

0990

Monorail Overhead Track Scale



METTLER TOLEDO

0990 Monorail Overhead Track Scale

METTLER TOLEDO Service

Essential Services for Dependable Performance of Your 0990 Monorail Overhead Track Scale

Congratulations on choosing the quality and precision of METTLER TOLEDO. Proper use of your new equipment according to this Manual and regular calibration and maintenance by our factory-trained service team ensures dependable and accurate operation, protecting your investment. Contact us about a service agreement tailored to your needs and budget. Further information is available at www.mt.com/service.

There are several important ways to ensure you maximize the performance of your investment:

1. **Register your product:** We invite you to register your product at www.mt.com/productregistration so we can contact you about enhancements, updates and important notifications concerning your product.
2. **Contact METTLER TOLEDO for service:** The value of a measurement is proportional to its accuracy – an out of specification scale can diminish quality, reduce profits and increase liability. Timely service from METTLER TOLEDO will ensure accuracy and optimize uptime and equipment life.
 - a. **Installation, Configuration, Integration and Training:** Our service representatives are factory-trained, weighing equipment experts. We make certain that your weighing equipment is ready for production in a cost effective and timely fashion and that personnel are trained for success.
 - b. **Initial Calibration Documentation:** The installation environment and application requirements are unique for every industrial scale so performance must be tested and certified. Our calibration services and certificates document accuracy to ensure production quality and provide a quality system record of performance.
 - c. **Periodic Calibration Maintenance:** A Calibration Service Agreement provides on-going confidence in your weighing process and documentation of compliance with requirements. We offer a variety of service plans that are scheduled to meet your needs and designed to fit your budget.
 - d. **GWP® Verification:** A risk-based approach for managing weighing equipment allows for control and improvement of the entire measuring process, which ensures reproducible product quality and minimizes process costs. GWP (Good Weighing Practice), the science-based standard for efficient life-cycle management of weighing equipment, gives clear answers about how to specify, calibrate and ensure accuracy of weighing equipment, independent of make or brand.

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

- Declaration of Conformity is available at <http://glo.mt.com/global/en/home/search/compliance.html/compliance/>.

Warnings and Cautions

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

	 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
	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
	FOR CONTINUED PROTECTION AGAINST SHOCK HAZARD, CONNECT TO PROPERLY GROUNDED OUTLET ONLY. DO NOT REMOVE THE GROUND PRONG.
 CAUTION	
BEFORE CONNECTING OR 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.	
	<i>NOTICE</i>
	OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

Disposal of Electrical and Electronic Equipment

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



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

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

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

Thank you for your contribution to environmental protection.

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1 Introduction

1.1. General

The Model 0990 monorail overhead track scale is a complete weighing assembly that can be installed as part of a new or existing rail system. It provides accurate weighing in overhead rail systems used in meat processing operations.

The 0990 monorail is available in 1,250-lb and 2,500-lb capacities. Each can be constructed of carbon steel or stainless steel with two live rail lengths (2 feet and 4 feet). The live rail is the weighing portion of the rail assembly, the portion on which the trolley wheel rolls. The assembly also includes a backing bar to support the live rail and suspension components to transfer the load to the load cells. A monorail scale can be loaded up to 100% of its rated capacity anywhere along the length of the live rail.

1.2. Monorail Models

Item Number	Description
61006261	Monorail / 2 feet / CS / Analog / H44 / 30 feet
61005908	Monorail / 2 feet / CS / Analog / H44 / 30 feet
61005913	Monorail / 4 feet / CS / Analog / H44 / 30 feet
61005914	Monorail / 4 feet / CS / Analog / H44 / 30 feet
69031730	Monorail / 2 feet / SS / Analog / H44 / 30 feet
61023593	Monorail / 2 feet / SS / Analog / H44 / 30 feet
61037423	Monorail / 4 feet / SS / Analog / H44 / 30 feet
69031731	Monorail / 4 feet / SS / Analog / H44 / 30 feet

1.3. Load Cells

Model 0990 monorail scales include stainless steel, cantilever-beam load cells with integral, four-conductor, shielded cables. Individual load cell capacities are listed below:

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

1.4. Load Cell Specifications

Model Number	757
Rated Capacity (RC)	1,250 lb, 2,500 lb
Rated Output	2 mV/V
Maximum Excitation Voltage*	15 VDC or VAC rms
Recommended Excitation Voltage	15 VDC
Input Terminal Resistance	350 ohms minimum
Output Terminal Resistance	350 ± 2 ohms
Temperature Range (compensated)	+14°F to +104°F (-10°C to +40°C)
Safe Overload	150% RC
Safe Side Load	100% RC
Zero Balance	1.0% RC

*The power supply to the load cells is provided by the METTLER TOLEDO terminal.

1.5. Load Cell Approvals

1.5.1. NTEP Certification

Model 757 load cells meet or exceed NIST Handbook-44 requirements for Class III 5,000 divisions (multiple cell). A Certificate of Conformance was issued under the National Type Evaluation Program (NTEP) of the National Conference of Weights and Measures (certificate number 96-006).

1.5.2. FM Certification

Model 757 load cells are FM-approved under certificate 3013019.

1.6. 0990 Scale Assembly Approvals

A Certificate of Conformance was issued under the National Type Evaluation Program (NTEP) of the National Conference of Weights and Measures (certificate number 95-144).

2 Inspection and Site Selection

2.1. Inspection

When the O990 monorail scale is delivered, visually inspect it for any damage that might have occurred during shipping and handling. Inspect the following:

1. Scale support frame (check for warping)
2. Load cell and suspension components
3. Load cell cables
4. Load cell summing junction box
5. Live rail and approach rails

If any damage is found, contact your freight carrier immediately.

2.2. Site Selection

Many problems associated with monorail scale installations are caused by improper site conditions. Before installing the scale, check the proposed location for the following conditions:

1. The section of rail in which the scale will be installed should be straight and level enough to maintain good weighing.
2. The rail at each end of the scale assembly should be capable of supporting the entire weighing capacity of the scale.
3. There should be easy access to the scale for maintenance.
4. There should be no heavy vibrations or wind currents at or near the scale.
5. The scale should not be subjected to excessive or unusual loading due to the location or type of equipment used.

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

3. Installation

3.1. Safety Considerations

- All welding should be performed by a certified welder per American Welding Society (AWS) guidelines.
- A safety support system (safety chain or wire rope) with a capacity greater than or equal to the scale capacity is required.

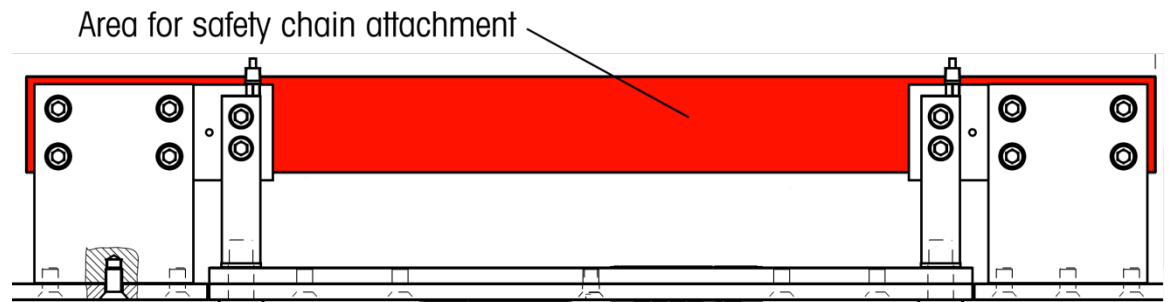


Figure 3-1: Safety Chain/Wire Rope Attachment Location, Top View

 WARNING
FAILURE TO INSTALL AND USE A SECONDARY SAFETY SUPPORT SYSTEM COULD RESULT IN BODILY HARM OR PROPERTY DAMAGE.

- Never place a load on the monorail scale that exceeds the scale's rated capacity.

3.2. Assembly and Installation

The 0990 monorail scale is shipped as a kit of parts. Figure 3-1 shows a monorail scale with a 2-foot live rail. To assemble the scale, use the following procedure:

1. Attach the backing bar to the live rail, using 1/2-13 UNC flat-head socket screws. Torque the screws to 60 ft-lb.
2. Attach the approach rail support blocks to the base weldment, using 1/2-13 UNC socket-head cap screws. Torque the screws to 100 ft-lb for carbon steel scales or 75 ft-lb for stainless steel scales.
3. Attach the approach rails to the support blocks, using 1/2-13 UNC flat-head socket screws. Do not tighten the screws at this time.

4. Mount the load cells to the base weldment, using 1/2-13 UNC socket-head cap screws. Torque the screws to 100 ft-lb for carbon steel scales or 75 ft-lb for stainless steel scales.

 **WARNING**

FAILURE TO TORQUE MOUNTING SCREWS TO THE CORRECT SPECIFICATIONS COULD RESULT IN BODILY HARM OR PROPERTY DAMAGE.

NOTICE

SLEEVE BEARINGS FIT SNUGLY INTO THE LIVE RAIL BORE. TAKE CARE TO INSERT THEM SQUARELY INTO THE RAIL.

5. Attach the live rail assembly to the load cells, using the load support pins and hardware. Make sure that there is 1/16 inch of clearance between the live rail and the approach rails (see Figure 3-2). Torque the load support pins to 200 ft-lb.
6. Tighten the approach rail screws to 60 ft-lb.
7. Align the approach rails with the existing monorail.
8. When the rails are aligned and level, attach the 0990 monorail scale assembly to a nearby superstructure using appropriately sized mounting struts. Section 3.3 shows attachment points for the Monorail base weldment and approach-departure rails..
9. It is required that the base weldment **and** approach/departure rails be welded to a suitable superstructure. The base carbon steel weldment is ASTM A36 steel, while the stainless weldment is ASTM 304 stainless steel. Final attachment must be reviewed by a qualified engineer and all welding should be performed by a certified welder per American Welding Society (AWS) guidelines.
10. Install the junction box in a location close to the scale, where the load cell cables can reach the box. The location should be dry and away from extreme temperature fluctuations. Wire the load cells into the junction box according to Figure 3-7 and Table 3-1. Complete junction box installation according to the **Precision Junction Boxes Installation and Service Manual** (30514073).

NOTICE

LOAD CELLS MUST BE REMOVED BEFORE WELDING IS PERFORMED. LOAD CELLS MAY BE DAMAGED BY WELDING CURRENT

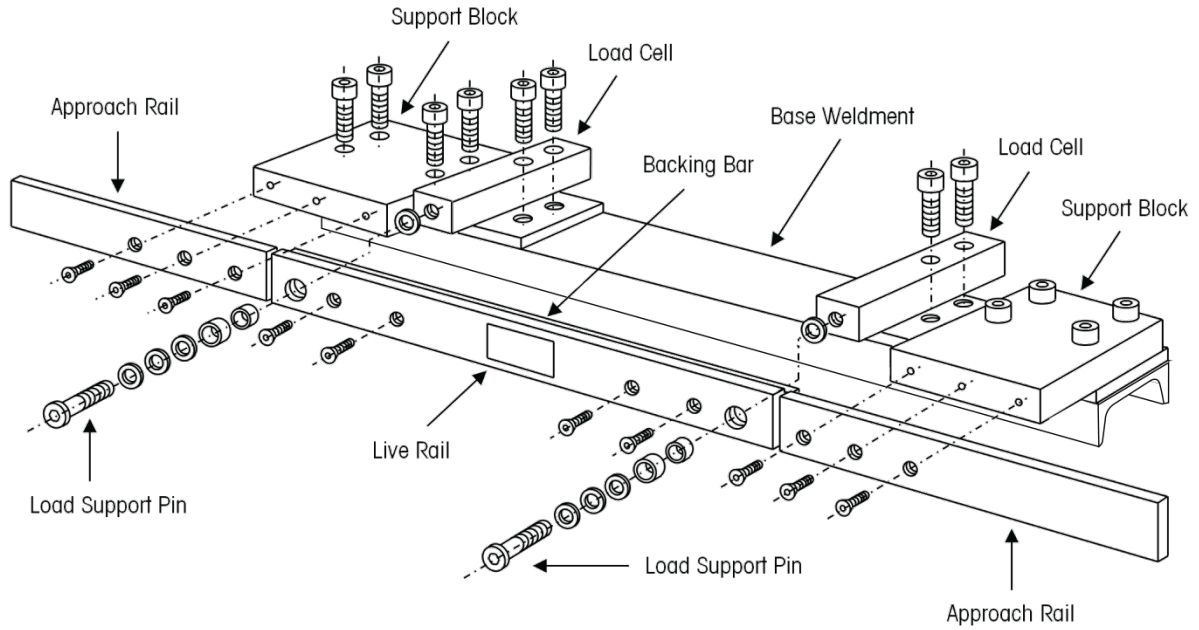


Figure 3-2: Monorail Scale Assembly (With 2-Foot Live Rail)

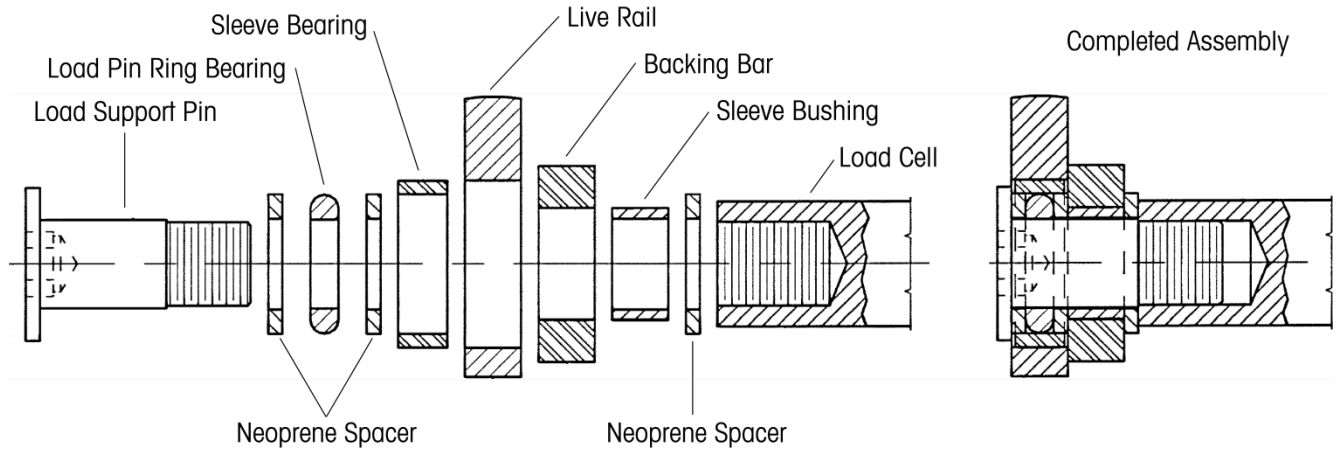


Figure 3-3: Monorail Mounting – Load Support Hardware, Exploded Drawing

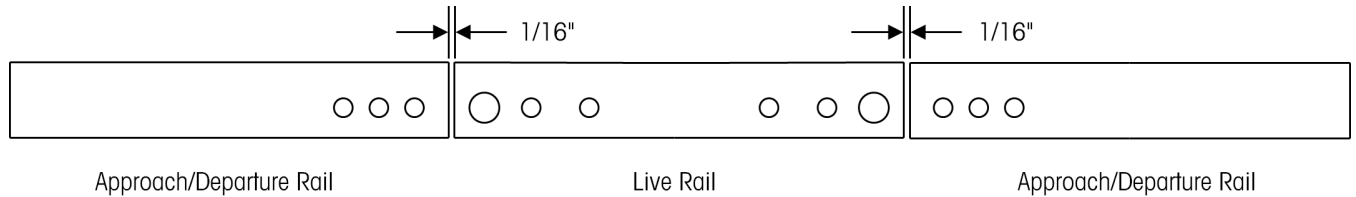


Figure 3-4: Clearance Between Live Rail and Approach Rails

3.3. Recommended Mounting Method

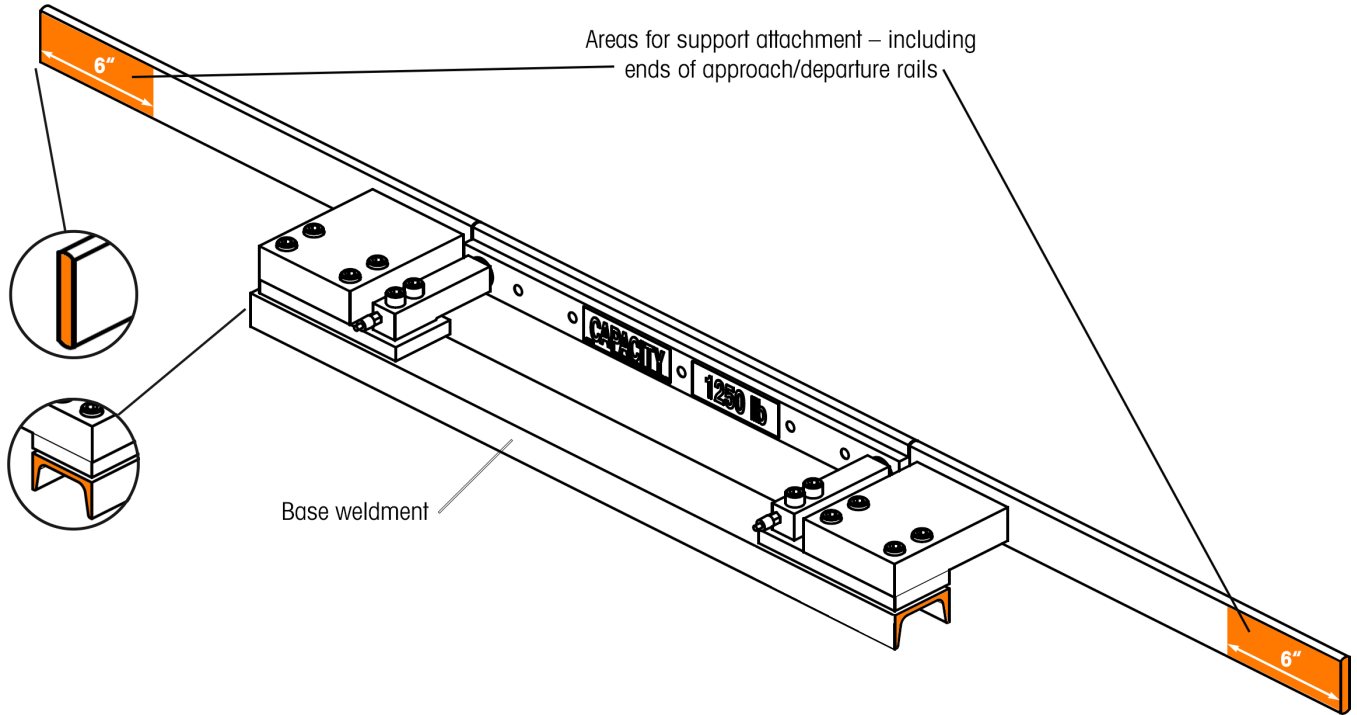


Figure 3-5: Welding Surfaces Indicated

Figure 3-6 shows an example of vertical C-channel supports welded to the ends of the base weldment.

- Approach/departure rail supports are not shown.

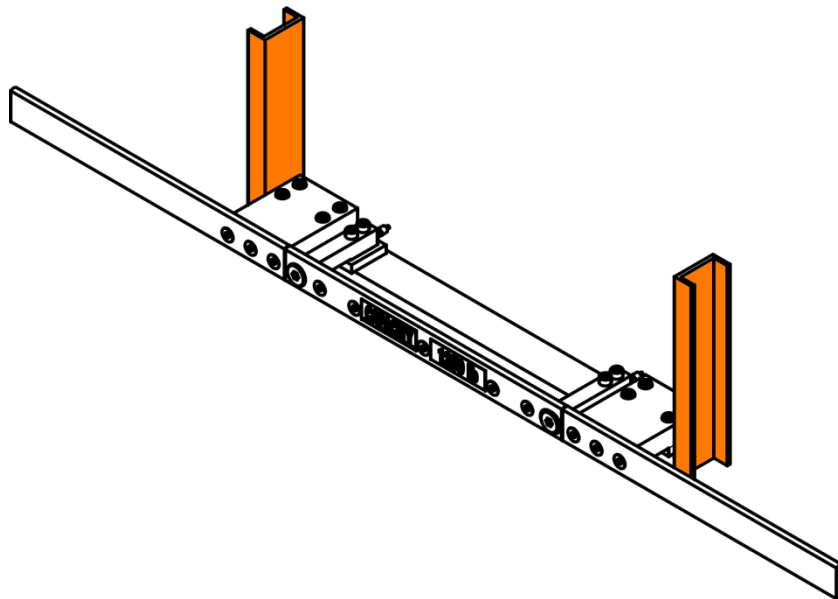


Figure 3-6: Vertical Support with C-Channel Struts

NOTICE

LOAD CELLS MUST BE REMOVED BEFORE WELDING IS PERFORMED. LOAD CELLS MAY BE DAMAGED BY WELDING CURRENT

Support structure should be sized by a qualified engineer familiar with the specific site conditions. The Monorail must be supported at all 4 locations shown in orange in Figure 3-5. Each support point must be capable of supporting the rated capacity of the scale.

WARNING

FAILURE TO PROVIDE ADEQUATE SUPPORT COULD RESULT IN BODILY HARM OR PROPERTY DAMAGE.

3.4. Modes of Operation

A Model 0990 monorail scale can be used with an analog junction box for summing the load cell outputs. Only analog-compatible scale terminals will work with an analog junction box. See Figure 3-7 and Table 3-1 for the correct cable connections. Load cells are numbered as indicated in Figure 3-2.

NOTICE

USE 24-GAUGE INSTRUMENT CABLE (P/N 510624370 / 61006641) FOR 50 FEET OR LESS. USE 20-GAUGE INSTRUMENT CABLE (P/N 510620370 / 61006640) FOR DISTANCES LONGER THAN 50 FEET.

NOTICE

DO NOT CUT LOAD CELL CABLES. CUTTING A CABLE WILL AFFECT COMPENSATION AND VOID THE WARRANTY.

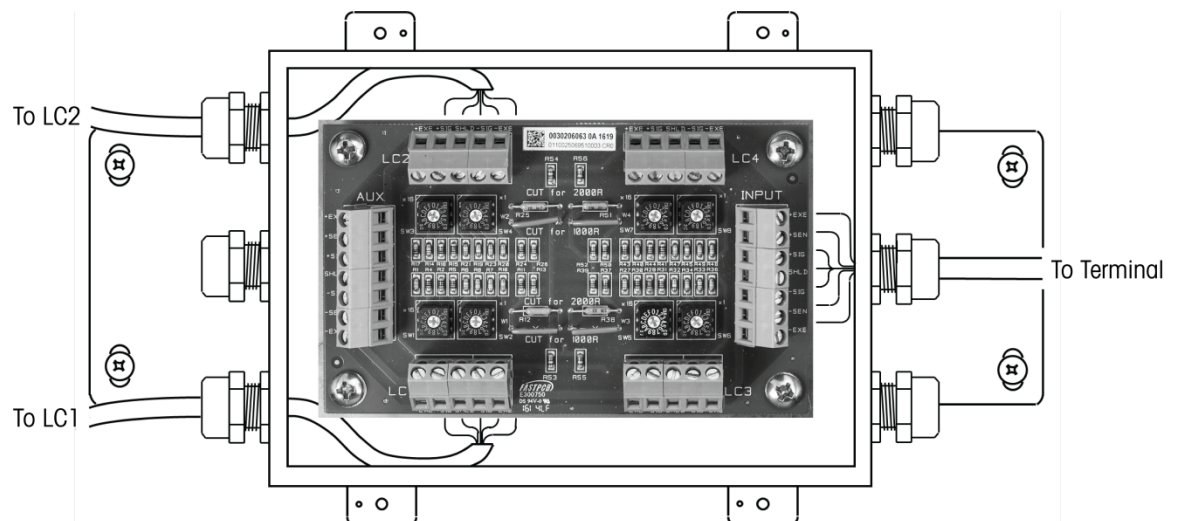


Figure 3-7: Analog Junction Box Detail

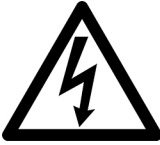

Table 3-1: Analog Junction Box Wiring Codes

Load Cell Wiring		Instrument Cable Wiring*	
Function	Color	Function	Color
+Excitation	Green	+Excitation	White
+Sense	Not Used	+Sense	Yellow
+Signal	White	+Signal	Green
Shield	Yellow	Shield	Orange
-Signal	Red	-Signal	Black
-Sense	Not Used	-Sense	Red
-Excitation	Black	-Excitation	Blue

*Based on METTLER TOLEDO cable number 510624370 (61006641)

4 Calibration

4.1. General

	 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.

Calibrate the scale according to the procedure described in the manual for the scale terminal. The scale should be calibrated using certified test weights that can be traced to the National Institute of Standards and Technology (NIST).

4.2. Analog Junction Box

Hang the test weight from the scale, using the type of hanger/trolley that will be used to convey product across the scale. The test weight should equal or exceed the largest load that will be weighed on the scale (minimum of 50% of scale capacity).

Follow the Shift Adjustment procedure described in the **Precision Junction Boxes Installation and Service Manual** (30514073).

5 Routine Care and Maintenance

5.1. General

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

5.2. Site Inspection

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

5.3. Scale Inspection

During periodic inspections of the scale, check the following:

1. Are there any unusual wear points, paths, or marks on the live or approach rails?
2. Is there a 1/16" clearance between the live rail and the approach/departure rails?
3. Is the monorail scale attached securely to the superstructure?
4. Is the junction box lid properly sealed and are all cable connectors tight?
5. Is there any moisture or foreign material around or inside the junction box?
6. Is the instrument cable damaged or binding the scale?
7. Is there any debris or material build-up under or around the live rail that could prevent it from moving freely?
8. Are all screws and load support pins torqued according to the specifications in Chapter 3?

 **WARNING**

FAILURE TO TORQUE MOUNTING SCREWS TO THE CORRECT SPECIFICATIONS COULD RESULT IN BODILY HARM OR PROPERTY DAMAGE.

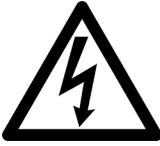


9. Are there signs of unusual wear on the load cells, live and approach rails, or suspension components (bearing rings, etc.)?
10. Check repeatability and shift of the scale.

6 Troubleshooting

6.1. 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 Model 0990 monorail scale, examine the scale's physical location. Check for the presence of water, corrosive materials, binding at the live rail, high vibrations, air currents, or physical damage to the live rail or approach rails. Also check the instrument cable for damage, and check all connections for loose or improper wiring.

	 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.
 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.	

6.2. Isolate the Problem

Determine whether the problem is in the scale or the scale terminal.

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

6.3. 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 to make sure they are wired correctly. The wiring color codes are given in **Table 6-1**:

Table 6-1: Load Cell Wiring Color Codes

Load Cell Wiring		Instrument Cable Wiring*	
Function	Color	Function	Color
+Excitation	Green	+Excitation	White
+Sense	Not Used	+Sense	Yellow
+Signal	White	+Signal	Green
Shield	Yellow	Shield	Orange
-Signal	Red	-Signal	Black
-Sense	Not Used	-Sense	Red
-Excitation	Black	-Excitation	Blue
*Based on METTLER TOLEDO cable number. 510624370 (61006641)			

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

6.4. Check Load Cells

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

Table 6-2: Load Cell Measuring Points

Measuring Points	Resistance
Any lead to shield or ground	Infinity
+Exc (Green) to -Exc (Black)	350 ohms minimum
+Sig (White) to -Sig (Red)	348 to 352 ohms

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 by raising the platform.

NOTICE

REMOVE SIGNAL LEADS FROM TERMINALS TO MEASURE OUTPUT.

6. With the power on, measure the output from the suspect load cell. The no-load zero output should be $\pm 1.0\%$ 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 ± 0.3 mV.
7. If a load cell fails any of the above tests, replace it.

6.5. Check Mechanical Components

Because the design of the 0990 monorail scale is so simple, there are only a few mechanical components to troubleshoot. Make sure that the live rail can move freely and is not touching the approach rails. If the live rail is touching the approach rails, check the following:

1. Check the ends of the live rail and its suspension components for unusual wear. Replace any worn or damaged components.
2. Make sure that the load cells are positioned correctly. If not, loosen the mounting screws, position the load cells correctly, and then tighten the mounting screws.
3. Check the approach rail fasteners for proper torque (see Chapter 3 for torque specifications).

6.6. Load Cell Replacement

1. Remove power to the scale terminal and disconnect the instrument cable.
2. Make sure that the live rail and approach rails are empty.
3. Disconnect the load cell cable from the terminal strip inside the junction box. Loosen the cord grip connector and pull the load cell cable out of the junction box.
4. Remove the load cell mounting screws and the load support pins to remove the defective load cell. Support the live rail until the cell is replaced..
5. Place the new load cell in position and secure it with the mounting screws. Tighten, but do not torque the load cell mounting screws at this point as adjustments may be necessary to align the live rail.

6. Attach the live rail to the load cells, using the load support pins and hardware. See Figure 3-2 for details. Make sure that there is 1/16 inch clearance between the live rail and approach/departure rails. Torque the load support pins to 200 ft-lb.
7. Wire the replacement load cell cable to the proper terminal strip in the junction box. Be sure to tighten the cord grip connector around the load cell cable.
8. Torque the load cell mounting screws to 100 ft-lb for carbon steel scales, or 75 ft-lb for stainless steel scales. Verify that there is a 1/16" clearance between the live rail and the approach/departure rails.
9. Check the calibration and shift adjustment with a certified test weight. Make any adjustments as required.

**WARNING**

FAILURE TO TORQUE MOUNTING SCREWS TO THE CORRECT SPECIFICATIONS COULD RESULT IN BODILY HARM OR PROPERTY DAMAGE.

7 Service Parts

7.1. 0990 Monorail Scale

Refer to Figure 7-1 and Table 7-1 when ordering parts for a current 0990 monorail scale.

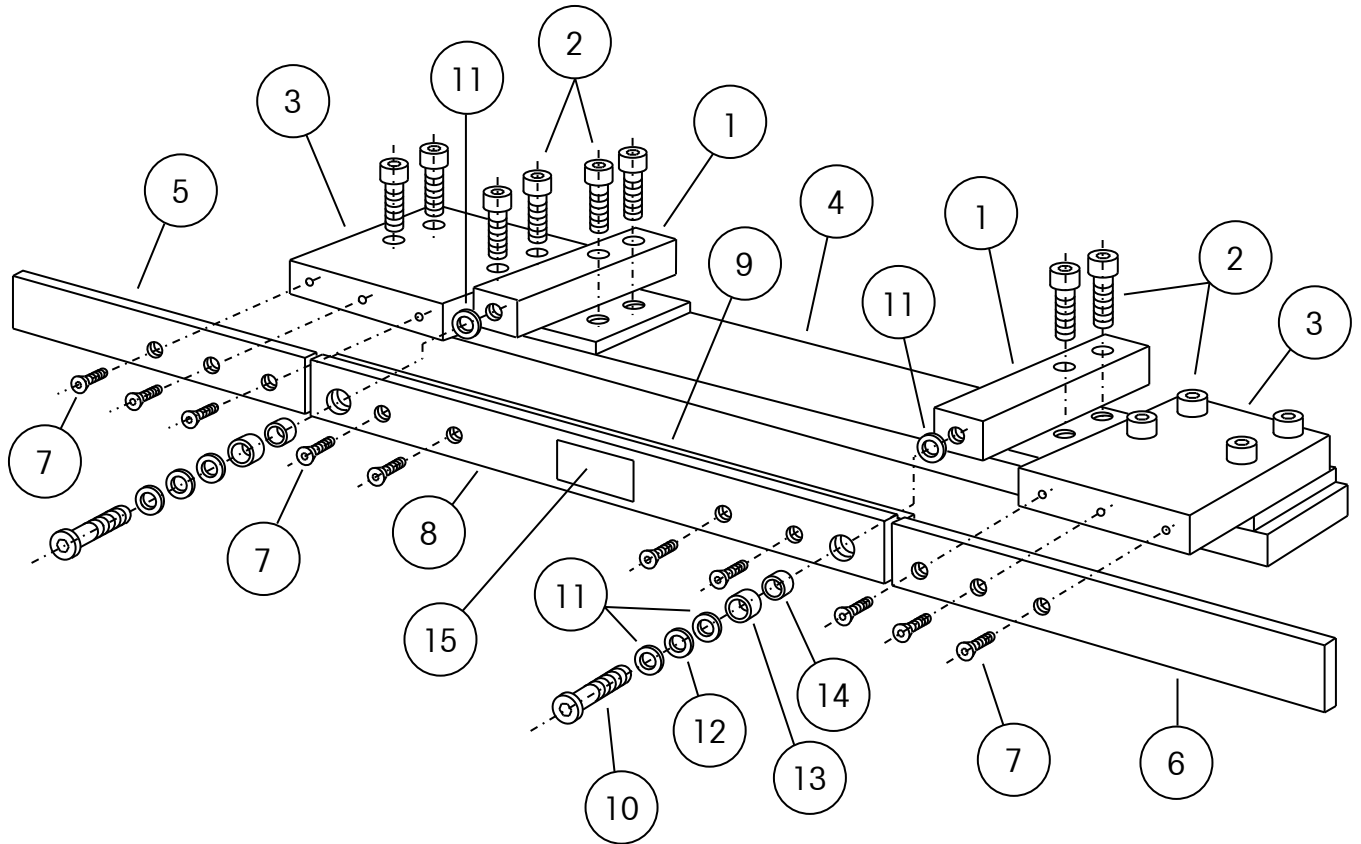


Figure 7-1: 0990 Monorail Scale Assembly

Table 7-1: 0990 Monorail Scale Service Parts

Ref. No.	Trade Name	Item Number	Description	Qty.
1	TB600489-2	68001220	Model 757 Load Cell, 1,250 lb (30-foot cable)	2
	TB600490-2	61006333	Model 757 Load Cell, 2,500 lb (30-foot cable)	
2	TN800647	68002018	1/2-13 Socket Head Cap Screw x 1.75 inches long, Black Oxide	12
	TN800648	68002019	1/2-13 Socket Head Cap Screw x 1.75 inches long, Stainless Steel	

Ref. No.	Trade Name	Item Number	Description	Qty.
3	TN400056-10	61036303	Support Block, Carbon Steel	2
	TN400057-10	61036298	Support Block, Stainless Steel	
4	TA400048-10	61038030	Base Weldment, Carbon Steel (for 2-foot rail)	1
	TA400041-10	61078648	Base Weldment, Stainless Steel (for 2-foot rail)	
	TA400053-10	61078655	Base Weldment, Carbon Steel (for 4-foot rail)	
	TA400058-10	61078661	Base Weldment, Stainless Steel (for 4-foot rail)	
5	TN400046-10	68004337	Departure Rail, Mild Steel (2 feet long)	1
	TN400039-10	61036649	Departure Rail, Stainless Steel (2 feet long)	
6	TN400045-10	61036098	Approach Rail, Mild Steel (2 feet long)	1
	TN400038-10	61036648	Approach Rail, Stainless Steel (2 feet long)	
7	MZ0901010464	68001468	1/2-13 Flat Head Socket Screw x 1 inch (required for 2-foot live rail)	11
			1/2-13 Flat Head Socket Screw x 1 inch (required for 4-foot live rail)	15
8	TA400047-10	68004171	Live Rail, Mild Steel (2 feet long)	1
	TA400040-10	68004169	Live Rail, Stainless Steel (2 feet long)	
	TA400055-10	61078659	Live Rail, Mild Steel (4 feet long)	
	TA400042-10	61078650	Live Rail, Stainless Steel (4 feet long)	
9	TA400043-10	68004170	Backing Bar, Mild Steel (2 feet long)	1
	TA400036-10	68004168	Backing Bar, Stainless Steel (2 feet long)	
	TA400054-10	61078657	Backing Bar, Mild Steel (4 feet long)	
	TA400035-10	61078644	Backing Bar, Stainless Steel (4 feet long)	
10	TN400034	68000299	Load Support Pin	2
11	TN400052	68000347	Neoprene Spacer	6
12	TN400050	68000263	Load Pin Ring Bearing	2
13	TN400049	68004338	Sleeve Bearing	2
14	TN400051	68001130	Sleeve Bushing	2
15	TN800595	61086496	Capacity Label	2
--		30206111	AJB541M Precision Junction Box	1

8 Reference Material

8.1. Reference Drawings

Scale Material	Assembly Drawing
0990 Carbon/Stainless Steel	30629921

8.2. Recommended Spare Parts

For part numbers, refer to the service parts list in Chapter 7.

Quantity	Description
1	Load cell (capacity of cell required depends on scale capacity)
1	Junction box circuit board, 30206063
1	Junction box desiccant bag, 68004199

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