HD

Analog Scale Base

Installation and Service Manual

A15724200A
(5/00).00

METTLER TOLEDO

Publication Revision History

An overview of this manual's revision history is compiled below.

Publication Name: HD Analog Scale Base Installation and Service Manual

Publication Part Number: 15724200A Publication Date: 5/99

Part Number	Date	Revisions
A15724200A	**5/00**	Added information about 24x30 size scale bases. Added information about hazardous environments. Added information about wheel kit.

INTRODUCTION

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

Information about METTLER TOLEDO Technical Training can be obtained by writing, calling, or faxing:

METTLER TOLEDO
1900 Polaris Parkway
Columbus, Ohio 43240 USA
phone: (614) 438-4511
fax: (614) 438-4958
www.mt.com

FCC Notice

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

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

PRECAUTIONS

READ this manual BEFORE operating or servicing this equipment.

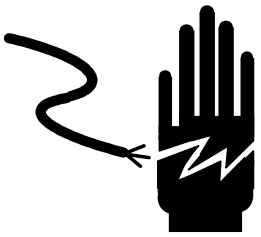
FOLLOW these instructions carefully.

SAVE this manual for future reference.

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

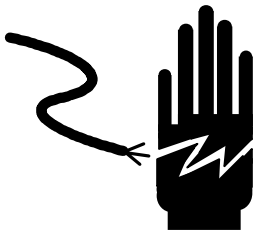
ALWAYS DISCONNECT this equipment from the power source before cleaning or performing maintenance.

CALL METTLER TOLEDO for parts, information, and service.



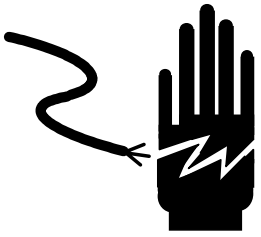
⚠ WARNING

PERMIT ONLY 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 A PROPERLY GROUNDED OUTLET ONLY. DO NOT REMOVE THE GROUND PRONG.



⚠ 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

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

⚠ CAUTION

USE CAUTION WHEN LIFTING THE SCALE BASE. BECAUSE OF THE WEIGHT OF THE BASE, ATTEMPTING TO LIFT IT BY YOURSELF COULD RESULT IN INJURY.

CONTENTS

1 Introduction

The HD analog scale base is designed for industrial and commercial weighing applications. It is a heavy-duty base that can be used in hazardous areas where intrinsically safe equipment is required. A carbon steel base is available for use in dry environments. A stainless steel base is available for use in washdown environments. The HD scale base can be connected to a variety of METTLER TOLEDO terminals, providing maximum flexibility for customizing a system.

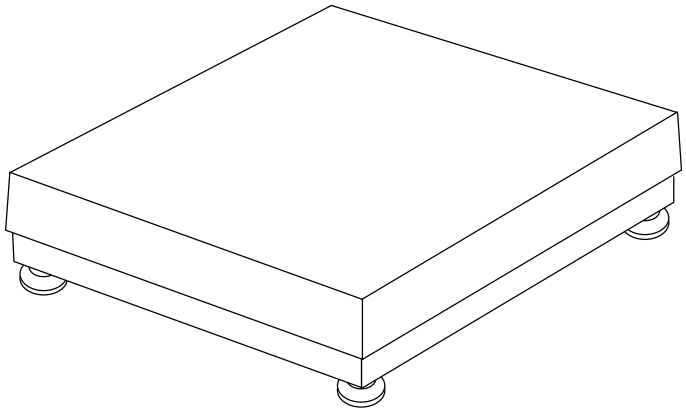


Figure 1-1: HD Scale Base

This manual explains how to install, adjust, and service the HD scale base. Additional information can be found in the manual(s) for the terminal that you are connecting to the HD scale base. If any information is incorrect or missing from this manual, please use the Publication Suggestion Report at the back of the manual to tell us about it.

Model Identification

The HD scale base is available in two sizes and four capacities. Refer to Table 1-1 to identify the HD scale base model with which you are working.

Type of Base	Capacity	Base Construction	Configuration	Optional Cable
HD	000	X	X	-C
HD Scale Base	050 = 50 kg (100 lb) 100 = 100 kg (250 lb) 250 = 250 kg (500 lb) 500 = 500 kg (1,000 lb)	P = Painted Carbon Steel S = Stainless Steel	R = 20x20 with Platter A = 20x20 without Platter L = 24x30 with Platter B = 24x30 without Platter	Optional 30-foot Load Cell Cable

Table 1-1: HD Scale Base Model Numbers

For example:

Model HD050PR is a 20" x 20" HD scale with a 50-kg capacity, painted carbon steel base with platter, and standard 15-foot load cell cable.

Model HD250SB-C is a 24" x 30" HD scale with a 250-kg capacity, stainless steel base without platter, and optional 30-foot load cell cable.

Specifications

Specifications for each model are listed in Tables 1-2 and 1-3.

Model	HD050PR	HD100PR	HD250PR	HD050SR	HD100SR	HD250SR
Max. Capacity	50 kg / 100 lb	100 kg / 250 lb	250 kg / 500 lb	50 kg / 100 lb	100 kg / 250 lb	250 kg / 500 lb
Min. Graduation (eMIN)	0.01 kg 0.02 lb	0.02 kg 0.05 lb	0.05 kg 0.1 lb	0.01 kg 0.02 lb	0.02 kg 0.05 lb	0.05 kg 0.1 lb
Max. Divisions (nMAX)	5,000d Approved	5,000d Approved	5,000d Approved	5,000d Approved	5,000d Approved	5,000d Approved
Recommended Build*	50 x 0.01 kg 100 x 0.02 lb	100 x 0.02 kg 250 x 0.05 lb	250 x 0.05 kg 500 x 0.1 lb	50 x 0.01 kg 100 x 0.02 lb	100 x 0.02 kg 250 x 0.05 lb	250 x 0.05 kg 500 x 0.1 lb
Platter Dimensions	508 x 508 mm 20 x 20 inches	508 x 508 mm 20 x 20 inches	508 x 508 mm 20 x 20 inches	508 x 508 mm 20 x 20 inches	508 x 508 mm 20 x 20 inches	508 x 508 mm 20 x 20 inches
Min. – Max. Scale Height	152 – 171 mm 6 – 6.75 inches	152 – 171 mm 6 – 6.75 inches	152 – 171 mm 6 – 6.75 inches	152 – 171 mm 6 – 6.75 inches	152 – 171 mm 6 – 6.75 inches	152 – 171 mm 6 – 6.75 inches
Load Cell Capacity	250 lb	500 lb	1,250 lb	250 lb	500 lb	1,250 lb
Load Cell Construction	Potted; Stainless Steel Counter-Force	Hermetically Sealed; Stainless Steel Counter-Force	Hermetically Sealed; Stainless Steel Counter-Force	Potted; Stainless Steel Counter-Force	Hermetically Sealed; Stainless Steel Counter-Force	Hermetically Sealed; Stainless Steel Counter-Force
Base Construction	Painted Carbon Steel	Painted Carbon Steel	Painted Carbon Steel	Stainless Steel	Stainless Steel	Stainless Steel
Platter Construction	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
W&M Approval	NTEP COC# 99-013A1 Measurement Canada Approved 5,000d					

* Recommended build and back weight based on 5,000d builds.

Table 1-2: HD Scale Base Specifications (20" x 20" Size)

Model	HD250PL	HD500PL	HD250SL	HD500SL
Max. Capacity	250 kg / 500 lb	500 kg / 1,000 lb	250 kg / 500 lb	500 kg / 1,000 lb
Min. Graduation (eMIN)	0.05 kg 0.1 lb	0.1 kg 0.2 lb	0.05 kg 0.1 lb	0.1 kg 0.2 lb
Max. Divisions (nMAX)	5,000d Approved	5,000d Approved	5,000d Approved	5,000d Approved
Recommended Build*	250 x 0.05 kg 500 x 0.1 lb	500 x 0.1 kg 1,000 x 0.2 lb	250 x 0.05 kg 500 x 0.1 lb	500 x 0.1 kg 1,000 x 0.2 lb
Platter Dimensions	610 x 762 mm 24 x 30 inches	610 x 762 mm 24 x 30 inches	610 x 762 mm 24 x 30 inches	610 x 762 mm 24 x 30 inches
Min. – Max. Scale Height	216 – 229 mm 8.5 – 9 inches	216 – 229 mm 8.5 – 9 inches	216 – 229 mm 8.5 – 9 inches	216 – 229 mm 8.5 – 9 inches
Load Cell Capacity	1,250 lb	2,500 lb	1,250 lb	2,500 lb
Load Cell Construction	Hermetically Sealed; Stainless Steel Counter-Force	Hermetically Sealed; Stainless Steel Counter-Force	Hermetically Sealed; Stainless Steel Counter-Force	Hermetically Sealed; Stainless Steel Counter-Force
Base Construction	Painted Carbon Steel	Painted Carbon Steel	Stainless Steel	Stainless Steel
Platter Construction	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
W&M Approval	NTEP COC# 99-013A1 Measurement Canada Approved 5,000d			

* Recommended build and back weight based on 5,000d builds.

Table 1-3: HD Scale Base Specifications (24" x 30" Size)

Scale Terminals

The HD scale base can be used with METTLER TOLEDO analog terminals and counting scales, including the following units:

- SPIDER Terminal
- PUMA Terminal
- JAGUAR Terminal
- LYNX Terminal
- PANTHER (Analog) Terminal
- SC Counting Scale (with analog second scale kit)

Hazardous Environments

⚠ WARNING

HD BASES ARE APPROVED FOR USE IN HAZARDOUS ENVIRONMENTS ONLY WHEN USED AND INSTALLED PER THE APPROPRIATE INSTALLATION (CONTROL) DRAWING(S). REFER TO THE TECHNICAL MANUAL SUPPLIED WITH THE MATING TERMINAL FOR DETAILS. DO NOT SUBSTITUTE OR MODIFY ANY ITEMS ON THESE CONTROL DRAWINGS. ANY MODIFICATION WILL VOID AGENCY APPROVAL AND COULD PRODUCE A HAZARDOUS CONDITION.

Factory Mutual

The load cells used in all HD scale bases have been approved by Factory Mutual and are listed on METTLER TOLEDO document 122502 for use in Class I, II, III, Division 1 & 2, Groups A, B, C, D, E, F, and G Classified locations.

HD scale bases are approved only for use with specific terminals that have been approved by Factory Mutual. Refer to the technical manual provided with the terminal for the Control Drawing containing installation and wiring details.

CSA

Models HD050XX and HD050XXX-X have been approved by CSA for use in Class I, Division 1 & 2, Groups A, B, C, and D Classified locations when installed according to drawing 152919R. All other HD scale bases have been approved by CSA for use in Class I & II, Division 1 & 2, Groups A, B, C, D, E, F, G Classified locations.

HD scale bases are approved only for use with specific terminals that have been approved by CSA. Refer to the technical manual provided with the terminal for the Control Drawing containing installation and wiring details.

A safety ground must be installed according to Canadian Electrical Code 22.1, Appendix F3.2. The safety ground lug extends from the center plate on the bottom of the base, as shown in Figure 1-2.

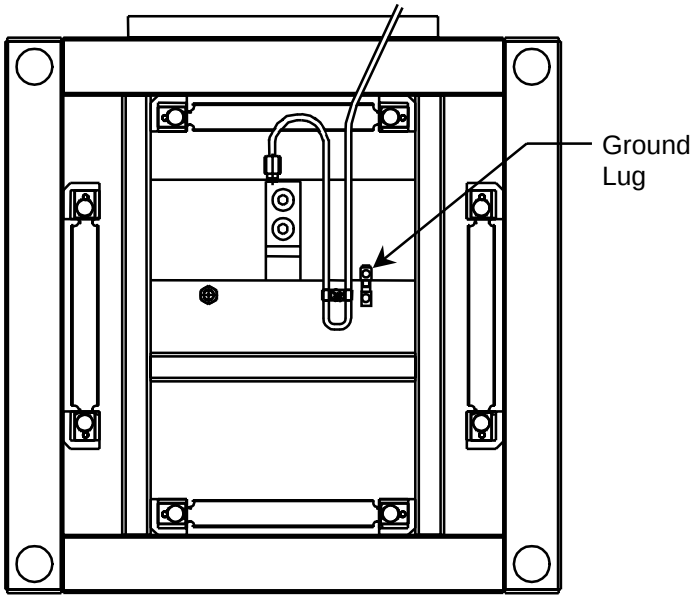


Figure 1-2: Ground Lug Location

2 Installation

Preparation

Model HD is a scale base only and does not include a terminal. The terminal, mounting column, and any other accessories are ordered and shipped separately. Make sure that you have all the accessories you need before you begin installation.

To protect against damage, keep the HD scale base in its shipping carton until it reaches the location where it will be installed.

Unpacking and Inspection

When you receive the HD scale base, inspect it to make sure that it is not damaged and that all parts are included:

1. If the shipping skid shows signs of damage when delivered, file a freight claim with the carrier if necessary.
2. Remove the scale base from the shipping skid.

⚠ CAUTION

USE CAUTION WHEN LIFTING THE SCALE BASE. BECAUSE OF THE WEIGHT OF THE BASE, ATTEMPTING TO LIFT IT BY YOURSELF COULD RESULT IN INJURY.

3. Remove the protective covering, using care not to drop the HD scale base. Store the packaging and skid to use if you will need to transport or ship the HD scale base later.
4. Inspect the HD scale base for damage. Never install an HD scale base if damage is apparent.
5. Make sure all components are included:
   - Scale base (and stainless steel platter, if ordered)
   - Installation and Service Manual
6. Contact your authorized METTLER TOLEDO representative if the HD scale base is damaged or any parts are missing.

Selecting the Location

Use the following guidelines when selecting a location for the HD scale base:

- Carbon steel scale bases are not intended for use in washdown environments. For those environments, make sure that you install a stainless steel scale base.
- Place the HD scale base on a firm, level, and vibration-free surface.
- Maintain a temperature range of -30°C to +70°C (-22°F to +158°F). Avoid areas where the temperature changes rapidly.
- Avoid excessive drafts, such as from fans and open windows.

Level the Base

Once the HD scale base is in place, make sure it is level. Each of the four leveling feet should touch the surface on which the scale base is placed. The scale base should not rock or teeter.

- Adjust the leveling feet as needed. To adjust a leveling foot, turn the nut located just above the base of the foot (see Figure 2-1).

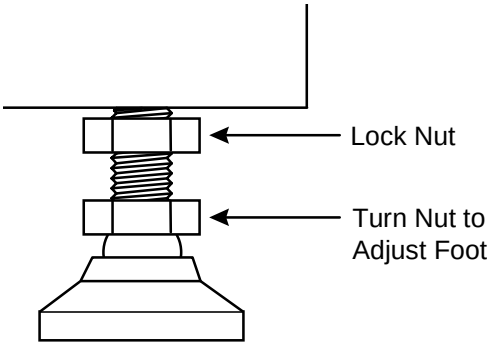


Figure 2-1: Leveling Foot

- Remove the platter so that you can check the level that is located on the top of the scale base. Adjust the leveling feet until the bubble on the level is centered (see Figure 2-2).

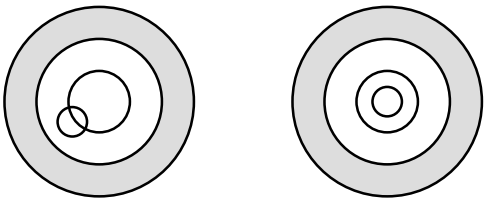


Figure 2-2: Leveling the Scale Base

- Once the leveling feet have been adjusted, tighten the lock nut on each foot against the underside of the scale base (see Figure 2-1).
- You must re-level the HD scale base every time you move it to a new location.

Wheel Assembly

An optional wheel kit is available for the 24x30 HD Scale Base. The following instructions explain how to assemble the wheel kit.

1. Turn the scale base upside down and place it on a stable surface. You might want to remove the platter to keep it from being scratched.
2. Remove the adjustable feet from the scale base.
3. Position the rear axle pan on the bottom of the scale base so that its 1/2-inch flange is flush with the mounting plate at the rear of the base (see Figure 2-3).

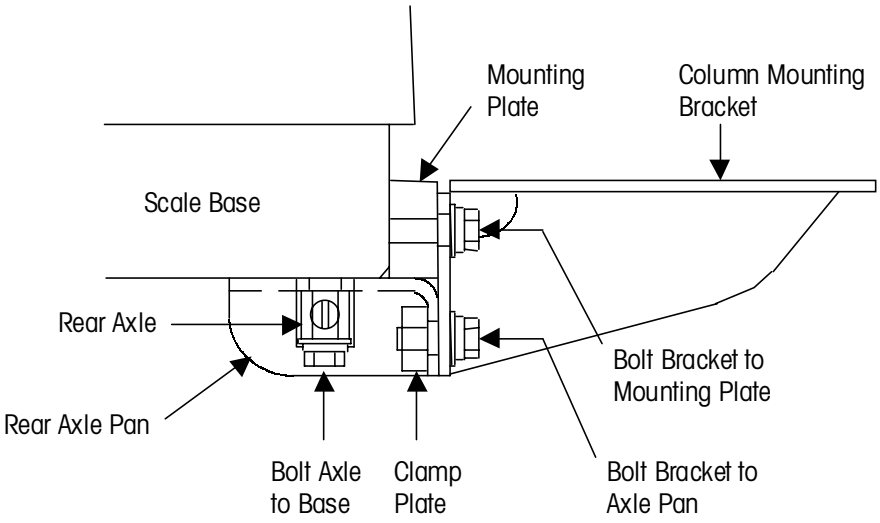


Figure 2-3: Side View of Rear Axle Installation (shown right side up)

4. Slide the rear axle through the square holes at both ends of the rear axle pan.
5. Align the bolt holes in the rear axle with the holes where the rear adjustable feet were attached to the bottom of the scale base. Secure the rear axle to the scale base with a flat washer, lock washer, and screw at each bolt hole.
6. Align the bolt holes in the front axle with the holes where the front adjustable feet were attached to the bottom of the scale base. Place an axle spacer between the axle and each of the bolt holes (see Figure 2-4). Secure the front axle and spacer to the scale base with a flat washer, lock washer, and screw at each bolt hole.

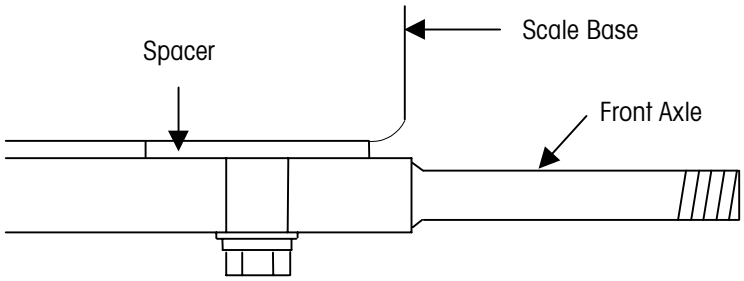


Figure 2-4: Front View of Front Axle Installation (shown right side up)

7. Position the column mounting bracket so that its bolt holes line up with those on the mounting plate and rear axle pan (see Figure 2-3).
   - Secure the bracket to the mounting plate with a flat washer, lock washer and screw at each bolt hole (torque screws to 30 ft/lb).
   - Secure the bracket to the rear axle pan with a clamp plate, flat washer, lock washer, and screw at each bolt hole (torque screws to 30 ft/lb).
8. Slide a wheel (with a washer on each side of it) over the end of each axle. Then place a castle nut over the end of the axle. Secure the nut, washers, and wheel by installing a cotter pin through the hole at the end of the axle (see Figure 2-5).

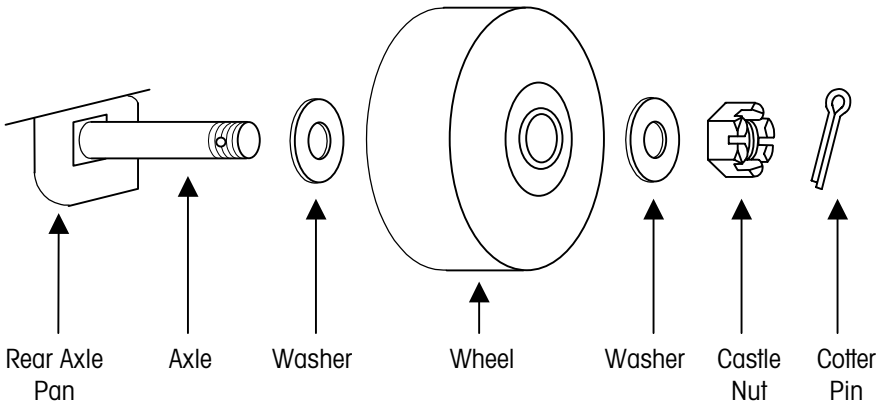


Figure 2-5: Installing Wheel on Axle

9. Thread the load cell cable through the 1/2-inch hole in the rear axle pan. Attach the cable to the pan with a cable clamp and screw (see Figure 2-6).
10. Thread the cable through the gussets of the column mounting bracket and up through the slot in the center of the bracket.
11. Thread the cable up through the column. Then bolt the column to the mounting bracket (torque screws to 30 ft/lb). Coil up any excess cable and place it inside the mounting column.

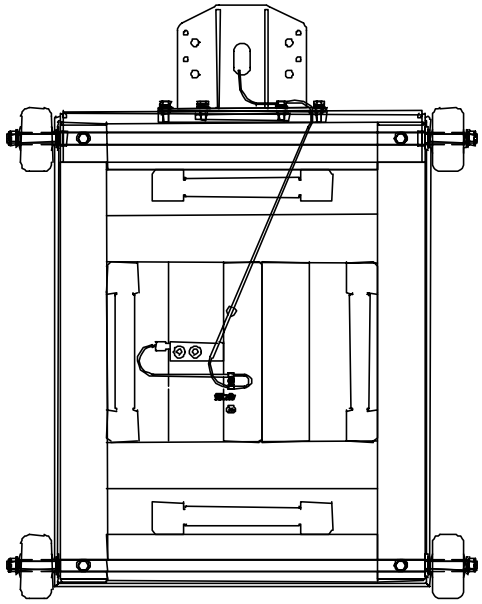


Figure 2-6: Load Cell Cable Routing

Connect the Terminal

For most applications, the terminal will be mounted on a column that is bolted to the scale base. Bolt holes are provided on the back side of the scale base so that you can attach a column to the base.

Wiring Connections

The load cell cable should be routed through the cable clamp (see Figure 2-7) to relieve strain on the cable's connection to the load cell. Make sure that the cable is not touching any of the flexures on the underside of the scale base.

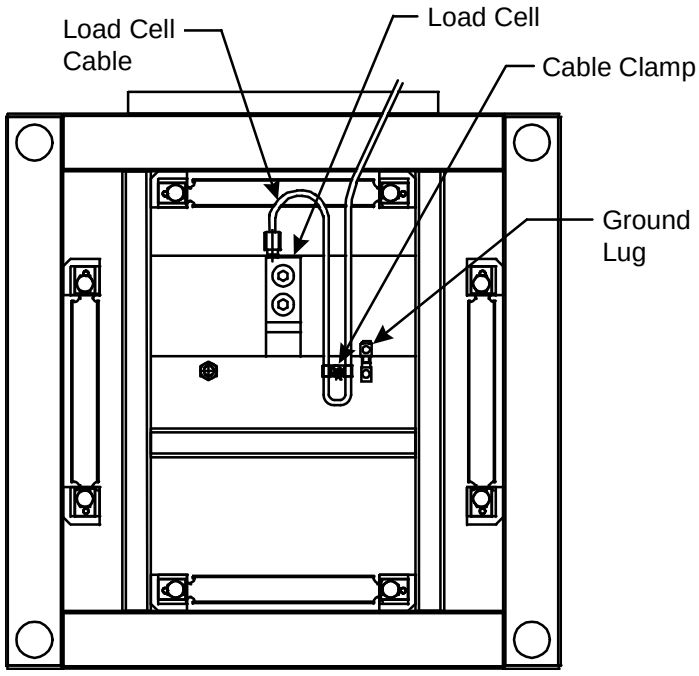


Figure 2-7: Underside of Scale Base

Connect the load cell cable to the terminal, using the wiring instructions provided in the technical manual for the terminal. Cable color codes are shown below:

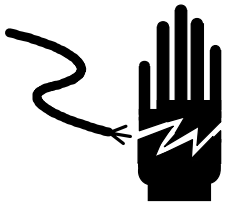
CABLE COLOR	SIGNAL DESCRIPTION
Black	-Excitation Input
Green	+Excitation Input
Red	-Signal Output
White	+Signal Output
Yellow	Ground

Note: Sense leads from the terminal must be jumpered to the corresponding excitation lead at the load cell termination.

If there is a ground wire, attach it to the ground lug on the underside of the scale base (see Figure 2-7).

Calibration

Calibrate the scale, using the procedure described in the technical manual for the terminal.



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To guarantee reliable service from the HD scale base, have its calibration checked regularly. The base should always be calibrated after any repairs have been made. Contact your authorized METTLER TOLEDO representative for more information.

3 Operating Instructions

The operating procedures for the HD scale base depend on the terminal that is connected to it, as well as on the scale's specific application. Refer to the operating instructions or technical manual for the terminal.

To ensure the best weighing performance for the scale, follow the general instructions listed below for all applications.

Location

- The HD scale base should be placed on a solid surface that is free of excessive vibration and in an area free of drafts and sudden temperature changes.
- The area should be clear of cables, boxes, or anything else that could come in contact with the scale platter. The platter itself should be kept free of dust, dirt, and water.

Accuracy

Place objects to be weighed near the center of the scale's platter.

Calibration

Contact your authorized METTLER TOLEDO representative to arrange scheduled calibration visits by factory-trained service technicians. You can also purchase certified weights from METTLER TOLEDO to perform your own calibration checks.

Shock Loads

Avoid dropping weight onto the platter. The HD scale base is designed to withstand overloading up to 150% of capacity without affecting the scale's weighing performance. However, comparable weights dropped from a distance onto the weighing platter can cause forces far greater than the acceptable overload capacity and damage the HD scale base's internal components or affect its accuracy.

Large Temperature Fluctuations

When connected to a METTLER TOLEDO terminal, an HD scale base is compensated for normal changes in ambient temperature. If the scale base is used in areas where large or fast temperature changes occur, weighing accuracy can be affected. In these situations, wait approximately 30 minutes to allow the HD scale base to adjust to temperature changes before weighing anything.

Weighing Practices

- To prevent scuffing, avoid sliding heavy items across the platter.
- Always use proper lifting devices and practices for loading and unloading the scale. Avoid moving heavy items to the edge of the platter to get a better grip for lifting. Edge loading can tip the platter and lead to personal injury.
- When using the terminal's Tare function to subtract a container's weight from the total weight on the scale, tare each container separately. Variations in material thickness and other factors can affect the weight of the containers.

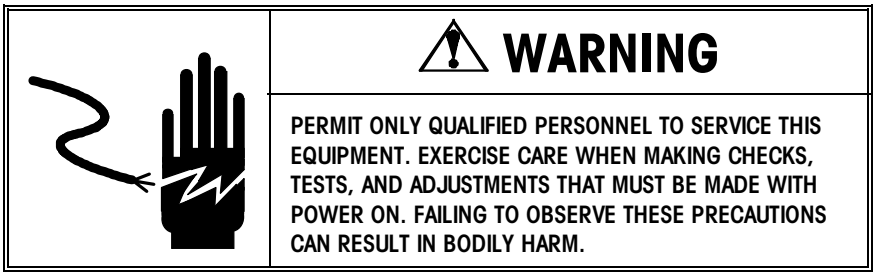
4 Service and Maintenance

Cleaning and Maintenance

Wipe the HD scale base with a clean, soft cloth that has been dampened with a mild glass cleaner. Do not use any type of industrial solvent such as toluene or isopropanol (IPA) on the platter.

To clean the terminal or counting scale used with the HD scale base, refer to the service manual for that specific product.

Maintenance Reminders



- The HD scale base must be re-leveled every time it is moved.
- Calibration tests should be performed any time major mechanical components are replaced or adjusted.
- Check the corner overload stop gaps with a feeler gauge after performing any scale maintenance. Adjust the gap between the platform and the overload screw to the setting indicated in Table 4-1. See Figure 4-1 for corner overload stop locations.

Scale Base	Overload Stop Gap
HD050 (20-inch x 20-inch base)	0.018 inch
HD100 (20-inch x 20-inch base)	0.046 inch
HD250 (20-inch x 20-inch base)	0.092 inch
HD250 (24-inch x 30-inch base)	0.080 inch
HD500 (24-inch x 30-inch base)	0.120 inch

Table 4-1: Corner Overload Stop Gap Settings

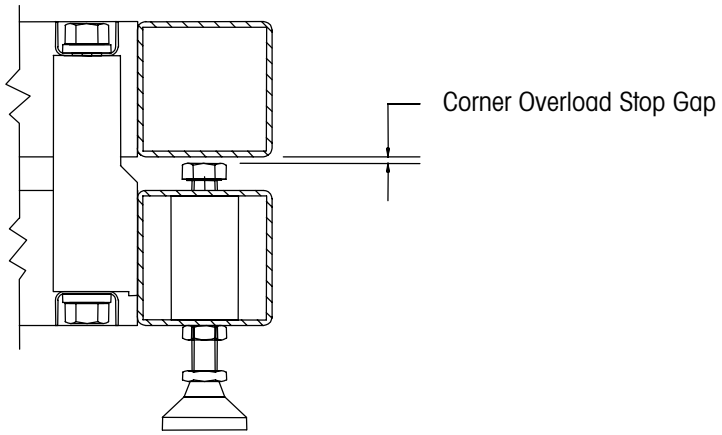


Figure 4-1: Corner Overload Stop Gap

Replacing Load Cells

Removing the Load Cell

1. Lift the platter off the scale base.
2. Remove the overlift stop bolt (see Figure 4-2). The bolt limits how far you can separate the two sections of the base.

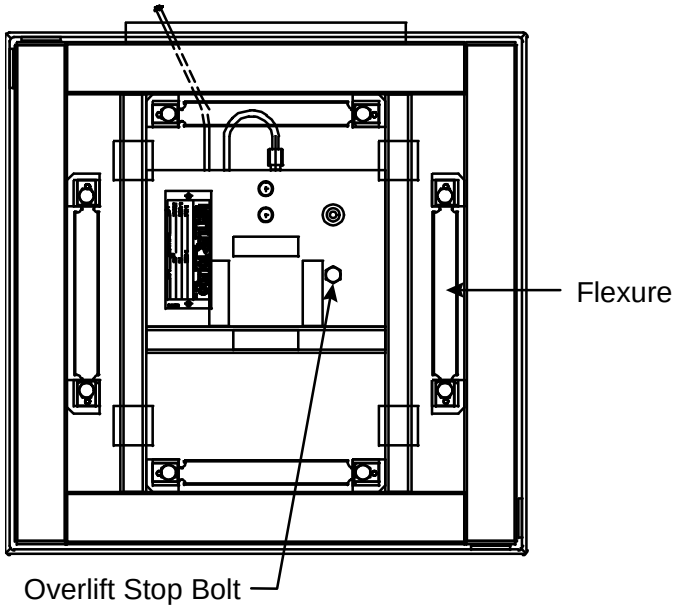


Figure 4-2: Top View of Scale Base

3. Unbolt and remove all the flexures (there are four on the top side of the base and four on the underside). Be careful not to bend the flexures. Note where all shims are located, so that you will be able to replace them later.
4. Disconnect the load cell cable from the cable clamp.

5. Separate the bottom half of the scale base from the top half, carefully removing the rocker pin from the load cell.
6. Remove the retaining bolts that mount the load cell to the plate on the top half of the base (see Figure 4-3). You should now be able to remove the load cell.

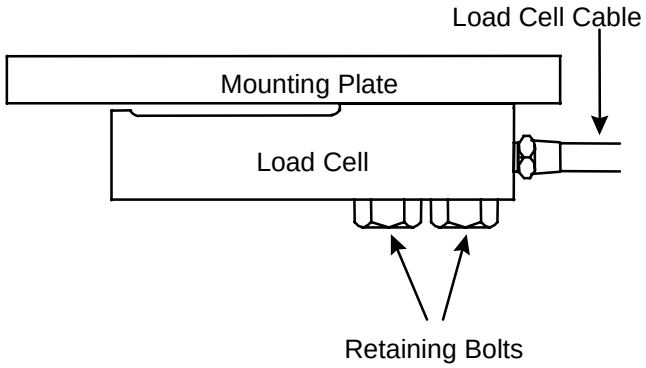


Figure 4-3: Load Cell in HD Scale Base

Replacing the Load Cell

1. Place an O-ring on each end of the rocker pin, positioning them as shown in Figure 4-4.

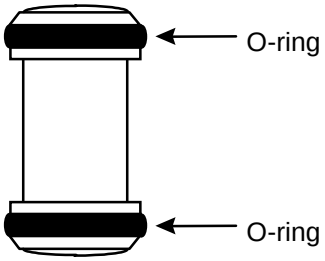


Figure 4-4: O-Rings Positioned on Rocker Pin

2. Lightly lubricate the load cell cup and the load receiver with a food-grade lubricant.
3. Insert one end of the rocker pin into the load receiver.
4. Bolt the load cell to the mounting plate. Retaining bolts should be torqued to 75 ft-lb for stainless steel bases and 100 ft-lb for carbon steel bases.

5. Check the overload gap setting (see Figure 4-5 and Table 4-2).

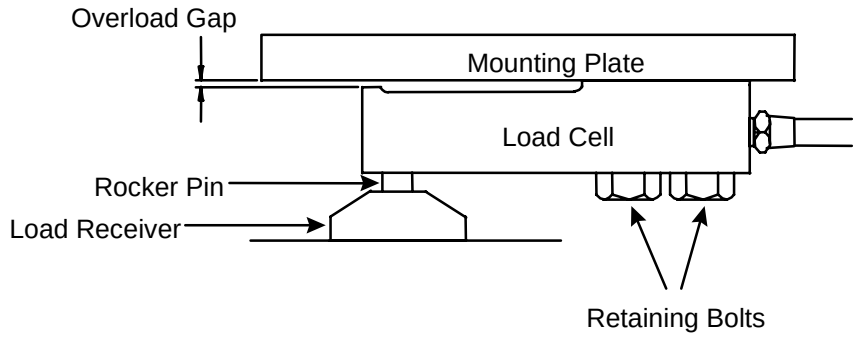


Figure 4-5: Load Cell in HD Scale Base

Load Cell Capacity	Minimum Gap	Maximum Gap
250 lb (110 kg)	0.009 inch	0.012 inch
500 lb (220 kg)	0.009 inch	0.015 inch
1,250 lb (550 kg)	0.012 inch	0.018 inch
2,500 lb (1,100 kg)	0.017 inch	0.023 inch

Table 4-2: Overload Gap Settings

6. Reposition the bottom half of the scale base on the top half, carefully inserting the rocker pin into the load cell cup.
7. Replace the flexures, clamp plates, and shims in their original positions.
   - For 20" x 20" bases, align the nipple on each clamp plate and shim with the locating hole on the flexure (see Figure 4-7).
   - For 24" x 30" bases, fit the small hole on each clamp plate and shim over the flexure post pin (see Figure 4-8).

   Bolt the flexures, clamp plates, and shims to the scale base. Bolts should be torqued to 55 ft-lb for 20" x 20" bases and to 90 ft-lb for 24" x 30" bases.
8. Route the load cell cable through the cable clamp (see Figure 2-7) and connect it to the load cell. Allow enough slack in the cable so that there is no strain on the connection. The cable should not touch any of the flexures.
9. Replace and tighten the overlift stop bolt.
10. Turn the scale base upright, and replace the platter on the scale base.
11. Recalibrate the scale, following the instructions provided in the technical manual for the terminal.

Shift Adjustment

The HD scale base has been carefully adjusted at the factory. Do not make shift adjustments unless absolutely necessary. A correctly adjusted scale will give the same weight reading no matter where on the platter you place a test weight. If you get different weight readings at different locations on the platter, the scale should be shift adjusted to correct the problem.

For shift adjustments, you must use test weights equal to one half the scale's maximum weighing capacity (which is stamped on the data plate). The test weights must weigh within the specified National Bureau of Standards Handbook 44 Digital Scale accuracy requirements.

Shift adjustment should be done with the scale terminal in expanded mode.

Shift Test Locations

Figure 4-6 shows test weight locations (A, B, C, and D) at the center of each quarter of the scale platter. Place the test weight at location A and record the weight reading. Then move the test weight to location B and record the weight reading. Continue until you have taken a weight reading at each of the four locations.

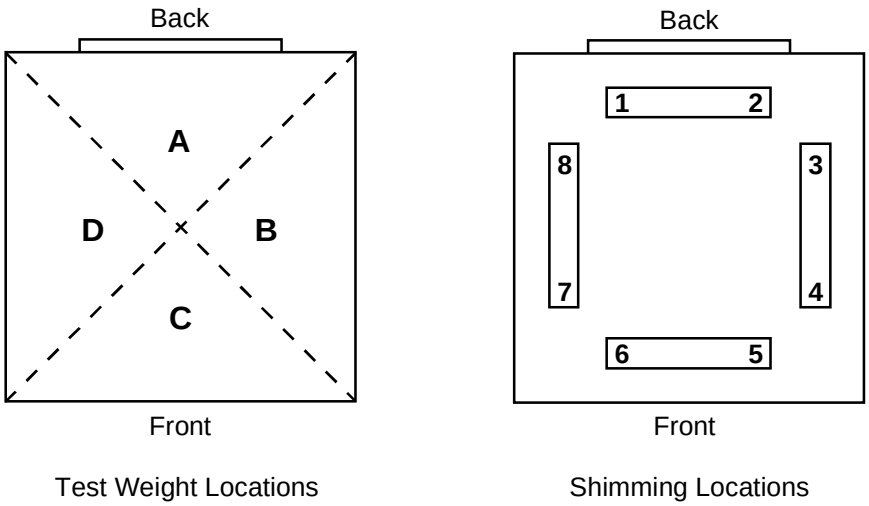


Figure 4-6: Shift Adjustment Locations

If you get the same weight reading at all four locations, no shift adjustment is needed. If you get different weight readings at some or all of the locations, you will need to shift adjust the scale. This is done by adding shims to the flexures at the shimming locations shown in Figure 4-6. To determine where to add shims, refer to the Table 4-3.

If weight reading A is less than C	→	Shim at locations 3 and 8
If weight reading C is less than A	→	Shim at locations 4 and 7
If weight reading B is less than D	→	Shim at locations 2 and 5
If weight reading D is less than B	→	Shim at locations 1 and 6

Table 4-3: Shim Locations

Shimming Procedure

Shift adjustment involves adding shims to balance uneven weight readings at opposite sides of the scale base. Add shims until you get equal weight readings at locations A and C, and then add shims until you get equal weight readings at locations B and D.

1. Remove the platter from the scale base.
2. Remove the bolts from the flexures at the first two locations where shims will be added. For example, you will need to add shims at locations 3 and 8 if the weight reading at A is lower than the weight reading at C.
3. Place a shim under the flexure at each location (as shown in Figures 4-7 and 4-8), and replace the bolt. Make sure that the flexure, clamp plate, and shim are aligned so that there is no mechanical binding to prevent the scale base from moving freely. Torque the bolts to 55 ft-lb for 20" x 20" bases and to 90 ft-lb for 24" x 30" bases. We recommend starting with the thinnest shim and gradually increasing the shim thickness as needed to balance the weight readings.

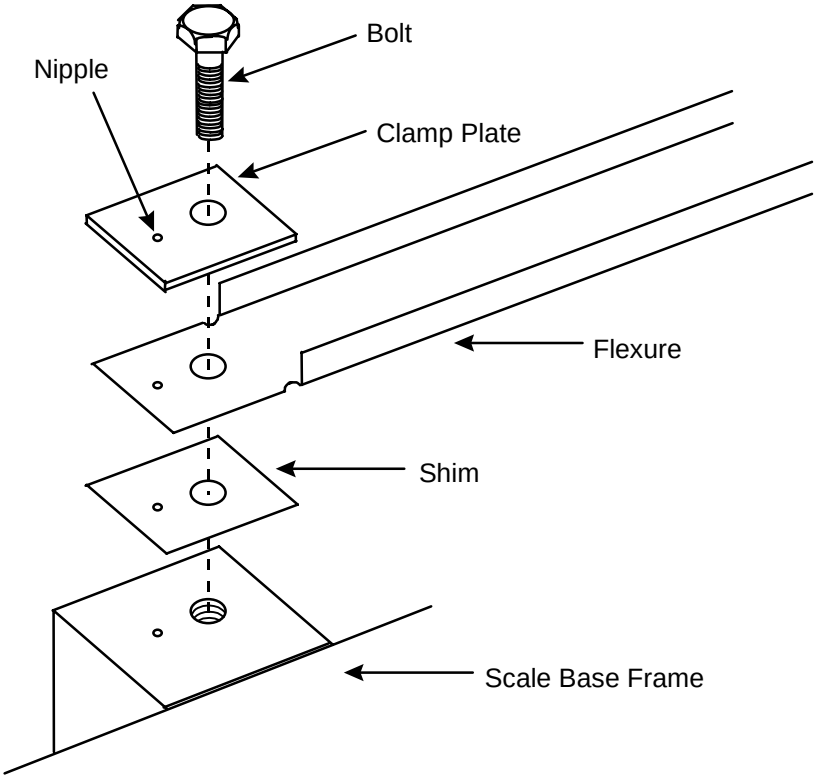


Figure 4-7: Shim Placement for 20" x 20" Scale Base

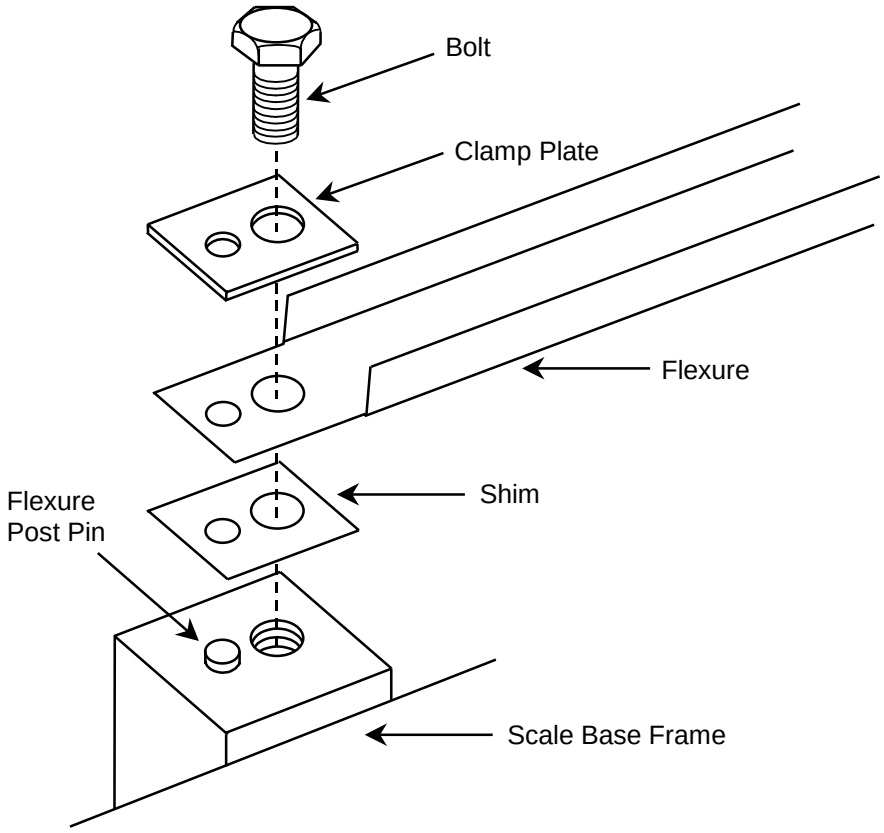


Figure 4-8: Shim Placement for 24" x 30" Scale Base

4. Replace the platter, and take new weight readings at all four test weight locations. If the weight readings are still not equal, you will need to use the same procedure to add additional shimming.
5. Once you have balanced the weight readings for the first pair of locations (A and C), check the weight readings at the other two (B and D). If they are not equal, follow the same shimming procedure to adjust them.
6. When you have finished shift adjusting the scale base, you should get the same weight reading at all four test weight locations. You will then need to calibrate the scale (refer to the scale terminal's technical manual for instructions).

5 Parts and Accessories

HD Scale Base

Refer to Figures 5-1 and 5-2 and Tables 5-1 to 5-4 when ordering parts and accessories for the HD scale base.

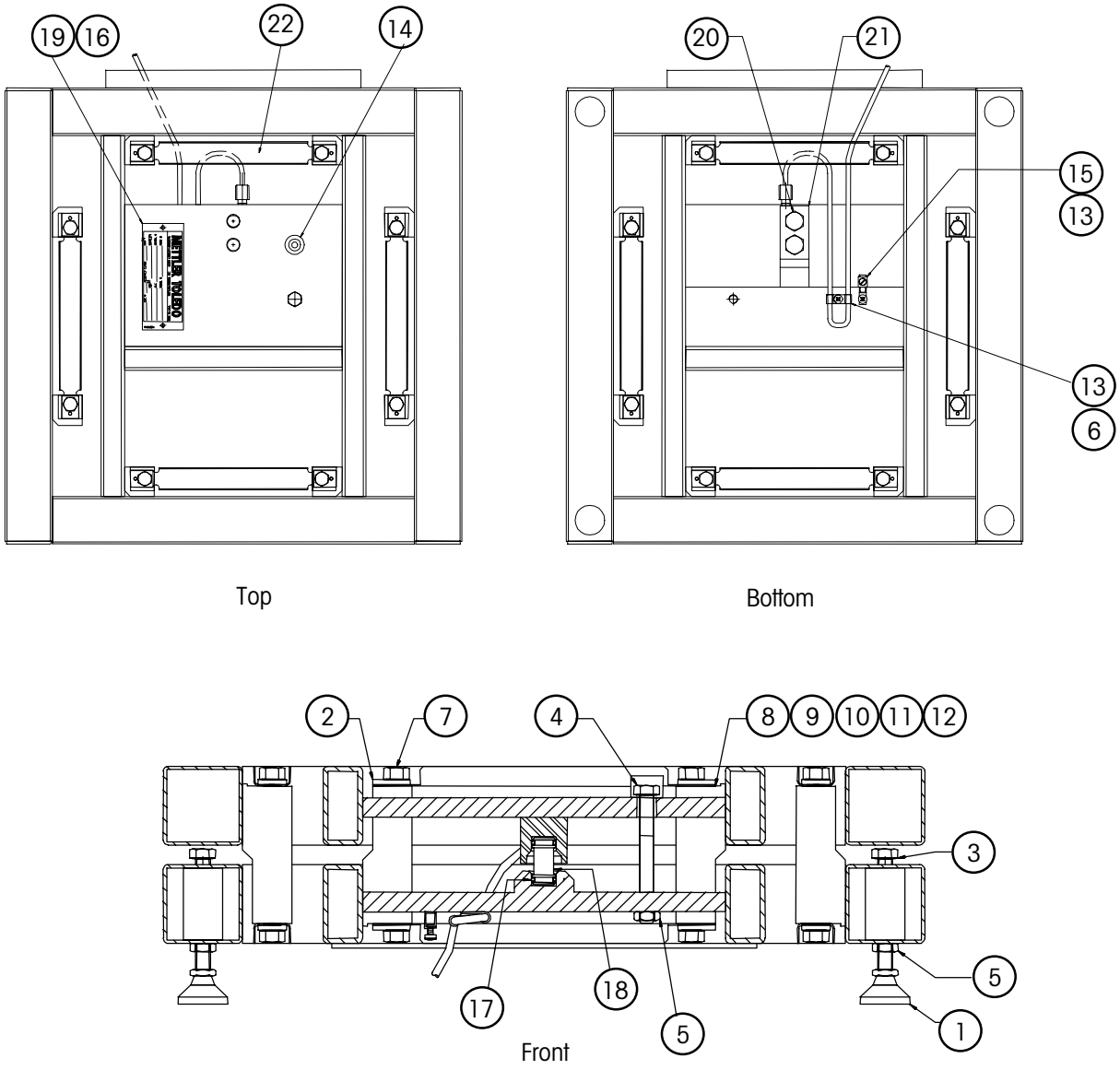


Figure 5-1: HD Scale Base Parts (20" x 20")

Ref. No.	Part No.	Description	Qty.
1	TN203728	Leveling Foot, 3/8-16 x 2	4
2	TN203736	Clamp Plate, Stainless Steel	16
3	MZ0901010030	3/8-16 x 3/4 Hex Head Cap Screw, Stainless Steel	4
4	MZ0901010513	3/8-16 3.25 Hex Head Cap Screw, Stainless Steel	1
5	MZ0901020054	3/8-16 Hex Head Jam Nut, Stainless Steel	5
6	MZ0907000008	Cable Clamp, 3/16 inch	2
7	MZ0901010514	3/8-24 x 3/4 Hex Head Cap Screw, Lamaloy	16
8	TN203737	HD Shim, 0.003 Thick, Stainless Steel	
9	TN203738	HD Shim, 0.005 Thick, Stainless Steel	
10	TN203739	HD Shim, 0.010 Thick, Stainless Steel	
11	TN203740	HD Shim, 0.0005 Thick, Stainless Steel	
12	TN203741	HD Shim, 0.001 Thick, Stainless Steel	
13	MZ0901010166	10-32 x 1/2 Phillips Head Screw, Stainless Steel	2
14	TN201817	Circular Bubble Level	1
15	09870100A	Ground Lug, 14-6 Gauge #10 MTG	1
16	MNT31004	Data Label	1
17	MZ0909000005	O-Ring	2
18	TN200050	Rocker Pin, Stainless Steel	1
19	MZ0904000067	Blind Rivet, 1/8 x 1/4, Stainless Steel	2
20	TN800646	1/2-13 x 1.75 Socket Head Cap Screw, Stainless Steel	2
21	TB600787-015 TB600787-030 TB600788-015 TB600788-030 TB600789-015 TB600789-030	Load Cell, 250 lb, potted, 15-foot cable Load Cell, 250 lb, potted, 30-foot cable Load Cell, 500 lb, hermetic, 15-foot cable Load Cell, 500 lb, hermetic, 30-foot cable Load Cell, 1,250 lb, hermetic, 15-foot cable Load Cell, 1,250 lb, hermetic, 30-foot cable	1
22	TA203540	Flexure, Stainless Steel	8
--	HD-040000	HD Shim Kit, Stainless Steel	
--	TB203764	20x20 Platter, Stainless Steel	

Table 5-1: HD Scale Base Parts (20" x 20")

Part Number	Description
88-500000	Indicator Column, Stainless Steel
58-500402	Column Mounting Bracket, Stainless Steel

Table 5-2: HD Scale Base Accessories (20" x 20")

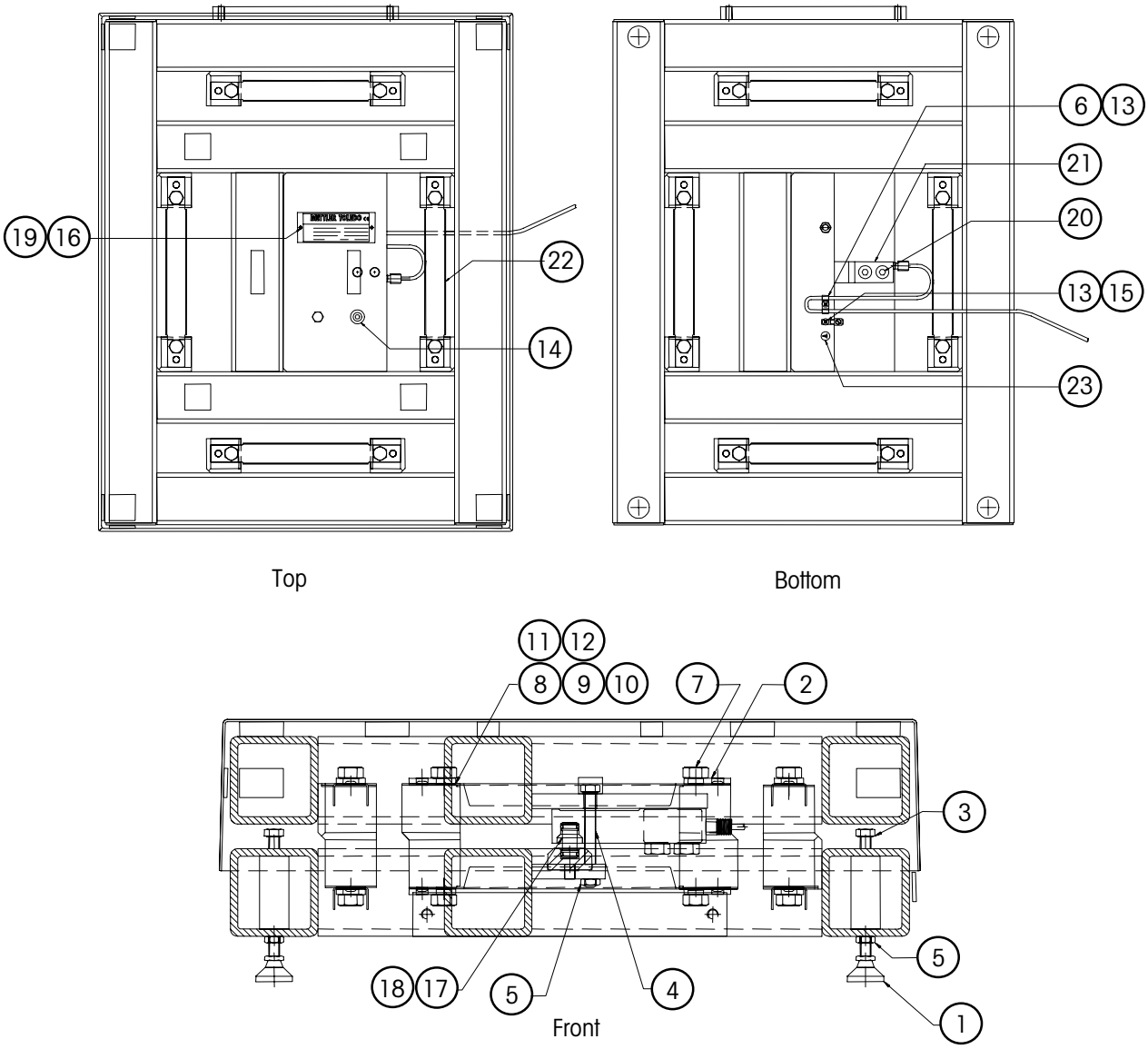


Figure 5-2: HD Scale Base Parts (24" x 30")

Ref. No.	Part No.	Description	Qty.
1	TN203728	Leveling Foot, 3/8-16 x 2	4
2	TN204094	Clamp Plate, Stainless Steel	16
3	MZ0901010076	3/8-16 x 1.25 Hex Head Cap Screw, Stainless Steel	4
4	MZ0901010513	3/8-16 x 3.25 Hex Head Cap Screw, Stainless Steel	1
5	MZ0901020054	3/8-16 Hex Head Jam Nut, Stainless Steel	5
6	MZ0907000008	Cable Clamp, 3/16 inch	2
7	MZ0901010533	1/2-20 x 1 Hex Head Cap Screw, Lamaloy	16
8	TN204252	HD Shim, 0.0005 Thick, Stainless Steel	
9	TN204253	HD Shim, 0.001 Thick, Stainless Steel	
10	TN204254	HD Shim, 0.003 Thick, Stainless Steel	
11	TN204255	HD Shim, 0.005 Thick, Stainless Steel	
12	TN204256	HD Shim, 0.010 Thick, Stainless Steel	
13	MZ0901010166	10-32 x 1/2 Phillips Head Screw, Stainless Steel	2
14	TN201817	Circular Bubble Level	1
15	09870100A	Ground Lug, 14-6 Gauge #10 MTG	1
16	MN31004	Data Label	1
17	MZ0909000005	O-ring	2
18	TN200050	Rocker Pin, Stainless Steel	1
19	MZ0904000067	Blind Rivet, 1/8 x 1/4, Stainless Steel	2
20	TN800646	1/2-13 x 1.75 Socket Head Cap Screw, Stainless Steel	2
21	TB600789-015 TB600789-030 TB600880-015 TB600880-030	Load Cell, 1,250 lb, hermetic, 15-foot cable Load Cell, 1,250 lb, hermetic, 30-foot cable Load Cell, 2,500 lb, hermetic, 15-foot cable Load Cell, 2,500 lb, hermetic, 30-foot cable	1
22	TA204092	Flexure, Stainless Steel	8
23	12943000A	Ground Label	1
--	HD-040001	HD Shim Kit, Stainless Steel	
--	TB204120	24x30 Platter, Stainless Steel	

Table 5-3: HD Scale Base Parts (24" x 30")

Part Number	Description
HD-020000	Wheel Kit, Stainless Steel
88-500000	Indicator Column, Stainless Steel
58-500402	Column Mounting Bracket, Stainless Steel

Table 5-4: HD Scale Base Accessories (24" x 30")

METTLER TOLEDO

Publication Suggestion Report

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Publication Part Number: A15724200A **Publication Date: 5/00**

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