



LITHIUM SERIES® II Electric Torque Tool User Interface Guide

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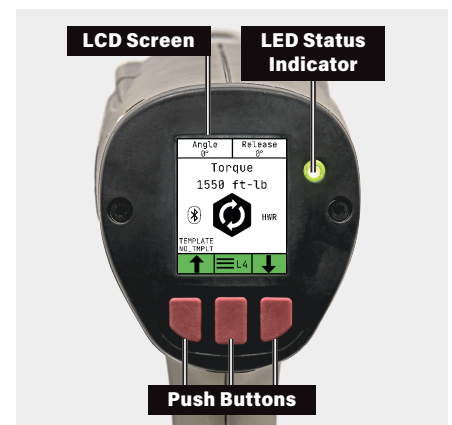
TOOL SWITCHES AND
CONTROL PANEL

1. Tool Switches and Control Panel

SWITCHES



CONTROL PANEL



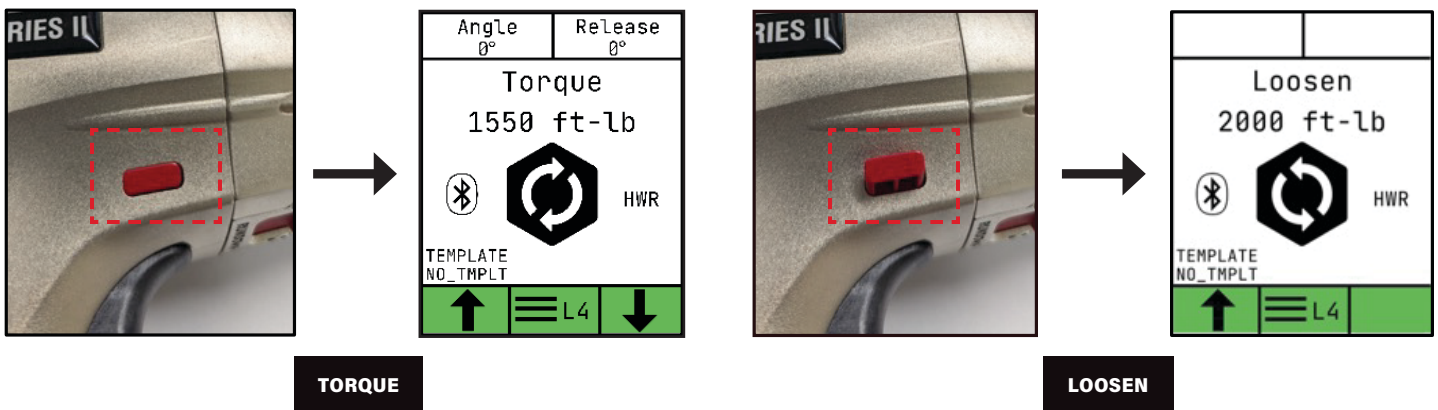
DUAL SPEED SWITCH



A) POWER ON AND OFF

- **Power On:** Press any button on the rear control panel quickly. The HYTORC logo briefly displays as the unit powers on, then shows the Home Screen.
- **Power Off (2 options):**
 1. Select Power Off from the Main Menu.
 2. Press and hold the center button for 3 seconds from the Home Screen.
- **Auto Shutdown:** The tool automatically powers off after 5 minutes of inactivity (default). This can be enabled or disabled in the Settings Menu.
- The tool saves all current settings on power-off and restores them on power-on, including the user access level.
- **IMPORTANT:** Always remove the battery pack from the tool after powering off or auto shutdown.

B) DIRECTIONAL SWITCH



The arrows at the center of the Home Screen, inside the nut, show the tool's current direction of rotation. The directional arrows on the screen will reverse direction when the tool mode is changed.

DIRECTIONAL SWITCH (Continued)

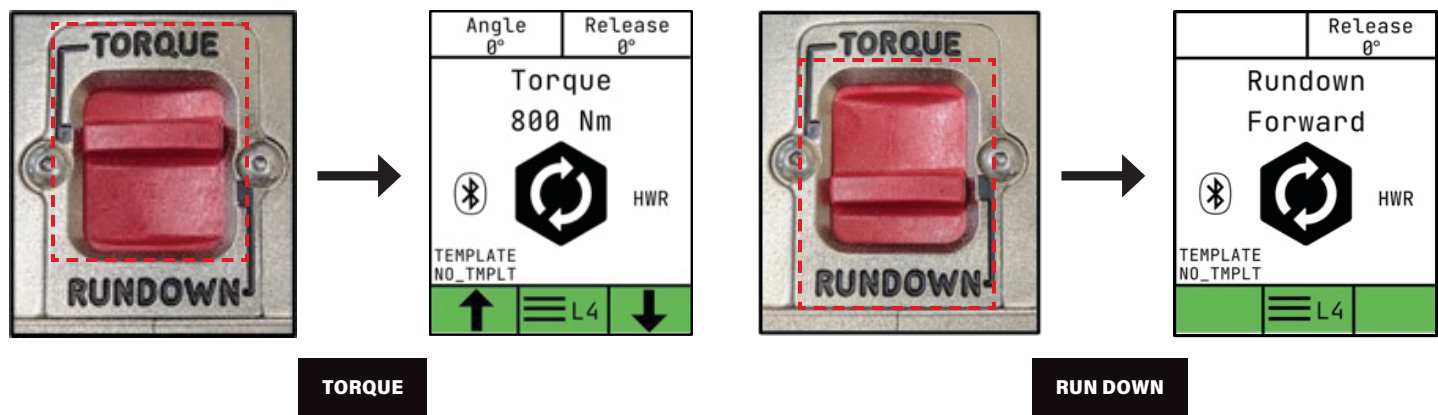
- **Torque:**

- Push the directional switch on the **right** side to set the tool for Right-Hand TORQUE operation.
- Push the directional switch on the **left** to torque Left-Hand (LH, HWL) or HYTORC Nut (HN) fasteners.

- **Loosen:**

- Push the directional switch on the **left** side to set the tool to LOOSEN Right-Hand fasteners.
- Push the directional switch on the **right** to loosen Left-Hand (LH, HWL) or HYTORC Nut (HN) fasteners.
- By default, the loosen operation is set to the tool's maximum torque output.
- The loosening torque can be decreased and is adjustable.

C) DUAL SPEED SWITCH



The tool has two speed modes: TORQUE and RUNDOWN.

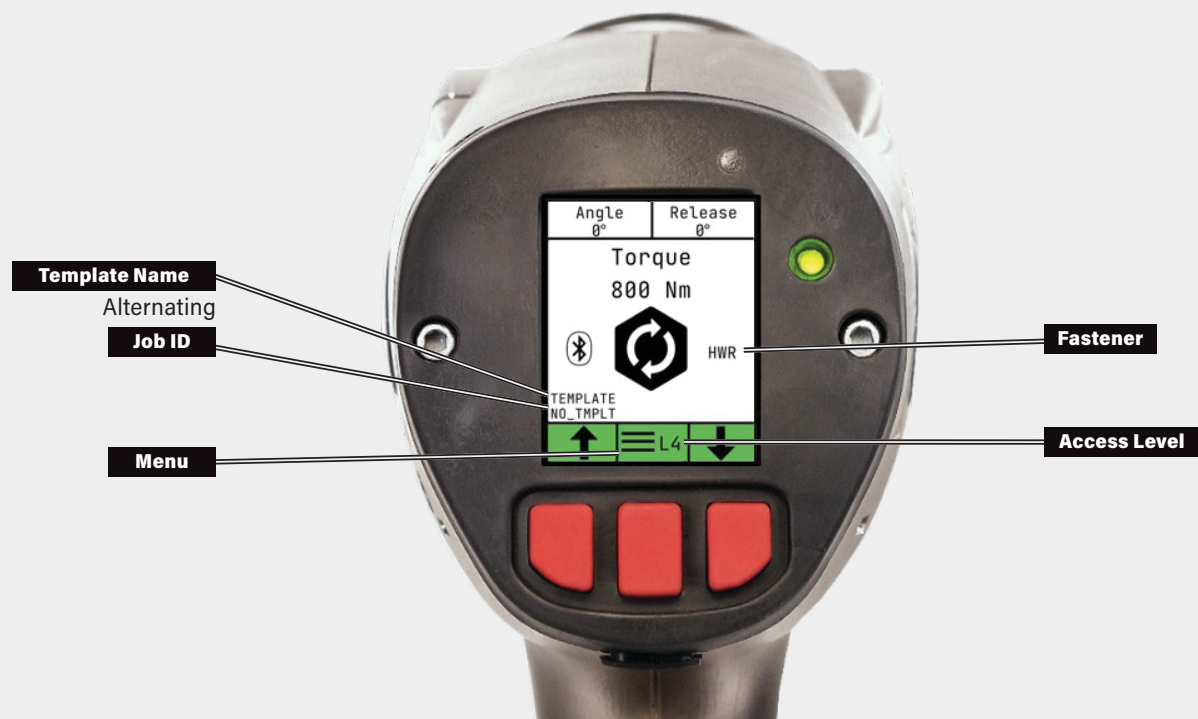
- **TORQUE:** Push the dual-speed switch toward the driver end of the tool to torque for controlled, measured operations at a slower speed.
- **RUNDOWN:** Push the dual-speed switch toward the trigger for increased speed. Use this to quickly bring the nut into position for torquing. Torque and angle measurements are not available. The work light blinks when the tool is in RUNDOWN mode.

D) REVERSE RUNDOWN

- This is used to quickly remove bolts that are not tightly torqued.
- With the dual-speed switch in RUNDOWN mode, press the directional switch on the **left** side to set the tool to LOOSEN, and then pull and hold the trigger to remove the nut. Push **right** for LH, HWL, or HN.
- The work light blinks when the tool is in reverse RUNDOWN mode.

E) HOME SCREEN

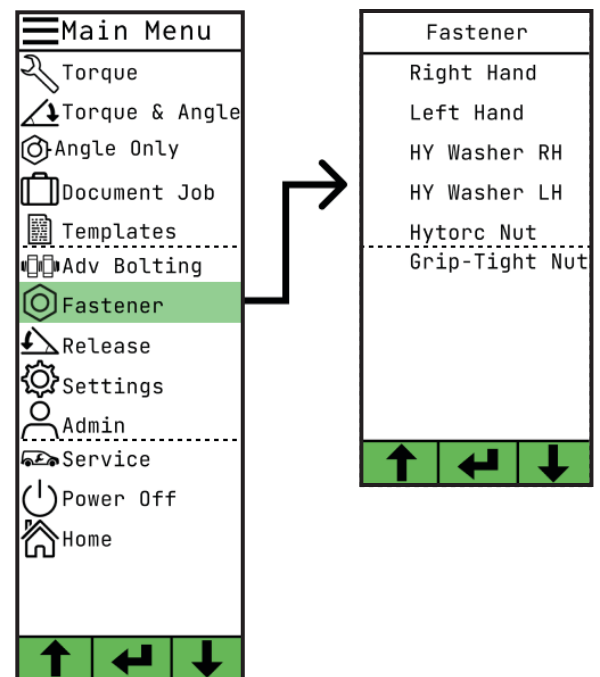
- Displays the values for: Torque, Angle, Release, Fastener, Access Level, Job ID (when selected), Template, and availability of Bluetooth.
- Additional relevant information is displayed when using various advanced bolting modes.
- The arrows at the center of the screen show the current direction of the nut rotation.



F) CHANGE FASTENER

The fastener selection determines the rotation direction (CW or CCW) and the attached socket.

- The default fastener type is Right-Hand (RH).
- From the **Main Menu**, scroll down and select **Fastener** and choose the desired fastener type.
- The selected type of fastener provides an additional safety measure if needed:
 - Right-Hand (RH) or Left-Hand (LH) - While holding the trigger, briefly press any button to start. This keeps the second hand clear of the reaction arm.
 - HYTORC Washer Right (HWR), HYTORC Washer Left (HWL), HYTORC Nut (HN), or Grip-Tight Nut (GTN) – As soon as the trigger is pulled, the tool's motor begins to rotate because a reaction arm is not used with these fasteners.
 - **Note:** Additional Safety options are available in the Settings Menu.
- The selected fastener type will be saved and stay in use until it is manually changed or a template with a different fastener is activated.



FASTENER TYPE	ABBREVIATION	TIGHTEN DIRECTION	REQUIRED ACCESSORY	SAFETY
Right-Hand	RH	Clockwise	Reaction Arm	Trigger + Press a button with 2nd hand
Left-Hand	LH	Counterclockwise	Reaction Arm	Trigger + Press a button with 2nd hand
HYTORC Washer Right-Hand	HWR	Clockwise	HYTORC Washer Driver	Trigger only. 2nd hand is free
HYTORC Washer Left Hand	HWL	Counterclockwise	HYTORC Washer Driver	Trigger only. 2nd hand is free
HYTORC Nut	HN	Counterclockwise	HYTORC Nut Driver	Trigger only. 2nd hand is free
HYTORC Grip-Tight Nut	GTN	Clockwise	HYTORC Grip-Tight Nut Driver	Trigger only. 2nd hand is free



2

MAIN MENU

2. Main Menu



TORQUE

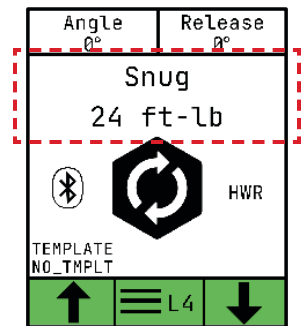
Tightens bolts to a precise clamping force by rotating the nut to a specified torque value. The Torque value can be adjusted from the minimum to the maximum calibrated range of the tool, subject to the Torque Limit set in the Settings Menu.

- **To apply torque**
 - Pull and **hold** the trigger.
 - Follow the on-screen instructions for additional button presses based on Fastener and Safety settings.
 - Keep holding the trigger until the tool reaches the specified torque value and comes to a stop.
 - If a Release angle is specified, continue to hold the trigger until the tool releases from the nut.
 - Upon successful completion, the screen flashes a **green** check mark, and the status LED light changes from amber ● to green ●. An optional beep can be enabled in Settings.
 - If the desired torque is not achieved, the screen displays **Failure** or **Error**, flashes a red **X**, and the status LED light turns red ●.
- **To increase or decrease the torque value**
 - From Home Screen: Push and hold the left button  or the right button. .
 - **Note:** Admin (L4) can lock the torque value and disable torque adjustment for L1 users.
 - The tool enters a **Snug** mode after the torque is lowered below the minimum calibrated torque value.

SNUG MODE

A preliminary pre-torque step to confirm proper alignment and contact between bolted surfaces before applying full torque.

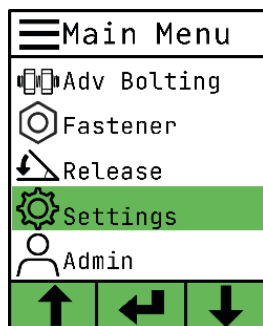
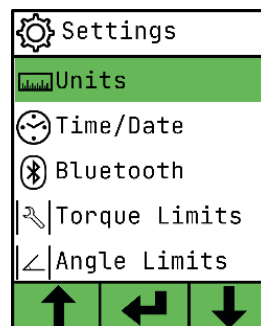
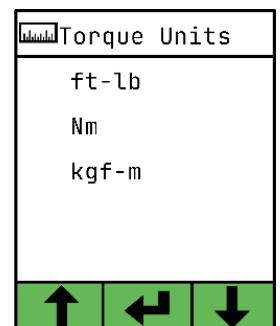
- Snug operates below the calibrated torque range of the tool. It does not precisely measure tightening compared to the Torque mode.
- Snug can also be used to tighten bolts at a lower torque. However, avoid using the Snug mode for critical torque applications because the torque output accuracy is undetermined.
- Snug mode is activated when the torque setting is below the lowest calibrated torque value of the tool.
- The tool remains in Snug mode until torque is raised above the minimum calibrated value. At this point, the screen display changes from Snug to Torque.
- The Torque & Angle feature enables angle tightening following a snug fit. This combined snug-plus-angle method can increase torque beyond the initial snug, reaching the tool's calibrated range and ensuring the expected accuracy.

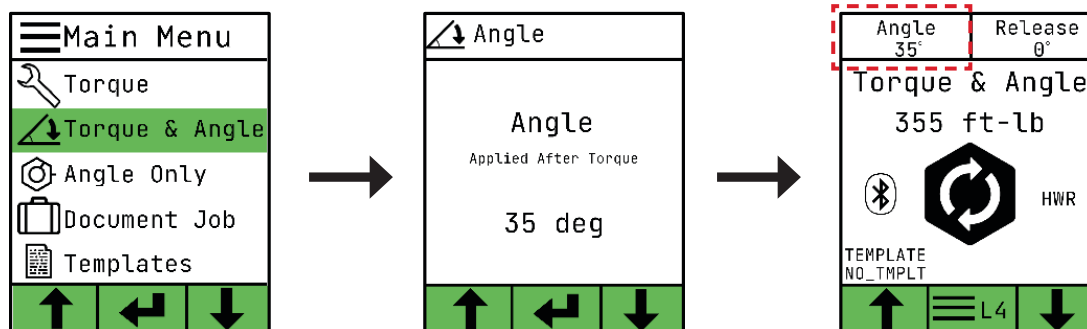


MODIFYING TORQUE UNITS

To modify the units of torque measurement:

- From the **Main Menu**, scroll down and select **Settings**, then **Units**. Select Foot-pound (ft-lb), Newton-meter (Nm), or Kilogram-force-meter (kgf-m).

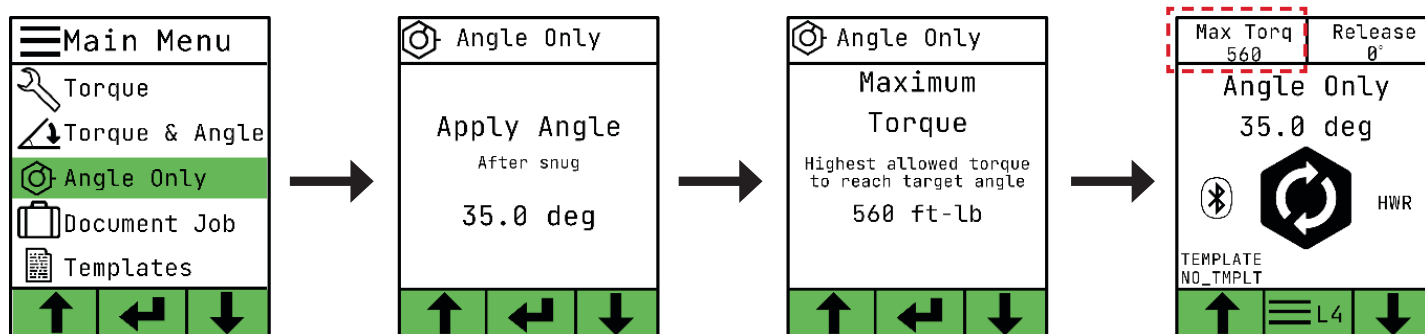




A two-stage tightening process. It applies a specific torque value for initial clamping and then rotates to a precise angle for accurate bolt stretch. This combined approach delivers highly accurate bolt preload by directly controlling the bolt's stretch, minimizing the impact of friction, and ensuring consistent, reliable connections. Ideal for applications demanding the highest levels of fastening integrity.

- From the **Main Menu**, select **Torque & Angle**.
- Adjust the desired angle (in degrees) to apply after torque and press the center button to confirm.
- Angle range 0° to 360°
- The Home Screen displays the chosen angle value in its top-left corner.
- The torque value is adjustable using the same up/down controls as conventional torque settings.
- Pull and **hold** the trigger.
- Follow the on-screen instructions for additional button presses based on Fastener and Safety settings.
- The angle is applied after completing the torque operation, turning the fastener to the specified angle, up to the tool's maximum output or the specified Torque Limit (see Settings section).
- Keep holding the trigger until the tool reaches the specified torque-plus-angle and comes to a stop.
- If a Release angle is specified, continue to hold the trigger until the tool releases from the nut.
- When Angle Delay is specified in the tool's settings, a delay of 1 to 5 seconds is introduced after the specified torque is achieved and before the angle is applied.
- Upon successful completion, the screen flashes a **green** check mark, and the status LED light changes from amber ● to green ●.
- An optional beep can be enabled in Settings.
- If the desired torque plus angle is not achieved, the screen displays **Failure** or **Error**, flashes a red X, and the status LED light turns red ●.
- **CAUTION:** Angle operations deliver significant torque. Set angle values carefully.

ANGLE ONLY

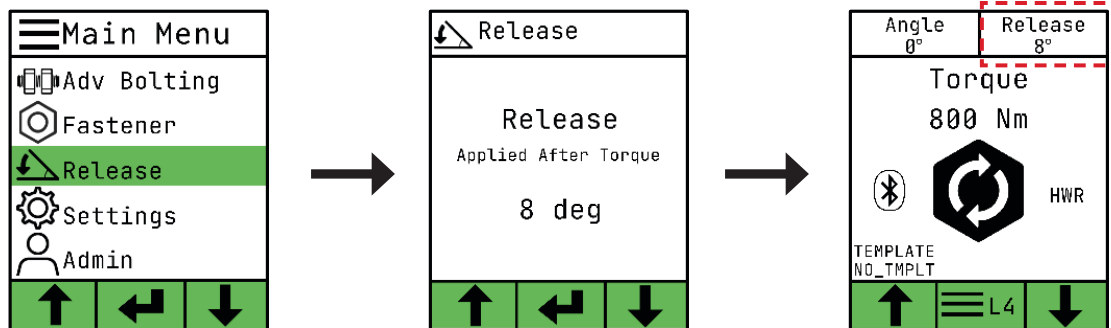


ANGLE ONLY (Continued)

Tightens bolts by rotating the nut to a specific angle after a snug fit, ensuring a consistent load that is less influenced by friction than tightening by torque measurement alone. Also referred to as "Turn Angle" or "Turn-of-Nut" bolting method. For added safety, the function provides an option to limit the torque applied during the angle rotation.

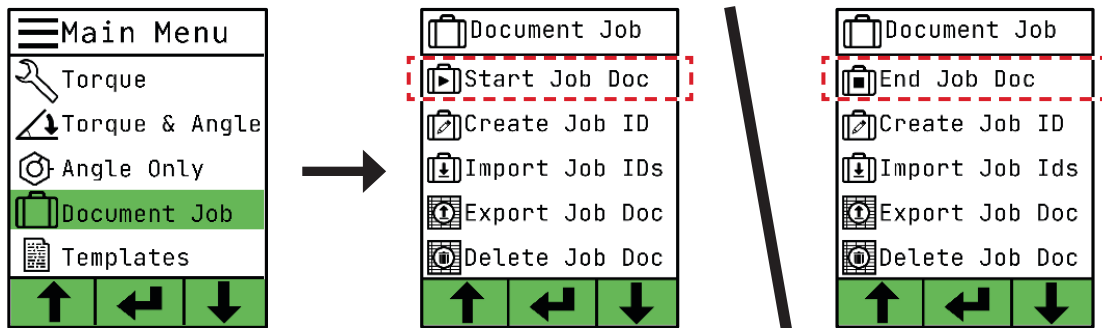
- From the **Main Menu**, select **Angle Only**.
- Adjust the desired angle (in degrees) to apply to the fastener and press the center button to confirm.
- Adjust the maximum torque allowed during the angle rotation, then confirm.
- Pull and **hold** the trigger.
- Follow the on-screen instructions for additional button presses based on Fastener and Safety settings.
- Angle range 0° to 360°
- The maximum torque allowed can be the maximum calibrated range of the tool, subject to the Torque Limit set in the Settings Menu.
- The angle measurement begins once the tool detects a snug condition, which is characterized by a torque of 5% of the tool's maximum output.
- Keep the trigger pressed until the tool reaches the specified angle and comes to a stop.
- If a Release angle is specified, continue to hold the trigger until the tool releases from the nut.
- Upon successful completion, the screen flashes a **green** check mark, and the status LED light changes from amber ● to green ●. An optional beep can be enabled in Settings.
- If the desired angle is not achieved, the screen displays **Failure** or **Error**, flashes a red X, and the status LED light turns red ●.
- **CAUTION:** Angle operations deliver significant torque. Set angle values carefully.

RELEASE



When completing a tightening operation, the gearbox relaxes automatically, reducing the tension applied to the nut and preventing the tool from locking onto it. Therefore, in most cases, a 0° Release angle is appropriate. If a particular job causes the tool to lock (or 'stuck') after a tightening operation, a small release angle, typically 5° - 7°, can be specified.

- From the **Main Menu**, scroll down and select **Release** and adjust the Release Angle. Press the center button to confirm.
- The Home Screen displays the Release angle value in the top-right corner.
- A Release angle larger than 0° will reverse the rotation by the specified angle, immediately after the tightening operation.
- An effective Release angle varies based on the application. It is advisable to set the angle to the lowest necessary to release the tool without loosening the nut.
- The direction of the Release angle rotation is always opposite to the direction of the tightening operation.



The tool automatically records jobs and stores bolting result data in its internal memory. This data can later be exported wirelessly to an app (Example: HYTORC CONNECT) or via USB to a PC.

- The tool has a memory capacity of over 65,000 bolting events.
- Each bolting event record contains the date, time, duration (in seconds), target and final torque, angle, documentation IDs, and other relevant operational data, along with a result status of OK or an error code.
- See Appendix C, D, and E for full descriptions of documentation fields, error codes, and sample data.
- When using a Bluetooth connection with a compatible application, such as HYTORC CONNECT, the documentation job data is transmitted immediately after each operation, except after a no-load Early Trigger Release (ETR).
- Bolting data is transmitted simultaneously over Bluetooth and also saved in the tool's internal memory.
- Job data documentation can be exported from the tool, but cannot be imported back into the tool's memory.
- Real-time, two-way control and data exchange are possible through Open Protocol with the HY-BRIDGE controller. See Appendix B for data sharing and communication.
- **Note:** A torque tool is not intended for long-term storage of bolting data. Regularly export job data to a secure location—ideally daily or weekly—to avoid data loss.

User ID

Associates bolting data with a specific username or ID. Allows users at any access level to enter their unique ID for data recording and documentation purposes. The User ID is saved with each job documentation data record.



- From the **Main Menu**, scroll down and select **Admin → User ID**.
- Enter up to 10 characters using uppercase letters (A–Z), digits (0–9), or underscores ("_").
- Example: "MYNAME_123"
- When using the General or Wheel sequence, the tool prompts the user to enter a user ID.
- When a User ID is not provided, the default blank ("[]") is recorded in the documentation job data.

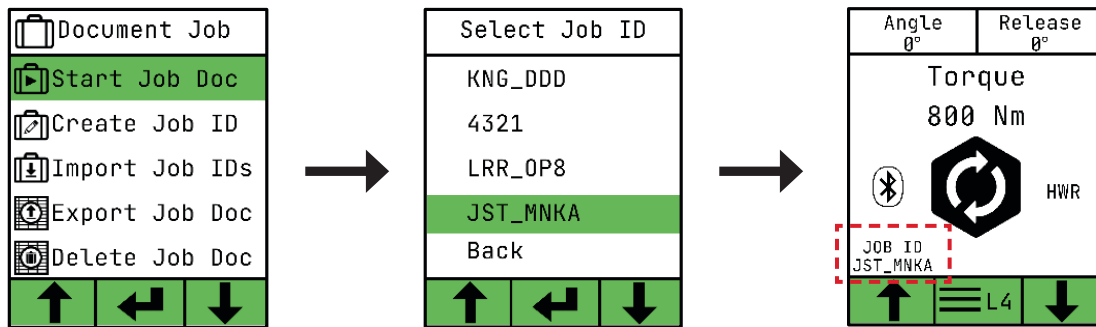
Job ID

For documentation purposes, assign a Job ID as a label to identify a specific bolting job, such as a plate, flange, beam, joint, hub, etc.

- The Job ID does not specify any bolting parameters, such as torque or angle.
- The tool's memory can store up to 100 Job IDs that should be created or imported in advance.
- When Job ID is not specified, NO_JOBID is recorded as the Job ID in job documentation data.
- From the Main Menu, select Document Job, then any of the following options:

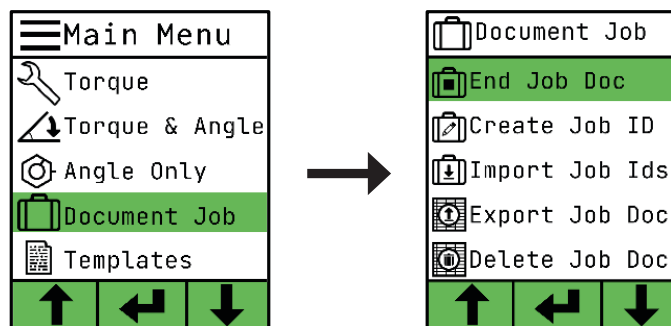


Start Job Doc



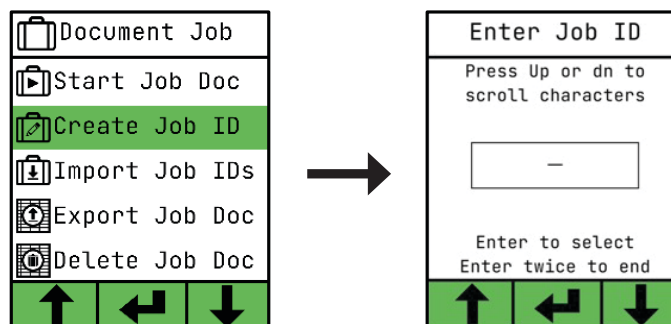
- When selected, the tool presents a list of available Job IDs (if any).
- Choose the desired Job ID and press the center button to begin job documentation with the specified Job ID.
- The active Job ID is displayed on the Home Screen in the lower left corner, alternating with the active template name.
- When a specific Job ID is active, this option becomes **End Job Doc**.

End Job Doc



- Ends job documentation that is associated with the currently specified Job ID.
- Job documentation will continue with a "NO_JOBID" as the Job ID.
- When a specific Job ID is not active, this option becomes **Start Job Doc**.

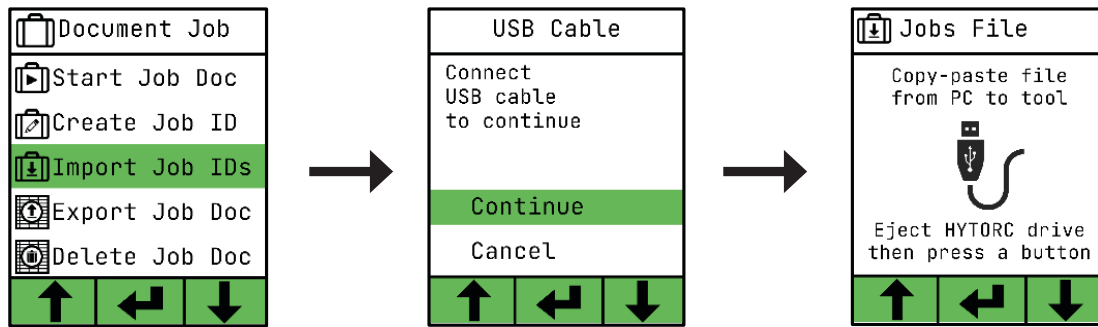
Create Job ID



- Enter up to 8 characters using uppercase letters (A–Z), digits (0–9), or underscores ("_"). Example: "JOB_123". Refer to Appendix A for instructions on Entering Characters Method.
- After accepting the newly created Job ID, an option is provided to start the Job ID immediately or create another one.



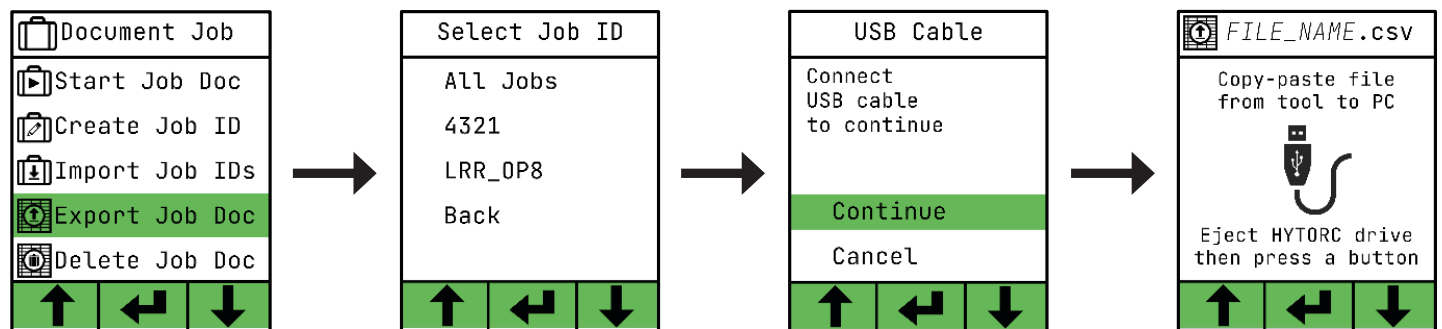
Import Job ID



- Preparation: Using a Windows computer, create a text file named JOBIDS.CSV that contains a list of up to 100 Job IDs. Place each Job ID on a new line, consisting of 1 to 8 characters using uppercase letters (A–Z), digits (0–9), or underscores ("_").
- When selected, the tool displays a prompt to connect it with a USB data cable to a Windows PC.
- When the computer detects the USB connection, it shows the tool as a new drive, such as drive (D:).
- Copy the JOBIDS.CSV file from the PC to the tool's drive, then disconnect.
- A compatible Micro-USB to USB Type A data cable is included with the tool.



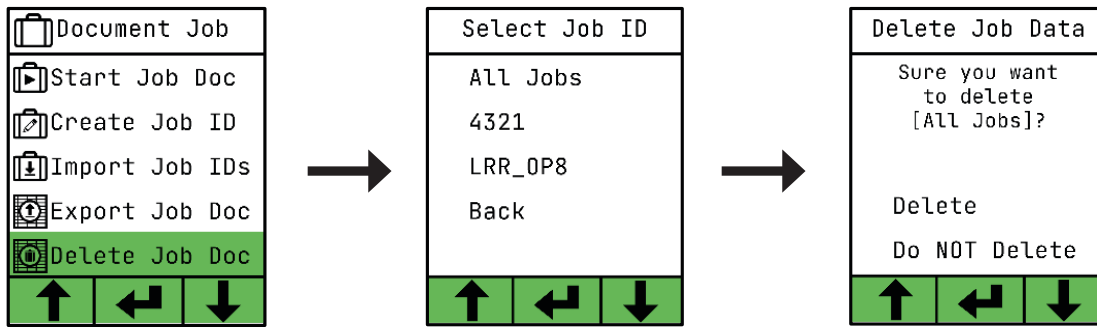
Export Job Doc



- Retrieves detailed job documentation from the tool, including all data collected from each trigger pull event.
- Job data is exported to a Windows PC as a Comma-Separated Values (.CSV) file, which can be opened with any standard spreadsheet program or imported into most computer systems.
- The CSV file includes column headings as described in the Documentation Fields Description. Each row denotes an individual trigger pull event.
- When selected, the tool presents a list of available Job IDs. To export documentation data, select one of the following:
 - A specific Job ID.
 - **NO_JOBID** for data collected without a designated Job ID.
 - **All Jobs** to export all available documentation data, regardless of Job ID.
- After selecting which job data to export, the tool displays a prompt to connect it with a USB data cable to a Windows PC.
- When the computer detects the USB connection, it shows the tool as a new drive, such as drive (D:).
- The .CSV file name is either the selected JobID.CSV or NO_JOBID.CSV, if a Job ID was not assigned.
- Copy the CSV file from the tool's drive to the PC, then disconnect.
- A compatible Micro-USB to USB Type A data cable is included with the tool.
- See Appendix B for descriptions of other data export options.

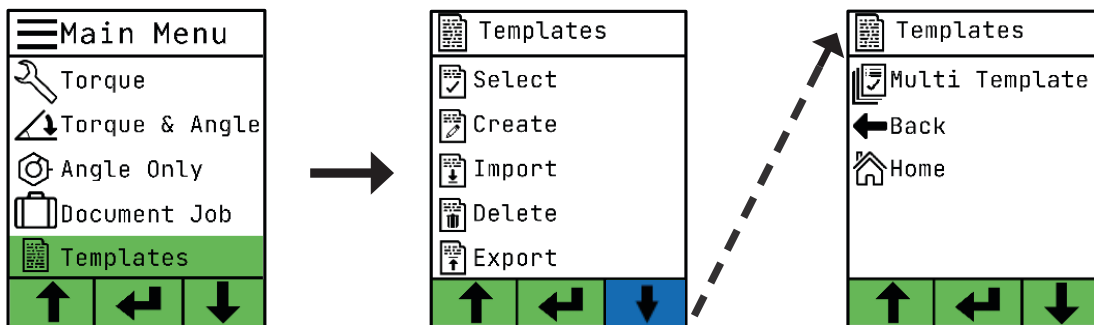


Delete Job Doc



- Delete both the Job ID and all data that have been collected and associated with that Job ID.
- When selected, the tool presents a list of available Job IDs. To delete, select one of the following:
 - A specific Job ID.
 - **NO_JOBID** for data collected without a designated Job ID.
 - **All Jobs** to delete all documentation data, regardless of Job ID.
- Deleted Job IDs and job documentation are erased permanently from memory.

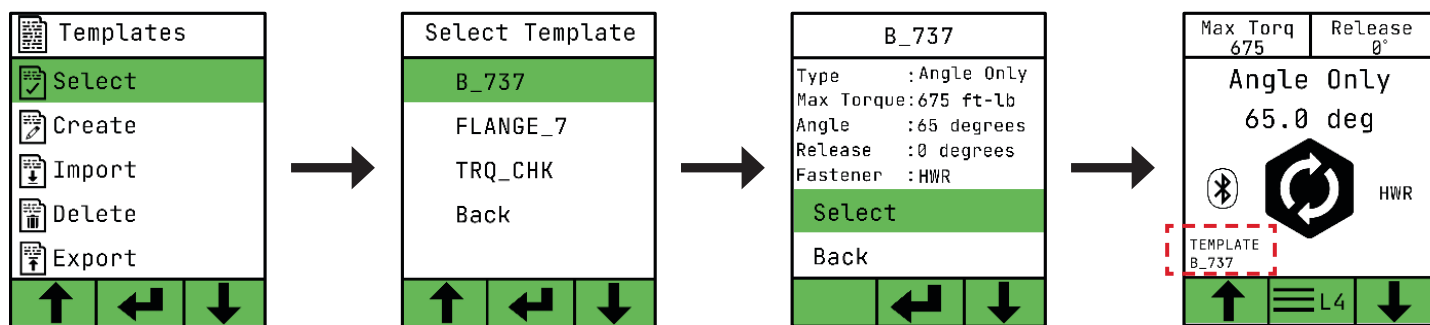
TEMPLATES



A template is a named, reusable collection of bolting parameters stored in the tool that can be quickly retrieved and used for a bolting task. A template includes the operation type (Torque, Torque & Angle, Angle Only, Rotation, etc.) along with the appropriate values for a specific bolting function. Using templates is convenient and reduces the risk of human error, especially when the tool's access level is lowered.

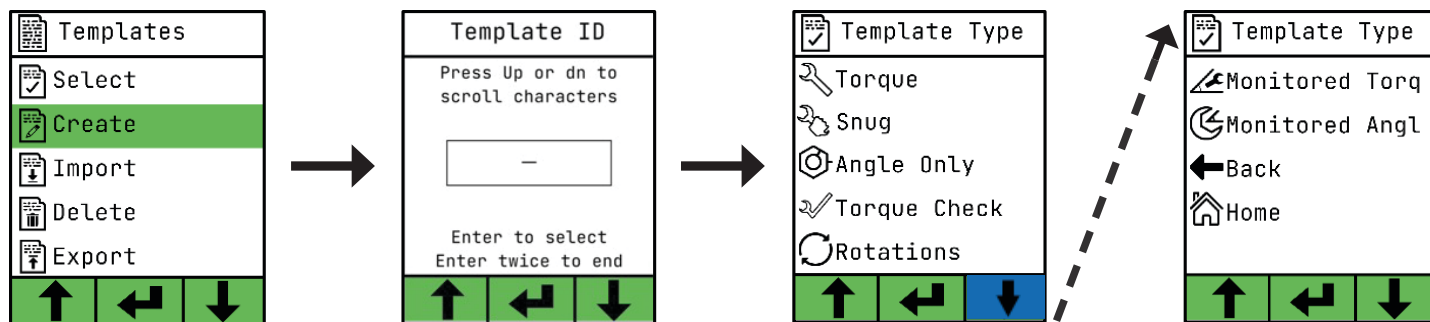
- The tool's memory can store up to 30 templates that should be created or imported in advance.
- If no template is specified, then NO_TMPLT is logged as the template name in the job documentation data.
- From the **Main Menu**, select **Templates**, then any of the following options:

Select



- When selected, the tool presents a list of available templates.
- Choose the desired template to activate and press the center button.
- The tool displays the type of bolting operation and the operation values for confirmation.
- The active template name appears in the lower-left corner of the Home Screen, alternating with the Job ID.
- If a Job ID is currently active for documentation, the tool will prompt either to end the Job ID or to keep the current one.
- To deactivate a template, press the left (up) or right (down) button on the Home Screen. The tool will prompt for **End Template** confirmation.

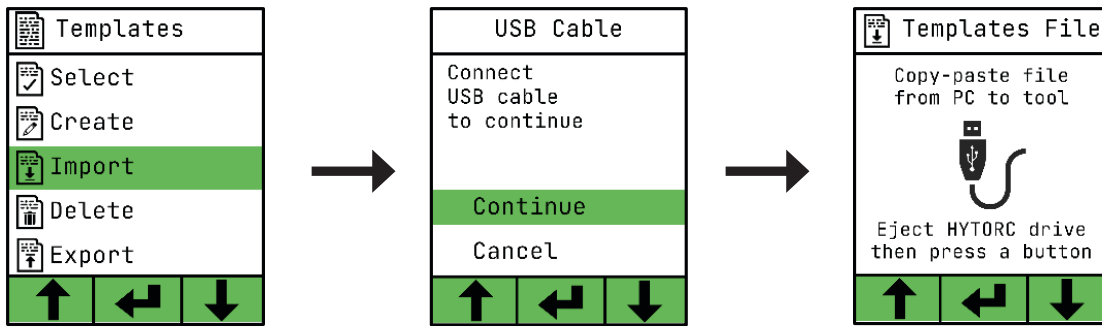
Create



- Enter a name for the new template (1–8 characters) following the method described in Appendix A.
- Select an operation type for the template. Available options are: Torque, Snug, Angle Only, Torque Check, Rotations, Monitored Torque, and Monitored Angle.
- Depending on the selected operation type, the tool requests relevant information, such as torque, angle, release angle, and more. Refer to the individual bolting type feature description for details.
- When finished, the tool saves the template for future use.



Import



- Preparation:
 - Using a Windows computer, create a text file named TEMPLATE.CSV that contains a list of up to 30 templates.
 - Place each template on a new line, beginning with the template name, which consists of 1 to 8 characters using uppercase letters (A–Z), digits (0–9), or underscores ("_").
 - Follow the template name with the template type code and its required values separated by a comma (","), as described below:

BOLTING FUNCTION	TEMPLATE TYPE CODE	PARAMETERS
Torque	TAR	Units,Torque,Angle,Release,Fastener
Snug	SRF	Units,Snug Torque,Angle,Release,Fastener
Angle Only	AOL	Units,Angle,Release,Max Torque,Fastener,Speed
Torque Check	ETC	Units,Torque,Release,Max Angle,Fastener
Rotations	ROT	Units,Release,Torque Limit,Fastener,Number of Rotations
Monitored Torque	MOT	Units,Torque,Trigger Torque,Min Angle,Max Angle,Release,Fastener
Monitored Angle	MOA	Units,Angle,Trigger Torque,Min Torque,Max Torque,Release,Fastener

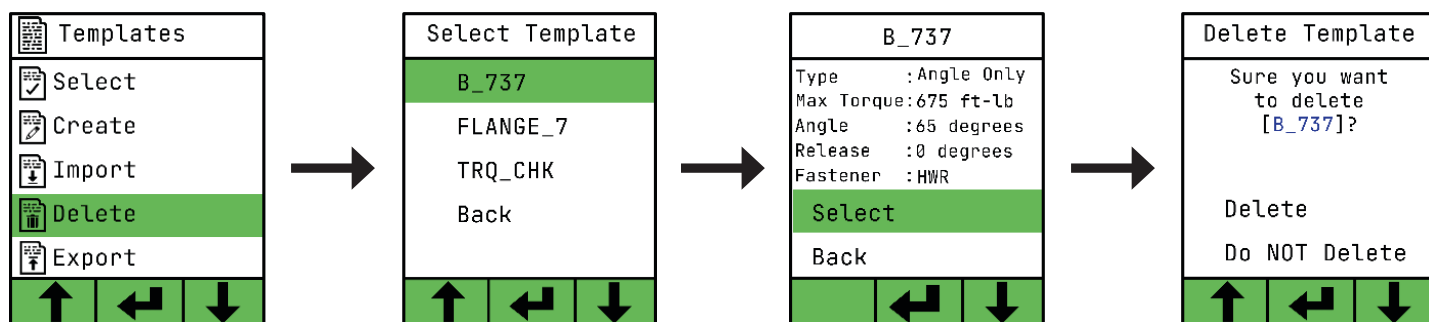
Template Examples:

BOLTING FUNCTION	EXAMPLE	NOTES
Torque	STEP_01,TAR,FTLB,250,60,2,HWR	Use 0 angle for Torque Only
Snug	MY_SNUG,SRF,FTLB,50,0,0,HWR	Use snug range of the tool
Angle Only	LAST_PAS,AOL,FTLB,120,0,0,650,RH,NORMAL	Angle with a decimal point, speed must be NORMAL
Torque Check	TCK_350,ETC,NM,350,1,0,RH	Max angle 1 to 3 degrees
Rotation	SPIN3_5,ROT,FTLB,0,800,HWR,3,5	Rotations number with a decimal point
Monitored Torque	EXACT100,MOT,FTLB,100,12,5,35,0,HWR	
Monitored Angle	FINL_35,MOA,FTLB,35,12,20,75,0,HWR	

Tip: create templates in the tool, export them to a PC as TEMPLATE.CSV file. Edit the exported file on the PC as needed or generate additional templates, then import the file back into the tool.

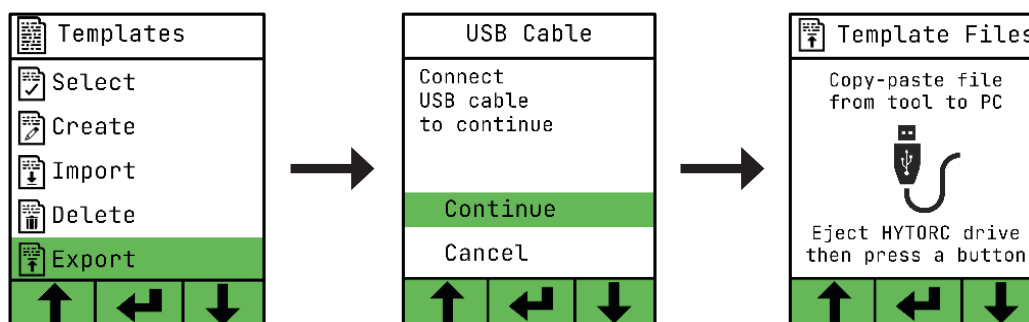
- When selected, the tool displays a prompt to connect it with a USB data cable to a Windows PC.
- When the computer detects the USB connection, it shows the tool as a new drive, such as drive (D:).
- Copy the TEMPLATE.CSV file from the PC to the tool's drive, then disconnect.
- A compatible Micro-USB to USB Type A data cable is included with the tool.
- Note:** Another option is to create templates and send them to the tool using an app such as HYTORC CONNECT.

Delete



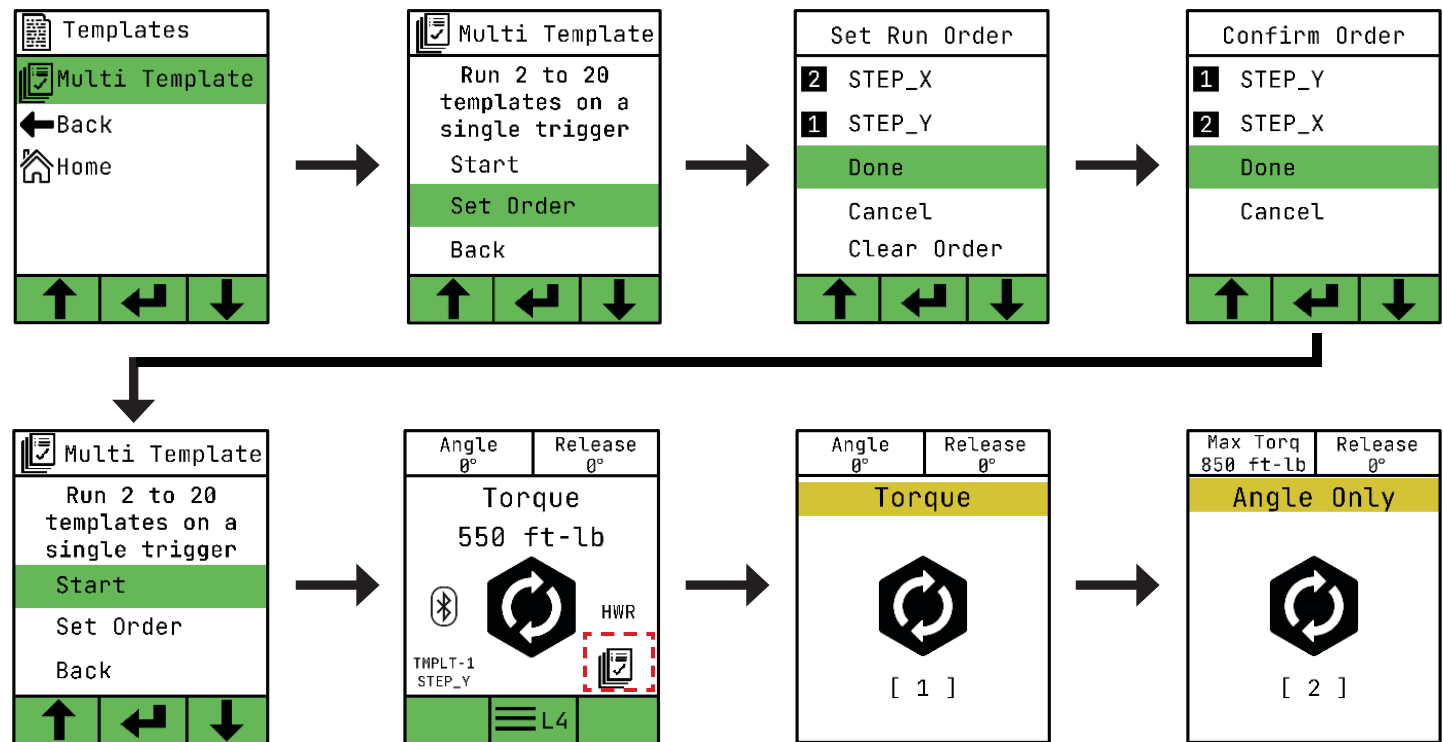
- When selected, the tool presents a list of available templates.
- Choose the desired template to delete and press the center button.
- The tool displays the bolting operation type along with the operational values for the chosen template.
- Confirm and select **Delete** to permanently erase the template from the tool's memory.

Export



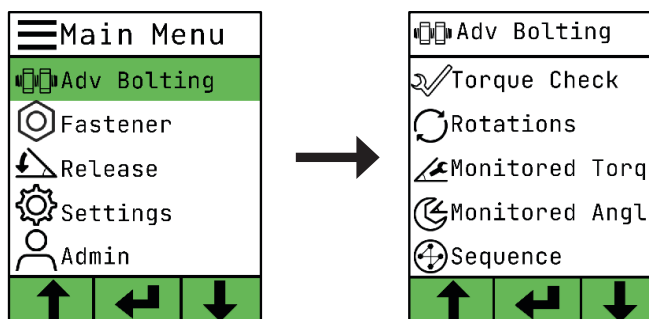
- Save a file containing all templates stored in the tool's memory to a computer. Use the file as a backup for future needs or to distribute templates to other tools of identical size.
- The tool displays a prompt to connect it with a USB data cable to a Windows PC.
- When the computer detects the USB connection, it shows the tool as a new drive, such as drive (D:).
- Copy the TEMPLATE.CSV file from the tool's drive to the PC, then disconnect.
- A compatible Micro-USB to USB Type A data cable is included with the tool.

Multi Template

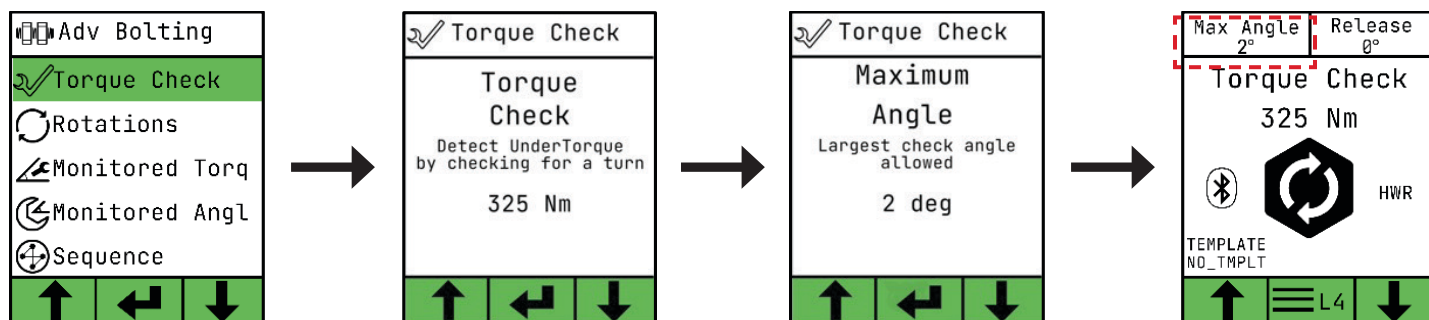


Use the Multi-Template mode to run a series of templates in succession with one trigger pull. This simplifies any compounded bolting operation, such as tightening a Center Lock Nut, which requires tightening, then loosening, and then tightening again.

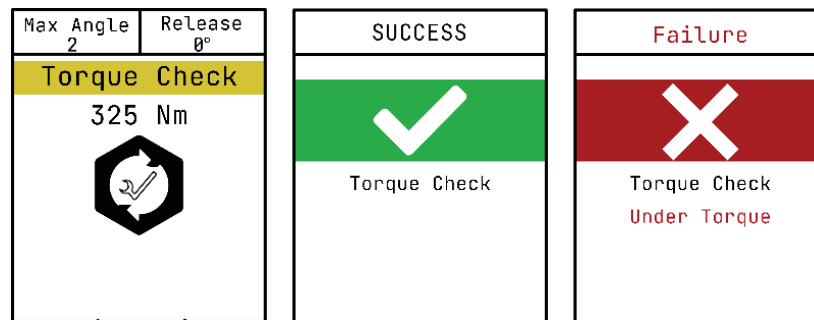
- Preparation:
 - Create or import all necessary bolting templates for the operation. The tool can store more templates than needed for the Multi-Template mode. The order in which the templates are created or loaded into the tool does not matter.
 - Select **Set Order** to start choosing the templates to use and the order in which to execute them.
 - Select between 2 and 20 templates in the preferred order of execution. The order number will be displayed next to each template name. To deselect a previously chosen template, reselect its corresponding number.
 - Select **Done** when finished.
 - For confirmation, the tool displays the selected templates in their execution order. Tap a template name to view its type and bolting values.
- After selecting the templates in the desired order, the Multi-Template function can **start** executing all templates in sequence while the trigger is held down.
- Releasing the trigger before all templates have been completed successfully will result in a failure.
- While the tool is in Multi-Template mode:
 - The Home Screen displays the Multi-Template icon in its bottom-right corner.
 - LOOSEN and RUNDOWN modes are disabled.
 - Pressing the MENU button provides an option to Stop, ending Multi-Template mode and returning to normal operation.
 - After stopping a Multi-Template mode or rebooting the tool, the Multi-Template mode with its pre-selected templates can be restarted by selecting Multi-Template from the Template Menu.
- **Tip:** To access the Multi-Template feature more conveniently, either create a shortcut for it or enable it in L2 Flex via the Admin Menu.



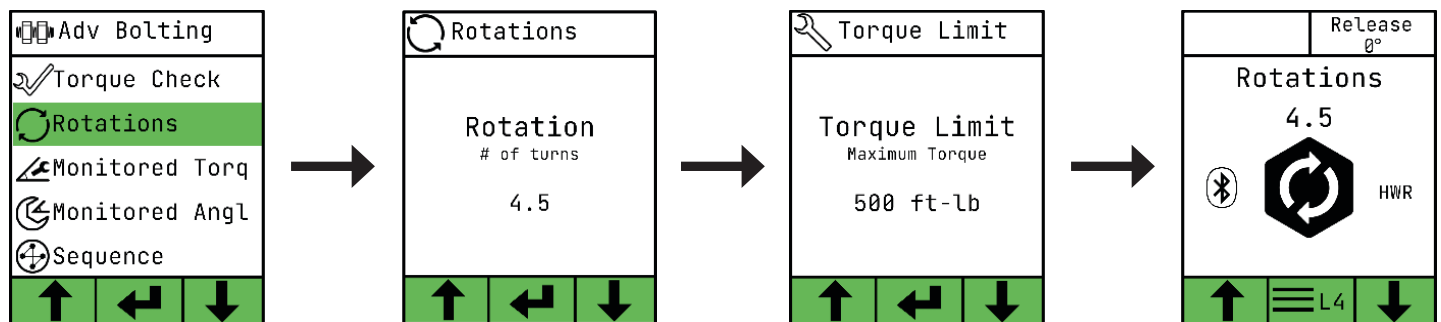
Torque Check



- Verify that a previously tightened nut is not under-torqued. The torque check function reports **success** if an attempt to rotate the nut results in little or no movement. It does not detect over-torque or measure actual torque, as doing so could risk over-tightening.
 - Torque Check detects and documents an under-torque condition, but it does not fix it.
 - Using a click-type torque wrench to 'check torque' may add force and lead to over-tightening, which is as risky as under-tightening. This feature is intended to verify joint integrity without that risk.
 - Confirm local bolting practices for an acceptable degree of rotation during Torque Check.
 - The tool must be calibrated for the Torque Check function by an authorized HYTORC service technician. To verify the Torque Check calibration, ensure an ETC value is present in *Tool Info*.
- From the **Adv Bolting** Menu, select **Torque Check**.
- Enter the amount of torque to be checked.
- Enter the Maximum Angle the nut is allowed to turn during the Torque Check operation, between 1 – 3°.
- Pull and **hold** the trigger. The tool will monitor the nut for movement.
- To prevent over-torque damage, the tool will apply up to 90% of the specified torque while **slowly** attempting to rotate the nut, ensuring it does not exceed the specified Maximum Angle.
- If a Release Angle is specified, continue to hold the trigger until the tool releases from the nut.
- Keep the trigger pressed until the tool stops and displays the result.
- The tool will display a **SUCCESS** if no movement is detected, or if the degree of movement during the check is equal to or less than the specified Maximum Angle.
- The tool displays a **Failure** if the nut's movement exceeds the specified Maximum Angle, indicating that the nut is not sufficiently tight.



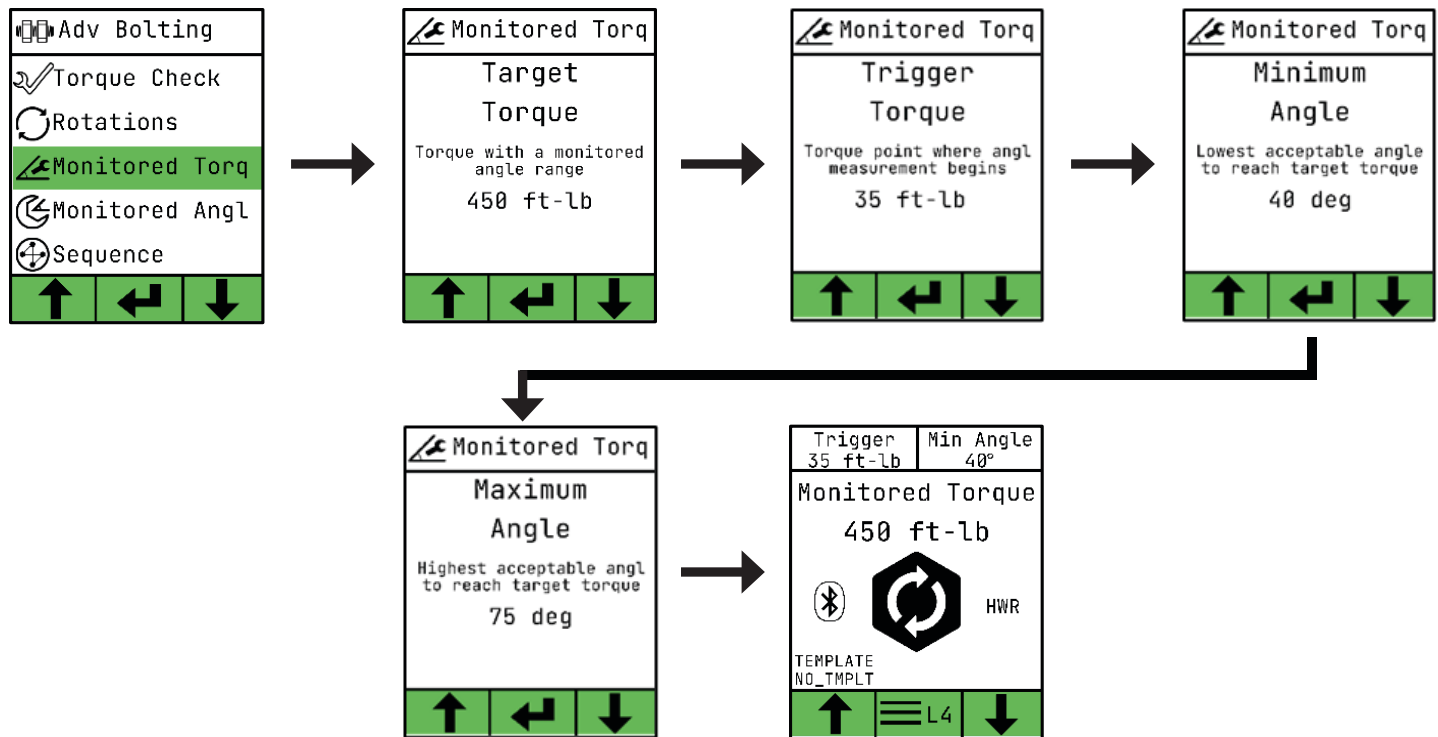
Rotations



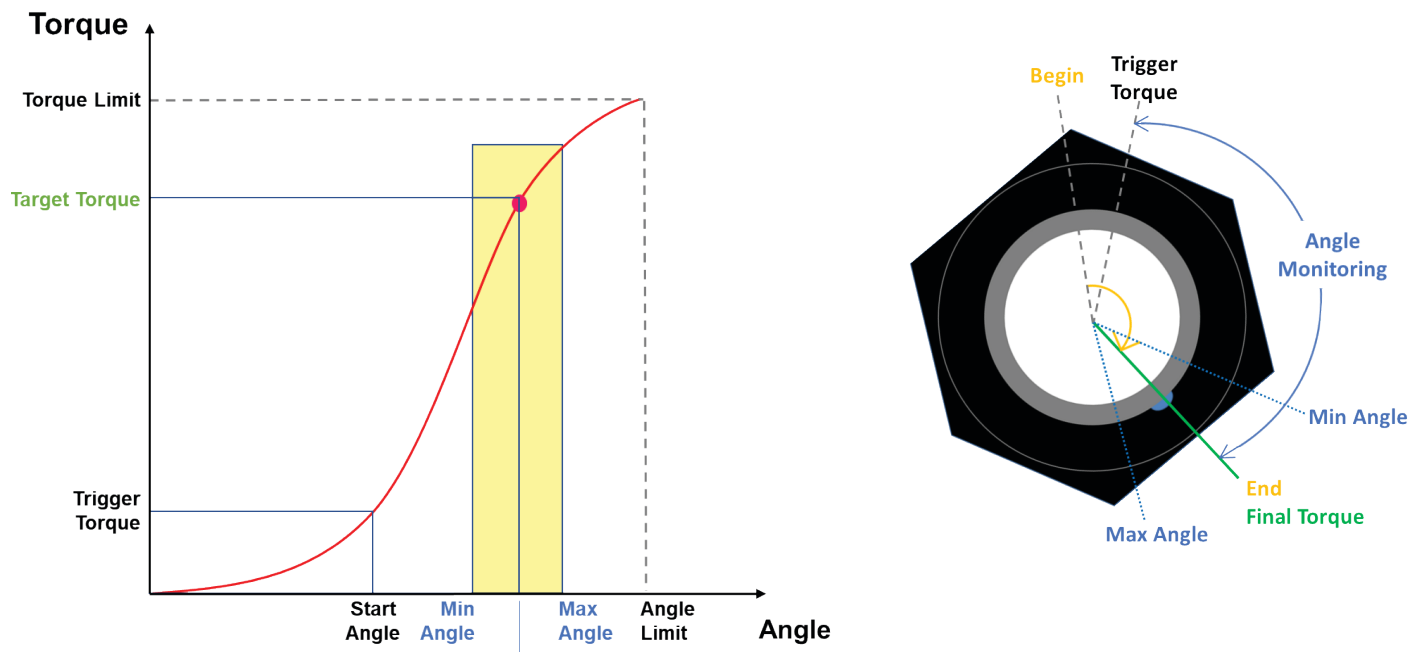
Rotate a valve or fastener under resistance for a precise number of turns without exceeding a specified maximum torque value.

- From the **Adv Bolting** Menu, select **Rotations**.
- Adjust the desired number of rotations (turns) and press the center button to confirm.
- Adjust the maximum torque allowed during rotation, then confirm.
- A complete rotation of 1.0 equals 360 degrees.
- Rotation number ranges from 0.1 (36 degrees) to 99.0.
- The maximum torque allowed can be the maximum calibrated range of the tool, subject to the Torque Limit set in the Settings Menu.
- Pull and **hold** the trigger.
- Follow the on-screen instructions for additional button presses based on Fastener and Safety settings.
- Keep the trigger pressed until the tool reaches the specified rotations and comes to a stop.
- If a Release angle is specified, continue to hold the trigger until the tool releases from the valve or nut.
- The operation can be paused by releasing the trigger before finishing the rotation and then continue until it is completed.
- In LOOSEN mode, the tool prevents reverse rotation past the initial position, displaying the message "Already at beginning." If rotation is in progress, switching to LOOSEN will reverse rotation back to the starting position.

Monitored Torque



Apply **Torque** while continuously monitoring the nut's rotation to ensure it remains within a specified angle range. If the rotation angle approaches the upper limit, the operation stops immediately. An error is reported if the final torque is reached while the rotation angle is below the required minimum specification.

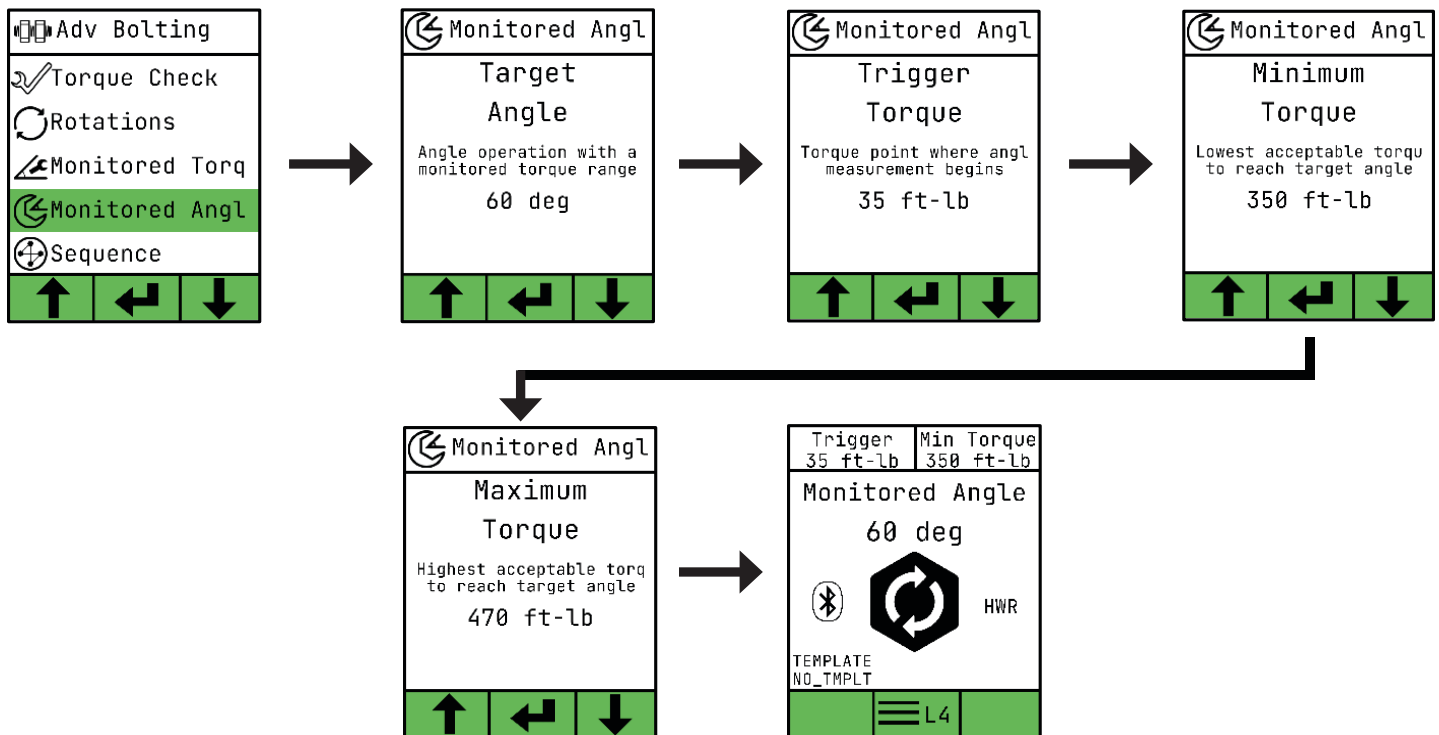


- From the **Adv Bolting** Menu, select **Monitored Torq**.
- Adjust the desired Target Torque and press the center button to confirm.
- The maximum torque allowed can be the maximum calibrated range of the tool, subject to the Torque Limit set in the Settings Menu.
- If needed, adjust the Trigger Torque, the starting point where the angle monitoring measurement begins.
- Adjust the Minimum and Maximum Angle, specifying the range of degrees the nut is allowed to rotate to achieve the target torque. Angle range 0° to 360°.
- The Minimum and Maximum Angle values are determined by analysis, experimentation, and/or engineering specifications.
- Pull and **hold** the trigger.
- Follow the on-screen instructions for additional button presses based on Fastener and Safety settings.
- The angle measurement starts once the tool detects the Trigger Torque condition.
- Keep the trigger pressed until the tool reaches the specified target torque and comes to a stop.
- If a Release angle is specified, continue to hold the trigger until the tool releases from the nut.
- The operation is a **Success** when the tool reaches Target Torque within the acceptable angle range.
- The tool stops the operation and reports a **Failure** when:
 - The Maximum Angle is reached before the Target Torque is achieved, or,
 - The Target Torque is reached before the Minimum Angle is met or exceeded.

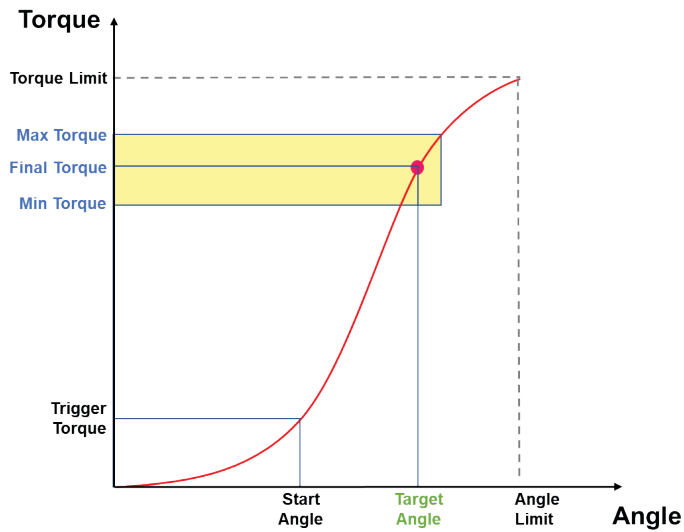
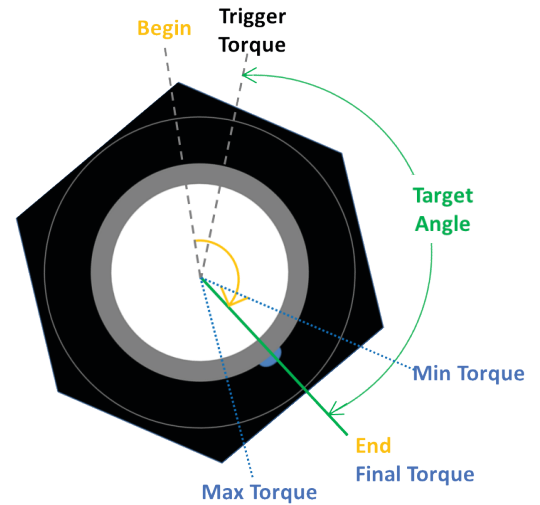
Success	Failure
Torque (ft-lb) Target : 450 Trigger : 35 Final : 442	Torque (ft-lb) Target : 450 Trigger : 35 Final : 381
Angle (degrees) Minimum : 40 Monitored : 69.1 Maximum : 75	Angle (degrees) Minimum : 40 Monitored : 33.2 Maximum : 75

Examples

Monitored Angle



Perform an **Angle** operation while continuously monitoring the torque to ensure it remains within a specified range. If the torque approaches the upper limit, the operation stops immediately. An error is reported if the angle is achieved while the measured torque is below the required minimum specification.



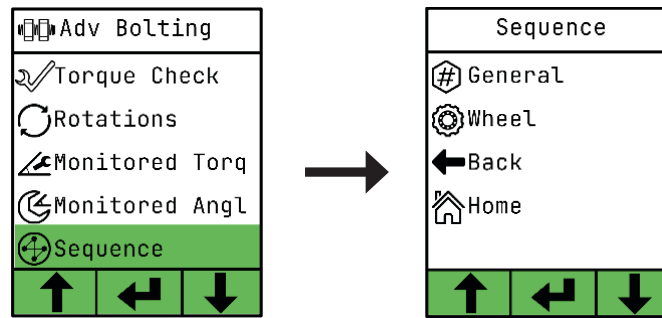
- From the **Adv Bolting** Menu, select **Monitored Angle**.
- Adjust the desired Target Angle (0° to 360°) and press the center button to confirm.
- If needed, adjust the Trigger Torque, the starting point where the angle monitoring measurement begins. Typically, the default minimum torque value is suitable.
- Adjust the Minimum and Maximum torque, specifying the allowable range of torque that the tool can apply to the nut to achieve the Target Angle.
- The Minimum and Maximum torque values are determined by analysis, experimentation, and/or engineering specifications.
- Pull and **hold** the trigger.
- Follow the on-screen instructions for additional button presses based on Fastener and Safety settings.
- The angle measurement starts once the tool detects the Trigger Torque condition.
- Keep the trigger pressed until the tool reaches the specified target angle and comes to a stop.
- If a Release angle is specified, continue to hold the trigger until the tool releases from the nut.
- The operation is a **Success** when the tool reaches the Target Angle within the acceptable torque range.
- The tool stops the operation and reports a **Failure** when:
 - The Maximum Torque is reached before the Target Angle is achieved.
 - The Target Angle is reached before the Minimum Torque is met or exceeded.

Success	Failure
Torque (ft-lb) Minimum : 350 Trigger : 35 Maximum : 470 Final : 421	Torque (ft-lb) Minimum : 350 Trigger : 35 Maximum : 470 Final : 471
Angle (degrees) Target : 60	Angle (degrees) Target : 60

Examples



Sequence

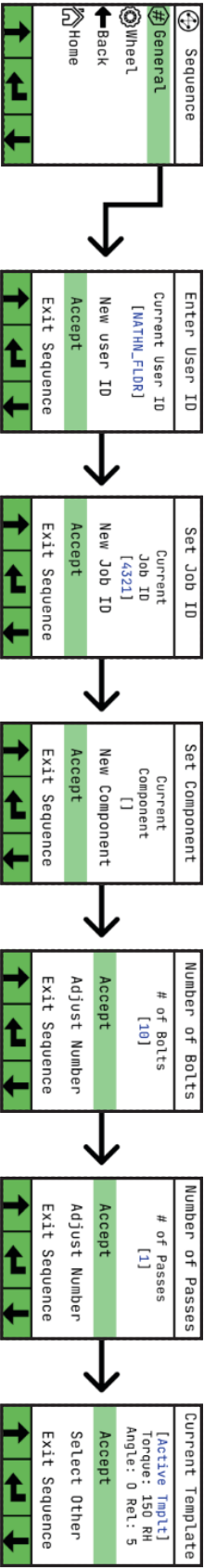
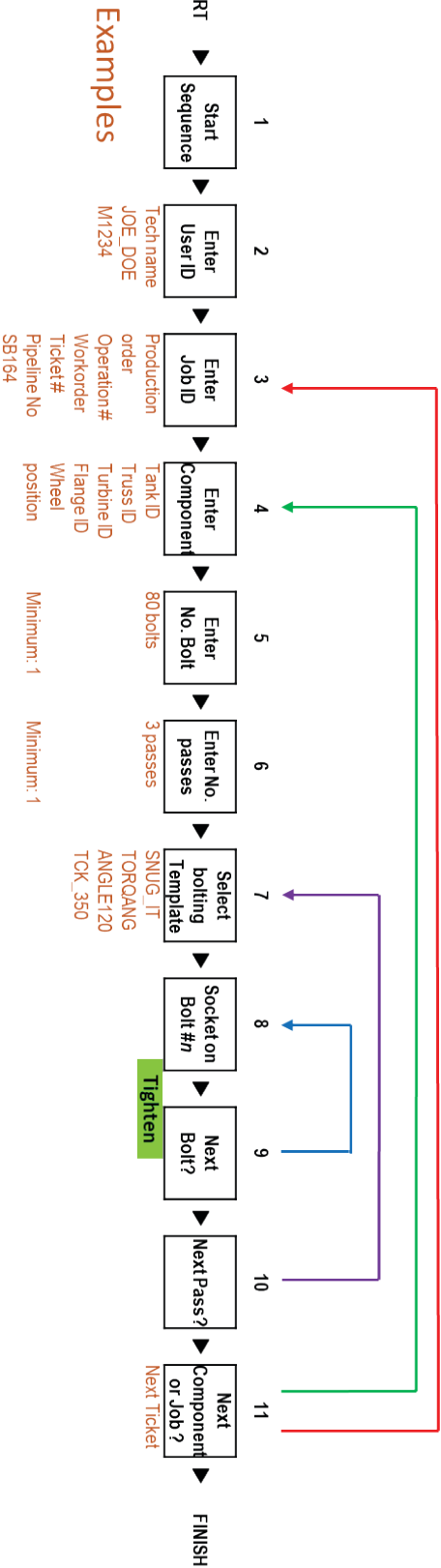


The Sequence function guides the operator through a bolting project involving multiple fasteners and applications. The tool displays the count of each successful fastener tightening, the number of passes performed, and information about components like flanges or wheels.

- Extended data fields offer detailed documentation of the project:
 - The tool can optionally prompt the operator to enter information such as Job ID, User ID, Component ID, wheel's axle number, and side.
- Custom Terminology:
 - Administrators can customize the tool's labeling of documentation fields to align with their industry terminology. For example, "Job_ID" can be renamed to "WORKORDER", "TICKET", "WIP", etc. "Component" can be changed to "VEHICLEID", "FLANGEID", "JOIST_NO", etc.
 - See **Admin Menu → Edit Seq Label** option.
- Two types of sequences:
 - **General** - Multipurpose, multi-pass bolting.
 - **Wheel** - Specifically for servicing wheels on a vehicle.
- Examples:
 - A sequence project of a pipeline with 15 flanges, each with 8 fasteners.
 - A construction project with 64 joints in a structure, each with 20 bolts that require 3 tightening passes each.
 - A sequence project to service 8 wheels on a truck, each with 10 lugs.
- Tip:
 - To access the Sequence feature quickly, use the Admin Menu to either create a shortcut or enable it for L2 Flex.



General Sequence



ADVANCED BOLTING (Continued)

- From the **Adv Bolting** Menu, select **Sequence → General**.
- Confirm the current **User ID** or enter a new one.
 - This is an optional documentation field to record the name or ID of the person who is about to run the bolting sequence.
 - Accept a blank ([]) User ID if this data field is unnecessary.
 - Enter a User ID of 1-10 characters using the Entering Characters Method outlined in Appendix A.
- Confirm the current **Job ID** or enter a new one by selecting a pre-loaded Job ID or creating a new ID.
 - This optional documentation field associates the project with a Job ID. The administrator can relabel (rename) this field.
 - Accept a blank ([]) Job ID if this data field is unnecessary.
 - Enter a Job ID of 1-8 characters following the method described in Appendix A.
- Confirm the current **Component ID** or enter a new one.
 - This is an optional documentation field that associates a part of the project with an ID. The administrator can relabel (rename) this field.
 - Accept a blank ([]) Component ID if this data field is unnecessary.
 - Enter a Component ID of 1-10 characters following the method described in Appendix A.
- Confirm the **Number of Bolts** or adjust the number.
 - The number of bolts ranges from 1 to 100 for each pass.
- Confirm the **Number of passes** or adjust the number.
 - The number of passes can range from 1 to 10.
- Confirm the **Current Template** or select another.
 - If no template is active, then the current bolting parameters will be used (NO_TMPLT).
 - Optionally select a different template for the 1st pass.
 - Before starting any following passes, the tool provides an option to select a different template.
- Start bolting
 - The bolting sequence begins with the first pass and first bolt.
 - The tool displays running counters of the current pass and current bolt.
 - The counters increment with each successful tightening as the bolting sequence progresses.
Example: Bolt 1 of 10, pass 1 of 3
 - Loosening or an unsuccessful bolting operation will not advance the sequence bolt counter.
 - Powering off the tool or removing the battery will not reset the counters. Re-power the tool to resume the sequence project.
- Bolting failure: When a bolting operation does not succeed, the tool offers the choice to either:
 - Retry Bolt** - Redo the tightening on the same bolt without advancing the counter.
 - Skip Bolt** - Continue to the next bolt, while advancing the sequence counter.
- Pass complete: At the end of each pass, the tool provides the option to either:
 - Continue** with the next pass in the sequence.
 - A different bolting template can be selected for the next pass.
 - Retry** the last bolt.
 - Redo** the current pass.
 - Exit the sequence.** Terminate the project and reset all counters.

Angle 0°	Release 0°
Torque 355 ft-lb	
  HWR	
TEMPLATE FLNG_420	BOLT 1/10
PASS 1/3	
L1	

Pass Complete
Pass 1 of 3
Continue
Retry a Bolt
Re do pass
Exit Sequence
  

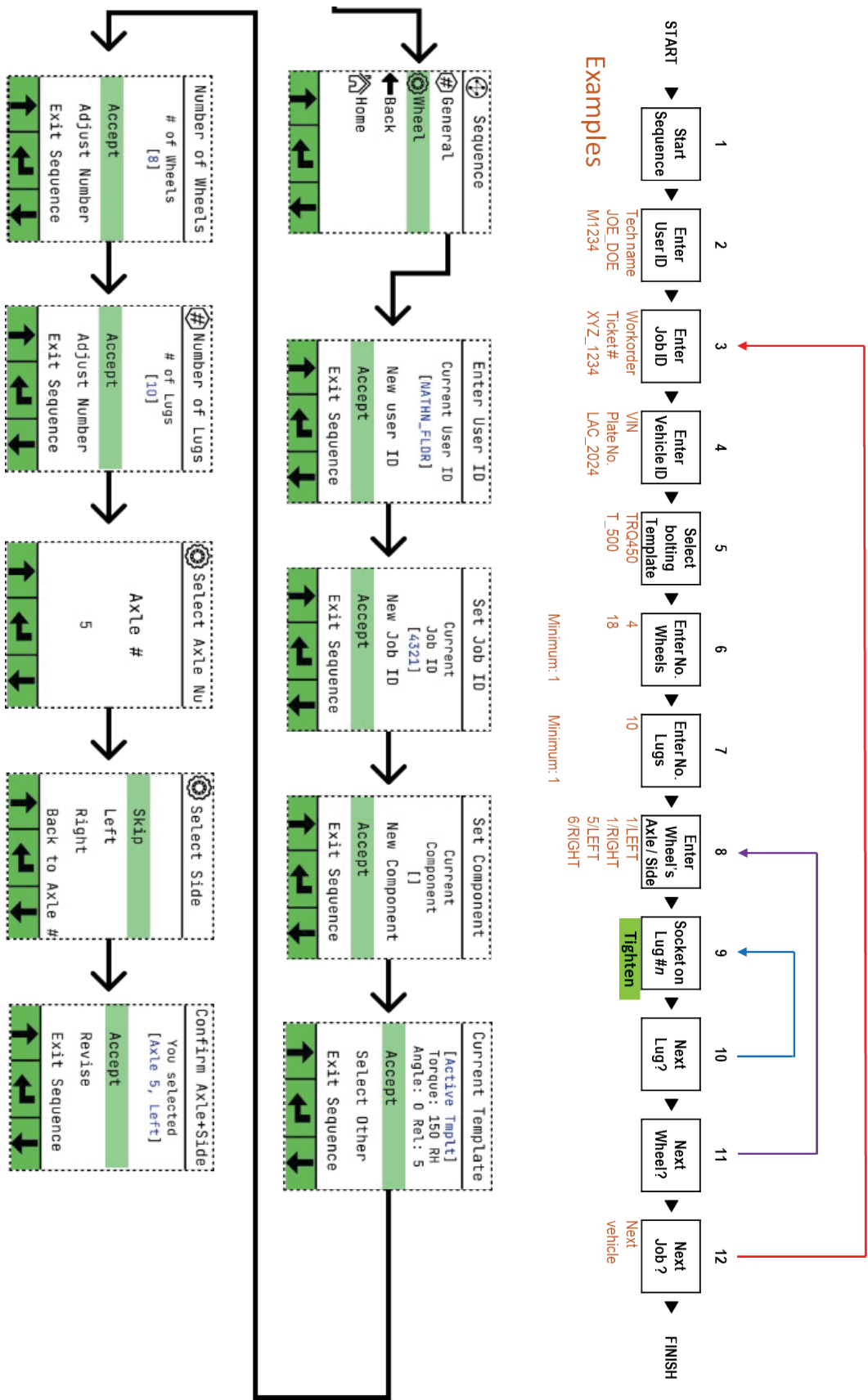
- **Component or Job done:** At the end of all passes or components, the tool provides the option to either:
 - Advance to the next component (example: Next flange).
 - Start a new job (start over the sequence with a new Job ID).
 - Exit the sequence. Terminate the project and reset all counters.
- **Exit the sequence during operation:**
 - A bolting sequence can be stopped at any time by pressing the center button.
 - When exiting the sequence, the tool provides the option to either:
 - **End Sequence** - stop the current sequence while keeping the Job ID active.
 - **End Job & Seq** - terminate both the current sequence and the current active Job ID.
 - After a sequence is stopped, all counters are reset, and the sequence cannot be resumed.
 - Additionally, there is an option to exit the sequence at the end of each pass or when a component is completed.
- **Documentation:**
 - In addition to complete bolting results (date, time, torque or loosen, angle, angle monitoring, etc.), each bolting record includes the bolt number in the sequence, pass number, as well as Job ID, User ID, and Component ID, if provided. See example in Appendix E.
 - Every unsuccessful operation is documented in the data, including errors, retries, skips, and re-dos.

Component Done		
Component [FLANG_17]		
Next Component		
Next Job ID		
Exit Sequence		
↑	↶	↓

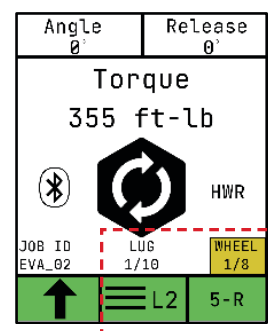
Exit Sequence		
Job ID [4321]		
End Sequence		
End Job & Seq		
Back		
↑	↶	↓



Wheel Sequence



- From the **Adv Bolting** Menu, select **Sequence → General**.
- Confirm the current **User ID** or enter a new one.
 - This is an optional documentation field to record the name or ID of the person who is about to run the bolting sequence.
 - Accept a blank ([]) User ID if this data field is unnecessary.
 - Enter a User ID of 1-10 characters using the Entering Characters Method outlined in Appendix A.
- Confirm the current **Job ID** or enter a new one by selecting a pre-loaded Job ID or creating a new ID.
 - This optional documentation field associates the project with a Job ID. The administrator can relabel (rename) this field.
 - Accept a blank ([]) Job ID if this data field is unnecessary.
 - Enter a Job ID of 1-8 characters following the method described in Appendix A.
- Confirm the current **Component ID** or enter a new one.
 - This is an optional documentation field that associates a part of the project with an ID. The administrator should rename this field to a relevant term, such as "VIN" or "PLATE".
 - Accept a blank ([]) Component ID if this data field is unnecessary.
 - Enter a Component ID of 1-10 characters following the method described in Appendix A.
- Confirm the **Current Template** or select another.
 - If no template is active, then the current "Active Tmpl" bolting parameters will be used.
 - Optionally select a different template.
 - The tool will maintain the same template throughout the entire wheel sequence job.
- Confirm the **Number of wheels** to service on the vehicle or adjust the number.
 - The number of wheels can range from 1 to 100.
- Confirm the **Number of Lugs** (bolts) per wheel, for all wheels on the vehicle, or adjust the number.
 - The number of lugs ranges from 1 to 100 for each wheel.
- Confirm the **Axle number** of the wheel to be serviced or adjust the number.
 - Axle numbers may vary between 1 and 5.
 - This number will be documented in the job data.
- Confirm the **Side** of the wheel to service on the vehicle. The options are:
 - **Skip** – Do not document the wheel's side.
 - **Left** – The left side of the vehicle (referred to as "driver's side" in some locales).
 - **Right** – The right side of the vehicle (referred to as "curb side" or "passenger side" in some locales).
- Start bolting
 - The bolting sequence begins with the first wheel and first lug. The tool displays running counters for the current lug and wheel, including their positions on the vehicle. Example: Lug 1 of 10, wheel 1 of 8, Axle 5, Right side.
 - The counters advance with each successful tightening as the bolting sequence progresses.
 - A loosening or unsuccessful bolting operation will not advance the sequence lug counter.
 - Powering off the tool or removing the battery will not reset the counters. Re-power the tool to resume the sequence project.

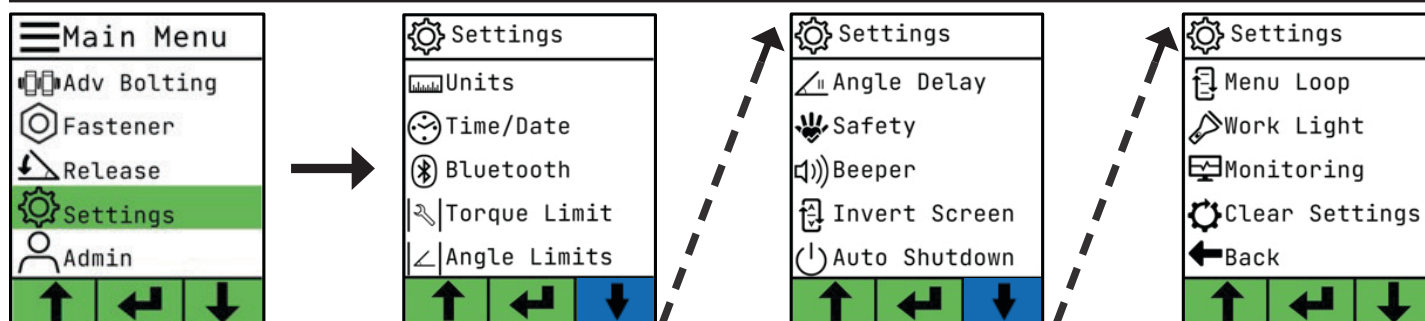


ADVANCED BOLTING (Continued)

- Bolting failure: When a bolting operation does not succeed, the tool offers the choice to either:
 - **Retry Lug** - Redo the tightening on the same lug without advancing the counter.
 - **Skip Lug** - Continue to the next lug while advancing the sequence counter.
- Wheel complete: At the end of each wheel, the tool provides the option to either:
 - **Continue** with the next wheel in the sequence. The same template and number of lugs will be applied for the next wheel
 - The tool will prompt for the next wheel's axle number and side.
 - **Retry** the last lug.
 - **Redo** the current wheel.
 - **Exit the sequence.** Terminate the project and reset all counters.
- Component done: After all wheels are serviced, the tool provides the option to either:
 - Start a new job - Start over the sequence with a new Job ID.
 - Exit the sequence - Terminate the project and reset all counters.
- Exit the sequence during operation:
 - A bolting sequence can be stopped at any time by pressing the center button.
 - When exiting the sequence, the tool provides the option to either:
 - **End Sequence** - stop the current sequence while keeping the Job ID active.
 - **End Job & Seq** - terminate both the current sequence and the current active Job ID.
 - After a sequence is stopped, all counters are reset, and the sequence cannot be resumed.
 - Additionally, there is an option to exit the sequence at the end of each pass or when a component is completed.
- Documentation:
 - In addition to complete bolting results (date, time, torque or loosen, angle, angle monitoring, etc.), each bolting record includes the bolt number in the sequence, pass number, as well as Job ID, User ID, and Component ID, if provided. See example in Appendix E.
 - Every unsuccessful operation is documented in the data, including errors, retries, skips, and re-dos.

Wheel Complete		
Wheel 1 of 8		
Continue		
Retry a Lug		
Re do Wheel		
Exit Sequence		
↑	↶	↓

SETTINGS

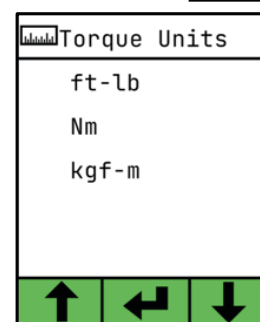


This menu provides general options for the tool that affect all modes and functionalities.

- From the **Main Menu**, scroll down and select **Settings**, then any of the following options:

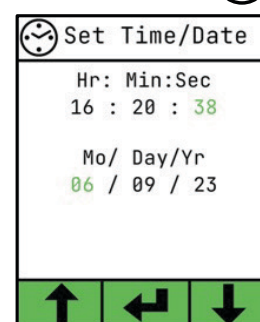
Units

- Select foot-pounds (**ft-lb**), Newton-meters (**Nm**), or Kilogram-force-meters (**kgf-m**).
- Note:** To comply with local regulations, authorized technicians (L5: Service) can lock the Units and remove the Units option from the Settings Menu.
- Default: **ft-lb**



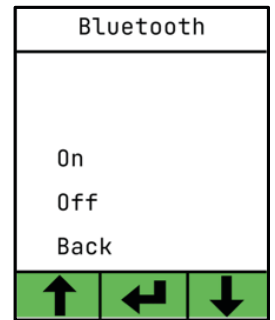
Time/Date

- The tool records each bolting operation with a timestamp that captures the exact date and time for precise documentation.
- Scroll up or down to set the correct time.
- Press the center button to confirm and advance to each position.
- Use the same method to enter the date in a Month / Day / Year format.
- Once complete, press the center button to Accept, Retry, or Cancel.
- The tool's internal long-life cell battery keeps the correct date and time even when the main battery is removed.
- Manually adjust the time for daylight saving or standard time changes.



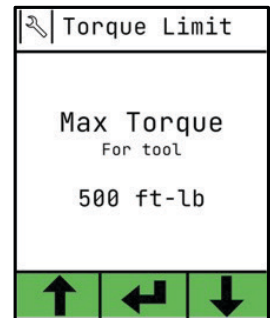
Bluetooth

- Turn the Bluetooth feature **On** or **Off**.
- A Bluetooth icon on the Home Screen indicates that the feature is active.
- Use a compatible app, such as HYTORC Connect, to communicate with the tool wirelessly.
- Default: **On**
- **Note:** This menu option is unavailable on LITHIUM SERIES II (LST) models without Bluetooth.



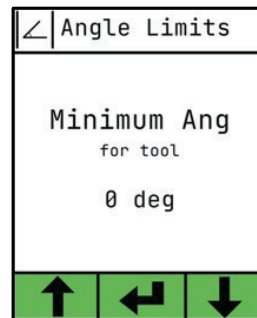
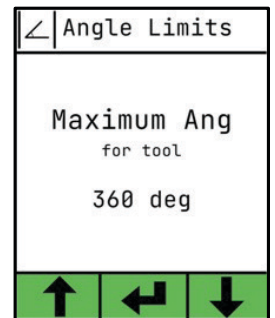
Torque Limit

- Limits the maximum torque output of the tool.
- Particularly useful when performing torque & angle operations.
- Scroll up or down to set the desired torque maximum and confirm using the center button.
- Maximum Torque value takes precedence over individual operation parameters, including uploaded templates or app-transmitted values. For example, if the Torque Limit is set to 50% of the tool's maximum capacity, then no configuration, template, or bolting operation can exceed that torque.
- Default: The tool's upper torque capability.



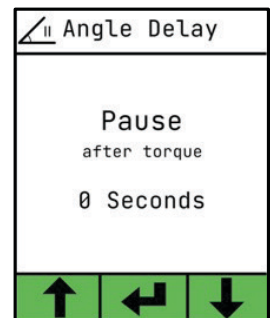
Angle Limits

- Limits the range of angle operations on the tool.
- Scroll up or down to set the Minimum and Maximum angle and confirm using the center button.
- Defaults: Minimum angle: 0° Maximum angle: 360°



Angle Delay

- Adds a slight delay between achieving Torque and applying an Angle during a single trigger pull.
- Use this delay time to mark the nut to validate the angle rotation applied.
- Scroll to set a delay of 0 to 5 seconds, then confirm using the center button.
- Default: **0 seconds** (no delay)



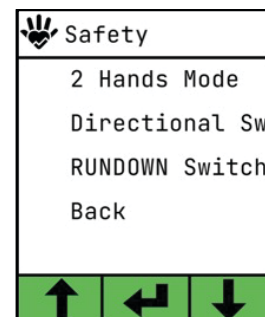
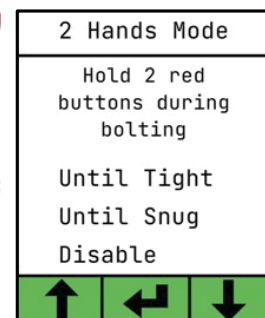


Safety

- Enables enhanced safety options:

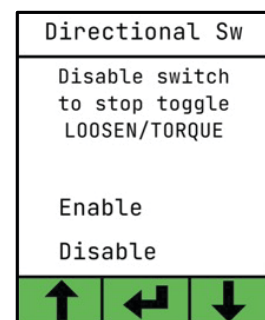
1. 2 Hands Mode

- Ensures safe hand positioning by requiring the placement of one hand on the trigger and the other on the rear buttons.
- Applies only to Left-Hand (LH) and Right-Hand (RH) fasteners.
- The feature is not applicable to any HYTORC fastener, as it is not necessary.
- Holding all 3 buttons or a single button on the back of the tool does not allow bolting.
- Select whether the user should press and hold the outer red buttons (leftmost and rightmost) simultaneously until Tight or until Snug.
 - Until Tight:** Press and hold the trigger along with the outer buttons until the bolt is completely tightened.
 - Until Snug:** Press and hold the trigger along with the outer buttons until the reaction arm is fully engaged and the tool detects a snug condition. The buttons can be released during the rest of the tightening operation.
 - Disable:** Turn off the 2-Hands mode.
- Default: **Disable**



2. Directional Switch

- Enables or disables the physical toggle switch that changes the tool's mode between LOOSEN and TORQUE. When disabled, the switch can still be moved, but it will not affect the rotation direction. A notification appears on the display if the switch is toggled while disabled.
- Default: **Enable**



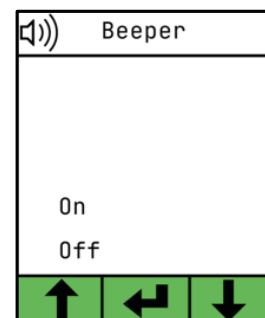
3. RUNDOWN Switch

- Enables or disables the physical toggle switch that changes the tool's mode between LOOSEN and TORQUE. When disabled, the switch can still be moved, but it will not affect the rotation direction. A notification appears on the display if the switch is toggled while disabled.
- Default: **Enable**



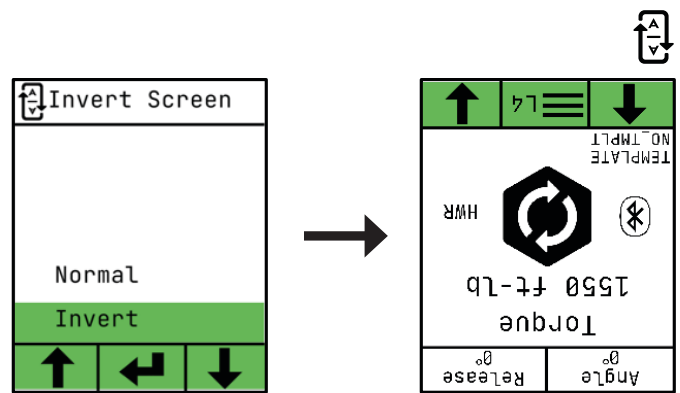
Beeper

- Turns the internal beeper **On** or **Off**.
- When turned on, the tool emits a soft audible beep after completing a successful bolting operation.
- Default: **Off**



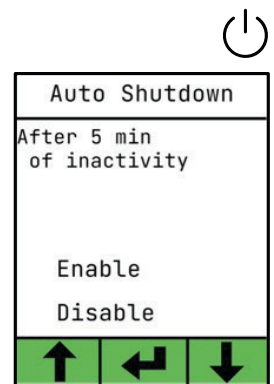
Invert Screen

- Flips the image on the tool's LCD screen, turning the display upside down.
- Use this option when operating the tool in an upside-down position.
- Default: **Normal**



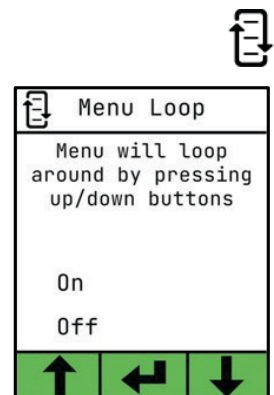
Auto Shutdown

- When enabled, the tool automatically shuts off after 5 minutes of no activity.
- When disabled, the tool remains on until it is manually turned off or the battery charge is depleted.
- Select either **Enable** or **Disable** and press the center button to confirm.
- **Note:** Always power off the tool and remove the battery when it is not in use.
- Default: **Enable**



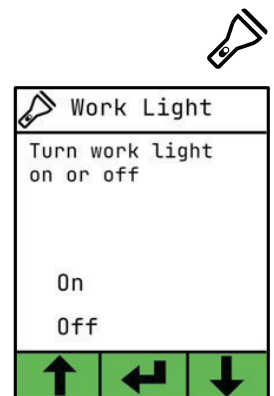
Menu Loop

- When **Off**, the menu scrolling navigation stops upon reaching the top or bottom of the menu.
- When **On**, it is possible to scroll continuously up or down through the entire menu without stopping at either end.
- Select either **On** or **Off** and press the center button to confirm.
- Default: **On**

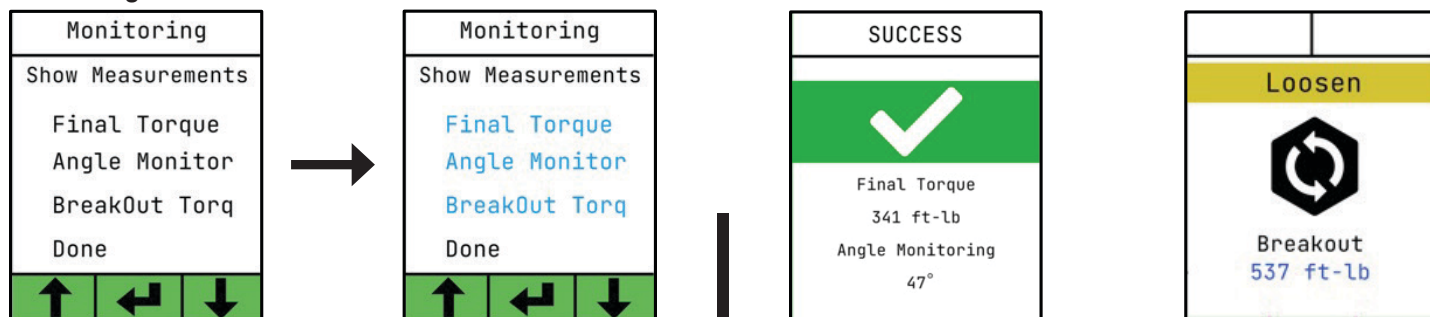


Work Light

- Illuminates the application when the trigger is pulled.
- Select either **On** or **Off** and press the center button to confirm.
- **Note:** The work light continuously blinks when the tool's speed mode is set to RUNDOWN.
- Default: **On**



Monitoring

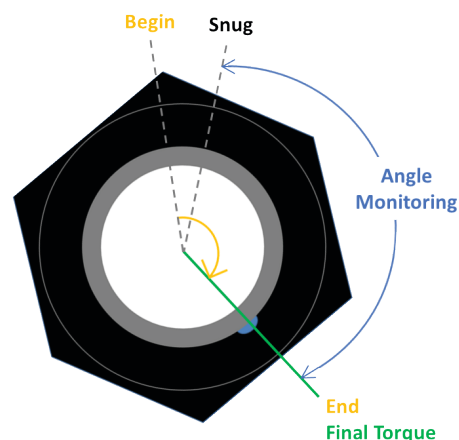


- Enables the display of measured values on the tool's screen after completing an operation.
- The values are shown as long as the trigger is held.
- These values are always sent to the app over Bluetooth and saved in the documentation job data, regardless of the Monitoring setting.
- The value options are:

1. **Final Torque** - The final amount of measured torque applied during the operation.

2. **Angle Monitoring** - The degree of rotation applied to a nut during the tightening process.

- Angle monitoring offers a secondary measurement to ensure proper tightening and can detect abnormal conditions, like "re-hit" situations (tightening an already tight bolt).
- Measurement starts when the tool detects initial resistance (snug), corresponding to 5% of the tool's maximum torque capacity (e.g., 35 ft-lb for the LST-700).
- Measurement ends when the target torque is reached.
- Measurement does not include any additional angle applied after the initial torquing.



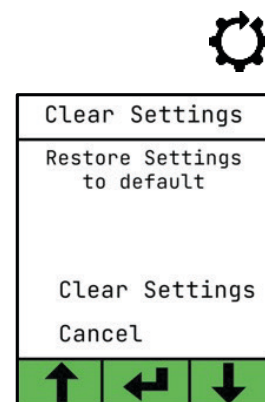
3. **Breakout Torque** - The amount of torque (i.e., 'peak torque') needed to begin loosening a nut or bolt that has been previously tightened.

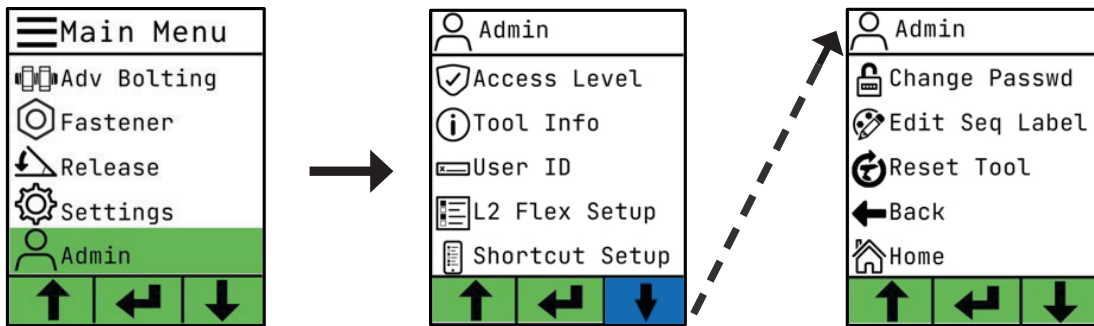
▪ **Note:**

- When loosening immediately after tightening, the Breakout Torque is usually **lower** than the torque applied to tighten a bolt. This is because the bolt stretches slightly during tightening, which aids the loosening process during contraction.
- Alternatively, over time, Breakout Torque may increase due to added friction in the joint, such as from corrosion or dry lubrication. This leads to the commonly expected rise in breakout torque.

Clear Settings

- Restores all the tool's settings in the Settings Menu to their original defaults, excluding Time & Date.
- Clear Settings only resets the user's settings; it does not modify Admin configurations, calibration data, job IDs, templates, or job documentation records.





- The tool's administrator controls these functions.
- From the **Main Menu**, scroll down and select **Admin**, then any of the following options:

Access Level

- Restricts access to certain functions and limits the tool to only the necessary capabilities, enhancing safety and job accuracy.
- It is highly recommended that the tool's administrator lower the access level of the tool before handing it to the end user.
- A password is required to increase the access level. No password is needed to decrease the access level.
- See Appendix F for a detailed list of access level functions.
- Factory default: **L4 Admin User**

1. L1: Job User

- Most of the tool's adjustments are locked.
- The Job User is restricted to using the current set torque without the ability to change it.
- The Job User can select templates that were previously created or imported into the tool.
- L1 Job User can Start Job documentation, Create Job IDs, and export job documentation.
- Default password: none (a password is not needed)

2. L2: Flex User

- A customizable access mode that the Admin can program to either grant or restrict access to certain features of the tool.
- Example: The Admin can configure an L2 Flex user to be allowed to use only the "Torque" and "Angle Only" features, without access to any other feature or function.
- Admin should select the menu options accessible to the L2 Flex User by using the **L2 Flex Setup** option (see below).
- Default password: **FLEX**

3. L3: Full User

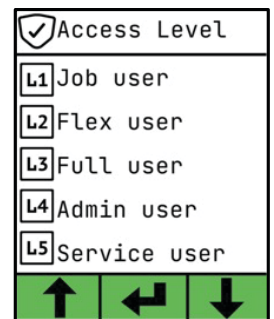
- Full User has access to nearly all of the tool's functionalities, except for safety settings, calibration, and most Admin functions.
- Default password: **FULL**

4. L4: Admin User

- Admin User has complete access to all functionalities of the tool, except for some Service items.
- L4 access level should be reserved only for the administrator. Typically, a bolting operator should not use the tool at the L4 access level.
- Admin User should customize the tool using the L2 Flex Setup and change the password.
- Default password: **ADMIN**

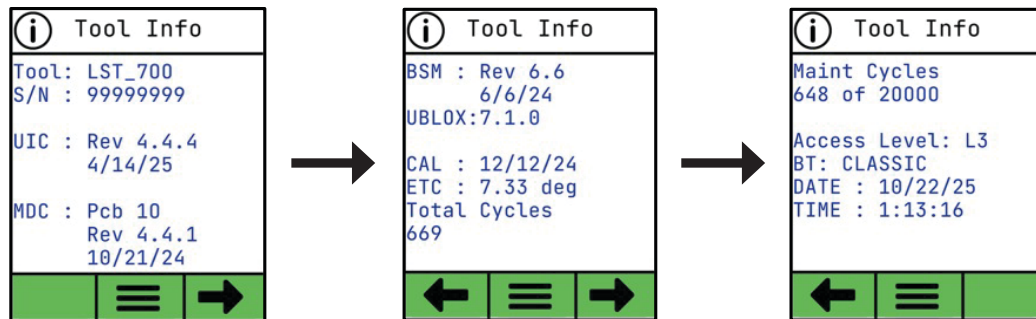
5. L5: Service User

- Restricted to HYTORC technicians. See the Service section.



Tool Info

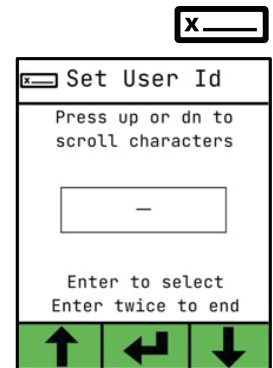
EXAMPLE



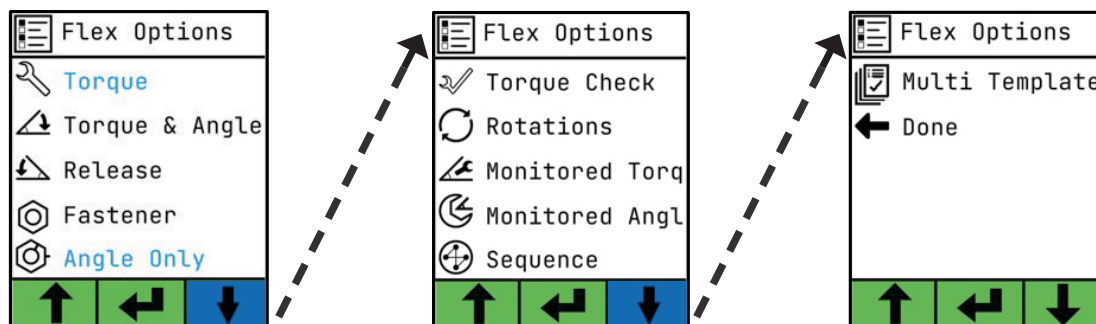
- Displays the tool's model number, firmware versions of various modules, last calibration date, total cycle (usage) counter, and maintenance counter.
- Scroll to the right for more information. Press the center button to go back.
- When requesting support, please provide HYTORC screenshots of all three **Tool Info** screens, if possible.

User ID

- Enables users of all access levels to enter a name or ID for documentation purposes.
- Associates bolting data with the specific username or ID by saving it to each job documentation record.
- Enter up to 10 characters, limited to uppercase letters (A-Z), numbers (0-9), and underscores ("_"). Example: "MYNAME_123"
- Refer to Appendix A for instructions on Entering Characters Method.
- When starting General or Wheel sequences, the tool uses this User ID and allows it to be changed.
- When a User ID is not provided, the default blank ("[]") is recorded in the documentation job data.
- Factory default: **blank** ("[]")

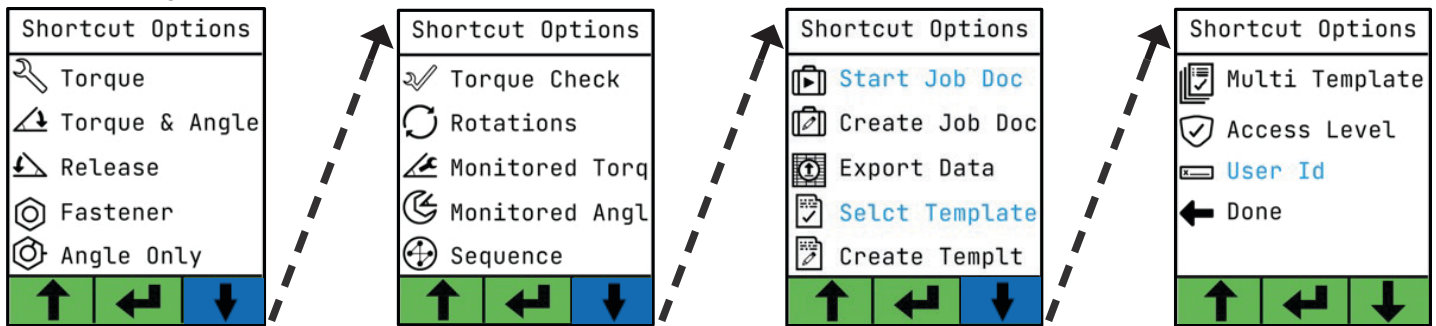


L2 Flex Setup



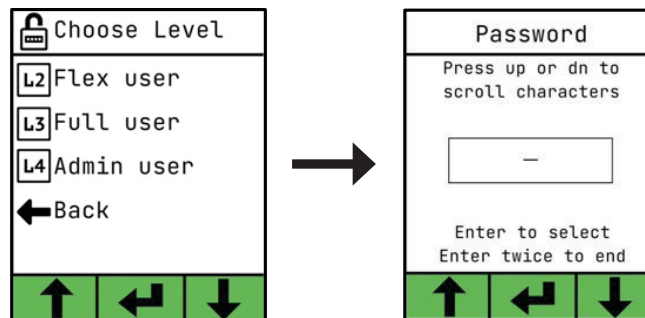
- Enables the Admin to configure which functions the L2 Flex User can access.
- Functions shown in **blue** in the selection menu are available to the L2 Flex User; those in **black** are hidden. For example, the L2 operator can be restricted to access just **Torque** and **Angle Only** functions.
- Scroll through the functions list and select (turn blue) or unselect (turn black) each function as needed.

Shortcut Setup



- Enables the Admin to create a custom shortcut menu with essential functions for quick access.
- The shortcut menu can be given an optional custom name, up to 10 characters long.
- Once saved, the shortcut menu appears as the primary menu on the tool.
- To create a shortcut menu, scroll through the function list and select which functions to include or exclude from the custom shortcut menu.
 - Only selected functions highlighted in **blue** will appear on the shortcut menu. For example, **Start/End Job Doc**, **Select Template**, and **User ID** can be marked for quick access as shortcuts.
 - At the end of the list, select Done to complete the setup.
- The standard full menu can be activated by selecting the **Main Menu** option from the shortcut menu.
- To cancel the shortcut and revert to the standard **Main Menu**:
- Press MENU, scroll down and select **Main Menu** → **Admin** → **Shortcut Setup** → **Disable Shortcuts**.

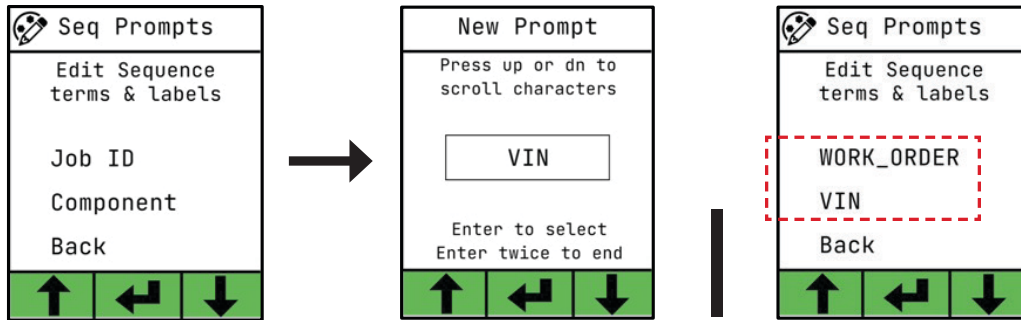
Change Password



- Enables the Admin to change access level passwords.
- Passwords can be up to 8 characters long and may include uppercase letters (A-Z), numbers (0-9), and underscores ("_"). Example: "CATS_123"
- Refer to Appendix A for instructions on Entering Characters Method.
- Default passwords:
 1. **(L1) Job user** - no password needed
 2. **(L2) Flex user** - FLEX
 3. **(L3) Full user** - FULL
 4. **(L4) Admin user** - ADMIN
- **Note:** HYTORC technicians cannot recover changed passwords. If a password is forgotten, access can only be restored through assistance from an authorized HYTORC service technician.



Edit Sequence Label ("Edit Seq Label")



- Enables the Admin to customize documentation labels to align with industry-specific terminology.
- The default labels "Component ID" and "Job ID" can be renamed to more suitable terms as needed.
- The customized labels are displayed to the operator throughout sequence operations and used in documentation.
- New labels can be up to 10 characters long and may include uppercase letters (A-Z), digits (0-9), and underscores (" _").

Examples:

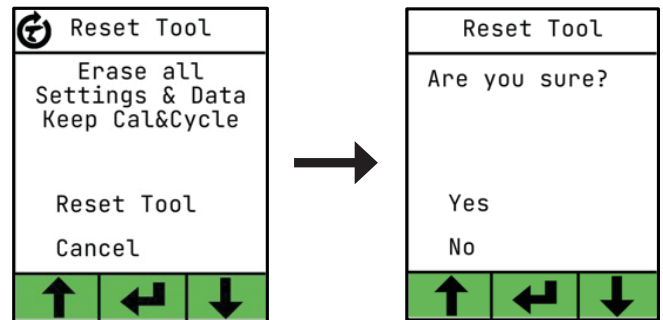
1. **"Job ID"** → Relabel this to "WORK_NUM" or "WORK_ORDER"

2. **"Component ID"** → Relabel this to "FLANGE_ID" or "VIN"

- Refer to Appendix A for instructions on Entering Characters Method.

Reset Tool

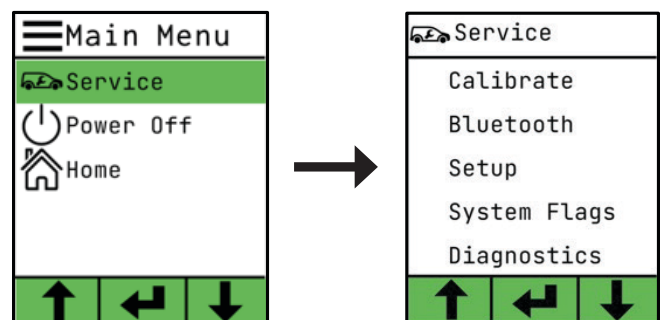
- Resets all of the tool's Settings and Admin values to factory defaults, deletes all stored templates and Job IDs, and erases all bolting documentation data from internal memory.
- The Reset Tool function does not affect Time/Date, calibration values, cycle counters, or access level passwords. A complete factory reset, including these items, can only be performed by an authorized HYTORC service technician.
- The tool prompts the user to confirm the reset before proceeding
- This action is irreversible.



Service

This menu provides options for authorized HYTORC technicians to perform calibration, factory setup, modify system flags, and conduct diagnostics on the tool for maintenance and repair purposes.

- Admin users can review the tool's Bluetooth regulatory information and Bluetooth certification tests.
- Service functions are restricted and require a password.
- A user with Service access (L5) is given additional service options. Refer to the HYTORC LITHIUM II Service Manual for further information.





HYTORC
LITHIUM SERIES II

HYTORC

HYTORC
3311 RITE TIGHT
CONVERSION
APPROXIMATE TORQUE RANGE IN FOOT POUNDS
DESIGNED BY HYTORC

MODEL SET	36V
CONVERSION	1 FT LBS = 1.356 N M
CONVERSION	1 N M = 0.7376 FT LBS

36V
HYTORC



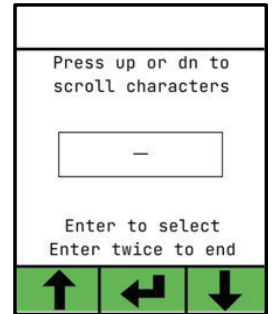
3

APPENDIX

3. Appendix

A) ENTERING CHARACTERS METHOD

- Use the left  and right  buttons to scroll through alphanumeric characters, then press the center button to select the character.
- Press the center button twice on the blinking "-" to finish.
- Allowable characters: Uppercase A to Z, digits 0 to 9, and underscores (" _").
Example: "ABC_123"
- Entry is limited to 8 or 10 characters in total, depending on the context.



B) DATA SHARING AND COMMUNICATION

- **Import/Export via wired connection:**
 - Use a Micro-USB cable to connect to the tool and a Windows™ PC.
 - To retrieve Job documentation, use **Export Job Doc**.
 - **Note:** It is not possible to import job documentation into the tool.
 - For Job IDs, use **Export** or **Import** Job ID.
 - For Templates, use **Export** or **Import** Templates.
 - The Windows PC detects the tool as an external drive.
 - Copy the desired CSV file between the tool's drive and the PC, then press any button on the tool to disconnect.
- **Import/Export via Bluetooth:**
 - Use the HYTORC Connect app, available on Windows, iOS, and Android devices.
 - Connect the tool to the HYTORC Connect app via Bluetooth to wirelessly import or export Job IDs and templates, or retrieve job data from the tool's built-in memory.
 - The HYTORC Connect app provides many additional features and includes built-in help resources.
- **Open Protocol:**
 - Use an industry standard that provides real-time, two-way control and data exchange.
 - Requires the **HY-BRIDGE** controller.
 - Please reach out to your local HYTORC representative for details.
- **Proprietary real-time 2-way communication via Bluetooth:**
 - Available software development kit including documentation, sample code, and Dynamic Link Library (DLL).
 - Please contact HYTORC for details.



CONNECT APP



C) DOCUMENTATION FIELDS DESCRIPTION

OPERATION TYPE CODE	BOLTING FUNCTION	PARAMETERS
TAR	Torque	Units,Torque,Angle,Release,Fastener
SRF	Snug	Units,Snug Torque,Angle,Release,Fastener
AOL	Angle Only Limited	Units,Target Angle,Release,Max Torque,Fastener,Speed
ETC	Enhanced Torque Check	Units,Torque,Max Angle,Release,Fastener
ROT	Rotations	Units,Release,TorqueLimit,Fastener,RotationsNo.
MOT	Monitored Torque	Units,Target Torque,Trigger Torque,Min Angle,Max Angle,Release,Fastener
MOA	Monitored Angle	Units,Target Angle,Trigger Torque,Min Torque,Max Torque,Release,Fastener

D) DOCUMENTATION ERROR CODES

CODE	EXPLANATION	COMMENT
OK	Success	Completed operation with the target Torque, Angle, or Rotation reached.
ETR	Early Trigger Release	Incomplete operation. Target torque or angle not reached.
MHS	Motor Has Stalled	The motor failed to spin, typically due to a pre-tightened bolt or any motor rundown error condition, including component failure.
ERR	Out-of-range error	Monitored Torque or Monitored Angle operation failed because the measured value was above or below the set Min or Max.
TLR	Torque Limit Reached	The motor stopped, and the operation failed because the operation reached the tool's set Torque Limit (default to maximum).
ABT	Aborted for Safety	The user aborted the operation during Safety Mode by releasing the tool's back button.
PTL	Partial Rotation	Incomplete rotation operation.
LBV	Low Battery Voltage	The battery is below the cut-off voltage.
MOC	Motor Over Current	The motor was shut down to protect against current overload caused by a mechanical or electrical impediment.
OT	Over Temperature	Temperature overheating detected.
COM	Motor Communication Error	Tool's internal communication error; Probably due to a cable or connector issue.
TE	Transducer Error	Transducer validation failed, detected before motor runs.

E) DOCUMENTATION DATA SAMPLE AND FIELD DESCRIPTIONS

MM/DD/YYYY	Time	Duration [Sec]	Job ID	Template	Operation Type	Torque	Angle	Release	Fastener	Units	Torque Loosen	Rotations	Result	Final Torque	Level	User ID	Comp ID	Pass- Wheel	Bolts- Lugs	Axle	Side	Trigger Torque	Min Angle	Max Angle	Angle Monitoring	Breakout Torque	Min Torque	Max Torque
9/27/23	16:46:09	11	WO_32F	FLANGE_B	TAR	450	0	5	HWR	f-Hb	T		OK	451	L4	TZ_34567												
9/27/23	16:45:49	8	WO_32F	FLANGE_B	TAR	450	0	5	HWR	f-Hb	T		OK	451	L4	TZ_34567												
9/27/23	16:45:35	9	WO_32F	FLANGE_B	TAR	450	0	5	HWR	f-Hb	T		OK	451	L4	TZ_34567												
9/27/23	16:45:19	12	WO_32F	FLANGE_B	TAR	450	0	5	HWR	f-Hb	T		OK	451	L4	TZ_34567												
9/27/23	16:45:01	9	WO_32F	FLANGE_B	TAR	450	0	5	HWR	f-Hb	T		OK	452	L4	TZ_34567												
9/27/23	16:44:37	10	WO_32F	FLANGE_B	TAR	450	0	5	HWR	f-Hb	T		OK	452	L4	TZ_34567												
9/27/23	16:44:15	15	WO_32F	FLANGE_B	TAR	450	0	5	HWR	f-Hb	T		OK	449	L4	TZ_34567												
9/27/23	16:43:52	14	WO_32F	FLANGE_B	TAR	450	0	5	HWR	f-Hb	T		OK	448	L4	TZ_34567												
9/27/23	16:43:21	11	WO_32F	FLANGE_B	TAR	450	0	5	HWR	f-Hb	T		OK	451	L4	TZ_34567												
9/27/23	16:42:53	15	WO_32F	FLANGE_B	TAR	450	0	5	HWR	f-Hb	T		OK	451	L4	TZ_34567												
11/20/23	11:40:44	13	WO_41A	CYLN_04	MOA		120	0	RH	f-Hb	T		OK	381	L4	J1_93945							35					375
11/20/23	11:40:13	12	WO_41A	CYLN_04	MOA		120	0	RH	f-Hb	T		OK	394	L4	J1_93945							35					375
11/20/23	11:39:44	9	WO_41A	CYLN_04	MOA		120	0	RH	f-Hb	T		OK	385	L4	J1_93945							35					375
11/20/23	11:39:17	12	WO_41A	CYLN_04	MOA		120	0	RH	f-Hb	T		OK	338	L4	J1_93945							35					375
11/20/23	11:34:13	8	WO_41A	CYLN_05	MOT	200		0	RH	f-Hb	T		OK	200	L4	J1_93945							35	80	150	148.7		
11/20/23	11:33:49	8	WO_41A	CYLN_05	MOT	200		0	RH	f-Hb	T		OK	201	L4	J1_93945							35	80	150	85.1		
11/20/23	11:32:59	12	WO_41A	CYLN_05	MOT	200		0	RH	f-Hb	T		OK	199	L4	J1_93945							35	80	150	127.2		
11/20/23	11:32:33	13	WO_41A	CYLN_05	MOT	200		0	RH	f-Hb	T		OK	201	L4	J1_93945							35	80	150	118		
11/20/23	11:27:17	9	WO_41A	CLMP_01	MOA		88	0	RH	f-Hb	T		ERR	132	L4	J1_93945							35				230	320
11/20/23	11:26:53	13	WO_41A	CLMP_01	MOA		88	0	RH	f-Hb	T		OK	235	L4	J1_93945							35				230	320
11/20/23	11:26:17	8	WO_41A	CLMP_01	MOA		88	0	RH	f-Hb	T		OK	252	L4	J1_93945							35				230	320
11/20/23	11:25:12	15	WO_41A	CLMP_01	MOA		88	0	RH	f-Hb	T		OK	309	L4	J1_93945							35				230	320
8/28/24	11:58:24	4	NO_JOBID	TOO230	TAR	653		0	HWR	f-Hb	L				L4	SCRUMPUS										155		
6/28/24	3:35:27	4	SATURDAY	NO_TMPLT	ACL		0.9	8	HWR	Nm	L				L3	PETERS										244		212
5/13/24	14:24:44	3	FI203	NO_TMPLT	ACL		20	0	HWR	Nm	T		OK	71	L3													203
5/13/24	13:40:13	3	FI203	NO_TMPLT	ACL		20	0	HWR	Nm	T		OK	117	L3													203
4/24/25	15:25:08	2	NO_JOBID	NO_TMPLT	TAR	150		5	RH	f-Hb	Rundown-T				L4													
4/24/25	15:25:01	4	NO_JOBID	NO_TMPLT	TAR	700		5	RH	f-Hb	Rundown-L				L4													

#	FIELD	EXPLANATION	DATA FORMAT
1	MM/DD/YYYY	Bolting operation date	MM/DD/YYYY = Month/Day/Year
2	Time	Bolting operation time	HH:MM:SS = Hour:Minute:Second
3	Duration (sec)	Length of the operation	Whole number (seconds)
4	Job ID	Job ID; As entered by the operator or the App	1 to 8 characters (A-Z, 0-9,_) NO_JOBID = undefined Job ID
5	Template	Bolting Template Name	1 to 8 characters (A-Z, 0-9,_) NO_TMPL = undefined Template
6	Operation Type	Bolting or Template Type	TAR = Torque Angle Release SRF = Snug ETC = Enhanced Torque Check AOL = Angle Only Limited ROT = Rotation MOT = Monitored Torque MOA = Monitored Angle
7	Torque	Target torque	Whole number (in current Units)
8	Angle	Additional angle applied after reaching the target torque	Whole number (degree)
9	Release	Tightening release angle	Whole number (degree)
10	Fastener	Type of fastener	RH = Right Hand LH = Left Hand HWR = HYTORC Washer Right HWL = HYTORC Washer Left HN = HYTORC Nut GTN = Grip Tight Nut
11	Units	Measurement Units for the torque	ft-lb, Nm or kgf-m
12	Torque/Loosen	Operation direction and/or Rundown speed	T = Torque L = Loosen Rundown-T = Rundown Torque Rundown-L = Rundown Loosen
13	Rotations	Number of rotations applied	Decimal number
14	Result	Operation Status	OK = success Error codes: ETR, MHS, LBV, MOC, OT, COM, TLR, TE, PTL, ABT, ERR
15	Final Torque	Measured torque after applying an angle	Whole number (in current Units)
16	Level	Current user access level	L1, L2, L3, L4 or L5
17	User ID	Current user ID	1 to 10 characters (A-Z, 0-9, _) Blank = undefined user ID
18	Comp ID	For General Sequence operation: The Component ID, as entered by the operator	1 to 10 characters (A-Z, 0-9, _)
19	Pass_Wheel	For Sequence operation: Current pass or wheel number of the total count	Number of number
20	Bolts_Lugs	For Sequence operation: Current bolt or lug number of the total count	Number of number
21	Axle	For Wheel Sequence operation: Axle number	Whole number
22	Side	For Wheel Sequence operation: Side of Vehicle	Left or Right
23	Trigger Torque	Torque point for starting measurement in MOA and MOT	Whole number
24	Min Angle	Lowest acceptable angle in MOT	Whole number
25	Max Angle	Highest acceptable angle in MOT	Whole number
26	Angle Monitoring	Measured angle from 5% of the target torque to completion	Whole number
27	Breakout Torque	Peak torque measured during loosen	Whole number
28	Min Torque	Lowest acceptable torque in MOA	Whole number
29	Max Torque	Highest acceptable torque in MOA	Whole number

F) ACCESS LEVEL FUNCTIONS

		User Level			
		Admin (L4)	Full (L3)	Flex (L2)	Job (L1)
Main Menu					
	Torque	✓	✓		
	Torque & Angle	✓	✓		
	Angle Only	✓	✓		
	Fastener	✓	✓		
	Release	✓	✓		
	Power Off	✓	✓	✓	✓
Document Job					
	Start / End Job Doc	✓	✓	✓	✓
	Create Job ID	✓	✓	✓	✓
	Import Job IDs	✓	✓		
	Export Job Doc	✓	✓	✓	✓
	Delete Job Doc	✓	✓		
Templates					
	Select	✓	✓	✓	✓
	Create	✓	✓		
	Import	✓	✓		
	Delete	✓	✓		
	Export	✓	✓		
	Multi Template	✓	✓		
Advanced Bolting					
	Torque Check	✓	✓		
	Rotations	✓	✓		
	Monitored Torque	✓	✓		
	Monitored Angle	✓	✓		
	Sequence	✓	✓		
Settings					
	Units	✓	✓		
	Time/Date	✓	✓		
	Bluetooth	✓	✓		
	Torque Limit	✓	✓		
	Angle Limits	✓	✓		
	Angle Delay	✓	✓		
	Safety	✓			
	Beeper	✓	✓		
	Invert Screen	✓	✓		
	Auto Shutdown	✓	✓		
	Menu Loop	✓	✓		
	Work Light	✓	✓		
	Monitoring	✓	✓		
	Clear Settings	✓	✓		
Admin					
	Access Level	✓	✓	✓	✓
	Tool Info	✓	✓	✓	✓
	User ID	✓	✓	✓	✓
	L2 Flex Setup	✓			
	Shortcut Setup	✓			
	Change Password	✓			
	Edit Seq Label	✓			
	Reset Tool	✓			
Service					
	Calibrate	Locked			
	Bluetooth	✓	✓		
	Setup	Limited			
	System Flags	✓	✓		
	Diagnostics	View only			

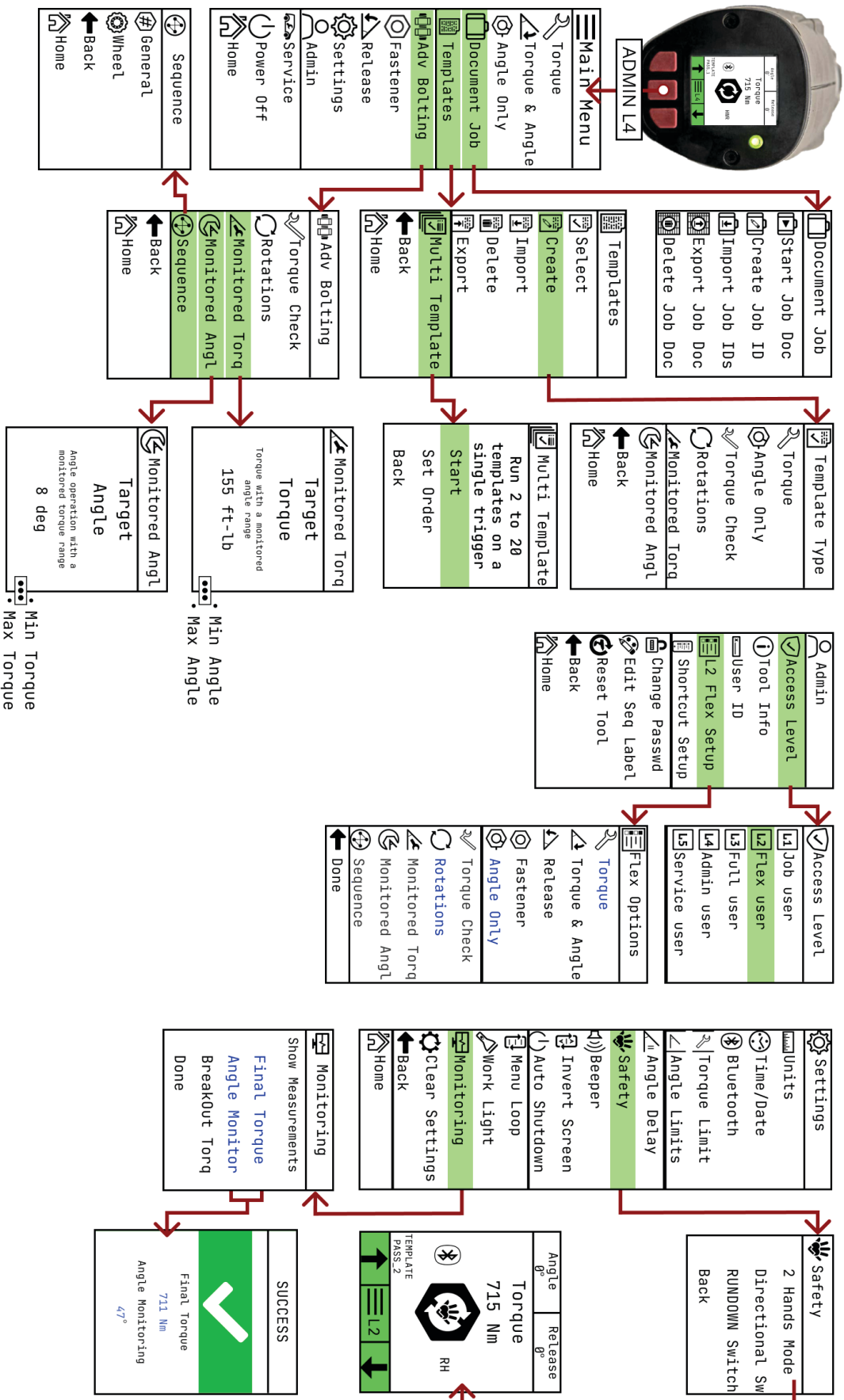
= Edit by Admin

G) ICON REFERENCE GUIDE

	English	汉语 Chinese	日本語 Japanese	Deutsch German	italiano Italian	français French	Español Spanish
	Home	主页	ホーム	Home	Menu	Accueil	Inicio
	Clockwise Direction	顺时针方向	時計回り	Im Uhrzeigersinn	Senso Orario	Sens Horaire	Rotación hacia la derecha
	Counter Clockwise Direction	逆时针方向	反時計回り	gegen Uhrzeigersinn	Senso Antiorario	Sens Antihoraire	Rotación en sentido antihorario
	Fastener Type	紧固件类型	締結方法	Verbindungselement	Tipologia di Bulloneria	Élément de montage	Tipo de cierre
	User Access Level	用户访问级别	ユーザーアクセスレベル	Benutzerzugriffsebene	Livello di accesso Operatore	Niveau d'accès utilisateur	Nivel de acceso del usuario
L1	L1 Jobs User	L1基础工单用户	L1作業ユーザー	L1 Benutzer	Operatore L1	L1 Jobs User	L1 Usuario de trabajos
L2	L2 Flex User	L2自定义功能用户	L2フレックスユーザー	L2 Flex Benutzer	Operatore L2 Flex	Utilisateur L2 Flex	L2 Usuario Flex
L3	L3 Full User	L3全功能用户	L3フルユーザー	L3 Haupt Benutzer	Operatore L3 con accesso completo	L3 utilisateur complet	L3 Usuario principal
L4	L4 Admin	L4管理员	L4管理者	L4 Administrator	Amministratore L4	L4 Administrateur	L4 Administrativo
	Main Menu	主菜单	メインメニュー	Hauptmenü	Menu Principale	Menu Principal	Menú Principal
	Torque	扭矩模式	トルク	Drehmoment	Coppia	Couple	Torque
	Torque & Angle	扭矩转角模式	トルクと角度	Drehmoment & Drehwinkel	Coppia e angolo	Couple & angle	Torque y ángulo
	Angle Only	转角模式	回転角度	Drehwinkel	Solo Angolo	Angle seulement	Solo ángulo
	Fastener	紧固件类型	ファスナー	Verbindungselement	Elementi di Bulloneria	Fixation	Sujetador
	Release	释放角度	開放	Freidrehwinkel	Rilascio	Déblocage	Liberación
	Power Off	关机	電源オフ	Ausschalten	Spegnimento	Éteindre	Apagado
	Document Job	工作文件	ドキュメントジョブ	Schraubfall Dokumentierung	Documento di Lavoro	Document de travail	Documentar trabajo
	Start Job Doc	启动工单	作業開始	Dokumentierung starten	Avviare lavoro	Commencer le travail	Iniciar trabajo
	End Job Doc	结束工单	作業終了	Dokumentierung beenden	Terminare lavoro	Fin du travail	Finalizar trabajo
	Create Job ID	创建工单ID	作業ID作成	Schraubfall benennen	Creare un ID lavoro	Créer un identifiant de travail	Crear numero de trabajo
	Import Job IDs	导入工单ID	作業IDインポート	Dateinamenliste Laden	Importare ID lavoro	Importer le travail ID	Importar numero de trabajo
	Export Job Doc	导出工单文件	作業データ出力	Dokumentierung Exportieren	Esportare I Processi	Exporter des tâches	Exportar trabajos
	Delete Job Doc	删除工单文件	作業データ削除	Dokumentierung Löschen	Eliminare I Processi	Supprimer des tâches	Borrar trabajos
	Templates	模板	テンプレート	Vorlagen	Modelli	Modèles	Plantillas
	Select	选择	選択	Auswählen	Selezionare	Choisissez	Seleccionar
	Create	创建	作成	Erstellen	Creare	Créer	Crear
	Import	导入	インポート	Laden	Importare	Importer	Importar
	Delete	删除	削除	Löschen	Eliminare	Supprimer	Eliminar
	Export	导出	エクスポート	Exportieren	Esportare	Exporter	Exportar
	Multi Template	多模板	マルチテンプレート	Mehrstufenvorlage	Multi - Modulo	Multi-modèle	Planillas multiples
	Advanced Bolting	高级紧固模式	高度ボルト締結	Erweiterte Verfahren	Bullonatura Avanzata	Boulonnage Supérieur	Empernado Avanzado
	Torque Check	扭矩检查	トルクチェック	Torque Check	Verifica di Coppia	Vérification du couple	Verificacion de torque
	Rotations	旋转圈数	回転	Drehungen	Rotazioni	Rotations	Rotaciones

ICON REFERENCE GUIDE (Continued)

	English	汉语 Chinese	日本語 Japanese	Deutsch German	italiano Italian	français French	Español Spanish
	Monitored Torque	扭矩监测	監視トルク	Überwachtes Drehmoment	Coppia Controllata	Couple contrôlé	Torque monitoreado
	Monitored Angle	角度监测	監視角度	Überwachter Winkel	Angolo Controllato	Angle contrôlé	Ángulo monitoreado
	Sequence	顺序紧固模式	順序	Abfolge	Sequenza	Séquence	Secuencia
	General Sequence	常规顺序模式	一般的なシーケンス	Allgemeine Abfolge	Sequenza Generale	Séquence générale	Secuencia general
	Wheel Sequence	车轮顺序模式	ホイールシーケンス	Radverschraubungsprogramm	Sequenza per Ruota	Séquence de roues	Secuencia de rueda
	Settings	设置	設定	Einstellungen	Impostazioni	Réglages	Ajustes
	Units	单位	単位	Einheiten	Unità	Unités	Unidades
	Time/Date	时间/日期	時計	Zeit/Datum	Ora/Data	Horloge	Reloj
	Bluetooth	蓝牙	Bluetooth	Bluetooth	Bluetooth	Bluetooth	Bluetooth
	Torque Limit	扭矩限制	トルク制限	Drehmomentgrenzen	Limiti di coppia	Limites de couple	Limites de torque
	Angle Limits	角度限制	角度制限	Winkelgrenzen	Limiti di angolo	Limites d'angle	Limites de ángulo
	Angle Delay	角度延迟	動作切替時間	Pause nach Fügoment	Ritardo dell'angolo	Retard d'angle	Retraso de ángulo
	Safety	安全	安全性	Sicherheit	Sicurezza	Sécurité	Seguridad
	Beeper	蜂鸣器	ビーブ音	Signalton	Cicalino	Bip	Localizador
	Invert Screen	反转屏幕	画面反転	Bildschirm drehen	Inverti schermo	Inverser l'écran	Pantalla invertida
	Auto Shutdown	自动关机	自動シャットダウン	Automatische Abschaltung	Spegnimento Automatico	Arrêt automatique	Apagado automático
	Menu Loop	菜单循环	メニューループ	Menüschleife	Menu a scorrimento ciclico	Boucle du menu	Bucle de menú
	Work Light	工作灯	照明	Arbeitslicht	Luce di lavoro	Lampe de travail	Luz de trabajo
	Monitoring	监测功能	監視	Überwachung	Monitoraggio	Contrôle	Monitoreo
	Clear Settings	清除设置	設定をクリア	Einstellungen löschen	Cancela impostazioni	Effacer les réglages	Borrar ajustes
	Admin	管理员	管理者	Administrator	Amministratore	Administrateur	Administrador
	Access Level	访问级别	アクセスレベル	Zugangsebene	Livello di Accesso	Niveau d'accès	Nivel de acceso
	Tool Info	工具信息	ツール情報	Werkzeuginformationen	Informazioni sugli strumenti	Informations sur l'outil	Información de la herramienta
	User ID	用户ID	ユーザーID	Benutzer ID	ID utente	Identifiant d'utilisateur	Numero de usuario
	L2 Flex Setup	L2自定义功能用户设置	L2フレックス設定	L2 Flex Aufbau	Configurazione L2 Flex	Configuration L2 Flex	Ajuste de L2 Flex
	Shortcut Setup	快捷方式设置	ショートカット設定	Schnellwahlmenü bearbeiten	Menu Scelta Rapida	Raccourci	Ajuste de atajo
	Change Password	更改密码	パスワード変更	Passwort ändern	Cambia password	Changer le mot de passe	Cambio de contraseña
	Edit Sequence Label	编辑序列标签	シーケンスラベル編集	Sequenzbeschriftung bearbeiten	Modifica Etichetta Sequenza	Editer etiquette sequence	Editar etiqueta de secuencia
	Reset Tool	重置工具	リセットツール	Werkzeug zurücksetzen	Strumento di Ripristino	Outil de réinitialisation	Herramienta de reinicio
	Service	服务	サービス	Service	Servizio	Un service	Servicio





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