



TABLE OF CONTENTS

TABLE OF CONTENTS 1

MANUAL REVISION HISTORY 2

IMPORTANT SAFETY NOTICE..... 3

 General Power Tool Safety Warnings 3

IMPORTANT BATTERY SAFETY NOTICE 5

1.0 General Information 6

 1.1 Receiving and Inspection..... 6

 1.2 Specifications 6

 1.2.1 Model Specifications..... 6

 1.2.2 Charging Specifications 7

 1.2.3 Environmental Specifications 7

2.0 Battery Usage and Charging 7

 2.1 Battery Safety Warnings and Guidelines 7

 2.2 Battery Charging and Storage..... 7

 2.3 Battery Removal and Replacement..... 8

3.0 RAD Transducer Assembly 8

4.0 General Operation 9

 4.1 Preparing for Use..... 9

 4.2 Sleep/Wake 9

 4.3 Measurement Method 10

 4.4 Installation 10

 4.5 Operation with Target Mode Enabled 11

 4.6 Operation with Target Mode Disabled 12

5.0 PC Connectivity 12

 5.1 Software Installation & PC Requirements 13

 5.2 Connecting the RAD Transducer to a PC..... 13

 5.3 Downloading all Data Logs 14

 5.4 Deleting (Closing) Data Logs 14

 5.5 Exporting Data 15

6.0 Transducer Configuration 16

 6.1 Tool Setup..... 17

 6.1.1 Date and Time 18

 6.1.2 Measurement Units..... 18

 6.1.3 Target Tolerance 19

 6.1.4 Tool Uptime 19

 6.1.5 Set Points 19

 6.1.6 Operating Modes 19

7.0 Software Functions 21

 7.1 Live Graphing 21

 7.2 Torque View 23

8.0 Troubleshooting..... 24

 8.1 Problem Diagnosis 24

 8.1.1 Screen is Blank..... 24

 8.1.2 Display Reads "Charge Required" 24

 8.1.3 Display Reads "Battery Low" 25

 8.1.4 Display Reads "Logs Full" 25

 8.1.5 Display Shows "Ready" or "Target" but doesn't update Torque Cycle... 25

 8.1.6 Display Shows "Unload" 25

 8.1.7 Battery Does Not Hold a Charge..... 25

 8.1.8 The RAD Transducer Doesn't Connect to a Computer 25

9.0 Contact Us 26



MANUAL REVISION HISTORY

Revision **2016.05.10**

- Initial Manual Release

RAD Transducer System – Original Instructions



IMPORTANT SAFETY NOTICE

WARNING!



READ ALL SAFETY WARNINGS AND ALL INSTRUCTIONS. FAILURE TO FOLLOW THE WARNINGS AND INSTRUCTIONS MAY RESULT IN ELECTRIC SHOCK, FIRE, AND/OR SERIOUS INJURY.

NEW WORLD TECHNOLOGIES INCORPORATED IS NOT RESPONSIBLE FOR ANY SUCH INJURY.

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE.

General Power Tool Safety Warnings

Do not use the RAD Transducer before reading and understanding this User Manual and the Safety Notices displayed on the RAD Transducer and throughout this manual.

Work Area Safety

- a. Keep work area clean and well lit. Cluttered or dark areas invite accidents.
- b. Do not operate the tool in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust. The tool may create sparks which may ignite the dust or fumes.
- c. Keep children and bystanders away while operating the tool. Distractions can cause you to lose control.

Electrical Safety

Electrical Shock can cause serious or fatal injury.

- a. The power plug must match the outlet. Never modify the plug in any way. Unmodified plugs and matching outlets will reduce the risk of electric shock.
- b. Avoid body contact with earthed or grounded surfaces such as pipes, radiators, ranges, or refrigerators. There is an increased risk of electric shock if your body is earthed or grounded.
- c. Do not expose the tool to rain or wet conditions. Water entering the tool will increase the risk of electric shock.
- d. Do not abuse the power or communications cords. Never use the cords to carry, pull, or unplug the tool. Keep the cords away from heat, oil, sharp edges, and moving parts. Damaged or entangled cords increase the risk of electric shock.

Personal Safety

- a. Stay alert, watch what you are doing, and use common sense when operating the tool. Do not use the tool while you are tired or under the influence of drugs, alcohol, or medication. A moment of inattention while operating the tool may result in serious personal injury.
- b. Use personal protective equipment. Always wear eye protection. Protective equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.
- c. Keep all body parts clear of moving parts and the reaction contact point.
- d. Remove any adjusting key or wrench before turning the power tool on. A wrench or a key left attached to a rotating part of the tool may result in personal injury.
- e. Do not overreach. Keep proper footing and balance at all times. This enables better control of the power tool in unexpected situations.
- f. Dress properly. Do not wear loose clothing or jewellery. Keep your hair, clothing, and gloves away from moving parts. Loose clothes, jewellery, or long hair can be caught in moving parts.



- g. If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used. Using dust collection can reduce dust-related hazards.

Power Tool Use and Care

- a. Do not force the power tool. Use the correct tool for your application. The correct tool will do the job better and safer at the rate for which it was designed.
- b. Do not use the power tool if the switch does not turn it off or on. Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
- c. Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool. Power tools are dangerous in the hands of untrained users.
- d. Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the tool repaired before use. Many accidents are caused by poorly maintained power tools.
- e. Use the power tool and accessories in accordance with these instructions, taking into account the working conditions and the work to be performed. Use of the power tool for operations different from those intended could result in a hazardous situation.

The intended use of the RAD Transducer is for commercial and industrial bolting applications.

Service

- a. Do not disassemble or attempt to repair the RAD Transducer; doing so will void warranty. If breakdown, malfunction, or damage occurs and the RAD Transducer fails to operate correctly, contact New World Technologies Inc. Technical Support (refer to Section 9.0 – Contact Us).
- b. Have your power tool serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the power tool is maintained.

CAUTION!



Only qualified personnel with training in the safe operation of torque tooling and the RAD Transducer should attempt the installation, operation, and diagnosis of the RAD Transducer. The RAD Transducer may be used in conjunction with tools connected to high voltage power and with rotating external parts. Improper training and use can cause serious or fatal injury.

The RAD Transducer should only be used if environmental storage and operation specifications have been met. Refer to Section 1.2.3 – Environmental Specifications.

The RAD Transducer has been calibrated by a qualified Calibration Technician. Calibration must be done by a qualified Calibration Technician. Improper calibration can cause damage to the Tool.

Never exceed the Maximum Torque of the RAD Transducer. Failure to comply will result in void warranty.

New World Technologies Inc, its distributors, and its retailers assume no liability for failure to comply with these warnings and safety guidelines.

The installer of this equipment is responsible for complying with Federal, NEC (National Electrical Code), or equivalent, and Local Guidelines and Application Codes that govern protection, earthing/grounding, disconnects, and other current protection for electrical equipment for use in indoor or outdoor applications.

By purchasing this tool system and battery, the buyer assumes all risks associated with this product. If you do not agree with these conditions, refrain from using the tool.



IMPORTANT BATTERY SAFETY NOTICE

WARNING!



Do not operate the tool or charge the battery before reading the safety instructions and warnings detailed in this manual. If breakdown, malfunction, or damage occurs, DO NOT attempt to repair; contact New World Technologies Inc. or your RAD distributor immediately.

- Lithium Polymer (LiPo) batteries are volatile. Failure to read and follow these instructions may result in fire, personal injury and/or damage to property if the battery is charged or used improperly.
- New World Technologies Inc, its distributors, and retailers assume no liability for failures in compliance with these warnings and safety guidelines.
- By purchasing this tool system and battery, the buyer assumes all risks associated with this product. If you do not agree with these conditions, please do not use the tool and return the tool and accessories immediately.



1.0 General Information

1.1 Receiving and Inspection

The RAD Transducer System is shipped with the following:

1. RAD Transducer (Figure 1.1-1) (includes internal rechargeable LiPo battery)
2. Tablet computer with Torque Transducer Software installed (optional)
3. USB Charging/Data Cable
4. USB Charger
5. Factory Calibration Certificate
6. User Manual



Figure 1.1-1: RAD Transducer

Upon receiving your RAD Transducer System, please check the following:

1. Check the shipping packaging condition and immediately report any damage to the carrier that delivered the RAD Transducer System.
2. Remove the RAD Transducer and accessories from the shipping packaging and ensure that you have each of the items listed above.
3. Verify the RAD Transducer Model you received is the same as your purchase order specifies.
4. If the RAD Transducer is to be stored prior to use, ensure that it is stored in a location that conforms to the storage temperature and humidity specifications outlined in Section 1.2 - Specifications.

1.2 Specifications

Please ensure that all specifications below are observed when using or storing the RAD Transducer.

1.2.1 Model Specifications

Model	Torque Range (Foot-Pounds)	Torque Range (Newton-Metres)
RAD 1.5k Transducer	75 – 1500	102 – 2034
RAD 3.5k Transducer	175 – 3500	237 – 4746
RAD 7k Transducer	350 – 7000	475 – 9492

Table 1.2.1: Model Specifications



1.2.2 Charging Specifications

	Units	240 mAh Battery
Charge Time	Hours	Approx. 1
Storage Time (Must be fully Charged)	Months	3-4

Table 1.2.2: Charging Specifications

1.2.3 Environmental Specifications

	All Models	
Ambient Operating Temperature Range	°C	°F
Optimum Battery Life	5 to 35	41 to 95
Absolute Maximum	1 to 60	34 to 140
Ambient Charging Temperature Range	°C	°F
Temperature While Charging	0 to 45	32 to 113
Storage Temperature Range	°C	°F
Optimum Battery Life	-20 to 45	-4 to 113
Storage More than 3 Months	0 to 30	32 to 86
Humidity	10% to 90% non-condensing	

Table 1.2.3: Environmental Specifications

2.0 Battery Usage and Charging

This section provides instructions for safe usage and charging of the RAD Transducer internal Lithium Polymer (LiPo) battery.

WARNING!



Do not operate the tool or charge the batteries before reading the safety instructions and warnings detailed in this manual. If breakdown, malfunction or damage occurs, DO NOT attempt to repair; contact New World Technologies Inc. or your local distributor immediately.

Lithium Polymer (LiPo) batteries are volatile. Failure to read and follow these instructions may result in fire, personal injury and/or damage to property if charged or used improperly.

2.1 Battery Safety Warnings and Guidelines

The RAD Transducer is assembled, calibrated, and shipped with a rechargeable Lithium Polymer (LiPo) battery.

The RAD Transducer battery is not fully charged when you receive it; the battery may be approximately 50% charged.

- Use only the New World Technologies Inc. supplied USB charger. Do not use any other Lithium, NiCd, or NiMh charger. Failure to comply may cause overheating or fire, which may result in personal injury and/or property damage.
- Never charge the tool unattended. When charging LiPo batteries you should monitor the charging process for any risks or problems that may occur.
- Charge in an isolated area, away from flammable materials.
- Let the RAD Transducer and battery regulate to the recommended ambient temperature before charging.
- If there is any sign of damage to the charger or charging cable, do not attempt to charge the battery. Unplug the charger immediately.
- If there is any sign of damage to the tool housing or to the battery pack, do not attempt to charge.
- If there is any sign of damage to the battery pack, or the battery pack is leaking, do not attempt to charge or make direct contact. If battery fluid comes into direct contact with skin or eyes, flush immediately with clean water and contact a physician.

2.2 Battery Charging and Storage

Battery life and charge capacity will be greatly extended by observing the operating, charging and storage temperature ranges stated in Section 1.2 - Specifications.



To charge the battery, plug the supplied USB charging/data cable into the Transducer's Micro USB port and a computer or the supplied USB wall charger.

Note: When the Transducer is plugged into a computer, you will be able to transmit information between the computer and the Transducer while it is charging.

Depending on age, ambient operating conditions, and care, a fully charged battery should have a stand-by life of 1-2 weeks.

Depending on the above mentioned factors, a fully charged battery should have an operation life of several thousand torque cycles.

2.3 Battery Removal and Replacement

If all tool and battery guidelines are followed, the battery life should exceed the normal re-calibration interval of the RAD Transducer. If the battery life seems exceedingly low or has deteriorated over time, it may be replaced by New World Technologies Inc. or an Authorized Service Center and may only be replaced with a NWT approved battery.

You should not replace the battery at any time without the approval of New World Technologies Inc.

3.0 RAD Transducer Assembly

The RAD Transducer is a battery powered strain-gauged torque transducer for precision torque monitoring and data logging of torque procedures.

The RAD Transducer assembly is comprised of the following (refer to Figure 3-1):

1. Screen – Displays Battery Charge, Mode, Status, and Measured Torque.
2. Keypad – For wake-up and option selection.
3. Charging/Comms Port – Used with the supplied USB Charger/Comms Cable to connect the RAD Transducer to a PC to charge the internal Lithium Polymer battery, view torque information, set up device configuration, or download Data Logs.
4. Reset Button – Located near the back of the RAD Transducer; the Reset Button is used to power-off and restart the RAD Transducer. It can be pressed with a 1.5mm metric Allen Key or an object of a similar size.

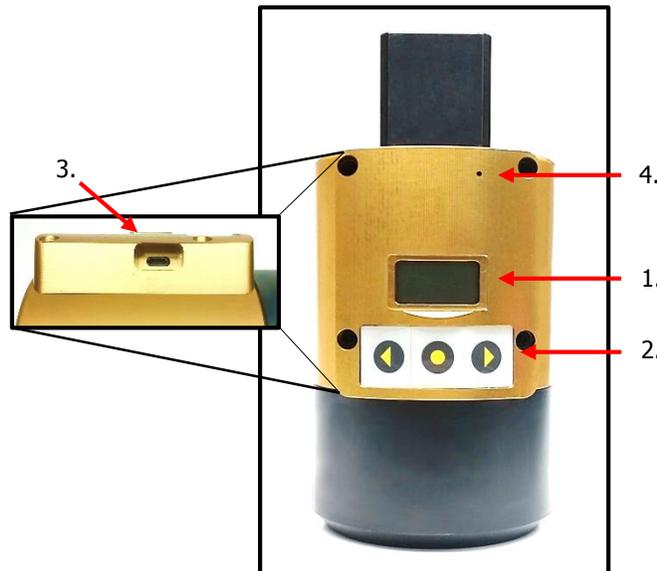


Figure 3-1: RAD Transducer Assembly



4.0 General Operation

The RAD Transducer must be properly selected to fit the appropriate Calibration Stand and Joint system. All tools to be calibrated or verified using the RAD Transducer must not exceed the Maximum Rated Torque of the Transducer. Refer to Section 1.2.1 – Model Specifications for the torque ranges of each model.

WARNING!

Read, understand, and follow all Safety Instructions, Warnings, and Cautions provided in the User Manual.

CAUTION!



Make sure the Transducer is fitted properly to the Joint and the Calibration Stand before operating a torque tool with the Transducer.

Keep your body parts clear of the Transducer and Calibration Stand during operation.

Always support the torque tool during use, while ensuring body parts are clear of any rotating parts and pinch points. The torque tool must be supported at all times in order to prevent unexpected release in the event of joint or component failure.

The LCD screen is protected by a clear plastic cover; however, the display is susceptible to mechanical shock which may result in damage and failure. Handle the RAD Transducer with care to protect it from impact.

The performance of the display may degrade when the temperature and humidity are outside of the specified ranges (see Section 1.2 – Specifications); avoid such conditions during use and storage.

4.1 Preparing for Use

To begin using the RAD Transducer for torque operations:

1. If the Transducer is in Sleep Mode, press the centre button to wake it up, then confirm that the Transducer is unloaded by pressing the centre button again (refer to Section 4.2 – Sleep/Wake).
2. Check that the Transducer's battery charge is sufficient for operations; if not, charge the device (see Section 2 – Battery Usage and Charging).
3. Prior to first use, configure the device as detailed in Section 6 – Transducer Configuration.
4. Set the Measurement Method. Refer to Section 4.3 – Measurement Method for more information.
5. Install the RAD Transducer in the Calibration Stand (see Section 4.4 – Installation).
6. When the RAD Transducer LCD screen shows "READY," the Transducer is ready to operate.

4.2 Sleep/Wake

To conserve battery power, the RAD Transducer will go to sleep after 10 minutes of inactivity when it is unplugged. This time limit can be modified (refer to Section 6.1.4 – Tool Uptime).

Note: While the device is in Sleep Mode, the screen is blank.

To wake the RAD Transducer from sleep:

1. Press the centre button.
2. When the display reads "Unload," ensure that there is no torque or loading force applied to the Transducer, then press the centre button.
3. The display should read "READY" and show the selected torque units and the measurement method.
4. If the LCD display does not turn on when the centre button is pressed, check that the battery has been charged. (Refer to Section 2 – Battery Usage and Charging).
5. If the display reads "Charge Required," plug in the Transducer to charge the battery.
6. If the Transducer still does not turn on, refer to Section 8.0 – Troubleshooting.



4.3 Measurement Method

The Measurement Method set in the Transducer will determine what values are displayed during or after a torque cycle. The Measurement Method options are Peak Mode or Track Mode. Both are described in detail below.

To select the desired Measurement Method:

- Press the Right Arrow button on the RAD Transducer to cycle through the menu options.
- When the desired Measurement Method is displayed, press the centre button.

Peak Mode: The Transducer will record the maximum torque of a torque cycle. The LCD will display the Peak Torque for 1 minute or until you start another torque cycle.

Note: The tool may need to reverse slightly before the Peak Torque is displayed.



Track Mode: The Transducer will constantly track and display the real-time torque value on the LCD.



Press the centre button when the above display is shown to begin real-time tracking.

Pressing the centre button during tracking will hold and display the current torque for 1 minute. To return to the Main Screen, press and hold the centre button.

Note: The "held" torque is an instantaneous reading and does not represent the Peak Torque.

Note: Track mode does not record individual cycles, but any torque value that is "held" will be recorded as a cycle.

4.4 Installation

WARNING!



Improper installation or use of the RAD Transducer can cause serious or fatal injury to the user. **DO NOT** use the RAD Transducer before reading all safety instructions and warnings in this manual.

The RAD Transducer is intended to be used with a New World Technologies Inc. Calibration Stand, and is not guaranteed to be compatible with other torque fixtures.

To install the RAD Transducer into a Calibration Stand:

1. Refer to Section 1 – General Information and Section 3 – RAD Transducer Assembly to familiarize yourself with the RAD Transducer models and components.
2. Inspect the RAD Transducer for any apparent damage to the display, keypad, and/or body. **DO NOT** charge or use the RAD Transducer if any component is damaged.
3. Install the RAD Transducer into the appropriate Calibration Stand fixture with the LCD display and keypad facing up (Figure 4.4-1).
4. Align the square drive to the receptor plate at the back of the Calibration Stand. The Transducer may need to come forward into the Joint retainer ring first in order to fit into the square receptor.
5. Slide the Transducer back into the receptor plate.
6. Insert the Joint assembly into the front square receptor of the Transducer.

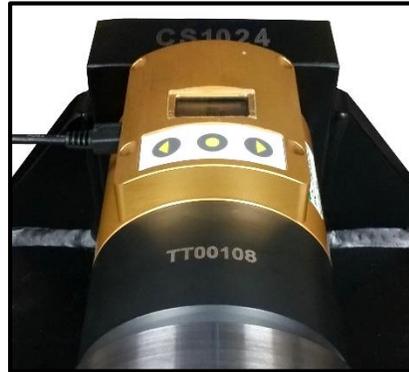


Figure 4.4-1: RAD Transducer Installed

7. Press the centre keypad button to wake up the RAD Transducer.
8. Check that the displayed battery charge is sufficient for operations. If not, refer to Section 2 – Battery Usage and Charging for instructions and safety information to charge the RAD Transducer.
9. The RAD Transducer is now installed and ready for use.

4.5 Operation with Target Mode Enabled

Refer to Section 6 – Transducer Configuration for more information on how to set up the RAD Transducer.

If “**Target PASS/FAIL Enable**” is enabled within Configuration, a “**PASS**” or “**FAIL**” message will be displayed on the RAD Transducer after a torque cycle. The result of the torque cycle is determined by the Target Torque and Tolerance set up during Transducer Configuration. The Transducer must be in Peak Mode to operate with Target Mode enabled (see Section 4.3 – Measurement Method).

After Configuration, the Transducer will display the following, for example, indicating that Target Mode is enabled:

**TARGET:
1000 LBFT
PEAK**

1. Proceed with bolting operations, following proper workplace procedures and the safety instructions and warnings in this manual.
2. Set the Target Torque of the torque tool to the same as the Target Torque on the Transducer.
3. If the actual torque is within the Target Torque Tolerance, the “**Pass**” message will appear on the screen along with the actual torque:

**PASS
1010 LBFT**

4. If the actual torque is outside of Target Torque Tolerance, the “**Fail**” message will appear:

**FAIL
900 LBFT**

5. If the “**Redo Screen**” Setup Parameter is enabled (refer to Section 6.1.6 – Operating Modes), you will be prompted with the following dialog after the “**Fail**” message:

**REDO?
Y N**



6. Press the corresponding keypad button below the "Y" for "yes" to allow the same Bolt ID to be used for the next torque cycle. Another record will be appended to the log file for the next torque cycle. The "Retry" is the number of times the bolt has been retried and the "Target" is the Target Torque as seen earlier. The screen will look like this, for example:

**RETRY 2:
Target 1000
LBFT**

7. Press the corresponding keypad button below the "N" for "no" to increment the Bolt ID on the next torque cycle.

4.6 Operation with Target Mode Disabled

Refer to Section 6 – Transducer Configuration, for more information on how to set up the RAD Transducer.

If "Target PASS/FAIL Enable" is disabled within Configuration, the RAD Transducer will be in "Audit" mode and may operate in Peak or Track mode. No Pass/Fail indication will be displayed.

Note: The Data Logs created in this mode will always contain a "Passed" result when viewed in the Datalogger.

1. Check the device status and configuration on the screen. The screen should display one of the following:

**READY
LBFT
PEAK**

**READY
LBFT
TRACK**

2. Proceed with bolting operations, following proper workplace procedures, safety precautions, and warnings in this manual for the use of the RAD Transducer.
3. Each measured Peak Torque will be displayed as, for example:

**1010
LBFT**

4. See Section 4.3 – Measurement Method for the functions of Peak and Track modes.

5.0 PC Connectivity

The RAD Transducer can be used to view live torque readings and torque graphs, download Data Logs, and update settings when connected to the Torque Transducer Software. This section outlines the use of the Software and its features.

Note: This manual references Torque Transducer Software version 1.0.4.0. Other versions of the Software may vary in features and appearance.

Figure 5-1 shows the main screen of the Software. For more detailed information on the Torque Transducer Software, see Sections 5 through 7.

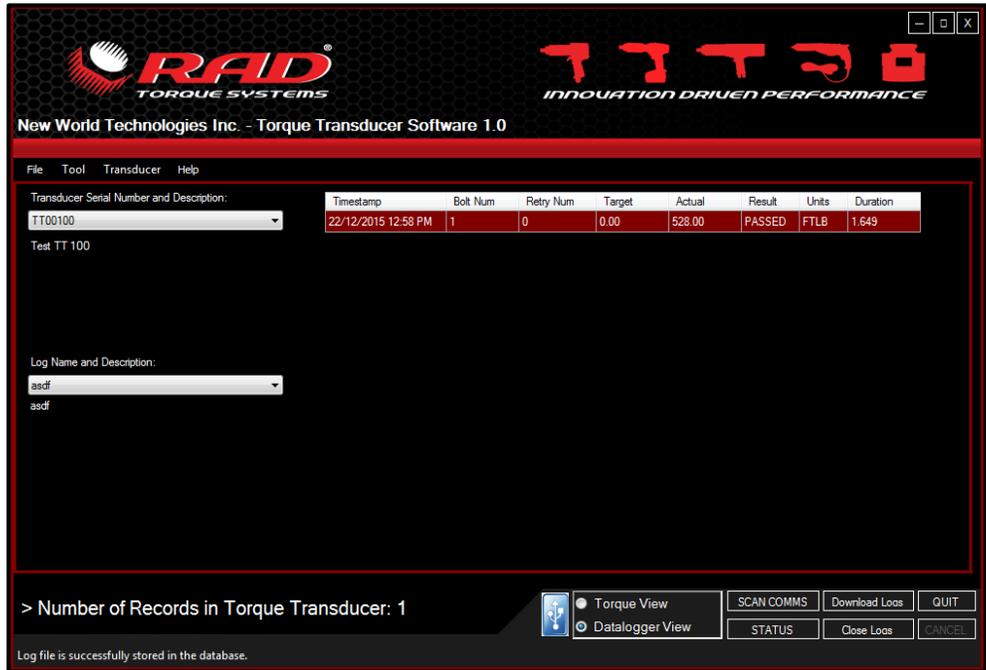


Figure 5-1: Torque Transducer Software Main Screen

5.1 Software Installation & PC Requirements

The Torque Transducer Software is compatible with Windows XP, Windows Vista, Windows 7, Windows 8, and Windows 10 operating systems.

The RAD Transducer may be shipped with a tablet computer pre-loaded with the Torque Transducer Software.

Note: If a physical copy is needed, a CD or memory stick containing the Torque Transducer Software can be requested from your RAD Distributor or New World Technologies Inc. Refer to Section 9.0 – Contact Us.

5.2 Connecting the RAD Transducer to a PC

WARNING!



Refer to Section 2 – Battery Usage and Charging, and follow all instructions and warnings before connecting the USB Charger/Comms Cable. Failure to do so may cause the battery to combust and cause serious or fatal injury.

The RAD Transducer communicates with the Torque Transducer Software through the supplied USB cable. To connect to the PC:

1. Connect the USB cable to the Micro USB port on the Transducer and a USB port on the PC.
2. The device drivers should install automatically. If the device doesn't connect or fails to load the correct drivers, refer to Section 8.0 – Troubleshooting.
3. Open the Torque Transducer Software.
4. The Transducer should automatically connect to the Torque Transducer Software.
5. If the Transducer doesn't connect to the Software, select "**Scan Comms**" from the bottom of the screen (Figure 5.2-1). See Section 8.0 – Troubleshooting if the problem persists.

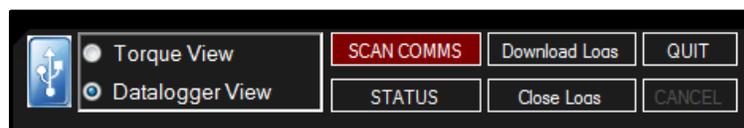


Figure 5.2-1: Scan Comms for Transducers



6. Proceed with configuration or data download as detailed in the sections below.

5.3 Downloading all Data Logs

Note: The RAD Transducer holds up to 360 Logs. If the Logs stored in the Transducer exceed 360 records, they must be downloaded to the Datalogger and cleared from the Transducer.

The Torque Transducer Software allows you to download the Data Log files from the RAD Transducer to a computer.

1. Press the **“Download Logs”** button on the Main Screen (Figure 5.3-1).

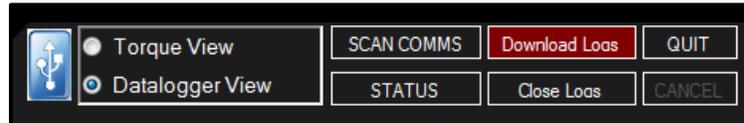


Figure 5.3-1: Download Logs Button

2. The Software will download all the data from the device.
3. You will be prompted to add descriptions of the Data Logs once the Log file has been downloaded (Figure 5.3-2). These descriptions should contain information to help you identify the data.
4. If the number of log records that have been downloaded is approaching the capacity of the Transducer (360 records), you will be prompted to close the log file (Figure 5.3-3) (see Section 5.4 – Deleting (Closing) Data Logs).

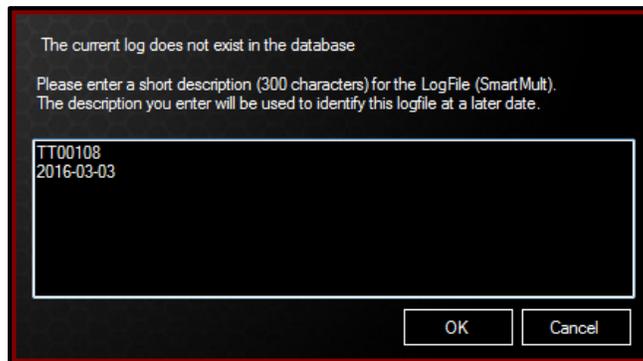


Figure 5.3-2: Log Descriptions

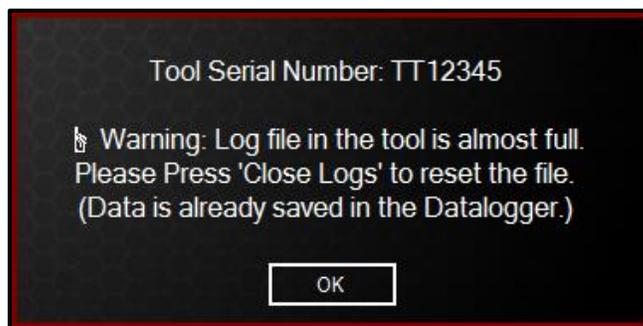


Figure 5.3-3: Logs Almost Full

5.4 Deleting (Closing) Data Logs

Closing Data Logs allows you to remove the Log from the Transducer to free up memory. The Log information will remain accessible from the Software. The title of the closed Log will be automatically modified to represent the date it was closed.

To close a Data Log:

1. Select the Log you would like to close.
2. Select **“Close Logs”** located under the **“Tool”** menu or press the **“Close Logs”** button on the bottom of the Main Screen (Figure 5.4-1).

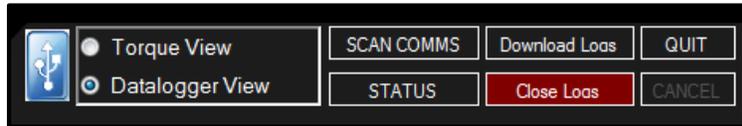


Figure 5.4-1: Close Logs Button

3. Confirm the dialog box to delete the Logs from the Transducer, or press "Cancel" to abort closing the Logs (Figure 5.4-2).

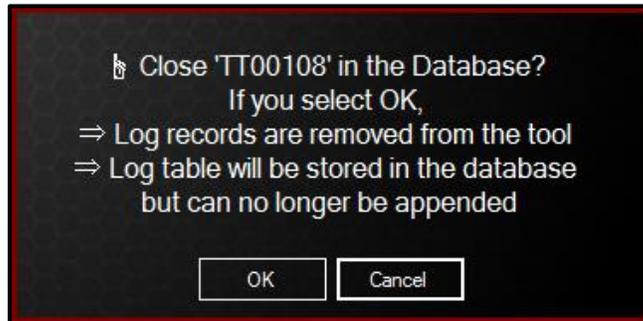


Figure 5.4-2: Close Logs Confirmation

4. The name of the Log file will change to "Closed" along with the date and time at which it was closed (Figure 5.4-3).



Figure 5.4-3: Example of a Closed Log

5.5 Exporting Data

Exporting data allows you to save the Data Logs to the computer or to print the Data Logs. There are two methods to export a log file to a text or spreadsheet format.

The first method is to use the CSV file export option:

1. In the "File" menu select "Export..." (Figure 5.5-1).

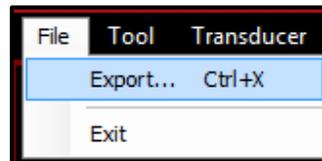


Figure 5.5-1: Export Button

2. A prompt window will be displayed asking to export all Data Logs or just the currently selected Data Log (Figure 5.5-2). If "Yes" is selected, all Data Logs will be exported. If "No" is selected, only the currently selected Data Log will be exported. If "Cancel" is selected, the Data Logs will not be exported.



Figure 5.5-2: Export Dialog Box



- When confirmed "Yes" or "No," a file browser will open where you can save the file (Figure 5.5-3).

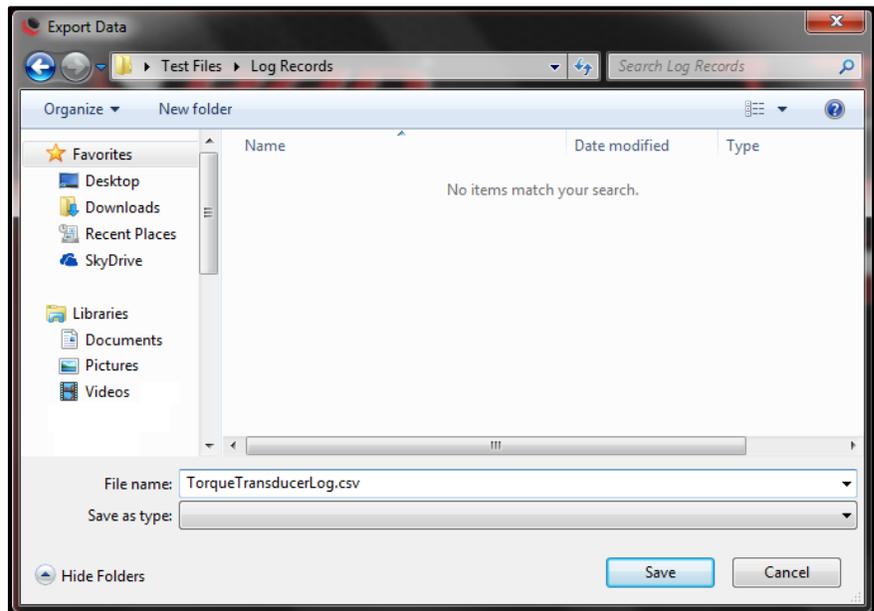


Figure 5.5-3: Saving the Data Log

- The file can now be opened and modified on the computer.

The second method to export data logs is to copy and paste directly from the Datalogger:

- Click and drag your cursor over the desired range of data from the current data log (Figure 5.5-4).

Timestamp	Bolt Num	Retry Num	Target	Actual	Result	Units	Duration
21/01/2016 10:16 AM	1	0	0.00	0.00	PASSED	FTLB	0.000
21/01/2016 10:23 AM	2	0	0.00	0.00	PASSED	FTLB	0.000
21/01/2016 10:25 AM	3	0	0.00	761.00	PASSED	FTLB	10.041
21/01/2016 10:41 AM	4	0	0.00	757.00	PASSED	FTLB	6.836
21/01/2016 12:37 PM	5	0	0.00	752.00	PASSED	FTLB	7.059
21/01/2016 12:38 PM	6	0	0.00	775.00	PASSED	FTLB	3.826
21/01/2016 1:01 PM	7	0	0.00	1,027.00	PASSED	Nm	7.281
21/01/2016 1:02 PM	8	0	0.00	145.00	PASSED	Nm	2.924

Figure 5.5-4: Select Data to Export

- Use the keyboard shortcut Control-C to copy the selected data to your computer's memory.
- Paste the data into a spreadsheet software and save the file as needed.

6.0 Transducer Configuration

Prior to deployment, you should verify that the RAD Transducer is configured as desired. Access to a computer or tablet running the Torque Transducer Software is required.

Configuration includes date/time clock, measurement units, operating modes, and if enabled, Set Point Target Torque and Pass/Fail tolerance.

See Section 5.1 – Software Installation & PC Requirements for more information on installing the Torque Transducer Software.

See Section 5.2 – Connecting the RAD Transducer to a PC for more information on connecting the RAD Transducer to the PC.



To view basic information stored on the RAD Transducer such as battery voltage, torque cycle statistics, and torque limits, click on **“View Tool Details”** in the **“Tool”** menu (Figure 6-1). The Tool Details box (Figure 6-2) will open.

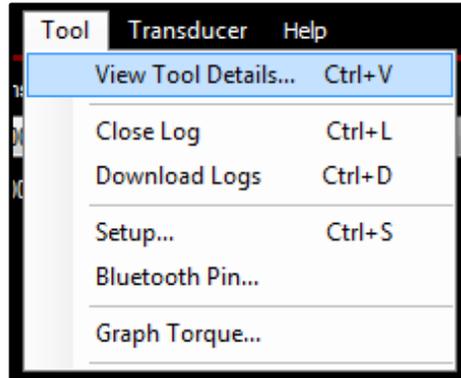


Figure 6-1: View Tool Details Option



Figure 6-2: Tool Details Box

6.1 Tool Setup

Before changing settings with the Torque Transducer Software, ensure that **“Datalogger View”** is selected in the bottom portion of the window (Figure 6.1-1).

Note: “Torque View” mode and its operation are covered in Section 7.2 – Torque View.

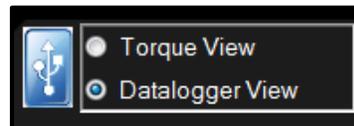


Figure 6.1-1: Datalogger View Selected

The majority of RAD Transducer settings can be changed within Tool Setup. Select **“Setup”** under the **“Tool”** menu in the Torque Transducer Software (Figure 6.1-2).

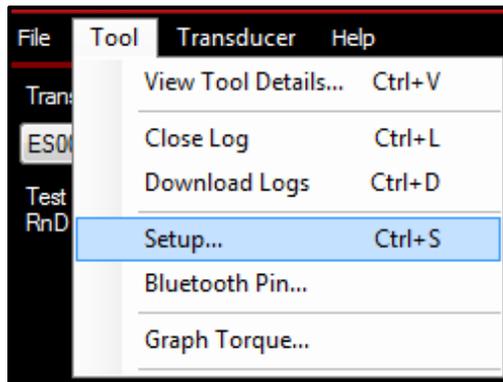


Figure 6.1-2: Tool Setup Option

The Tool Setup Window will be displayed (Figure 6.1-3).

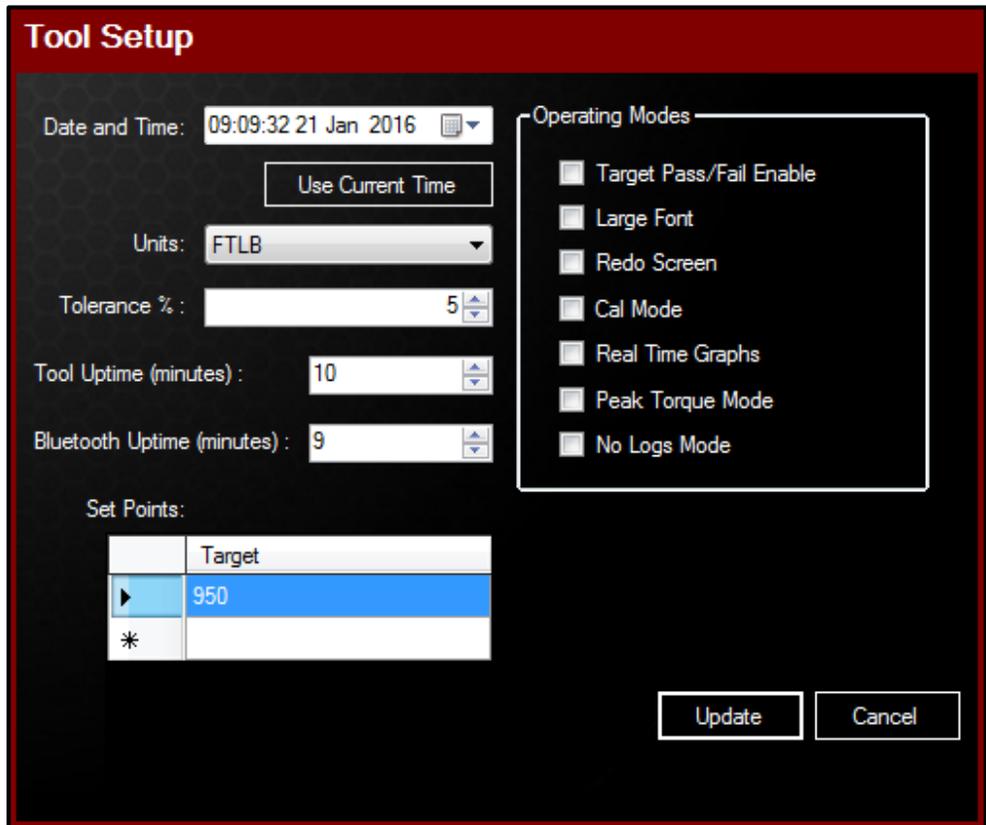


Figure 6.1-3: Tool Setup Window

Each of the Setup options are detailed in the following sections.

Once all the desired changes have been made, press “**Update**”.

6.1.1 Date and Time

The date and time can be set manually or automatically. Press “**Use Current Time**” to use the computer’s date and time. The calendar icon to the right of the text box can also be used to quickly find the correct date (Figure 6.1.1-1).

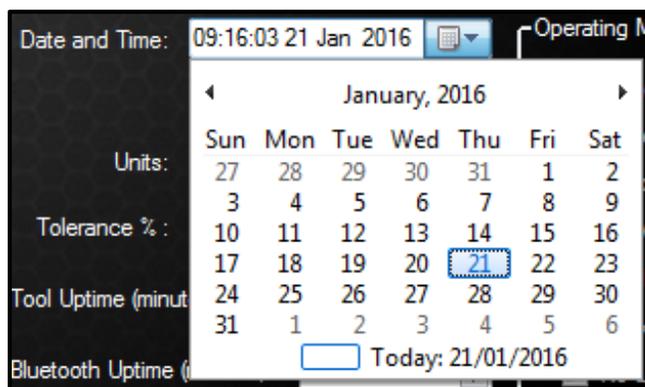


Figure 6.1.1-1: Calendar Date Selection

6.1.2 Measurement Units

Select the desired units from the “**Units**” menu (Figure 6.1.2-1). The possible choices are inch-ounces (**INOZ**), inch-pounds (**INLB**), foot-pounds (**FTLB**), and Newton-metres (**Nm**).



Figure 6.1.2-1: Units Drop Down Menu

6.1.3 Target Tolerance

In the **"Tolerance %"** box, enter the desired tolerance percentage above or below Target to indicate a Pass or a Fail. The default value is 5%.

Note: The Operation Mode setting **"Target Pass/Fail Enable"** must be enabled for the tolerance parameter to take effect. Refer to Section 6.1.6 – Operating Modes for more information on this option.

6.1.4 Tool Uptime

"Tool Uptime" is the amount of time (in minutes) before the tool goes to sleep during inactivity. By default, this time is set to 10 minutes. The Torque Transducer will not sleep while it is charging or connected to a computer.

6.1.5 Set Points

The **"Set Points"** box (Figure 6.1.5-1) lists the currently saved Target Torque values. To choose the current Set Point, click on the desired Target value. To add a new Target, press the asterisk (*) in the bottom left corner, then type in the desired value. To change a Target, double-click the Target you wish to change and enter the new value.

Note: The currently selected target will have an arrow beside it.

Note: The Operation Mode setting **"Target Pass/Fail Enable"** must be enabled for the Target Set Points to take effect. Refer to Section 6.1.6 – Operating Modes for more information on this option.

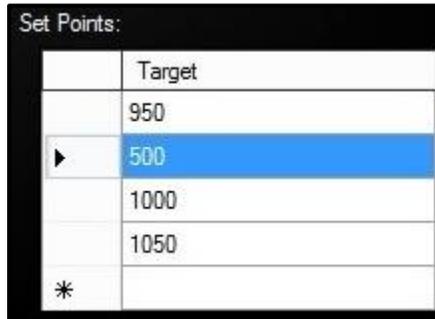


Figure 6.1.5-1: Set Points Selection

6.1.6 Operating Modes

To access the Operating Modes, select **"Setup"** from the **"Tool"** drop down menu in the Torque Transducer Software.

CAUTION!

The Operating Modes alter the operation of the RAD Transducer and may not apply to the desired application. They are provided here for reference only. It is not recommended to change any of the Operating Modes unless absolutely necessary.

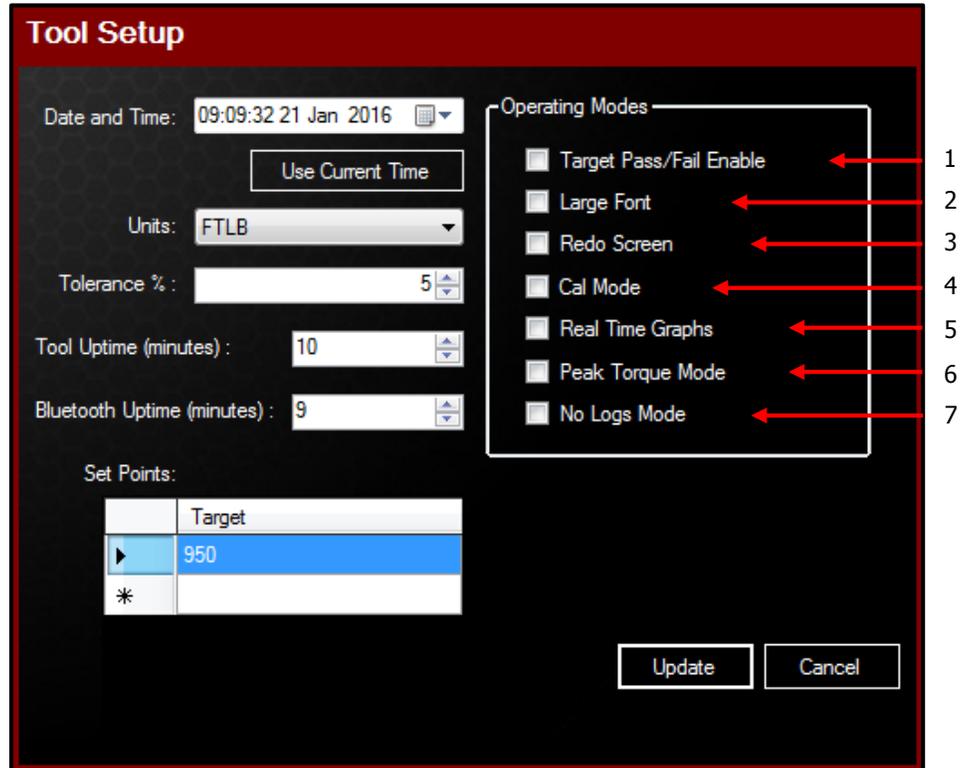


Figure 6.1.6-1: Tool Setup Menu

Operating Modes (refer to Figure 6.1.6-1 above):

1. **Target Pass/Fail Enable** (see Sections 4.5 – Operation with Target Mode Enabled and 4.6 – Operation with Target Mode Disabled):

When "Target Pass/Fail Enable" is enabled, the Target Torque (see Section 6.1.5 – Set Points) and Measurement Method ("Peak" or "Track") will appear on the LCD screen.

When "Target Pass/Fail Enable" is disabled, the RAD Transducer will be in "Audit" mode and will measure, display, and record the torque according to the measurement method selected (see Section 4.3 – Measurement Method).

2. **Large Font:**

When "Large Font" is enabled, the RAD Transducer will display the torque readings in a larger font on the LCD.

3. **Redo Screen:**

Choose whether the bolt ID will be incremented after a failed Target Torque cycle (see Section 4.5 – Operation with Target Mode Enabled for more information).

4. **Cal Mode:**

It is not recommended to enable "Cal Mode" at any time. When Cal Mode is enabled, the RAD Transducer will display torque data from the strain gauges. These numbers are raw values and are not in any torque units.

5. **Real Time Graphs:**

When "Real Time Graphs" is enabled, you can view a live graph of the torque cycle with the Torque Transducer Software. To view the live graph, see Section 7.1 – Live Graphing.

Note: Real Time Graphs Mode will automatically be enabled when the Graph Torque display is enabled. There is no need to enable this mode before graphing with the Torque Transducer Software.



6. **Peak Torque Mode:**

Forces Peak Mode to be enabled (see Section 4.3 – Measurement Method).

Note: This setting may be enabled using the RAD Transducer LCD interface rather than the Operating Modes window.

7. **No Logs Mode:**

The Transducer will not record Data Log entries for torque cycles, but only display readings on the LCD Screen and on the Torque Transducer Software.

Note: This is a custom feature not available on all Transducer models.

7.0 Software Functions

The Torque Transducer Software supplements and enhances the features of the RAD Transducer. The software may be used to view live torque graphs or peak torque while running torque tools on the RAD Transducer. This section describes the functions of the Torque Transducer Software with the RAD Transducer.

Note: This manual refers to the use of Torque Transducer Software version 1.0.4.0. Other versions of the Software may have different features.

The RAD Transducer must be connected via USB to the computer to communicate with the Torque Transducer Software. See Section 5.2 – Connecting the RAD Transducer to a PC for more information.

7.1 Live Graphing

To view a live torque graph, select “**Graph Torque**” from the “Tool” tab (Figure 7.1-1).

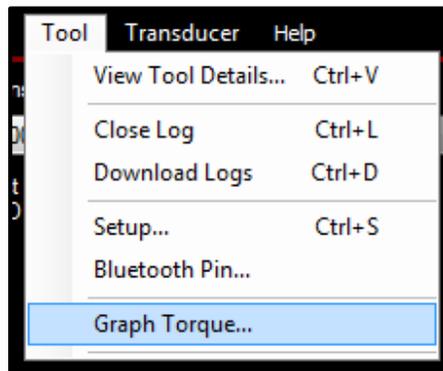


Figure 7.1-1: Graph Torque Button

The Torque vs Time Graph window will open (Figure 7.1-2).

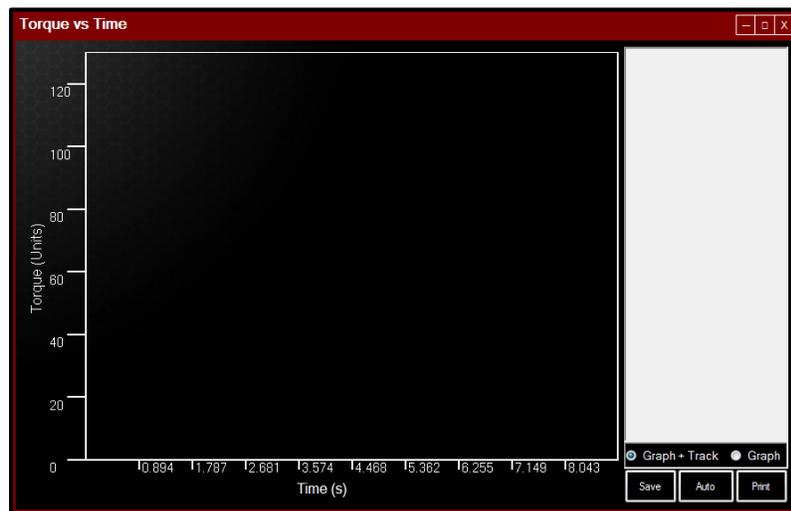


Figure 7.1-2: Torque Vs Time Graph



There are two modes within the Graph Torque window (Figure 7.1-3). The default mode is "Graph + Track" which draws a live graph as well as displaying real-time torque values while the torque tool is moving, then displays the Peak torque after the tool stops. "Graph" mode shows a live graph, then displays the Peak torque after the torque tool has stopped.



Figure 7.1-3: Graphing Modes

Figure 7.1-4 below shows a Graph being drawn in "Graph + Track" mode, along with the real-time torque reading. Figure 7.1-5 has the same graph after the torque cycle is completed, with the Peak torque shown (note that the green text is a darker shade).

Note: The Transducer must be unloaded after the torque cycle to display the Peak torque. The torque tool may need to be reversed slightly before the proper Peak torque is displayed.

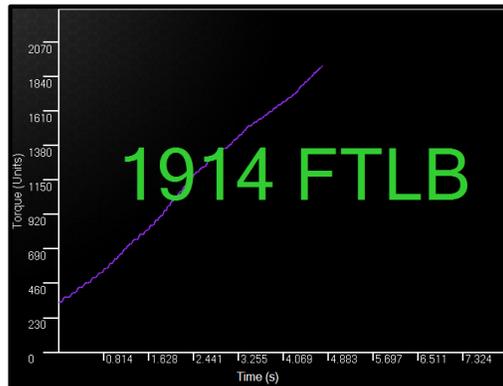


Figure 7.1-4: Real-Time Tracking Graph

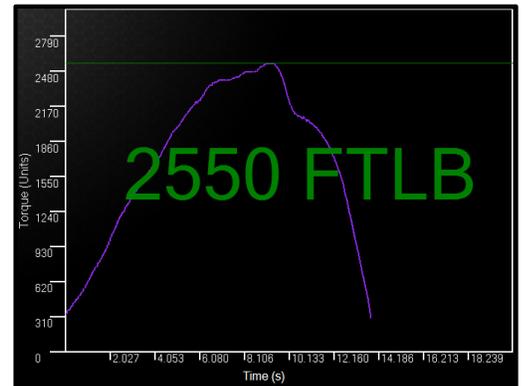


Figure 7.1-5: Graph With Peak Torque

After a graph has been drawn, it may be exported as data points or printed. Note that the data points appear to the right of the graphing window (Figure 7.1-6).

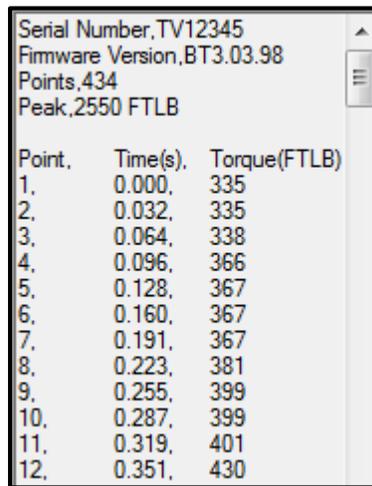


Figure 7.1-6: Graph Data Points

There are several options for exporting graph data (Figure 7.1-7). These are shown underneath the data point list to the right of the graphing window.



Figure 7.1-7: Graph Export Options

The "Save" option will let you save a CSV (comma separated values) file onto the computer. The data can then be viewed with a spreadsheet software to be analyzed or create graphs.



The "Auto" option scales the graph to fill the entire width of the graphing window for a nicer display option. This can be done before printing the graph.

The "Print" option will prepare a full-page print of the graph. You are given the option to preview the page before printing (Figure 7.1-8).

Note: You can resize the graphing window at any time to view and print a bigger graph.

Note: Printing the graph will use a lot of black ink.

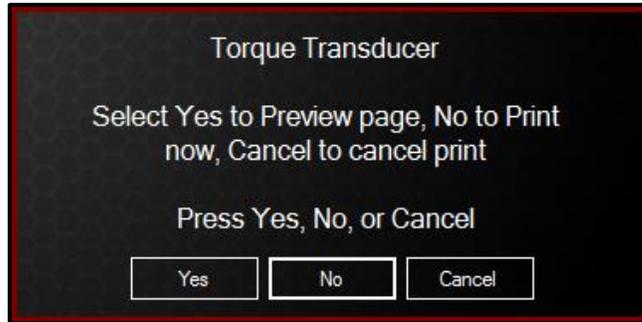


Figure 7.1-8: Print Options

7.2 Torque View

Torque View mode (Figure 7.2-1) is used to emulate a large display for reading torque values. Torque view may be used with Peak or Track mode enabled. Data Log records will be created as normal while using the Transducer with Torque View mode.

Note: To view real-time torque readings, refer to Section 7.1 – Live Graphing.

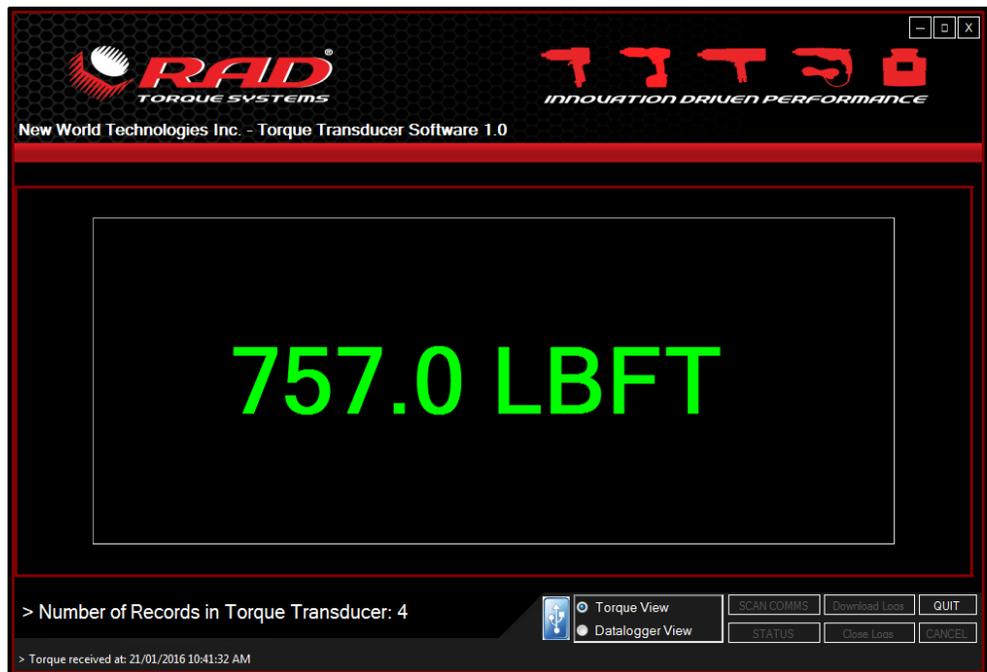


Figure 7.2-1: Torque View Mode

To enable the torque display, select the "Torque View" option in the bottom portion of the Torque Transducer Software window (Figure 7.2-2).

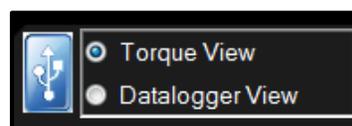


Figure 7.2-2: Torque View Selected



The Transducer Serial Number and Firmware version will appear on the screen until the first torque cycle is completed.

To view the Peak torque in Torque View, set the Transducer to "Peak" mode (see Section 4.3 – Measurement Method). When the RAD Transducer is connected to the Torque Transducer Software, all new torque cycles will appear in large text alongside the selected units.

Note: The Transducer must be unloaded after the torque cycle to display the Peak torque. The torque tool may need to be reversed slightly before the Peak torque is displayed.

The Torque View display may be used with the RAD Transducer in Track mode. Only torque values that are "held" will be displayed (see Section 4.3 – Measurement Method).

A green dot appears above the torque display when the RAD Transducer is communicating with the Software (Figure 7.2-3).



Figure 7.2-3: Green Dot Indicates Communication

To return to the main display of the Torque Transducer Software to access settings and the Datalogger, select the "Datalogger View" option.

8.0 Troubleshooting

If there is a problem with your RAD Transducer, please first ensure that all instructions in the User Manual have been followed and the device/battery is charged.

WARNING!



Never open the Transducer cover without the authorization of New World Technologies Inc. Do not remove the battery cover or attempt to repair the device or replace the battery. Do not touch any exposed power device, electrical connection, or cable.

8.1 Problem Diagnosis

The following sections describe various common problems and steps for resolution.

If the problem persists, please contact your Authorized RAD Distributor or New World Technologies Inc. Technical Support.

8.1.1 Screen is Blank

Solution:

1. Press the keypad centre button to wake the RAD Transducer from Sleep Mode.
2. If screen remains blank, connect the RAD Transducer to the supplied charger and press the centre button.
3. If screen remains blank, press the reset button near the back of the RAD Transducer while it is still plugged in.
4. If screen remains blank, charge the RAD Transducer for 15 minutes before trying again.

If problem persists after charging, contact your RAD Distributor for return/inspection.

8.1.2 Display Reads "Charge Required"

The RAD Transducer battery does not have enough power to operate.

Solution: Charge the RAD Transducer (refer to Section 2.2 – Battery Charging and Storage)

If message persists after charging, contact your RAD Distributor for return/inspection.



8.1.3 Display Reads “Battery Low”

Solution: Charge the RAD Transducer as soon as possible (refer to Section 2.2 – Battery Charging and Storage).

If message persists, contact your RAD Distributor for return/inspection.

8.1.4 Display Reads “Logs Full”

Solution: Connect the RAD Transducer to the PC Software, download the Data and close the Log (refer to Section 5.0 – PC Connectivity).

If message persists after closing the Log file, contact your RAD Distributor for technical support.

Note: The RAD Transducer can store approximately 360 log records.

8.1.5 Display Shows “Ready” or “Target” but doesn’t update Torque Cycle

Solution: Ensure the RAD Transducer is unloaded after the torque cycle.

If error persists, contact your RAD Distributor for return/inspection.

8.1.6 Display Shows “Unload”

Solution: Ensure the Transducer is unloaded, then press the keypad centre button (refer to Section 4.2 – Sleep/Wake).

If message persists, contact your RAD Distributor for return/inspection.

8.1.7 Battery Does Not Hold a Charge

The Battery needs to be replaced; contact your RAD Distributor for return/inspection.

8.1.8 The RAD Transducer Doesn’t Connect to a Computer

If the drivers did not automatically load:

- Check that the Transducer is turned on.
- Disconnect the Transducer from the computer, then try again.
- Check that the Micro USB cable is not damaged and is properly charging the RAD Transducer.

If the drivers have loaded:

- Check that the Transducer is turned on.
- Press “Scan Comms” in the Torque Transducer Software.
- Press “Status” in the Torque Transducer Software to check whether the Transducer is connected.

If the RAD Transducer still does not connect to the computer or the Torque Transducer Software, contact New World Technologies Inc. Technical Support.



9.0 Contact Us

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