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1.0   INTRODUCTION

These Electronic Torque Tools are "State of the Art" devices, With Intelligent Technology, Organic LED display (OLED). They are Menu Driven with Total Tracability. Demonstrated to have better than 1% Accuracy. They are Simple to Set and Calibrate and come complete with ISO 6789-2003 Certification.

These Torque Tools are, Hand-held Torque Measuring Instruments which provide Precision Accuracy, They have High Repeatability. Presets can be set to provide the user with Visual & Audio Signals during Torque measurements. Supplied with visual Low Battery Indicator. Use the wrenches for Preset Value Approach, Fastener Overload, Range Overload and Maximum Mechanical Overload.

1.1   Recommended Use

The Electronic Torque Tools are specifically designed for use in all Industrial Sectors and Applications where High Accuracy and Repeatability combined with a Complete Torque Data Management & Control System are Standard Requirements.

1.2   Basic Characteristics

- Accuracy: Right hand side torque = 1%, Left hand side = 1% of Actual Reading
- Resolution: 0.05 to 50Nm & 0.1 to 1000Nm
- Alarms: Preset Value Approach, Fastener Overload, Range Overload, Mechanical Overload, Low Battery, Memory Full.
- Memory Capacity: 2094 Values
- Battery Life: Sleep Mode 5,000 Hrs, Operational Mode 160 Hrs.

2.0   CARE GUIDELINES

These Instruments should be handled with care. Do not subject to Torque Loads in excess of the Model Range. Do not use Tool to loosen fasteners tightened beyond Max Tool Capacity - Never apply extensions to Tool without contacting your supplier.

Do not Drop or Subject to Impact Blows - Provide adequate storage to Protect from Damage - Adhere to Safety Instructions

2.1   Changing the Battery on Wrenches

1. Unscrew the metal End Cap on the handle of the wrench.
2. Remove the four AAA cell batteries and replace with new.
3. Screw back the metal End cap.
4. Check to ensure the date and time are correct

Note: Battery life should last 160hrs+

2.2   Ratchet head guidelines (only for ETW wrenches)

1. Store in a dry location
2. Oil Frequently to prevent Ratchet head seizing
3. Do not exceed specified torques
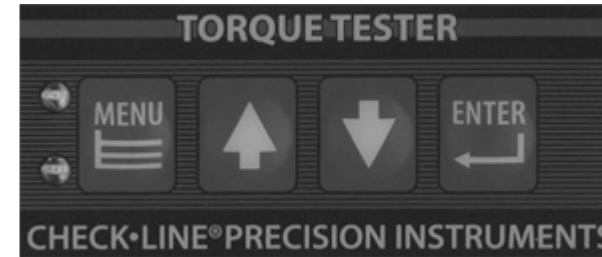4. Do not use external forces on Ratchet (i.e. Hammer)

Max Torque for 1/4" Ratchet = 30 Nm

Max Torque for 3/8" Ratchet = 135 Nm

Max Torque for 1/2" Ratchet = 340 Nm

3.0   BASIC SETTINGS

3.1   Keypad

3.2   Set measuring unit

The instrument can be used with different measuring units. You can choose between kgf.cm, kgf.m, cN.m, N.m, ozf.in, lbf.in and lbft.ft.

To set the measuring mode, follow these steps:
1. Press **MENU** to Scroll to Units Menu.
2. Press **ENTER** to enter Units Menu.
3. Press **UP** or **DOWN** to Scroll to Units Required.
4. Press **ENTER** to confirm selected units

3.3   Set Date/Time

With this function you can set the hour, day and year. If the minutes are adjusted by the arrow piles, the hour changes automatically. If the days are adjusted by the arrow piles, the month changes automatically, too.

To set the time, follow these steps:

1. Press **MENU** to Scroll to the Date Menu.
2. Press **ENTER** to enter Date Menu.
3. Press **UP** or **DOWN** to Set the Min/Hour.
4. Press **ENTER** to Confirm.

To Set Day / Month / Year - repeat Steps 3 & 4.

4.0   OPERATION MODES

The instrument is featured with different operation modes so you can choose the best mode for your application.

4.1   Track Mode

As Torque is applied to the Wrench it will actively display the applied Torque reading to the Max Span of the Device. On removal of the Torque Load the display will return to Zero.

For setting the Track Mode:
1. Press **MENU** to Scroll to Track Mode
2. Press **ENTER** to operate in Track Mode

For EZ wrenches the Track mode is accessed using a different procedure:

1. Press **MENU** to Scroll to Preset Mode
2. Press **ENTER** to access Preset Mode
3. Press **UP** or **DOWN** to go to the lowest or the highest possible value. From the highest possible value press **UP** once more. The display now reads 00.00 and Track. Press **ENTER**. You are now in Track mode.

4.2   Peak Mode

In Peak Mode the Torque Reading will remain Displayed when the Torque Load is removed. The User has the option to store the reading in Memory. If storage of the reading is not required the User may continue to the next measuring task.

For setting the Peak Mode:
1. Press **MENU** to Scroll to Peak Mode
2. Press **ENTER** to select Peak Mode and then apply Torque
3. Press **ENTER** to store the Peak Value Recorded if required.

If Storage is not required then apply New Torque

4.3   Set/Preset Mode

This mode allows the user to set the limits for Torque. The operator can choose to set Torque values by % or by tolerances. The OLED display will be Green approaching Preset tolerances and will change to Red if exceeded.

Setting Torque

1. Press **MENU** to Scroll to Set Mode, Press **ENTER** and you'll see option to "Set by Tolerance " or "Set by %".
2. Press **UP** or **DOWN** to select Set by % or Set by Tolerance
3. Press **UP** or **DOWN** to Scroll to required Preset No. (1 to 99)
4. Press **ENTER** to confirm Preset No. selected
5. Press **UP** or **DOWN** to Set Nominal Value and press **ENTER**
6. Press **UP** or **DOWN** to Set Your Low Value and press **ENTER**
7. Press **UP** or **DOWN** to set your High Value and press **ENTER**
8. Use **MENU** to select Preset from the menu to use this set-up

4.4   Input Mode (only on "SUPER" models)

With the buttons or the PCFE software you can adjust the setpoints, minimum- and maximumvalues. In total 99 different settings are possible.

To set the values, follow these steps:

1. Press **MENU** to get to the trac mode.
2. Press **ENTER** to choose a number for the input mode.
3. Choose the required number (1 to 99) with the arrowbuttons.
4. Confirm with **ENTER**.
5. Adjust the setpoint / minimum value / maximum value with the arrow buttons.
6. Confirm with **ENTER**.

To set the deviation from the setpoint (in %), follow these Stepps:

1. Repeat the steps 1 to 6. The setpoint is composed by the setting of maximum and minimum value.
2. Press **ENTER** to show the deviation in percent.

3. Choose with the arrow piles the deviation in %.
4. Confirm with **ENTER**.

4.5 Recall Mode

This mode allows the User to view the Stored Torque & angle Data. Only Locations containing data will be displayed. Note that as data is stored the locations are populated sequentially from 01 to 2094.
1. Press **MENU** to Scroll to Recall Mode.
2. Press **ENTER** to enter and view Memory Locations, Results and Functions.
3. Press **UP** or **DOWN** to scroll through locations that contain data.

05.59Nm@ 3.0°

07.88Nm @ 12.0°

Loc 3 JustMove
Menu ↑↓-Select

4.6 Clear Mode

This Mode allows the User to Clear the Stored Torque Data from an individual or range of locations.

Note: Before clearing the selected range and as a safety precaution, the user will be asked are they sure they wish to clear selected data. This can be done by pressing the confirm button.

To delete stored data, follow these steps:

1. Press **MENU** to Scroll to Clear Mode.
2. Press **ENTER** to enter Clear Mode.
3. Press **UP** or **DOWN** to select "From" range to be cleared and press.
4. Press **ENTER** to confirm „From" range.
5. Press **UP** or **DOWN** to confirm "To" range to be cleared.
6. Press **ENTER** to confirm and you will be asked if you're "Sure?".
7. Press **ENTER** to confirm and that Range of data is cleared from the wrench memory.

4.7 Upload Mode

This Mode allows the User to Upload Stored Torque Data from an individual or range of locations. In Upload Mode the Wrench must be connected to a PC running the PC FRONT-END Software (PCFE) via the USB Port on the Wrench and PC.

Note: The PCFE must have USB drivers installed for communication

1. Press **MENU** to scroll to Upload Mode.
2. Press **ENTER** to enter Upload Mode.
3. Press **ENTER** to select "From" and **UP** or **DOWN** to select the first location to upload.
4. Press **ENTER** to confirm "From" location.
5. Press **ENTER** to select "To" location and **UP** or **DOWN** for end location to be uploaded.
6. Press **ENTER** to confirm, you are asked if your Sure press **ENTER** to confirm.

From:1
To:9
SURE?
Menu ☑-Select

5.0 SOFTWARE INSTALLATION

Note: The driver and software installation instructions have been written for Windows XP users, on Windows Vista or Windows 7 (and other Windows versions), the procedure might be different or the software may not work properly.

5.1 USB Driver Installation

1. Insert the USB stick into an available USB port on the PC, the CD Start program will automatically start.

2. If the CD Start program does not automatically start, open the Explorer and navigate to the USB Drive, double click on the program called "CD_Start", this opens a window with a few options.

3. Click the "Install USB driver" button to install the USB driver. A program briefly opens and closes again to prepare installation of the driver.

4. Connect the torque gauge to an available USB port with the cable that was included with the gauge.

5. Turn the torque gauge on. In Windows XP a "Wizard new hardware found" opens.

6. Select "No, no this time" when the wizard asks to connect to the internet to find driver information, after that, click the "Next" button.

7. In the next wizard screen choose "I want to choose myself (advanced)" when asks which software to install for USBSerial. Click "Next" to continue.

8. In the "Choose your search and install" screen, select "look for the most suitable driver on the following locations", then check the checkbox with the option "Also search on this location" and click the "Browse" button to navigate to the USB stick. On the USB stick, select the "USB_driver" folder and click the "OK" button.

9. The next screen shows 3 drivers. Select the driver with location "usbser.inf" for Windows XP (or select the "usbser_7_64.inf" for 64 bit Windows 7 machines) and click "Next".

10. On popup of the hardware installation warning message, select "Continue anyway" and click "Finish" in the final screen of the wizard. The driver installation is now complete.

5.2 Determination Of The Assigned COM Port

1. Open the System Properties by clicking start and right-clicking "My Computer" and selecting "Properties". (If this does not work, a shortcut to open the System Properties is to press the "Windows key" and while keeping it pressed, press the "Pause/Break key").

2. In the System Properties screen, click the Hardware tab and click "Device Manager" to open the Device Manager.

3. In the Device Manager, press the "Plus" sign in front of "Ports (COM & LPT)". A list of installed communication ports is now displayed.

4. One of the ports is called "USB CDC serial port" The communication port number is mentioned after this between brackets (COM#).

5. Remember or write down the COM port number and close the Device Manager. The correct COM port number needs to be set in the software later. Disconnect the torque gauge from the PC by removing the USB cable from the socket. Reconnect the torque gauge by plugging the USB cable back into the socket.

5.3 Data Transfer Protocol

General
The data transfer protocol allows measurement data along with the associated date/time stamps and pre-set limits to be transferred from the wrench to other equipment such as a PC or a PLC controller.

Data can be transferred in either ASCII or binary formats and data transfer can be on a measurement by measurement basis or as a complete upload of internal memory.

Data Link Settings
All data is transferred in 8 bit bytes, single start bit, single stop bit, no parity at a speed of 9600 bits per second.

ASCII data transfer
For this the ASCI menu item must be selected on the wrench.

Individual measurement transfer
This is initiated by transmitting the ASCII character 'm' to the wrench. Once the wrench receives this it remains in individual measurement transfer mode until it powers down. Data can be transferred from the wrench whenever the 'Store?' prompt is ticked in peak or preset mode.

The data format is as follows:

Day, Month, Hour, Minutes, Torque value, Torque units, Preset index, Preset high setting, Preset low setting, Preset nominal value, Preset units

Each item is separated by a comma and can be used to feed a CSV spreadsheet file. In peak mode the pre-set values (high, low and nominal) are set at 0.

Block transfer
This is initiated by transmitting the ASCII character 'b' to the wrench. Once the wrench receives this it transfers the entire data memory contents to the external device. The data is separated into individual measurements containing the date/time stamp, measured value and pre-set data, as described in the data format above.

The first measurement data are transmitted immediately after reception of the 'b' character. After each measurement data are transmitted the wrench waits for a 'ready to receive' signal in the form of the ASCII character 'r'. Once this is received the next measurement data are transmitted. When all memory data has been transmitted the wrench will respond with the ASCII character 'e'.

Binary Data Transfer
For this the BIN menu item must be selected on the wrench. This is similar to the ASCII data transfer. Returned data format is as follows:
Day (1 Byte) Month (1 Byte) Hour (1 Byte) Minutes (1 Byte) Torque value (3 Bytes) Torque units indicator (1 Byte, see below) Pre-set index (1 Byte) Pre-set high setting (3 Bytes)

Pre-set
low setting (3 Bytes) Pre-set nominal setting (3 Bytes) Pre-set units indicator (1 Byte) There are no separators between the different data items. The torque and pre-set units are expressed as follows:

Units indicator byte contents
LBFT 0 - LBIN 1 - OZIN 2 - NM 3 - CNM 4 - MKG 5 - CMKG 6

Individual measurement mode
This is initiated by transmission of the single byte hex value 6D Block transfer mode This is initiated by the transmission of the single byte binary value 62 The clear to send character is single byte binary 72 When all data is transferred the wrench responds with a single byte binary 65

6.0   SOFTWARE INSTRUCTIONS

6.1   Starting The Software

1. The software does not need to be installed. After plugging the USB drive into an available USB port, the startup screen will either pop up or can be started as explained in Chapter 5.2.

2. Click "Run PCFE" on the start screen and a screen pops up asking for a password. If this is the first time you run the program, a password has not been set and you can click "OK" to continue. To set or change a password, view the instructions in chapter 6.3

Note: You can choose to copy the files on the USB drive to your PC's harddrive to run the program without having the USB stick inserted in the PC.

6.2   Setting The COM Port

After opening the software, the correct COM port needs to be set in order to communicate with the torque gauge. Click "Select Port" and choose the COM port that you have written down or remembered at chapter 5.2. Click "OK" to confirm your choice.

After setting the COM port in the software and the gauge is connectend, in the bottom left of the screen the text "Port COM# opened". Next to this it shows "Wrench connected" along with the software verion. The serial number and model number are displayed in the top right in their respective fields.

Note: If the gauge is not connected and the text "Port COM# not opened" is displayed in the bottom left of the screen along with "Wrench not connected", please close the software and disconnect the gauge from the PC. Restart the software, connect the gauge to the PC and turn on the gauge. If after this the gauge is still not connected to the software, please verify that the correct COM port has been set according to the steps in chapter 5.2

6.3 Language

The PCFE languages available include; English, French, German, Italian, Polish, Portuguese, Spanish, Russian and Chinese
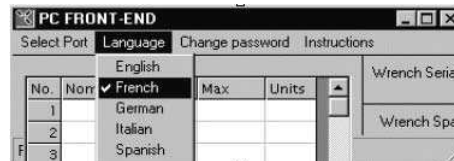

6.4 PCFE Window

The Top half of the PCFE displays Wrench Configuration data, the Bottom section allows the user to manage the stored wrench data.

Displays the Presets stored in the wrench - the user can choose to use the PCFE to set the preset's or it can be done manually on the wrench.

Displays data such as Wrench serial Number, Make, Model, Wrench Span and Units of measurement, the date of calibration and the period of calibration.
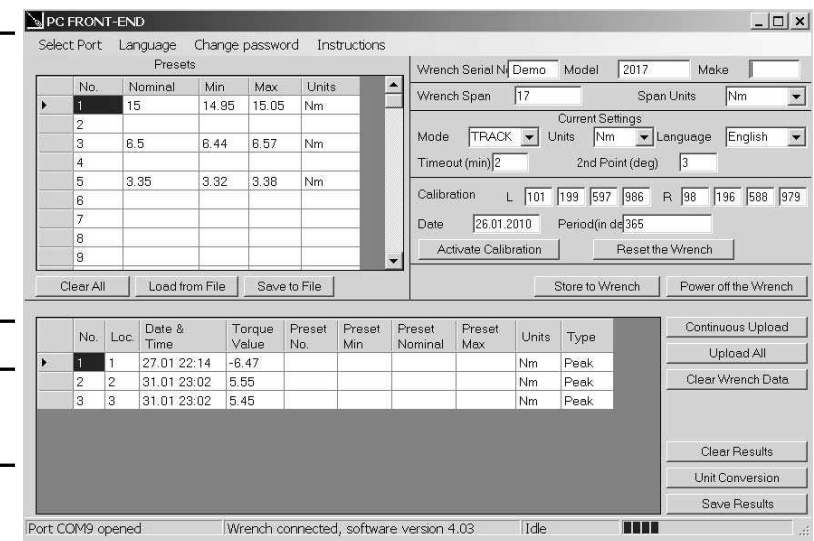
Displays any stored measurements on the wrench, wrench location number, date and time of reading, torque readings, preset data, units of measurement and the mode that was used to take the torque measurement.

IMPORTANT: Changing the measuring units and measuring ranges requires a re-calibration of the tool.

Bottom Section of PCFE

The lower section of the PCFE allows the user to view stored results from the wrench. These results can then be saved as an Excel file for further analysis and to offer the user complete traceability of their torque measurements.

Each row will display the following; Time and date of Torque operation, Torque value and units, If it's a Preset result then the Minimum and Maximum tolerances are displayed along with the nominal setting.

The "Type" Column will display the function that was been used for the Torque operation, In the Example below you can see Peak and Preset.

6.5   Set a Preset using the PCFE

1. Ensure the wrench is connected to the PCFE software.

2. Select the preset number or location from 1 to 99 you wish to set.

3. When the pop up window appears, fill in required fields and press OK.

4. Select Store to wrench and the data is written to the wrench.

5. Select Preset option on the wrench and select the preset required

6.6   Overview input boxes in PCFE

Activate calibration: Activates the calibration option in the wrench menu. You must begin calibration before the wrench powers down.

Calibrated on: Date of last calibration.

Change password: Type current password. Type new password. Confirm new password

Clear: Clears the wrench measurement data displayed on the PC.

Clear all presets: Clears presets from the PCFE presets window.

Clear Results: Selecting this button on the PCFE will clear the displayed PCFE results

Clear Wrench Data: Selecting this option will clear the stored results from the wrench memory

Continuous upload: Allows real time communication of measurements to the PCFE. Wrench must be connected to the PC.

Continuous Upload: When the wrench is connected to the PCFE and this is selected then the user can take reading's and by pressing confirm on the wrench the result will be automatically up dated to the PCFE

Current mode: Select mode you wish wrench to operate in. Selection will take effect after data is stored using 'store to wrench button'

Current units: Select the units you wish wrench to operate in. Selection will take effect after data is stored using 'store to wrench button'

Current language: Select the language you wish wrench to operate in. Selection will take effect after data is stored using 'store to wrench button'

Default calibration: Allows wrench reset. All data/settings stored in the wrench will be cleared and default calibration values for the wrench's specific calibration span will be programmed.

Load from file: Loads a previously created file containing preset data, into the PCFE front preset window (top left).

Period of calibration: Set number of days to next calibration or it can be set by number of measurements.

Power off wrench: Allows soft power down of the wrench.

Save as an excel file: Save the current displayed measurement data as an excel file.

Save to file: Saves PCFE displayed preset data to file.

Select port: select communication port you wish to use to communicate with the wrench

Set a preset: Click on any preset location number in the PCFE presets window. Set the required nominal, min, max Tolerance and units. Store settings to the wrench.

Sort by preset: Sort the displayed measurement data and group according to ascending preset numbers.

Store to wrench: Store all current pc front settings to wrench. Wrench will automatically power down after store

Unit Conversion: Selecting this button allows the user to convert the displayed PCFE readings between Nm, cNm, lbft, lbins, mkg and cmkg

Upload All: Once the wrench is connected to the PCFE, selecting this option will upload all the wrench stored measurements to the PCFE and display them.

Wrench span: The span of measurement of the wrench for example Span 100Nm would have a range of 2-100Nm.

The PCFE measurement data window displays stored wrench measurements showing wrench memory location, date and time, torque value.

7.0 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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