Honeywell

MS2420 / MS2430

Bar Code Scanner / Diva Scale

Installation and User's Guide

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Patents

For patent information, refer to www.hsmpats.com.

Table of Contents

Introduction

Manual Scope

This guide provides information on the installation, setup, and operation of Honeywell's MS2420 and MS2430 scanner/Diva scale unit. It is designed to be used in conjunction with MetroSelect™ Configuration Guide (PN 00-02407x) and the MS2x20 Stratos™ Series Scanner/Diva Scale Configuration Addendum (PN 00-02272x).

Product manuals are also available for download in Adobe® Acrobat® file format at www.honeywellaidc.com.

Product Overview

MS2420 and MS2430 scanner is designed to meet the demanding needs of high volume supermarket and point-of-sale applications. With advanced features like 5-sided, 360° scanning, 5400 scans per second, a comprehensive scan zone and advanced decoding software, this high performance series of in-counter scanner/Diva scale products guarantees fast customer checkouts with minimal operator fatigue and stress. The MS2420 and MS2430 scanner is equipped with a multitude of standard features including:

- Stratos**SCAN** – 5-sided, 360° scanning that minimizes product orientation

- Stratos**SPHERE** – Decoding software that reads poor quality and damaged bar codes

- Stratos**SYNC** – Horizontal and vertical scanning zones operate independently from one another

- GS1 DataBar Decoding – Decodes GS1 DataBar, GS1 DataBar Limited, and GS1 DataBar Expanded symbologies

- Flash ROM – Upgrade latest software enhancements on site

- Powered Aux Port – Connect hand-held scanner for large or bulky items

- Integrated Scale – Factory integrated Mettler Toledo Diva scale

- Loud Speaker – 3 volume/7 tone settings can be heard in all environments

- Easy Configuration – Windows® based utility or simple bar code setup

- Fully Automatic – "No touch" wake up from power save modes

- EAS Deactivation – Electronic Article Surveillance (EAS) equipped (EAS cable is an optional purchase)

- Field Replaceable Vertical Window – Quickly remove vertical window for cleaning or replacement

- Stratos**SCOPE** – Visual diagnostic indicator for easy to read feedback on scanner condition

- Stratos**SWAP** – Modular optics engine technology – small, pre-aligned, field replaceable modules

- Stratos**SCHOOL** – Operator training software

Base Kit Components

Part #	Description			
MS24x0-105Kz	Scanner/Diva Scale			
	x	2	MS2420; 399 mm (15.7")	
		3	MS2430; 508 mm (20.0")	
	z	D	Diamonex Horizontal Window	
		S	Sapphire Horizontal Window	
00-02407*	MetroSelect Configuration Guide			
00-02272*	MS2x20 Stratos Series Scanner/Diva Scale Configuration Addendum			
00-05310*	MS2420/MS2430 Scanner/Diva Scale Installation and User's Guide			

* Guides also available for download at www.honeywellaidc.com.

Other items may be ordered for the specific protocol being used. To order additional items, contact the dealer, distributor or call the customer service department.

Optional Accessories

Part #	Description
57-57210-N-3	RS232 Interface Cable, Straight Cord with Short Strain Relief
57-57212-N-3	RS485◇ Port 9 Cable, Straight Cord
57-57201-N-3	USB Full Speed Communication Cable, Straight Cord, Type A (Non-Locking) Connector
57-57227-N-3	USB Full Speed Communication Cable, Straight Cord, Locking 12V Plus-Power™ Type A
57-57000-N-3	Dual Interface Cable, Straight Cord with Short Strain Relief
57-57008-N-3	Aux Program Cable, Straight Cord with Short Strain Relief
57-57099-3	LSO RS232 PowerLink AUX Cable w/ power jack Straight Cord with Short Strain Relief
57-57099-3-12	RS232 AUX, Straight Cord, 3.7 m (12') (for 95xx, 5145 and 7580 scanners)
CBL-420-300-C00	RS232 AUX, Coiled Cord (for 1200, 1300 and 1900 Series scanners)
52-52511	EAS cable, 24"
52-52556	EAS cable, 6'

◇*Applicable for IBM® Host applications.*

Optional Accessories

Part #	Description
	AC to DC Power Transformer - Regulated Output: +5.2V @ 4A +12V @ 1.5A
70-74868	120V United States and Canada
70-74882	220V – 240V Continental European
70-74880	220V – 240V United Kingdom
70-74884	220V – 240V China
70-74886	220V – 240V Australia
70-74888	220V – 240V India

Optional Accessories

Part #	Description
46-00375	Remote Single Line Scale Display (lb.) (See Figure 1)
46-00376	Remote Single Line Scale Display (kg.) Dual Interval (See Figure 1)
46-01075	Remote Single Line Scale Display (kg.) Single Interval (See Figure 1)

Other Four Line Scale Display currency lens overlay stickers are available. To order additional items or replacement parts, contact the dealer, distributor or call the customer service department.

Remote Single Line Display
Pounds

Max 30 lb   Min 0.2 lb   d=0.01 lb   W/01-LB

ZERO NET   lb

Remote Single Line Display
Kilograms (Single Interval)

Max 15 kg   Min 100 g   e = 5 g   W/01-KG

ZERO NET   kg

Remote Single Line Display
Kilograms (Dual Interval)

Max 6/15 kg   Min 40 g   e = 2/5 g   W/01-KG

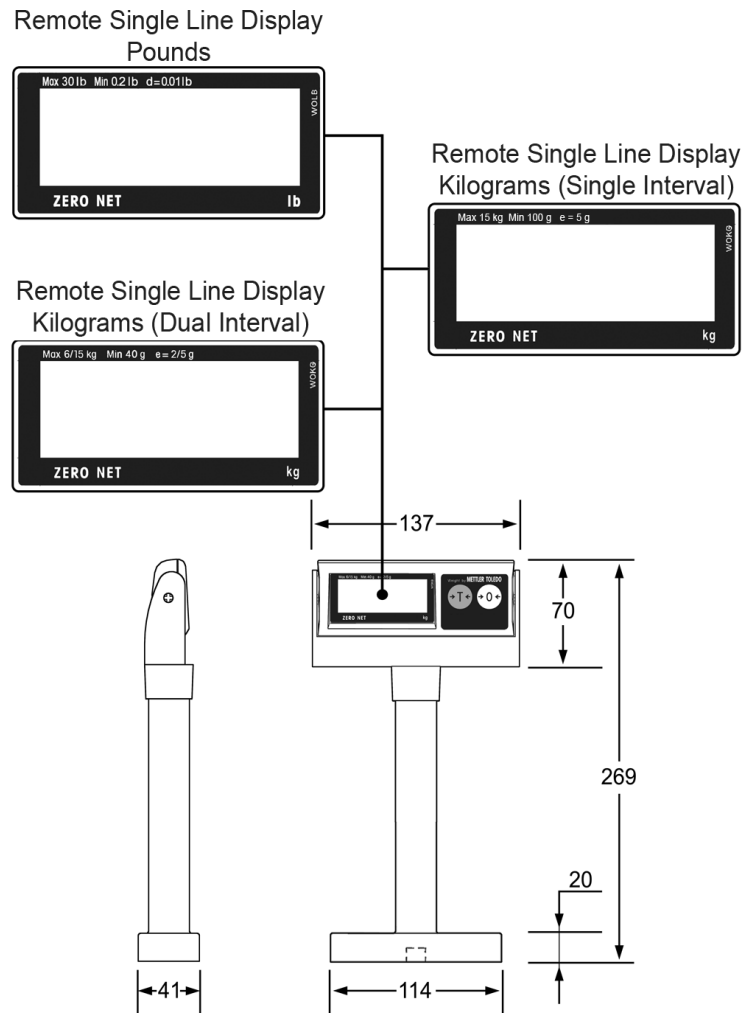ZERO NET   kg

137

70

269

20

41

114

Figure 1

All dimensions are shown in mm (millimeters).

Specifications are subject to change without notice.

Replacement Parts

Part #	Description
⚠ Caution	Window types (Diamonex and Sapphire) are not interchangeable due to laser safety and/or scanner performance differences. To change window type, the scanner must be returned to the manufacturer for reconfiguration.
46-00296	Diamonex Platter – Full Size with Product Weight Roll Bar / Platter Lift Handle
46-00297	Sapphire Platter – Full Size with Product Weight Roll Bar / Platter Lift Handle
46-01084	Sapphire Platter – 508 mm with Product Weight Roll Bar / Platter Lift Handle
46-01085	Diamonex Platter – 508 mm with Product Weight Roll Bar / Platter Lift Handle

Other items may be ordered for the specific protocol being used. To order additional items, contact the dealer, distributor or call the customer service department.

General Precautions

The following are some general precautions to remember when handling your MS2420/MS2430 series scanner.

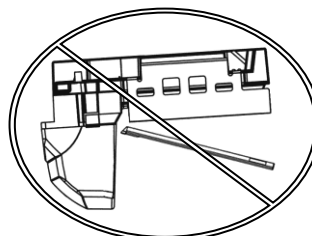**Do not turn** the unit upside down with the platter in place.

Figure 2

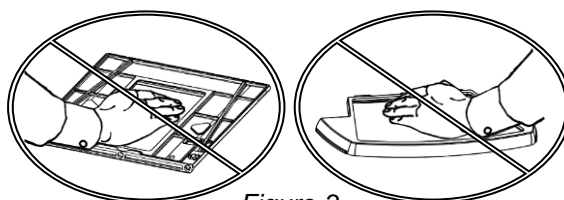**Do not press** on the window in the replacement platter or the vertical window frame.

Figure 3

Platter Removal

No hardware or tools are required to remove the platter (see Figure 4). Refer to the *Maintenance* section of this manual for additional information on platter replacement.

Note: See caution statement on page 5.

Unlatch the Platter Lift Handle, as shown (Use finger recess). Use the lift handle to raise the platter upwards.
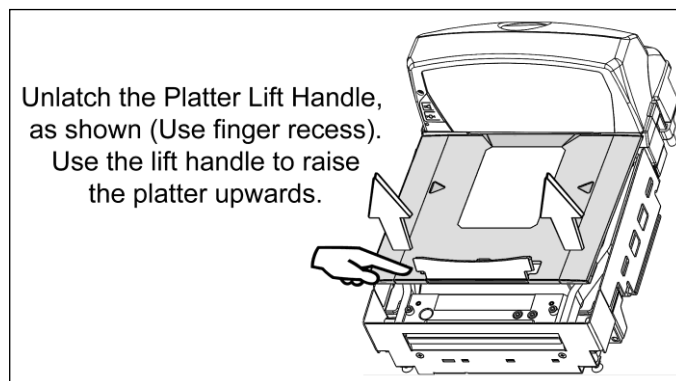
Figure 4

Finger Recesses

Rest both thumbs against the vertical window frame for added stability when lifting the unit by the finger recesses.
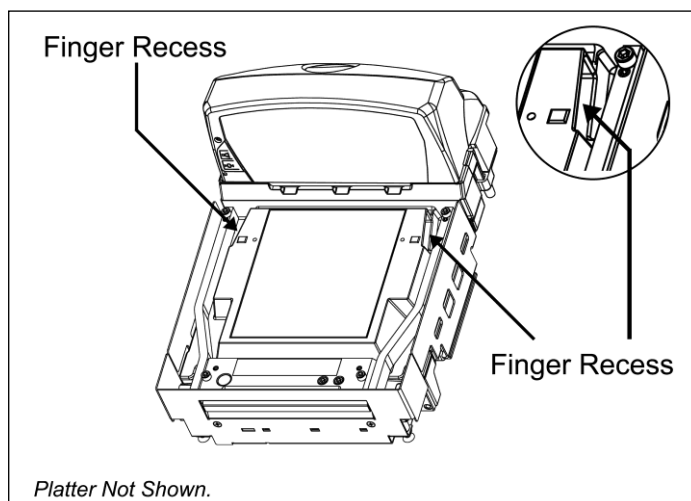

Finger Recess

Finger Recess

Platter Not Shown.

Figure 5

Design Specifications

Operational

Light Source:	VLD 650 nm	
Peak Laser Power:	<1.5 mW	
Embedded Laser:	Max Optical Power:	10 mW
	Wavelength:	650 nm
Horizontal Depth of Field:	0 mm – 100 mm (0"- 4") for 0.33 mm (13 mil) Bar Code	
Vertical Depth of Field:	0 mm - 216 mm (0"- 8.5") for 0.33 mm (13 mil) Bar Code	
Scan:	(Scan) Speed: 5400 Scan Lines per Second	(Scan) Zone: 360°
No. of Scan Lines:	54 (38 Horizontal / 16 Vertical)	
Motor Speed:	6000 / 6000 RPM (Horizontal / Vertical)	
Min Bar Width:	0.114 mm (4.5 mil)	
Decode Capability:	All Standard 1-D Bar Codes, GS1 DataBar, GS1 DataBar Expanded, and GS1 DataBar Limited Bar Codes	
System Interfaces:	RS232, Aux RS232, RS485, and USB	
Print Contrast:	35% Minimum Reflectance Difference	
No. Characters Read:	Up to 80 data characters. Maximum number will vary based on symbology and density.	
Beeper Operation:	7 Tones or No Beep; 3 Volume Settings	

	Blue	Blue Flash	Amber
Indicators (LED):	Laser ON, Ready to Scan	Good Read, Decoding	Scale at Zero

Mechanical

MS2420 L x W x H:	399 mm (15.7") [L]	292 mm (11.5") [W]	130 mm (5.12") [Tower Height]
MS2430 L x W x H:	508 mm (20.0") [L]	292 mm (11.5") [W]	130 mm (5.12") [Tower Height]
Depth (Below Counter):	100 mm (3.9")		
Weight (with Platter):	MS2420:	9.97 kg (22 lbs.)	
	MS2430:	10.8 kg (24 lbs.)	

Specifications are subject to change without notice.

Electrical

Voltage Supply:	4A @ +5V / 1.5A @ +12V	
Power:	Operating:	11.9 Watts
	Standby:	3.25 Watts
Current:	Operating:	1.7A @ 5.2V / 0.2A @ 12V
	Standby:	0.6A @ 5.2V / 0.07A @ 12V
DC Transformers:	Class I; 5.2VDC @ 4A; 12VDC @ 1.5A	
*For Regulatory Compliance Information, refer to pages **Error! Bookmark not defined.** - **Error! Bookmark not defined.**.*		

Scale Capacities

Capacity:	kg unit	6.0 / 15.0 kg	lb. unit	15.0 / 30.0 lb.
Minimum Increments:	kg unit	0.002 / 0.005 kg	lb. unit	0.005 / 0.01 lb.
Maximum Static Weight:	kg unit	75.0 kg	lb. unit	150.0 lb.
Adjustments required:	Calibration only.			

Environmental

Operating Temperature:	0°C to 40°C (32°F to 104°F)
IP Rating:	IP 55
Light Levels:	4842 Lux (450 foot-candles)
Storage Temperature:	-40°C to 60°C (-40°F to 140°F)
Humidity:	5% to 95% Relative Humidity, Non-Condensing
Contaminants:	Sealed to resist airborne particulate contaminants.
Ventilation:	None Required

Specifications are subject to change without notice.

Base Model Characteristics

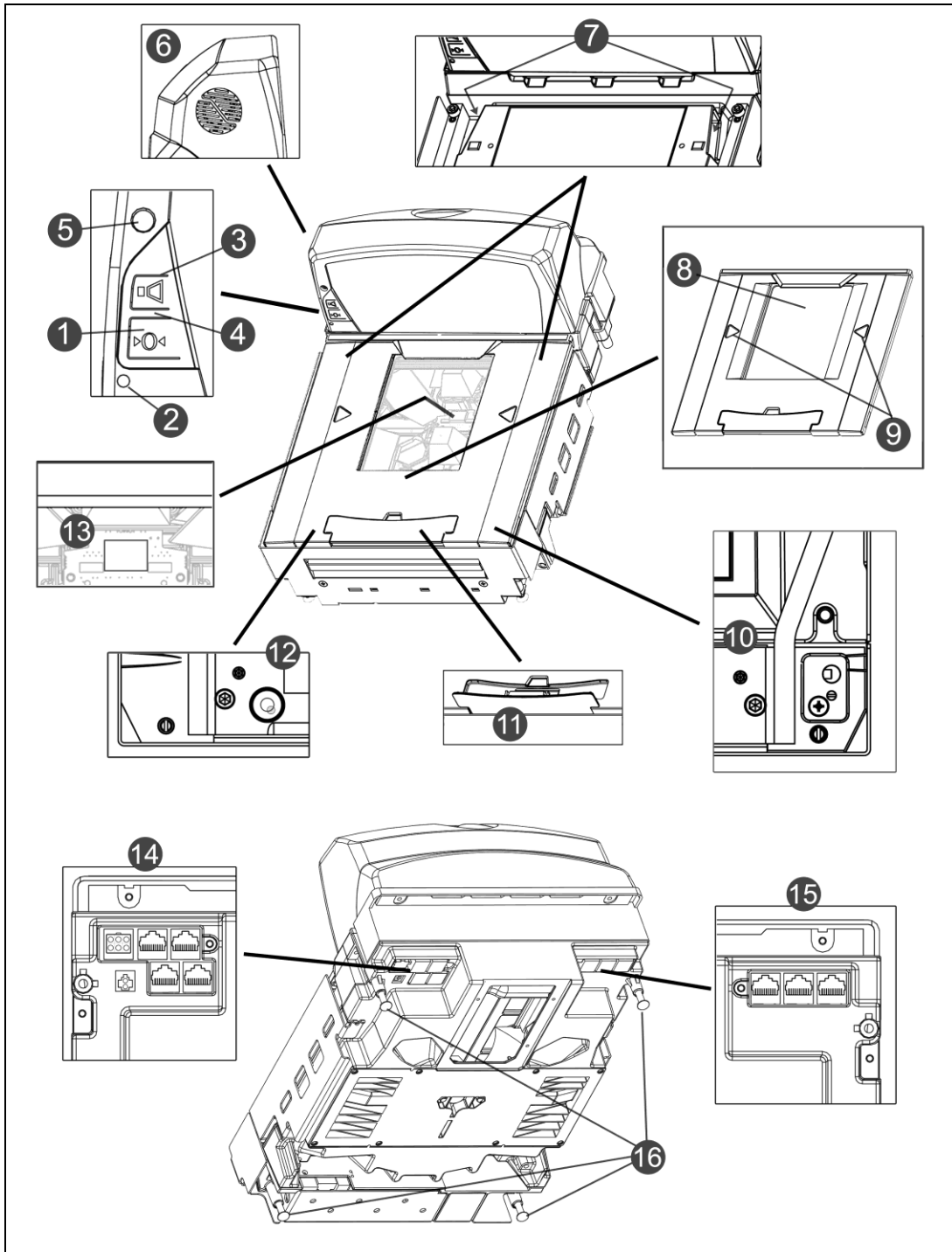**MS2420/MS2430 Scanner / Mettler-Toledo DIVA Scale Components***

Figure 6. Components*

MS2420 shown

MS2420/MS2430 Scanner / Mettler-Toledo DIVA Scale Components

Item No.	Description of Item in Figure 7
1	Scale Zero Button *(see page 47)*
2	Amber LED, Scale Zero Indicator *(see page 47)*
3	Volume/Tone Multi-Function Button *(see page 44)*
4	Blue LED Indicators *(see page 38)*
5	Photocell Window
6	Speaker
7	Finger Recesses for Lifting (Located Under Platter)
8	Replaceable Stainless Steel Platter with Diamonex or Sapphire Horizontal Window (Laser Aperture)
9	Flow Direction Indicator
10	Sealed Calibration Switch/Button Cover (Located Under Platter) On a fully installed unit the calibration switch cover should be sealed with a lead wire or paper seal. This seal indicates the appropriate Federal, State, and Local Weights and Measures authorities have calibrated the scale. See the *Scale Operation: Calibration* section of this guide for further information.
11	Produce Weigh Flip Up Bar
12	Leveling Bubble for Scale Arms
13	Diagnostic Indicator Display *(see page 40 for Error Codes)*
14	Interface, Aux Scanner and EAS Connectors *(see page 12)*
15	Power and Scale Connectors *(see page 12)*
16	Leveling Feet
Note: Scanner/Diva Scale label information can be found on page 13.	

MS2420/MS2430 Scanner / Mettler-Toledo DIVA Scale
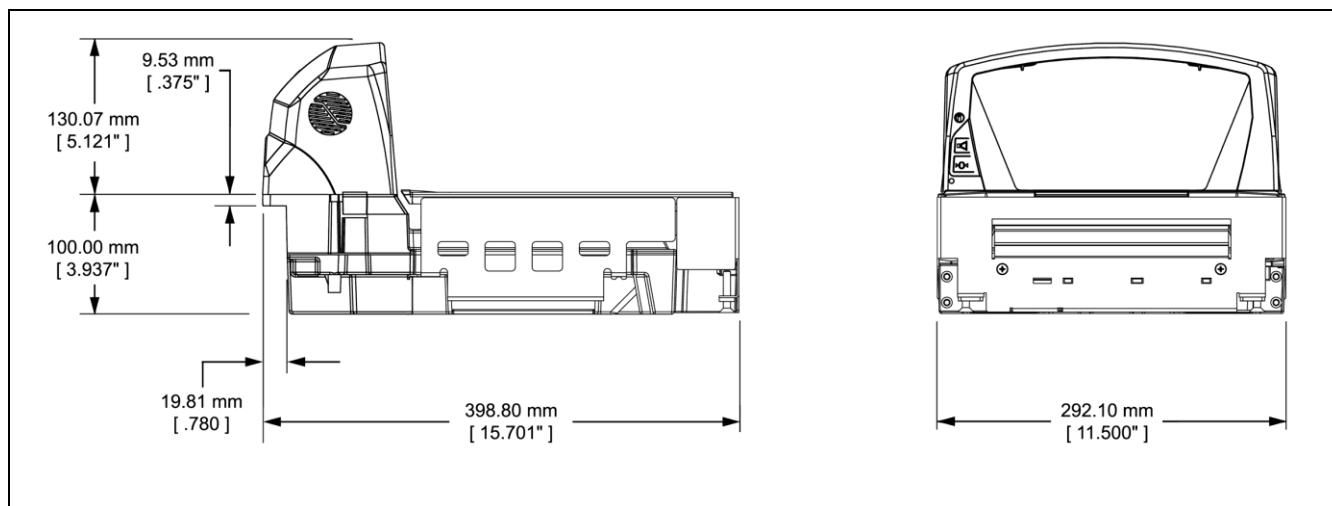
MS2420 Dimensions

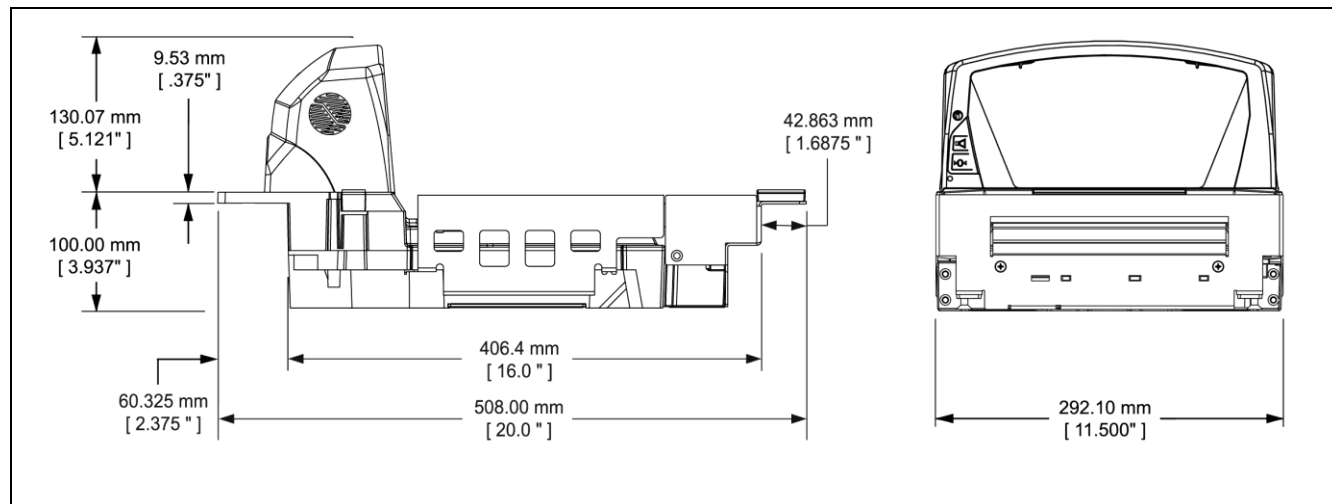*Figure 7. MS2420 Dimensions*

MS2430 Dimensions

Figure 8. MS2430 Dimensions

Specifications are subject to change without notice.

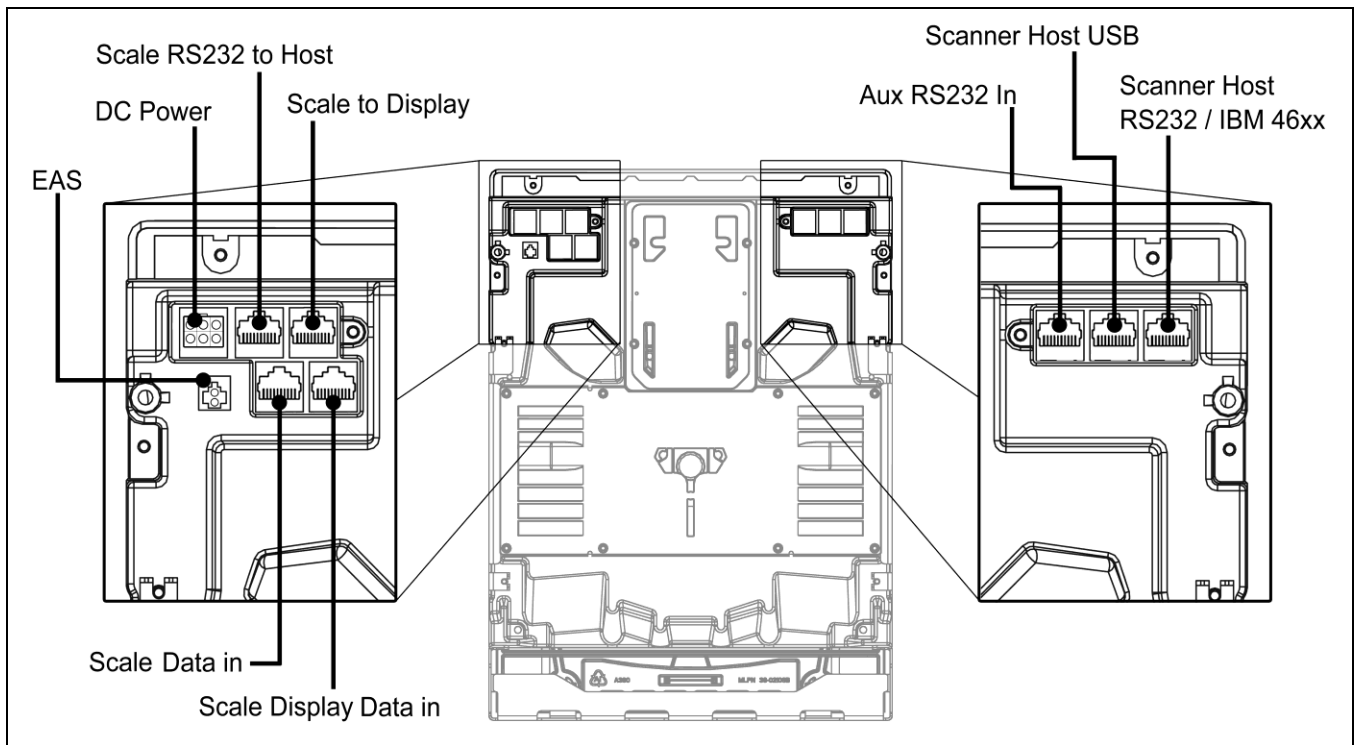# MS2420/MS2430 Scanner / Mettler-Toledo DIVA Scale

Connector Panel

Figure 9. MS2420/MS2430 Connector Panel

MS2420/MS2430 Scanner/Diva Scale
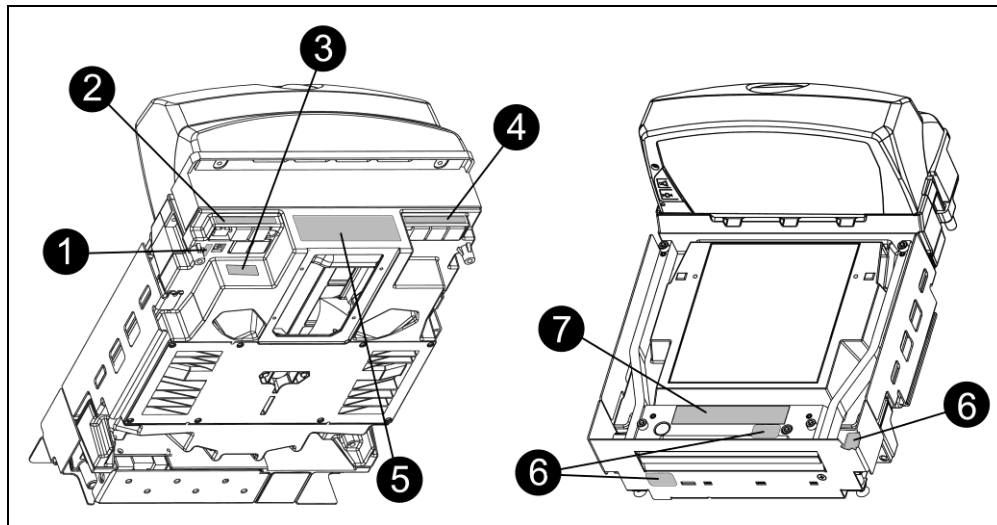
Caution and Serial Number Labels

Figure 10. MS2420/MS2430 Label Locations (Top) and Examples (Bottom)

1 EAS In

2

DC	Scale	Scale
Power In	RS232 to Host	RS485 to Display

3

Scale	Scale Display
Data In	Data In

4

Aux	Scanner Host	Scanner Host
RS232 In	USB	RS232 , 46xx

5

Honeywell International Inc.
Manufactured by Metro (Suzhou) Technologies Co.,Ltd.
Contains no user serviceable components. Warranty void if case is opened. Complies with FCC and ICES-003 Class B. See manual.
Made in Suzhou China June 2012 (C)
Model: MS2420-105KD   232, 46XX, USB
Stratos™ Barcode Scanner
0X 12 24 0071
See User's Guide for patent coverage.

This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50 dated June 24, 2007.

⑮

c(UL)us LISTED 94J8 I.T.E.

5V, 12V ⎓
CAUTION:
Laser light when opened.
DO NOT STARE INTO BEAM.

CE

6

Honeywell SEAL   OR   **METTLER TOLEDO SECURITY SEAL**

7

Mettler—Toledo, (Changzhou) Scale & System Ltd
CC: 06-024   Made in China
MODEL: DIVA
S/N: 12345678XX

www.mt.com
DIVA M XXX
Max 30 lb / 15 kg
Min 0.2 lb / 100 g
e = 0.01 lb / 5 g

www.mt.com
DIVA M XXX
Max 6 / 15 kg
Min 40 g
e = 2 / 5 g
T6941

Diva scale shipped **with** remote display.

OR

Mettler—Toledo, (Changzhou) Scale & System Ltd
Made in China
CE 06 0103
MODEL: DIVA
S/N: 12345678XX

M

www.mt.com
DIVA M XXX
Max 6 / 15 kg
Min 40 g
e = 2 / 5 g
TC6942

Diva scale shipped **without** remote display.

Caution: ⚠ To maintain compliance with applicable standards, all circuits connected to the imager must meet the requirements for SELV (Safety Extra Low Voltage) according to EN/IEC 60950-1.

To maintain compliance with standard CSA C22.2 No. 60950-1/UL 60950-1 and norm EN/IEC 60950-1, the power source should meet applicable performance requirements for a limited power source.

Installation

Quick Installation Outline

The following is a quick preview of the steps required for first time installations. Each item is discussed in detail later in this section.

- Determine clearance, ventilation and service access requirements.

- Determine checkout counter layout taking into account package flow, cable routing, and power requirements.

- Choose the mounting option which provides the best cable/power access and unit stability.

- Unpack the unit.

- Make the appropriate countertop cutouts and install all support brackets.

- Place the unit in the counter.

- Install the platter.

- Follow the steps under the correct interface to connect the cables and power supply.

- Configure the unit for the correct interface.

- Calibrate the Diva scale.

Site Requirements

Before installing your MS2420/MS2430 scanner/Diva scale, please consider the following items.

Vertical Clearance

A minimum clearance height of 5.25" from the checkout counter surface is needed for the vertical 'hood' on all of the scanner models.

Ventilation and Spacing

All MS2420 and MS2430 models have a die-cast housing to dissipate heat allowing the unit to operate without a ventilation fan. The temperature surrounding the unit is recommended not to exceed 40°C (104°F). There should be adequate convection and minimal heat producing equipment in close proximity of the unit.

A cooling fan with a filter is recommended if there will be a conveyor motor or other heat producing equipment close to the unit that will create a high temperature environment.

Adequate spacing between the unit and the checkout counter opening is required for proper operation of the scale. When the scanner/Diva scale model is mounted properly, the scale platter should be able to move up and down freely without hitting the edges of the checkout counter cutout. Refer to Installing the *Unit in the Counter* beginning on page 18 of this guide for detailed cutout dimensions and mounting instructions.

Site Requirements

Service Access

When routing and installing the cable(s) and power supply, make sure you leave access that these components may be swapped easily without the need to remove the unit from the checkout counter.

When changing the Stratos**SWAP** optics engine modules, removing the unit completely from the checkout counter is recommended.

When calibrating or zeroing the scale, do not remove the unit from the checkout counter. Refer to the *Scale Operation* Section beginning on page 47 of this guide for detailed instructions on zeroing and calibration.

Power Installation

The Power Supply (AC/DC) should be connected to an AC Outlet that is free of electrical noise (clean). A qualified electrician can determine the amount of electrical noise on the AC line. See additional information on power installation and restrictions under the *Installation: Interface* section of this manual.

Note: A switched AC outlet is recommended. The switch should be located on the operator's side of the checkout counter in close proximity to the MS2420/MS2430 to facilitate calibration and service of the unit.

Checkout Counter Layout Considerations

When placing a scanner in a checkout counter, the following factors should be considered.

- Items should flow at a distance to the operator that maximizes comfort. The operator should not need to stretch or strain to reach for and scan packages.

- The MS2420 and MS2430 can scan a bar code on five sides of a package. The packages should flow into the scan area that provides the maximum reading performance. No lifting or orientation of the items is necessary. A properly placed item diverter can maximize the flow of packages.

- In what direction are the packages flowing? Most checkout counters are designed for left-handed takeaway. If the operator is facing the vertical window of the scanner, packages flow from the operator's right to left. The packages are in queue on the conveyor to the right and the bagging is to the left.

Unpacking the Unit

1. Make sure the shipping box is topside up before opening.

2. Remove the accessories box and check the box's content for the following items.

   • Product Manuals

   • Power Supply

   • Communication Cables

   • Remote Scale Display (Optional)

3. Carefully remove the platter and store it in a safe location until the unit is properly installed into the checkout counter.
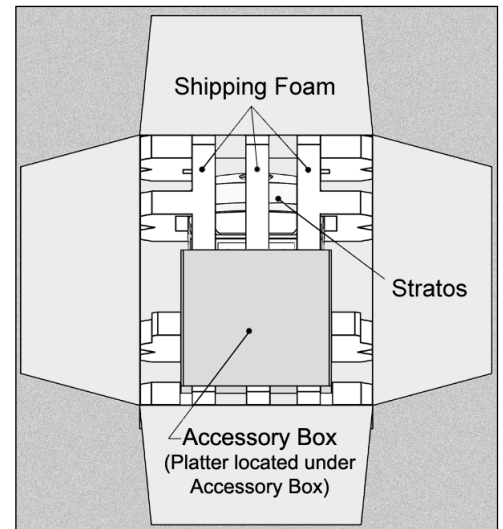
Figure 11

4. Lift the MS2420/MS2430 scanner out of the box by carefully grasping both sides near the center of the unit and lifting directly up. Refer to Figure 12 for hand placement.

   Important! ***Do not*** *remove the MS2420/MS2430 scanner from the box by grabbing the shipping foam. This can result in the unit falling!*
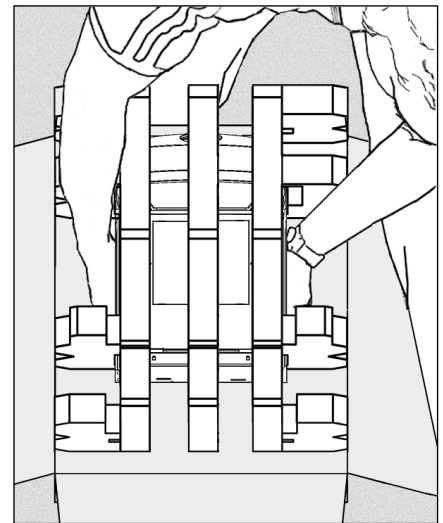

Figure 12

5. Carefully remove the shipping foam from around the MS2420/MS2430 scanner.
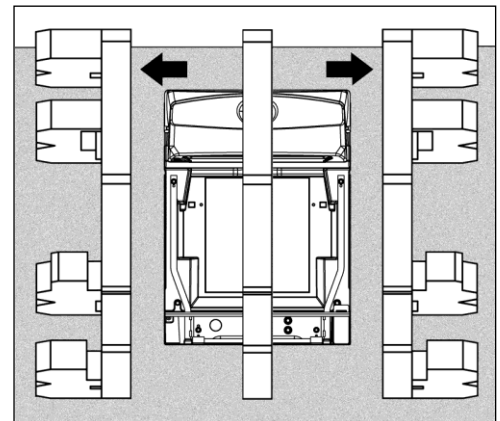
Figure 13

Unpacking the Unit

MS2420/MS2430 Package Warning

There is a protective film located on the topside platter surface, vertical scan windows outer surface, and the horizontal scan windows top surface. These protective films **must** be removed prior to performing any scanner operation (see Figure 14).

Both foam wedges securing the scale arms during shipping **must** be removed or the scale will not function (see Figure 14)!
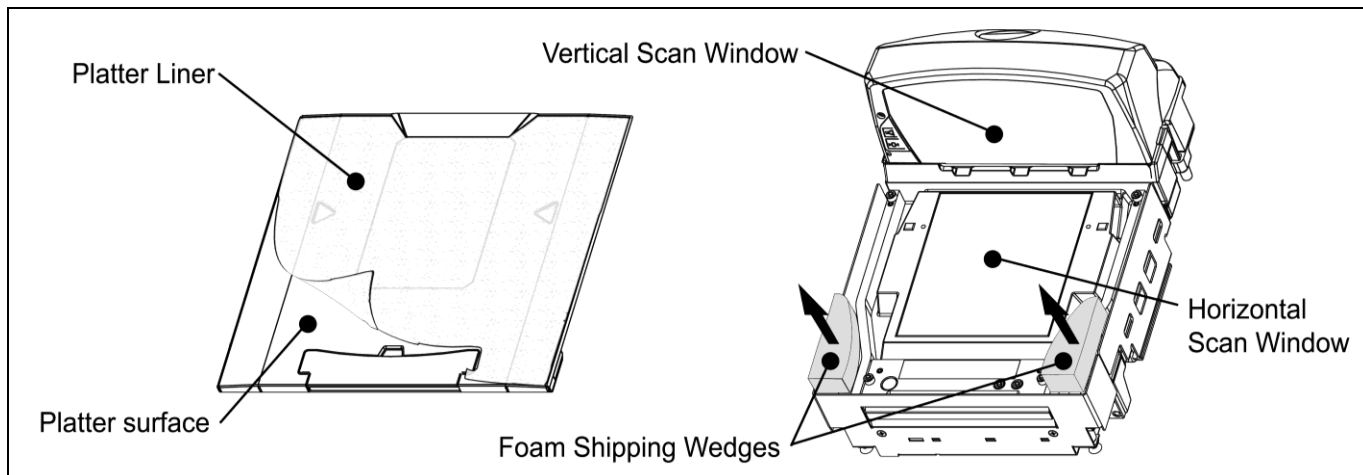
Figure 14. Protective shipping foam and lining.

Note: **Do not discard these instructions and shipping foam wedges!** *If the unit is going to be reshipped at any time this foam* **must** *be reinstalled prevent damage to the scale arms during shipping.*

Installing the Unit in the Counter

Before starting to mount the MS2420/MS2430 determine:

- the scanner's orientation in reference to the operator and the direction of package flow,

- the mounting method that provides the most stability for the scanner, and

- if any additional materials or tools are required for installation.

Lifting the Unit by the Finger Recesses

There are two finger recesses located under the removable platter near the base of the vertical window. These finger recesses are provided to assist in installation when placing the unit in the checkout counter cutout (see Figure 15).

To decrease the risk of dropping the unit during installation, rest both thumbs against the vertical window frame for added stability when lifting the unit by the finger recesses. The unit may tilt forward when lifted by the finger recesses if it is not stabilized making installation in the countertop cutout difficult.
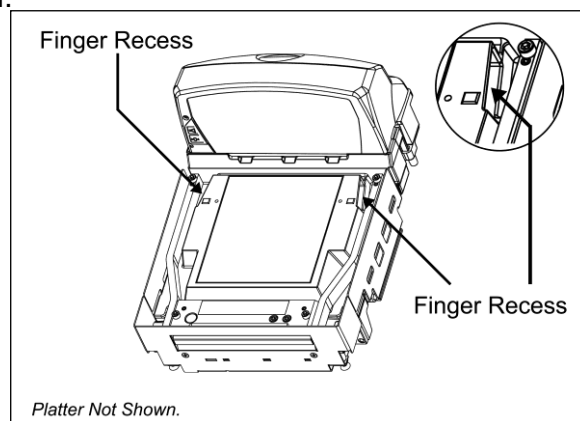
Figure 15. Lifting the Unit by the Finger Recesses

Installing the Unit in the Counter

MS2420 Mounting Diagram

Cutout Corners = (4x) R6.35 mm [R.25"] Maximum

401.95 mm [15.825"]
Cutout Length

100 mm [3.937"]

177.3 mm [6.98"]
To Window Center

Leveling Feet
See Detail C

B - B

295.3 mm [11.625"]
Cutout Width

Support Brackets

A - A

Bottom View

Top View

273 mm [10.76"]

Leveling
Bubble

Platter
Removed

250 mm [9.84"]

279 mm [10.98"]

65.5 mm [2.58"]

Leveling feet are adjusted by
tightening or loosening the four
flat head screws shown.

Detail C

Figure 16. MS2420 Mounting Diagram

Specifications are subject to change without notice.

MS2430 Mounting Diagram (Two Point Support)

294.1 mm ± 1.59 mm*
[11.5787" ± 0.0625"]

38.1 mm
[1.5"]

511.18 mm ± 1.59 mm*
[20.125" ± 0.0625"]

38.1 mm
[1.5"]

39.0 mm
[1.54"]

62.1 mm
[2.45"]

A

19.05 mm
[0.75"]

B

19.05 mm
[0.75"]

9.525 mm
[0.38"]

12.017 mm
[0.47"]

⚠ Keep connector
areas free from
obstructions.

102.0 mm
[4.01"]

B - B
(Platter Not Shown)

A

B

A - A
(Platter Not Shown)

Additional structural support may be required for thin countertops or two
L brackets may be used instead of a routed edge (see example below).

9.5 mm
[0.375"]

39.0 mm
[1.54"] Max.

62.1 mm
[2.45"] Max.

9.5 mm
[0.375"]

** Cutout walls must not
contact the platter.*

Example of L Bracket Support
Max. Length of 286 mm [11.25"].

Example of L Bracket Support
Max. Length of 286 mm [11.25"].

Figure 17. MS2430 Mounting Diagram, Two Point Support

Specifications are subject to change without notice.

Figure 18. MS2430 Mounting Diagram, Three Point Support

Specifications are subject to change without notice.

Cable Installation (Interface Specific)

RS232

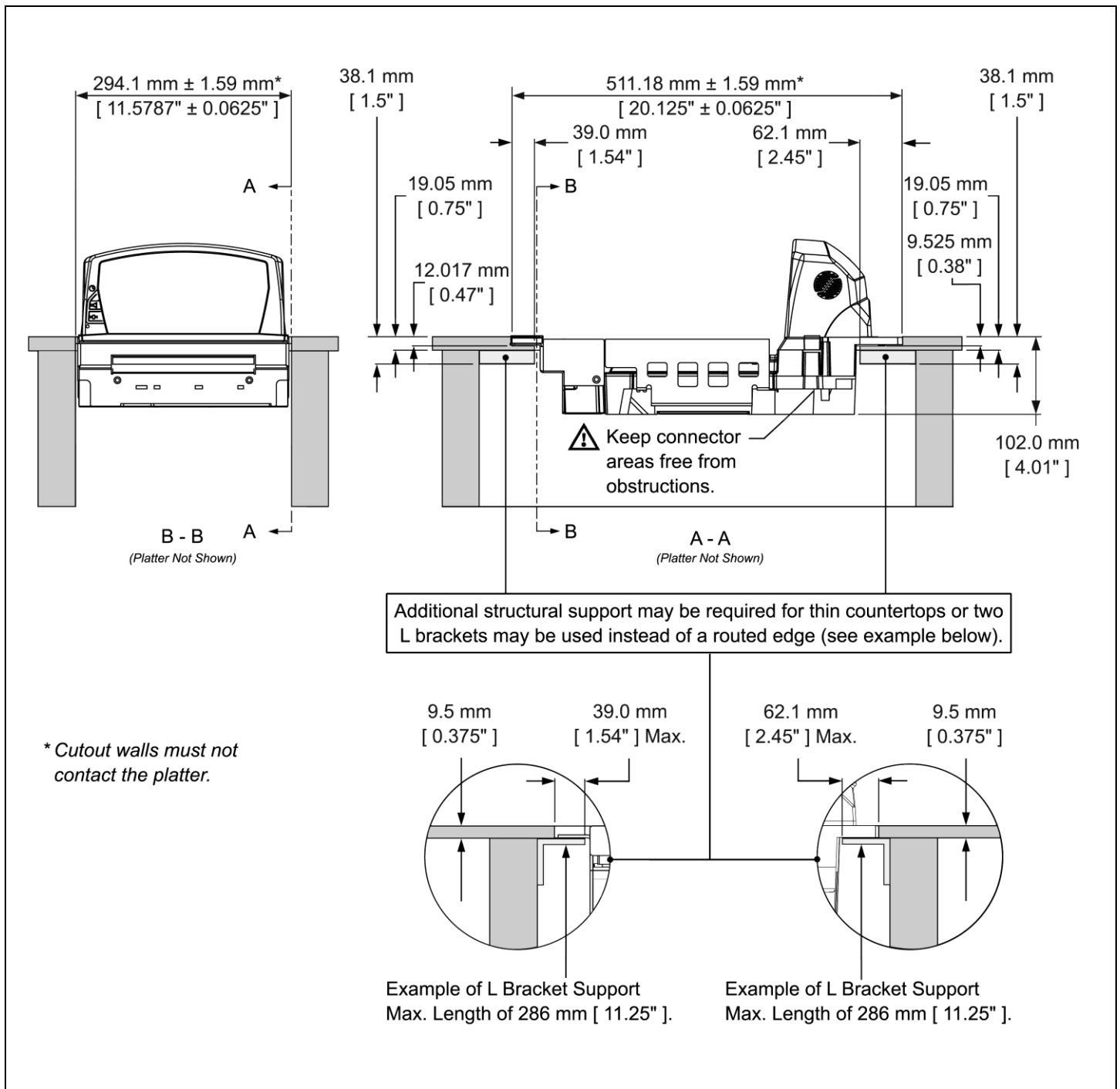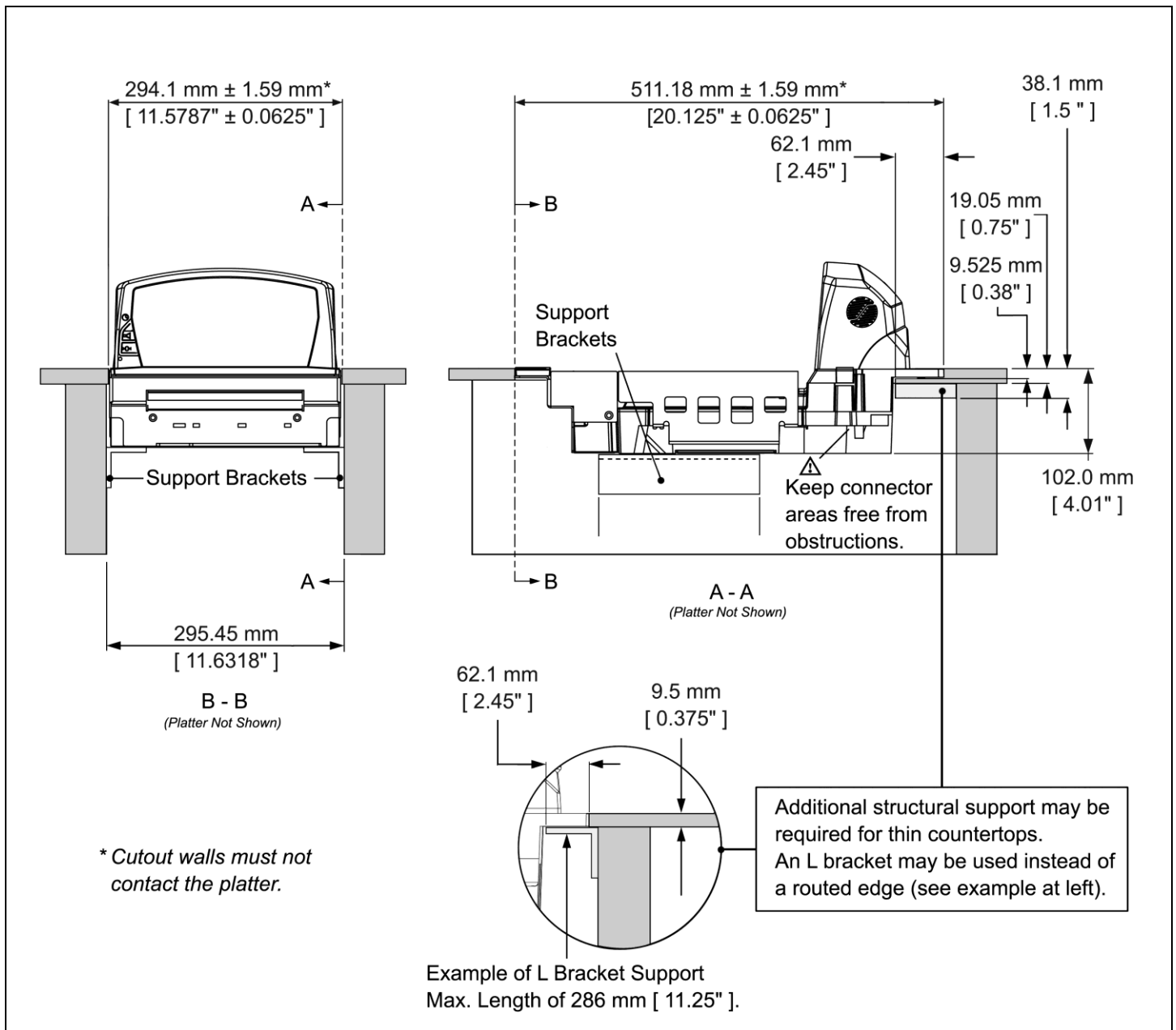The following steps describe how to properly install the cables for an RS232 application. The scanner/Diva scale must then be configured to match the host's RS232 parameters. Cable installation alone does not guarantee that the scanner will communicate properly with the host system.

Note: Configuration bar codes are located in the MetroSelect Configuration Guide (PN 00-02407x) and the MS2x20 Stratos Series Scanner/Diva Scale Configuration Addendum (PN 00-02272x).

1. Turn off the host system.

2. Plug the 10-pin RJ45 end of the RS232 interface cable (PN 57-57210x-N-3) into the 10-pin socket labeled 'Scanner Host RS232' on the bottom of the scanner. Refer to the figure on page 23.

3. Connect the other end of the RS232 cable to the proper communication port on the host device.

   > ***Stop****: Before continuing, verify that the RS232 interface cable is connected to the appropriate interface socket on the scanner. An incorrect cable connection can cause communication problems or potential damage to the scanner and/or terminal.*

Steps 4 and 5 are for dual cable interfaces where the scale and the scanner connect to the host with their own separate communication cables. Skip to step 6 for a single cable interface where the scale and scanner connect to the host with a single cable.

4. Plug the dual interface cable (PN 57-57000x-N-3) into the 10-pin socket labeled 'Scale RS232 to Host' on the bottom of the scanner.

5. Connect the other end of the dual interface cable (PN 57-57000x-N-3) to the appropriate communication port on the host's scale device.

6. Plug the optional remote scale display cable (PN 46-00375, 46-00376, or 46-00377) into the 10-pin socket labeled 'Scale to Display' on the bottom of the scanner.

7. Plug the external power supply (PN 46-002xx) into the 3-pin Molex socket labeled 'DC Power In' on the bottom of the scanner.

   > *Note: Check the AC input requirements of the power supply to make sure the voltage matches the AC outlet. The outlet should be located near the equipment and be easily accessible.*
   >
   > *Using a switched AC outlet is recommended. The switch should be located on the operator's side of the checkout counter in close proximity to the scanner to facilitate calibration and service of the unit.*

8. Connect AC power to the transformer. If the AC outlet is equipped with an on/off switch, turn the power on.

Cable Installation (Interface Specific)

RS232

9. Turn on the host system.

10. Scan the *Recall Defaults* bar code.

    Note: The Recall Defaults bar code is located in the MetroSelect Configuration Guide, under Need to Start Over (PN 00-02407x).

11. Configure the scanner to match the host system's RS232 parameters.

    Note: Refer to the MetroSelect Configuration Guide (PN 00-02407x) under Section G: RS232 for enabling RS232 Mode (scan the recall defaults bar code first).

    Refer to the MS2x20 Stratos Series Scanner/Diva Scale Configuration Addendum (PN 00-02272x) for scale, dual cable and single cable configuration bar codes.
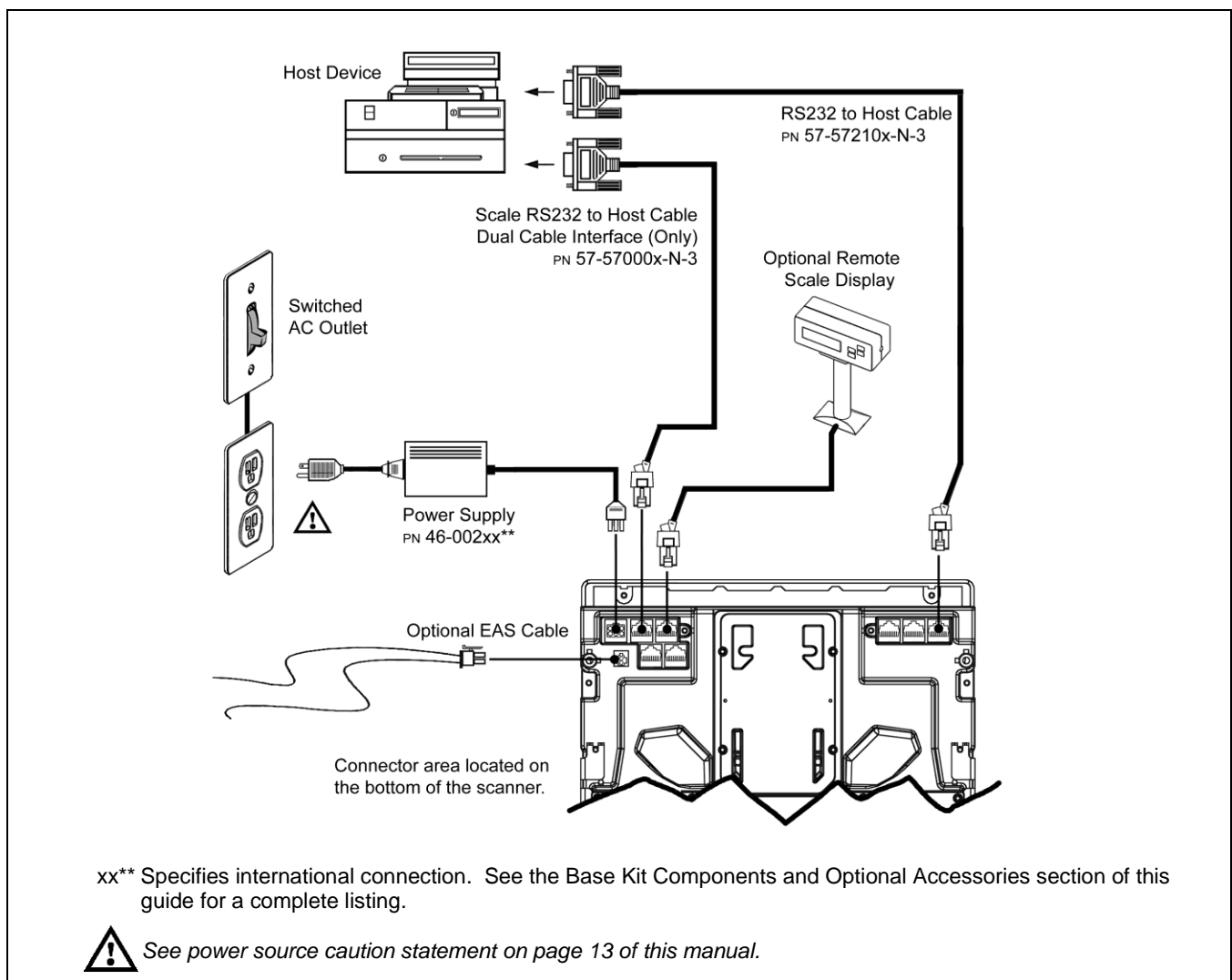

Figure 19. RS232 Interface Cable Installation Schematic

Cable Installation (Interface Specific)

Full Speed USB

The following steps describe how to properly install the cables for a Full Speed USB application. The scanner/Diva scale must then be configured to match the host's USB parameters. Cable installation alone does not guarantee that the scanner will communicate properly with the host system.

Note: Configuration bar codes are located in the MetroSelect Configuration Guide (PN 00-02407x) and the MS2x20 Stratos Series Scanner/Diva Scale Configuration Addendum (PN 00-02272x).

1. Turn off the host system.

2. Plug the 10-pin RJ45 end of the USB interface cable (PN 57-57201x-N-3 or 57-57227x-N-3) into the 10-pin socket labeled 'Scanner Host USB' on the bottom of the scanner. Refer to the figure on page 26.

3. Connect the other end of the USB interface cable to the appropriate USB port on the host device.

    Stop*: Before continuing, verify that the USB interface cable is connected to the appropriate socket on the scanner. An incorrect cable connection can cause communication problems or potential damage to the scanner and/or terminal.*

    Note: Plugging the scanner into the USB port of the host does not guarantee that scanned information will appear at the host. A software driver and correct configuration setting are also required for proper communication to occur.

Steps 4 and 5 are for dual cable interfaces where the scale and the scanner connect to the host with their own separate communication cables. Skip to step 6 for a single cable interface where the scale and scanner connect to the host with a single cable.

4. Plug the dual interface cable (PN 57-57000x-N-3) to the 10-pin socket labeled 'Scale RS232 to Host' on the bottom of the scanner.

5. Connect the other end of the dual interface cable (PN 57-57000x-N-3) to the appropriate communication port on the host's scale device.

6. Plug the optional remote scale display cable (PN 46-00375, 46-00376, or 46-00377) into the 10-pin socket labeled 'Scale to Display' on the bottom of the scanner.

7. Plug the external power supply (PN 46-002xx) into the 3-pin Molex socket labeled 'DC Power In' on the bottom of the scanner.

    Note: Check the AC input requirements of the power supply to make sure the voltage matches the AC outlet. The outlet should be located near the equipment and be easily accessible.

    Using a switched AC outlet is recommended. The switch should be located on the operator's side of the checkout counter in close proximity to the scanner to facilitate calibration and service of the unit.

8. Connect AC power to the transformer. If the AC outlet is equipped with an on/off switch, turn the power on.

Cable Installation (Interface Specific)

Full Speed USB

9. Turn on the host system.

10. Configure the scanner to match the host system's USB parameters.

For Single Cable Applications:

> *The IBM OEM Full Speed USB English and Metric bar codes are located in the MS2x20 Stratos Series Scanner/Diva Scale Configuration Addendum (PN 00-02272x) under Scanner Configuration Bar Codes: Single Cable Protocols for POS Compatibility, IBM OEM Full Speed USB.*

For Dual Cable Applications:

> *The IBM OEM Full Speed USB Communication Defaults bar code is located in the MS2x20 Stratos Series Scanner/Diva Scale Configuration Addendum (PN 00-02272x) under Scanner Configuration Bar Codes: Dual Cable Scanner Configuration Bar Codes, IBM OEM Full Speed USB Communication Defaults and IBM OEM Full Speed USB Protocols.*

For USB Serial Emulation Mode or Keyboard Emulation Mode Only

These features can only be used for Dual Cable Applications.

11. Configure the scanner for USB Serial Emulation Mode or USB Keyboard Emulation Mode by scanning the appropriate configuration bar codes in the USB section of the MetroSelect Configuration Guide (PN 00-02407x) under Low Speed USB. Any low speed USB warnings may be disregarded when utilizing these codes for a Full Speed USB scanner.

> *Note: These features can only be used for Dual Cable Applications. The IBM OEM Full Speed USB Communication Defaults bar code listed in step 10 must be scanned before scanning one of these bar codes or this feature will not work properly.*

Cable Installation (Interface Specific)

Full Speed USB

Non-Locking

Host Device

or

Locking, Type A

RS232 to Host Cable
PN 57-57201x-N-3 or
PN 57-57227x-N-3

Scale RS232 to Host Cable
Dual Cable Interface (Only)
PN 57-57000x-N-3

Optional Remote
Scale Display

Switched
AC Outlet

Power Supply
PN 46-002xx**

Optional EAS Cable

Connector area located on
the bottom of the scanner.

xx** Specifies international connection. See the Base Kit Components and Optional Accessories section of this guide for a complete listing.

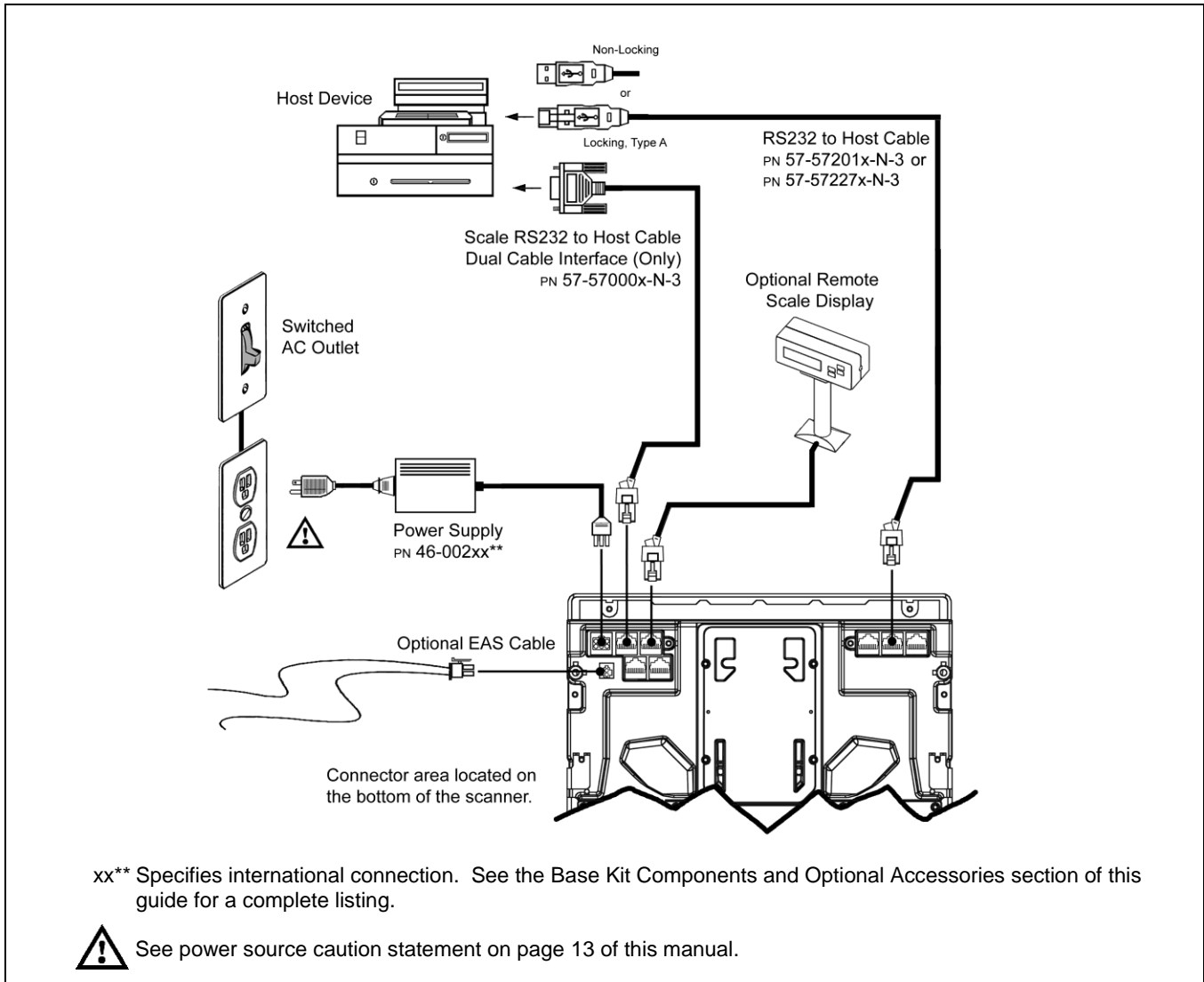⚠ See power source caution statement on page 13 of this manual.

Figure 20. USB Cable Installation Schematic

Cable Installation (Interface Specific)

RS485

The following steps describe how to properly install the cables for a RS485 application. The scanner/Diva scale must then be configured to match the host's RS485 parameters. Cable installation alone does not guarantee that the scanner will communicate properly with the host system.

Note: Configuration bar codes are located in the MetroSelect Configuration Guide (PN 00-02407x) and the MS2x20 Stratos Series Scanner/Diva Scale Configuration Addendum (PN 00-02272x).

1. Turn off the host system.

2. Plug the 10-pin RJ45 end of the RS485 interface cable (PN 57-57212x-N-3) into the 10-pin socket labeled 'Scanner Host 46xx' on the bottom of the scanner. Refer to the figure on page 28.

3. Connect the other end of the RS485 cable to communication port 9 on the host device.

    Stop*: Before continuing, verify that the RS485 cable is connected to the appropriate interface socket on the scanner. An incorrect cable connection can cause communication problems or potential damage to the scanner and/or terminal.*

    Note: Plugging the scanner into the serial port of the host device does not guarantee that scanned information will appear at the host device. A software driver and correct configuration settings are also required for proper communication to occur.

Steps 4 and 5 are for dual cable interfaces where the scale and the scanner connect to the host with their own separate communication cables. Skip to step 6 for a single cable interface where the scale and scanner connect to the host with a single cable.

4. Plug the 10-pin RJ45 end of the dual interface cable (PN 57-57000x-N-3) into the 10-pin socket labeled 'Scale RS232 to Host' on the bottom of the bottom of the scanner.

5. Connect the other end of the dual interface cable (PN 57-57000x-N-3) into the appropriate communication port on the host's scale.

6. Plug the optional remote scale display cable (PN 46-00375, 46-00376, or 46-00377) into the 10-pin socket labeled 'Scale to Display' on the bottom of the scanner.

7. Plug the external power supply (46-002xx) into the 3-pin Molex socket labeled 'DC Power In' on the bottom of the scanner.

    Note: Check the AC input requirements of the power supply to make sure the voltage matches the AC outlet. The outlet should be located near the equipment and be easily accessible.

    Using a switched AC outlet is recommended. The switch should be located on the operator's side of the checkout counter in close proximity to the scanner to facilitate calibration and service of the unit.

8. Connect AC power to the transformer. If the AC outlet is equipped with an on/off switch, turn the power on.

Cable Installation (Interface Specific)

RS485

9. Turn on the host system.

10. Configure the scanner to match the host system's RS485 parameters.

    For Single Cable Applications:

    The IBM 3rd Generation 46xx, English and Metric bar codes are located in the MS2x20 Stratos Series Scanner/Diva Scale Configuration Addendum (PN 00-02272x) under Scanner Configuration Bar Codes: Single Cable Protocols for POS Compatibility, IBM 3rd Generation 46xx.

    For Dual Cable Applications:

    The IBM 3rd Generation 46xx and IBM OEM Full Speed USB bar code is located in the MS2x20 Stratos Series Scanner/Diva Scale Configuration Addendum (PN 00-02272x) under Scanner Configuration Bar Codes: Dual Cable Scanner Configuration Bar Codes, IBM 3rd Generation 46xx and IBM OEM Full Speed USB.
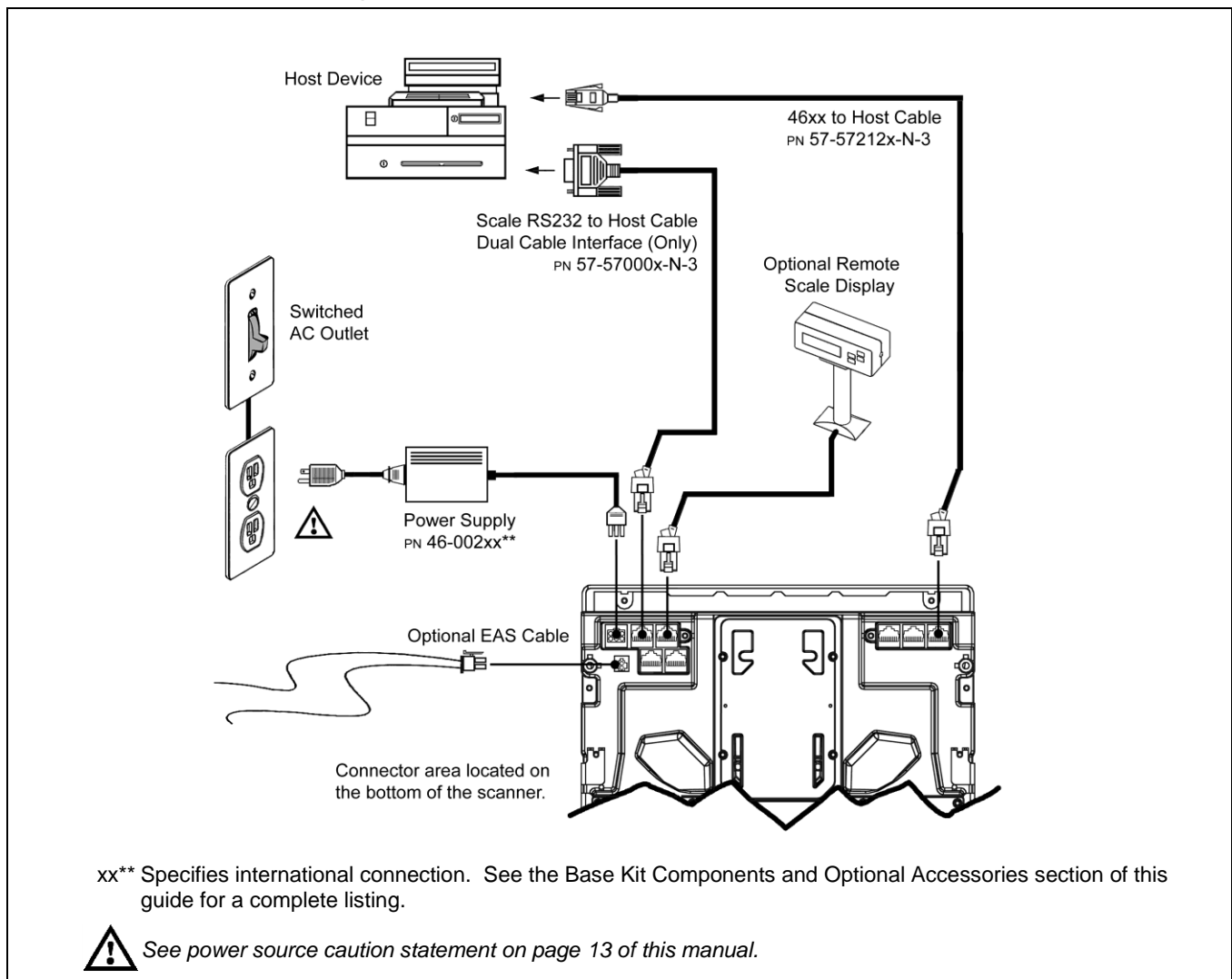
Figure 21. RS485 Cable Installation Schematic

Cable Installation (Secondary Honeywell Scanner)

The following steps describe how to properly install the cables between a secondary Honeywell scanner and the MS2420/MS2430. The MS2420/MS2430 and the secondary scanner must then be configured to communicate properly. Cable installation alone does not guarantee that the MS2420/MS2430 will communicate properly with the host system and secondary scanner.

Note: Contact a customer service representative before connecting another manufacturer's scanner to the MS2420/MS2430 as a secondary scanner.

Configuration bar codes are located in the MS2x20 Stratos Series Scanner/Diva Scale Configuration Addendum (PN 00-02272x) under Scanner Configuration Bar Codes: Auxiliary Port, Quick Start for a Secondary Honeywell Scanner.

1. Refer to pages 22 - 27 for the type of interface (RS232, RS485, etc.) required for your application. Follow the cable installation steps under the appropriate interface before continuing. Once the communication and power cables have been installed follow step 2 below for the secondary scanner installation.

2. Connect the straight end of the RS232 PowerLink AUX cable (PN 57-57099x-3 or PN 57-57099x-3-12) into the RS232 socket of the secondary scanner (see figure on page 30).

3. Connect the angled end of the RS232 AUX cable (PN 57-57099x-3 or PN 57-57099x-3-12) into the 10-pin socket labeled 'Aux RS232 In' on the bottom of the MS2420/MS2430.

   Important: The MS2420/MS2430 series' aux port requires the signals; transmit, receive, RTS & CTS from the secondary scanner.

   For Rev G Units or later: The MS2420/MS2430's auxiliary port will support 5VDC devices with a 700mA maximum current.

   For Rev F units or earlier: The MS2420/MS2430's auxiliary port will support 5VDC devices with a 150mA maximum current. If the auxiliary device exceeds this specification, an external power supply will be required to power the auxiliary device. The following Honeywell scanners can receive power from MS2420/MS2430: the MS9520, MS9540, and the MS5145.

4. This step is required for secondary devices that require >5VDC and/or 700mA current to operate. Skip to step 5 if the secondary device requires ≤ 5VDC. Plug the power supply into the secondary scanner's PowerLink cable (PN 57-57099x-3 or PN 57-57099x-3-12) and connect AC power to the secondary scanner.

   Note: Check the AC input requirements of the power supply to make sure the voltage matches the AC outlet. The outlet should be located near the equipment and be easily accessible.

5. Configure the MS2420/MS2430 and the secondary scanner. The auxiliary input port's data format must match the main output format of the secondary scanner.

   Note: Refer to the MS2x20 Stratos Series Scanner/Diva Scale Configuration Addendum (PN 00-02272x) under Scanner Configuration Bar Codes: Auxiliary Port, Quick Start for a Secondary Honeywell Scanner.

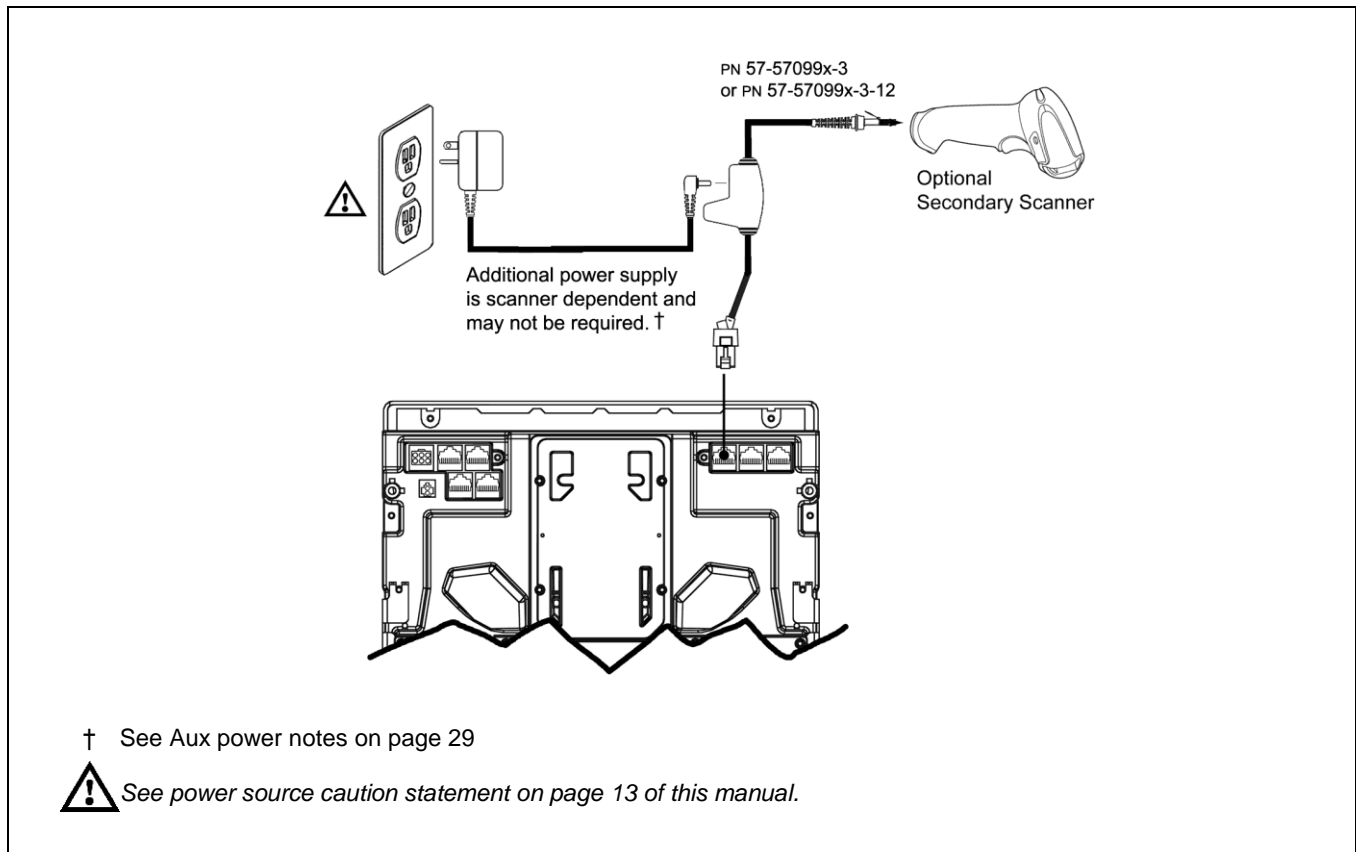## Cable Installation (Secondary Honeywell Scanner)

PN 57-57099x-3
or PN 57-57099x-3-12

Optional
Secondary Scanner

Additional power supply
is scanner dependent and
may not be required. †

† See Aux power notes on page 29

⚠ *See power source caution statement on page 13 of this manual.*

Figure 22. Secondary Scanner Cable Installation Schematic

EAS Deactivation

SW1 and SW2 are the switch banks inside the Checkpoint Device that set the deactivation range. The following is a list of Checkpoint recommended switch bank settings.

Base Model	Checkpoint Recommended Switch Bank Settings
MS2420	SW1 & SW2 switches 1 and 6 set to ON
MS2430	SW1 & SW2 switches 1 and 6 set to ON

All MS2420/MS2430 models have a connector labeled EAS In on the bottom of the unit. An optional EAS cable (PN 52-52511 or 52-52556) is available for purchase for connection between the Checkpoint Device and the MS2420/MS2430.
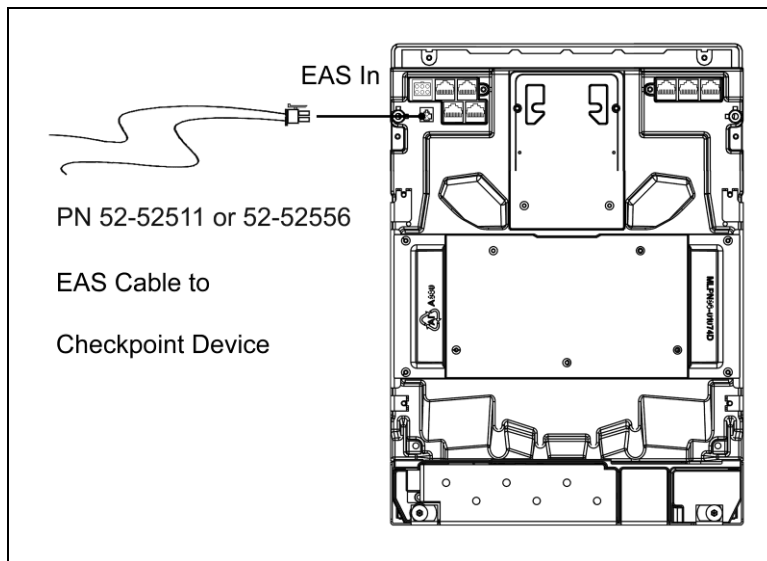
Figure 23. EAS Cable Connection (Bottom of MS2420/MS2430)

The following figure shows the location of the EAS deactivation area for the MS2420/MS2430. It is important to pass the entire tag through this area to deactivate the security tag.
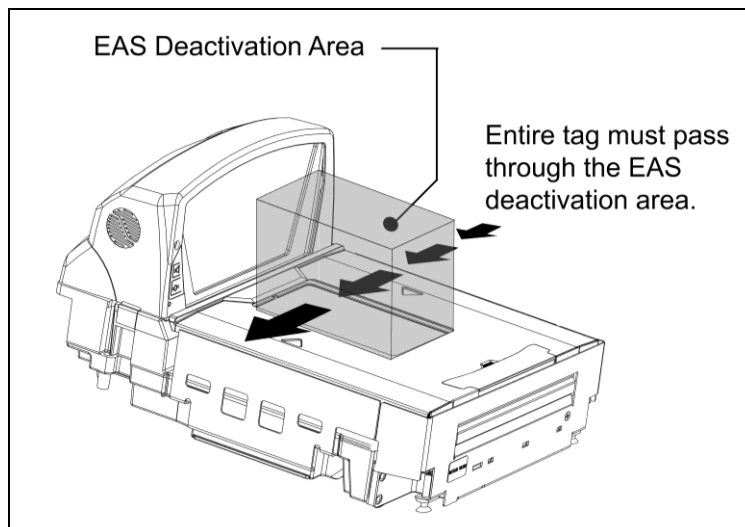
Figure 24. EAS Deactivation Area

Scan Zone
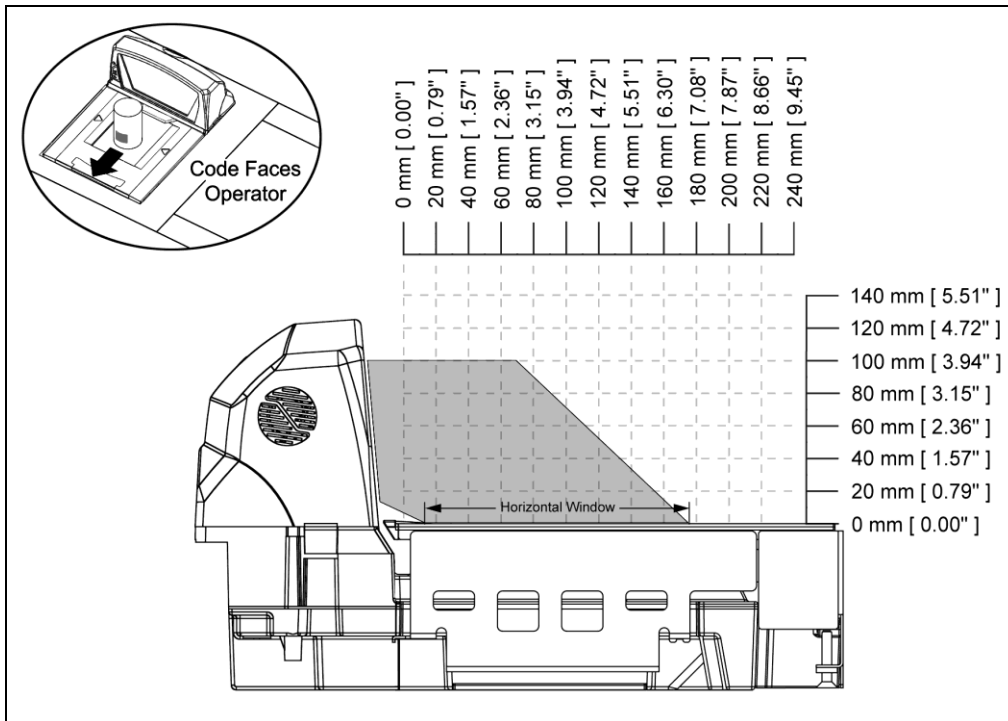
Figure 25. Checker-Side (13 mil)
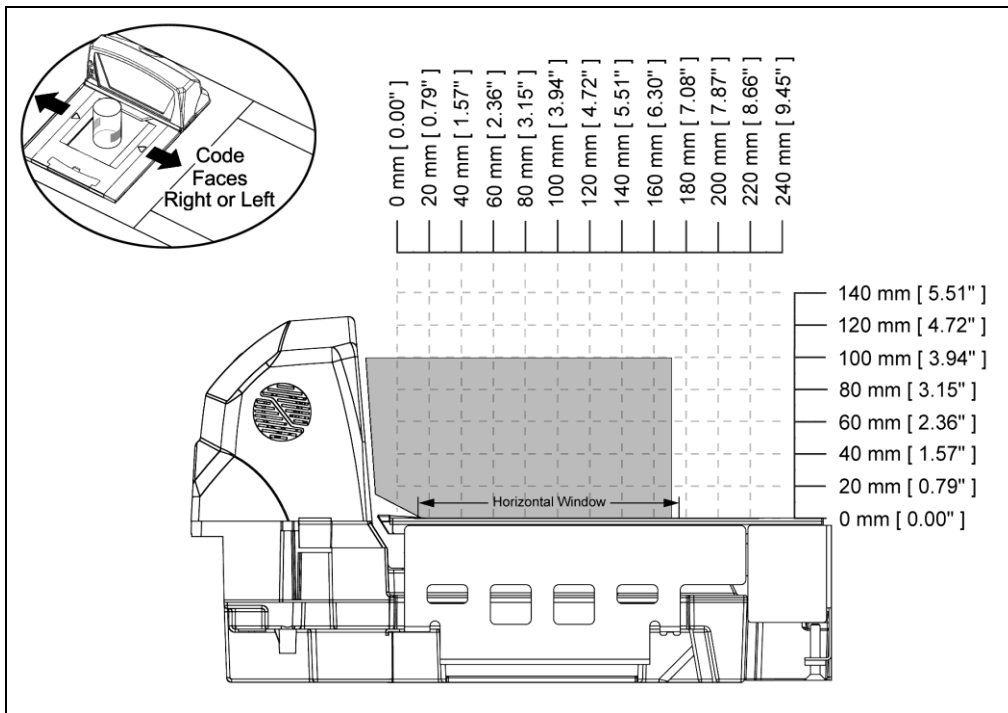
Figure 26. Horizontal Left/Right (13 mil)

Specifications are subject to change without notice.

Typical scan zones shown.
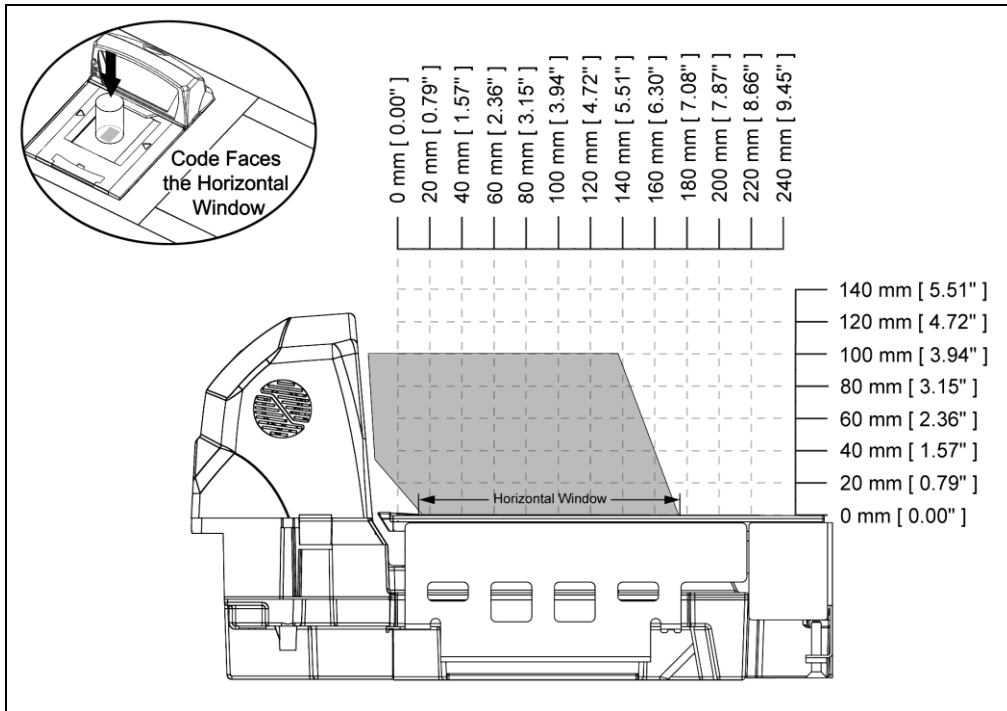
Scan Zone

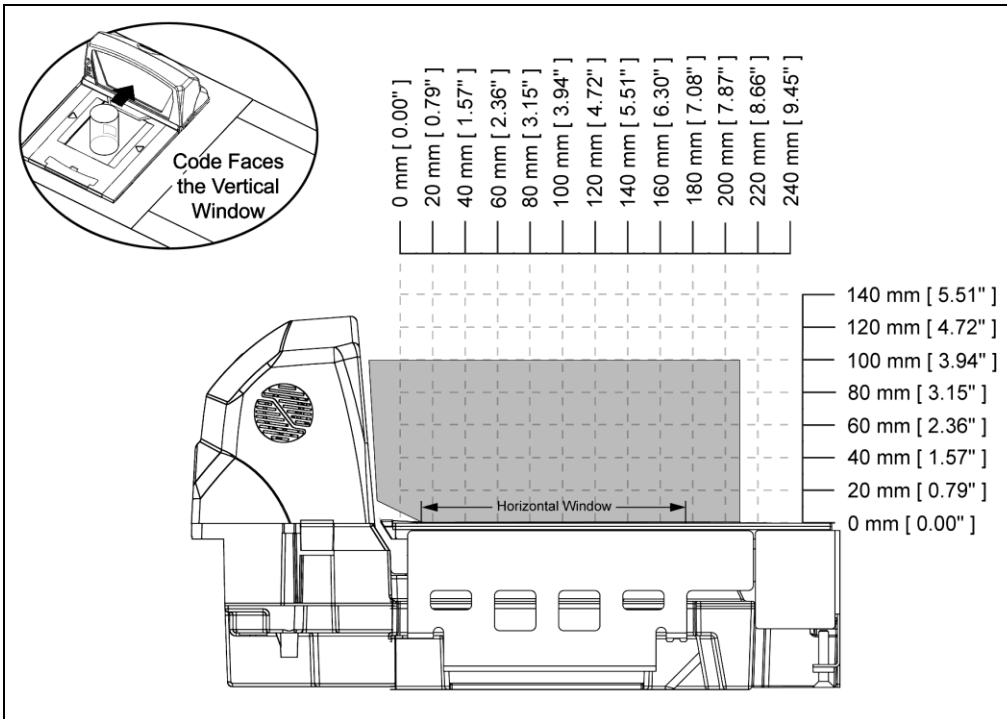*Figure 27. Horizontal Direct (13 mil)*

Figure 28. Vertical Direct (13 mil)

Specifications are subject to change without notice.

Typical scan zones shown.

Wake Activation Area (Photocell LED Output)

The MS2420/MS2430 scanner's default power save mode[†] is Dual Action Power Save Mode #2 (see page 43). This power save mode turns the laser OFF after a configured period of non-use then turns the motor OFF after thirty-minute intervals. Any movement detected by the photocell in the activation area, shown below in grey, will cause the scanner to exit the power save mode. The motor will restart automatically and the laser will turn back on preparing the scanner for bar code recognition, decoding, and transmission.
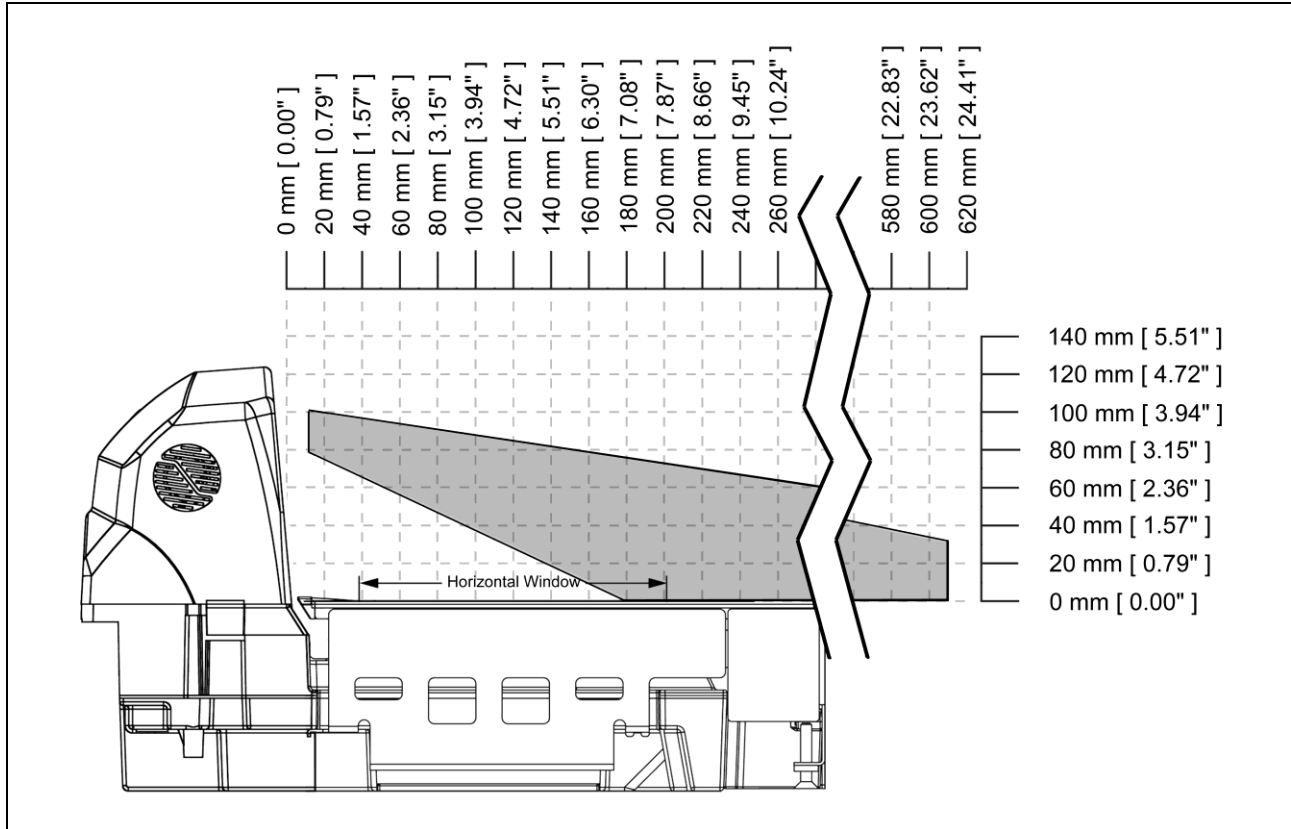
Figure 29. Wake Activation Area Perpendicular to Package Flow Default Range
(Photocell LED Output)

†   *Refer to the MetroSelect Configuration Guide (PN 00-02407) for additional information on configurable power save modes.*

Specifications are subject to change without notice.

Wake Activation Area Sensitivity (Photocell LED Output Range)

Changing the Wake Area Sensitivity Level (Photocell LED Range Adjust)

The MS2400 Series bar code scanner wake area sensitivity level can be set to the end users preference by scanning one of the Photocell Sensitivity adjustment bar codes below.

*Max Photocell
Sensitivity

³ 2 2 1 2 0 0

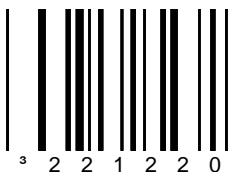This feature enables the MS24xx to be at Max sensitivity or far sensing for the wake up photo transistor.

This is the default setting.

This feature enables the MS24xx to be at a medium 1 sensitivity or medium sensing for the wake up photo transistor.

Medium Photocell
Sensitivity

³ 2 2 1 2 1 0

Low Photocell
Sensitivity

³ 2 2 1 2 2 0

This feature enables the MS24xx to be at a low sensitivity or low sensing for the wake up photo transistor.

This feature enables the MS24xx to be at the lowest sensitivity (close only) for the wake up photo transistor.

Min Photocell
Sensitivity

³ 2 2 1 2 3 0

*   MS2400 Series Bar Code Scanner Default Setting

Audible Indicators

When in operation the MS2420/MS2430 provides audible feedback that indicates the status of the unit and the current scan. Eight settings are available for the tone of the beep (normal, six alternate tones and no tone) plus three volume settings. To change the tone or volume, refer to the *Changing the Beeper Tone & Volume* section of this manual.

One Beep

When the scanner first receives power the blue LED will flash then the blue LED will stay on and the scanner will beep once. The scanner is now ready to scan.

When the scanner successfully reads a bar code, the blue LED will flash and the scanner beeps once (if configured to do so). If the scanner does not beep once and the blue light does not flash, then the bar code has not been successfully read.

Razzberry Tone

This is a failure indicator. Refer to failure modes on page 39.

Three Beeps - during operation

When placing the scanner in configuration mode, the blue LED will flash while the scanner simultaneously beeps three times. The blue LED will continue to flash until the unit exits configuration mode. Upon exiting configuration mode, the scanner will beep three times and the blue LED will stop flashing.

When configured, three beeps can also indicate a communications timeout during normal scanning mode.

When using one-code-configuring, the scanner will beep three times (the current selected tone), followed by a short pause, a high tone and a low tone. This tells the user that the single configuration bar code has successfully configured the scanner.

Three Beeps - on power up

This is a failure indicator. Refer to failure modes on page 39.

Visual Indicators

Blue LED is located near the bottom corner of the vertical output window on the MS2420/MS2430. When the scanner is ON, the flashing or constant, illumination of the LED indicates the status of the MS2420/MS2430 and the current scan. There is an additional amber LED next to the scale zero symbol on all MS2420/MS2430 models that include a scale (see Figure 32).

Blue LED

Scale Zero LED

Figure 30. LED

No Blue LED

The blue LED will not be illuminated if the scanner is not receiving power from the host or transformer. It is also not illuminated when all lasers are turned off for any reason.

Steady Blue

When all lasers are active, the blue LED is illuminated. The blue LED will remain illuminated until all lasers are deactivated.

Steady Blue and Single blue Flash

When the scanner successfully reads a bar code, the blue LED will flash and the scanner will beep once. If the blue LED does not flash or the scanner does not beep once, then the bar code has not been successfully read.

Steady Blue

After a successful scan, the scanner transmits the data to the host device. Some communication modes require that the host inform the scanner when data is ready to be received. If the host is not ready to accept the information, the scanner's blue LED will remain on until the data can be transmitted.

Flashing Blue

This indicates the scanner is in program mode. A razzberry tone indicates that an invalid bar code has been scanned in this mode.

or

If the unit is in sleep mode, the blue LED will flash once every 15 seconds.

or

This indicates there is an error active on the diagnostic indicator display (see Error Codes on page 40). The scanner may continue to operate depending on the type of error.

Blue LED Off

This indicates the scanner may be waiting for communication from the host.

Steady Amber LED

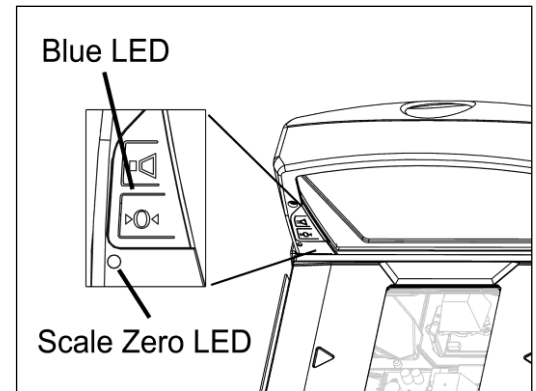The amber LED is illuminated when the scale is at zero.

Failure Modes

Flashing Blue and One Razzberry Tone

This indicates that the scanner has experienced a laser subsystem failure. The scanner will try up to three times to correct the failure condition. If the laser subsystem continues to fail, that subsystem (horizontal or vertical) will be shut down and an error indication will be shown on the Diagnostic Indicator Display. This error stays on the display until corrected. If the remaining subsystem is still operational, scanning will continue using the operational components.

Flashing Blue and Two Razzberry Tones

This indicates that the scanner has experienced a motor subsystem failure. The scanner will try up to three times to correct the failure condition. If the motor subsystem continues to fail, that subsystem (horizontal or vertical) will be shut down and an error indication will be shown on the Diagnostic Indicator Display. This error stays on the display until corrected. If the remaining subsystem is still operational, scanning will continue using the still operational components.

Continuous Razzberry Tone with Both LED Off

If, upon power up, the scanner emits a continuous razzberry tone, then the scanner has an electronic failure. Return the unit for repair at an authorized service center.

Three Beeps - On Power Up

If the scanner beeps three times on power up then, the nonvolatile memory that holds the scanner configuration has failed. Return the unit for repair at an authorized service center.

Diagnostic Indicator Display

There is a two-digit error code display located under horizontal output window near the top of the platter (see figure below).
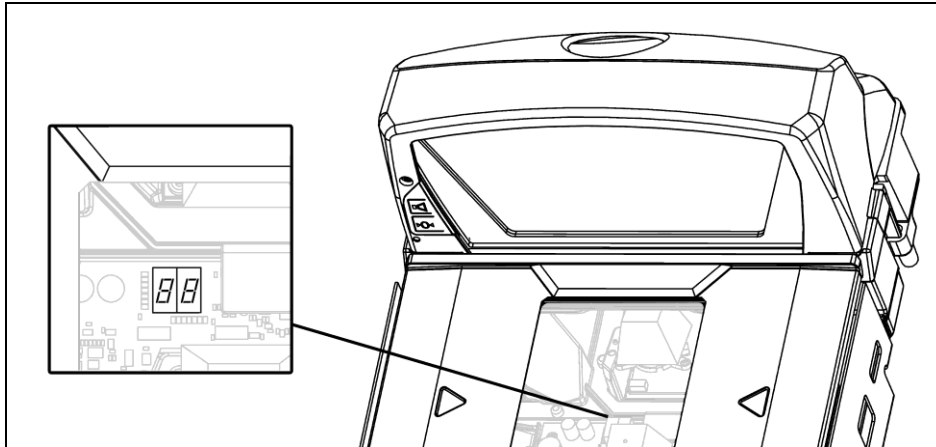

Figure 31. Error Code Display

The following is a list of possible error codes and their meanings. Some errors will require immediate scanner maintenance.

Error Code	Description
01	Reserved
02	RAM ERROR – The scanner's Random Access Memory (RAM) is tested as faulty. Return the unit for repair at an authorized service center.
03	PROGRAM ERROR – The scanner's software program is failing. Return the unit for repair.
04	INTERFACE ERROR – After power up and any application exit (e.g. MetroSet™, etc.), the scanner checks the interface hardware with that chosen in configuration. If they do not agree, an interface error exists. Correct this problem by getting the proper hardware interface OR programming MS2420/MS2430 configuration for the proper interface hardware attached.
05	CONFIGURATION ERROR – The non-volatile configuration memory did not agree with the data last saved. Default configuration data is then used and the scanner continues operating. This error is also accompanied by three beeps. This error will remain during operation as a reminder that this power cycle is scanning against a default-generated configuration.
06	COMMUNICATION ERROR – The RS232 data line is being held active. This causes the scanner to read a "break" signal constantly and continuous attempts are made to enter MetroSet configuration mode. A short on the RX Data line can cause this condition. It can also be the result of a laptop in power save mode. The scanner will abort attempts to enter configuration mode after a short timeout. The scanner can automatically recover from this condition once the short in the RX Data line is corrected.

Diagnostic Indicator Display

Error Code	Description
09	COPROCESSOR COMMUNICATION ERROR – The main microprocessor is not communicating with the interface coprocessor. The interface coprocessor may be in a fault condition with the host or just not able to respond. This error may appear when the scanner is configured for USB or RS485 interface applications or during an attempt to update the interface software through the flash utility. The unit should be repaired at an authorized service center.
11	SWITCH ERROR – The switch used for volume selection or sleep mode is detected in error (always closed). The condition is self-correcting if possible. If the error persists, return the unit for repair at an authorized service center. The scanning operation can continue with this error active.
12	Reserved
13	SCALE ERROR – The scanner does not communicate with the scale. Make sure there is nothing plugged into the 'Scale RS232 to Host' port. If there is disconnect the cable, it may be causing the communication error. If there is still no communication between the scanner and scale return the unit to authorized service center for repair.
14	SCALE RETURN TO ZERO ERROR – The scale did not return to zero between scale weight requests if the zero checking function is enabled. The scale will need to be re-zeroed.
21	LASER #1 (VERTICAL) ERROR – The laser in the vertical scanning subsystem denotes a failure. The scanner will try three times to correct the laser operation. If the laser error persists, the vertical scanning subsystem will be shut down and this error code will remain on the Diagnostic Indicators.
22	LASER #2 (RIGHT HORIZONTAL) ERROR – The right laser in the horizontal scanning subsystem denotes a failure. The scanner will try three times to correct the laser operation. If the laser error persists, and the left horizontal laser (#3) is also in error, the horizontal scanning subsystem will be shut down and this error code will remain on the Diagnostic Indicators.
23	LASER #3 (LEFT HORIZONTAL) ERROR – The left laser in the horizontal scanning subsystem denotes a failure. The scanner will try three times to correct the laser operation. If the laser error persists, and the right horizontal laser (#2) is also in error, the horizontal scanning subsystem will be shut down and this error code will remain on the Diagnostic Indicators.
24	LASER #1 (VERTICAL) HIGH CURRENT WARNING – The laser in the vertical scanning subsystem is drawing excessive current. This could be a warning for a future total failure. Have the unit checked at an authorized service center when convenient.
25	LASER #2 (RIGHT HORIZONTAL) HIGH CURRENT WARNING – The laser in the vertical scanning subsystem is drawing excessive current. This could be a warning for a future total failure. Have the unit checked at an authorized service center when convenient.

Diagnostic Indicator Display

Error Code	Description
26	LASER #3 (LEFT HORIZONTAL) HIGH CURRENT WARNING – The laser in the vertical scanning subsystem is drawing excessive current. This could be a warning for a future total failure. Have the unit checked at an authorized service center when convenient.
27	LASER #1 (VERTICAL) UNDERCURRENT WARNING – The laser in the vertical scanning subsystem is drawing too little current. The laser is probably not on. This could be the result of a loss of the required set point in memory. Have the unit checked at an authorized service center.
28	LASER #2 (RIGHT HORIZONTAL) UNDERCURRENT WARNING – The laser in the right horizontal scanning subsystem is drawing too little current. The laser is probably not on. This could be the result of a loss of the required set point in memory. Have the unit checked at an authorized service center.
29	LASER #3 (LEFT HORIZONTAL) UNDERCURRENT WARNING – The laser in the left vertical scanning subsystem is drawing too little current. The laser is probably not on. This could be the result of a loss of the required set point in memory. Have the unit checked at an authorized service center.
31	MOTOR #1 (VERTICAL) ERROR – The motor in the vertical scanning subsystem denotes a failure. The scanner will try three times to correct the motor operation. If the motor error persists, the vertical scanning subsystem will be shut down and this error code will remain on the Diagnostic Indicators.
32	MOTOR #2 (HORIZONTAL) ERROR – The motor in the horizontal scanning subsystem denotes a failure. The scanner will try three times to correct the motor operation. If the motor error persists, the horizontal scanning subsystem will be shut down and this error code will remain on the Diagnostic Indicators.
34	Motor #1 (VERTICAL) SPEED ERROR – The motor in the vertical section cannot be speed controlled as desired. Have the unit checked at an authorized service center.
35	Motor #2 (HORIZONTAL) SPEED ERROR – The motor in the horizontal section cannot be speed controlled as desired. Have the unit checked at an authorized service center.

Power Save Modes

The MS2420/MS2430 has five configurable power save modes. Refer to the MetroSelect Configuration Guide for additional information on Power Save Modes.

1. Blink Power Save Mode:

    Blinks the laser OFF and ON after a configured period of non-use.

    When the scanner recognizes a bar code, it will exit the Blink mode.

2. Laser Off Power Save Mode:

    Turns the laser OFF after a configured period of non-use. The motor continues to spin allowing for a faster "wake" up time.

    Any movement detected by the IR will "wake" the scanner from the Laser Off power save mode (see Figure 29 on page 35).

3. Laser & Motor Off Power Save Mode:

    Turns the laser and motor OFF after a configured period of non-use.

    Any movement detected by the IR will "wake" the scanner from the power save mode (see Figure 29 on page 35). This mode's "wake" time is slightly longer due to the motor's need to restart.

4. Dual Action Power Save Mode #1:

    "Blinks" the laser OFF and ON after a configured period of non-use; turns the laser and motor OFF at thirty-minute intervals.
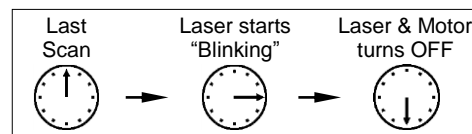
    Example:
    If the power save timeout is set to 15 minutes.

    Any movement detected by the IR will "wake" the scanner from the power save mode (see Figure 29 on page 35).

5. Dual Action Power Save Mode #2 (Default):

    Turns the laser OFF after a configured period of non-use then turns the motor OFF after thirty-minute intervals.

    Example:
    If the power save timeout is set to 15 minutes.
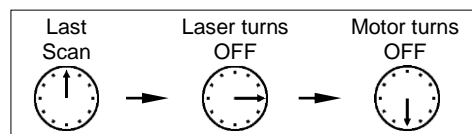
    Any movement detected by the IR will "wake" the scanner from the power save mode (see Figure 29 on page 35).

Beeper Options and Button Functions

Changing the Beeper Tone

Beeper tones may be configured incrementally using the following bar code. The new tone will be heard followed by a short pause. Two more new tones will be heard signifying the new setting has been stored in memory. The silent (no beep) tone is also selectable.

Next Beep Tone

Changing the Beeper Volume

Volume levels may be configured using the volume button or incrementally using the following bar code. The new volume will be heard followed by a short pause. Two more tones will be heard signifying the new setting has been saved in memory. The silent (no volume) tone is also selectable.

Next Volume

The Multi-Function Button
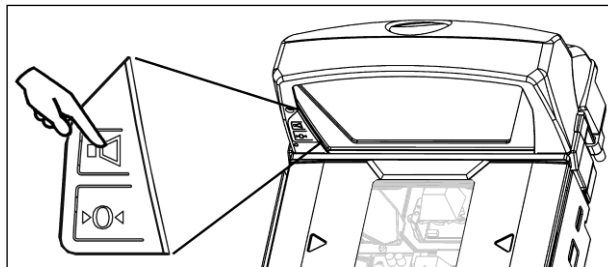
Figure 32. The Multi-Function Button
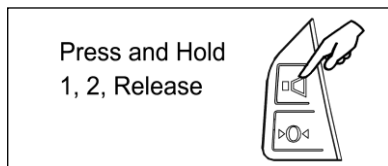
Figure 33. Changing the Beeper Volume

Changing the Beeper Volume

A short (<3 second) depression and the beeper volume will change. The new volume will be heard. The silent (no beep) volume is also selectable.
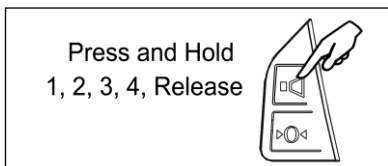
Figure 34. Laser & Motor Off Power Save Mode

Placing the Unit in Laser & Motor Off Power Save Mode

Long (>3 seconds) depression The Laser & Motor Off Power Save Mode is the only power save mode that can be activated with the multi-function button*.

   * *This feature is configuration dependent. Refer to the MetroSelect Configuration Guide (PN 00-02407x) under Scanner Operation: Power Save Modes to enable this feature.*
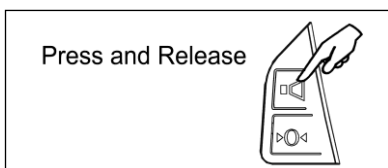
Figure 35. Normal Operation

Waking the Unit from All Power Save Modes

The next button depression will awaken the scanner for normal operation.

Startup

When the scanner first receives power, the blue LED will turn on and the scanner will beep once. The scanner is now ready to scan.

Power-Up Test Mode

When a MS2420/MS2430 scanner is first powered up, it cycles through a number of self-tests before starting normal operation. If there are any initial failures during this sequence of tests the scanner will beep or razz to indicate the error and an error code will appear in the diagnostic indicator display.

The following are examples of the types of tests performed at power-up.

1. Memory tests

2. Hardware setup tests

3. Motor tests

4. Laser tests

5. Configuration tests

6. Interface tests

7. Scale tests

These tests are also performed on a periodic basis with the operator alerted to any failures.

Configuration Mode

All MS2420/MS2430 series scanners have been configured at the factory with a set of default communication protocols. Since many host systems have unique formats and protocol requirements, a wide range of configurable features that may be selected with the use of the MetroSelect Configuration Guide (PN 00-02407x), the MS2x20 Stratos Series Scanner/Diva Scale Configuration Addendum (PN 00-02272x), and MetroSet.

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Scale Operation

Scale Zeroing

After the unit has been officially calibrated (see page 48) the scale can be re-zeroed by pressing the scale-zeroing button either on the unit or on the remote display stand. When the scale is at zero the amber LED will be illuminated.
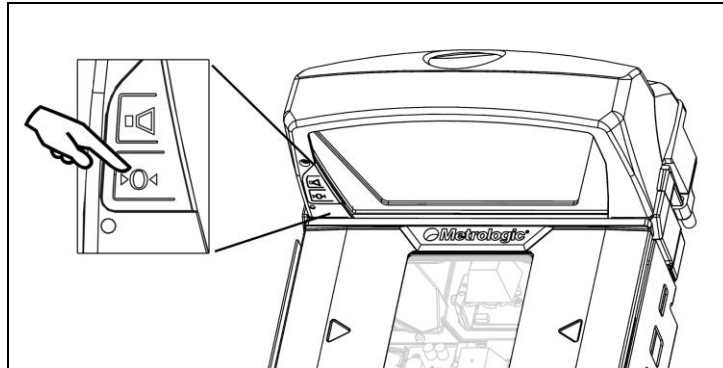
Figure 36. The scale zero button on scanner/scale.
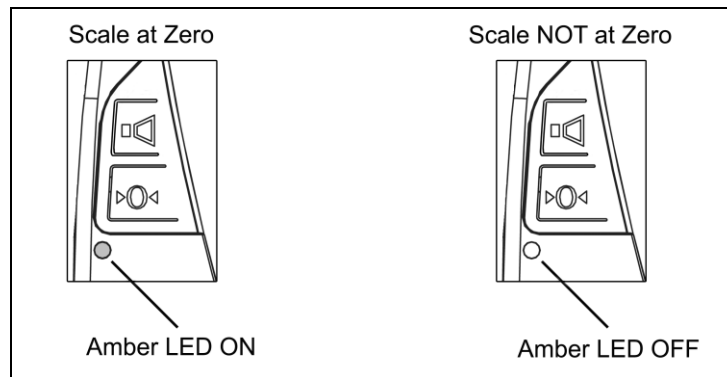
Figure 37. The scale zero indicator.
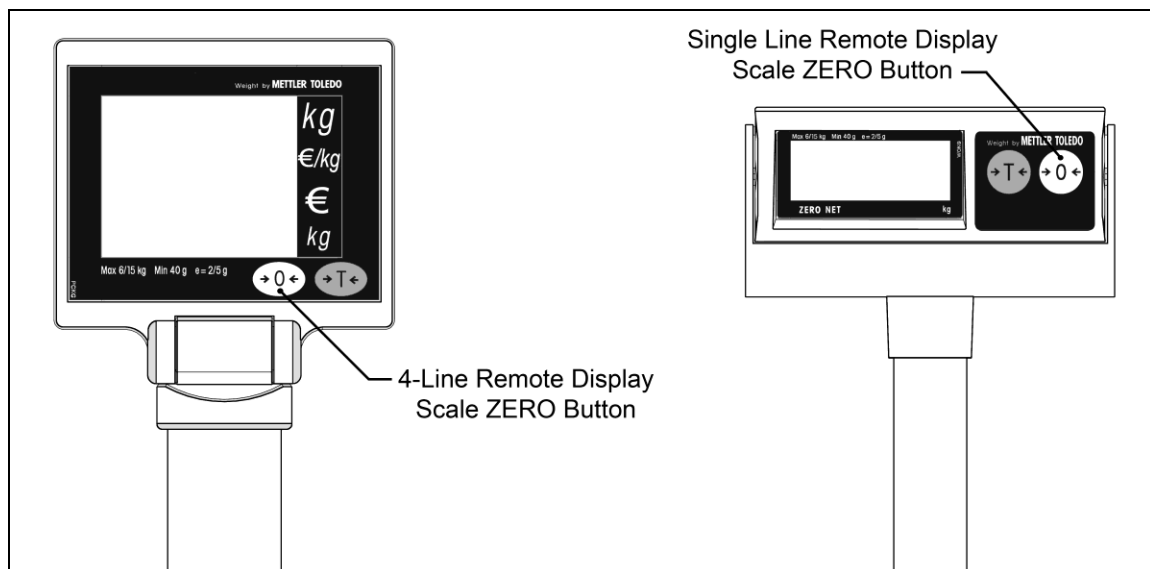
Figure 38. The scale zero button on the optional remote display.

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Calibration

The scanner/Diva scale must be calibrated if:

- it is a first time installation
- the scale cannot be re-zeroed
- the calibration verification tests indicate errors
- there is a change in the units of measure [i.e. from pounds (lbs.) to kilograms (kg)]
- if the scale load cell has been replaced
- the calibration seal is missing or torn

Note: *The certification of the weighing mechanism of the scale version of this scanner is subject to federal, state and local Weights and Measures statutes and regulations and can only be performed by authorized government agencies and/or their duly registered agents. Each time the scale or weighing mechanism is calibrated, it should be properly sealed with a paper seal or a wire seal prior to being placed into service in commerce.*

It is the responsibility of the owner of the scale to confirm compliance with the relevant Weights and Measures statutes and regulations applicable in your area by checking with the appropriate government agency before placing a newly calibrated unit into service or removing any official seals.

Tools Required

- Field Standard 30.0 pound Weight Set or 15.0 kilogram Weight Set
- Phillips #1 Screw Driver
- Wire or Paper Seal
    - *Note:* *Type of seal to be used will depend on the guidelines specified by the local Weights and Measures authorities.*

Scale Calibration Methods

- **Scale Calibration with Remote Display** uses the scale display to sequence through the calibration steps and store critical calibration points.

- **Bar Code Scale Calibration without Remote Display*** uses the scanner / scale only and assumes there is no remote scale display. A bar code is used to initiate the calibration sequence and the Multi-Functional Button (see page 44) is used to store critical range values.
    - * *This calibration procedure will work with the remote display connected to the MS2420/MS2430 but no data will appear on the remote display.*

Priming the Scale for Calibration (lbs. or kg)

Prime the scale before starting either method of calibration.

Note: Calibrate the scanner/Diva scale after the unit is installed in the checkout countertop. It is important to use the correct certified (lb. or kg.) field weight set when calibrating the scale.

1. Check the platter to ensure that nothing is interfering with its freedom to move. Assure that no debris is present from daily use of the scanner/Diva scale if it has been in service.

2. Apply power to the scanner/Diva scale.

   ⚠ *See power source caution statement on page 13 of this manual.*
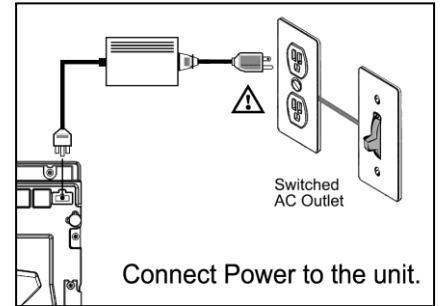
Figure 39. Power Up Unit

3. Wait 5 minutes after power up before proceeding.

4. Place the 30.0 lb. weight or the 15 kg weight on the center of the scale. Allow the weight to settle.
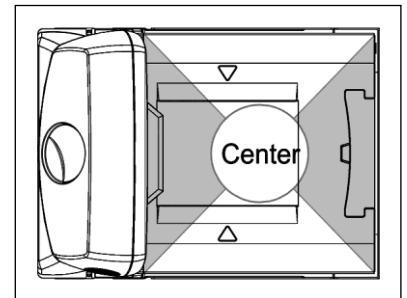
5. Remove the weight.

Figure 40. Scale Center

6. Repeat three times to prime the scale before calibration.
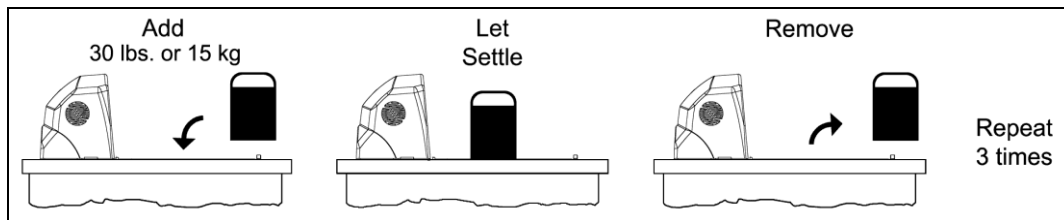
Figure 41. Priming the Scale for Calibration

Scale Calibration Procedure (lbs. or kg) with Remote Display*

1. Temporarily remove the platter and place it in a safe location.

   Note: It is the responsibility of the owner of the scale to confirm compliance with the relevant Weights and Measures statutes and regulations applicable in your area by checking with the appropriate government agency before placing a newly calibrated unit into service or removing any official seals.

2. If this is a currently installed scanner/Diva scale, there will be either an adhesive label seal or wire sealed cover over the scale calibration button. New installation units will only have a factory-applied adhesive seal covering the scale calibration button installed.

   - To remove the adhesive label seal, peel off the label and discard.

   - To remove the wire seal, cut the wire and discard. Fully loosen the security screw and lift off the cover. Place the security screw and cover in a safe location.

Figure 42. Diva Scale security seals

3. Press the calibration button to access the Service Mode. 'Cal' then 'Conf' will appear on the remote display.
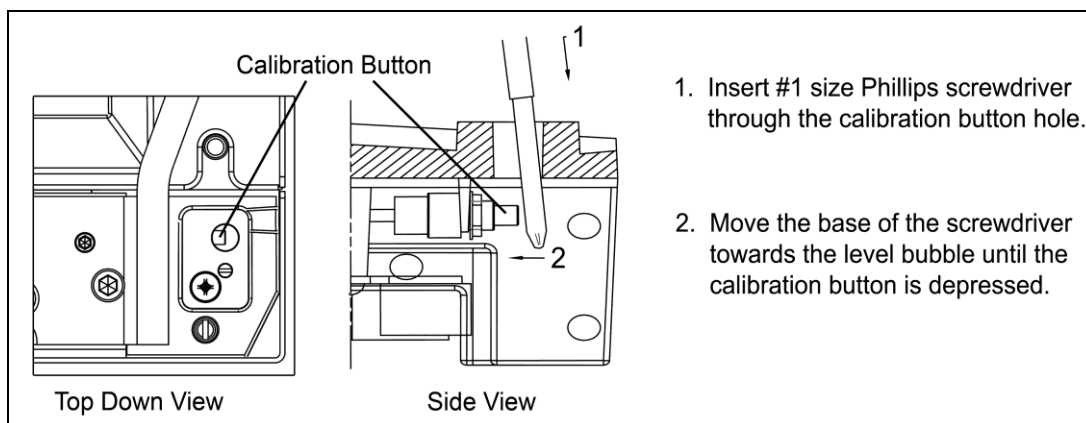
Figure 43. Enter Service Mode

These procedures are for MS2420/MS2430 Scanner/Diva Scale models only.

*Scale Calibration Procedure (lbs. or kg) with Remote Display**

4. Reinstall the platter onto the scanner/Diva scale.
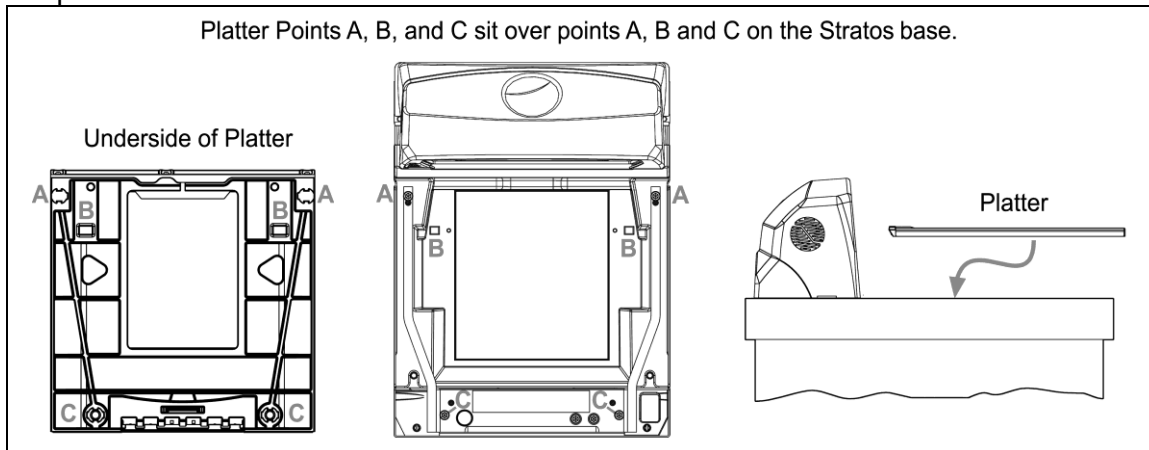
Figure 44. Install Platter

5. Go to Group 1 Step 8 (Weight Unit) of the Service Mode by pressing the Zero (⊕0⊕) key several times until 'Group 1 Step 8' is displayed on the Remote Scale Display screen (see Figure 45 below).
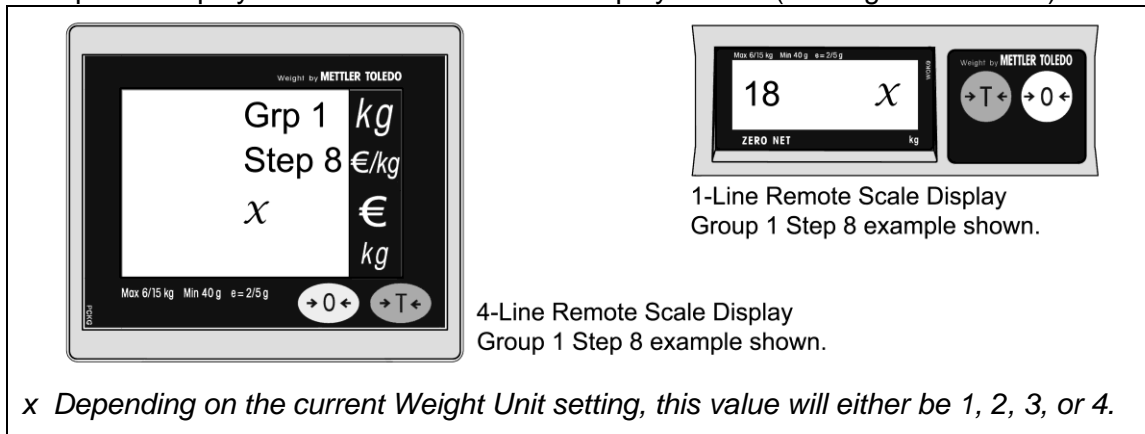
Figure 45. Remote Scale Display Group 1 Step 8 example shown

6. Verify the weight unit setting. Verify the Group 1 Step 8 setting using the table shown below. Press the Zero (⊕0⊕) key if correct. If the lb (Pounds) or kg (Kilograms) basic range setting needs to be changed, press the Tare (⊕T⊕) key to scroll through the selectable options. Press the Zero (⊕0⊕) key to accept the selected weight unit range.

Group 1 Step 8 (x)	Selectable Weight Unit Ranges
1	lbs range (0 to 30 lbs) **
2	kg range (0 to 15kg)
3	kg multi-interval (0 to 6kg, 6 to 15kg) **
4	lbs multi-interval (0 to 15 lbs, 15 to 30 lbs)
** *Common ranges used as default setting.*	

*These procedures are for MS2420/MS2430 Scanner/Diva Scale models only.

Scale Calibration Procedure (lbs. or kg) with Remote Display*

7. Go to Group 2 Step 6 (Calibration) of the Service Mode. Press the Tare (•T•) key to advance to Group 2, then use the Zero (•0•) key to advance to step 6 of group 2.

8. Press the Tare (•T•) key to change the prompt to 'YES'.

9. Press the Zero (•0•) key to accept.

10. The display will now show "- - - - - -". This indicates the scale is ready to take a zero reading. Check the platter to ensure that it is seated properly and nothing is touching or interfering with its freedom to move.

11. Press the Zero (•0•) key to accept and begin taking the Zero Capacity calibration reading.

    Note: If the scale is unable to capture a stable reading it will not store any value and advance to the next step. Verify nothing is touching or interfering with the scale and/or platter.

12. Once the calibration reading has been successfully taken, the display will now show "FULCAP" (Full Capacity). Place theFull Capacity weight, either 15kg or 30lb (whichever matches the scales selected Weight Unit), on the center of the scale platter. Wait at least three seconds for the scale to stabilize.

13. Press the Zero (•0•) key to accept and begin taking the Full Capacity calibration reading.

    Note: If the scale is unable to capture a stable reading it will not store any value and advance to the next step. Verify nothing is touching or interfering with the scale and/or platter.

14. Once the calibration reading has been successfully taken, the display will now show "UNLOAD" (Zero Capacity). Remove all weight from the platter at this time. Wait at least three seconds for the scale to stabilize.

15. Press the Zero (•0•) key to accept and begin taking the final Zero Capacity calibration reading.

16. The display will now begin the initialization sequence and return to the normal weighing mode in the weight units calibrated.

17. The unit's calibration must now be verified as required by state and/or local Weight and Measures regulations (starting on Page 58).

Need to Start Over?

If for any reason you need to restart the calibration process, restart at Step 1 on page 50.
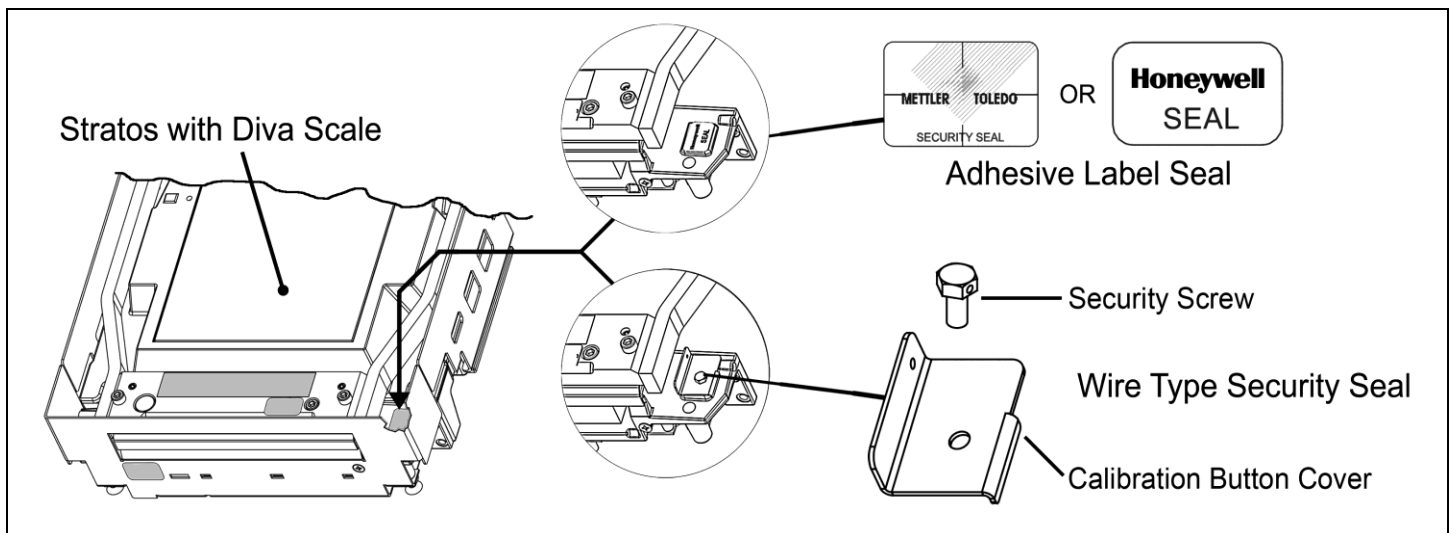
*These procedures are for MS2420/MS2430 Scanner/Diva Scale models only.

Bar Code Calibration Procedure without Remote Display*

The following calibration procedure can be used when the remote scale display is not present. The Multi-Function Button (see page 44) is used to advance to the next stage of calibration and the LED display notifies the operator which 'calibration stage' is active.

1. Temporarily remove the platter and place it in a safe location.

>   *Note: It is the responsibility of the owner of the scale to confirm compliance with the relevant Weights and Measures statutes and regulations applicable in your area by checking with the appropriate government agency before placing a newly calibrated unit into service or removing any official seals.*

2. If this is a currently installed scanner/Diva scale, there will be either an adhesive label seal or wire sealed cover over the scale calibration button. New installation units will only have a factory-applied adhesive seal covering the scale calibration button installed.

    *   To remove the adhesive label seal, peel off the label, and discard.

    *   To remove the wire seal, cut the wire, and discard. Fully loosen the security screw and lift off the cover. Place the security screw and cover in a safe location.

Figure 46. Diva Scale security seals

* These procedures are for MS2420/MS2430 Scanner/Diva Scale models only.

Bar Code Calibration Procedure without Remote Display*

3. Enter the scale program mode. Press the calibration button to engage the scale calibration mode. If the system is a dual cable system, disconnect the host to scale RS232 cable from the unit.
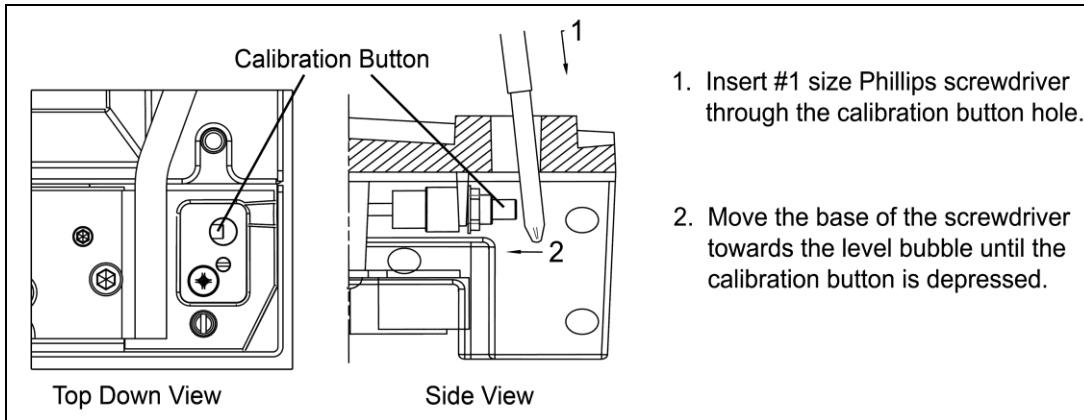
Figure 47. Entering the Scale Program Mode

4. Reinstall the platter onto the MS2420/MS2430 scanner/Diva scale (see Figure 48).
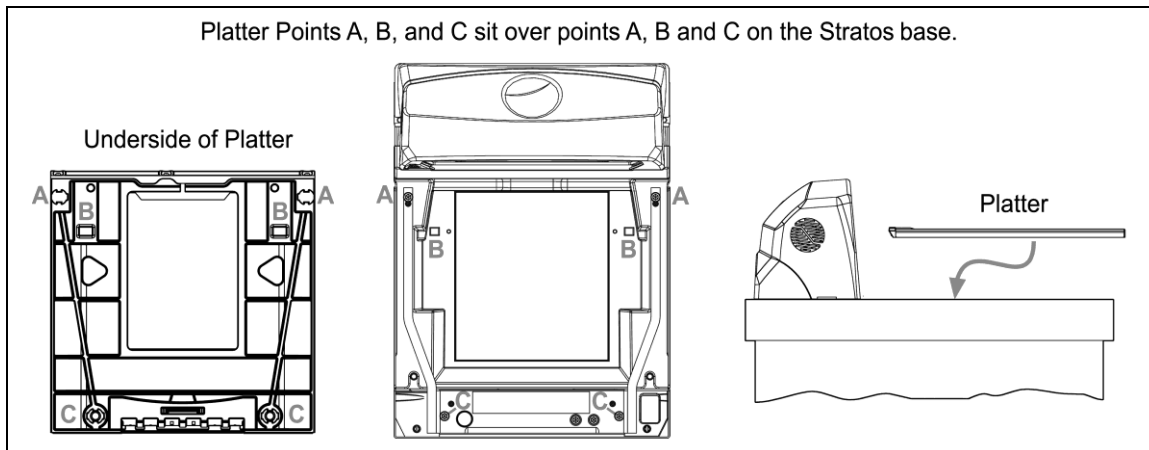
Figure 48. Platter Installation

5. Enter bar code calibration mode. Use the vertical window to scan one of the following bar codes, whichever weight units (either pounds or kilograms) the scanner/Diva scale will be operating in. The scanner will beep once as it enters the bar code calibration mode and the calibration utility will start.

* These procedures are for MS2420/MS2430 Scanner/Diva Scale models only.

Bar Code Calibration Procedure without Remote Display*

Unit Calibration (Pounds)

For Kilogram weight units see instructions on page 55.

Pounds Calibration

³ 9 9 6 0 4 2

Scan Bar Code with Vertical Window

Unit Beeps Once
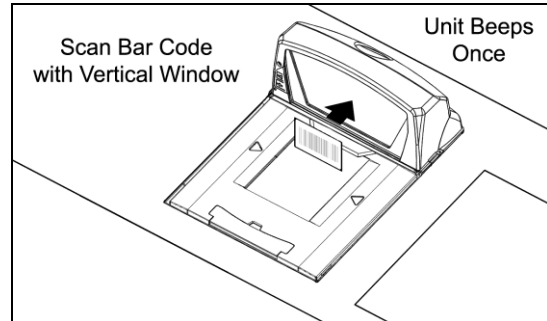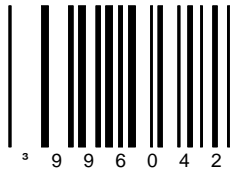
Figure 49. Entering Bar Code Calibration Mode (Pounds)

> *Note: If a razz tone sounds, an error has occurred. Refer to Diagnostic Indicator Display; Error Codes starting on page 40 for additional information.*

Unit Calibration (Kilograms)

For Pound weight, units see instructions on page 54.

Scan Bar Code with Vertical Window

Unit Beeps Once
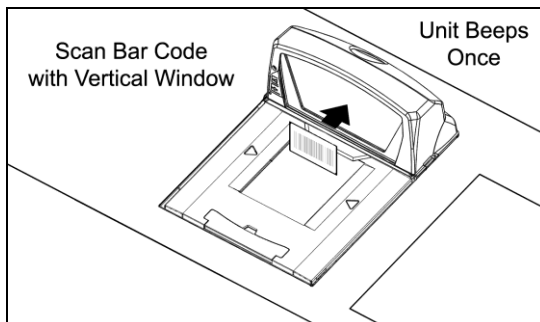
Kilograms Calibration

³ 9 9 6 0 4 4
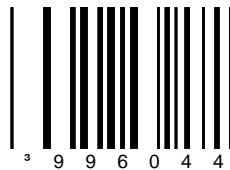
Figure 50. Entering Bar Code Calibration Mode (Kilograms)

> *Note: If a razz tone sounds, an error has occurred. Refer to Diagnostic Indicator Display; Error Codes starting on page 40 for additional information.*

* These procedures are for MS2420/MS2430 Scanner/Diva Scale models only.

Bar Code Calibration Procedure without Remote Display*

6. Make sure there is no load on the scale platter. The blue LED will be used to indicate the current step in the calibration process.

7. Calibrate a zero load. The blue LED will blink once periodically. Wait 8 to 10 seconds for scale stability, and then press the Multi-Function Button once. After the Multi-Function Button has been pressed, there will be a short delay followed by one short beep indicating that the zero load value has been stored.
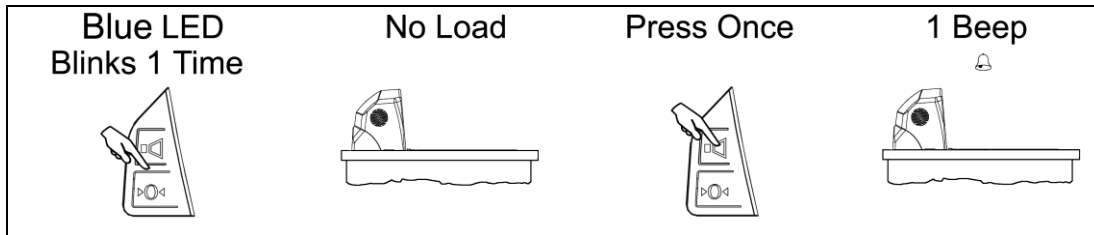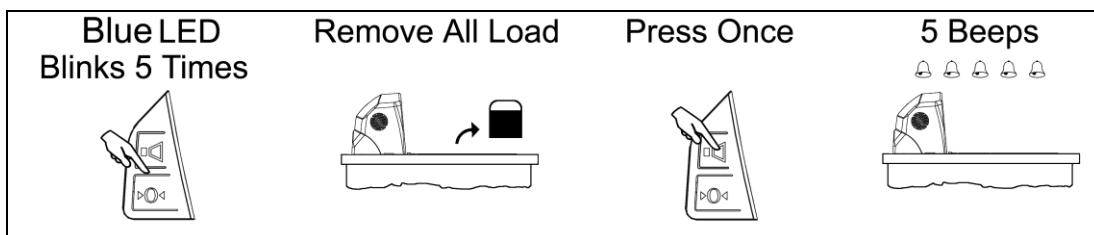

Figure 51.

8. Place a FULL Load on the center of the scale platter. The blue LED will blink three times periodically. Wait at least three seconds for scale stability, and then press the Multi-Function Button once. After the Multi-Function Button has been pressed, there will be a short delay followed by three short beeps indicating that the FULL Load value has been stored.
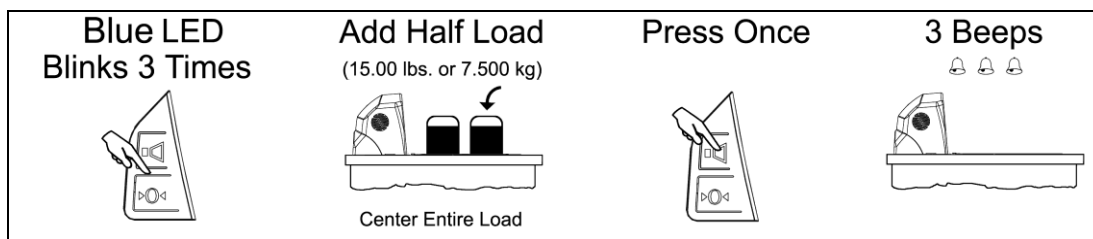
Figure 52.

9. Remove the entire load from the scale platter. The blue LED will blink five times periodically. Wait at least three seconds for scale stability, and then press the Multi-Function Button once. After the Multi-Function Button has been pressed, there will be a short delay followed by five short beeps indicating that the zero load value has been stored.

Figure 53.

* These procedures are for MS2420/MS2430 Scanner/Diva Scale models only.

*Bar Code Calibration Procedure without Remote Display**

10. Calibration process is now complete. The scanner will automatically restart, and beep one time, in approximately 12 seconds.

11. Verify the calibration was successful with the calibrated weight. If the scale display does not accurately show the calibrated load weight correctly, restart this procedure from Step 1 on page 53.

12. The unit's calibration must now be verified as required by state and/or local Weight and Measures regulations (starting on Page 58).

* These procedures are for MS2420/MS2430 Scanner/Diva Scale models only.

Calibration Verification

U.S. Pounds (lbs.)

The following tests verify if the scale's Calibration is accurate. For Kilograms see instructions starting on page 59.

Note: The following tests are based on a 2-digit accuracy setting for pounds.

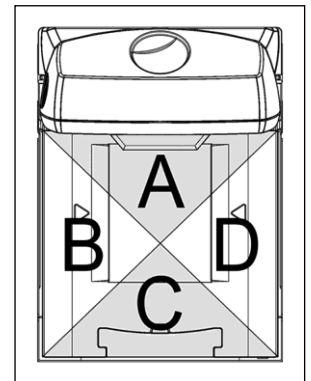- Increasing Load Test
- Shift Test
- Decreasing Load Test
- Return to Zero Test

Increasing Load Test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.00 lbs.

2. Place a 5.00 lb. weight on the center of the scale platter and verify the display reads 5.00 lbs.

3. Place an additional 5.00 lb. weight on the center of the scale platter and verify the remote display reads between 9.99 and 10.01 lbs.

4. Place an additional 10.00 lb. weight on the center of the scale platter and verify the remote display reads between 19.99 and 20.01 lbs.

5. Place an additional 10.00 lb. weight on the center of the scale platter and verify the remote display reads between 29.99 and 30.01 lbs.

6. Remove all the weight from the scale platter and verify the display reads 0.00 lbs.

Shift Test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.00 lbs.

2. Place a 15.00 lb. weight on the scale platter in the center of zone A (see diagram) and verify the remote display reads between 14.99 and 15.01 lbs.

3. Remove the 15.00 lb. weight and verify the display reads 0.00 lbs.

4. Repeat steps 2 and 3 for each of the remaining zones (B, C, and D).

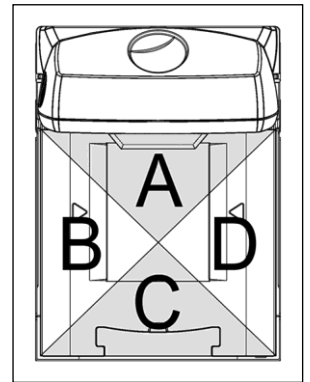5. Verify that the remote display reads 0.00 lbs. when all weight has been removed.

Figure 54.   Shift Test Zones

Decreasing Load Test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.00 lbs.

2. Place a 30.00 lb. load on the center of the scale platter (use two 10.00 lb. weights and two 5.00 lb. weights). Verify the remote display reads between 29.99 and 30.01 lbs.

3. Remove a 10.00 lb. weight from the platter and center remaining weight. Verify that the remote display reads between 19.99 and 20.01 lbs.

4. Remove another 15.00 lbs. from the platter, center the remaining weight and verify the scale reads 5.00 lbs.

5. Remove all the weight from the platter and verify the scale has returned to 0.00 lbs.

Return to Zero Test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.00 lbs.

Calibration Verification

Kilograms (kg)

The following tests verify if the scale's Calibration is accurate. For US Pounds see instructions starting on page 58.

Note: The following tests are based on a 3-digit accuracy setting for kilograms.

- Increasing Load Test
- Shift Test
- Decreasing Load Test
- Return to Zero Test

Increasing Load test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.000 kg.
2. Place a 2.500 kg weight on the center of the scale platter and verify the display reads 2.500 kg.
3. Place an additional 2.500 kg weight on the center of the scale platter and verify the remote display reads between 4.995 kg and 5.005 kg.
4. Place an additional 5.000 kg weight on the center of the scale platter and verify the remote display reads between 9.995 kg. and 10.005 kg.
5. Place an additional 5.000 kg weight on the center of the scale platter and verify the remote display reads between 14.995 kg. and 15.005 kg.
6. Remove all the weight from the scale platter and verify the display reads 0.000 kg.

Shift Test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.000 kg.
2. Place a 7.500 kg weight on the scale platter in the center of zone A (see diagram) and verify the remote display reads between 7.495 kg. and 7.505 kg.
3. Remove the 7.500 kg weight and verify the display reads 0.000 lbs.
4. Repeat steps 2 and 3 for each of the remaining zones (B, C, and D).
5. Verify that the remote display reads 0.000 kg when all weight has been removed.

Figure 55.   Shift Test Zones

Decreasing Load Test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.000 kg.
2. Place a 15.000 kg load on the center of the scale platter. Verify the remote display reads between 14.995 kg. and 15.005 kg.
3. Remove 7.500 kg from the platter and center remaining weight. Verify that the remote display reads between 7.495 kg. and 7.505 kg.
4. Remove another 5.000 kg from the platter, center remaining weight and verify the scale reads 2.500 kg.
5. Remove all the weight from the platter and verify the scale has returned to 0.000 kg.

Return to Zero Test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.000 kg.

Security Seal Installation

Note: *The certification of the weighing mechanism of the scale version of this scanner is subject to federal, state and local Weights and Measures statutes and regulations and can only be performed by authorized government agencies and/or their duly registered agents. Each time the scale or weighing mechanism is calibrated, it should be properly sealed with a paper seal or a wire seal prior to being placed into service in commerce.*

It is the responsibility of the owner of the scale to confirm compliance with the relevant Weights and Measures statutes and regulations applicable in your area by checking with the appropriate government agency before placing a newly calibrated unit into service or removing any official seals.

Type of seal to be used will depend on the guidelines specified by the local Weights and Measures authorities.

The security seal must only be installed if there were <u>no</u> errors during the scale calibration verification tests.

Pressure Sensitive Security Seal*

1. Temporarily remove the platter and place it in a safe location.

2. Apply the adhesive calibration security seal over the calibration button access hole (see Figure 56).
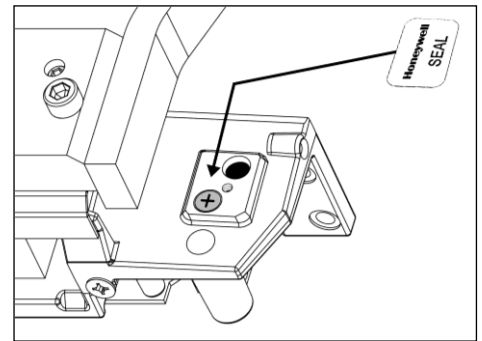
Figure 56.

3. With very light pressure, push down on the adhesive calibration security seal label to ensure a firm adhesion is created (see Figure 57).
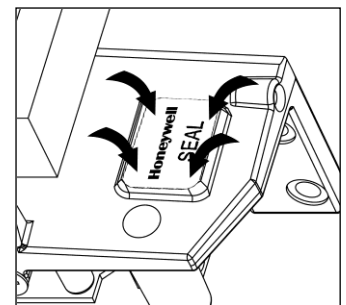
Figure 57.

4. Reinstall the platter.

Platter Points A, B, and C sit over points A, B and C on the Stratos base.

Underside of Platter
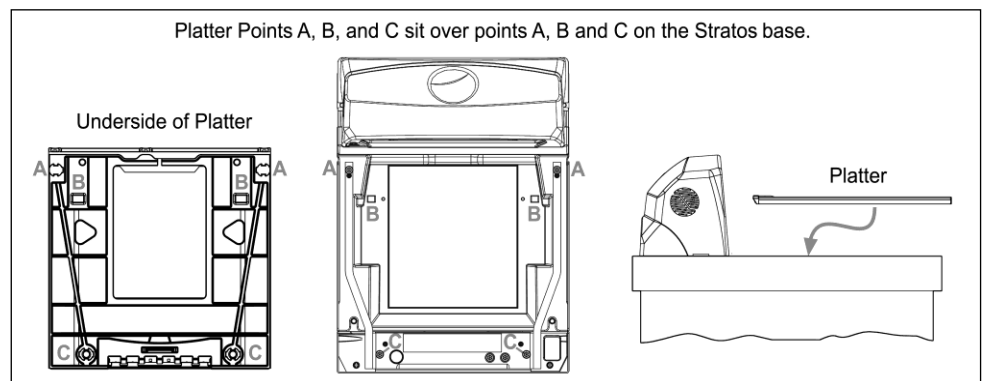
Platter

Figure 58. Platter Installation

* These procedures are for MS2420/MS2430 Scanner/Diva Scale models only.

Wire Security Seal (Seal Conversion Kit PN 46-00359)*

1. Temporarily remove the platter and place it in a safe location.

2. Install the calibration button sealing cover and through-hole sealing screw.

3. Tighten the screw and route the wire seal through the holes in the plate and screw.
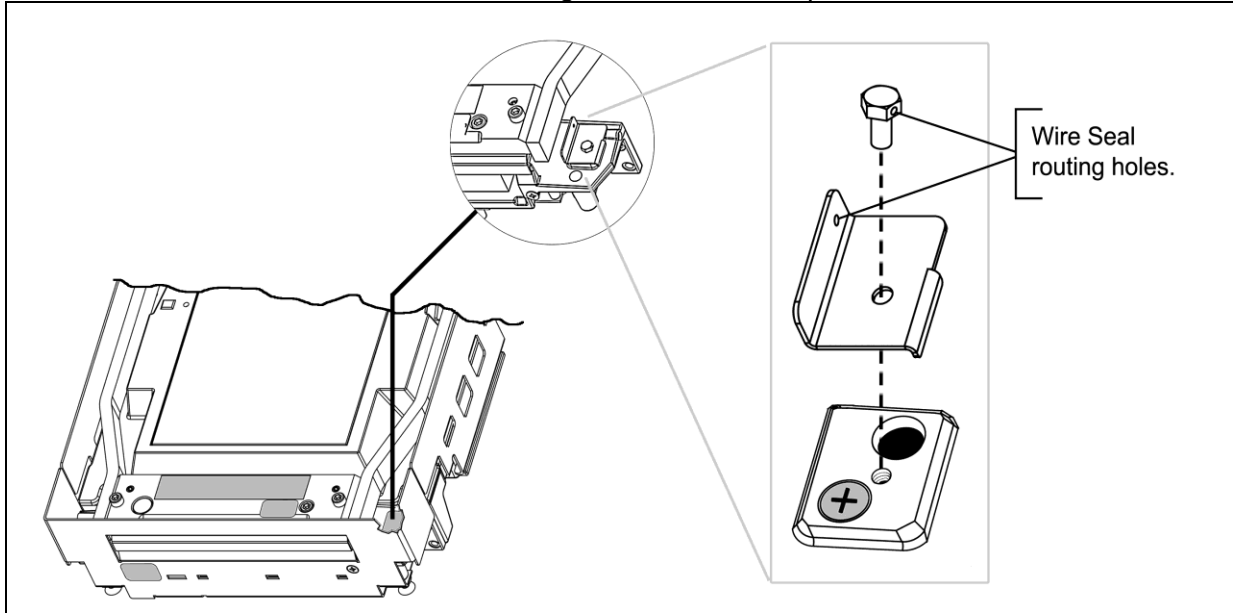
Figure 59. Calibration Switch/Button Wire Security Seal Assembly

4. Leaving the least amount of slack in the wire loop as possible, close the wire seal and verify the seal connection is secure.

5. Reinstall the platter.
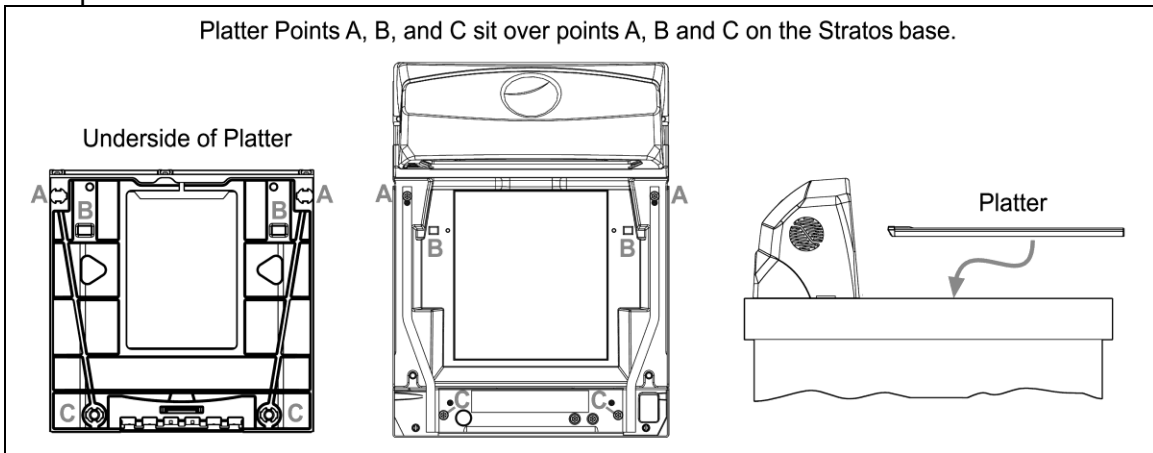
Figure 60. Platter Installation

* These procedures are for MS2420/MS2430 Scanner/Diva Scale models only.

Horizontal Scan Window Replacement*

Figure 61. Platter/Horizontal Scan Window Replacement

* See replacement parts on page 3.

Daily Maintenance

Smudges and dirt on the unit's window can interfere with the unit's performance. If the horizontal or vertical output windows require cleaning, use only a mild glass cleaner containing no ammonia. When cleaning the window, spray the cleaner onto a lint free, non-abrasive cleaning cloth then gently wipe the window clean.

If the unit's case requires cleaning, use a mild cleaning agent that does not contain strong oxidizing chemicals. Strong cleaning agents may discolor or damage the unit's exterior.

Routinely check and clean the base unit to ensure that no debris is interfering with the platter movement.

Troubleshooting

The following guide is for reference purposes only. Contact a customer service representative to preserve the limited warranty terms.

Symptom	Possible Cause(s)	Solution
All Interfaces		
No LEDs, beep, or motor spin.	No power is being supplied to the scanner.	Check the transformer, outlet and the power strip. Make sure the power cable is plugged into the scanner.
No LEDs and no beep.	No power is being supplied to the scanner.	The host system cannot supply enough current to power the MS2400 series scanner. Use the power supply included with the scanner.
During power up the unit beeps three times.	A non-volatile RAM failure.	Contact a service representative, if the unit will not hold the configuration.
During power up the unit razzes continuously.	There has been a diagnostic failure.	Contact a service representative, if the unit will not function.
During power up the unit razzes once and the blue LED flashes.	A VLD failure.	Contact a service representative.
During power up the unit razzes twice and blue LED flash.	Scanner motor failure.	Contact a service representative.
There are multiple scans upon presentation of code.	The same symbol timeout is set to short.	Adjust same symbol timeout for a longer time.
The unit powers up but does not beep.	The beeper is disabled.	Enable the beeper.
	No volume is selected.	Select a volume.
	No tone is selected.	Select a tone.
The unit powers up but does not scan and/or beep.	The unit is trying to scan a particular symbology that is not enabled.	UPC/EAN and Code 128 are enabled by default. Verify that the type of bar code being read has been selected.
	The unit has been configured for a character length lock or a minimum length and the bar code being scanned does not satisfy the configured criteria.	Verify that the bar code that is being scanned falls into the criteria.

Typical of Non-UPC/EAN codes. The scanner defaults to a minimum of 4 character bar code. |

Symptom	Possible Cause(s)	Solution
All Interfaces		
The unit scans a bar code, but locks up after the first scan (the blue LED stays on).	The scanner is configured to support some form of host handshaking but is not receiving the signal.	If the scanner is setup to support ACK/NAK, RTS/CTS, XON/XOFF, or D/E, verify that the host cable and host are supporting the handshaking properly.
The unit scans but the data transmitted to the host is incorrect.	The scanner's data format does not match the host system requirements.	Verify that the scanner's data format matches that required by the host. Make sure that the scanner is connected to the proper host port.
Scanner beeps at some bar codes and NOT from others of the same bar code symbology.	The print quality of the bar code is suspect.	The type of printer and/or the printer settings could be the problem.

Check the print mode or change the printer settings. For example change to a higher print quality or DPI resolution. |
	Check the character length lock.	
	The aspect ratio of the bar code is out of tolerance.	
The unit powers up but does not scan and/or beep.	The unit is trying to scan a particular symbology that is not enabled.	UPC/EAN and Code 128 are enabled by default. Verify that the type of bar code being read has been selected.
	The unit has been configured for a character length lock or a minimum length and the bar code being scanned does not satisfy the configured criteria.	Verify that the bar code that is being scanned falls into the criteria.

Typical of Non-UPC/EAN codes. The scanner defaults to a minimum of 4 character bar code. |
The unit beeps at some bar codes but NOT for others of the same bar code symbology.	The bar code may have been printed incorrectly.	Check if it is a check digit, character or border problem.
	The scanner is not configured correctly for this type of bar code.	Check if check digits are set properly.
	The minimum symbol length setting does not work with the bar code.	Check if the correct minimum symbol length is set.

Symptom	Possible Cause(s)	Solution
RS232 Only		
The unit powers up OK and scans OK but does not communicate properly to the host.	The com port at the host is not working or is not configured properly.	Check to make sure that the baud rate and parity of the scanner and the communication port match and the program is looking for RS232 data.
	The cable is not connected to the proper com port.	
	The com port is not operating properly.	
The host is receiving data but the data does not look correct.	The scanner and host may not be configured for the same interface.	Check that the scanner and the host are configured for the same interface.
Characters are being dropped.	The intercharacter delay needs to be added to the transmitted output.	Add some intercharacter delay to the transmitted output by using the MetroSelect Configuration Guide (PN 00-02407x).
Aux Port Operation With Any Interface		
The secondary scanner is not functioning.		Refer to the user's guide provided with the secondary scanner.
The secondary scanner powers up but data is not relayed to the host.	The secondary scanner cable may not be connected to the proper port on the MS2420/MS2430.	Ensure that the secondary scanner is connected to the MS2420/MS2430 com port marked "Aux" port.
	The auxiliary com port may not be operating properly.	* The MS2400 series must be configured to enable the auxiliary port.
		The auxiliary input port's data format must match the main output format of the secondary scanner.
Refer to the MS2x20 Stratos Series Scanner/Diva Scale Configuration Addendum (PN 00-02272x) under Scanner Configuration Bar Codes: Auxiliary Port, Quick Start for a Secondary Honeywell Scanner.		

Scanner and Cable Terminations

Scanner Pinout Connections

The MS2420/MS2430 scanner terminates to 10-pin modular jacks located on the bottom of the unit. The serial number label indicates the model number and interface of the scanner.

EAS	
Pin	Function
1	EAS In
2	EAS Out

DC Power	
Pin	Function
1	No Connect
2	Earth Ground
3	No Connect
4	5.2VDC
5	Ground
6	12VDC

Figure 62. Connector Layout
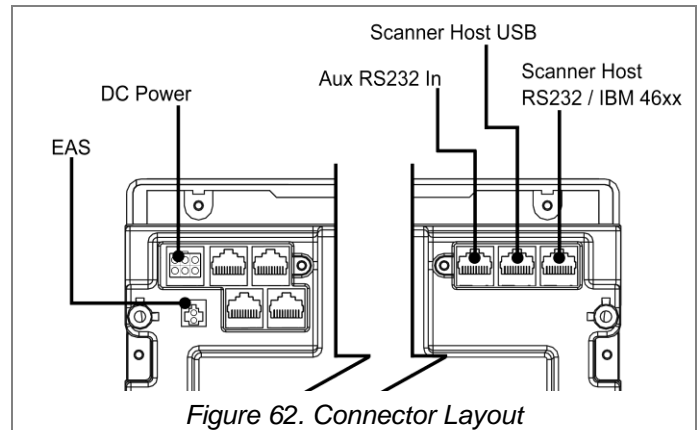
Scanner to Host, RS485	
Pin	Function
1	Signal Ground
2	Reserved for RS232 Interface
3	Reserved for RS232 Interface
4	Reserved for RS232 Interface
5	Reserved for RS232 Interface
6	Reserved for RS232 Interface and EAS
7	No Connect
8	Reserved for RS232 Interface and EAS
9	IBM B-
10	IBM A+

Scanner to Host, RS232	
Pin	Function
1	Ground
2	RS232 Transmit
3	RS232 Receive
4	RS232 RTS Output
5	RS232 CTS Input
6	RS232 DTR Input (EAS GPIO IN)
7	No Connect
8	DSR (EAS GPIO OUT)
9	Reserved for RS485 Interface
10	Reserved for RS485 Interface

Scanner to Host, USB	
Pin	Function
1	Signal Ground
2	RS232 Transmit
3	RS232 Receive
4	Shield
5	No Connect
6	RS232 CTS Input (EAS GPIO IN)
7	PC+5VDC
8	RS232 RTS Output (EAS GPIO OUT)
9	Data -
10	Data +

Auxiliary RS232 In	
Pin	Function
1	Ground
2	RS232 Receive Input
3	RS232 Transmit Output
4	RS232 RTS In
5	RS232 CTS Out
6	EAS GPIO IN
7	Ground
8	EAS GPIO OUT
9	+5V Out
10	No Connect

Specifications are subject to change without notice.

Scanner Scale Pinout Connections

There are four additional 10-pin modular jacks located on the bottom of the of the MS2420/MS2430 scanner models that may be used for an integrated scale application and the use of a remote display.

Note: Please keep in mind that every application is unique. The use of these connections depends on the specifications of the scale's manufacturer. The following pinouts are for reference only. If the scanner has been integrated with a scale, refer to the Scale Addendum for detailed instructions on the appropriate cable connections, communication specifications and calibration procedures required by the scale manufacturer and local Weights and Measures authorities.

When connecting any combination of scale/external scale display to the MS2420/MS2430 do not exceed the following current restrictions: 12V @ 0.7A max. / 5V @ 0.2A max.
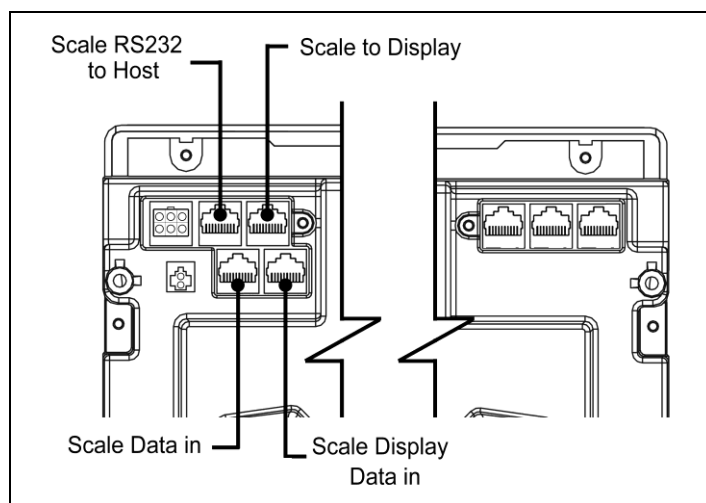
Figure 63. MS2420/MS2430 Scale Connection Layout

Scale Display Data In Scale Data to Display from the Load Cell Interface		Scale Data In RS232 from the Load Cell Interface		Scale RS232 to Host Scale Data, Dual Cable Applications		Scale to Display	
Pin	Function **	Pin	Function**	Pin	Function**	Pin	Function**
1	SIG1	1	12V	1	Ground	1	SIG1
2	SIG2	2	Ground	2	Scale RS232 TX Out	2	SIG2
3	SIG3	3	5V	3	Scale RS232 RX In	3	SIG3
4	SIG4	4	Ground	4	Scale RS232 RTS Out	4	SIG4
5	SIG5	5	RS232 TX In	5	Scale RS232 CTS In	5	SIG5
6	SIG6	6	RS232 RX Out	6	*No Connect*	6	SIG6
7	SIG7 ††	7	RS232 CTS In	7	*No Connect*	7	SIG7 ††
8	SIG8 ††	8	RS232 RTS Out	8	*No Connect*	8	SIG8 ††
9	SIG9 ††	9	Scale Status, TTL	9	*No Connect*	9	SIG9 ††
10	SIG10 ††	10	Scale Zero, TTL	10	Shield	10	SIG10 ††
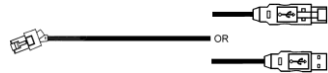
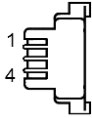** *All signals are referenced from the MS2420/MS2430 scanner.*

†† *The use of these pins depends upon the specifications of the scale's manufacturer.*

Specifications are subject to change without notice.

Cable Connector Configurations

RS232 Interface Cable, PN 57-57210x-N-3	
Pin	**Function ****
1	*No Connect*
2	RS232 Transmit Output
3	RS232 Receive Input
4	DTR Input
5	Power/Signal Ground
6	DSR Output
7	CTS Input
8	RTS Output
9	*No Connect*

5 1

9 6

9-Pin D-Type Connector
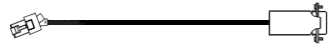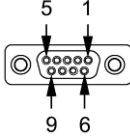
Full Speed USB Cable, PN 57-57201x-N-3 or PN 57-57227x-N-3	
Pin	**Function****
1	PC +5V USB
2	D-
3	D+
4	Ground

OR

1 ... 4	1 ... 4
Locking, Type A 57-57227x-N-3	Non-Locking, Type A 57-57201x-N-3

RS485 Cable, PN 57-57212x-N-3	
Pin	**Function****
1	Signal Ground
2	IBM +A
3	IBM -B
4	*No Connect*

1

4

4-Pin SDL

** All signals are referenced from the MS2420/MS2430 scanner.

Specifications are subject to change without notice.

Cable Connector Configurations

Aux Port Configuration Cable*, PN 57-57008x-N-3	
Pin	**Function****
1	*No Connect*
2	Output from Scanner
3	Input to Scanner
4	*No Connect*
5	Ground
6-9	*No Connect*

9-Pin D-Type Connector

RS232 LSO/AUX Cable PN 57-57099x-3 or PN 57-57099x-3-12	
Pin	**Function†**
1	Signal Ground
2	RS232 from Aux / Secondary Scanner
3	RS232 to Aux / Secondary Scanner
4	RTS from Aux / Secondary Scanner
5	CTS to Aux / Secondary Scanner
6-8	*No Connect*
9	+ 5VDC – Transformer / Direct
10	Shield Ground

10-Position Modular Plug

*   *This configuration cable was designed to be used with the MS2420/MS2430 auxiliary connector only.*

** *All signals are referenced from the MS2420/MS2430 scanner.*

† *All signals are referenced from the auxiliary / secondary scanner.*

Specifications are subject to change without notice.

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Technical Assistance

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For our latest contact information, see www.honeywellaidc.com/locations.

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