RAD TORQUE SYSTEMS

SMART SOCKET™

200 - 16.200 Nm

USER MANUAL

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Figure 1

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 RAD Torque Systems B.V. or your local distributor immediately.

Ensure that the square drive size of the tool matches the Smart Socket™ model and check the fit is snug.

- Familiarize yourself with the Smart Socket™ models and components.
- Inspect the Smart Socket™ for any apparent damage to the display, keypad and/or body. Do not charge or use the Smart Socket™ if any component is damaged.
- Press the centre keypad button to wake up the Smart Socket™.
- Check the displayed battery charge is sufficient for operations.
- Install the Smart Socket™ onto the desired tool by the square drive end:
- Insert the retaining O-ring on the neck of the Smart Socket™ just below the retaining O-ring groove, such that it does not impede the insertion of the tools square drive, nor the retaining pin.
- Insert the retaining pin through one side of the socket square drive, through the mated tools square drive, and out the other side of the socket.
- Insert the retaining O-ring into the groove such that it holds the retaining pin in place.
- Pull on the Smart Socket™ away from the mated tool and ensure it is securely retained on the tool.

The Smart Socket™ has been calibrated by a qualified calibration technician; calibration must be done by a qualified calibration technician.

NOTE: The pin should be flush on either side of the socket retaining O-ring groove and fully engage though the tools mated square drive.

2. Battery usage and charging

This section provides instructions for safe usage and charging of the Smart Socket™ internal Lithium Polymer (LiPo) battery.

2.1 General safety and guidelines

The Smart Socket™ is assembled, calibrated and shipped with a rechargeable Lithium Polymer (LiPo) battery.

1. Batteries are not fully charged as you receive them; they may contain approximately 50% of a full charge.
2. Use the RAD Torque Systems B.V. supplied USB charger only. Do not use any other Lithium Polymer or NiCd or NiMh charger. Failure to comply may cause a fire, which may result in personal injury and/or property damage.
3. Never charge the tool unattended. When charging LiPo batteries you should always remain in constant observation to monitor the charging process and react to potential problems that may occur.
4. Charge in an isolated area, away from flammable materials.
5. Let the Smart Socket™ and battery cool down or warm up to recommended ambient temperature before charging.
6. If there is any sign of damage to the charger or charging cable, do not attempt to charge the tool/battery. Unplug the charger immediately.
7. If there is any sign of damage to the tool housing or 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 fresh, clean water and contact a physician.

2.2 Battery charging

Depending on the above mentioned factors and in addition to run-down time, a fully charged battery should have an operation usage of several thousand bolts.

2.3 Battery removal and replacement

If the tool and battery guidelines are followed, the battery life should exceed the normal recalibrat on interval of the tool. As a preventative measure the battery should be replaced by RAD Torque Systems B.V. or authorized service centre at the desired re-calibration interval and only be replaced with an approved battery.

3. Assembly

The Smart Socket™ is a battery powered, strain gauged socket for precision torque monitoring of fastening operations.

The Smart Socket™ must be properly selected to fit both the mating tools square drive and the application fastener, without exceeding the maximum torque rating of the model.

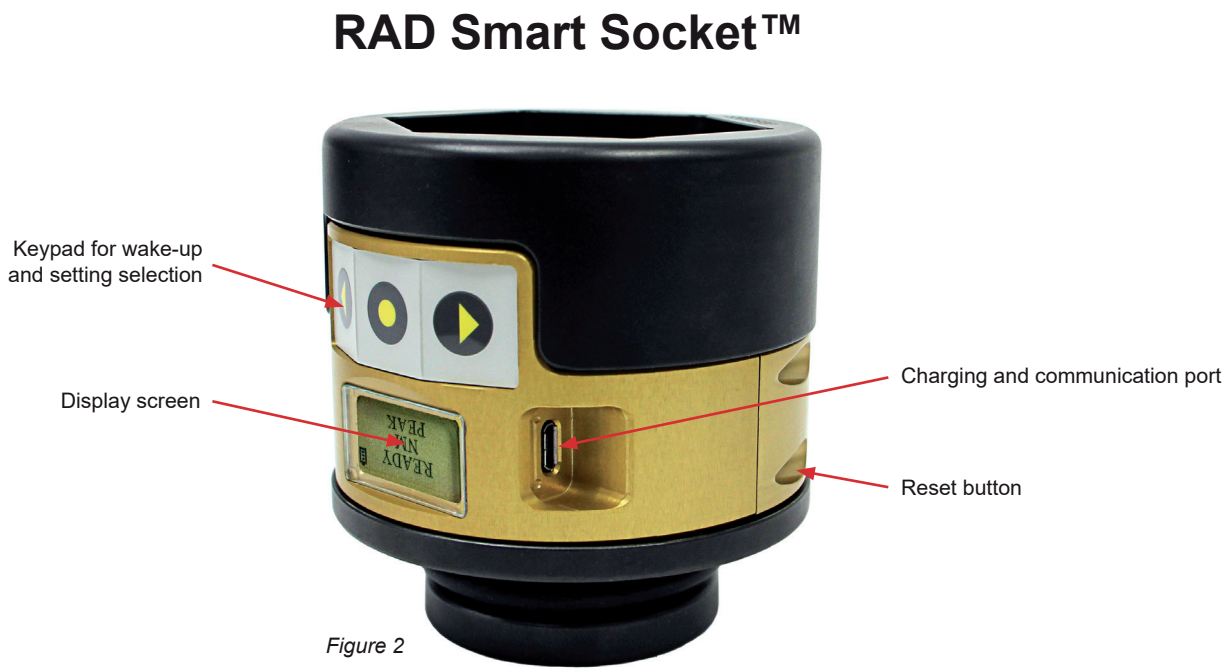

Figure 2

NOTE: The Smart Socket™ holds 360 log records. When display reads “logs full”, download the logs to the data logger software.

4. User interface

The Smart Socket™ offers a user friendly LCD interface with push button navigation.

4.1 Main screen

NOTE: Be sure to hold the push button press down for a duration of 1 second. This will ensure that the button was properly registered.

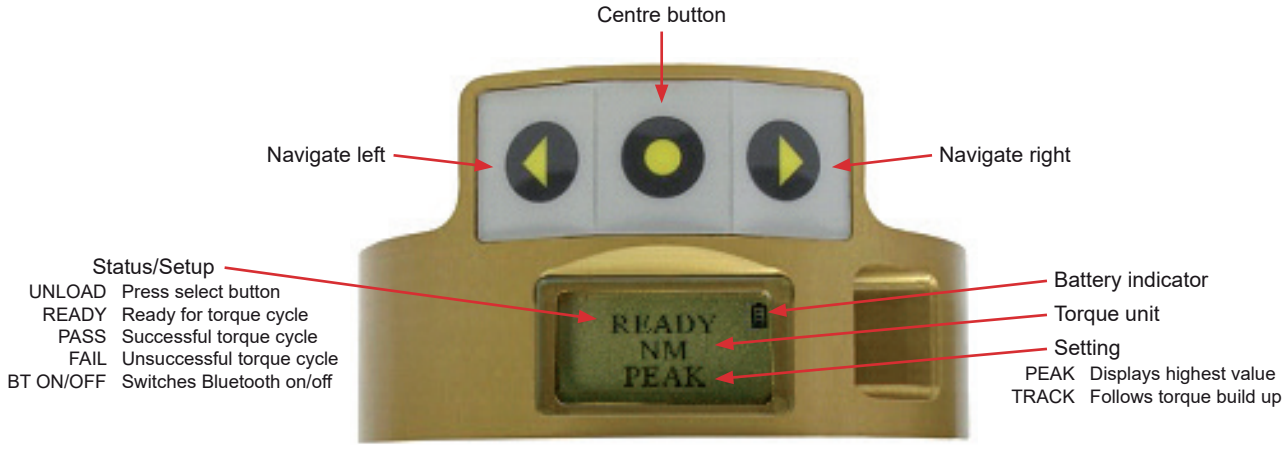

Figure 3

5. General operation

5.1 Prepare for bolting

To use the Smart Socket™ for bolting operations check:

1. If the device is in sleep mode, wake the device by pressing the centre button on the keypad.
2. The battery charge is sufficient for operations, if not, charge the device.
3. The measurement method is set.
4. The Smart Socket™ is installed on the torque wrench.

5.2 Sleep/Wake

To conserve battery power the Smart Socket™ will go to sleep after 10 minutes of inactivity on the keypad. This time can be changed in the settings.

NOTE: While the device is in sleep mode the screen will be blank.

5.3 Measurement method

Select the torque measurement method using the Smart Socket™ keypad:

- Peak mode - reads peak only and will hold it for 1 minute or until you start torqueing another bolt.
- Track mode - constantly tracks and displays the read out of the current torque. Pressing the center button will hold and display the current torque for 1 minute but it will not read peak torques. Press and hold the center button to return to the main screen.

5.4 Operation with target mode disabled

- During pre-deployment setup, if Target Pass/Fail Enable is not selected, the Smart Socket™ will be in Audit mode and will measure, record and display the torque according to the measurement mode selected. No Pass/Fail indication will be displayed.
- Check the device status and configuration on the screen, either Peak or Track mode.
- Proceed with bolting operations as per the users' normal process and safety procedures, while also following the safety instructions and warnings in this manual for the use of the Smart Socket™.
- Each measured peak torque will be displayed on the screen.

5.5 Operation with target mode enabled

If Target Pass/Fail Enable mode is selected during pre-deployment setup and measurement mode is set to Peak, a Pass or Fail will be displayed on the Smart Socket™ after a peak torque. The Pass/Fail is based on the target tolerance parameter defined during the pre- deployment setup.

- Proceed with bolting operations as per the user's normal process and safety procedures, while also following the safety instructions and warnings in this manual for the use of the Smart Socket™.
- If a torque cycle is completed the display result is Pass. If a torque cycle result is failed the display result is Fail.
- If the Redo Screen setup parameter is enabled, then on Fail user will have to press the centre button, then they will be prompted the option to Redo. Pressing the corresponding keypad Y for yes will cause the bolt ID to be maintained for the next torque cycle, but as an appended record. The Retry# is the number of times the bolt has been retried and the Target# is the target torque. Pressing the corresponding keypad button below, N for no will cause the bolt ID to be incremented on the next torque cycle.

To wake the Smart Socket™ from sleep:

a. Press the keypad center button.
b. If screen is still blank, connect the Smart Socket™ to a computer and press the centre button.
c. If screen is still blank, press the reset button on the back of the Smart Socket™ while it is still plugged in.
d. If the screen is still blank, charge the battery for 15 minutes before trying again. If the problem persists contact your RAD representative for assistance.

NOTE: While the device is in sleep mode the screen will be blank.

6. Connecting Smart Socket™ to Tablet

The Smart Socket™ is supplied with, and can be connected to an android operated Tablet Computer through Bluetooth for Smart Socket™ configuration and data log downloads.

- **a.** Turn on Bluetooth on the Smart Socket™. To do this, press one of the arrow keys until the screen reads BT Off. This is the current state of the Bluetooth. Press the centre button. When Bluetooth is turned on, the screen will read BT On.
- **b.** Connect/ pair the Smart Socket™ by using the Bluetooth settings in the tablet.
  Pairing code: 111 or 1234
- **c.** Open RAD Connect PRODOCS
- **d.** Under tab 'CONNECT', select the desired Smart Socket™ or scan for devices and select subsequently.
  You may be prompted to enter the pairing code again.

7. Data log PC operations

The PC Iinterface is used to interact with the remote audit system. Once connected to the remote audit system the operator is able to download data logs, view tool details, configure the specifications of the tool and calibrate the remote audit system, see figure 5.

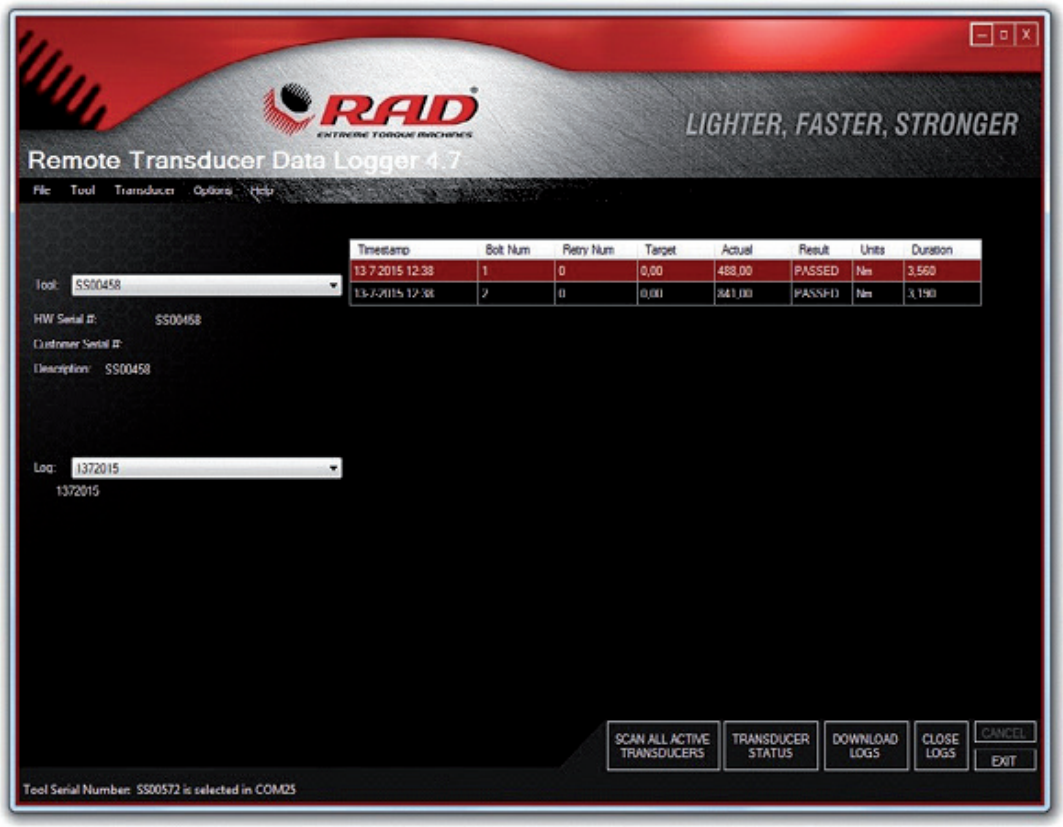

Figure 5

8. Pre-Deployment configuration

Prior to each deployment, the user should verify the Smart Socket™ is configured as desired. Access to a PC or Laptop running the RT Data Logger software is required.

Configuration includes date/time clock, measurement units, operating modes, and if enabled, targets and Pass/Fail indication tolerance.

NOTE: RT Data Logger software is available for download from www.radtorque.nl.

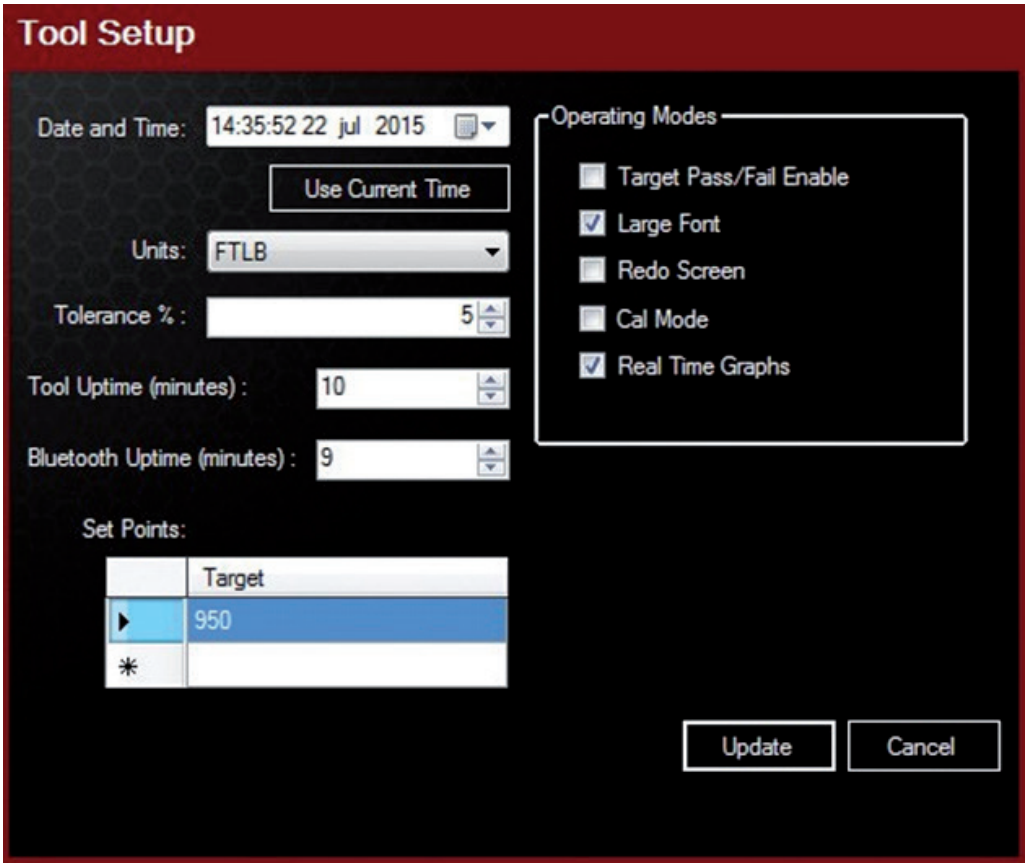

Figure 6

8.1 Operating Modes

Under the Tool drop down menu located in the RT Data Logger software select Setup, then select the desired operation modes.

Operating modes:

1. Target Pass/Fail enable:
   - When the Target Pass/Fail Enable is disabled, the Smart Socket™ will be in Audit mode and will measure, record and display the torque according to the measurement mode selected.
   - When the Target Pass/Fail Enable is enabled, Pass/Fail indication via the screen will be updated based on the desired tolerance within target.
2. Large font:
   - When large font is enabled, the Smart Socket™ screen will display the torque readings in a larger font
3. Redo screen:
   - For purpose of bolt number and data log synchronization, if this mode is enabled and a target Fail occurs, user will have to press the centre button and then they will be prompted with Redo? Yes or No.
   - Pressing the corresponding keypad button below Y for yes will cause the bolt ID to be maintained for the next torque cycle, but as an appended record. Where the Retry # is the number of times the bolt has been retried and the Target # is the current setpoint.
   - Pressing the corresponding keypad button below, N for no will cause the bolt ID to be incremented on the next torque cycle.
4. Cal mode:
   - When cal mode is enabled, the screen of the Smart Socket™ will display raw data values that come from the strain gauges. These numbers are not in any torque units.
5. Real time graphs:
   - The Smart Socket™ must be connected to the data logger during the torque cycle for real time graph mode to work.
   - When real time graphs is enabled, the user can view a live graph of the torque cycle on the RT Data Logger software. To view the live graph, go to the Tool tab and press Graph Torque.

When a pull is done with the Smart Socket™, a live graph will be created on the torque vs time screen.

9. Safety

RAD tools are developed for tightening and loosening threaded fasteners using very large forces. For your safety and that of others, warning labels and attention labels are prominently attached to the torque wrench and its accessories.

NOTE: Make sure you observe the directions on the warning labels at all times.

RAD tools have been designed with safety in mind however, as with all tools you must observe all general workshop safety practices, and specifically the following:

- Before using your new tool, get familiar with all its accessories and how they work.
- Always wear safety goggles when the tool is in operation.
- Make sure the reaction arm is in contact with a solid contact point before you operate the tool.
- Keep your body parts clear of the reaction arm and the contact point.
- Make sure the reaction arm snap ring is securely in place to hold the reaction arm or blank in place.

RAD tools are safe and reliable. Not following precautions and instructions outlined here can result in injury to you and your fellow workers. RAD Torque Systems B.V. incorporated is not responsible for any such injury.

10. Warranty

10.1 New tool warranty

(1) RAD B.V. guarantees the proper performance of the goods delivered for a period of twelve (12) months after delivery to the final customer and is limited to fifteen (15) months after the original RAD B.V. calibration date. (2) Excluded from this warranty are electric components of RAD B.V.'s digital tools (e.g. MB-RAD, MV-RAD, E-RAD, SmartSocket™, RT and TV-RAD) which have a twelve (12) month warranty after date of delivery to the final customer with a maximum of nine (9) months after the original RAD B.V. calibration date. Mechanical components of these tools fall under the terms of paragraph 1.

10.2 Repaired tool warranty

(1) Once a tool is beyond its new tool warranty, RAD B.V., for a period of three (3) months from the date of repair, will replace or repair for the original purchaser, free of charge, any part or parts, found upon examination by RAD B.V., to be defective in material or workmanship or both. If any tool or part is replaced or repaired under the terms and conditions of this warranty, that tool or part will carry the remainder of the warranty from the date of original repair. To qualify for the above mentioned warranties, written notice to RAD B.V. must be given immediately upon discovery of such defect, at which time RAD B.V. will issue an authorization to return the tool. The defective tool must promptly be returned to RAD B.V., all freight charges prepaid. When returning a tool, the reaction arm(s) being used with the tool must also be returned.

10.3 Customer cannot invoke a warranty if

(1) the defect, wholly or partly, is due to unusual, inappropriate, improper or careless use of a delivery;
(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 delivery is altered, modified, used or processed; (5) the delivery is transferred to a third party;
(6) RAD B.V. has obtained the tool, wholly or partly, from a third party, and RAD B.V. cannot claim compensation under warranty;
(7) RAD B.V. in manufacturing of the tool, has used raw materials, and suchlike on the instructions of the Customer;
(8) the tool has a small deviation in its 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 promptly and correctly fulfilled all obligations under the agreement towards RAD B.V.

11. Contact

RAD Torque Systems B.V.
Zuidergracht 19
3763 LS Soest
Phone: +31(0)35 588 24 50
Website: www.radtorque.eu

Notes

Notes

RADIAL®
TORQUE TOOLS

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RADIAL TORQUE TOOLS B.V.

ZUIDERGRACHT 19
3763 LS SOEST
THE NETHERLANDS

Phone: *+31(0)35 588 24 50*
E-MAIL: *SALES@RADIALTORQUE.EU*

www.radialtorque.eu