0958

Flexmount®, Flexmount® HD, and Centerlign™ Weigh Modules

Installation and Service Manual

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(6/00).00

METTLER TOLEDO

Publication Revision History

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

Publication Name: 0958 Flexmount, Flexmount HD, Centerlign Weigh Modules Service Manual

Part Number: A15175600A **Publication Date: 6/97**

Part Number	Date	Revisions
B15175600A	3/98	Added bolt-hole dimensions to drawings and tables on pages 1-5 to 1-9.
C15175600A	8/98	Added new Model 0958 Flexmount and Centerlign weigh modules for 20K, 30K, and 45K lb sizes.
D15175600A	12/98	Removed references to Model 0957 weigh modules for 20K and 45K lb sizes. Replaced Certificate of Conformance 88-008A3 with 88-008A4.
E15175600A	8/99	Added new Model 0958 Flexmount HD weigh modules for 50K, 75K, 100K, 150K, and 200K lb sizes. Removed information about Model 0957 weigh modules (75K, 100K, and 200K lb sizes).
F15175600A	6/00	Revised description of how to level weigh modules in Flexmount, Centerlign, and Flexmount HD installation procedures (Chapter 3). Revised procedure for checking load cell voltages (Chapter 6).

INTRODUCTION

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

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

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

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 Cells
Models: 744, 745 and 745A
(when used within the technical requirements listed in Mettler Toledo documentation and installed as a Load receptor as listed in Type approval certificate T2206, Table 4.)

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CE Conformity / CE-Konformität / Conformité CE
90/384/EU Nonautomatic Balances and Scales / Nichteselbsttätige Waagen / Balances à Functionnement non automatique
Article 1.2.a.
89/336/EU EMC Directive / EMU-Richtlinie / Directive concernant la CEM
EN55 022, B: 1987 Emissions / Funkstörungen
EN50 082-2: 1995 Immunity
73/23/EU Low Voltage / Niederspannung / basse tension
EN61010-1 el. Safety / el. Sicherheit / sécurité el.
94/9/EC concerning equipment and protective systems intended for use in potentially explosive atmospheres
EN 50 014 : 1977 + A1…A5, General requirements
EN 50 020 : 1977 + A1…A5, Intrinsic safety "i"

Other Directives and Standards / Andere Richtlinien und Normen / Autres documents
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R60 OIML International Recommendation, Metrological regulation for load cells
EEx ib IIC T4 el. Safety / el. Sicherheit / sécurité el. (PTB Nr. Ex-95.D.2051, for models 744 and 745)
EEx ib IIC T4 el. Safety / el. Sicherheit / sécurité el. (KEMA No. Ex-98.D.0965, for model 745A)

Darrell Flocken, Manager - Weights & Measures
Office of Weights and Measures
Worthington, Ohio USA
September, 1996
Revised January 1999 **(Added: model 745A, conformity to 89/336/EU – 73/23/EU – 94/9/EC)**

according to EN45014

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Type: Analog Load Cells
Models: 743 **(when used within the technical requirements listed in Test certificate TC2977.)**

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R60 OIML International Recommendation, Metrological regulation for load cells

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Office of Weights and Measures
Worthington, Ohio USA
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Type: Analog Load Cell
Models: 790

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Darrell Flocken, Manager - Weights & Measures
Office of Weights and Measures
Worthington, Ohio USA
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STANDARD WARRANTY

Model 0958 Flexmount/Centerlign Weigh Modules

Mettler Toledo warrants that the equipment covered by this warranty will be free from defects in workmanship and materials for a period of one year from date of installation or eighteen (18) months from date of shipment to the buyer, whichever comes first.

Should any such defects be found and reported during the first thirty (30) days after installation (if installation occurs during the warranty period), Mettler Toledo (herein referred to as the "Company"), will, at its option, refund the purchase price or correct such defects furnishing replacement parts and service free of charge to the buyer. For the remainder of the warranty term, the Company will furnish necessary replacement parts and on-site technician's service free of charge, provided the Buyer agrees to pay reasonable technician's travel time, vehicle mileage, and associated travel expenses to and from the nearest authorized Company service location. The following are NOT covered under any of these warranties:

1) Initial installation and ongoing scale calibration.

2) Damage to scale components by gross abuse, fire, flooding, explosion, water, voltage surges, or civil disturbance.

3) Normal maintenance or consumable items.

This warranty covers only the Model 0958 Flexmount / Centerlign Weigh Modules. Refer to Mettler Toledo Standard Product Warranty for coverage of other scale system components including scale instrument, printer, and/or other accessories.

THE COMPANY EXPRESSLY WARRANTS THE EQUIPMENT MANUFACTURED BY IT AS SET FORTH HEREIN. THE COMPANY MAKES NO OTHER WARRANTIES EITHER EXPRESSED OR IMPLIED (INCLUDING WITHOUT LIMITATION WARRANTIES AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE). IN ADDITION, THIS DOCUMENT SHALL CONSTITUTE THE SOLE AND EXCLUSIVE REMEDIES OF THE BUYER FOR ANY BREACH BY THE COMPANY OF ITS WARRANTIES HEREIN.

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This warranty coverage is only applicable to the United States of America. Consult Mettler Toledo for Export Warranty Terms and Conditions.

APPLICATION GUIDES

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Precautions

READ this manual BEFORE operating or servicing this equipment.

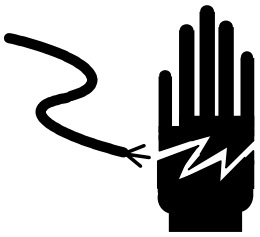
FOLLOW these instructions carefully.

SAVE this manual for future reference.

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

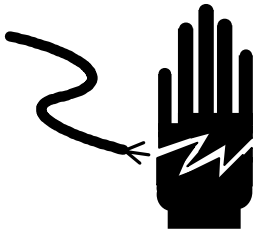
ALWAYS DISCONNECT this equipment from the power source before cleaning or performing maintenance.

CALL METTLER TOLEDO for parts, information, and service.



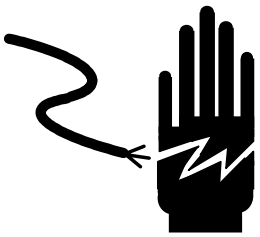
⚠ WARNING

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.



⚠ WARNING

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

⚠ CAUTION

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

CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

CONTENTS

1 Specifications

Introduction

Flexmount, Flexmount HD, and Centerlign weigh modules are used to convert tanks, hoppers, and other structures into scales. Each weigh module consists of a load cell and the mounting plates needed to attach it to a structure.

A METTLER TOLEDO digital indicator powers the analog load cells used in these weigh modules. Which digital indicator is used determines the type of junction box required: Analog, DigiTOL, or IDNet junction box.

Refer to Mettler Toledo's Digital Indicator Service Manual for indicator power requirements.

Accuracy

Model 744 and 745 Flexmount and Centerlign load cells meet or exceed the NIST Handbook-44 requirements for Class III 3000 divisions/multiple cell (minimum). Model 743 load cells meet or exceed NIST Handbook-44 requirements for Class III 2500 divisions. Model 790 load cells meet or exceed the NIST Handbook-44 requirements for Class IIIL 10,000 divisions/multiple cell.

Certificates of Conformance (COC # 92-108, 91-089, 88-008, and 99-093) were issued under the National Type Evaluation Program (NTEP) of the National Conference of Weights and Measures for these load cells.

Model 745 Flexmount and Centerlign metric capacity load cells meet or exceed OIML requirements for R60 C3 3000 divisions (TC2154). Model 743 metric capacity load cells meet or exceed OIML requirements for R60 C2 2000 divisions (TC2977).

A scale's accuracy depends on:

- The design of the support steel for the module, and of the receiving structure (tank, hopper, conveyor, etc.) mounted to the modules
- The design and number of dead-to-live connections attached to the scale
- The total load cell capacity
- Environmental factors: wind, vibration, temperature variations, etc.

Refer to the METTLER TOLEDO Weigh Module Systems Handbook (*15598500A) for more information.

* May have alpha prefix.

Model Number

Model 0958 Flexmount and Centerlign weigh modules are available in 250-lb to 45,000-lb capacities. Model 0958 Flexmount HD weigh modules are available in 50,000-lb to 200,000-lb capacities. Use the following table to find the proper load cell configuration.

Standard Model Number Configuration Table					
XXXX	**X**	**X**	**X**	**XX**	**-X**
Model	**Weigh Module Type**	**Material/Cell Type**	**# Load Cells**	**Load Cell Capacity**	**Junction Box**
0958	0 = Flexmount/ Flexmount HD 1= Centerlign	1 = C.S. H44 Hermetic 2 = S.S. H44 Hermetic 3 = C.S. H44 Potted 4 = S.S. H44 Potted 5 = C.S. OIML Potted 6 = S.S. OIML Potted 7 = C.S. OIML Hermetic 8 = S.S. OIML Hermetic	3 to 8	X2 = 250 lb X5 = 500 lb/220 kg 01 = 1,250 lb/550 kg 02 = 2,500 lb/1,100 kg 05 = 5,000 lb/2,200 kg 10 = 10,000 lb/4,400 kg 20 = 20,000 lb/9,072 kg 30 = 30,000 lb/13,608 kg 45 = 45,000 lb/20,412 kg 50 = 50,000 lb 75 = 75,000 lb 1X = 100,000 lb 15 = 150,000 lb 2X = 200,000 lb	1 = Standard Analog 2 = No Junction-Box*

* For optional junction boxes, order a base model having a (-2) suffix. Order optional junction boxes as a separate line item: DigiTOL junction box, IDNet junction box, and enlarged Analog junction box with conduit fittings.

The following table shows the level detection model number scheme for Flexmount and Flexmount HD weigh module systems:

Level Detection Model Number Scheme					
Model	**Material**	**Load Cell**	**# Live Cells**	**Load Cell Capacity**	**Junction Box**
0958D	C = Carbon Steel S = Stainless Steel	1 = H44/US 2 = R60/SI	1 or 2	X2 = 250 lb X5 = 500 lb or 220 kg 01 = 1,250 lb or 550 kg 02 = 2,500 lb or 1,100 kg 05 = 5,000 lb or 2,200 kg 10 = 10,000 lb or 4,400 kg 20 = 20,000 lb or 9,072 kg 30 = 30,000 lb or 13,608 kg 45 = 45,000 lb or 20,412 kg 50 = 50,000 lb (22,680 kg)* 75 = 75,000 lb (34,019 kg)* 1X = 100,000 lb (45,359 kg)* 15 = 150,000 lb (68,039 kg)* 2X = 200,000 lb (90,718 kg)*	1 = Analog 3-hole 2 = No Junction Box

*Metric capacities are for reference only.

Level Detection Scheme Notes

1. All systems include two "dead" weigh modules, which contain dummy load cells:
   - For three-support systems, the "live" load cell is in the full-floating module.
   - For four-support systems, the "live" load cells are in the full-floating modules.
2. A dead weigh module has the same mounting dimensions as a standard weigh module of the same capacity. The dummy load cell in a dead weigh module can be replaced with a live load cell if greater accuracy is desired.
3. For best performance, place any piping that runs to and from the vessel as close to the fixed-pin module as possible.

Load Cells and Suspension

Stainless-steel, single cantilever beam load cells are included in all Model 0958 Flexmount and Centerlign weigh modules.

Painted alloy steel torsion ring load cells are included in all Model 0958 Flexmount HD weigh modules.

Model number: 743 Load Cells, 20K/30K/45K lb; 9,072/13,608/20,412 kg

- NTEP certificate of conformance number: 88-008
- EC Test Certificate: TC2977
- Maximum excitation voltage: 20 VDC or VAC rms
- Full-scale output: 2 mV/V
- Input terminal resistance: 20K & 30K cells 360 - 400 ohms, 45K cells 2,100 - 2,300 ohms
- Output terminal resistance: 20K & 30K cells 350 $\pm$ 2 ohms, 45K cells 2,200 $\pm$ 20 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

Model number: 744 Load Cells, 250 lb

- Maximum excitation voltage: 15 VDC or VAC rms
- Full scale output: 2 mV/V
- Input terminal resistance: 350 ohms min.
- 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

Model number: 745 Load Cells, 500 to 10K lb, 220 to 4,400 kg

- NTEP certificate of conformance number: 92-108
- EC Test Certificate: TC2154/2 EC Type Approval: T2206
- Maximum excitation voltage: 15 VDC or VAC rms
- Full scale output: 2 mV/V
- Input terminal resistance: 350 ohms min.
- 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

Model number: 790 Load Cells, 50K/75K/100K/150K/200K lb

- Maximum excitation voltage: 18 VDC or VAC rms
- Full scale output: 2 mV/V
- Input terminal resistance: 750 ohms minimum
- Output terminal resistance: 700 $\pm$ 5 ohms
- Temperature range compensation: -10°C to +45°C (+15°F to +115°F)
- Safe side load: 100% of full load cell rating
- Safe overload: 150% of full load cell rating

Flexmount module suspension is achieved by a load pin between the cell and receiver in the upper assembly (Figure 1-1).

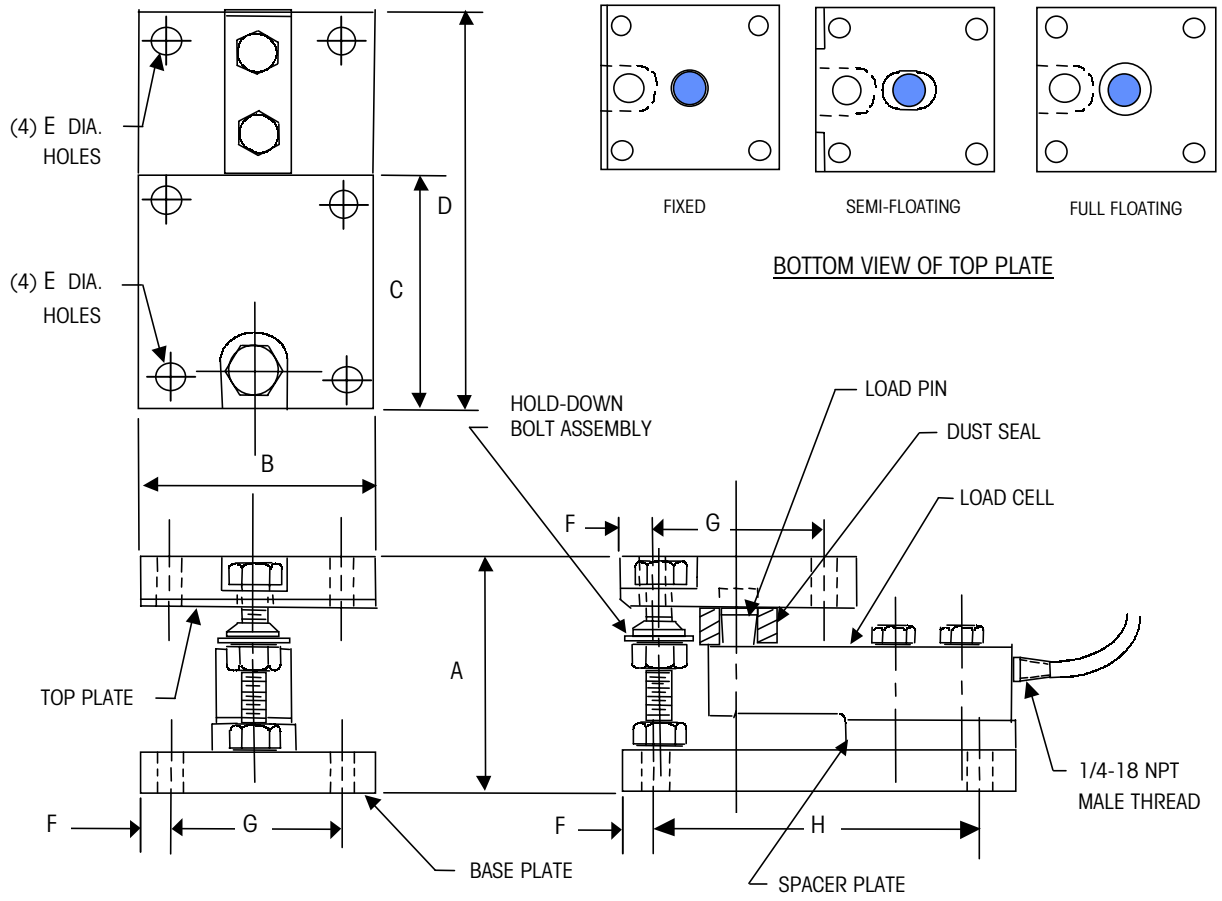
Centerlign module suspension is achieved by a rocker pin between the cell and the receiver in the upper assembly (Figure 1-2).

Flexmount HD module suspension is achieved by a load pin between the cell and the receiver in the upper assembly (Figure 1-3).

Flexmount

Flexmount load cells provide horizontal checking and an anti-tip feature while still allowing for thermal expansion. The Flexmount design consists of three weigh modules:

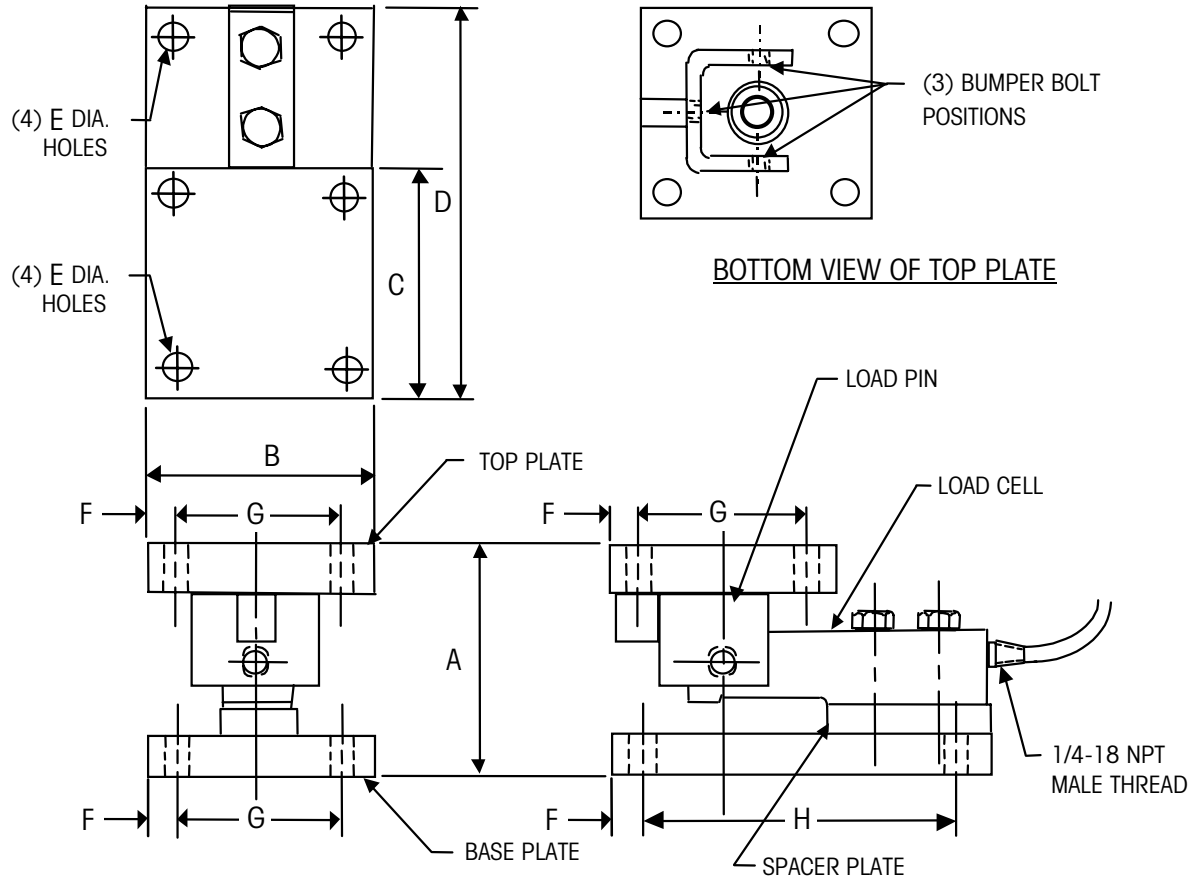
- One fixed-pin module
- One semi-floating pin module
- One or more full-floating pin modules



Cell Capacity	A	B	C	D	E Diameter	F	G	H
250 - 5K lb	4.12 in.	4.50 in.	4.50 in.	7.00 in.	0.44 in.	0.50 in.	3.50 in.	6.00 in.
10K lb	5.38 in.	6.00 in.	6.00 in.	9.25 in.	0.69 in.	1.00 in.	4.00 in.	7.25 in.
20K - 30K lb	7.50 in.	8.00 in.	8.00 in.	14.00 in.	0.81 in.	1.00 in.	6.00 in.	12.00 in.
45K lb	9.00 in.	9.00 in.	9.00 in.	16.00 in.	1.12 in.	1.25 in.	6.50 in.	13.50 in.
220 - 2,200 kg	104.8 mm	114.3 mm	114.3 mm	177.8 mm	11.1 mm	12.7 mm	88.9 mm	152.4 mm
4,400 kg	136.5 mm	152.4 mm	152.4 mm	235.0 mm	17.5 mm	25.4 mm	101.6 mm	184.2 mm
9,072 - 13,608 kg	190.5 mm	203.2 mm	203.2 mm	355.6 mm	20.6 mm	25.4 mm	152.4 mm	304.8 mm
20,412 kg	228.6 mm	228.6 mm	228.6 mm	406.4 mm	28.4 mm	31.7 mm	165.1 mm	342.9 mm

Figure 1-1: Model 0958 Flexmount Weigh Module Dimensions

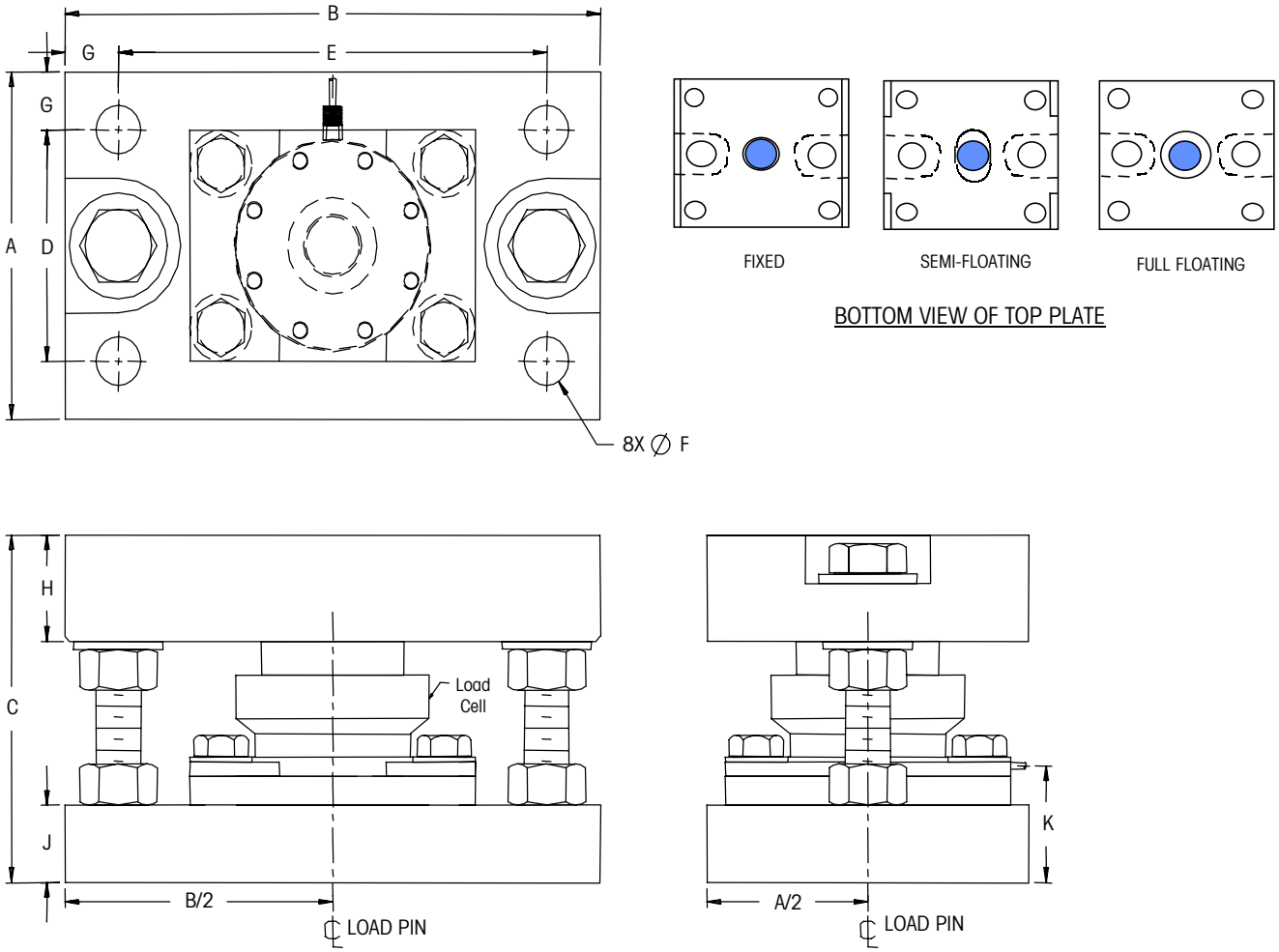
Centerlign



Cell Capacity	A	B	C	D	E Diameter	F	G	H
250 - 5K lb	4.12 in.	4.50 in.	4.50 in.	7.00 in.	0.44 in.	0.50 in.	3.50 in.	6.00 in.
10K lb	5.38 in.	6.00 in.	6.00 in.	9.25 in.	0.69 in.	1.00 in.	4.00 in.	7.25 in.
20K - 30K lb	7.50 in.	8.00 in.	8.00 in.	14.00 in.	0.81 in.	1.00 in.	6.00 in.	12.00 in.
45K lb	9.00 in.	9.00 in.	9.00 in.	16.00 in.	1.12 in.	1.25 in.	6.50 in.	13.50 in.
220 - 2,200 kg	104.8 mm	114.3 mm	114.3 mm	177.8 mm	11.1 mm	12.7 mm	88.9 mm	152.4 mm
4,400 kg	136.5 mm	152.4 mm	152.4 mm	235.0 mm	17.5 mm	25.4 mm	101.6 mm	184.2 mm
9,072 - 13,608 kg	190.5 mm	203.2 mm	203.2 mm	355.6 mm	20.6 mm	25.4 mm	152.4 mm	304.8 mm
20,412 kg	228.6 mm	228.6 mm	228.6 mm	406.4 mm	28.4 mm	31.7 mm	165.1 mm	342.9 mm

Figure 1-2: Model 0958 Centerlign Weigh Module Dimensions

Flexmount HD



Cell Capacity	A	B	C*	D	E	F Diameter
50K, 75K, 100K lb	9 inches 229 mm	15 inches 381 mm	9 inches 229 mm	6 inches 152 mm	12 inches 305 mm	1.25 inches 31.8 mm
150K, 200K lb	12 inches 305 mm	18 inches 457 mm	10 inches 254 mm	8 inches 203 mm	14 inches 356 mm	1.625 inches 41.3 mm

Cell Capacity	G	H	J	K
50K, 75K, 100K lb	1.5 inches 38.1 mm	2.75 inches 69.9 mm	2 inches 50.8 mm	3 inches 76.2 mm
150K, 200K lb	2 inches 50.8 mm	2.75 inches 69.9 mm	2 inches 50.8 mm	3.25 inches 82.6 mm

*Dimension shown is for weighing position. Add 1/8 inch for shipping/installation height.

Figure 1-3: Model 0958 Flexmount HD Weigh Module Dimensions

2 Inspection and Site Selection

Inspection

When you receive your weigh modules, visually inspect the packing containers and modules for freight damage. Inspect:

1. Load cell and suspension assemblies
2. Load cell cables and summing junction box
3. Overall assembly

If you find damage, contact your freight carrier immediately.

Fill out the enclosed warranty card and return it to the address noted.

Site Selection

Weigh module installation problems are often caused by inappropriate site conditions. Before installing the weigh modules, check the installation site for:

- Level all support surfaces
- Adequate floor/support at each module throughout the scale's weighing capacity
- Uniform deflection of the weigh module supports (top and bottom), maintaining less than one-half degree out of level at gross capacity
- Shared foundation: does the vessel to be weighed have an exclusive, isolated support foundation? Does it share supports with other vessels? Interaction may occur if the vessel is on a shared foundation.
- Proper drainage away from each of the weigh modules
- Heavy vibrations or wind currents at or near the scale
- Access around each weigh module for installation and service
- Locations on the scale to add test weights for calibration
- Access to the scale for moving test weights to the scale's loading locations
- A position near the proposed scale location to mount the junction box (Do not mount the junction box on the live portion of the scale)
- Excessive or unusual loading caused by the site or type of equipment mounted to the weigh modules

If the site is appropriate based on the criteria provided, proceed with the installation. Otherwise, make the necessary changes before installing the modules.

3 Installation

Flexmount Installation

Flexmount weigh modules are used to convert tanks, hoppers, vessels, blenders, bins, and mixers into scales. Flexmount load cells provide horizontal checking and an anti-tip feature while still allowing for thermal expansion. The Flexmount load cell design consists of three weigh modules:

- One fixed-pin module
- One semi-floating pin module
- One or more full-floating pin modules

This system provides a fully checked, self-contained weighing system free to expand and contract thermally.

Model 0958 Flexmount assemblies (250-lb to 45K-lb load cells) have top plates that can be turned 90 degrees to handle tangential or radial mounting arrangements. See Figure 3-1 for recommended mounting arrangements.

Note: Model 0958 top plates are marked for easy post-installation identification. The "fixed" top plate has a chamfer along the entire front-bottom edge. The semi-floating top plate has a 1-inch chamfer on each side of the front-bottom edge. The full-floating unit has no chamfer.

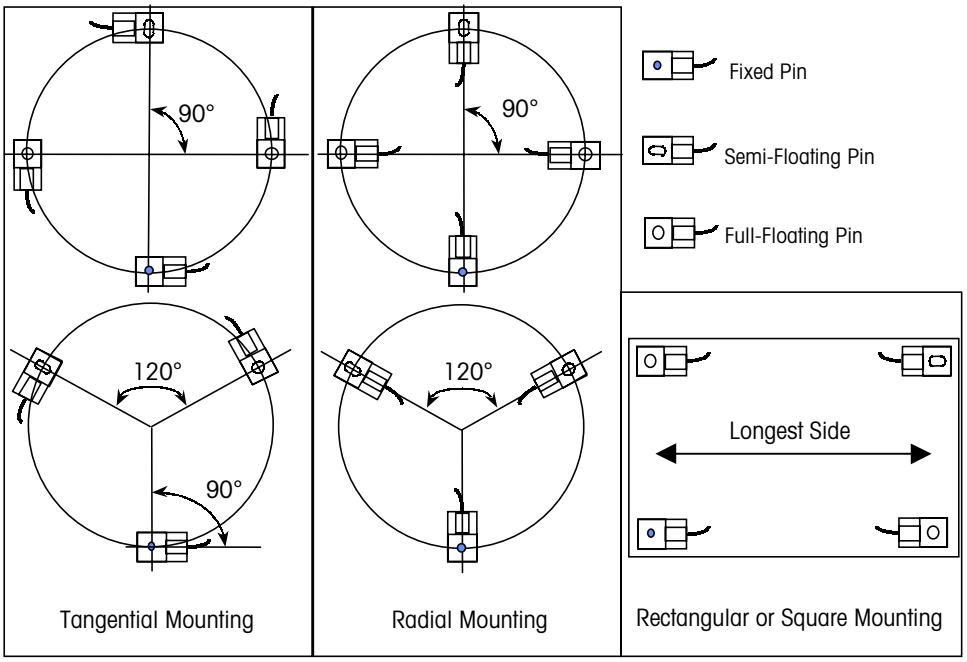


Figure 3-1: Plan View of Mounting Arrangements for Model 0958 Flexmount Modules

ATTENTION!

Installation Guidelines:

1. **Always use one (1) fixed and one (1) semi-floating weigh module. All others in the system will be full-floating modules.**
2. **To allow limited horizontal movement and prevent binding, always mount the semi-floating module directly across from, or farthest from, the fixed module.**
3. **Tank legs or structural support lugs must be rigid enough to prevent the support points from spreading out under load.**

Table 3-1 shows the base plate bearing requirements for Flexmount weigh modules. If the weigh modules are to be mounted to a concrete floor, locate and anchor the base plates to the concrete before setting the weigh structure (tank, hopper, etc.) on the modules. Make sure that you will be able to adjust the weigh structure to align it correctly with the weigh modules.

1. Position the weigh modules so that each supports an equal portion of the total load and so the load on any module does not exceed the load cell capacity.
2. Level each weigh module so that each mounting plate (top and base plate) is within 1/2° of level in both longitudinal and lateral directions (see Figure 3-2).

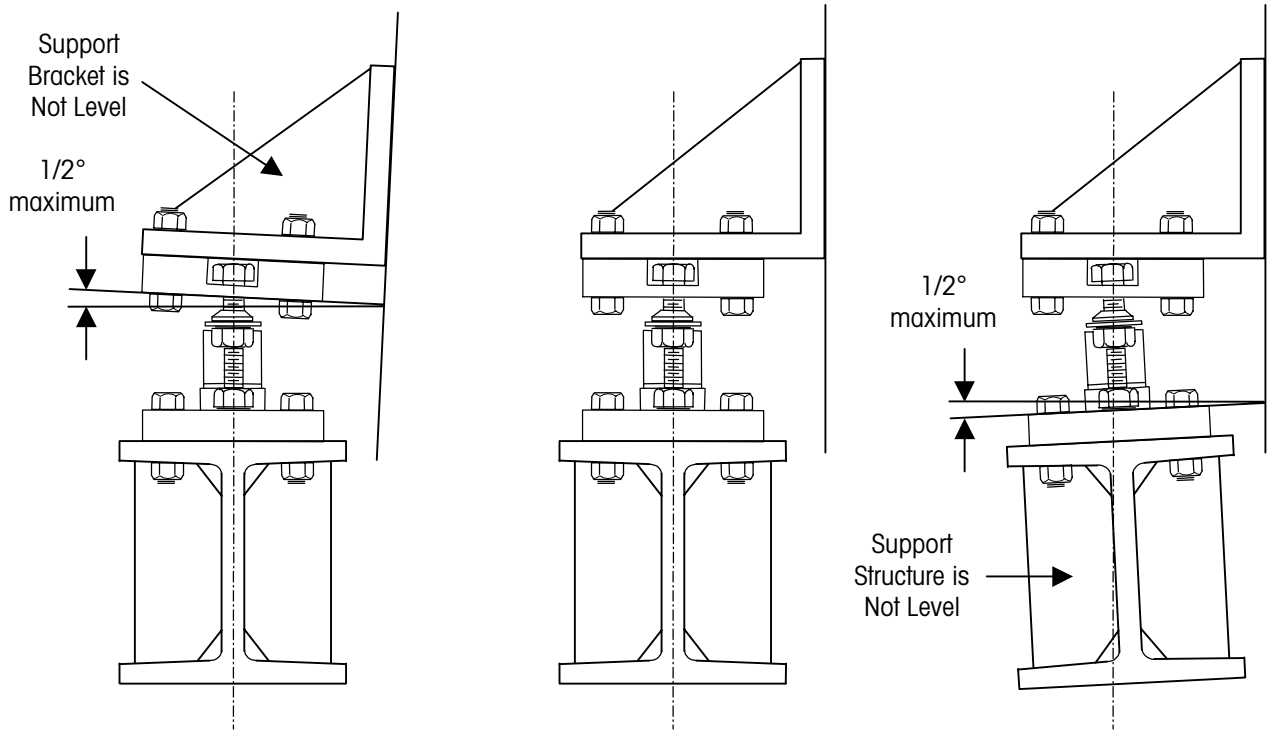


Figure 3-2: Maximum Amount that a Mounting Plate can be out of Level

3. Slowly lower the weigh structure onto the weigh modules.
4. Add stainless steel shims between the structure and top plates if needed, so that each top plate is within 1/2° of level in both longitudinal and lateral directions.

Note: Mounting plate bolts are not supplied by METTLER TOLEDO.

5. Bolt or weld the Flexmount module top plates to the weigh structure supports, and the base plates to the foundation or support steel. See Table 3-1 for bolt sizes.

0958 Flexmount Weigh Module lb (kg)	Base Plate Bearing psi (K Pascal)	Top Plate Bolts (Metric)	Base Plate Bolts (Metric)
250, 500, 1.25K, 2.5K & 5K (220, 550, 1100 & 2200)	159 (1,094)	3/8"-16 UNC (M10 x 1.5)	3/8"-16 UNC (M10 x 1.5)
10K (4400)	180 (1,242)	5/8"-11 UNC (M16 x 2)	5/8"-11 UNC (M16 x 2)
20K	179 (1,231)	3/4"-10 UNC (M20 x 2.5)	3/4"-10 UNC (M20 x 2.5)
30K	268 (1,846)	3/4"-10 UNC (M20 x 2.5)	3/4"-10 UNC (M20 x 2.5)
45K	312 (2,154)	1"-8 UNC (M24 x 3)	1"-8 UNC (M24 x 3)

Table 3-1: Flexmount Bearing Support and Mounting Bolt Sizes

6. If the top plates are to be welded to the weigh structure or the base plates welded to a structural steel support, the weld should be 3/8 inch fillet, 1 inch long, and 3 inches pitch (2 inches between welds).

⚠ CAUTION

DO NOT PASS WELDING CURRENT THROUGH THE LOAD CELLS! WHEN WELDING ON A SCALE, ALWAYS GROUND THE WELDING DEVICE AS CLOSE TO THE WORK AS POSSIBLE. NEVER WELD CLOSER THAN 4 FEET (1.2 METERS) TO ANY LOAD CELL WITHOUT REMOVING THE LOAD CELL.

7. After securing all the top and base plates, slowly back out the nut and centering washer on the hold-down bolt, carefully lowering the top plate and weigh structure onto the load cells.

8. After all the top plates are down and applying load to the load cells, make sure there is adequate clearance between the hold-down bolt and top plate. See Figure 3-3, Hold-Down Bolt Assembly.

Note: Consider calibrating the scale before connecting any piping to the scale. The scale can then be used as a meter to determine if a proper live-to-dead connection was made.

9. Mount the junction box in a location where the load cell cables can be properly terminated in the junction box. Do not mount the junction box on the scale.

Note: Each load cell is supplied with a standard length of cable. Do not lengthen or shorten load cell cables in the field! Changing the length of a load cell cable will affect the output signal from the load cell. If a cable is too long, simply coil the excess cable and place it in or near the junction box. Nonstandard lengths of cable can be ordered for applications that require them.

10. Connect the load cell cables to the junction box and terminate wires according to the wiring and color code decal on the underside of the junction box lid.

11. Connect the junction box to the scale indicator with an appropriate cable.

12. Confirm that all live-to-dead connections are flexible and securely anchored at both the scale and dead connection point.

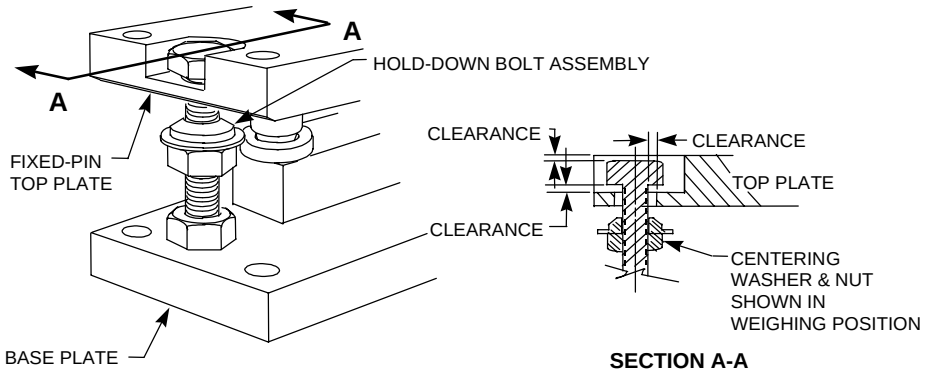


Figure 3-3: Flexmount Hold-Down Bolt Assembly

Centerlign Installation

Centerlign weigh modules are arranged to handle major horizontal forces by bumping on the end of the load cells, as shown in Figures 3-4 and 3-5.

⚠ WARNING

CENTERLIGN WEIGH MODULES DO NOT PROVIDE OVERTURN PROTECTION. IF ANY UPLIFTING FORCES ARE GENERATED, ANTI-UPLIFT/OVERTURN PROTECTION MUST BE ADDED SEPARATELY.

⚠ WARNING

STRUCTURES SUCH AS TANKS OR CONVEYORS MUST BE PROPERLY DESIGNED TO MAINTAIN THE RELATIONSHIP OF THE LOAD SUPPORT POINTS THROUGH THE ENTIRE WEIGHING RANGE. CENTERLIGN WEIGH MODULES DO NOT PROVIDE THIS TYPE OF RESTRAINT.

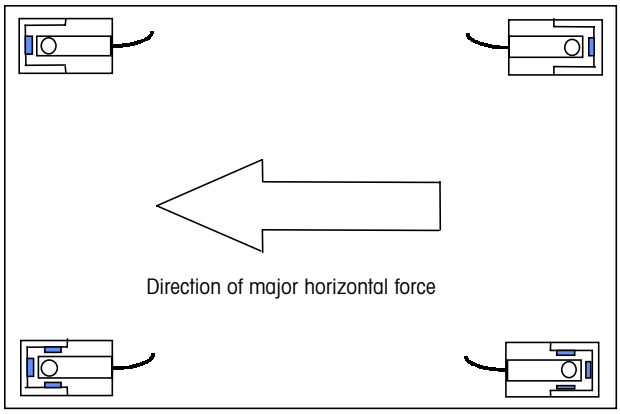


Figure 3-4: Plan View of Square/Rectangular Mounting Arrangement for Model 0958 Centerlign Modules

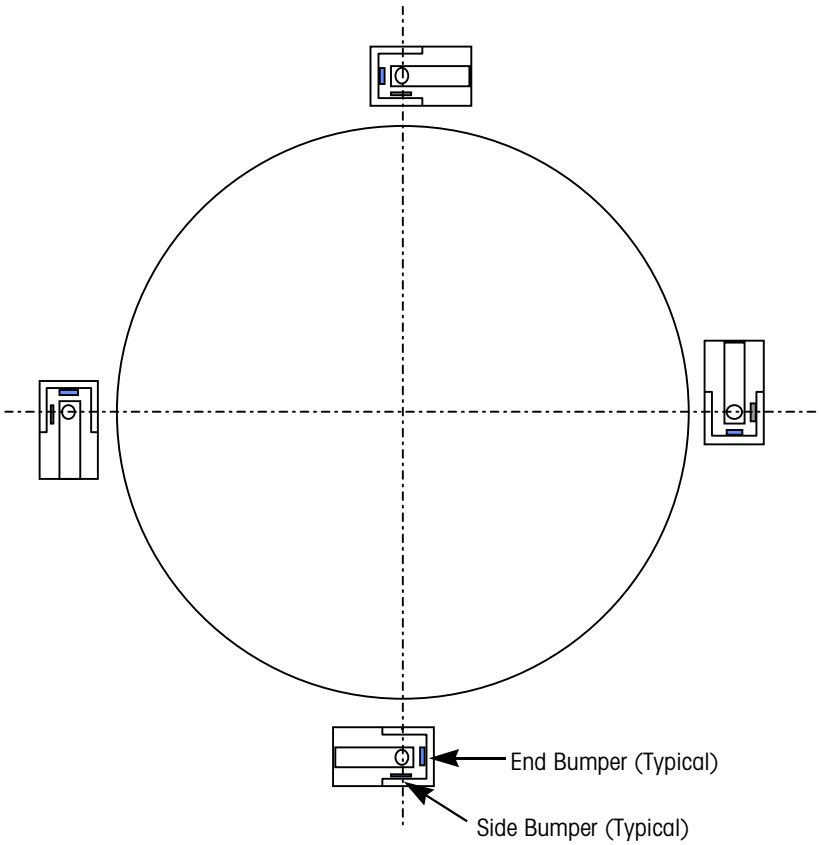


Figure 3-5: Plan View of Circular Mounting Arrangement for Model 0958 Centerlign Modules

⚠ WARNING

CENTERLIGN WEIGH MODULES DO NOT PROVIDE OVERTURN PROTECTION. IF ANY UPLIFTING FORCES ARE GENERATED, ANTI-UPLIFT/OVERTURN PROTECTION MUST BE ADDED SEPARATELY.

⚠ WARNING

STRUCTURES SUCH AS TANKS OR CONVEYORS MUST BE PROPERLY DESIGNED TO MAINTAIN THE RELATIONSHIP OF THE LOAD SUPPORT POINTS THROUGH THE ENTIRE WEIGHING RANGE. CENTERLIGN WEIGH MODULES DO NOT PROVIDE THIS TYPE OF RESTRAINT.

ATTENTION!

Installation Guidelines:

1. **Always handle major horizontal forces by bumping on the end of the load cells.**
2. **When only two weigh modules are used for bumpering, both weigh modules should be on the same side of the scale.**

Table 3-2 shows the base plate bearing requirements for Centerlign weigh modules. If the modules are to be mounted to a concrete floor, anchor the base plates to the concrete before setting the weigh structure (tank, conveyor, etc.) on the modules. Make sure that you will be able to adjust the weigh structure to align it correctly with the weigh modules.

1. Position the weigh modules so that each supports an equal portion of the total load and so the load on any module does not exceed the load cell capacity.
2. Level each weigh module so that each mounting plate (top and base plate) is within 1/2° of level in both longitudinal and lateral directions (see Figure 3-6).

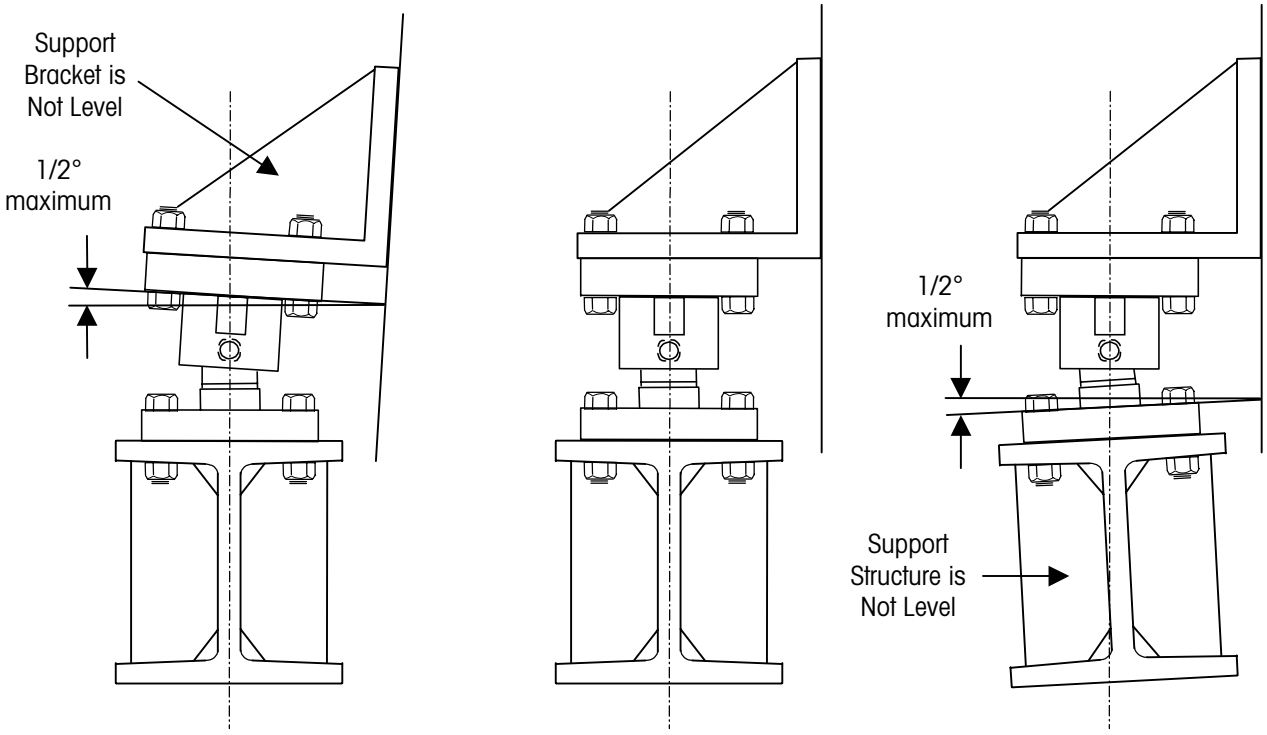


Figure 3-6: Maximum Amount that a Mounting Plate can be out of Level

3. Install an alignment tool in each of the Centerlign weigh modules. See Figure 3-7.

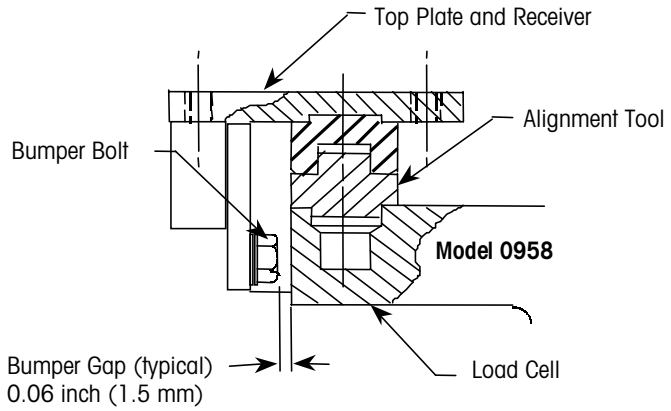


Figure 3-7: Centerlign Module Top Plate Alignment

4. Slowly lower the weigh structure onto the weigh modules.
5. Add stainless steel shims between the structure and top plates if needed, so that each top plate is within 1/2° of level in both longitudinal and lateral directions.
6. Bolt or weld the Centerlign module's top plates to the weigh structure supports and the base plates to the foundation or support steel. See Table 3-2 for bolt sizes. METTLER TOLEDO does not supply mounting bolts.

0958 Centerlign Weigh Module lb (kg)	Base Plate Bearing psi (K Pascal)	Top Plate Bolts (Metric)	Base Plate Bolts (Metric)
250, 500, 1.25K, 2.5K & 5K (220, 550, 1100 & 2200)	159 (1,094)	3/8"-16 UNC (M10 x 1.5)	3/8"-16 UNC (M10 x 1.5)
10K (4400)	180 (1,242)	5/8"-11 UNC (M16 x 2)	5/8"-11 UNC (M16 x 2)
20K	179 (1,231)	3/4"-10 UNC (M20 x 2.5)	3/4"-10 UNC (M20 x 2.5)
30K	268 (1,846)	3/4"-10 UNC (M20 x 2.5)	3/4"-10 UNC (M20 x 2.5)
45K	312 (2,154)	1"-8 UNC (M24 x 3)	1"-8 UNC (M24 x 3)

Table 3-2: Centerlign Bearing Support and Mounting Bolt Sizes

7. If the top plates are to be welded to the weigh structure or the base plates welded to a structural steel support, the weld should be 3/8 inch fillet, 1 inch long, and 3 inches pitch (2 inches between welds).

⚠ CAUTION

DO NOT PASS WELDING CURRENT THROUGH THE LOAD CELLS! WHEN WELDING ON A SCALE, ALWAYS GROUND THE WELDING DEVICE AS CLOSE TO THE WORK AS POSSIBLE. NEVER WELD CLOSER THAN 4 FEET (1.2 METERS) TO ANY LOAD CELL WITHOUT REMOVING THE LOAD CELL.

8. After securing all the top and base plates, slowly raise the weigh structure off the module and replace the alignment tools with the rocker pin suspension parts (Figure 3-8). Place a rubber O-ring on each end of the rocker pin. Lubricate the O-rings and both ends of the rocker pin with a high-quality grease, such as FEL-PRO Food Grade AA Anti-Seize lubricant.

⚠ WARNING

ALWAYS BLOCK THE SCALE WHEN IT IS IN THE RAISED POSITION. OBSERVE ALL APPROPRIATE SAFETY PROCEDURES WHEN INSTALLING AND SERVICING THE SCALE.

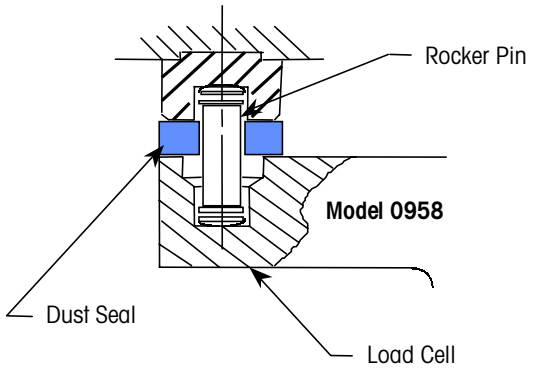


Figure 3-8: Centerlign Rocker Pin Arrangement

9. Slowly lower the weigh structure and top plates onto the lower part of the Centerlign weigh modules. Then apply load to the load cells, and move the weigh structure back and forth several times to align and seat all components. Make sure there is adequate clearance between all bumper bolts and load cells. If bumper bolts are not torqued properly, they can back out and bind the scale, causing weighing inaccuracies.

10. Mount the junction box at a location where the load cell cables can be properly terminated in the junction box. Do not mount the junction box on the scale.

    Note: Each load cell is supplied with a standard length of cable. Do not lengthen or shorten load cell cables in the field! Changing the length of a load cell cable will affect the output signal from the load cell. If a cable is too long, simply coil the excess cable and place it in or near the junction box. Nonstandard lengths of cable can be ordered for applications that require them.

11. Connect the load cell cables to the junction box and terminate the wires according to the wiring and color code decal on the under side the junction box lid.

12. Connect the junction box to the scale indicator with the appropriate instrument cable.

13. Ensure that all live-to-dead connections are flexible and securely anchored at both the scale and dead connection point.

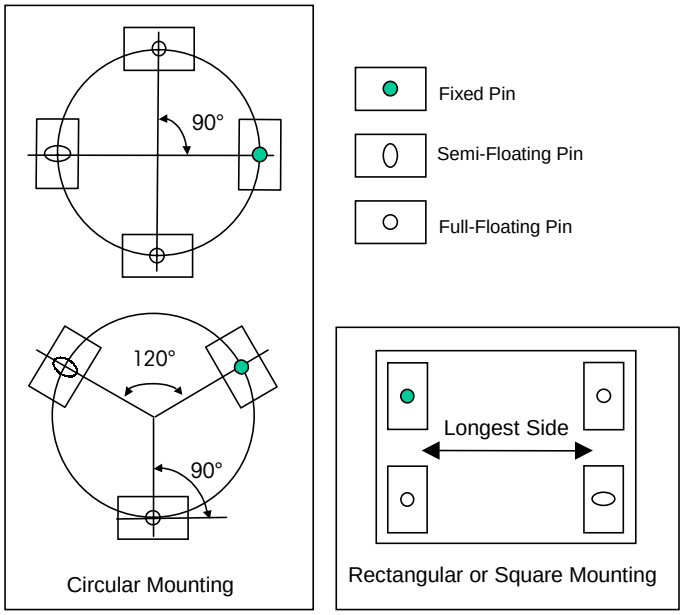
Flexmount HD Installation

Model 0958 Flexmount HD weigh modules provide horizontal checking and an anti-tip feature while still allowing for thermal expansion. The Flexmount HD load cell design consists of three weigh modules:

- One fixed-pin module
- One semi-floating pin module
- One or more full-floating pin modules

This system provides a fully checked, self-contained weighing system free to expand and contract thermally.

See Figure 3-9 for recommended mounting arrangements.



NOTE: In each of the mounting examples above, the semi-floating module is located and oriented to make full use of its expansion/ contraction limits while providing resistance to the rotational moment about the fixed pin. The semi-floating module must be installed in this manner to provide optimum performance and system self-checking.

Figure 3-9: Plan View of Mounting Arrangements for Flexmount HD Weigh Modules

ATTENTION!

Installation Guidelines:

1. **Installation must allow for load cell replacement, either by raising the weigh structure 2 inches or by removing each entire weigh module.**
2. **Always use one (1) fixed and one (1) semi-floating weigh module. All others in the system will be full-floating modules.**
3. **To allow limited horizontal movement and prevent binding, always mount the semi-floating module directly across from, or farthest from, the fixed module.**
4. **Tank legs or structural support lugs must be rigid enough to prevent the support points from spreading out under load.**

Table 3-3 shows the base plate bearing requirements for Flexmount HD weigh modules. If the weigh modules are to be mounted to a concrete floor, locate and anchor the base plates to the concrete before setting the weigh structure (tank, hopper, etc.) on the modules. Make sure that you will be able to adjust the weigh structure to align it correctly with the weigh modules.

1. Position the weigh modules so that each supports an equal portion of the total load and so the load on any module does not exceed the load cell capacity.
2. Level each weigh module so that each mounting plate (top and base plate) is within 1/2° of level in both longitudinal and lateral directions (see Figure 3-10).

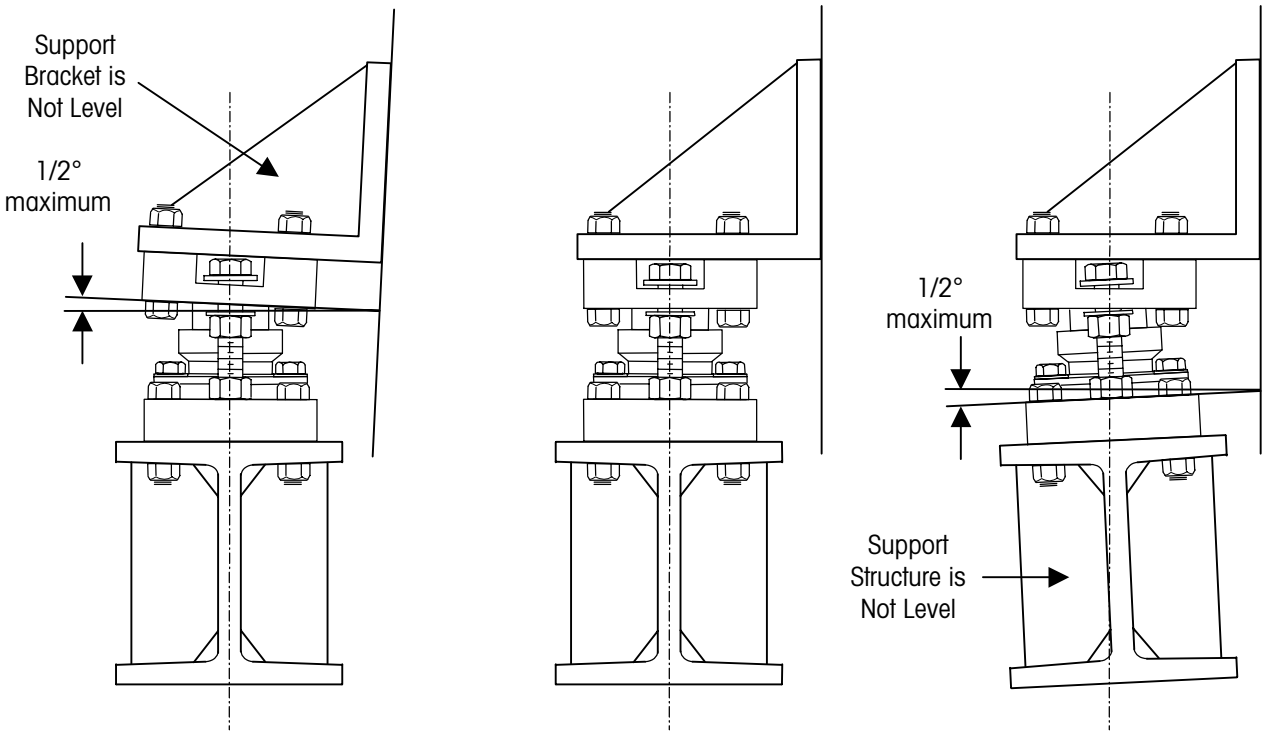


Figure 3-10: Maximum Amount that a Mounting Plate can be out of Level

3. Slowly lower the weigh structure onto the weigh modules.

4. Add stainless steel shims between the structure and top plates if needed, so that each top plate is within 1/2° of level in both longitudinal and lateral directions.

5. Bolt or weld the Flexmount HD module top plates to the weigh structure supports, and the base plates to the foundation or support steel. See Table 3-3 for bolt sizes.

0958 Flexmount HD Weigh Module lb (kg)	Base Plate Bearing psi (K Pascal)	Top Plate Bolts (Metric)	Base Plate Bolts (Metric)
50K	370 (2,551)	1.125"-8 UNC (M30 x 3.5)	1.125"-8 UNC (M30 x 3.5)
75K	556 (3,834)	1.125"-8 UNC (M30 x 3.5)	1.125"-8 UNC (M30 x 3.5)
100K	740 (5,102)	1.125"-8 UNC (M30 x 3.5)	1.125"-8 UNC (M30 x 3.5)
150K	694 (4,785)	1.5"-8 UNC (M40)	1.5"-8 UNC (M40)
200K	926 (6,385)	1.5"-8 UNC (M40)	1.5"-8 UNC (M40)

Table 3-3: Flexmount HD Bearing Support and Mounting Bolt Sizes

6. If the top plates have to be welded to the weigh structure or the base plates have to be welded to a structural steel support, the weld must be 3/8 inch continuous fillet.

⚠ CAUTION

DO NOT PASS WELDING CURRENT THROUGH THE LOAD CELLS! WHEN WELDING ON A SCALE, ALWAYS GROUND THE WELDING DEVICE AS CLOSE TO THE WORK AS POSSIBLE. NEVER WELD CLOSER THAN 4 FEET (1.2 METERS) TO ANY LOAD CELL WITHOUT REMOVING THE LOAD CELL.

7. After securing all the top and base plates, slowly back out the nut and centering washer on the hold-down bolts, carefully lowering the top plate and weigh structure onto the load cells.

8. After all the top plates are down and applying load to the load cells, make sure there is adequate clearance between the hold-down bolt and top plate. See Figure 3-11, Hold-Down Bolt Assemblies.

9. Mount the junction box in a location where the load cell cables can be properly terminated in the junction box. Do not mount the junction box on the scale.

   Note: Each load cell is supplied with a standard length of cable. Do not lengthen or shorten load cell cables in the field! Changing the length of a load cell cable will affect the output signal from the load cell. If a cable is too long, simply coil the excess cable and place it in or near the junction box. Nonstandard lengths of cable can be ordered for applications that require them.

10. Connect the load cell cables to the junction box and terminate wires according to the wiring and color code decal on the underside of the junction box lid.

11. Connect the junction box to the scale indicator with an appropriate cable.

12. Confirm that all live-to-dead connections are flexible and securely anchored at both the scale and dead connection point.

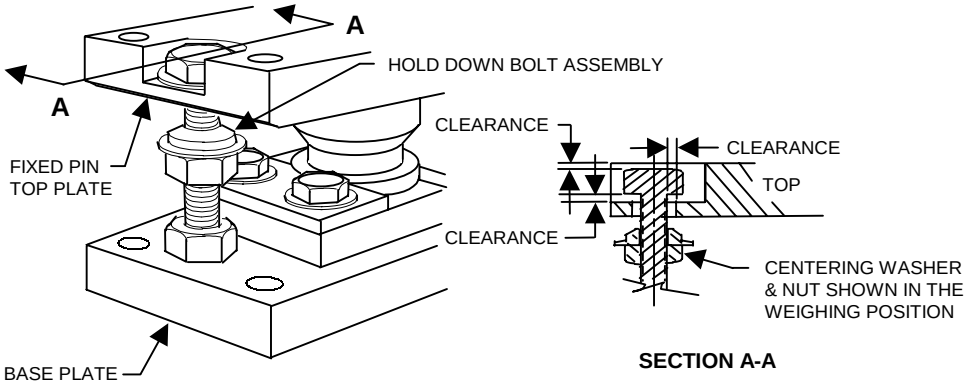


Figure 3-11: Flexmount HD Hold-Down Bolt Assembly

Modes of Operation

Analog Mode

Flexmount, Flexmount HD, and Centerlign modules can be used with an analog junction box for summing the load cell outputs. Only analog-compatible indicators work with the Analog junction box. See Figure 3-12 and Table 3-4 for the correct cable connection.

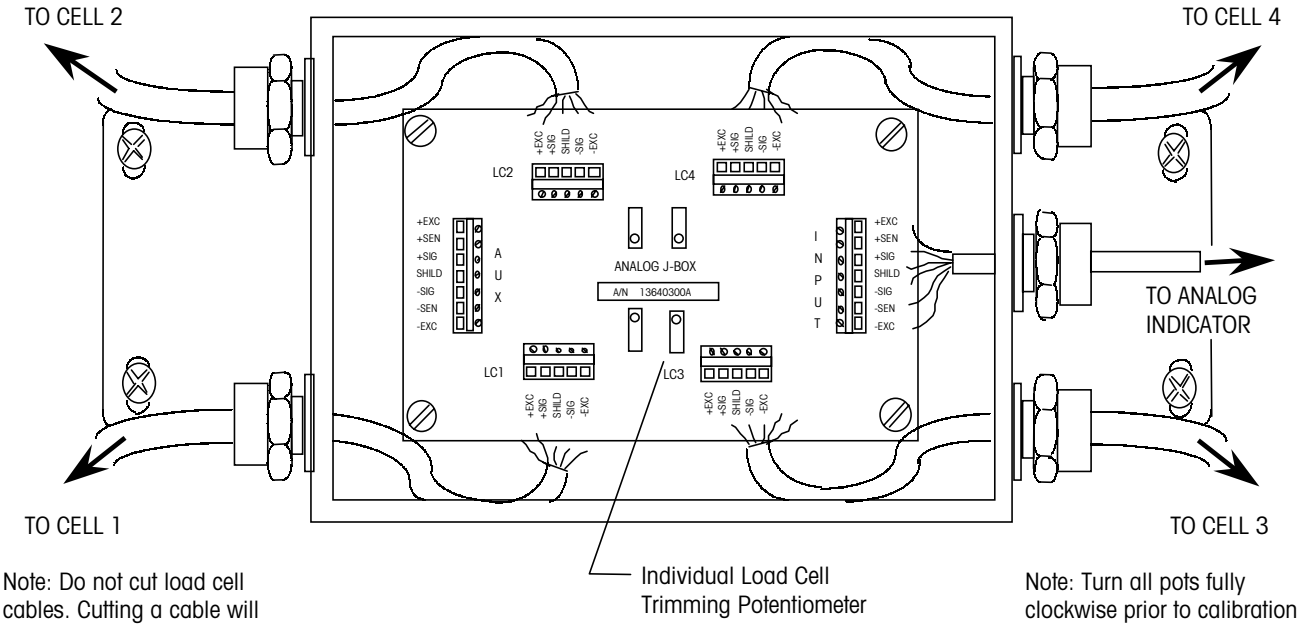


Figure 3-12: Analog Junction Box Detail

Load Cell Wiring			Instrument Cable Wiring	
Function	**Color for 45K PN *13929400A PN *14841200A**	**Color for All Other Load Cells**	**Function**	**Color**
+Excitation	White	Green	+Excitation	White
			+Sense	Yellow
+Signal	Green	White	+Signal	Green
Shield	Yellow	Yellow	Shield	Orange
-Signal	Black	Red	-Signal	Black
			-Sense	Red
-Excitation	Blue	Black	-Excitation	Blue
			(Based on METTLER TOLEDO Cable Number 510624370)	

Table 3-4: Analog Junction Box Wiring Codes

DigiTOL DLC Mode

Flexmount, Flexmount HD, and Centerlign weigh modules can be used with a DigiTOL junction box for summing load cell outputs. Only DigiTOL indicators work with a DigiTOL junction box. In the DLC mode, the indicator serves as the host for the DigiTOL junction box, allowing you to use the indicator's keypad to adjust scale parameters. See Figure 3-13 and Table 3-5 for cable connections.

⚠ WARNING

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

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

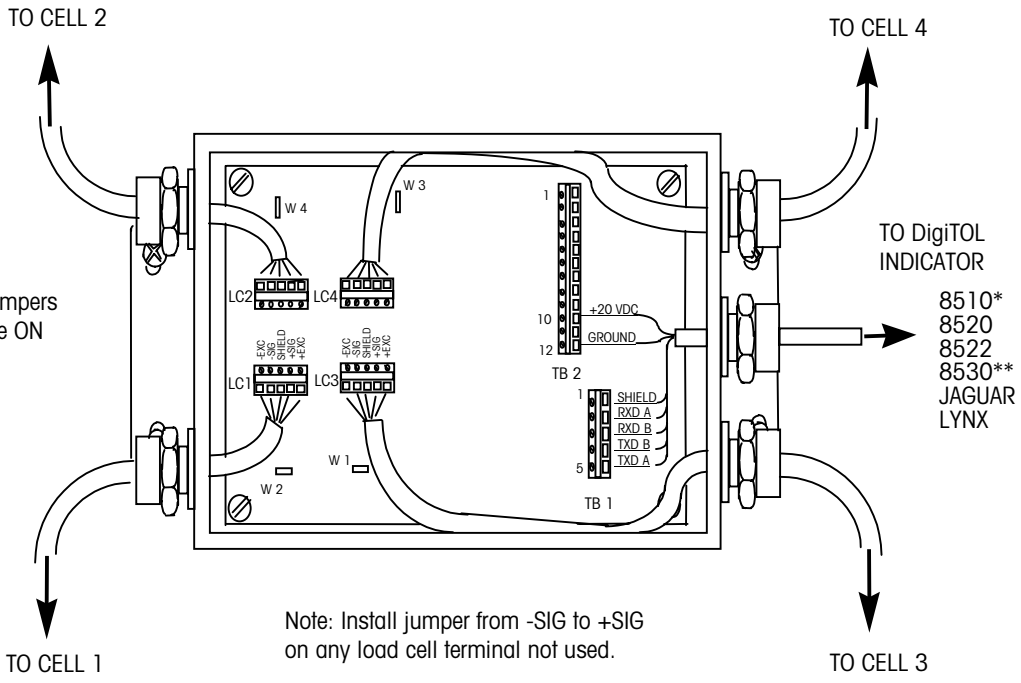


Figure 3-13: DigiTOL Junction Box Detail

*Not compatible with Model 8510 Panel Mount DigiTOL Indicator or Models 8572 and 8582 counting scales.

**Not compatible with Model 8530VS.

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

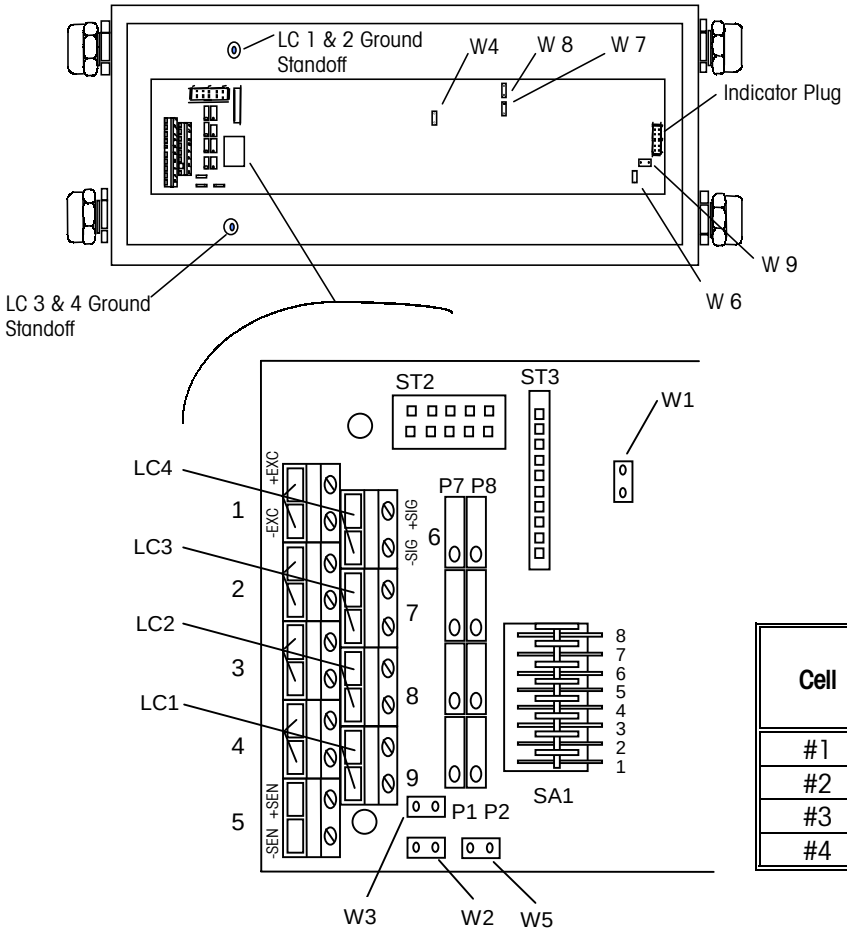
Table 3-5: DigiTOL Junction Box Wiring

IDNet Mode

The IDNet junction box can output an IDNet data format compatible with the METTLER TOLEDO ID1 and ID5 weight display, or the Jaguar Industrial Terminal. See Figure 3-14 and Table 3-6 for cable connections. For detailed information regarding the indicator capabilities and operating instructions, refer to the appropriate service manual.

⚠ WARNING

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



Cell	Terminal			
	+ Exc. Green	- Exc. Black	+ Sig. White	- Sig. Red
#1	4	4	9	9
#2	3	3	8	8
#3	2	2	7	7
#4	1	1	6	6

Figure 3-14: 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 3-6: IDNet Default Factory Setting

Home Run Cable Connection

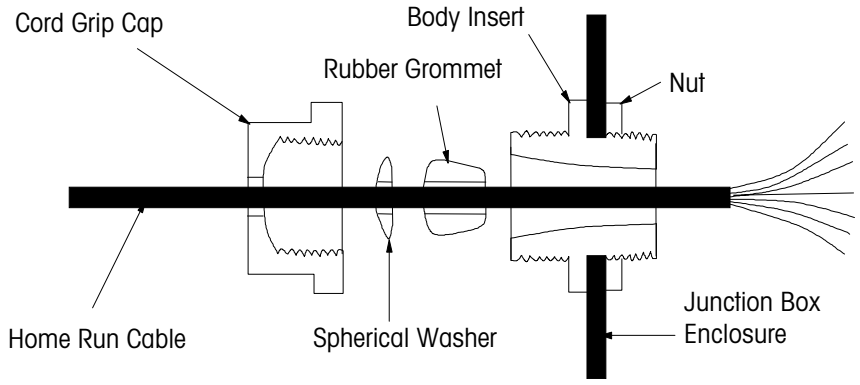


Figure 3-15: Cord Connector Details

Connect the home run cable from the scale indicator to the junction box (see Figure 3-15).

1. Wire the home run cable to the PCB according to Figure 3-12 for Analog, Figure 3-13 for DigiTOL DLC, or Figure 3-14 for IDNet.
2. Place the desiccant bag inside the junction box.
3. Reinstall the junction box lid. Make sure that the rubber gasket is clean and correctly positioned. Tighten all screws and make sure all cord grip caps are secure.

4 Calibration

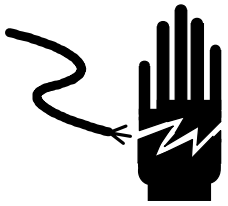
Shift Adjust

Before making calibration adjustments, check all mechanical parts and make sure that the scale provides repeatable weight readings. To check repeatability, repeatedly place a test weight in the same position of the scale and confirm that you get the same weight reading each time.

Then perform a shift adjust so that the weight reading at or near each weigh module is the same for the same test weight.

The test weight used for the shift test should equal 10 percent of the rated scale capacity. Test weights should be concentrated directly (or as close as possible) over the weigh modules.

Analog Junction Box Shift Adjustment



⚠ 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.

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

1. Successively place the test weight at each of the designated locations (at or near the weigh modules). Note and record the displayed weight readings.
2. Determine the location with the lowest weight reading.
3. Proceeding clockwise, place the test weight at each designated location. If necessary, adjust the trim potentiometer corresponding to that location to obtain the weight reading recorded in Step 2.
4. Repeat this procedure until all weight readings at the designated locations are the same or within the tolerances specified by local weights and measures authority.
5. Check that all cable connectors and cord grip caps are tight, place the desiccant bag in the box, and reinstall the junction box lid.

DigiTOL Junction Box Shift Adjustment

Perform the shift adjust procedure at the indicator, with the indicator in Setup mode. For shift adjustment instructions, refer to the manual for the weight indicator 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.

1. Successively place the test weight(s) at the designated 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.
2. Activate the trim potentiometers by opening the eight hook switches (if not already open) located on the PCB (Figure 4-1). Once activated, the switches remain open. Do not 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. Should the scale need further adjustment, turn all potentiometers counterclockwise. Stop turning the potentiometers when the indication on the instrument or meter 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 all location readings 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 box, leave all hook latches open, and reinstall the junction box lid.

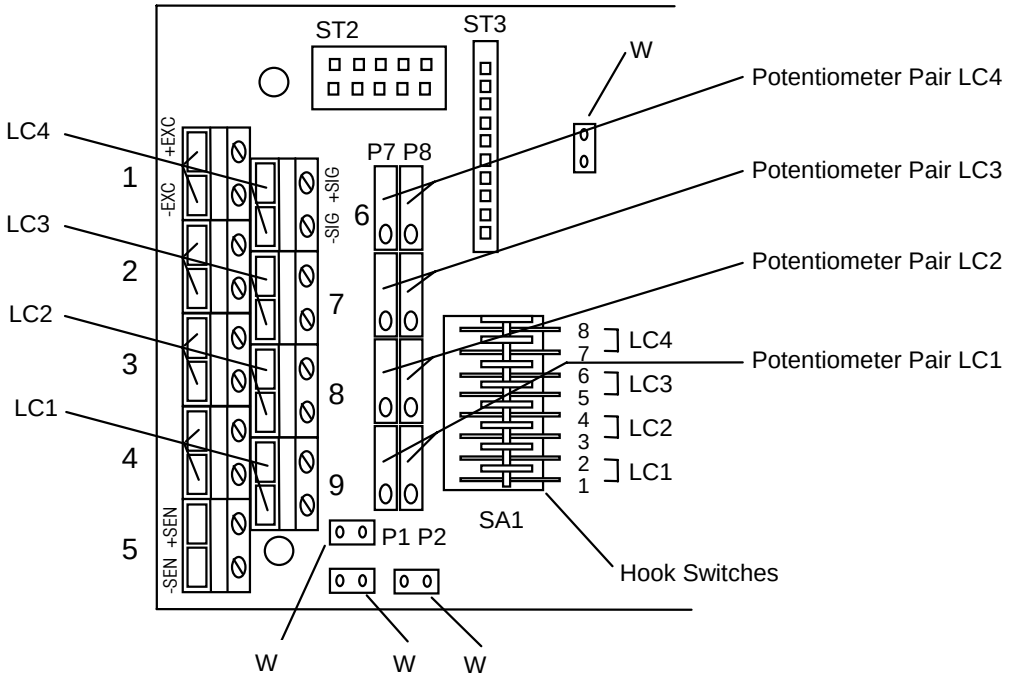


Figure 4-1: IDNet Potentiometer Adjustment

Scale Calibration

METTLER TOLEDO recommends calibrating the scale using test weights equal to the scale's capacity. With the proper test weight, continue calibrating the weighing system according to the instructions provided in your digital indicator manual.

Options for Calibration

Calibration with Test Weights

The most accurate, reliable way to calibrate a scale is to hang test weights from the tank. This method is useful when accuracy is extremely important and in tanks holding less than 10,000 kg.

Take readings as you add and remove weights. This yields a graph of the scale's performance from zero to maximum, and back to zero.

Calibration with Test Weights and Material Substitution

The substitution method is recommended for larger installations where it is physically impossible to hang test weights equivalent to the tank's maximum capacity. When performed correctly, this method yields a reliable performance graph.

For example, you might hang 1,500 kg of test weights, take a weight reading, and then remove the test weights. Then add enough water to the tank to equal the indicator reading obtained with the test weights. With the water still in the tank, hang the same test weights for a second reading. Continue substituting water for the test weights and taking weight readings until you reach the tank's full capacity.

Calibration with Material Transfer

When calibrating with material transfer, you weigh a material (usually water) on an existing scale and transfer it to the tank scale being calibrated. You can do this in a single transfer or in stages until you reach the tank's maximum capacity. This method yields only a rough indication of scale performance. It depends on the accuracy of the existing scale and the integrity of the transfer process. Even in the best conditions, you will not know if allowable errors are cumulative or compensating.

Electronic Calibration

When using the electronic calibration method, you replace the load cell cables with leads from a load cell simulator. The simulator sends out a signal equal to the signal the load cells should produce. Electronic calibration is noted for its speed and simplicity; however, it calibrates only the electronics. It does not verify the scale performance, assuming instead that the tank and all mechanical connections are in perfect working order.

1. With the simulator adjusted to zero output, set the indicator to zero.
2. Adjust the simulator to full output; a signal equal to that which all the load cells should produce at their rated capacity.
3. Adjust the indicator to show the total capacity of all loads cells in the system.

5 Routine Care and Maintenance

General

Once you have installed your equipment, you should have an authorized METTLER TOLEDO representative periodically inspect and calibrate it. 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 on periodic inspection and calibration services.

Site Inspection

Make sure that the scale site remains in good condition. Check for alterations in the dead-to-live connections, alterations in support for the weigh modules, overloading and excessive vibration conditions, and debris or material build-up under or around the scale which could prevent the scale from moving freely.

Weigh Module and Junction Box Inspection

During periodic inspections of the weigh modules, note:

1. Load cells, rocker pins/load pins, and bumpers for signs of unusual wear
2. Clearance between the hold-down bolt and the top plate (scales using Flexmount and Flexmount HD weigh modules)
3. Number of bumper bolts used, where they are installed, and the bumper gaps (scales using Centerlign weigh modules)
4. Floor drain for adequate drainage away from the weigh modules
5. Junction box lid: Is it properly sealed? Are all cord grips tight?
6. Moisture or foreign material present around or inside the junction box assembly
7. Is the instrument cable damaged? Does it bind the scale?
8. Repeatability and shift of the scale

6 Troubleshooting

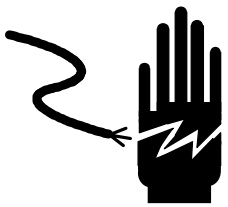
General

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 Flexmount, Flexmount HD, or Centerlign scale system, examine the scale's physical location and all dead-to-live connections. Check for the presence of water, corrosive materials, unlevel or inadequate support, high vibrations, air currents, or physical damage to the scale structure. Also check the instrument cable for damage, and all connections for loose or improper wiring.

⚠ 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.



⚠ 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.

Isolate the Problem

Determine whether the problem is in the scale or the digital indicator.

1. Remove power from the system, and then disconnect the digital indicator from the scale.
2. Connect the digital indicator to a load cell simulator (analog simulator available from METTLER TOLEDO).
3. Reapply power and test the indicator. If the problem persists, consult the digital indicator manual for further troubleshooting assistance.
4. If the problem is NOT present with the load cell simulator attached to the indicator, 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 lid from the junction box and check the interior for moisture and 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 for correct wiring. The wiring color codes are given in Table 6-1:

Load Cell Wiring			Analog Instrument Cable*	
Function	**Color for 45K PN *13929400A PN *14841200A**	**Color for All Other Load Cells**	**Function**	**Color**
+Excitation	White	Green	+Excitation	White
			+Sense	Yellow
+Signal	Green	White	+Signal	Green
Shield	Yellow	Yellow	Shield	Orange
-Signal	Black	Red	-Signal	Black
			-Sense	Red
-Excitation	Blue	Black	-Excitation	Blue
Instrument cable color code based on METTLER TOLEDO cable no. 51062037				

* See Figure 3-13 for DigiTOL instrument cable wiring.

Table 6-1: Load Cell Wiring Color Codes

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

Check Load Cells

1. Remove power from the system. Fully disconnect each load cell and check for proper input/output resistances (see Table 6-2).

	Resistance			
Measuring Points*	**250 – 10K**	**20K/30K**	**45K**	**50K – 200K**
+Exc (Green) to -Exc (Black)	350 ohms min.	360-400 ohms	2,100-2,300 ohms	750 ohms min.
+Sig (White) to –Sig (Red)	348-352 ohms	348-352 ohms	2,180-2,220 ohms	695-705 ohms

*See Table 6-1 for 45K wiring.

Table 6-2: 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 ± 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 ± 0.45 mV.
6. If a load cell fails any of the above tests, replace it.

Check Mechanical Components

Because the Flexmount, Flexmount HD, and Centerlign designs are so simple, only a few mechanical components require troubleshooting. Make sure that the scale can move freely and that the bumpers do not rest against the load cells. Then note:

1. Is the scale level or rocking? If so, reshimming may be required.
2. Check the rocker pins for unusual wear. Replace unevenly worn pins or pins having flattened bearing surfaces.
3. Check new or modified dead-to-live connections on the scale.
4. Does rigid piping or poor structural support result in mechanical binds?

Flexmount/Centerlign Load Cell Replacement

1. Remove power to the digital indicator 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 water-tight cable connector on the junction box and remove the cable from the enclosure.
5. Carefully raise the top plate of the weigh module to remove the load from the cell. If you are servicing a Flexmount weigh module, you can use the jacking bolt to raise the empty vessel off the cell.
6. If the load cell cable runs through a conduit, attach a string to the end of the defective load cell cable. The string should be both strong enough and long enough to pull the new load cell cable through the conduit.
7. Remove the load cell mounting screws, and keep them for reinstallation. Lift the load cell from the mounting surface. See Table 6-3 for bolt sizes and torques.

⚠ WARNING

BE SURE TO BLOCK THE SCALE WHEN IN THE RAISED POSITION. OBSERVE ALL APPROPRIATE SAFETY PROCEDURES WHEN INSTALLING AND SERVICING THE WEIGH MODULES.

8. Carefully pull the defective load cell cable through the conduit while feeding the string through 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 the O-rings or load pin with the O-ring from the defective load cell. Reinstall it in the new load cell.
10. Attach the new load cell's cable to the pulling string and carefully thread it through the conduit into the junction box opening.

11. Secure the new load cell to the base plate. Apply an anti-seize compound such as Never-Seez to the mounting screw threads and tighten to the torque specifications outlined in Table 6-3.

Flexmount Weigh Module lb (kg)	C.S. Load Cell Bolt & Torque ft-lb (Nm)	S.S. Load Cell Bolt & Torque ft-lb (Nm)
250, 500, 1.25K, 2.5K & 5K (220, 550, 1100 & 2200)	1/2-13 UNC Bolt 100 (136)	1/2-13 UNC Bolt 75 (102)
10K (4,400)	3/4-10 UNC Bolt 250 (339)	3/4-10 UNC Bolt 200 (271)
20K & 30K (9,012 & 13,608)	1-8 UNC Bolt 475 (644)	1-8 UNC Bolt 280 (380)
45K (20,412)	1.25-7 UNC Bolt 1,000 (1,356)	1.25-7 UNC Bolt 520 (705)

Table 6-3: Torque Specifications

12. Verify adequate clearance under the load end of the load cell.

13. Thread the load cell cable through the connector on the junction box. When the cable length inside the box is sufficient, tighten the box connector.

14. Wire the new load cell cable to the proper terminal on the PCB, per the wiring code shown.

15. Ensure that the rocker/load pin is properly aligned with the receiver in the top plate. Then slowly lower the top plate until the rocker/load pin is properly seated.

16. Reattach the instrument cable and power-up the indicator. Perform a shift adjust if required and recalibrate the scale.

Flexmount HD Load Cell Replacement

The Flexmount HD load cell is secured to its mounting plate by eight socket head cap screws. The mounting plate is secured to the weigh module's base plate by four hex head cap screws and two retaining plates. Both the load cell and the mounting plate must be removed to gain access to the eight load cell retaining screws.

You can remove a load cell by removing the entire Flexmount HD weigh module or by removing the load cell while the weigh module is still in place. To remove a load cell with the weigh module in place, you must raise the top plate approximately 2 inches.

1. Remove power to the digital indicator 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 water-tight cable connector on the junction box and remove the cable from the enclosure.

5. Remove weight from the load cell by lifting the tank with hydraulic jacks.

⚠ WARNING

BE SURE TO BLOCK THE SCALE WHEN IN THE RAISED POSITION. OBSERVE ALL APPROPRIATE SAFETY PROCEDURES WHEN INSTALLING AND SERVICING THE WEIGH MODULES.

NOTE: To lift the tank, you will have to loosen the weigh module's hold-down bolts enough to allow the top plate to move upward approximately 2 inches.

6. Remove the four screws that secure the mounting plate to the base plate, and slide the load cell assembly off the base plate. Be sure to catch the load pin as it disengages from the top plate. Set aside the four screws, load pin, and two retaining plates so that you can use them later.
7. Remove the eight screws that secure the load cell to the mounting plate. Then use the screws to fasten the new load cell to the mounting plate. See Table 6-4 for torque specifications.
8. Position the load cell / mounting plate assembly on the base plate. Make sure that the load pin is properly engaged to the top plate. Then fasten the mounting plate to the base plate with the four mounting screws. See Table 6-4 for torque specifications.
9. Lower the top plate onto the load pin.
10. Check the weigh module's hold-down bolts for proper clearance, and tighten the lower jam nut on each bolt against the base plate.
11. Reattach the instrument cable and power up the indicator.

Flexmount HD Weigh Module lb	Load Cell Bolt & Torque ft-lb (Nm)	Mounting Plate Bolt & Torque ft-lb (Nm)
50K, 75K & 100K	7/16-20 UNC Bolt 60 (81)	7/8-9 UNC Bolt 320 (430)
150K & 200K	1/2-20 UNC Bolt 90 (122)	1.25-7 UNC Bolt 840 (1130)

Table 6-4: Flexmount HD Torque Specifications

7 Flexmount Parts

Refer to the following drawing and tables when ordering parts for Model 0958 Flexmount weigh modules.

Model 0958 Flexmount

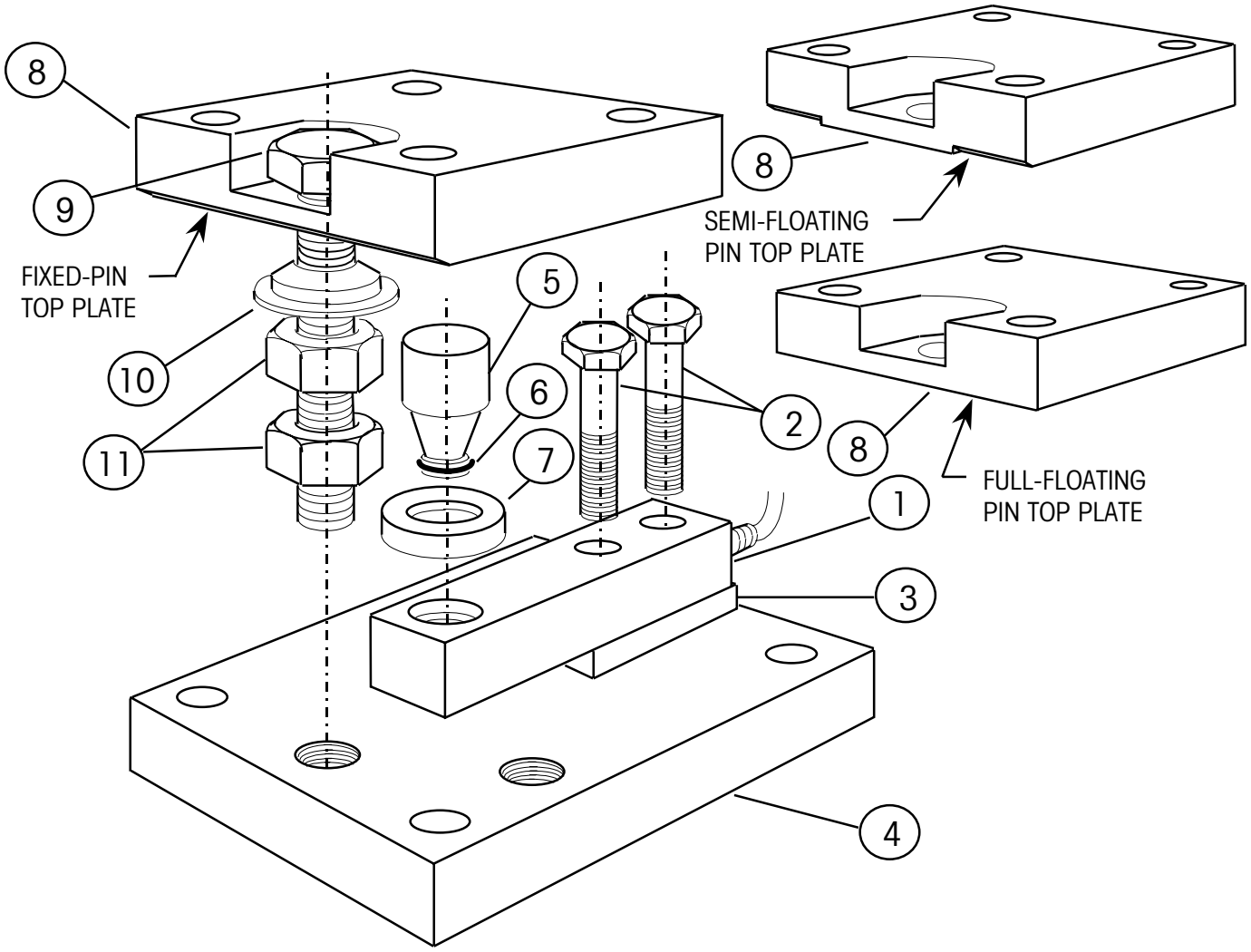


Figure 7-1: 250-lb to 45K-lb Flexmount Assembly

Ref. No.	Part Number	Description	Qty.
1	TB600488-1	250-lb load cell, S.S., potted, 350 ohm, Model 744 (15-ft cable)	1
	TB600529-3	500-lb load cell, S.S., 350 ohm (15-ft cable)	
	TB600647-3	220-kg OIML C3 R60 load cell, S.S., 350 ohm (15-ft cable)	
	TB600454	550-kg OIML C3 R60 load cell, S.S., 350 ohm (15-ft cable)	
	TB600363	1,250-lb load cell, S.S., 350 ohm (15-ft cable)	
	TB600342	2,500-lb load cell, S.S., 350 ohm (15-ft cable)	
	TB600455	1,100-kg OIML C3 R60 load cell, S.S., 350 ohm (15-ft cable)	
2	MZ0901010433	1/2-13 hex head bolt x 2.25" long (carbon steel)	2
	MZ0901010122	1/2-13 hex head bolt x 2.25" long (stainless steel)	
3	TN600366	Spacer plate	1
4	TA600316-11	Base plate (carbon steel)	1
	TA600316-2	Base plate (stainless steel)	
5	TN600321	Load pin	1
6	MZ090900005	O-ring, load pin	1
7	TN600322-1	Dust seal, load pin	1
8	TA600320-11	Top plate, full-floating pin (carbon steel)	1
	TA600320-2	Top plate, full-floating pin (stainless steel)	
	TA600319-11	Top plate, semi-floating pin (carbon steel)	
	TA600319-2	Top plate, semi-floating pin (stainless steel)	
	TA600318-11	Top plate, fixed pin (carbon steel)	
	TA600318-2	Top plate, fixed pin (stainless steel)	
9	MZ0901010462	5/8-11 hold-down bolt x 3.5" long (carbon steel)	1
	MZ0901010423	5/8-11 hold-down bolt x 3.5" long (stainless steel)	
10	TN600507	Centering washer (stainless steel)	1
11	MZ0901020025	5/8-11 hex nut (stainless steel)	2
Ref.	TB100393	Analog junction box, 4 hole (*13640300A PCB)	
Ref.	TB100395	Analog junction box, 5 hole (*13640300A PCB)	
Ref.	TB100515-X**	DigiTOL junction box (*13839900A PCB)	
Ref.	TB100569-X**	IDNet junction box	

* May have a letter prefix.
** X = Number of connectors on junction box (-4 or -5 connector boxes available).

Table 7-1: 250-lb to 2,500-lb Flexmount Assembly

Ref. No.	Part Number	Description	Qty.
1	TB600343	5K-lb load cell, S.S., 350 ohm (15-ft cable)	1
	TB600456	2,200-kg OIML C3 R60 load cell, S.S., 350 ohm (15-ft cable)	
2	MZ0901010434	1/2-13 hex head bolt x 2.5" long (carbon steel)	2
	MZ0901010227	1/2-13 hex head bolt x 2.5" long (stainless steel)	
3	TN600366	Spacer plate	1
4	TA600316-11	Base plate (carbon steel)	1
	TA600316-2	Base plate (stainless steel)	
5	TN600321	Load pin	1
6	MZ090900005	O-ring, load pin	1
7	TN600322-2	Dust seal, load pin	1
8	TA600320-11	Top plate, full-floating pin (carbon steel)	1
	TA600320-2	Top plate, full-floating pin (stainless steel)	
	TA600319-11	Top plate, semi-floating pin (carbon steel)	
	TA600319-2	Top plate, semi-floating pin (stainless steel)	
	TA600318-11	Top plate, fixed pin (carbon steel)	
	TA600318-2	Top plate, fixed pin (stainless steel)	
9	MZ0901010462	5/8-11 hold-down bolt x 3.5" long (carbon steel)	1
	MZ0901010423	5/8-11 hold-down bolt x 3.5" long (stainless steel)	
10	TN600507	Centering washer (stainless steel)	1
11	MZ0901020025	5/8-11 hex nut (stainless steel)	2
Ref.	TB100393	Analog junction box, 4 hole (*13640300A PCB)	
Ref.	TB100395	Analog junction box, 5 hole (*13640300A PCB)	
Ref.	TB100515-X**	DigiTOL junction box (*13839900A PCB)	
Ref.	TB100569-X**	IDNet junction box	

* May have a letter prefix.
** X = Number of connectors on junction box (-4 or -5 connector boxes available).

Table 7-2: 5K-lb Flexmount Assembly

Ref. No.	Part Number	Description	Qty.
1	TB600364	10K-lb load cell, S.S., 350 ohm (30-ft cable)	1
	TB600457-1	4,400-kg OIML C3 R60 load cell, S.S., 350 ohm (30-ft cable)	
2	MZ0901010420	3/4-10 hex head bolt x 3.25" long (carbon steel)	2
	MZ0901010421	3/4-10 hex head bolt x 3.25" long (stainless steel)	
3	TN600367	Spacer plate	1
4	TA600333-11	Base plate (carbon steel)	1
	TA600333-2	Base plate (stainless steel)	
5	TN600337	Load pin	1
6	MZ090900050	O-ring, load pin	1
7	TN600322-3	Dust seal, load pin	1
8	TA600336-11	Top plate, full-floating pin (carbon steel)	1
	TA600336-2	Top plate, full-floating pin (stainless steel)	
	TA600335-11	Top plate, semi-floating pin (carbon steel)	
	TA600335-2	Top plate, semi-floating pin (stainless steel)	
	TA600334-11	Top plate, fixed pin (carbon steel)	
	TA600334-2	Top plate, fixed pin (stainless steel)	
9	MZ0901010461	3/4-10 hold-down bolt x 4.5" long (carbon steel)	1
	MZ0901010425	3/4-10 hold-down bolt x 4.5" long (stainless steel)	
10	TN600511	Centering washer (stainless steel)	1
11	MZ0901020046	3/4-10 hex nut (stainless steel)	2
Ref.	TB100393	Analog junction box, 4 hole (*13640300A PCB)	
Ref.	TB100395	Analog junction box, 5 hole (*13640300A PCB)	
Ref.	TB100515-X**	DigiTOL junction box (*13839900A PCB)	
Ref.	TB100569-X**	IDNet junction box	

* May have a letter prefix.
** X = Number of connectors on junction box (-4 or -5 connector boxes available).

Table 7-3: 10K-lb Flexmount Assembly

Ref. No.	Part Number	Description	Qty.
1	*15297300B	20K-lb load cell, S.S., 350 ohm (30-ft cable)	1
	*15297800B	30K-lb load cell, S.S., 350 ohm (30-ft cable)	
	*15355500B	9,072-kg C3 R60 OIML load cell, S.S., 350 ohm (30-ft cable)	
	*15298200B	13,608-kg C3 R60 OIML load cell, S.S., 350 ohm (30-ft cable)	
2	TN800675	1-8 hex head cap screw x 4.5" long (carbon steel)	2
	TN800674	1-8 hex head cap screw x 4.5" long (stainless steel)	
3	TA600687-SS	Spacer plate	1
4	TA600683-CS	Base plate (carbon steel, painted)	1
	TA600683-SS	Base plate (stainless steel, type 304)	
	TA600683-S6	Base plate (stainless steel, type 316)	
5	TA600708	Load pin	1
6	MZ0909000013	O-ring, load pin	1
7	TN600691-1	Gasket, load pin	1
8	TA600712-CS	Top plate, full-floating pin (carbon steel, painted)	1
	TA600712-SS	Top plate, full-floating pin (stainless steel, type 304)	
	TA600712-S6	Top plate, full-floating pin (stainless steel, type 316)	
	TA600711-CS	Top plate, semi-floating pin (carbon steel, painted)	
	TA600711-SS	Top plate, semi-floating pin (stainless steel, type 304)	
	TA600711-S6	Top plate, semi-floating pin (stainless steel, type 316)	
	TA600710CS	Top plate, fixed pin (carbon steel, painted)	
	TA600710-SS	Top plate, fixed pin (stainless steel, type 304)	
	TA600710-S6	Top plate, fixed pin (stainless steel, type 316)	
9	TA600693	1-8 hold-down bolt x 6.5" long (carbon steel)	1
	TA600695	1-8 hold-down bolt x 6.5" long (stainless steel)	
10	TN600689	Sleeve washer (stainless steel)	1
11	MZ0901020073	1-8 hex nut (stainless steel)	1
Ref.	TB100393	Analog junction box, 4 hole (*13640300A PCB)	
Ref.	TB100395	Analog junction box, 5 hole (*13640300A PCB)	
Ref.	TB100515-X**	DigiTOL junction box (*13839900A PCB)	
Ref.	TB100569-X**	IDNet junction box	

* May have a letter prefix.
** X = Number of connectors on junction box (-4 or -5 connector boxes available).

Table 7-4: 20K-lb and 30K-lb Flexmount Assembly

Ref. No.	Part Number	Description	Qty.
1	*15297700B	45K-lb load cell, S.S., 2K ohm (30-ft cable)	1
	*15357400B	20,412-kg C3 R60 OIML load cell, S.S., 2K ohm (30-ft cable)	
2	TN800662	1.25-7 hex head cap screw x 5.5" long (carbon steel)	2
	TN800673	1.25-7 hex head cap screw x 5.5" long (stainless steel)	
3	TA600688-SS	Spacer plate	1
4	TA600685-CS	Base plate (carbon steel, painted)	1
	TA600685-SS	Base plate (stainless steel, type 304)	
	TA600685-S6	Base plate (stainless steel, type 316)	
5	TA600709	Load pin	1
6	MZ0909000004	O-ring, load pin	1
7	TN600691-3	Gasket, load pin	1
8	TA600715-CS	Top plate, full-floating pin (carbon steel, painted)	1
	TA600715-SS	Top plate, full-floating pin (stainless steel, type 304)	
	TA600715-S6	Top plate, full-floating pin (stainless steel, type 316)	
	TA600714-CS	Top plate, semi-floating pin (carbon steel, painted)	
	TA600714-SS	Top plate, semi-floating pin (stainless steel, type 304)	
	TA600714-S6	Top plate, semi-floating pin (stainless steel, type 316)	
	TA600713-CS	Top plate, fixed pin (carbon steel, painted)	
	TA600713-SS	Top plate, fixed pin (stainless steel, type 304)	
	TA600713-S6	Top plate, fixed pin (stainless steel, type 316)	
9	TA600694	1.25-7 hold-down bolt x 8" long (carbon steel)	1
	TA600696	1.25-7 hold-down bolt x 8" long (stainless steel)	
10	TN600690	Sleeve washer (stainless steel)	1
11	MZ0901020048	1.25-7 hex nut (stainless steel)	1
Ref.	TB100393	Analog junction box, 4 hole (*13640300A PCB)	
Ref.	TB100395	Analog junction box, 5 hole (*13640300A PCB)	
Ref.	TB100515-X**	DigiTOL junction box (*13839900A PCB)	
Ref.	TB100569-X**	IDNet junction box	

* May have a letter prefix.
** X = Number of connectors on junction box (-4 or -5 connector boxes available).

Table 7-5: 45K-lb Flexmount Assembly

8 Centerlign Parts

Refer to the following drawing and tables when ordering parts for Model 0958 Centerlign weigh modules.

Model 0958 Centerlign

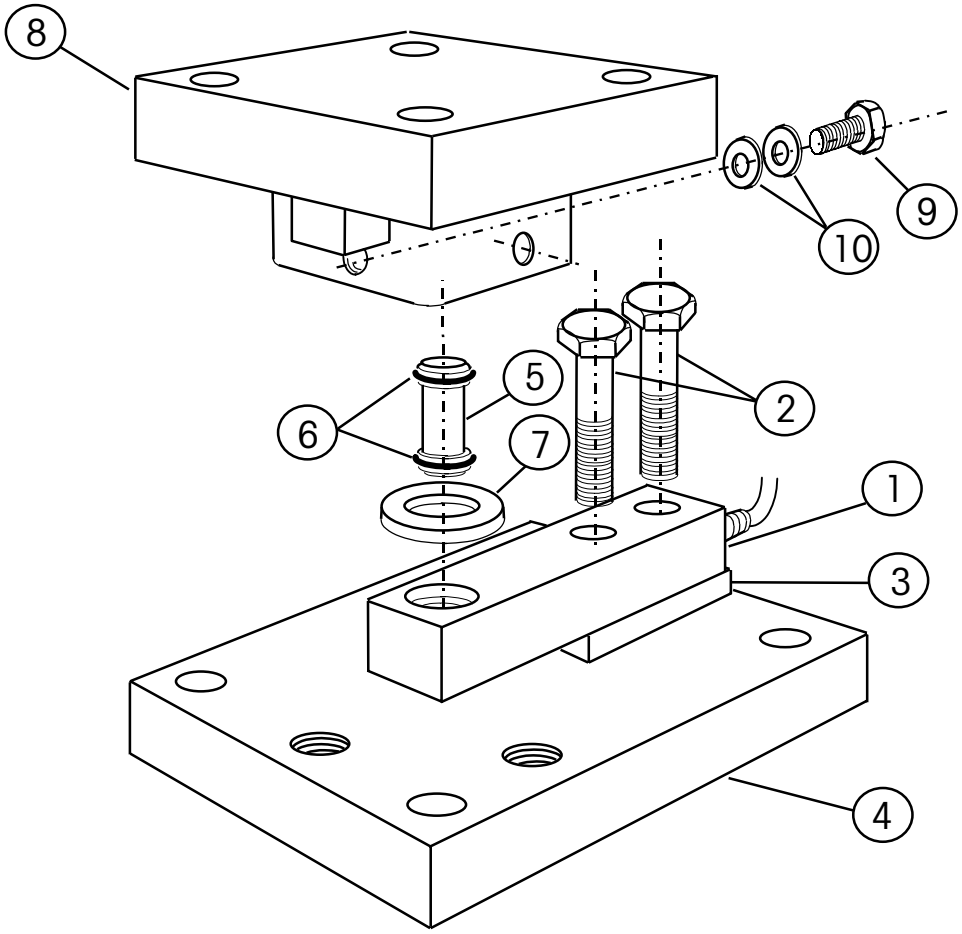


Figure 8-1: 250-lb to 45K-lb Centerlign Assembly

Ref. No.	Part Number	Description	Qty.
1	TB600488-1	250-lb load cell, S.S., potted, 350 ohm, Model 744 (15-ft cable)	1
	TB600529-3	500-lb load cell, S.S., 350 ohm (15-ft cable)	
	TB600647-3	220-kg OIML C3 R60 load cell, S.S., 350 ohm (15-ft cable)	
	TB600454	550-kg OIML C3 R60 load cell, S.S., 350 ohm (15-ft cable)	
	TB600363	1,250-lb load cell, S.S., 350 ohm (15-ft cable)	
	TB600342	2,500-lb load cell, S.S., 350 ohm (15-ft cable)	
	TB600455	1,100-kg OIML C3 R60 load cell, S.S., 350 ohm (15-ft cable)	
2	MZ0901010433	1/2-13 hex head bolt x 2.25" long (carbon steel)	2
	MZ0901010122	1/2-13 hex head bolt x 2.25" long (stainless steel)	
3	TN600366	Spacer plate	1
4	TA600316-11	Base plate (carbon steel)	1
	TA600316-2	Base plate (stainless steel)	
5	MN21018	Load pin	1
6	MZ090900005	O-ring, load pin	1
7	TN600322-4	Dust seal, load pin	1
8	TA600362-11	Top plate (carbon steel)	1
	TA600348	Top plate (stainless steel)	
9	MZ0901010064	3/8-16 hex head screw x 0.50" long (stainless steel)	3
10	MZ0901030019	3/8 plain washer (stainless steel)	Varies
	TN201034	3/8 plain washer x 0.03" long (stainless steel)	
Ref.	TB100393	Analog junction box, 4 hole (*13640300A PCB)	
Ref.	TB100395	Analog junction box, 5 hole (*13640300A PCB)	
Ref.	TB100515-X**	DigiTOL junction box (*13839900A PCB)	
Ref.	TB100569-X**	IDNet junction box	
Ref.	TN600387	Alignment tool	

* May have a letter prefix.
** X = Number of connectors on junction box (-4 or -5 connector boxes available).

Table 8-1: 250-lb to 2,500-lb Centerlign Assembly

Ref. No.	Part Number	Description	Qty.
1	TB600343	5K-lb load cell, S.S., 350 ohm (15-ft cable)	1
	TB600456	2,200-kg OIML C3 R60 load cell, S.S., 350 ohm (15-ft cable)	
2	MZ0901010434	1/2-13 hex head bolt x 2.5" long (carbon steel)	2
	MZ0901010227	1/2-13 hex head bolt x 2.5" long (stainless steel)	
3	TN600366	Spacer plate	1
4	TA600316-11	Base plate (carbon steel)	1
	TA600316-2	Base plate (stainless steel)	
5	MN21018	Load pin	1
6	MZ090900005	O-ring, load pin	1
7	TN600322-4	Dust seal, load pin	1
8	TA600362-11	Top plate (carbon steel)	1
	TA600348	Top plate (stainless steel)	
9	MZ0901010064	3/8-16 hex head screw x 0.50" long (stainless steel)	3
10	MZ0901030019	3/8 plain washer (stainless steel)	Varies
	TN201034	3/8 plain washer x 0.03" long (stainless steel)	
Ref.	TB100393	Analog junction box, 4 hole (*13640300A PCB)	
Ref.	TB100395	Analog junction box, 5 hole (*13640300A PCB)	
Ref.	TB100515-X**	DigiTOL junction box (*13839900A PCB)	
Ref.	TB100569-X**	IDNet junction box	
Ref.	TN600360	Alignment tool	

* May have a letter prefix.
** X = Number of connectors on junction box (-4 or -5 connector boxes available).

Table 8-2: 5K-lb Centerlign Assembly

Ref. No.	Part Number	Description	Qty.
1	TB600364	10K-lb load cell, S.S., 350 ohm (30-ft cable)	1
	TB600457-1	4,400-kg OIML C3 R60 load cell, S.S., 350 ohm (30-ft cable)	
2	MZ0901010420	3/4-10 hex head bolt x 3.25" long (carbon steel)	2
	MZ0901010421	3/4-10 hex head bolt x 3.25" long (stainless steel)	
3	TN600367	Spacer plate	1
4	TA600333-11	Base plate (carbon steel)	1
	TA600333-2	Base plate (stainless steel)	
5	TN201975	Load pin	1
6	MZ090900050	O-ring, load pin	1
7	TN600322-5	Dust seal, load pin	1
8	TA600368-11	Top plate (carbon steel)	1
	TA600359	Top plate (stainless steel)	
9	MZ0901010064	3/8-16 hex head screw x 0.50" long (stainless steel)	3
10	MZ0901030019	3/8 plain washer (stainless steel)	Varies
	TN201034	3/8 plain washer x 0.03" long (stainless steel)	
Ref.	TB100393	Analog junction box, 4 hole (*13640300A PCB)	
Ref.	TB100395	Analog junction box, 5 hole (*13640300A PCB)	
Ref.	TB100515-X**	DigiTOL junction box (*13839900A PCB)	
Ref.	TB100569-X**	IDNet junction box	
Ref.	TN600361	Alignment tool	

* May have a letter prefix.
** X = Number of connectors on junction box (-4 or -5 connector boxes available).

Table 8-3: 10K-lb Centerlign Assembly

Ref. No.	Part Number	Description	Qty.
1	*15297300B	20K-lb load cell, S.S., 350 ohm (30-ft cable)	1
	*15297800B	30K-lb load cell, S.S., 350 ohm (30-ft cable)	
	*15355500B	9,072-kg C3 R60 OIML load cell, S.S., 350 ohm (30-ft cable)	
	*15298200B	13,608-kg C3 R60 OIML load cell, S.S., 350 ohm (30-ft cable)	
2	TN800675	1-8 hex head cap screw x 4.5" long (carbon steel)	2
	TN800674	1-8 hex head cap screw x 4.5" long (stainless steel)	
3	TN600687-SS	Spacer plate	1
4	TA600683-CS	Base plate (carbon steel, painted)	1
	TA600683-SS	Base plate (stainless steel, type 304)	
	TA600683-S6	Base plate (stainless steel, type 316)	
5	TA800664	Rocker pin	1
6	MZ0909000013	O-ring, load pin	2
7	TN600691-2	Gasket, load pin	1
8	TA600716-CS	Top plate (carbon steel, painted)	1
	TA600716-SS	Top plate (stainless steel, type 304)	
	TA600716-S6	Top plate (stainless steel, type 316)	
9	MZ0901010499	5/8-11 hex head cap screw x 0.75" long (stainless steel)	3
10	MZ0901030023	5/8 plain washer (stainless steel)	6
Ref.	TB100393	Analog junction box, 4 hole (*13640300A PCB)	
Ref.	TB100395	Analog junction box, 5 hole (*13640300A PCB)	
Ref.	TB100515-X**	DigiTOL junction box (*13839900A PCB)	
Ref.	TB100569-X**	IDNet junction box	
Ref.	TN600676	Locating tool	

* May have a letter prefix.
** X = Number of connectors on junction box (-4 or -5 connector boxes available).

Table 8-4: 20K-lb and 30K-lb Centerlign Assembly

Ref. No.	Part Number	Description	Qty.
1	*15297700B	45K-lb load cell, S.S., 350 ohm (30-ft cable)	1
	*15357400B	20,412-kg C3 R60 OIML load cell, S.S., 350 ohm (30-ft cable)	
2	TN800662	1.25-7 hex head cap screw x 5.5" long (carbon steel)	2
	TN800673	1.25-7 hex head cap screw x 5.5" long (stainless steel)	
3	TA600688-SS	Spacer plate	1
4	TA600685-CS	Base plate (carbon steel, painted)	1
	TA600685-SS	Base plate (stainless steel, type 304)	
	TA600685-S6	Base plate (stainless steel, type 316)	
5	TA800665	Rocker pin	1
6	MZ0909000004	O-ring, load pin	2
7	TN600691-4	Gasket, load pin	1
8	TA600717-CS	Top plate (carbon steel, painted)	1
	TA600717-SS	Top plate (stainless steel, type 304)	
	TA600717-S6	Top plate (stainless steel, type 316)	
9	MZ0901010499	5/8-11 hex head cap screw x 0.75" long (stainless steel)	3
10	MZ0901030023	5/8 plain washer (stainless steel)	6
Ref.	TB100393	Analog junction box, 4 hole (*13640300A PCB)	
Ref.	TB100395	Analog junction box, 5 hole (*13640300A PCB)	
Ref.	TB100515-X**	DigiTOL junction box (*13839900A PCB)	
Ref.	TB100569-X**	IDNet junction box	
Ref.	TN600677	Locating tool	

* May have a letter prefix.
** X = Number of connectors on junction box (-4 or -5 connector boxes available).

Table 8-5: 45K-lb Centerlign Assembly

9 Flexmount HD Parts

Refer to the following drawing and tables when ordering parts for Model 0958 Flexmount HD weigh modules.

Model 0958 Flexmount HD

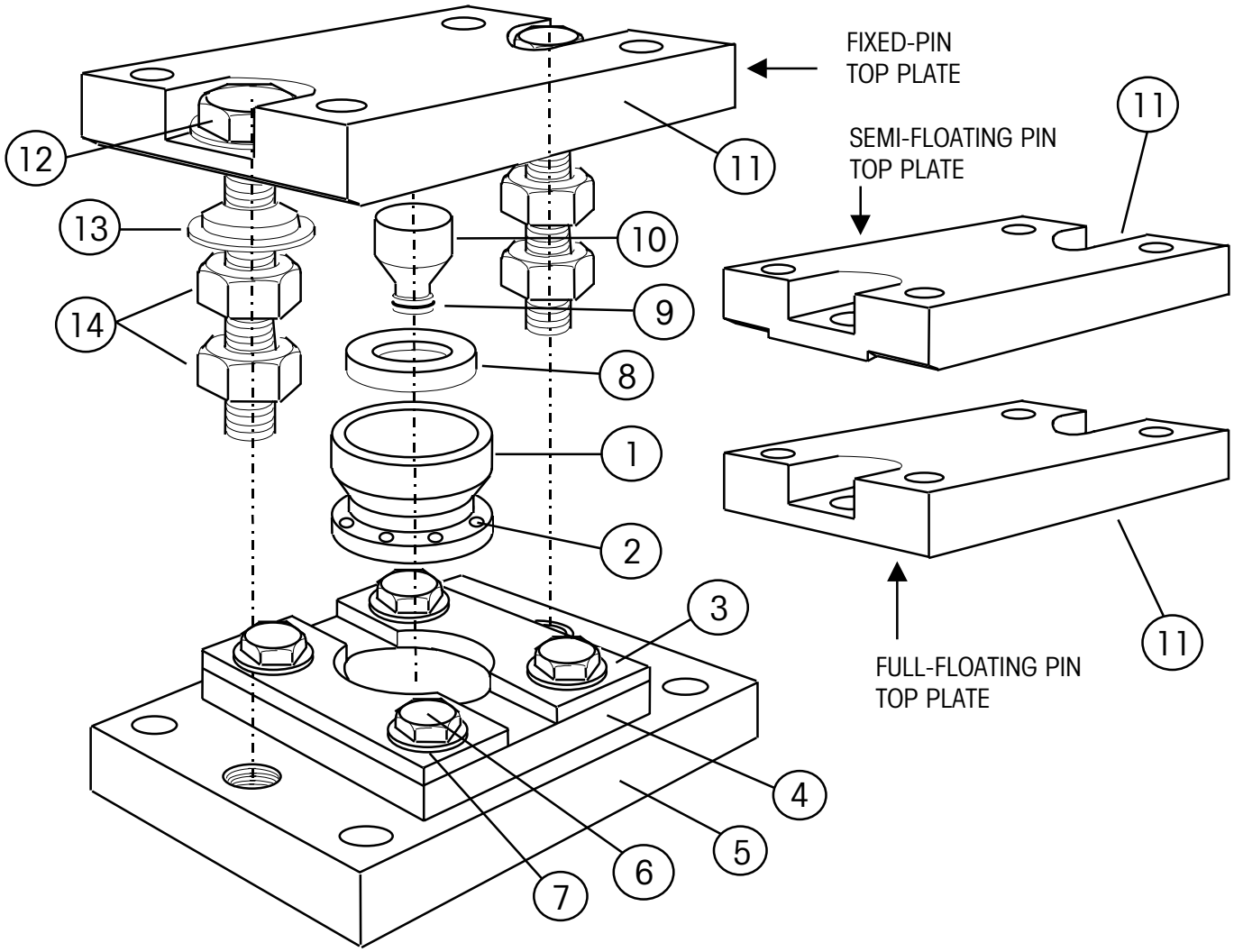


Figure 9-1: 50K-lb to 200K-lb Flexmount HD Assembly

Ref. No.	Part Number	Description	Qty.
1	TB600862-035	50K-lb load cell, Model 790 (35-ft cable)	1
	TB600863-035	75K-lb load cell, Model 790 (35-ft cable)	
	TB600864-035	100K-lb load cell, Model 790 (35-ft cable)	
2	MZ0901010524	7/16-20 socket head cap screw x 0.75" long (GR8)	8
3	TA600848-CS	Retaining plate	2
4	TA600847-CS	Mounting plate	1
5	TA600846-CS	Base plate (carbon steel)	1
6	MZ0901010525	7/8-9 hex head cap screw x 2.5" long (GR5 ZN)	4
7	MZ0901030058	Plain washer, 7/8"	4
8	TN600849-1	Gasket, load pin	1
9	MZ0909000004	O-ring, load pin	1
10	TA600856	Load pin	1
11	TA600855-CS	Top plate, full-floating pin, 50-100K (carbon steel)	1
	TA600854-CS	Top plate, semi-floating pin, 50-100K (carbon steel)	
	TA600853-CS	Top plate, fixed pin, 50-100K (carbon steel)	
12	TA600859	1.25-7 hold-down bolt x 8" long (GR5 ZN)	2
13	TN600857	Sleeve washer	2
14	MZ0901020048	1.25-7 hex nut	4
Ref.	TB100393	Analog junction box, 4 hole (*13640300A PCB)	
Ref.	TB100395	Analog junction box, 5 hole (*13640300A PCB)	
Ref.	TB100515-X**	DigiTOL junction box (*13839900A PCB)	
Ref.	TB100569-X**	IDNet junction box	

* May have a letter prefix.
** X = Number of connectors on junction box (-4 or -5 connector boxes available).

Table 9-1: 50K-lb to 100K-lb Flexmount HD Assembly

Ref. No.	Part Number	Description	Qty.
1	TB600865-035	150K-lb load cell, Model 790 (35-ft cable)	1
	TB600866-035	200K-lb load cell, Model 790 (35-ft cable)	
2	MZ0901010527	1/2-20 socket head cap screw x 1" long (GR8)	8
3	TA600869-CS	Retaining plate	2
4	TA600868-CS	Mounting plate	1
5	TA600867-CS	Base plate (carbon steel)	1
6	MZ0901010528	1.25-7 hex head cap screw x 2.75" long (GR5 ZN)	4
7	MZ0901030015	Plain washer, 1.25"	4
8	TN600849-2	Gasket, load pin	1
9	MZ0909000063	O-ring, load pin	1
10	TA600870	Load pin	1
11	TA600879-CS	Top plate, full-floating pin, 150-200K (carbon steel)	1
	TA600878-CS	Top plate, semi-floating pin, 150-200K (carbon steel)	
	TA600877-CS	Top plate, fixed pin, 150-200K (carbon steel)	
12	TA600871	1.5-6 hold-down bolt x 8" long (GR5 ZN)	2
13	TN600872	Sleeve washer	2
14	MZ0901020064	1.5-6 hex nut	4
Ref.	TB100393	Analog junction box, 4 hole (*13640300A PCB)	
Ref.	TB100395	Analog junction box, 5 hole (*13640300A PCB)	
Ref.	TB100515-X**	DigiTOL junction box (*13839900A PCB)	
Ref.	TB100569-X**	IDNet junction box	

* May have a letter prefix.
** X = Number of connectors on junction box (-4 or -5 connector boxes available).

Table 9-2: 150K-lb and 200K-lb Flexmount HD Assembly

10 Reference Material

Reference Diagrams

Weigh Module Systems Handbook, Part Number *15598500A

Do It Yourself Guide To Building Tank Scales, Part Number TH3100.1E

Weigh Module	General Dimensions	Wiring Diagram Analog	Wiring Diagram DigiTOL	Wiring Diagram IDNet
250 - 200K lb	TA600405	TB100505	TB100575	TB100600

Recommended Spare Parts

For part numbers refer to service parts (Chapters 7, 8, and 9).

Quantity	Description
1	Load cell
1	Junction box circuit board (type of board is per model of scale)
1	Junction box desiccant bag
1	Load or Rocker pin (by capacity of load cell)
2	Load or Rocker pin O-ring (by capacity of load cell)

11 Certificates of Conformance

Certificates of Conformance

U.S. Department of Commerce
National Institute of Standards and Technology
Gaithersburg, MD 20899

Certificate Number: 88-008A4
Page 1 of 3

National Type Evaluation Program

Certificate of Conformance

for Weighing and Measuring Devices

For:

Load Cell
Shear Beam
Model: 743
n_{max}, Class III, Multiple Cells: 5000
n_{max}, Class III L, Multiple Cells: 10 000
Capacity: 1000 lb to 75 000 lb

Accuracy Class: III/III L

Submitted by:

Mettler-Toledo, Inc.
P.O. Box 1705
Columbus, OH 43216
Tel: (614) 438-4393
Fax: (614) 438-4355
Contact: Darrell Flocken

Standard Features and Options

See Page 2 for specific load cell parameters.

Wire Design: 4 wire
Material: Stainless steel
Excitation Voltage: 5 to 15 volts (AC/DC)
Nominal Output: 2 mV/V

Temperature Range: -10 °C to 40 °C (14 °F to 104 °F)

This device was evaluated under the National Type Evaluation Program (NTEP) and was found to comply with the applicable technical requirements of Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices." Evaluation results and device characteristics necessary for inspection and use in commerce are on the following pages.

Effective Date: March 3, 1998

Gilbert M. Ugiansky, Ph.D.
Chief, Office of Weights and Measures
Issue Date: June 23, 1998

Note: The National Institute of Standards and Technology does not "approve," "recommend," or "endorse" any proprietary product or material, either as a single item or as a class or group. Results shall not be used in advertising or sales promotion to indicate explicit or implicit endorsement of the product by the Institute. (See NTEP Policy and Procedures.)

Mettler-Toledo, Inc.
Shear Beam Load Cell
Model: 743

Application: The load cells may be used in Class III and III L scales for multiple cell applications consistent with the model designations, number of scale divisions, and parameters specified in this certificate. Load cells of a given accuracy class may be used in applications with lower accuracy class requirements provided the number of scale divisions, the v_{min} values, and temperature range are suitable for the application. The manufacturer may market the load cell with fewer divisions (n_{max}) and with larger v_{min} values than those listed on the certificate. However, the load cells must be marked with the appropriate n_{max} and v_{min} for which the load cell may be used.

Load Cell Parameters

Capacity (lb)	Accuracy Class	n_{max}	v_{min} (lb)	Minimum Dead Load (lb)
1000*	III	5000	0.2	10
3000	III	5000	0.6	30
5000	III	5000	1.0	50
10 000*	III	5000	2.0	100
20 000* **	III	5000	2.8	200
30 000*	III	5000	4.2	200
45 000*	III	5000	6.4	200
35 000	III L	10 000	3.5	200
45 000*	III L	10 000	4.5	200
75 000	III L	10 000	5.25	0

* Hermetic sealing option
** Load cell tested

Identification: A pressure sensitive identification badge containing the manufacturer, model designation, and serial number is located on the load cell. All other required information must be on an accompanying document including the serial number of the load cell.

Test Conditions: This Certificate supersedes Certificate of Conformance Number 88-008A3 and is issued to change the 20 000-lb and 45 000-lb capacities to hermetically sealed and to add a 30 000-lb capacity hermetically sealed load cell.

Two 20 000-lb capacity hermetically sealed load cells were tested at NIST using dead weights as the reference standard. The data were analyzed for multiple load cell applications. The cells were tested over a temperature range of -10 °C to 40 °C. Three tests were run on each cell at each temperature. The temperature effect on zero was measured and a time dependence (creep) test was performed. The barometric pressure test was waived due to the insensitivity of the load cell design to changes in barometric pressure.

The test conditions from previous certificates are listed below for reference.

Mettler-Toledo, Inc.
Shear Beam Load Cell
Model: 743

Certificate of Conformance Number 88-008A3: This Certificate superseded Certificate of Conformance Number 88-008A2 and was issued to add the Model 743, Class III L, 75 000-lb load cell with a 350-ohm gage and to revise the v_{min} ratings.

Two 50 000-lb capacity load cells was were tested at NIST using dead weights. The data were analyzed for multiple load cell applications. The cells were tested over a temperature range of -10 °C to 40 °C. Three tests were run on the each cell at each temperature. The temperature effect on zero was measured and a time dependence (creep) test was performed. The barometric pressure test was waived due to the insensitivity of the load cell design to changes in barometric pressure.

Certificate of Conformance Number 88-008A2: This Certificate superseded Certificate of Conformance Number 88-008A1 and was issued to include the Model 743, Class III L, 45 000-lb load cell with a 350-ohm gage and Model 743, Class III L, 35 000-lb load cell. The original Model 743, 45 000-lb load cell, has a 2000-ohm gage. This difference does not appear to significantly affect the metrological characteristics of the load cell; however, the two load cells are not interchangeable because they are electrically different.

In addition to the testing conducted for Certificate of Conformance Number 88-008, two 45 000-lb load cells with 350-ohm gages were tested using dead weights, a force machine with a load cell as the reference standard. The data were analyzed for multiple load cell applications. The cells were tested over a temperature range of -10 °C to 40 °C. Three tests were run on each cell at each temperature. The temperature effect on zero was measured and a time dependence (creep) test was performed. The barometric pressure test was waived due to the insensitivity of the load cell design to changes in barometric pressure.

Certificate of Conformance Number 88-008A1: This Certificate superseded Certificate of Conformance Number 88-008 (dated October 2, 1989) and was issued to reflect new values for v_{min} for Class III load cells evaluated for multiple load cell applications. The new values for v_{min} reflect a change made in the NTEP application of the tolerances for these load cells.

Certificate of Conformance Number 88-008: This Certificate superseded Certificates of Conformance Numbers 88-008P and 88-008P Amended and was issued to upgrade the status of the certificate from provisional to full.

Two 1000-lb, two 10 000-lb, and two 20 000-lb capacity load cells were tested using dead weights, a force machine with a load cell as the reference standard. The data were analyzed for multiple load cell applications. The cells were tested over a temperature range of -10 °C to 40 °C. Three tests were run on each cell at each temperature. The temperature effect on zero was measured and a time dependence (creep) test was performed. The barometric pressure test was waived due to the insensitivity of the load cell design to changes in barometric pressure. The manufacturer's laboratory was used to collect the test data.

Representatives from the National Institute of Standards and Technology evaluated the manufacturer's test facility, witnessed repeat tests on the load cells, and analyzed the data.

The results indicate that the load cells comply with the applicable requirements of NIST Handbook 44.

Type Evaluation Criteria Used: NIST Handbook 44, 1998 Edition

Tested By: NIST Force Group, NIST Office of Weights and Measures

Information Reviewed By: R. Whipple (NIST) & Constantine Cotsoradis (NIST) 88-008A3; R. Suiter (NIST) 88-008A4

U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
GAITHERSBURG, MARYLAND 20899

CERTIFICATE NO. 92-108

Page 1 of 2

Certificate of Conformance

For Weighing and Measuring Devices

For:	Submitted by:
Load Cell Bending Beam Stainless Steel Model Family: 745 Series* n_{max}, Single Cell: 3,000 n_{max}, Multiple Cells: 5,000 Capacity: 1,000 to 20,000 lb Accuracy Class: III	Toledo Scale Corporation P.O. Box 1705 Columbus, OH 43216 Tele: (614) 438-4548 FAX: (614) 438-4646 Contact: Thomas M. Stabler

Standard Features and Options

*The specific load cell capacities, v_{min}, and minimum dead loads are listed on Page 2.

Nominal Output: 2 mV/V
Temperature Range: -10 to 40 °C (14 to 104 °F)

This device was evaluated under the **NATIONAL TYPE EVALUATION PROGRAM (NTEP)** and found to comply with the applicable technical requirements of **HANDBOOK 44**, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices".

Evaluation results and device characteristics necessary for inspection and use in commerce are on the following pages. For further information, contact the National Institute of Standards and Technology, address above, or telephone (301) 975-4004.

Date: April 20, 1992 (Effective) Carroll S. Brickenkamp
Chief, Office of Weights and Measures
Issued: June 22, 1993

NOTE: The National Institute of Standards and Technology does not "approve", "recommend", or "endorse" any proprietary product or material, either as a single item or as a class or group. Results shall not be used in advertising or sales promotion to indicate explicit or implicit endorsement of the product or material by the Institute. (See NTEP Policies and Procedures).

Mettler-Toledo, Inc.
Bending Beam Load Cell
Model Family: 745 Series

Application:

The load cells may be used in Class III scales for both single and multiple cell applications consistent with the model designations and parameters specified in this certificate. Load cells of a given accuracy class may be used in applications with lower accuracy class requirements provided the number of scale divisions, the v_{min} values, and temperature range are suitable for the application. The manufacturer may market load cells with fewer scale divisions (n_{max}) and with larger v_{min} values than those listed on the certificate. However, the load cells must be marked with the appropriate n_{max} and v_{min} for which the load cell may be used.

Application:

Capacity (lb)	Multiple-Cell Application v_{min} (lb)	Single-Cell Application v_{min} (lb)	Minimum Dead Load (lb)
1,000	0.140	0.140	0
1,250	0.175	0.175	0
2,500	0.35	0.35	0
4,000	0.56	0.56	0
5,000	0.70	0.70	0
10,000	1.4	1.4	0
20,000	2.8	2.8	0

Test Conditions:

Two 50,000-lb capacity load cells were tested at NIST using dead weights as the reference standard. Two 2,500-lb capacity load cells were tested at the manufacturer's facility using dead weights as the reference standard. The data were analyzed for both single and multiple load cell applications. The cells were tested over a temperature range of -10 to 40 °C. Three tests were run on each cell at each temperature. The temperature effect on zero was measured and a time dependence (creep) test was performed. The barometric pressure test was waived due to the insensitivity of the load cell design to changes in barometric pressure.

Representatives from the National Institute of Standards and Technology evaluated the manufacturer's test facility, witnessed repeat tests on the 2,500-lb load cells, and analyzed the data. The results indicate that the load cells comply with the applicable requirements of NIST Handbook 44.

Type Evaluation Criteria Used: NIST Handbook 44, 1992 Ed.

Tested By: NIST Force Group, NIST Office of Weights and Measures

Update Reviewed By: R. Whipple (NIST)

Control No.: 129

Nederlands Meetinstituut

Test certificate

Number **TC2154** Revision 2
Project number 10020362

Issued by	NMi IJkwezen B.V. Hugo de Grootplein 1 3314 EG Dordrecht The Netherlands Notified Body Number 122
In accordance with	Paragraph 8.1 of the European Standard on Metrological aspects of non-automatic weighing instrument EN 45501:1992 and by application of the OIML International Recommendation R 60 (Edition 1991). The applied error fraction p_i, meant in paragraph 3.5.4. of the standard is 0.7.
Applicant	Mettler-Toledo, Inc. 350 West Wilson Bridge Road Worthington, Ohio 43085 U.S.A.
In respect of	The model of a **beam load cell** with strain gauges, tested as part of a weighing instrument (for NAWI class (III) or (IIII)): Manufacturer : Mettler-Toledo types : 744 and 745

Characteristics

Maximum Capacity (E_{max})	220, 550, 1100, 1760, 2200 and 4400 kg (0.5, 1.25, 2.5, 4, 5 and 10 klb)
Accuracy Class	C
Maximum number of load cell intervals (n)	3000
Minimum load cell verification interval (V_{min})	E_{max}/10000

In the description TC2154 further essential characteristics are described.

Description and Documentation: The load cell is described in the description number TC2154 and documented in the documentation folder number TC2154-1, appertaining to this test certificate.

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Test certificate

Number **TC2154** Revision 2
Project number 10020362

Remarks
- Summary of tests involved: see Appendix number TC2154.
- This revision test certificate replaces the earlier versions with the numbers T2154, T2154/1 and T2154 revision 1 including its documentation folders.

Dordrecht, 3 May 1994
NMi IJkwezen B.V.

M. Charité
Director

Nederlands Meetinstituut

Description

Number **TC2154** Revision 2
Project number 10020362

1 General information about the load cell

All properties of the load cell, whether mentioned or not, may not be in conflict with the standard mentioned in the test certificate.

1.1 Essential parts

Description	Drawing number	Rev.	Remarks
Assy. HLC/TLC	2P15234	0	–
Load set up BLC/HLC	2P13025	0	–
Load set up TLC	2P14783	0	–
Assy. BLC/TLC	3P14926	0	–
Assy. HLC/THC	3P14925	0	–
Assy. BLC-C3-2.5K and 5K	2P16151	0	–

Cable:
The load cell is provided with a 4-wire or a 6-wire system.
The cable length of the load cell with the 4-wire system must correspond with the description on the load cell, 744 or 745

1.2 Essential characteristics

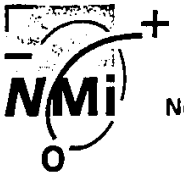
Minimum dead load	: 0 kg
Safe overload	: 150 % of E_{max}
Rated output	: 2 mV/V ± 0.002 mV/V
Input impedance	: 350 Ω (minimum)
Output impedance	: 350 Ω ± 2 Ω
Excitation maximum	: 15 V DC/AC
Transducer material	: 17-4 PH Stainless steel
Atmospheric protection	: Type 744 are sealed with a potting Type 745 are hermetic sealed

Mettler-Toledo 744 corresponds with HBM TLC/HLC.
Mettler-Toledo 745 corresponds with HBM BLC/TLC.

1.3 Essential shapes

Sealing:
- The data plate is sealed against removal or will be destroyed when removed. The data plate consists of at least the following information:
- manufacturer's mark, or name;
- E_{max} of the load cell;
- standard classification in the form C3;
- manufacturer's designation;
- serial number and year of manufacture;
- the number of this test certificate, TC2154.

Securing:
- The connecting cable of the load cell or the junction box is provided with a possibility to seal.



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Appendix

Number **TC2154** Revision 2
Project number 10020362

Tests carried out for this test certificate on the load cell, type BLC (1.25 and 5 klbs) and type HLC (500lbs) and BLC-2.5K (according drawing 2P16151).

Test	Institute	type, version, remarks
Temperature test and repeatability (20, 40, -10 and 20 °C)	NMi Certin B.V.	BLC-2.5K only at 20 °C
Temperature effect on minimum dead load output (20, 40, -10 and 20 °C)	NMi Certin B.V.	–
Creep test (20, 40 and -10 °C)	NMi Certin B.V.	–
Minimum load output return (20, 40 and -10 °C)	NMi Certin B.V.	–
Barometric pressure test at room temperature	NMi Certin B.V.	–
Humidity test	NMi Certin B.V.	–

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Test certificate

Number **TC2977** Revision 0
Project number 10069160

Issued by
NMi Certin B.V.
Hugo de Grootplein 1
3314 EG Dordrecht
The Netherlands

Notified Body Number 122

In accordance with
Paragraph 8.1 of the European Standard on Metrological aspects of non-automatic weighing instrument EN 45501:1992/AC:1993 and by application of the OIML International Recommendation R 60 (Edition 1991). The applied error fraction pi, meant in paragraph 3.5.4. of the standard is 0.7.

Applicant
Mettler-Toledo, Inc.
1150 Dearborn Drive
Worthington OH 43085-6712
United States of America

In respect of
The model of a **bending beam load cell** with strain gauges, tested as part of a weighing instrument (for NAWI class (III) or (IIII)):
Manufacturer : Mettler-Toledo, Inc.
Type : 0743

Characteristics

Maximum Capacity (E_{max})	9072 kg and 20412 kg 20000 lb and 45000 lb
Accuracy Class	C
Maximum number of LC intervals (n)	2000
Ratio of minimum LC verification interval $Y = E_{max} / V_{min}$	6000

In the description TC2977 Revision 0 further essential characteristics are described.

Description and Documentation
The load cell is described in the description number TC2977 Revision 0 and documented in the documentation folder number TC2977-1, appertaining to this test certificate.

Remarks
Summary of tests involved: see Appendix number TC2977 Revision 0.

Dordrecht, 6 March 1997
NMi Certin B.V.

A.J. Nederlof
Director

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Nederlands Meetinstituut

Description

Number **TC2977** Revision 0
Project number 10069160

1 General information about the load cell

All properties of the load cell, whether mentioned or not, may not be in conflict with the standard mentioned in the test certificate.

1.1 Essential parts

Description	Drawing number	Rev.	Remarks
Load cell Assy, (SS)		5	Mechanical and Electrical
Loadcell, BHSB LB SS		1	Mechanical and Electrical

Cable:
The load cell is provided with a 6-wire system (standard cable length 4.8 m other cable length optional).
The cable should be a shielded cable, the shield is not connected to the load cell body.

1.2 Essential characteristics

Minimum dead load	: for the version of 20000 lb, 50 kg; for the version of 45000 lb, 100 kg
Safe overload	: 100 % of E_{max}
Rated output	: 2 mV/V
Input impedance	: 380 Ω
Output impedance	: 350 Ω
Recommended excitation	: 15 V DC/AC
Excitation maximum	: 20 V DC/AC
Transducer material	: 17-4 PH, Stainless Steel
Atmospheric protection	: Potted sealing over strain gauge area

1.3 Essential shapes

Sealing:
- The data plate is sealed against removal or will be destroyed when removed. The data plate contains at least the following information:
  - manufacturer's mark, or name;
  - E_{max} of the load cell;
  - standard classification in the form C2;
  - manufacturer's designation;
  - serial number and year of manufacture;
  - the number of this test certificate, TC2977.

Securing:
- The connecting cable of the load cell or the junction box is provided with a possibility to seal.

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Appendix

Number **TC2977** Revision 0
Project number 10069160

Tests carried out for this test certificate on the load cell, type 0743

Test	Institute	version, remarks
Temperature test and repeatability (20, 40, -10 and 20 °C)	NMi Certin B.V.	20000 lb
Temperature effect on minimum dead load output (20, 40, -10 and 20 °C)	NMi Certin B.V.	20000 lb
Creep test (20, 40 and -10 °C)	NMi Certin B.V.	20000 lb
Minimum load output return (20, 40 and -10 °C)	NMi Certin B.V.	20000 lb
Barometric pressure test at room temperature	–	Not applicable because of construction
Humidity test	NMi Certin B.V.	20000 lb

METTLER TOLEDO

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Publication Part Number: F15175600A **Publication Date: 6/00**

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