2020

Assembly 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:

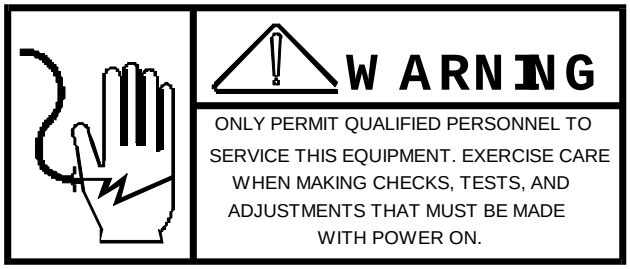
METTLER TOLEDO
Training Center
P.O. Box 1705
Columbus, Ohio 43216
(614) 438-4400

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.

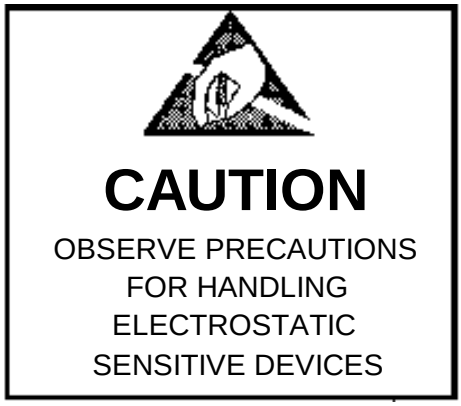
- **ALWAYS** take proper precautions when handling static sensitive devices.



- **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

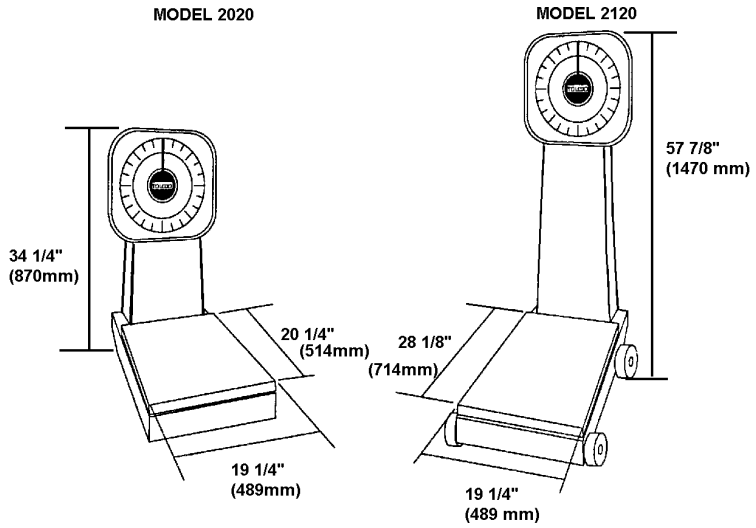
1. DESCRIPTION

The Toledo Models 2020 and 2120 are compact industrial scales designed to meet a variety of weighing needs where simplicity and low cost are a must.

The 2020 and 2120 feature am automatic dial indicating mechanism which incorporates high tensile strength alloy coil for consistent accuracy. An oil dashpot absorbs loading shock and reduces indicator oscillation. Tare is available through a knob conveniently located at the top of the dial housing. A precision rack and pinion assure negligible backlash. Finally, large clear figures and a contrasting color, knife edge indicator minimize reading errors.

Both scales utilize a rugged fabricated steel design and the 2120 is equipped with phenolic wheels for easy portability for the 2020. Accessory pans and platforms tailor the scales to specific applications.

2. SPECIFICATIONS



Available Charts	Maximum Tare
Avoirdupois	
50 lb X 1 oz	10 lb
100 lb X 2 oz	20 lb
200 lb X 4 oz	40 lb
Metric	
20 kg X 50 g	4 kg
50 kg X 100 g	10 kg
100 kg X 200 g	20 kg

Available Charts	Maximum Tare
Avoirdupois	
200 lb X 4 oz	50 lb
400 lb X 8 oz	100 lb
800 lb X 1 lb	100 lb
Metric	
100 kg X 200 g	25 kg
200 kg X 250 g	50 kg
400 kg X 500 g	50 kg

3. ASSEMBLY / INSTALLATION

3.1 BASIC REQUIRMENTS

3.1.1. Each 2020 and 2120 carton contains the following items:

A. One scale basis (plastic wrapped)

B. One scale column with dial head attached (plastic wrapped).

C. One bottle of dashpot oil.

D. One steelyard rod.

E. One bag of loose hardware consisting of:

a. six sets of bolts/nuts/washers (Model 2020) or,

b. eight sets of bolts/nuts/washers (Model 2120).

F. In addition, the Model 2120 includes four black wheels.

3.1.2. For easy assembly, the following tools are recommended:

A. 3/4” socket and ratchet

B. 3/4” box or open end wrench

C. #2 Phillips screwdriver

D. 7/16” box or open end wrench

E. 1/8” or 1/4” slotted screwdriver

F. 9/16” socket and ratchet (Model 2020 only)

G. 9/16” box or open end wrench (Model 2120 only)

3.1.3. Following the steps BELOW, assemble your 2020 or 2120:

A. Remove the plastic wrapping from the scale base.

B. Remove the scale platform from the scale base and set it aside.

C. For reinstallation purposes, note the position of the two bumper bolts in the center-front and center-rear of the spider assembly. Refer to Figure 1. Note also that the “L” bracket under one of these bolts is located at the end of the base where the column will be mounted. Life out the spider assembly by raising the end away from the column area first, and place it off to the side.

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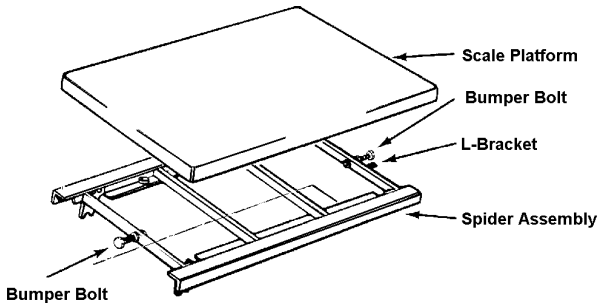


D. Remove all cardboard packing and the bad of silica gel from inside of the scale base.

E.1Model 2020. Assemble a jam nut to each of the four leveling legs. Life the scale base on one side and block to hold in the “up” position. Assemble two blots from underneath the base into the welded bolts in the base frame. Repeat this procedure for the two legs on the opposite side of the base. When the desired height of the 2020 is reached, tighten each jam nut against the scale base to provide additional support.

F.2 Model 2120. using the four axle bolts with the four back wheels, install each wheel in the following sequence:

1. Slide one flat washer onto the 1/2” axle bolt and slide the bolt through the black phenolic wheel.

2. Slide another flat washer onto the bolt.

3. Lifting the scale base the required distance (approximately 2-1/2”) insert the bolt through the hole in the scale base from the outside and screw the bolt through the nut that is welded to the inside of the scale base.

4. From inside of the scale base, add the lock washer and nut onto the bolt.

5. Repeat these steps for the remaining three wheels.

6.Tighten all bolts and nuts for the wheels at this time. make sire the wheels spin freely.

	CAUTION!
	PLACE WEDGES UNDER WHEELS BEFORE USING SCALE

G. Reinstall the spider assembly that was removed in step 3. Tilt the front end of the spider assemble, closest to the column, downward slightly for ease of reinstallation. The L-shaped bracket (See Figure 1) located in the center-front of the spider assembly must be under the base flange; the heads of the two hex head bolts located in the center-front and center-rear of the spider must both be inside of the base flange. Once installed, be sure that the four bearings are properly seated on the four pivots of the main lever system.

H. Reinstall the scale platform removed in Step 2.

I. Remove the plastic wrapping from the column. Be careful to protect the glass and the front of the column from damage prior to removing the rear cover. Remove all of the Phillips screws that attach the rear cover of the column and place the rear cover aside.

J. Using the remaining bolts, attach the column to the scale base. Position the column on the front of the scale base, aligning the smaller holes of the column floor with the smaller holes in the scale base. The front of the dial must face the scale platform. To secure the column to the base, slide a flat washer onto a bolt, insert the bolt down through the small hole in the column and scale base, and from underneath the scale base slide another flat washer onto the bolt, followed by a lock washer and nut. Install all remaining bolts in this fashion, making sure that the large center hole in the column is aligned with the large center hole in the scale base. Tighten all bolts/nuts.

K. Remove all packing material (cardboard and silica gel) from inside the column assembly.

(NOTE: Refer to Figure 2 when completing Steps 11 through 17)

L. Install the steelyard as follows:

1. Insert the hook end of the steelyard rod down through the large hole in the center of the column floor.

2. Remove one of the nuts on the upper end of the steelyard rod.

3. Connect the hook end of the steelyard rod to the pivot on the extension lever nose.

4. Lifting up on the steelyard rod, slide the upper end of the steelyard rod through the hole at the tie bar, and reinstall the nut removed in Step 11b.. Adjust the nuts to allow approximately 1/4” of upward movement of the steelyard before the extension lever hits the base frame. Tighten the nut using a 7/16” wrench.

M. Unscrew the dashpot cover and fill the dashpot with dashpot oil to within 1/4” of the top. Replace the cap and tighten. Use only the Toldeo Scale dashpot fluid furnished with the scale.

N. Unscrew the dashpot plunger from the dashpot cover.

O. Loosen the ball retaining screw on the short dashpot arm from the tie bar. Do *not* remove screw entirely. Life the dashpot plunger, align the dashpot ball bearing between the ball retaining screws, and tighten the ball retaining screw until snug.

P. Remove the two tie down screws which are identified by the red tag and reinstall them, in the front of the tie bar. These screws should be reinstalled in their original location when moving the scale any substantial distance.

Q. Adjust the scale to zero by turning the zero adjustment knob at the top of the housing to provide a zero indication on the dial.

R. Turn the knurled adjustment nut near the top of the dashpot plunger to adjust for proper indicator oscillation (refer to Section V, Calibration Step 5). Turning the nut clockwise slows the indicator response and turning the nut counter -clockwise allows the indicator to move more freely.

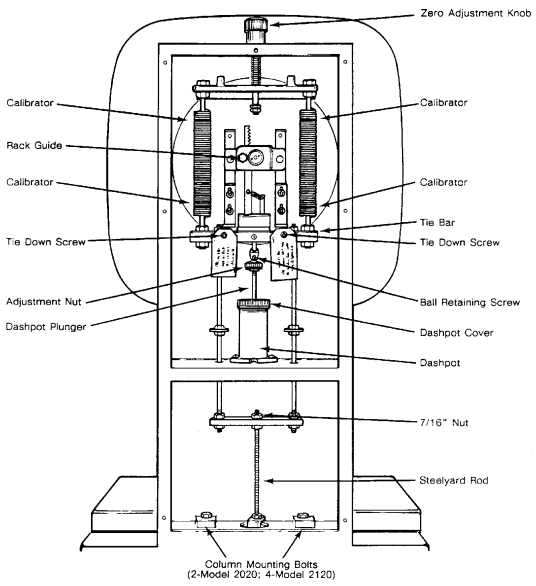


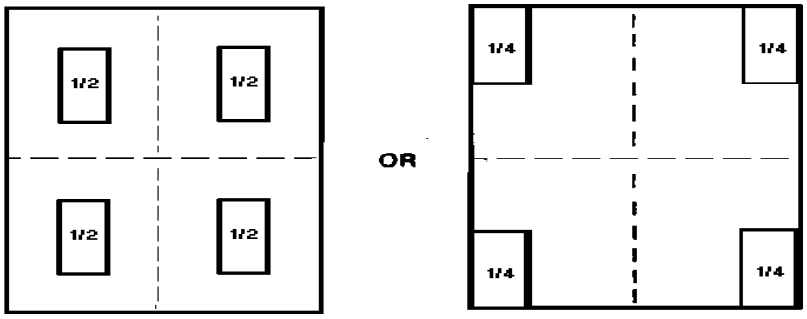
Figure 2

S. Replace the back cover that was removed in Step 8.

4. SHIFT

4.1 TEST

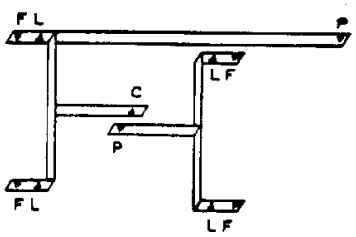
Place a half capacity test load at the center of each quarter of the platform or use a quarter capacity test load over each load pivot sequentially.



If a correction is not needed, proceed to the operating instructions.

In a mechanical base, shift refers to the pivot distance of the levers. If on a lever the distances are equal, then a lever is said to have no shift error. Also, two levels which have the same ration will have no shift error.

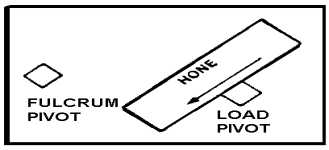
4.2 ADJUSTMENT



The lever illustration of the 2020 and 2120 designates the pivots as follows:

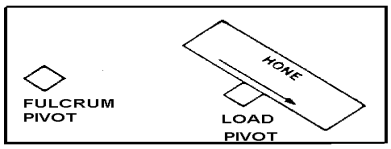
F= Fulcrum Pivot
L= Load Pivot
P= Power Pivot
C= Center Connection

The rule is to lengthen the distance between the fulcrum and the load pivots to increase the indication. Conversely, shorten the distance between the fulcrum and the load pivots to decrease the indication. Use hone part numbers 085061 020 (fine) and 085062 020 (coarse) to adjust the pivots.



TO LENGTHEN THE DISTANCE

OR



TO SHORTEN THE DISTANCE

Note the direction of honing. Always hone away from the load edge of the pivot.

4.2 SIDE TO SIDE

To correct a shift errors, side to side on a lever, note the indication and hone the load pivot as needed to correct the side error on either lever. Hone only the load pivots to correct an error on either lever for a side to side correction.

4.3 FRONT TO BACK.

When the indications on each load point of each lever are equal side to side and the indication of the levers are different front to back, then hone the power pivot of the short lever until the two levers are equal front to back. Do not home the power pivot of the long lever. Increase the pivot distance from the power pivot to the fulcrum point on the short lever if the short lever has a higher indication than the long lever.

When the shirt error is corrected, recalibrate the scale and retest the shift. Continue calibration and shift test/ adjustment until no shift error is found after the scale is calibrated.

5. TESTING AND ADJUSTING

5.1 REMOVING THE DIAL GLASS

The dial glass is held in place with a clamp-on- bezel (scroll frame) that is held together at the bottom by means of an angle and two screws. Removal of either screw will allow the scroll to be separated at the bottom for removal. NOTE: The gasket used is a double channel design, one channel of which is around the glass. Care must be used in removing the scroll frame so as not to dislodge the gasket from the glass or dial.

5.2 CALIBRATION

5.2.1. Level the scale by means of the adjustable foot at each corner of the base.

5.2.2. Balance the indicator by means of the adjustable weights on the indicator. Always begin with the indicator in balance.

5.2.3. Establish zero indication by turning the zero adjusting knob (Refer to Figure 2)

5.2.4. Be sure the rack guide (Refer to Figure 2) is set to permit the least possible amount of play throughout the entire travel of the indicator.

5.2.5. Adjust the dashpot so the indicator oscillates not more than twice before coming to rest.

5.2.6. Check for friction. When friction-free movement is obtained, recheck zero.

Full Capacity Adjustment

5.2.7. Apply test weights equal to dial capacity. If the reading is incorrect, adjust the lower calibrator in each coil an equal amount. Hold the coil from rotating and turn calibrator with a prying motion, using the blade of a screwdriver. Turn up (right) to slow the indication and down (left) to speed the indication.

NOTE: If the error is one graduation or less, adjustment can be made on one coil only. When making a full capacity adjustment it is usually necessary to go past the mark to allow for zero correction.

5.2.8. Recheck zero indication with no load. Adjust if necessary.

5.2.9. Repeat zero and full capacity adjustments until correct.

Half Capacity Adjustment

5.2.10. After zero and full capacity are correct, check half capacity. If in error, correct half the error with The indicator balance weights (the weights which are horizontal when the scale is indicating half capacity).

5.2.11. Correct the zero indication.

5.2.12. Recheck half and full capacity and repeat adjustments if necessary.

Quarter Capacity Adjustments

5.2.13. When correct indication is obtained at zero, half, and full, put weights equal to one quarter capacity on the platform. If the indication is in error, adjust the indicator tail weight to make it correct.

5.2.14. Recheck zero, half and full capacities.