# 1985

Technical Manual

# INTRODUCTION

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

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

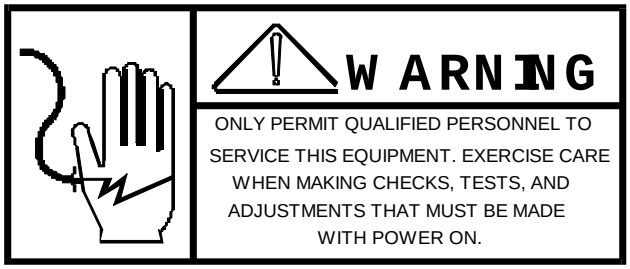
METTLER TOLEDO
Training Center
P.O. Box 1705
Columbus, Ohio 43216
(614) 438-4400

# PRECAUTIONS

- **READ** this manual before operating or servicing this equipment.


- **ALWAYS REMOVE POWER** and wait at least 30 seconds **BEFORE** connecting or disconnecting any internal harnesses. Failure to observe these precautions may result in damage to, or destruction of the equipment.

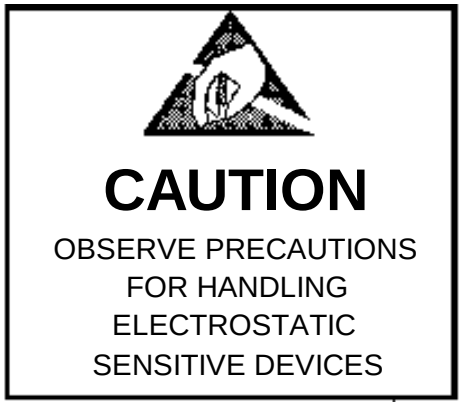
- **ALWAYS** take proper precautions when handling static sensitive devices.




- **DO NOT** connect or disconnect a load cell scale base to the equipment with power connected or damage will result.

- **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 servicing.

- **CALL** METTLER TOLEDO for parts, information, and service.

# *CONTENTS*

# I. GENERAL DESCRIPTION

The Toledo Model 1985 Base and Platform aSsembly utilizes a load cell transducer and a unique base mounted flexure weighing mechanism.

The load applied to the weighing platform is tramsitted to the Toledo transducer load receiver through the mechanical platform support spider-flexure weighing mechanism.

The Weighing System employs a Toledo Digital Indicator, associated satellite accessories and 1985 Base and Platform Assembly.

# II. SPECIFICATIONS

## A. CAPACITIES:

| AVOIRDUPOIS | METRIC |
|---|---|
| 25 lb x .005 lb | 10 kg x .002 kg |
| 50 lb x .01 lb | 25 kg x .005 kg |
| 100 lb x .02 lb | 50 kg x .01 kg |
| | |
| 20 lb x .002 lb | 10 kg x .001 kg |
| 50lb x .005 lb | 20 kg x .002 kg |
| 100 lb x .01 lb | 50 kg x .005 kg |

## B. ACCURACY:

Meets or exceeds National Bureau of Standards Handbook 44 Digital Scale Requirements.

## C. TRANSDUCER:

Toledo Cantilever Load Cells:

Hermetically Sealed
Industrial
General Purpose
Rated Output-2 Millivolts / Volt
Overload Protector - External Adjustable Mechanical Stop

## D. WEIGH PLATFORM SUPPORT SPIDER:

Flexure Stabilization
Overload / Shock
Loading Safeguard-Base Internal Mounted
Adjustable Mechanical Corner Stops

## E. WEIGH PLATFORM:

Lift-Off Type

Size: 14” x 14”
(35.6 cm x 35.6 cm)

Finish: Stainless Steel-Polished
Mild Steel-Painted Dark Charcoal

## F. BASE:

Internal Mounted Level Indicator

External Dimensions: 13.5” x 13.5” x 4”
(Excluding Leveling Feet)
(34.3 cm x 34.3 cm x 10.2 cm)

Finish: Stainless Steel-Polished
Mild Steel-Painted, Fog White

## G. POWER SUPPLY REQUIREMENTS

Load cell excitation is provided by Digital Indicator

# III. BASE UNIT UNPACKING AND HANDLING

The Base and Platform Assembly is factory assembled, calibrated and shipped as one integral unit.

WEIGHT PLATFORM IS LIFT OFF TYPE.

DO NOT LIFT BASE UNIT BY WEIGH PLATFORM SUPPORT SPIDER. LIFTING BASE UNIT BY SPIDER COULD DAMAGE THE FLEXURES.

Remove unit from shippin container. After is has been determined that the specified equipment has been received and no damage has occurred during shipment, proceed with “Preparation for Calibration”.

# IV. BASE UNIT PREPARATION FOR CALIBRATION

AIR MOVEMENT MAY CAUSE WEIGHING PROBLEMS. EXCESSIVE ARI CURRENTS MAY REQUIRE PROTECTION FOR BASE AND PLATFORM ASSEMBLY.

A. Place base unit on a stationary stable support.

FRONT OF BASE DETERMINATION
Front indication of the base is the OPPOSITE SIDE of the data plate.

B. Carefully lift off weighing platform: lift up platform evenly from opposite sides, hands centered, at the same time.

C. LOAD CELL INTERCONNECTING CABLE
Thread cable-six (6) pin connector or plain end (General Purpose Load Cell applications) beneath base, and connect directly to load cell or load cell harness terminal facilities.

LOAD CELL CABLE CONNECTOR:
MAKE CERTAIN THE CONNECTOR ENGAES THE LOAD CELL MATING JACK PROPERLY. CROSS THREADING OR FAILURE TO TIGHTEN CONNECTOR (HAND TIGHTEN) WILL CAUSE IMMEDIATE FAILURE DUE TO MOISTURE.
DO NOT PINCH INTERCONNECTING CABLE BETWEEN BASE AND SUPPORTING STRUCTURE.

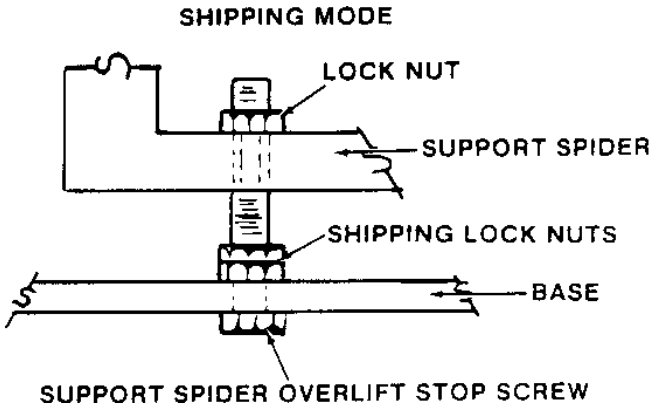
D. BASE INTERNAL GROUNDING FACILITIES
A self-tapping ground cable retaining screw is located adjacent to the wall opening for the Load Cell Interconnecting Cable.

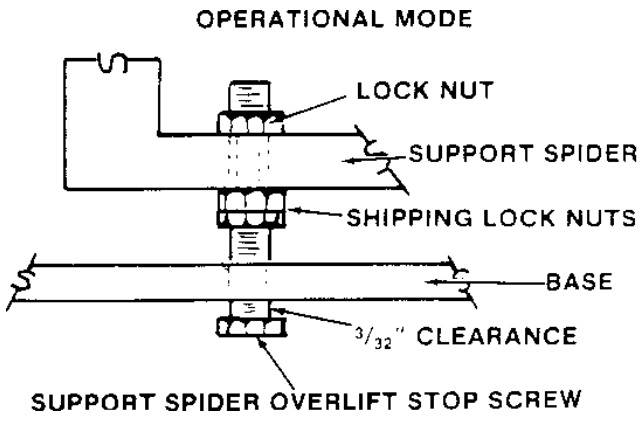
E. Combination support spider shipping and overlift screw arrangement:
The Overlift Stop Screw is used to remove the load from the load cell and to lock the support spider in place for shipment.

1. Shipping Mode
The head of the adjusted overlift stop screw is held against the base and locks the support spider in place with the two (2) shipping lock nuts.

2. Operational Mode
Release the two (2) overlift stop screw shipping lock nuts and secure them up against the support spider. The weigh platform suppor spider overlift stop screw has been factory adjusted to allow 3/32 of an inch maximum movement when spider is gently lifted upwards. To make an adjustment, if required, loosen the three (3) lock nuts and adjust stop screw to obtain the 3/32 of an inch verticle movement. Tighten lock nuts (3) securely.

F. Level the unit using the base mounted adjustable feet (4)-center level the indicator bubble.
BE SURE TO LEAVE SUFFICIENT SPACE BETWEEN BASE AND SUPPORTING STRUCTURE FOR INTERCONNECTING LOAD CELL CABLE.



# V. DIGITAL INDICATOR

A. Connect load cell cable to digital indicator.
B. Insert line cord into properly grounded power supply.
C. Program digital indicator for weighing system calibration.
D. Allow load cell-digital instrumentation system to warm-up for a minimum period of fifteen (15) minutes.

# VI. CALIBRATION

CHANGING INDICATION, INSTABILITY OR MECHANICAL FRICTION MUST BE CORRECTED BEFORE PROCEEDING WITH SCALE CALIBRATION.
BASE UNIT HAS BEEN CAREFULLY ADJUSTED AT THE FACTORY. DO NOT MAKE WEIGH PLATFORM SUPPORT SPIDER OR LOAD CELL OVERLOAD STOP/SHIFT ADJUSTMENTS UNLESS ABSOLUTELY NECESSARY.

DO NOT PLACE test weights directly on weigh platform support spider. They could fall into weighing mechanism damaging flexures, load cell, etc.

Test weight platter, Toledo Part Number 11201500A, must be used for making internal shift and overload stop adjustments.

Do not slide test weight load from one position to the other.

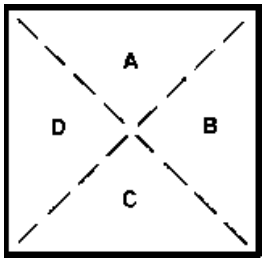
Exercise base weighing mechanism two (2) times with a full capacity test weight load placement in center of WEIGH PLATFORM OR TEST WEIGHT PLATTER.

## A. SHIFT TEST

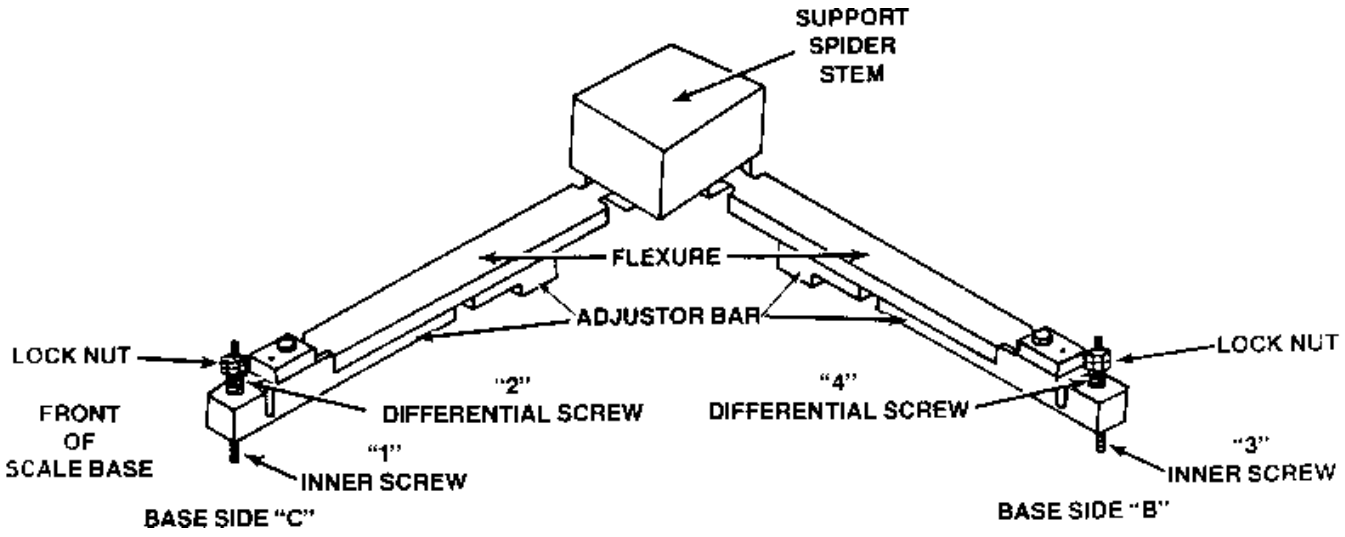
**WEIGH PLATFORM / TEST WEIGHT PLATTER**

**SHIFT TEST DESIGNATIONS**

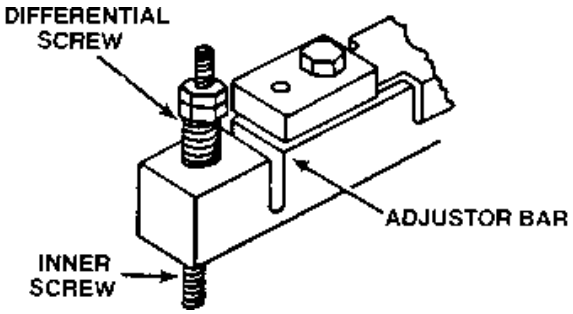
**BACK**
**(SIDE WITH DATA PLATE)**




Weigh platform designations, A, B, C and D are one-half (1/2) the distance from the center to the edge of the platform. The test weight load must weigh within the specified National Bureau of Standards Handbook 44 Digital Scale Accuracy Requirements. Test weight load for the shift test must equal one-half (1/2) the scale's weighing capacity.




DIFFERENTIAL SCREW BASE SIDE DISPLAY INDICATION RULE: Turn differential screw clockwise to decrease indication; counterclockwise to increase indication.




1. Place test weight load on platter at each A, B, C and D locations; record display indications.

2. Equalize opposite side indications by fine adjustment of adjustor bar Differential Screws “2” and “4” after removing lock nuts. REPLACE AND TIGHTEN LOCK NUT AFTER FINAL ADJUSTMENT.

If sufficient differential screw adjustment is not available:

a. Remove lock nut, carefully disengage differential screw “2” or “4” (releasing tension on adjustor bar).

b. Push adjustor bar down or hold it up, whichever direction is required, and re-engage differential screw.

c. Repeat shift adjustment.

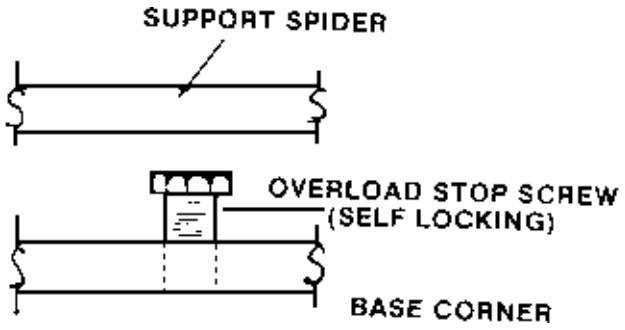
d. Replace and tighten lock nut after final adjustment.

e. Check indication - if required, repeat adjustment.

If shift adjustment is done properly, the weigh platform test weight load placements “A”, “B”, “C” and “D” should meet the shift test accuracy requirements.

| TEST WEIGHT PLATTER<br>TEST WEIGHT REQUIREMENT FOR SETTING PLATFORM SPIDER AND LOAD CELL OVERLOAD STOPS | |
|---|---|
| **CAPACITY** | **TEST WEIGHT REQUIREMENT** |
| 20 LB<br>25LB | 33 LB |
| 10 KG | (15 KG) |
| 50 LB | 66 LB |
| 25 KG | (30 KG) |
| 100 LB | 132 LB |
| 50 KG | (60 KG) |

**PLATFORM SUPPORT SPIDER OVERLOAD STOP**



## B. OVERLOAD STOPS

1. PLATFORM SUPPORT SPIDER OVERLOAD STOPS

Four (4) adjustable spider overload stops are located in the corners of the base (one on each corner).

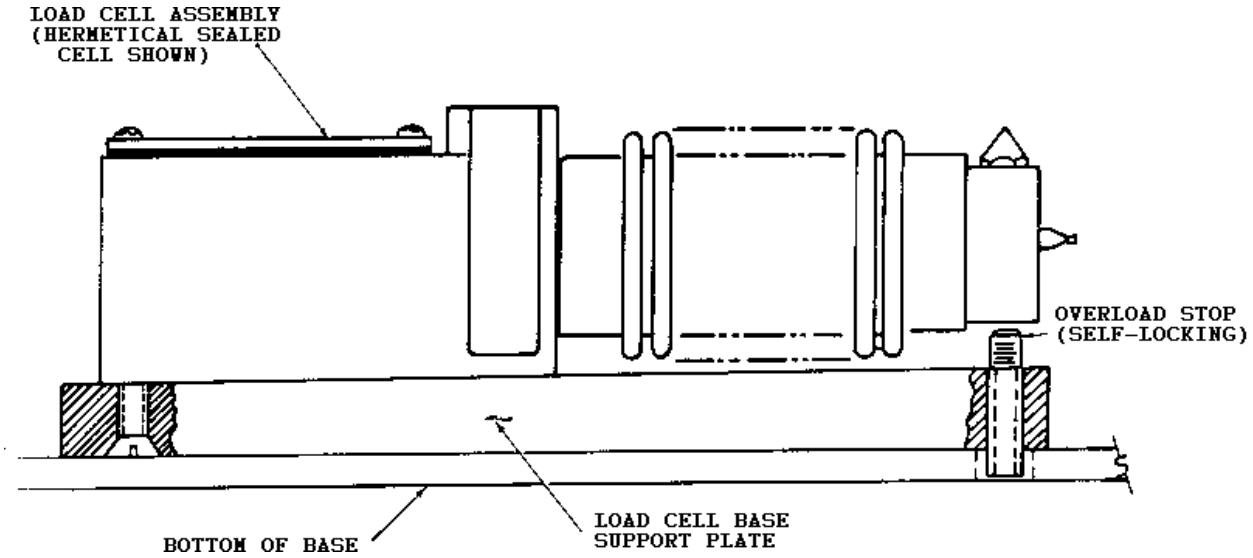
2. LOAD CELL OVERLOAD STOP

This stop is located in the load cell base support plate directly beneath the load receiver. Remove test weight platter. Place base assembly up on four (4) elevated corner stable supports. Gain access to stop from bottom of base.

Place test weight platter on support spider.

a. Place the specified test weight load at the respective support spider corner and center (load cell overload stop) locations. Adjust each stop until display indication changes.

b. Remove the base assembly from the four (4) corner elevated supports. Level the unit using the four (4) base-mounted adjustable feet and center level indicator bubble.




## C. SCALE CALIBRATION

Replace test weight platter with weigh platform.

With the appropriate test weight loads, continue with calibration of the weighing system according to the instructions described in the Digital Indicator Technical Manual.

# VII. WEIGHING INACCURACIES / COMPONENT REPLACEMENT

Weighing inaccuracies and/or changing indication can be attributed to:

1. Loose flexures - loose load cell / mounting plate.

2. Foreign material on adjustor bar, base and weigh platform spider or flexure retainer (clamp) mating surfaces. All mating surfaces must be clean, free of grease, etc.

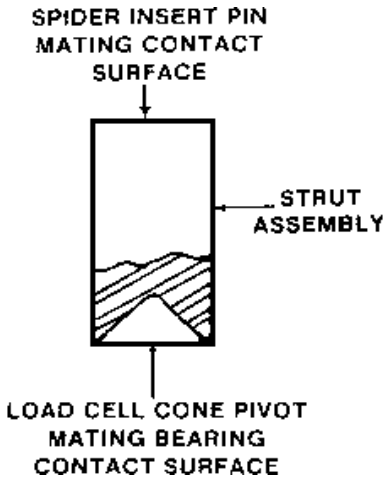
3. General Purpose Load Cell Applications - loose load cell interconnecting and/or harness cable connections at load cell and terminal facilities.

4. Strut Assembly - out-of-alignment; in backward; surface condition of load cell cone pivot and spider insert pin bearing contact surfaces.

5. Spider Assembly - surface condition of insert pin bearing contact surface.

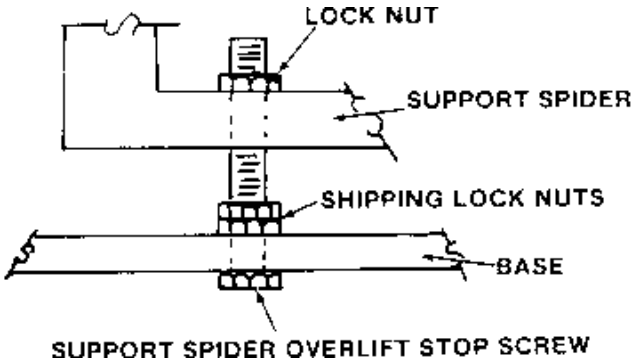
**STRUT ASSEMBLY ORIENTATION**

The strut assembly must be placed in position as shown. If strut is placed in backward (upside down), the increase in height could damage the flexures and/or load cell.




**CHANGING LOAD CELL-SUPPORT SPIDER OVERLIFT STOP**

To prevent damage to the flexures while the load cell is being replaced, the Support Spider Overlift Stop MUST be placed in the "Shipping Mode" arrangement.




Loosen and lower the two (2) shipping lock nuts on the Overlift Stop Screw down against the base as shown above. There must be no clearance between the base and the head of the overlift stop screw. The load cell is correctly aligned when the strut does not move back and forth and the Spider can be gently raised and lowered.

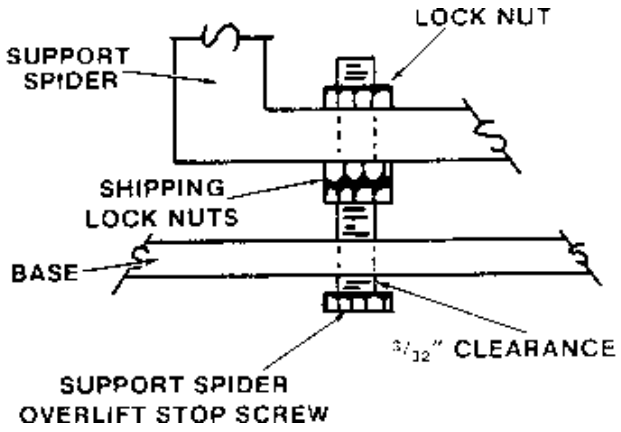
After the replacement load cell has been aligned and secured in place, the Support Spider Overlift Stop MUST be placed in the "Operational Mode" arrangement with the Strut in position.

Release the two (2) overlift stop screw shipping lock nuts and secure them up against the support spider.

There should be 3/32 of an inch maximum movement when spider is gently lifted upward. To make an adjustment, if required, loosen the three (3) lock nuts and adjust stop screw to obtain the 3/32 of an inch vertical movement.

Tighten lock nuts securely.

MAKE SURE ALL RETAINING SCREWS ARE TIGHT.




## VIII. MODEL 1985 BASE AND PLATFORM ASSEMBLY DATA TABLE

| INDICATION FOR ONE PART / 5000 | | FACTORY NUMBER | | CAPACITY LOAD CELL | MICROVOLT(μv) PER INCREMENT | | MAXIMUM ADDITIONAL ALLOWABLE BACKWEIGHT | |
|---|---|---|---|---|---|---|---|---|
| AVOIRDUPOIS | METRIC | STAINLESS STEEL | MILD STEEL | | AVOIRDUPOIS | METRIC | AVOIRDUPOIS | METRIC |
| 25lb x .005lb | 10kg x .002kg | 1985-0001 | 1985-0021 | 50lb H.S. | 3.000μV | 2.646μV | 8 lb | 5 kg |
| 50lb x .01lb | 25kg x .005kg | 1985-0002 | 1985-0022 | 100lb H.S. | 3.000μV | 3.307μV | 16 lb | 5 kg |
| 100lb x .02lb | 50kg x .01kg | 1985-0003 | 1985-0023 | 200 lb H.S. | 3.000μV | 3.307μV | 32 lb | 10 kg |
| 50lb x .01lb | 25kg x .005kg | 1985-0005, 1985-0105 | 1985-0015, 1985-0115 | 100 lb IND. | 3.000μV | 3.307μV | 16 lb | 5 kg |
| 100lb x 02lb | 50kg x .01kg | 1985-0006, 1985-0106 | 1985-0016, 1985-0016 | 200 lb IND. | 3.000μV | 3.307μV | 32 lb | 10 kg |
| 25lb x .005lb | 10kg x .002kg | | 1985-0011 | 50 lb G.P. | 3.000μV | 2.646μV | 8 lb | 5 kg |
| 50lb x .01lb | 25kg x .005kg | | 1985-0012 | 100 lb G.P. | 3.000μV | 3.307μV | 16 lb | 5 kg |
| 100lb x .02lb | 50kg x .01kg | | 1985-0013 | 200 lb G.P. | 3.000μV | 3.307μV | 32 lb | 10 kg |

H.S. - HERMETICALLY SEALED LOAD CELL ASSEMBLY

IND. - INDUSTRIAL LOAD CELL ASSEMBLY

G.P. - GENERAL PURPOSE LOAD CELL ASSEMBLY

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.