



**Sturtevant
Richmont®**

Torque Measurement Systems

Sturtevant Richmond

The Tools You Trust.

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SLTC24-FM (2.4GHz) Torque Wrench Operating Instructions



Models to which these instructions apply:

P/N	Description	P/N	Description	P/N	Description
810410	SLTC-FM 2.4GHz OHT	810405	SLTC-FM 2.4GHz Ergo	810411	SLTC-FM 2.4GHz 50I
810412	SLTC-FM 2.4GHz 150I	810413	SLTC-FM 2.4GHz 300I	810414	SLTC-FM 2.4GHz 750I
810415	SLTC-FM 2.4GHz 1800I				

SR SLTC-FM 2.4 GHz torque wrenches are designed and manufactured to provide consistent torque application in multiple manufacturing and maintenance applications. They meet or exceed the requirements of ASME B107.300 and ISO 6789. These wrenches are accurate to +/-4% of the preset value from 20% to 100% of rated capacity.

Interchangeable Heads and Dovetail

Any S/R interchangeable head may be used with the wrench. Note: It is imperative that the head used to preset the torque wrench have the same common centerline length as the head that will be used in assembly. Failure to do so will create a different torque output during assembly than that which was preset.

To attach the head:

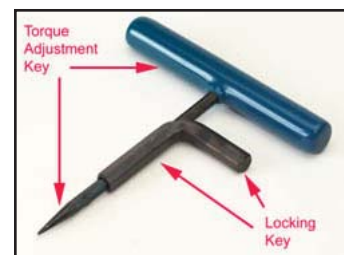
1. Align the head with the dovetail and slide it onto the dovetail until it contacts the retaining pin.
2. Use a small hex key or other device to depress the locking pin.
3. Slide the head completely onto the dovetail.

To remove the interchangeable head:

1. Use small hex key or similar device to depress the locking pin through the access hole in the rear of the head.
2. While the pin is depressed, slide the head sideways to hold the pin down and remove the hex key.
3. Slide the head completely off the dovetail.

Torque Setting

A torque tester of +/- 1% indicated value accuracy or better, an SR CART (Combination Adjusting and Release Tool shown at right), and an interchangeable head having the same common centerline length as the head that will be used in assembly and capable of engaging the tester are required.



1. Insert the Torque Adjustment Key fully into the rear of the wrench so the hex engages the adjustment nut. Do not engage the Lock Key. Rotate the Torque Adjustment Key slightly clockwise to disengage the adjustment nut from the lock nut.

- Slide the Lock Key in until it engages the lock nut. You may need to rotate the lock key slightly to align it with the internal hex of the lock nut. Rotate the Lock Key counterclockwise several turns to assure the lock nut is fully disengaged from the adjustment nut and that there is sufficient travel available for the adjustment nut to attain the torque setting desired.



- Install the interchangeable head on the wrench. Engage the wrench to the tester and click the wrench once or twice while noting the readings. To adjust the wrench to a higher torque setting, rotate the Torque Adjustment Key clockwise. To adjust the wrench to a lower torque setting, rotate the Torque Adjustment Key counterclockwise. Torque adjustments should be made



in small increments with several checks made between each movement of the Torque Adjustment Key.

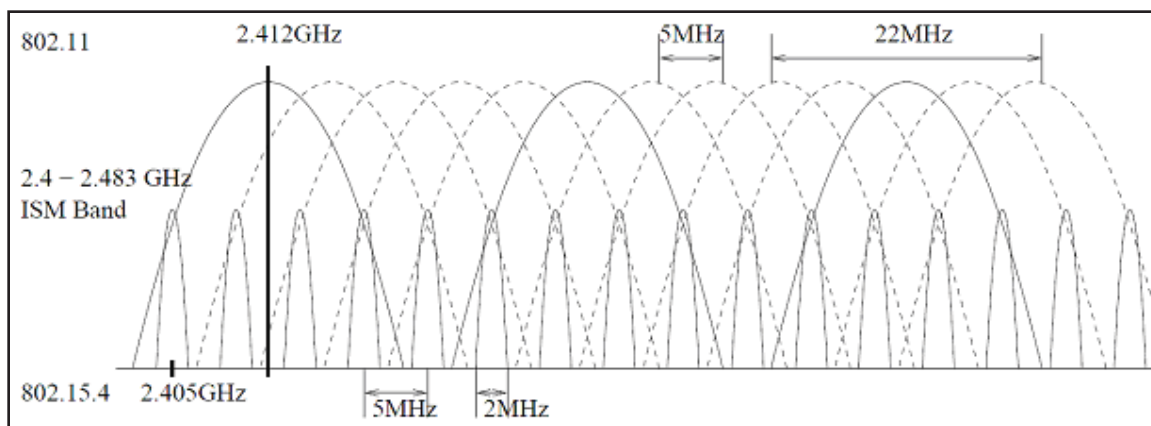
- Once the desired torque has been attained, hold the Torque Adjustment Key steady and rotate the Lock Key clockwise until the lock nut firmly engages the torque adjustment nut, locking it in place. Remove the CART from the wrench and perform a final torque check on the tester. When the reading matches the desired torque and the lock nut is firmly engaged to the torque adjustment nut, the procedure is complete.

Radio Communications - 2.4 GHz Communication Overview

These tools use the 2.4GHz band for communication with the controller. As with all radio communications, there are limits on the distance at which reliable bi-directional communication may be obtained. Physical barriers such as steel framing, sheet metal and other objects that impede radio waves can significantly reduce the reliable communication distance. Another factor affecting the reliability and distance combination is the radio environment in which the unit will be used.

The controller and torque wrench may operate on any of the 12 channels these products use. It is generally best to think about this even before the unit is installed.

The radio modules in the controllers and torque wrenches used with them comply with the IEEE 802.15.4 standard. The channel numbers loosely match the channels used by the IEEE 802.11b/g WLAN standard. It may be beneficial to use channels that do not match the channels used by a nearby wireless network. The graph below depicts both standards and illustrates the center frequencies and channel overlap for each standard.



Notice that the channels we use leave a much smaller footprint than WLAN. Also notice that one WLAN channel radiates energy onto several of the adjacent WLAN and process monitor (PM) channels.

For the most reliable communication between the SR PM and the tool in a 802.11b/g LAN environment, it is usually best to choose a channel for the controller and tool that is separated from the channel of the LAN.

Unlike IEEE 802.15.1 (Bluetooth) radios, the our 2.4GHz radio modules do not frequency hop, use less power and have faster response times with less impact on other wireless devices. A wrench only transmits a small packet of data after each torque operation, and each transmission lasts about 30ms (0.03 seconds).

The 2.4GHz radio used by the unit and the tool is certified in the United States (FCC), Canada (IC), and Europe (CE).

Torque wrench output power: 1mw
Controller 2.4GHz output power: 10-60mw
Typical 802.11b/g output power: 100mw

Frequency Map of 802.15.4 vs. 802.11b/g Center Frequency (GHz)

Channel	802.15.4	802.11b/g
1	2.410	2.412
2	2.415	2.417
3	2.420	2.422
4	2.425	2.427
5	2.430	2.432
6	2.435	2.437
7	2.440	2.442
8	2.445	2.447
9	2.450	2.452
10	2.455	2.457
11	2.460	2.462
12	2.465	

Establishing RF Communication With SR Process Monitors

The transceiver in the PM and the one in the torque wrench each have identification numbers. When communication between the two is first established, the numbers are exchanged and stored in memory. The PM and tool will thereafter ignore communications from other radios until the number stored in memory is replaced with a different identification number.

The second element is that under all conditions the controller and the tool to be used with it must be on the same channel. If the channel on the controller is changed and the channel on the tool is not, they will not communicate or will cease communicating if they have previously been associated with each other.

To remove the identification of the unit from the tool memory, click the wrench and hold it in the clicked position until the LED on the wrench flashes. This will take about 5 seconds. Release the pressure on the tool and allow it to return to the normal position.

The flashing of the LED occurs when the Process Monitor with which the tool was associated has been erased. The tool is now ready to be associated with another PM\.

Note that when the battery has been removed and replaced in the wrench the LED will alternate between emitting red and green light several times very quickly. If the alternating color emission stops and then a red light pulse is emitted, the tool is not associated with a specific controller and can be associated with whatever unit is desired. If the alternating color emission stops and then a green light pulse is emitted, the tool has a specific controller unit identification number in memory and is ready to be used with that unit.

To establish communication with the controller, it is necessary to follow the instructions included with the specific controller to be used.



Raised LED Fresnel emits Green or Red during the "learning in" or radio connection process.

Even when faceplate is tilted away from the user the raised Fresnel is easily seen.



Battery and Battery Replacement

These tools are shipped with an alkaline battery. Always respect polarity requirements for our tools.

1. The battery compartment is located directly under the LED on the underside of the wrench. Turn the wrench over so the face plate is facing the floor.
2. Use a pen head or small screwdriver to depress the battery cover security spring and slide the battery cover plate off.
3. Remove the old battery and recharge it.
4. Reinstall the battery and battery cover.
5. Note: We strongly urge that NiMH rechargeable AAA batteries are the only battery used in these products. Other batteries have different operating characteristics and are highly unlikely to provide satisfactory performance.



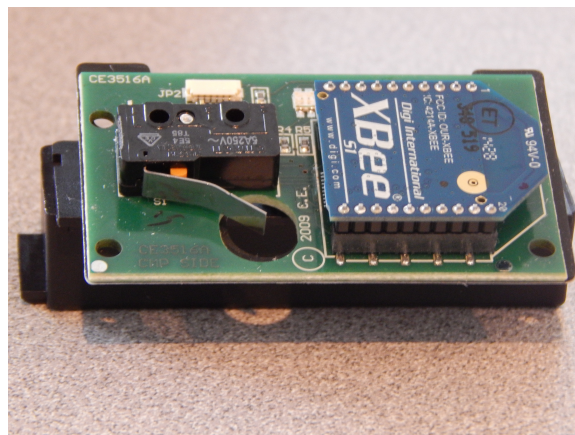
Radio Transceiver Replacement

Under normal circumstances the transceiver is well protected and the system is robust and durable. This procedure should only be needed on rare occasions.

1. Remove the four screws in the radio housing and gently lift the cover straight up off of the internal components.
2. The radio board is now visible.

Notice the location of the spring steel trigger on the microswitch (red arrow on right). The trigger location is critical to tool function. The screw rising from inside the wrench (indicated by red arrow on left) triggers the microswitch that activates the electronic functions. When the electronics are reassembled the trigger must be on the inside of this screw for the tool to function.

3. Gently lift the circuit board off of the mounting plate without damaging the gray insulating paper between it and the mounting plate. The insulating paper is essential to preventing shorts on the circuit board. Examine the paper for tears and replace if torn or damaged
4. Reassemble the components in the reverse order of their removal. Place the circuit board on the insulating paper on the mounting plate, ensuring that the microswitch trigger is inside the activating screw. Install the upper cover and screws holding it in place. Then install the battery in the battery holder and slide the battery cover back to the original position.



Operation & LED's

Once the tool has been preset, the appropriate interchangeable head installed and the radio transceiver has been associated with the appropriate controller and specifications exchanged, the tool is ready for use. In normal operation, the tool will emit a strong tactile and sound impulse when it clicks. If the tool is jerked (too little time in the clicked position) the LED on the tool will not illuminate. If the tool has been properly used (force applied, click attained, force released within specified time frame) the LED on the circuit board will illuminate with a green color. This will shine through the cover and be highly visible. If the tool has been pulled past the click (too much time in the clicked position) the LED on the circuit board will illuminate with a red color. Under either of the latter two circumstances, the information will be immediately transmitted to the controller.

SLTCR (Ratcheting) Models

These tools use the SR slide pin ratchet design to permit the user to reposition the body of the tool in limited-access applications where a socket is used. Even though the ratchet is reversible, the tool only applies measured and controlled torque in the clockwise direction, so thought must be given to the task to be accomplished before the ratchet is reversed and the tool used in the counter-clockwise direction. Exceeding the capacity of the tool in a CCW torque application is likely to damage the tool and is not covered by warranty.

The ratchet should be disassembled and cleaned periodically, then the ratchet spindle teeth lubricated very lightly with a grease containing molybdenum disulfide prior to reassembly. For detailed instructions on ratchet disassembly cleaning and reassembly, go to the FAQ section of our website.

SAFETY

- ALWAYS wear safety glasses and all other required safety equipment when operating this tool.
- Do NOT exceed the rated capacity of the wrench.
- Do NOT use this wrench for any purpose other than that for which it was designed and manufactured.

Cleaning

This wrench should be cleaned with a soft cloth dampened with water. Do not immerse this tool in liquid or use any solvent other than water to clean the tool.

Presetting, Calibration and Repair

Factory presetting and calibration from our ISO 17025 Accredited Calibration Laboratory are available. Contact your SR distributor for details. Parts and factory repair are also available.

INSTRUCTION TO THE USER

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guaran-tee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- * Reorient or relocate the receiving antenna.
- * Increase the separation between the equipment and receiver.
- * Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- * Consult the dealer or an experienced radio/TV technician for help.

This equipment has been certified to comply with the limits for a class B computing device, pursuant to FCC Rules. Operation with non-approved equipment is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

Additional Information

Additional information is available at **www.srtorque.com**. You can also call customer service at

1-847-455-8677 or e-mail them at customerservice@srtorque.com.

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