7541

DigiTOL® Truckmaster

Weighbridge Installation and Service Manual

IS007541I02

INTRODUCTION

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

Information regarding Mettler Toledo Technical Training may be obtained by writing to:

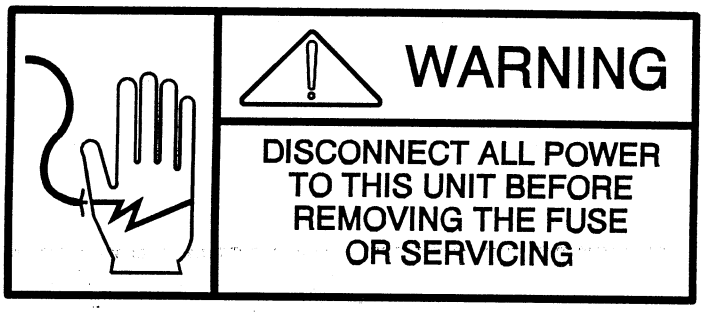
METTLER TOLEDO
Training Center
P.O. Box 1705
Columbus, Ohio 43216
(614) 438-4400

IMPORTANT!

It is most important that the correct part number is used when ordering. Parts orders are machine processed, using only the part number and quantity as shown on the order. Orders are not edited to determine if the part number and description agree.

PRECAUTIONS

- READ this manual BEFORE operating or servicing this equipment.
- FOLLOW these instructions carefully.
- SAVE this manual for future reference.



- Failure to use proper precautions when handling ELECTRO STATIC SENSITIVE DEVICES may result in component or equipment failure.
- ELECTRICAL SHOCK HAZARD: Only permit qualified personnel to service this equipment and/or make checks, tests, and adjustments.
- ALWAYS REMOVE POWER and wait at least 30 seconds BEFORE connecting or disconnecting any internal harnesses. Failure to observe these precautions may result in damage to, or destruction of the equipment.
- CALL Mettler Toledo for parts, information, and service.

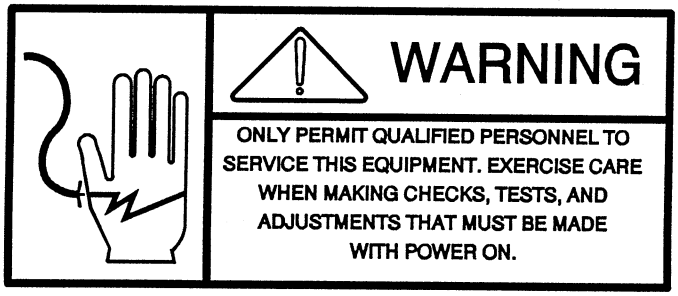


TABLE OF CONTENTS

1. INTRODUCTION

The 7541 DigiTOL® TRUCKMASTER is a pit type 45,000 lb tandem axle capacity truck scale. DigiTOL TRUCKMASTER scales are specifically designed to weigh highway vehicles while minimizing installation and maintenance cost. The DigiTOL TRUCKMASTER is modular, consisting of 8 ft wide modules. Deck coping is welded to the modules in the field to give the scale a final width of 10 ft. The steel modules are fabricated using conventional construction techniques. The modules are supported by Mettler Toledo DigiTOL Power Cells. The modules are interconnected to form a monolithic-appearing scale to form standard length scale platforms of 12 to 80 ft (over 80 ft - special order.)

The DigiTOL TRUCKMASTER is a nominal 39 inches high and maintains approximately 21 inches clearance between the bottom of the main girders and the foundation, making the overall height approximately 48 inches. The nominal capacity varies with the number of cells used in the scale. The foundations are available in three (3) types of designs:

1) Frost Pit 48 "

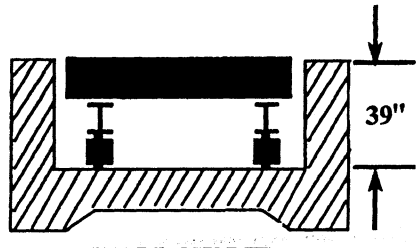
2) Non Frost Area Pit

3) Above Ground Contractor Style

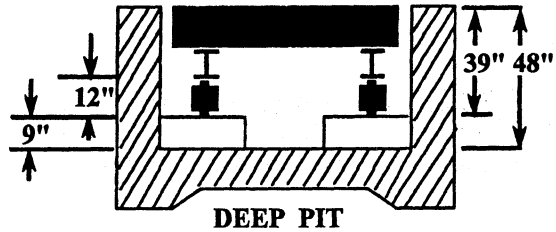
NOTE: These scales are designed to weigh highway vehicle traffic. They are NOT designed to weigh concentrated load devices such as heavy-capacity forklifts.

1.1 FOUNDATION DESIGNS

Two foundation designs are available depending on specific installation requirements.



SHALLOW PIT



DEEP PIT

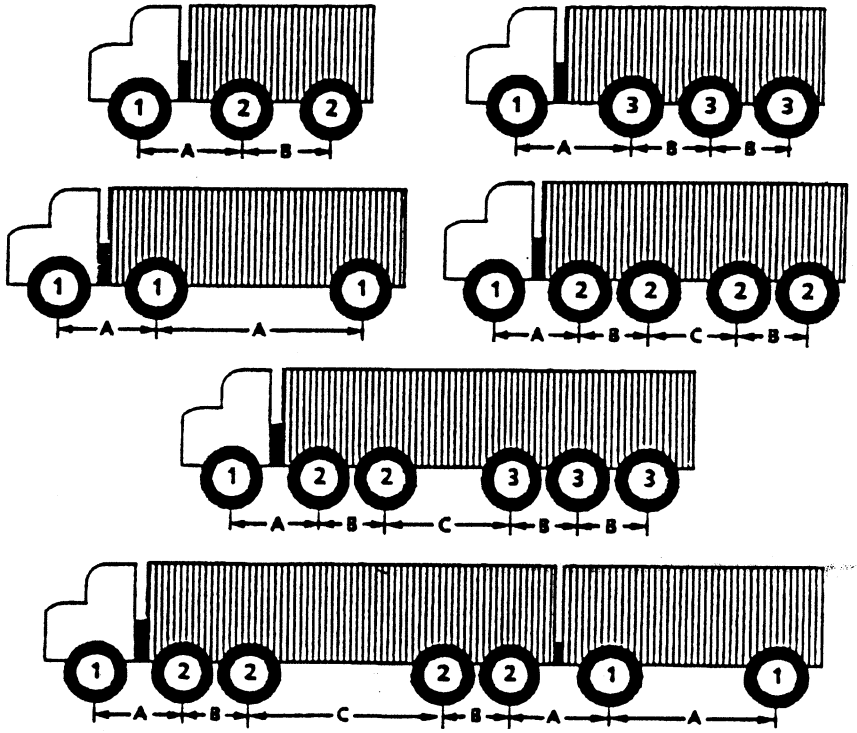
Requires manholes for access.
Deeper pits may be mandatory in some states.

Figure 1.1 Foundation Designs

1.2 MAXIMUM LOADING

Axle Number	Load Specification
1	Single
2	Tandem
3	Tri Axle

Spacing
"A" = Over 96 inches "B" = 48 to 96 inches "C" = Over 128 inches



Platform Size	Maximum Gross Weight (lb)	Maximum Axle Load	
		Single (lb)	Tandem (lb)
60 ft X 10 ft	200,000	25,000	45,000
70 ft X 10 ft	200,000	25,000	45,000

Figure 1.2 7541 Truck Scale
Axle Load and Spacing Limitations

1.3 FEDERAL BRIDGE FORMULA

Gross weight allowable to be carried on any group of two or more consecutive axles under Federal Bridge Formula enacted January 4, 1975.

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

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.

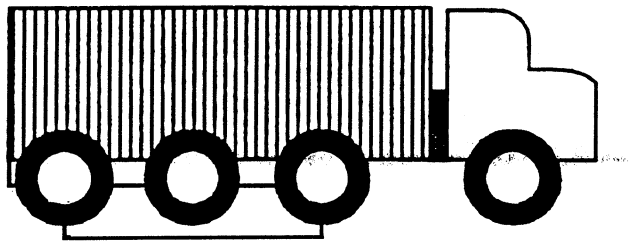
7541 DigiTOL TRUCKMASTER Rating

The Bridge Formula, by itself, provides a 34 K tandem axle rating. This rating specifies a 34,000 lb weight limit for tandem axles spaced between 40 and 96 inches. The 7541 DigiTOL TRUCKMASTER is a 45 K rated scale. Therefore, to determine the maximum weight carried on any group of two or more consecutive axles. The results of the Federal Bridge Formula must be multiplied by a factor (r) = 1.32.

$$W1 = W \times 1.32$$

W1 = Maximum weight to be carried on any group of two or more consecutive axles for vehicles to be on a 7541 DigiTOL TRUCKMASTER Scale.

Example: The maximum weight, to be carried on the back three (3) axles of the truck shown below, to be on the 7541 weighbridge would be determined as follows.



14 ft

Per the Federal Bridge Formula W = 46,500 lb (for N = 3 and L = 14 ft)

W1 = 46,500 X 1.32
= 60,500 lb (rounded to the nearest 500 lb)

Therefore: The maximum weight to be carried across the scale, by this (3) axle grouping which loads the scale over a 14 ft distance, is 60,500 lb.

2. SITE SELECTION AND PREPARATION

2.1 SITE REQUIREMENTS

The site selected must meet state and local requirements. The following is taken directly from Handbook 44 (H-44) 1994 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 then 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 insure 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 insure, 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).

2.1.1 The site should have good drainage. Surrounding areas should not drain through the scale site. The ideal scale site is on ground elevated above the surrounding area.

2.1.2 Check for buried pipes, sewer lines, wires, or foundations that would interfere with footing construction.

2.1.3 The scale should be located away from high power electrical transmission lines or substations.

2.1.4 The site should have adequate room for trucks to properly align with the platform before pulling on. This is especially important if trucks must turn before pulling onto the scale. Similar consideration applies for trucks pulling off the scale platform.

2.1.5 Trucks should remain on the scale for a period of time no longer than is necessary for obtaining the vehicle weight.

2.1.6 Some jurisdictions require that the scale platform be clearly visible from the location of the scale instrument. Others will allow the use of closed circuit TV or even a voice intercom. Obtain official approval before starting construction.

2.1.7 Provide clearance on at least one side of the scale for the full length of the platform to allow for testing and calibration.

2.1.8 Take every precaution against pit flooding. Unless unusually good drainage conditions exist at all times, a good sump pump system is essential.

Because most sump pumps are located in the pit and are out of sight, they require a special effort to observe their operation and condition. For this reason, a second or backup pump is useful in keeping water out of the pit.

Even with the small added cost, the submersible type of pump is preferred over the upright type. If the power should fail, the pit could flood and cover the exposed motor on an upright type of pump. When the power is restored, the motor would be ruined and there may be a shock hazard for anyone working in the area.

2.2 FOUNDATION TYPE

The foundations are designed to support a 7541 DigiTOL TRUCKMASTER rated 100 tons, assuming the ground has at least a bearing surface of 1,500 lb per sq ft. If the soil bearing pressure is less than 1,500 lb per sq ft, it must be increased to this level before pouring the foundation.

2.3 FOUNDATION DRAWING

Install the foundation per the correct drawing. Ensure that the end walls are parallel and measure diagonally within ½ in. Ensure that the instrument cable conduit is in place before pouring the slab.

2.4 BASE PLATES

At the location of the base plate, the concrete should be level and in the same plane (within ± ⅛ in.) 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.

2.5 CURING

Let the concrete cure 7 - 10 days before installing the scale or expanding anchor bolts. Do not allow traffic or loading on scale until concrete reaches full strength, normal in 28 days. Expanding anchor bolts must be installed after foundation has cured in order for anchor bolts to seat correctly.

3. RECEIVING AND INSPECTION

NOTE: In the shipping packet is a warranty card. In order for your warranty to be in effect, this card must be completed and returned to Mettler Toledo. If the optional Lightning Protection System is included, a lightning warranty card must be returned.

3.1 INSPECTION

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

The DigiTOL TRUCKMASTER will consist of seven major items:

1) DigiTOL TRUCKMASTER modules with adjustable bumpers

2) DigiTOL Power Cells

3) Deck Channel

4) Deck Rebar

5) Instrument and Power Cell Cable

6) Installation Kit (J-Boxes, Cables, Tie-Rods, Foundation Bumper Brackets, Shims)

7) (1) Manhole

Lightning Protection System Components, Anchor Bolts, and Home Run Cable are supplied, if ordered.

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

CAUTION !

WHENEVER MOVING THE MODULE, AVOID MECHANICAL SHOCK. THESE MODULES SHOULD ALWAYS BE MOVED SLOWLY AND CAREFULLY. INSURE THAT THE LIFTING DEVICE BEING USED TO MOVE THE MODULE IS OF SUFFICIENT CAPACITY TO SAFELY AND SECURELY HANDLE THE PLATFORMS.

WHEN THE MODULE IS BEING MOVED, NEVER PLACE YOUR HANDS OR OTHER ITEMS BETWEEN THE PLATFORM AND ANY OTHER SURFACE. IF IT IS NECESSARY TO PLACE YOUR HANDS UNDER THE MODULE DURING THE INSTALLATION PHASE, THEN INSURE THAT THE SECTION IS PROPERLY BLOCKED SUCH THAT IT IS IMPOSSIBLE FOR IT TO MOVE. FAILURE TO FOLLOW THIS WARNING COULD RESULT IN PHYSICAL HARM AND/OR PROPERTY DAMAGE.

3.2 UNLOADING PROCEDURE

If the DigiTOL TRUCKMASTER 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, the modules must be lifted per the procedure shown in Figure 3.1. To avoid damage to the scale, hook to the module as shown. Proceed as follows: (See Figure 3.1 TRUCKMASTER Lifting Procedure.)

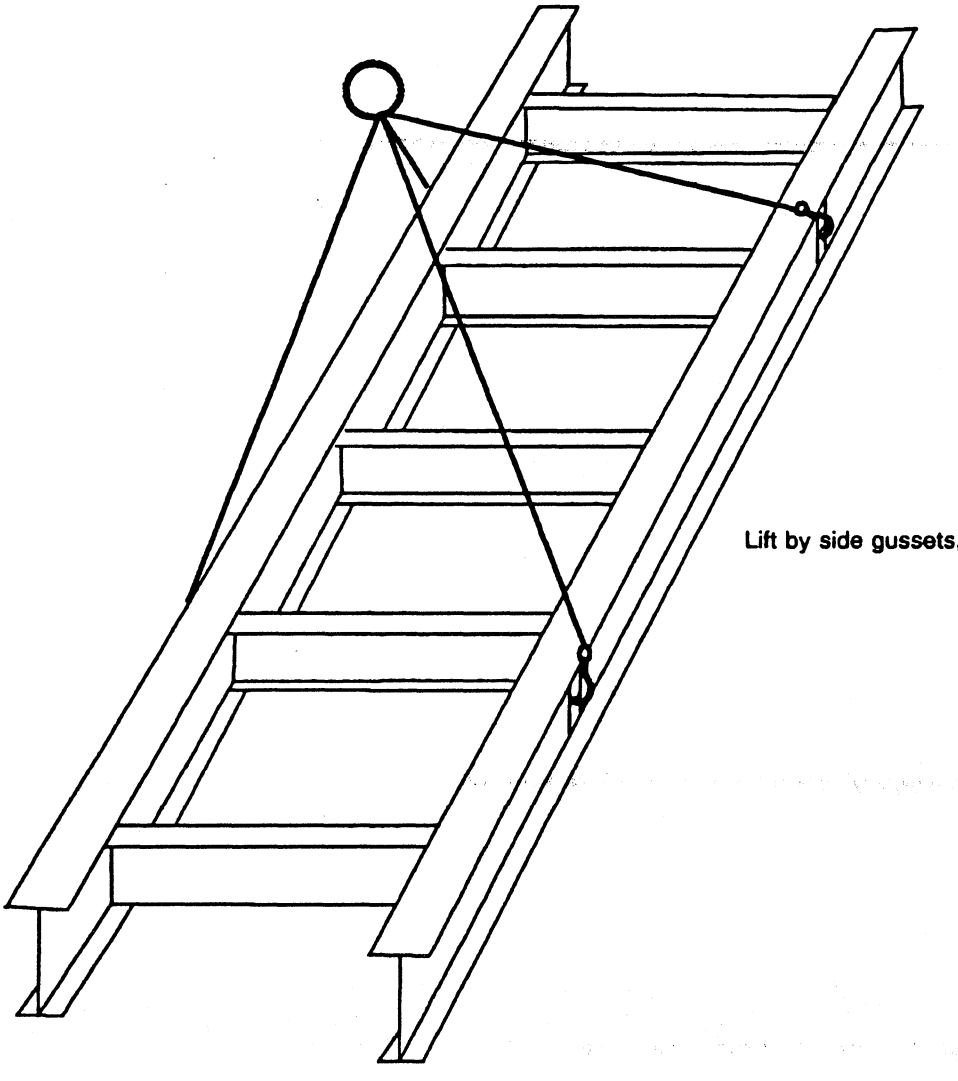


Figure 3.1 TRUCKMASTER Lifting Procedure

If the platforms are to be placed immediately on the foundation, then proceed to Section 4. If the platforms are to be stored, then unload the platforms and stack one on top of the other in the following order: (Refer to Figure 3.2 for module illustrations.)

Top - First and Terminal Modules

Bottom - Middle Module

Place all mechanical accessories in a clean, dry area.

Ensure that the bottom module is stored off the ground by using 4x4's. Place electrical instrumentation and DigiTOL Power Cells in a clean, dry area.

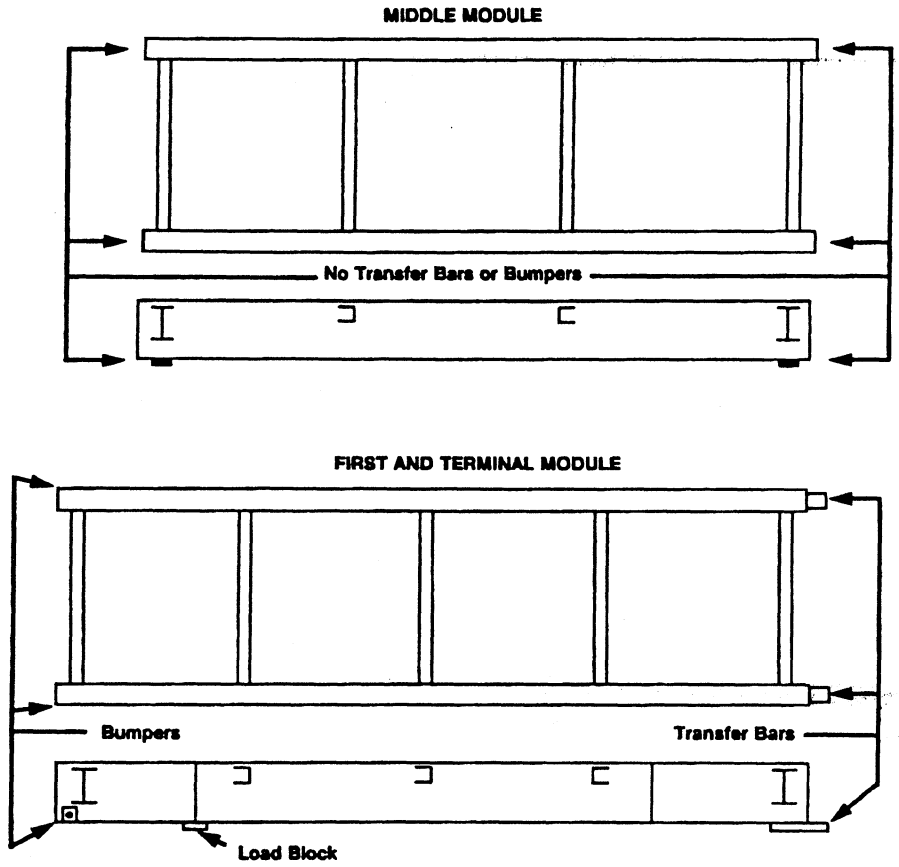


Figure 3.2 Module Type

MODULE TYPE	MODULE 20 ft	MODULE 25 ft
Before Pour	2,800 lb	3,500 lb
Module with Concrete	18,000 lb	21,500 lb

Table 3-1 Approximate Module Weight

4. INSTALLATION SUPPLIES CHECKLIST

The following equipment or other items are required to properly install a 7541 DigiTOL TRUCKMASTER. These items are not supplied by Mettler Toledo.

4.1 MATERIAL

1) Corrugated sheeting or plywood for deck and shoring.
*2) Non-shrink, high quality grout and mixing tools.
3) A small supply of Never-Seez bearing compound or good quality grease.

4.2 TOOLS

1) Transit, tripod, rod
2) 6 in. spirit level
3) 100 ft Measuring Tape
4) 100 ft Chalk Line
5) 100 ft Extension cords - 3/#14 wire
6) Hammer drill 1 in. or greater capacity
7) ¾ in. carbide bit at least 18 in. long for anchor bolts
8) 6 ft Crow Bar to align modules
9) FET Meter or Simpson voltmeter, 100+ meg ohm for insulation and ground check
10) Socket set, including:
    - 1⅞ in. for 1½ in. side bumper bolts and tie rod nuts
    - 2¼ in. for 1½ in. end bumper bolts
    - 1⅛ in. for ¾ in. anchor bolt nuts
    - 4 ft breaker bar or torque wrench
    - ¾ in. drive extension - for tie rod
11) Air compressor or air pressure tank - cleaning nozzle to blow out anchor bolt holes
12) Normal Installation tools
13) Locator Tools (8)**
14) Welding Apparatus

FOR CONCRETE DECK:

15) Vibrator
16) 200 ft duct tape
17) Concrete finishing tools
18) 2 in. X 4 in. X 10 ft lumber - 1 in. bow at center
19) Curing compound manufactured by W.R. GRACE Co., or equal

* Not Normally used, but maybe required.
** Only supplied if scale delivered by Mettler Toledo delivery system; otherwise, must be purchased: Part No. TA200831

4.3 WEIGHBRIDGE INSTALLATION CHECKLIST

This list summarizes the basic sequence of events required for proper installation of a DigiTOL TRUCKMASTER on a dimensionally correct foundation.

		Check (✓) When Complete
1.	Set Base Plates	_____
2.	Set Modules on Locating Tools	_____
3.	Ensure Scale is Centered on Foundation and Level	_____
4.	Tighten Tie Rods	_____
5.	Insert Beam Alignment Shims	_____
6.	Check Base Plate Alignment (Vertical Locating Tools)	_____
7.	Drill Anchor Holes and Insert Anchors	_____
	* DO NOT DRILL UNTIL STEPS 5 AND 6 ARE COMPLETE	
8.	Mount Side Bumper Brackets	_____
9.	Set Bumpers (side 1/16 in. Max. and End 1/8 in.)	_____
10.	Replace Locating Tools with Power Cells	_____
11.	Install Deck Channel / Sheeting and Rebar	_____

CAUTION:

WELDING / GROUND PRECAUTIONS:

DO NOT PASS CURRENT THROUGH CELLS

12.	Insert Spacers between Deck and Pit Coping	
13.	Pour Concrete - Cure	_____
14.	Connect Cables per the Wiring Diagram	_____
15.	Calibrate after Deck has cured.	_____

5. INSTALLATION

5.1 INSTALLATION OF MODULES AND POWER CELLS

Stub off conduit and complete conduit installation, if necessary.

5.1.1 At this time, check the distance between approach copings, side copings, and diagonal measurements.

5.1.2 Position base plates in approximate location on the foundation. (Refer to Figure 5.1.)

5.1.3 Grease (Never-Seez) and insert a hex receiver with ¼ in. of shims in each of the base plates and use a transit to check elevation of the foundation at each base plate location, relative to the top of the approach coping and to each other. To check this accurately, rest the measuring rod on the top surface of the receiver at each base plate location. The nominal height(s) of the scale from the top (flat) surface of the receiver to the top of the pit wall coping is as follows:

Height Without Shims
Concrete Deck 38"

The total, nominal height of the scale is 39 in. The scale should be shimmed to fit the installation with a maximum of 3/8 in. shims under the top receiver and 3/8 in. shims under the bottom receiver for a total of 3/4 in. Never exceed either of these measurements. If greater than 3/4 in. shim is required, shim under the base plate and grout under the entire base plate after accurately locating the scale and securing the anchor bolts.

5.1.4 Insert a locating tool in each of the receiver base plate hex receivers.

5.1.5 Place the scale modules in location using the following sequence:

IMPORTANT: Be sure to have blocks under the modules any time it is not engaged (all modules are not set) or multi-scale platforms have not been coupled.

5.1.5.1 End Modules

The two end modules that require four DigiTOL Power Cells (See Figure 3.2) need to be installed first. The end of the module which has the end bumpers and side bumper angles goes toward the approach wall. End bumper bolts and upper receivers must be greased (Never-Seez) and installed prior to placing this module.

(a) Place the end module reasonably square with the end wall and spaced away from end wall per assembly drawing. Use care when placing the module on the locating tools (See Figure 5.1.)

CAUTION!!

DO NOT PLACE ANYTHING UNDERNEATH THE SCALE MODULE WHICH COULD BE DAMAGED OR INJURED IF THE CRANE OR CARRYING VEHICLE WERE TO LOSE ITS HOLD ON THE MODULE.

(b) Slowly lower module onto locating tools (approach end first) then continue lowering onto the other two locating tools.

Refer to Figure 3.1 in the Unloading procedures, Section 3.2.

Check the module alignment with the foundation. After the first end module is in position, move to the opposite end of the foundation and install the last end module repeating section 5.1.5.1.

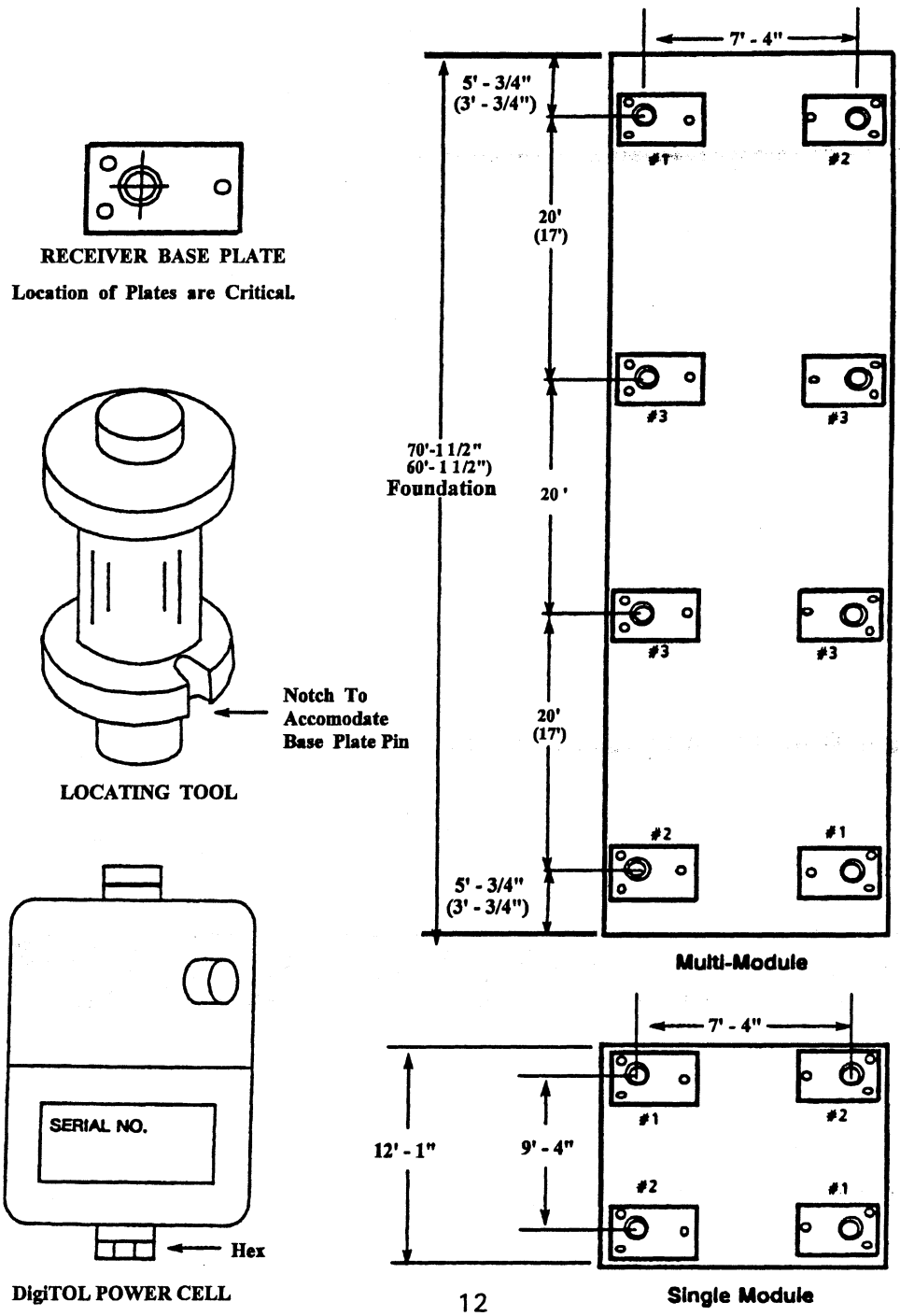


Figure 5.1 Base Plate Location

5.1.5.2 Middle Module

To place the middle module (Figure 3.2) in location, slowly lower the module into position on the end module transfer bars. Ensure that the modules are aligned and that the couplers are completely seated on both sides. Lower the other end onto the locating tools or the opposite end module transfer bars.

(a) After all modules have been set and aligned, connect them with 1-1/4 in. tie rods.

(b) Use the tie rods to pull the modules together so that no clearance exists between the load transfer bar and the 1 in. welded bar. A ¾ in. distance between the girders should now exist. Insert alignment shims at the transfer bars to align the beams longitudinally.

5.1.6 Square the base plates* and check all the locating tools carefully. **THERE SHOULD BE NO CLEARANCE BETWEEN THE SHOULDERS ON THE LOCATING TOOLS AND THE TOP OR BASE PLATE RECEIVERS.** This ensures the proper relationship between upper and lower receivers.

***NOTE:** In order to move the base plates, it may be necessary to pry with a crowbar while another person taps the base plate with a hammer.

5.1.6.1 Adjust the end bumper to 1/16 in. and end bumpers to 1/8 in. clearance. Tighten nuts to lock.

5.1.6.2 Using a hammer drill, drill through the holes in the base plate. Insert the 3/4 in. diameter anchor bolts and secure.

NOTE: The cells can be installed at this point if desired (See Section 5.3.)

5.2 CONCRETE DECK CONSTRUCTION

The deck coping is 7 inch channel steel and is used as a permanent form when the concrete is poured. Refer to section 9 in the back of this manual for recommended concrete specifications.

5.2.1 Set the end deck channel members in place and tack weld to the main girders.

CAUTION!!

ALL ELECTRIC WELDING ON OR AROUND THE SCALE SHOULD BE COMPLETED BEFORE THE ELECTRONIC PARTS ARE INSTALLED.

THE WELDING CIRCUIT GROUND CLAMP MUST BE CONNECTED TO THE STEEL MEMBER BEING WELDED. THE HIGH AMPERAGE WELDED CURRENT MUST NOT PASS THROUGH ANY ELECTRONIC PARTS.

5.2.2 Place the side channels into position and tack weld them to the end channels. The distance between channels should be no more than 1/4 in. - 3/8 in.

5.2.3 The deck channel needs to be blocked, wedged, or tied to wall coping and main beam before concrete is poured to prevent it from bowing into the side and end walls. Insert wedges on the top and bottom of the deck channel at about 5 ft spacings.

5.2.4 Continuously weld the deck channel to the main girders and to each other. The weld should have a 5/16 in. root cross section, also need 2 X 2 angles on top of each beam. (See General Layout Drawing).

Size	Torque
3/4 in. Anchor Bolts	180 ft - lb
1 1/4 in. & 1 1/2 in. Bumper Bolts	700 ft - lb
1 1/4 in. Tie Rod Locknuts	400 ft - lb nut against nut

Table 5-1 Torque

5.2.5 Place corrugated sheeting (28 gauge min.) on top of the beams. It cannot support wet concrete and must be supported from below with shoring.

5.2.6 Place the rebar and manhole(s) into position in accordance with the general layout drawing.

NOTE: Cover pertains to distance between top of corrugation and bottom of rebar.

Tie the rebar together so that it's position is maintained during the pour.

5.2.7 Pour 4000 psi 28 day cure concrete. If subject to freezing, use 5% to 7% air entrainment. Do not cast unless temperature is above 40 °F.

5.2.8 Remove the shoring and wedges after the deck has cured. Refer to addendum in the back of this manual for concrete recommendations.

NOTE: DO NOT DRIVE ON THE SCALE UNTIL THE DECK IS FULLY CURED. It is recommended that test cylinders be poured and tested before putting the scale in operation.

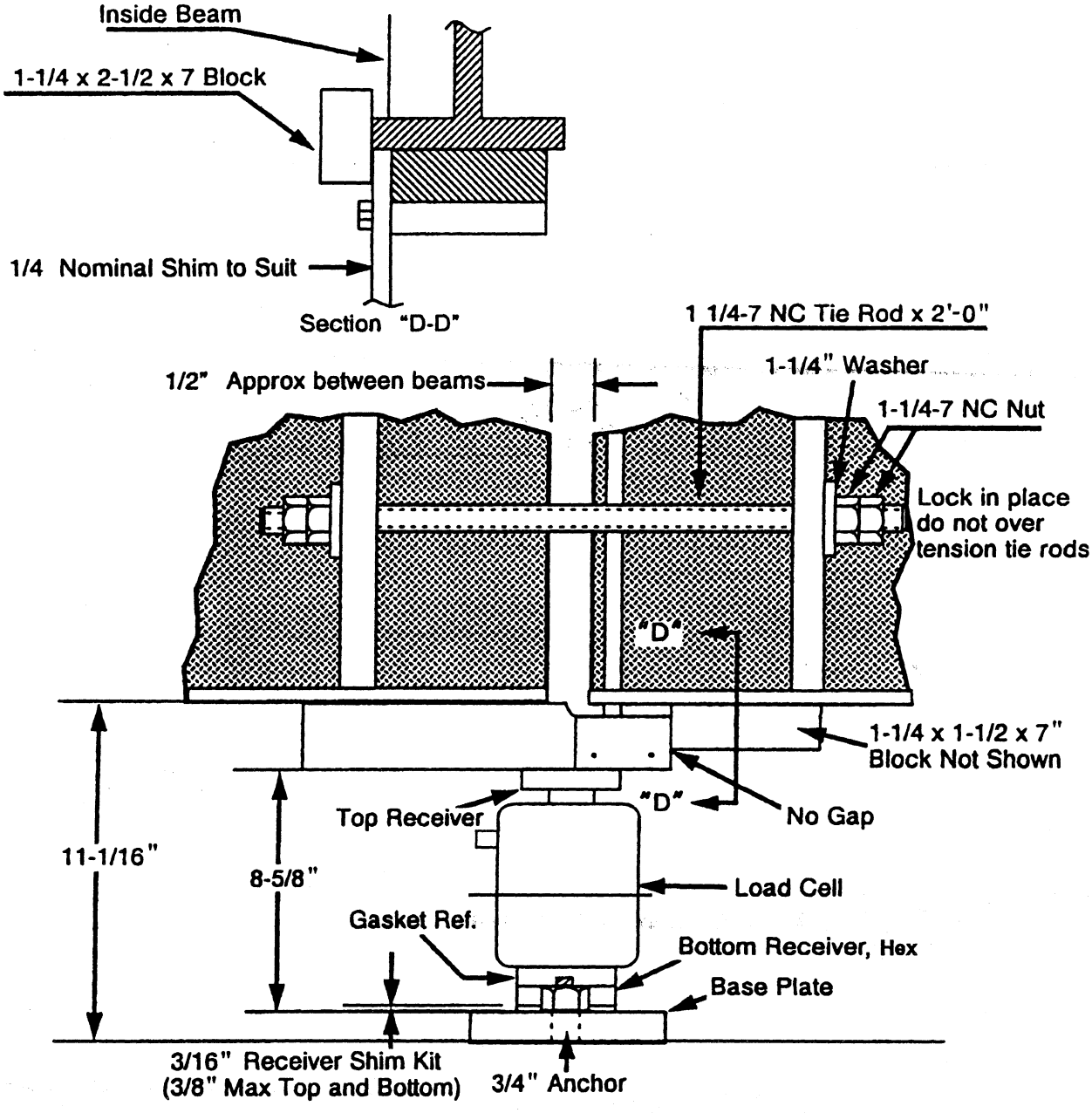


Figure 5.2 Center Cell and Tie Rod Arrangement

5.3 POWER CELL INSTALLATION (See Figure 5.2)

5.3.1 Remove all locating tools and install Power Cells. Before installing power cell apply Magnalube "G" to load surface of the cell buttons and fill lower hex receiver with a multi-purpose grease. Shims can be added under the top and bottom receivers in order to adjust the height of the scale up to 3/4 in. DO NOT PLACE more than 3/8 in. of shims under the top or bottom as the receiver could become dislodged. Be sure that the Power Cell cable connectors are on the

CAUTION!!

BLOCK OR BRACE BOTH MODULES AS LONGITUDINAL CHECKING IS DISENGAGED WHEN A MODULE IS LIFTED.

5.3.2 If grout was used under the base plates, because of uneven foundation, wait approximately 1/2 hour, before placing the modules back into position per section 5.1.5.

NOTE: If 1 in. or more shimming is used, longer anchor bolts will be required to ensure 4 in. minimum anchor depth. (Six (6) in. bolts supplied with scale).

When these modules are placed in position, check the bumper bolt clearance. Bumper bolt clearance must be 1/16 in. for side bumpers and 1/8 in. for end bumpers.

Important!

Recheck bumper bolt clearances after sectioning and calibration. If any of the modules tend to rock up and down, shims may be added or removed underneath the Power Cell lower receivers.

NOTE: Final shimming if required to be determined by raw count readings of the DigiTOL Load Cells. (See Table 6-2) Final shimming to be done after addressing the load cells and before calibration of the scale.

5.4 LOAD CELL CABLING

At this point, mount the j-boxes to the inside of the middle module girders and route load cell cables through short pieces of tubing placed along the main girders. At this time do not connect the load cell cables to the load cells. This will be done 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. The load cells, the connectors, and the junction boxes are made watertight, however, continuous exposure will cause corrosion which will eventually break down the seal and ultimately allow moisture to reach sensitive parts. Penetration of moisture can cause drifting, change in zero, and in general degrade the accuracy of the scale.

Some of the things that can be done to ensure satisfactory operation are:

1. Dress the load cell cables to form a drip loop to 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 a moisture sensitive component such as connectors or seals.

2. The load cells do not have cables integrally attached; therefore, when connecting 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, it can be assembled by hand. Important: Do not use tools to tighten. Also be sure the connection is free of any foreign material before applying grease to connection. (Use grease supplied with scale.)

3. See 7541 wiring diagram for maximum home run cable length.

5.5 JUNCTION BOX

After calibration is complete, the junction box should be carefully sealed against moisture. Place the desiccant pack in the box. Make sure the desiccant is in an active (dry) condition. Tighten 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.

5.6 SCALE FINISHING

Inevitably the scale modules will be scratched and bumped in transit and installation. Paint is provided in the installation kit to touch up all of these areas to prevent rust. If a scratched areas has started to rust, it should be cleaned with mineral spirits of lacquer thinner prior to 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 end-to-end in order to obtain axle as well as gross weight. The installation of these multiple scales is identical to single scale installations with the exception of some coupling hardware.

6.1 SCALE COUPLERS

Two sets of module couplers (rod end bearing/coupling block) are used between the scales. (See Figures 6.1 and 6.2). The couplers hold the modules together so that the end wall checking checks all scales. The coupler articulates so that weight on one scale is not seen by the adjacent module.

6.2 INSTALLATION

6.2.1 Install coupling hardware*. (See Figure 6.1 and 6.2). Hand tighten the coupling block until no "play" exists between shoulder bolts. DO NOT ALTER module position by overtightening block. Tighten jam nut against block.

6.2.2 Disconnect coupled section by removing shoulder bolts from one module before raising the modules.

6.2.3 Raise the modules and insert cells.

6.2.4 Set modules on the cells and replace the should bolts.

* Use Never-Seez bearing compound or equal on all threaded surfaces and I.D. or rod end bearings.

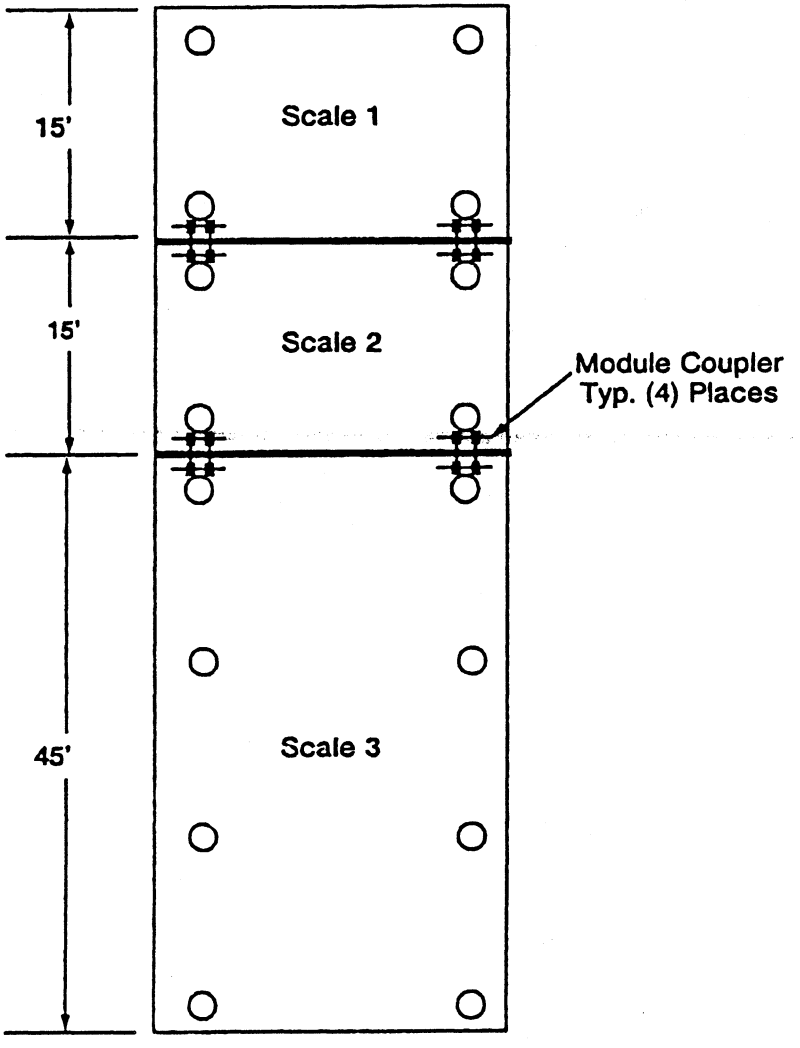


Figure 6.1 Layout Multi-Scale

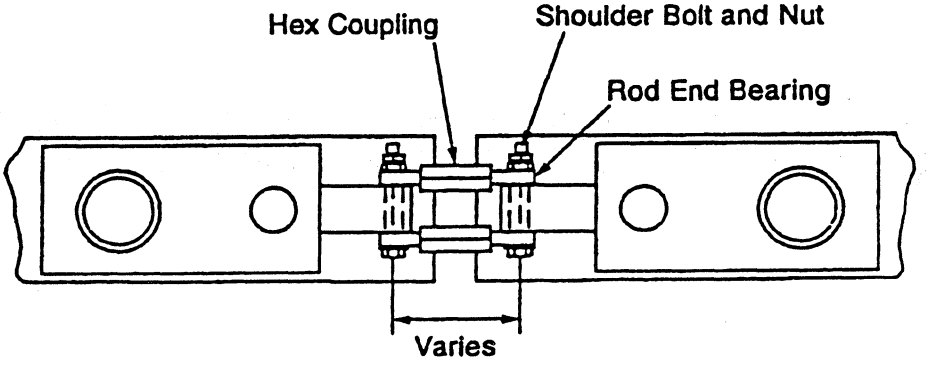


Figure 6.2 Module Coupler

7. SCALE INDICATOR SETUP FOR 7541

Total Capacity	Scale Length	# of Cells	Programmed Capacity	Increment Size
*35 Ton	Less than or Equal to 25 ft	4	70,000	20
*60 Ton	Greater than 25 ft or Less than 60 ft	6	120,000	20
*100 Ton	Equal to or Greater to 60 ft	≥ 8	200,000	20

*Check serial plate on scale for total capacity.

Table 7-1 Scale Capacity and Increment Size

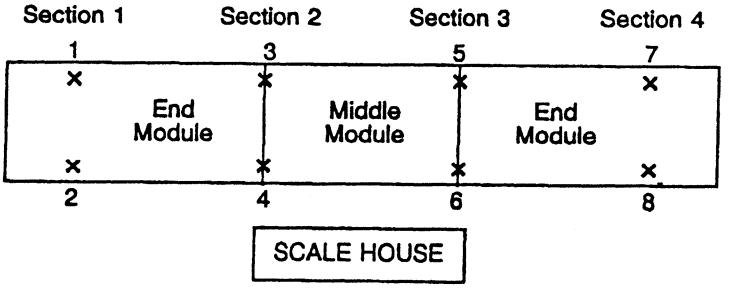


Figure 7.1 Recommended Power Cell Addressing

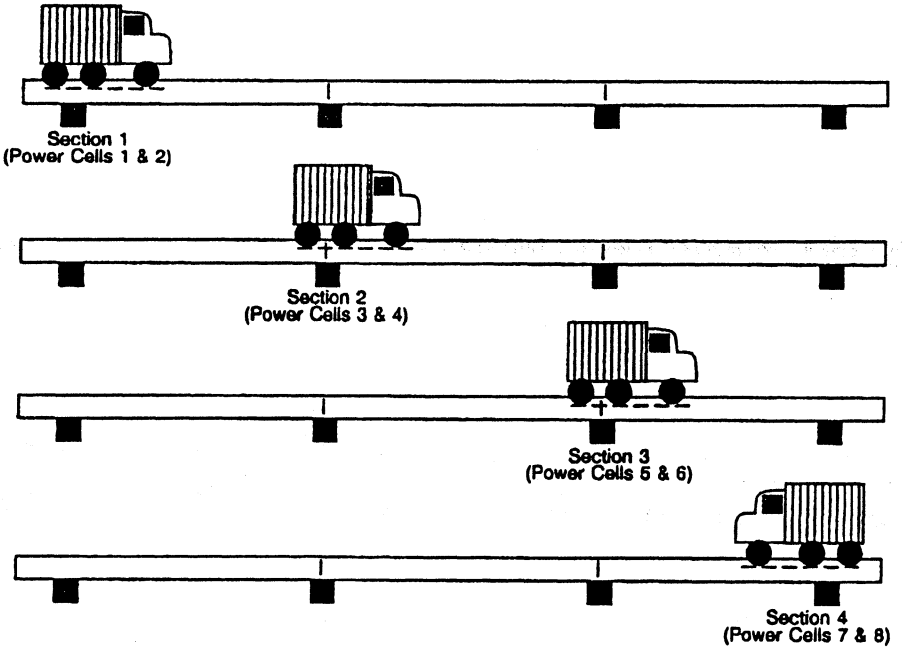


Figure 7.2 Test Truck Positions For Shift Compensation

End Cell Raw Count Range

Module Size	Concrete Deck	
	Without Concrete	With Concrete
20 ft	1200 - 1800	7200-10800
25 ft	1360 - 2040	8600 - 12900

Middle Cell Raw Count Range

Module Size	Scale Deck	
	Without Concrete	With Concrete
20 ft	2400 - 3600	14400 - 21600
25 ft	2560 - 3840	15800 - 23700

IMPORTANT!

If Raw Counts do not fall into the ranges listed in these tables, re-shim.

Table 7-2 Expected "Raw Count" Readings for Model 7541

8. MAINTENANCE

8.1 FREQUENCY

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

All fabrications are painted with an epoxy paint. These areas will require occasional repainting. When repainting, ensure that the metal surfaces are clean and rust is removed. Resurface with an epoxy paint. The easiest method is to use paint rollers. The temperature must be 60 °F (15 °C) or higher.

The calibration of the scale should be checked every six months. Bumper bolt adjustment should be checked and adjusted if required and the J-box desiccant bags should be checked or replaced as required.

8.2 POWER CELL REPLACEMENT

If a power cell needs to be replaced, proceed as follows:

8.2.1 The platform will need to be raised using either a hydraulic jack, test truck, boom, or a forklift. The scale should be raised only when it is unloaded. The force required to lift a module at any of the interior sections is 23,000 lb for a deck with concrete. Refer to Lifting Procedures, Section 3.2 for decks without concrete. Decks with concrete must be lifted from the bottom of the deck. The scale needs to be lifted only 1-1/2 in. (approx.) to remove a DigiTOL cell.

CAUTION!!

WHEN THE MODULE IS BEING LIFTED TO REPLACE CELL, NEVER PLACE YOUR HANDS OR OTHER ITEMS BETWEEN THE PLATFORM AND ANY OTHER SURFACE. IF IT IS NECESSARY TO PLACE YOUR HANDS UNDER THE MODULE DURING CELL REPLACEMENT, THEN ENSURE THAT THE SECTION IS PROPERLY BLOCKED SUCH THAT IT IS IMPOSSIBLE FOR IT TO MOVE. FAILURE TO FOLLOW THIS WARNING COULD RESULT IN PHYSICAL HARM AND/OR PROPERTY DAMAGE.

8.2.2 After the scale is raised and blocked, enter the setup mode on the indicator and access the cell replacement parameter.

8.2.3 Place the jacking mechanism in position and remove the blocks. Slowly lower the section back onto the Power Cell.

8.2.4 Check the calibration of the scale and recalibrate if required.

8.3 SPARE PARTS LIST

PART NUMBER	DESCRIPTION
14002500A	Power Cell, 22,500 kg CMOS
TA200764	Receiver, Upper
TA200814	Receiver, Lower Hex
M61016-13	Gasket
TA200712-1	Receiver Shim, 0.125 in
TA200712-2	Receiver Shim, 0.062 in
TA200712-3	Receiver Shim, 0.180 in
13635300A	CMOS J-Box PCB
TA200831	Locating Tool

Multi Platform Scale (Only)

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

NOTE: For load cell cables see 7541 wiring kit drawing.

8.4 SPECIFICATION - POWER CELLS

MODEL
0760
NTEP (National Type Evaluation Program) Certificate of Conformance Number 88-091A1 for Class IIIL, n = 10,000 devices.

CAPACITY
22,500 kg / 49,604 lb

MATERIAL
Stainless Steel

ENVIRONMENTAL PROTECTION
Hermetically Sealed

OUTPUT
Mettler Toledo DigiTOL Protocol

8.5 7541 SCALE CERTIFICATION

NTEP (National Type Evaluation Program) Certificate of Conformance Number 90-046 for Class IIIL, n = 10,000 devices, 200,000 lb nominal capacity, 60,000 lb CLC.

9. CAST-IN-PLACE CONCRETE RECOMMENDATIONS (Foundation)

9.1 GENERAL

9.1.1 Description

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

9.1.2 Submittals

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

9.2 PRODUCTS

9.2.1 Materials

Cement: Portland Cement, ASTM C150-82, Type 1
Water: Potable
Aggregates: ASTM C33, size number 57
Admixtures:
Water-reducing: ASTM C494-79, Type A or D
Air-entraining: ASTM C260-77
High range water reducing admixture (superplasticizer): ASTM C-494, Type F or G
Non-chloride, non-corrosive 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 A185-79. Provide in sheet form.

Curing Compound and Sealer: Federal Specification TT-C-800A. 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

9.2.2 Mixes

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

Compressive strength to be *4000 psi, 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 in.

* Or as specified on foundation drawing.

9.3 EXECUTION

9.3.1 Finish

Finish on flatwork to be medium broom finish.

9.3.2 Curing and Protection

9.3.2.1 Temperature

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 section less than 12 in. thick.) Maintain concrete temperature within these limits for the full curing period of 7 days.

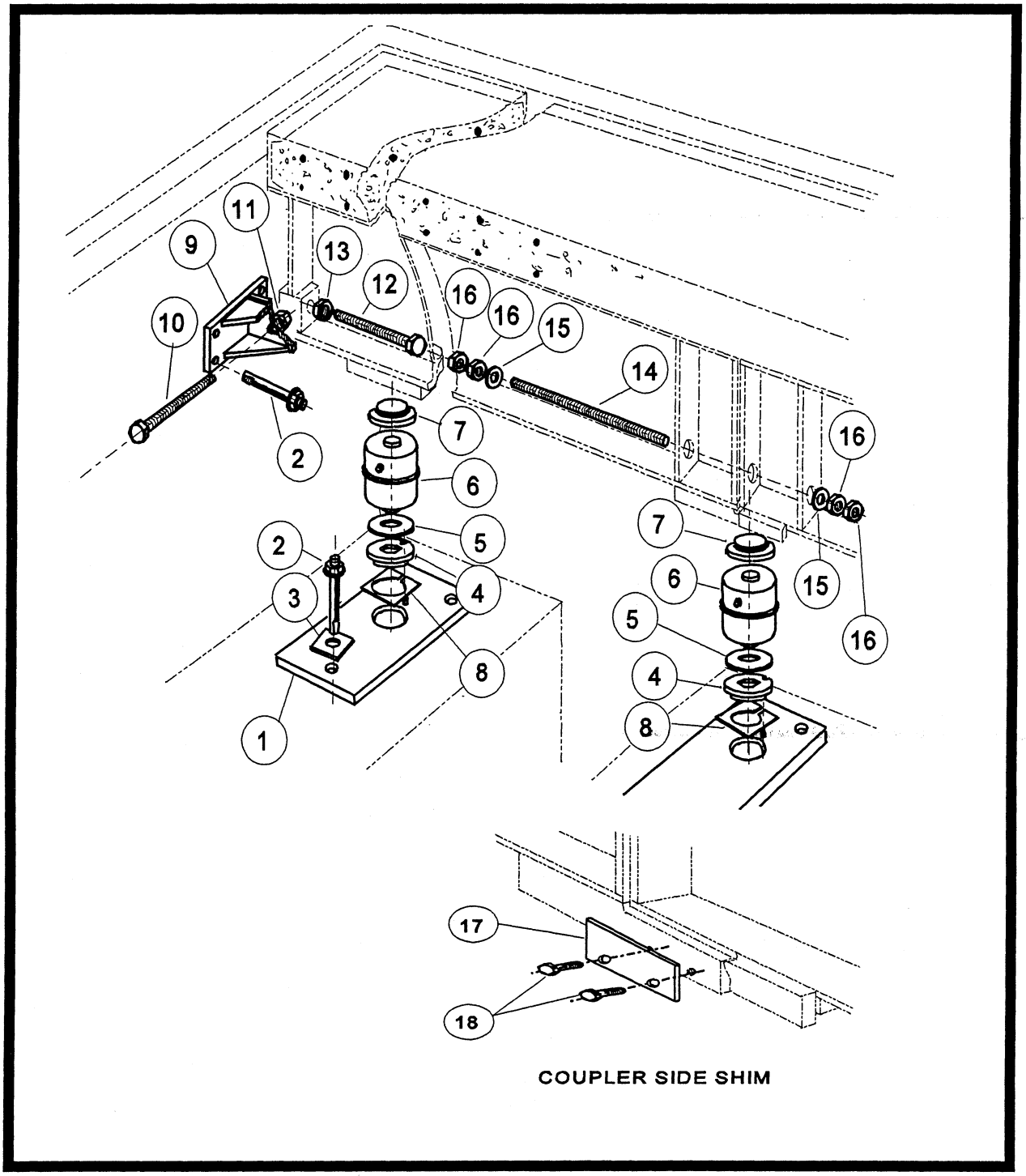
9.3.2.2 Curing

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 is to commence immediately after disappearance of water sheen, and continue for at least 7 days. Do not allow curing to be delayed overnight.

10. SERVICE PARTS

CELL ASSEMBLY, TIE ROD, AND BUMPER
(Model 7541)



CELL ASSEMBLY, TIE ROD, AND BUMPERS
(Model 7541)

Ref. No.	Part Number	Description	Qty.
1	TB200797	Base Plate w/ MZ0904000063 Roll Pin	varies
2	MZ0901010055	3/4 - 10 Anchor Bolt X 6" Lg. (Per Base Plate) (Per Side Bumper Bracket)	 3 4
3	TN201244	Clamp Bar (Per Base Plate)	3
4	TA200814	Lower Hex. Receiver	varies
5	MN61016-13	Gasket	varies
6	14002500A	22.5t DigiTOL Load Cell (CMOS) Upper	varies
7	TA200764	Receiver	varies
8	TA200712-1	Receiver Shim .125"	varies
	TA200712-2	Receiver Shim .062"	varies
	TA200712-3	Receiver Shim .180"	varies
9	TB201498	Side Bumper Bracket	4
10	TA200923	1 1/4 - 7 Side Bumper Bolt x 10" Lg. Gr. 8	4
11	MZ0901020068	1 1/4 - 7 Nut	4
12	TA201606	1 1/2 - 6 End Bumper Bolt x 10" Lg. Gr. 8	4
13	MZ0901020064	1 1/2 - 6 Nut	4
14	MZ0901050006	1 1/4 - 7 Tie Rod x 2' - 0" Lg.	varies
15	MZ0901030015	1 1/4" Washer (Per Tie Rod)	2
16	MZ0901020068	1 1/4 - 7 Jam Nut (Per Tie Rod)	4
17	TA200801-1	Coupler Side Shim .250	varies
	TA200801-2	Coupler Side Shim .125"	varies
	TA200801-3	Coupler Side Shim .062"	varies
18	MZ0901010356	10-32 Screw x 1/2" Lg.(Per Coupler)	2

Items Not Shown:

MZ0602000096	Magnalube-G
TA200831	Locating Tool

Model 7541 (45K Tandem Axle) Truck Scale Reference Drawings

Part Number	General Layout	Foundation		Wiring Diagram		Wiring Diagram NMOS For Scales Shipped Before April 1, 1993
		Regular Pit	Deep Pit	CMOS Standard	CMOS Hazardous	
7541X X1210	TC202350	TC302470	TC201632	TC100460	TC100442	TC100460
7541XX2010	TC202351	TC201633	TC201634			
7541XX4010	TC202352	TC204635	TC302108			
7541XX6010	TC202353	TC200806	TC201363			
7541XX7010	TC202355	TC200799	TC201208			
7541XX8010	TC202357	TC204504	TC201636			
"MICHIGAN VEHICLE"				REF. TB100497 Wiring	REF. TB100498 Wiring	REF. TB100497 Wiring
7541CM6010	TC202354	TC201802	TC201802			
7541CM7010	TC202356	TC201362	TC201362			

NOTE: Part Number XX = CD (Standard)
XX = CH (Hazardous)

METTLER TOLEDO
Scales & Systems
350 West Wilson Bridge Road
Worthington, Ohio 43085-2273

P/N: IS 007541I02

IS 007541I02