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**NOTES**

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## 1.0 INTRODUCTION

### 1.1 Description

The TT-QC Torque Tester is designed to provide for a wide range of torque testing applications in the smallest foot print at a very reasonable price. Features include an LCD graphics display, built-in battery pack for remote testing and a unique swiveling display for use in either horizontal or vertical testing situations. The QC also has serial output for use with a serial printer or Windows PC.

### 1.2 System Specifications

<i>Dimensions</i>	Width: 3.125", Height: 3.75", Depth: 3.23", Weight: 2.5 Lbs
<i>Power Requirements</i>	9V DC, 150 mA (120V mains adapter standard, 240v mains adapter available) and internal NiMH batteries.
<i>Operating Temperature Range</i>	0°C to 50°C
<i>Data Communications</i>	RS-232-C
<i>Accuracy</i>	1% of Indicated Reading with AWS series transducers
<i>Range</i>	10% to 100%
<i>Display</i>	4 active digits
<i>Units</i>	Eight (8) available engineering units: Oz.in., Lb.in, Lb.ft., Nm, cNm, KgfCm,gfCm, Kgfm.
<i>Filter</i>	Selectable power tool filtering speeds: 125Hz, 250 Hz, 500Hz, 750Hz, 1500Hz

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## NOTES

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## 2.0 OPERATION

### 2.1 Display Operation

**Button Function:**

Press any key to turn the unit on. Press **CLR** and **ENT** simultaneously to turn the unit off.

**ENT**

Sends the current reading to the serial port and clears the current peak. If memory is on will also output the location and save the current reading. If 999 readings are stored, the next reading will display 'FULL' and disable memory.

**MDE**

Displays the current mode for 1 second. Pressing **MDE** again while the mode is displayed will change the mode. Any other button will return to sample mode.

**ENG**

Displays the current units for 1 second. Pressing **ENG** again while the units are displayed will change the units. Any other button will return to sample mode.

**CLR**

Clears the current peak or zeros the transducer if no peak is current. If memory is on will erase the reading at the current location. (see view mode, below)

**ENT+CLR**

Turns off the display. Press any key to turn on the display.

**MDE+ENG**

Displays the program menu. See below.

**ENT+ENG**

Press **ENT** to send all the readings in memory to the serial port or any other button to cancel. The location will be displayed as the reading is sent. Memory must be on for this command to work.

**CLR+MDE**

Press **ENT** to clear all the readings from memory or any other button to cancel. The location will be displayed as the reading is erased. Memory must be on for this command to work.

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## 2.2 Sample Mode

Sample mode is the normal operating mode used for measurement. When a measurement is taken, the current transducer sample or current peak is displayed. If a peak is inside the low and high limits, or the limit(s) is/are off, the LED will light up green. Otherwise, the LED will light up red to warn the user that the measurement is out of limits.

## 2.3 Program Menu

The program menu alternates display of the item name and the current setting. The program menu will time out after 5 seconds without a button press. All settings will be saved and the display will return to sample mode.

### Buttons for menu navigation:

**Up (ENG):** Go to the next item.  
**Down (MDE):** Go to the previous item.  
**CLR:** Exit back to sample mode and save all settings.  
**Ent:** Change the current item

### Menu Items: (Some models may not have all menu items)

**LOC:** Current memory location. Press **ENT** to enter view mode. (see below)  
**MEM:** Memory enable. On, Off.  
**A.C.:** Autoclear time, in seconds. Off, 1 - 9  
**FILT:** Peak filter frequency response, in hertz. 125, 250, 500, 750, 1500.  
**PPER:** Minimum peak, percentage of full scale. 2 - 50.  
**S.L.:** Sign lock. On, Off.  
**LOW:** Lower limit. A setting of 0.000 disables the limit. Press **ENT** to enter the number edit mode. (see below)  
**HIGH:** Upper limit. A setting of 0.000 disables the limit. Press **ENT** to enter the number edit mode. (see below)  
**F.S.:** Full scale in the current units. Not editable.  
**SLEEP:** Inactive time to sleep, in minutes. Inactive time is when no buttons are pressed and the transducer is in zero blanking. Off, 1 - 20.

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## 4.0 WARRANTY

Checkline Europe (Checkline) warrants to the original purchaser that this product is of merchantable quality and confirms in kind and quality with the descriptions and specifications thereof. Product failure or malfunction arising out of any defect in workmanship or material in the product existing at the time of delivery thereof which manifests itself within one year from the sale of such product, shall be remedied by repair or replacement of such product, at Checkline's option, except where unauthorized repair, disassembly, tampering, abuse or misapplication has taken place, as determined by Checkline. All returns for warranty or non-warranty repairs and/or replacement must be authorized by Checkline, in advance, with all repacking and shipping expenses to the address below to be borne by the purchaser.

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### 3.0 DESCRIPTION OF FUNCTIONS

The following is a description of the standard features of the Checkline product line.

#### 3.1 Operating Mode

##### Peak

Displays and retains the maximum torque exerted by the wrench, as occurs when operating the wrench in the tightening direction. The Peak Mode is used for all power tools and some dial wrenches.

##### 1st Peak

Detects the “first peak” of torque experienced by the wrench, capturing the initial torque as occurs when the torque wrench cams over. First Peak is used primarily for Click torque wrenches and cam over screwdrivers.

##### Track

Displays torque as it is being applied to the transducer. Track mode is used primarily for verifying calibration of the unit.

#### 3.2 Engineering Units

Shows the current engineering units. Press the key to cycle through the eight possible choices: Kgf m, KgfCm, gfCm, cNm, Nm, FT LB, IN LB, IN OZ.

#### 3.3 Full Scale

This screen shows the Full-Scale value of the Torque Shaft. This is not a field adjustable value.

#### 3.4 Low Limit

Use the low limit setting as a means of visually flagging the operator when a reading fails to reach a desired minimum value. A small down arrow will appear on the screen if a peak is captured below the limit setting.

#### 3.5 High Limit

Use the high limit setting as a means of visually flagging the operator when a reading falls over a desired maximum value. High limits are set in the identical way as low limits. Please refer to the Low Limit section for details.

**NOTE ON LIMITS: The green LED on the front of the display will flash when a peak is captured that falls within the limit setting.**

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### 2.4 Number Edit Mode

The current digit or decimal point flashes. Number edit mode never times out.

##### ENT

Save the current digit and go to the next digit. After editing the digits, the decimal point can be moved. After the decimal point is saved, **ENT** exits number edit mode and saves the number that was edited. During the decimal point edit, the decimal point can be moved to a position where all of the digits flash. If **ENT** is pressed at this point the number saved will be 0.000.

##### Up (ENG)

Increases the current digit or moves the decimal point to the right.

##### Down (MDE)

Decreases the current digit or moves the decimal point to the left.

##### CLR

Cancels number edit mode and restores the previous number.

### 2.5 View Mode

Display toggles between the current location and the current reading at that location. View mode never times out. When memory is off, the location displayed is 000. The units are not displayed when viewing the saved readings.

##### ENT

Exits view mode and sets the current memory location to the next empty location if memory is on. If memory is off then it stays off.

##### Up (ENG)

Goes to the next memory location. If the maximum location used is passed then pressing up wraps around to the first location .

##### Down (MDE)

Goes to the previous location. If the first location is passed then pressing down wraps around to the maximum location used.

##### CLR

Exits view mode and sets the current location to the displayed location. Readings will be saved from this location, overwriting saved readings at this and higher locations.

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## 2.6 Side Panel Inputs

### DC In

The interface for the AC Adapter supplied with the unit. Use this if you plan on working under Mains power. Use only the AC adapter provided with the unit. Use of another power source will void the warranty and may cause severe damage to the display.

### RS-232

If you are downloading to a printer, data collector, computer, etc., this is the mini-plug interface for the RS-232 cable. Values are sent via RS-232 every time the unit auto-clears or the **ENT/clr** button is pressed.

## 2.7 Charging the Batteries

The batteries in this system should last approximately 12 hours when fully charged. The batteries are trickle-charged any time the system is plugged in, and take about 8 hours to fully charge. It is recommended the tester be plugged in when not in use. This will not harm the unit and will increase battery life.

**Note:** If the tester is to be stored for several months, always ensure the battery is completely charged prior to storage.

## 2.8 RS-232

The TT-QC display can be connected to a printer, computer or data collector via its RS232 interface. Every time a reading is accepted into memory, a peak is cleared, or data is transmitted via the print data menu(s), it is transmitted via the RS-232 port. To download the readings, go to the DATA MENU.

### RS232 Transfer Protocol

Protocol	Value
Cable	9 pin to miniplug.
Baud	9600
Parity	None
Bits	8
S Bit	1
Flow	None

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## RS232 Datastream Format

*mmmbssddddd buuuuucl*, where:

m	Memory Location	c	Carriage Return
s	Sign (space or -)	l	Line Feed
d	Data with Decimal Point	b	Blank
u	Units		

### RS232 Cable Pinouts

Pin #	Description	Pin #	Description
1	Unused	6	Unused
2	Transmit	7	Unused
3	Receive	8	Unused
4	Unused	9	Unused
5	Ground		

# TT-QC

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