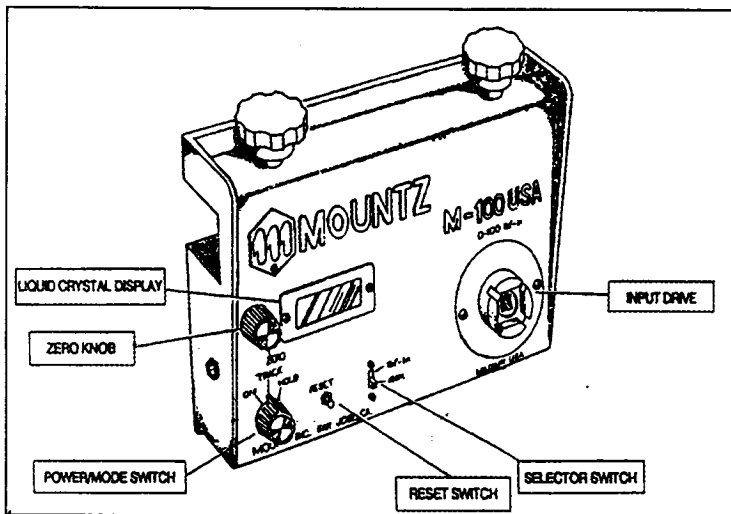




mountz
the torque tool specialists®

Operating Instructions Model M100USA Torque Tester



USES

- Calibration of torque drivers, both hand and power
- Calibration of impact and power ratcheting tools
- Obtaining data for screw thread planning

FEATURES

- Accuracy of $\pm 0.5\%$ of reading $\pm$ on count ($\pm 1\%$ of reading, $\pm$ one count from 10% to 20% of full scale)
- Range of 100 lbf.in (1130 cNm)
- Measures both clockwise and counter clockwise rotation
- Portable (dimensions: 7.25" x 9.25" x 3.0", weight: 6 lbs.)
- Powered by rechargeable battery
- Overload 50% without damage

The M100USA torque tester is designed to provide years of reliable service. In order to achieve the best results with the tester, these operating instructions should be reviewed before each unit is placed into service.

INSTRUCTIONS

1. Where possible, clamp the tester to a solid base (such as a table top) to avoid damage to the tester and tool or injury to the operator. It is possible to use the tester unclamped for light torque loads if a rough surface (such as heavy carpet) is solidly attached to the working surface. **NOTE:** Clamping with "C" clamps is **NOT** recommended.
2. Turn the POWER/MODE switch to the TRACK position.
3. Check the LO BAT indicator on the liquid crystal display. When the LO BAT indicator is first visible, about 8 hours of useful operation are left before recharging is necessary. Charging time is approximately 15 hours or less depending on remaining charge. To determine if a unit is unusable due to low charge, turn POWER/MODE switch to HOLD. If torque reading slowly increases or is erratic, unit is unusable until charged.
4. Set the SELECTOR switch to the appropriate unit of measure (lbf.in or cNm.).
5. With no force on the INPUT DRIVE, adjust the LIQUID CRYSTAL DISPLAY to 000 or 00.0.
NOTE: Before taking a series of readings, zero the tester as listed below to ensure accurate results:
 - 5.1 Preload the tester in the direction to be used (clockwise or counter clockwise)
 - 5.2 Turn the ZERO knob until "000" is first visible. Note the dial position.
 - 5.3 Turn the ZERO knob in the same direction until the display changes from "000" to "001." Note the dial position.
 - 5.4 Return the dial halfway between the two dial positions noted.
 - 5.5 To make measurements in the opposite direction, repeat steps 5.1 - 5.4.

6. To read torque continuously as it increases and decreases, turn the **POWER/MODE** switch to **TRACK**. To hold the display at the highest torque applied, turn the **POWER/MODE** switch to **HOLD**.
7. The tester is supplied with a run down adapter and two(2) springs for testing dynamic (power) tools. Use the lighter spring with tools that have a torque range under 20 lbf.in (226 cNm.). Use the heavier spring with tools that have a torque range from 20 - 100 lbf.in (226 - 1130 cNm.). **NOTE:** Other suitable adapters may be constructed by the user for special applications.
8. When the tester is not in use, always return the **POWER/MODE** switch to the **OFF** position.

SPRING TYPE STALL NUT ADAPTER OPERATING INSTRUCTIONS

Your Mountz electronic analyzer is supplied with two different springs for the stall nut adapters. These springs are used to simulate the joint characteristics of your application. **NOTE:** Stall nut adapters are only designed to simulate joint characteristics and, as a result, could vary in their performance. For information on setting the torque on the actual joint, please contact the Mountz technical department or your local Mountz representative.

Once the proper spring has been selected, it is very important that the following instructions are used otherwise accurate, repeatable torque will be difficult to achieve.

1. Unscrew the stall nut adapter and install the spring that was chosen. Be careful to properly reassemble the adapter or damage to the bearings or threads may occur.
2. Turn on the unit and set to the track mode. Zero the unit. (see item no. 5 in the **INSTRUCTIONS** section for information regarding how to properly zero the analyzer.
3. After the analyzer has been zeroed, switch the analyzer to the hold mode and insert the stall nut adapter into the drive assembly.
4. Insert the driver onto the ¼" hex drive of the stall nut adapter, hold the tool firmly and perpendicular to the unit. Side loading will occur if this procedure is not followed causing inaccuracy and poor repeatability. **NOTE:** Ensure that the tool to be calibrated does not exceed the range of the analyzer.
5. Actuate the tool that is being tested to run down the stall nut adapter. Record the reading or readjust the tool for desired torque. Back off the stall nut adapter to release the pressure from the spring. Repeat this step until desired torque is achieved. Once desired torque is achieved, cycle the tool several times to verify that torque is maintained. **NOTE:** Failure to back off the stall nut adapter until all pressure is released could cause improper torque readings and poor repeatability.

CARE

1. To ensure proper readings, periodically check the zero adjustment. Drift of the zero point may occur due to changes in temperature.
2. **DO NOT** store in humidity greater than 85%.
3. **DO NOT** operate a power tool on the tester without some form of adapter between the tool and the tester.
4. Keep the exterior clean and dry.
5. **DO NOT** drop.
6. Check the accuracy of the tester at least once a year with a dead weight test set.

SERVICE

Information on parts and suitable dead weight test sets may be obtained upon request, or the tester can be sent to Mountz for calibration and repair.

Service Centers

San Jose Service Center
1080 N. 11th St
San Jose, CA 95112
408-292-2214
Fax: 408-292-2733

Alabama Service Center
19051 Underwood Rd
Foley, AL 36535
251-943-4125
Fax: 251-943-4979

www.eturque.com
mountzsales@mountztorque.com

Electronic Analyzers

Internal Adjustments for M-10, -20, -100, -200

Equipment required: Variable Power Supply, Voltmeter, Basic Hand Tools

Be especially careful when following instructions for deadweight calibration in section 3. Since this procedure is written to illustrate the calibration steps for the M-100 model with 4" wheel, the amount of weight for the calibration will differ depending on the analyzer model and calibration wheel being used.

1. Adjust the LOBAT indicator

- 1.1 Remove the rear cover and unplug battery connector.
- 1.2 Remove 2 ea. 4-40 nuts from back of PCB and gently pull PCB out of chassis. Support PCB to avoid possibility of short circuit while allowing access to adjustment pots.
- 1.3 Set variable power supply output voltage to 7.4 VDC +/- 0.1 V and connect to unit in place of battery. Red (+) and Black (-)
- 1.4 Rotate power switch to TRACK and immediately check for display activity. Turn unit OFF if display is not active and check wiring, power supply polarity, and ensure that the PCB is not shorted to chassis.
- 1.5 Adjust R11 until 'lobat' indicator starts flickering.
- 1.6 Turn off power and reconnect battery.

2. Zero Adjustment

- 2.1 Switch to TRACK mode and lbf.in units. Turn ZERO adjust on front panel to mid-range.
- 2.2 Measure voltage at U9 pin 6. Adjust R36 for 0 V +/- 1 MV.
- 2.3 Adjust R17 for display reading of 00.0. Adjust ZERO control for minimum (-00.0) display reading. Readjust R17 to reading of 00.0. Adjust ZERO control for minimum reading again. Several more iterations of R17 / ZERO adjustments may be required to achieve desired results. Ideally, R17 will be adjusted to the threshold where the "-" symbol fails to illuminate throughout the range of the ZERO adjust.

3. Dead Weight Calibration

- 3.1 Clamp unit to a stable surface in the vertical plane, allowing room to hang weights beneath the M100. Remove and support PCB to avoid possibility of short circuit while allowing access to adjustment pots. Set to TRACK mode and lbf.in units.
- 3.2 Install 4" radius calibration wheel into square input drive. Gently hang 25 lbs. in CW direction for a few seconds to preload transducer then remove it.
- 3.3 Adjust ZERO slowly CW to 00.0. Note position of ZERO pot. Adjust ZERO slowly CW to 00.1. Note position of pot. Return ZERO adjustment to the midpoint between the two noted positions. This is true zero.
- 3.4 Gently hang 25 lbs. CCW for a few seconds to preload transducer then remove it. If reading is now .8 Counts or more then the mechanical assembly (i.e. beam, input drive, beam support, bearing) is most likely at fault. Check for excessive friction or binding within these components.
- 3.5 Preload transducer CW. Readjust true zero.
- 3.6 Gently hang 25 lbs CW and adjust R1 for 100.0 lbf.in.
- 3.7 Preload transducer CCW. Adjust true ZERO.
- 3.8 Gently hang 25 lbs CCW and adjust R16 to 100.0 lbf.in.
- 3.9 Repeat steps 3.2 - 3.8 until unit meets specifications.
- 3.10 Gently hang 2.5, 5, 10, 15, 20 and 25 lbs CCW and record readings.
- 3.11 Preload transducer CW then repeat step 3.10 CW.
- 3.12 Repeat calibration.