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® Ethernet Satellites, Ethernet Standalone and the STEM use this connector.

The ***10*** is for 10 Megabits per second (Mbps) operation, ***Base*** is for base band 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).

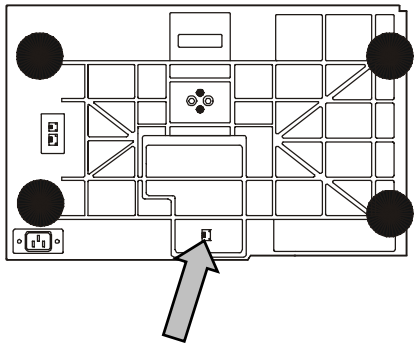
Scale Ethernet Connections

The Ethernet jacks on all METTLER TOLEDO® Ethernet Clients or the Standalone use standard 10BASE-T Ethernet Wiring configurations. This wiring configuration allows the use of standard Ethernet straight-through patch cables from a hub to the client. The Ethernet jacks on the satellite and STEM are shown below.

Ethernet RJ45
10 Base-T Connector

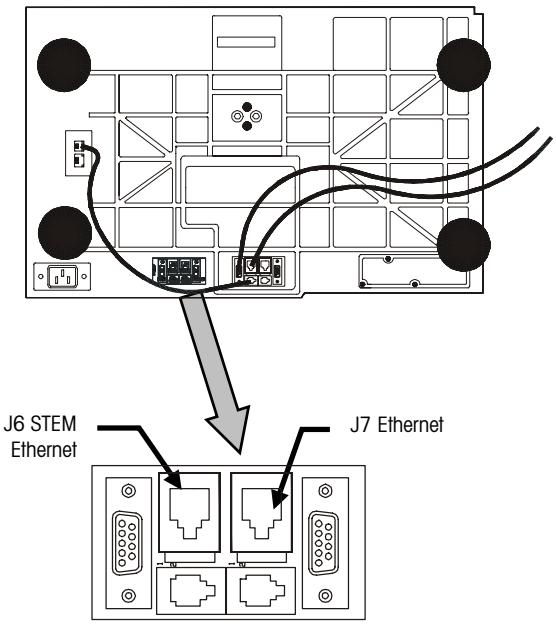
Pin 1 - TD+
Pin 2 - TD-
Pin 3 - RD+
Pin 6 - RD-

Model 8461 Client or Standalone Bottom View



Ethernet Connector

Model 8461 STEM Bottom View



STEM Bottom View, Ethernet Master Connectors

Patch Cables

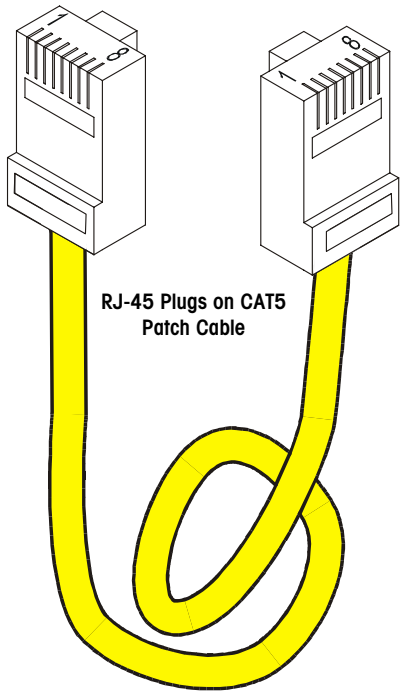
10BASE-T Straight-Through Patch Cable

Patch cables connect devices to hubs. METTLER TOLEDO® Ethernet scales 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.

Pin connections for 568A and 568B cables.

	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

Straight Through 10BASE-T Patch Cable

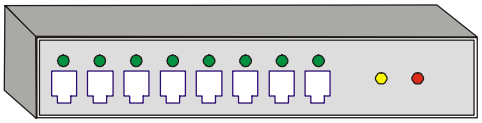


**Patch Cable for 10BASE-T
RJ-45 Plugs on CAT 5 Cable**

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 scales.

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

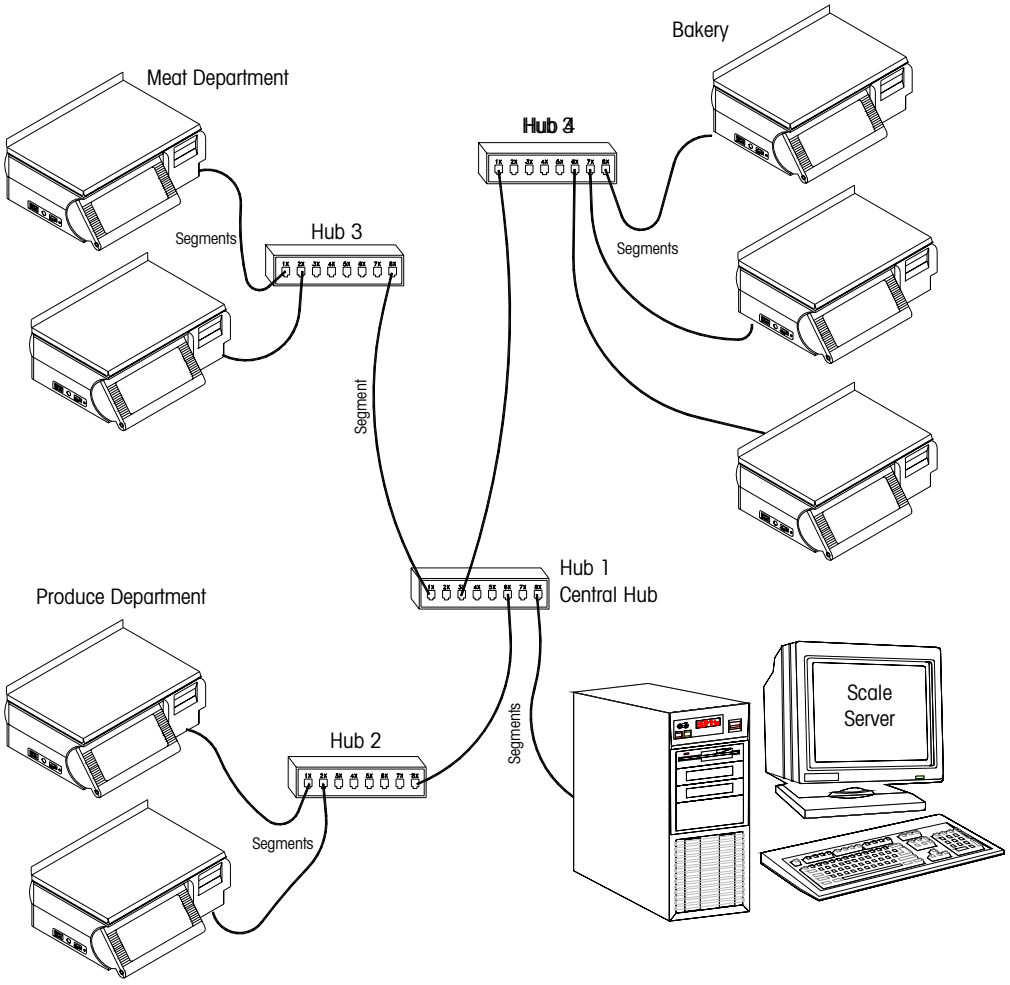
The illustration below shows an example scale Ethernet Network using the PC Scale Server. A Network Administrator or System Engineer should be consulted prior to purchasing any equipment. Many other configurations are possible due to the flexibility of Ethernet.

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.

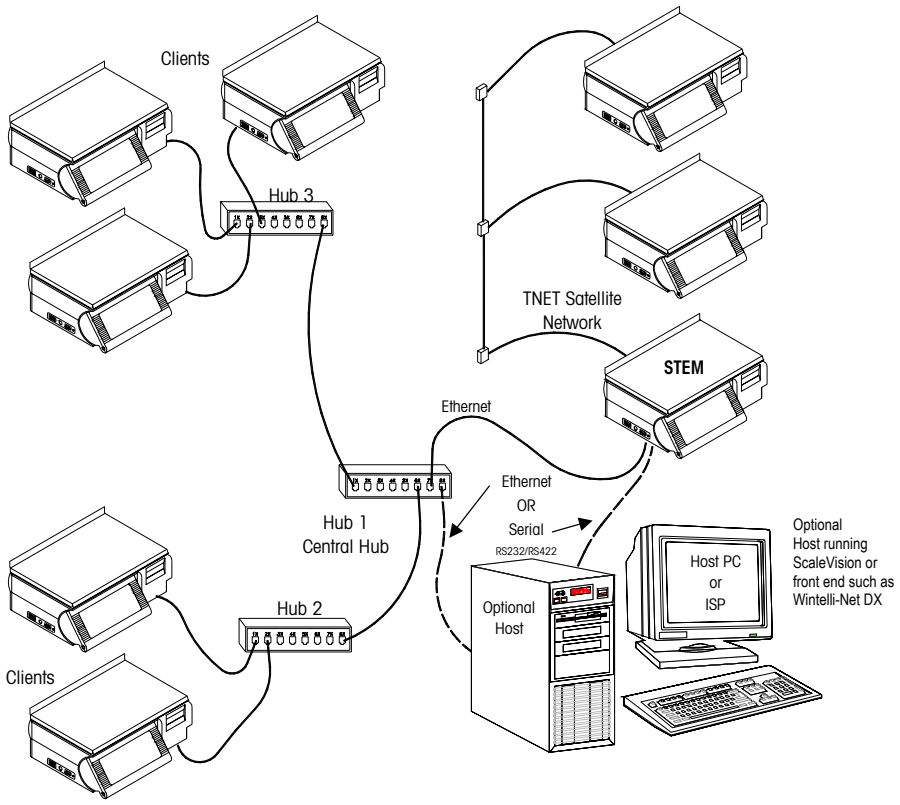
Some common hub manufacturers web pages are:

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



Example Scale Ethernet Network

The illustration below shows an example network using the STEM (**Smart*Touch*®** Ethernet Master) as the Server. The STEM can support up to 25 Ethernet 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 scales, the following guidelines should be followed.

TNET Unit ID - 1 to 30

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

8361 Ethernet Scales using Cutting Test - If cutting test is used, the Ethernet IP Address must be below xxx.xxx.xxx.100.

The IP numbers are used to identify each of the devices on the network. The numbers must be unique on the network (no duplicates). When connecting TNET and Ethernet Satellites to the METTLER TOLEDO® STEM, do not duplicate the last three digits of the IP addresses or the TNET ID numbers. 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 Ethernet scales 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 sub network 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.

Router (Default Gateway)

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.

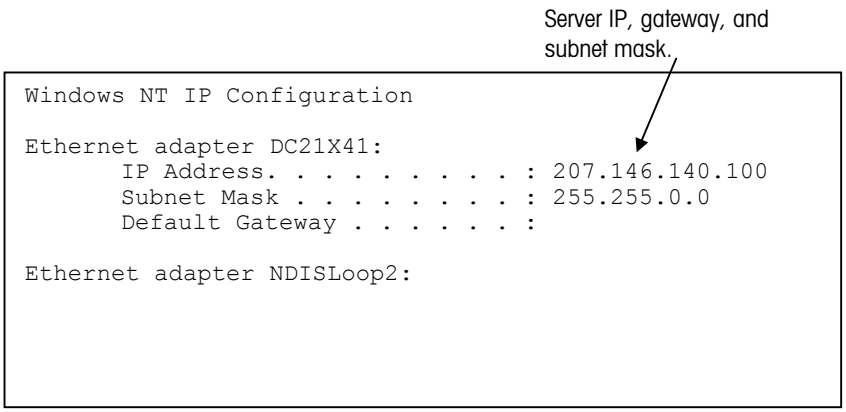
Server IP Address using Scale Server

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:



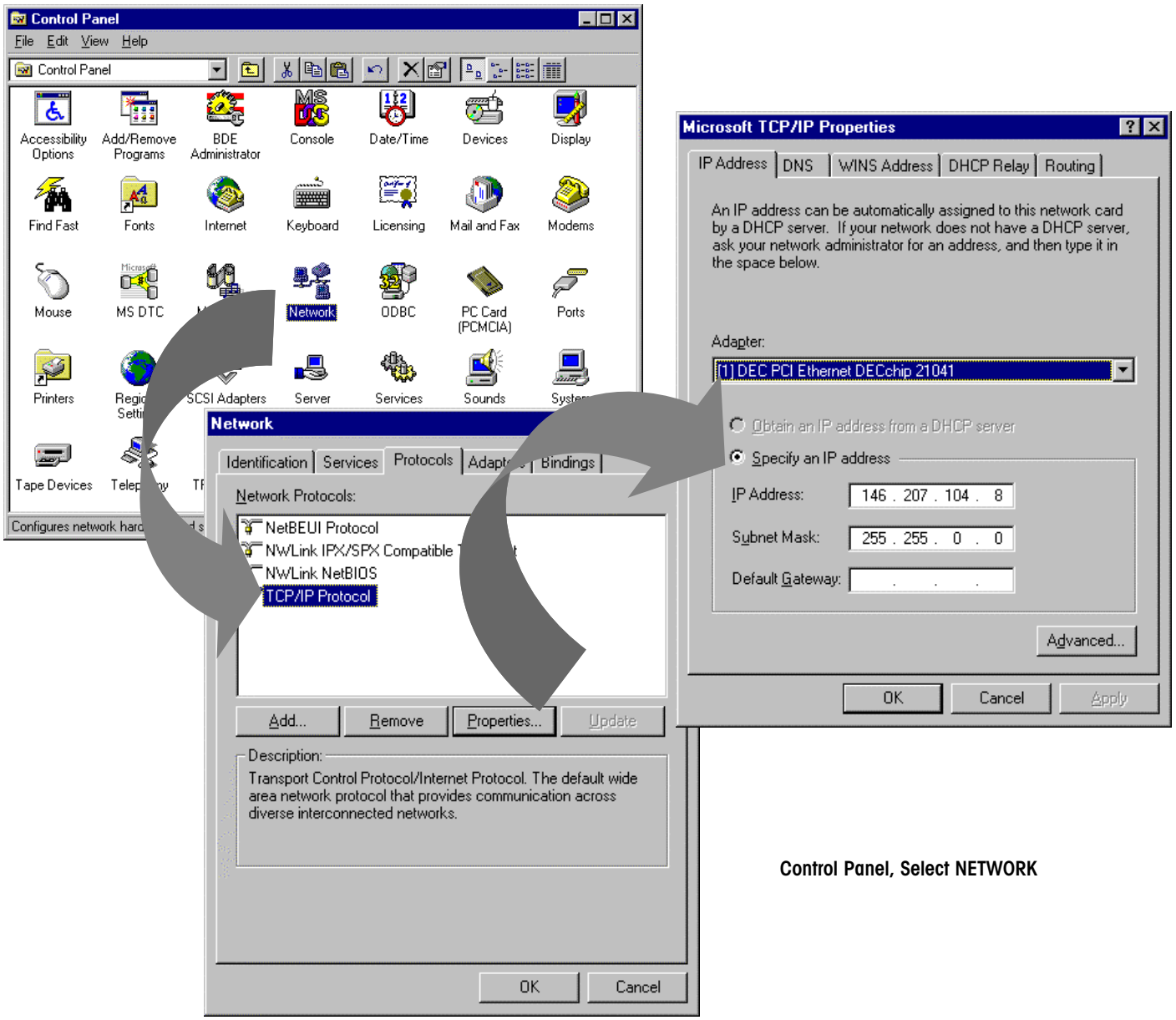
IP Address Display

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

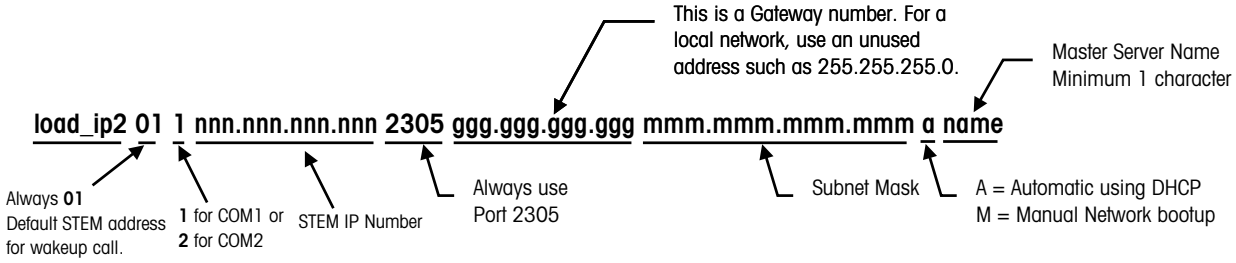
LOAD_IP2.EXE

This section describes how to set the STEM IP address using the PC program, LOAD_IP2.EXE.

If the STEM is installed in a TNET satellite, the IP address can be set through the master editor.

After the STEM is flashed with new software, the IP address and TCP port number must be set. Ethernet communications between the STEM and Ethernet clients will not be possible until the IP address and port number are set. The IP address can be set using a TNET Satellite or with a PC program. The PC connects to the STEM RS232 Host Port and uses program called "**LOAD_IP2.EXE"** or "Databack for Windows" (see next page; available from **METTLER TOLEDO®**). Power must be cycled on the STEM for the new settings to take effect. Refer to "Chapter 3, Master Setup/Version 2 Stem" for an explanation of the field terms.

To set the STEM IP, first connect an RS232 Serial cable to COM1 or COM2 on the PC and to the STEM Host Port. Running LOAD_IP2 with no parameters displays help. The **LOAD_IP2** command line is as follows:



The gateway number may be required to access a host PC on another network. Check with your IS department for details on a gateway and submask number.

An example command to set the STEM IP number to **207.142.140.100** would be as follows:

load_ip2 01 1 207.142.140.100 2305 255.255.255.0 255.255.255.0 m stem1

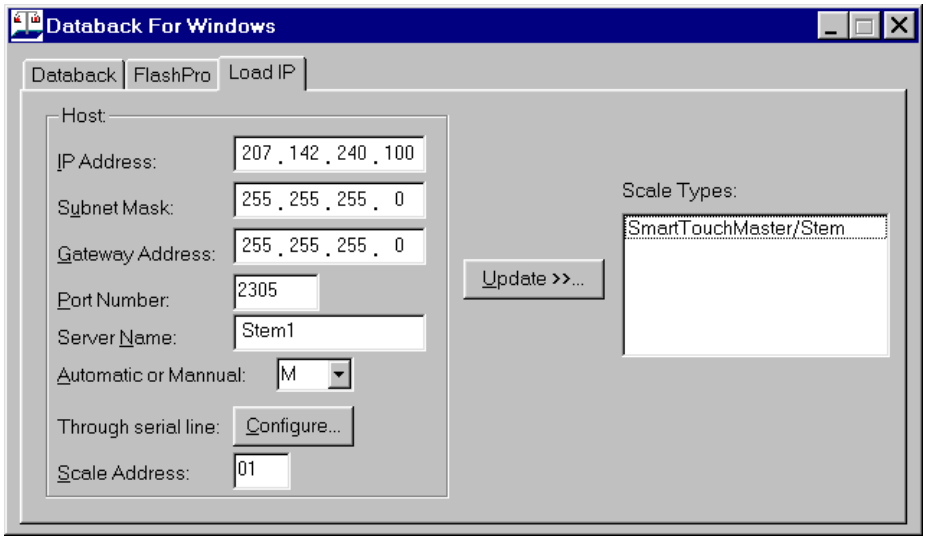
A batch file can be created to do this automatically. *Always wait at least 30 seconds after powering the STEM up before using LOAD_IP2*. When the IP number is sent successfully, the PC screen should be similar to the following example.

```
C:\STEM\>load_ip2 01 1 207.142.140.100 2305 255.255.255.0255.255.255.0
Scale address [01]; Local port [COM1]; ip address [207.142.140.100] port [2305]

      default gateway [255.255.255.0] subnet mask [255.255.255.0]
Scale returned ACK to wake-up call
Scale returned ACK to IP command.

C:\Flash\STEM\LoadIP>
```

If LOAD_IP2 reports **ACK**, the IP was set successfully. If LOAD_IP2 reports **NACK**, an error occurred. In this case, power down the unit, and then retry LOAD_IP2. If you get a blinking cursor after running the LOAD_IP2 command, cycle power to the scale and wait at least 30 seconds before attempting to run LOAD_IP2.

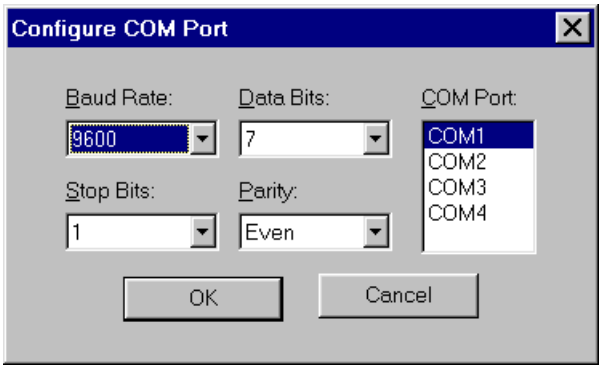
Databack for Windows

If you are using "Databack for Windows", to download the software, click the "Load IP" tab. Enter the IP Address you will be using for the STEM or Standalone. Enter the Subnet Mask and Gateway Address if required. Leave the Port Number as 2305. Type in a "Server Name" if required (minimum one character). Select the "Automatic or Manual" boot preference (A=Automatic, M=Manual). Click on "SmartTouchMaster/STEM" scale type, then click the "Update" button. Refer to the next section for an explanation of the field terms.

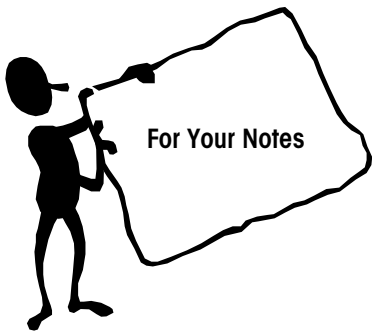


Databack For Windows, Load IP Screen

The default configuration for Load IP should not need to be changed (except the COM port) if the software was just flashed, as shown below.

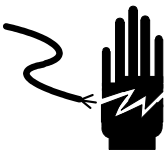


Databack for Windows®, Load IP Configure COM Port Screen


For Your Notes

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

General Scale Symptoms	Solution
Scale inoperative/Blank Display.	1. LCD Contrast Adjustment. Touchpanel Status LED's illuminated? 2. Check Power Supply Voltage. 3. Check Main PCB.
Touchscreen inoperative.	1. Clean Touchscreen lens and check for obstruction. 2. Check status of Touchpanel PCB LED's visible through Touchscreen lens. **LEDs ON** Path is not blocked. Do LED's go off when path is blocked? If not, Touchpanel PCB is not functioning. Check Main PCB. **LEDs OFF** Path is blocked or Touchpanel PCB is defective. **LEDs Flickering** Path is blocked or Touchpanel PCB is defective.
Blank Touchscreen.	1. Check LCD Contrast Adjustment. 2. Check Power Supply 3. Check Main PCB voltages. 4. Test LCD voltages.
Blank Customer Display.	1. Check +56 VDC supply voltage on Main PCB. If +56 VDC is outside the acceptable range or zero, replace the Main PCB. 2. Check Customer Display. If voltages are good, replace Display PCB.

General Scale Symptoms	Solution
Backlight is dim or not working on LCD Display.	1. Check Connectors from Backlight to Main PCB. 2. Refer to Troubleshooting LCD Display Section.
Checksum Error when Flashing new software.	1. Incorrect file or compressed file used with Flashpro. Check the file name, and/or uncompress file before using. 2. Software file may be corrupt. Use a new file.
Scale won't zero (Displays "EEEEEE" in weight field.	1. Check platter and spider for obstructions. Turn power off, then back on. 2. Check Overload Stops. 3. Check Motion Readings setting in Calibration Menu. Zero setting will cause this symptom. 4. Re-calibrate. 5. Check load cell voltage. If okay, replace the load cell. If not, replace the Main PCB.
Erratic or inconsistent weight	1. Check platter and spider for obstructions. 2. Check Overload Stops.
Losing Unit setup data (ID, calibration, label formats, time, etc.)	1. Check Main PCB voltage at test points. 2. Check External Battery Voltage. Replace battery if voltage is below 4.00 volts. 3. Replace Main PCB.

Smart*Touch*® Master

Smart*Touch*® Master	Solution
Master database is corrupt or master is losing data.	1. Check the battery on the Master CPU PCB. Refer to Chapter 6 "SmartTouch® Master CPU PCB". Replace the battery if the voltage is less than 3.8 VDC. 2. Initialize the master RAM (Setup, Master Editor, Config, Initialize RAM) and download the data files. Turn the power off for a few minutes then recheck the data files. 3. Verify the scale is not connected on the same power line as fluorescent lighting, motors, compressors, or other sources capable of producing line surges or electrical noise. 4. Check the AC power outlet using an outlet tester. If the tester reports reverse polarity or bad ground, contact a licensed electrician to fix the problem before reconnecting the scale to the outlet. 5. Replace Master Memory PCB and/or Master CPU PCB.

TNET Networks

Master Satellite Networks	Solution
Satellite Offline with master.	1. Are other satellites online? If not, check master. 2. Check for duplicate Scale ID on another satellite. 3. 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. 4. Reconnect one satellite. If online, connect another satellite and observe online status. If one unit takes the others offline, check that unit. 5. Check 25 ft/7.62 m communication cable between scale and phone jack. 6. Check Model 8461 Main PCB.
All satellites Offline with master.	1. Check the 25-ft/7.62-m cord from the satellite to the phone jack. 2. Disconnect satellites from Master. Does master come back online? 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. 3. If master is off-line with satellites disconnected, check the master.

Master to Host RS422 Networks

Master to Host RS422	Solution
Master offline with host on an RS422 Network	1. Refer to the section titled "RS422 Network Troubleshooting in Chapter 6.

Single Master to PC RS232

Master to PC RS232	Solution
Single Master offline with host PC using RS232	1. Turn the power off to the master, wait 30 seconds, and then reapply power. Recheck. If the master is still offline, shut down the PC, turn off power, wait 30 seconds, and then turn the power back on. Recheck the communication. If the master is now online, the problem was most likely a normal lockup that can happen occasionally to a PC serial port or to the master host port. 2. Verify the Master Host ID matches the Scale Address configured in the PC. 3. If another PC is available, use ComTool (available from METTLER TOLEDO®) to troubleshoot the master. Disconnect the RS232 Communication Cable at the original PC and connect it to the test PC. Set up ComTool (Alt-S) to match the master host settings. Use the "Online Tests" function (F10). If the master is online, troubleshoot the PC and serial port. Install a jumper between the PC's Transmit and Receive pins (Pins 2 and 3) on the serial port or on the end of the PC to master cable, then use the Loopback Test in ComTool (Alt-B) to check the port. If the word "TEST" is not displayed on the **Receiving** lines, the serial port is not working and should be replaced. If the master is still offline, check the cable from master to PC. Refer to Chapter 6 "Connecting the **Smart*Touch*®** Master to a PC, RS232 Interface". Is the communication cable 100 ft (30 m) or less? 4. An alternative method can be used to verify if the PC and cable are not causing the problem. First, disconnect the communication cable from the master host port and connect the communication cable to the AUX port on the left side of the scale. Under Unit Setup, Peripheral Configuration, write down the host ID and baud rate and enter these settings in ComTool (Alt-S). Use the Online Test (F10) in ComTool to check the PC and cable. If the scale reports online, the problem is in the master. If it is offline, the problem is probably in the cable or PC.

Ethernet Networks

Ethernet Networks	Solution
One or more Ethernet Satellites offline.	1. Are other Ethernet Satellites 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 and Chapter 6 "Ethernet Network Troubleshooting". 3. Check polarity of patch cable. The patch cable from Hub to Ethernet Satellite or RF node must be a straight through UTP patch cable. 4. Check for duplicate IP on another Ethernet Satellite. 5. Verify the IP address of the NT Server or Workstation match the Server IP in the Ethernet Satellite. 6. Check Model 8461 Ethernet PCB.
All Ethernet Satellites offline.	1. If the NT PC is on a network with other PCs, PING another PC on the network (refer to Chapter 6 "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 (Ethernet Satellite for RF node)? 2. Check power to the unit or RF node. 3. Remove power to unit 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 unit 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 (Ethernet Satellite or RF node) into the suspect port. If this works, check the Ethernet Satellite 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).

Ethernet Networks	Solution
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 Ethernet Satellite or node.
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 Ethernet Satellites and RF nodes for 30 seconds, then reconnect power to each Ethernet Satellite and node one at a time to isolate which Ethernet Satellite or RF node is causing this condition. 4. If the Collision light stays on when a particular Ethernet Satellite or RF node is powered up, troubleshoot that unit. For the RF node, replace the unit. Areas to check in the Ethernet Satellite 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.
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.

Printing Problems	Solution
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.

Jumpers

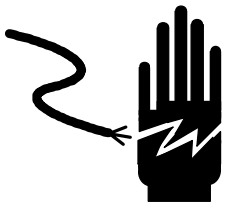
Jumpers on the Main PCB should be set as follows:

W1 - On for normal video. Off for Inverse Video.

W2 - Must be Off.

W3 - Must be Off.

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 AND/OR PROPERTY DAMAGE.

Testing the Power Supply

Before testing the Power Supply, check the AC input power from the AC outlet. Check the voltage first, then check with a GOT (Grounded Outlet Tester). If the input AC voltage is between 85 VAC to 264 VAC (continuous steady voltage) and the GOT does not report any problems, 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 in the illustration below. The acceptable output range for the +21 VDC output is +20.5 to +22.5 VDC.

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 volt, replace the Power Supply.

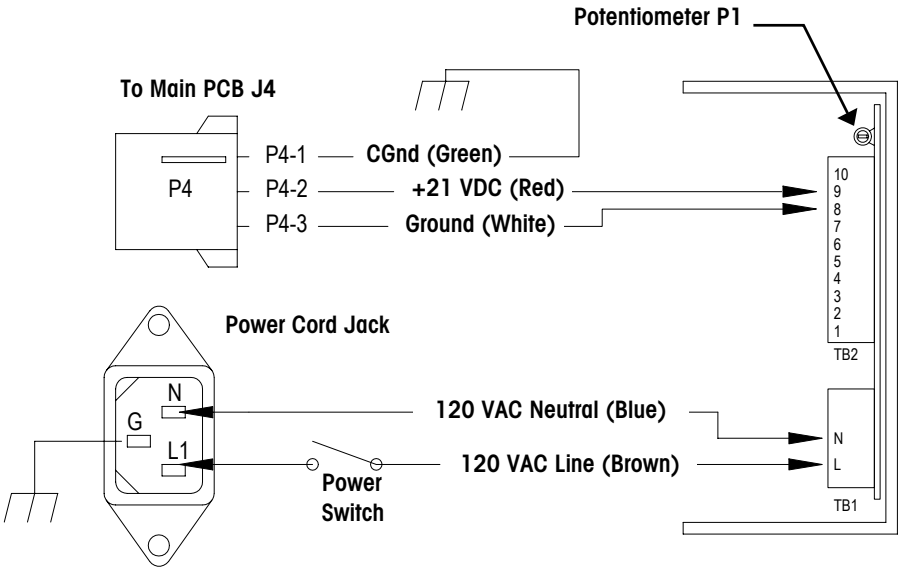
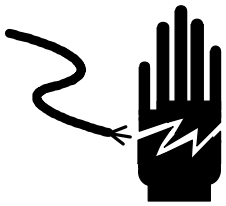


Figure 5-1: Power Supply Test Points

Main PCB



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Note: Units shipped in late 1999 use a new Main PCB P/N 15526100A, and a new Load Cell, P/N 15515100B. Do not mix the new Main PCB and Load cell with the earlier Main PCB and Load Cells.

The new Main PCB and Load Cell use a higher excitation voltage to improve performance.

If installing the new style Load Cell or Main PCB in an earlier unit, they must be replaced as a pair.

Note: If the Main PCB is replaced, the unit must be flashed with software.

The Main PCB receives +21VDC from the Power Supply that it uses to supply +56VDC, +11VDC, +21VDC, and +5VDC to various components on and off the PCB. The Main PCB controls all functions in the unit including the thermal printer. Inputs and Outputs to the Main PCB include the Label Taken Sensor, Gap Sensor, Printhead, Label Stepper Motor, Take Up Motor, and Load Cell. The SuperCap and +4.5 VDC battery are used to backup setup data if AC power is off, and to backup PLU records in the event the master/server goes Off-Line. Figures 5-2 and 5-3 show the locations of the voltage test points on the Main PCB.

The +5VDC and +21VDC voltage test points on the Main PCB are easily accessible after removing the top cover, as shown in Figure 5-2. If the voltages are not within the range specified, and the Power Supply voltage is correct, replace the Main PCB.

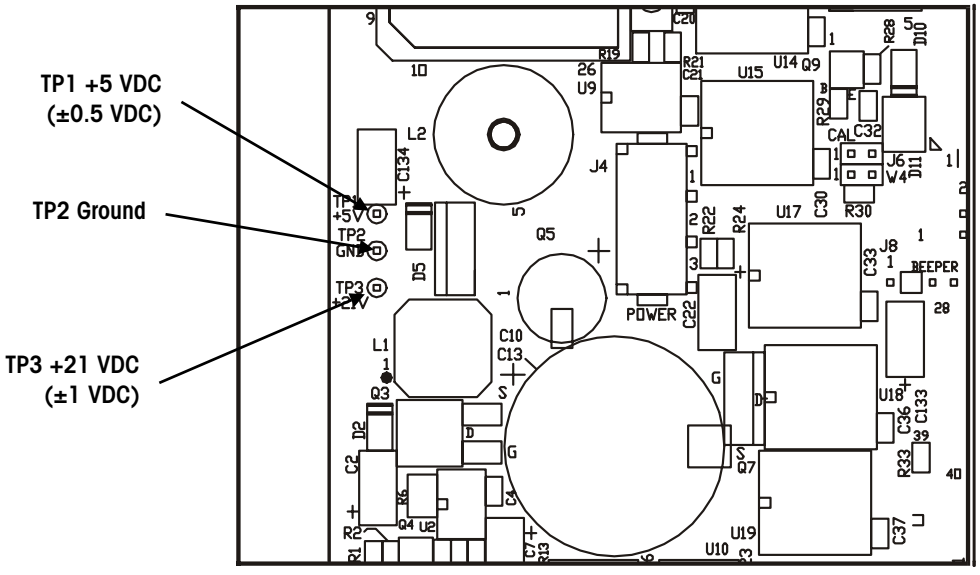


Figure 5-2: Voltage Test Points on the Main PCB

The following voltages can be checked when troubleshooting Customer or Tower Display problems (see Customer Display in this chapter). If the +56VDC or +11VDC voltages are not present at the Customer or Tower Display PCBs, the voltage supplies can be checked on the Main PCB. The +56VDC and +11VDC supply voltages can be checked with a meter after pivoting the Power Supply out, as shown in Figure 5-3. If the voltages are not within the range specified and the Power Supply voltage is correct, replace the Main PCB.

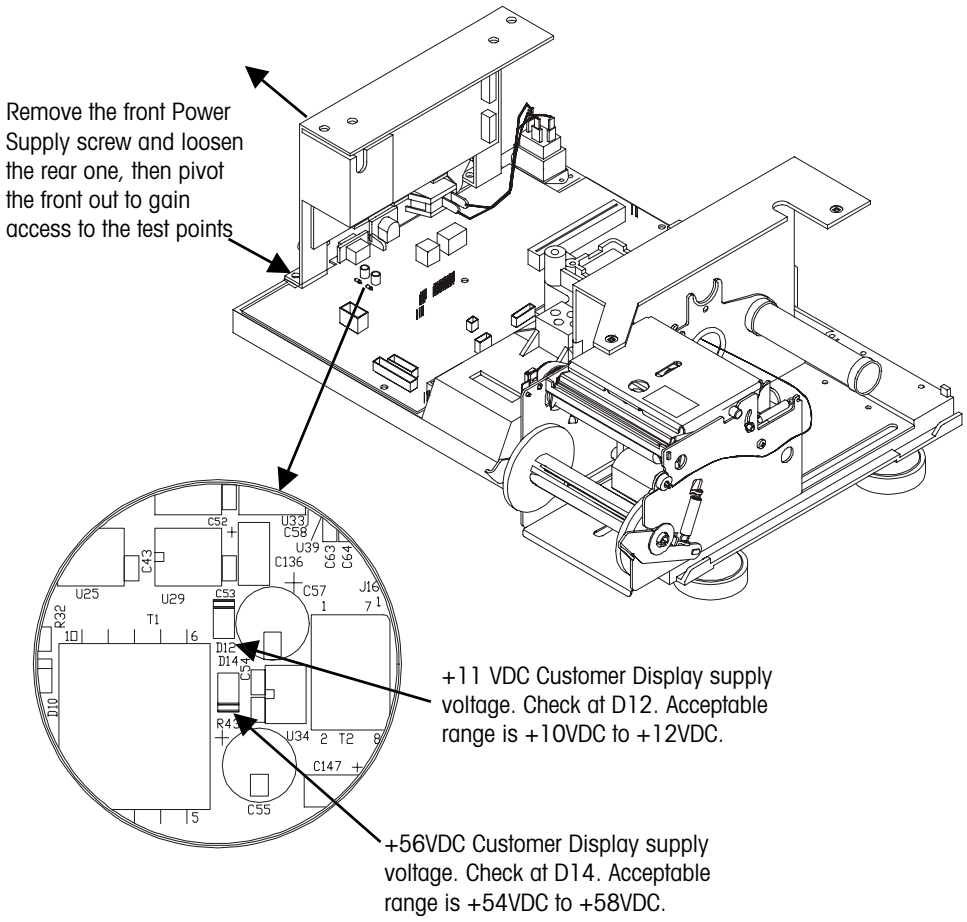


Figure 5-3: +56VDC and +11VDC Test Points on Main PCB

Main PCB Jumpers

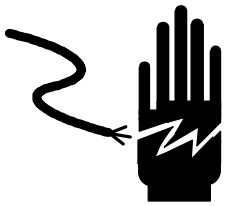
Jumpers on the Main PCB should be set as follows:

W1 - **On** for normal video. Off for Inverse Video.

W2 - Must be **Off**.

W3 - Must be **Off**.

Touchpanel PCB



WARNING

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CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

Figure 5-4 shows a diagram of the Touchpanel PCB used to detect key entries in the Touchscreen. The Touchpanel PCB uses infrared (IR) transmitters and receivers. When one or more transmitters are blocked, the Main PCB uses this data to locate the position of the blockage through X/Y coordinates. The Main PCB then uses the position to make a key entry based on the function of the key at that time. Two status LED's (I1 and I2), visible through the display lens, can be used to verify operation of the Photo Transistor/IR Diode arrays. The Touchpanel PCB is working properly when the LED's are ON with nothing blocking the transistors and OFF when one or more are blocked (indicating a key closure). If the LED's are ON all the time, check for an object blocking the transistors. If not, the PCB is may be defective.

CAUTION!
Exercise care when handling the Touchpanel PCB. Do not bend the board or move the phototransistors or diodes out of alignment.

The +5VDC supply voltage at J1 on the Touchpanel board can be checked, as shown in Figure 5-4. When one of the phototransistors is blocked, the Status LED's will be OFF (+5 VDC). When none of the phototransistors are blocked, the LED's should be ON (+1.86 VDC). If the +5 VDC supply from the Main PCB is present at J1 Pin 3, but the LED's do not change state, replace the Touchpanel PCB. If the LED's flicker, and the power supply voltage is good, replace the Touchpanel PCB.

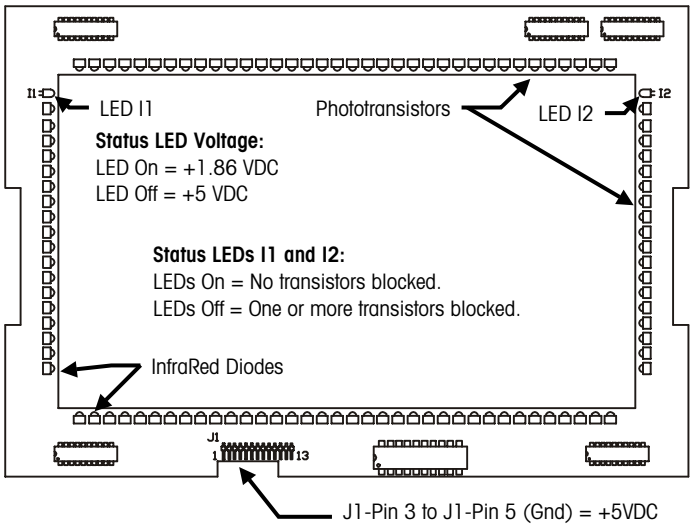
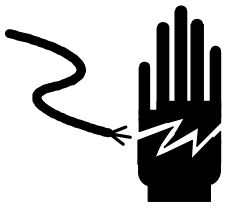


Figure 5-4: Touchpanel PCB Voltage Test Points

LCD Display



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The LCD Display uses a CCFT (Cold Cathode Fluorescent Tube) to light up the LCD to provide a more readable display under low light conditions. Care must be taken when testing the display circuitry, as high AC voltage is used to power the CCFT. There are three electrical parts to the LCD assembly: 1) LCD Panel, 2) CCFT, 3) Inverter PCB.

To adjust the contrast, first touch the HELP key area, located in the upper left corner of the Touchscreen. When HELP is displayed, touch the key marked **Adjust Cont**.

If the video appears inverse, make sure Jumper W1 is shorted.

The LCD contrast is controlled by the -21 VDC supplied to the LCD by the Main PCB. The -21 VDC will range between -16 and -21 VDC, depending on the contrast setting. When the display is dark, the voltage will be near the maximum of -21 VDC. When the display is light, the voltage will be near the minimum of -16 VDC. If the voltage is zero or outside this range, and the contrast cannot be adjusted, replace the Main PCB. If the +5 VDC and the -21 VDC are within acceptable range, but the display is blank or extremely light/dark, replace the LCD Display PCB. Always exercise care when handling the LCD. If you replace the LCD, always pack the old LCD in the original factory container that the replacement part was shipped in.

The +5 VDC Supply Voltage and Contrast Control Voltage Test Points are shown below. To adjust the contrast, first touch the HELP key area, located in the upper left corner of the Touchscreen. When HELP is displayed, touch the key marked **Adjust Cont**. The contrast circuit can be checked at J2 on the Main PCB, as shown in Figure 5-5.

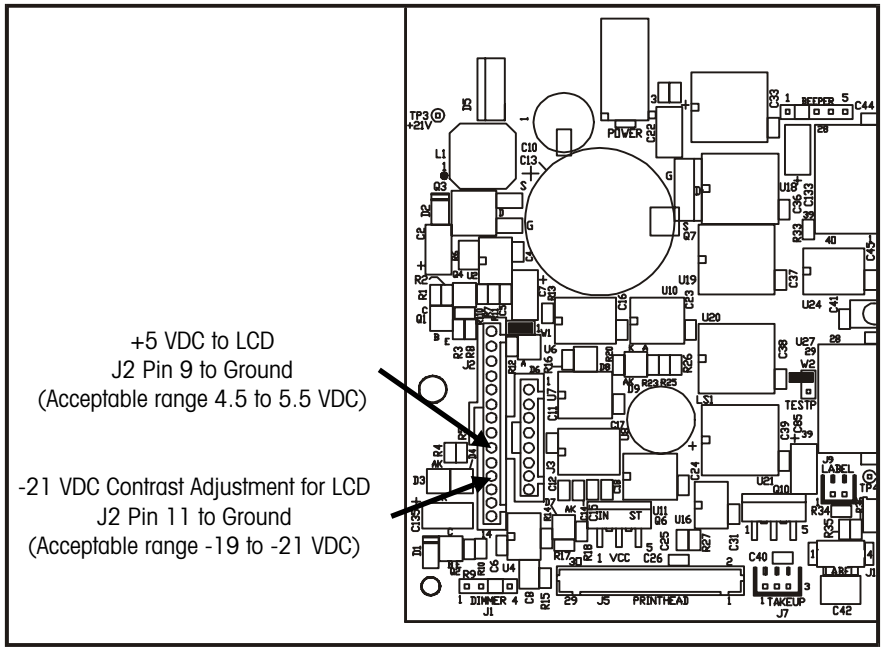


Figure 5-5: LCD Contrast/Voltage Test Points on Main PCB

If no activity is detected for approximately 15 minutes, a timer circuit signals drops a +5 VDC control line to +1.9 VDC. This in turn causes the Inverter PCB to lower the voltage output to the CCFT. The dimmer circuit can be tested at J1 on Main PCB.

The LCD CCFT is powered from a DC to AC Inverter PCB that converts a variable +5VDC input to a 380 VAC/40 kHz/5 mA output. (Note: Initial startup voltage is approximately 900 VAC). The Inverter PCB is located under the LCD Panel. If the backlight is not working, and the +5 VDC at the Main PCB checks good, the problem may be the Inverter PCB or the CCFT (Cold Cathode Fluorescent Tube.) The output voltage from the Inverter to the CCFDT cannot be checked using a standard volt-ohm meter, since the unloaded voltage is approximately 1100 VAC RMS at 40 kHz. If the Inverter is suspected as defective, it is best to plug in a new backlit display assembly, or a new CCFT (which is available separately as P/N 14385100A) to test the Inverter PCB. If the new CCFT does not light up, replace the Inverter PCB. Figure 5-6 shows the LCD and CCFT.

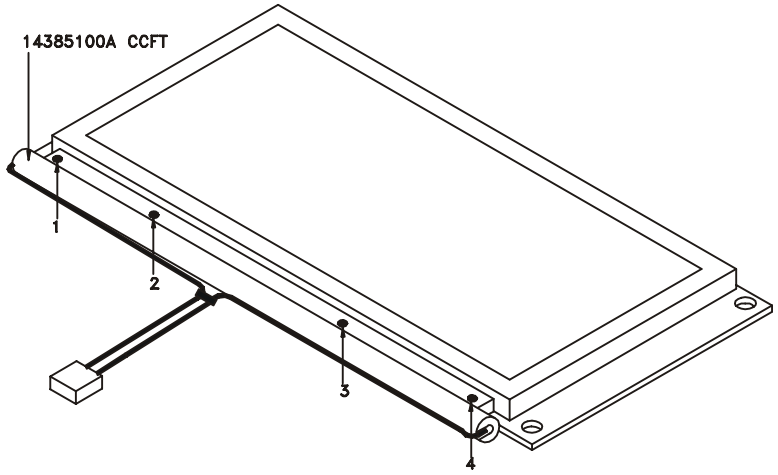
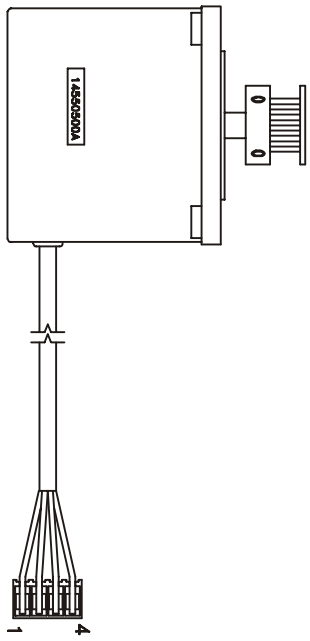


Figure 5-6: 14385100A CCFT Replacement

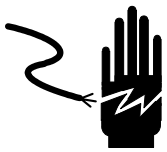
To replace the CCFT, first turn the power switch to the off position, then disconnect the AC power cord from the outlet before proceeding. Remove the LCD Panel from the cover assembly. Disconnect the CCFT voltage harness from the Inverter PCB. Remove the four screws as shown in Figure 5-6. Install new CCFT reversing previous steps.

Label Stepper Motor



If the Label Stepper Motor does not advance the label, first check for any mechanical problems. If the motor shaft appears to be binding, replace the motor (see Chapter 6, Label Stepper Motor Replacement). If there are no evident mechanical problems seen after examining the motor, the motor windings can be checked to verify there are no electrical problems.

First turn the power switch to the off position, then disconnect the AC power cord from the outlet before proceeding.



⚠ WARNING

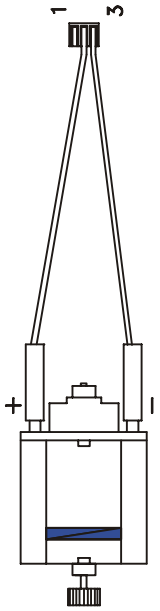
DISCONNECT ALL POWER TO THIS UNIT BEFORE INSTALLING, SERVICING, CLEANING, OR REMOVING THE FUSE. FAILURE TO DO SO COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.

The Label Stepper Motor can be tested with a Volt-Ohm Meter by first disconnecting the motor harness from the Main PCB at connector J14. Set the Volt-Ohm Meter to read Ohms. Connect the Volt-Ohm Meter between pins 1 and 2. You should read between 2.1 ohms and 3.5 ohms. Next, connect the ohmmeter between pins 3 and 4. You should read between 2.1 ohms and 3.5 ohms.

If the motor passes the ohm's test and does not appear to have a mechanical bind, replace the Main PCB. If it does not pass the test, replace the motor (see Chapter 6, Label Stepper Motor Replacement).

Take Up Motor

NOTE: The Take Up Motor does not run when the strip function is set to unstripped.



If the Take Up Motor does not run when using die cut labels in a stripped delivery mode, first check the Delivery Mode under **Unit Setup/Printer Setup/Delivery**. When using die cut labels in a stripped delivery mode, the Delivery Method must be set to "Stripped". If the delivery method is set to "Unstripped", the motor will not run.

If the configuration is set to "stripped", check for any mechanical problems. If the motor shaft appears to be binding, replace the motor (see Chapter 6, Take Up Motor Replacement). If there are no evident mechanical problems seen after examining the motor, the motor windings can be checked to verify there are no electrical problems.

First turn the power switch to the off position, then disconnect the AC power cord from the outlet before proceeding.

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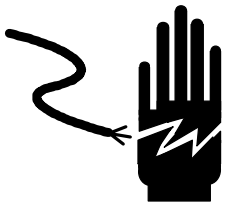
The Take Up Motor can be tested with a Volt-Ohm Meter by first disconnecting the motor harness from the Main PCB at connector J7. Connect the Volt-Ohm meter across pins 2 and 3. You should read approximately 48 ohms. If the motor passes the ohms test and does not appear to have a mechanical bind, replace the Main PCB. If it does not pass the test, replace the motor (see Chapter 6, Take Up Motor Replacement).

Take Label Sensor



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Tip: If the Delivery Mode is set to "unstripped", the Take Label Sensor is not used.

The Take Label Sensor detects the presence of a label in the printer to prevent multiple labels printing at once in prepack mode, batch mode, or demand mode when the labels are being stripped. In these modes, the next label should not print until the label is removed from the printhead. The sensor locations are shown in Figure 5-7. Before troubleshooting Take Label problems, always make sure the sensor lens is clean. The Take Label Sensor Receiver can be tested with a Volt-Ohm Meter as follows.

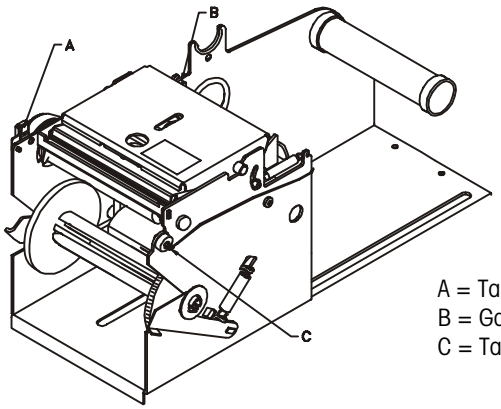
The following test is performed with power ON.

Tip: The Take Label Sensor can be temporarily by-passed by disconnecting the harness at J10 and shorting J10 Pin-2 to J10 Pin-3. You can also disable the Take Label sensor by setting delivery to unstripped mode as a temporary fix.

Set the Volt-Ohm Meter to read DC volts. Place the positive meter lead on J10 Pin-3 and the negative meter lead on J10 Pin-2 (or chassis ground). The meter should show +5 VDC when the Take Label Sensor is blocked and near 0 VDC when it is not blocked.

The following test is performed with power OFF.

If the Take Label Sensor fails this test, turn the power switch to the off position, then disconnect the AC power cord from the outlet before proceeding. Set the Volt-Ohm Meter to read ohms. Check the Take Label Transmitter by disconnecting the harness at J9. Place the volt-ohm meter negative lead on the harness removed from J9 Pin-1 and the positive meter lead on J9 Pin 2. You should read some resistance. Reverse the meter leads. You should 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 Transmitter.

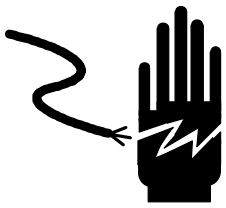
Figure 5-7: Take Label and Gap Sensor

Label Gap Sensor

This section covers electrical and mechanical adjustments to the Label Gap Sensor, which is responsible for indexing the labels.

Electrical Adjustments

To correct indexing problems, or when installing a new Label Gap sensor, perform the following electrical adjustments.



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MODE 1

Automatic level adjust. (Default Factory Setting)

Remove AC Power

Set the Volt-Ohm Meter to read ohms. Place the positive meter lead on **TP4** and the negative meter lead on ground or **TP5**. Adjust potentiometer **R37** so the meter reads 60K ohms (±5K ohms).

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

Reconnect AC Power

Set the Volt-Ohm Meter to read DC volts. 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.)

NOTE: R37 may need to be adjusted many turns before any change in voltage is seen.

Set the Volt-Ohm Meter to read DC volts. If the above test points and readings are within specification and you are still experiencing problems, place the white area of label stock and liner within the Gap Sensor and adjust **R37** for an output voltage of +1.3 VDC (± 0.2 VDC) measured across **TP4** and **TP5**.

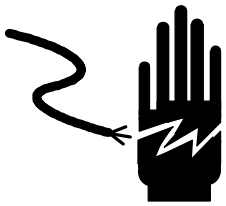
If the above adjustments do not correct an indexing problem, replace the Label Gap Sensor and retest the unit. If the Label Gap Sensor has been replaced and tests ok, replace the Main PCB.

Load Cell

Note: Units shipped in late 1999 use a new Main PCB P/N 15526100A, and a new Load Cell, P/N 15515100B. Do not mix the new Main PCB and Load cell with the earlier Main PCB and Load Cells.

The new Main PCB and Load Cell use a higher excitation voltage to improve performance.

If installing the new style Load Cell or Main PCB in an earlier unit, they must be replaced as a pair.



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The internal Load Cell can be tested for proper analog voltage input and millivolt output by measuring the voltage at connector J18 on the Main PCB. To check the input voltage across +EXC & -EXC, set the meter for ***volts*** and put the positive lead on J18-6 and the negative lead on J18-9. You should be read a steady +5.0VDC (± 0.2 VDC).

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 J18-10 and the negative lead on J18-8. 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 PCB. If there is no output from the load cell, but correct input voltage, replace the load cell.

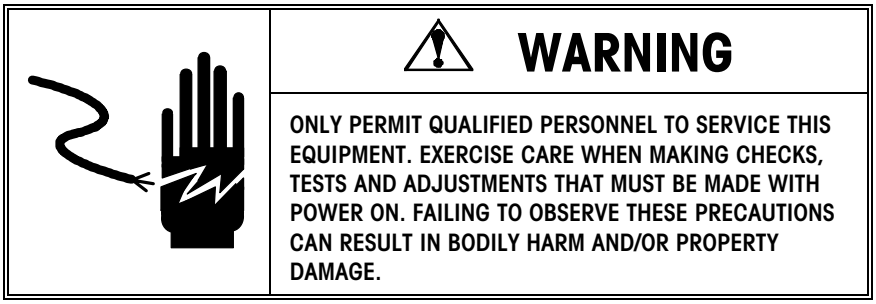
Master Memory PCB

Note: Although the battery on the Master CPU or the Master CPU PCB can be changed without normally losing data, it is always wise to first backup the memory using DataBack if possible.

The **Smart*Touch*®** Master and STEM Memory PCB provides storage capacity for the PLU, Extra Text, Nutrition Facts, Graphics, and master setup data. The PCB is available in 2M, 4M, and 8M RAM memory. The Master CPU provides the running and backup battery voltage for the Master Memory PCB. The Master Memory PCB has an onboard Supercap that will retain backup voltage for the memory for approximately 12 hours. The Supercap allows changing the Master CPU without losing data on the Memory PCB. The Supercaps require up to four hours to initially charge. Do not remove a programmed Master Memory from the Master CPU until the Supercaps have fully charged.

Smart*Touch*® Master CPU PCB

If the Master has lost data (either all or partial) or is off-line with either the satellites or a host, the Master CPU voltage supply and backup battery voltage should be tested. If the battery voltage and the supply voltage is within tolerance, data loss could be caused by the Master Memory PCB. See the previous section.



The +5 VDC supply voltages from the Main PCB to the Master CPU can be checked at the point shown in Figure 5-8. If the voltage is not with the tolerance range, check the voltage at the Main PCB. If the voltage is correct, and problems exist, the Master CPU PCB may be defective.

When AC power is off, a 4.5 VDC Alkaline battery (mounted to the Master CPU PCB) is used to backup data stored on the Master CPU and Master Memory PCB. This battery is not rechargeable. The battery should retain data under normal conditions for up to two years with power off. If the battery voltage is not within the tolerance range, replace the battery. In most circumstances, the battery can be safely replaced without data loss. When the battery is removed, a SuperCap on both the Master CPU and Master Memory PCB will hold memory for approximately 12 hours. If the battery needs replacement, order P/N 14548600A Replacement Battery. (Note: Although the battery can be changed without normally losing any data, it is wise to first backup the memory using DataBack.)

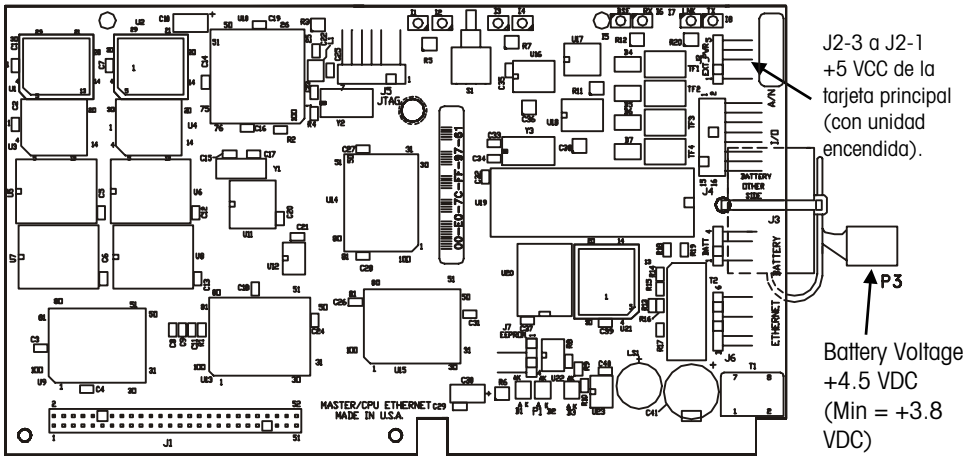
There are eight LED's on the Master CPU Board. Their functions are as follows:

LED	Function
I1	ON when receiving and processing host commands.
I2	When flashing software this LED will be ON. In normal operation, if an error is detected in the master software, the LED will be ON. Normally this LED is OFF.
I3	This LED will alternately flash ON / OFF with LED I4 while the master software is starting up. This will last for about 3 seconds. Afterwards, this LED indicates TNET communications. When no TNET satellites are detected, the LED will be blinking at a slow rate. It will actually look dim at this rate. If TNET satellites are detected, the LED will be turned ON more during most of the blinking and will look brighter.
I4	This LED will alternately flash ON / OFF with LED I3 while the master software is starting up. This will last for about 3 seconds. This LED should be ON during normal operations. If it is not ON, the software has failed to properly start.
I5	(BSE) - This LED is only on the STEM. This LED will be ON when the Ethernet controller is being accessed. If data packets are received or transmitted this LED will be ON briefly.
I6	(RX) - This LED is only on the STEM. This LED will be ON whenever Ethernet data packets are received for the STEM.

LED	Function
	packets are received for the STEM.
I7	(LNK) - This LED is only on the STEM. This LED will be ON if the STEM is properly connected and communicating to a hub.
I8	(TX) - This LED is only on the STEM. This LED will be ON whenever the STEM transmits Ethernet data packets.

Note: The Supercaps on the TNET Master CPU and Master Memory PCB require up to four hours to initially charge. Do not remove a programmed Master Memory PCB from the Master CPU until the Supercaps have charged or memory loss will occur.

STEM Master CPU PCB



TNET Master CPU PCB

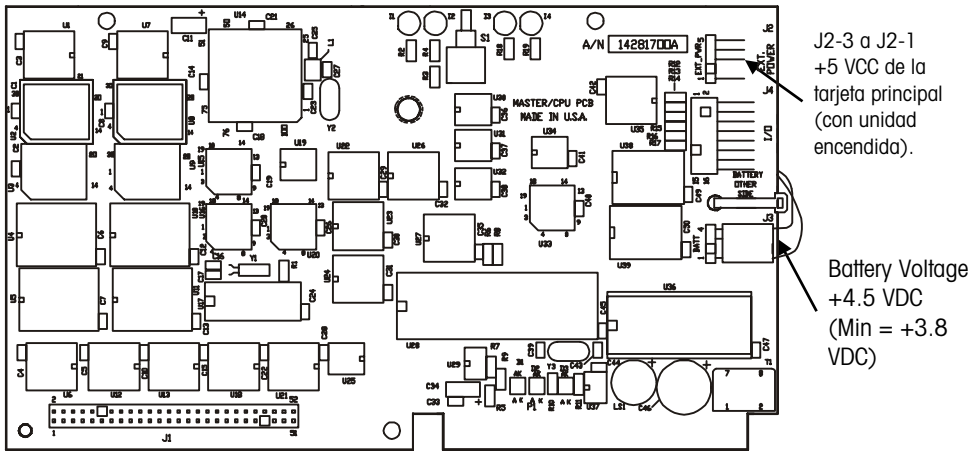
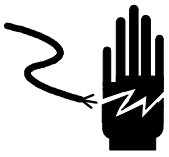


Figure 5-8: Master CPU Voltage Test Points

Customer Display

The customer display in the base must be removed to check the voltage supply to the PCB. The optional tower display can be checked by removing the front cover.



⚠ 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.

If the customer display is blank or partially lit, the voltage supply to the display can be checked with an ohmmeter. To check the voltages, follow this procedure.

1. Disconnect AC power.
2. Remove the platter, spider, and top cover assembly.
3. Remove the two screws securing the Display PCB to the top cover.
4. Lay the display on a non-conducting surface to prevent shorts.
5. Check the voltages shown in Figure 5-9. Chassis ground can be used to check for proper grounding in the cable to the display. Diode D2 is connected to the PCB ground.
6. If one or more voltages are not present or outside the tolerance range at the test points, check the supply voltages (+5VDC, +11VDC, and +56VDC) on the Main PCB as described in the section in this chapter titled "Main PCB".
7. If the voltages at the Main PCB are correct, swap the display cable and Display PCB one at a time for a test. If problems persist after replacing the cable and Display PCB with known good parts, replace the Main PCB.

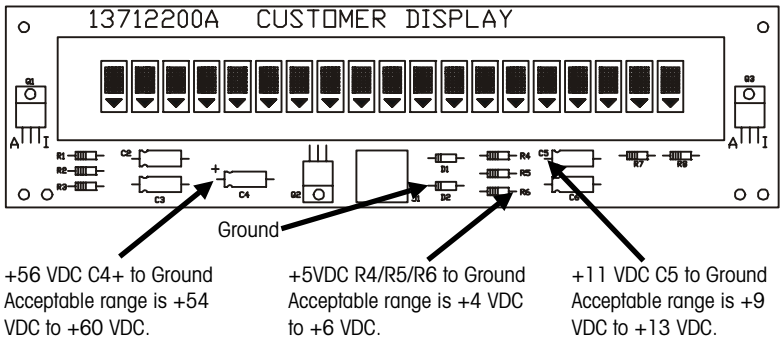
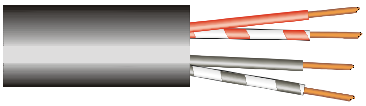


Figure 5-9: Customer Display Voltage Test Points

Testing TNET Network Wiring

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.



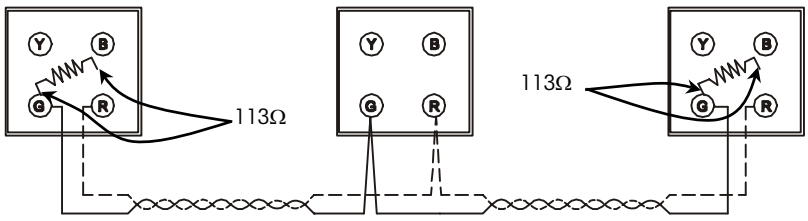
Two-Pair UTP (Unshielded Twisted Pair) Category 2 (or higher), 22-24 Gauge Cable is required for the master/satellite network.

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

When troubleshooting TNET network online/offline symptoms, the 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.

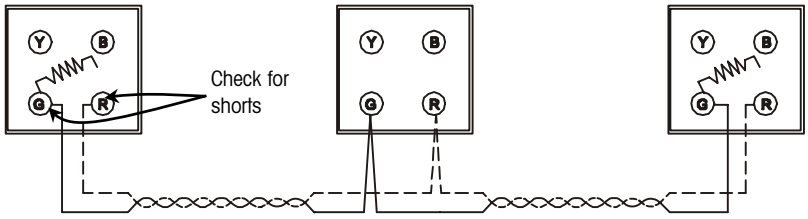
Test 1

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.



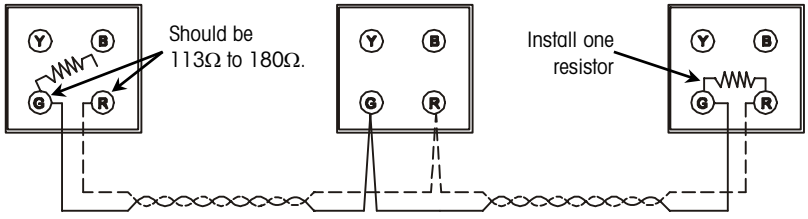
Test 2

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 Network Troubleshooting

This section outlines troubleshooting procedures that can be used to isolate communication problems on an RS422 network. Before performing these tests, you should verify the problem is not due to a duplicate or incorrect scale address, incorrect host port setup in the scale, incorrect COM Port setup in the PC, bad connection, incorrect wiring, etc. The host port may have been marginally damaged due to disruptive events on the network wires. The Communication Cable Test can be used to verify the integrity of the wiring.

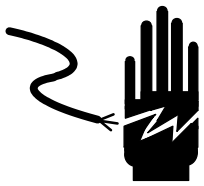
Verify Setup

Verify host port settings in the scale and the serial port setup in the PC. Refer to Chapter 3, "Configuring the Master, Host Port Setup. The configuration in the master must match the configuration in the PC software program. For example, Intelli-Net uses 7-bit, Even Parity, and one stop bit. This should match the setup in the master. Continue with the next section when the setup has been verified.

Disconnect Power and Network Cables

Disconnect AC power to the scale when performing these tests. The Communication Cable Test is performed with power off.

Disconnect the network cable (including any protection devices, converter boxes, etc.) at the AUX/Host port of the scale.



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.

Communication 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" in Figure 5-10.

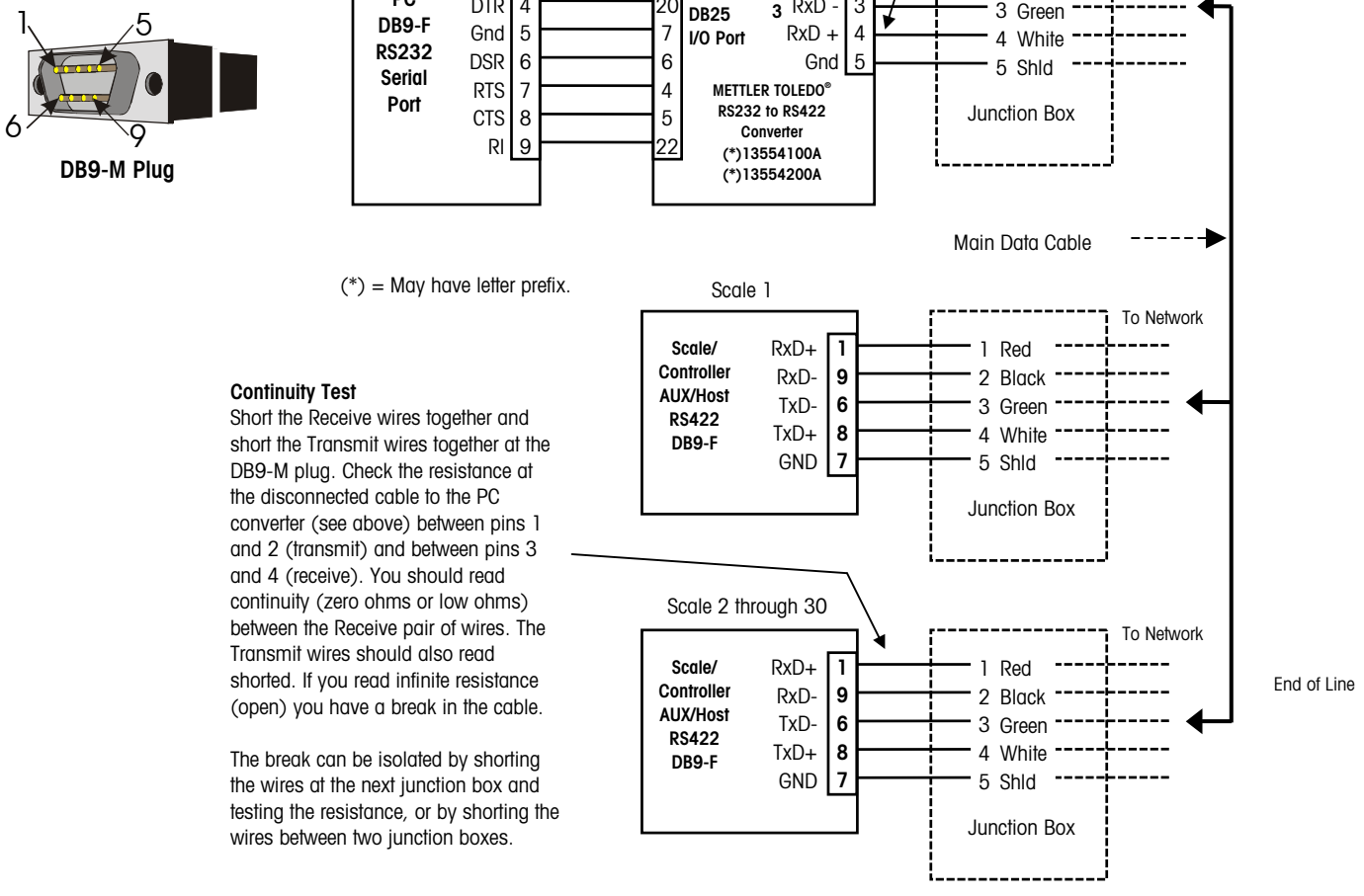


Figure 5-10: Testing the RS422 Wiring

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 Ethernet Satellite 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 Ethernet Satellite or host.)

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

ping 109.205.104.25

When the communications are working properly, the responding Ethernet Satellite 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 Ethernet Satellite does not respond:

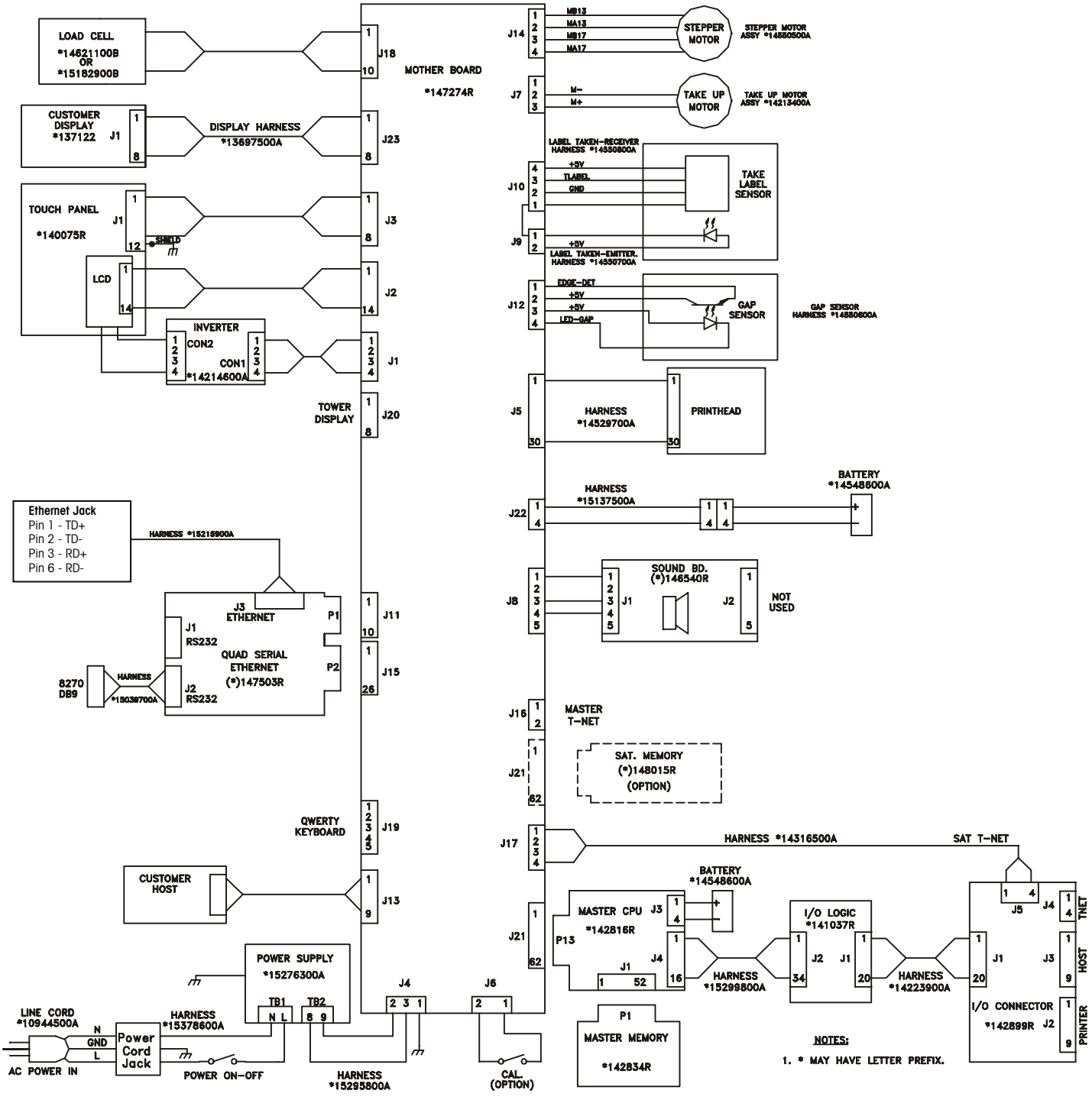
```
C:\>ping 109.205.104.25

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

Satellite Interconnect Diagram

WARNING

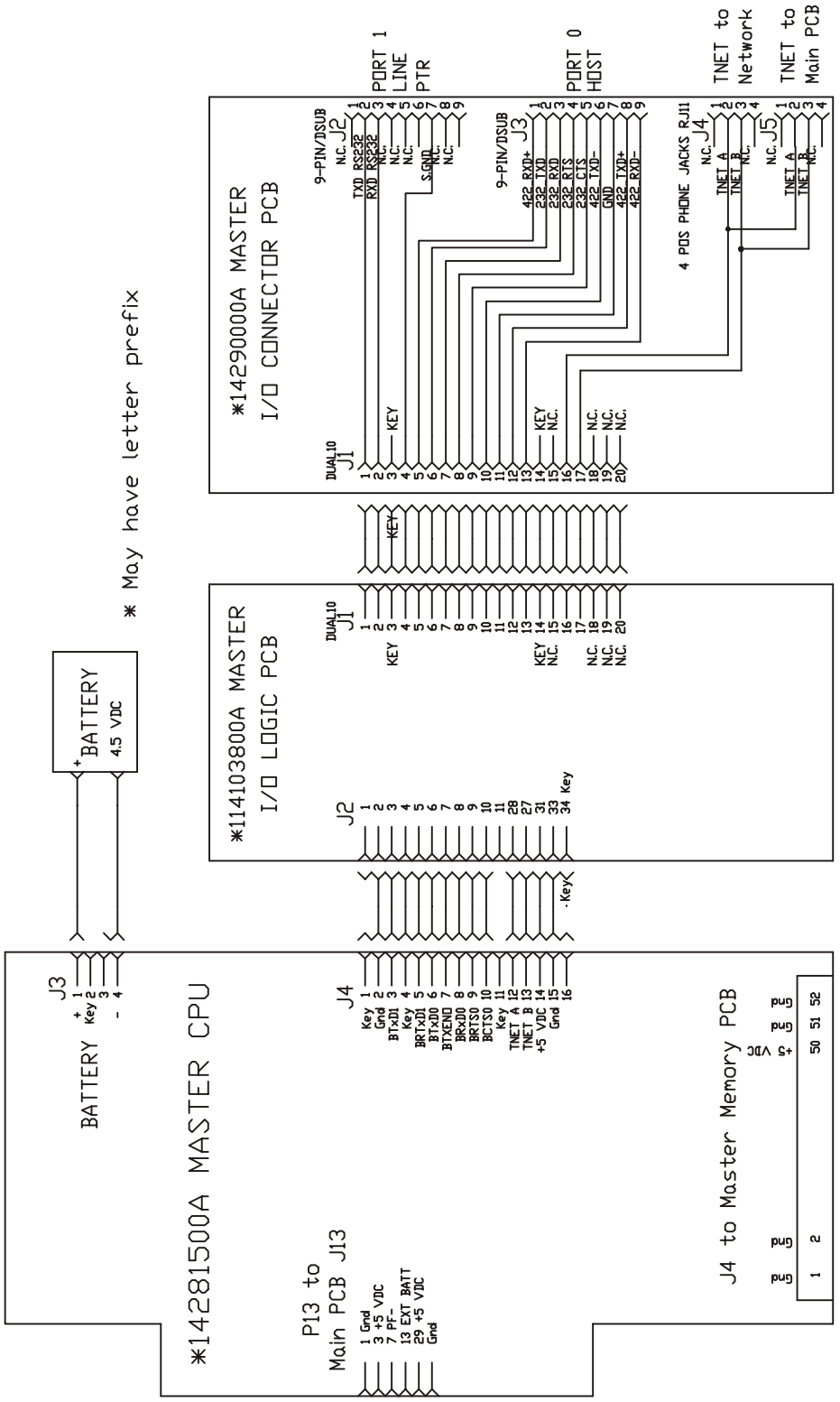
DISCONNECT ALL POWER TO THIS UNIT BEFORE INSTALLING, SERVICING, CLEANING, OR REMOVING THE FUSE. FAILURE TO DO SO COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.



SmartTouch® TNET Master Interconnect Diagram

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.



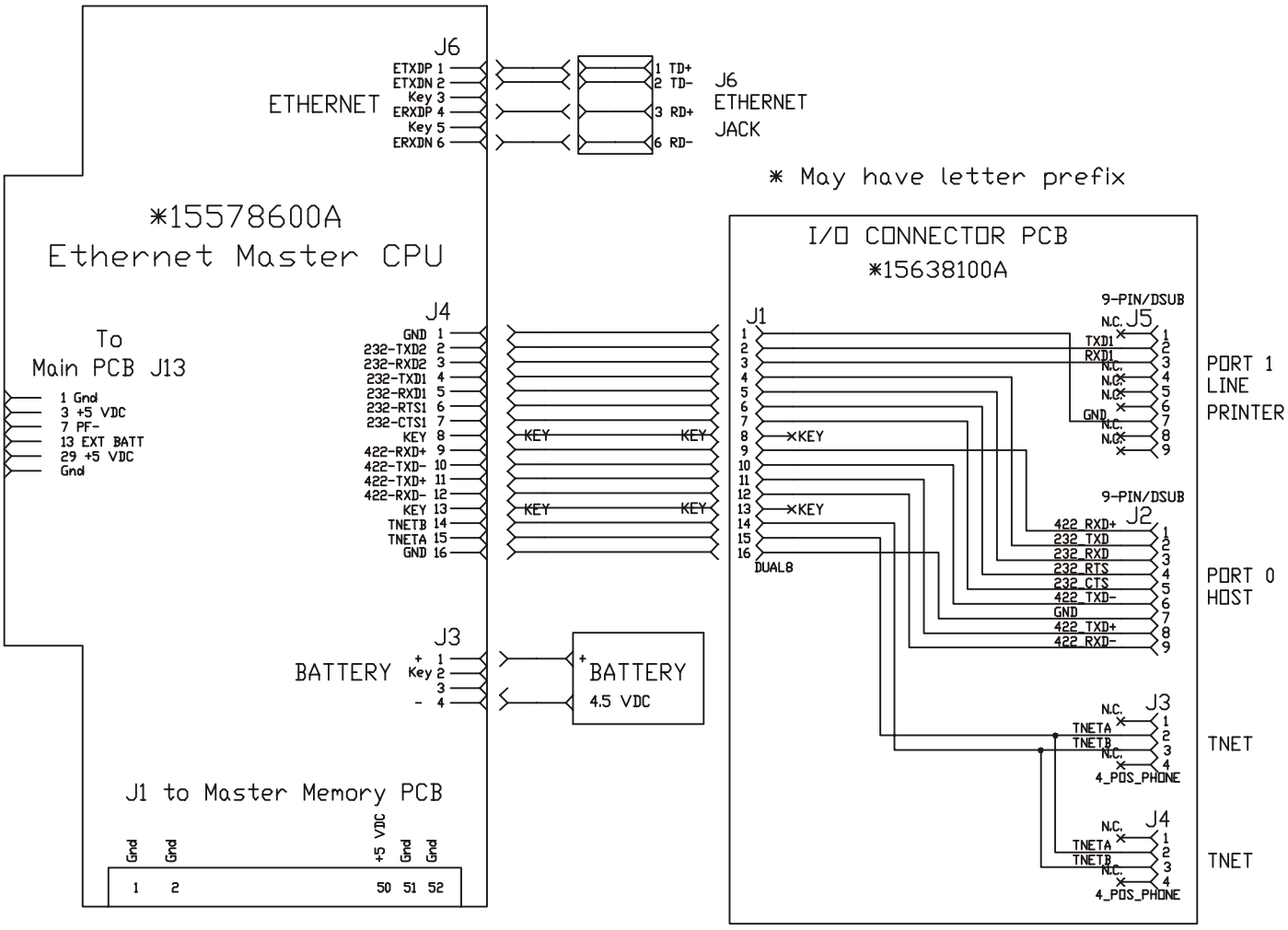
SmartTouch® Ethernet Master (STEM) Interconnect Diagram

⚠ 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

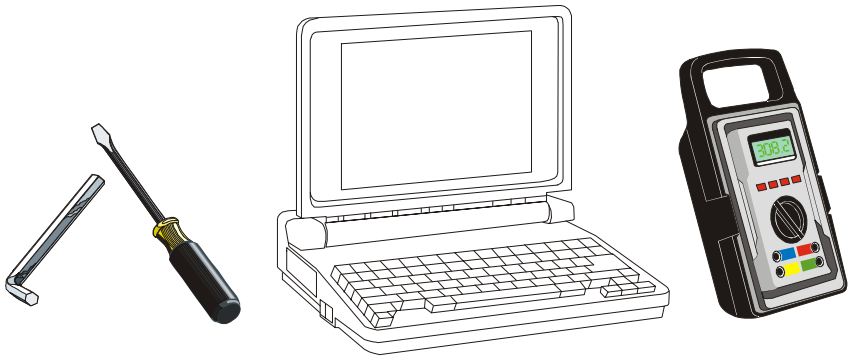
OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.



6 Parts Replacement and Adjustments

Service Tools

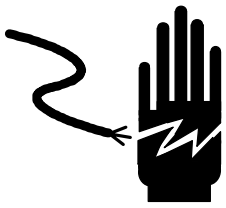
Following is a recommended list of tools that may be required to service the Model 8461.



- 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 4 Interfacing Figure 4-1).
- 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.

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

Model 8461 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 AND/OR PROPERTY DAMAGE.

Refer to Figure 6-1 for access to the scale base components. When removing the top cover, slightly lift the cover and disconnect the LCD/IR harnesses and Customer Display Harness before lifting the cover off the base.

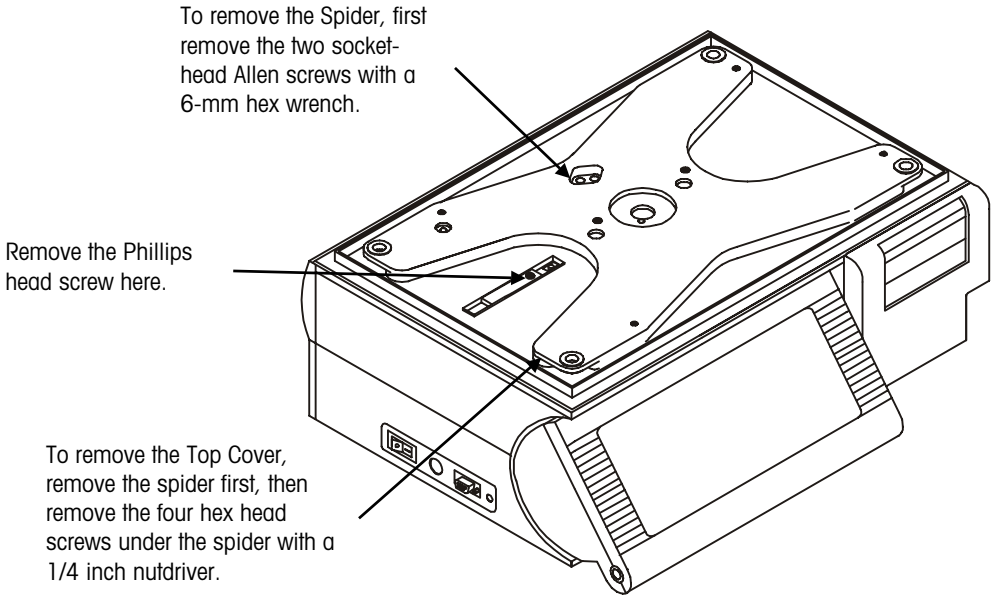


Figure 6-1: Cover Removal Model 8461

Spider Replacement

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

The Model 8461 Spider can be removed using a 6mm Hex Wrench (Allen) to remove the two M8 X 65 socket-head 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 in Figure 6-2. ***If the Spider is replaced, the overload stops must be checked and adjusted to factory specifications as described in the section titled "Overload Stops".***

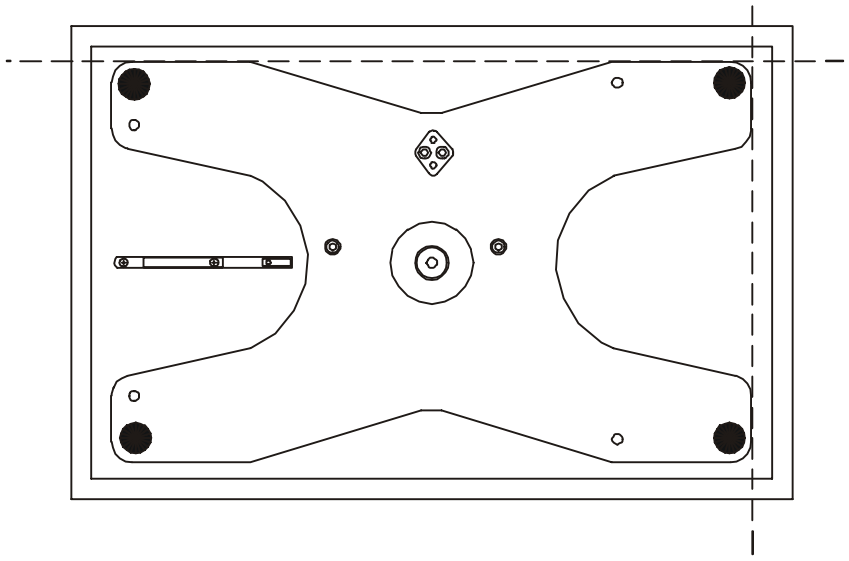
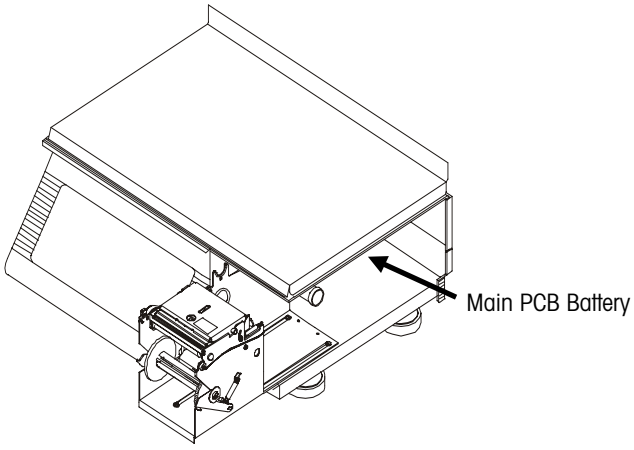


Figure 6-2: Aligning the Model 8461 Spider

Main PCB Battery Replacement

The Main PCB Battery is located behind the printer and can be changed without removing the top cover. The battery is secured with Velcro and can be changed by first sliding the printer out, disconnecting the battery harness, and installing the new battery.



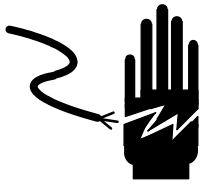
Main PCB Replacement

Note: Units shipped in late 1999 use a new Main PCB P/N 15526100A, and a new Load Cell, P/N 15515100B. Do not mix the new Main PCB and Load cell with the earlier Main PCB and Load Cells.

The new Main PCB and Load Cell use a higher excitation voltage to improve performance.

If installing the new style Load Cell or Main PCB in an earlier unit, they must be replaced as a pair.

To replace the Main PCB, first refer to Model "8461 Cover Removal" at the beginning of this chapter.



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.

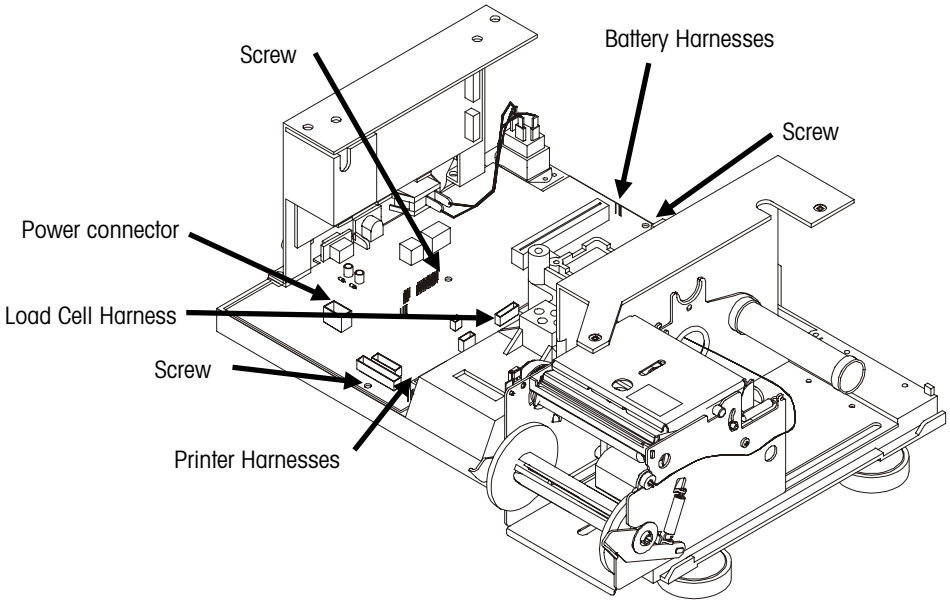
CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

Disconnect all power before proceeding. Press the power switch to the off position, then disconnect the power cord from the outlet.

Remove any plug-in cards from the Main PCB. Disconnect the power connector, load cell harness, battery harness, and the printer harnesses.

Remove the three screws securing the Main PCB to the base. Lift the Main PCB at the end nearest the center of the base first, then slide it out from under the Power Supply.



After installing the new Main PCB, you must flash new software in the unit. Refer to Chapter 4 for details on flashing software.

Load Cell Replacement

Note: Units shipped in late 1999 use a new Main PCB P/N 15526100A, and a new Load Cell, P/N 15515100B. Do not mix the new Main PCB and Load cell with the earlier Main PCB and Load Cells.

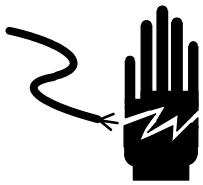
The new Main PCB and Load Cell use a higher excitation voltage to improve performance.

If installing the new style Load Cell or Main PCB in an earlier unit, they must be replaced as a pair.

If the load cell is replaced, the overload stops must be checked and adjusted to factory specifications.

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

Before proceeding, turn the power switch off, then disconnect the AC power cord from the 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 Model 8461 Load Cell, first remove the spider, load cell spacer, and top cover. Disconnect the Load Cell harness, then remove the two socket head set screws with a 6-mm Hex Wrench, as shown in Figure 6-3. 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.

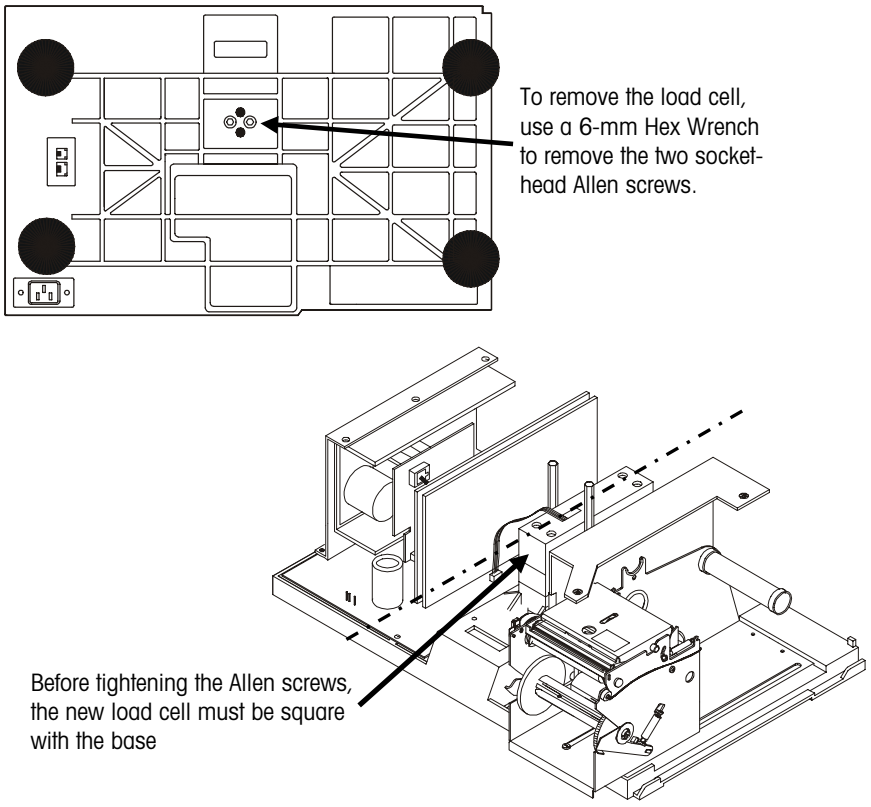


Figure 6-3: Model 8461 Load Cell Replacement

After replacing the load cell and checking the overload stop gaps, recalibrate the scale as described in Chapter 3, Setup, Calibrate/Install Unit.

Overload Stops

If the Model 8461 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 set screws in the spider that are designed to contact stops in the frame in case of an overload condition. ***Failure to properly check and set the overload gaps may result in severe damage to the load cell in case 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 = Newton-meters of torque

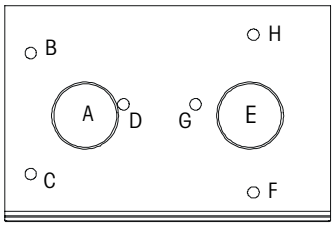
1. Before adjusting the overload-stops, the load cell and spider mounting bolts must be torqued to 150 - 200 lbf.in (12.5 - 17 lbf.ft, or 17 - 23 N.m).

2. Install the service platter with holes (P/N 15368000A show at left) 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 adjustment 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 adjustment screws and screw them into the spider. Stop when the tip of the screw just begins to protrude from the bottom of the spider.



Service Platter (*)15368000A

4. Stack the weights (six 5 lb, three 10 lb, or three 5 kg weights) at the left circle (A) on the service platter (shown at left). 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 adjustment screw (B) 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 adjustment screw (C).

Loctite® 242 and 243 is a registered trademark of Loctite Corporation, Rocky Hill, CT

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 (D). 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 (E) on the special platter and repeat steps 5, 6, and 7 for the three adjusting screws on the right side of the spider (F, G, and H).
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 with the weights located at half the distance from the center to the edge of the platter (circle A and E). 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 test weights equal to 50% of scale capacity on the scale platter at point A, as shown in Figure 6-4. Proceed with the test at points B through E, as shown in Figure 6-4. 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 ±0.015 lb of any of the points B through E compared to A.

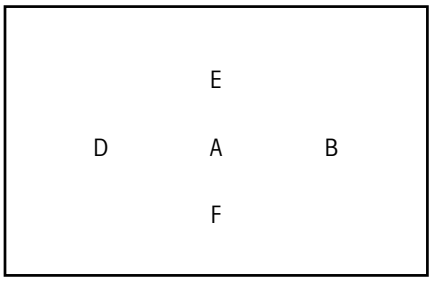
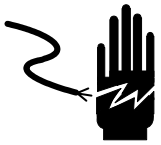


Figure 6-4: Shift Test

If the scale fails the specified tolerance at one or more test points, check the overload-stop screws for proper adjustment and the top cover for proper seating and possible interference with sub-platter. The Spider and load cell spacer must be properly centered to avoid interference with top cover and load cell cover. If none of the above conditions exists, replace the load cell, recalibrate the scale, and recheck the shift.

Printhead Replacement

Before proceeding, set the power switch to off then disconnect the AC power cord from the 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 Model 8461 printhead, unlock the printhead and refer to the illustration in Figure 6-5. After replacing the Printhead, compare the Printhead Resistance Rating on the front of the Printhead with the old Printhead. If the resistance rating is different, set to match the new printhead's rating.

Print Speed/Density
(Varies the print speed and power to the printhead to adjust print quality.)

122.5 mm/sec Low
122.5 mm/sec Low-Medium
122.5 mm/sec High-Medium
122.5 mm/sec High
101.6 mm/sec High

Head
(Match Ohms marked on the Print Head.)

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

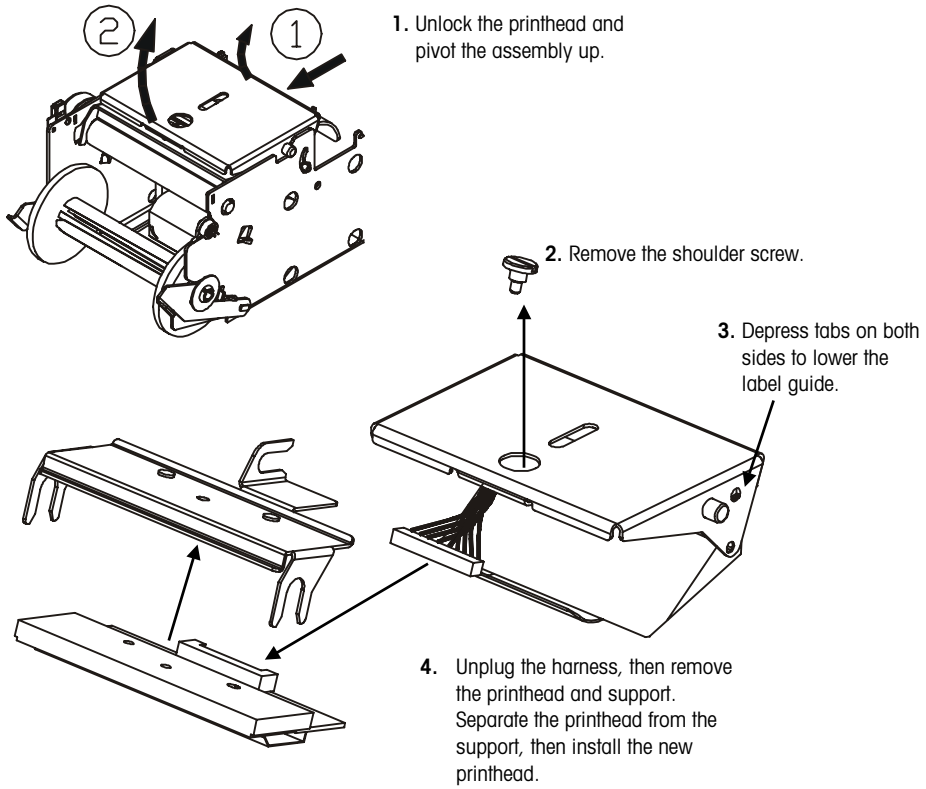


Figure 6-5: Printhead Replacement

Platen Roller, Drive Belt, and Bearing Replacement

Tools needed: 1.5 mm Allen Wrench and small pliers.

Turn the power switch to OFF. These parts can be replaced without removing the top cover.

Slide the printer mechanism forward to gain access to the Platen Roller Drive Belt. Unlock the printhead assembly to remove pressure on the Platen Roller.

Remove the drive belt by rotating the pulley while applying outward pressure to spin the belt off.

Remove the drive pulley by loosening the two 1.5 mm Allen screws.

Rotate the plastic bearing until the tabs line up with the slots.

Remove the Platen Roller. Either bearing or the roller may be replaced. Install in reverse order. To re-install the drive belt, first loop the belt over the motor drive pulley and spin the belt on by rotating the driven pulley.

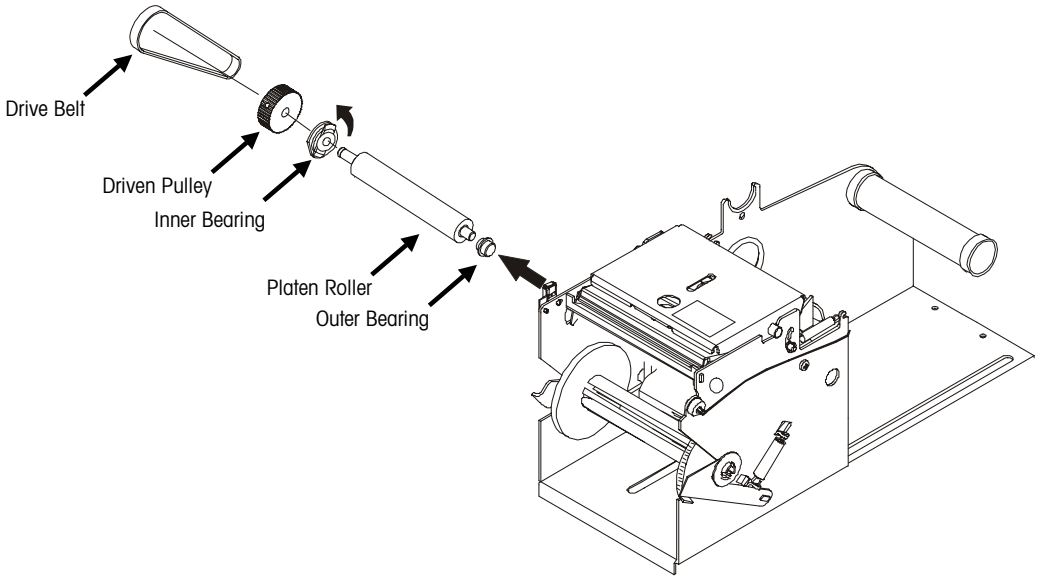
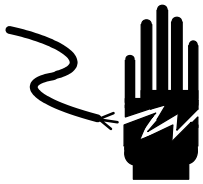


Figure 6-6: Platen Roller, Belt, and Bearing Replacement

Take-Up Motor Replacement

Before proceeding, set the power switch to off then disconnect the AC power cord from the 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 Model 8461 Take-Up Motor assembly, remove the top cover and slide the printer forward. Remove the two Phillips-head screws, disconnect the motor from the Main PCB at connector J7 (Figure 1-9), and slide the motor out the rear (Figure 6-7). Reverse the steps to install the new motor.

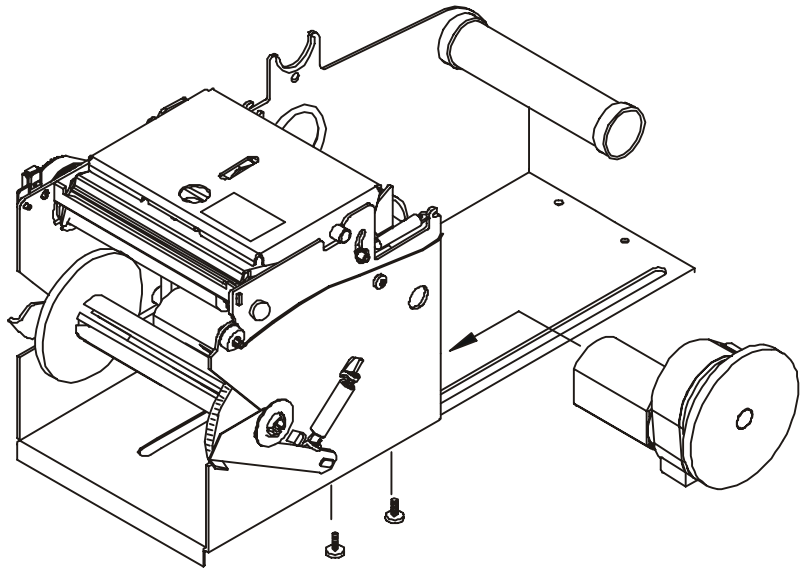
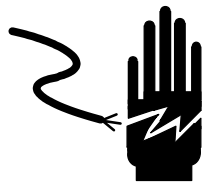


Figure 6-7: Take-Up Motor Replacement Model 8461

Label Stepper Motor Replacement

Before proceeding, set the power switch to off then disconnect the AC power cord from the 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 Model 8461 Label Stepper Motor, first remove the spider and top cover (or Dead Deck Cover). Slide the printer forward. Remove the four Phillips-head screws, disconnect the motor from the Main PCB at connector J14, and slide the motor out the rear. Reverse the steps to install the new motor (Figure 6-8).

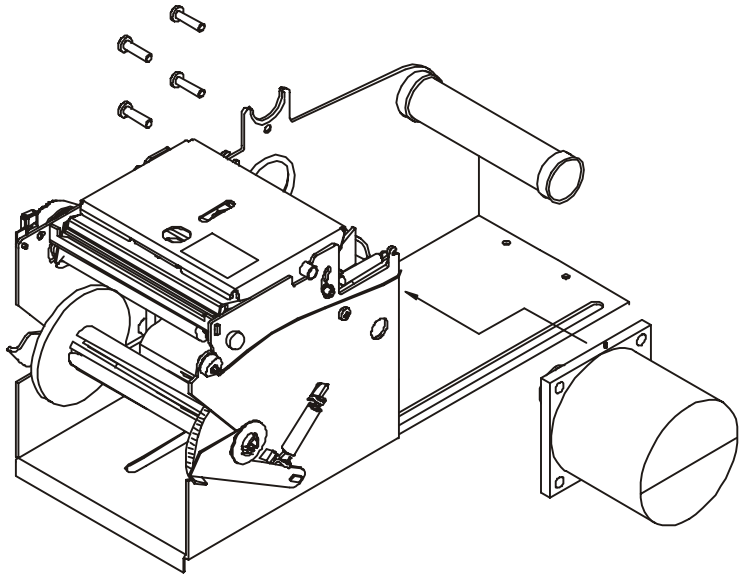
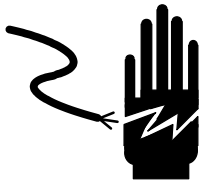


Figure 6-8: - Stepper Motor Replacement Model 8461

Touchscreen Service

Before proceeding, set the power switch to off then disconnect the AC power cord from the 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 service the Touchscreen assembly, first remove the top cover assembly. The Touchscreen is mounted to the top cover with two screws, as shown in Figure 6-9. Remove the two screws and separate the Touchscreen and harnesses from the top cover.

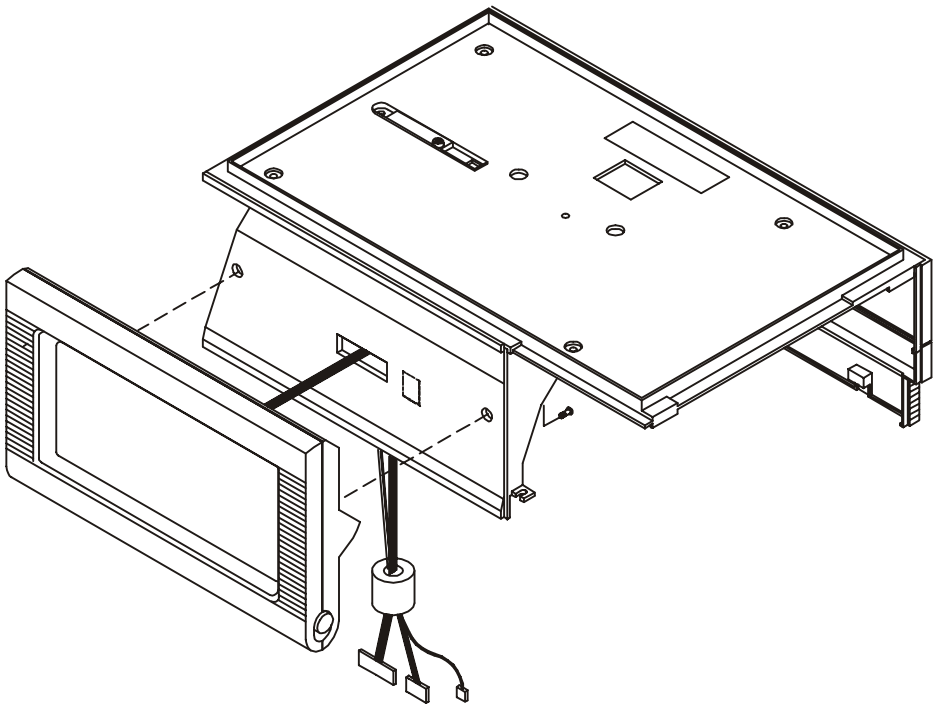


Figure 6-9: Removing Touchscreen Assembly

To service the internal components of the Touchscreen, lay the Touchscreen on a flat surface, screen side down, and then remove the eight screws from the rear of the Touchscreen. Turn the Touchscreen over, then remove the front cover from the assembly taking care to note the position of the left and right actuator and springs which may come loose when removing the cover (Figure 6-10).

The IR PCB is not held in by any screws and can be replaced simply by lifting the PCB off the pegs and disconnecting the harness.

The LCD Display can be removed by first lifting the IR PCB and Shield from the mounting pegs. Disconnect the LCD harness and backlight harness. Remove the four screws holding the LCD to the rear cover. After removing the LCD, the Inverter PCB can be serviced, also.

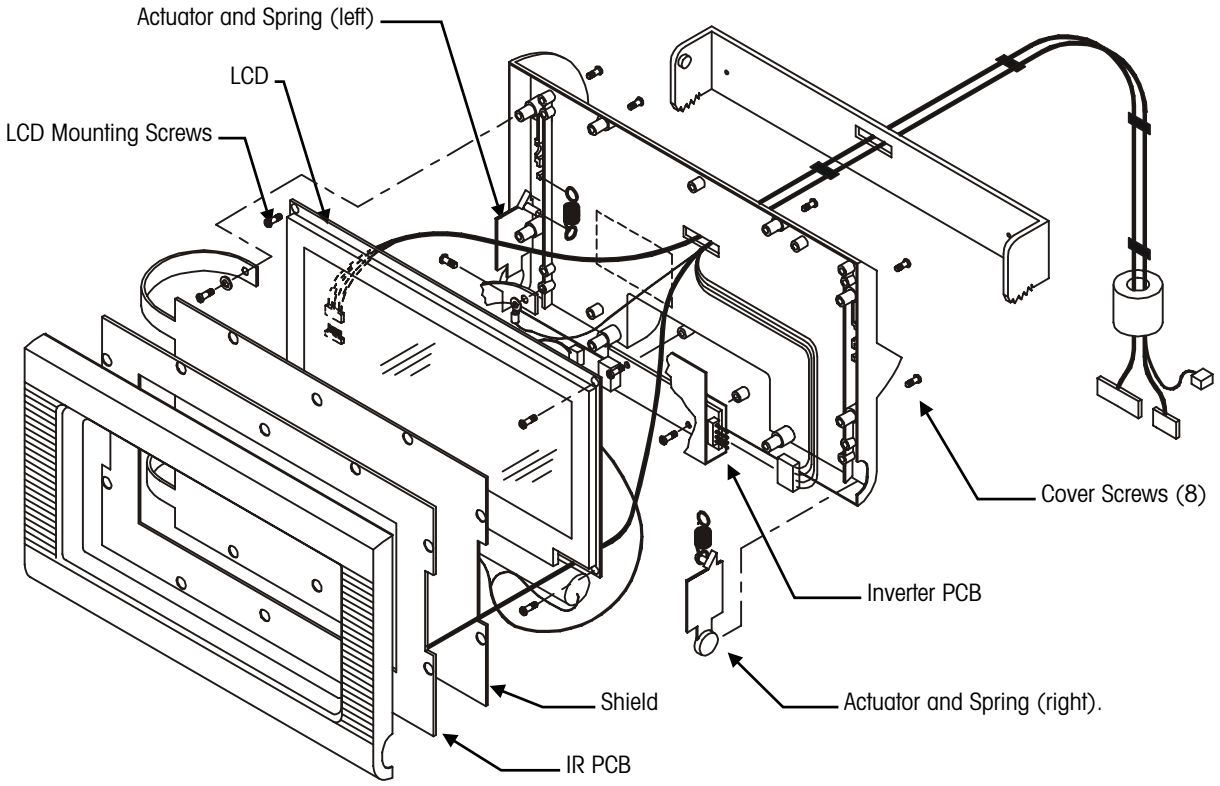
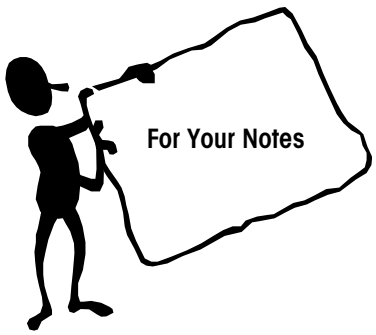


Figure 6-10: Touchscreen Assembly

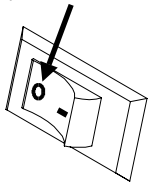

For Your Notes

7 Maintenance

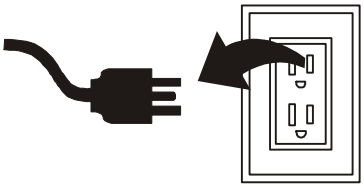
Before Performing Maintenance!

"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).*"

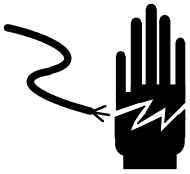
1. Press OFF on the power switch.



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.

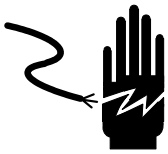
- Disconnect power.
- Use a soft clean cloth dampened with mild detergent and water, or with mild cleaner to wipe the exterior surfaces.
- **Do not spray directly on the unit**. A mild spray cleaner can be used by spraying the cleaning cloth.
- Do not use solvent or commercial cleaners on the unit. They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

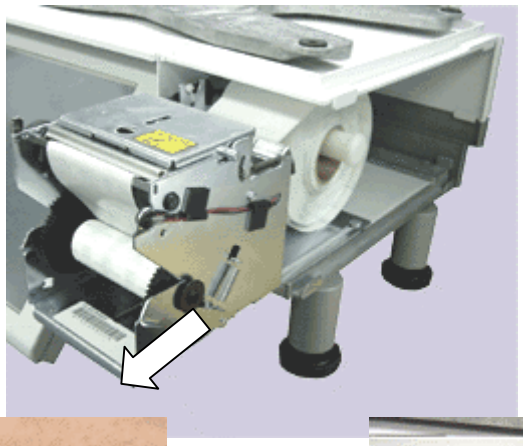
Note: Before pressing the printhead down, hold the bottom of the printer to prevent the scale from tipping if the foot clamp is not used.



⚠ WARNING

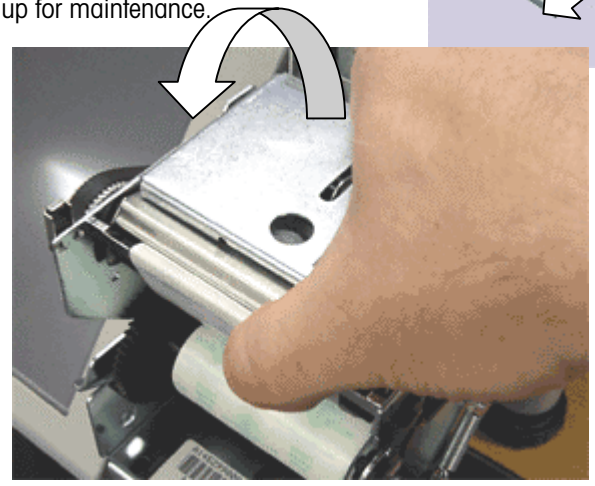
DISCONNECT ALL POWER TO THIS UNIT BEFORE INSTALLING, SERVICING, CLEANING, OR REMOVING THE FUSE. FAILURE TO DO SO COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.

- 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.



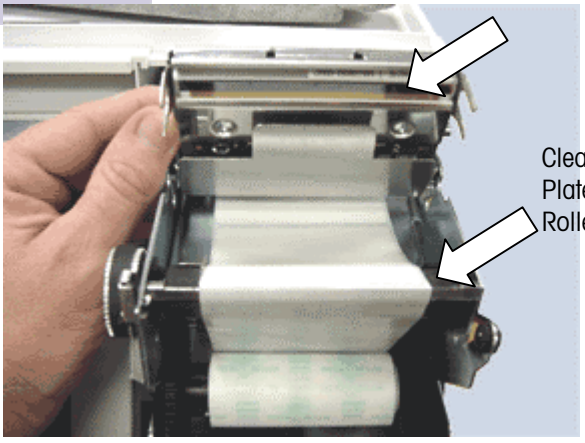
Slide the printer out for access to the printhead.

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



Clean the printhead here.

Clean the Platen Roller

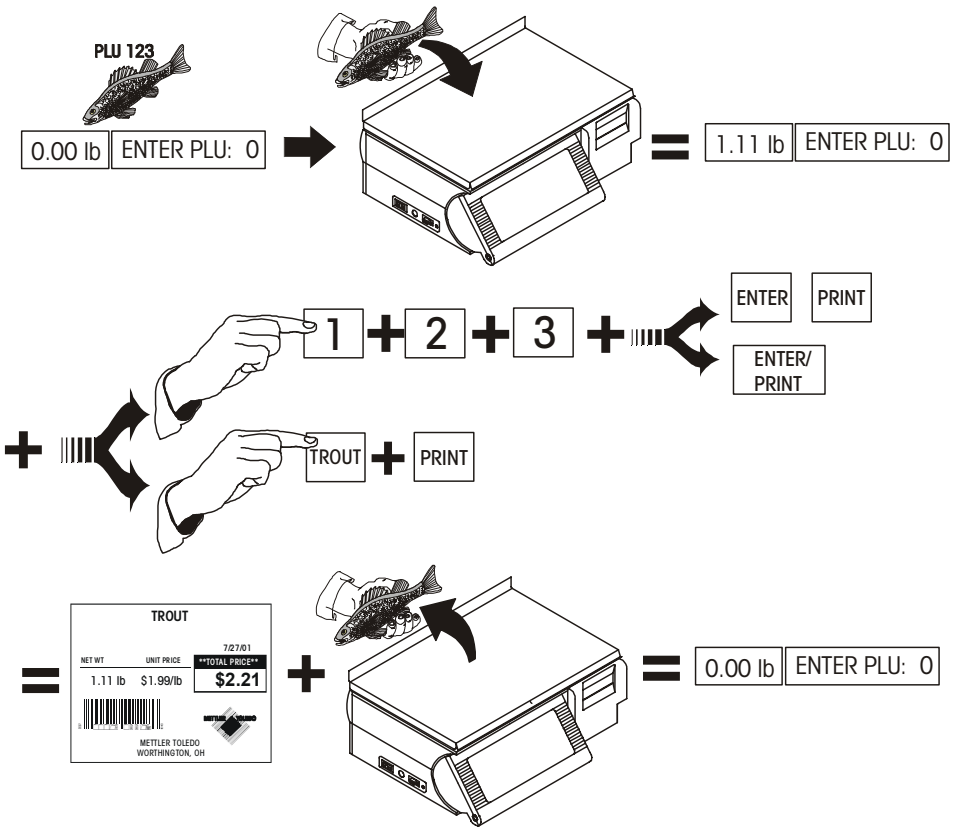


8 Operating Instructions

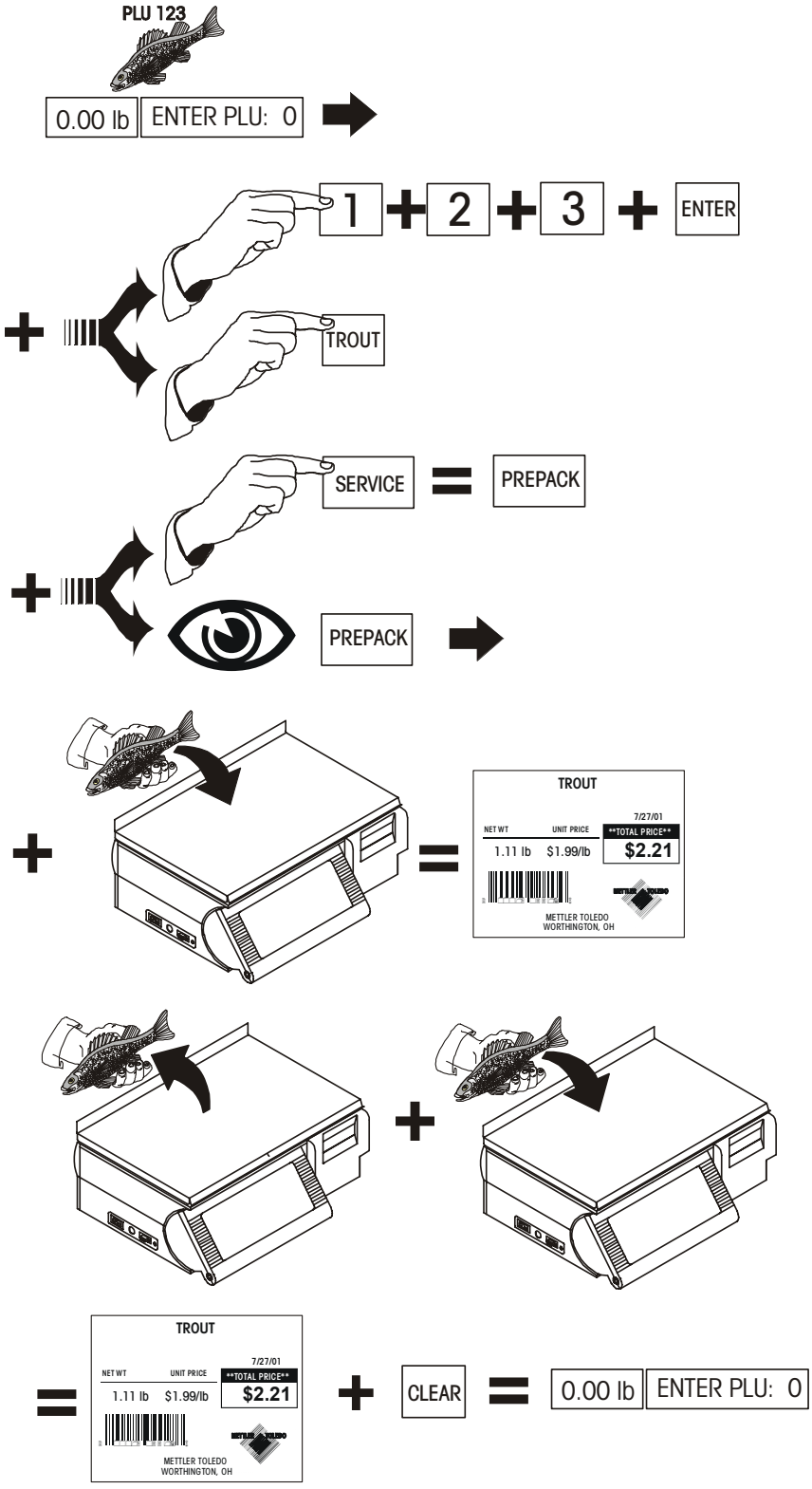
Quick Start

This section provides a quick reference for some common procedures.

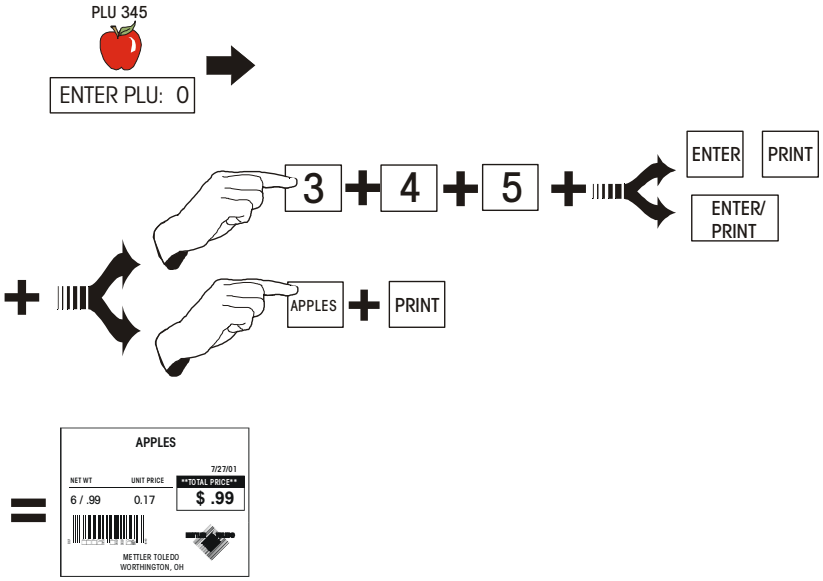
Printing a By-Weight PLU in Service Mode



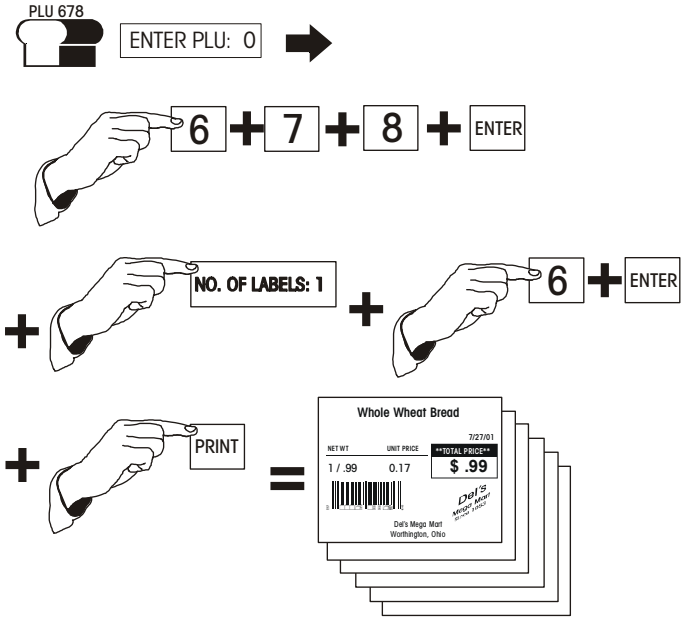
Printing a By-Weight PLU in Prepack Mode



Printing a By-Count or Standard Pack PLU Single Label



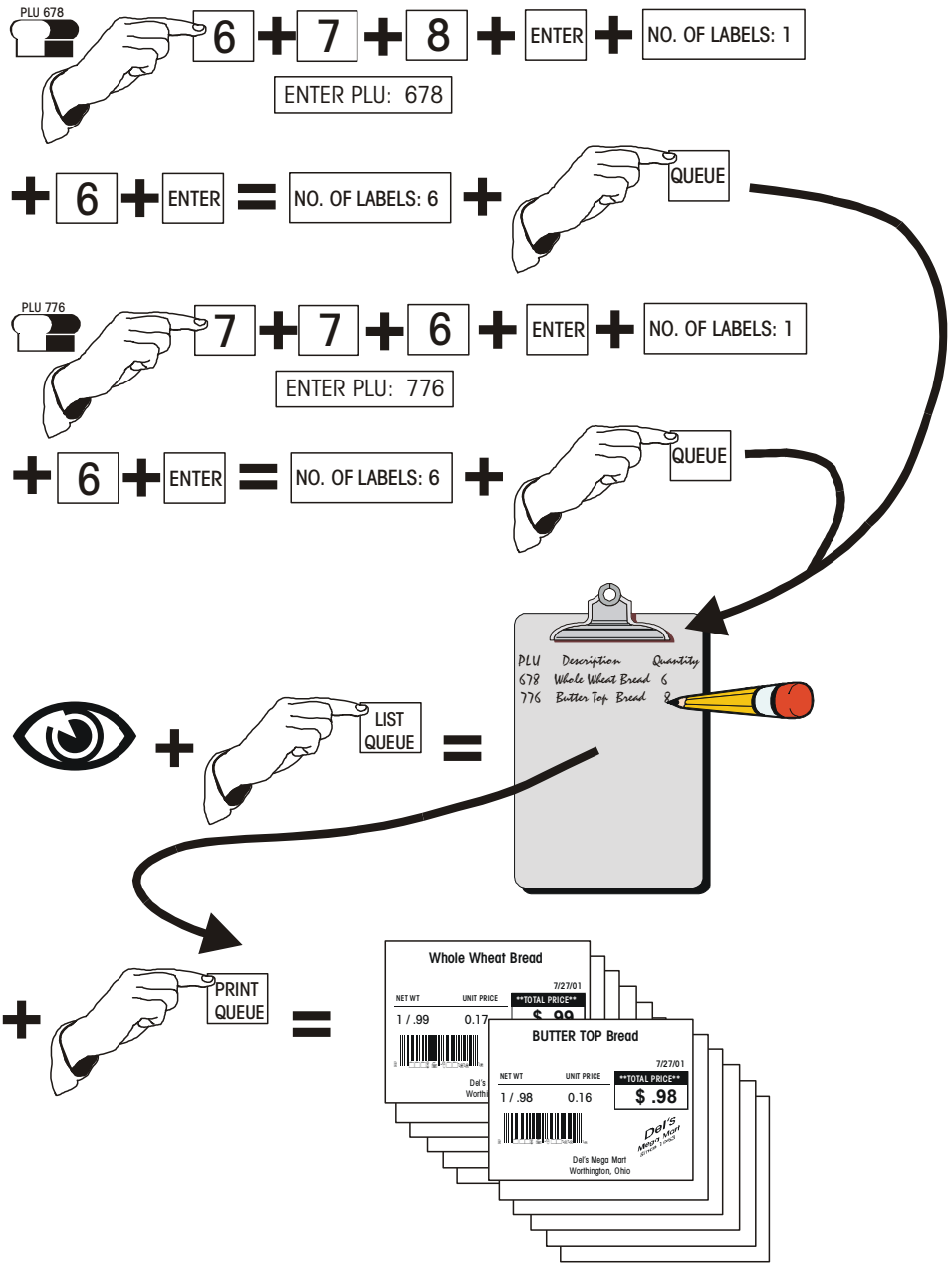
Printing Multiple labels for By-Count or Standard Pack PLU



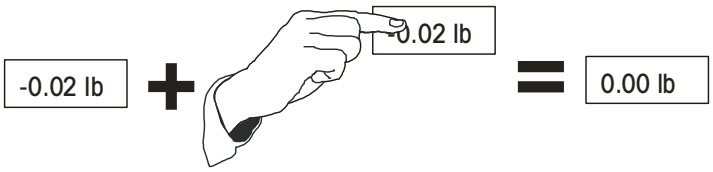
Batch Queue

When BATCH QUEUE is enabled (under Setup/Unit/PLU Options) multiple By-Count and Standard Pack PLUs can be put into a queue for later printing.

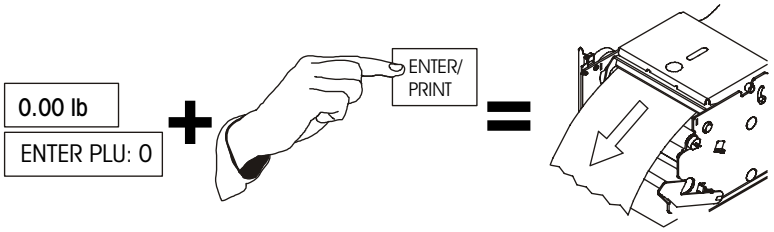
This procedure is used to print batches of different labels. To print Nutrition Facts or Extra Text labels, use the key before touching the QUEUE key to select the Extra Text or Nutrition Facts label formats located at the end of the formats list.



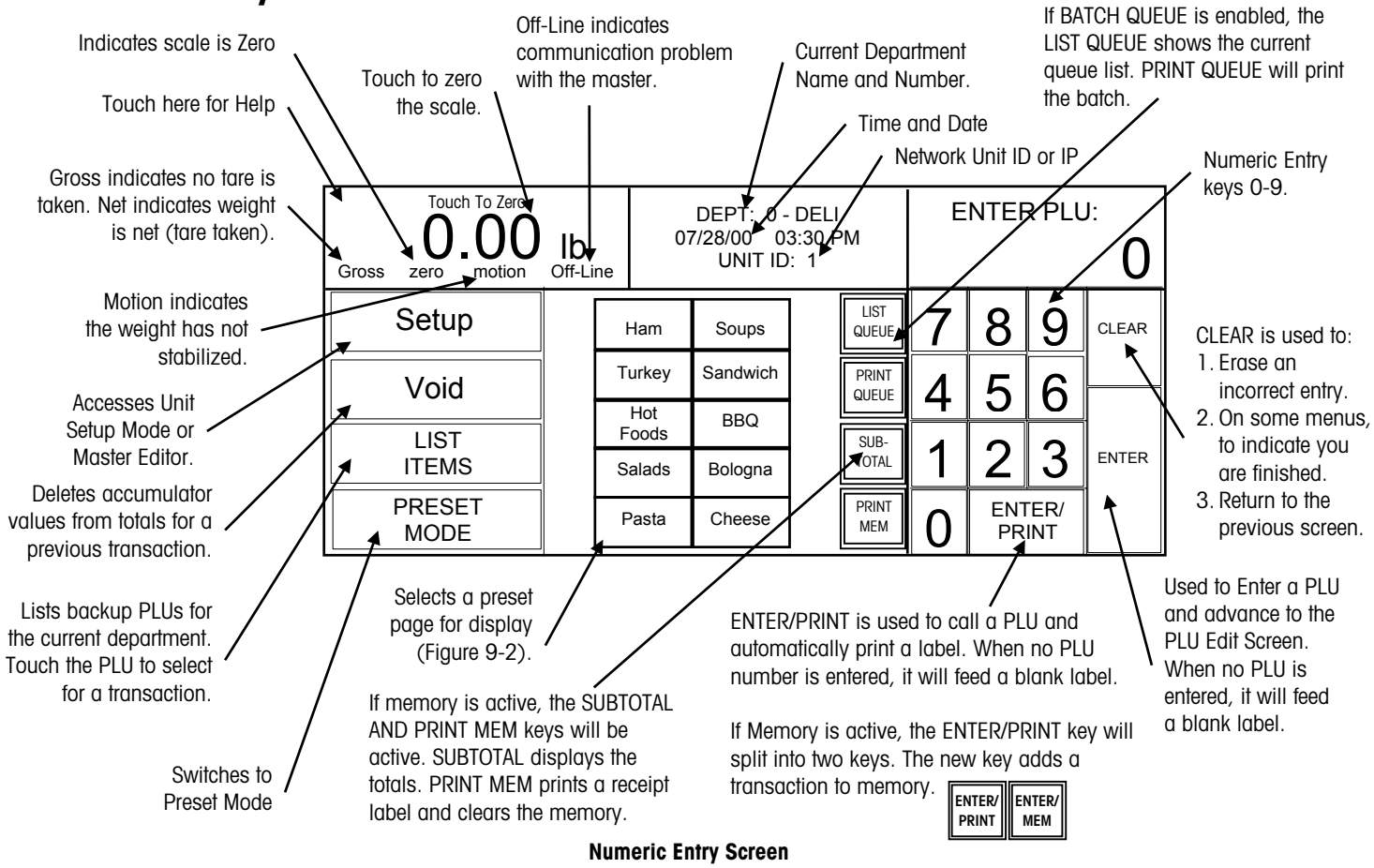
Zero the Scale



Label Feed

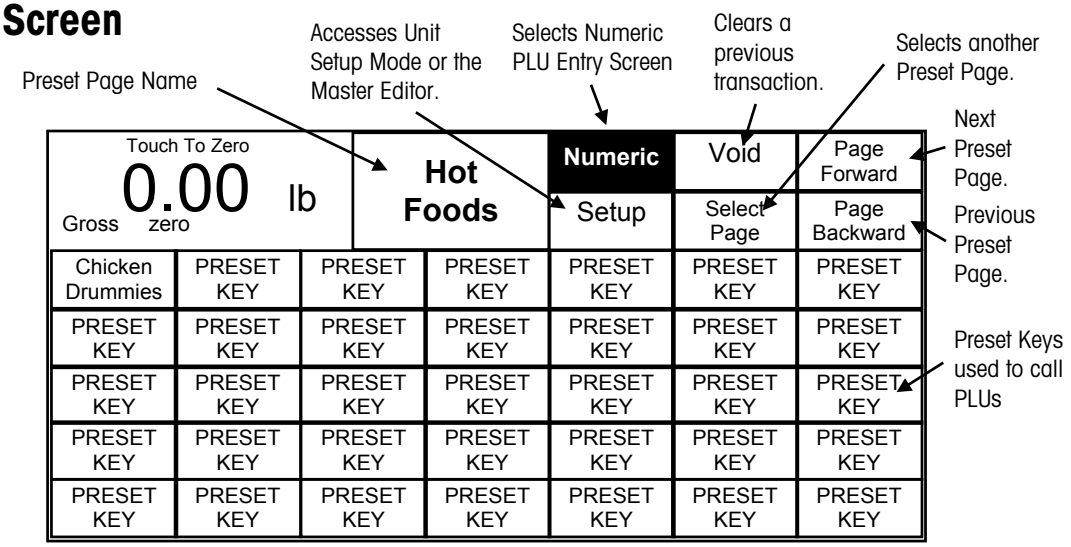


Numeric Entry Screen



Numeric Entry Screen

Preset Entry Screen



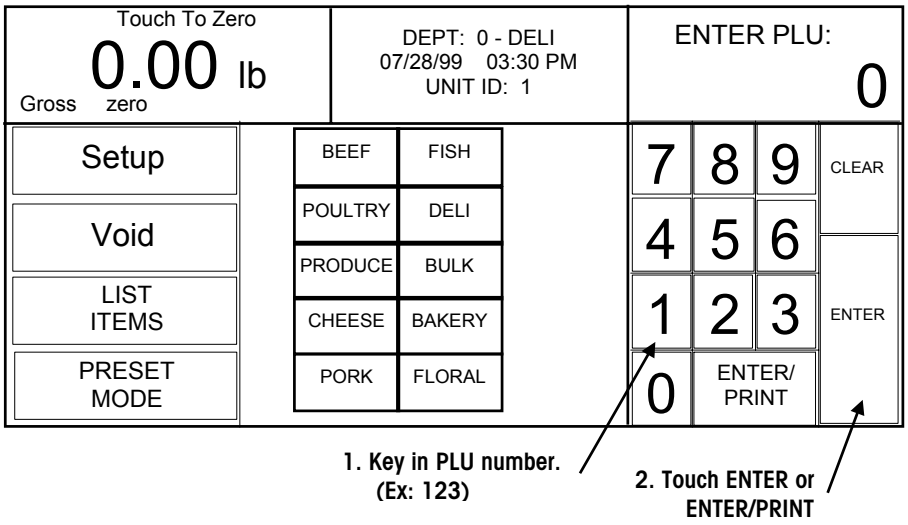
Preset Entry Screen

Calling PLU Records

PLU (Price Look Up) records are called (retrieved from file) two ways: Numeric Entry (Enter the PLU number on the keyboard), or Preset Entry (touch one of the preset keys.)

Numeric Entry Method

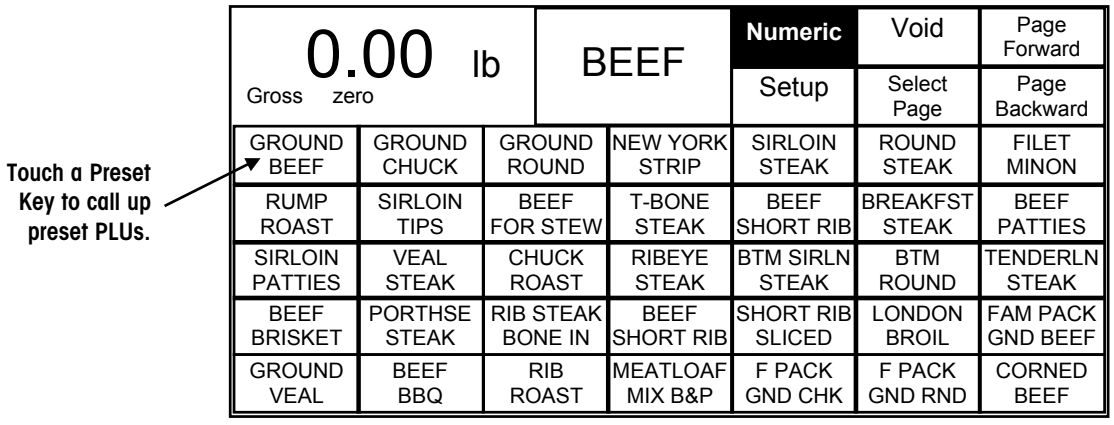
If the Preset PLU entry screen is displayed, touch the NUMERIC key. This will select the Numeric entry screen for transactions. To call a PLU record, enter the PLU number on the numeric keypad, then touch the ENTER or ENTER/PRINT key.



Enter PLU Number on Numeric Entry Screen

Preset Method

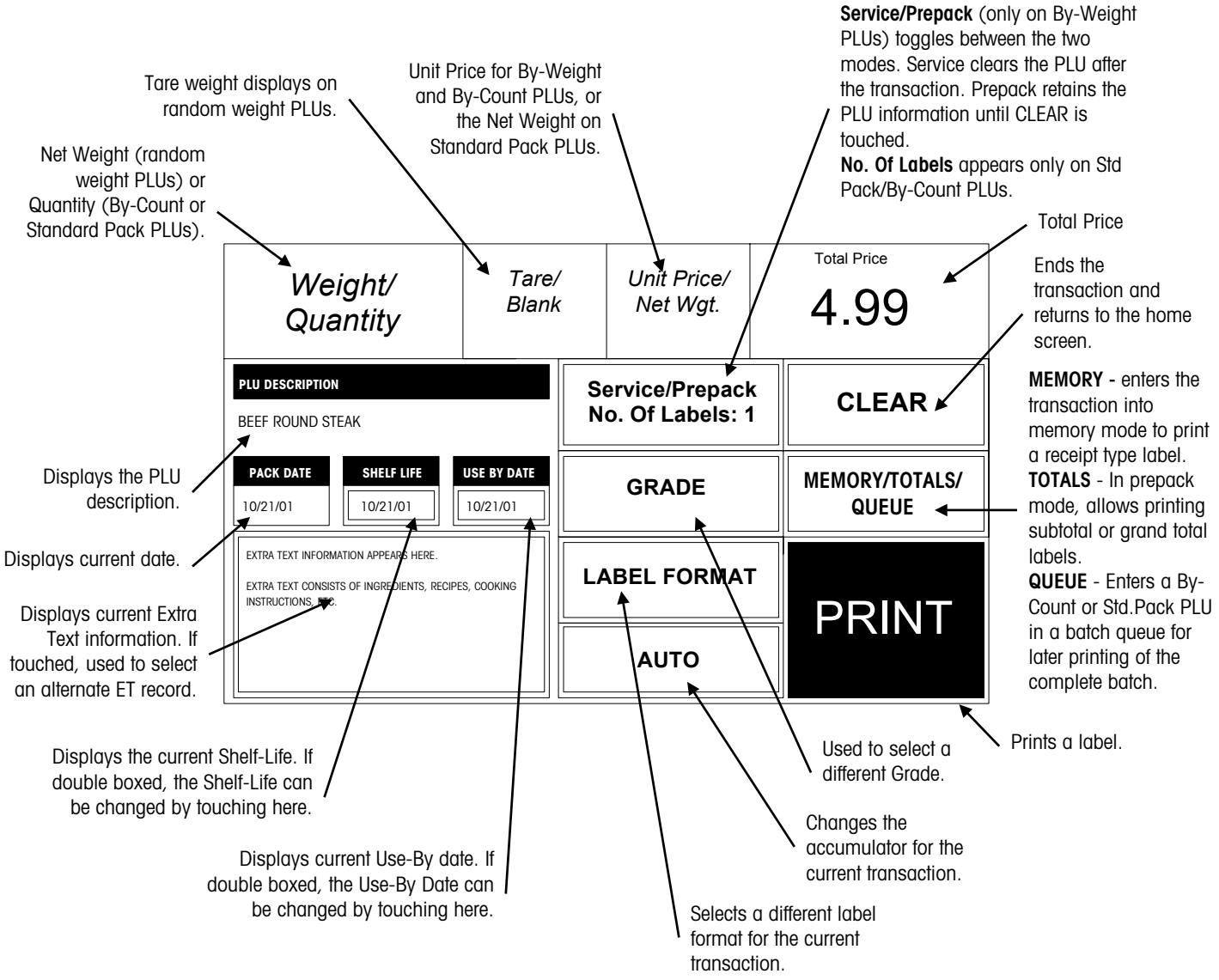
When a preset key is touched, the screen shown below will display. To call a preset PLU, touch one of the preprogrammed preset PLU keys.



Preset Screen

PLU Edit Screen

After a PLU is selected, the PLU Edit screen will display (shown below). This display will differ depending on the PLU types used. If enabled in setup, certain items will be "double boxed" and can be manually overwritten by touching the appropriate box and following instructions. All changes made through this screen will be for the current transaction only and the changes will not be saved to the PLU record.



PLU Edit Screen

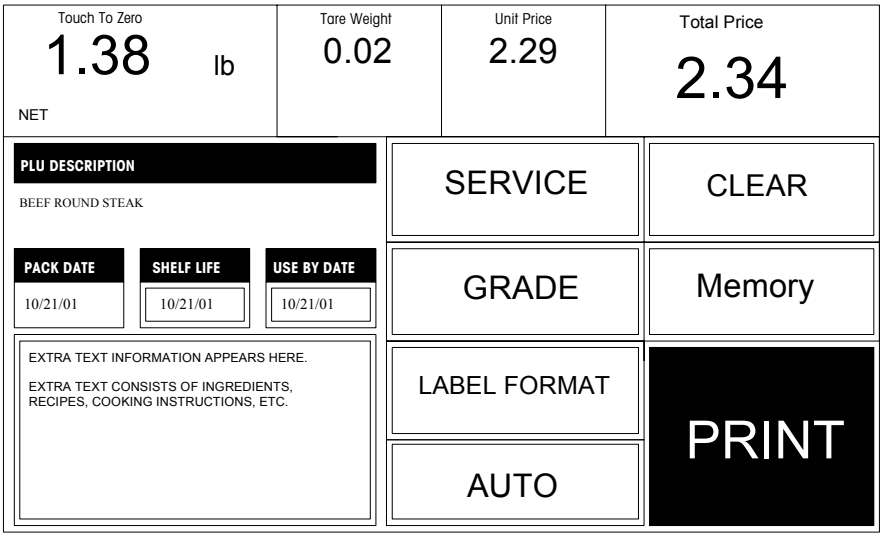
By-Weight PLU

Service Mode
Call the PLU. If PREPACK is displayed on the EDIT screen, touch that key to toggle to SERVICE. Place the item on the platter and touch PRINT to issue a label. When the item is removed from the platter, the PLU will automatically clear.

Prepack Mode
Call the PLU. If SERVICE is displayed on the EDIT screen, touch that key to toggle to PREPACK. Place the item on the platter. A label will automatically issue. Take the label and remove the item from the platter. The PLU will remain on the screen to weigh additional items. Touch CLEAR when you are finished weighing.

The By-Weight PLU Edit Screen is shown below. By-Weight PLUs can be priced in three ways:

1. Priced "Per Pound" - Typically weighed items are priced per the pound. The weight multiplied by the unit price equals the total price of the product to the customer.
2. Priced "Per Fraction of a Pound" (fractional) - The item may also be priced by the fraction of the pound (where legal and desired). Pricing per 1/4 pound and per 1/2 pound is available.
3. "Pounds for" price - The PLU may be sold with a pounds-for price (rather than price per pound). (e.g. 2 pounds for $1.00).

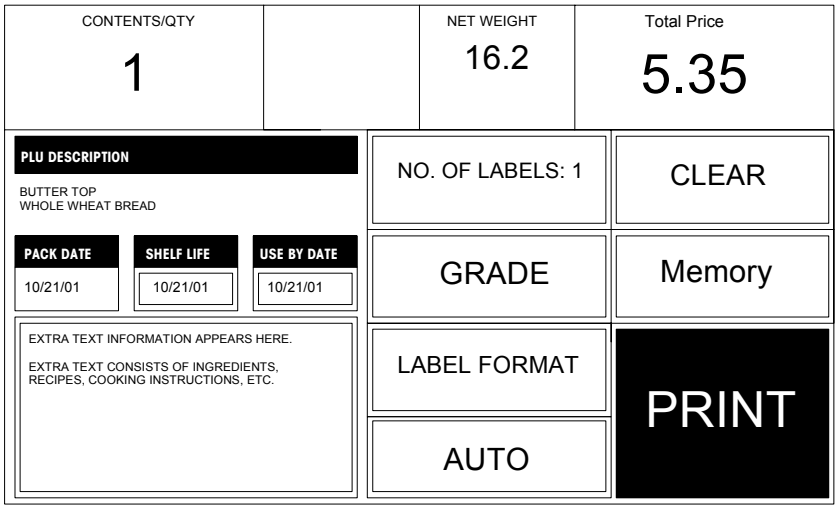


By Weight PLU Edit Screen

Standard Pack PLU

If the PLU is priced as a Standard Pack item, enter the quantity of labels desired (default is 1), then touch PRINT to print labels. Touch the screen area to stop printing.

The Standard Pack PLU allows the operator to use the scale for a labeling operation. Generally, the labels indicate the net weight of the item and total price. A Standard Pack PLU edit screen is shown below.

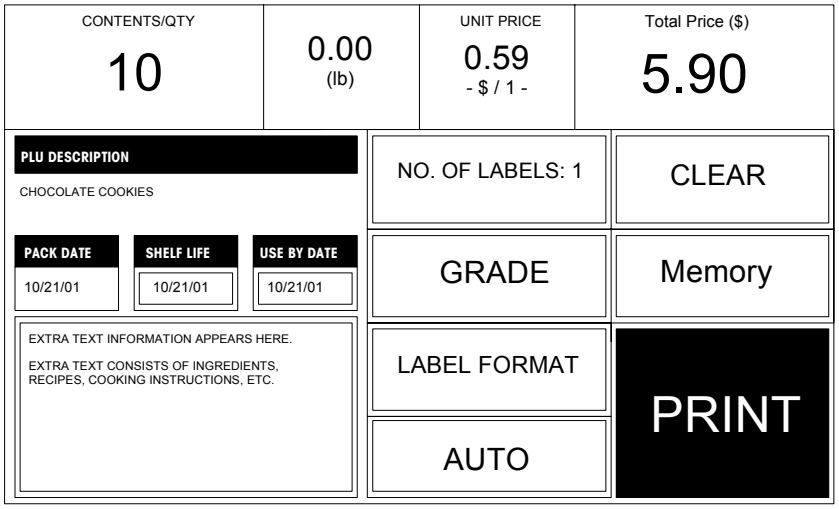


Standard Pack PLU Edit Screen

By-Count PLU

If the PLU is priced as a By-Count item, enter the quantity of labels desired (default is 1), then touch PRINT to print labels. Touch the screen area to stop printing.

A By-Count PLU edit screen is shown below.



By Count PLU Edit Screen

Manual PLU

A manual PLU is a PLU that has been programmed at the master for the "Manual" pricing mode. This allows a general PLU that can be used for incidental items that do not have a permanent PLU record If a manual PLU is selected, a screen will be displayed to select the Pricing Mode. Touch the appropriate mode, then touch ENTER. The corresponding PLU Edit screen will be displayed, along with a numeric keyboard requesting essential data (such as count, prices, etc.). Adjust the fields as necessary, then touch PRINT to print a label.

Manual Overrides

PLU fields that are double-boxed in the PLU Edit screen can be changed. Instructions on editing fields follow.

Manual Unit Price

The Unit Price applies only to By-Weight or By-Count PLUs. Enter the new Unit Price through the numeric keyboard. The Total Price will be recalculated using the new Unit Price and the current Weight (By-Weight PLUs) or Count (By-Count PLUs) to adjust for the change in the Unit Price.

Manual Count

The Count applies only to By Count or Standard Pack PLUs. Enter the new Count through the numeric keyboard. For By-Count PLUs, the Total Price will be recalculated based on the new Count and the current Unit Price. For Standard Pack PLUs, the Net Weight and Total Price will be recalculated based on the new Count and the current values of the Net Weight and Total Price.

Manual Total Price

The Total Price can only be adjusted on By-Count or Standard Pack PLUs. Enter the new Total Price through the numeric keyboard. For By-Count PLUs, the Unit Price will automatically be recalculated based on the new Total Price and the current Count. For Standard Pack PLUs, changing the Total Price does not affect any other values.

Manual Net Weight

The Net Weight can only be adjusted on Standard Pack PLUs. Changing the Net Weight will not affect any other values.

Manual Tare

The Tare Weight only applies to By-Weight PLUs. After emptying the platter, enter the value of the tare weight through the Numeric Keyboard or place the empty container on the platter and touch the PLATTER TARE key. To clear a tare, touch the CLEAR TARE key. The Weight (and, consequently, the Total Price) will be adjusted based on the new Tare

Weight. Note: If the platter is not empty, the "UNABLE TO CHANGE TARE" message will appear after the new value was entered. Empty the platter and try again.

Manual Shelf Life and Use-By Date

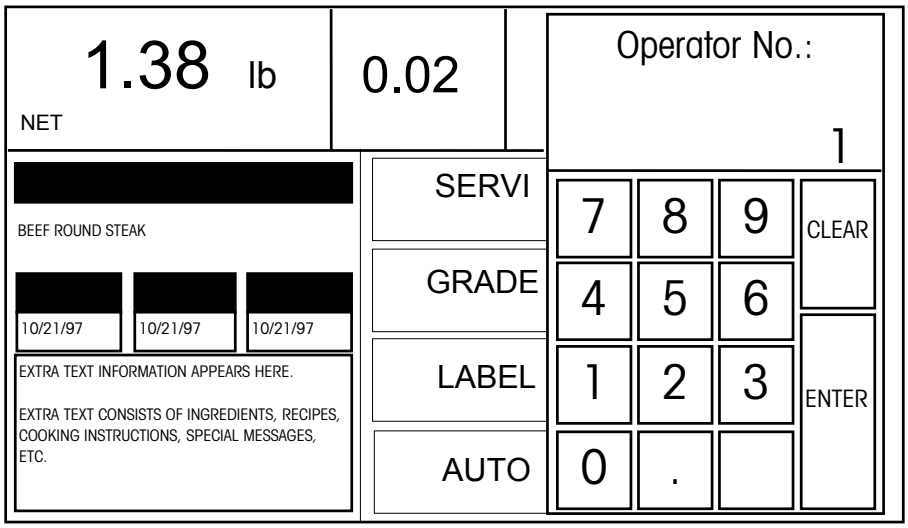
The Numeric keyboard will appear. Enter the new number of days from the current date or enter the exact date by typing the numeric month, numeric day, and last two digits of the year separated by the "Slash (/)" key.

Manual Extra Text

The numeric keyboard will appear with the current extra text number displayed. (Extra text is programmed through the Master Editor, see Master Programming Manual.) Enter the new extra text number.

Operator Totals

Operator Totals allow totals to be recorded for up to 30 operators per department. Up to 30 operators may be defined by number and name in the **Smart*Touch*®** master or scale server. When operator totals are enabled, before printing a label you will be prompted to enter your operator number, as shown below.



Operator Number Entry

Memory Mode

When enabled, this feature allows the user to accumulate the items weighed for a customer. When complete an itemized receipt can be printed showing the grand total and department bar code. To use the memory function, touch the MEMORY key to enter the transaction. A window will then appear that displays the number of pieces, total price, and four options. When "Department" memory is active, you will be asked for an operator number when adding to the memory.

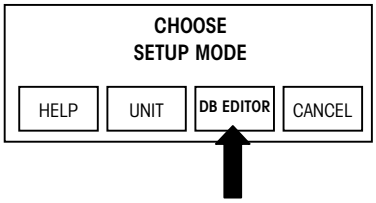
1. CONTINUE to call up another item for the same customer and enter it into memory.
2. REMOVE ITEM to delete an item from the transaction memory by choosing it from a list.
3. CANCEL to delete the entire transaction (a confirmation prompt will appear).
4. END/PRINT to end the transaction and print the receipt (a confirmation prompt will appear after the receipt prints).

While in the memory mode, touch MEMORY after each item is entered. If a separate label is also desired for each item, touch PRINT to receive a label and then touch MEMORY to continue. To prohibit the current item from being added to memory (before or after printing a label), touch CLEAR. The memory screen will appear with the normal choices, but the "cleared" item will not be in the memory.

Totals

In Prepack Mode, Run Totals can be printed by touching the SUBTOTAL or the GRAND TOTAL key. This will issue a label for the packages weighed during this transaction with the following possible items (depending on the label format): Item description, PLU number, UPC symbol, store address lines, dates, number of packages, weight, and dollars. After a Grand Total calculation, the records for the current transaction are cleared.

Standalone Mode DB Editor



There are limited Quick Edit functions on the standalone. You can change prices, tare, Shelf Life, and Use-By dates. To add/remove or modify existing records, an external host program must be used, such as Wintelli-Net™ or Intelli-Net™.

The DB Editor can be protected by a password. If no password is used, anyone can access the Quick Change functions.

To access the EB Editor, touch SETUP then touch DB EDITOR (shown at left). If a password has been programmed, enter the password. ***(Note: If the password is not known, use the service password 7627.)*** The DB Editor screen is shown below.

	Quick		Report	Clear		conFig	QUIT ESC
DATABASE ACCESS Current Dept: 1 PLU's: 0 Linked Records: 0							

Standalone DB Editor Screen

To configure the standalone, first touch **conFig** to display the drop down menu.

	Quick		Report	Clear		conFig	QUIT ESC
					pAsswords		
					Store/department info.		
					Department number		
DATABASE ACCESS Current Dept: 1 PLU's: 0 Linked Records: 0							

Config Options

The configuration options under the CONFIG key are as follows:

Passwords	The password can be up to four-digits numeric (1-9999). To clear a password, press CLEAR or enter a zero.
Store/Department Info	Configure the Store Name and Address, Department Name and Address (used on labels), and Department UPC.
Department Number	Used to select the Current Department.

The QUICK menu allows changing the price, tare, Shelf Life, and Use-By dates of existing PLU records. The REPORT function will display hours totals on the screen. The CLEAR function will clear all hourly totals.

9

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.

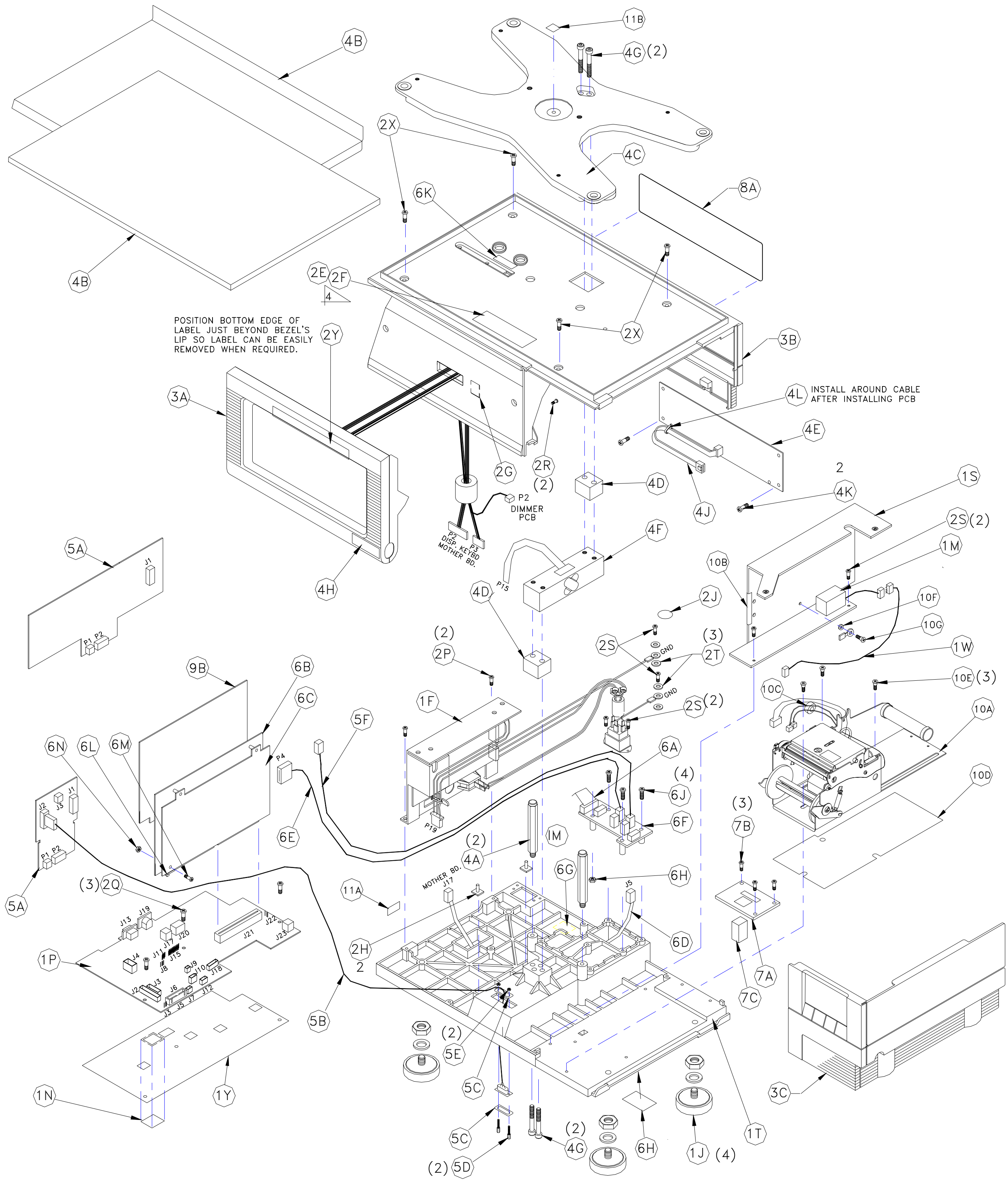
Aftermarket Services:

- 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

Base


11B
4G (2)
4B
2X
4C
6K
8A
4B
2E
2F
4
POSITION BOTTOM EDGE OF LABEL JUST BEYOND BEZEL'S LIP SO LABEL CAN BE EASILY REMOVED WHEN REQUIRED.
2Y
2X
3B
3A
4L
INSTALL AROUND CABLE AFTER INSTALLING PCB
4E
2G
2R (2)
4D
P2 DIMMER PCB
P2 DISP. KEYBD
P3 MOTHER BD.
2
1S
4K
4J
2S (2)
1M
5A
J1
4F
10B
10F
10G
4H
4D
P15
2J
1W
(2) 2P
2S
(3) 2T
GND
10E (3)
9B
6B
6C
1F
10C
2S (2)
10A
5F
6N
6L
6M
P4
6A
(4)
6J
10D
6F
(3) 7B
6E
P19
IM
(2) 4A
6G
6H
5A
(3) 2Q
11A
MOTHER BD. J17
J5
6D
1P
2H
2
7A
7C
5B
(2) 5E
5C
3C
1N
1Y
5C
(2) 4G
6H
1J (4)
1T
(2) 5D

Base Parts List

COMMON PARTS:			
SYM	QTY.	PART NUMBER	DESCRIPTION
1F	1	15556000A	POWER SUPPLY W/BRACKET
1J	4	A13864600A	FOOT/NUT ASSY, 5/16-18
1M	1	14548600A	BATTERY, ALKALINE 4.5V
1N	1	12281100A	STICKER, NON-FUNCTION
1P	1	C15526100A	PCB ASSY, MAIN, 8461 (Note 1)
1S	1	C14528900A	BRACKET, TOP COVER
1T	1	B14529100A	BASE
1W	1	15137500A	HARNESS, BATTERY EXTENSION
1Y	1	14531100A	INSULSTOR, MOTHER BD.
2E	1	14800000A	LABEL, DATA
2F	1	14801800A	SHIELD, LABEL, DATA
2G	1	14665400A	CABLE CLAMP, FLAT (LCD HARNESS)
2H	2	14687900B	STANDOFF, .625 PCB
2J	1	14531400A	LABEL, GND
2P	2	R02180050	SCREW, 8-32 X 3/8 TAPTITE
2Q	3	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	4	R00589130	LOCKWASHER, #6, EXT.TOOTH
2X	4	R0517000A	SCREW, 8-32 X 3/8 HEX HD.
2Y	1	15783500A	LABEL,INSPECT BEFORE TRADE,ENGLISH
		15783900A	LABEL,INSPECT BEFORE TRADE,FRENCH
PART OF ASSEMBLY 15565500A	1	14149300A	POLY BAG, 5 X 8 ZIP-LOCK
	1	B12363300A	SECURITY SEAL
	3	R0514000A	SCREW, 8-32 X 1 PH.TT.
	1	12716300A	PHONE JACK, WALL MTG.
	1	R0531100A	SCREW, 8-32 X .75, DRILLED HEAD
	1	14882300A	CALIB BRACKET
	2	12839300A	RES, MF, 1/4W 113 OHM, 1%
(*)	1	12716500A	CABLE, PHONE

ADD FOR LINECORDS			
SYM	QTY.	PART NUMBER	DESCRIPTION
(*)	1	10944500A	LINECORD, RIGHT ANGLE N.AMERICA
		13902200A	LINECORD, RIGHT ANGLE EUROPE
		14202100A	LINECORD, RIGHT ANGLE AUSTRALIA

ADD FOR SOFTWARE			
SYM	QTY.	PART NUMBER	DESCRIPTION
		157754R	PGM,MEDIA IMAGE, TNET
		157755R	PGM,MEDIA IMAGE, ENET

ADD FOR SCALE COLOR			
SYM	QTY.	PART NUMBER	DESCRIPTION
3A	1	15597100A	DISPLAY ASSY, GRAY
		15597200A	DISPLAY ASSY, BLACK
3B	1	E13687000A	TOP COVER ASSEMBLY, GRAY
		15385000A	TOP COVER ASSEMBLY, BLACK
3C	1	15585600A	PRINTER DOOR ASSY, GRAY W/LABEL
		15585700A	PRINTER DOOR ASSY, BLACK W/LABEL

ADD FOR SCALE UNITS			
SYM	QTY.	PART NUMBER	DESCRIPTION
4A	2	13689200A	OVERLOAD POST ASSEMBLY
4B	1	A14529000A	PLATTER ASSEMLBY
4C	1	14529300A	SPIDER ASSEMBLY
4D	2	14529800A	SPACER, LOAD CELL
4E	1	13712200A	PCB ASSY, CUSTOMER DISPLAY
4F	1	15515100B	LOAD CELL ASSEMBLY 45KG (Note 1)
4G	4	R0519500A	SCREW, M8-1.25 X 65 SHCS
4H	1	A15017000A	LABEL, CAPACITY (30 lb/15 kg)
		15041800A	LABEL, CAPACITY (6 kg/15 kg)
		15277800A	LABEL, CAPACITY (15 lb/30 lb)
		15533000A	LABEL, CAPACITY (15kg)
4J	1	A13697500A	HARNESS, CUSTOMER DISPLAY
4K	2	R0501200A	SCREW, 4-24 X .25, PHPAN DST
4L	1	09591500A	CABLE TIE
5A	1	A15214300A	PCB ASSY, ENET

ADD FOR DEAD DECK UNITS			
SYM	QTY.	PART NUMBER	DESCRIPTION
4B	1	15822600A	DEAD DECK COVER, GRAY
		15844100A	DEAD DECK COVER, BLACK
4H	1	14643300A	LABEL,CAPACITY 50LB/20KG
5A	1	A15214300A	PCB ASSY, ENET

ADD FOR DEAD DECK W/INTERFACE			
SYM	QTY.	PART NUMBER	DESCRIPTION
5A	1	A14750400A	PCB ASSY, SERIAL/ENET
5B	1	15039700A	HARNESS, I/O 9 PIN DSUB
5C	2	14295900A	BRACKET, I/O
5D	2	13716600A	HEX POSTS, 4-40
5E	2	R0363800A	NUTS, HEX, 4-40 W/LOCKWASHER
5F	1	15215900A	HARNESS, ENET INTERNAL

ADD FOR MASTER UNITS			
SYM	QTY.	PART NUMBER	DESCRIPTION
6A	1	15677500A	HARNESS, I/O LOGIC
6B	1	15578600A	PCB ASSY, MASTER W/ENET
6D	1	14316500A	HARNESS, SAT.T-NET JUMPER
6E	1	15398500A	HARNESS, ENET MASTER
6F	1	15638200A	PCB ASSY, I/O CONN.
6G	1	14665400A	CABLE CLAMP, FLAT
6H	1	15641600A	LABEL, I/O CONNECTOR
6J	3	R0382000A	SCREW, 8-32 X 3/4 PH.HD.TT.
6K	1	15267400A	LABEL, FLASHING
6L	1	15447100A	FOOT, PCB MTG.
6M	1	R01982050	SCREW, 4-40 X 5/8
6N	1	R0330500A	NUT, 4-40
(*)	1	A14736800A	MANUAL, SCALE PROGRAM ENGLISH
		A15203400A	MANUAL, SCALE PROGRAM SPANISH
		A156463R	PROGRAM,MASTER ENGLISH
		156465R	PROGRAM,MASTER FRENCH
		156464R	PROGRAM,MASTER SPANISH

ADD FOR SATELLITE UNITS			
SYM	QTY.	PART NUMBER	DESCRIPTION
7A	1	A15169600A	PLATE, CONN, ENET/SSP
7B	3	R0255900A	SCREW, 8-32 X 5/16 TAP.
7C	1	15217700A	CONNECTOR, PHONE

ADD FOR DISPLAY LENS/BEZEL			
SYM	QTY.	PART NUMBER	DESCRIPTION
8A	1	A15203100A	LENS, ENGLISH LB (30lb)
		B14694800A	LENS, ENGLISH KG (6/15kg)
		A15203300A	LENS, SPANISH LB (30lb)
		A15203200A	LENS, SPANISH KG (15kg)
		15041600A	LENS, FRENCH MR (6/15kg)
		15263200A	LENS, ENGLISH MR (15/30lb)
		A15586000A	LENS, ENGLISH, AUSTRALIA
		14130600A	BEZEL, DECORATIVE GRAY
		14130600B	BEZEL, DECORATIVE BLACK

ADD FOR MEMORY CAPACITY			
SYM	QTY.	PART NUMBER	DESCRIPTION
9A	1	A14317300A	PCB ASSEMBLY, MEMORY 2 MEG
		A14283500A	PCB ASSEMBLY, MEMORY 4 MEG
		15077500A	PCB ASSEMBLY, MEMORY 8 MEG
9B	1	14858800A	PCB ASSEMBLY, MEMORY 2 MEG (SAT)
		15808000A	PCB ASSEMBLY, MEMORY 4 MEG (SAT)
		15808100A	PCB ASSEMBLY, MEMORY 8 MEG (SAT)

ADD FOR PRINTER MECHANISM			
SYM	QTY.	PART NUMBER	DESCRIPTION
10A	1	14862600A	PRINTER ASSEMBLY, LINERLESS
		A14529900A	PRINTER ASSEMBLY
10B	3"	14166900A	TAPE, GLASS YARN
10C	1	13492900A	FERRITE, .38 X .68
10D	1	14571800A	PRINTER FRAME SHEET
10E	3	14572100A	SCREW, 8-32 SHOULDER
10F	1	R00589130	LOCKWASHER, #8 INT.TOOTH
10G	1	R00859050	SCREW, 8-32 X 1/4 PH FL HD

ADD FOR AUSTRALIA			
SYM	QTY.	PART NUMBER	DESCRIPTION
(*)	1	15209500A	LEVEL ASSEMBLY
(*)	1	15533000A	LABEL, CAPACITY
(*)	1	15543000A	INSTRUCTIONS, UNPACKING
11A	1	10333100A	LABEL, LEVEL WARNING
11B	1	14369200A	LABEL, WHITE, .5X.6

Note 1: Units shipped in late 1999 use a new Main PCB P/N 15526100A, and a new Load Cell, P/N 15515100B. Do not mix the new Main PCB and Load cell with the earlier Main PCB and Load Cells. The new Main PCB and Load Cell use a higher excitation voltage to improve performance.
If installing the new style Load Cell or Main PCB in an earlier unit, they must be replaced as a pair.

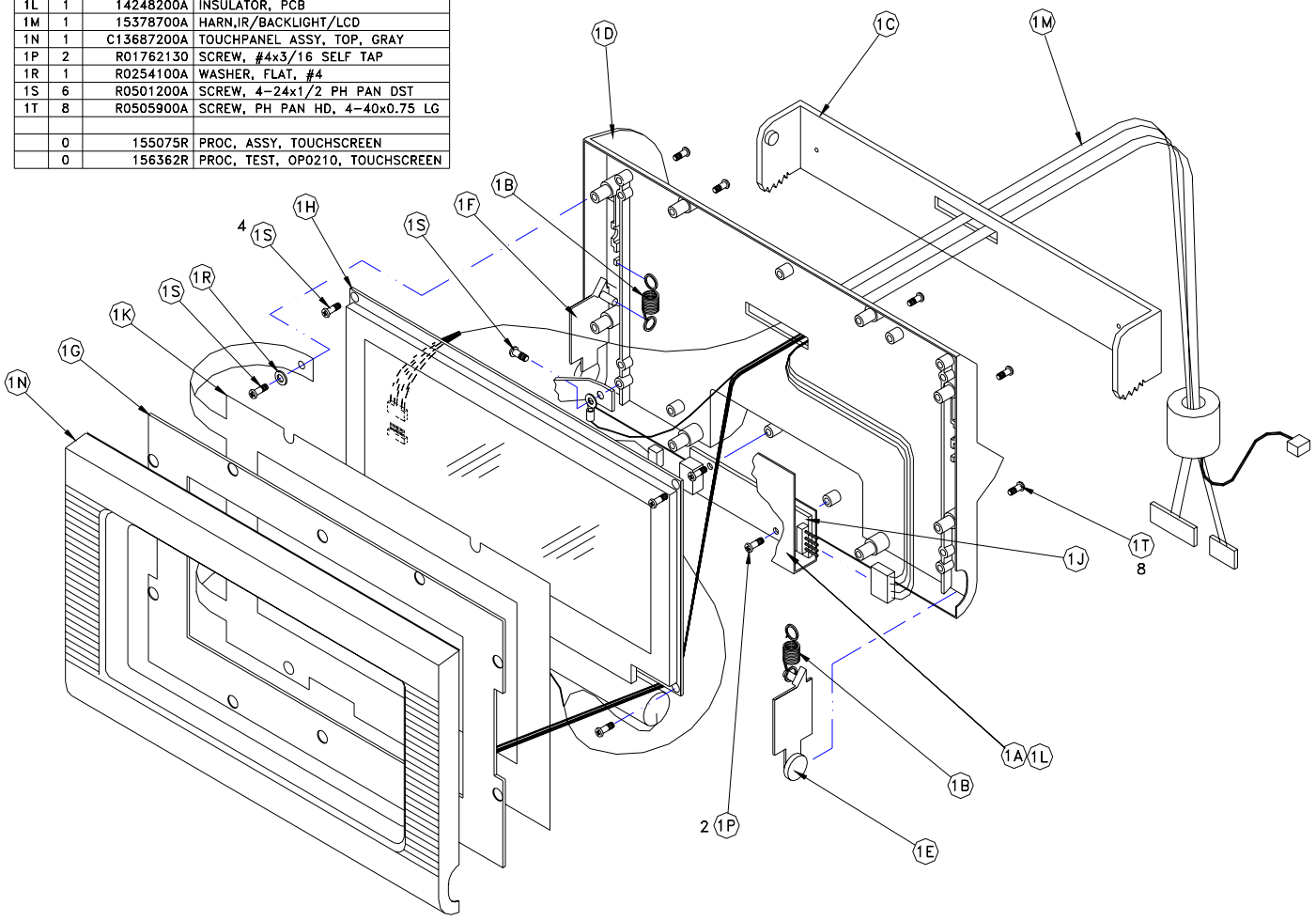
(*) May have letter prefix

Touchscreen Display

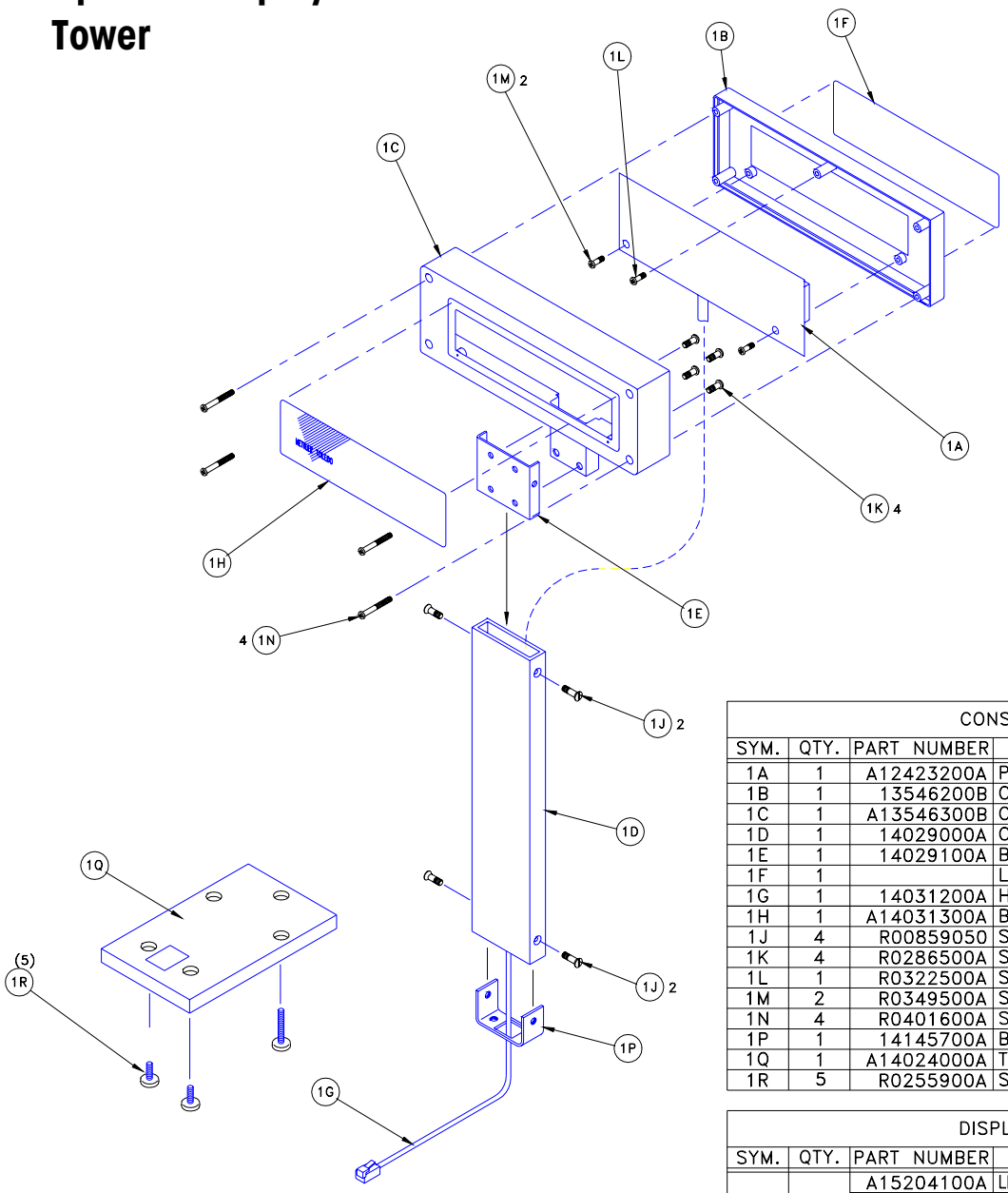
CONSISTS OF:			
SYM	QTY	PART NUMBER	DESCRIPTION
1A	1	A12822400A	LABEL, WARNING, SHOCK
1B	2	13687300A	SPRING, EXTENSION .75"
1C	1	A13501200A	PIVOT, TOUCHPANEL, W/INSERTS
1D	1	B13501300A	COVER,BOTTOM,TOUCHPANEL,GRAY
1E	1	A13501500A	ACTUATOR, RIGHT
1F	1	A13501600A	ACTUATOR, LEFT
1G	1	D13538300A	PCB ASSY, TOUCHPANEL
1H	1	14214500A	DISP MOD,LCD,640x200 DOT
1J	1	14214600A	PWR SUP,INVERTER, DC TO AC
1K	1	A14246200A	SHIELD KEYBOARD
1L	1	14248200A	INSULATOR, PCB
1M	1	15378700A	HARN,IR/BACKLIGHT/LCD
1N	1	C13687200A	TOUCHPANEL ASSY, TOP, GRAY
1P	2	R01762130	SCREW, #4x3/16 SELF TAP
1R	1	R0254100A	WASHER, FLAT, #4
1S	6	R0501200A	SCREW, 4-24x1/2 PH PAN DST
1T	8	R0505900A	SCREW, PH PAN HD, 4-40x0.75 LG
	0	155075R	PROC, ASSY, TOUCHSCREEN
	0	156362R	PROC, TEST, OP0210, TOUCHSCREEN

NOTES:

1. SEE ASSEMBLY PROCEDURES 155075R FOR PROPER ASSEMBLY, AND TORQUE SPECIFICATIONS.
2. TEST ASSEMBLY PER 156362R.



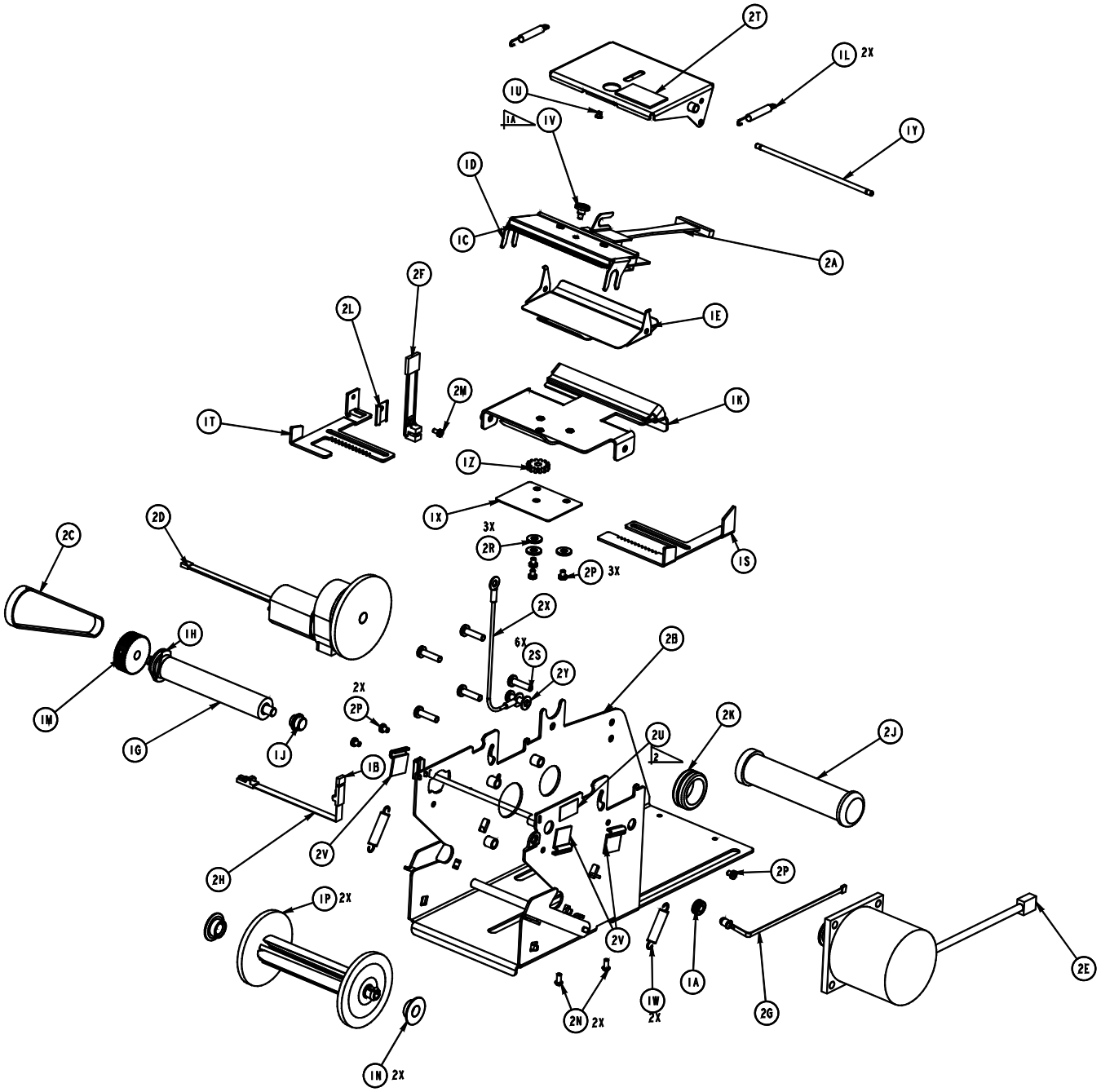
Optional Display Tower



CONSISTS OF:			
SYM.	QTY.	PART NUMBER	DESCRIPTION
1A	1	A12423200A	PCB ASSY, DISPLAY
1B	1	13546200B	COVER, TOWER FRONT
1C	1	A13546300B	COVER, TOWER REAR
1D	1	14029000A	COLUMN, TOWER
1E	1	14029100A	BRACKET, INTERFACE
1F	1		LENS, DISPLAY (See 1F below.)
1G	1	14031200A	HARNESS, DISPLAY
1H	1	A14031300A	BEZEL, REAR
1J	4	R00859050	SCREW,8-32 X 1/4" PH.FL.HD
1K	4	R0286500A	SCREW,6-32 X 1/4" PH.RD.HD.
1L	1	R0322500A	SCREW,#6 X 1/4" PLASTITE
1M	2	R0349500A	SCREW,#6 X 5/8" PLASTITE
1N	4	R0401600A	SCREW,#4 X 1-1/4" PLASTITE
1P	1	14145700A	BRACKET, TOWER SUPPORT
1Q	1	A14024000A	TOWER MOUNT
1R	5	R0255900A	SCREW,8-32 X 5/16" PHD TAPTITE

DISPLAY LENS			
SYM.	QTY.	PART NUMBER	DESCRIPTION
1F	1	A15204100A	LENS, TOWER DISPLAY, ENGLISH LB
		B14694900A	LENS, TOWER DISPLAY, ENGLISH 6/15 KG
		15041700A	LENS, TOWER DISPLAY, FRENCH 6/15 KG
		A15204200A	LENS, TOWER DISPLAY, SPANISH 15 KG
		A15204300A	LENS, TOWER DISPLAY, SPANISH 30 LB

Printer


2T
1L 2X
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2A
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1E
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1K
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2R
2P 3X
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2C
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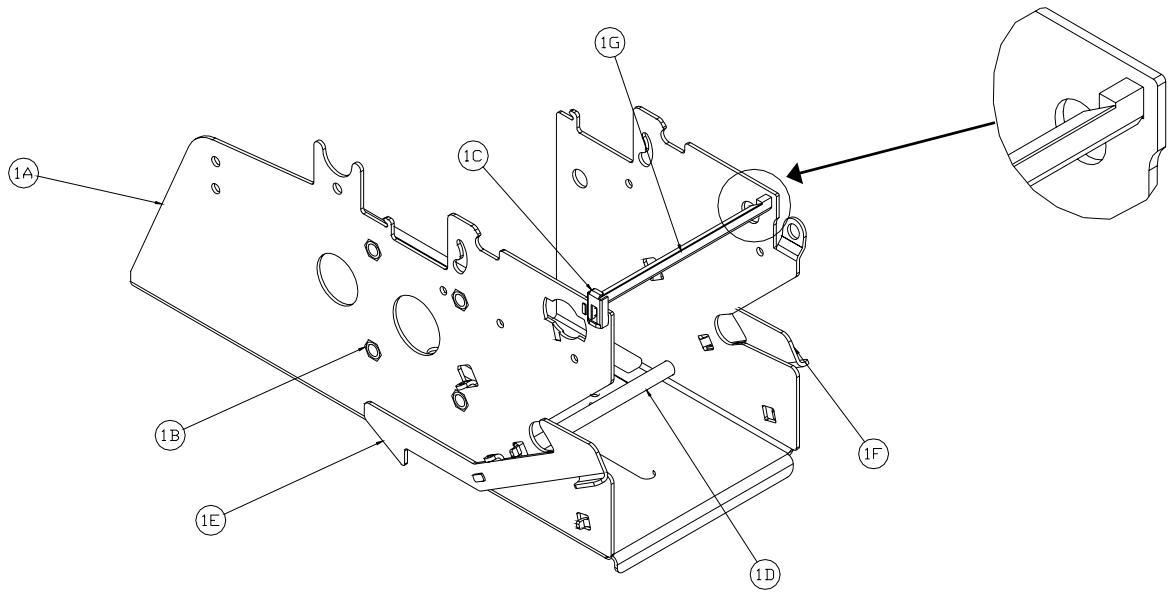
2K
2J
2V
2H
2P
1P 2X
2V
1A
1W 2X
2G
2E
2N 2X
1N 2X

Printer Parts List

CONSISTS OF			
SYM	QTY	PART NUMBER	DESCRIPTION
1A	1	12462200A	GROMMET .12 ID
1B	1	14156600A	RECEIVER, LABEL TAKEN
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	B14550100A	FRAME ASSEMBLY
2C	1	14550200A	BELT, TIMING
2D	1	14550400A	MOTOR ASSY, LABEL TAKE-UP
2E	1	14550500A	MOTOR ASSY, STEPPER
2F	1	14550600A	ASSY, GAP SENSOR
2G	1	14550700A	EMITTER, LABEL TAKEN SENSOR
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	15178000A	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

Printer Frame



"00A" CONSISTS OF			
SYM	QTY	PART NUMBER	DESCRIPTION
1A	1	B14550100B	FRAME, 8450
1B	4	R0515700A	STANDOFF, 5.1MM THRU
1C	1	14550900A	BRACKET, LABEL TAKEN SENSOR
1D	1	14228900A	SHAFT, SPOOL LOCK
1E	1	14571100A	ARM, LEFT SPOOL LOCK
1F	1	14571200A	ARM, RIGHT SPOOL LOCK
1G	1	B14212900A	BAR, STRIPPER

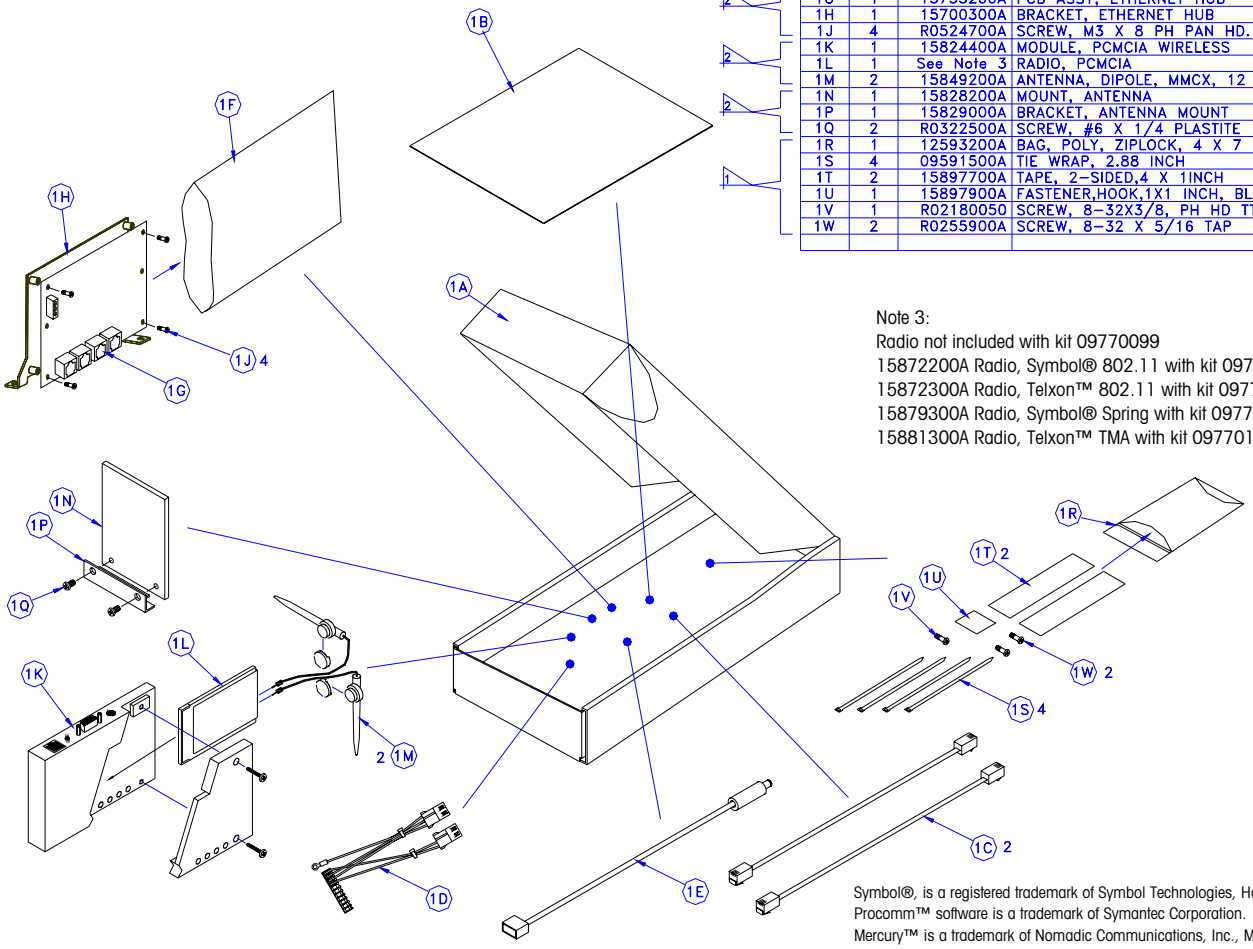
Ethernet RF

First Version

NOTES (UNLESS OTHERWISE SPECIFIED)

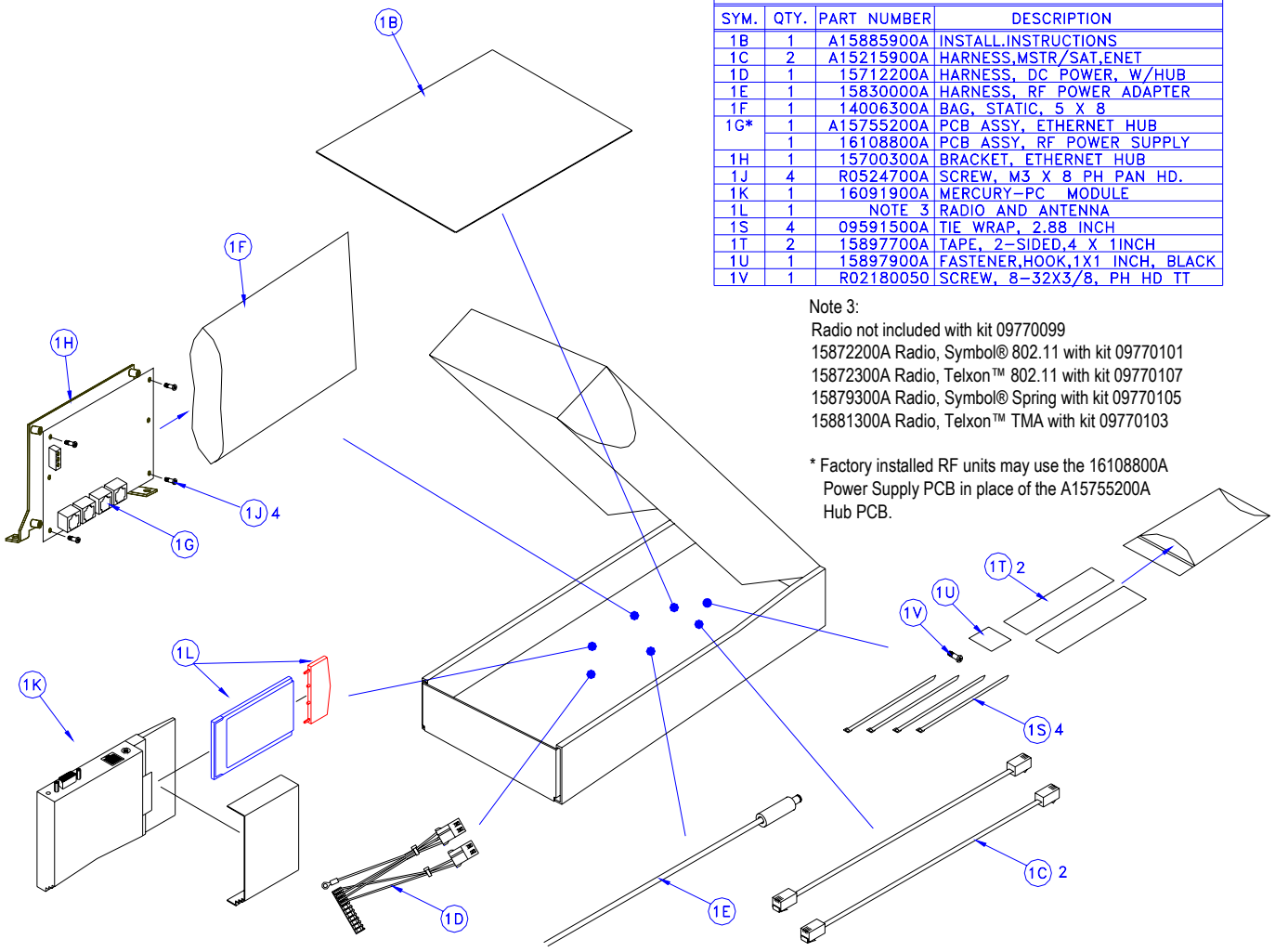
1. PACKAGE PARTS IN SMALL PLASTIC BAG.
2. ASSEMBLE THESE PARTS TOGETHER PRIOR TO SHIPPING.

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
	1	16108800A	PCB ASSY, RF POWER SUPPLY
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

* Factory installed RF units may use the 16108800A Power Supply PCB in place of the A15755200A Hub PCB.

10 Label Formats

Abbreviations

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

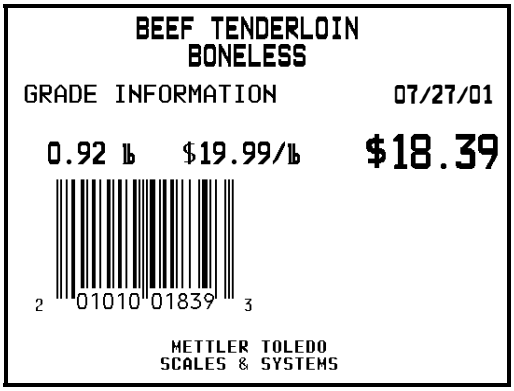
BCB	Bar Code on Bottom
By-Count	By Count Pricing
By-Weight	By-Weight Pricing
Cont	Continuous Strip Label
Grade	Grade
NF	Nutrifact Text
Pack	Pack Date
Sell	Sell By Date
SH	Safe Handling Text Printed by 8461.
SHS	Safe Handling Space on Preprinted labels.
Std-Pack	Standard Pack Pricing

Cross Reference

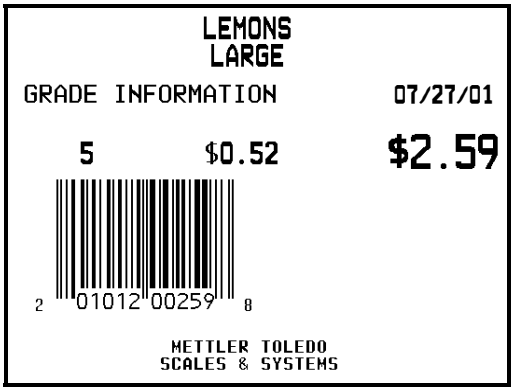
8450 Ref Number	Size	Type	Date	Other Info	BC Position	8461 Reference Name
31	1.9"	By-Weight	Sell	Grad		1.9" By-Weight Sell Grade
32	1.9"	By-Count	Sell	Grad		1.9" By-Count Sell Grade
33	1.9"	Std-Pack	Sell	Grad		1.9" Std-Pack Sell Grade
34	1.9"	By-Weight				1.9" By-Weight
35	1.9"	By-Count				1.9" By-Count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

8450 Ref Number	Size	Type	Date	Other Info	BC Position	8461 Reference Name
80	3.7"	By-Count	Sell	NF		3.7" By-Count Sell NF
81	4.2"	By-Weight	Sell	Grad		4.2" By-Weight Sell Grade
82	4.2"	By-Count	Sell	Grad		4.2" By-Count Sell Grade
83	4.2"	Std-Pack	Sell	Grad		4.2" Std-Pack Sell Grade
84	4.2"	By-Weight	Sell	Grad	BCB	4.2" By-Weight Sell Grade BCB
85	4.2"	By-Count	Sell	Grad	BCB	4.2" By-Count Sell Grade BCB
86	4.2"	Std-Pack	Sell	Grad	BCB	4.2" Std-Pack Sell Grade BCB
87	4.2"	By-Weight	Sell	Grad	SH	4.2" By-Weight Sell Grade SH
88	4.2"	By-Weight	Sell	Grad	SHS	4.2" By-Weight Sell Grade SHS
89	4.2"	By-Weight	Sell	Grad	NF	4.2" By-Weight Sell Grade NF
90	4.2"	By-Count	Sell	Grad	NF	4.2" By-Count Sell Grade NF
91	4.2"	Std-Pack	Sell	NF		4.2" Std-Pack Sell NF
92	4.7"	By-Weight	Sell	Grad		4.7" By-Weight Sell Grade
93	4.7"	By-Count	Sell	Grad		4.7" By-Count Sell Grade
94	4.7"	Std-Pack	Sell	Grad		4.7" Std-Pack Sell Grade
95	4.7"	By-Weight	Sell	Grad	BCB	4.7" By-Weight Sell Grade BCB
96	4.7"	By-Count	Sell	Grad	BCB	4.7" By-Count Sell Grade BCB
97	4.7"	Std-Pack	Sell	Grad	BCB	4.7" Std-Pack Sell Grade BCB
98	4.7"	By-Weight	Sell	Grad	SH	4.7" By-Weight Sell Grade SH
99	4.7"	By-Weight	Sell	Grad	SHS	4.7" By-Weight Sell Grade SHS
100	4.7"	By-Weight	Sell	Grad	NF	4.7" By-Weight Sell Grade NF
101	4.7"	By-Count	Sell	Grad	NF	4.7" By-Count Sell Grade NF
102	4.7"	Std-Pack	Sell	Grad	NF	4.7" Std-Pack Sell Grade NF
103	5.1"	By-Weight	Sell	Grad		5.1" By-Weight Sell Grade
104	5.1"	By-Count	Sell	Grad		5.1" By-Count Sell Grade
105	5.1"	Std-Pack	Sell	Grad		5.1" Std-Pack Sell Grade
106	5.1"	By-Weight	Sell	Grad	BCB	5.1" By-Weight Sell Grade BCB
107	5.1"	By-Count	Sell	Grad	BCB	5.1" By-Count Sell Grade BCB
108	5.1"	Std-Pack	Sell	Grad	BCB	5.1" Std-Pack Sell Grade BCB
109	5.1"	By-Weight	Sell	Grad	SH	5.1" By-Weight Sell Grade SH
110	5.1"	By-Weight	Sell	Grad	SHS	5.1" By-Weight Sell Grade SHS
111	5.1"	By-Weight	Sell	Grad	NF	5.1" By-Weight Sell Grade NF
112	5.1"	By-Count	Sell	Grad	NF	5.1" By-Count Sell Grade NF
113	5.1"	Std-Pack	Sell	Grad	NF	5.1" Std-Pack Sell Grade NF
114	Cont	By-Weight	Sell	BCB		Cont By-Weight Sell BCB
115	Cont	By-Count	Sell	BCB		Cont By-Count Sell BCB
116	Cont	Std-Pack	Sell	BCB		Cont Std-Pack Sell BCB
117	Cont	By-Weight	Sell	SH	BCB	Cont By-Weight Sell SH BCB
118	Cont	By-Weight	Sell	NF	BCB	Cont By-Weight Sell NF BCB
119	Cont	By-Count	Sell	NF	BCB	Cont By-Count Sell NF BCB
120	Cont	Std-Pack	Sell	NF	BCB	Cont Std-Pack Sell NF BCB
121	Receipt					Receipt

1.9 Inch (48.3 mm) Label Formats

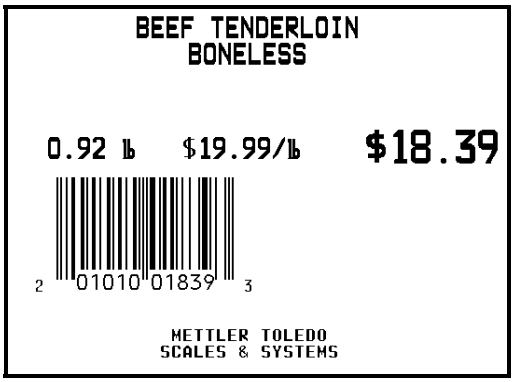


1.9" By-Weight Sell Grade

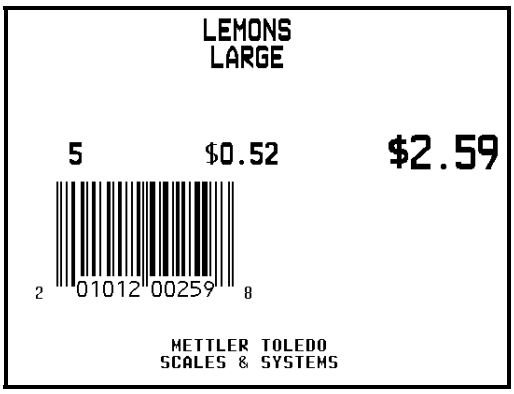


1.9" By-Count Sell Grade

1.9" Std-Pack Sell Grade

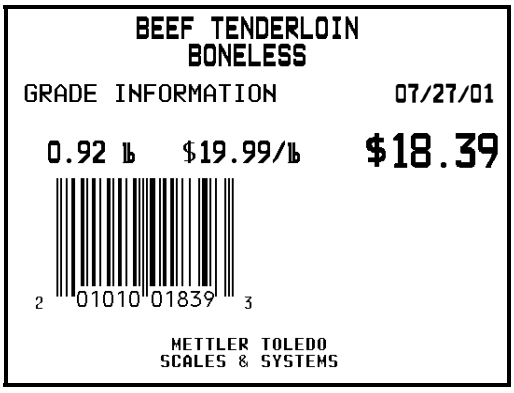


1.9" By-Weight

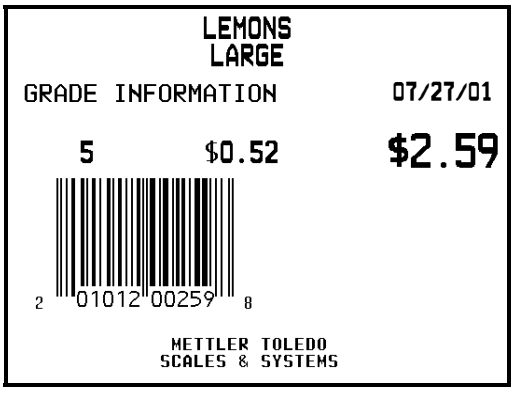


1.9" By-Count

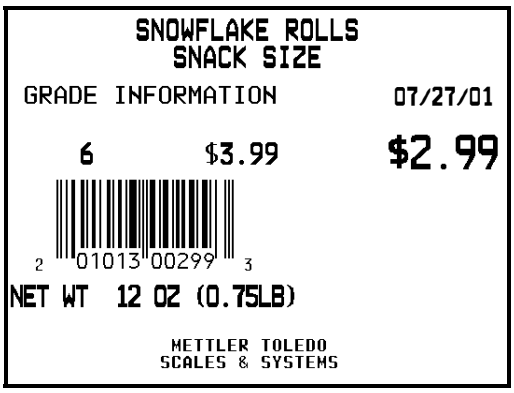
1.9" Std-Pack



1.9" By-Weight Pack Grade

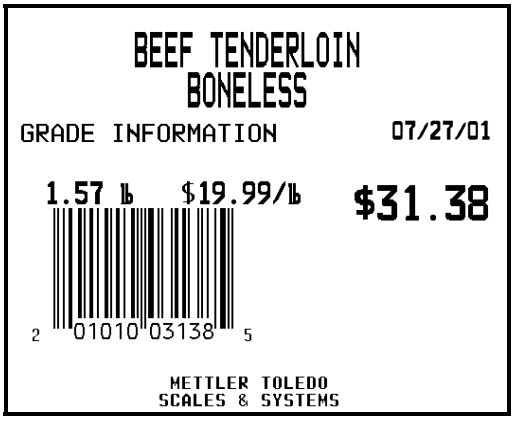


1.9" By-Count Pack Grade

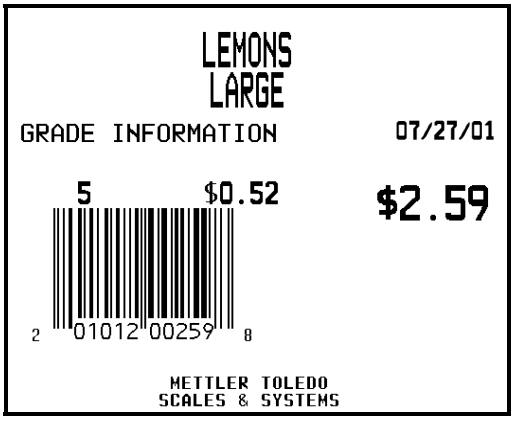


1.9" Std-Pack Pack Grade

2.1 Inch (53.3 mm) Label Formats

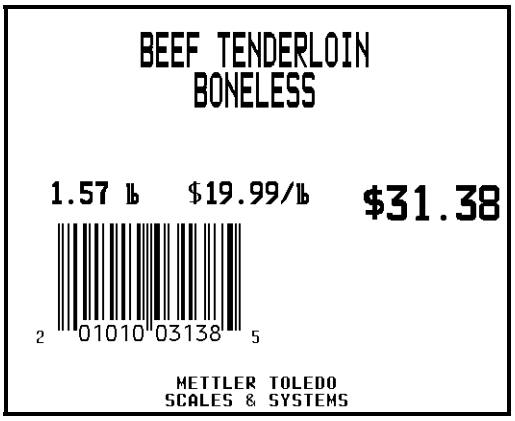


2.1" By-Weight Sell Grade



2.1" By-Count Sell Grade

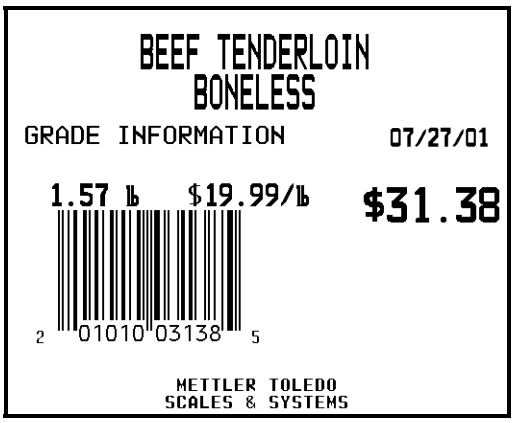
2.1" Std-Pack Sell Grade



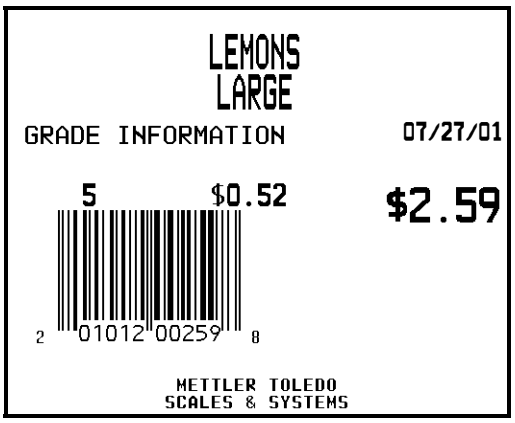
2.1" By-Weight

2.1" By-Count

2.1" Std-Pack



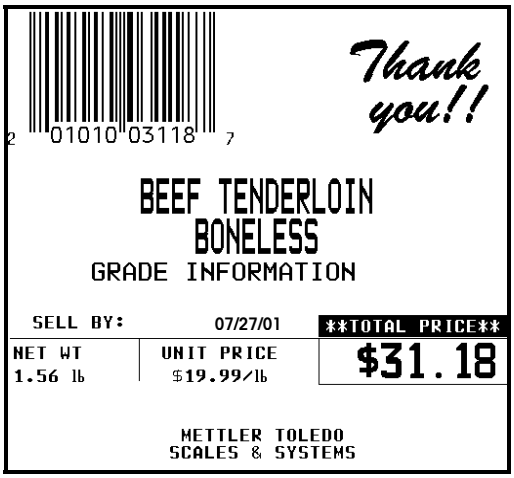
2.1" By-Weight Pack Grade



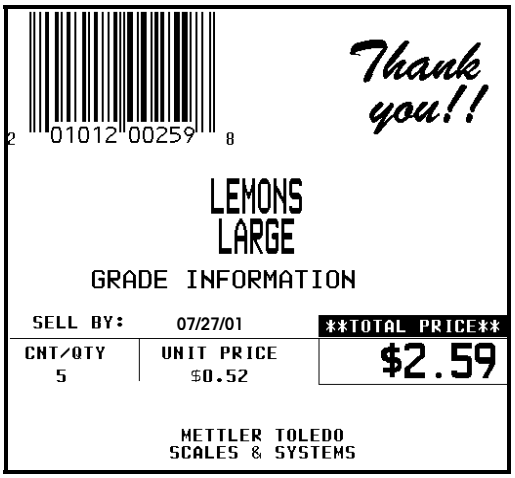
2.1" By-Count Pack Grade

2.1" Std-Pack Pack Grade

2.4 Inch (61.0 mm) Label Formats

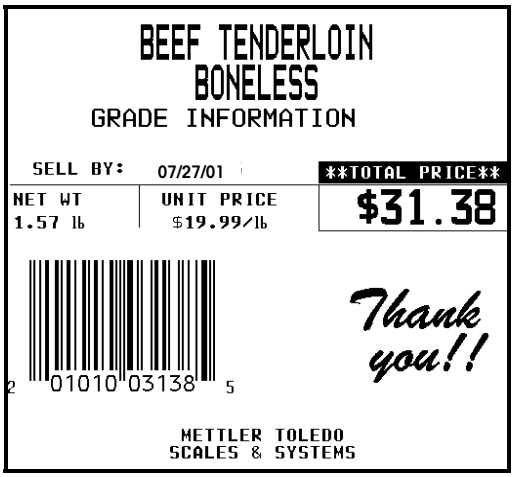


2.4" By-Weight Sell Grade



2.4" By-Count Sell Grade

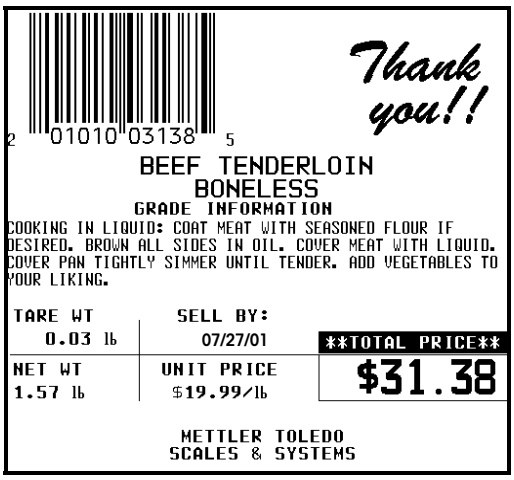
2.4" Std-Pack Sell Grade



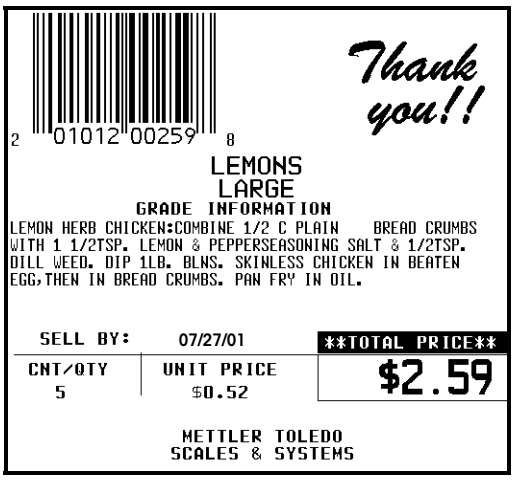
2.4" By-Weight Sell Grade BCB

2.4" By-Count Sell Grade BCB

2.4" Std-Pack Sell Grade BCB

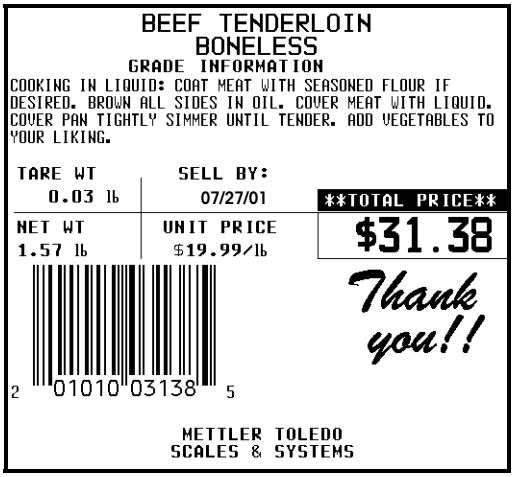


2.4" By-Weight Sell Grade

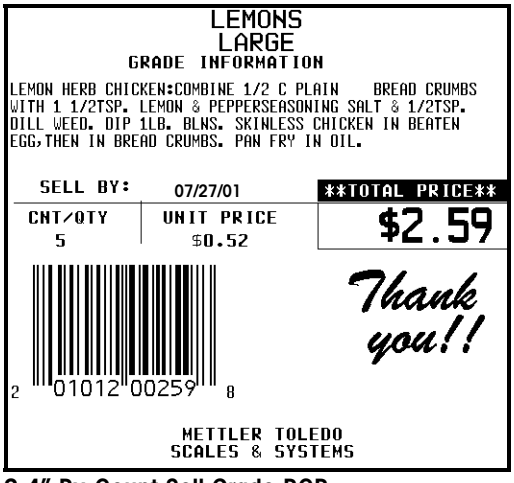


2.4" By-Count Sell Grade

2.4" Std-Pack Sell



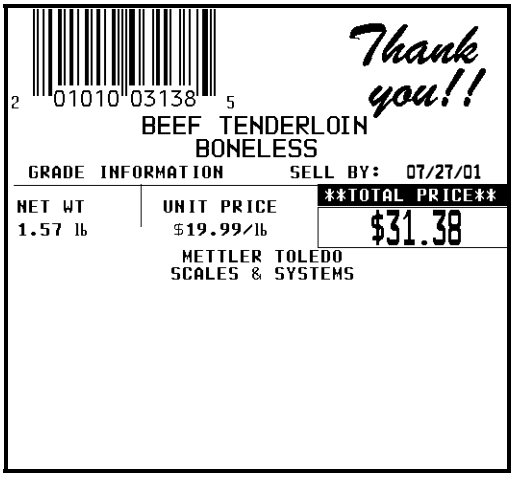
2.4 " By-Weight Sell Grade BCB



2.4" By-Count Sell Grade BCB

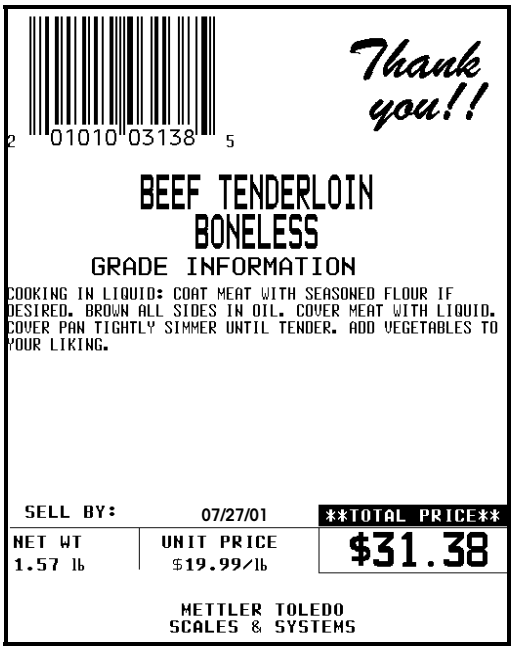
2.4" Std-Pack Sell BCB

2.4" By-Weight Sell Grade SH

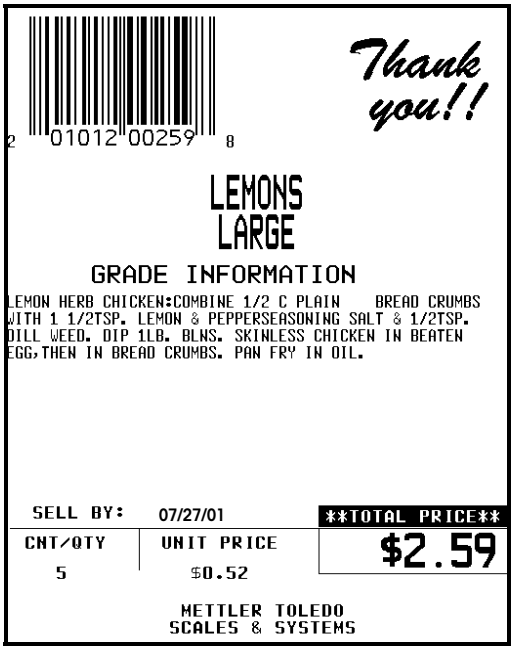


2.4" By-Weight Sell Grade SHS

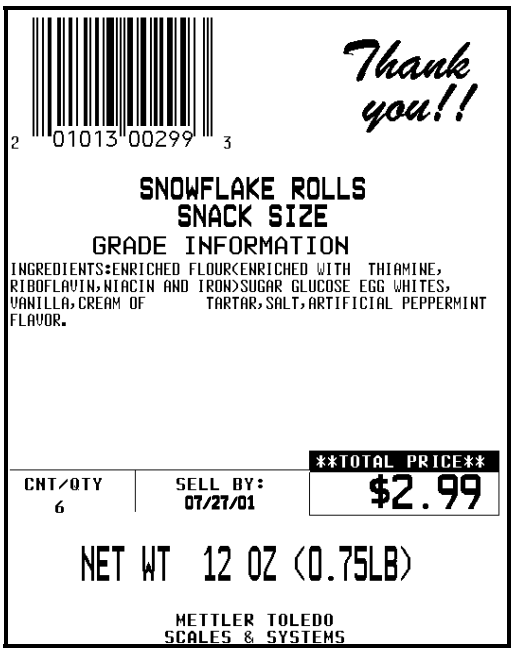
3.3 Inch (83.8 mm) Label Formats



3.3" By-Weight Sell Grade

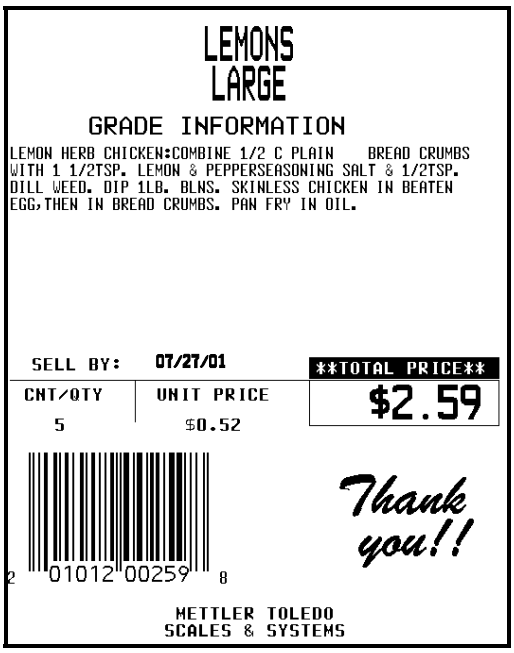


3.3" By-Count Sell Grade

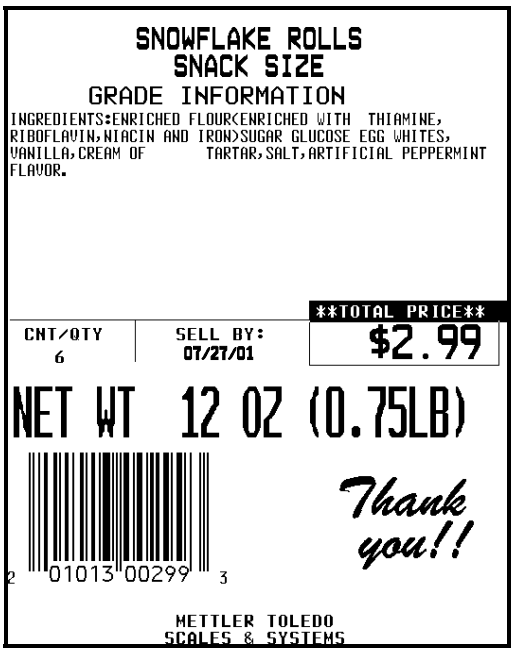


3.3" Std-Pack Sell Grade

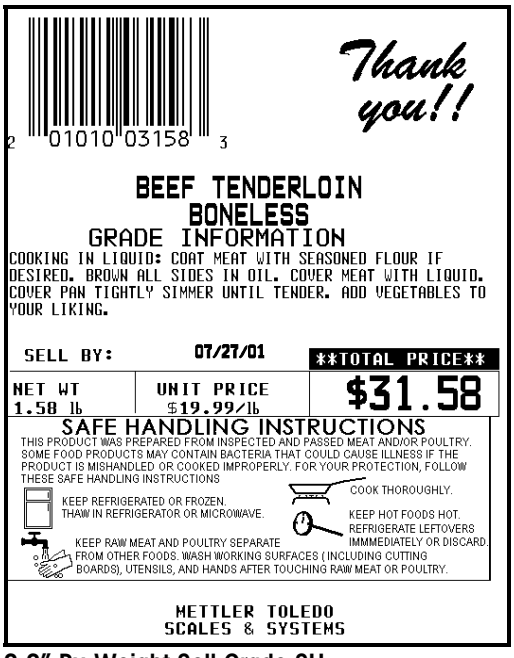
3.3" By-Weight Sell Grade BCB



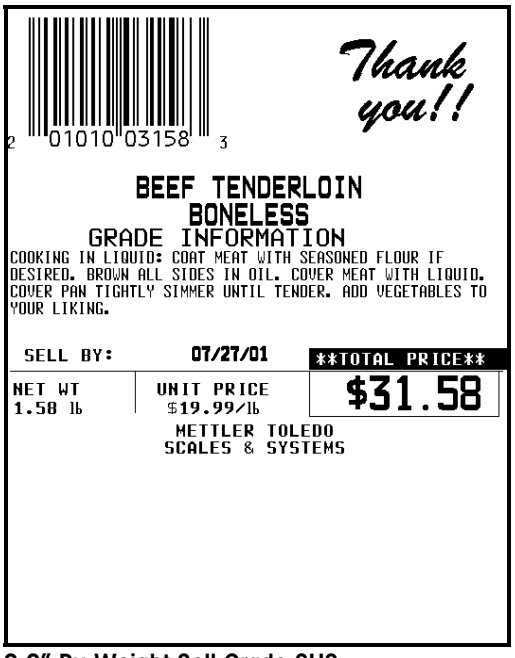
3.3" By-Count Sell Grade BCB



3.3" Std-Pack Sell Grade BCB

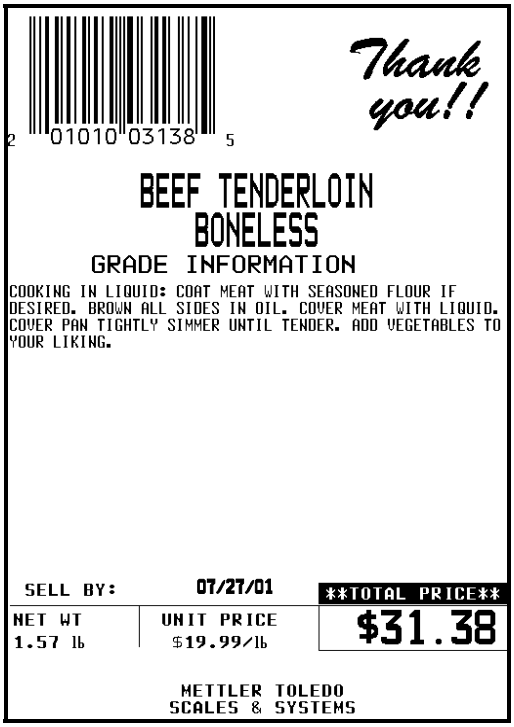


3.3" By-Weight Sell Grade SH

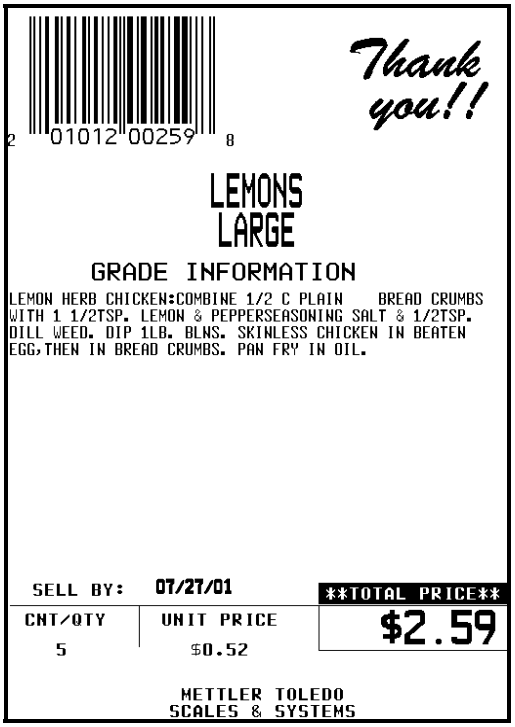


3.3" By-Weight Sell Grade SHS

3.7 Inch (94.0 mm) Label Formats

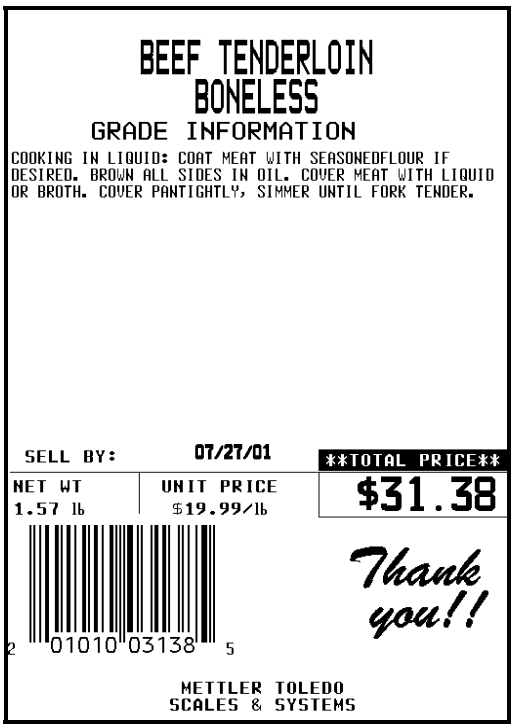


3.7" By-Weight Sell Grade



3.7" By-Count Sell Grade

3.7" Std-Pack Sell Grade



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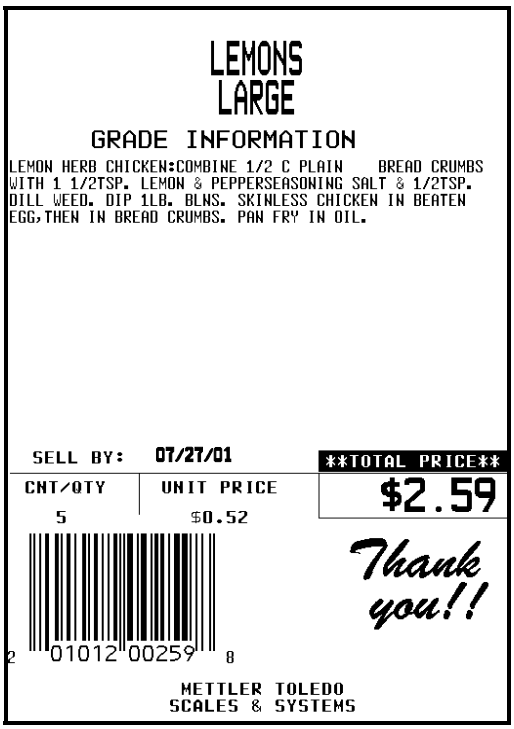
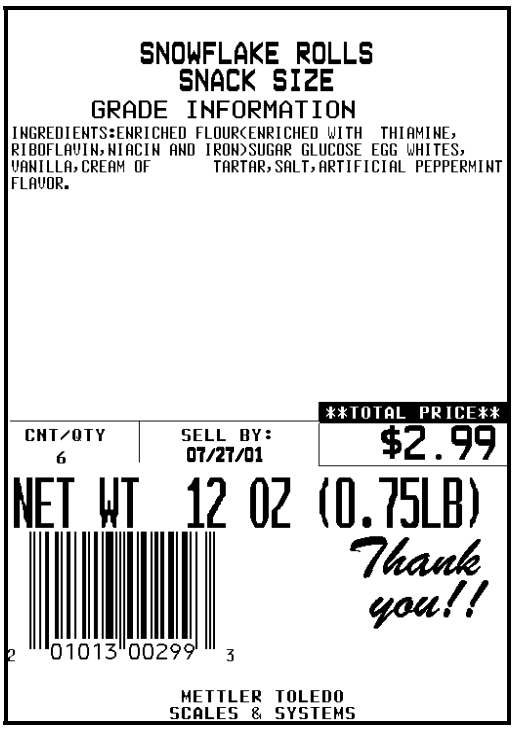
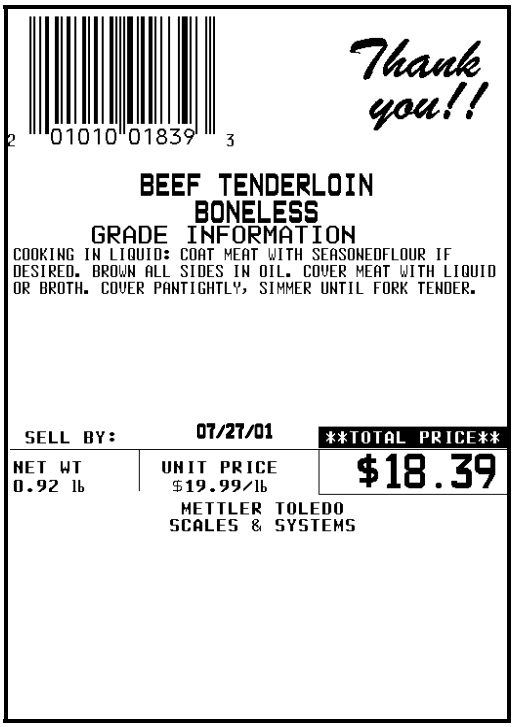


3.7" By-Count Sell Grade BCB



3.7" Std-Pack Sell Grade BCB

3.7" By-Weight Sell Grade SH



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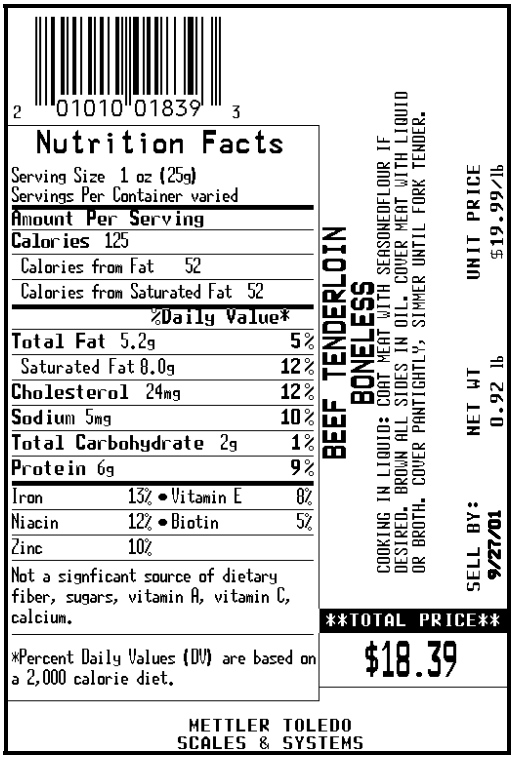
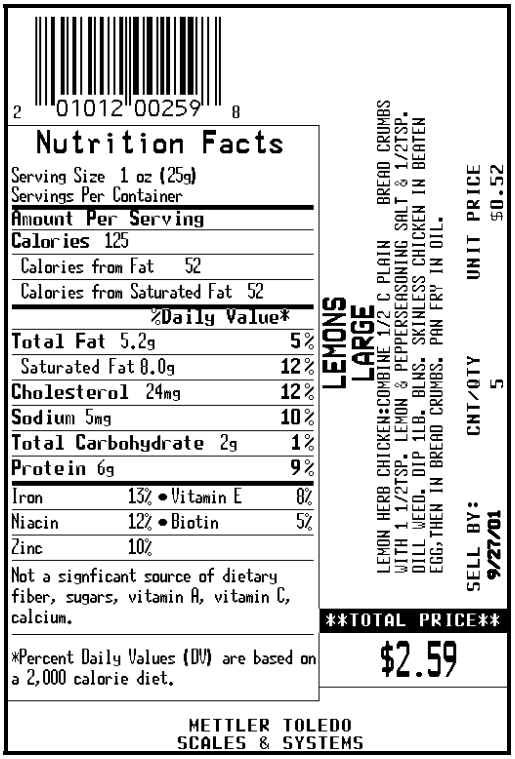


3.7" By-Weight Sell NF



3.7" By-Count Sell NF

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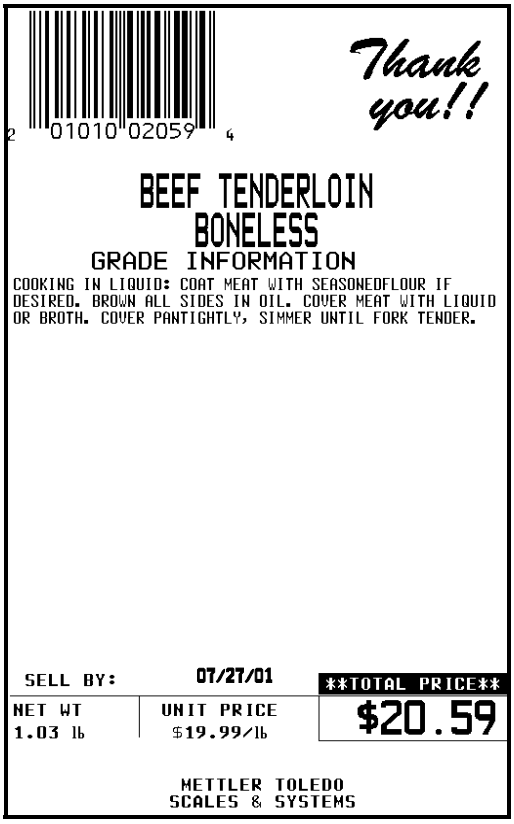
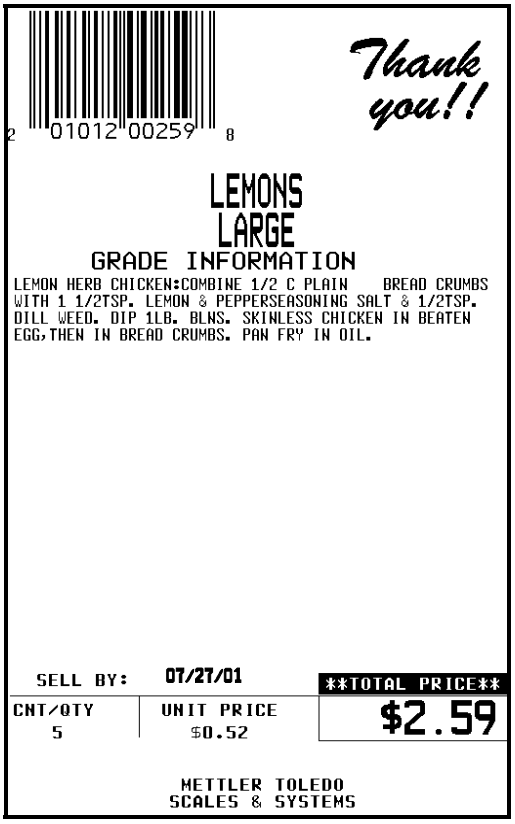
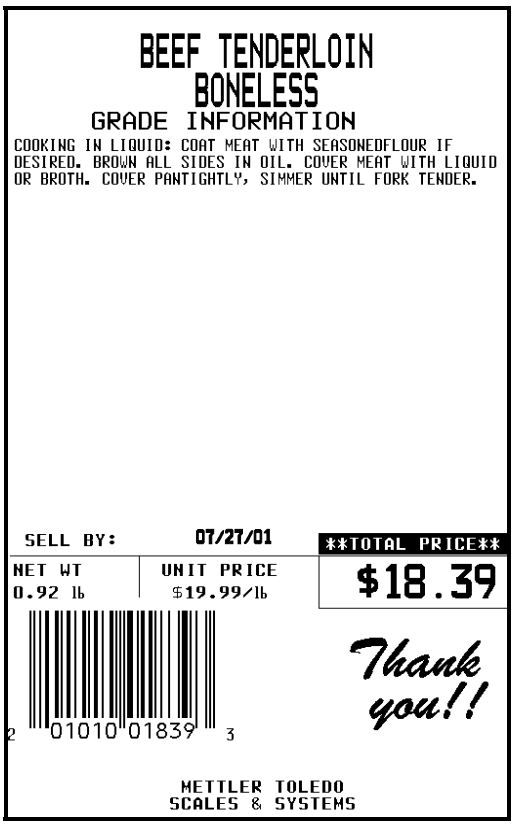


4.2" By-Weight Sell Grade

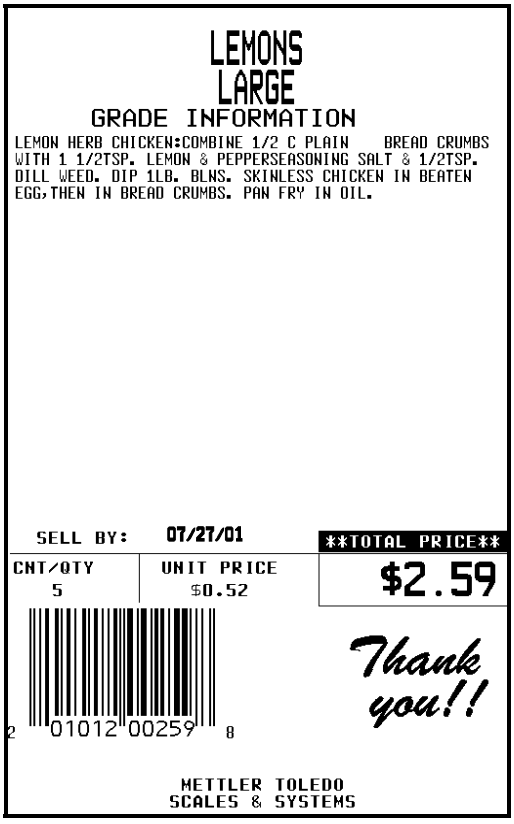


4.2" By-Count Sell Grade

4.2" Std-Pack Sell Grade

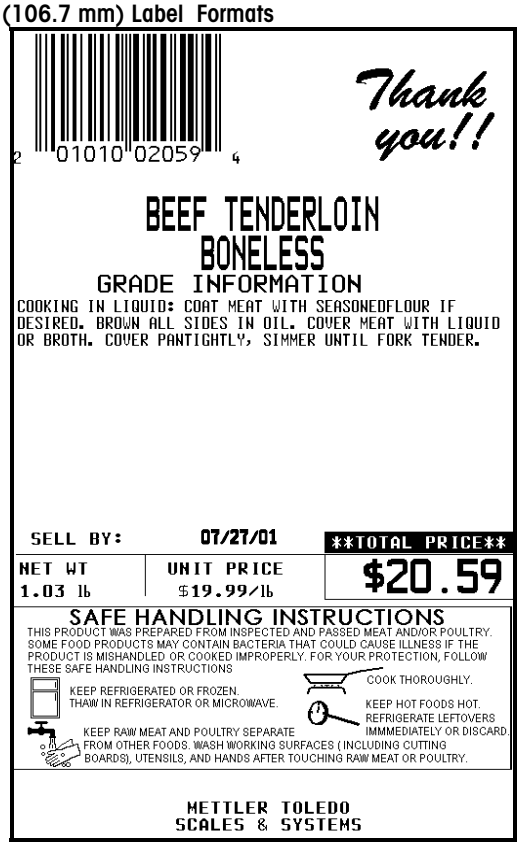


4.2" By-Weight Sell Grade BCB



4.2" By-Count Sell Grade BCB

4.2" Std-Pack Sell Grade BCB



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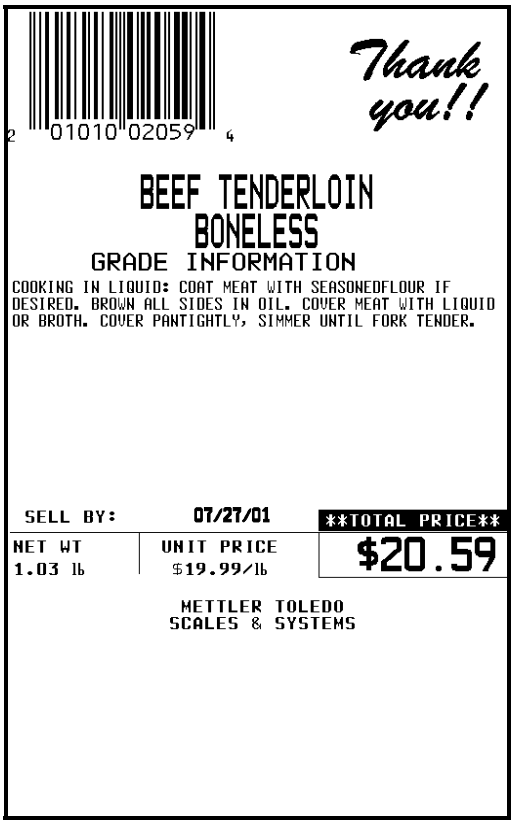

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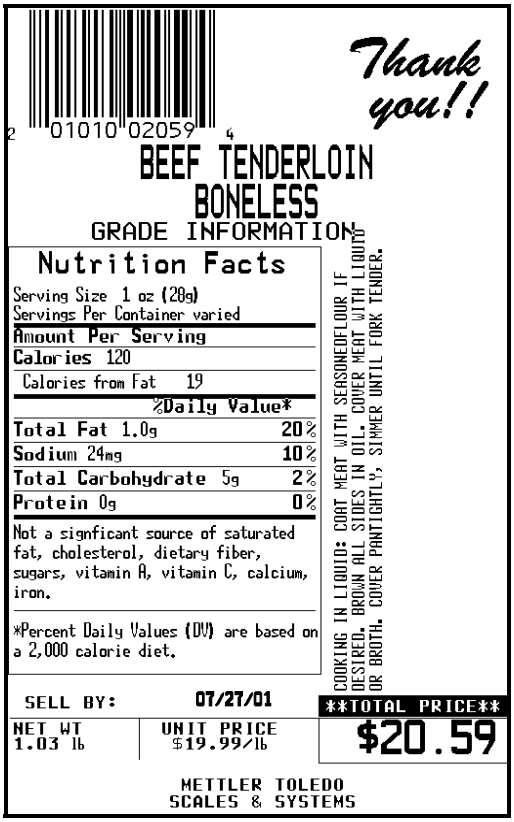

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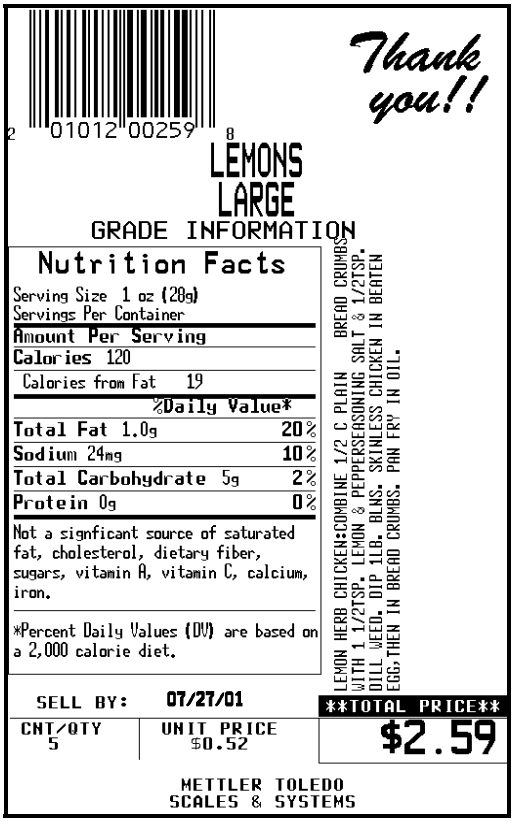

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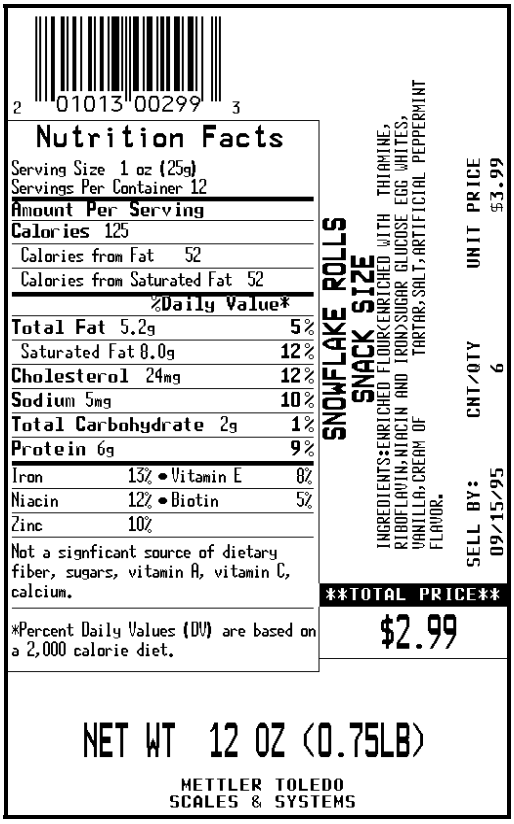
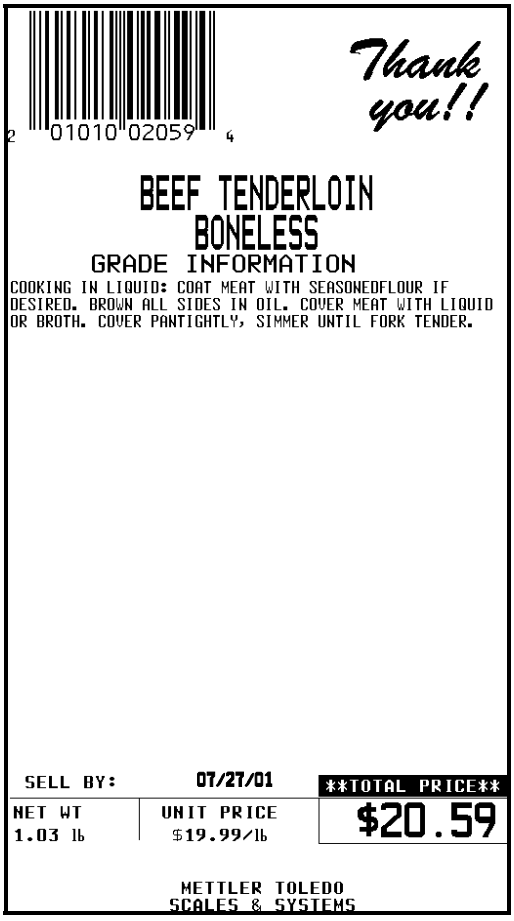
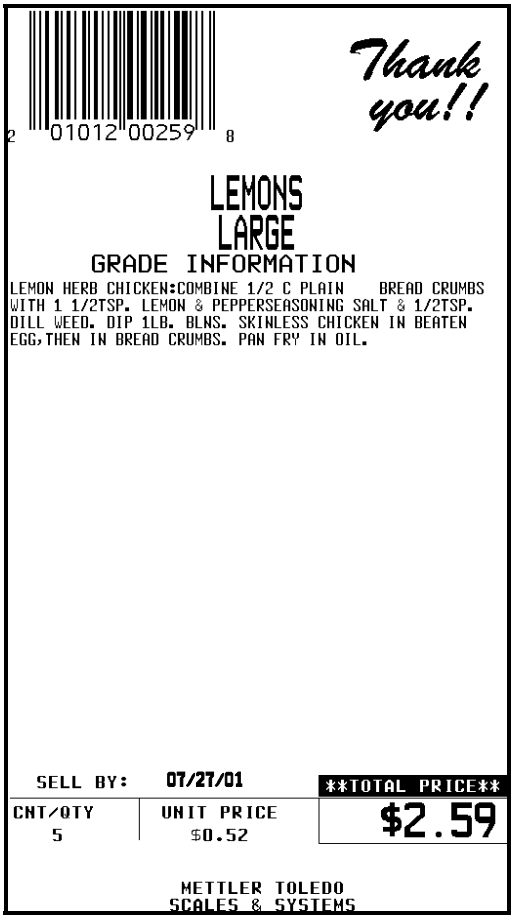


4.2" Std-Pack Sell NF

4.7 Inch (119.4 mm) Label Formats

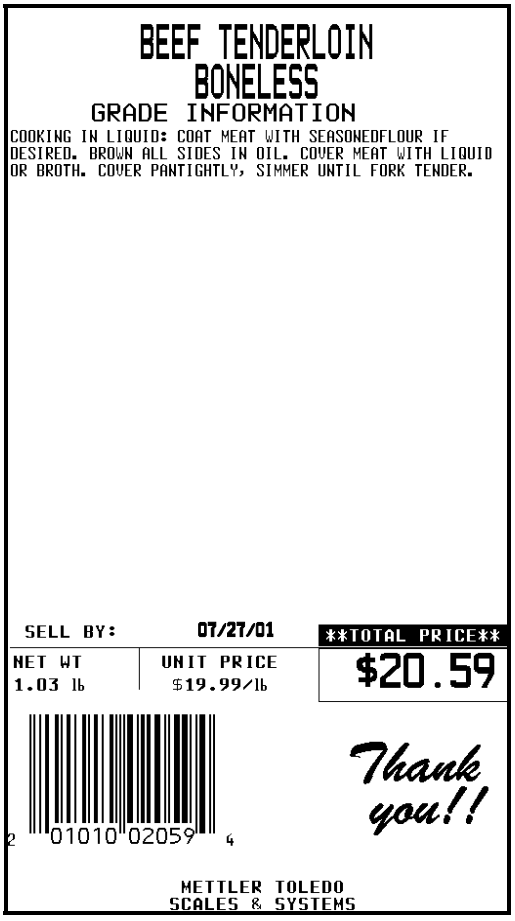


4.7" By-Weight Sell Grade

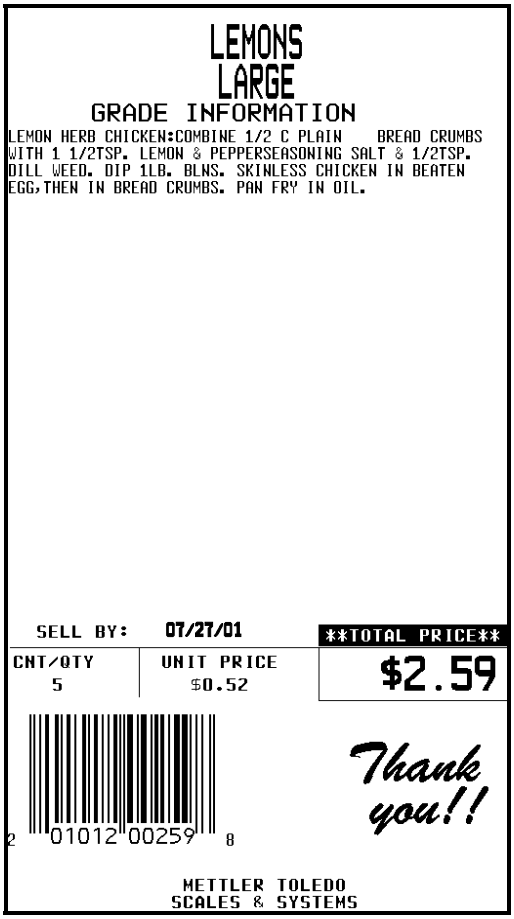


4.7" By-Count Sell Grade

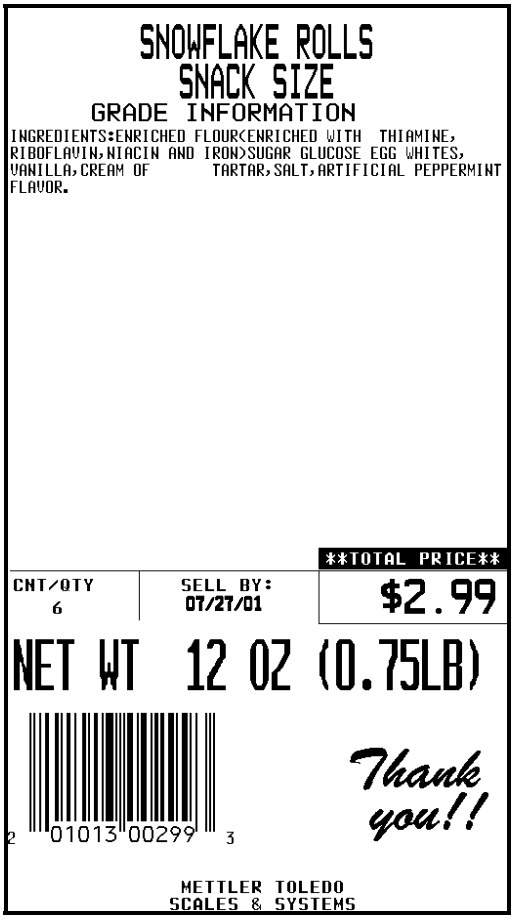
4.7" Std-Pack Sell Grade



4.7" By-Weight Sell Grade BCB

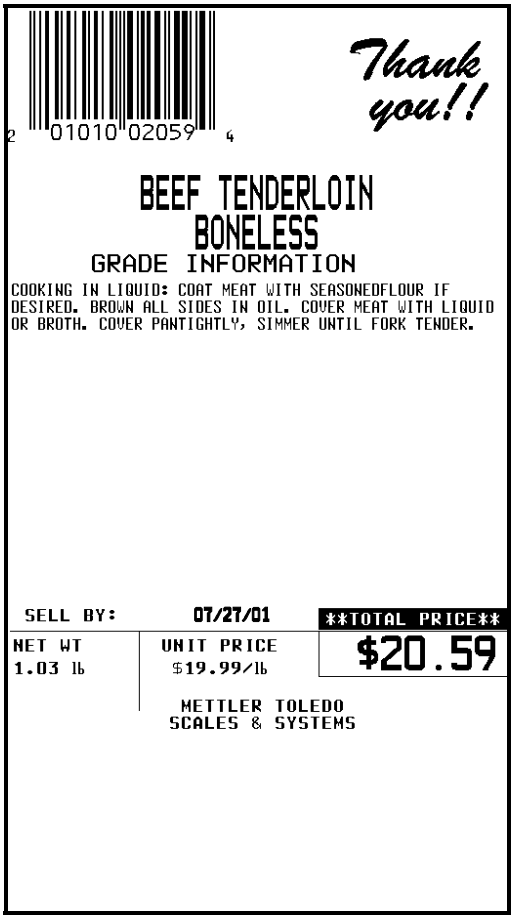


4.7" By-Count Sell Grade BCB



4.7" Std-Pack Sell Grade BCB

4.7" By-Weight Sell Grade SH



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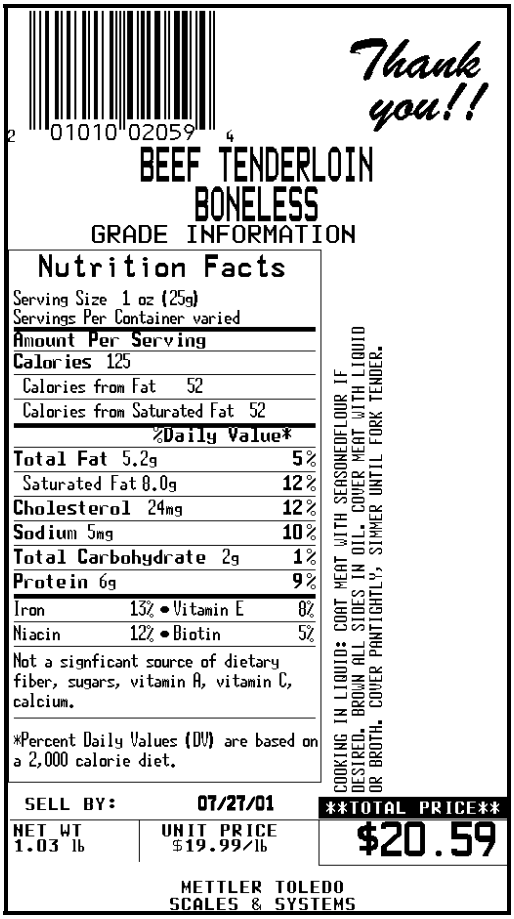

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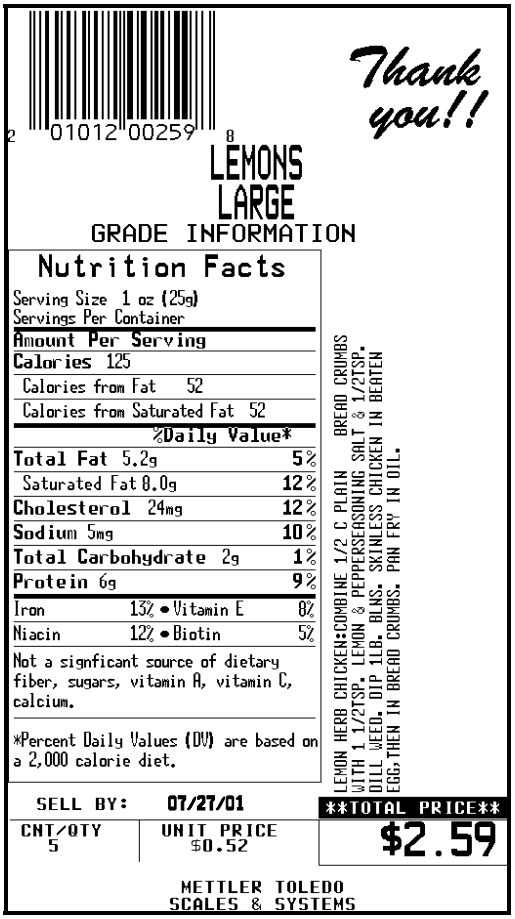

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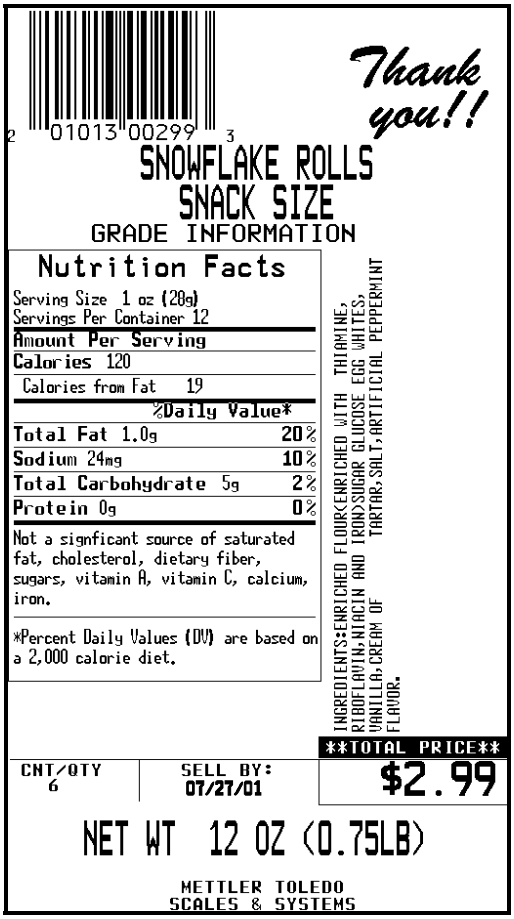
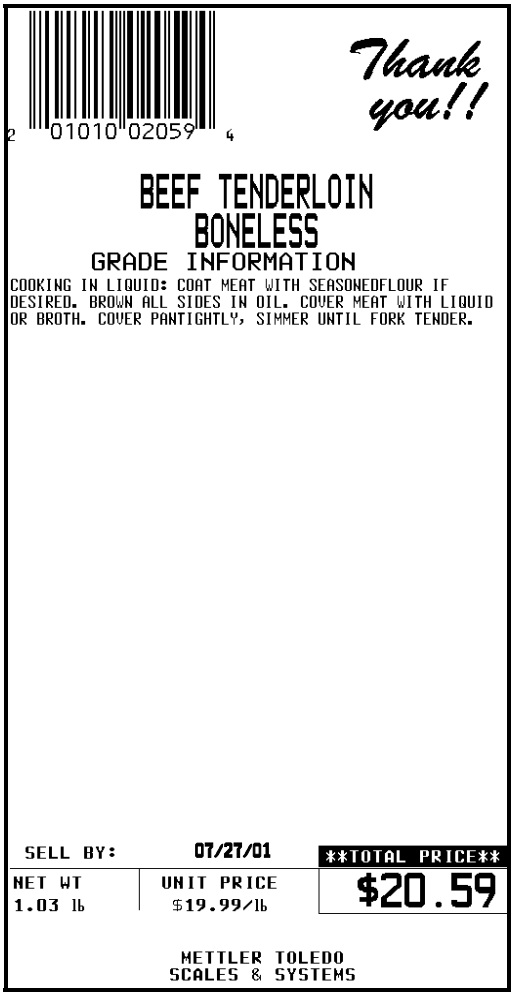
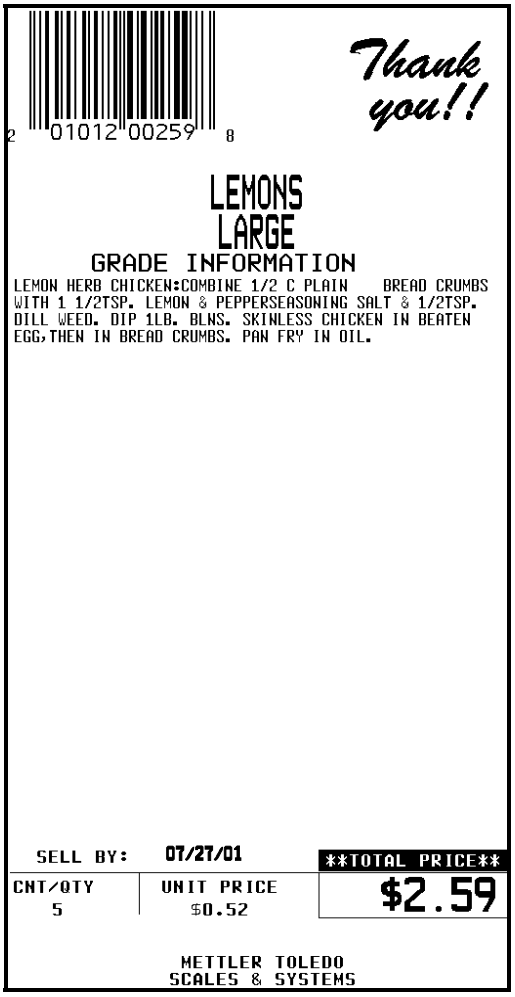


4.7" Std-Pack Sell Grade NF

5.1 Inch (129.5 mm) Label Formats



5.1" By-Weight Sell Grade



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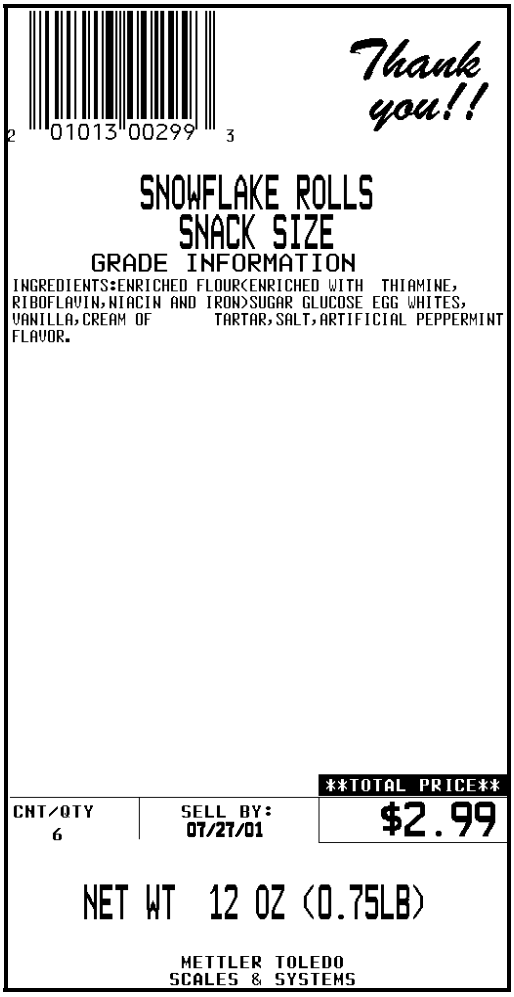

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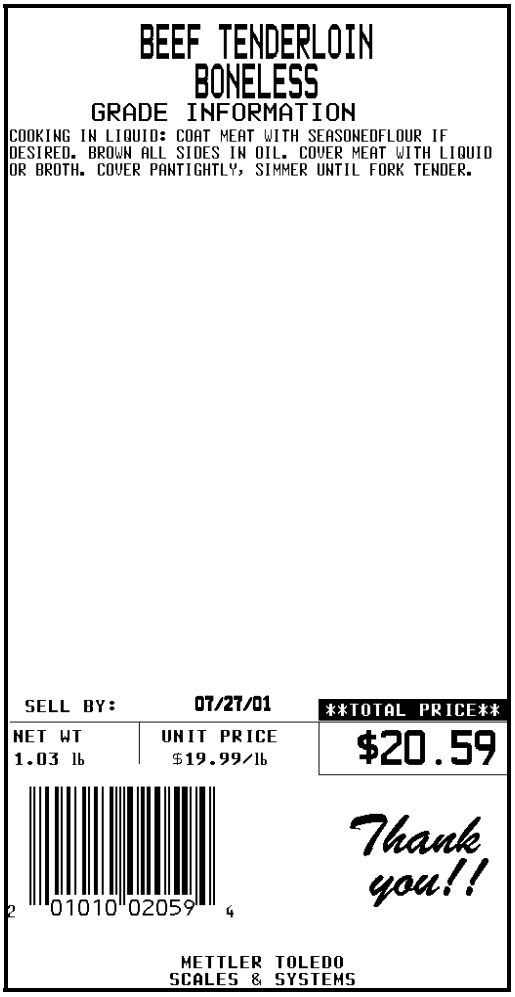
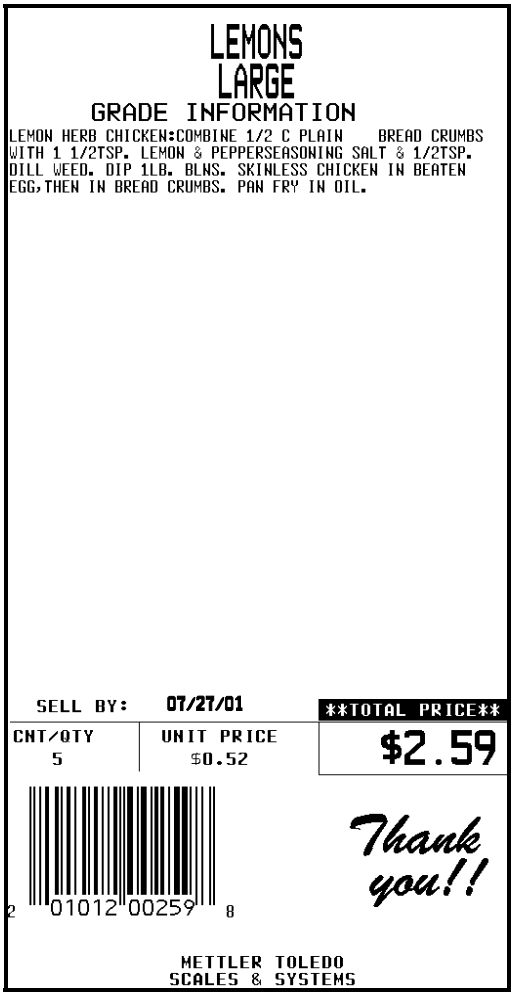


5.1" By-Weight Sell Grade BCB



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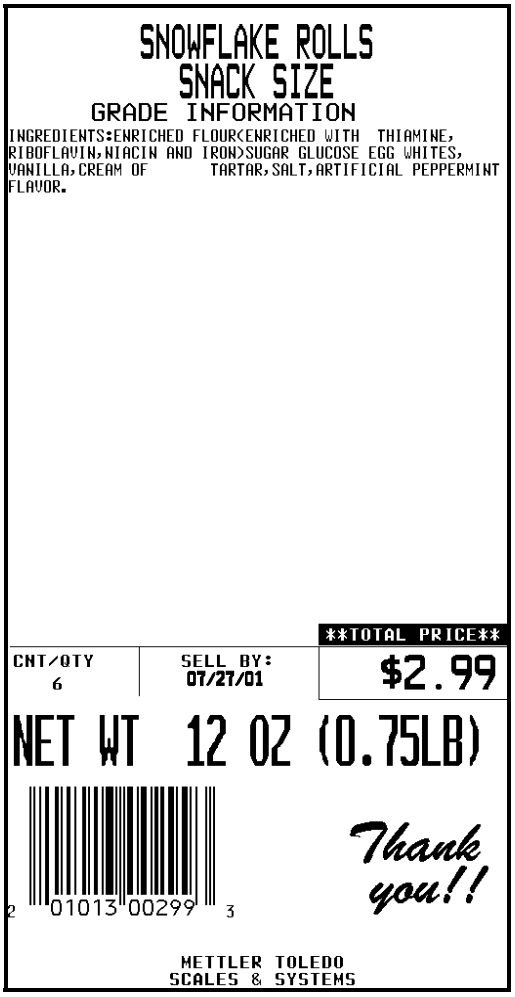
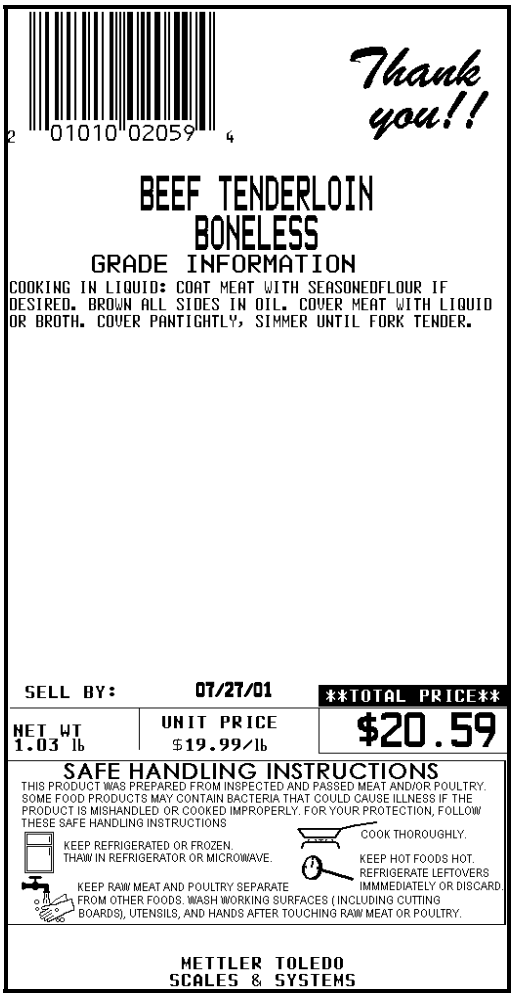
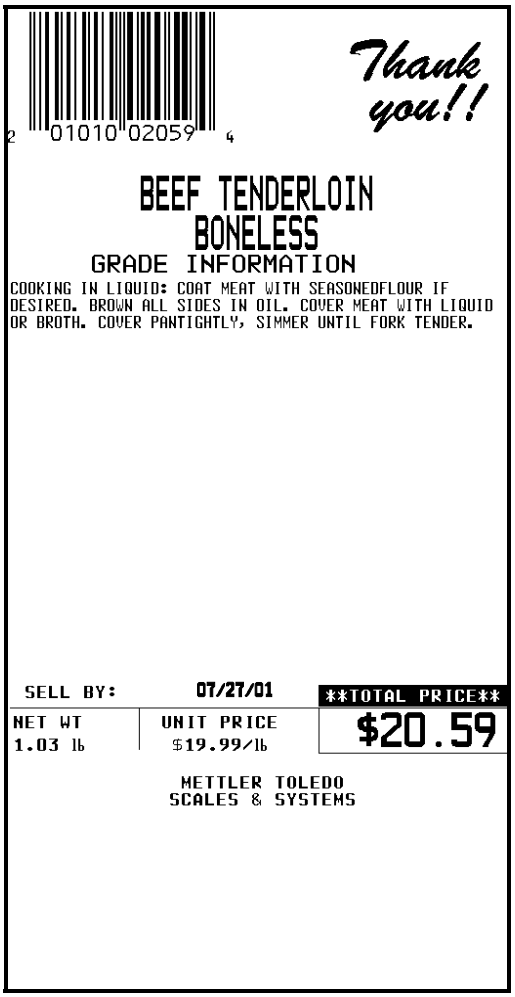


5.1" Std-Pack Sell Grade BCB



5.1" By-Weight Sell Grade SH



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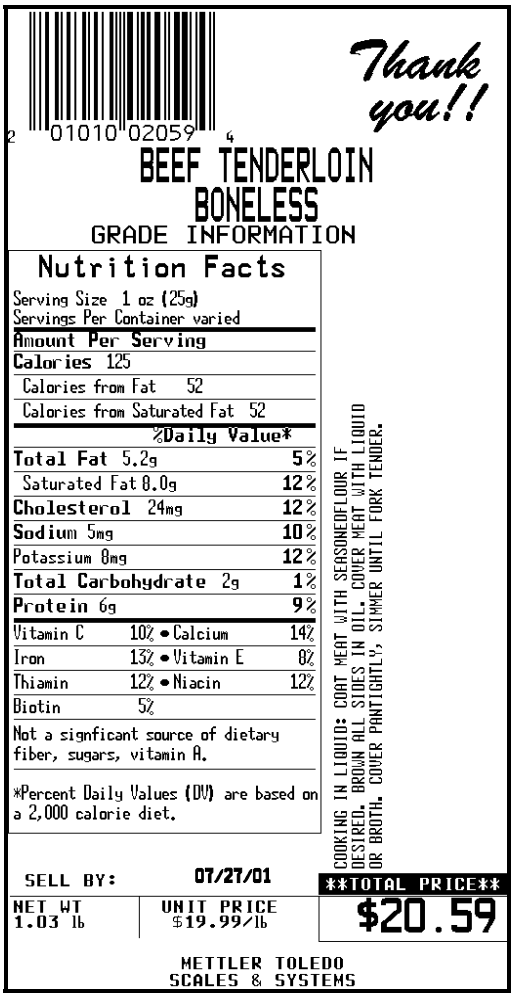

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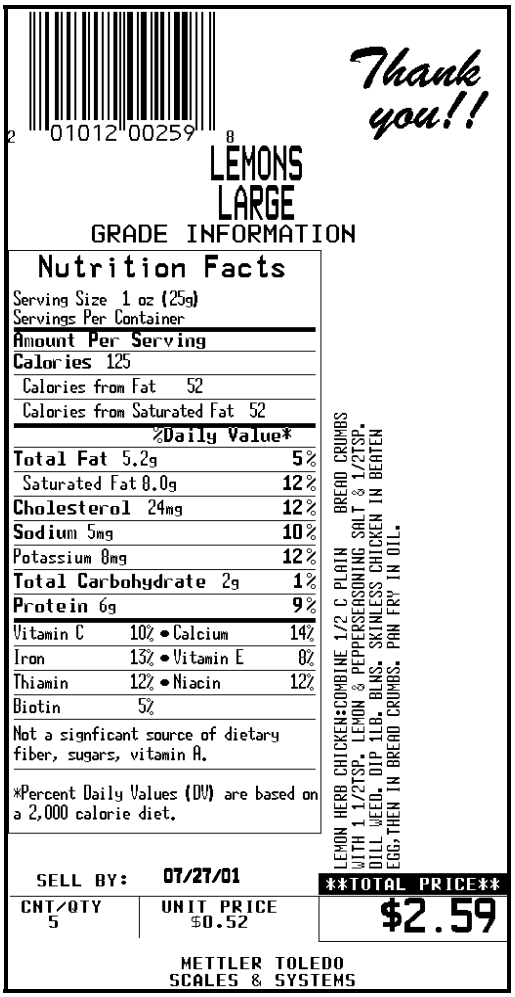
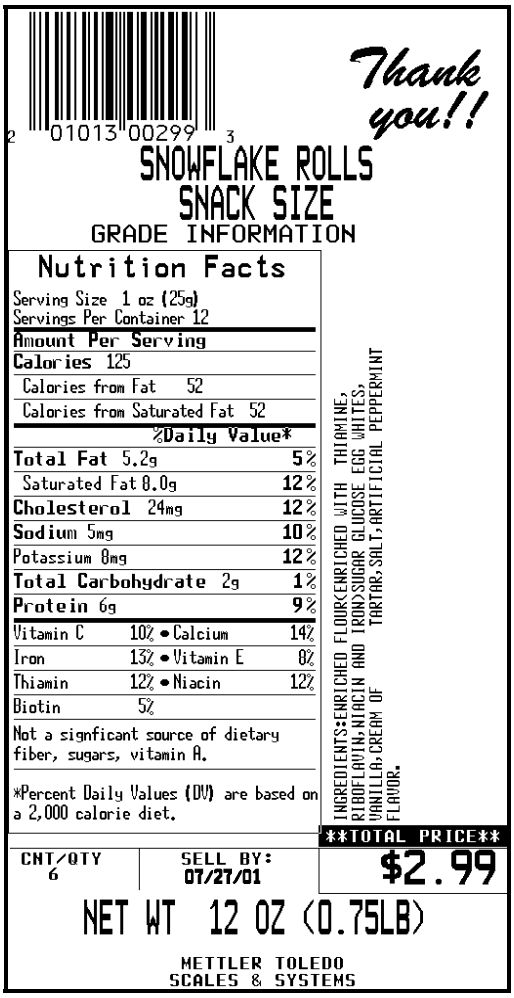
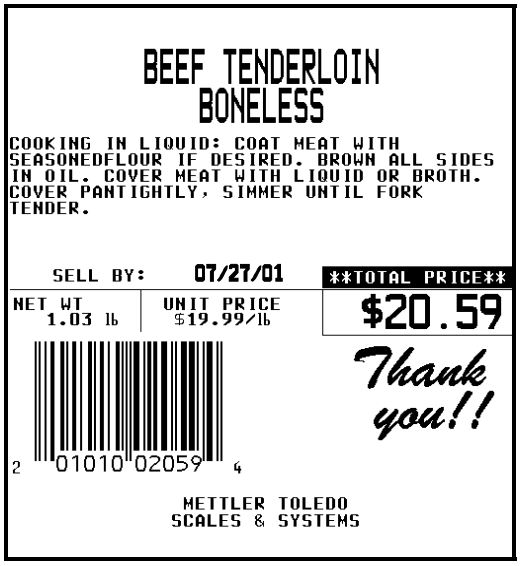


5.1" By-Count Sell Grade NF



5.1" Std-Pack Sell Grade NF

Continuous Label Formats (7.9 inch Max.)

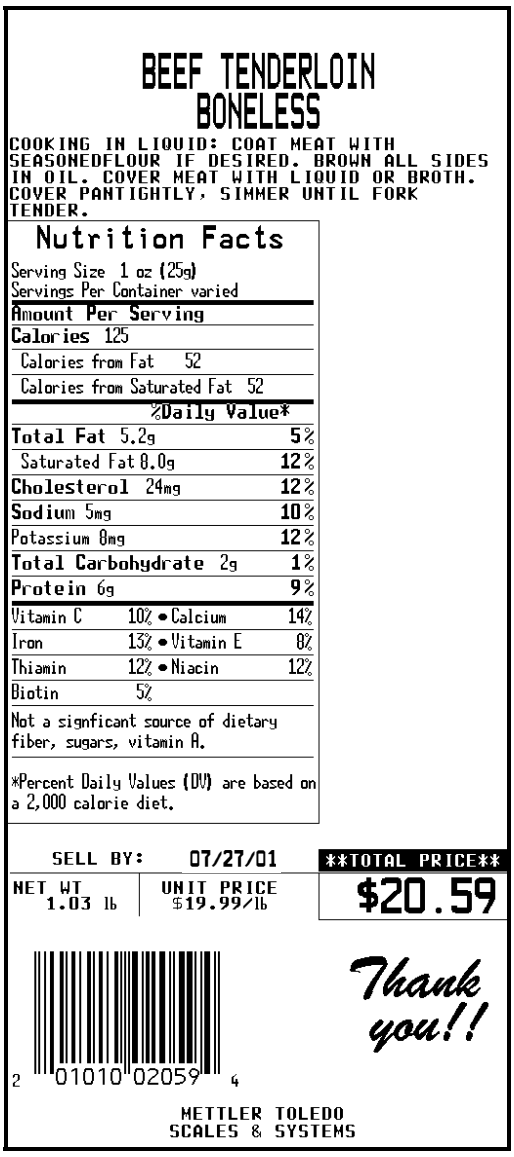


Cont By-Weight Sell BCB

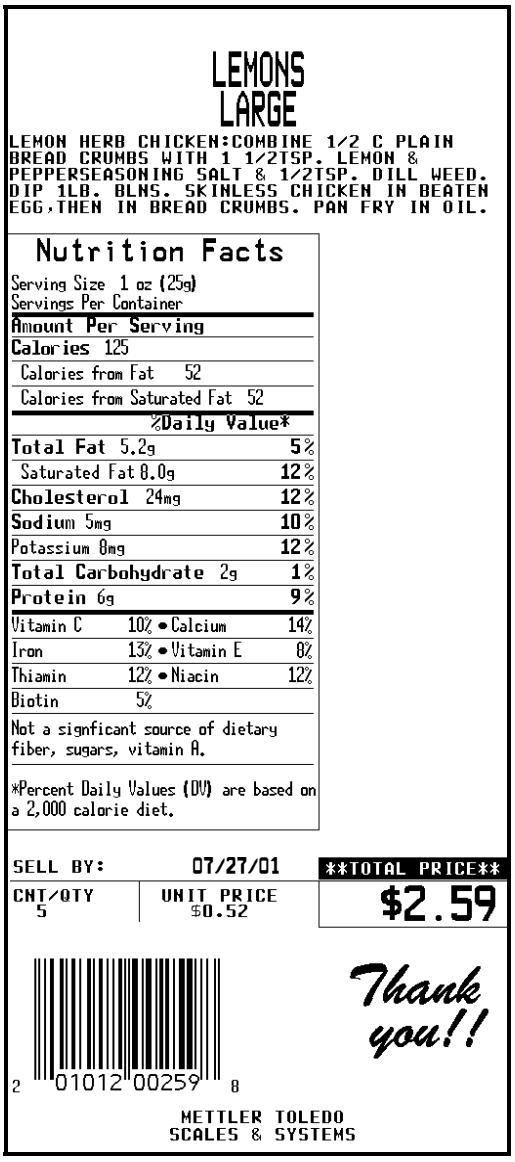
Cont By-Count Sell BCB

Cont Std-Pack Sell BCB

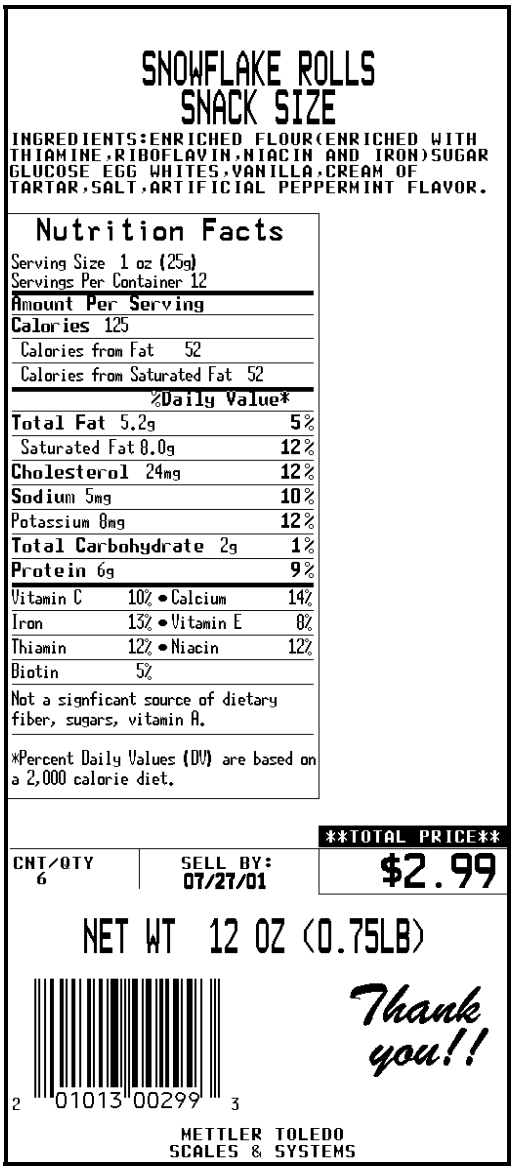
Cont By-Weight Sell SH BCB



Cont By-Weight Sell NF BCB

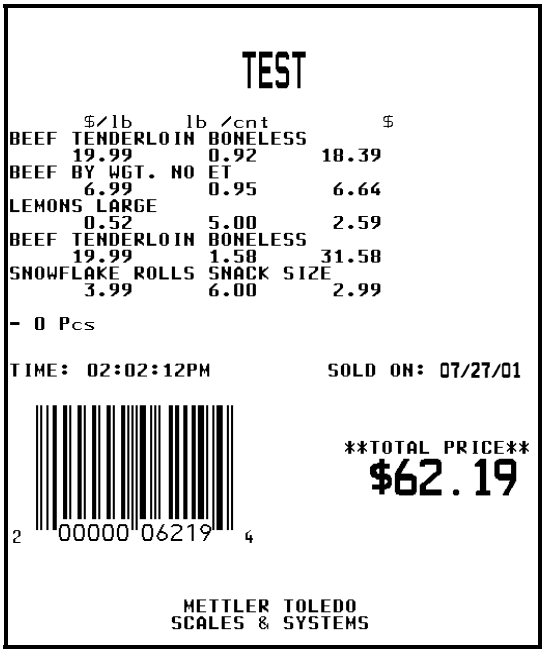


Cont By-Count Sell NF BCB

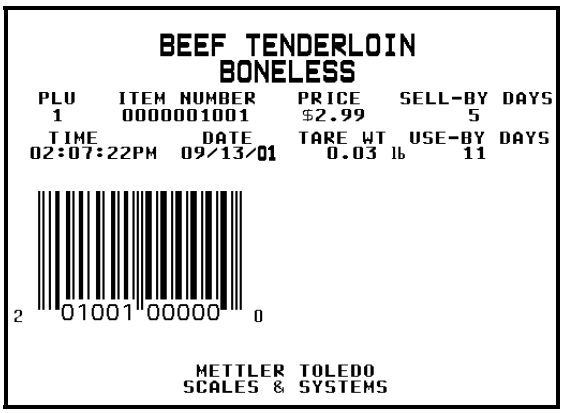


Cont Std-Pack Sell NF BCB

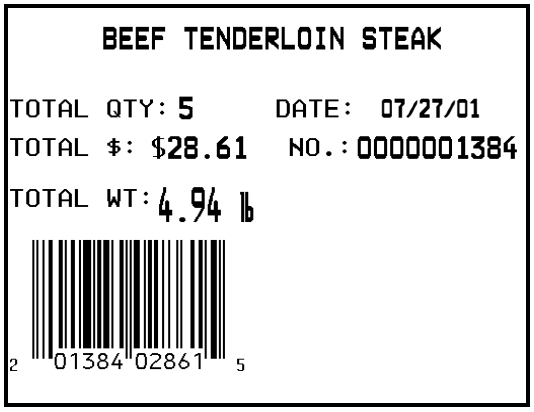
Other Label Formats (7.9 inch Max.)



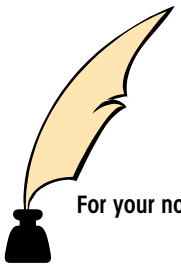
Receipt



Verification



Run Total



For your notes

11 Glossary

Standard 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.

12 Certificate of Conformance, NTEP

U.S. Department of Commerce
National Institute of Standards and Technology
Gaithersburg, MD 20899

Certificate Number: 97-129

National Type Evaluation Program

Certificate of Conformance

for Weighing and Measuring Devices

For:

Computing Scale
Digital Electronic
Model: 8461
n_{max}: 3000 (Scale); n_{max}: 5000 (Indicating Element)
Capacity: 30 lb x 0.01 lb (Single Range), or
0-6 kg x 0.002 kg & 0-15 kg x 0.005 kg (Multiple Range)
Platform: 11.5″ x 17.75"
Accuracy Class: III

Submitted by:

Mettler-Toledo, Inc.
1150 Dearborn Drive
Worthington, OH 43085
Tel: (614) 438-4393
Fax: (614) 438-4355
Contact: Darrell Flocken

Standard Features and Options

Semi-automatic zero
Initial zero setting mechanism
Automatic zero setting mechanism
Keyboard tare
Semi-automatic tare
Platter tare
Stainless steel platter
AC power
Gross/net display
Customer display
Screen saving feature
LCD (liquid crystal display)
Proportional (%) tare
Programmable (PLU) tare
Integral thermal label printer
RS232 computer interface port

Option: Fish or lobster pan
Thermal label or tape printer

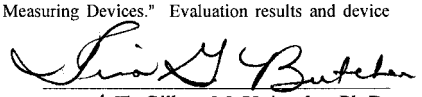
Optional Model: 8461 indicating element (n_{max}: 5000).
The 8461 "Dead Deck" is a scale without the load cell and platter and can be used with other compatible weighing/load receiving elements.

The load cell used may be either Mettler-Toledo part no. 14621100B (22 kg capacity) or Mettler-Toledo part no. 15317900B (45 kg capacity).

Temperature Range: 0 °C to 40 °C (32 °F to 104 °F)

This device was evaluated under the National Type Evaluation Program (NTEP) and was found to comply with the applicable technical requirements of Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices." Evaluation results and device characteristics necessary for inspection and use in commerce are on the following pages.

Effective Date: October 29, 1997



for Gilbert M. Ugiansky, Ph.D.
Chief, Office of Weights and Measures
Issue Date: February 19, 1998

Note: The National Institute of Standards and Technology does not "approve," "recommend," or "endorse" any proprietary product or material, either as a single item or as a class or group. Results shall not be used in advertising or sales promotion to indicate explicit or implicit endorsement of the product or the Institute. (See NTEP Policy and Procedures.)

Mettler-Toledo, Inc.
Computing Scale, Digital Electronic
Model: 8461

Application: General purpose weighing for direct sale or pre-pack applications.

Identification: The required information appears on a self adhesive badge located under the scale platter.

Sealing: A metal access plate is used to cover the set up and calibration access hole located on the left-hand side when viewed from the operator's position. The access plate is held in position by threading a wire security seal through a flathead screw and a raised tab on the plate.

Test Conditions: The emphasis of the evaluation was on the device design, operation, and compliance with influence factor requirements. Several increasing/decreasing load and shift tests were performed on the complete scales as well as on the "dead deck" indicator using a Mettler Toledo Model 8270 load receiving element (Certificate of Conformance Number 95-150). The scale was tested over a temperature range of 0 °C to 40 °C (32 °F to 104 °F). A load of approximately one-half scale capacity was applied to the 30 lb x 0.0 lb scale 100 800 times and 103 740 times to the 15 kg multiple range scale. Tests were conducted using 100 VAC and 130 VAC power supply.

The results of the evaluation indicate the device complies with the applicable requirements of NIST Handbook 44.

Type Evaluation Criteria Used: NIST Handbook 44, 1997 Edition

Tested By: W. West and A. McCoy (OH)

METTLER TOLEDO
1900 Polaris Parkway
Columbus, Ohio 43240
www.mt.com

P/N: D15038200A

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