# **2266 EZ-LIFT® Floor Scale** Installation and Service Manual

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# **Publication Revision History**

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A15348200A.01	1/10	Removed warranty information. Updated hazardous area information.
A15348200A.02	9/11	Removed 745 load cells.

### 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

#### WARNING!

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

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Type:Analog Load CellModel/Type:744, 745 and 745A

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#### in combination with a weighing terminal produced by Mettler-Toledo is in conformity with the following directives and standards.

Council directive on the harmonization of the laws of the	standards:	Certificate number
Member states:		(if applicable)
relating to non-automatic weighing instruments (90/384/EEC) amended by directive (93/68/EEC)	EN 45501 : 1992 Article 1.2.a	TC2154
relating to electromagnetic compatibility (89/336/EEC) amended by directive (93/68/EEC; 92/31/EEC)	EN 55022, B: 1987 EN 50082-2: 1995	
Relating to electrical equipment designed for use in potentially explosive atmospheres (76/117/EEC)	EN 50 014 : 1977 + A1A5, General requirements	Model 744 and 745 Ex-95.D.2051
	EN 50 020 : 1977 + A1A5, Intrinsic safety "i"	Model 745A Ex-98.D.0965
Relating to electrical equipment designed for use in potentially explosive atmospheres (94/9/EC) ATEX Certification applies to Model 745A Only	EN 50014 : 1997 EN 50020 : 2002 EN 50281-1-1 : 1998	KEMA 03ATEX1069 (Category 2 Approval)
	EN 50021 : 1999 EN 50281-1-1 : 1998	KEMA 03ATEX1070 (Category 3 Approval)

#### Worthington, Ohio USA, May, 2003

Mettler-Toledo, Inc.

Darrell Flocken, Manager - Weights & Measures Office of Weights and Measures

Original issue: September, 1996

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 January, 1999
 Added: model 745A, conformity to 89/336/EU – 73/23/EU – 76/117/EEC

 May, 2003
 added compliance to ATEX Directive 94/9/EC for both Category 2 and 3.

According to EN 45014

# **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 PROPERLY GROUNDED OUTLET ONLY. DO NOT REMOVE THE GROUND PRONG.



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.

# A CAUTION

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



# A CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

# A WARNING

IF THE SCALE IS USED IN A HAZARDOUS AREA, ALWAYS REMOVE POWER AND MAKE THE AREA SAFE BEFORE PERFORMING MAINTENANCE.





# 

USE EXTREME CAUTION WHEN LIFTING AND MOVING THE SCALE TO THE DESIRED LOCATION. DO NOT ATTEMPT TO LIFT AND MOVE THE SCALE BY YOURSELF OR INJURY COULD OCCUR.



# Disposal of Electrical and Electronic Equipment

In conformance with the European Directive 2002/96 EC on Waste Electrical and Electronic Equipment (WEEE) this device may not be disposed of in domestic waste. This also applies to countries outside the EU, per their specific requirements.

Please dispose of this product in accordance with local regulations at the collecting point specified for electrical and electronic equipment.

If you have any questions, please contact the responsible authority or the distributor from which you purchased this device.

Should this device be passed on to other parties (for private or professional use), the content of this regulation must also be related.

Thank you for your contribution to environmental protection.

# CONTENTS

1	Introduction	1-1
	General	1-1
	Model Numbers	1-1
	Load Cells	1-2
	Load Cell Specifications	1-2
	Scale Accuracy	1-3
	End Loading	1-4
	Platform	1-4
	Support Frames	1-4
	Standard Above-Floor Frame	
	Quick-Pit In-Floor Frame	1-6
	Access Ramps	1-6
	Approvals	1-7
	Entity Approval	1-7
	United States Approval	1-8
	European Approval	1-8
	Product Markings	1-9
	Grounding	1-10
2	Inspection and Site Selection	
	Inspection	2-1
	Site Selection	2-1
3	Installation (Top of Floor)	
	Locate Scale	3-1
	Remove Platform	
	Anchor Frame	
	Route/Attach Instrument Cable	3-3
	Modes of Operation	3-5
	Analog Mode	
	DigiTOL DLC Mode	
	IDNet Mode	
	Reinstall Platform	3-8
	Ontional Dama Installation	4 1
4		
	Installation Procedure	4-1
5	Optional Scale Guard Installation	5-1
-	Installation Procedure	<u>5-</u> 1
6	Quick-Pit Installation (In-Floor)	6-1
	Installation Procedure	6-1

7	Calibration	7-1
	Shift Adjust	7-1
	Analog Junction Box Shift Adjustment	7-1
	DigiTOL Junction Box Shift Adjustment	7-3
	IDNet Junction Box Shift Adjustment	7-3
	Scale Calibration	7-4
8	Routine Care and Maintenance	
-	General	
	Site Inspection	8-1
	Platform Inspection	8-1
9	Troubleshooting	9-1
0	General	Q_1
	Isolate the Drohlem	0_2
	Chock Wiring	9-2 0.2
	Check Load Colle	
	Check Mochanical Components	9-3
	Lord Coll Depletoment	9-4
	Load Cell Replacement	
		9-6
10	Service Parts	
	Load Cell and Suspension Parts	
11	Reference Material	
	Reference Drawinas	11-1
	Recommended Spare Parts	11_1

# Introduction

### General

The Model 2266 EZ-LIFT® floor scale is a low-profile, stainless steel scale for use in sanitary applications. It can be installed in a pit or above the floor. A pair of pressurized struts enables a single person to lift the scale platform easily for cleaning

# **Model Numbers**

The following table shows how standard model numbers are determined for Model 2266 EZ-LIFT floor scales.

XXXX	X	X	X	X
Model	Revision	Junction Box	Size	Capacity
2266	1	0 = Analog	1 = 3 x 3	1 = 1,000 lb / 600 kg
		1 = Enhanced	2 = 4 x 4	2 = 2,500 lb / 1,500 kg
		DigiTOL	4 = 5 x 5	3 = 5,000 lb / 3,000 kg
		3 = IDNet	5 = 4 x 6	

### **Load Cells**

NOTE: The standard length for load cell cables is 30 ft; 15-ft cables are an option.

Each EZ-LIFT floor scale includes four stainless steel load cells. They allow 100% end loading across any end of the scale. Each load cell is complete with an integral four-conductor, shielded, color-coded cable attached to a stainless steel junction box. The suspension system consists of a stainless steel rocker pin positioned between the load cell and a receiver mounted to the frame (see Figure 1-1).



Figure 1-1: Load Cell and Suspension Detail

Scale Platform Capacity	Capacity of Each Load Cell	Minimum Approved Graduation Size
1,000 lb	500 lb	0.2 lb
2,500 lb	1,250 lb	0.5 lb
5,000 lb	2,500 lb	1.0 lb

#### **Load Cell Specifications**

Model number: 745A Load cell capacities: 500 lb, 1,250 lb, and 2,500 lb Maximum excitation voltage: 15 VDC or VAC rms Recommended excitation voltage: 15 VDC Full scale output: 2 mV/V Input terminal resistance: 385 ohms minimum Output terminal resistance: 350  $\pm$  2 ohms Temperature range compensation: -10°C to +40°C (+14°F to +104°F) Safe side load: 100% of full load cell rating Safe overload: 150% of full load cell rating

# **Scale Accuracy**

EZ-LIFT floor scales meet or exceed the National Institute of Standards and Technology (NIST) Handbook 44 requirements for Class III scales. Standard EZ-LIFT scales meet 5000-division accuracy. Certificate of Conformance No. 97-153 was issued under the National Type Evaluation Program (NTEP) of the National Conference on Weights and Measures for the analog version of the EZ-LIFT scale. DigiTOL and IDNet versions are not covered by the certificate.



Applied Weight	Allowable Error
0 - 500 Divisions	± 1/2 Division
501 - 2,000 Divisions	± 1 Division
2,001 - 4,000 Divisions	± 1.5 Divisions
4,001 - 10,000 Divisions	$\pm$ 2.5 Divisions

Figure 1-2: NIST Class III Acceptance Tolerances



Applied Weight	Allowable Error
0 - 500 Divisions 501 - 2,000 Divisions	± 1/2 Division ± 1 Division
2,001 - 10,000 Divisions	± 1.5 Divisions

Figure 1-3: OIML Class C Acceptance Tolerances

### **End Loading**

The scale may be end loaded up to 100% of the platform's rated capacity or two times the individual load cell rating (whichever is less) across any end of the scale.

#### Platform

The weighbridge structure of the EZ-LIFT floor scale is constructed of 304 stainless steel tubing in a lattice design, allowing for easy cleaning under the platform. The inner tubing is welded completely around the connecting seams to prevent moisture from entering. The outer tubing has openings for the load cell mounting and for cleaning the inside of the tube. Standard stainless steel scales have a smooth deck surface with a glass bead blast finish. Threaded holes are provided in all platform structures for eye bolts to be used to lift the platform during installation and removal.

### **Support Frames**

#### Standard Above-Floor Frame

The scale platform has a formed-angle frame with all sides turned under the scale for a fully captured assembly (see Figure 1-4). When used for above-floor installations, the scale can be equipped with optional ramps to provide access from all four sides. To provide protection in high-traffic areas, optional scale guards can be mounted on sides of the scale that do not have ramps. EZ-LIFT frames can be used for in-floor applications; however, a Quick-Pit frame is recommended.



Figure 1-4: EZ-LIFT Frame



Figure 1-5: EZ-LIFT Frame

is not shown.

#### **Quick-Pit In-Floor Frame**

The Quick-Pit frame option provides a unitized scale assembly, eliminating the need for additional pit coping with in-floor installations. The upper flange of the rugged C-channel frame acts as the pit coping around the perimeter of the scale platform. The Quick-Pit frame provides the following benefits:

- Pits are correct depth
- Pits are always square
- No field assembly or welding of coping
- Easy to install, no pit forming required
- Ability to move the scale in the future



Figure 1-6: Quick-Pit Frame

### **Access Ramps**

Access ramps are available for EZ-LIFT floor scales. The ramps can accommodate single- or multi-directional traffic. Ramps are available in 36-inch or 60-inch lengths, depending on the width of the scale. The maximum ramp angles are listed below:

Scale Capacity	Ramp Length	Ramp Angle
1,000 to 5,000 lb	36 inches	6.0°
1,000 to 5,000 lb	60 inches	3.6°

### **Approvals**

#### **NTEP Certification**

Model 745A load cells meet or exceed the NIST Handbook-44 requirements for Class III 5,000 divisions (multiple cell). A Certificate of Conformance was issued under the National Type Evaluation Program (NTEP) of the National Conference of Weights and Measures for these load cells (certificate number 92-108A3).

#### **OIML** Certification

Model 745A load cells meet or exceed OIML requirements for R60 C3 3000 divisions (European Test Certificate TC2154).

## **Entity Approval**

Entity approval permits the application of individually approved components (even from various manufacturers) to be used together to build a solution that is approved. When installing equipment in hazardous areas, it is necessary to compare the entity values of the load cells, junction boxes, connecting cables, and other components. Those entity values include voltage, current, power, capacitance, and inductance.

The components must compare as follows in order for the wiring to be considered intrinsically safe:

 $V_{max}$  or U<sub>i</sub> (Maximum voltage permitted)  $\geq V_t$  or U<sub>o</sub> (Total voltage output)

 $I_{max}$  or  $I_i$  (Maximum current permitted)  $\geq I_i$  or  $I_o$  (Total current output)

 $P_{max}$  or  $P_i$  (Maximum power permitted)  $\geq P_t$  or  $P_o$  (Total power output)

 $C_i$  (Unprotected capacitance) +  $C_{couble}$  (Cable capacitance)  $\leq C_{\alpha}$  or  $C_{\alpha}$  (Allowable capacitance)

 $L_i$  (Unprotected inductance) +  $L_{cable}$  (Cable inductance)  $\leq L_o \text{ or } L_o$  (Allowable inductance)

If the above conditions are not true, then the circuit will not be intrinsically safe and must not be installed in a hazardous area. If the parameters compare favorably as shown above, then the circuit is intrinsically safe and can be installed in a hazardous area. Always refer to the electrical regulations for the country of installation for specific wiring requirements.

### United States Approval

The United States safety approvals are based on entity values. Reports on the 745A load cells were submitted to Factory Mutual for compliance with FM Approval Standards Class No. 3600, 3610, and 3810. They were approved as intrinsically safe devices and issued the following certificates:

745A: FM Original Approval Job Identification #3005885

IS/I,II,III/1/ABCDEFG/T4 Ta=40°C – 158574R/5; ENTITY; NI/I/2/ABCD/T6 Ta=40°C; S/II,III/2/FG/T6 Ta=40°C

The following chart lists the Factory Mutual entity values for the load cells.

Vt (Total voltage output)	25 V
I: (Total current output)	600 mA
P <sub>1</sub> (Total power output)	1.25 W
C <sub>a</sub> (Allowable capacitance)	0
La (Allowable inductance)	29 µH

**745A:** When used in hazardous areas, the load cells must be installed according to control drawing 158574R (see Figure 1-7).

### **European Approval**

#### 745A Load Cells

The European safety approvals are based on entity values. The 745A load cells were submitted to KEMA for compliance with EN60079-0, EN60079-11, EN60079-15, EN61241-0, and EN61241-1. They were approved as intrinsically safe devices and issued the following certificates:

KEMA 03ATEX1069 II 2 G Ex ia IIC T4 II 2 D Ex tD A21 IP6X T100°C KEMA 03ATEX1070 II 3 G Ex nA II T4 II 3 G Ex nL IIC T4 II 3 D Ex tD A22 IP6X T100°C

The following chart lists the entity values for the load cells.

U. (Total voltage output)	25 V
I₀ (Total current output)	600 mA
P₀ (Total power output)	1.25 W
C <sub>°</sub> (Allowable capacitance)	5 nF
L₀ (Allowable inductance)	30 µH

When used in hazardous areas, the load cells must be installed according to installation instructions document 16792100A (see Figure 1-8).

#### **Junction Boxes**

TA100831 junction boxes were submitted to KEMA for compliance with EN60079-0, EN60079-11, EN60079-15, EN61241-0, EN61241-1, and EN61241-11. They were approved as intrinsically safe devices and issued the following certificates:

KEMA 03ATEX1396 X II 2 G Ex ia IIC T4 II 2 D Ex ibD 21 IP65 T70°C...T90°C KEMA 03ATEX1397 X II 3 G Ex nL IIC T4 II 3 G Ex nA II T4 II 3 D Ex tD A22 IP65 T70°C...T90°C

TA100831 junction boxes have been certified to IP69K ingress protection.

The following chart lists the entity values for the junction boxes.

U <sub>°</sub> (Total voltage output)	30 V
I₀ (Total current output)	1 A
C₀ (Allowable capacitance)	0
L <sub>0</sub> (Allowable inductance)	0

When used in hazardous areas, the junction boxes must be installed according to installation instructions document C16953600A (see Figure 1-9).

### **Product Markings**

#### 745A Load Cells

METTLER TOLEDO is not responsible for classifying hazardous areas. Each 745A load cell should have the following label attached to it:



If you install a load cell in a hazardous area, use a permanent marker to place a mark in the check box on the label that indicates the applicable protection (KEMA 03ATEX1069 or KEMA 03ATEX1070). Once the label has been marked, it may not be changed.

#### **Junction Boxes**

TA100831 junction boxes should have the following label attached:

METTLER-TOLEC HEAVY INDUSTRIAL P COLUMBUS, OHIO U C C MODEL # SERIAL #	)0, INC. 0 .s.a.	□ ⟨Ex⟩	CHECK BOX ☑ BELOW TO INDICATE THE APPLICABLE PROTECTION. ONCE SELECTED IT MAY NOT CHANGE II 3 GD Ex nL IIC T4 tD A22 IP65/IP69K T70°CT90°C II 3 GD Ex nA II T4 tD A22 IP65/IP69K T70°CT90°C KEMA 03ATEX1397 X
	WARNING MAKE AREA SAFE		II 2 GD Ex ig IIC T4 ibD 21 IP65/IP69K T70°CT90°C KEMA 03ATEX1396 X PEMOVINC COVER

If you install a junction box in a hazardous area, use a permanent marker to place a mark in the check box on the label that indicates the applicable protection (KEMA 03ATEX1396 X or KEMA 03ATEX1397 X). Once the label has been marked, it may not be changed.

# Grounding

Make sure that all hazardous area installations are properly grounded. All grounding and equal potential bonding connections must be made according to local regulations based upon the country of installation. Refer to local codes and the control drawing provided in this manual for information about grounding.



Figure 1-7: Control Drawing for 745A Load Cell

Mettler-Toledo, Inc. 1900 Polaris Pkwy Columbus, Ohio 43240 USA

#### Installationsanleitung Installation Instruction

Lastzellen Typen:	0743, 0743-SBK, 0745A
Load cell model numbers:	0743, 0743-SBK, 0745A

#### Anschlußplan bzw. Farbcodetabelle: Wire according to the following color code:

[	Deutsch	English				
Farbe	Zustand	Colour	Function			
Grün	+ Spannung	Green	+ Excitation			
Schwarz	- Spannung	Black	- Excitation			
Weiss	+ Signal	White	+ Signal			
Rot	- Signal	Red	- Signal			
Gelb	Schirm	Yellow	Shield			

#### Installation

#### Installation

Installation wie in den Konformitätsbescheinigungen KEMA 03ATEX1069 oder KEMA 03ATEX1070 beschrieben. Install according to Certificate Number KEMA 03ATEX1069 or KEMA 03ATEX1070.

When load cells are considered in type of protection non-sparking Ex nA II, they need to be fitted in an enclosure that complies with the requirements of clause 6 of EN 60079-15.

Wenn Wägezellen aus der Sicht des Schutzes als nicht-funkend EX nA II betrachted werden, müssen sie in ein Gehäuse eingebaut werden, das die Anforderungen in Artikel 6 von EN 60079-15 erfüllt.

Markieren Sie mit einem wasserfesten Stift den Einsatzbereich (KEMA 03ATEX1069 or KEMA 03ATEX1070) der Messzelle auf dem dafür vorgesehenen Feldern des Hinweisschildes. Wurde bereits eine Zuordnung vorgenommen, darf diese nicht mehr verändert werden.

With a permanent marker place a mark ( $\checkmark$ ) in the box on the load cell label to indicate the applicable protection (KEMA 03ATEX1069 or KEMA 03ATEX1070). Once selected it may not be changed.

#### Certifications, Markings & Standards

Zertifikationen, Zeichnungen & Normen	
KEMA 03ATEX1069	KEMA 03ATEX1070
II 2 G EX ia IIC T4	II 3 G Ex nA II T4 or
II 2 D Ex tD A21 IP6X T100°C	II 3 G Ex nL IIC T4 or
	II 3 D Ex tD A22 IP6X T100°C
Ui=25V; li=600mA; Pi=1.25W;	Ui=25V; li=600mA; Pi=1.25W;
Ci=5nF; Li=30uH	Ci=5nF; Li=30uH
EN60079-0:2006, EN 60079-11:2007	EN 60079-0:2006, EN 60079-15:2005
EN 61241-0:2006, EN 61241-1:2004	EN 61241-0:2006, EN 61241-1:2004

#### Jahr der Herstellung: Year of Manufacture:

Das Herstellungsjahr wird mit der letzten Stelle der Seriennummer (S/N) wie folgt gekennzeichnet: The year of manufacture is indicated by the last character of the load cell Serial Number (S/N) as follows:

Letzter Buchstabe	D	Е	F	G	Н	J	Κ	L	М	Ν	Ρ	Q	R	S	Т
Last Character															
Jahr Year	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16

Figure 1-8: Installation Instructions for 745A Load Cell

16792100A

#### Mettler-Toledo, Inc. Columbus, Ohio USA

Installationsanleitung Installation Instructions

Typennummer des Anschlusskastens: TB100771-X, TB100772-X, TB100777-X, TB100778-X, TA100831-SSA, TA100831-S6A X ist die Nummer der Abschlusskastenlöcher

Junction Box Model Numbers: TB100771-X, TB100772-X, TB100777-X, TB100778-X, TA100831-SSA, TA100831-S6A where: -X designates the number of holes in the junction box

Schließen Sie die Kabel laut Farbcodetabelle bzw Anschlussplan an: Wire according to the following color codes:

	Farbcode der Wägez Load Cell Color Cod	elle le	Farbcode des Kabels zum Terminal Home Run Cable Color Code
ANALOG			
Beschreibung/Description + Excitation - Excitation + Signal - Signal Shield + Sense - Sense POWERCELL and MTX	Farbe/Color rosa/Pink grau/Grey braun/Brown weiss/White durchsichtig/Clear nicht verwendet/ nicht verwendet/	Farbe/Color grün/Green schwarz/Black weiss/White rot/Red gelb/Yellow Not Used Not Used	Farbe/Color weiss/White blau/Blue grün/Green schwarz/Black orange/weiss/Orange/White gelb/Yellow rot/Red
Beschreibung/Description A B N.C. +V GND CGND	Farbe/Color gelb/Yellow blau/Blue weiss/White rot/Red grün/Green orange/Orange		Farbe/Color
A B GND GND +VC +VB +VA			gelb/Yellow blau/Blue schwarz/Black braun/Brown grün/Green orange/Orange rot/Red weiss/White

#### Installation/Installation

Installation wie im EG-Baumusterprüfbescheinigung KEMA03ATEX1396X oder Baumusterprüfbescheinigung KEMA 03ATEX1397X.

Install according to EC-Type Examination Certificate KEMA03ATEX1396X or Type Examination Certificate KEMA 03ATEX1397X.

Markieren Sie mit einem wasserfesten Stift den Einsatzbereich (KEMA03ATEX1396X oder KEMA 03ATEX1397X) des Anschlusskastens auf dem dafür vorgesehenen Feldern des Hinweisschildes. Wurde bereits eine Zuordnung vorgenommen, darf diese nicht mehr verändert werden.

With a permanent marker, a mark ( $\sqrt{}$ ) must be placed in the location on the junction box label which indicates the applicable protection (KEMA03ATEX1396X or KEMA 03ATEX1397X). Once selected it may not be changed.

#### C16953600A

#### Figure 1-9: Installation Instructions for Junction Box

#### METTLER TOLEDO 2266 EZ-LIFT Floor Scale Installation and Service Manual

Typennummer des Anschlusskastens: TB100771-X, TB100772-X, TB100777-X, TB100778-X X ist die Nummer der Abschlusskastenlöcher

Junction Box Model Numbers: TB100771-X, TB100772-X, TB100777-X, TB100778-X where: -X designates the number of holes in the junction box



Typennummer des Anschlusskastens: TA100831-SSA, TA100831-S6A

Junction Box Model Numbers: TA100831-SSA, TA100831-S6A



Kabelverschraubungen dürfen nur mit Kabel der folgenden Größen verwendet werden: klein/PG7 (.12-.26 inch / 3-6.5mm) gross/PG9 (.16-.31 inch / 4-8mm) Die Schrauben periodisch anziehen um sicherzustellen, dass der Deckel fest montiert ist.

Cable glands are to be used only with cables that have the following cable diameter ranges: small/PG7 (.12-.26in / 3-6.5mm) large/PG9 (.16-.31in / 4-8mm). Periodically tighten cover screws to ensure cover is secured properly.

Jahr der Herstellung:

Year of manufacture:

Das Herstellungsjahr wird mit der letzten Stelle der Seriennummer (S/N) des Anschlusskastens wie folgt gekennzeichnet:

The year of manufacture is indicated by the last character on the junction box serial number (S/N) as follows:

Jahr/Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Buchstabe/Character	D	E	F	G	Н	J	К	L	М	Ν	Р	Q	R	S	Т

C16953600A

#### Figure 1-9: Installation Instructions for Junction Box

# **Inspection and Site Selection**

### Inspection

When the EZ-LIFT floor scale is delivered, visually inspect it for any damage that might have occurred during shipment and handling. Inspect the following areas:

- 1. Frame assembly
- 2. Load cell and suspension assemblies
- 3. Load cell cables
- 4. Load cell summing junction box
- 5. Overall platform assembly

If the scale is damaged, contact your freight carrier immediately.

### Site Selection

Many problems associated with floor scale installations are caused by improper site conditions. Before installing the scale, check the proposed location to make sure that it meets the following requirements:

- 1. The floor or support should be level to within 1/4 inch at the location where the scale will be used.
- 2. The floor/support at each corner of the scale should be strong enough to support the scale when it is loaded to full weighing capacity.
- 3. There should be proper drainage away from the scale.
- 4. There should be no heavy vibrations or wind currents at or near the scale.
- 5. The scale should not be subjected to excessive or unusual loading due to the location or type of equipment used.

If the site is acceptable, proceed with the installation. If not, choose a new location or select another scale.



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IF USED IN A HAZARDOUS AREA, THE HAZARDOUS AREA MUST BE MADE SAFE PRIOR TO INSTALLATION, REPLACEMENT, OR TROUBLESHOOTING. FAILURE TO COMPLY COULD RESULT IN PERSONAL INJURY, DEATH, AND/OR PROPERTY DAMAGE.

# 3

# Installation (Top of Floor)

Locate Scale	After inspecting the site, place the floor scale in the desired location.					
Remove Platform	Before removing the scale platform, install the lifting eye bolts in the holes provided in					
	the deck (two 3/4-10 UNC eye bolts are required):					
	1. Completely loosen the hold-down screws.					
	2. Raise the deck plate to the up position.					
	3. Remove the E-clips from the hold-down screws, and remove the screws.					
	4. Lower the deck plate to the closed position.					
	5. Install the eye bolts through the deck plate and into the platform.					
	Attach a chain or strap to the eye bolts, and lift the platform with a forklift or crane to remove it from the frame. Make sure that the eye bolts are snug and fully threaded into the deck before lifting.					
Anchor Frame	1. Locate the anchor holes in all four corners of the frame. There are a total of eight					
	<ul> <li>Drill anchor holes into the floor, using the frame as a guide. Eight flat-head socket cap screws 1/2-13 UNC x 1.5 inches long are provided with each EZ-LIFT scale for securing the frame to the floor. The 1/2-inch anchors can be purchased from METTLER TOLEDO. Drill anchor holes to the diameter and depth specified by the supplier.</li> </ul>					
	<b>3.</b> All corners of the frame must touch the floor and must be level within $\pm 1/16$ inch. If the scale is out of level or if gaps exist between the frame and floor, shim between the frame and the floor. Corner shims (1/16 inch thick) can be purchased from METTLER TOLEDO (Part No. 58-030025 / 61006650) or fabricated using Figure 3-2 as a guide.					
	4. Secure the frame to the floor using the eight flat-head anchor bolts provided.					

METTLER TOLEDO 2266 EZ-LIFT Floor Scale Installation and Service Manual



Figure 3-1: Frame Corner Detail (Top View)



Figure 3-2: Leveling Shim Detail

# Route/Attach Instrument Cable

- 1. Remove the junction box lid.
- **2.** Loosen the instrument cable connector, and thread the cable through the connector (pull enough cable to reach the INPUT terminal on the junction box PCB).
- 3. Route the cable as shown in Figure 3-4.
- 4. Connect the instrument cable to the INPUT terminal on the PCB as shown in Figure 3-5 For Analog, Figure 3-6 For DigiTOL, or Figure 3-7 For IDNet.
- 5. Place the desiccant bag inside the junction box.
- 6. Reinstall the junction box lid. Make sure that the rubber gasket is clean. Tighten all screws and make sure all cord grip caps are secure.







EZ-LIFT Scale (with ramp)

#### Figure 3-3: Instrument Cable Access Locations



Figure 3-4: Instrument Cable Routing

### **Modes of Operation**

### **Analog Mode**

An EZ-LIFT floor scale can be used with an analog junction box for summing the load cell outputs. Only analog-compatible scale terminals work with the analog junction box. See Figure 3-5 and Table 3-1 for the correct cable connection.



NOTE: Do not cut load cell cables. Cutting a cable will affect compensation and void the warranty.

Figure 3-5: Analog Junction Box Detail

NOTE: Turn all potentiometers fully clockwise prior to calibration.

Load Ce	ll Wiring	Instrument Cable Wiring*				
Function	Color	Function	Color			
-Sense	Not Used	-Sense	Red			
+Sense	Not Used	+Sense	Yellow			
-Signal	Red	-Signal	Black			
+Signal	White	+Signal	Green			
-Excitation	Black	-Excitation	Blue			
+Excitation	Green	+Excitation	White			
Shield	Yellow	Shield	Orange			
*Instrument cable color code based on METTLER TOLEDO cable no. 510624370						

Table 3-1: Analog Junction Box Wiring Codes

#### **DigiTOL DLC Mode**

An EZ-LIFT floor scale can be used with a DigiTOL junction box for summing load cell outputs. Only DigiTOL scale terminals work with a DigiTOL junction box. In the DLC mode, the terminal serves as the host for the DigiTOL junction box, allowing you to use the terminal's keypad to adjust scale parameters. See Figure 3-6 and Table 3-2 for cable connections.



#### Figure 3-6: DigiTOL Junction Box Detail

Terminal Number	Position	Function	Wire Color
TB2	10	+20 VDC	Green
TB2	12	Ground	Blue
TB1	1	Shield	Orange
TB1	2	RXD A	Red
TB1	3	RXD B	White
TB1	4	TXD B	Yellow
TB1	5	TXD A	Black

Table 3-2: DigiTOL Junction Box Wiring

#### **IDNet Mode**

An EZ-LIFT floor scale can be used with an IDNet junction box to output an IDNet data format compatible with METTLER TOLEDO IDNet weight displays. See Figure 3-7 and Table 3-3 for cable connections. For information about the terminal and how to operate it, refer to the appropriate terminal manual.



# 🗥 WARNING

DO NOT USE THE IDNet JUNCTION BOX IN LOCATIONS CLASSIFIED AS HAZARDOUS BY THE NATIONAL ELECTRICAL CODE (NEC) ARTICLE 500.



Figure 3-7: IDNet Junction Box Detail and Wiring

NOTE: For 2 mV/V load cells, jumpers W1, W2, W3, and W4 must be ON (shorting the pins).

Jumper	Status	Description
W1	Closed (ON)	Matching the gain at 2 mV/V load cells
W2	Closed (ON)	No external sensing (-SEN)
W3	Closed (ON)	No external sensing (+SEN)
W4	Closed (ON)	Internal reference voltage = 3.5 Volts
W5	Open (OFF)	Excitation voltage for load cells = $4.0$ Volts
W6	Closed (ON)	Internal supply voltage = 7.1 Volts
W7	2-3	Protocol IDNet
W8	1-2	Interface 20 mA
W9	Open (OFF)	Supply voltage IDNet
SA1	Closed (ON)	Trim Potentiometers Circuit Disabled

#### Table 3-3: IDNet Default Factory Setting

### **Reinstall Platform**

- 1. Clear all debris from the scale area. Make sure that all four load pin receivers in the frame are clean and free of all foreign material.
- 2. Replace the platform into the frame. Make sure that there is slack in the cable between the frame and platform and that no cable pinching occurs.
- **3.** Move the platform back and forth in both directions to make sure that the rocker pins are seated in the receivers and there is no binding.
- 4. Remove the eye bolts from the deck plate.
- 5. Raise the deck plate to the up position.
- 6. Replace the hold-down screws.
- 7. Replace the E-clips on the hold-down screws.
- 8. Lower the deck plate to the closed position.
- 9. Tighten the hold-down screws.
- 10. Calibrate the scale according to the METTLER TOLEDO terminal manual.

# **Optional Ramp Installation**

### **Installation Procedure**

You can install a ramp on any side of a standard EZ-LIFT floor scale. Each ramp is shipped with a kit of parts, which includes two ramp attachment lugs and two 3/8-16 UNC x 1-inch hex-head cap screws with lock washers for securing the lugs to the frame.

1. After the frame is anchored to the floor (but with the platform not installed), locate the two ramp attachment holes on the side of the scale frame (see Figure 4-1).



Figure 4-1: Side View of Scale Frame

- **2.** From the inside of the scale frame, insert the 3/8-16 screws with lock washers through the ramp attachment holes.
- **3.** Thread the ramp attachment lugs onto the screws until the lugs touch the outside surface of the frame. Torque the lug attachment screws to 30 ft-lb.
- **4.** The front plate of the ramp has two slots that provide a friction-type fit when slid over the attachment lugs. Lift the ramp, align the slots with the lugs, and lower the ramp until the slots are fully engaged in the grooves on the lugs (see Figure 4-2).



Figure 4-2: Ramp Attachment Detail

5. Make sure that the ramp is stable. Shim under the corners of the ramp if needed. Proceed with installation of the platform. The instrument cable can be routed through the ramp via the slot below the attachment lug and the instrument cable hole.

# **Optional Scale Guard Installation**

## **Installation Procedure**

Scale guards are used with the standard top-of-floor EZ-LIFT frame to provide protection against accidental forklift hits, etc. Scale guards are available for all sizes and capacities of standard EZ-LIFT scales.

- 1. Locate the scale guard a minimum of 3/8 inch from the side of the scale frame. It is important that the scale guard does not touch the scale platform.
- Two 9/16-inch diameter holes are provided for anchoring the scale guards to the floor. Using the holes as a drill template, install 1/2-inch anchors into the floor (anchors and anchor bolts are not supplied).
- **3.** Insert the 1/2-inch anchor bolts and tighten them to secure the scale guard to the floor (see Figure 5-1).



Figure 5-1: Scale Guard Installation Detail

# **Quick-Pit Installation (In-Floor)**

### **Installation Procedure**

The Quick-Pit frame makes it easy to install a standard above-floor EZ-LIFT floor scale in a pit. You can install the Quick-Pit frame in the floor before you receive the EZ-LIFT scale assembly. When you receive the scale assembly, simply lower the standard frame into the Quick-Pit frame and anchor it. Insert the scale platform to complete the installation.



#### Figure 6-1: Quick-Pit Cable Access Locations

- 1. Before constructing a pit, contact METTLER TOLEDO or an authorized METTLER TOLEDO distributor to obtain the latest pit construction drawing.
- 2. Cut a pit in the floor according to the dimensions shown on the pit construction drawing. The Quick-Pit frame requires an opening that allows a 3-5/8-inch gap around the perimeter of the frame. The pit should be 10 inches deep.
- **3.** Position the instrument cable conduit as shown in Figure 6-1. Use a high-grade steel conduit (3/4-inch EMT thin-wall conduit minimum, supplied by others). Do not secure the conduit until the frame is in the correct position.
- Reverse the shipping brackets on the Quick-Pit frame so they extend outward from the frame (see Figure 6-2). Remove the EZ-LIFT scale assembly at this time (if it was shipped within the Quick-Pit frame).
- 5. Place the frame into the pit, with the shipping brackets resting on the existing floor.
- 6. Center the frame in the pit opening, and make sure the frame is level. If the frame is not level, shim between the shipping brackets and existing floor as required.
- 7. Secure the instrument cable conduit to the frame.
- **8.** Mask off the four corner plates and the top flange of the frame to prevent concrete from adhering to these surfaces.
- **9.** Pour concrete around the perimeter of the frame. Work the concrete until it is level with the top flange of the frame, and make sure the undersides of all corner base plates are completely covered. Slope the floor at least 1/2 inch per foot to a suitable drain at the center of the pit.

#### USE A MINIMUM OF 3000 PSI STRENGTH CONCRETE AT 28 DAYS WITH 5 TO 7% AIR ENTRAINMENT

10. Once the concrete has properly cured, mount the standard EZ-LIFT frame inside the Quick-Pit frame. Lower the standard frame into the Quick-Pit frame, center it, and then locate the eight anchor holes in the corners. METTLER TOLEDO supplies eight

NOTE: The 10K capacity VERTEX scale uses a 5/8" spacer between the Quick-Pit frame and the standard frame.

#### METTLER TOLEDO 2266 EZ-LIFT Floor Scale Installation and Service Manual

flat-head socket cap screws (1/2-13 UNC x 1.5 inches long) for securing the frame. The 1/2-inch anchors can be purchased separately. Using the frame as a guide, drill anchor holes to the diameter and depth specified by the supplier. Install the anchors into the concrete, and then secure the frame using the eight flat-head screws provided (see Figure 6-3).

11. Install the scale platform and have the scale calibrated by an authorized METTLER TOLEDO service technician.



Figure 6-3: Frame Anchoring Detail

# Calibration

### Shift Adjust



# 🗥 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.

When you shift adjust a scale, you are adjusting the output voltage (signal) of each load cell so that all load cells in the system produce a consistent signal. A correctly adjusted scale will give the same weight reading no matter where on the platform you place a test weight. Each floor scale is shift adjusted at the factory. For a new installation, the only adjustment that should be needed is minor load cell trimming.

After the scale has been installed, check all mechanical parts to make sure that they work properly. Then check the scale's repeatability by placing a test weight on the same location on the platform several times to make sure that you get the same weight reading each time. After checking for repeatability, adjust the load cell trimming potentiometers as needed.

# Analog Junction Box Shift Adjustment

Use the following procedure to trim the load cells:

- 1. Remove the junction box cover.
- 2. Figure 7-1 shows two sets of test weight locations. If you use a test weight equal to 1/4 of the rated scale capacity, place the test weight at each corner of the scale platform. If you use a test weight equal to 1/2 of the rated scale capacity, place the test weight at the center of each quadrant of the scale platform.

Place a 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.

7-1



#### Figure 7-1: Test Weight Locations

**3.** Place the test weight at the location immediately clockwise from the location at which you got the lowest weight reading. Then adjust the trimming potentiometer for the load cell that corresponds to the corner of the scale where the test weight is positioned (see Figure 7-2). Make the adjustment by turning the potentiometer until the weight reading matches the lowest reading.



NOTE: Do not cut load cell cables. Cutting a cable will affect compensation and void the warranty. NOTE: Turn all potentiometers fully clockwise prior to calibration.

Figure 7-2: Load Cell Trimming Potentiometers

**4.** Proceeding clockwise, repeat the adjustment described in Step 3 for the next two test weight locations.

NOTE: Because the trimming potentiometers interact with one another, any adjustment will affect the weight readings at all four corners of the scale.

- Repeat Steps 2 to 4 until the weight readings at all corners of the platform are the same or are within the specified National Institute of Standards and Technology (NIST) Handbook 44 Scale Accuracy Requirements.
- 6. Replace the junction box cover.

# DigiTOL Junction Box Shift Adjustment

Perform the shift adjust procedure at the scale terminal, with the terminal in Setup mode. For shift adjustment instructions, refer to the manual for the terminal you are using.

# IDNet Junction Box Shift Adjustment

Perform the shift adjust procedure using the load cell trim potentiometers mounted on the PCB inside the IDNet junction box.

- Successively place the test weight(s) at the test weight locations and record each weight reading. If the readings are within desired tolerance, shift adjust is not required. If the readings are not within desired tolerance, perform Steps 2 through 6.
- Activate the trim potentiometers by opening the eight hook switches (if not already open) located on the PCB (Figure 7-3). Once activated, the switches remain open. <u>Do not</u> close the latches, even after completing the shift adjustment.
- **3.** Start the adjustment at the load cell having the highest positive reading. This process trims the load cells to match the value of the lowest recorded value.
- **4.** To make minor adjustments, turn the trim potentiometers (each load cell has two) clockwise for a positive increase, or counterclockwise for a negative result.
- 5. If the scale needs further adjustment, turn all potentiometers counterclockwise. Stop turning the potentiometers when the weight reading on the terminal stabilizes.
- 6. Reapply the test weight(s) to the location having the highest recorded weight reading. Then, adjust that load cell's potentiometers to match the reading of the location having the lowest recorded value. Repeat this step until the readings at all locations are the same, or within the specified scale tolerances. Repeat Step 1 to verify shift tolerances.
- 7. Confirm that all cable connectors and cord grip caps are tight. Then place the desiccant bag in the junction box, leave all hook latches open, and reinstall the junction box lid.



Figure 7-3: IDNet Potentiometer Adjustment

### **Scale Calibration**

METTLER TOLEDO recommends calibrating the scale using test weights equal to the scale's capacity. Follow the calibration instructions in the manual provided with the scale terminal.

# **Routine Care and Maintenance**

### General

Once the scale has been installed, have an authorized METTLER TOLEDO representative inspect and calibrate it periodically. If the scale is used for legal-for-trade purposes, consult the local weights and measures authorities for minimum inspection requirements. Contact your local authorized METTLER TOLEDO service representative for information about periodic inspection and calibration services.

### **Site Inspection**

Make sure that the scale site remains in good condition. Check for alterations in the surrounding floor, excessive vibrations, and possible overloading conditions.

### **Platform Inspection**

# A WARNING

INSPECT THE LIFT STRUTS REGULARLY, AND REPLACE THE LIFT STRUTS IF THEY ARE DAMAGED OR IF THERE IS A NOTICEABLE LOSS OF LIFTING FORCE. REPLACE THE LIFT STRUTS AFTER 2 YEARS OF USE OR 2,000 LIFTING CYCLES, WHICHEVER OCCURS FIRST.

During periodic inspections of the scale, check the following:

- 1. Are there any unusual wear points, paths, or marks on the weighing platform?
- 2. Is the scale frame bent or damaged?
- **3.** Is the junction box lid properly sealed and all cable connectors tight against the enclosure?
- 4. Is there any moisture or foreign material around or inside the junction box assembly?
- 5. Is the instrument cable damaged or binding the scale?
- 6. Is there any debris or material build-up under or around the platform that could prevent the platform from moving freely?
- 7. Check the lift struts to make sure the lid raises and lowers easily without binding. Make sure the clevis pins and retaining rings are secure.
- 8. For pit installations, is the floor drain clear and providing adequate drainage?

#### METTLER TOLEDO 2266 EZ-LIFT Floor Scale Installation and Service Manual

- **9.** Visually inspect the load cells, rocker pins, and fixed bumpers for signs of unusual wear.
- 10. Check repeatability and shift of the scale.

# Troubleshooting

### General

If the scale does not operate properly, find out as much about the problem as possible. Try to determine whether the problem is constant or intermittent. Mechanical and electrical influences can cause malfunctions, so be patient and use sound logic when troubleshooting.

When troubleshooting a floor scale, examine the scale's physical location. Check for the presence of water, corrosive materials, unlevel floors, high vibrations, air currents, or physical damage to the scale platform or frame. Also check the instrument cable for damage, and all connections for loose or improper wiring.



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

### **Isolate the Problem**

NOTE: For the Model 2266 EZ-LIFT DigiTOL scale, the analog simulator can only be connected to the load cell terminal of the junction box PCB to determine if the problem is a bad load cell. Determine whether the problem is in the scale or the terminal.

- 1. Remove power from the system, and then disconnect the terminal from the scale.
- 2. Connect the terminal to a load cell simulator (analog simulator available from METTLER TOLEDO).
- **3.** Reapply power and test the terminal. If the problem persists, consult the terminal's manual for further troubleshooting assistance.
- If the problem is NOT present with the load cell simulator attached to the terminal, remove power, disconnect the simulator, and reconnect the scale. If the problem persists, continue troubleshooting the scale.

### **Check Wiring**

- **1.** Remove power from the system.
- 2. Remove the junction box cover and check inside the junction box for moisture or foreign material.
- **3.** Make sure that all wiring connections are tight and that no insulation material is touching the terminal contacts.
- 4. Check all cable connections to make sure they are wired correctly. The wiring color codes are given in Table 9-1:

Load Ce	ll Wiring	Instrument Cable Wiring*				
Function	Color	Function	Color			
-Sense	Not Used	-Sense	Red			
+Sense	Not Used	+Sense	Yellow			
-Signal	Red	-Signal	Black			
+Signal	White	+Signal	Green			
-Excitation	Black	-Excitation	Blue			
+Excitation	Green	+Excitation	White			
Shield	Yellow	Shield	Orange			
*Instrument cable color code based on METTLER TOLEDO cable number 510624370.						

#### Table 9-1: Load Cell Wiring Color Codes

- 5. Check all cable connectors and cord grip caps on the junction box.
- 6. Tighten any loose connectors.

NOTE: See Table 3-2 for the Model 2266 EZ-LIFT DigiTOL instrument cable wiring color code.

### **Check Load Cells**

1. Remove power from the system. Fully disconnect each load cell and check for proper input/output resistances (see Table 9-2).

Measuring Points	Resistance
+Exc (Green) to -Exc (Black)	385 ohms minimum
+Sig (White) to -Sig (Red)	348-352 ohms

#### Table 9-2: Load Cell Measuring Points

- 2. If resistance is within specification, perform a shorted-signal symmetry test.
  - Short the signal leads together and place one multimeter lead on the shorted signals and one lead on the +Excitation wire. Note the resistance value.
  - Remove the lead from the +Excitation wire and place it on the -Excitation wire. The two resistance values should be approximately equal.
- **3.** If the load cells pass the shorted-signal test, reconnect them and reapply power to the scale. Confirm that the proper excitation voltage is reaching the load cells by placing multimeter leads on the excitation positions of each load cell terminal.
- 4. If proper excitation voltage is reaching the load cells, check the output signal from each cell by disconnecting the signal leads and measuring voltage output. If one cell has a particularly high or low dead-load output, it is suspect. The maximum output possible from any cell is 30 mV at 15 VDC excitation and loaded to gross capacity.
- 5. If any load cell has an unusual signal, remove all load from that cell.
  - With the power on, measure the output from the suspect load cell. The no-load zero output should be  $\pm$  1.5% of the full scale output. For example, if the excitation voltage is 15 VDC, then the full scale output would be 30 mV and the no-load zero output should be within  $\pm$  0.45 mV.
- 6. If a load cell fails any of the above tests, replace it.

NOTE: Remove signal leads from terminals to measure output.

### Check Mechanical Components

Because the floor scale design is so simple, there are only a few mechanical components to troubleshoot. Make sure that the platform can move freely and that the load cells are not resting against the fixed bumpers. If the load cells touch the fixed bumpers when there is no motion in the scale platform, check the following:

- 1. The platform should be level and should not rock. Otherwise, shimming may be required.
- 2. Check the rocker pins for unusual wear. Replace any rocker pins that are unevenly worn or have flattened bearing surfaces.
- **3.** Examine the rocker pin receivers in the frame. If the bearing surface is sunken, depressed, or unevenly worn, replace the frame.
- 4. If the fixed bumpers on the frame are excessively worn or damaged, the entire frame should be replaced.
- 5. Inspect the platform and frame for physical damage. Replace the platform or frame if it is bent or has broken welds.
- 6. Verify that the load cell overload stop gap is set properly:

Load Cell Capacity	Overload Stop Gap
500 lb	0.009 to 0.015 inch
1,250 lb	0.012 to 0.018 inch
2,500 lb	0.017 to 0.023 inch

## Load Cell Replacement

NOTE: The instrument cable may need to be removed from the junction box to allow the platform to be removed.

#### **Remove Load Cell**

- 1. Remove power to the scale terminal and disconnect the instrument cable.
- 2. Remove the junction box cover and locate the defective load cell terminal.
- 3. Disconnect the defective load cell cable from its terminal on the summing PCB.
- 4. Loosen the cable connector on the junction box and remove the cable from the enclosure.
- 5. Install eye bolts in the platform, and carefully remove the platform from the frame assembly (follow the instructions for installing eye bolts and lifting the platform that are provided on page 3-1). Position the platform upside down on a stable surface that allows access to the defective load cell and cable as well as offering protection to the other load cells during disassembly.
- 6. Attach a string to the end of the defective load cell's cable. The string should be long enough and strong enough to pull the new load cell's cable through the platform structure.

- 7. Remove the two load cell mounting screws and keep them for reinstalling the new load cell. Then lift the load cell from the mounting surface.
- 8. Carefully pull the defective load cell's cable through the platform while feeding the string in at the junction box opening. Once the string is at the load cell location, detach it from the load cell cable.
- 9. Remove the rocker pin with O-rings from the defective load cell.

#### **Install New Load Cell**

- 1. Reinstall the rocker pin with O-rings in the new load cell.
- 2. Attach the new load cell's cable to the pulling string and carefully thread it through the platform into the junction box opening.
- **3.** Mount the new load cell to the platform. Apply an anti-seize compound such as Never-Seez to the threads of the mounting screws and tighten with a calibrated torque wrench to 75 ft-lb.
- **4.** Verify that the load cell overload stop gap is set properly:

Load Cell Capacity	Overload Stop Gap
500 lb	0.009 to 0.015 inch
1,250 lb	0.012 to 0.018 inch
2,500 lb	0.017 to 0.023 inch



Figure 9-3: Load Cell Installation

**5.** Thread the load cell cable through the connector on the junction box. When enough cable is inside the box, tighten the connector.

- **6.** Wire the new load cell cable to the proper terminal on the PCB according to the wiring codes shown in Chapter 3.
- 7. Reinstall the platform in the frame. Make sure that the rocker pins are properly seated and aligned with the receivers in the frame.
- **8.** Reconnect the instrument cable and power-up the scale terminal. Perform a shift adjust and recalibrate the scale.

NOTE: Make sure load cell and platform mounting surfaces are free of grease and other foreign materials.

NOTE: It might be necessary to apply a

small amount of lubricant to the cable

so that it passes easily through the

double-hole cord grip.

### Lift Strut Replacement



# 🗥 WARNING

BEFORE REMOVING THE RETAINING PINS FROM THE LIFT STRUT, MAKE SURE THAT THE DECK PLATE IS FULLY SECURED BY A LIFTING CHAIN OR OVERHEAD HOIST. FAILURE TO DO SO COULD RESULT IN BODILY HARM.

Inspect the lift struts regularly, and replace the lift struts if they are damaged or if there is a noticeable loss of lifting force. Replace the lift struts after 2 years of use or 2,000 lifting cycles, whichever occurs first. Use the following procedure for replacing the scale's lift struts:

#### **Remove Lift Strut**

- 1. Raise the deck plate to the full open position and secure it with a lifting chain or overhead hoist.
- 2. Remove the retaining rings from the lift strut clevis pins (see Figure 10-4).
- **3.** Raise the deck plate slightly to reduce side pressure on the clevis pins. Using a drift pin or equivalent, slowly drive the top clevis pin out so that the end of the lift strut can be removed from the clevis. Remove the clevis pin completely.
- 4. Remove the bottom clevis pin and remove the lift strut.

#### Install Lift Strut

- 1. Position the lift strut in the bottom clevis and install the clevis pin. The cylinder end of the strut mounts to the deck plate clevis. The rod end of the cylinder mounts to the platform clevis.
- 2. Align the hole in the cylinder end of the lift strut with the holes in the top clevis (adjusting the position of the deck plate as needed), and drive the clevis pin through the holes to secure the lift strut to the clevis.
- 3. Install the new retaining rings to the top and bottom clevis pins.

# 10

# **Service Parts**

# Load Cell and Suspension Parts

NOTE: Proper overload gap: 500-lb cell - 0.009" to 0.015" 1,250-lb cell - 0.012" to 0.018" 2,500-lb cell - 0.017" to 0.023"

NOTE: Torque load cell bolts to 75 ft-lb.

NOTE: All load cells have 30-ft cables; 15-ft cables are an option.



Figure 10-1: Load Cell Assembly

Ref. No.	Trade Name	Item Number	Description	Q	)ty.
1	TB600529-4		500-lb Load Cell (5,000d) with 30-foot cable		4
	TB600529-3	61036926	500-lb Load Cell (5,000d) with 15-foot cable		
	TB600363-2		1,250-lb Load Cell (5,000d) with 30-foot cable		
	TB600363	61037948	1,250-lb Load Cell (5,000d) with 15-foot cable		
	TB600342-2	61043919	2,500-lb Load Cell (5,000d) with 30-foot cable		
	TB600342	61037947	2,500-lb Load Cell (5,000d) with 15-foot cable		
2	TN800646	68002150	1/2-13 Bolt x 1.75 inches long, stainless steel		8
3	MN21018	69033610	Rocker Pin		4
4	MZ0909000005	68000587	O-ring		8
-	510624370	61006641	24-gauge, 6-conductor, shielded home run cable	Va	aries

Ref. No.	Trade Name	Item Number	Description	Qty.
_	TA100831-SS	61041767	Analog junction box assembly	1
			Includes:	
			TC100814 Analog PCB	
			TA800218 Desiccant Bag (68004199)	
	TB100515-5	61005976	DigiTOL junction box assembly	
			Includes:	
			*13839900A DigiTOL PCB (68000031)	
			TA800218 Desiccant Bag (68004199)	
	TB100569-4	61008236	IDNet junction box assembly	
			Includes:	
			22005404 IDNet PCB	
			TA800218 Desiccant Bag (68004199)	
	TA100831-SSA	61076206	Analog junction box assembly (ATEX)	
_	MZ0901010298	68004035	1/2-13 flat head screw x 1.5" long, ZN (for bolting frame to floor)	8
	MZ0901010451	68004045	1/2-13 flat head screw x 1.5" long, SS (for bolting frame to floor)	
_	ME504235	61024568	IDNet Cable, x 5 m long	-
—	ME200308	61024566	Lock Nut, IDNet	—
_	ME209911	61024567	Washer, IDNet	_

#### Table 10-2: Junction Box and Option Hardware

Ref. No.	Trade Name	Item Number	Description	Qty.
_	TA201611	68004138	Lug, Ramp (per ramp)	2
_	MZ0901030076	61024587	3/8-inch lock washer (per ramp)	2
_	MZ0901010124	68004028	3/8-16 UNC x 1-inch-long hex-head screw (per ramp)	2

#### Table 10-3: Ramp Option Hardware

Ref. No.	Trade Name	Item Number	Description	Qty.
_	TN202623	61036066	Shipping Angle	4
_	MZ0901010033	68004026	3/8-16 UNC x 3/4-inch-long hex-head screw	8
_	MZ0901030011	61036132	3/8-inch zinc washer	8

Table 10-4: Quick-Pit Option Hardware



Figure 10-2: Hold-Down Bolt

Ref. No.	Trade Name	Item Number	Description	Qty.
1	MZ0908000016	68004075	Retaining Ring, EXT, E, 3/4, SS	2
2	TN203485	68004328	Hold-Down Bolt, SS	2

Table 10-5: Spare Parts



Figure	10-3.	l ift	Handle
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Ref. No.	Trade Name	Item Number	Description	Qty.
1	MZ0901020102	61039778	Hex Nut, 1/4-20, SS, Nylon Insert	2
2	MZ0901030044	61072786	Plain Washer, 1/4, SS	2
3	TN203306	61037562	Lift Handle, 1/4 inch, SS	1

Table 10-6: Spare Parts



Figure 10-4: Lift Strut Assembly

Ref. No.	Trade Name	Item Number	Description	Qty.
1	MZ0908000014	69033691	Retaining Ring, EXT, SH, 5/16, SS	7
2	TA204703-33	61044131	Gas Spring, SS, 3x3, 400 N	2
	TA204703-44	61045068	Gas Spring, SS, 4x4, 925 N	
	TA204703-46	61044444	Gas Spring, SS, 4x6, 1900 N	
	TA204703-55	61037257	Gas Spring, SS, 5x5, 1750 N	
3	TN204619	61085711	Clevis Pin, 5/16 x 1.125, SS	4
4	TN203291	68004327	Clevis Pin, 5/16 x 2.125, SS	3
_	TA800622	61078867	Safety Label, 2266, SS	1

#### Table 10-7: Spare Parts

Ref. No.	Trade Name	Item Number	Description	Qty.
_	MZ0905000003	61072856	Eyebolt, 3/4-10	2
_	TN800645	61086501	Eyebolt Installation Tag	1
_	TA203527	69033800	Hex Wrench, 1/2 inch, SS	1

Table 10-8: Installation Parts

# 11

# **Reference Material**

# **Reference Drawings**

Scale Capacity	General Dimensions	Quick-Pit Assembly	
1,000, 2,500, 5,000 lb	TB203317	TB203474	

# Recommended Spare Parts

For part numbers refer to Chapter 10.

Quantity	Description		
1	Load cell (capacity of load cell depends on scale capacity)		
1	Junction box circuit board		
1	Junction box desiccant bag		
1	Rocker pin		
2	Rocker pin O-ring		
1	Lift strut		
2	Clevis pin		
2	Retaining ring		

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