XX97

DigiTOL® Scale Bases (1997/2097/2197)

Technical Manual and User's Guide

15492800A
(7/00).02

METTLER TOLEDO is recognized around the world for manufacturing and marketing high quality scales and weighing systems. With roots tracing back to 1901, the company takes pride in its long established record of employing innovation, technology, and a close working relationship with its customers to meet the diverse needs of the global marketplace. METTLER TOLEDO's worldwide headquarters are in Greifensee, Switzerland. Corporate offices for the North American Marketing Organization are in Columbus, Ohio.

CUSTOMER FEEDBACK

If you have a problem with this product, or just a suggestion on how we can serve you better, please fill out this form and send it to us. Your feedback will help us to improve product performance, quality and service. Mail to the address on the reverse, or fax to (614) 438-4355.

Your Name:	Date:
Organization Name:	Mettler Toledo Order Number
Address:	Part / Product Name:
	Part / Model Number:
	Serial Number:
Phone Number: ( ) Fax Number: ( )	Company Name of Installation:
E-mail Address:	Contact Name:
	Phone Number:

How well did this product meet your expectations in its intended use?		Comments:
	Met and exceeded my needs	
	Met all needs	
	Met most needs	
	Met some needs	
	Did not meet my needs	

PROBLEM:

UNACCEPTABLE DELIVERY:

- ☐ Shipped late
- ☐ Shipped early
- ☐ Shipped to incorrect location
- ☐ Other (Please Specify)

OUT OF BOX ERROR:

- ☐ Wrong item
- ☐ Wrong part
- ☐ Missing equipment
- ☐ Equipment failure

- ☐ Wrong documentation
- ☐ Missing documentation
- ☐ Incorrectly calibrated
- ☐ Other (Please specify)

Comments:

DO NOT WRITE IN SPACE BELOW; FOR METTLER TOLEDO USE ONLY

☐ Retail ☐ Light Industrial ☐ Heavy Industrial ☐ Systems

RESPONSE: Include Root Cause Analysis and Corrective Action Taken.

FOLD THIS FLAP FIRST

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

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POSTAGE WILL BE PAID BY ADDRESSEE

Mettler-Toledo, Inc.
Quality Manager - MTWI
1150 Dearborn Drive
Worthington, OH 43085
USA

Please seal with tape.

INTRODUCTION

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

Information regarding METTLER TOLEDO Technical Training may be obtained by writing to:

METTLER TOLEDO
1900 Polaris Parkway
Columbus, Ohio 43240
(US and Canada) 614- 438-4511
(All Others) 614-438-4888

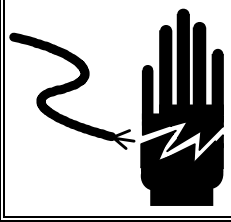
WARNING!

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, in which case the user, at his or her own expense, will be required to take whatever measures may be required to correct the interference.

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

PRECAUTIONS

READ this manual BEFORE operating or servicing this equipment.

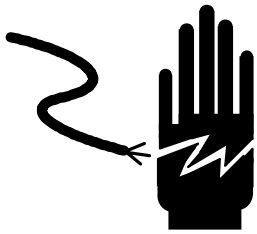


⚠WARNING

ONLY PERMIT 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.

FOLLOW these instructions carefully.

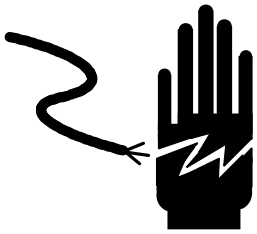
SAVE this manual for future reference.



⚠WARNING

FOR CONTINUED PROTECTION AGAINST SHOCK HAZARD, CONNECT TO PROPERLY GROUNDED OUTLET ONLY. DO NOT REMOVE THE GROUND PRONG.

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



⚠WARNING

DISCONNECT ALL POWER TO THIS UNIT BEFORE REMOVING THE FUSE OR SERVICING. TO DISCONNECT POWER, FIRST TURN THE POWER SWITCH TO OFF, THEN REMOVE THE POWER CORD FROM THE AC OUTLET.

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

⚠CAUTION

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

CALL METTLER TOLEDO for parts, information, and service.

CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

CONTENTS

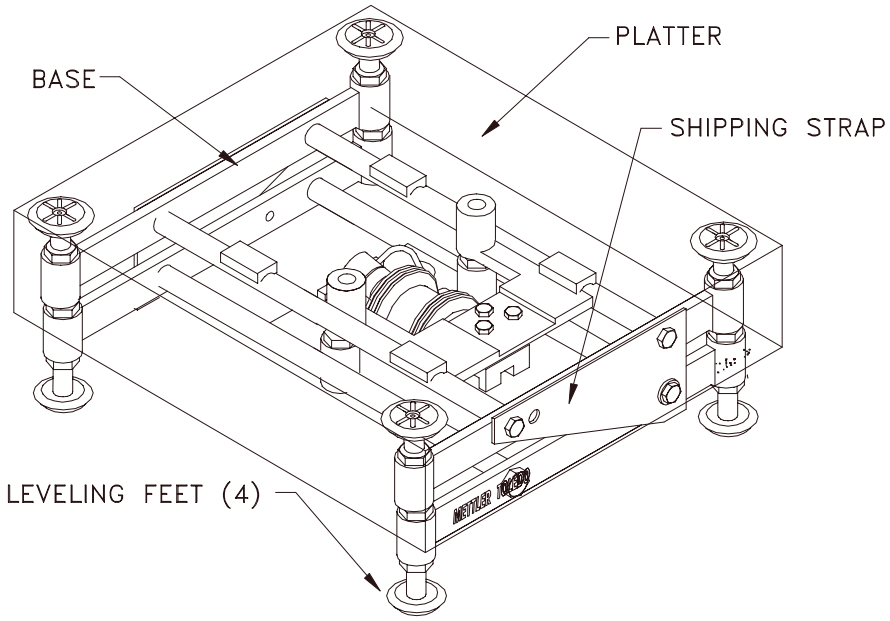
1

Introduction

Using hermetically sealed NEMA (IP68) load cells, the XX97 Series of DigiTOL® Bench and Portable Scale Bases are designed to work in wet, corrosive industrial environments which require frequent washdown.

This manual provides detailed information for installing, adjusting, and troubleshooting the XX97 scale bases, including models 1997, 2097, and 2197. Please note that the 1997, 2097, and 2197 are scale bases only and are intended for use with the specific terminals listed on the next page. Refer to the technical manual(s) for the terminal being used with the 1997, 2097, or 2197 for additional information.

If you discover a problem with the information provided in this manual, please complete and fax the Publication Evaluation Form found in the back of this manual. For problems not covered in this manual, please contact your authorized METTLER TOLEDO representative.



Compatibility

The XX97 series is designed for use with the following METTLER TOLEDO products:

- JAGUAR terminal
- LYNX terminal
- PANTHER terminal
- LYNXBATCH controller
- BC/SC counting scales with second scale option

Model Identification and Specifications

The 1997, 2097, and 2197 models are each available in multiple weighing capacities as shown in the chart below. Use this chart to confirm the model number of the XX97 scale base with which you are working and to familiarize yourself with the specifications of that model. If the seventh digit of the model number is a "1," it denotes the 25-foot cable option. For example, 1997-0011 is a model 1997, 20 kg/50 lb capacity scale with the 25-foot cable option.

In addition, column kits, portability stands, and wheel/brake kits may be ordered. Contact your METTLER TOLEDO representative for more information.

MODEL	1997-0001	1997-0002	2097-0001	2097-0002	2197-0001	2197-0002
Max. Cap.	20 kg/50 lb	60 kg/120 lb	80 kg/150 lb	200 kg/400 lb	300 kg/600 lb	600 kg/1200 lb
Min. Grad. (eMIN)	0.002 kg/0.005 lb	0.005 kg/0.01 lb	0.01 kg/0.02 lb	0.02 kg/0.05 lb	0.05 kg/0.1 lb	0.1 kg/0.2 lb
Max. Divisions (nMAX)	5000d	5000d	5000d	5000d	5000d	5000d
Recommended Build*	10 x 0.002 kg 25 x 0.005 lb	50 x 0.01kg 100 x 0.02lb	50 x 0.01kg 100 x 0.02lb	100 x 0.02 kg 250 x 0.05 lb	200 x 0.05 kg 500 x 0.1lb	500 x 0.1kg 1000 x 0.2lb
Physical Dimensions	350 mm x 315 mm x 125mm (13.75 in x 12.25 in x 5 in)	350 mm x 315 mm x 125 mm (13.75 in x 12.25 in x 5 in)	450 mm x 600 mm x 144 mm (17.75 in x 23.5 in x 5.5 in)	450 mm x 600 mm x 144 mm (17.75 in x 23.5 in x 5.5 in)	(600 mm x 800 mm x 165 mm 23.5 in x 31.5 in x 6.5in)	(600 mm x 800 mm x 165 mm (23.5 in x 31.5 in x 6.5 in)
Max. Back Weight*	6 kg/15 lb	10 kg / 25 lb	18 kg/45 lb	60 kg/150 lb	80 kg/200 lb	120 kg/ 300 lb
Base Construction	Stainless Steel					
Platter Construction	16 Gauge Stainless Steel	16 Gauge Stainless Steel	14 Gauge Stainless Steel	14 Gauge Stainless Steel	12 Gauge Stainless Steel	12 Gauge Stainless Steel
Shipping Weight	11 kg/27 lb.	11 kg/27 lb	22 kg/54 lb	22 kg/54 lb	62 kg/152 lb	62 kg/ 152 lb

*Maximum back weight based on recommended builds.

Table 1: Specifications

2 Installation

Preparation

Models 1997, 2097, and 2197 are scale bases only and do not include terminals. The appropriate terminal and any accessories will be shipped in a separate carton. The base should remain in its shipping carton until it reaches the location where it is to be installed for maximum protection during transit.

Unpacking and Inspection

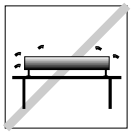
⚠ WARNING

USE CAUTION WHEN LIFTING AND MOVING LARGE-SIZE BASES. ATTEMPTING TO LIFT AND MOVE THE LARGE-SIZE BASES BY YOURSELF MAY RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.

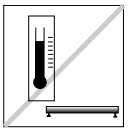
Note: If you choose to dispose of the packaging materials, please recycle them.

- If the shipping carton showed signs of damage upon delivery, file a claim with the carrier immediately.
- If you have not already unpacked the XX97 scale base, unpack it in a space at least twice its size. Because the large-size bases weigh approximately 70 kg (150 pounds), assistance may be needed.
- Lift the scale platter and then the scale base from the container and place them on a level, firm surface. (Retain the shipping carton should you need to move or ship the scale at a later date.)
- Inspect the scale base for signs of shipping damage. File a freight claim with the carrier if necessary.
- Make sure all components of the scale base are included in the package. Contact your METTLER TOLEDO representative if any components are missing. The XX97 scale base includes:
  - XX97 scale base
  - Platter
  - Power cable
  - Hole plugs (7)
  - Technical Manual/User's Guide

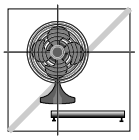
Location



Select a firm, level, and vibration-free surface on which to place the XX97 scale base. The area should be clear of cables, boxes, or anything else that could come in contact with the scale platter.

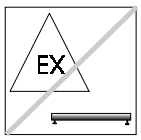


Avoid sudden temperature changes. Maintain a temperature range of -10°C to 40°C (-18°F to 104°F).



Avoid excessive drafts, such as from fans and open windows.

The platter should be kept free of dust, dirt, and water.



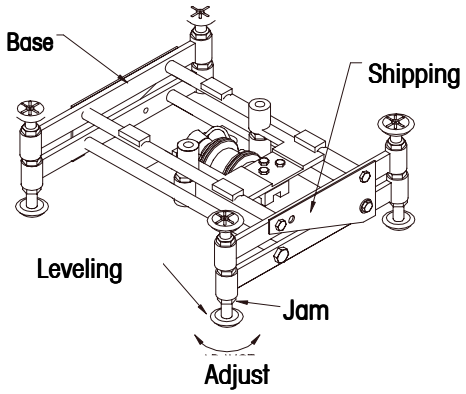
Do NOT operate the XX97 scale base in a hazardous environment.

Setup

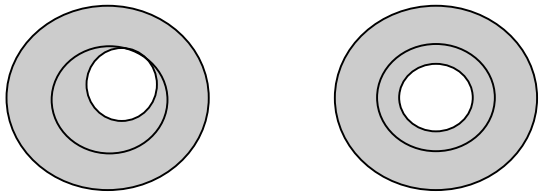
⚠ WARNING

USE CAUTION WHEN LIFTING AND MOVING XX97 LARGE-SIZE BASES. ATTEMPTING TO LIFT AND MOVE THE XX97 LARGE-SIZE BASES WITHOUT ASSISTANCE MAY RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.

- Remove the shipping straps from the ends of the scale base by removing the three bolts in each strap. Plug the bolt holes with the plastic plugs provided. (For the large-size bases, install the bolts back into the holes from which they came. Place the shipping straps back in the carton in case you need to ship the XX97 scale base at a later date.)



- Level the unit by turning the adjustable feet while using the level bubble on the side of the scale base as a guide. When the level bubble is centered, the base is properly leveled. (Figure 2-1).



Bubble Not Centered Bubble Centered

Figure 2-1

- Verify that all four feet touch the surface and the base does not rock.
- Tighten the jam nuts on the feet to lock them in place. (Figure 2-2.)

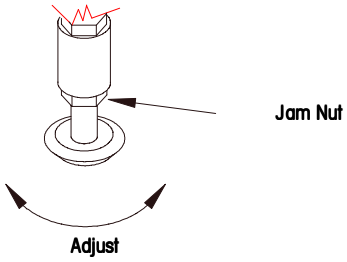


Figure 2-2

Electrical Connections

Keep in mind that the XX97 series scale bases are intended for use only with METTLER TOLEDO DigiTOL terminals. Before connecting the base to a terminal, verify that the load cell port is setup for a DigiTOL scale base. Refer to the technical manual for the terminal with which you are working for details. Failure to do so may result in damage to the load cell, terminal, or both.

Cables

The XX97 scale bases are each shipped with a standard 10-foot, six-conductor, 20-gauge load cell cable that is attached and hermetically sealed to the digital load cell. An optional 25-foot (7.6 m) cable is available. This option is denoted by the extra "1" in the last four digits of the model number. For example, in model number 1997-0011, the extra "1" indicates the 25-foot (7.6 m) cable option.

Connectors

Once the scale base is setup, and you have verified that the terminal you wish to connect can be used with the XX97 scale base:

- Connect the scale base cable to the terminal. The XX97 cable uses a "pigtail" cable dressing.
- Route the cable so it does not interfere with the upper frame or platter.

Terminal Connections

Connection to the digital terminal is made by wiring the cable directly to a terminal block or by soldering the DB-9 male 9-pin connector supplied with the SC or BC counting scales. The color code and signal description for each conductor is provided in Table 2-1 under Instrument Configuration.

The load cell cable provides power to the scale base and transmits data to the terminal from the scale base. The digital load cell uses an RS422 voltage level to communicate with the terminal. The RS422 output may be used as RS422 or TTL depending on the terminal used. The XX97 scale bases do not use RxD B.

Note: It may be necessary to attach a connector strip or solder a male DB-9 connector to the cable. The shield (orange) wire should be terminated directly to the metal enclosure of the terminal. Refer to the manual supplied with the terminal for information on connecting DigiTOL load cells.

Instrument Configuration

During setup of the terminal to be used with the XX97 base, you should select the appropriate terminal setting for the application for which you intend to use the terminal and XX97 base.

- Certain METTLER TOLEDO products have no special selection for XX97 scale bases. In these products, the scale type should be set as "DigiTOL" during setup.
- In the PANTHER, LYNX and JAGUAR terminals, you should set the scale type as "UltraRes" during setup.
    - Select "UltraRes High" for maximum resolution (5000d or greater).
    - Select "UltraRes Low" for faster response at lower resolutions (5000d or less).
    - Select the low frequency filter for applications being performed in noisy environments.
    - Select the high frequency filter for faster response.

Signal Description	XX97 Cable Color Code	PANTHER and JAGUAR COM2 or COM4 and LYNX COM2
GND	Blue	GND
RxD A	Red	TxD +
NC	White	NC
TxD A	Black	RxD +
TxD B	Yellow	RxD-
+20 VDC	Green	+V
Shield	Orange	Chassis

NC = No Connection

Table 2-1

Calibration

- Allow a 30-minute warm-up before calibrating.
- Refer to the Appendix for recommended capacity and increment size. Refer to the appropriate terminal technical manual for calibration instructions.
- Exercise the scale base by adding and removing full capacity weight before calibration.

Note: Proper calibration requires ANSI/ASTM E617 Class 4 weights equal to the capacity of the scale.

To guarantee reliable service from the XX97 scale base, a regular calibration schedule should be implemented. In addition, the base should always be calibrated after repairs of any type are performed.

Following calibration, verify accurate readings at one or two points between zero and full capacity. This ensures that the overload stops are not touching and the load cell is not saturated at full capacity.

NOTES

3 Operating Instructions

The operating instructions for the XX97 model scale base depend on the terminal with which it is connected, as well as on the specific application for which it will be used. Please refer to the operating instructions in the technical manual for the terminal being used with the scale base. However, the general instructions listed on the following page should be followed for all applications and terminals to ensure the highest accuracy weighing.

⚠CAUTION

PLEASE REVIEW THE APPROPRIATE OPERATING INSTRUCTIONS FOR THE TERMINAL YOU ARE USING WITH THE XX97 BASE BEFORE OPERATING THE SCALE. FAILURE TO DO SO MAY RESULT IN INACCURATE WEIGHING RESULTS, DAMAGE TO EQUIPMENT OR PROPERTY, OR BODILY HARM.

⚠CAUTION

PERMIT ONLY QUALIFIED PERSONNEL TO INSTALL AND PROGRAM TERMINALS THAT ARE BEING USED WITH THE XX97 BASE. FAILURE TO OBSERVE THIS PRECAUTION MAY RESULT IN INACCURATE WEIGHING RESULTS, DAMAGE TO EQUIPMENT OR PROPERTY, OR BODILY HARM.

⚠CAUTION

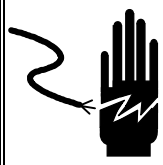
AVOID MOVING HEAVY ITEMS TO THE EDGE OF THE XX97 SCALE BASE PLATTER. EDGE LOADING CAN TIP THE PLATTER, LEADING TO PERSONAL INJURY OR PROPERTY DAMAGE. SAFE WEIGHING PRACTICES MUST BE USED AT ALL TIMES WHEN OPERATING THE XX97 SCALE BASE.

Weighing Practices

- Items to be weighed or counted should be placed near the center of the weighing platter.
- Items should not be dropped onto the scale as they can damage the platter, loosen scale components, or unlevel the base.
- Avoid sliding heavy items across the platter to prevent scuffing.
- Always use proper lifting devices and practices for loading and unloading the scale. Avoid moving heavy items to the edge of the platter to get a better grip for lifting. Edge loading can tip the platter and lead to personal injury.
- When using the tare function to remove a container's weight from the total weight on the scale, tare each container separately. Variations in materials thickness and other factors can affect the containers' weight.

4 Service and Maintenance

Overload Stop Adjustments



WARNING

ONLY PERMIT 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 OR EQUIPMENT DAMAGE.

Note: Overload stop gaps must be reset if the top or bottom frame or load cell is replaced.

Setting Overload Stop Gaps

- Refer to Figure 4-1 and Table 4-2 for the location of overload stops and proper gap settings. Torque settings are listed in Table 4-2.
- Insert the proper size gap gauge between the screw and post, then turn the screw until the proper gap is measured.
- Hold the set screw with the adjustment tool while tightening the jam nut.

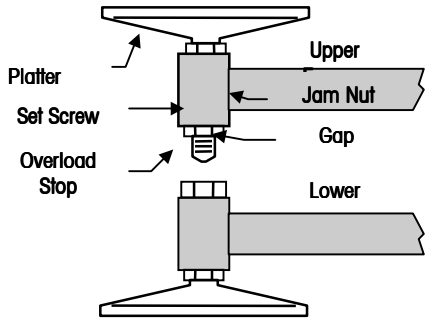


Figure 4-1 Overload Stop Parts

Overload Stop Settings				
Base	Inside (2)		Outside (4)	
	mm	in	mm	in
1997-0001	0.508	0.020	1.067	0.042
1997-0002	0.736	0.029	2.286	0.090
2097-0002	0.508	0.020	2.210	0.087
2097-0002	0.711	0.028	4.572	0.180
2197-0001	0.762	0.030	4.318	0.170
2197-0002	1.168	0.046	9.144	0.360

Table 4-1

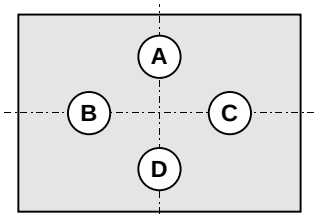
Shift Test

The Shift Test verifies that all sections of the XX97 scale base platter weigh within tolerance. Before performing the test, note the following:

- The scale base must be level with all four feet properly adjusted.
- It should be allowed to warm up and stabilize for at least 30 minutes when first powered up.
- The terminal must be configured for the rated capacity. Refer to the terminal service manual for configuration specifications.
- Exercise it by applying full capacity and removing it at least two times.

To perform the shift test, use weight equal to half the capacity of the scale build.

- Place the weights halfway between the center and edge of the platter.
- Move the weights to four positions in sequence (A, B, C, D).



Platter Diagram for Shift Test

The terminal reading at each position should be within these limits:

SCALE CAPACITY	TEST WEIGHT	ACCEPTANCE (NEW SCALE) TOLERANCE	MAINTENANCE (IN SERVICE) TOLERANCE
5,000 d	2,500 d	+/- 1.5 d	+/- 3 d
3,000 d	1,500 d	+/- 1.0 d	+/- 2 d

Note: Shift problems cannot be corrected in the field. XX97 scale bases that fail this test require a replacement load cell. If the readings are within the specified limits, the scale base is ready for normal operation.

Calibration Tests

Calibration tests verify that the XX97 scale base is operating within specified limits. They should be performed any time major mechanical components are replaced or adjusted. Refer to the technical manual for the terminal being used with the XX97 base for more information.

Linearity Test

The Linearity Test confirms scale accuracy over the operating range.

- Zero the scale.
- Apply a test weight equal to one half the rated capacity to the center of the platter.
- Remove the test weights.

Overload Test

The Overload Test verifies that the overload stops do not engage prematurely or after damage to the counter force has occurred. A full capacity weight is placed at each of the four Shift Test positions. If any readings are out of tolerance, one or more of the overload stops may not be properly adjusted. Check the overload stops and repeat the test.

Digital Load Cell Replacement

The following section describes how to replace the DigiTOL load cells for the XX97 model scale base. Follow these procedures carefully and always use the proper tools and torque settings to ensure proper installation and accurate measurements. Keep in mind the load cells are precision instruments and should be handled with care.

Load Cell Torque Settings	
1997-0001	45 N· m - 50 N· m (33-37 ft lbs)
1997-0002	45 N· m - 50 N· m (33-37 ft lbs)
2097-0001	45 N· m - 50 N· m (33-37 ft lbs)
2097-0002	45 N· m - 50 N· m (33-37 ft lbs)
2197-0001	108 N· m -136 N· m (80 - 100 ft lbs)
2197-0002	108 N· m -136 N· m (80 - 100 ft lbs)

Table 4-2

⚠CAUTION

BEFORE DISCONNECTING THE LOAD CELL CABLE FROM THE TERMINAL, YOU MUST WAIT AT LEAST 30 SECONDS AFTER REMOVING POWER. FAILURE TO OBSERVE THIS PRECAUTION MAY RESULT IN DAMAGE TO THE LOAD CELL, THE TERMINAL, OR BOTH.

- Disconnect power to the terminal. After waiting a minimum of 30 seconds, disconnect the load cell cable from the terminal by removing the screws which secure the cable connector to the base.
- Remove the platter.
- Loosen and carefully remove the top load cell mounting bolts that secure the top frame to the load cell. Set the top frame aside.
- Remove the bottom load cell mounting bolts. The load cell assembly can now be removed from the lower base.
- Take the replacement load cell from its shipping carton and position it in the base cavity.

- When reinstalling a digital load cell, reverse the preceding steps. Lubricate the bolt threads before reassembly. Using a torque wrench, tighten the mounting bolts.
- To properly align the top and bottom frames, center the overload set screws at the corners above their respective overload stops.
- The overload stop settings must be checked and adjusted.
- Connect the load cell cable to the terminal. Apply power and allow the terminal and base to warm up for 30 minutes. Calibrate using test weights and following the instructions provided in the technical manual for the terminal with which you are working.

Cleaning and Maintenance

The XX97 scale bases are designed for wet, corrosive industrial environments which require frequent washdown. They can be hosed down with high pressure water with the platform cover on or off, since all interior parts are protected. To clean the terminal used with the XX97 scale base, refer to the technical manual for that specific product.

Maintenance Reminder: The overload stop gaps must be checked and reset if the top or bottom frame, or load cell is replaced. Calibration tests should be performed any time major mechanical components are replaced or adjusted.

5 Troubleshooting

In most cases, if the terminal cannot recognize the digital load cell in the base, the problem is electrical. If the scale has a calibration problem, the problem is generally mechanical.

Electrical Problems

Problem	Possible Cause	Remedy
Terminal display is blank.	No AC power. Blown fuse.	Check outlet and power cord connections. Refer to the terminal service manual.
Terminal displays error.	Improper configuration of terminal. Improper connection to DLC.	Refer to the terminal service manual for description of error codes. See possible errors below.
1. ALC NO RESPONSE	Terminal is configured for analog load cell instead of digital load cell.	Refer to the terminal service manual for instruction on how to configure for DigiTOL or DLC.
2. DLC COMM FAILURE	No communication response from the DLC. Possible loose or damaged cable. Wrong com channel may be selected. Possible power supply problem. DLC cable may be too long.	a) Check DLC connections to the terminal. b) Check terminal setup for correct com channel. c) Inspect DLC cable for damage. d) On non-hermetic load cells, check the harness connection at the DLC. e) Check supply voltage from terminal. f) Has the DLC cable been extended beyond 50 ft?
3. DLC PARITY ERROR	Jaguar terminal with Rev G or earlier software. DLC cable too long or damaged. Damaged communications buffer on terminal. Defective load cell.	a) Upgrade Jaguar software to Rev H or higher. b) Inspect DLC cable for damage. c) Try alternate Com Channel on terminal. d) Replace load cell.
4. SCALE IN MOTION	Air movement or low frequency vibration. Radio transmission nearby.	a) Use a wind screen in drafty areas. b) Select a lower frequency filter if possible. c) Check for 2-way radio transmissions in area.
5. ZERO OUT OF RANGE	Scale may have been lifted by the upper frame. Possible mechanical problem.	a) Try calibrating again. b) See Mechanical Problems. c) Replace load cell.
Other Error Codes	Refer to terminal technical manual.	See Mechanical Problems.

Mechanical Problems

Problem	Possible Cause	Correction
Calibrates but doesn't weigh correctly.	Base not level. Calibrated in drafty area. Something touching the platter, frame, or load cell. Moisture on scale. Overload stop touching. Low supply voltage.	a) Verify base is level and not in a draft. b) Verify load cell cable is not touching upper frame or platter. c) Check overload stop gaps. d) Are any radio transmitters near the base/area? e) Are there sudden changes in temperature or possible condensation? f) Check supply voltage to DLC.
Doesn't return to zero (within 0.5d).	Operation before warm up. Load cell bolts not properly torqued. Something touching load cell or upper frame. Bellows is damaged.	a) Did base warm up for 30 minutes first? b) Was the base calibrated before warm up? c) Verify torque on load cell bolts. d) Replace load cell if bellows are damaged.
Doesn't weigh full capacity.	Terminal setup incorrectly. Calibrated without preload. Preload exceed specified limit. Overload stop touching.	a) Check terminal is set up for base capacity. b) Added fixture or container should be below specified weight and included during calibration. c) Check overload stop gaps.
Doesn't weigh full capacity when weight is off center.	Poor weighing practice. Overload stop touching.	Base is not guaranteed to weigh full capacity beyond the Shift measurement points.
Fails shift test.	Base is not level. Test weights positioned too close to edge. Bellows is damaged on hermetic load cells.	a) Verify position of test weights. b) Check load cell torque. c) Replace hermetic load cell if bellows damaged.
Excessive Creep (greater than1.5d).	Terminal is set up for more than 5,000 divisions. Load cell bolts not properly torqued.	a) Check the build option selected and re-test. b) Check load cell bolt torque.
Terminal responds slowly to change in weight.	Wrong filter selected in DLC or terminal.	a) Select higher frequency filter for quicker response. b) b) Select 'UltraRes Low' on terminals to double the update rate from the DLC.
Terminal takes too long to settle (least significant digit).	Base is in the presence of excessive vibration or draft. Terminal is configured to more than 5,000 divisions. Wrong filter selected in DLC.	a) Check the configuration of the terminal. b) Select a lower frequency filter.

6 Additional Information

DigiTOL Load Cell

All XX97 load cells use a moment-insensitive counterforce combined with advanced analog and digital electronics. The A/D conversion is done in the load cell, so only digital weight data is sent to the terminal. The internal resolution is 1 part in 2.5 million.

For most DigiTOL terminals, the load cell update rate is fixed at 7 updates per second. The JAGUAR, PANTHER, LYNXBATCH, and LYNX terminals can increase the update rate to 14 updates per second at a lower resolution level, by selecting "UltraRes Low" load cell type.

Electrical Specifications

The digital load cell in the XX97 scale base is powered by the terminal or parts counting scale with which it is interfaced.

Voltage: 18 and 24 volts DC

Maximum current: 33 milliamps

Maximum cable length (base to terminal): 16 m (50 feet).

Environmental Specifications

Temperatures

Operating temperature: -10° C and +40° C (+14° F to +113° F) with relative humidity between 10% and 95% non-condensing.

Storage temperature: -40° C and +70° C (-40° F to +158° F) with relative humidity between 10% and 95% non-condensing.

Application Environment

The XX97 model scale bases are intended for use in wet, corrosive industrial environments which require frequent washdown. However, they are NOT for use in any type of hazardous applications where explosive atmospheres are present.

⚠ WARNING!

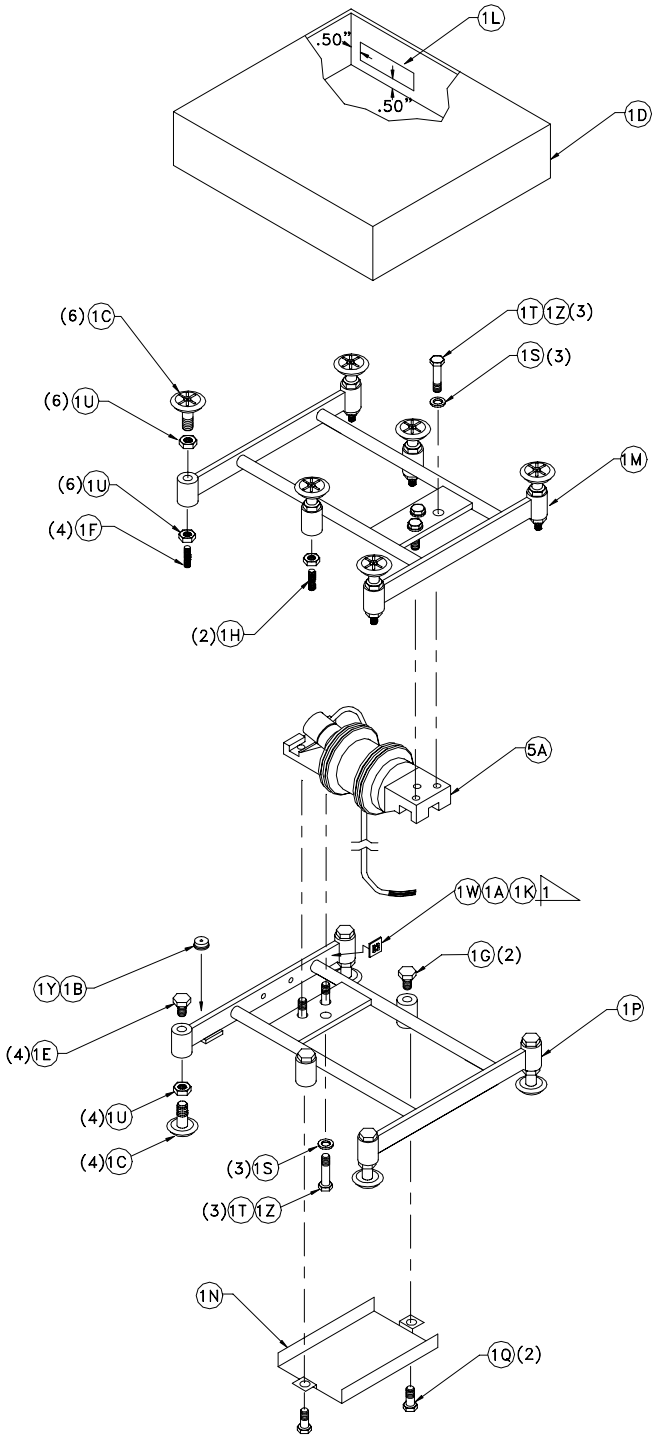
DO NOT USE THE XX97 SCALE BASE IN LOCATIONS CLASSIFIED HAZARDOUS BY THE NATIONAL ELECTRICAL CODE (NEC). FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN BODILY INJURY AND/OR PROPERTY DAMAGE.

Agency Approvals

Weight and Measures Approvals:	1997-0001	1997-0002	2097-0001	2097-0002	2197-0001	2197-0002
USA	NTEP: 90-047 (nMAX: 5000d)					
Canada	Industry Canada: AM4513					
Europe	OIML (Nmi)					
Australia	NSC: 6/96/231 (nMax: 3000d)					

7 Parts and Accessories

Model 1997



1997 PARTS LIST			
REF. #	PART NUMBER	DESCRIPTION	QTY.
1A	09591500A	Tie Wrap	1
1B	10268900A	Level	1
1C	A13253600A	Foot/platter pad	10
1D	B14252100B	Platter 1997	1
1E	13257800A	Overload Stop, Outside	4
1F	13358700A	Set Screw, Outside	4
1G	A13299000A	Overload Stop, Inside	2
1H	A13334700A	Set Screw, Inside	2
1K	13586600A	Tie Holder	1
1L	B13612500A	Patent Label	1
1M	13710500A	Plate, L/C Protection	1
1N	13710500A	Plate, L/C Protection	1
1O	R0286000	Screw, 3/8-24x5/8 Cap	2
1S	R0389900A	Washer Flat 406 ID S.S.	6
1T	R0390600A	Screw Hex 3/8-24 1 1/2	6
1U	R0391500A	Nut, Hex 3/8-24	16
1W	R0395700A	Rivet	1
1Y	141723R	Spec. Adhes. Cyanoacy	Suff
1Z	141455R	Lubriplate, Aero	Suff
5A	A1474400A	L/C Assy., 30 kg,	1
5A	15391600A	L/C Assy., 30 kg, U/R, W/CA	1
5A	A14764500A	L/C Assy., 100 kg	1
5A	15391700A	L/C Assy., 100 kg, U/R, W/CA	1

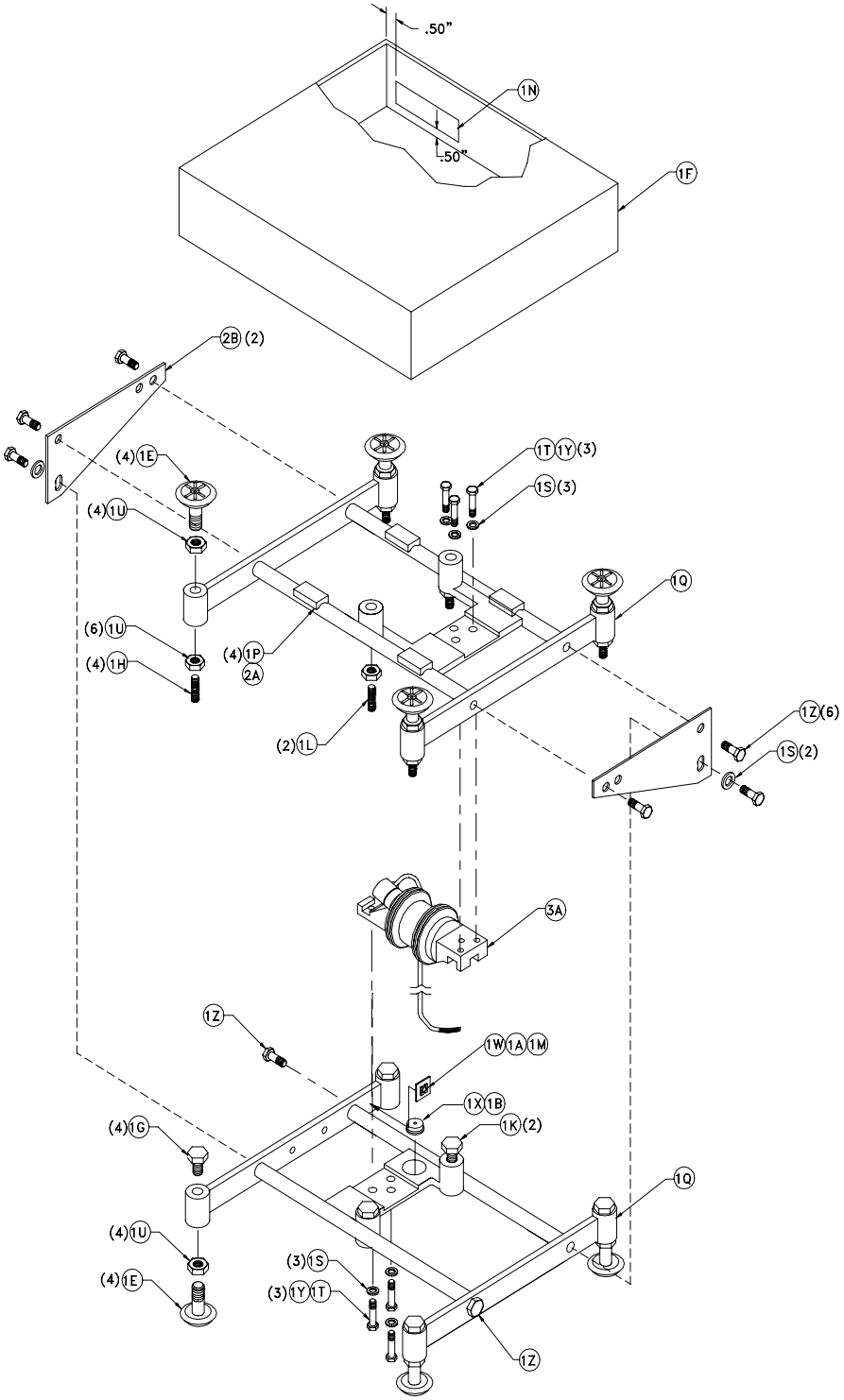
PART NUMBER	MINOR ASSY 1997-0101 DESCRIPTION
13492900A	Ferrite Core, Toroid, 0.687 x 0.375
14141500A	L/C Assy., Qualified 30 kg, I.Safe
14103200A	Label, Intrinsically Safe-FM Apprvd

PART NUMBER	MINOR ASSY 1997-0102 DESCRIPTION
13492900A	Ferrite Core, Toroid, 0.687 x 0.375
14141600A	L/C Assy., Qualified 100 kg, I.Safe
14103200A	Label, Intrinsically Safe-FM Apprvd

PART NUMBER	MINOR ASSY 1997-0202 DESCRIPTION
14498000A	L/C Assy., Qualified 100 kg, SS MILC

ACCESSORIES		
PART NUMBER	DESCRIPTION	SALES NUMBER
13465900A	Stainless Steel Adjustable Height Stand	09240036000

Model 2097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(4) 1U
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(3) 1S
(3) 1Y 1T
1Z

2097 PARTS LIST			
REF. #	PART NUMBER	DESCRIPTION	QTY.
1A	09591500A	Tie Wrap	1
1B	10268900A	Level	1
1E	A13254100A	Foot/Platter Pad	10
1F	B14752300A	Platter, 2097	1
1G	13257800A	Overload Stop, Outside	4
1H	13258700A	Set Screw Outside	4
1K	A13299000A	Overload Stop, Inside	2
1L	A13335500A	Set Screw, Inside	2
1M	13586600A	Tie Holder	1
1N	B13612500A	Patent Label	1
1P	13253900A	Pad	1
1Q	13554800A	Machine Frame	1
1R	1369200A	Label, Caution, L/C	1
1S	R0389900A	Washer Flat 406 ID S.S.	8
1T	R0390600A	Screw Hex 3/8-24 1 1/2	8
1U	R0391500A	Nut, Hex 3/8-24	14
1W	R0395700A	Rivet	1
1X	141723R	Spec. Adhes. Cyanoacy	Suff
1Y	141755R	Lubriplate, Aero	Suff
1Z	R0392800A	Scr. Cap 3/8-16x1/2	8
2A	141815R	Black Max	Suff
2B	14274900A	Bracket, Shipping	2
	154926R	Embossing Information	1
3A	A14764500A	L/C Assy, 100 kg	1
3A	A14764600A	L/C Assy, 300 kg	

PART NUMBER	MINOR ASSY 2097-0011 DESCRIPTION
15391700A	L/C Assy., Qualified 100 kg, 25' Cable

PART NUMBER	MINOR ASSY 2097-0012 DESCRIPTION
15391800A	L/C Assy., Qual. 300 kg 25' Cable

PART NUMBER	MINOR ASSY 2097-0101 DESCRIPTION
13492900A	Ferrite Core, Toroid, 0.687 x 0.375
14141600A	L/C Assy., Qualified 100 kg, I.Safe
14103200A	Label, Intrinsically Safe-FM Approved

PART NUMBER	MINOR ASSY 2097-0102 DESCRIPTION
13492900A	Ferrite Core, Toroid, 0.687 x 0.375
14141700A	L/C Assy., Qualified 100 kg, I.Safe
14103200A	Label, Intrinsically Safe-FM Approved

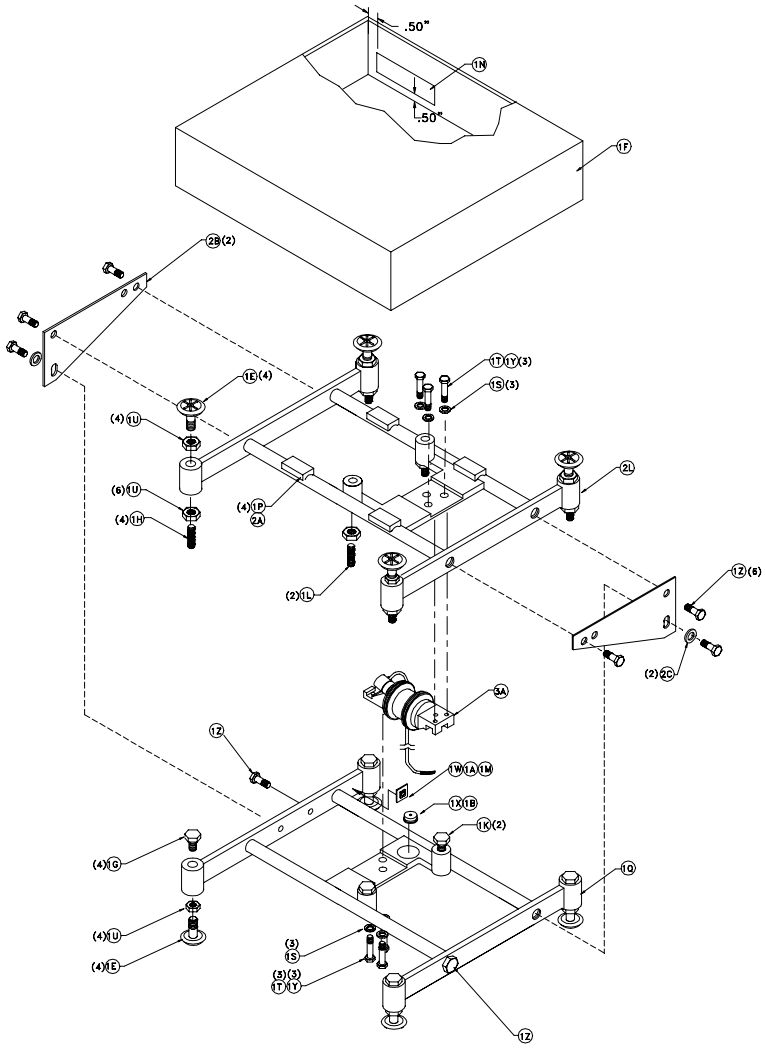
PART NUMBER	MINOR ASSY 2097-0201 DESCRIPTION
14498000A	L/C Assy., Qualified 100 kg, SS MILC

PART NUMBER	MINOR ASSY 2097-0202 DESCRIPTION
14498100A	L/C Assy., Qualified 100 kg, SS MILC

ACCESSORIES		
PART NUMBER	DESCRIPTION	SALES NUMBER
13465900A	Stainless Steel Adjustable Height Stand	09240036000
	19" Stainless Steel Column Kit	09240038000
	Stainless Steel Column Mount Kit	09240046000

NOTES

Model 2197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1Z

2197 PARTS LIST			
REF. #	PART NUMBER	DESCRIPTION	QTY.
1A	09591500A	Tie Wrap	1
1B	10268900A	Level	1
1C	14274400A	Shipping Bracket	2
1D	R0389900A	Washer	2
1E	A13254100A	Foot/Platter Pad	10
1F	B14752500A	Platter, 2197	1
1G	13257800A	Overload Stop, Outside	4
1H	13258000A	Set Screw Outside	4
1K	A13299000A	Overload Stop, Inside	2
1L	A13335400A	Set Screw, Inside	2
1M	13586600A	Tie Holder	1
1N	B13612500A	Patent Label	1
1P	13254000A	Pad	1
1Q	13552000A	Machine Frame	1
1R	13649200A	Label, Caution, L/C	1
1S	R0390900A	Washer Flat 406 ID S.S.	8
1T	R0390500A	Screw Hex 3/8-24 1 1/2	8
1U	R0391500A	Nut, Hex 3/8-24	14
1W	R0395700A	Rivet	1
1X	141723R	Spec. Adhes. Cyanoacy	Suff
1Y	141755R	Lubriplate, Aero	Suff
1Z	R0392800A	Scr. Cap 3/8-16x1/2	8
2A	141815R	Black Max	Suff
2B	14274900A	Bracket, Shipping	2
	154926R	Embossing Information	1
3A	A14764700A	L/C Assy, 500 kg	1
3A	A14764800A	L/C Assy, 1000 kg	

PART NUMBER	MINOR ASSY 2197-0011 DESCRIPTION
15391900A	L/C Assy., Qualified 500 kg, 25' (6.7 m) Cable

PART NUMBER	MINOR ASSY 2197-0012 DESCRIPTION
15392000A	L/C Assy., Qual. 1000 kg 25' (6.7 m) Cable

PART NUMBER	MINOR ASSY 2197-0101 DESCRIPTION
13492900A	Ferrite Core, Toroid, 0.687 x 0.375
14141800A	L/C Assy., Qualified 500 kg, I.SAFE
A14103200A	Label, Intrinsically Safe - FM Apprvd

PART NUMBER	MINOR ASSY 2197-0102 DESCRIPTION
13492900A	Ferrite Core, Toroid, 0.687 x 0.375
14141900A	L/C Assy., Qualified 1000 kg, I.SAFE
A14103200A	Label, Intrinsically Safe - FM Apprvd

PART NUMBER	MINOR ASSY 2197-0201 DESCRIPTION
14498200A	L/C Assy., Qualified 500 kg, SS MILC

PART NUMBER	MINOR ASSY 2197-0202 DESCRIPTION
14498300A	L/C Assy., Qualified 1000 kg, SS MILC

NOTES

METTLER TOLEDO

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