
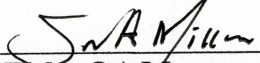
	Standard Operating Procedure TT01 Digital Cap Torque Tester		SOP Number B-601	Revision 2
			Effective Date 07/13/22	Page Page 1 of 5
Written by/ Date <i>H. Bunnick 05/05/22</i>		Reviewed by/ Date  <i>05/18/22</i>		Approved by/ Date  <i>05/20/22</i>
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1.0 Purpose

The purpose of this procedure is to describe the setup and operation of the digital cap torque tester in use at Ion Labs, Inc.

2.0 Scope

This procedure applies to the digital cap torque tester in use at Ion Labs, Inc.

3.0 Responsibility

4.0 It is the responsibility of QC Inspectors and Production (Packaging) personnel to follow this procedure for all products that require cap torque testing.

5.0 Definitions

- 5.1 **QC** – Quality Control
- 5.2 **RT** – Real Time
- 5.3 **PCW** – Peak Clockwise
- 5.4 **PCCW** – Peak Counter – Clockwise
- 5.5 **lbFin** – Pound-inch

6.0 References

- 6.1 Series TT01 Digital Cap Torque Tester User's Guide

7.0 Specifications

7.1 Accuracy:

7.1.1 $\pm 0.3\%$ of full scale

7.2 Sampling Rate:

7.2.1 7,000 Hz

7.3 Power:

7.3.1 AC or rechargeable battery

7.3.1.1 Multi-step low battery indicator is displayed, tester shuts off automatically when power is too low.

7.4 Battery Life:

7.4.1 **Backlight on:** up to 7 hours of continuous use

7.4.2 **Backlight off:** up to 24 hours of continuous use

7.5 Measurement Units:

7.5.1 ozFin

7.5.2 lbFin

7.5.3 kgFcm

7.5.4 Nm

7.5.5 Ncm

7.6 Outputs:

7.6.1 USB / RS-232: Configurable up to 115,200 baud.

7.6.2 Mitutoyo: Serial BCD suitable for all Mitutoyo SPC-compatible devices.

7.6.3 Analog: ± 1 VCD, $\pm 0.25\%$ of full scale at capacity.

7.6.4 General Purpose: Three open drain outputs, one input.

7.6.5 Set Points: Three open drain lines.

7.7 Configurable Settings:

7.7.1 Digital Filters

7.7.2 Outputs

7.7.3 Automatic output / data storage / zero

7.7.4 Automatic shutoff

7.7.5 Default settings

7.7.6 Key tones

7.7.7 Backlight

7.7.8 Audio alarms

7.7.9 Passwords

7.7.10 Calibration




7.8 Safe Overload:

7.8.1 150% of full scale (display shows “OVER” at 110% and above)

7.9 Weight:

7.9.1 8.4 lb [3.8 kg]

8.0 Controls

Primary Label	Primary Function	Secondary Label	Secondary Function
	Powers the tester on and off. Press briefly to power on, press and hold to power off. Active only when the home screen is displayed.	ENTER	Various uses, as described in the following sections.
ZERO	Zeroes the primary reading and peaks.	 (UP)	Navigates up through the menu and sub-menus.
MENU	Accesses the main menu.	ESCAPE	Reverts one step backwards through the menu hierarchy.
MODE	Toggles between measurement modes.	 (DOWN)	Navigates down through the menu and sub-menus.
DATA	Stores a value to memory and/or transmits the current reading to an external device, depending on configuration.	DIRECTION	Toggles between clockwise and counter-clockwise directions while configuring set points and other menu functions.

8.0 Procedure

- 8.1 To turn the power on, press **ENTER**.
- 8.2 Press the **MODE** until the measurement mode **PCCW** appears.
- 8.3 To the right of **PCCW**, the unit measurement should indicate **lbFin**.

Display Indicators



- 8.4 To configure set points, select **Set Points** from the menu.
 - 8.4.1 Press **MENU**
 - 8.4.2 Press **MODE**; use ▼ to go to Set Points
 - 8.4.3 Two limits, high and low, are programmed in the tester, and the primary reading is compared to these limits.
- 8.5 Place a bottle on the sample grippers of the torque tester and tighten the grippers using the knob on the right of the tester. Do not over tighten.
- 8.6 Press **ZERO** on the keypad and ensure that the screen is indicating **0.00**.
- 8.7 Grip the sample firmly by hand and gradually exert counterclockwise torque on the bottle cap.
- 8.8 The torque “pound inches” reading will appear on the screen. Check the current reading with the upper and lower pound inch limits in the upper left corner of the screen.
- 8.9 To turn the power off, press **ENTER**. When the tester is not in use, ensure that the power is turned off.

9.0 Revision History

Revision	Date	Description of Changes	CCR #	By
0	09/30/14	New	14-0774	M. Wienke
1	12/19/19	Scheduled review: no changes needed	19-0953	J. Kalem
2	05/05/22	Changed SOP number and logo. Updated SOP format.	CC-22-0222	K. Burris