



Digital Torque Wrenches TAW Model User Manual

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Basic Description

The Torque & Angle Model Digital Torque Wrench is a state-of-the-art hand-held device suitable for both torque auditing and also torque application. These precision tools have both high torque accuracy & also high repeatability. For product portfolio cohesion the Torque & Angle Model Torque Wrench uses the same organic LED display, membrane type keypad, user interface and PC based data management software as other standard products within this range of electronic torque tools. Training up time is minimal with a key feature being the ease of use.

These products are demonstrated to have better than 1% Accuracy. They are both simple to set and calibrate and come complete with fully traceable ISO 6789-2003 certification.

The Torque & Angle Model Digital Torque Wrench has both visual and audio alarms to signal good or bad torque. Along with this, there is a visual battery life indicator & alarms for preset value approach, fastener overload, range overload and maximum mechanical overload.

Recommended Use

The Torque & Angle Model Digital Torque Wrench is specifically designed for use in all industrial sectors and applications where high accuracy and repeatability combined with a complete torque data management and control system are standard requirements.

General Characteristics

Accuracy	Right hand side torque = 1% Left hand side = 1% of Actual Reading
Resolution	0.01 N.m - 50 N.m 0.1 N.m - 999 N.m 1 N.m - 2000 N.m
Alarms	Preset Value Approach, Range Overload, Mechanical Overload, Low Battery, Memory Full
Memory Capacity	2094 Values
Battery Life	Sleep Mode: 5,000 Hrs Operational Mode: While using Torque Only Modes: Up to 120 hours. While using Torque plus Angle Modes: Up to 60 hours Using Optional Wireless Model with Torque Only: Up to 40 hours If using Wireless Model with Torque & Angle: 25 hours

| Basic Description

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 maximum tool capacity
- Using non-linear extensions may affect the torque accuracy
- Using torque extensions will increase the torque applied
- Do not operate tool unless it has been powered on and the display screen can be read clearly
- Do not drop or subject to impact blows
- Provide adequate storage to protect from damage
- Adhere to safety instructions
- As torque is length dependent, therefore torque should be applied to the center of the torque wrench handle

Changing the Battery

Step 1: Unscrew the metal end cap on the handle of the wrench

Step 2: Remove the four AA cell batteries and replace with new

Step 3: Screw back the metal end cap

Step 4: Turn on the wrench and check to ensure the date and time are both set correctly

Step 5: Practical usage time for rechargeable batteries is shorter than for standard batteries

Ratchet Head Guidelines

- Store in a dry location
- Oil frequently to prevent ratchet head seizing
- Do not use external forces on ratchet (i.e. hammer)
- Do not exceed specified torques
 - Max Torque for 1/4" Ratchet = 30 N.m
 - Max Torque for 3/8" Ratchet = 135 N.m
 - Max Torque for 1/2" Ratchet = 340 N.m

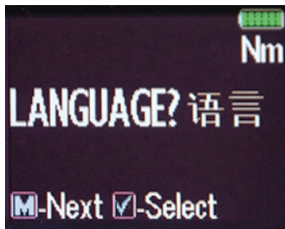
Modes of Operation

Torque reading starts at 5% of maximum with an accuracy of 1% beginning at 10% of maximum (threshold to maximum span).

Press **M** to select the required Menu option and **✓** to select.

Language Mode - Keypad Function:

The Languages of Operation available to the user are: English, Chinese, French, German, Italian, Polish, Portuguese, Russian, Spanish



Step 1: Press **M** to scroll to the Language Menu

Step 2: Press **✓** to enter Language Menu

Step 3: Press **↑** **↓** to scroll to the language required

Step 4: Press **✓** to confirm operation in this language

Unit Mode - Keypad Function:

The following units of measurement are available: kgf.cm, kgf.m, cN.m, N.m, ozf.in, lbf.in, lbf.ft



Step 1: Press **M** to scroll to the Units Menu

Step 2: Press **✓** to enter Units Menu

Step 3: Press **↑** **↓** to scroll to the units required

Step 4: Press **✓** to confirm selected units

Date - Keypad Function:

Step 1: Press **M** to scroll to the Date Menu

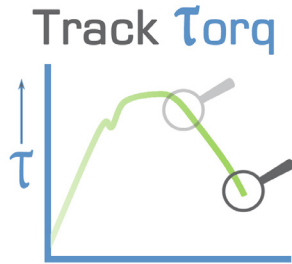
Step 2: Press **✓** to enter Date Menu

Step 3: Press **↑** **↓** to scroll to set the min/hour

Step 4: Press **✓** to confirm

To set the day/month/year, repeat step 3 and step 4.

Modes of Operation

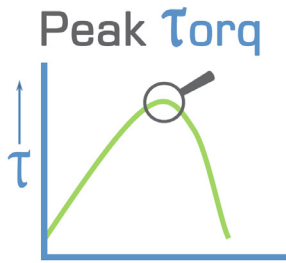


Track Mode:

As torque is applied, the driver will actively display the applied torque reading from 5% up to the max span of the device. On removal of the torque load, the display will return to zero.

Step 1: Press **M** to scroll to Track Mode

Step 2: Press **✓** to operate in Track Mode



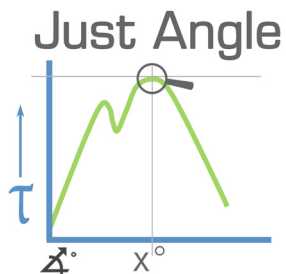
Peak Mode:

In Peak Mode, on condition that the torque loaded is above 10% of the tool span, then the maximum 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.

Step 1: Press **M** to scroll to Peak Mode

Step 2: Press **✓** to operate in Peak Mode

Step 3: Press **✓** to store the peak value if required. If storage is not required, then apply new torque.



Just Angle Mode:

In Just Angle Mode, on condition that the torque loaded is above 10% of the tool span, then the maximum torque reading will remain displayed when the torque load is removed. The angle turned from 5% of the tool span until maximum torque reading is also displayed. 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.

Step 1: Press **M** to scroll to Peak Mode

Step 2: Press **✓** to operate in Peak Mode

Step 3: Press **✓** to store the Peak Value if required. If storage is not required, then apply new torque.

| Modes of Operation

Set Mode:

This mode allows the user to set the limits for Torque, Torque & Angle and Just Move Modes. The operator can choose to set values by % or by tolerances. After, in operation of these presets, the OLED display will be green within preset tolerances and will change to red if exceeded.

Step 1: Press **M** to scroll to Set Mode

Step 2: Press **✓** to select Set Mode

Step 3: Press **↑** **↓** to scroll to set by % or set by tolerance

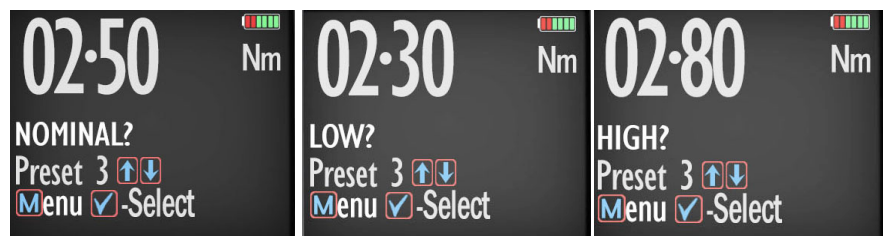
Step 4: Press **↑** **↓** to scroll to scroll to required preset number (1 to 99)

Step 5: Press **✓** to confirm preset number selected

Step 6: Press **↑** **↓** to set nominal value and **✓** to confirm

Step 7: Press **↑** **↓** to set your low value and **✓** to confirm

Step 8: Press **↑** **↓** to set your high value and **✓** to confirm



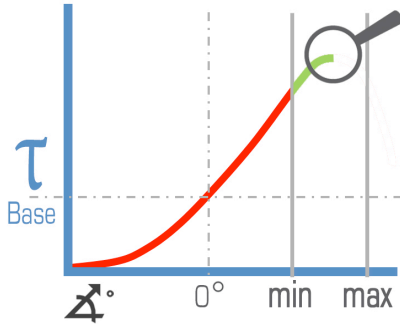
Step 9: Once the parameters have been confirmed the operator can find the task within Preset Mode. Use **M** to select Preset Mode from the main menu to find the task.



To set a preset as a +/- % deviation of the nominal value, please select "Set Torque" and then select "by %"

Modes of Operation

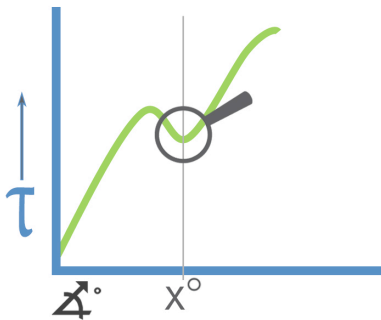
Preset - Torq+Ang



Set Mode - Torque and Angle:

- Step 1: Press **M** to scroll to Set Mode
- Step 2: Press **✓** to select Set Mode
- Step 3: Press **↑** **↓** to Torque & Angle
- Step 4: Press **↑** **↓** to scroll to required preset number (1 to 99)
- Step 5: Press **✓** to confirm preset number selected
- Step 6: Press **↑** **↓** to set reference torque value and **✓** to confirm
- Step 7: Press **↑** **↓** to set angle low value and **✓** to confirm
- Step 7: Press **↑** **↓** to set angle high value and **✓** to confirm

Just Move



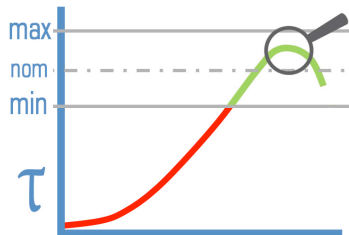
Set Mode - Just Move:

Just Move allows the user to measure torque after rotation of a pre-defined number of degrees. Degrees will count once torque is above 5% of the tool span.

- Step 1: Press **M** to scroll to Recall Mode
- Step 2: Press **✓** to select Set Mode
- Step 3: Press **↑** **↓** to select Just Move
- Step 4: Press **↑** **↓** to scroll to required preset number (1 to 99)
- Step 5: Press **✓** to confirm preset number selected
- Step 6: Press **↑** **↓** to select Just Move Preset Angle and **✓** to confirm.

| Modes of Operation

Preset Torq



Preset Mode:

This mode allows the User to operate using target, minimum and maximum parameters prepared in Set Mode. Depending on the max torque loaded, there are relevant warning signals activated.

- **Passing Min. Value:** the green LED on keypad will flash and the buzzer will sound intermittently. The OLED display will change to orange
- **Passing Nom. Value:** the green LED on keypad will switch on and the buzzer will sound continuously. The OLED display will be green
- **Passing Max. Value:** The Red LED will flash continuously and the buzzer will sound continuously and the OLED will change to Red.

Step 1: Press **M** to scroll to Preset Mode

Step 2: Press **✓** to enter Preset Mode

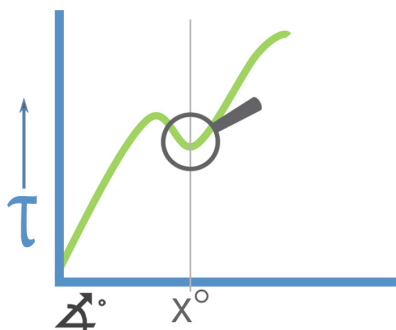
Step 3: Press **↑** **↓** to select your preferred preset number (1 to 99)

Step 4: Press **✓** to operate within this preset parameter

Step 5: Press **✓** to store the applied torque (torque and angle) if required

Just Move Mode:

Just Move



In Just Move Mode, on condition that the torque loaded is above 10% of the tool span, then the torque recorded after a pre-defined number of degrees will remain displayed when the torque load is removed. Along with this, the final torque and final angle will also be displayed. 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.

Step 1: Press **M** to scroll to Just Move Mode

Step 2: Press **✓** to operate in Just Move Mode

Step 3: Press **↑** **↓** to store the just move torque along with final peak torque and peak angle values if required


If storage is not required, apply a new load to test again.


| Modes of Operation

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.

Step 1: Press  to scroll to Recall Mode

Step 2: Press  to enter and view memory locations, results and functions

Step 3: Press   to scroll through locations that contain data

Upload Mode:




This mode allows the user to upload stored torque data. In Upload Mode, the driver must be connected to a PC running the PC FRONT-END Software (PCFE) via the USB port on the driver and PC.

Step 1: Press  to scroll to Upload Mode

Step 2: Press  to enter Upload Mode

Step 3: Press  to select "From" and   to select the First Sorted Data location to upload

Step 4: Press  to confirm "From" location

Step 5: Press  to select "To" location and   for end location to be uploaded

Step 6: Press  to confirm. You are asked if you are sure, press  to confirm

| Modes of Operation

COMMS Mode:

This mode allows the User to select the method for communication. The standard model allows communication by standard USB cable to the included software. For communication by ASCII or BINARY the wrench will need physical modifications in advance.

Step 1: Press  to scroll to COMMS Mode

Step 2: Press  to enter COMMS Mode

Step 3: Press   to select the method of communication and  to confirm

Note: For Standard communication to the included Software program, select 'PCFE'


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.


Step 1: Press  to scroll to Clear Mode

Step 2: Press  to enter Clear Mode

Step 3: Press   to select "From" range to be cleared and press 

Step 4: Press   to confirm "To" range to be cleared

Step 5: Press  to confirm and you will be asked if you are sure

Step 6: Press  to confirm and that the range of the data is cleared from the wrench memory

| PCFE - ASG Software

Communication to PCFE

- PCFE: 'PC Front End' is the standard software which is included with the tool

Installation

Select Setup.exe from USB Storage Device

The user can choose from options within the window below interface

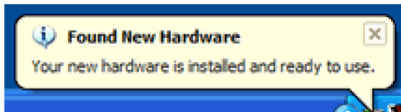
- Demo PCFE: this will allow the user to test the software without installing
- Install PCFE.exe: to install the software to the PC
- Instructions: user manual

Install the PCFE.exe

- During the steps for installation, there is a search to ensure the .net framework is present and installs it from the web if required
- USB drivers are automatically installed but should there be the need they can also be manually installed. They can be found at C:/program files/PCFE/Front-end/USB drivers
- After installation the PCFE icon will appear on the desktop. No password is required; just click OK when prompted for a password
- The screen can be re-sized and the new setting will remain on next opening

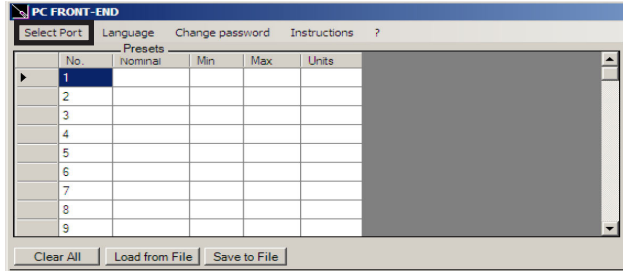
Communication to PCFE

Connect a USB Cable from PC to the torque driver. The HID driver will self-install and prompt you when the process is complete.



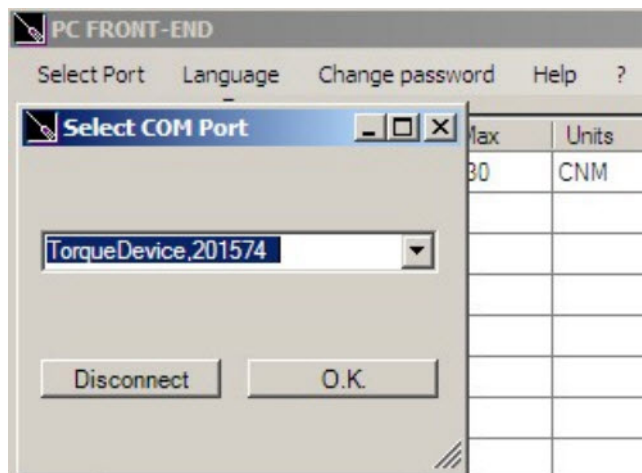
PCFE - ASG Software

Select Port



There will be two options:

- Com Port 1: this will allow you to connect the older type tools using the RS232 cable
- The serial number(s) of the drivers connected



Note: After you configure or view data on the tool and disconnect from PCFE, select Com Port 1 afterwards to close the virtual port.

| PCFE - ASG Software

PCFE Interface Glossary

- **Select Port:** Select communication port you wish to use to communicate with the wrench
- **Current Mode:** Select mode you wish the tool display on start up. Selection will take effect after data is stored using 'store to wrench button'
- **Current Units:** Select the torque units you wish the tool to operate with. Selection will take effect after data is stored using 'store to wrench button'
- **Current Language:** Select the language you wish the tool to operate in. Selection will take effect after data is stored using 'store to wrench button'
- **Tool Span:** The quoted accuracy is 1% of actual reading from 10% to 100% of the actual reading. 'Tool Span' will indicate the 100% limit for this specific driver
- **Period of Calibration:** Set number of days to next calibration or it can be set by number of measurements
- **Calibrated On:** Date of last calibration
- **Activate Calibration:** Activates the calibration option in the tool on-board menu. You must begin calibration before the wrench powers down
- **Reset the Wrench:** Allows tool reset. All calibration data/settings stored in the Driver will be cleared and default calibration values for a calibration span will be programmed. This is not an alternative method for calibration
- **Power Off Wrench:** Allows soft power down of the driver
- **Store to Wrench:** Store all current PC front settings to driver. Driver will automatically power down after store
- **Load from File:** Loads a previously created file containing preset data into the PCFE front preset window (top left)
- **Save to File:** Saves PCFE displayed preset data to file
- **Clear All Presets:** Clears presets from the PCFE presets window
- **To 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 Driver
- **Continuous Upload:** Allows real time communication of measurements to the PCFE. Driver must be connected to the PC

| PCFE - ASG Software

PCFE Interface Glossary (Continued)

- **Upload All:** Uploads & displays all stored driver measurement data in the PCFE data window
- **Clear:** Clears the driver measurement data displayed on the PC
- **Clear Wrench Data:** Clears the driver measurement data displayed on the PCFE and in the driver
- **Unit Conversion:** Allows user to change the units of the displayed measurement data on the PCFE
- **Sort by Preset:** Sort the displayed measurement data and group according to ascending preset numbers.
- **Save as an Excel File:** Save the current displayed measurement data as an excel file. The PCFE measurement data window displays stored wrench measurements showing driver memory location, date and time, torque value.

PCFE Instructions



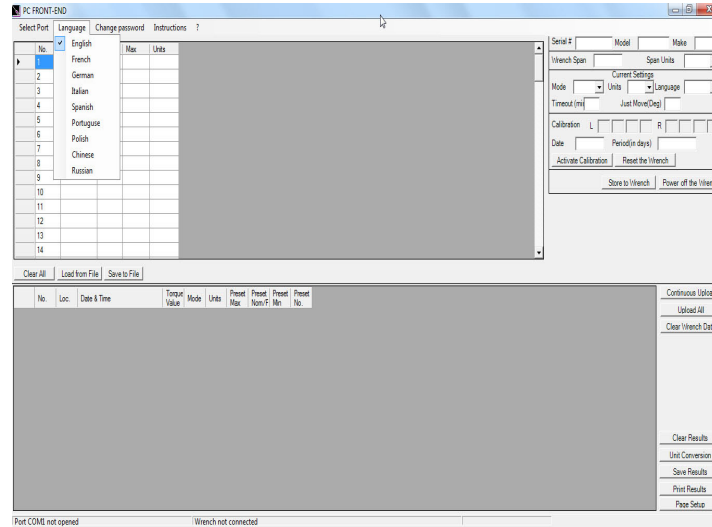
No password is required when starting the PCFE software, click OK when the password entry screen appears.

PCFE - ASG Software

PCFE Instructions (Continued)

Language

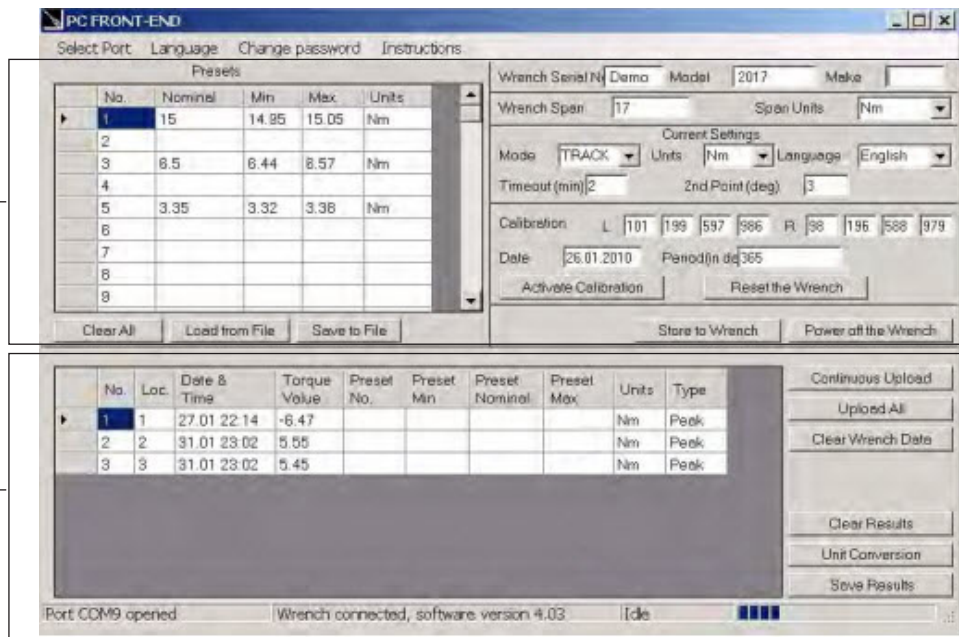
The PCFE languages available include: English, French, German, Italian, Polish, Portuguese, Spanish, Russian and Chinese



PCFE Interface

The top section of the PCFE displays wrench configuration data

The bottom section allows the user to manage the stored wrench data



The right upper half of the PCFE window displays data such as tool serial number, make, model, torque span and units of measurement. The date of calibration and the period of calibration are also shown in this section.

PCFE - ASG Software

PCFE Instructions (Continued)

The screenshot shows the PCFE software interface with the following callouts:

- Serial Number, Model, Make:** Labels pointing to the top input fields.
- Wrench Span and Units:** Callout pointing to the 'Wrench Span' (17) and 'Span Units' (Nm) fields, with text: "change these and tool must be recalibrated".
- Current Settings:** Callout pointing to the 'Mode' (TRACK), 'Units' (Nm), and 'Language' (English) dropdowns, with text: "mode, language, units, power off time".
- Calibration:** Callout pointing to the 'Date' (26.01.2010) and 'Period (in days)' (365) fields, with text: "Date of calibration, calibration co-efficients, duration of calibration".
- Activate Calibration:** Callout pointing to the 'Activate Calibration' button, with text: "Activate Calibration".
- Store to Wrench:** Callout pointing to the 'Store to Wrench' button, with text: "stores any changes the user makes to the wrench current settings".
- Power off the Wrench:** Callout pointing to the 'Power off the Wrench' button.

The left upper section displays the presets stored in the tool - the user can choose to use the PCFE to set the presets or it can be done manually on the tool.

Presets					
No.	Nominal	Min	Max	Units	
1					
2					
3					
4					
5					
6					
7					
8					
8					

The bottom half of the PCFE window displays any stored measurements on the tool. It displays location, number of data on tool, date and time of reading, torque readings, preset data, units of measurement and the mode that was used to take the torque measurement.

| PCFE - ASG Software

PCFE Instructions (Continued)

Set a Preset using the PCFE

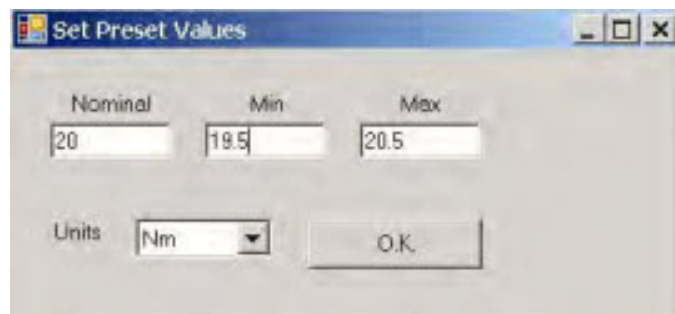
Step 1: Ensure the wrench is connected to the PCFE software selected using 'Select Port'

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

Step 3: When the pop up window appears fill in required fields and press O.K.

Step 4: Select 'Store to Wrench'. Data is written to the tool

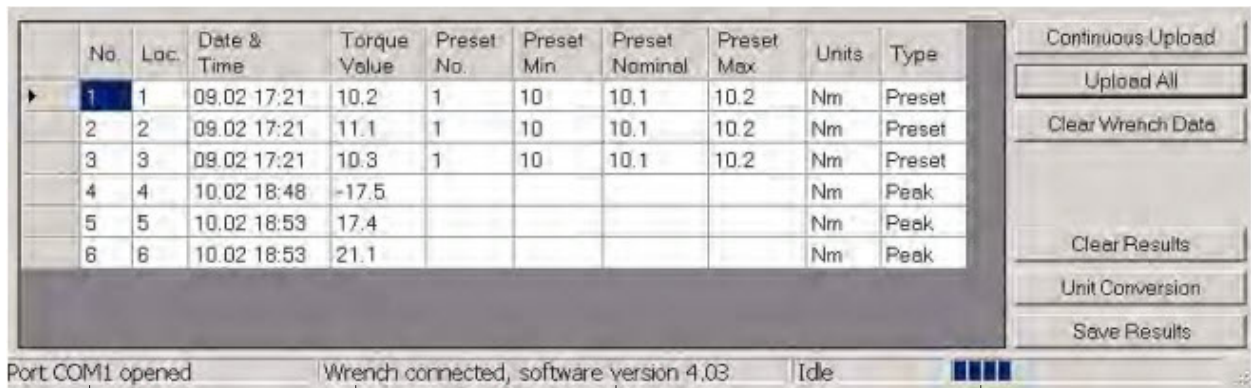
Step 5: Select preset option on the tool and select the required preset



| PCFE - ASG Software

PCFE Instructions (Continued)

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.



Shows Com Port Selected

Shows that the Wrench is Connected

Current Software Version

Indication Bar

Each row will display the following; time and date of torque operation, torque value and units. If it's a treset result then the minimum and maximum tolerances are displayed along with the nominal setting.

The "Mode" column will display the function that was used for the torque operation. In the example you can see Peak and Preset.

Continuous Upload: When the wrench is connected to the PCFE and this is selected, the user can take readings. By pressing confirm on the wrench, the result will be automatically updated to the PCFE

Upload All: Once the tool is connected to the PCFE, selecting this option will upload all the stored measurements of the wrench to the PCFE

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

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

Unit Conversion: Selecting this button allows the user to convert the displayed PCFE readings between N.m, cN.m, lbf.ft, lbf.in, kgf.m and kgf.cm

| Torque Wrench Calibration


Calibration is achieved using 8 measuring points, namely 10%, 20%, 60% and 100% of maximum span in both clockwise and counter-clockwise directions. In Calibration Mode the tool will automatically display these measuring point values initially for the right hand and then for the left hand. All products should be 1% accurate.

- De-stressing wrench implies that the wrench is torqued to its maximum span
- Ensure date & time on tool are correct before calibrating
- Calibration Mode is only accessible through the master and distributor versions of the PCFE Software
- Calibration Mode will not appear on the tool unless activated using the PCFE software
- A certified system with accuracy of 0.25% should ideally be used to calibrate


Step 1: Connect wrench to PCFE software and click the 'Activate Calibration' button

Step 2: Press  on the wrench to scroll to Calibrate Mode

Step 3: Place tool onto calibration unit. The reaction post should contact the center of the handle grip. The wrench would be kept perpendicular to the static torque tester. De-stress to the CW (clockwise) direction

Step 4: Press  to activate Calibrate Mode. The wrench OLED will now display a static reading of 10% of the maximum span of the wrench

Step 5: Apply torque to the tool until the reading on the calibration rig is equal to the reading on the Tool (10% of maximum span)

Step 6: Press  to confirm that the first point of calibration is now set

Step 7: Next, measurement point no. 2 (20% of maximum span) will appear on the Tool OLED display. Repeat step 5 and step 6

Step 8: Next measurement point no. 3 (60% of maximum span) will appear on the Tool OLED display. Repeat step 5 and step 6

Step 9: Now measurement point no. 4 (100% of maximum span) will appear on the wrench OLED display. Repeat step 5 and step 6

Step 10: Repeat step 1 to step 9 for the left hand calibration

Step 11: Once calibration is complete, select track mode on wrench. On the left hand side check wrench accuracy at 20%, 60% and 100% according ISO6789-2003.

Step 12: Now de-stress on right hand side and repeat step 11.

| Torque Wrench Calibration

Gyroscope Calibration

Once activate calibration is selected on the PCFE while a wrench is connected, a new mode 'Gyro-Calibration' will appear on next wrench start-up.

The purpose of this mode is to calibrate the wrench gyroscope while in 2 positions; firstly at a planar zero degrees, and secondly at 180 degrees on the same plane.

This is most accurately achieved using an independent digital encoder and a rig which holds the wrench and allows for rotation and locking in position.

Optional Wireless Technology

- Easy to set-up and use
- Numerous safety features prevent data loss
- To use the Digital Torque Wrench as a wireless torque wrench it should be used together with the wireless master receiver

