Gain Control of Your Torque Verification Program Now!

Torq-Tronics 2®
Owners Manual

Sturtevant Richmont
Direct: 1 847/455-8677
Toll-Free in the US: 800/877-1347
www.srtorque.com

Part Number: 857292
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Torq-Tronics 2 Owners Manual

Safety FIRST: To avoid possible injury, always follow these following precautions:

- Wear safety glasses or goggles at all times. The Torq-Tronics 2 and AC Adaptor are for dry location use only.
- Do not stand in water when using tester or allow tester to get wet.
- Be sure torque wrench properly engages torque tester prior to applying torque.
- The installation location must be capable of resisting the torque transmitted to it during tester use without moving the tester or tipping the mounting.
- Maintain firm footing and balanced body position when applying torque.

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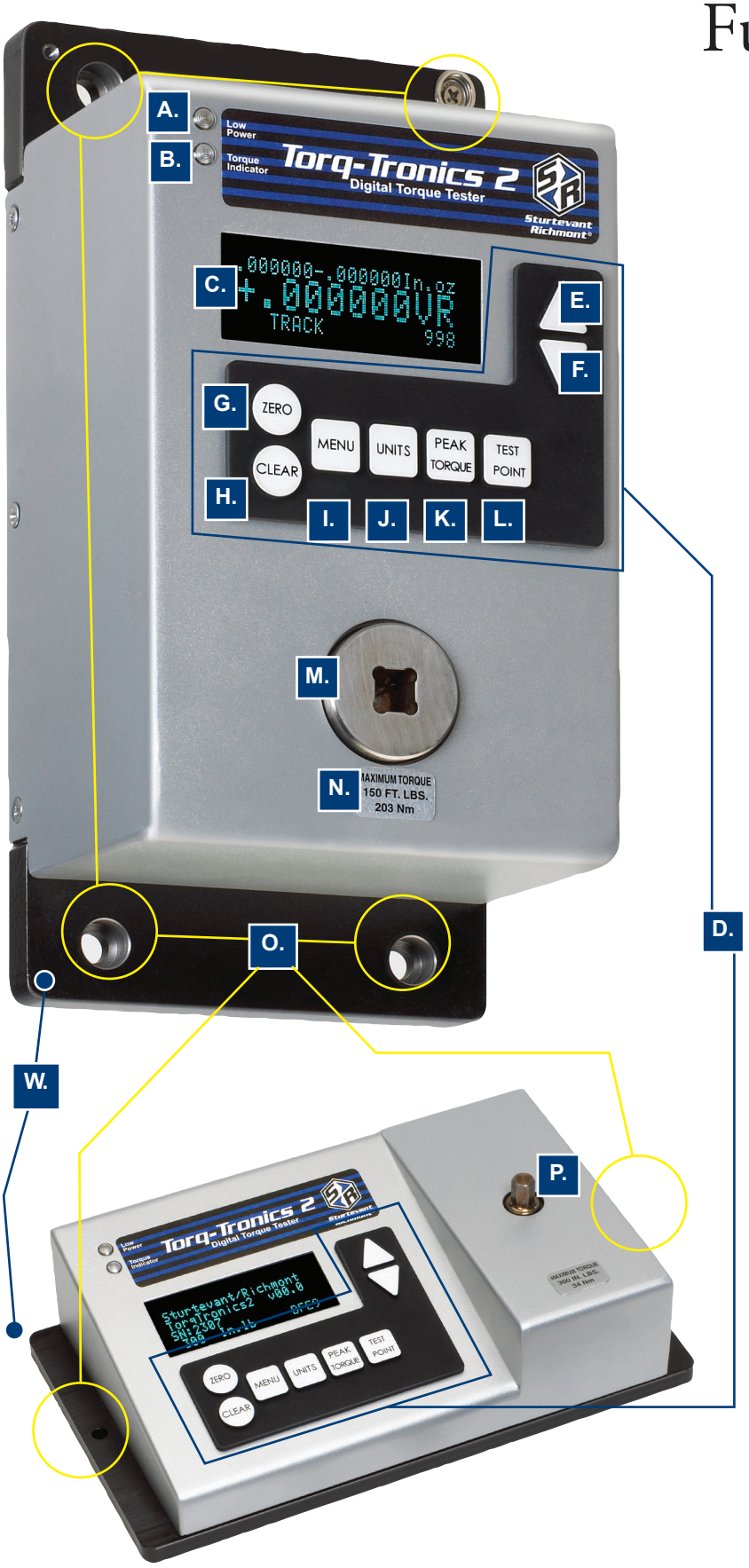
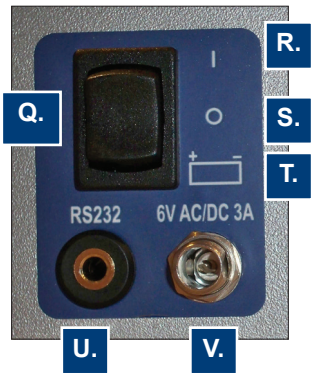
Functionality Legend



A.	Low Power LED Indicator
B.	Torque Indicator LED
C.	Vacuum Florescent Display: VFD
D.	Control Keys
E.	Up Arrow
F.	Down Arrow
G.	Zero Key
H.	Clear Key
I.	Menu Key
J.	Units Key
K.	Peak Torque Key
L.	Test Point Key
M.	Transducer
N.	Unit Capacity Sticker
O.	Mounting Holes
P.	Transducer Hex
Q.	3-Way Power Switch (Rocker)
R.	AC Power position
S.	Off Position
T.	Battery Power Position
U.	RS 232 Port
V.	6 Volt, screw-on power adapter port
W.	Back plate



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- Be sure torque wrench properly engages torque tester prior to applying torque.
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- Maintain firm footing and balanced body position when applying torque.

1: Torq-Tronics 2 Overview

Torque tool verification and calibration are vital parts of any quality process that includes threaded fasteners. Torque values are engineered to keep specified pressure on a joint. If the tool is out of calibration, the chances of applying the appropriate pressure or torque value are slim.

Torq-Tronics 2 is engineered to provide the torque verification and calibration process with a simple, durable, rugged, and reliable foundation. Torq-Tronics 2 is a valuable resource in providing historical information about your torque tools, how well they stay in spec, how long they last, and which employees are more or less likely to have tools that go out of spec.

This manual provides you with the detailed information you need to maximize usage of Torq-Tronics 2. For more information go to www.srtorque.com or go to the USB stick that was provided with the unit. There you will find videos, and additional resources.

The new Torq-Tronics 2 has been engineered with new safeguards to help protect your equipment and your quality processes.

2: International Safety Recommendations

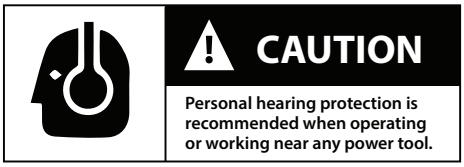
For your safety and the safety of others, read and understand the safety recommendations before installing or operating the Torq-Tronics 2®.

Torq-Tronics 2® Digital Torque Testers are designed and constructed to provide the user with a safe and reliable means of calibrating torque wrenches and power tools. Should a fault occur which impairs its function and/or compromises its safe use, immediately disconnect the unit from its power source and secure against unintended operation. Under no circumstances should repair be attempted by persons not qualified in the service of electronic instrumentation. Please contact our customer service department at customerservice@srtorque.com to schedule a return.

When testing a tool torque, always wear protective equipment:

For additional information on eye and face protection, refer to Federal OSHA Regulations, 29CFR § 1910.133, Eye and Face Protection, and American National Standards Institute, ANSI Z87.1, Occupational and Educational Eye and Face Protection. Z87.1 is available from the American National Standards Institute, Inc., 11 West 42nd Street, New York, NY 10036.

Hearing protection is recommended in high noise areas of 85 dBA or greater. The operation of other tools and equipment in the area, reflective surfaces, process noises and resonant structures can substantially contribute to, and increase the noise level in the area. Excessive air pressure above 90 PSI or worn motor components can also increase sound level emit-



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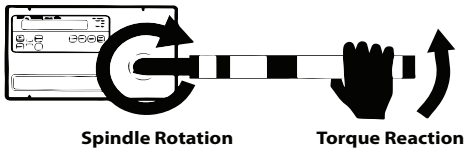
ted by the tool. Proper hearing conservation measures, including annual audiograms and training in the use and fit of hearing protection devices may be necessary. For additional information on hearing protection, refer to CFR § 1910.95, Occupational Noise Exposure, and American National Standards Institute, ANSI S12.6, Hearing Protectors.

Torq-Tronics 2® Digital Torque Testers should be securely mounted and located such that inadvertent movement will not allow the unit to be dislodged, possibly causing personal injury or damage to the unit. Should the unit be dropped, it should be checked by someone qualified in the service of electronic instrumentation.



WARNING: Shock Hazard. Disconnect power to the unit before attempting to service. Any internal adjustments should be carried out only by skilled persons who are aware of the hazards of dealing with live circuitry. The cabinet which houses the circuitry provides protection against dust and falling dirt. This unit should be used only indoors. Do not use in explosive atmospheres.

WARNING: Shock Hazard. Damaged cords or plugs are dangerous, and should be repaired or replaced as necessary.

CAUTION: Tripping Hazard. Electrical cords and tool cables must be organized and located in such a manner as to reduce the likelihood of the user and others from tripping or becoming entangled in electrical cords and cables used with this product. Route electrical cord so that it is not subject to chafing, crushing, or severing.

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3: Installation

3.1 Select location that provides sufficient strength and stability to resist the reaction torque that will be generated during tester use. The location should have available the required source of electric power and computer communications that are needed. Make sure the selected location has sufficient room for the operator to operate the tools to be tested on the unit.

3.2 Use the Mounting Holes in the Back Plate as a template, then drill all holes as required to solidly mount the unit to the selected location.

3.3 Use 5/16" (or M6) bolts or bolts and nuts to mount the unit in place. Grade 8 (Class 10.9) bolts are required. Torque to 100-150 in.lb (11.3-16.9 Nm)

3.4 Slowly and carefully test the structural integrity of mount before proceeding further. If the unit resists rotation throughout capacity, go to the next step. If the unit moves or the mounting location moves, correct the problem before proceeding.

3.5 Carefully remove the Battery Compartment Cover using the handle on the cover. Install the four (4) AA NiMH batteries into the Battery Holder. Pay careful attention to battery orientation. Incorrect battery orientation will severely damage the Torq-Tronics 2 and void the warranty. Reinstall the Battery Compartment Cover. NOTE: USING BATTERIES OTHER THAN THE REQUIRED NIMH RECHARGE-ABLE BATTERIES WILL DAMAGE THE UNIT AND VOID THE WARRANTY.

3.6 Connect the universal ROHS compliant AC/DC power supply adapter (6 volt 3 amp rated to 100 to 200 volts 50 to 60 Hz) at the male end of the Connector that screws on tester to ensure power tool testing does not cause the power source to come loose.

3.7 Use the RS-232 port (located near the 3 way rocker power switch) to connect to serial printers or computers. A USB port adapter is supplied with Torq-Tronics 2.

3.8 Test the unit by moving the 3 way rocker power switch from off (middle position) to either AC power (up) or Battery power (down). When the Display comes on, the installation is complete.

3.9 Setting the date and time.
Retrieve U.S. time date clock type: @U< Enter >
Returns format: MM/DD/YYYY,HH:MM:SS<CR+LF>

Set U.S. time date clock type: @Umm/dd/yyyy,hh:mm:ss<Enter>

mm = the two digit month range 01 – 12.
dd = the two digit day range 01-31.
yyyy = the four digit year.
hh = the two digit hour in military time range: 00 -23.
mm = The two digit minute range: 00-59.
ss = The two digit seconds range 00-59.

Returns format: @Umm/dd/yyyy,hh:mm:ss<CR+LF>

3.10 Retrieve European time date clock type: @E<CR+LF>
Returns format: DD/MM/YYYY,HH:MM:SS

Set European time date clock type: @Edd/mm/yyyy,hh:mmm:ss<Enter>

dd = the two digit day range 01-31.
mm = the two digit month range 01 – 12.
yyyy = the four digit year.
hh = the two digit hour in military time range: 00 -23.
mm = The two digit minute range: 00-59.
ss = The two digit seconds range 00-59.

Returns format: DD/MM/YYYY,HH:MM:SS<CR+LF>

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4: An Important Note About Batteries and Sturtevant Richmont Equipment

Sturtevant Richmont tools and testers are engineered to exacting standards. The electronics are sophisticated, reliable, accurate, and highly durable as long as the proper batteries are used.

Batteries are not required for operation. Batteries and charger are optional items. Battery charger part number: 21259.

Our tools and testers are designed to work on rechargeable AA NiMH (nickel metal hydride) batteries unless otherwise noted. Over the years we have found that Energizer AA NiMH batteries work best and last the longest, but, you may choose another brand of battery as long as it is a AA NiMH rechargeable battery. The quick charge battery recharger unit is available for from Sturtevant Richmont. Contact customer service at customerservice@srtorque.com to order.

Please pay attention to battery orientation as reverse loading of NiMH rechargeable batteries also has damaging effects on these units. Because this unit tests power tools we have made the battery connections extremely tight. Batteries are easier to remove from the carriage when you place the red ribbon in the carriage first and use it to pull the batteries out. For more information about batteries see our video "Assault With Batteries" and "How to Kill A Torque Wrench at www.srtorque.com/videos.

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5: Four Line Vacuum Florescent Display (VFD)

5.1 The Torq-Tronics 2 comes with a large display, that is easy to read in any lighting environment.

The top line of numbers gives you the acceptable torque range for any specific test. When you set the test point and then set the percent of tolerance the topline automatically calculates the minimum and maximum range based on your test point and the % of tolerance. **(Figure 1)**

To the right of the acceptable torque range you will see the units of measure set for this particular test.

The main 6 large digits provide three kinds of information.

If there is a "T" to the right hand side of the number, this indicates the Test Point for the test. **(Figure 2)**

When testing, the "T" disappears once the test has started and the actual test result is displayed with no letters next to it. If "VR" is seen to the right of the 6 digits this indicates you are viewing historical records. **(Figure 3)** Historical records are complete in that the display provides all information except the date and time. The display shows the record number, the test mode, the result, the target torque value, the minimum and maximum range for the test and the units of measure.

The bottom left hand side of the display shows "OK" or "NG" depending on the test result, which is based on the established torque target range and the percent of tolerance for the specific tool. **(Figure 4)**

In the middle of the lower line you will see the mode that has been selected for this particular test.

In the lower right hand corner you may or may not see numbers. If you see 3 digits this indicates that the memory function is set to on. **(Figure 5)** If the space is blank and the 3 digits are not visible, this indicates the memory function is set to off. If the memory section is set to off you press either the UP ARROW or DOWN ARROW, you will go into View Record mode. In View Record mode you will see test history.

Figure 1

Figure 2

Figure 3

Figure 4

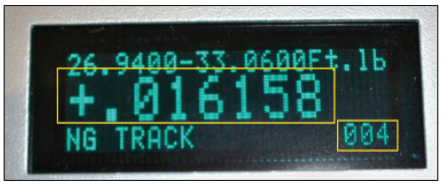

Figure 5

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5.2: LED Indicators

The Torq-Tronics 2 is equipped with 2 LED indicators: upper left hand side of the label above the Display screen. Green indicates the measurement is within target torque range.

Torq-Tronics 2 is equipped with two LED indicators on the upper left hand side of the Display. The Torque Indicator LED is engineered to give you additional visual feedback on test results. However, if you have not established a pre-determined test point, the Torque indicator LED will not light during a test:

5.2.1 A Red/Green LED indicator labeled 'Torque Indicator' and a Yellow indicator labeled 'Low Power', both are on the upper left hand side of the label above the display screen.

5.2.2 Green indicates the measurement is within target specifications.

5.2.3 Solid Red: indicates measurement is outside of target specification.

5.2.4 Blinking Red: during a zero offset indicates the transducer offset is greater than 0.25% of rated transducer capacity.

5.2.5 Constant blinking red indicates the transducer had a torque applied over 120% of rated capacity. (Refer over capacity section in the manual on how to clear an over torque condition.)

5.2.6 Blinking Yellow indicates a low power condition. If batteries are supplying power, it may be time to recharge them.

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5.3: Keys and Controls

There are also 2 arrow keys located on the right side of the Display. Both are used to scroll through the Display screen or change the setting. There are six (6) keys on the faceplate of the tester below the Display.

Their functions are as follows:

5.3.1 **Up Arrow:** If memory is 'on': increments the records counter and shows the record stored in that location.

5.3.1.1 Note: a 'VR' is displayed after the torque value to indicate you are viewing a record.

5.3.1.2 Press the 'Zero' or 'Clear' key to return to normal operation.

5.3.2 **Down Arrow:** If memory is 'on': decrements the records counter and shows the record stored in that location.

5.3.2.1 Note: a 'VR' is displayed after the torque value to indicate you are viewing a historical test record.

5.3.2.2 Press the 'Zero' or 'Clear' key to return to normal operation.

5.3.3 **Zero:** allows operator to remove any offset from the transducer.

5.3.3.1 The 'Zero' key is used to reestablish the no-load zero point when either the direction of use has been changed or the mode of operation has been changed.

5.3.3.2 Under no circumstances should the 'Zero' key be pressed when a load is applied to the drive hex (or drive square) of the tester. This button is not to be used to tare out torque values.

5.3.4 **Clear:** allows the clearing of a value on Display without saving or printing.

5.3.4.1 Note: Exception, in 'Track mode, this key will send the current torque record out the RS232 port.

5.3.5 **Menu:** enters and exits the menu used to enable or disable the memory function and print or clear on board torque data records.

5.3.5.1 Using the 'UP' arrow key, the operator can enable memory.

5.3.5.2 Pressing the 'Zero' button disables the memory.

5.3.5.3 The down arrow indicates the self generating report, 'upload' of the records currently held in memory.

5.3.5.4 The 'Clear' button enters into the memory clear process.

8.5.4.1 To confirm the clearing of memory, press the 'UP' arrow key.

8.5.4.2 To skip the memory clear process, press the 'DOWN' arrow key.

5.3.6 **Units:** used to enter/exit unit of measure change screen.

5.3.6.1 Use the 'UP' arrow key to select the desired unit of measure.

5.3.6.2 The Torq-Tronics 2 supports operation in English, S.I. and Metric units of Measure.

5.3.6.3 **Important note:** Changing the unit of measure causes the test point to be reset to zero. Please re-enter the new test point and check % of accuracy to continue testing with the new unit of measure.

5.3.7 **Peak Torque:** used to enter/exit change mode menu.

5.3.7.1 Use the 'UP' arrow key to select Track, Peak, Initial Peak, or Power Tool mode.

5.3.7.2 When Power Tool mode is selected, the 'DOWN' arrow key is used to select filter setting.

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5.3.7.2.1 The 'DOWN' arrow key pages through the ten filters available, numbered 0 through 9. Each filter is tuned for a specific frequency of measurement see owner's manual page 13, section 11, for further information.

5.3.7.3 Press 'Peak Torque' key to save mode setting.

5.3.8 TEST POINT: used to enter/exit into target value setting menu.

5.3.8.1 Using the 'UP' and 'DOWN' arrow keys, the operator can set the target torque value for the test.

5.3.8.1.1 Note: then 'UNIT' key is used to change the position of the decimal point

5.3.8.1.2 Note: The 'ZERO' key returns the test point to zero.

5.3.8.2 Pressing the 'TEST POINT' button a second time saves the value to memory and enters into the % of tolerance window.

5.3.8.2.1 Be sure to use the appropriate % of tolerance for the tool to be tested.

5.3.9 Using the 'UP' and 'DOWN' arrow keys.

5.3.9.1 Note: The 'ZERO' key returns the test % to 0.1%.

5.3.9.2 Pressing the 'Test Point' button a third time saves the settings to memory and exits the target setting menu.

6: Operation

Please follow the procedure for each wrench tested. Be sure the Torq-Tronics 2 tester has been exercised three times to capacity in the direction CW or CCW that it will be used. Adjustable wrenches should also be exercised three times at 4 different points along the scale of capacity before beginning the test. Preset wrenches should be tested at preset value.

Preparation for Testing

6.1 Move the 3 position Power Switch from Off to On or to Battery as needed.

6.2 Allow the tester to complete the internal start up process. This takes about 20 seconds.

6.2.1 At the end of startup process, the tester will return to its last state of operation.

6.2.1.1 Unit of Measure selected.
6.2.1.2 Mode of operation selected. (and filter is applicable.)
6.2.1.3 Torque specifications.

6.3 Auto store/print/clear process is always active except in 'Track' mode. When the 'Clear' button is pressed the torque data is transmitted via the RS-323 link then cleared from the display. While in 'Track' mode no data is stored in the tester.

6.4 If the torque value Display reads other than zero, press the 'ZERO' key.

6.4.1 Note: Never press the Zero key with a wrench connected to the tester. Doing so will cause inaccurate results. The 'ZERO' key does not perform a TARE function.

6.5 The Torq-Tronics 2 should be used between 10% and 100% of the unit capacity. Example: If the tester is rated at 100 ft. lbs. you should be testing tools with a capacity between 10 ft lbs and 100 ft. lbs. If you test below 10% of rated capacity you may encounter problems with accuracy, especially if you are testing a torque screwdriver with an accuracy of +/- 6%.

6.6 See our video on Set Up For Testing on the Newton Metre Channel in YouTube: https://www.youtube.com/watch?v=BOLzJ3RddN4 or on the Sturtevant Richmont website.

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7: Making the Most of the Torq-Tronics 2

Calibration standards require that torque wrenches be calibrated, on a tester that has 4X greater accuracy than does the wrench. If the wrench being calibrated has an accuracy factor of +/- 2% a calibration unit must have a minimum accuracy factor of +/-.5%. The Torq-Tronics 2 has an accuracy factor of +/- 0.5% meaning it can calibrate torque wrenches with an accuracy factor of +/-2%. It is also capable of calibrating wrenches with a lesser accuracy such as +/- 6%.

To verify or calibrate wrenches that need greater accuracy, the Sturtevant Richmont System 8 is engineered to +/- .25% which allows you to calibrate wrenches with +/-1% accuracy. Many of the digital wrenches on the market are in the +/- 1% accuracy group.

8: Torque Testing

8.1 It is important to follow recommended procedures in order to secure accurate torque verification results. Good testing practices always include:

8.1.1 Exercising the wrench to 100% of capacity at least 3 times immediately prior to testing. This applies to all wrenches except pre-set click wrenches, which should be exercised three times to their preset point.

8.1.2 Wrenches should be verified on testers in the range of the 10% to 100% of the testers rated capacity. If a tester had 100 ft. lbs capacity, wrenches between 10 ft. lbs and 100 ft lbs would be candidates for testing on the 100 ft lb tester.

8.1.3 The tester itself should be exercised to 100% of capacity at least 3 times prior to testing. Once the tester is warmed up and has been exercised, you can test for hours if you like.

8.1.4 Selecting the proper mode for testing is important. Please use the following:

* All click wrenches: initial peak mode

* All beam, dial, digital, and cam-over wrenches: peak mode

* Torque screwdrivers use peak mode

* Power tools use power tool mode and select the appropriate filter

8.1.5 The Torq-Tronics comes with a memory mode that must be turned on if you wish to track specific test results.

8.1.6 When you change modes, any preset target torque ranges and the percent of tolerance should be changed to the appropriate settings based on the wrenches being tested.

8.1.7 The LED indicators for “OK”/”NG” will not light if there is no pre-established torque value because there is no standard against which to test.

8.1.8 The same is true for the “OK”/”NG” reading in the lower left hand corner of the Display. An “OK”/”NG” will not be designated if there is no pre-established torque value for that specific test.

8.1.9 If you are testing and using the batteries, and the low power indicator lights, stop testing and insert new batteries. Remember NiMH rechargeable batteries are the only acceptable batteries for Torq-Tronics 2. Under no circumstance should you mix old and new NiMH in the tester at the same time.

8.2 Please see the section on the 9 most common torque testing mistakes located on the www.srtorque.com /common testing mistakes to improve accuracy in your results.

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8.3 General Set Up Process For All Tests:

The following process of setting up Torq-Tronics 2 for testing can be used to verify or calibrate any acceptable tool type. (Impact tools are not acceptable.)

8.4 Memory:

If you see three digits in the lower right hand side of the display, memory function is set to on. If you do not see three digits in the lower right hand side of the Display the memory function is set to off.

The factory default setting for the memory function is "OFF." To turn the memory on, press MENU and then press the UP arrow and then press the MENU button and memory will be activated.

If the memory is on and you would like to turn it off, press the MENU and then ZERO button. Then press the MENU button to return to normal functioning.

8.5 Clearing The Memory:

The Torq-Tronics 2 memory can be cleared the following ways.

8.5.1 The operator may choose to download a report by pressing the MENU button – the display will read Data and the number of tests or records currently resident in the unit. The operator then uses the DOWN ARROW to download the report to Hyper-Terminal via RS232 port. When the download is complete the lower left hand side of the display shows CLR which provides the order to press the CLEAR button. Press the CLEAR button to clear the memory. You will see the counter in the lower right hand of the display move from the number of records that were in the unit down to 001. The display always displays the current record unless you are in "VR" (view record) mode.

8.5.2 The unit memory may be cleared without printing by MENU button and then pressing the CLEAR button.

8.5.3 Accessing Torq-Tronics 2 via Hyper-Terminal allows the operator to clear the memory by using the serial command CL<CR+LF> This returns the message DONE<CL+LF> upon task completion.

8.5.4 The unit holds 999 records. If the records are not cleared, after the 999th test, the unit will start to overwrite the subsequent records. The records will retain their numbering sequence, but the data from the original test 001 will be replaced by the data from test 1000.

8.6 Here is the sequence to use when setting up tests in Torq-Tronics 2.

8.6.1 Select the mode by pressing the PEAK TORQUE key and then using the up arrow to select the appropriate test mode. When you have selected the desired test mode press the PEAK TORQUE key again. If you have selected Power Tool mode, use the down arrow to select the appropriate filter. Once you have the set the filter, press the PEAK TORQUE key again.

8.6.2. To set the units of measure press the UNITS and use the UP ARROW to scroll through the listing until you find the unit of measure you want. The unit of measure is located on the display in the upper right hand corner. When you have scrolled through and found the desired unit of measure, stop. At that point press the UNITS button again to return to normal functioning. Any time you reset the units of measure, the test point will automatically return to zero and must be reset.

8.6.3. To set the TEST POINT press the TEST POINT button. Six digits are shown on the display and the decimal point is on the far left. Pressing the UNIT button moves the decimal point to the right. Once the appropriate decimal place (or increment) is found, press the UP ARROW to move the TEST POINT value to the appropriate setting. Once the test point has been reached press the TEST POINT button again to return to normal functioning.

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8.6. 4. After setting the test point the screen automatically advances to the % of accuracy screen. To set the % of accuracy press the UP ARROW or DOWN ARROW to scroll through the settings to find the % you want. Once you have found the appropriate % of accuracy press TEST POINT to return to normal functioning.

8.6. 5. Each type of wrench has it's own built in level of accuracy. Typically manual torque screwdrivers have accuracy of +/- 6%. Other wrenches may have an accuracy of +/- 2%. To accommodate each type of wrench during testing and to establish a minimum and maximum torque range for the test, the test range can be set. The default accuracy tolerance range is +/-4%.

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9: How To Test a Manual Torque Screwdriver or a Click Type Torque Wrench

All click wrenches: use INITIAL PEAK MODE

Torque screwdrivers: use PEAK MODE

9.1 Select the initial peak mode of testing by pressing PEAK TORQUE and the UP ARROW key. Then press the PEAK TORQUE key again.

9.2 Select the units of measure for the tool by pressing the UNITS key and the UP ARROW until you find the unit of measure. Then press the UNITS key again.

9.3 To set the TEST POINT press the TEST POINT button. Six digits are shown on the display and the decimal point is on the far left. Pressing the UNIT button moves the decimal point to the right. Once the appropriate decimal place (or increment) is found, press the UP ARROW to move the TEST POINT value to the appropriate setting. Once the test point has been reached press the TEST POINT button again to return to normal functioning.

9.4 Press the UP or DOWN ARROW to change the Percent of Accuracy Value appropriate for the tool being tested.

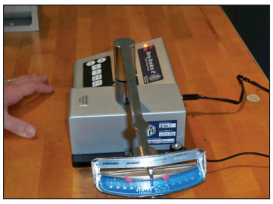
9.5 When you have found the appropriate torque value range for the tool, press TEST POINT again.

9.6 Press ZERO to clear any offset on the transducer. NEVER press ZERO to clear an offset when a wrench is engaged in the tester.

9.7 Engage the wrench to the tester and begin testing.

9.8 The unit will autoclear after the load is removed and the test timer has expired.

10: How To Test a Beam, Dial, or Cam-Over Torque Wrench



All beam, dial or cam-over torque wrenches: use PEAK MODE.

10.1. Select peak mode of testing by pressing PEAK TORQUE and the UP ARROW key. Then press the PEAK TORQUE key again.

10.2 Select the units of measure for the tool by pressing the UNITS key and the UP ARROW until you find your unit of measure. Then press the UNITS key again.

10.3 To set the TEST POINT press the TEST POINT button. Six digits are shown on the display and the decimal point is on the far left. Pressing the UNIT button moves the decimal point to the right. Once the appropriate decimal place (or increment) is found, press the UP ARROW to move the TEST POINT value to the appropriate setting. Once the test point has been reached press the TEST POINT button again to return to normal functioning.

10.4 Press the UP or DOWN ARROW to change the Percent of Accuracy Value appropriate for the tool being tested.

10.5 When you have found the appropriate torque value range for the tool, press TEST POINT again.

10.6 Press ZERO to clear any offset on the transducer. NEVER press ZERO to clear an offset when a wrench is engaged in the tester.

10.7 Engage the wrench to the tester and begin testing.

10.8 There is no auto-clear in track mode.

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11: How To Test a Power Tool

11.1 Select Power Tool mode of testing by pressing PEAK TORQUE and then press the UP ARROW key. There are 10 filters resident in Torq-Tronics 2 numbered from 0 to 9. Use the DOWN ARROW to scroll through options and select the appropriate filter.

Power tools: use POWER TOOL mode and select appropriate filter.

Power Tool Tester Filters:
Filter N/A = No Filter Used
Filter 0 = 100 Hz
Filter 1 = 250 Hz
Filter 2 = 500 Hz
Filter 3 = 571 Hz
Filter 4 = 666 Hz
Filter 5 = 800 Hz
Filter 6 = 1000 Hz
Filter 7 = 1333 Hz
Filter 8 = 2000 Hz
Filter 9 = 4000 Hz

11.2 Select the units of measure for the tool by pressing the UNITS key and the UP ARROW until you find your unit of measure. Then press the UNITS key again.

11.3 To set the TEST POINT press the TEST POINT button. Six digits are shown on the display and the decimal point is on the far left. Pressing the UNIT button moves the decimal point to the right. Once the appropriate decimal place (or increment) is found, press the UP ARROW to move the TEST POINT value to the appropriate setting. Once the test point has been reached press the TEST POINT button again to return to normal functioning.

11.4 Press the UP ARROW or DOWN ARROW to change the Percent of Accuracy Value appropriate for the tool being tested.

11.5 When you have reached the appropriate torque value range for the tool, press TEST POINT again.

11.6 Press ZERO to clear any offset on the transducer. NEVER press ZERO to clear an offset when a power tool is engaged in the tester.

11.7 Engage the power tool to the tester and begin testing.

11.8 NEVER TEST IMPACT TOOLS ON Torq-Tronics 2.

12: How to Test Digital Torque Wrenches

Digital torque wrenches should be tested in TRACK MODE and testing should be done using a mechanical loader.

12.1 Power up the digital tool and allow it to boot up.

12.2 Engage the torque wrench to the tester.

12.3 Slowly apply force to the grip of the wrench until the wrench displays the torque test point. To obtain an accurate reading, make sure the pressure is applied perpendicular to the drive square; do not push in, out, forward or back on the grip.

12.4 Release pressure on the wrench when the wrench attains the test point.

12.5 The actual torque at the test point will be displayed on the tester display.

12.6 Remember: Torq-Tronics 2 has an accuracy of +/- .5%. Some digital torque wrenches have a +/- 1% accuracy. To comply with the 4 to 1 standard accuracy ratio for testers and wrenches, to test a wrench with +/- 1% you must use a tester with +/-.25 accuracy.

Note: Some digital tools require programming in order to test please review the tools owners manual for proper test methodology.

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13: Over Capacity Situations

Each Torq-Tronics 2 unit has a rated capacity that is easily visible on the front of the unit near the transducer. Tools should be tested that are between 10% and 75% of the rated capacity for the unit.

Torq-Tronics 2 is a rugged and reliable unit. It is engineered to withstand over capacity situations. However, when a unit has been stretched to 120% of rated capacity a number of things happen. It is imperative to understand what has happened, and the impact it has on your test results.

Torq-Tronics 2 has been engineered to help support your workers and guide them to do the right thing during the over capacity situation.

When the Torq-Tronics 2 is taken to 120% over capacity, the Torque Indicator LED holds solid red and then begins a rapid flashing sequence.

Next the 6 digit middle line of the display displays the torque value that has taken the unit into over-capacity.

The top line of the display now displays OV 120% capacity. You no longer see the target torque range numbers.

Torq-Tronics 2 will continue to operate, however, the following changes occur:

13.1 OK/NG is no longer displayed.

13.2 Track mode is no longer operable.

13.3 The Torque Indicator LED continues the rapid flash sequence.

13.4 If the unit is turned off, the LED stops flashing, but returns as soon as power is restored.

13.5 If the memory function was set to ON during the over capacity event, overload information is stored in memory.

13.6 Over capacity information is stored in a non-erasable memory location inside the unit. It is stored in non-erasable memory whether the memory function was set to on or off. Non-erasable memory cannot be erased.

13.7 If the unit memory was set to on and a worker tries to erase the memory in an effort to stop the LED from flashing, the display shows the message 'See Supervisor.' This is a safety precaution engineered in to the unit to give you more control over your processes.

13.8 If tests are continued on the unit after the over capacity event and prior to having the overload flag reset, each test record will be tagged with an OVL in the test record. This is another way of providing traceability so if you have errors you can catch them before your customer does.

13.9 To See the Captured Overload Point of Torq-Tronics 2 process
Using a Hyper-terminal type program set for 4800 baud, 8 data bits and 1 stop bit, Parity: None.

Type: O<enter>

The Torq-Tronics 2 will send, via the RS-232, a print string showing the captured overload (See Serial Command Appendix A, Print string command for format)

13.10 Clearing 'Overload' of Torq-Tronics 2 process
Using a Hyper-terminal type program set for 4800 baud, 8 data bits and 1 stop bit, Parity: None.

13.10.1 Type: D<enter>

13.10.2 Then Type: Z <enter>

13.10.3 Then Type: D<enter>

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13.11 For more information on understanding and resolving the over capacity situation, see our videos:

Interview With Torq-Tronics 2
https://www.youtube.com/ watch?v=_8TH3frmKH4

and

Error Proofing With An LED
https:// www.youtube.com/watch? v=QW9068Ewo0k

PLEASE NOTE:

Your Quality Is Our Business is more than an advertising tagline with us, it is our way of life. We take your quality seriously. Like all Sturtevant Richmont products Torq-Tronics 2 is engineered and built to withstand the rigors and realities of the industrial workplace.

Our testers were tested at 100% of capacity at more than 50,000 cycles in both directions and the units stay in spec. However, at 120% of capacity we can no longer be 100% certain that the unit will function properly.

To safeguard your test results we suggest that you have any Torq-Tronics 2 unit that has been placed in overload, tested. To test the Torq-Tronics 2 follow the procedures outlined in Section 15: Calibration, or email us at customerservice@srtorque.com to schedule returning the Torq-Tronics 2 so we can test it. If the tests prove to be accurate, put the unit back in service and have it calibrated at the next cycle. The last and next calibration dates are displayed on the display during the start up process.

If your tests reveal the unit may have been compromised, please return it to Sturtevant Richmont for any required repair, recalibration, and recertification.

Caution: spraying cleaner on the face of Torq-Tronics 2 may cause electrical damage to the unit and will void the warranty.

Please use a soft damp cloth to clean Torq-Tronics 2.

14: 14.1 Always use NiMH rechargeable batteries and keep the polarity correct.

14.2 NEVER mix battery brands, types, ages, as this can damage the unit.

14.3 When cleaning the unit, NEVER use a spray bottle to apply cleaning solutions. Extra cleaning solution may drain down between the keys into the unit and cause electronic damage.

14.4 Always use a soft, damp cloth or sponge to wipe the unit. Do not use any abrasive cleaners or abrasive surfaces on the unit.

14.5 Always test or calibrate tools within 10% to 75% of Torq-Tronics 2 capacity. Capacity is located on a plate on the right hand side of the unit. Unit Capacity is also displayed on the display during the start up sequence.

14.6 The unit holds 999 records in memory. When it exceeds 999 records the unit will over write previous records. Each record is date and time stamped.

14.7 The Torq-Tronics 2 has safeguards designed to notify the user of overload at 120% of capacity. It is recommended that the unit be checked for accuracy after an overload occurrence.

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15: Calibrating The Torq-Tronics 2

15.1 Overview

This is the recommended process for Calibration Check of the Torq-Tronics 2 tester.

15.2 Required Equipment

To ascertain the required equipment for any given calibration check, look up the capacity of the tester in the Calibration Check Chart below.

Check each piece of equipment to assure the calibration is current. If any piece of the equipment is past due for calibration, stop, and notify the supervisor or Laboratory Manager immediately.

Computer with RS232 port and Terminal Software set for: 4800 baud, 1stop bit, 8 data bits, no hand shake RS-232 Cable (21175)

15.3 Notes on Terminal Software and Tester Use

To send a command to the tester, first enter the command into the terminal software then press the Enter key. The command is not processed until the enter key is pressed.

To unlock an 'OVERLOAD' condition type:

D<enter>
Z <enter> on the PC. (After the 100% point is captured.)
D<enter>

15.4 General Principles for Every Verification

When torque loads are applied, they shall be applied from lower to higher values.

Whenever the direction of torque is changed, the operator must perform apply three (3) full scale loads to the tester in the new direction prior to recording and measuring torque values.

15.5 Procedure

15.5.1 Move Torque Tester into the Torque Tester laboratory and allow unit to acclimate over night, or for a minimum of 12 hours prior to beginning test.

15.5.2 Attach transducer to torque Tester and turn on the power. Allow tester and transducer to warm up for 10 minutes in Track Mode. Check if any zero offset, rolling or drifting occurs. If any defects are found, notify laboratory manager.

15.5.3 Bolt unit onto calibration fixture. Torque bolts to the specification below with torque wrench. Grade 8 (Class 10.9) are required.

Transducer Capacity	**Bolt size**	**Torque**
Up to 300 in.lb	#10-32	8 in.lb min
960 – 7200 in.lb	5/16"	75 in.lb min

15.5.4 Connect torque tester serial port to computer serial port via serial cable or with the serial to USB converter supplied with the unit. Check if computer causes any offsets, rolling digits, or other problems with the torque tester. If any defects are found, notify manager. (Note: You may want to consider purchasing an optically isolated RS-232 device to eliminate ground loops and noise problems.)

15.5.5 Prepare to record torque data from unit under test.

15.5.6 Use appropriate calibration arm and deadweights from the 'Calibration Check Chart' found in Appendix B for the unit under test (UUT), to apply three (3) full scale (100%) loads to the Transducer in the direction of torque to be measured, either clockwise or counterclockwise. Remove weights, leave calibration arm attached. Wait one (1) minute and then press the ZERO Switch.

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15.5.7 Use appropriate calibration arm and deadweights from chart to apply torque load of 10% of full scale to the Transducer in the direction of torque to be measured. Let the weights settle, and then record the results. Repeat this step 3 times.

15.5.8 Use appropriate calibration arm and deadweights from chart to apply torque load of 30% of full scale to the Transducer in the direction of torque to be measured. Let the weights settle, and then record the results. Repeat this step 3 times.

15.5.9 Use appropriate calibration arm and deadweights from chart to apply torque load of 50% of full scale to the Transducer in the direction of torque to be measured. Let the weights settle, and then record the results. Repeat this step 3 times.

15.5.10 Use appropriate calibration arm and deadweights from chart to apply torque load of 70% of full scale to the Transducer in the direction of torque to be measured. Let the weights settle, and then record the results. Repeat this step 3 times.

15.5.11 Use appropriate calibration arm and deadweights from chart to apply torque load of 100% of full scale to the Transducer in the direction of torque to be measured. Let the weights settle, and then record the results. Repeat this step 3 times.

15.5.12 Reverse the torque direction and repeat steps 15.5.6 through 15.5.11. When complete, proceed to step 15.5.13.

15.5.13 Report results per your process.

15.6 Acceptance Criteria

The measured torque values from the torque test equipment must fall within required accuracy requirements and the guard band as listed below, at each test point within the range specified.

ASME B107.29M **Accuracy Class**	**ACCURACY CLASS** **% of I. V. range from 10% to 100% of Full Scale**	**Torque Tester Model**
B	+/-.5	Torq-Tronics 2

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16: Adjusting the Torq-Tronics 2

16.1 Overview

This is the recommended process for Calibration Adjustment of the Torq-Tronics 2 tester.

16.2 Required Equipment

To ascertain the required equipment for any given calibration, look up the capacity of the tester found in Appendix B.

Check each piece of equipment to assure the calibration is current. If any piece of the equipment is past due for calibration, stop, and notify the supervisor or Laboratory Manager immediately.

Computer with RS232 port or USB port, and Terminal Software set for: 4800 baud, 1stop bit, 8 data bits, no hand-shake RS-232 Cable (21175)

16.3 Notes on Terminal Software and Tester Use

To send a command to the tester, first enter the command into the terminal software then press the Enter key. The command is not processed until the enter key is pressed.

To unlock an 'OVERLOAD' condition type:

D<enter>
Z <enter> on the PC. (After the 100% point is captured.)
D<enter>

16.4 Calibration Adjustment Procedure

16.4.1 Move tester into the laboratory and allow it to acclimate for a minimum of 12 hours prior to beginning test.

16.4.2 Bolt unit onto calibration fixture. Torque bolts to the specification below with torque wrench. Grade 8 (Class 10.9) are required.

Transducer Capacity	**Bolt size**	**Torque**
Up to 300 in.lb	#10-32	8 in.lb min
960 – 7200 in.lb	5/16"	75 in.lb min

16.4.3 Connect 'Earth Ground' strap to unit under test.

16.4.4 Turn on the tester. Allow the electronics to warm up for a minimum of 10 minutes in Track Mode.

16.4.5 Connect tester to the computer via serial cable/USB cable provided.

16.4.6 Start terminal software.

16.4.7 Type the diagnostic "**D"** Command into the terminal and press <enter>. The Terminal display will display "DiaOn". You are now in diagnostic mode.

16.4.8 Type **M** <enter>. The capacity of the tester should be seen on the display.
If the wrong capacity is displayed:
Press the 'ZERO' key on the tester.
If the wrong capacity is still displayed, contact the Sturtevant Richmont service department.

16.4.9 To enter the Calibration process, press the '**MENU**' button on the keypad.

16.4.10 Obtain the proper calibration arm. The correct arm can be found in the "Calibration Chart" in Appendix B.

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16.4.11 Make certain the calibration arm is properly counterbalanced.

16.4.12 Attach the drive square of the calibration arm to the drive of the tester in the clockwise direction, and press the Zero key.

16.4.13 Hang the weight platform (hook) and the CW full-scale weights (100%) (Found in the "Calibration Table") on the calibration arm-gently, and imparting as little motion to the weights as possible. Wait until the weights have completely stopped moving then remove the full-scale load.

16.4.14 Wait one minute.

16.4.15 Repeat steps 12 and 13 above two more times, then proceed to next step.

16.4.16 Remove the calibration arm from the unit under test.

16.4.17 Press the **'CLEAR'** or **'DOWN'** key on the unit to capture the CW 0 calibration point. (Green led will flicker.)

16.4.18. Press the **'MENU' or 'UP'** key to move to the next test point.

16.4.19 Again hang the weight platform (hook) and the appropriate weights (10%) (found in the "Calibration Chart") on the calibration arm-gently, and imparting as little motion to the weights as possible. Wait for the arm to completely stop moving then press the **'CLEAR' or 'DOWN'** key on the unit.

Observe acknowledgement of the 10% clockwise calibration point.

16.4.20 Press the **'MENU' or 'UP'** key to move to the next test point.

16.4.21 Again hang the weight platform (hook) and the appropriate weights (20%) (found in the "Calibration Chart") on the calibration arm-gently, and imparting as little motion to the weights as possible. Wait for the arm to completely stop moving then press the **'CLEAR' or 'DOWN'** key on the unit.

Observe acknowledgement of the 20% clockwise calibration point.

16.4.22 Press the **'MENU' or 'UP'** key to move to the next test point.

16.4.23 Again hang the weight platform (hook) and the appropriate weights (30%) (found in the "Calibration Chart") on the calibration arm-gently, and imparting as little motion to the weights as possible. Wait for the arm to completely stop moving then press the **'CLEAR' or 'DOWN'** key on the unit.

Observe acknowledgement of the 30% clockwise calibration point.

16.4.24 Press the **'MENU' or 'UP'** key to move to the next test point.

16.4.25 Again hang the weight platform (hook) and the appropriate weights (40%) (found in the "Calibration Chart") on the calibration arm-gently, and imparting as little motion to the weights as possible. Wait for the arm to completely stop moving then press the **'CLEAR' or 'DOWN'** key on the unit.

Observe acknowledgement of the 40% clockwise calibration point.

16.4.26 Press the **'MENU' or 'UP'** key to move to the next test point.

16.4.27 Again hang the weight platform (hook) and the appropriate weights (50%) (found in the "Calibration Chart") on the calibration arm-gently, and imparting as little motion to the weights as possible. Wait for the arm to completely stop moving then press the **'CLEAR' or 'DOWN'** key on the unit.

Observe acknowledgement of the 50% clockwise calibration point.

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16.4.28 Press the **'MENU' or 'UP'** key to move to the next test point.

16.4.29 Again hang the weight platform (hook) and the appropriate weights (60%) (found in the "Calibration Chart") on the calibration arm-gently, and imparting as little motion to the weights as possible. Wait for the arm to completely stop moving then press the **'CLEAR' or 'DOWN'** key on the unit.

Observe acknowledgement of the 60% clockwise calibration point.

16.4.30 Press the **'MENU' or 'UP'** key to move to the next test point.

16.4.31 Again hang the weight platform (hook) and the appropriate weights (70%) (found in the "Calibration Chart") on the calibration arm-gently, and imparting as little motion to the weights as possible. Wait for the arm to completely stop moving then press the **'CLEAR' or 'DOWN'** key on the unit.

Observe acknowledgement of the 70% clockwise calibration point.

16.4.32 Press the **'MENU' or 'UP'** key to move to the next test point.

16.4.33 Again hang the weight platform (hook) and the appropriate weights (80%) (found in the "Calibration Chart") on the calibration arm-gently, and imparting as little motion to the weights as possible. Wait for the arm to completely stop moving then press the **'CLEAR' or 'DOWN'** key on the unit.

Observe acknowledgement of the 80% clockwise calibration point.

16.4.34 Press the **'MENU' or 'UP'** key to move to the next test point.

16.4.35 Again hang the weight platform (hook) and the appropriate weights (90%) (found in the "Calibration Chart") on the calibration arm-gently, and imparting as little motion to the weights as possible. Wait for the arm to completely stop moving then press the **'CLEAR' or 'DOWN'** key on the unit.

Observe acknowledgement of the 90% clockwise calibration point.

16.4.36 Hang the calibration point (100%) weights, as found in the "Calibration Chart", on the arm, gently. Wait for the arm to completely stop moving then press the **'CLEAR' or 'DOWN'** key on the unit. Observe acknowledgement of the 100% clockwise calibration point.

16.4.37 Press the **'MENU' or 'UP'** key to move to the next test point.

16.4.38 Remove weights and reverse calibration arm to the **counter-clockwise direction.**

16.4.39 Hang weight platform and full-scale (100% load as found in the "Calibration Table") load on the arm, gently. Wait until the arm has completely stopped moving then remove the weights and platform.

16.4.40 Wait one minute.

16.4.41 Repeat steps 38, 39 and 40 two more times, then proceed to next step.

16.4.42 Remove calibration arm from tester.

16.4.43 Press the **'CLEAR' or 'DOWN'** key on the unit to capture the CCW 0 calibration point. (Green led will flicker.)

16.4.46 Press the **'MENU' or 'UP'** key to move to the next test point.

16.4.47 Again hang the weight platform (hook) and the appropriate weights (10%) (found in the "Calibration Chart") on the calibration arm-gently, and imparting as little motion to the weights as possible. Wait for the arm to completely stop moving then press the **'CLEAR' or 'DOWN'** key on the unit.

Observe acknowledgement of the 10% counter clockwise calibration point.

16.4.48 Press the **'MENU' or 'UP'** key to move to the next test point.

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16.4.49 Again hang the weight platform (hook) and the appropriate weights (20%) (found in the "Calibration Chart") on the calibration arm-gently, and imparting as little motion to the weights as possible. Wait for the arm to completely stop moving then press the **'CLEAR' or 'DOWN'** key on the unit.

Observe acknowledgement of the 80% counter clockwise calibration point.

16.4.50 Press the **'MENU' or 'UP'** key to move to the next test point.

16.4.51 Again hang the weight platform (hook) and the appropriate weights (30%) (found in the "Calibration Chart") on the calibration arm-gently, and imparting as little motion to the weights as possible. Wait for the arm to completely stop moving then press the **'CLEAR' or 'DOWN'** key on the unit.

Observe acknowledgement of the 30% counter clockwise calibration point.

16.4.52 Press the **'MENU' or 'UP'** key to move to the next test point.

16.4.53 Again hang the weight platform (hook) and the appropriate weights (40%) (found in the "Calibration Chart") on the calibration arm-gently, and imparting as little motion to the weights as possible. Wait for the arm to completely stop moving then press the **'CLEAR' or 'DOWN'** key on the unit.

Observe acknowledgement of the 40% counter clockwise calibration point.

16.4.54 Press the **'MENU' or 'UP'** key to move to the next test point.

16.4.55 Again hang the weight platform (hook) and the appropriate weights (50%) (found in the "Calibration Chart") on the calibration arm-gently, and imparting as little motion to the weights as possible. Wait for the arm to completely stop moving then press the **'CLEAR' or 'DOWN'** key on the unit.

Observe acknowledgement of the 50% counter clockwise calibration point.

16.4.56 Press the **'MENU' or 'UP'** key to move to the next test point.

16.4.57 Again hang the weight platform (hook) and the appropriate weights (60%) (found in the "Calibration Chart") on the calibration arm-gently, and imparting as little motion to the weights as possible. Wait for the arm to completely stop moving then press the **'CLEAR' or 'DOWN'** key on the unit.

Observe acknowledgement of the 60% counter clockwise calibration point.

16.4.58 Press the **'MENU' or 'UP'** key to move to the next test point.

16.4.59 Again hang the weight platform (hook) and the appropriate weights (70%) (found in the "Calibration Chart") on the calibration arm-gently, and imparting as little motion to the weights as possible. Wait for the arm to completely stop moving then press the **'CLEAR' or 'DOWN'** key on the unit.

Observe acknowledgement of the 70% counter clockwise calibration point.

16.4.60 Press the **'MENU' or 'UP'** key to move to the next test point.

16.4.61 Again hang the weight platform (hook) and the appropriate weights (80%) (found in the "Calibration Chart") on the calibration arm-gently, and imparting as little motion to the weights as possible. Wait for the arm to completely stop moving then press the **'CLEAR' or 'DOWN'** key on the unit.

Observe acknowledgement of the 80% counter clockwise calibration point.

16.4.62 Press the **'MENU' or 'UP'** key to move to the next test point.

16.4.63 Again hang the weight platform (hook) and the appropriate weights (90%) (found in the "Calibration Chart") on the calibration arm-gently, and imparting as little motion to the weights as possible. Wait for the arm to completely stop moving then press the **'CLEAR' or 'DOWN'** key on the unit.

Observe acknowledgement of the 90% counter clockwise calibration point.

Note: *Torque Tool Manager 2 is a for purchase software that creates a torque testing and calibration history database. Torque Tool Manager works with the legacy Torq-Tronics unit as well as System 4/5. Torque Tool Manager 2 software functionality is not as robust with the new Torq-Tronics 2 unit.*

Torque Tool Manager software is sold separately. For more information email customerservice@srtorque.com.

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16.4.64 Press the **'MENU' or 'UP'** key to move to the next test point.

16.4.65 Hang the calibration point (100%) weights, as found in the "Calibration Chart", on the arm, gently. Wait for the arm to completely stop moving then press the **'CLEAR' or 'DOWN'** key on the unit. Observe acknowledgement of the 100% clockwise calibration point.

16.4.66 Press the **'MENU' or 'UP'** key to move to the Save calibration date.

16.4.67 Press the **'CLEAR' or 'DOWN'** key on the unit to save the calibration date then turn the unit off.

17: Torq-Tronics 2 Additional Resources

This manual is designed to work in conjunction with the video support found on our website and on the Newton Metre Channel on YouTube. If you need additional support contact customer service at customerservice@srtorque.com.

Torq-Tronics 2® & HyperTerminal Programs
Most torque testing programs use a software program to collect and manipulate torque test data. Torq-Tronics 2 downloads test results into several software programs, including PuTTY, HyperTerminal, and Torque Tool Manager 2.

Being able to download test data into a program and manipulate that data can provide important insight as to what is going on in torque applications. Test results can identify tools and users that continually go out of spec or experience loss of calibration faster than others.

Each program has advantages, disadvantages, and different pricing. The links below are provided for your convenience and to assist you in making a software program selection.

HyperTerminal: HyperTerminal offers a free trial download and then costs apply for purchase. For more information about HyperTerminal please follow this link: http://www.hilgraeve.com/hyperterminal/

PuTTY: PuTTY is a free, open software, but it may not be legal where encryption is an issue. Please verify any legal issues prior to downloading and using PuTTY. To download the PuTTY and the directions please follow this link: http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html

Torque Tool Manager 2: You should note that at this time Torq-Tronics 2 and Torque Tool Manager 2 (TTM2) have one-way communication between them, with the information flowing from the Torq-Tronics 2 to TTM2.

Please note the following:
1. Test data from Torq-Tronics 2 to TTM2 is transferred, real time, after each test.
2. The memory in Torq-Tronics 2 cannot be batch dumped into TTM2.
3. TTM2 stores all test parameters for each tool using the tool serial number.
4. It is NOT recommended to set target torque value and percent of accuracy in the Torq-Tronics 2 when using it with TTM2 software.
5. Due to the one way communication between TTM2 and Torq-Tronics 2, unit of measure and peak mode must be manually set on the Torq-Tronics 2.
6. TTM2 is NOT compatible with Mac operating systems.

Please keep these factors in mind when using Torq-Tronics 2 with Torque Tool Manager 2. For more information about Torque Tool Manager 2 please contact customerservice@srtorque.com.

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Appendix A: **Serial Commands**

Most of the Serial Commands are Alpha based. However, we do have some numeric commands that contain a 0 (ZERO) not the letter O.

An example of a Serial Command containing a numeric character would be D0 (ZERO).

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A.1 Default Factory Communication Settings

A.1.1 Serial communication parameters at boot up: 4800 baud, 8 data bits and 1 stop bit, Parity: None.

A.2 Clearing 'Overload' of Torq-Tronics 2 process

A.2.1 Using a Hyper-terminal type program set for 4800 baud, 8data bits and 1 stop bit, Parity: None.

A.2.1.1 Type: D<enter>

A.2.1.2 thenType: Z <enter>

A.2.1.3 then Type: D<enter>

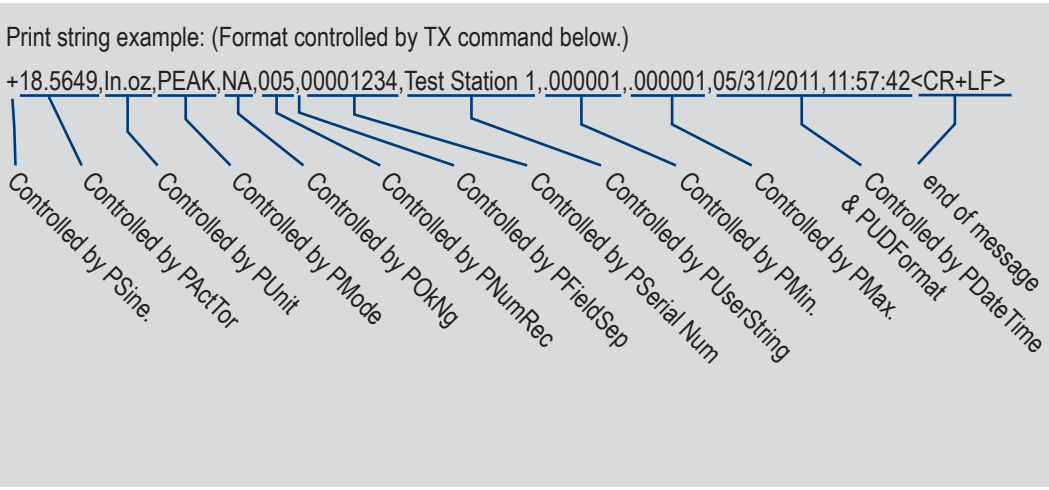
A.3 To See the Captured Overload Point of Torq-Tronics 2 process

A.3.1 Using a Hyper-terminal type program set for 4800 baud, 8data bits and 1 stop bit, Parity: None.

A.3.1.1 Type: O<enter>

A.3.1.2 The Torq-Tronics2 will send, via the RS-232, a print string showing the captured overload.

Print string example: (Format controlled by TX command below.)



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A.4 Request tester to generate and print a report of data captured

A.4.1 Type: DR<Enter>
Data report structure depends on settings of the print flags, see TX command.

Example of a DR<Enter> command, dump report.

Start Report Tester Serial number: 00001234,
Controlled by PSerialNum

Tester1234567890,
Controlled by PUserString

Records in Report: 004,
Controlled by PRecInRpt

+41.2597,In.oz,PEAK,NA,001,00001234,Test Station 1,.000001,.000001,05/31/2011,11:45:34
See above TX command

+14.8275,In.oz,PEAK,NA,002,00001234,Test Station 1,.000001,.000001,05/31/2011,11:55:55
TX command

+14.3511,In.oz,PEAK,NA,003,00001234,Test Station 1,.000001,.000001,05/31/2011,11:56:10
TX command

+14.2901,In.oz,PEAK,NA,004,00001234,,Test Station 1,.000001,.000001,05/31/2011,11:56:27
TX command

End Report Tester Serial number: 00001234,
Controlled by PSerialNum

A.5 Serial Messaging Command List

A.5.1 Special ASCII commands:

A.5.1.1 BEL = 0x0007 ASCII Bell. This is used to indicate invalid data in message.

A.5.1.2 CR = 0x000D ASCII Carriage return

A.5.1.3 LF = 0x000A ASCII Line Feed

A.5.1.4 <CR+LF> = <Enter > = ASCII Carriage return + Line Feed.

A.5.1.5 **Enter Calibration Mode** type: CM< Enter>
Returns message: CalOn<CR+LF>

A.5.1.6 **Exit calibration mode and unlock the keypad** type: CMD< Enter >
Returns message: CalOff<CR+LF>

A.5.1.7 **Toggles the Enter/exit state of Diagnostic mode** type: D< Enter >
Depending on the state, returns: DiaOn<CR+LF> or DiaOff<CR+LF>

A.5.1.8 **Enter Diagnostic mode** Type: D1< Enter >
Returns message: DiaOn<CR+LF>

A.5.1.9 **Exit Diagnostic mode:** Type D0< Enter > *Note: the 0 is a ZERO.*
Returns message: DiaOff<CR+LF>

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A.5.2 **Commands available only when Calibration mode is on:**

To place the tester in calibration mode, enter CM <Enter> To exit calibration mode use command CMD <Enter>

Once the tester is in calibration mode, these Serial Commands are available.

A.5.2.1 Set the calibration date type: CM9mmddyyyy<Enter>
Set the calibration date, date format MMDDYYYY.
Setting Example: CM905262011<Enter>
Returns: 05262011<CR+LF>

A.5.2.2 Set the next calibration date, date format MMDDYYYY type: CM%mmddyyyy<Enter>
Setting Example: CM%905262012<Enter>
Returns: 05262012<CR+LF>

5.2.3 Set tester serial number type CM!xxxxxxxx<Enter>
Where 'xxxxxxxx' is the eight digit serial number of the tester. (This field is eight characters long and must lead with a 0.)

Example: 01234567<CR+LF>

A.5.2.4 Set transducer serial number type: CMTxxxxxxxx<Enter>

Where 'xxxxxxxx' is the eight digit serial number of transducer. (This field is eight characters long and must lead with a 0.)

Example: 00001234<CR+LF>

A.5.2.5 Set the user string for the tester. Up to 16 characters long.

Example Type: CMPTester1234567890<Enter>

Or

Example Type: CM#Tester1234567890<Enter>
Returns: <CR+LF>

A.5.2.6 Set the user string for the transducer. Up to 16 characters long, Type: CMWTest Station 1<Enter>

Returns: <CR+LF>

A.5.2.7 Test Bi-color LEDs. Should blink: Green, then red, then yellow.
CML<Enter>

A.5.2.7.1 Set Bi-Color LEDs control for SR part number 40118 Type: CML0<Enter>

A.5.2.7.2 Set Bi-Color LEDs control for SR part number 40126 type: CML1<Enter>

A.5.3 **Commands available only when Diagnostic mode is on:**

(See Special ASCII command D<Enter> or D1<Enter> or D0<Enter>)

A.5.3.1 Enter Transducer Calibration Adjustment procedure Type: M<Enter>

A.5.3.2 Unlock and clear an overload transducer condition Type: Z<Enter>

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A.6 Commands available at all times

A.6.1.1 Baud rate setting request Type: B<Enter>
Returns current baud rate setting message. Example: Baud rate is: 4800<CR+LF>

A.6.1.2 Temporally Change RS232 baud rate Type Bx<Enter>
(Note: Baud rate will revert to 4800 when the tester is rebooted.)

Request to change "Baud rate" holds the table number for the baud rate to set the com port to.

"1" = 2400
"2" = 4800 (note: factory default baud rate)
"3" = 9600
"4 "= 19,200
"5" = 38,000
anything else = 1200

Returns message at the current baud rate:
Example: Switching Baud rate to: 9600<CR+LF>
Then the tester will change to the requested baud rate setting.

A.6.1.3 **Setup how and what the Torque Print string shall print out.**
TXxxxxxxxxxxxxxx<CR+LF>

In the table below 0 = On and 1 = Off. There are two exceptions to this rule. PUSFormat and PFieldSep use 1 to designate other changes as noted.

To view the current Print message control flags:
Type: TX <Enter>'

Returns: TX + Fourteen Ascii bytes +< CR+LF>.

valid ascii bytes range: 0x30 to 0x31.

First transmitted byte after TX =: PSine

PSine	= 0 = Print sine '-' or '+'
PActTor	= 0 = Print Actual torque.
PUnit	= 0 = Print unit of measure.
PMode	= 0 = Print Mode of operation.
POkNg	= 0 = Print 'Ok' or 'NG'
PNumRec	= 0 = Print record number.
PMin	= 0 = Print Minimum specification
PMax	= 0 = Print Maximum specification
PDateTime	= 0 = Print Time and date stamp.
PUSFormat	= 0 = Print US standard format. 1 = print European format.
PSerialNum	= 0 = Print Serial number at start and end of report.
PUserString	= 0 = Print User defined string.
PRecInRpt	= 0 = Print records in report.
PFieldSep	= 0 = Print ',' for field seprator. 1 = Print 'tab' for field seprator.
*Reserved	= 0 = Reserved
*Reserved	= 0 = Reserved

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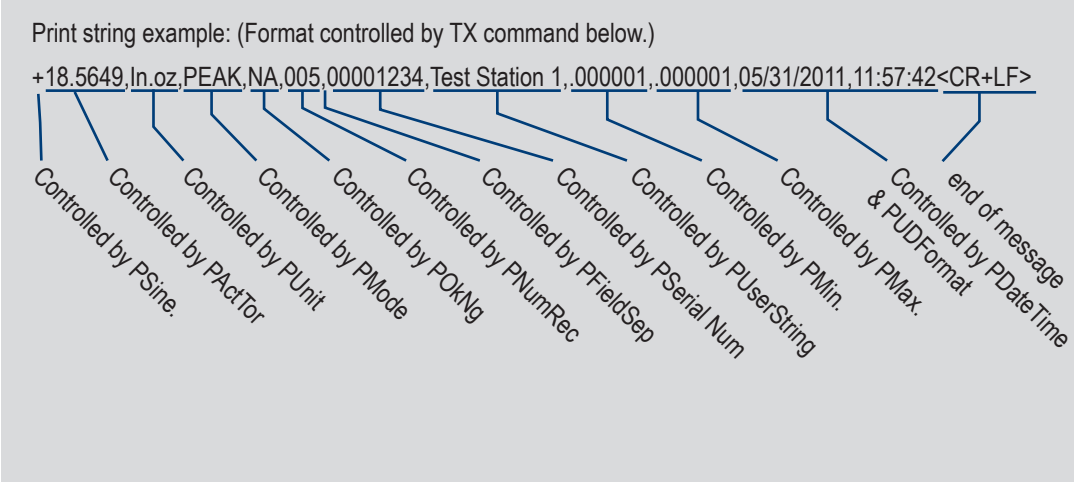

A.6.1.4 **Retrieve U.S. time date clock** type: @U< Enter >

Returns format: MM/DD/YYYY,HH:MM:SS<CR+LF>

A.6.1.5 **Set U.S. time date clock type**: @Umm/dd/yyyy,hh:mm:ss<Enter>
mm = the two digit month range 01 – 12.
dd = the two digit day range 01-31.
yyyy = the four digit year.
hh = the two digit hour in military time range: 00 -23.
mm = The two digit minute range: 00-59.
ss = The two digit seconds range 00-59.
Returns format: @Umm/dd/yyyy,hh:mmm:ss<CR+LF>

A.6.1.6 **Retrieve European time date clock** type: @E<CR+LF>

Returns format: DD/MM/YYYY,HH:MM:SS

A.6.1.7 **Set European time date clock type**: @Edd/mm/yyyy,hh:mmm:ss<Enter>
dd = the two digit day range 01-31.
mm = the two digit month range 01 – 12.
yyyy = the four digit year.
hh = the two digit hour in military time range: 00 -23.
mm = The two digit minute range: 00-59.
ss = The two digit seconds range 00-59.
Returns format: DD/MM/YYYY,HH:MM:SS<CR+LF>

A.6.1.8 **Clear currently stored records data** type: CL<Enter>
Returns the message: DONE<CR+LF> upon completion.

A.6.1.9 Clear ALL 999 stored record data locations, type: CLA<Enter> .
Returns the message: DONE<CR+LF> upon completion.

A.6.1.10 Show the last calibration date format MMDDYYYY type: CM9<Enter>
Returns message: Example: 05262011<CR+LF>

A.6.1.11 Show the next calibration date format MMDDYYYY type: CM%<Enter>
Returns message: Example: 05262012<CR+LF>

A.6.1.12 Show tester serial number. (This is eight characters long.) type: CM! <Enter>
Example: 01234567<CR+LF>

A.6.1.13 Show transducer serial number. (This is eight characters long.) CMT<Enter>
Example: 01234567<CR+LF>

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A.6.1.14 Show the user string for the tester. Up to 16 characters long type: CMP<Enter>Or CM#<Enter> These commands are interchangeable. However if using an ExaWin program, use CM#<Enter>

Example Returns: Tester1234567890<CR+LF>

A.6.1.15 Show the user string for the transducer. Up to 16 characters long type: CMW<Enter>

Example Returns: Test Station 1<CR+LF>

A.6.1.16 Print the model string Type: E<Enter>

Example Returned: TorqTronics II 10Ft.Lb.<CR+LF>

A.6.1.17 **Show the auto clear time in seconds** Type: H9<Enter>

Example Returns: 0002<CR+LF> for two seconds. (Hexadecimal format: 0 to 'FF")

A.6.1.18 **Set the auto clear time in seconds**. (Hexadecimal format: 0 to 'FF').) type: H9xx<Enter>

Example Returns: 0002<CR+LF> for two seconds.

A.6.1.19 Request current calibration table information type: L<Enter>

Returns example:
Table 08 *(table location in tester memory)*
0040,0025 *(Peak drop setting, second value is not used.)*
TorqTronics II 600Ft.lb,,1234 *(Tester model and serial number.)*
CW =A97A,A554,A129,9CF8,98C8,949C,9068,8C3D,880E,83D9,7FA7, *(Tester Cw ADC calibration points 100% to 0%.)*
1.07673,1.07570,1.07505,1.07507,1.07492,1.07392,1.07442,1.07226,1.06994,1.06895,
Ccw=55C0,59ED,5E20,6246,6671,6AA5,6ED6,7305,7735,7B66,7F9E,
(Tester Ccw ADC calibration points 100% to 0%.)

1.07573,1.07537,1.07568,1.07421,1.07309,1.07332,1.07292,1.07160,1.06944,1.06402,
Last Cal: 10082012 *(Tester last calibration date.)*
Next Cal: 10082013 *(Tester next suggested calibration date.)*

A.6.1.20 Show the mode of operation type: N<Enter>
Returned Examples:

PEAK<CR+LF>	peak mode message.
INIPEAK<CR+LF>	initial peak mode message.
TRACK<CR+LF>	Track mode message.
PTOOL*<CR+LF>	Power tool message.

|__power tool filter in use.
Note: the "*" indicates no filter selected, valid filter selection range: *, 0-9.

A.6.1.21 Set the mode of operation type: Px<Enter>
Examples:

P1<Enter>	= TRACK<CR+LF>	Track mode message.
P2<Enter>	= PEAK<CR+LF>	peak mode message.
P3<Enter>	= INIPEAK<CR+LF>	initial peak mode message.
P4<Enter>	= PTOOL*<CR+LF>	Power tool message.

|__power tool filter in use.
Note: the "*" indicates no filter selected, valid filter selection range: *, 0-9.

A.6.1.22 **Print the current torque reading**. String construction controlled by the last state of the TX command.
Type: P<Enter>

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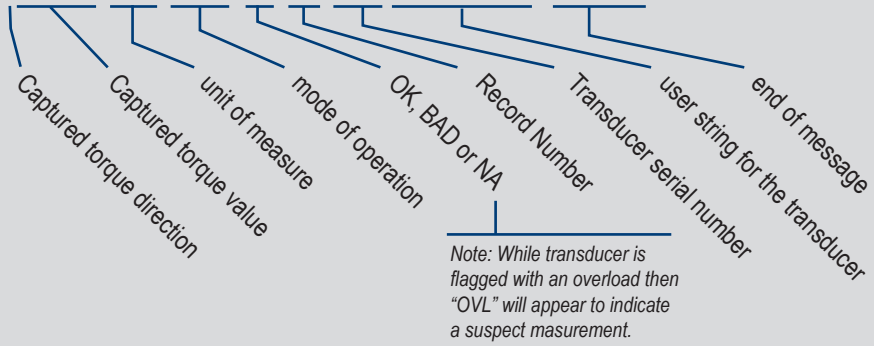
A.6.1.23 **Show the current number of records stored in memory**
Type: F<Enter> or R<Enter> .
Returns a three digit number.

A.6.1.24 **Retrieve record number and print per the last state of the TX command** type: Fxxxx <Enter>
Returns a print string per the last state of the TX command.

A.6.1.25 Retrieve record number and print as follows: Rxxxx<Enter>

Example:
+41.2597,In.oz,PEAK,NA,001,1234,Test Station 1, <CR+LF>



A.6.1.26 **Turn the memory of the tester 'ON'** Type: SM0<Enter>
Returns: MemOn<CR+LF>

A.6.1.27 **Turn the memory of the tester 'OFF'** Type: SM1<Enter>
Returns: MemOff<CR+LF>

A.6.1.28 Show the code version message Type: V<Enter>
Example Returns: v1.00T<CR+LF>

A.6.1.29 **Make only English units of measure available.** Type: YE<Enter>

Example Returns:'01'<CR+LF>

A.6.1.30 **Make only SI metric units of measure available.** Type: YS<Enter>

Example Returns:'02'<CR+LF>

A6.1.31 **Make only Metric units of measure available.** Type: YJ<Enter>

Example Returns:'03'<CR+LF>

A6.1.32 **Make all units of measure available.** Type: YA<Enter>

Example Returns:'00'<CR+LF>

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A.6.2 **Special TTM 2 interface commands:**

A.6.2.1 Request print "TTM 2" style torque string: :P<Enter>
Print "TTM 2" style torque string:
Example: +.000000 In.oz PEAK<CR+LF> (Note: has a floating decimal point.)
As soon as you type in the :P command the print interface is the TTM2 format. (Torque Tool Manager 2)
When the unit is turned off and power is returned the tester reverts to previous TX command setting. If you customize the string your customization becomes the default.
*Note: all torque strings will report in "TTM 2" format until the tester is rebooted.

A.6.2.2 Clear current reading on tester display type: :J< Enter >
Returns message: Clear<CR+LF> when process is completed.
*Note: all torque strings will report in "TTM 2" format until the tester is rebooted.

A.6.2.3 :U<CR+LF> Show the current unit of measure.
Returns one of the following:
In.oz<CR+LF>
In.lb <CR+LF>
Ft.lb <CR+LF>
cNm <CR+LF>
dNm <CR+LF>
Nm <CR+LF>
c.mkg<CR+LF>
mkg <CR+LF>
*Note: all torque strings will report in "TTM 2" format until the tester is rebooted.

A.6.2.4 Change unit of measure where x = number '0' –'7' type: :Ux<Enter>
0 = In.oz Returns: In.oz<CR+LF>
1 = In.lb Returns: In.lb <CR+LF>
2 = Ft.lb Returns: Ft.lb <CR+LF>
3 = cNm Returns: cNm <CR+LF>
4 = dNm Returns: dNm <CR+LF>
5 = Nm Returns: Nm <CR+LF>
6 = c.mkg Returns: c.mkg<CR+LF>
7 = mkg Returns: mkg <CR+LF>
*Note: all torque strings will report in "TTM 2" format until the tester is rebooted.

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Torque Conversion Formulas	
inch grams	
Multiplier	*Result*
.249085	milli Newton metres
.0249085	centi Newton metres
.00249085	deci Newton metres
inch ounces	
Multiplier	*Result*
28.349527	inch grams
72.007	gram centimeter
.706156	centi Newton metres
.0706156	deci Newton metres
inch pounds	
Multiplier	*Result*
453.59243	inch grams
16	inch ounces
1.1521193	kilogram centimeters
.011521193	kilogram meters
11.2985	centi Newton metres
1.12985	deci Newton metres
.112985	Newton metres
foot pounds	
Multiplier	*Result*
12	inch pounds
.1382541	kilogram meter
1.355818	Newton metres
kilogram meters	
Multiplier	*Result*
9.80665	Newton metres
7.233058	foot pounds
Newton metres	
Multiplier	*Result*
.101971	kilogram meters
8.850744	inch pounds
.737562	foot pounds
deci Newton metres	
Multiplier	*Result*
14.161184	inch ounces
.885074	inch pounds
centi Newton metres	
Multiplier	*Result*
1.4161184	inch ounces
.0885074	inch pounds
kilogram centimeters	
Multiplier	**Result**
.86796	inch pounds
.0980665	Newton metres

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Appendix B: **Calibration Charts**

Capacity in InLb	Scale %	Nominal	Wgt(Lbs)	Weights to use	Arm (In.)
10	10%	1	0.25	4 Oz Platform	4
	20%	2	0.5	4 Oz Platform + 4 Oz	
	30%	3	0.75	4 Oz Platform + 8 Oz	
	40%	4	1	4 Oz Platform + 8 Oz + 4 Oz	
	50%	5	1.25	4 Oz Platform + 1Lbs	
	60%	6	1.5	4 Oz Platform + 1Lbs + 4 Oz	
	70%	7	1.75	4 Oz Platform + 1Lbs + 8 Oz	
	80%	8	2	4 Oz Platform + 1Lbs + 8 Oz + 4 Oz	
	90%	9	2.25	4 Oz Platform + 2Lbs	
	100%	10	2.5	4 Oz Platform + 2Lbs + 4 Oz	

Capacity in InLb	Scale %	Nominal	Wgt(Lbs)	Weights to use	Arm (In.)
50	10%	5	0.5	0.5Lb Platform	10
	20%	10	1	0.5Lb Platform + 8 Oz	
	30%	15	1.5	0.5Lb Platform + 1 Lbs	
	40%	20	2	0.5Lb Platform + 1 Lbs + 8 Oz	
	50%	25	2.5	0.5Lb Platform + 2 Lbs	
	60%	30	3	0.5Lb Platform + 2 Lbs + 8 Oz	
	70%	35	3.5	0.5Lb Platform + 3 Lbs	
	80%	40	4	0.5Lb Platform + 3 Lbs + 8 Oz	
	90%	45	4.5	0.5Lb Platform + 4 Lbs	
	100%	50	5	0.5Lb Platform + 4 Lbs + 8 Oz	

Capacity in InLb	Scale %	Nominal	Wgt(Lbs)	Weights to use	Arm (In.)
100	10%	10	1	1Lb Platform	10
	20%	20	2	1Lb Platform + 1 Lbs	
	30%	30	3	1Lb Platform + 2 Lbs	
	40%	40	4	1Lb Platform + 3 Lbs	
	50%	50	5	1Lb Platform + 4 Lbs	
	60%	60	6	1Lb Platform + 5 Lbs	
	70%	70	7	1Lb Platform + 5 Lbs + 1 Lbs	
	80%	80	8	1Lb Platform + 5 Lbs + 2 Lbs	
	90%	90	9	1Lb Platform + 5 Lbs + 3 Lbs	
	100%	100	10	1Lb Platform + 5 Lbs + 4 Lbs	

Capacity in InLb	Scale %	Nominal	Wgt(Lbs)	Weights to use	Arm (In.)
300	10%	30	3	1Lb Platform + 2 Lbs	10
	20%	60	6	1Lb Platform + 5 Lbs	
	30%	90	9	1Lb Platform + 5 Lbs+ 3 Lbs	
	40%	120	12	1Lb Platform + 10 Lbs + 1 Lbs	
	50%	150	15	1Lb Platform + 10 Lbs + 4 Lbs	
	60%	180	18	1Lb Platform + 10 Lbs + 5 Lbs+ 2 Lbs	
	70%	210	21	1Lb Platform + 20 Lbs	
	80%	240	24	1Lb Platform + 20 Lbs + 3 Lbs	
	90%	270	27	1Lb Platform + 20 Lbs + 5 Lbs+ 1 Lbs	
	100%	300	30	1Lb Platform + 20 Lbs + 5 Lbs + 4Lbs	

Capacity in FT.Lb	Scale %	Nominal	Wgt(Lbs)	Weights to use	Arm (FT.)
80	10%	8	2	1Lb Platform + 1 Lbs	4
	20%	16	4	1Lb Platform + 3 Lbs	
	30%	24	6	1Lb Platform + 5 Lbs	
	40%	32	8	1Lb Platform + 5 Lbs + 2 Lbs	
	50%	40	10	1Lb Platform + 5 Lbs + 4 Lbs	
	60%	48	12	1Lb Platform + 10 Lbs + 1 Lbs	
	70%	56	14	1Lb Platform + 10 Lbs + 3 Lbs	
	80%	64	16	1Lb Platform + 10 Lbs + 5 Lbs	
	90%	72	18	1Lb Platform + 10 Lbs + 5 Lbs + 2 Lbs	
	100%	80	20	1Lb Platform + 10 Lbs + 5 Lbs + 4 Lbs	

Capacity in FT.Lb	Scale %	Nominal	Wgt(Lbs)	Weights to use	Arm (FT.)
150	10%	15	3.75	1Lb Platform + 2 Lbs + 8 Oz + 4 Oz	4
	20%	30	7.5	5Lb Platform + 2 Lbs + 8 Oz	
	30%	45	11.25	5Lb Platform + 5 Lbs + 1 Lbs + 4 Oz	
	40%	60	15	5Lb Platform + 10 Lbs	
	50%	75	18.75	5Lb Platform + 10 Lbs + 3 Lb + 8 Oz + 4 Oz	
	60%	90	22.5	5Lb Platform + 10 Lbs + 5 Lb + 2 Lb + 8 Oz	
	70%	105	26.25	5Lb Platform + 20 Lbs + 1 Lb + 4 Oz	
	80%	120	30	5Lb Platform + 20 Lbs + 5 Lb	
	90%	135	33.75	5Lb Platform + 20 Lbs + 5 Lb + 3 Lb+ 8 Oz + 4 Oz	
	100%	150	37.5	5Lb Platform + 20 Lbs + 2 Lb + 8 Oz	

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Capacity in FT.Lb	Scale %	Nominal	Wgt(Lbs)	Weights to use	Arm (FT.)
250	10%	25	6.25	5Lb Platform + 1 Lbs + 4 Oz	4
	20%	50	12.5	5Lb Platform + 5 Lbs + 2 Lbs + 8 Oz	
	30%	75	18.75	5Lb Platform + 10 Lbs + 3 Lb + 8 Oz + 4 Oz	
	40%	100	25	5Lb Platform + 20 Lbs	
	50%	125	31.25	5Lb Platform + 20 Lbs + 5 Lb + 1 Lb + 4 Oz	
	60%	150	37.5	5Lb Platform + 20 Lbs + 10 Lb + 2 Lb + 8 Oz	
	70%	175	43.75	5Lb Platform + 20 Lbs + 10 Lb + 5 Lb + 3 Lb + 8 Oz + 4 Oz	
	80%	200	50	5Lb Platform + 20 Lbs + 20 Lb + 5 Lb	
	90%	225	56.25	5Lb Platform + 50 Lbs + 1Lb + 4 Oz	
	100%	250	62.5	5Lb Platform + 50 Lbs + 5 Lb + 2Lb + 8 Oz	

Capacity in FT.Lb	Scale %	Nominal	Wgt(Lbs)	Weights to use	Arm (FT.)
600	10%	60	15	5Lb Platform + 10 Lbs	4
	20%	120	30	5Lb Platform + 20 Lbs + 5 Lbs	
	30%	180	45	5Lb Platform + 20 Lbs + 20 Lb	
	40%	240	60	5Lb Platform + 50 Lb + 5 Lb	
	50%	300	75	5Lb Platform + 50 Lbs + 20 Lb	
	60%	360	90	5Lb Platform + 50 Lbs + 20 Lb + 10 Lb + 5 Lb	
	70%	420	105	5Lb Platform + 50 Lbs + 50Lb	
	80%	480	120	5Lb Platform + 50 Lbs + 50 Lb +10 Lb + 5 Lb	
	90%	540	135	5Lb Platform + 50 Lbs + 50 Lb + 20 Lb +10 Lb	
	100%	600	150	5Lb Platform + 50 Lbs + 50 Lb + 20 Lb +20 Lb + 5 Lb	

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