3115

Technical Manual
and
Parts Catalog

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:

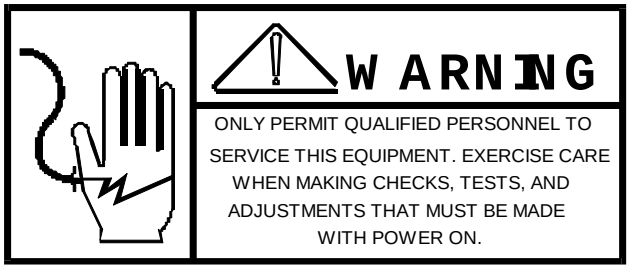
METTLER TOLEDO
Training Center
P.O. Box 1705
Columbus, Ohio 43216
(614) 438-4400

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.

1. GENERAL DESCRIPTION

The Toledo Model 3115 Industrial scale is an electronic light capacity scale. An independent self contained electronic box scale, which provides a visual digital readout for the operator and has 100% tare capability.

2. SYSTEM DESCRIPTION

Toledo Model 3115 Industrial Scale uses the Toledo 5 flexure platter support system with a General Purpose 15 lb load cell to provide a scale of 10 lb gross capacity, with a 9 x 12 inch plastic weigh platter.

Model 3115 uses Toledo's "gated power supply" technique to provide zero stability with temperature, and a multislope, self compensating, A/D converter with precision thin film resistors to provide span stability with temperature. An active linear filter circuit reduces effects of vibration of the scale mounting surface. A/D logic and counting functions are controlled by a microprocessor, which also provides additional data filtering, tare storage and net weight calculation. LB-KG conversion, auto-zero maintenance, and weight in motion detection.

Weight display is via four digits of 7 segment LED's and a keyboard provides pushbutton zero, as well as pushbutton and keyboard tare entry provisions.

3. SPECIFICATIONS

3.1 ELECTRICAL & PHYSICAL

1. Physical Construction

   Die cast aluminum base. Cover and platform are molded plastic. Platform 9" x 12": overall 16:" x 13" W x 7" H. Weight: 16 lb.

2. Power Requirements

   120 VAC ±10%, 60 Hz; single phase; 0.25 amperes.

3. Capacity

   9.990 lb x .002 lb/5kg x .001 kg.

4. Digital Display

   Four digits and minus sign, seven segment LED's --0.55 inches high.

5. Lighted Legends

   Lighted spots adjacent to printed legend are LB, KG, Net and Tare.

6. Level Indicator

   A spirit level incorporated in the platform provides a level reference.

3.2 INTERNAL FUNCTIONS AND INTERLOCKS

1. Display Messages or Signals

1). Weight greater than 5 increments over capacity blanks weight display.

2). Under zero display reads true negative numbers with minus sign.

3). Display blinks on power up until the scale is zeroed.

4). Alternate action of the CLEAR button displays all segments and legends on or all off.

2. Motion Detection

Zero and tare functions are inhibited whenever motion is detected. An optional program switch selection may also hold the displayed weight until the motion stops. (SW1-2)

3. Automatic Zero Maintenance

Weight variations within ± 0.2 increments per second are compensated to zero. Compensation range is ±2% of capacity from true zero (as calibrated) or a total of 4% of capacity. May be disabled by internal program switch. (SW1-3)

4. Resolution

One part in 5,000. For calibration only, the resolution may be expanded to 1 part in 50,000. (SW1-1)

5. Pushbutton Zero

When the weight displayed is within the zero correction range and no motion is present, pressing the zero pushbutton for two seconds will cause the weight display to be zero.

The range of this correction is ± 0.2 lb for 9.990 x .002 lb and ± 0.1 kg for 5 x .001 kg.

6. Tare

Platform tare and keyboard entered tare may be used at any time unless tare interlock is selected. (SW1-4)

3.3 EXTERNAL CONTROLS

1. Display Switch

The display switch is located under the scale on the right side near the fuseholder. This switch is on a signal line to the microprocessor which is held at 5 VDC by a pull-up resistor when the switch is open. In this open position the display is ON. Closing the display switch brings the signal to ground and the display is then turned OFF.

CAUTION: WHEN THE LINE CORD IS PLUGGED INTO A POWER SOURCE, THE LINE VOLTAGE IS PRESENT AND THE SCALE IS ON. TO SERVICE THE UNIT, UNPLUG THE LINE CORD AND OBSERVE SAFETY PRECAUTIONS.

2. Keyboard

The keyboard provides 0-9, Clear, Zero, Tare, LB/KG entry.

4. INSTALLATION INSTRUCTION

4.1 SET-UP PROCEDURE

1. Unpack the scale and inspect for visual damage.
2. Remove the shipping clip and install the platter.
3. Level the scale.
4. Apply power.
5. Depress and hold the zero key for two seconds.
6. Apply test weights to check the calibration.

4.2 CALIBRATION CHECK LIST

1. Weighing Accuracy

   1). Remove the platform, remove the sealing clip and screw at the center top of the bezel-keyboard assembly, remove two screws from the top corners of the bezel keyboard assembly. The bottom edge is held by two clips. Grasp the top of the bezel and lift one half inch, then slide the bezel toward the top of the scale to disengage the clips. Replace the platform.

   2). Set switch SW1-1 and SW1-5 ON (See Figure 1)

   3). Adjust zero with the initial potentiometer.

   4). Place 10 lb or 5 kg on center of platform.

   5). Adjust span potentiometer. 10 lb should read 5.359 and 5 kg should read 0.000.5 kg should be used when possible.

   6. Check step 3 through 5 until no further adjustments are needed.

   7). Set program switches as needed for customer application (See IV - C program switch summary.)

   8). Remove the platform, replace the keyboard assembly and replace the platform.

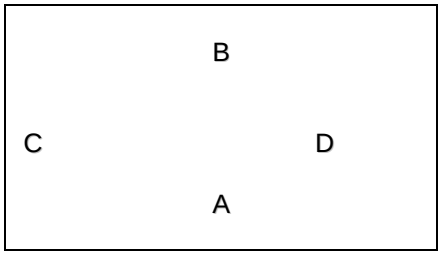
   9). Place test weight on platform and check the indicated weight. Scale should now be calibrated.

*NOTE: Scale is set up for expand mode and KG only. 10 lb is equivalent to 4.5359 kg. Expanded by ten equals 45.359. With the 4 off the display, therefore, you will read 5.359 when you use this method. Display will blank and you cannot use 10 lb if you are in LB mode of operation.

2. Shift Test

   Place half capacity in the center of the platter and note the indication. Place half capacity at A, B, C and D in turn (Figure 2). The indications should not vary more than one increment from each other in the normal mode of operation.

NOTE: The diagrammed points are 1/2 the distance form the center of the platter to the edge of the platter.



NOTE: Scale has been carefully adjusted at the factory. DO NOT make shift adjustments unless absolutely necessary.

1). Set the scale to operate in the Expand mode by setting switch SW1-1 to the ON position.

2). Place test weights equal to one-half capacity on the test platter at "A" and note the indication. Move test weights to location "B" and note the indication.

3). Equalize readings, as close as possible (within 10 minor increments), by fine adjustment of Differential screws "A" and "B" on adjustment bars, after loosening lock nuts, Figure 3.

Tightening the lock nuts may slightly offset the shift adjustment. With practice, the fine adjustment and tightening the lock nuts can be accomplished using two wrenches.

If position A is less than B, turn screw "A" clockwise.

If position A is more than B, turn screw "A" counterclockwise.

If position D is less tan C, turn screw "B" clockwise.

If position D is more than C, turn screw "B" counterclockwise.

4). If shift has been adjusted, recalibration is necessary. Repeat Section 4.2

4.3 PROGRAM SWITCH SUMMARY

SW-1-1 EXPAND: with this switch ON, the display will be expanded by 10 times the graduations. NOTE: if the display is by 2, it will appear the expansion will be by five times..

SW1-2 MOTION TRACK INHIBIT: with this switch ON, when the motion occurs the display will hold until motion stops and the new data is provided, then the display will update.

SW1-3 AZM INHIBIT: with this switch ON, the automatic zero maintenance does NOT operate and will NOT keep the scale on zero in spite of small weight changes on the platform. (less than one graduation).

SW1-4 TARE INTERLOCK ENABLE: with this switch ON, the scale platform must be clear with the indication at 0.000 for a tare entry to be accepted. Start the operation by using ZERO key to obtain a valid 0.000 indication. Enter tare by keyboard entry or by placing a container on the platform and then use the TARE key. Make weighments with this tare entered. When a change in the tare is desired, clear the platform and press the ZERO key to return to a "TRUE ZERO" with the tare amount now reading in the display. Press the CLEAR key to clear out the tare and return the display to 0.000. You are now ready to enter a new tare.

SW1-5 KG ONLY: with this switch ON, the scale will weigh in KG only and the LB/KG switch on the keyboard will not function.

5. MAINTENANCE

5.1 SERVICE KOP

First Man KOP -- 082113020

PART NUMBER	DESCRIPTION	QTY.
113472 00A	Main PCB	1
113468 00A	Prom PCB	1
095920 00A	Fuse .25 A SB	5
099595 00A	Switch	1
113483 00A	Keyboard, Bezel, Lens Assy.	1

5.2 TROUBLESHOOTING

The Model 3115 is designed to be serviced by identifying and replacing defective modules. The modules are the keyboard assembly, main PCB, prom PCB, power supply assembly and the load cell.

Referring to Figure 4 for the location of the connections on the main PCB, you can then use the information on Figure 5 to determine which module should be replaced.

CAUTION:
Remove PROM PCB BEFORE either removing or replacing cover.