METTLER TOLEDO

PS

Shipping Scale

Service Manual

D14690000A
12/98

METTLER TOLEDO

Publication Problem Report

If you find a problem with our documentation, please complete and fax this form to (864) 472-7625

Publication Name: _____

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

PROBLEM(S) TYPE:	DESCRIBE PROBLEM(S):			*INTERNAL USE ONLY*
☐ **Technical Accuracy**	☐ Text	☐ Illustration		
☐ **Completeness** What information is missing?	☐ Procedure/step ☐ Example ☐ Explanation	☐ Illustration ☐ Guideline ☐ Other (please explain below)	☐ Definition ☐ Feature	☐ *Info. in manual* ☐ *Info. not in manual*
☐ **Clarity** What is not clear?				
☐ **Sequence** What is not in the right order?				
☐ **Other Comments** Use another sheet for additional comments.				

Your Name: _____ **Location:** _____

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INTRODUCTION

This publication is provided solely as a guide for individuals who have received Technical Training in servicing the METTLER TOLEDO product.

Information regarding METTLER TOLEDO Technical Training may be obtained by writing to:

METTLER TOLEDO
1900 Polaris Parkway
Columbus, OH 43240-2020
(614) 438-4400

WARNING!

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

METTLER TOLEDO RESERVES THE RIGHT TO MAKE REFINEMENTS OR CHANGES WITHOUT NOTICE.

PRECAUTIONS

READ this manual BEFORE operating or servicing this equipment.

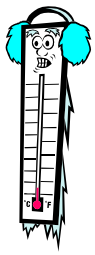
FOLLOW these instructions carefully.

SAVE this manual for future reference.

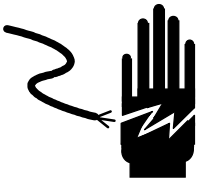
DO NOT allow untrained personnel to operate, clean, inspect, maintain, service, or tamper with this equipment.

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

CALL METTLER TOLEDO for parts, information, and

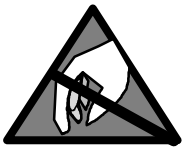


Note: If the unit has been stored or transported in below freezing temperatures, allow the unit to warm up to room temperature before turning on AC power.



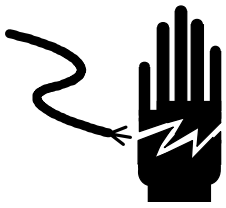
WARNING

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



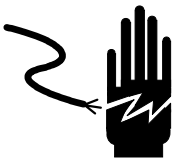
CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.



WARNING

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



WARNING

FOR CONTINUED PROTECTION AGAINST SHOCK HAZARD, CONNECT TO PROPERLY GROUNDED OUTLET ONLY. DO NOT REMOVE THE GROUND PRONG.

CAUTION

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

CONTENTS

1

Introduction

Thank you for purchasing a PS shipping scale from METTLER TOLEDO. The legal-for-trade model of the PS60 shipping scale is a low-profile, 150 × 0.05 lb (60 × 0.02 kg) capacity scale designed to meet the needs of the legal-for- trade parcel/manifest markets. The PS60 also features an auto-ranging capacity of 0 - 60 lb × .02 lb / 60 - 150 lb × .05 lb, as well as a weight classifying model with the same capacity as the auto-ranging model. Both are NTEP approved. (See Chapter 3 for a complete list of builds.)

The legal-for-trade model of the PS6L shipping scale is very much like the PS60. It has an auto ranging capacity of 0-7 lb x 0.1oz / 7-70 lb x 0.2 oz / 70–149 lb x 0.5 oz.

The PS2+ model is a large roller top scale with a capacity of 0-250 x 0.1 lb (0-100kg x 0.05kg). It is designed for use in conveyors.

The PS, like all METTLER TOLEDO products is designed for maximum durability and reliability in even the most demanding application environments. The PS is manufactured in one of METTLER TOLEDO's ten ISO 9000 certified facilities so you are assured to receive a high-quality product.

The scale is designed for use in parcel shipping and other light industrial environments. This unit is not intended for washdown or hazardous area operation, nor for operation in environments of extreme dust, heat, cold, or humidity.

In the unlikely event you experience difficulties operating your scale, please contact your local distributor or METTLER TOLEDO representative from whom you purchased the scale.

Standard Features

The following are standard features built into each PS shipping scale.

- 150 lb or 250 lb capacity "Eagle+" load cell
- Die-cast aluminum base and sub-platter
- Stainless steel or Plastic platter
- RS-232 serial interface to the scale base
- Sleep mode for energy conservation

Optional Accessories

- 0270, 2-key weight indicator base mount display with 12 in. cable

- 12 VDC, 60 mA power supply unit (wall-mount transformer)
- D-cell alkaline battery KOP (for some models)
- Tower display with 14 ft cable
- Ball transfer top platter (standard on PS2+)
- Car lighter jack
- Wall mount display with 14 ft cable
- Dual Wall mount displays with 6 ft cable

Specifications

The PS shipping scale conforms to and operates best within the specifications described in this section.

Physical Dimensions

- Base dimensions: 29 cm × 33.5 cm (11.42 in. × 13.19 in.)
- Platter dimensions: 30 cm × 35 cm (11.81 in. × 13.78 in.)
- Maximum dimensions w/indicator: 35.8 cm × 35 cm (14.09 in. × 13.78 in.)
- Height with platter: 8 cm (3.15 in.)
- Height with platter and battery: 9 cm (3.54 in.)
- Weight with display: 6.65 kg
- Weight with display and battery: 7.75 kg
- Shipping weight: 10 kg

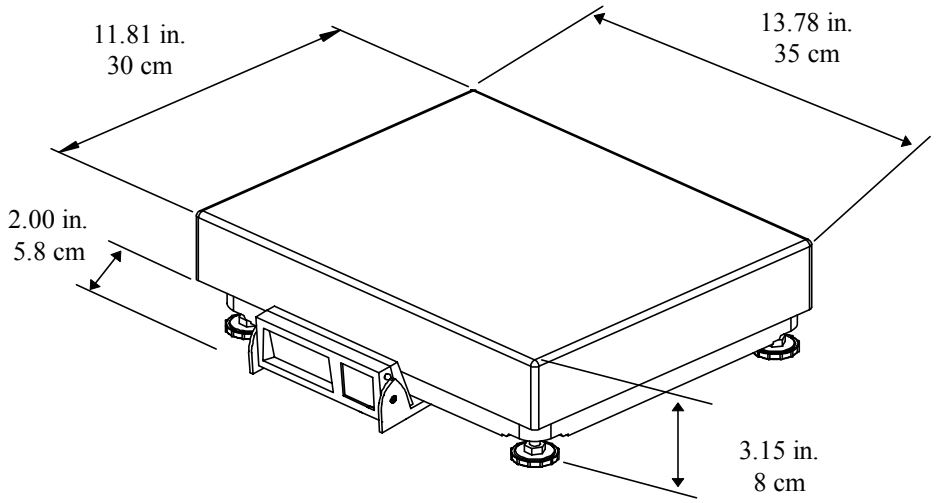


Figure 1-a: PS60 / PS6L Dimensions

- Base dimensions: 558 mm × 450 mm (11.42 in. × 13.19 in.)
- Platter dimensions: 489 mm × 387mm (11.81 in. × 13.78 in.)
- Maximum dimensions w/indicator: N/A
- Height with platter: 152 mm (3.15 in.)
- Height with platter and battery: 152 mm (3.54 in.)
- Weight: 16.8 kg
- Shipping weight: 19 kg

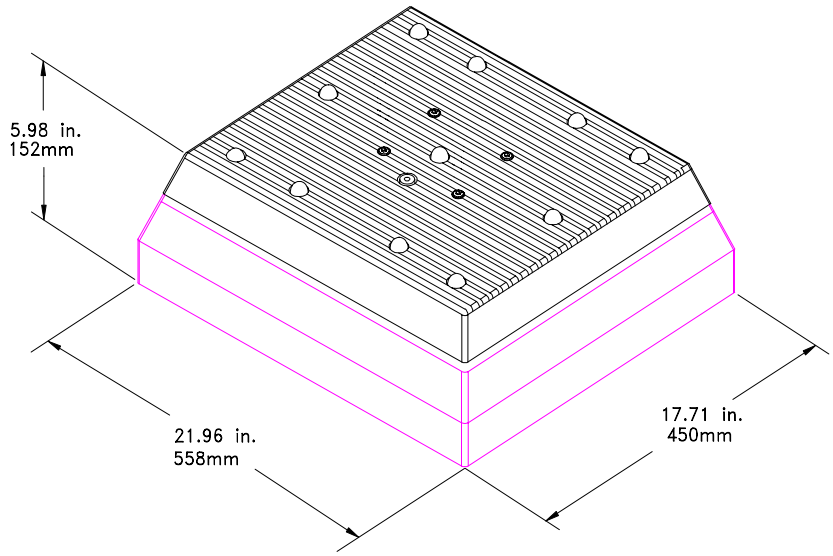


Figure 1-b: PS2+ Dimensions

Power Requirements

The PS operates over an input voltage range of 7.5 to 12 VDC (at 60 mA).

- An external 12 VDC voltage converter supplies power to the PS.
- An optional D-cell battery KOP can be used to power the scale continuously for a minimum of 40 hours. Battery life is extended with the on/off switch in the "off" position.
- An optional 12 VDC Car Lighter Jack Cable can power the PS.

Environmental Requirements

The PS60 operating range is –10° to +40°C (+14°F to +104°F) at 10 to 90% relative humidity, non-condensing. The PS6L & PS2+ operation range is +10° to +40°C at 10 to 90% relative humidity, non-condensing. The shipping and storage temperature range is –20° to +60°C (-4°F to +140°F) at 0 to 95% relative humidity, non-condensing.

The scale is designed for use in parcel shipping and other light industrial environments. This unit is not intended for washdown or hazardous area operation, nor for operation in environments of extreme dust, heat, cold, or humidity.

Standards Compliance

The PS60 meets or exceeds USA NIST HB-44, Australian NSC, Canadian MC, and international OIML requirements for a 3000 division, Class III parcel scale.

The PS6L meets or exceeds USA NIST HB-44 requirements for a 4800 division, Class III parcel scale.

AC Power Line Voltage Variation

The PS meets USA NIST HB-44, Australian NSC, and Canadian MC line voltage variation specifications as listed in the following table:

Line Voltage Variation Specification	AC Line Voltage			Line Frequency in Hz		
	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum
NIST HB-44	100	120	130	59.5	60	60.5
Australian NSC	102	120	132	58.8	60	61.2
Canadian MC	108	120	132	58.8	60	61.2

RFI Susceptibility

The PS60 meets the requirements of the European Norm. 45501 for RFI susceptibility as listed below with a maximum of one display increment of change when calibrated for recommended builds.

Radio Interference Frequency	Field Strength
26-1000 MHz	3 volts/meter

Electrical Interfaces

The PS scale's single board construction has a load cell connector (10 position ZIF), display connector (8 position phone jack), RS-232 interface (9-Pin DSUB), and an input power jack. The following interconnection diagram describes wiring connections for the PS shipping scale.

The PS can function as a peripheral device to a host through the RS-232 serial port. Calibration and setup can be done using the Host Interface command set. For detailed instructions describing calibration and setup using the Host Interface, please refer to the Appendix at the end of this manual.

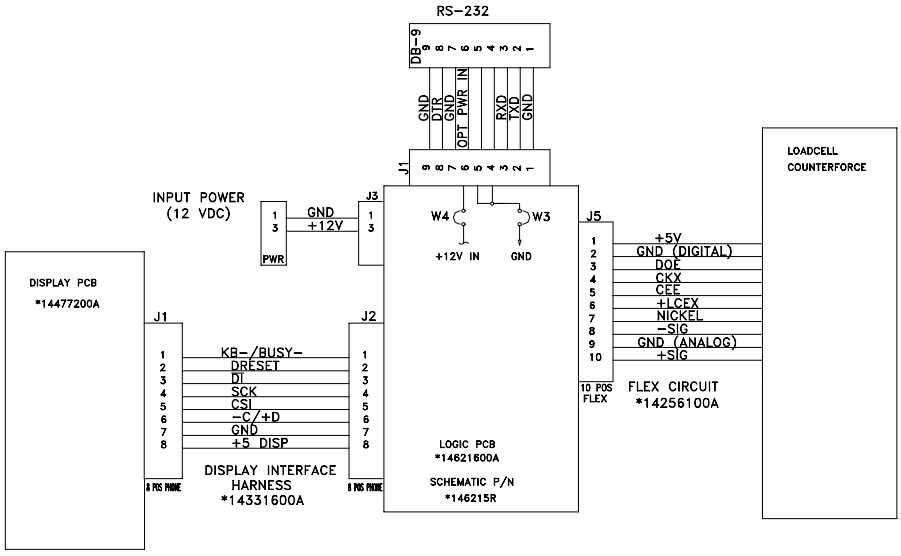


Figure 1-c: PS60/ PS2+ Electronic Interface Diagram

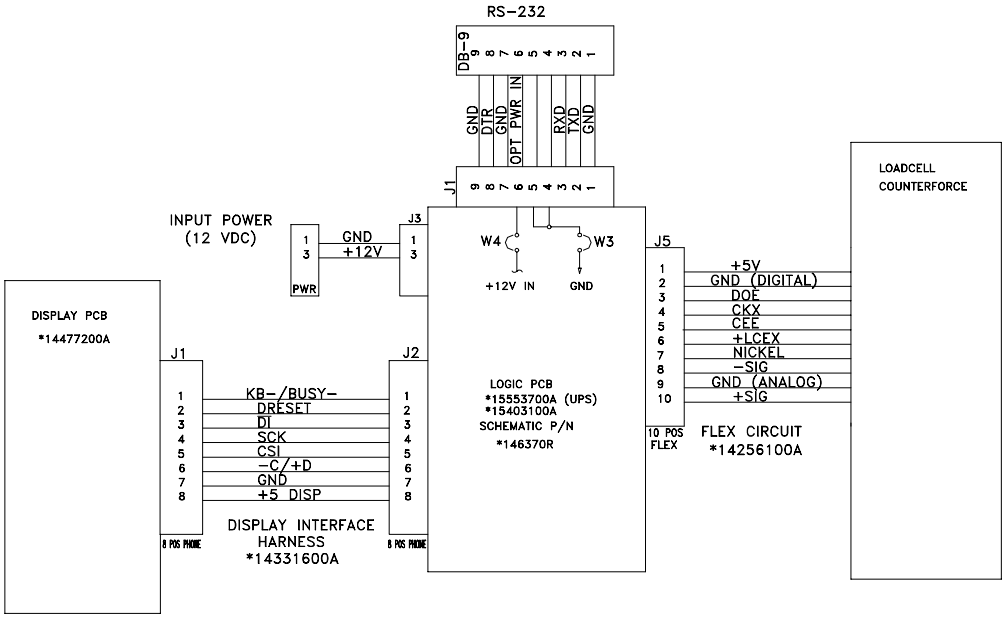


Figure 1-d: PS6L Electronic Interface Diagram

2 Configuring the Setup Parameters

This chapter discusses basic information related to PS configuration and specific instructions on configuring each program block and operating parameter.

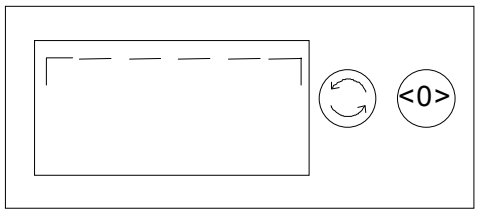
Basic Information

The following sections describe some basic information that you will need to know as you configure the setup parameters and use the PS in normal operating mode.

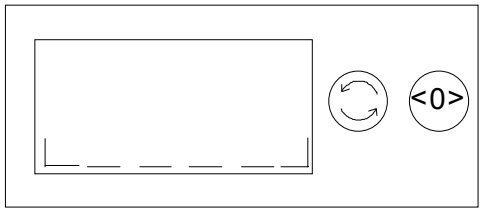
The Display

The PS's display consists of six digits and five cursor positions. Each digit is composed of seven segments and is 12 mm high. The PS's cursor can appear above one or more of the legends printed on the display to indicate the current unit, stable conditions, zero, or options in setup mode.

The display area also indicates over-capacity and under-capacity conditions. Over- and under-capacity are indicated on the display as follows:



Over Capacity



Under Capacity

Figure 2-a: Over/Under Capacity Display

Keys and Navigation

The PS keypad contains a UNITS key and a ZERO key:

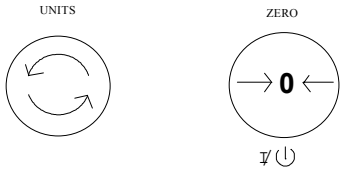


Figure 2-b: UNITS and ZERO Key

The functions for each key **in normal operating mode** are as follows:

- **UNITS**—Press UNITS to switch between the selected main units and alternate units.
- **ZERO**—Press ZERO to zero an empty scale or tare the scale if weight such as an empty container is on the platter. You can tare the scale only if the weight of the empty container is within the 2% zero capture range (discussed later in this chapter in the section entitled Auto Zero Capture Program Block).

If the scale is in Sleep mode (as defined in the Sleep program block), press ZERO to "awaken" the scale. The scale then goes through its normal power-up sequence and returns to normal operating mode.

The functions for each key **in setup mode** are as follows:

- **UNITS**—Press and hold UNITS to enter setup mode. When a program block option is displayed for selection, press UNITS to confirm the selection.
- **ZERO**—Press ZERO to scroll through a list of parameter options.

Program Block Access

The PS's operational parameters are configured in setup mode through a series of program blocks. The program blocks are accessed as follows:

1. Press and hold the UNITS key for up to eight seconds until the message **Setup** is displayed. Release the UNITS key. When released, the PS displays the **Pb0** prompt indicating the first program block.

Reset to Factory Defaults

A default value for each program block parameter is configured at the factory. To reset all program block parameters:

1. From within setup mode, press UNITS to display the **End** prompt.
2. Press ZERO until the **Default** prompt is displayed.
3. Press UNITS to reset all parameters to factory default values.

Exit Setup

Exit setup mode as follows:

1. Press UNITS to display the **End** prompt.
2. Press ZERO to display the desired exit option. Exit options include:
   - No—Do not exit setup mode at this time.
   - Save—Save all changes program block parameters then exit setup mode.
   - Abort—Exit setup mode but do not save any changes made in this session.
   - Default—Reset all program block parameters to default values, then exit setup mode.
3. Press UNITS to carry out the displayed option. The PS automatically exits setup mode and returns to normal operating mode unless No is selected.

There are three alternate ways to exit the setup mode:

- The scale automatically leaves the setup mode after it has been calibrated.
- Disconnect the power from the scale. Changes **will not** be saved.
- Hold down the UNITS key for more than seven seconds. Then release the UNITS key while a category name is shown. Changes **will be** saved.

Configuring Setup Parameters

This section describes the program blocks that govern normal operation including:

- Push Button Zero
- Approval
- Build
- Alternate Units
- Mode
- Filter
- Baud
- ASCII
- Parity
- Stop Bits
- Protocol
- Sleep
- Calibration
- End

Some PS models may differ slightly from what is listed here.
The Approval, Capacity/Increment, Display Mode, and Calibrate program blocks are hidden in setup mode when the Cal jumper (W1) is in place. These program blocks are used only when the jumper is removed and the scale is being calibrated. Please refer to Chapter 3 for calibration details.

The PS can also be configured remotely through the METTLER TOLEDO Host Interface. Details for configuring the scale using the Host Interface are given in the Appendix at the end of this manual.

To configure the PS at the scale, enter the setup mode by pressing and holding the UNITS key for up to eight seconds until the message **Setup** is displayed. Release the UNITS key, then configure the PS program block parameters.

Pushbutton Zero Program Block

The Pushbutton Zero program block lets you configure the range within which the PS can capture zero. The only pushbutton zero capture range currently supported is ± 2%. (Metrology PCB jumper must be removed.)

To configure the program block:

1. Press UNITS to display the **Pb0** prompt, then press ZERO.
2. Press UNITS again to accept the 2 pct option. The PS continues to the Approval / Alternate Units program block.

Approval Program Block

The Approval program block lets you chose which Weights and Measures approval you would like to use with the PS. (Metrology PCB jumper must be removed.) To configure the program block:

1. Press UNITS to display the **APP** prompt, then press ZERO.
2. Press ZERO to display the desired approval setting. Options include:
   - None
   - H44
   - Canada
   - NSC
3. Press UNITS to accept the displayed filter option. The PS continues to the **Build** program block.

Build Program Block

See Chapter 3 for detailed information about choosing builds and calibrating the PS. (Metrology PCB jumper must be removed.)

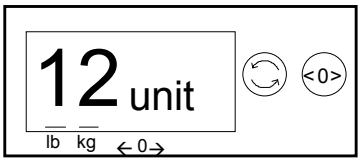
Alternate Units Program Block

This program block lets you select the primary and alternate weighing units. The alternate unit is accessed in normal operation using the UNITS key. This program block may have been configured in calibration to reflect the desired main and alternate units. To configure the Alternate Units program block for normal operation:

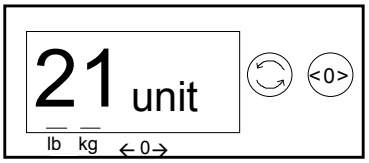
1. If the **Alt** prompt is not displayed, press UNITS to display it, then press ZERO.
2. Press ZERO to display the desired primary and alternate weight unit combination. Options are shown using a number 1 and number 2 over the lb and kg legend in the display. If the primary unit and the alternate unit are the same, the display shows three lines over the lb or kg legend.

   To configure:

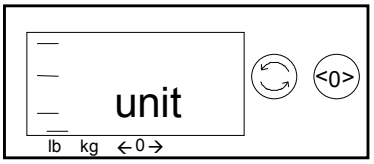
   - lb (primary) and kg (alternate)—display reads 1 2 unit

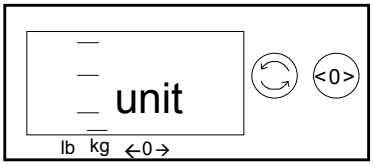
   - lb (alternate) and kg (primary)—display reads 2 1 unit

   - lb as primary and alternate (no unit switching)—display reads three bars over lb legend

   - kg as primary and alternate (no unit switching)—display reads three bars over kg legend

3. Press UNITS to accept the displayed option. The PS continues to the Mode / Filter program block.

Mode Program Block

The Mode program block lets you configure which mode is used to display weight. (Metrology PCB jumper must be removed.)

To configure the program block:

1. If the **Mode** prompt is not displayed, press UNITS to display it, then press ZERO.
2. Press ZERO to display the desired mode. Options include:
   - Normal
   - Expanded
   - Test
   - Classifier
3. Press UNITS to accept the displayed mode option. The PS continues to the Filter program block.

Filter Program Block

The Filter program block lets you configure the noise filter that is used in determining weight stability on the scale. The PS disregards environmental noise such as vibrations that affect the weighing accuracy according to the filter setting.

To configure the program block:

1. If the **Filter** prompt is not displayed, press UNITS to display it, then press ZERO.
2. Press ZERO to display the desired noise filter. Options include:

   Settling time increases with heavier filter setting.

   - Light
   - Heavy
   - Medium
3. Press UNITS to accept the displayed filter option. The PS continues to the Baud program block.

Baud Program Block

This program block lets you set the baud rate (the speed at which data is transmitted in bits-per-second).

To configure the Baud program block:

1. If the **Baud** prompt is not displayed, press UNITS to display it, then press ZERO.
2. Press ZERO to display the desired baud rate.

   Options include:

   - 300
   - 1200
   - 2400
   - 4800
   - 9600
   - 19200

3. Press UNITS to accept the displayed baud rate option. The PS continues to the ASCII program block.

ASCII Program Block

The ASCII program block lets you select the number of bits that make up an ASCII character. Most METTLER TOLEDO equipment communicates using seven data bits.

To configure the program block:

1. If the **ASCII** prompt is not displayed, press UNITS to display it, then press ZERO.
2. Press ZERO to display the desired bit selection. Options include:
   - Seven (7)
   - Eight (8)
3. Press UNITS to accept the displayed option. The PS continues to the Parity program block.

Parity Program Block

The Parity program block lets you select the parity option for data transmission. Parity is an error checking mechanism. To configure the program block:

1. If the **Par** prompt is not displayed, press UNITS to display it, then press ZERO.
2. Press ZERO to display the desired parity option. Options include:
   - Space
   - Mark
   - Odd
   - Even
   - None
3. Press UNITS to accept the parity option. The PS continues to the Stop program block.

Stop Program Block

The Stop program block lets you select the number of stop bits to be transmitted for each ASCII character. Most METTLER TOLEDO products will work with either 1 or 2 stop bits.

To configure the program block:

1. If the **Stop** prompt is not displayed, press UNITS to display it, then press ZERO.
2. Press ZERO to display 1 or 2 stop bits, then press UNITS to accept the displayed selection. The PS continues to the Protocol program block.

Protocol Program Block

The Protocol program block lets you select a preconfigured set of scale parameters specific to your company and needs. Protocols are configured in the factory according to your ordering information. This section gives instructions on how to select a protocol only.

To select a protocol:

1. If the **Proto** prompt is not displayed, press UNITS to display it, then press ZERO.
2. Press ZERO to display the desired protocol. Options include:

Toledo protocol contained in the PS is identical to the Toledo protocol within the industrial builds of the 8213. The PS replaces the industrial versions of the 8213.

   - Toledo
   - Disable
   - Proto 6
   - Proto 5
   - Proto 4
   - Proto 3
   - Proto 2
   - Proto 1

Power is saved if RS-232 interface is not needed.

3. Press UNITS to accept the protocol option. The PS continues to the Calibration / Sleep program block.

Calibration Program Block

See Chapter 3 for detailed information about choosing builds and calibrating the PS. (Metrology PCB jumper must be removed.)

Sleep Program Block

The Sleep program block lets you configure the sleep timer. Power consumption is reduced by approximately 80% while in Sleep mode. **IMPORTANT: For battery powered units, it is important to turn battery power off (using the rocker switch underneath the scale) when the scale is not in use.**

To configure the Sleep program block:

In normal operating mode the scale is powered-up by pressing the ZERO (ON/OFF) key.

1. If the **Sleep** prompt is not displayed, press UNITS to display it, then press ZERO.
2. Press ZERO to display the desired sleep timer option. Options include:
   - **Disable**—the PS will not power-down regardless of time between transactions (inactivity)
   - **5 min**—the PS will enter Sleep mode after 5 minutes with no activity
3. Press UNITS to accept the sleep timer option. The PS continues to the Calibration / End program block.

End Program Block

The End program block lets you save the configuration and exit setup mode. This program block does not have parameters to configure.

To use the End program block:

1. Press UNITS to display the **End** prompt.
2. Press ZERO to display the desired exit option. Exit options include:
   - **No**—Do not exit setup mode at this time. PS returns to the **Approval** prompt.
   - **Save**—Save all changes program block parameters then exit setup mode.
   - **Abort**—Exit setup mode but do not save any changes made in this session.
   - **Default**—Reset all program block parameters to default values, then exit setup mode.

     Default values include the standard Toledo protocol.
   - **Def x**—Company specific.
3. Press UNITS to carry out the displayed option.

3 Installation and Calibration

This chapter gives detailed instructions and important information you will need to install the PS successfully. Please read this chapter thoroughly before you begin installation. This information is also covered in the PS Operator Instructions.

Unpacking and Setup

Please inspect the package as the carrier delivers it.

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

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

Please keep the packing material and shipping insert in case the scale needs to be returned to METTLER TOLEDO. The PS is a precision instrument and may be permanently damaged if not shipped in factory-approved packaging.

Typical package contents for the PS include:

- PS Shipping Scale
- Operator's Instructions
- Power Supply
- Optional Accessories

Installation

The PS shipping scale is fully assembled at the factory, and you should not have to assemble the unit. To install components other than those installed at the factory, please refer to Chapter 5 Service and Maintenance.

1. Locate a suitable environment for the scale. Refer to Chapter 1 for environmental specifications.

The proper environment enhances the operation and longevity of the scale.

2. Remove the packaging material from each side of the scale. Remove the scale by grasping the bottom sides of the scale. **Do not** lift the scale by grasping the sub-platter.
3. Place the scale on a sturdy, level surface and remove any protective shipping materials under the platter.

4. Level the scale by turning the adjustable feet on the bottom of the unit. When the bubble in the bubble indicator is within the circle, the PS is level (see Figures 3-a, 3-b, 3-c). The feet must be adjusted so the scale does not rock.

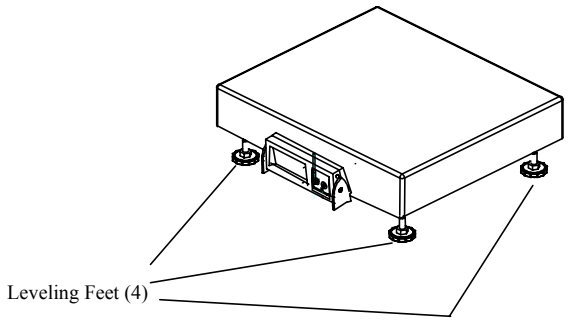


Figure 3-a: PS and PS6L Leveling Feet

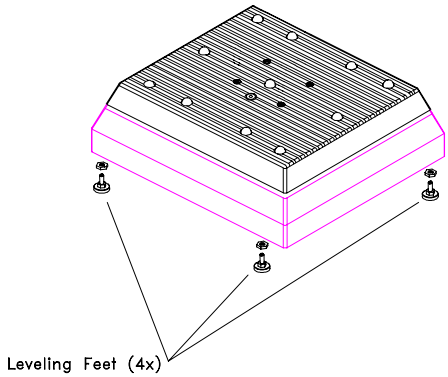


Figure 3-b: PS2+ Leveling Feet

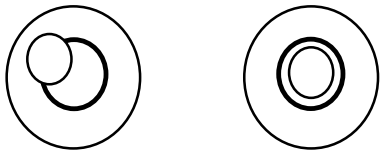
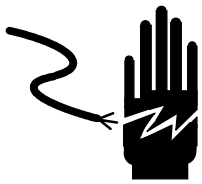


Figure 3-c: Level Indicator

5. Unpack the power supply and plug it into the power jack in the scale base. The jack is recessed on the bottom of the base toward the center front. Plug the line cord into a **properly grounded** AC power outlet. Figure 3-d illustrates proper power supply connection.

To "awaken" the PS whenever it is in sleep mode, press the ZERO key.



WARNING!

AC power sources must have proper short circuit and over current protection in accordance with local and national electrical regulations. Failure to provide this may result in bodily injury and/or property damage.

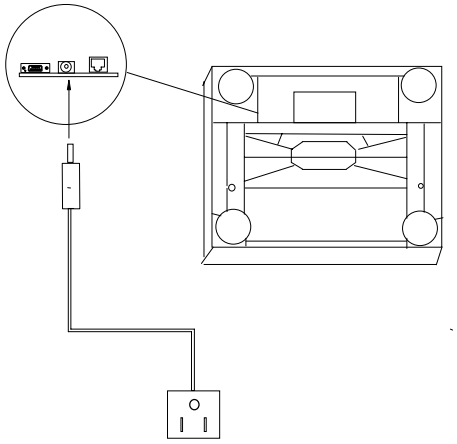


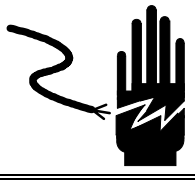
Figure 3-d: Power Cable Connection

Power-up Sequence

The PS goes through a power-up sequence each time power is applied or the scale is brought from its power-down ("sleep") state. The scale performs a diagnostic test on its ROM and RAM, then proceeds to normal operating mode. The power-up sequence is as follows:

1. All segments of the display characters are lighted. This verifies operation of all segments.
2. The scale displays the software part number followed by the software revision status.
3. The scale then captures zero (within ± 10% capacity on power-up) and is ready for normal operation.

Calibration



WARNING

ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND

	ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM.

The PS shipping scale should be calibrated when the unit is initially installed and periodically thereafter to ensure accurate weighing results. You can calibrate the PS at the scale using the UNITS and ZERO keys, or you can calibrate the unit remotely from a computer terminal through its Host interface. Details on calibration using a Host Interface are given in the Appendix at the end of this manual.

To calibrate the PS at the scale:

1. Disconnect the power from the scale.
2. Remove the platter, break the legal-for-trade seal (if present), and remove the PCB cover plate to give access to the PCB.
3. Remove the calibration jumper (W1 in Figure 3-e).

Note: PCB of PS6L looks slightly different but still has a Mlock jumper, W3

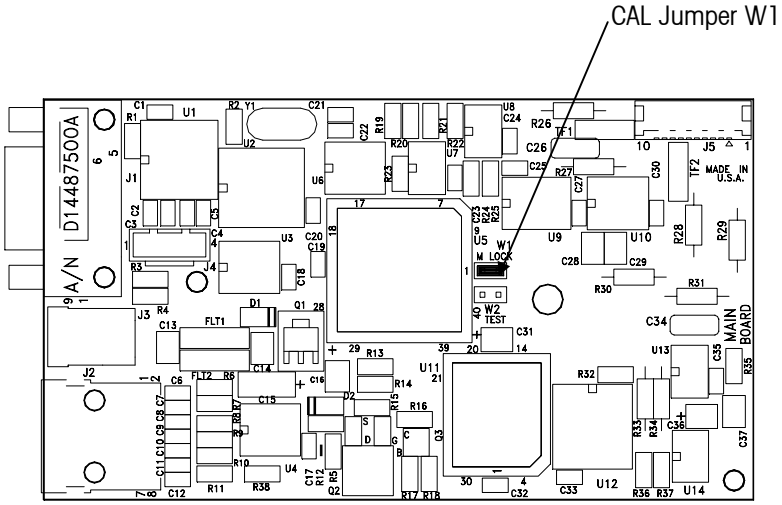


Figure 3-e: CAL Jumper on Main PCB

4. Connect the power to the scale.
5. Enter the setup mode by pressing and holding the UNITS key for up to eight seconds until the message **Setup** is displayed. Release UNITS.

This prompt only appears if the calibration jumper is removed.

6. Press the UNITS key several times until the **APP** prompt appears, then press the ZERO key to display the desired approval option.
7. Press UNITS to select the displayed approval option.
8. Press UNITS until the **Alt** prompt appears, then press ZERO to display the desired primary and secondary units. Select from the following options: (Not an option on PS6L)
   - kg/kg
   - lb/lb

- lb/kg
- kg/lb

Calibration units are selected according to the scale build. For example, if a scale has a kilogram build, select **kg** as the primary unit. Alternately, if the scale has a pound build, select **lb** as the primary unit.

9. Press UNITS to select the displayed units option.

If a different capacity/increment option is selected, the Cal prompt automatically appears.

10. Press UNITS until the **Build** prompt appears, then press ZERO to display the desired capacity/increment option. Capacity/increment options include:

PS60 / PS2+

Display Prompt	Build
60-01	60 x 0.01 kg
150-02	150 x 0.02 lb
60-02	60 x 0.02 kg
150-05	150 x 0.05 lb
100-05	100 x 0.05 kg
250-1	250 x 0.1 lb
50-01	50 x 0.01 kg
100-02	100 x 0.02 lb
60-Mi	60 x 0.01 / 0.02 kg Multi-Interval
150-Mi	150 x 0.02 / 0.05 lb Multi-Interval
70-Mi	70 x 0.02 / 0.05 kg Multi-Interval

PS6L

Note: The PS6L has only one Capacity/Increment build: 0-10 lb x 0.1 oz, 10-70 x 0.2 oz, 70-150 lb x 0.5 oz.

11. Press UNITS to select the displayed capacity/increment option.

12. Press UNITS until the **CAL** prompt appears, then press ZERO to display Y or N. Select Y(es) to calibrate or select N(o) to abort calibration. If Y(es), press UNITS to begin the calibration process.

13. At the **Empty** prompt, set the empty platter on the sub-platter, then press UNITS.

14. At the 50 lb, 20 kg, 125 lb, or 50 kg prompt, place on the platter a test weight equaling **one-third of the scale's capacity** (50 lb or 20 kg), or **half of the scale's capacity** (125 lb or 50 kg) then press UNITS. The scale automatically determines a span factor then indicates **Done** while the calibration values are saved.

15. Disconnect the power from the scale.

16. Replace the calibration jumper (W1), then reassemble the scale.

The PS is now calibrated and ready to configure to your needs. Chapter 2 of this manual gives setup and configuration details.

You can change the build from straight weighing to weight classifying as follows:

1. Enter setup mode by pressing and holding the UNITS key for up to eight seconds.
2. Press the UNITS key to display the Mode menu.
3. Press ZERO to display **Classifr**.
4. Press UNITS to display the End menu.
5. Press ZERO to display **Save**.
6. Press UNITS to return to normal operating mode.

Metrological Seal Installation

If a wire seal is required for W & M requirements, the PS can be sealed after calibration and setup by installing a wire seal on the Main PCB access cover, as shown in Figure 3-f. (The PS2+ does not have a metrology seal.)

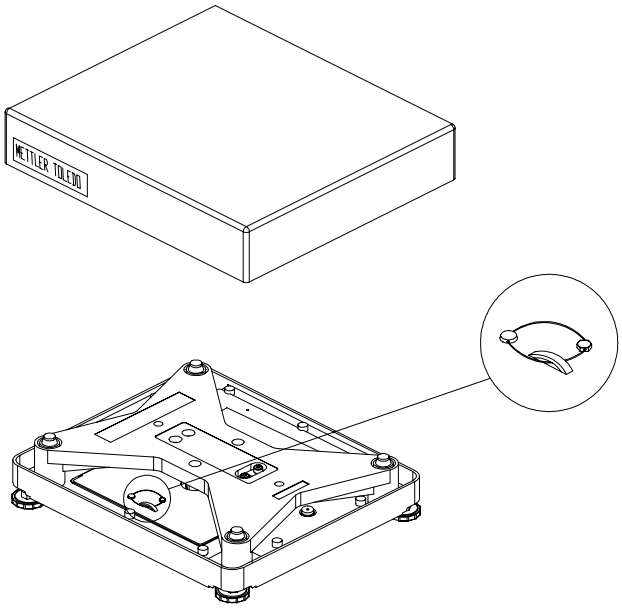


Figure 3-f: Wire Seal Installation

4

Operating Instructions

This chapter gives information that an operator will need to become familiar with the scale and perform its functions in normal operating mode. The scale operates based on the current program block configuration. Please refer to Chapter 2 for more information on configuring the PS.

Keypad and Display

The PS has a simple LCD weight display with two keys that are used to perform scale functions. Weight is displayed using up to six 7-digit numeric characters with decimal point and comma. Cursors (horizontal bars) at the bottom of the display indicate current weight units and zero condition when zero is captured.

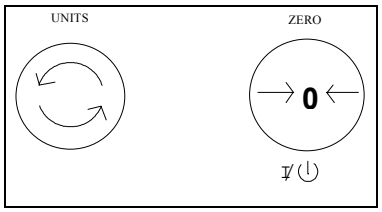


Figure 4-a: PS Keypad

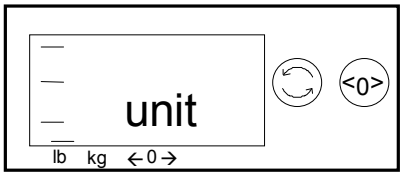


Figure 4-b: PS Display

Operator Functions

The PS supports one primary function: parcel weighing. Other operator functions described in this chapter include:

- Unit switching
- Zero the scale with an empty container prior to weighing (tare a container)
- Repower from Sleep mode

Parcel Weighing

Before weighing parcels on the PS, please be sure the scale is configured as desired (Chapter 2) and power is applied as instructed in Chapter 3 of this manual.

You may wish to recapture zero periodically when the scale is in continuous use. It is not necessary to press ZERO before each transaction.

To weigh a package:

1. Press ZERO to capture zero. The display reads **0.00** and a cursor appears above the zero indicator in the legend.
2. Place the parcel to be weighed on the platter. The display reads the parcel weight with a cursor above the current weight units legend.
3. Record the parcel weight, then remove the parcel from the platter.

Unit Switching

The PS lets you view the displayed scale weight in primary and secondary units. Alternate units must be configured (in setup mode) to convert and display in alternate units.

If primary and alternate units are the same (as configured in the Alternate Units program block), unit switching is effectively disabled. The UNITS key displays the same weight and unit when the UNITS key is pressed.

To switch units:

1. With scale weight displayed, press the UNITS key. The PS automatically converts the displayed weight to weight in the alternate unit as indicated by the cursor.
2. Press UNITS again to reconvert alternate units back to primary units and return weight display to the primary unit.

Zeroing the Scale with an Empty Container

The PS does not support a formal tare function; however, you can capture zero with an empty container on the scale provided weight of the container does not exceed the push button zero-capture limit. To zero the scale with an empty container prior to filling:

1. Place the empty container on the platter.

If the weight of the container exceeds the 2% limit, the scale will not capture zero and displays the weight of the container instead of the container tare weight.

2. Press ZERO. If the container weight is within 2% of the scale capacity, the PS display reads **0.00**.
3. Place the contents to be weighed in the container tared in step 2. The display reads the net weight of the contents with a cursor above the current weight units legend.
4. Remove the container and press ZERO to capture zero for the next weighing transaction.

Repowering from Sleep

If the PS display is blank after a period of inactivity, the ZERO key “awakens” the unit from its power-saving (sleep) mode.

When the ZERO key is pressed, the PS goes through its power-up sequence and returns to normal operating mode.

5 Service and Maintenance

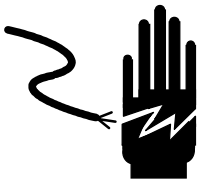
This chapter gives information on servicing, upgrading, and maintaining the PS including cleaning and regular maintenance, troubleshooting, and installing optional equipment KOPs.

Cleaning and Regular Maintenance

You may need to wipe the keypad and platter with a clean, soft cloth that has been dampened with a mild cleaner. Do not use any type of industrial solvent such as toluene or isopropanol (IPA). These may damage the display finish. Do not spray cleaner directly onto the terminal.

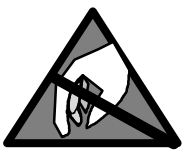
Troubleshooting

The PS shipping scale is designed to be virtually error free and reliable. If problems do occur, do not attempt to repair the scale before you have determined the source of the problem. Record as much information as possible about what has happened including any messages and physical responses. The following troubleshooting information may help to determine the cause of the problem.



WARNING

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



CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

Wall Transformer

The wall transformer (when connected to the proper AC input and disconnected from the scale) may read as low as 10.7 VDC or as high as 18.3 VDC. The wall transformer should read from 11 VDC, up to 17 VDC when connected to the scale. If the voltages measured are not within this range, replace the wall transformer. The center conductor of the wall transformer is positive.

Main PCB

From PC - **DB25-F** RS232 SERIAL PORT		**To PS60 - DB9-M (Male)**	
2	TRANSMIT	3	RECEIVE
3	RECEIVE	2	TRANSMIT
7	SIG GROUND	1,4,5,7, or 9	SIG GROUND

Table 1 Standard PC RS232 DB-25 To PS60

From PC - **DB9-F** RS232 SERIAL PORT		**To PS60 - DB9-M (Male)**	
2	RECEIVE	2	TRANSMIT
3	TRANSMIT	3	RECEIVE
5	SIG GROUND	1,4,5,7, or 9	SIG GROUND

Table 2 Standard PC RS232 DB9 To PS60

To test the Main PCB:

1. Start your communications software such as ComTool (Part Number KN000000K64).
2. Setup your software for:
   - 7 data bits
   - Even parity
   - 1 stop bit
   - Baud rate that matches the computer's baud rate
3. Send an uppercase "W" from your PC to the scale. The scale should respond with the current weight. If the scale does not respond, verify the communications setup. If the problem persists, replace the Main PCB and/or load cell.

Blank or Half Display

Remove power then check the display interface harness from the scale to the display. Apply power the unit. If the blank display continues, replace the 0270 Display PCB and/or the display interface harness.

No Keypad Interaction

To test operation of the keypad, remove power, then reapply. With power to the unit and the W1 (W3 on PS6L) calibration jumper installed, attempt to enter setup mode by pressing and holding the UNITS key. If the display does not indicate setup mode, replace the keypad.

Indicator Locked

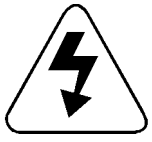
To test operation of the indicator, remove power, then reapply. With power to the unit, add weight. If no motion is displayed, replace either the load cell or the Logic PCB.

Load Cell Replacement

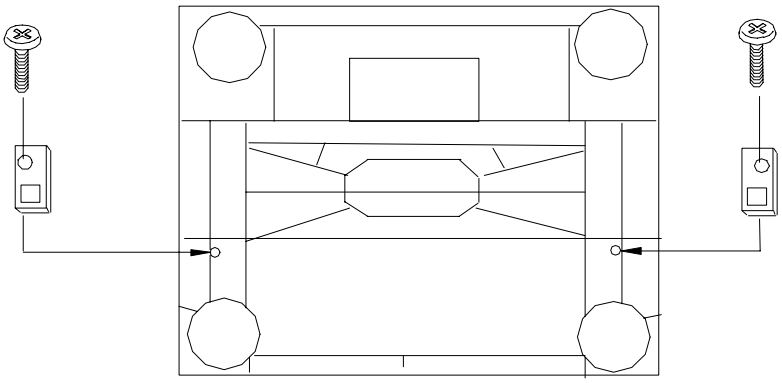
For load cell replacement, please use 15213900A for PS60, use 15440100A for PS60 Australia models, use 15504100A for PS2+ models, and 15335900A for PS6L models.

Installing the Battery KOP

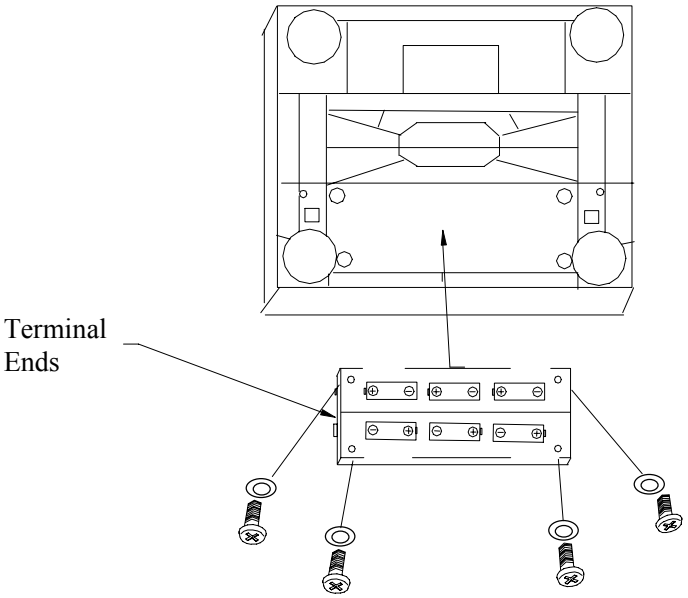
The following instructions describe battery installation (optional) for the PS shipping scale (PS60 model only). Under normal operation, battery life is approximately 40 hours. Sleep mode reduces power consumption by 80% and extends battery life. For prolonged battery life, turn the scale off when not in use.

	WARNING!
	**Always remove all power before operating on any equipment. Mettler-Toledo recommends that only qualified technicians open the unit up for maintenance and repair. If you must open the PS, read this section carefully to avoid damage to the internal components.**

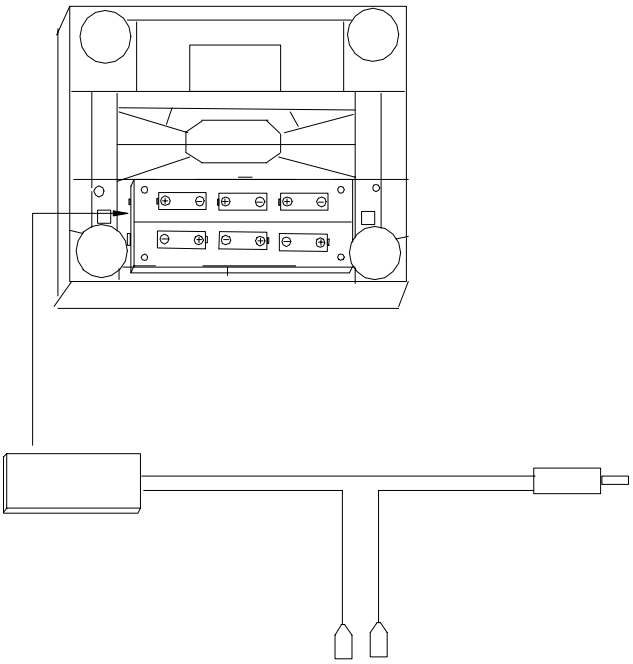
1. Remove the power and turn the PS over on the on the platter side. Be extremely careful not to damage the display.
2. Install the battery plates (P/N 14553600A) with the M4-0.7X10 Pan HD screws (P/N R0513100A) in the base of the scale.



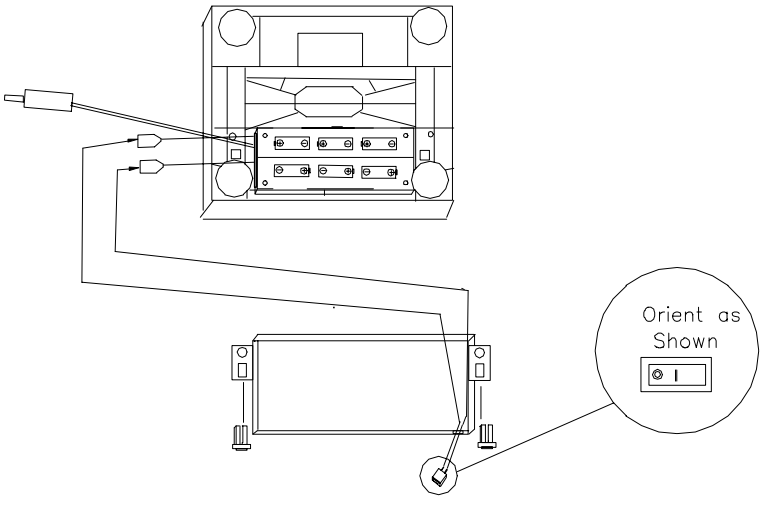
3. Install the plastic D-cell battery holder P/N 13257500A. Attach with four M3-0.5X8 Pan HD screws and washers. Note the polarity of the battery holder and terminal positions.



4. Attach the harness assembly (P/N 14544600A) to the battery holder.



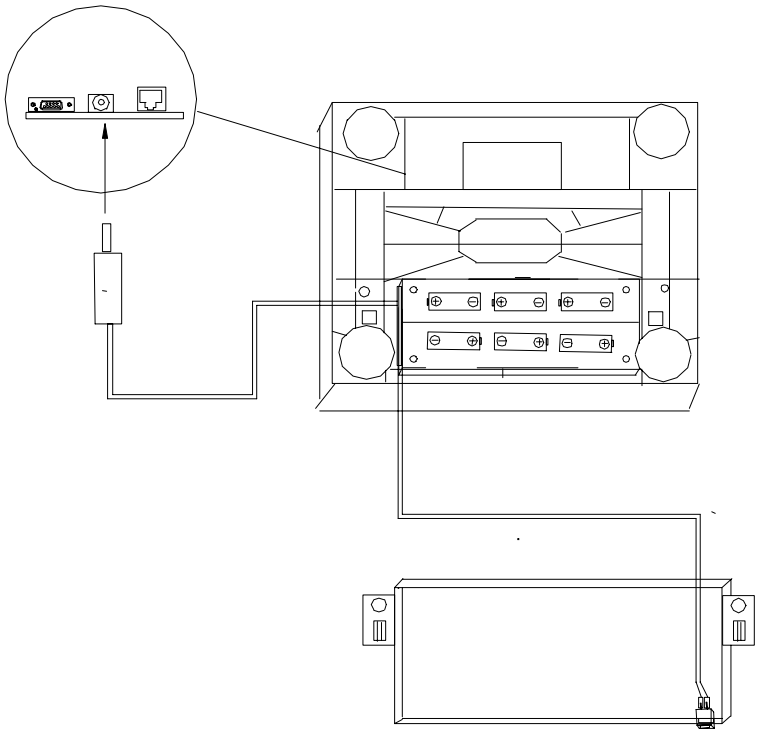
5. Insert the on/off rocker switch (P/N 14262400A) into the switch hole of the battery cover (P/N 14545200A) noting the orientation of the switch.



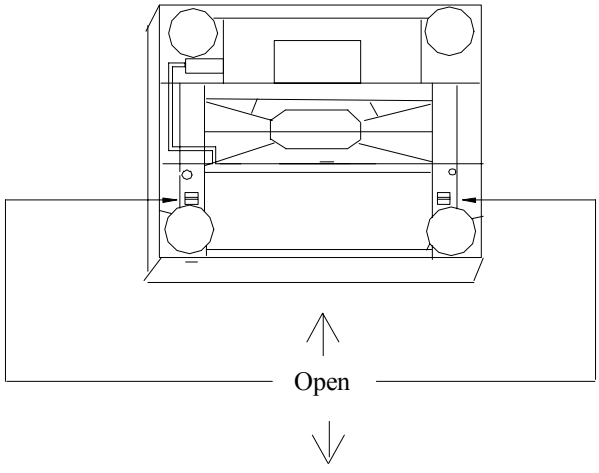
6. Insert the two fasteners (P/N 12051300A) into the battery cover.
7. Install the terminal spade lugs on the terminals of the switch that is installed into the battery cover.

Six alkaline 1.5 VDC 14AH batteries (P/N 13293700A) are required for operation.

8. Connect the plug into the receptacle on the Logic PCB as shown below and install the six 1.5 VDC batteries.



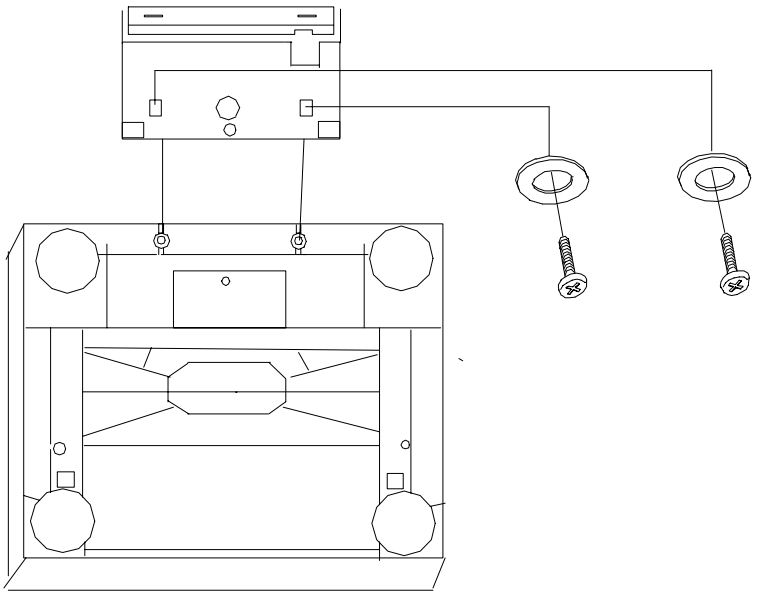
9. Carefully attach the battery cover paying close attention to the routing of the cable to the Main PCB. Close the battery cover fasteners.



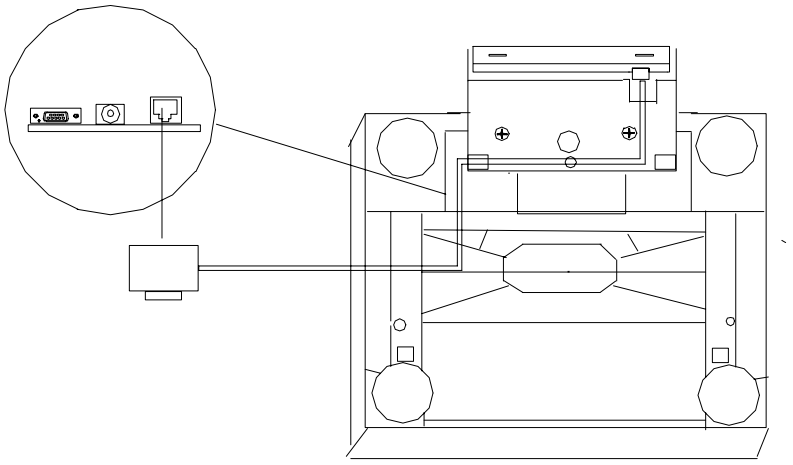
Installing the Base Mount Display

A base mount display unit (0270, 2-key indicator) can be installed if one was not ordered initially for the PS shipping scale (PS60 and PS6L models only). To install the base mount display:

1. Attach the display unit to the bottom of the PS with the two M4 10mm screws (P/N R0513100A) and two washers (P/N R0285100A) as shown below:



2. Install the display interface harness (P/N 14331600A) into the display as shown. Next, insert the display interface harness into the PCB as shown. Make sure to route the cable as shown to prevent damage to the cable.



Installing the Ball Top Transfer Platter

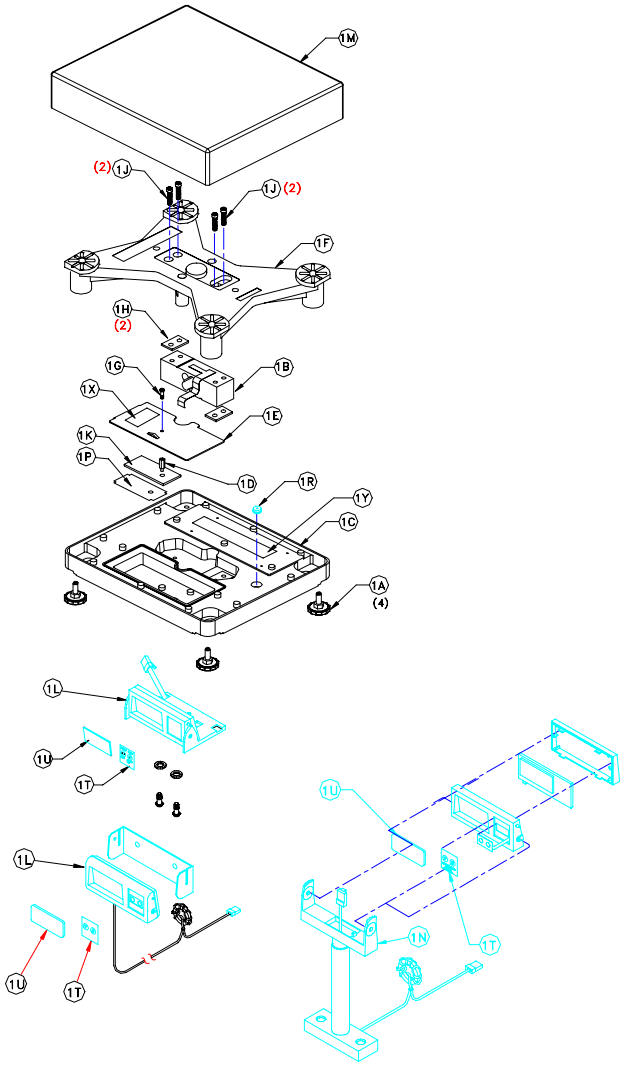
A ball top transfer platter is available for the PS. (Ball top transfer platters are standard on the PS2+ model.) To install the ball transfer platter:

1. Remove the platter supplied with the PS.
2. Place the ball top transfer platter on the PS.
3. Ensure that the ball top transfer platter drops into place without mechanical interference.

6 Parts and Accessories

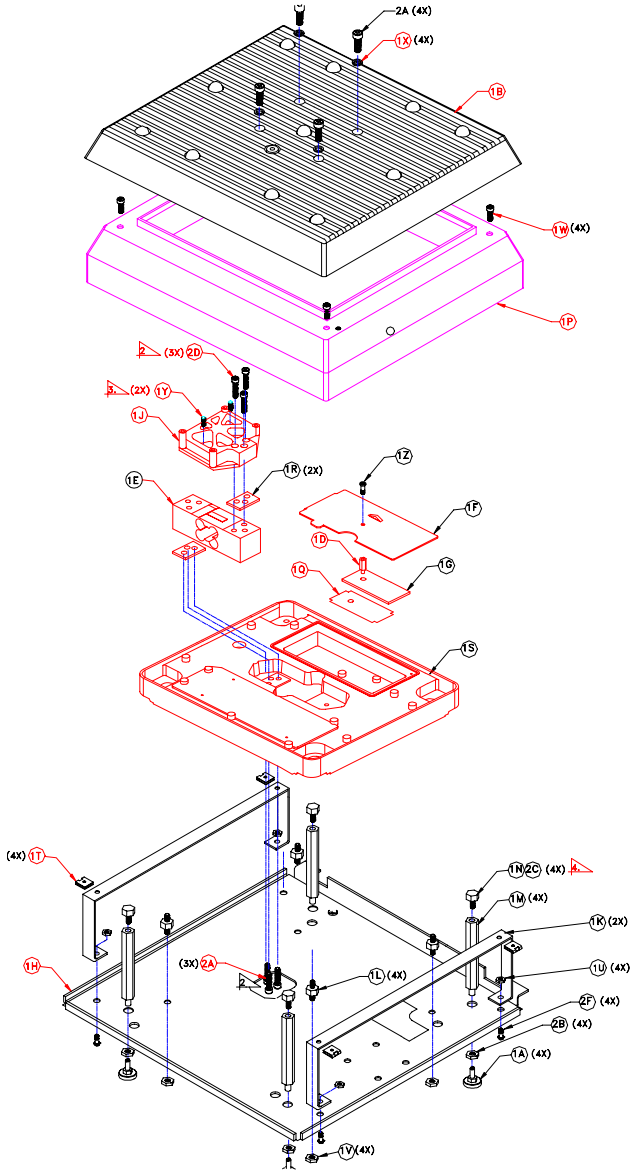
Please refer to the following diagrams and parts lists when ordering parts and accessories for the PS shipping scale.

PS60/PS6L
Scale Parts



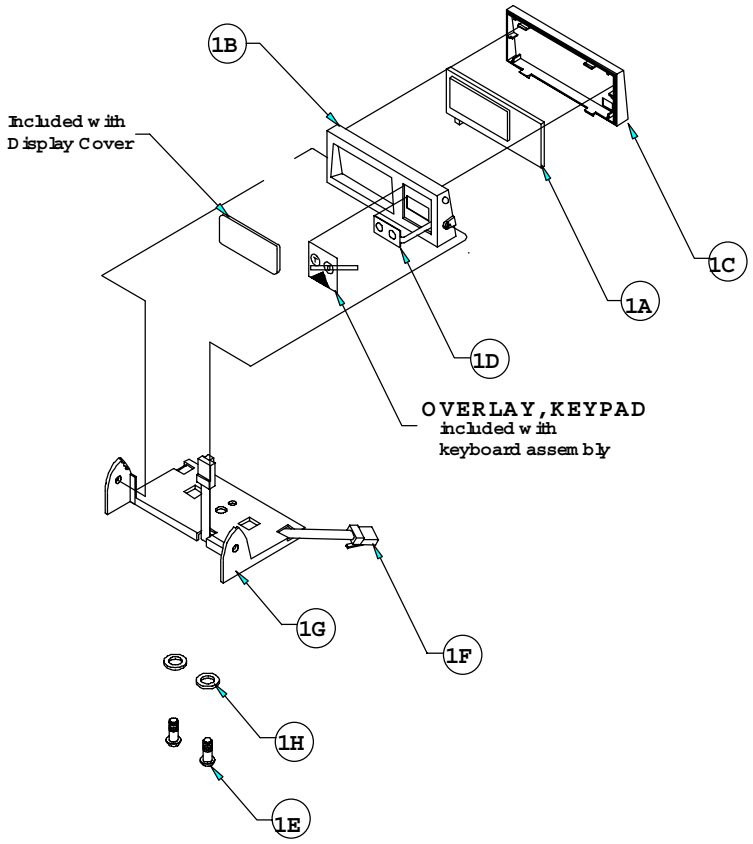
COMMON PARTS (REF MAJOR ASSY.)			
SYM	QTY	PART NO.	DESCRIPTION
1A	4	A14100500A	ADJUSTABLE FOOT
1B	1	15335900A	L/C ASSY,QUAL,100KG PS6L
	1	15214000A	L/C ASSY,QUAL,100KG,3000d PS60
	1	15213900A	L/C ASSY,QUAL,100KG,2X3000 PS60
1C	1	A14647800A	BASE MACHINED,45KG
1D	1	14497000A	STANDOFF,HEX,M4,M/F,16MM
1E	1	14544000A	COVER PLATE,8270 PCB
1F	1	B14544100B	ASSY SPIDER,8270
1G	1	R0514600A	SCREW,M4 X 8 HEX DRILLED
1H	2	A14647700A	SPACER, L/C, 1.5 X 1.0
1J	4	R0517600A	SCR,CAP M8X30 SOC
1K	1	15553700A	PCB ASSY,MAIN,PS6L USPS
	1	A15403100A	PCB ASSY,MAIN,PS6L
	1	G14621600A	PCB ASSY,MAIN,PS60
1L	1	14543000A	ASSY INDICATOR BASE MTG.,8270
	1	14824700A	ASSY,INDICATOR REMOTE SINGLE
1M	1	A15083400A	ASSY,PLATTER,SS,PS60,OPEN CORNER
	1	14819500B	PLATTER,N8,9,PANTONR COOL GREY
1N	1	14917300A	ASSY,DISPLAY TOWER MT.
1P	1	14616100A	INSULATOR, HI RES, LOGIC,8270
1R	1	14813500B	LEVEL W/O ADHESIVE
1T	1	14488900A	OVERLAY,0270
1U	1	14912500A	LENS,DISPLAY,PS60,NTEP,MULTI INT
	1	15362500A	LENS,DISPLAY,PS6L,WGT CLASSIFIER
	1	A14489000A	LENS,DISPLAY,PS60,3000d
*	1	13786200A	POLYBAG 18"X18"
1X	1	14275100A	LABEL,FCC
1Y	1	14082800A	DATA LABEL,00SC

PS2+ Scale Parts



CONSISTS OF			
SYM	QTY	PART NO.	DESCRIPTION
1A	4	12764900A	ADJUSTABLE FOOT
1B	1	12814200A	PAN,ROLLER TOP
1C	1	14082800A	DATA PLATE
1D	1	14497000A	STANDOFF,HEX,M4,M/F,16MM,BRASS
1E	1	15504100A	L/C ASSY,QUAL.,250KG,PS2+
1F	1	14544000A	COVER PLATE,8270 PCB
1G	1	G14621600A	PCB ASSY,8270
1H	1	B15394700A	PLATE BASE STEEL
1J	1	15396700A	SPIDER,SANDCAST JN64
1K	2	15394900A	BRACKETS, SKIRT HOLDERS
1L	4	15395000A	ADAPTOR,MALE SPACER
1M	4	15395100A	STANDOFF,HEX JN64
1N	4	15395600A	ADAPTOR,OVERLOAD STOP
1P	1	A15396300A	SKIRT, PLASTIC JN64
1Q	1	A14591600A	INSULATOR LOGIC, 8270
1R	2	15366000A	SPACER, L/C 1.5 X 1.25
1S	1	A14647800D	BASE,MACHINED,PW200
1T	4	R0153200A	SPEED NUT #8
1U	4	R0329800A	NUT,8-32 W/LOCKWASHER
1V	4	R0365600A	NUT,HEX 5/16-18
1W	4	R0369800A	SCREW TAP, #8 X 5/8
1X	4	R0369900A	WASHER,ANSI TYPE A
1Y	2	R0532200A	SCREW SET,M8X30,W/NYLOK
1Z	1	R0514600A	SCREW M4-0.7X8 HEX DRILLED
2A	7	R0517600A	SCR,CAP M8X30 SOC
2B	4	R0540500A	NUT,HEX,7/16-20 JAM
2D	3	R0543000A	SCREW,HEX HD,M8X35
2E	1	14275100A	LABEL,FCC,P.B. DOMESTIC
2F	4	R0505700A	SCREW,8-32X1/2 FLAT HD

Weight Display Parts



Parts List—Weight Display			
Ref #	**Part Number**	**Description**	**Qty**
1A	14477200A	PCB Assembly, Display	1
1B	A14248600B	Display Cover Front	1
1C	14248700B	Display Cover Rear	1
1D	A14249100A	Keypad (2 Button)	1
1E	R0513100A	Screw (M4 x 10 mm)	2
1F	14331600A	Harness, Display Interface	1
1G	B14248800A	Display Base Mount	1
1H	R0285100A	Washer	2

Appendix: Host Interface

The METTLER TOLEDO PS shipping scale can function as a peripheral device to a host computer. In host mode you can:

- Calibrate the scale
- Configure setup parameters
- Request and receive weight data when the scale is in a stable state
- Request and receive the scale's status when the scale is in an unstable or invalid state
- Zero the scale and/or switch units (depending on setup)

The scale does not reply to host commands if it is in calibration mode or if the scale cannot capture zero on power-up.

This section presents information and instructions on how to use the PS in host mode.

Communication Parameters

Data is transmitted and received by the scale through an RS-232 serial port connection. The following communication parameters are supported:

- Baud Rate (300, 1200, 2400, 4800, 9600, 19200)
- Parity (no, even, odd, mark, space)
- ASCII bit string (7 or 8)
- Stop bits (1, 2)

Protocols

The scale can be programmed to respond to a selected "menu" of defined protocols. The host sends requests to the scale in the form of ASCII data and control characters as determined by the selected protocol. The scale responds to the host with a string of ASCII characters. ASCII characters and their binary conversions are listed in the following table:

ASCII Characters and Conversions

ASCII CHAR.	DEC	HEX	76543210	ASCII CHAR.	DEC	HEX	76543210
NULL	0	00	00000000	@	64	40	01000000
SOH	1	01	00000001	A	65	41	01000001
STX	2	02	00000010	B	66	42	01000010
ETX	3	03	00000011	C	67	43	01000011
EOT	4	04	00000100	D	68	44	01000100
ENQ	5	05	00000101	E	69	45	01000101
ACK	6	06	00000110	F	70	46	01000110
BELL	7	07	00000111	G	71	47	01000111
Backspace	8	08	00001000	H	72	48	01001000
TAB	9	09	00001001	I	73	49	01001001
Line Feed	10	0A	00001010	J	74	4A	01001010
Vert. Tab	11	0B	00001011	K	75	4B	01001011
Form Feed	12	0C	00001100	L	76	4C	01001100
Carr. Return	13	0D	00001101	M	77	4D	01001101
Shift Out	14	0E	00001110	N	78	4E	01001110
Shift In	15	0F	00001111	O	79	4F	01001111
Data Link Esc	16	10	00010000	P	80	50	01010000
DC1	17	11	000010001	Q	81	51	01010001
DC2	18	12	00010010	R	82	52	01010010
DC3	19	13	00010011	S	83	53	01010011
DC4	20	14	00010100	T	84	54	01010100
NAK	21	15	00010101	U	85	55	01010101
SYNCH IDLE	22	16	00010110	V	86	56	01010110
End Trans.	23	17	00010111	W	87	57	01010111
CANCEL	24	18	00011000	X	88	58	01011000
End Of Medium	25	19	00011001	Y	89	59	01011001
Substitute	26	1A	00011010	Z	90	5A	01011010
ESCAPE	27	1B	00011011	[	91	5B	01011011
FS (Cur. Right)	28	1C	00011100	\	92	5C	01011100
GS (Cur. Left)	29	1D	00011101	]	93	5D	01011101
RS (Cursor Up)	30	1E	00011110	^	94	5E	01011110
US (Cur. Down)	31	1F	00011111	_	95	5F	01011111

ASCII CHAR.	DEC	HEX	76543210	ASCII CHAR.	DEC	HEX	76543210
SPACE	32	20	00100000	`	96	60	01100000
!	33	21	00100001	a	97	61	01100001
″	34	22	00100010	b	98	62	01100010
#	35	23	00100011	c	99	63	01100011
$	36	24	00100100	d	100	64	01100100
%	37	25	00100101	e	101	65	01100101
&	38	26	00100110	f	102	66	01100110
′	39	27	00100111	g	103	67	01100111
(	40	28	00101000	h	104	68	01101000
)	41	29	00101001	i	105	69	01101001
*	42	2A	00101010	j	106	6A	01101010
+	43	2B	00101011	k	107	6B	01101011
,	44	2C	00101100	l	108	6C	01101100
-	45	2D	00101101	m	109	6D	01101101
.	46	2E	00101110	n	110	6E	01101110
/	47	2F	00101111	o	111	6F	01101111
0	48	30	00110000	p	112	70	01110000
1	49	31	00110001	q	113	71	01110001
2	50	32	00110010	r	114	72	01110010
3	51	33	00110011	s	115	73	01110011
4	52	34	00110100	t	116	74	01110100
5	53	35	00110101	u	117	75	01110101
6	54	36	00110110	v	118	76	01110110
7	55	37	00110111	w	119	77	01110111
8	56	38	00111000	x	120	78	01111000
9	57	39	00111001	y	121	79	01111001
:	58	3A	00111010	z	122	7A	01111010
;	59	3B	00111011	{	123	7B	01111011
<	60	3C	00111100	l	124	7C	01111100
=	61	3D	00111101	}	125	7D	01111101
>	62	3E	00111110	~	126	7E	01111110
?	63	3F	00111111		127	7F	01111111

Toledo Protocol Host Commands

Following is a listing of host commands and scale responses. Brackets "<>" are used to indicate that the characters within are a description of the transmitted data and are not part of the transmitted data string. <STX> indicates an ASCII Start Of Text character (HEX 02). <CR> indicates an ASCII Carriage Return (HEX 0D).

Host Command	Description	Scale Response
W*	Send normal resolution weight data. (Non-status responses always 8 chars.)	<STX>XXX.XX<CR> OR <STX>XX.XXX<CR> OR <STX>?<status byte><CR>
H	Send high resolution weight data. (Non-status responses always 9 chars.)	<STX>XXX.XXX<CR> OR <STX>?<status byte><CR>
Z	Zero scale unless in motion or out of range under or over capacity.	<STX>?<status byte><CR> Scale status byte.
A	Perform a confidence test of RAM, ROM, and EEPROM. Store results of tests in confidence status byte for later retrieval.	<STX><CR> The scale echoes back a <STX><CR> indicating the command was received.
B	Send results of confidence test.	<STX>?<status byte><CR> Confidence test status byte.
C	Initiate host interface scale configuration.	<STX>CALIBRATE?<CR>
S	Initiate host interface setup.	<STX>SETUP?<CR>
E	Enter "echo" serial port test mode. All characters sent to the scale will be echoed back to the host. "F" terminates the test.	<STX>E<CR> The scale echoes back the letter E indicating the command was received.
L	Switch to/send standard weight.	Same as for W above.
K	Switch to/send metric weight.	Same as for W above.
F	Exit "echo" serial port test mode.	<STX>F<CR> The scale echoes back the letter F indicating the command was received.

Table Note:

***** A status byte message **<STX>?<status byte><CR>** is sent in place of the requested weight data field if the scale is in motion, under zero, or over capacity when the weight data request is sent. The question mark "?" indicates that the following data is a non-ASCII status byte rather than weight data. See below for status byte definitions.

Scale Status Byte Format

When communicating in host mode using the standard Toledo protocol, the PS may receive status bytes containing information such as motion and over/under-capacity conditions. The message <**STX>?<status byte><CR>** on the display indicates receipt of a status byte. The status byte sent is an ASCII character that must be converted to binary form for decoding the bits. The ASCII character table with binary conversion (given in the previous section) can be used to convert status bytes. The bits of the status byte in the standard Toledo protocol are defined as follows:

Status Byte	
Bit No.	**Bit Description**
6	Always 1
5	Always 1
4	1 = Center of zero 0 = Not at center of zero
3	1 = Outside zero capture range 0 = Within range
2	1 = Under zero 0 = Within weighing range
1	1 = Over capacity 0 = Within weighing range
0	1 = Scale in motion 0 = Stable weight data

Calibrate Using Host Interface

ComTool (PN KN000000K64) can be used for all host to scale communications.

The PS shipping scale can be calibrated using the host interface. The command to initiate the calibration sequence is available in the METTLER TOLEDO command set. Calibration is based on the current scale configuration for units and capacity/increment. These can be changed (through the keypad or the host interface) before calibrating the scale through the host interface.

To calibrate using the host interface:

1. Remove the platter, break the legal-for-trade seal (if present), and remove the sub-platter to give access to the PCB.

2. Remove the calibration jumper (W1). Refer to the calibration diagram in Chapter 2 of this manual. DO NOT ENTER SETUP MODE. The PS does not respond to host commands in calibration mode.
3. Send the command **C** to initiate calibration sequence. The scale responds **<STX>CALIBRATE?<CR><LF>**.
4. Send the command **Y** to continue with the calibration sequence, or send the command **N** to abort the sequence. The scale responds **<STX>UNLOAD SCALE- Y?<CR><LF>**.
5. Remove any weight on the platter and send the command **Y** to continue. A stable zero reading is taken, then the scale responds **<STX> ADD 50 LB- Y? <CR><LF>** or **<STX> ADD 20 KG- Y? <CR><LF>** or **<STX> ADD 125 LB- Y? <CR><LF>** or **<STX> ADD 50 KG- ? <CR><LF>**.
6. Add the requested calibration weight to the scale, then send the command **Y** to continue. The scale responds **<STX> CAL DONE <CR><LF>** or **<STX> INCORRECT AMOUNT OF WEIGHT <CR><LF>**.

Configure Scale Parameters Using Host Interface

Configuration parameters can also be sent using the host interface. A command to send a new scale configuration over the host interface is available in the METTLER TOLEDO command set.

To configure using the host interface:

1. From the host computer, send the host command **S** to initiate the configuration setup sequence. The scale responds **<STX>SETUP?<CR>**.
2. Send the command **Y** to continue. The scale responds **<STX>READY<CR>**.
3. Determine the command string representing the configuration parameters. The command string consists of 22 characters. The command string represents a 10 byte bit-mapped setup array stored in EEPROM. The 10 byte array is expanded for serial transmission so that the high-order four bits of each byte are zeroes and the low-order four bits are numbers representing the desired option for each program block.

The tables below list the programming options available in each program block. Use the numbers in parentheses as the command line string characters for each operating parameter. These tables represent the parameters in the Toledo protocol as the PS is shipped from the factory. Your company may want to configure a unique protocol with options and defaults other than those shown here.

PS Program Block Configuration Options (PS6L differs slightly)						
PB Zero	**Approval**	**Capacity/ Increment**	**Alt Unit**	**Display Mode**	**Filter**	**Baud**
± 2% (1)	Canada (1)	60 x 0.01 kg (1)	kg/lb (1)	Test (1)	Light (1)	300 (1)
	HB44 (2)	150 x 0.02 lb (2)	lb/lb (2)	Expand (2)	Medium (2)	1200 (2)
	None (3)	60 x 0.02 kg (3)	lb/kg (3)	Normal (3)	Heavy (3)	2400 (3)
	NSC (4)	150 x 0.05 lb (4)	kg/lb (4)	Class. (4)		4800 (4)
		100 x 0.05 kg (5)				9600 (5)
		250 x 0.1 lb (6)				19200 (6)
		50 x 0.01 kg (7)				
		100 x 0.02 lb (8)				
		60 x 0.01 / 0.02 kg (9)				
		150 x 0.02 / 0.05 lb (10)				
		70 x 0.02 / 0.05 kg (11)				

PS Program Block Configuration Options						
ASCII Bit String	**Parity**	**Stop Bits**	**Protocol**	**Sleep Mode**	**Calibrate**	**End**
7 (1)	Space (1)	1 (1)	Disabled (1)	0 min (1)	No (1)	Default (1)
8 (2)	Mark(2)	2 (2)	Toledo (2)	5 min (2)	Yes (2)	Abort (2)
	Odd (3)		Proto 1 (3)			Save (3)
	Even (4)		Proto 2 (4)			No (4)
	None (5)		Proto 3 (5)			Default 1 (5)
			Proto 4 (6)			Default 2 (6)
			Proto 5 (7)			Default 3 (7)
			Proto 6 (8)			Default 4 (8)
						Default 5 (9)
						Default 6 (10)
						Default 7 (11)
						Default 8 (12)

Before sending the **DONE** reply, the configuration file is analyzed just as if it had been constructed using the keyboard.

4. Send the command string using the start of text and end of text characters. The scale echoes the command **<STX>XXXXXXXXXXXXXXXXXXXX**<CR> as verification of receipt. For example:

   Host send: 2,0,0,0,0,0,0,0,1,2,1,4,1,5,1,3,3,4,3,1,0,3
   Scale reply:
   <STX>,NUL,NUL,NUL,NUL,NUL,NUL,NUL,SOH,STX,SOH,EOT,SOH,ENQ, SOH,ETX,ETX,EOT,ETX,SOH,NUL<ETX>

You can also obtain the current configuration by sending the command string **<STX>00000000000000000000<ETX>**. The scale responds with a string representing the current configuration.

5. Send the command Y to use the current configuration string, or N to abort configuration. The scale responds **<STX>DONE<CR>** when configuration is complete or **<STX>ABORT<CR>** if you sent the command **N** to abort. For example:
   Host sends: Y or N (hex 89 or hex 78)
   Scale reply: <STX> DONE<CR> or <STX> ABORT<CR>

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