



Operating Manual

BreakTorq-Series (Mechanical, Digital & Preset)



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1. Mechanical BreakTorq-Series

1.1. General Information

1.1.1. Ratchet Head Guidelines

- Store wrench and ratchet head in a cool, dry location.
- Oil frequently to prevent ratchet head from becoming stiff and seizing.
- Do not exceed specified torques.
- Do not use external forces on ratchet e.g. a hammer.

1.1.2. Safety Instructions

The following are a set of general guidelines for using and storing the wrench that should be adhered to at all times;

- All torque tools are precision instruments and should be handled with care.
- Do not subject the tool to torque loads in excess of the model range.
- Do not use this tool to loosen fasteners in the counter-clockwise direction.
- Using non-linear extensions will affect the accuracy of the readings.
- The use of torque extensions/multipliers will increase the torque applied.
- Do not operate the tool unless it has been powered on and the display screen can be read clearly.
- Do not drop the tool or subject it to heavy impact blows.
- Ensure the tool is stored in a cool, dry location in order to protect it from damage.
- Adhere to safety instructions.
- Torque should be applied to the centre of the torque wrench handle, with no other force applied to any other part of the tool.

1.1.3. Basic Characteristics

1. Fixed ratchet head. See "1.1 Ratchet Head Guidelines" for more details.
2. Breakpoint.
3. Soft grip handle. Force should always be applied to the centre of the handle in a controlled manner for optimal accuracy and function.
4. Torque break setting.



2. Digital & Preset BreakTorq-Series

1.1. General Information

2.1.1. Product Description

The digital BreakTorq-Series torque wrenches with Bluetooth are a state of the art hand-held device suitable for both torque auditing & torque application. As a precision tool, it is highly accurate as well as highly repeatable. For product portfolio cohesion, the digital BreakTorq-Series torque wrench uses the same Organic LED display, membrane keypad, user interface and PC based data management software as the BlueTorq-Series TrackWrench® range of electronic torque tools. Additionally, training time is kept to a minimum due to the ease of use of the tool itself.

Digital BreakTorq-Series torque wrenches are demonstrated to have a maximum permissible deviation of 1% or better and are both simple to set and calibrate, as well as coming with a fully traceable ISO 6789 certification. The breaking hinge has a repeatability of 4% or better.

The wrench has both visual and audible alarms that signal good or bad torque. Furthermore, there is a visual battery life indicator as well as alarms for preset value approach, fastener overload, range overload and maximum mechanical overload.

2.1.2. Recommended Use

The Digital BreakTorq-Series is specifically designed for use in all settings and applications where accuracy, repeatability combined with complete torque data management and control system are required.

2.1.3. Basic Characteristics

- Accuracy – Right hand side torque = 1% of actual reading.
- Repeatability – Breaking hinge repeatability of 4%.
- Alarms – Preset value approach, range overload, mechanical overload, low battery and memory full.
- Memory Capacity – 2094 values (in non-bluetooth state)
- Battery Life – Sleep Mode: 5.000 hours,
Operational Mode – Up to 16 hours.

2.2. General Guidelines

2.2.1. Changing the Batteries

1. Remove the battery cover underneath the electronics housing.
2. Remove the single protected 18650 Lithium Ion cell and replace with a new cell.
3. Replace the battery cover and push down.
4. Turn on the wrench and check to ensure the date and time are both set correctly.

Note: Only use protected 18650 cells from a verified supplier.

2.2.2. Ratchet Head Guidelines

- Store wrench and ratchet head in a cool, dry location.
- Oil frequently to prevent ratchet head from becoming stiff and seizing.
- Do not exceed specified torques.
- Do not use external forces on ratchet e.g. a hammer.

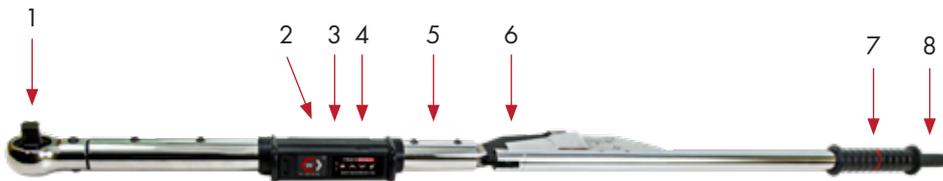
2.2.3. Safety Instructions

The following are a set of general guidelines for using and storing the wrench that should be adhered to at all times;

- All torque tools are precision instruments and should be handled with care.
- Do not subject the tool to torque loads in excess of the model range.
- Do not use this tool to loosen fasteners in the counter-clockwise direction.
- Using non-linear extensions will affect the accuracy of the readings.
- The use of torque extensions will increase the torque applied.
- Do not operate the tool unless it has been powered on and the display screen can be read clearly.
- Do not drop the tool or subject it to heavy impact blows.
- Ensure the tool is stored in a cool, dry location in order to protect it from damage.
- Adhere to safety instructions.
- Torque should be applied to the centre of the torque wrench handle, with no other force applied to any part of the tool.

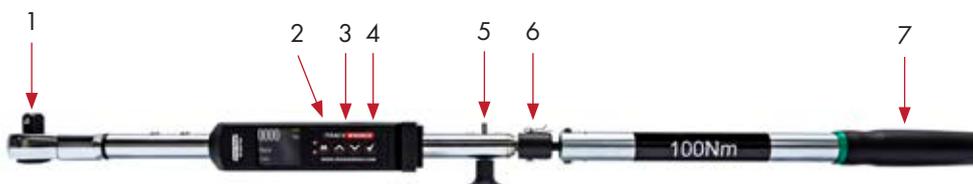
2.2.4. Digital BreakTorq-Series Operation

1. Fixed ratchet head.
2. OLED display.
3. Battery cover (at opposite side to OLED display).
4. Membrane switch for tool navigation.
5. 2 * M6 screws for separation of digital section and mechanical breaking section.
6. Breakpoint.
7. Soft grip handle. Force should always be applied to the centre of the handle in a controlled manner for optimal accuracy and function.
8. Torque break setting.



2.2.5. Preset BreakTorq-Series Operation

1. Fixed ratchet head.
2. OLED display.
3. Battery cover (at opposite side to OLED display).
4. Membrane switch for tool navigation.
5. Lock Pin to change torque handles.
6. Breakpoint.
7. Soft grip handle. Force should always be applied to the centre of the handle in a controlled manner for optimal accuracy and function.



2.2.6. Digital & Preset Operation



Figure 2: Tool Interface Overview

1. Coloured LED warning indicators.
2. Use "M" to scroll through the menu or return to the previous screen.
3. Use the directional arrows to adjust values such as units, torque settings, time, etc.
4. Use "√" to enter mode, confirm setting or save result to memory.

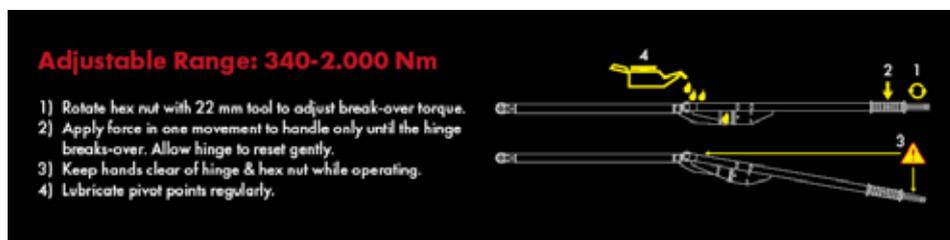


Figure 3: Breaking Torque Adjustment and application of force.

2.3 Modes of Operation

Torque reading start at 5% of maximum capacity with an accuracy of 1% beginning at 10% of maximum capacity (threshold to maximum span). The following are the different modes available with the Digital BreakTorq-Series:

- Languages
- Units
- Date
- Track
- Peak
- Preset
- Set:
- Wheel-Torque
- Recall
- Upload
- Clear
- Comms
- Clear

2.3.1. Language Mode

The languages of operation available to the user are: English, Chinese, French, German, Italian, Polish, Portuguese, Russian & Spanish.

1. Press **M** to scroll to the Language mode.
2. Press **✓** to enter Language mode.
3. Press **↓** **↑** to scroll to desired language.
4. Press **✓** to confirm operation in this language.



Figure 4:
Language Mode

2.3.2. Units Mode

1. Press **M** to scroll to Units mode.
2. Press **✓** to enter Units mode.
3. Press **↓** **↑** to scroll to desired units.
4. Press **✓** to confirm selected units.

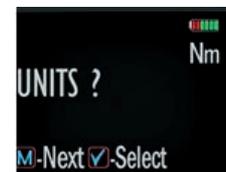


Figure 5:
Units Mode

Note:

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

2.3.3. Date Mode

1. Press **M** to scroll to Date mode.
2. Press **✓** to enter Date mode.
3. Press **↓** **↑** to set the minute and hour.
4. Press **✓** to confirm.
5. Repeat steps 3 & 4 to set the date, month and year.

2.3.4. Track Mode

As torque is applied, the OLED will actively display the applied torque reading from 5-100% of the maximum span of the device. Upon removal of the load, the display will return to zero.

1. Press **M** to scroll to Track mode.
2. Press **✓** to enter Track mode.

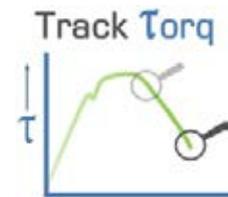


Figure 5:
Track Mode Graph

2.3.5. Peak Mode

In Peak mode, the maximum torque reading will remain on the OLED display when the load is removed as long as the torque loaded is above the 10% of maximum capacity threshold. 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.

1. Press **M** to scroll to Peak mode.
2. Press **✓** to enter Peak mode.
3. Press **✓** to store the peak value recorded if required.

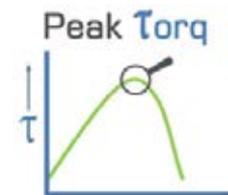


Figure 6:
Peak Mode Graph

2.3.6. Preset Mode

In Preset mode, the maximum torque reading will remain on the OLED display when the load is removed as long as the torque loaded is above the 10% of maximum capacity threshold. Depending on the maximum torque recorded, there are various warning signals activated:

- **Passing Minimum Value** – The green LED on the keypad will flash, and the buzzer will sound intermittently, while the OLED display will change to orange.
- **Passing Nominal Value** – The green LED on the keypad will turn on, and the buzzer will sound continuously, while the OLED display will change to green.
- **Passing Maximum Value** – The red LED will flash continuously, and the buzzer will sound continuously, while the OLED display will change to red.

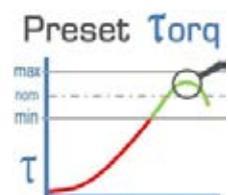


Figure 7:
Preset Mode Graph

1. Press **M** to scroll to Preset mode.
2. Press **✓** to enter Preset mode.
3. Press **↓** **↑** to select your preferred preset number i.e. 1 to 99
(Pro Series Wrenches have 1 configurable preset,
Super & Auditor Series have 99).
4. Press **✓** to operate within this preset parameter.
5. Press **✓** to store the applied torque if required.

2.3.7. Set Mode

This mode allows the user to set limits for the torque or angle, applied. The operator can choose to set values by either percentage or numerical tolerance. During operation the OLED display will be green when approaching the preset tolerance and will change to red if exceeded.

1. Press **M** to scroll to Set mode.
2. Press **✓** to enter Set mode.
3. If the tool is torque-only, skip to step 4. If the tool has angle measuring capabilities there will be three options in Set mode;
 - a. Set Torque.
 - b. Set Torque & Angle (Auditor Series only Mode).
 - c. Just Move Preset (Auditor Series only Mode).

The user should select the most relevant option for their application.

4. Press **↓** **↑** to select set by percentage or set by tolerance.
5. Press **↓** **↑** to scroll to required preset number i.e. 1 to 99.
6. Press **✓** to confirm preset number selected.
7. Press **↓** **↑** to set nominal value and **✓** to confirm.
8. Press **↓** **↑** to set your low value and **✓** to confirm.
9. Press **↓** **↑** to set your high value and **✓** to confirm.
10. Once the parameters have been confirmed the operator can find the configured preset within Preset mode. Use **M** to select Preset mode from the main menu and find the desired preset number.

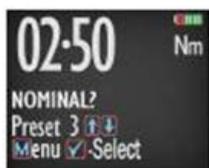


Figure 8:
Nominal Preset



Figure 9:
Low Preset



Figure 10:
High Preset

2.3.8. Wheel-Torque Mode

In Wheel-Torque mode, the maximum torque reading will automatically transfer to a connected device when the recorded torque exceeds the preset minimum value. Depending on the maximum torque recorded, there are various warning signals activated:

- Passing Minimum Value – The green LED on the keypad will flash, and the buzzer will sound intermittently, while the OLED display will change to orange.
- Passing Nominal Value – The green LED on the keypad will turn on, and the buzzer will sound continuously, while the OLED display will change to green.
- Passing Maximum Value – The red LED will flash continuously, and the buzzer will sound continuously, while the OLED display will change to red.

1. Press **M** to scroll to Wheel-Torque mode.
2. The Bluetooth symbol will confirm connection to device.
3. Waiting for download screen will display until a job is received from device.

For connection instruction See manual 'Wheel-Torque Operating Manual'.



Figure 11:
Set & Preset functions

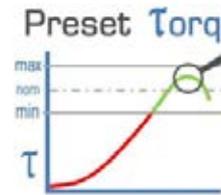


Figure 7:
Preset Mode Graph

2.3.9. Recall Mode

This mode allows the user to view the stored torque 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 **M** to scroll to Recall mode.
2. Press **✓** to enter and view memory locations, results and functions.
3. Press **✓** **↕** to scroll through locations that contain data.

2.3.10. 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 the PC.

1. Press **M** to scroll to Upload mode.
2. Press **✓** to enter Upload mode.
3. Press **✓** to select "From" & **✓** **↕** for the starting point of the results upload.
4. Press **✓** to confirm "From" location.
5. Press **✓** to select "To" & **✓** **↕** for the finishing point of the results upload.
6. Press **✓** to confirm, press **✓** again when asked are you sure.

2.3.11. Comms Mode

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

1. Press **M** to scroll to Comms mode.
2. Press **✓** to enter Comms mode.
3. Press **▼** **▲** to select the method of communication and **✓** to confirm.

Note: For standard communication to the included software program, select "PCFE".

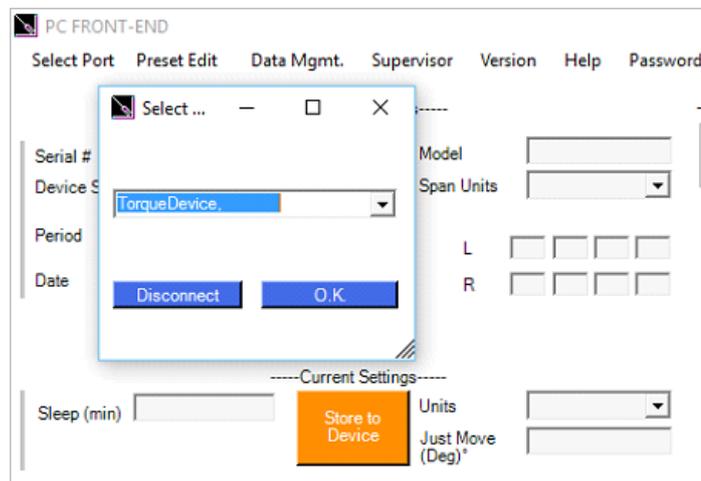


Figure 15: Selecting suitable COM port

2.3.12. Clear Mode

This mode allows the user to clear the stored data from an range of locations. 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.

1. Press **M** to scroll to Clear mode.
2. Press **✓** to enter Clear mode.
3. Press **▼** **▲** to select "From" range to be cleared and press **✓** to confirm.
4. Press **▼** **▲** to select "To" range to be cleared and press **✓** to confirm.
5. Press **✓** to confirm and you will be asked if you are sure.
6. Press **✓** to confirm and that range of data is cleared from the wrench memory.

3. PCFE – PC Software

3.1. Installing the PCFE Software

PCFE – “PC Front End” is the standard software that the wrench communicates with and is included with the tool.

1. Select “Setup.exe” from the USB storage device received with the product.
2. Choose one of the following options based on your requirements;
 - a. Demo PCFE – This will allow the user to test the software without installing it on a PC or laptop.
 - b. Install PCFE.exe – Install the software to the PC or laptop for full functionality.
 - c. Instructions – User Manual
3. Install the PCFE.exe
 - a. During the steps for installation there is a search to ensure the .net framework is present and installs it from the web if required.
 - b. USB drivers are automatically installed, if there are any issues achieving this they can also be manually installed from: C:/program files/PCFE/Front-end/USB drivers.
 - c. Subsequent to installation, the PCFE icon will appear on the desktop. Double click on the icon, the password is “master”.
 - d. At this stage the PCFE window can be resized. Once altered, it will stay as such until modified again.

3.2. Communication with PCFE

1. Connect a USB Cable from PC to the Torque Device. The HID driver will self-install and prompt you when the process is complete (See Figure 1).

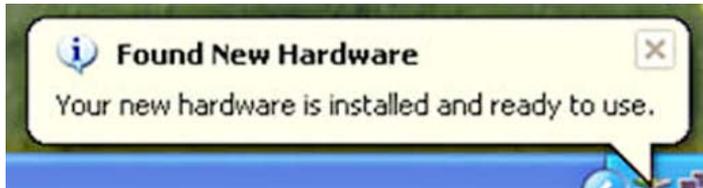


Figure 14: Desktop Notification for Driver Installation

2. When in the “Select Port” menu from the top left of the PCFE, there will be two options:

- i. Com Port 1 – Select this option if you require and have the capability of serial communication.
- ii. Torque Device – This will allow you to connect your Torque Device via USB.

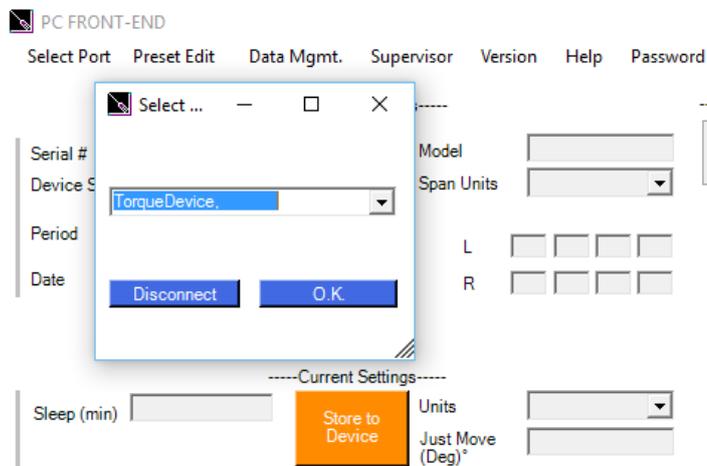


Figure 15: Selecting suitable COM port

3.3. PCFE User Instructions

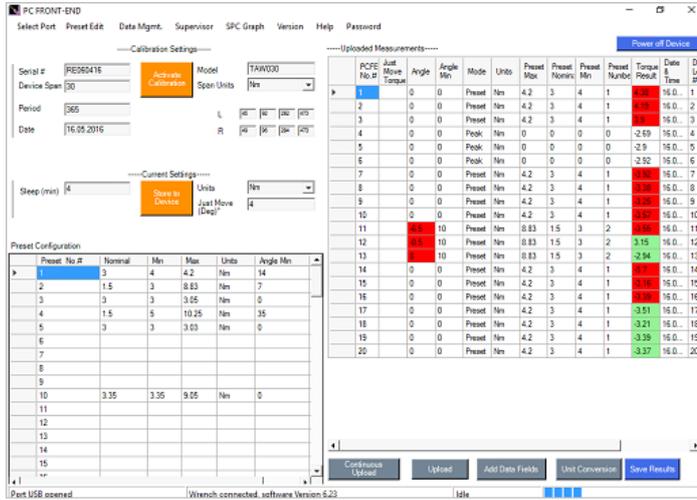


Figure 16: Main PCFE Screen



Figure 17: PCFE Menu Bar

3.3.1. Menu Bar

Figure 17: PCFE Menu Bar

1. Select Port:

Allows the User to connect with the Torque Device (See Figure 2).

2. Preset Edit:

A preset is a set of torque/torque and angle parameters.

- i. Clear all – Delete existing presets from the table, use “Store to Device” save this update to device.
- ii. Load from File – Load presets from a .csv file to the Torque Device.
- iii. Save to File – Export the preset table to a .csv file.

3. Data Mgmt:

- i. Save Results – Save measurement results to a .csv file.
- ii. Print Results – Print measurement results.
- iii. Clear Results – Delete all the results measurement from the table.
- iv. Page Setup – Set print layout for the “Print Results” option.

4. Supervisor:

- i. Clear Product Results – Permanently delete all measurement results from the Torque Device.

- ii. Enable/Disable – Hides all Torque Device modes except for “Preset”.

On next start-up all mode except preset will be enabled/disabled.

- iii. Torque Counter – Counter can be enabled/disabled on compatible products and the counter limits set.
- iv. Reset Product – Perform factory reset on the Torque Device.

Note: This deletes all information on the Torque Device including calibration information.

5. **SPC Graph:** Creates a visual representation of the chosen torque results. Note: This feature is only available when ten or more measurements using the same preset, have been uploaded to the PCFE.
6. **Version:** Shows current version of the PCFE.
7. **Help:** Leads to instruction manuals for PCFE operation.
8. **Password:** Change existing password. Note: Only available when PCFE opened with “master” password.

3.3.2. Calibration Settings

1. **Serial #:** The serial number of the product which can be linked to a calibration certificate.

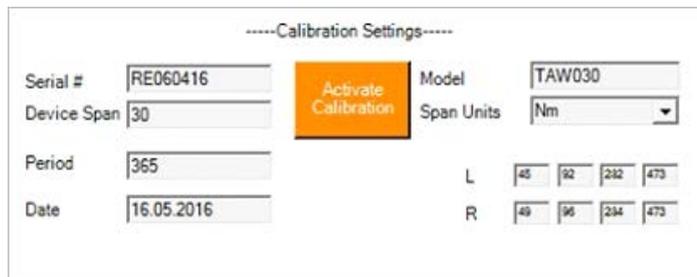


Figure 18: Calibration Settings Screen

2. **Model:** The model number is the default value used but can be changed if required without effecting the calibration of the Torque Device.
3. **Device Span:** The upper limit of the torque range of the Torque Device is shown here.
4. **Span Units:** Shows what units the Torque Device was calibrated in.
5. **Period:** The number of days from the date of calibration until it is recommended that the Torque Device is re-calibrated.
6. **Date:** The date on which the Torque Device was last calibrated.

3.3.3. Current Settings

1. **Sleep:** The time in minutes before the Torque Device will enter



Figure 19: Current Settings

sleep mode if left idle. If the operator applies torque or uses the torque device control buttons the sleep counter is reset. The Torque Device will not enter sleep while connected via USB to PC.

2. **Units:** Current units of measurement (Nm is the default setting).
3. **Just Move (Deg)°:** The default Just Move angle setting, which is the angle at which a snapshot of the torque is taken during the Just Move mode application.

3.3.4. Preset Configuration

Preset No.#	Nominal	Min	Max	Units	Angle Min
1	3.05	3	5.09	Nm	0
2	1.5	3	8.83	Nm	7
3	3	3	3.05	Nm	0
4	1.5	5	10.25	Nm	35
5	3	3	3.03	Nm	0
6					
7					
8					
9					
10	3.35	3.35	9.05	Nm	0
11					
12					
13					
14					
15					

Figure 20: Preset Configuration Screen

The Preset Configuration Screen shows the presets that are stored on the Torque Device. Presets can be configured either in the PCFE or on the Torque Device.

For instructions on how to add a preset using the PCFE, please see the section “Set a Preset using the PCFE”.

3.3.5. Status Bar & Results Table Controls

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



Figure 21: Status Bar & Results Table Controls

3.3.6. Status Bar

1. **Port status:** Displays which port is being used by the Torque Device.
2. **Connection Status:** Displays the current status of the PCFE's connection to a torque device.
3. **Software version:** The current firmware version on the Torque Device.
4. **PCFE Status:** Displays what actions are currently being processed by the PCFE.
5. **Progress Bar:** A visual progress bar, defaults to three bars when connected.

3.3.7. Results Table Controls

1. **Continuous Upload:** If this option is selected and the Torque Device is permanently connected to the PCFE via USB or RS232 cables, the results of the Torque Device will continuously upload to the PCFE as the measurements are taken with the Torque Device.
2. **Upload All:** Once the Torque Device is connected to the PCFE, selecting this option will upload all the Torque Device stored measurements.
3. **Set Data Fields:** Used to add columns to the PCFE results section. These columns contain comments that are applied to all subsequent results.
4. **Unit Conversion:** Converts the units of the existing results in the table to Nm, cNm, kgm, kgfcm, lbft, lbin or ozin.
5. **Save Results:** Save results to a .csv file.
6. **Power off Device:** Turn off and disconnect the Torque Device from the PCFE.

3.3.8. Results Table

PCFE No. #	Device Location #	Date & Time	Preset Number	Preset Min	Preset Max	Torque Result	Preset Nominal	Angle Min	Units	Angle	Mode	Just Move Torque	Preset Max
17	616	17.06 11:33	1	3	5.09	5.26	3.05	0	Nm	0	Preset	0	0
18	617	17.06 11:33	1	3	5.09	-4.65	3.05	0	Nm	0	Preset	0	0
19	618	17.06 11:33	1	3	5.09	7.25	3.05	0	Nm	0	Preset	0	0
20	619	17.06 11:33	1	3	5.09	-3.88	3.05	0	Nm	0	Preset	0	0
21	620	17.06 11:33	1	3	5.09	7.64	3.05	0	Nm	0	Preset	0	0
22	621	23.06 11:09	1	3	5.09	-4.65	3.05	0	Nm	0	Preset	0	0
23	622	23.06 11:11	1	3	5.09	-3.91	3.05	0	Nm	0	Preset	0	0
24	623	23.06 15:43	1	3	5.09	3.63	3.05	0	Nm	0	Preset	0	0
25	624	23.06 15:43	2	3	8.83	4.35	1.5	7	Nm	9	Preset	30	0
26	625	23.06 15:44	3	3	3.05	3.04	3	0	Nm	0	Preset	0	0
27	626	23.06 15:44	1	3	5.09	3.41	3.05	0	Nm	0	Preset	0	0
28	627	23.06 15:48	1	3	5.09	3.4	3.05	0	Nm	0	Preset	0	0
29	628	23.06 15:48	2	3	8.83	3.69	1.5	7	Nm	8	Preset	30	0
30	629	23.06 15:48	3	3	3.05	3.27	3	0	Nm	0	Preset	0	0
31	630	23.06 15:49	3	3	3.05	3.01	3	0	Nm	0	Preset	0	0
32	631	23.06 15:49	1	3	5.09	3.34	3.05	0	Nm	0	Preset	0	0
33	632	23.06 15:49	2	3	8.83	3.63	1.5	7	Nm	8.5	Preset	30	0
34	633	23.06 16:00	1	3	5.09	3.41	3.05	0	Nm	0	Preset	0	0
35	634	23.06 16:01	2	3	8.83	4.43	1.5	7	Nm	9.5	Preset	30	0
36	635	23.06 16:01	3	3	3.05	3.1	3	0	Nm	0	Preset	0	0
37	636	23.06 16:01	3	3	3.05	3.12	3	0	Nm	0	Preset	0	0
38	637	23.06 16:01	3	3	3.05	3.05	3	0	Nm	0	Preset	0	0
39	638	23.06 16:02	4	5	10.25	11.04	1.5	55	Nm	60	Preset	65	0
40	639	23.06 16:05	1	3	5.09	3.13	3.05	0	Nm	0	Preset	0	0
41	640	23.06 16:10	4	5	10.25	7.47	1.5	35	Nm	42.5	Preset	65	0
42	641	23.06 16:10	1	3	5.09	3.71	3.05	0	Nm	0	Preset	0	0
43	642	23.06 16:10	2	3	8.83	8.88	1.5	35	Nm	60	Preset	65	0

Figure 21: Status Bar & Results Table Controls

The results table is only populated when torque results are uploaded to the PCFE. Results that are highlighted green indicate that the torque or angle measurement was “good”, i.e. the torque or angle applied was within the pre-configured tolerances. Conversely, results highlighted red indicate that the torque or angle measurement was “bad”, i.e. the torque or angle applied fell outside the pre-configured tolerances.

3.3.9. SPC Graph

To access SPC graphic functionality there must be at least ten results uploaded to the PCFE. Figure 10 shows the control panel of the SPC Graph feature.

Figure 21: Status Bar & Results Table Controls

- 1. Date Range:** This setting is used to select the range of results that are to be graphed. The minimum and maximum values default to the oldest and latest results respectively. To change these dates, press the button above the appropriate date. These select the desired date from the calendar.
- 2. Preset Select:** Select the preset you wish to graph. Note: To graph a preset, at least 10 measurements for the individual preset must be reset.
- 3. Maximum number of Readings:** A maximum number of results to be graphed for a given preset and date range. If there are 50 results for that particular parameter and 10 readings are selected, the earliest results will be graphed.
- 4. Print Graph:** Print the current graph.
- 5. Graph:** Creates the graph as per the parameters entered in the data fields.

Note: To produce a line graph the results table must be ordered by the "PCFE #" column. If not, the time axis of the graph will be effected and a standard scatter chart will be shown.

Upon graphing of a set of results (Figure 12), the Cpk and standard deviation are automatically calculated, and displayed in the bottom right of the screen (Figure 11).

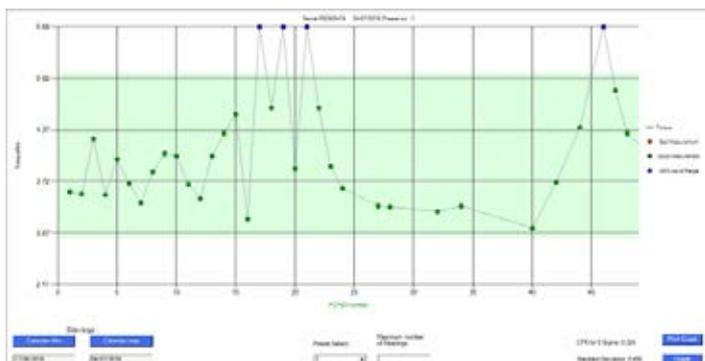
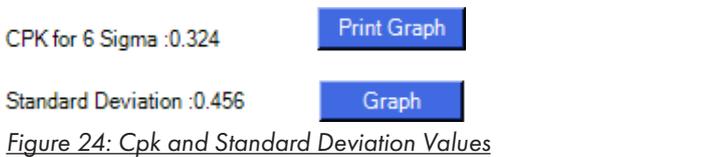


Figure 25: SPC Graph Output of a Torque Only Preset

3.3.10. Set a Preset using the PCFE

1. Ensure the Torque Device is connected to the PCFE software selected using "Select Port" (Figure 2).
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 "O.K.".
4. Select 'Store to Torque Device'. The data is then written to the Torque Device.

Notes:

- Some series of torque device only have the capability for one preset to be configured.
- Torque or torque and angle parameters can be set product dependent.

Torque		
Nominal	Min	Max
3	3	3.05

Torque & Angle				
Tref	TMin	TMax	AngleMin	AngleMax

Units: Nm

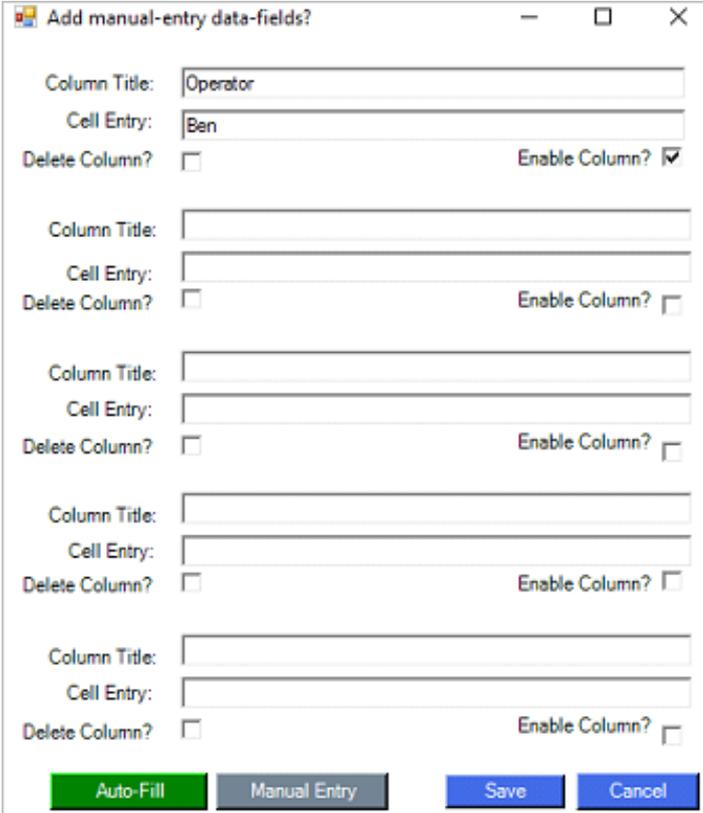
O.K. Delete

Figure 26: Setting Presets via the PCFE

3.3.11. Add a Data Field

1. Select the "Add Data Fields" button on the bottom right of the main PCFE window.
2. Enter column title and select either "Auto-Fill" or "Manual Entry" button. If "Auto-Fill" button is selected then the value entered in "Cell Entry" will be set as default.
3. Hit the save button and the column will be added to the results table on the far right.

Note: If enable column is not selected the column will not appear at all in the PCFE.



The screenshot shows a dialog box titled "Add manual-entry data-fields?". It contains five rows of input fields. The first row has "Column Title" with the value "Operator" and "Cell Entry" with the value "Ben". Below each row are "Delete Column?" and "Enable Column?" checkboxes. The "Enable Column?" checkbox for the first row is checked. At the bottom of the dialog are four buttons: "Auto-Fill" (green), "Manual Entry" (grey), "Save" (blue), and "Cancel" (blue).

Figure 26:

Setting Presets via the PCFE

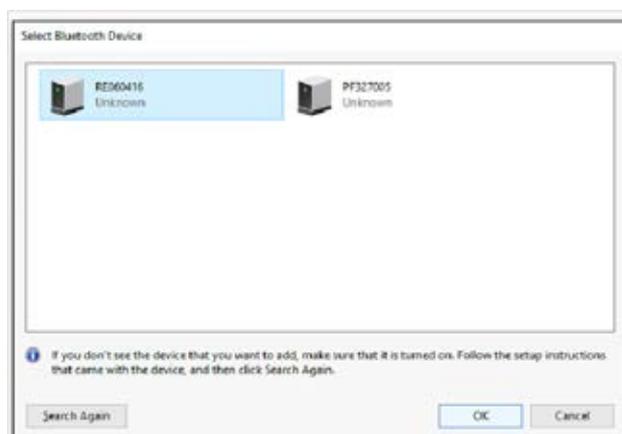
4. Wheel-Torque Software - PC Software

4.1. Installing the Wheel-Torque Software

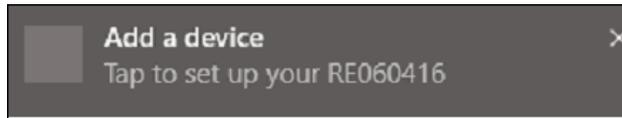
- a. To install Wheel-Torque, run "Wheel-Torque Installer.exe" and follow the on screen prompts.
- b. "Wheel-Torque Installer.exe" is configured to automatically install all necessary dependencies. This may take a few minutes.
- c. Once installation has been completed, a desktop shortcut will be created.

4.2. Connect to a Torque Device

- a. Open Wheel-Torque Launcher.
- b. Enter Operator ID 'administrator' and Password 'admin'.
- c. Ensure Bluetooth is available and active on the computer.
- d. Before connecting the software to the torque device the torque device should be powered on and Wheel-Torque mode mode should be active.
- e. The Bluetooth identification number of the Torque Device will be shown on the OLED screen.
- f. Select "Connect" tab from the Wheel-Torque launcher page.
- g. The torque device should become visible within 1-2 minutes. (This is the initial device discovery, subsequent pairing is much faster)
- h. Select the relevant Bluetooth identification number from available options.
- i. Click on the "OK" button.



- j. Click on the "Add a device" pop-up.



- k. Enter the password "1234"



4.2. Communication with PCFE

4.2.1. Connect with Bluetooth

1. Press M to operate the wrench.
2. Press M to scroll through the menu, select Comms and confirm with $\sqrt{\quad}$.

You will find the following options:

- Binary
- ASCII
- PCFE should be highlighted in green (if not press $\sqrt{\quad}$, select PCFE and confirm with $\sqrt{\quad}$).

3. Make sure that Bluetooth is switched on Press M to scroll through the menu, select the M-Torque function and confirm with $\sqrt{\quad}$. In the right-hand bottom corner you will find Bluetooth icon with red line.
4. Go to the Windows icon on the left bottom screen and choose Settings.
5. Choose Devices in the settings screen.
6. Press + to add a Bluetooth device and select the Bluetooth icon. Make sure your wrench is switched on. Please note: Your wrench might be mentioned as a unknown device.
7. Select wrench and use the following pairing code:
1234.
8. The wrench is now paired.

4.3. Wheel-Torque

The Wheel-Torque user-interface has been designed to allow for full client traceability of the wheel-nut tightening process. The operator can add a vehicle by Vin number and registration number, he can prepare the specific test settings such as stud configuration and torque settings and can create a template for axle groups specific to the vehicle. These configurations allow the operator to capture the actual tightening torque by date and time but also critically this enables the association of these torque results with a specific stud, on the actual wheel position and to a specific vehicle VIN number.

The association of the torque results with vehicle mileage provides further opportunity for the operator to follow best practices for torque maintenance and re-torque procedures according to internally or externally created best practices.

This version of the Wheel-Torque software includes a database designed to run locally on one computer.

4.3.1. Wheel Torque operation

- i. Connect to the desired Torque Device as per Section 2 above 'Connect to a Torque Device'.
- ii. Within the Wheel-Torque Launcher, click on the 'WT' icon.
- iii. The application homepage will open, as shown below.

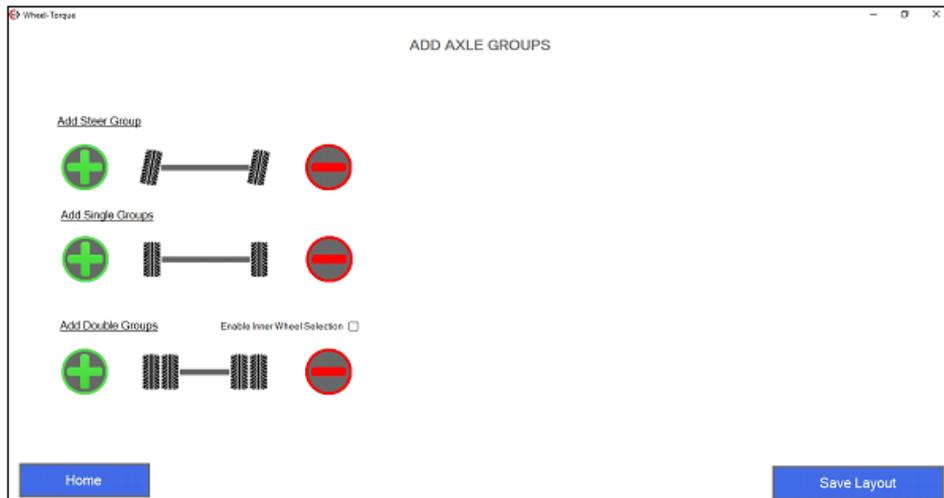


.3.2.Adding a Vehicle

- i. To add a new vehicle to the database, click on the 'Add new vehicle' Icon on the Homepage.
- ii. On the subsequent "Add vehicle to database" page, the operator can add specific details such as Registration number, VIN number, axle groups, stud configuration and torque settings which are specific to this vehicle.

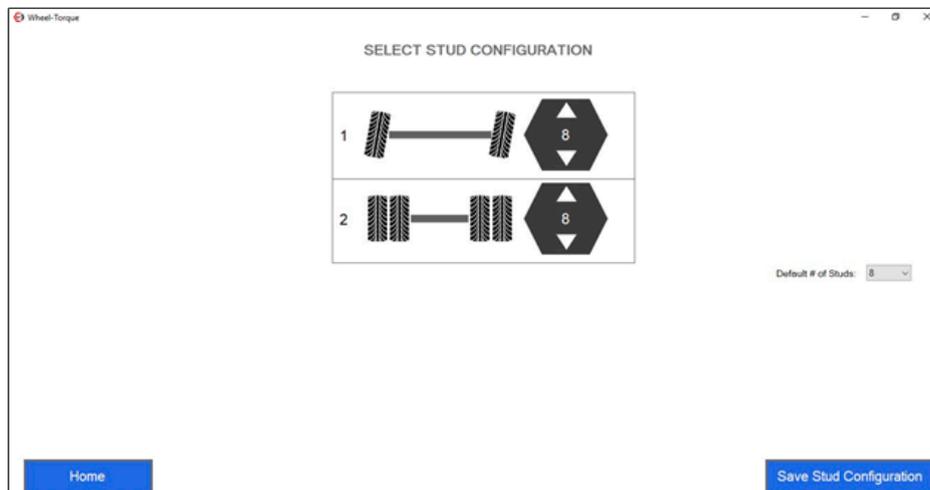


- iii. The vehicle will be searchable via the 'Vin #' and therefore this field is critical. The "Registration #" must also be completed however text such as 'N/A' is acceptable where there is no Registration number.
- iv. To create the vehicle layout, select 'Configure Layout' Icon from the 'Add vehicle to database' page. The "Configure Layout" window will open as shown below.
 - i. To add a single wheel axle groups press the green addition symbol on the left of the vehicle graphic.
 - ii. To add double wheel axle groups press the green addition symbol on the right hand side of the screen.

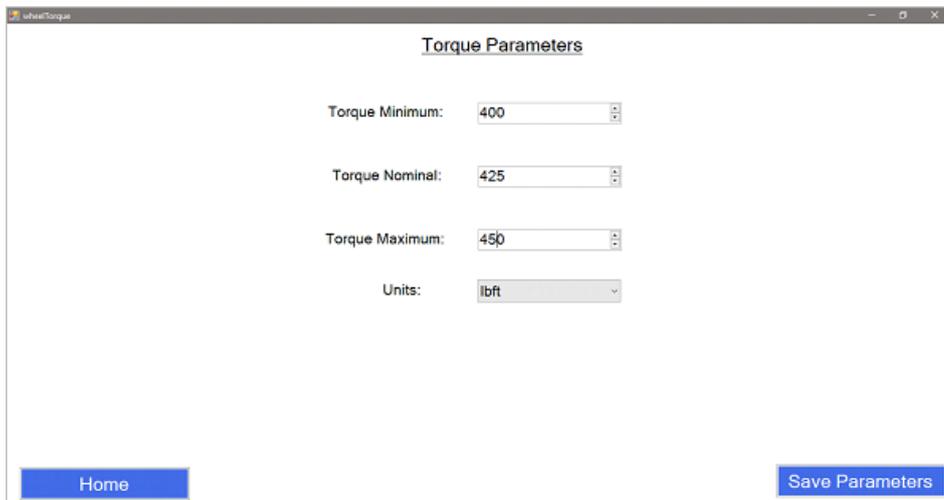


Note: Up to 25 axles can be added to one layout.

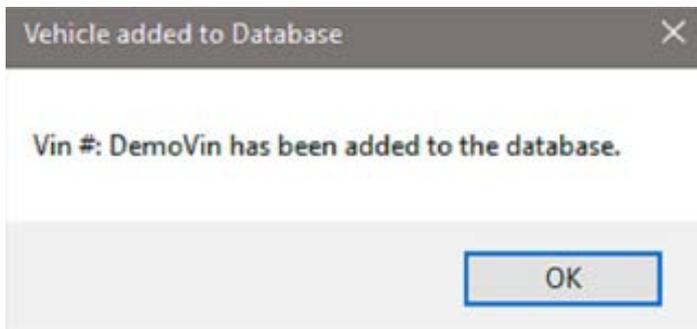
- v. To set the number of studs per wheel click on the 'Configuration Studs' icon of the 'Add vehicle to database' page.
- i. Select the appropriate number of studs per axle group using the up or down arrows and select 'Save stud configuration'.



- vi. To set the torque parameters for the wheels select the 'Configure Torque' icon on the 'Add vehicle to database' page.
 - i. Edit the available fields for torque minimum, torque maximum, torque nominal and unit's as required. For an example see below. Note, the default units on the Torque Device should be changed on device start-up.
 - ii. Select "Save parameters" to proceed.



- vii. Once all fields and options of the 'Add vehicle to database' page have been configured, press the 'save to database' button. A pop-up similar to the image shown below will appear
- viii. Click ok in the pop-up window.
- ix. The operator can now choose to enter the details for another vehicle or return to the Homepage by pressing the Home button.



- x. To update the parameters of an existing vehicle type the same VIN and registration numbers into the fields and enter the updated parameters. This will archive the older parameters and associated results to "xxxxxx-old".

4.3.3 Load Vehicle & Wheel tightening

From the Home window the user can load a previously saved VIN # via the VIN number field.

1. Connect to the wrench as described in the "Connect to a Tool" section above.
2. While at the Home page, select the desired VIN by typing or selecting from the dropdown.
3. Enter the current mileage of the vehicle. (If this mileage has been entered previously the user will be asked to confirm if they wish to continue the previous session.)
4. Click the "load vehicle" button.
5. Select the wheel that needs to be tightened & click on the "Run test" button.
6. The Wheel tightening page will open. On a new wheel, when the wrench is connected and in Wheel-Torque mode the first job will auto-send to the Torque Device. Proceed to the indicated fastener and tighten it. (Should a job not auto-send to the device select the 'Start Job' button in the centre of the wheel image.)
7. Follow the on-screen steps until the wheel is complete.
8. To view current results on wheels press the "view report" button.

Upon wheel completion a red X or green tick will appear to indicate if the wheel has been tightened full and correctly.

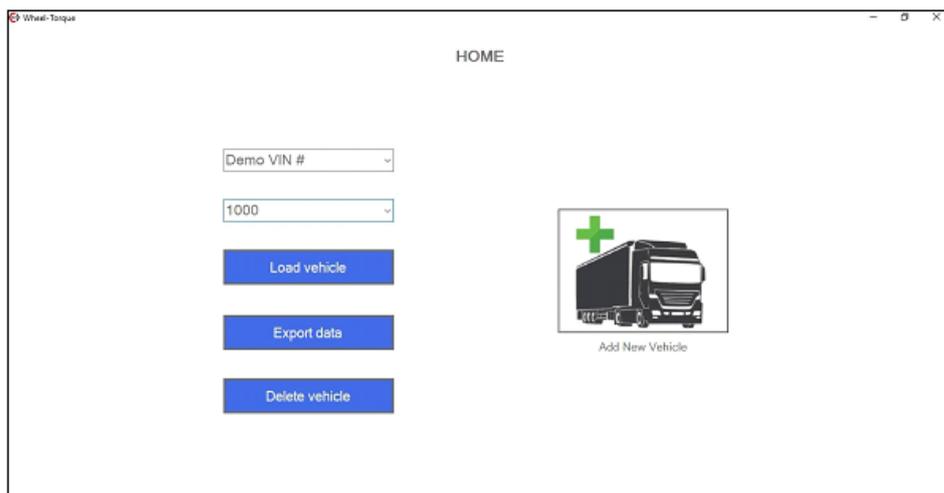


9. If the user aborts a wheel tightening sequence the wheel will be marked incomplete on the wheel select screen with an orange outline.
10. To begin tightening a new wheel Click the Wheel position button and choose desired wheel position.
11. When tightening session is complete press the Home button.

4.3.4. Viewing previous results

Previous results for a vehicle can be accessed as follows;

1. On the homepage select the VIN of the vehicle, to reload a previous session enter the mileage when the session took place.
2. Press the 'Export Data' button to view the available reports at that mileage for the vehicle.



5. Warranty

TrackWrench® is an independent product group within RAD Torque Systems B.V.. Therefore, all TrackWrench® products fall under the Terms and Conditions of RAD Torque Systems B.V..

5.1. New tool warranty

Any new tool branded with the RAD name and purchased from RAD Torque Systems B.V., or through one of its authorized distributors or agents, is warranted to the original purchaser against defects in materials and workmanship for a period of twelve (12) month from the date of delivery to the end user. This guarantee is valid until fifteen (15) months after the original calibration date.

Furthermore, the warranty conditions determine that no warranty applies if:

1. The defect, wholly or partly, is due to unusual, inappropriate, improper or careless use of the product;
2. The defect, wholly or partly, is due to normal wear and tear or lack of proper maintenance;
3. The defect, wholly or partly, is due to installation, assembly, modification and / or repair by the customer or by third parties;
4. The product is altered, modified, used or processed;
5. The product is transferred to a third party;
6. RAD Torque Systems B.V. has obtained the product, wholly or partly, from a third party, and RAD Torque Systems B.V. can not claim compensation under warranty;
7. RAD Torque Systems B.V. in manufacturing of the product raw materials, and suchlike has used those on the instructions of the customer;
8. The product has a small deviation in it's quality, finishing, size, composition and suchlike, which is not unusual in the industry or if the defect was technically unavoidable;
9. The customer has not fulfilled all obligations under the agreement promptly and correctly towards RAD Torque Systems B.V..

5.2. Repaired tool warranty

After the warranty has expired a three (3) month warranty applies to the original purchaser against defective in material or workmanship or both from the date of repair. To qualify for the above mentioned warranties, written notice to RAD Torque Systems B.V. must be given immediately upon discovery of such defect, at which time RAD Torque Systems B.V.. will issue an authorization to return the tool. Freight costs must be paid in advance. When returning a tool, the reaction arm/s being used with the tool must also be returned.

For the latest warranty terms, please see our sales conditions on our website www.trackwrench.com.

Distributed by:

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