

1350 SERIES EXACTA 2 DIGITAL TORQUE WRENCH Operating Instructions



The 1350 Series Exacta 2 Digital Torque Wrenches are designed to work with the Global 400 and Global 400mp process monitors. These wireless tools are designed for industrial assembly use. The tool is completely dependent on the Global 400/400mp for directions and torque results reporting. This tool meets or exceeds the requirements of ASME B107.300 and ISO 6789.

These tools are designed for ease of use. Operators simply pull to green, there are no buttons to push. The tool provides operator with visual, auditory, and kinesthetic guidance. The light bands, display, audible beep, and vibration signal the operator of the status for each fastening. The light bands turn yellow when approaching minimum torque. Exceeding maximum torque causes the light bands to turn red and the audible beep changes to one long tone.

Details on programming the tool through the Global 400/400mp process monitors are found in the process monitor manual. There are "how to" programming videos at www.srtorque.com. The 1350 Series Exacta 2 does not communicate with the Global 8.

Interchangeable Heads

These tools use the SR dovetail system. The tools are calibrated for use with SR Interchangeable Heads having a 1 7/16" (36.5mm) Common Centerline. Any SR heads with this centerline length may be used without affecting torque accuracy. If a different head length is used, the parameter must be modified on the process monitor. Failure to do so will generate incorrect torque output during use.

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.

Establishing RF Communication With Sturtevant Richmont Process Monitors

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

Under all conditions, the process monitor and the tool must be on the same radio channel. If the channel on the process monitor 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 establish communication with the process monitor, it is necessary to follow the instructions included with the specific process monitor to be used. Refer to the Global 400 or Global 400mp user manual for details.

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Radio Communications - 2.4 GHz Communication Overview

These tools use the 2.4GHz band for communication with the process monitor. As with all radio communications, there are limits on the distance at which reliable bidirectional 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 is the radio environment in which the unit will be used. The process monitor and tool may operate on up to 15 channels.













The radio modules in the process monitors and tools comply with the IEEE 802.15.4 standard. The channel numbers loosely match the channels used by the IEEE 802.11b/g WLAN standard. The channels used have a much smaller footprint than WLAN. Also, one WLAN channel radiates energy onto several of the adjacent WLAN and process monitor channels. For the most reliable communication between the Sturtevant Richmond process monitor and the tool in an 802.11b/g LAN environment, it is usually best to choose a channel for the process monitor and tool that is separated from the channel of the LAN. Refer to the process monitor user manual for the specific frequencies being used.

Features

Bidirectional Measurement

Traceable Results with Global 400 and Global 400mp

Four Modes of Operation: Torque to Angle (T2A), Torque with Angle Monitoring (TAM), Peak, and Residual
Backlit LCD graphic display

	Press  to increase the displayed value or scroll up
	Press  to decrease the displayed value or scroll down
	Press  to go to next screen in sequence or select the highlighted line
	Showing target torque and angle, as opposed to actual
	Clockwise target or current torque direction
	Counterclockwise target or current torque direction
	Either target direction
	Keypad locked
	Battery charge level

Status indicators – LEDs, buzzer, handle vibration

6-Button keypad

Loading point indicated by plain ring in the middle of the grip

Accuracy

Torque: +/-2% of the indicated value from 20% to 100% of rated capacity, +/-4% of the indicated value from 5% to 19% of rated capacity (CW and CCW directions).

Angle: +/-1° at angular velocity > 10°/sec < 180°/sec.

Environmental Conditions

This tool is intended for indoor use.

Operating/Storage Temperature: 0°F to 130°F (-18°C to 54°C)

Operating/Storage Maximum Relative Humidity: 90% non-condensing

Maximum Altitude: 2000 meters

Electrical Ratings

Tool Input: 1.2 V = 1 A Max.

Battery Replacement


This tool is designed to operate on rechargeable NiMH battery pack, 3.6V nominal voltage. Always respect polarity requirements for the tool. To replace the battery:

1. Twist the battery cap counterclockwise.
2. Replace the discharged battery pack with a fully charged battery pack, inserting the contact end into the handle.
3. Twist the battery cap clockwise until secure.
4. Recharge the discharged battery pack.

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Important User Information





The user shall consult this documentation in all cases where this caution symbol  is marked. If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Safety

- ALWAYS wear safety glasses and all other required safety equipment when operating this tool.
- Do NOT exceed the rated capacity of the tool.
- Do NOT use this tool for any purpose other than that for which it was designed and manufactured.
- Never immerse the tool in liquids.

Operating Instructions

The tool is powered on by screwing on the battery cap. The tool will begin a startup routine and display:

ZEROING ANGLE DO NOT MOVE TOOL	Zeroing angle. (For best results, set the tool on a hard surface to allow the angle sensor to zero.)
COPYRIGHT 2022 SR	Copyright screen.
	Sturtevant Richmond logo.
ES1350-25 V1.00	Identification screen displaying the model and firmware version.
RADIO ID: 1234	Radio ID.
TOOL DISABLED	At this point, if the tool has not been learned into a process monitor or a parameter has not been selected for the tool, this screen will be displayed. Otherwise, the sequence will continue as follows.
	An idle screen similar to this will be displayed. The information displayed is different for each mode of operation.

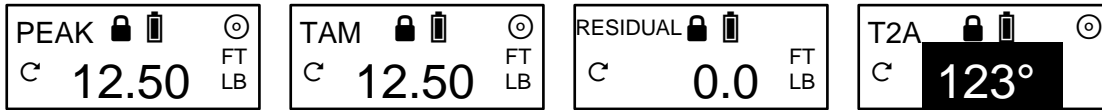
Three phases of operation are repeated for each joint:

1. Idle: showing the measurement mode and target; waiting for torque.
2. Torque Applied: showing the Measurement Screen.
3. Torque Released: showing the Measurement Screen and waiting to clear.

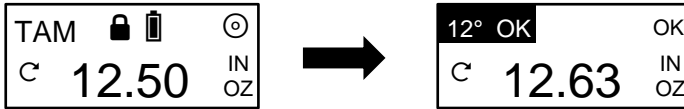
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Idle Screen

As shown below, the Idle Screen is somewhat different for each mode. Residual mode doesn't show target values. The target angle, not torque, is shown for T2A mode. Angle values are shown white-on-black.



Measurement Screen



- When torque is applied, the Measurement Screen replaces the Idle Screen.
- The large digits show the current peak torque or angle depending on the mode.
- The current angle of rotation is shown white-on-black.
- Status is shown for torque and for angle – OK, HI, or LO. (The target icon disappears.)
- Direction of measured torque is shown (clockwise or counterclockwise arrow).
- When torque is released, the digits show the final torque and angle measured. At the auto-clear timeout, the Idle Screen is shown again or “TOOL DISABLED” will be displayed if the batch is complete and lock on batch is active.

Modes of Operation

The meaning of some settings may change depending on mode.

Peak Mode

Peak mode shows the current peak torque on the tool until torque is released. Torque display begins at 4% of full scale torque capacity. The yellow LEDs light up as minimum torque is approached.

- Target Torque – Apply torque to this value to get a green LED.
- Minimum Torque – This is the minimum acceptable torque for the joint. The light bands will be yellow and status OK when this value is met. If torque is between the minimum and maximum settings, the light bands will turn green when torque is released and the dwell timer has expired.
- Maximum Torque – The light bands will turn red and status HI if the peak value exceeds this setting.

Residual Mode

Residual mode shows zero torque on the tool until residual torque is detected, then it shows the residual torque until torque is released, with an OK status.

- Target Angle – The default is 3°. To look for the torque dip only, set the target angle to 0°.

Two methods may be applied to detect residual torque.

- On a soft joint, a pull through a small prescribed angle denotes that residual torque has been reached. The value at that exact angle represents the residual torque that was in the joint. A minimum of 3° is recommended but may be adjusted to reflect joint behavior.
- On a hard joint, a dip in torque may be detected when applied torque breaks the joint loose momentarily. The value at the bottom of the dip represents the residual torque that was in the joint.

Torque To Angle (T2A) Mode

In T2A mode, a joint is tightened to a prescribed target torque. Then the fastener is turned through an additional angle, intended to stretch the fastener and thus apply clamp load by an amount proportional to the angle.

The tool will display the target angle in the Idle state. As torque is applied, the measured torque is displayed in large digits, with an angle of 0°. One yellow LED lights when the Target Torque is reached. The display changes to angle in large digits, starting at 0°. The other yellow LEDs light up as the angle approaches its target.

- Target Torque – Apply torque to this value to get a yellow LED and start counting angle. This is typically set to the snug point on the joint (the point at which the head of the fastener has bottomed out).
- Minimum Torque – This is the minimum acceptable torque for the joint.

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- Target Angle – This is the minimum acceptable angle. The light bands will turn green and status OK when minimum torque and target angle are met.
- Maximum Angle – This is the maximum acceptable angle. The light bands will turn red and status HI if angle exceeds this setting.
- Maximum Torque – This is the maximum acceptable torque for the joint. While final angle is of primary interest, a check on final torque may be warranted as well (e.g., to detect a fastener that is too hard to stretch). The light bands will turn red and status HI if the peak value exceeds this setting. Final torque must fall the minimum and maximum torque settings to be acceptable.

Torque With Angle Monitoring (TAM) Mode

TAM is an extension of Peak mode, adding the ability to detect cross-threaded fasteners, double hits on a joint, and the like. Primarily, it adds the constraint that a fastener must turn through a minimum angle before minimum torque is reached.

TAM mode uses the same settings as Peak mode, plus:

- Snug Torque – This is the torque value at which angle measurement starts. This is typically set to the snug point on the joint (the point at which the head of the fastener has bottomed out).
- Target Angle – This is the minimum angle needed before minimum torque is reached. The light bands will turn red and status DH (Double Hit) if minimum torque is reached before minimum angle.
- Maximum Angle – This is the maximum acceptable angle. The light bands will turn red and status HI if angle exceeds this setting.

Menu Options

To access the main menu on the tool, press and hold \leftarrow for 3 seconds. Use $\blacktriangle/\blacktriangledown$ to highlight a menu selection and press \leftarrow to select. Main menu selections include:

- SETTINGS – Displays tool settings menu.
- OPTIONS – Displays tool options menu.
- CALIBRATION – Displays calibration menu.
- INFO – Displays information about the tool.
- EXIT – Exit main menu and return to the idle screen.

SETTINGS

- SLEEP TIME defines the interval that the tool enters a power down state following the last applied torque or button press. Interval options include: 2 MINS, 4 MINS, 10 MINS, 30 MINS, 1 HOUR, 2 HOURS, and 8 HOURS.

OPTIONS

- BATTERY TYPE is used to configure the battery discharge thresholds for the battery type used. Choose from:
 - 3 CELLS – This applies to the NiMH battery pack used in the original tool design.
 - SINGLE NIMH – This is for the single AA NiMH battery design.
- The tool is considered to be overloaded when it is loaded beyond 120% of its rated capacity. The OVERLOAD OPTION configures how the tool operates after it is overloaded. Choose from:
 - OVERLOAD CONT – Pressing \odot will clear the overload warning and allow the tool to be used.
 - OVERLOAD LOCK – Pressing \odot will display the unlock password screen. The password must be entered to clear the warning and allow the tool to be used. The intention of this option is to require the tool to be checked before putting it back into use.

NOTE: It is highly recommended that tool accuracy be verified after an overload event.

CALIBRATION


- CAL WRENCH – This option will start the calibration process.
- CAL COUNT – This displays the number of times the tool has been calibrated. Refer to the Exacta 1350 Calibration Manual for details on calibrating the tool.

INFO

- VER – This displays the tool firmware version.
- OVERLOAD CNT – This displays the number of times the tool was loaded beyond 120% of tool capacity.
- OPERATIONS CNT – This displays the number of operations/cycles the has reported a result to the process monitor.

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Troubleshooting

Issue	Possible Cause	Resolution
Tool does not power on	Dead battery	Replace battery with a fully charged one.
Torque reading out of spec	Calibration required	Calibrate the tool.
	Incorrect head length	Modify the parameter to specify the correct head length. Use the proper head.
CHANGE BATTERY	Low battery	Replace battery with a fully charged one.
ZEROING ANGLE DO NOT MOVE TOOL	Tool moving while zeroing	Set the tool on a hard surface to allow the angle sensor to zero.
	Angle sensor not calibrated	Calibrate the angle sensor.
TOOL DISABLED	No connection to Global	Learn the tool to the Global. Move the tool within range of Global.
	Tool parameter not selected	Select an appropriate parameter from the Global.
TORQUE OVERLOAD	Tool loaded over 120% of rated capacity	Press  to clear the overload message. Check the tool on a tester to verify accuracy.

Care and Maintenance

This tool 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. Refer to the Exacta 1350 Calibration Manual for details on calibrating the tool. Contact your SR distributor for details. Parts and factory repair are also available. All repairs are to be performed by factory trained technicians or the factory only.

Additional Information

Additional information is available at www.srtorque.com. You can also call customer service at 1-847-455-8677 or send e-mail to customerservice@srtorque.com.