7560

Truckmate®
Concrete Deck Weighbridge

Installation and Service Manual

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METTLER TOLEDO

Publication Revision History

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

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Publication Part Number: 15375100A Publication Date: 9/97

Part Number	Date	Revisions
A15375100A	7/00	Reformatted manual. Added MTX load cell installation procedure. Updated part numbers.

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 may 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.

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

Precautions

READ this manual BEFORE operating or servicing this equipment.

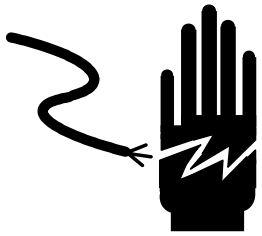
FOLLOW these instructions carefully.

SAVE this manual for future reference.

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

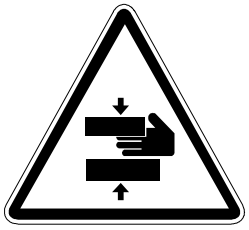
ALWAYS DISCONNECT this equipment from the power source before cleaning or performing maintenance.

CALL METTLER TOLEDO for parts, information, and service.



⚠ WARNING

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.



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⚠ CAUTION

WEIGHBRIDGE MODULES SHOULD ALWAYS BE MOVED SLOWLY AND CAREFULLY TO AVOID MECHANICAL SHOCK. MAKE SURE THAT THE LIFTING DEVICE USED TO MOVE THEM HAS A SUFFICIENT CAPACITY TO HANDLE THE MODULES SAFELY AND SECURELY.

⚠ CAUTION

THE TOP REBAR MUST BE PLACED TO CLEAR THE ANCHOR BOLTS. REFER TO THE FOUNDATION DRAWINGS FOR ANCHOR BOLT LOCATIONS.

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DO NOT POUR CONCRETE DECK UNTIL THE CABLES ARE CONNECTED TO THE LOAD CELLS. THIS WILL ENSURE THAT CONCRETE DOES NOT GET INTO THE CONNECTORS.

CONTENTS

1 Introduction

The Model 7560 TRUCKMATE® truck scale is a concrete-deck weighbridge that can be installed above ground or in a pit. It has a 55K tandem-axle capacity and is designed for weighing highway vehicles, not for weighing concentrated-load vehicles such as heavy-capacity forklifts.

Model 7560 consists of concrete-deck modules (10 or 11 feet wide, standard) that can be connected to form a single scale with a platform 10 to 122.5 feet long, standard. Platforms longer than 122.5 feet are available as special orders. The weighbridge is 8 inches high (nominal) and maintains approximately 3 inches of clearance between the bottom of the weighbridge and the foundation, making the overall height approximately 11 inches. The nominal capacity varies with the number of modules (number of load cells) used in the scale (see Table 7-1).

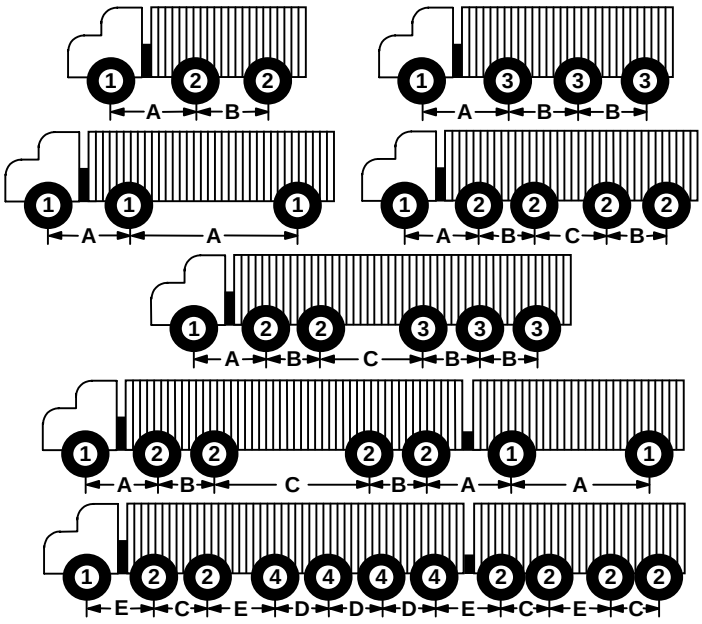
Due to the unique construction of these scales and the number of weighbridge support points (a four-module scale uses ten load cells), the force exerted on the foundation is only slightly more than the force that a truck would exert on the highway.

Maximum Loading

Use the information in Figure 1-1 to determine the maximum allowable weight loading for different types of axle arrangements.

Axle Number	Load Specifications	Axle Number	Load Specifications
1	Single	3	Tri-Axle
2	Tandem	4	Multiple

Spacing Between Axles		
A = More than 120 inches	C = More than 128 inches	E = More than 110 inches
B = 48 to 96 inches	D = 42 to 110 inches	F = More than 128 inches



Platform Length	Maximum Gross Weight	Maximum Axle Load			
		Single per Axle	Tandem per Axle	Tri-Axle per Axle	Multiple per Axle
60 feet	200,000 lb	45,000 lb	27,500 lb	21,000 lb	17,000 lb
70 feet	200,000 lb	45,000 lb	27,500 lb	21,000 lb	17,000 lb

Figure 1-1: Maximum Loading for Low-Profile Truck Scales

Federal Bridge Formula

The Federal Bridge Formula (enacted January 4, 1975) is used to determine the gross weight allowed to be carried on any group of two or more consecutive axles:

$$W = 500 [LN/(N-1) + 12N + 36]$$

where:

W = Maximum weight in pounds carried on any group of two or more consecutive axles computed to the nearest 500 lb.

L = Distance in feet between the extremes of any group of two or more consecutive axles.

N = Number of axles in group under consideration.

7560 Truckmate Rating

The Federal Bridge Formula provides a 34K tandem-axle rating. This rating specifies a 34,000-lb weight limit for tandem axles spaced between 40 and 96 inches. Since the 7560 truck scale has a 55K rating, you must multiply the results of the Federal Bridge Formula by a factor (r) of 1.62 to determine the maximum weight that can be carried on any group of two or more consecutive axles.

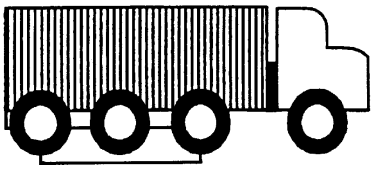
$$W1 = W \times 1.62$$

where:

W1 = Maximum weight to be carried on any group of two or more consecutive axles for vehicles to be on a 7560 truck scale.

Example:

Determine the maximum weight that can be carried on the back three axles of the truck shown below in order for it to be weighed on the 7560 weighbridge.



L = 14 feet

According to the Federal Bridge Formula, W = 46,500 lb (for N = 3 and L = 14 feet)

$$W1 = 46,500 \times 1.62$$
$$= 75,500 \text{ lb (rounded to the nearest 500 lb)}$$

The maximum weight that can be carried across the scale by this three-axle grouping (which loads the scale over a 14-foot distance) is 75,500 lb.

2 Site Selection and Preparation

Site Requirements

The site selected for the scale must meet state and local requirements. The following is taken directly from Handbook 44 (H-44) 1999 edition issued by the National Institute of Standards and Technology:

> "UR.2.6. Approaches.
>
> UR.2.6.1. Vehicle Scales. - On the entrance and exit ends of a vehicle scale installed in any one location for a period of 6 months or more, there shall be a straight approach as follows:
>
> (a) the width at least the width of the platform,
>
> (b) the length at least one-half the length of the platform but not required to be more than 12 m (40 ft), and
>
> (c) not less than 3 m (10 ft) of any approach adjacent to the platform shall be constructed of concrete or similar durable material to ensure that this portion remains smooth and level and in the same plane as the platform. However, grating of sufficient strength to withstand all loads equal to the concentrated load capacity of the scale may be installed in this portion. Any slope in the remaining portion of the approach shall ensure (1) ease of vehicle access, (2) ease for testing purposes, and (3) drainage away from the scale."
>
> Note: The scale drawings provided meet part (a) of this requirement. The site must be located to meet parts (b) and (c).

Other requirements or considerations:

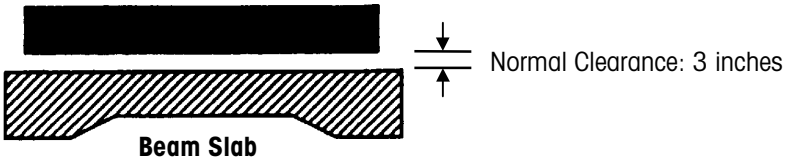
- The site should have good drainage. Surrounding areas should not drain through the site. The ideal scale site is on ground that is higher than the surrounding area.
- Make sure there are no buried pipes, sewer lines, wires, or foundations that would interfere with footing construction.
- The scale should be located away from high-power electrical transmission lines or substations.
- The site should have enough room to align trucks with the scale platform before pulling them onto the platform. This is especially important if trucks must turn before pulling onto the scale. There should also be enough room for trucks to pull off the scale.
- Trucks should not be left on the scale for longer than is necessary to take a vehicle weight reading.
- Some jurisdictions require that the scale platform be visible from the location of the scale instrument. Others allow the use of a closed-circuit TV or a voice intercom. Obtain official approval before starting construction.
- Provide clearance on at least one side of the scale for the full length of the platform to allow for testing and calibration.

Foundation Designs

A 7560 truck scale should be installed on one of the following types of foundations:

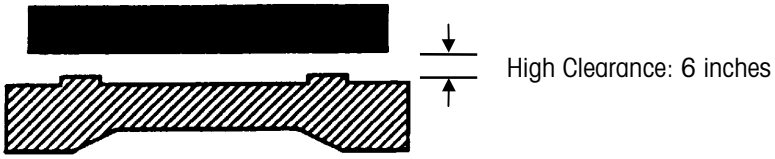
1. Floating Beam Slab (with normal or high clearance)
2. Variable Footer
3. Pit (2-foot or 4-foot clearance options)

Select the type of foundation that meets a site's installation requirements. The foundations are designed to support a 7560 truck scale rated 100 tons, assuming the ground has a bearing surface of at least 1,500 lb per square foot for a beam slab, 2,000 lb per square foot for a pit, and 2,500 lb per square foot for a variable footer design.



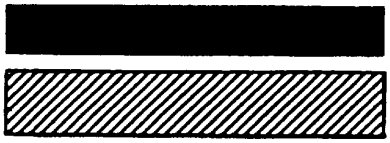
Beam Slab

A beam slab is designed to "float" and does not require a deep footer.



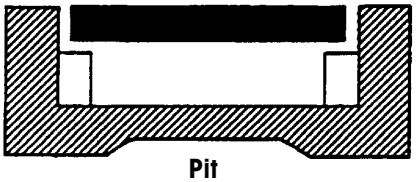
Beam Slab with High Clearance

A beam slab with high clearance is required in some states.



Variable Footer

A variable footer design uses separate footers with depths of 2 feet to 6 feet. Connecting "washout" slab is mandatory in some areas.



Pit

A pit design provides 2 feet or 4 feet of clearance under the scale. It generally requires manholes for access. A deep pit is mandatory in some states.

Figure 2-1: Foundation Designs

Foundation Drawing

Install the foundation according to the correct drawing (see the list of reference drawings in Chapter 11). Make sure that the end walls are parallel and measure the same distance diagonally within 1/2 inch. The instrument cable conduit should be in place before the slab is poured.

Base Plates

At the locations of the base plates, the concrete should be level and in the same plane (within ± 1/8 inch). The rest of the foundation should be graded slightly for drainage.

⚠ CAUTION

THE TOP REBAR MUST BE PLACED TO CLEAR THE ANCHOR BOLTS. REFER TO THE FOUNDATION DRAWINGS FOR ANCHOR BOLT LOCATIONS.

Curing

Let the concrete foundation cure for 7 to 10 days before installing the scale. Expanding anchor bolts should be installed after the foundation has cured, so that the anchors will seat correctly. Do not allow traffic or loading on scale until concrete reaches full strength, normally in 28 days.

3 Receiving and Inspection

Inspection

Check all items received against the shipping bill of lading. If any items are missing, notify the carrier immediately in order to collect damages.

Inspect all items received. If there is any physical damage, please notify your carrier immediately in order to collect damages.

⚠ CAUTION

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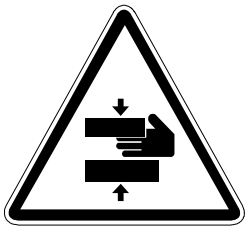

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Unloading Procedure

If the 7560 truck scale is being delivered by a METTLER TOLEDO truck, the unloading will be handled and supervised by the METTLER TOLEDO driver. If the scale is being delivered by a common carrier or customer truck, use the following procedure to lift modules without concrete:

1. Remove the gap covers and load cell covers before lifting the modules. This will prevent the covers from being damaged during lifting.
2. Lift each module by the gap cover supports via quadlift chain. To avoid damage to the scale, hook the module as shown in Figure 3-1.

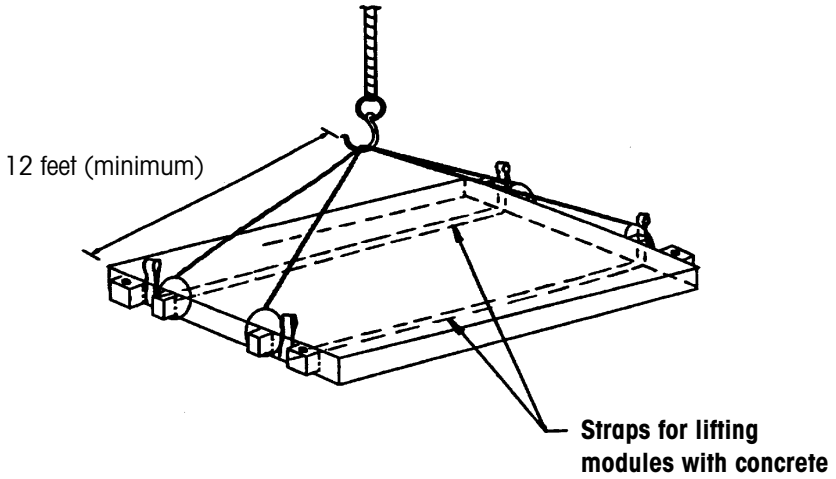


Figure 3-1: TRUCKMATE Lifting Procedure

NOTE: Modules with concrete should not be lifted by gap cover supports. Instead, attach the quadlift chain to straps positioned under the module. Table 3-1 lists the approximate weights of modules with and without concrete.

Module Type	15-foot Module	17.5-foot Module
Without Concrete	2,800 lb	3,500 lb
With Concrete	18,000 lb	21,500 lb

Table 3-1: Approximate Module Weight

Storing Modules

The scale will be installed by placing the First Module on the foundation first, followed by the Middle Module(s), and then the Terminal Module. If you are going to store the modules, stack them one on top of the other in the following order:

Bottom = Terminal Module
Center = Middle Module(s)
Top = First Module

Figure 3-2 shows the three types of modules. Make sure that the bottom module is stored off the ground. We recommend placing lengths of 4 x 4 lumber under the module to support it. Place additional 4 x 4's between each pair of modules. Store all other mechanical accessories in a clean, dry area. Store electrical instrumentation and load cells in a clean, dry area. If the modules will be stored for more than one month, the cable connectors should be filled with connector dielectric compound.

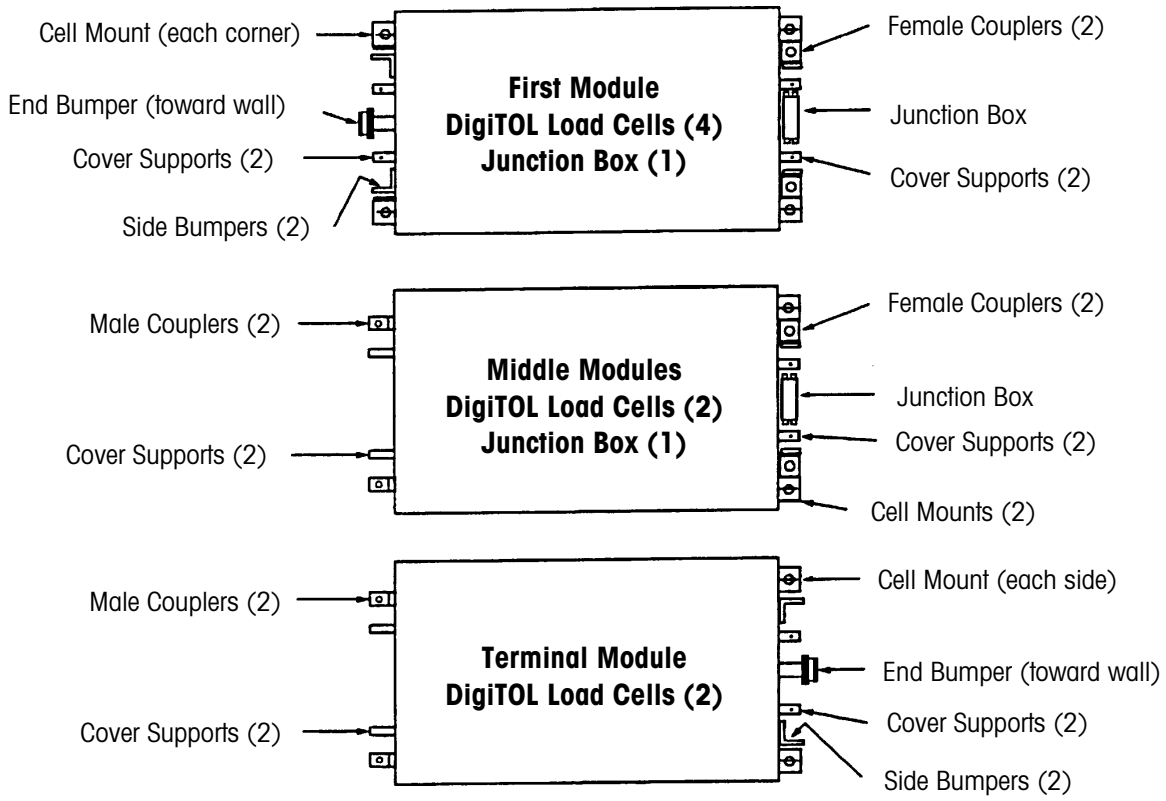


Figure 3-2: Types of Modules

4 Installation Supplies Checklist

The following material and tools are needed to properly install a 7560 truck scale. They are not supplied by METTLER TOLEDO.

Material

- A small supply of Never-Seez bearing compound or quality grease.
- Non-shrink, high-quality grout and mixing tools (not normally used, but might be required).

Tools

- Transit, tripod, rod
- 6-inch spirit level
- 100-foot measuring tape
- 100-foot chalk line
- 100-foot extension cords, 3/#14 wire
- Hammer drill, 1-inch or greater capacity
- 3/4-inch carbide drill bit at least 18 inches long for anchor bolts
- 6-foot crowbar to align modules
- Beckman or Fluke digital multimeter, 100+ meg ohm for insulation, wiring, and ground check
- Socket set, with sockets for the following bolt sizes:

  3/4 inch - Access plate bolts
  15/16 inch - End bumper bolts
  9/16 inch - Coupler pin retainer bolts
  1-1/16 inches - Open end wrench - side bumper bolt
- Air compressor or air pressure tank (cleaning nozzle to blow out anchor bolt holes)
- Normal installation tools
- Locating tools, 10 (supplied only if scale is delivered by METTLER TOLEDO delivery system; otherwise, they must be purchased—Part No. TA200831)
- Welding apparatus (not normally used, but might be required)

For Concrete Deck:

- Vibrator
- Duct Tape (200 feet)
- Concrete finishing tools
- Lumber (2 inches x 4 inches x 12 feet, with 1-inch bow at center)
- Stick mop (for cleaning)
- Curing compound manufactured by W.R. Grace Co., or equivalent

Weighbridge Installation Checklist

This list summarizes the basic sequence of events required for proper installation of a 7560 truck scale on a dimensionally correct foundation.

		Check (✓) When Completed
1.	Snap chalk lines and position base plates	_____
2.	Set receivers into base plates and check with transit	_____
3.	Set modules on locating tools	_____
4.	Make sure scale is centered on foundation and level	_____
5.	Check base plate alignment (verify that locating tools are vertical)	_____
6.	Drill anchor holes and insert anchors (five holes in corner plate / three holes in center plate)	_____
7.	Replace locating tools with load cells	_____
8.	Connect cables according to the wiring diagram	_____
9.	Pour concrete decks	_____

⚠ CAUTION

DO NOT POUR CONCRETE DECK UNTIL THE CABLES ARE CONNECTED TO THE LOAD CELLS. THIS WILL ENSURE THAT CONCRETE DOES NOT GET INTO THE CONNECTORS.

10.	Calibrate scale after deck has cured	_____

5 Installation

Installing Modules and Load Cells

After installing the concrete foundation (according to Chapter 2 and the foundation drawings for the scale), allow it to cure. Stub off the instrument cable conduit and complete conduit installation, if necessary.

1. Snap a chalk line on the foundation to mark the location of each side of the scale from approach coping to approach coping. These chalk lines will be used to align the modules as they are set in place. Check the distance between the approach copings and check the diagonal measurements.
2. Roughly position the base plates on the foundation (see Figure 5-1).
3. Grease (with Never-Seez) the lower receivers and insert one in each of the base plates, aligning the notch with the roll pin. Use a transit to check the elevation of the receiver at each base plate location, relative to the top of the approach coping and to the other receivers. To check this accurately, rest the measuring rod on the top surface of the receiver at each base plate location. The nominal height of the scale from the top (flat) surface of the receiver to the top of the weighbridge is as follows:

   Height of Concrete Deck without Shims = 9 5/8 inches

   The total, nominal height of the scale is 11.5 inches when the concrete deck is shimmed 3/16 inch at the top and 1/8 inch at the bottom. The scale should be shimmed to fit the installation, with a maximum of 3/8 inch shims on top and 3/8 inch shims on bottom for a total of 3/4 inch. Never exceed either of these numbers. If more than 3/4 inch of shimming is required, shim under the base plate and grout under the entire base plate after accurately locating the scale and securing the anchor bolts. If 1 inch or more shimming is used, you will need anchor bolts that are long enough to extend to a depth of at least 4 inches into the foundation slab (longer anchor bolts are not supplied by METTLER TOLEDO).
4. Insert a locating tool in each of the receiver base plates, aligning the notch with the roll pin.
5. Prepare modules for installation.
   - Remove all access covers.
   - Grease (with Never-Seez) the upper receivers with O-Ring and insert the receivers into each load cell receiver block on the undersides of the modules.
   - Loosen the bumper bolts on the side brackets so that adjustments can be made after the modules are in position.

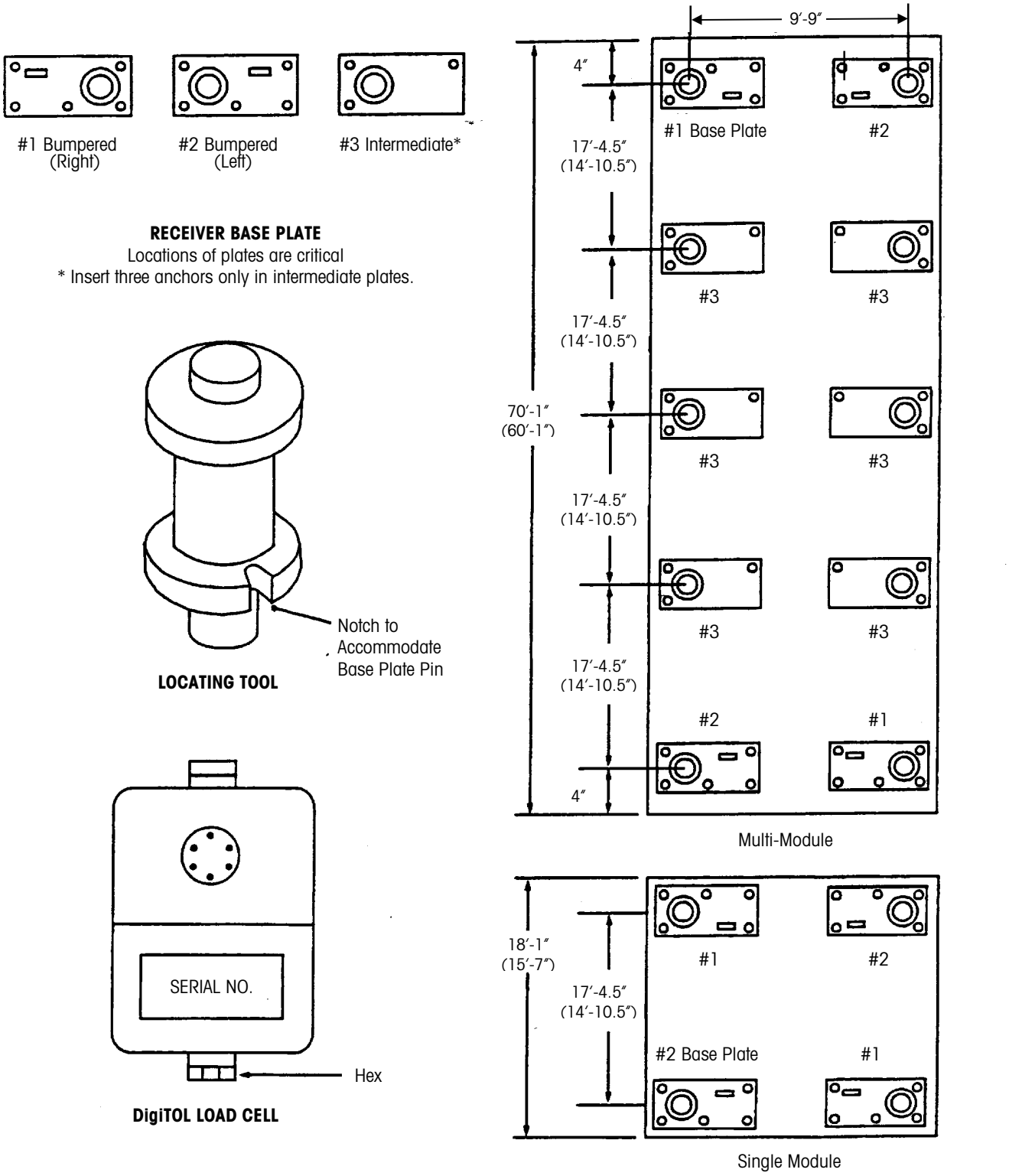


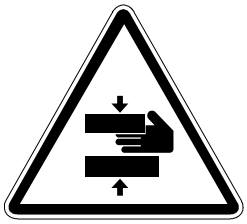
Figure 5-1: Base Plate Location

IMPORTANT! Be sure there are blocks under the modules any time the checking is not engaged (all modules are not set, or multi-scale platforms have not been coupled.) This is especially true if the truck crane is driving on a previous module to set the next one.

6. Set the scale modules in place using the following sequence:

a. The First Module to be set in place is the module that requires four DigiTOL load cells (see Figure 3-2). Lift the module as shown in Figure 3-1. Before setting this module in place, make sure that the end bumper assembly and side bumper bolts have been installed. Position the module so that the end with the end bumper and side bumpers faces the approach wall. The first module should be reasonably square with the end wall and spaced away from the end wall as shown in the assembly drawing.

Slowly lower the module onto the locating tools, lowering the approach end first. Check the module's alignment with the chalk line snapped on the foundation.



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b. Set the first Middle Module in place by slowly lowering it and fitting the male coupler brackets into the female couplers on the First Module. Verify correct seating by noting engagement of coupler pins and male gusset level below female gusset level. Module will seat best if it is lowered almost level. Lower the other end onto the locating tools.

c. Set the next Middle Module in place. It is important to note alignment of scale with chalk line as you install the modules. If the scale starts to drift beyond a satisfactory point, check to make sure the base plates are in line. If the base plates are not in line, use the following procedure to correct misalignment.

- Note whether drift is to the right or left while facing the approach end of the first module.
- Remove the last module that you installed and set it aside.
- Remove the retaining bolt from the octagonal coupler pin of the adjoining module and lift it from the socket (see Figure 5-2). Rotate the pin one position counterclockwise for left drift or clockwise for right drift, and then drop it back into socket. Replace retaining bolt.
- Reset the module and check alignment.
- If the module is still not aligned satisfactorily, rotate the pin once more in the same direction. Any remaining misalignment can be corrected by adjusting the next module(s) to be set in place.

d. Set the Terminal Module in place. The gap between this module and the end approach wall should be approximately the same as the gap at the other end of the scale (the gap should not be larger than 1 inch). If the foundation diagonals are out of square, then the clearance will vary across the approach wall. This clearance should not be less than 3/8 inch at any point.

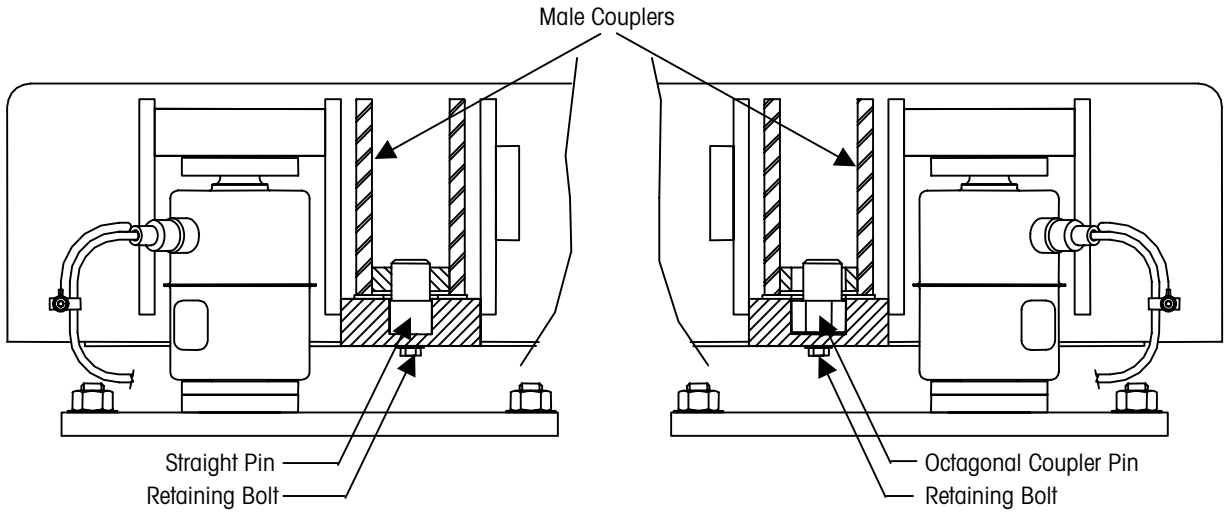


Figure 5-2: Module Alignment

7. Square the base plates (in order to move the base plates, it may be necessary to use a pry bar to lift the module slightly while another person taps the base plate with a hammer). Check all the locating tools carefully. **There should be no clearance between the shoulders on the locating tools and the upper or lower receivers.**

8. Open each access cover. Using a hammer drill, drill through the holes in the base plates into the foundation. Note that only the end sections require five bolts; the middle sections require three bolts. Insert 3/4-inch diameter anchor bolts and secure.

Load Cell Installation

Use a transit to check the height of the scale deck near each load cell to determine if shimming is required.

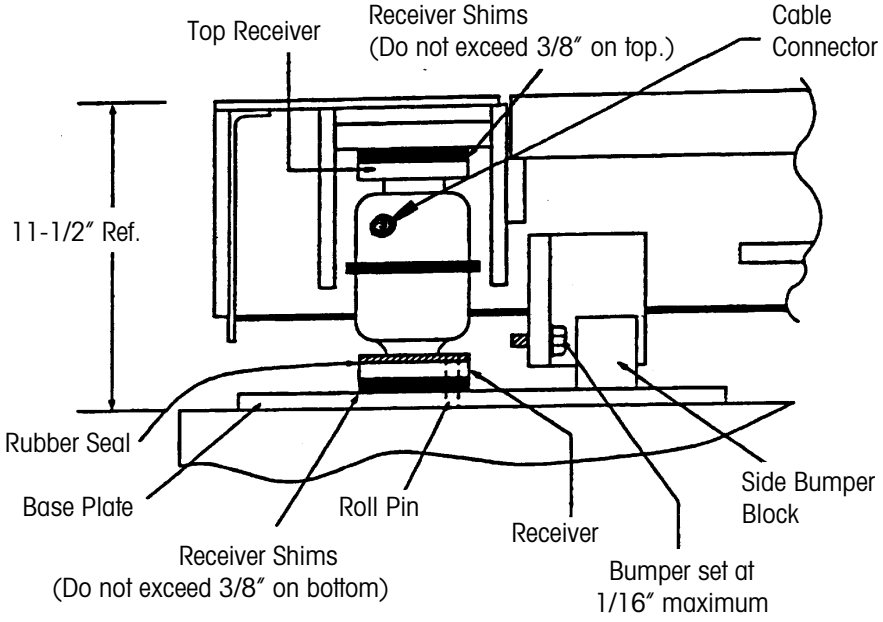


Figure 5-3: Load Cell Installation

Install each load cell as shown in Figure 5-3, using the following procedure:

1. Remove the locating tool.
2. Apply Magnalube G lubricant to the load surface of the cell buttons at the top and bottom of the load cell.
3. Fill the lower hex receiver with a multi-purpose grease.
4. If you need to adjust the height of the deck, add shims under the bottom receiver and above the top receiver. The maximum shimming to be used for a load cell is 3/4 inch. DO NOT PLACE more than 3/8 inch of shims at the top or bottom receiver, or the receiver could become dislodged.

   NOTE: Final shimming should be determined by the raw-count reading of the load cells (see Table 7-2). Final shimming should be done after addressing the load cells and before calibrating the scale (the shimming sequence is described in Chapter 10).
5. Install a POWERCELL® or MTX load cell:

   POWERCELL Load Cell: Position the foam rubber gasket on the lower receiver, and then place the hex end of the load cell into the lower receiver. Make sure that the cable connector points toward the outside of the scale and is oriented 30° out and away from the best cable routing.

MTX Load Cell: Install the MTX load cell and boot as described below (see Figure 5-4).

- Place a rubber boot on the lower part of the load cell. If necessary, apply a small amount of food-grade lubricant to the boot to ease it onto the load cell.
- Roll up the lower part of the boot, and place the hex end of the load cell into the lower receiver.
- Once the load cell is in position, roll down the lower part of the boot so that it fits around the receiver. Make sure that the cable connector points toward the outside of the scale and is oriented 30° out and away from the best cable routing.

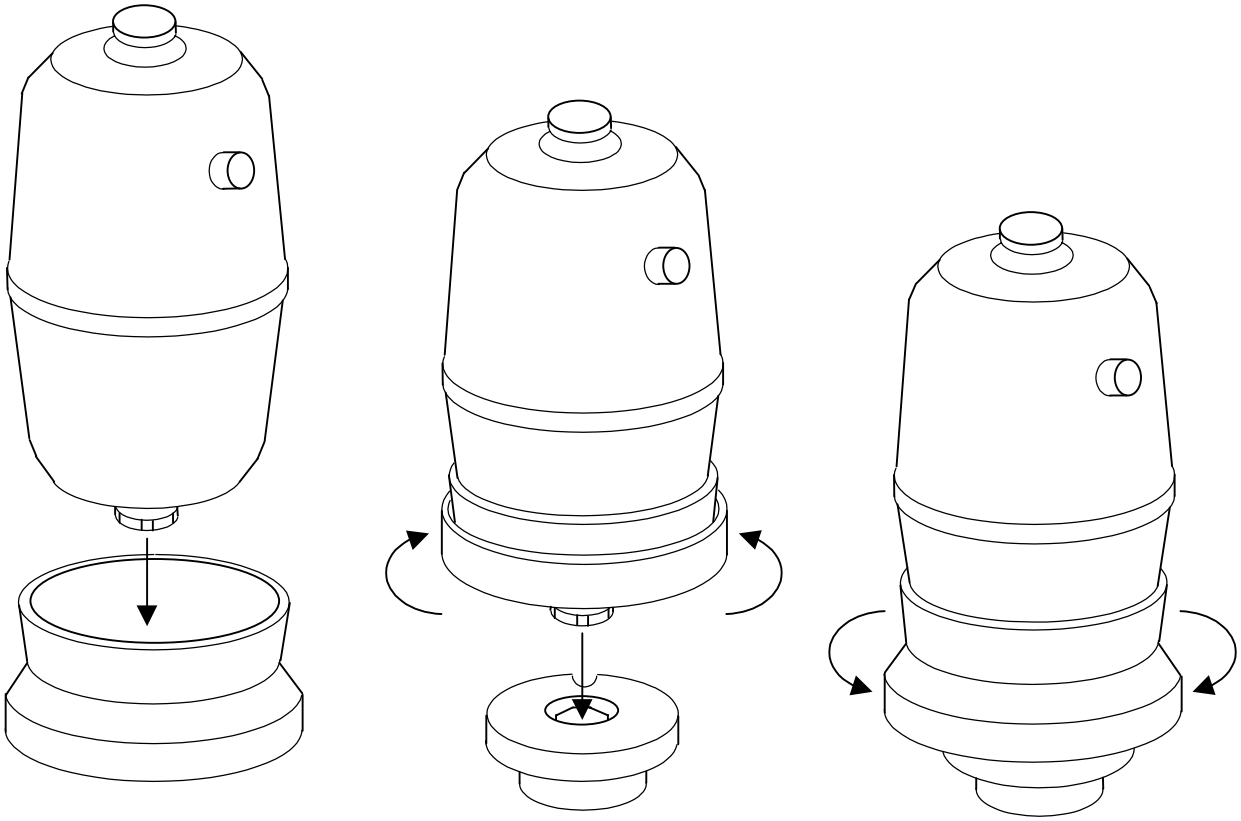


Figure 5-4: MTX Load Cell Installation

Load Cell Cables

At this point, connect the load cell cables to the junction boxes. See the 7560 wiring diagram for routing and terminating load cell cables.

Do not connect the load cell cables to the load cells at this time. They should be connected as the load cells are being addressed.

It is important that all the electrical parts are kept absolutely dry on the inside and as dry as possible on the outside. Continuous exposure can cause corrosion, which will eventually break down the seal and ultimately allow moisture to reach sensitive parts. Penetration of moisture can cause drifting, zero change, and in general degrade the accuracy of the scale.

Guidelines for installing cables:

- Dress the load cell cables to form a drip loop at a point before the cable connects to the load cell or to the junction box. Water will drip onto the cable and follow the cable to its lowest point before dripping off. If a drip loop is provided, the water will run off before reaching moisture-sensitive components such as connectors or seals.
- Cables are not integrally attached to the load cells. When you connect the cable connector to the load cells, the connector must be correctly and completely seated so the gasket will seal out all moisture and so the pins are not bent. Do not use wrenches or pliers on this fitting. If the fit is correct and free of foreign material, you should be able to assemble it by hand. IMPORTANT! Do not use tools to tighten. Make sure the connection is free of any foreign material before applying grease to connection. Use grease supplied with scale.
- See 7560 Wiring Diagram for maximum home run cable length. Reference drawing numbers are listed in Chapter 11.

Scale Traffic

Pour the concrete decks for each module. Do not drive vehicles onto the concrete decks until the concrete has cured (21 to 28 days) or reached a minimum of 4,000 psi. After the concrete decks have cured, calibrate the scale according to the instructions in the indicator manual.

Junction Box

After calibrating the scale, place the desiccant pack in the junction box and carefully seal the junction box against moisture. Make sure the desiccant is in an active (dry) condition. Tighten the junction box cover securely. Be careful that the bolts are not over-tightened, as this could warp the cover or force the gasket out of place. The optimum screw torque is 20 in-lb.

Scale Finishing

Scale modules are often scratched and bumped in transit or during installation. To prevent rust, paint is provided in the installation kit to touch up any scratched or damaged areas. If a scratched area has started to rust, clean it with mineral spirits of lacquer thinner before applying the paint. Do not paint the scale platform when the temperature is below 60° F (15° C).

6 Multiple-Platform Scale Installations

Truck stops commonly use several independent scales installed end-to-end in order to obtain axle weight as well as gross weight. These multiple-platform scales are installed the same as single platform scales, except that the platforms are joined with dual-cell base plates and coupling hardware.

Dual-Cell Base Plates

Large dual-cell base plates (see Figure 6-1) are used between independent scales. This type of plate is designed to maintain the proper distance between the scales. Figure 6-2 shows a layout for a typical 15 foot x 15 foot x 45 foot scale system. When installing these base plates, make sure that they are in position and oriented correctly.

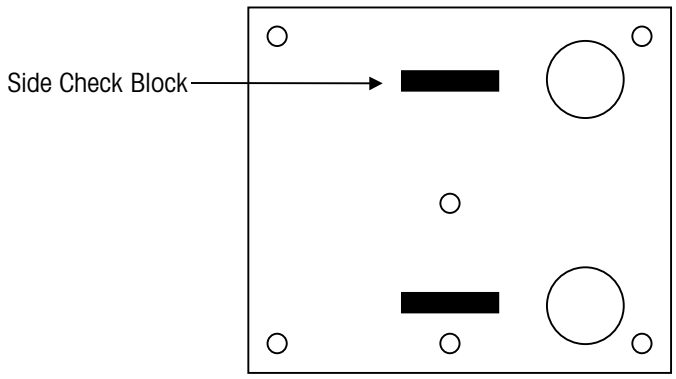


Figure 6-1: Dual-Cell Base Plate

Scale Couplers

Two scale couplers are used to join each pair of scales (see Figures 6-2 and 6-3). They are designed to allow the scales to operate independently so that weight on one scale is not read on the adjacent scale. Each coupler consists of a coupling block and two rod end bearings. The couplers hold the scales together so that the end wall checking system checks all scales.

Installation

1. Position the base plates, check their height, install locating tools, and set the modules in place.
2. Install coupling hardware (use Never-Seez bearing compound or equal on all threaded surfaces and inside diameters of rod end bearings). Hand tighten the coupling block until there is no play between the shoulder bolts. Do not change the position of the scale by over-tightening the block. Tighten jam nuts against the block.
3. Disconnect the coupled sections by removing shoulder bolts from one module before raising the modules.
4. Raise the modules and insert load cells.
5. Set modules on the load cells and replace the shoulder bolts.

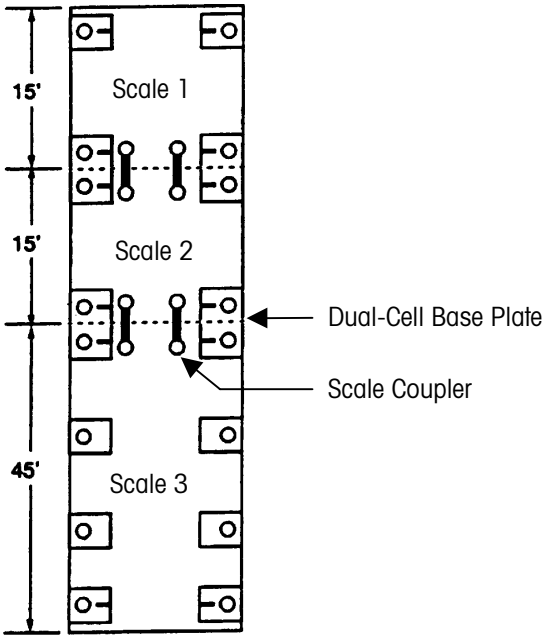


Figure 6-2: Multiple-Platform Scale Layout

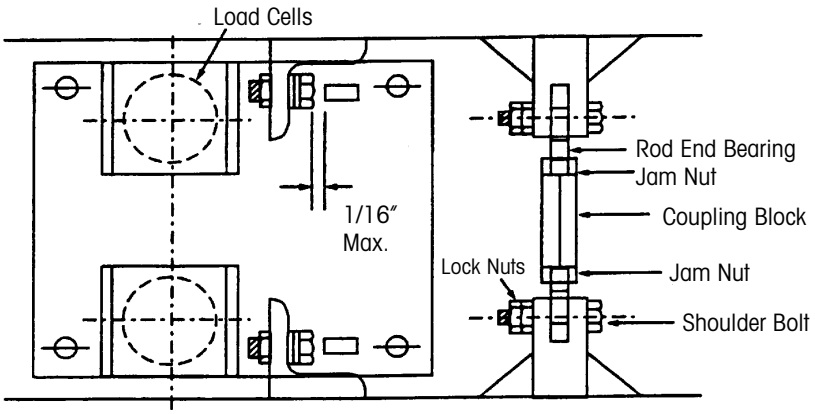


Figure 6-3: Scale Coupler

7 Scale Indicator Setup for 7560

Instructions for programming and calibrating the scale indicator can be found in the indicator's manual. The following 7560 setup information will be needed.

Total Capacity	Scale Length	No. of Load Cells	Programmed Capacity	Increment Size
35 Tons*	Less than or equal to 17.5 feet	4	70,000 lb	20 lb
60 Tons*	Greater than or equal to 17.5 feet but less than 60 feet	6	120,000 lb	20 lb
100 Tons*	Greater than or equal to 60 feet	≥ 8	200,000 lb	20 lb

*Check serial plate on scale for total capacity.

Table 7-1: Scale Capacity and Increment

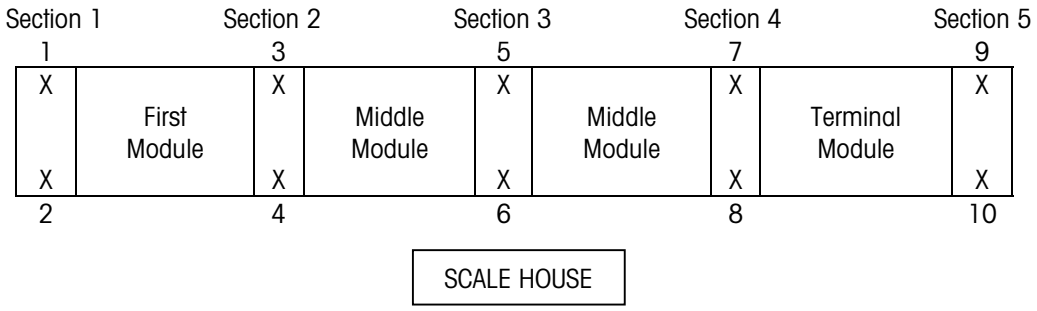


Figure 7-1: Recommended Load Cell Addressing

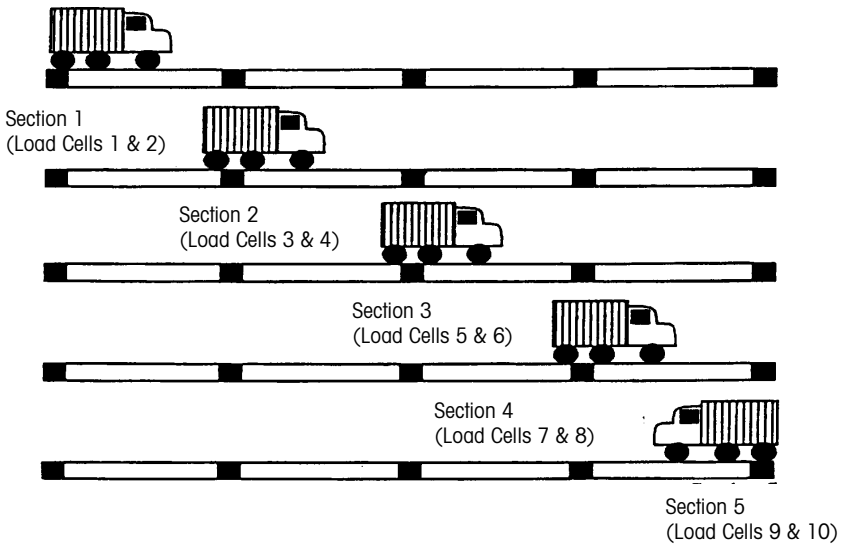


Figure 7-2: Test Truck Positions For Shift Compensation

End Cell Raw Count Range		
Module Size	Concrete Deck	
	Without Concrete	With Concrete
15 feet	1,200 – 1,800	7,200 – 10,800
17.5 feet	1,360 – 2,040	8,600 – 12,900

Middle Cell Raw Count Range		
Module Size	Concrete Deck	
	Without Concrete	With Concrete
15 feet - 15 feet	2,400 – 3,600	14,400 – 21,600
15 feet - 17.5 feet	2,560 – 3,840	15,800 – 23,700
17.5 feet - 17.5 feet	2,720 – 4,080	17,200 – 25,800

Table 7-2: Expected Raw Count Readings for Model 7560

IMPORTANT!

If raw counts do not fall into the ranges listed in Table 7-2, re-shim the scale using the shimming procedure described in Chapter 10.

8 Maintenance

Frequency

Since the scale has no moving parts, it requires only minimum maintenance. But normal service inspection schedules are recommended.

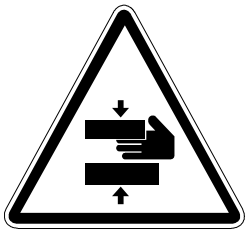
The underside and sides of the scale platform are painted with an epoxy paint. You will need to repaint these areas occasionally with an epoxy paint. Before repainting, clean the metal surfaces and remove all rust. The easiest method for painting the platform is with paint rollers. The temperature must be 60°F (15°C) or higher.

Check the calibration of the scale every six months. Adjust the bumper bolts if necessary. Replace the desiccant bags in the junction box if necessary.

Load Cell Replacement

If a load cell needs to be replaced, use the following procedure:

1. Raise the platform, using a hydraulic jack, test truck, boom, or forklift. The scale should be raised only when it is unloaded. The force required to lift a module at either end of the scale is 3,500 pounds for decks without concrete and 23,000 pounds for decks with concrete. If you are going to lift a middle module (with concrete), lift the module that bears on the coupler bracket first and block it up before attempting to lift the adjoining module off the load cell. Refer to the lifting procedures in Chapter 3. Decks with concrete must be lifted from the bottom of the deck. To remove a DigiTOL load cell, a scale needs to be lifted only 1.5 inches (approximate).



⚠ WARNING

WHEN A MODULE IS BEING MOVED, DO NOT PLACE YOUR HANDS OR OTHER ITEMS BETWEEN THE MODULE AND ANY OTHER SURFACE. IF IT IS NECESSARY TO PLACE YOUR HANDS UNDER A MODULE DURING INSTALLATION, MAKE SURE THAT THE MODULE IS PROPERLY BLOCKED SO THAT IT CANNOT MOVE. FAILURE TO FOLLOW THIS WARNING COULD RESULT IN BODILY HARM OR PROPERTY DAMAGE.

2. After the scale is raised up and blocked, enter the setup mode on the indicator and access the load cell replacement parameter. Follow the indicator manual's instructions for replacing a load cell.
3. Check the calibration of the scale and recalibrate if required.

Spare Parts List

Part Number	Description
14002500A	POWERCELL Load Cell, 22.5t, CMOS, H44 10kd
15476400A	MTX Load Cell, 25t, CMOS, H44 10kd
TA200764	Receiver, Upper
TA200814	Receiver, Lower Hex
TN203173	Gasket
TN203705	MTX Boot
TA200712-1	Receiver Shim, 0.125 inch
TA200712-2	Receiver Shim, 0.062 inch
TA200712-3	Receiver Shim, 0.180 inch
TA200865-1	Round Coupler Pin
TA200865-2	Octagonal Coupler Pin
TA200856-1	End Bumper Shims, 0.250 inch
TA200856-2	End Bumper Shims, 0.125 inch
TA200856-3	End Bumper Shims, 0.062 inch
TA200357-1	Side Bumper Shim, 0.125 inch
TA200357-2	Side Bumper Shim, 0.062 inch
TA200357-3	Side Bumper Shim, 0.031 inch
TA200864-1	Coupler Pin Shim, 0.125 inch
TA200864-2	Coupler Pin Shim, 0.062 inch
*	Load Cell Cable
13635300A	CMOS Junction Box PCB
TA200831	Locating Tool

Multiple-Platform Scale (Only)

TA200502	Coupling Block
MZ0901010398	Shoulder Bolt
MZ0901040009	Rod End R.H.
MZ0901040010	Rod End L.H.

* See Wiring Kit Drawing for Load Cell Cables.

Load Cell Specifications

POWERCELL Load Cell

Model: 0760, NTEP (National Type Evaluation Program) Certificate of Conformance Number 88-091 for Class IIIL, 10,000 divisions.

Capacity: 22,500 kg / 49,604 lb

Material: Stainless Steel

Environmental Protection: Hermetically Sealed

Output: METTLER TOLEDO DigiTOL Protocol

MTX Load Cell

Model: MTX, NTEP (National Type Evaluation Program) Certificate of Conformance Number 88-091 for Class IIIL, 10,000 divisions.

Capacity: 25,000 kg / 55,115 lb

Material: Stainless Steel

Environmental Protection: Hermetically Sealed

Output: METTLER TOLEDO DigiTOL Protocol

Scale Certification

NTEP (National Type Evaluation Program) Certificate of Conformance Number 88-243 for Class IIIL, 10,000 divisions.

9 Cast-in-Place Concrete Recommendations

General

Work including: Providing all cast-in-place concrete work, including reinforcing, placing, curing, and cleanup.

Submit, on request only, product literature for admixtures and curing compounds proposed for use.

Materials

Cement: Portland Cement, ASTM C150, Type 1
Water: Potable
Aggregates: ASTM C33, size number 67
Admixtures:

- Water-reducing: ASTM C494, Type A or D
- Air-entraining: ASTM C260
- High-range, water-reducing admixture (superplasticizer): ASTM C494, Type F or G
- Nonchloride, noncorrosive accelerator: ASTM C494, Type C or E
- Calcium Chloride is **NOT** permitted.
- Use of mixtures other than those listed will not be permitted.

Reinforcing

Deformed bars: ASTM A615, A616, or A617. Yield strength to be 60 ksi. Welded wire fabric (if required): ASTM A185. Provide in sheet form.

Curing Compound and Sealer: Federal Specification ASTM C309. The compound shall be a styrene butadiene type, 30% solids content minimum. The following are acceptable:

- Super Floor Coat, by Euclid
- Super Pliocure, by Euclid
- Masterseal 66, by Master Builders

Mixes

Use the following for fill in scale pan and for exterior slabs on grade:

- Compressive strength to be 4,000 psi (or as specified on foundation drawing), 28-day strength.
- Air content shall be 5 to 7 percent.
- Maximum water to cement ratio shall be 0.45.
- Maximum slump as placed shall be 4 inches.

Finish

Finish on flatwork shall be medium broom finish.

Curing and Protection

When air temperature during placement is less than 40°F, or will be within 24 hours, temperature of concrete as placed is to be between 50°F and 90°F (55°F and 90°F for sections less than 12 inches thick). Maintain concrete temperature within these limits for the full curing period of 7 days.

Slab areas may be either moist-cured or receive an application of curing compound, except that when concrete above grade is placed in the open, and the air temperature exceeds 75°F, the concrete is to be moist-cured for the first 24 hours.

Whichever curing method is used, it shall begin immediately after the water sheen disappears and continue for at least 7 days. Do not allow curing to be delayed overnight.

10 Shimming Sequence

1. Complete the initial installation work. Connect the scale to a DigiTOL indicator and apply power. Let the load cells warm up for approximately 1/2 hour.
2. Access the setup mode of the indicator and observe the raw counts displayed for each load cell in the scale. Refer to the 10-cell layout in Figure 10-1 for the recommended load cell numbering scheme. Note that load cells 1 and 2 make up Section 1, cells 3 and 4 make up Section 2, and so on. Make sure that you know the proper location of each cell in your scale and that cells 1, 2, 3, and 4 are supporting the first or starting module of the scale.
3. Adjust the deck at Section 1 so that it is level with the approach ramp (assuming that the approach coping at each end of the scale is in the same level plane) to ensure a smooth transition onto the weighbridge. Shim load cells 1 and 2 as required (do not exceed 3/8 inch of shims at the top or bottom load cell receivers, 3/4 inch total shims maximum).
4. Shim under Section 2 cells until Section 1 cells are within raw count tolerance and equal side-to-side within 20% or less.
5. Shim under Section 3 cells to bring Section 2 cells into tolerance. Bring Section 3 cells into tolerance by shimming under Section 4 cells.
6. Make sure that Section 5 is level with the approach ramp. Shim Section 5 cells as necessary. Next, check Section 4 and 5 cell counts to determine if additional shimming is required. If so, shims must be placed at the coupler connections of Section 4. Shim as required to bring Sections 4 and 5 into tolerance.
7. Scale is now ready for shift adjust and calibration.

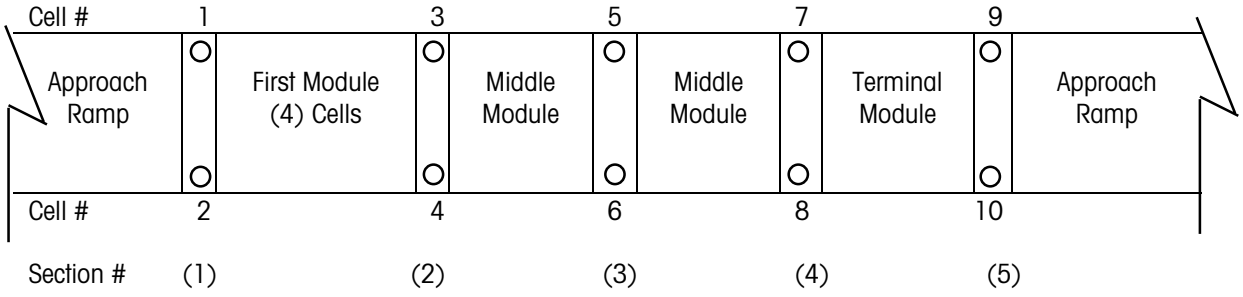
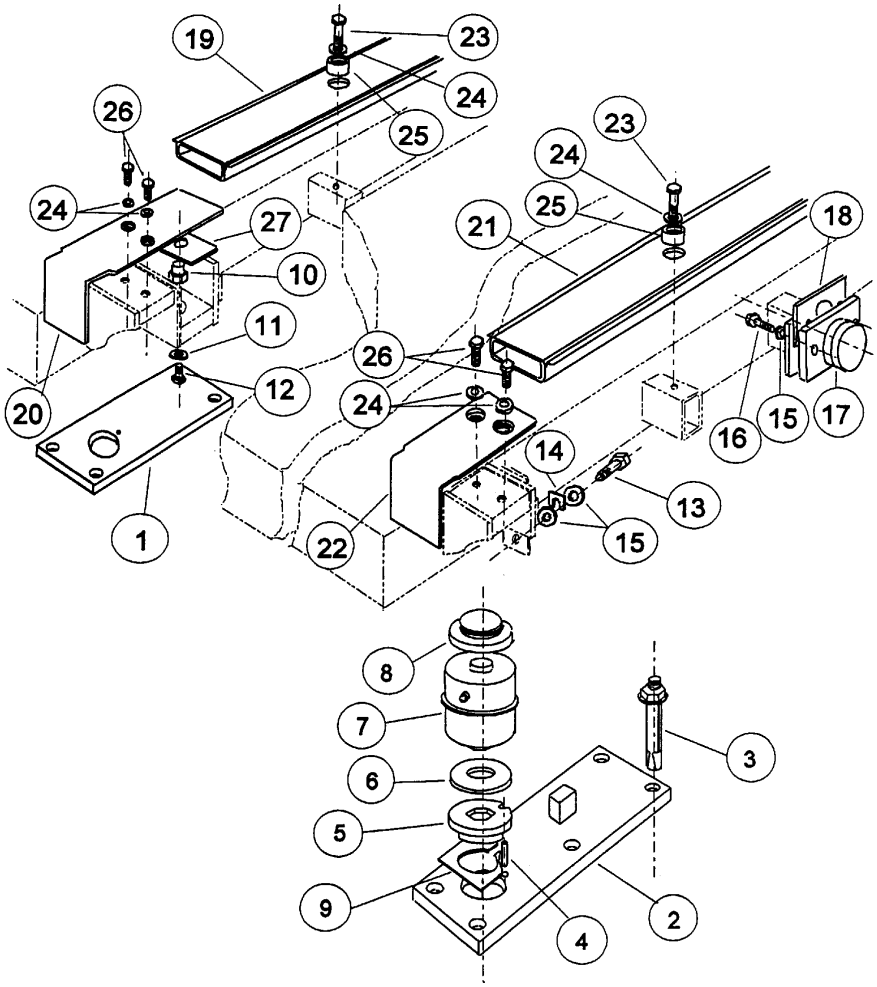


Figure 10-1: Recommended Load Cell Numbering

11 Service Parts

Cell Assembly, Bumpers and Gap Covers



Ref No.	Part Number	Description	Qty.
1	TA200937-2*	Base Plate	varies
2	TA200937-3*	Left Bumper Base Plate	2
	TA200937-4*	Right Bumper Base Plate (not shown)	2
	TB200930-2*	Dual-Cell Base Plate (for multiple-platform scale)	varies
3	TN203216	3/4-10 Anchor Bolt x 6 inches long	varies
4	MZ0904000063	Roll Pin, 1/2 inch	varies
5	TA200814	Lower Hex. Receiver	varies
6	TN203173	POWERCELL Gasket	varies
–	TN203705	MTX Boot	varies
7	E12995400A**	22.5t POWERCELL Load Cell (NMOS) before April 1, 1993	varies
	14002500A	22.5t POWERCELL Load Cell (CMOS) after April 1, 1993	
	15476400A	25t MTX Load Cell	
8	TA200764	Upper Receiver	varies
9	TA200712-1	Receiver Shim, 0.125 inch	varies
	TA200712-2	Receiver Shim, 0.062 inch	
	TA200712-3	Receiver Shim, 0.180 inch	
10	TA200865-2	Octagonal Coupling Pin (per module)	1
	TA200865-1	Round Coupling Pin (per module)	1
11	MZ0901030019	3/8-inch Washer (per module)	2
12	MZ0901010030	3/8-16 Hex. Head Screw x 3/4 inch long (per module)	2
13	MZ0901010375	5/8-11 Side Bumper Bolt x 1.25 inches long	4
14	TA200357-1	Side Bumper Shim, 0.125 inch	varies
	TA200357-2	Side Bumper Shim, 0.062 inch	
	TA200357-3	Side Bumper Shim, 0.031 inch	
15	MZ0901030062	5/8-inch Washer, Plain	varies
16	TN202012	5/8-11 Bolt, Hex. Head x 2.5 inches long	4
17	TA200887	End Bumper Assembly	2
18	TA200856-1	End Bumper Shim, 0.250 inch	varies
	TA200856-2	End Bumper Shim, 0.125 inch	
	TA200856-3	End Bumper Shim, 0.062 inch	
19	TB202312-2	Center Gap Cover, Concrete Deck, Middle (11 feet wide only)	varies
	TB202313-2	Center Gap Cover, Steel Deck, Middle (11 feet wide only)	
20	TA202072-2	Side Cover, Concrete Deck, Middle (per section)	2
	TA201427-2	Side Cover, Steel Deck, Middle (per section)	2
21	TB202312-1	Center Gap Cover, Concrete Deck, End (11 feet wide only)	varies
	TB202313-1	Center Gap Cover, Steel Deck, End (11 feet wide only)	
22	TA202072-1	Side Cover, Concrete Deck, End (per section)	2
	TA201427-1	Side Cover, Steel Deck, End Left (per section)	1
	TA201427-3	Side Cover, Steel Deck, End Right (per section)	1
23	TN800653	1/2-13 Bolt x 2.5 inches long (per center gap cover)	2
24	MZ0901030098	1/2-inch Washer (per section)	6
25	TN202310	Sleeve (per center gap cover)	2
26	MZ0901010512	1/2-13 Bolt x 1.5 inches long (per side cover)	2
27	TA200864-1	Coupler Shim, 0.125 inch	varies
	TA200864-2	Coupler Shim, 0.062 inch	

*If you are using a new scale to replace a 7560CD installed before January 1990 and plan to use the existing anchor bolts, use the following adapter base plates:

TB302942-2 Base Plate

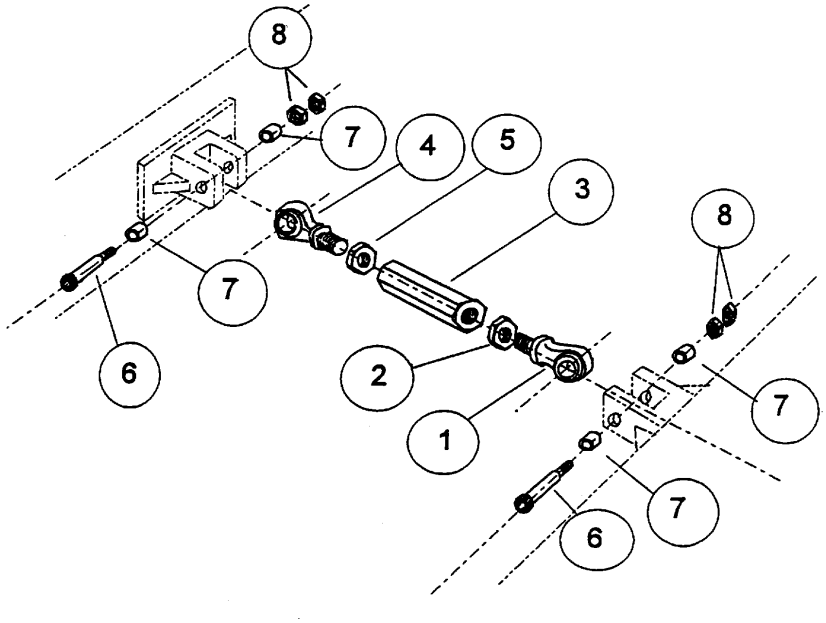
TB302942-3 Left Bumper Base Plate

TB302942-4 Right Bumper Base Plate

TB303776 Dual-Cell Base Plate

**Replace with 14002500A load cell (CMOS).

MULTIPLE PLATFORM CONNECTING LINK ASSEMBLY (7560 A)



Ref. No.	Part Number	Description	Qty.
1	MZ0901040009	Rod End Bearing, R.H.	1
2	MZ0901020038	Jam Nut, R.H.	1
3	TA200502	Coupling Block	1
4	MZ0901040010	Rod End Bearing, L.H.	1
5	MZ0901020069	Jam Nut, L.H.	1
6	MZ0901010398	Shoulder Bolt	2
7	MZ1606000002	Bushing	4
8	MZ0901020014	Jam Nut	4

Reference Drawings

Size	General Layout				Foundation		
	MTX Standard	MTX Hazardous	CMOS Standard	CMOS Hazardous	Beam Slab	Adjustable Footer	Pit
10′ x 11′	TC203821	TC204161	TC202316	TC201872	TC201551	TC201550	TC201552
15′ x 11′	1 Module	1 Module	1 Module	1 Module	TC201554	TC201553	TC201555
35′ x 11′	TC203822 2 Modules	TC204162 2 Modules	TC202317 2 Modules	TC201873 2 Modules	TC201557	TC201556	TC201558
45′ x 11′	TC203823 3 Modules	TC204163 3 Modules	TC202318 3 Modules	TC201874 3 Modules	TC201560	TC201559	TC201561
60′ x 11′	TC203824	TC204164	TC202319	TC201875	TC201563	TC201562	TC201564
70′ x 11′	4 Modules	4 Modules	4 Modules	4 Modules	TC201566	TC201565	TC201567
80′ x 11′	TC203825	TC204165	TC202320	TC201876	TC201572	TC201571	TC201573
87.5′ x 11′	5 Modules	5 Modules	5 Modules	5 Modules	TC201575	TC201574	TC201576

Wiring Diagram (All Sizes)	
CMOS Standard	CMOS Hazardous
TC100460	TC100442

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Publication Part Number: A15375100A **Publication Date: 7/00**

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☐ **Completeness** **What information is missing?**	☐ **Procedure/step** ☐ **Illustration** ☐ **Definition** ☐ **Example** ☐ **Guideline** ☐ **Feature** ☐ **Explanation** ☐ **Other (please explain below)**	☐ ***Info. in manual*** ☐ ***Info. not in manual***
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