

HYTORC

The World's Most Trusted Industrial Bolting Systems



LITHIUM SERIES® Electric Torque Tool (BTM and BTM-DOC Models)

Operations Manual

Firmware Version 1.26

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ABOUT THIS DOCUMENT

ORIGINAL INSTRUCTIONS

This manual provides information for the standard LITHIUM SERIES® Electric Torque Tool.

Models: BTM-0250, BTM-0700, BTM-1000, BTM-2000, BTM-3000, BTM-0250-DOC, BTM-0750-DOC, BTM-1000-DOC, BTM-2000-DOC, BTM-3000-DOC

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Product Modifications. HYTORC DOES NOT ALLOW any of the products listed in this manual to be modified by any end user without exception. Should an application require a modification to the tool, or any of the standard accessories please consult with your local HYTORC representative and they will be able to obtain the assistance for any modification that may be required.

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

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

ABOUT THIS DOCUMENT (CONT'D.)

Warranty. The **LITHIUM SERIES®** Tool has a one-year limited warranty. Every tool is tested before leaving the factory and is warranted to be free from defects in workmanship and materials. HYTORC will repair or replace, without charge, any tool which, upon examination, proves to be defective in workmanship or materials for one (1) year after the date of purchase. This warranty does not cover damage resulting from repairs made or attempted by unauthorized repair facilities. The repair and replacement remedies described herein are exclusive. In no event shall HYTORC be liable for any incidental, special, or consequential damages, including loss of profits. This warranty is exclusive and in lieu of all other warranties or conditions, written or oral, expressed or implied for merchantability or fitness for particular use or purpose. This warranty gives you specific legal rights. You may also have other rights that vary from state to state and province to province. In those states that do not allow the exclusion of implied warranties or limitation of incidental or consequential damages, the above limitations or exclusions may not apply to you. If you have questions about the warranty, contact our customer service center at 201-828-5270.

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WARNING! Read all safety warnings designated by the  symbol and all instructions.

Save all warnings and instructions for future reference.

The term “power tool” in the warnings refers to your mains-operated (corded) power tool or battery-operated (cordless) power tool.

A. WORK AREA SAFETY

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

B. ELECTRICAL SAFETY

- **Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools.** Unmodified plugs and matching outlets will reduce risk of electric shock.
- **Avoid body contact with earthed or grounded surfaces, such as pipes, radiators, ranges and refrigerators.** There is an increased risk of electric shock if your body is earthed or grounded.
- **Do not allow battery to get wet.** Do not operate tool in rain, snow or high humidity. Do not splash or immerse in liquids.
- **Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts.** Damaged or entangled cords increase the risk of electric shock.
- **When operating a power tool outdoors, use an extension cord suitable for outdoor use.** Use of a cord suitable for outdoor use reduces the risk of electric shock.
- **If operating a power tool in a damp location is unavoidable, use a Ground Fault Circuit Interrupt (GFCI) protected supply.** Use of a GFCI reduces the risk of electric shock.

C. PERSONAL SAFETY

- **Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication.** A moment of inattention while operating power tools may result in serious personal injury.
- **Use personal protective equipment. Always wear eye protection.** Protective equipment such as a dust mask, non-skid safety shoes, hard hat or hearing protection used for appropriate conditions will reduce personal injuries.
- **Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool.** Carrying power tools with your finger on the switch or energising power tools that have the switch on invites accidents.
- **Remove any adjusting key or wrench before turning the power tool on.** A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
- **Do not overreach. Keep proper footing and balance at all times.** This enables better control of the power tool in unexpected situations.
- **Dress properly. Do not wear loose clothing or jewelry. Keep your hair and clothing away from moving parts.** Loose clothes, jewelry or long hair can be caught in moving parts.
- **If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used.** Use of dust collection can reduce dust-related hazards.
- **Do not let familiarity gained from frequent use of tools allow you to become complacent and ignore tool safety principles.** A careless action can cause severe injury within a fraction of a second.

D. POWER TOOL USE AND CARE

- **Do not force the power tool. Use the correct power tool for your application.** The correct power tool will do the job better and safer at the rate for which it was designed.
- **Do not use the power tool if the switch does not turn it on and off.** Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
- **Disconnect the plug from the power source and/or remove the battery pack, if detachable, from the power tool before making any adjustments, changing accessories, or storing power tools.** Such preventive safety measures reduce the risk of starting the power tool accidentally.
- **Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool.** Power tools are dangerous in the hands of untrained users.
- **Maintain power tools and accessories. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use.** Many accidents are caused by poorly maintained power tools.
- **Keep cutting tool sharp and clean.** Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
- **Use the power tool, accessories and tool bits etc. in accordance with these instructions, taking into account the working conditions and the work to be performed.** Use of the power tool for operations different from those intended could result in a hazardous situation.
- **Keep handles and grasping surfaces dry, clean and free from oil and grease.** Slippery handles and grasping surfaces do not allow for safe handling and control of the tool in unexpected situations.

E. BATTERY TOOL USE AND CARE

- **Recharge only with the charger specified by the manufacturer.** A charger that is suitable for one type of battery pack may create a risk of fire when used with another battery pack.
- **Use power tools only with specifically designated battery packs.** Use of any other battery packs may create a risk of injury and fire.
- **When battery pack is not in use, keep it away from other metal objects, like paper clips, coins, keys, nails, screws or other small metal objects, that can make a connection from one terminal to another.** Shorting the battery terminals together may cause burns or a fire.
- **Under abusive conditions, liquid may be ejected from the battery; avoid contact. If contact accidentally occurs, flush with water. If liquid contacts eyes, additionally seek medical help.** Liquid ejected from the battery may cause irritation or burns.
- **Do not use a battery pack or tool that is damaged or modified.** Damaged or modified batteries may exhibit unpredictable behaviour resulting in fire, explosion or risk of injury.
- **Do not expose a battery pack or tool to fire or excessive temperature.** Exposure to fire or temperature above 130 °C may cause explosion.
- **Follow all charging instructions and do not charge the battery pack or tool outside the temperature range specified in the instructions.** Charging improperly or at temperatures outside the specified range may damage the battery and increase the risk of fire.

F. SERVICE

- **Have your power tool serviced by a qualified repair person using only identical replacement parts.** This will ensure that the safety of the power tool is maintained.
- **Never service damaged battery packs.** Service of battery packs should only be performed by the manufacturer or authorized service providers.

G. IMPORTANT TOOL CARE AND HANDLING

- **Inspect all tool components as they are removed from the shipping container.** If damage is found to any component, contact the shipper immediately. Do not use the tool.
- **Modifying a tool or tool accessory is dangerous and invalidates the warranty**
- **Inspect the tool before each use.** Have any obviously worn or damaged parts replaced.
- **When not in use, store the tool and tool accessories in the plastic storage case supplied with the tool.** Do not store the tool and batteries in an environment outside of the following temperature and humidity range: -4°F (-20°C) to 122°F (50°C), 5% to 95% ambient relative humidity

H. IMPORTANT BATTERY PACK INSTRUCTIONS

- **Do not incinerate the battery pack even if it is severely damaged or is completely worn out.** The battery pack can explode in a fire. Toxic fumes and materials are created when Lithium-ion battery packs are burned.
- **Do not charge or use the battery in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.** Inserting or removing the battery from the charger may ignite dust or fumes.
- **Contents of opened battery cells may cause respiratory irritation.** Provide fresh air. If symptoms persist, seek medical attention.



WARNING

Burn hazard. Battery liquid may be flammable if exposed to spark or flame.



WARNING

Never attempt to open the battery pack for any reason. If battery pack case is cracked or damaged, do not insert into charger or tool. Do not crush, drop, or damage battery pack. Do not use a battery pack or charger that has received a sharp blow, has been dropped or has been run over or damaged in any way (i.e. pierced with a nail, hit with a hammer, stepped on). Damaged battery packs should be returned to an authorized HYTORC service center for recycling.



CAUTION

The US Department of Transportation Hazardous Materials Regulations (HMR) actually prohibit transporting batteries in commerce or on airplanes, (i.e. packed in suitcases and carry-on luggage). When transporting individual batteries, make sure that the battery terminals are protected and well insulated from materials that could contact them and cause a short circuit. For any other concerns in regarding the transportation of LI-ION batteries, consult your Transportation Carrier.

I. IMPORTANT BATTERY CHARGER SAFETY INSTRUCTIONS

- Before using charger, read all instructions and cautionary markings on charger, battery pack and product using battery pack
- **DO NOT attempt to charge the battery pack with any chargers other than the one in this manual.** The charger and battery pack are specifically designed to work together.
- **These chargers are not intended for any uses other than batteries supplied with LITHIUM SERIES Tools as described in this manual.** Any other uses may result in risk of fire, electric shock or electrocution.
- **Do not expose charger to rain or snow**
- **To disconnect charger, firmly grasp plug and remove.** Do not disconnect the charger by pulling on the cord.
- **Make sure the cord is located so that it will not be stepped on, tripped over, or otherwise subjected to damage or stress**
- **Do not use an extension cord unless it is absolutely necessary**
- **An extension cord must have adequate wire size (AWG) for safety.** In general the larger the wire size the greater the capacity of the cable.
- **Do not block any ventilation slots on charger power supply**
- **To clean the charger, first unplug from the power source, then wipe with a dry cloth**



WARNING

Burn hazard. Battery liquid may be flammable if exposed to spark or flame.



WARNING

Burn hazard. To reduce the risk of injury, charge only tool batteries. Other types of batteries may burst causing personal injury and damage.



CAUTION

Under certain conditions, with the charger plugged into the power supply, the charger can be shorted by foreign material. Foreign materials of a conductive nature such as, but not limited to, steel wool, aluminum foil, or any buildup of metallic particles should be kept away from charger cavities. Always unplug the charger from the power supply when there is no battery pack in the cavity. Unplug charger before attempting to clean.

J. EMISSIONS

- **The noise emission, measured in accordance with EN 62841-1 I.2, is as follows:**
 - A-weighted sound pressure level L_{pA} does not exceed 70 dB(A)
 - A-weighted sound power level $L_{WA} = 80.9$ dB(A) and its uncertainty $K_{WA} = 3$ dB(A)
- **Wear hearing protection when required by job conditions**
- **The vibration total value and its uncertainty measured in accordance with EN 62841-1 I.3 is as follows:**
 - The vibration total value does not exceed 2.5 m/s²
- **The declared vibration total value has been measured in accordance with a standard test method and may be used for comparing one tool with another**
- **The declared vibration total value may also be used in a preliminary assessment of exposure**
- **The vibration emission during actual use of the tool can differ from the declared total value depending on the ways in which the tool is used**
- **Identify safety measures to protect the operator that are based on an estimation of exposure in the actual conditions of use (taking account of all parts of the operating cycle such as the times when the tool is switched off and when it is running idle in addition to the trigger time)**



FREE SERVICES*

- User safety training upon receipt of merchandise
- Semi-Annual user safety training on request
- Annual safety seminar on appointment
- Loaner tools in event of product failure within 24 hours
- Torque/Tension consultation/seminar
- Half-Day, first-use supervision
- Annual product inspection on request
- Product demonstrations
- 12-Month no-questions-asked warranty
- 5-Year tool housing warranty
- User training for first-time rentals
- Warranty repairs including return-freight
- Upgrades during the lifetime of the tool to enhance safety, durability, and function
- Free calibration with new tool purchase

*Above services are not subject to travel expense charges.

REPAIRS

- All repairs are guaranteed for 6 months
- All repairs are subject to labor and part cost as outlined in the official HYTORC price list
- All repairs will be tested and calibrated to ensure the highest quality repairs
- All warranty repairs are free of all charges including return-freight

TOOL RENTALS

- 100% of all paid rentals will be applied as a discount towards any new purchase in that calendar year
- User training for first-time rentals is free of all cost
- Rental tools are guaranteed to perform and are subject to the free loaner tool policy of HYTORC

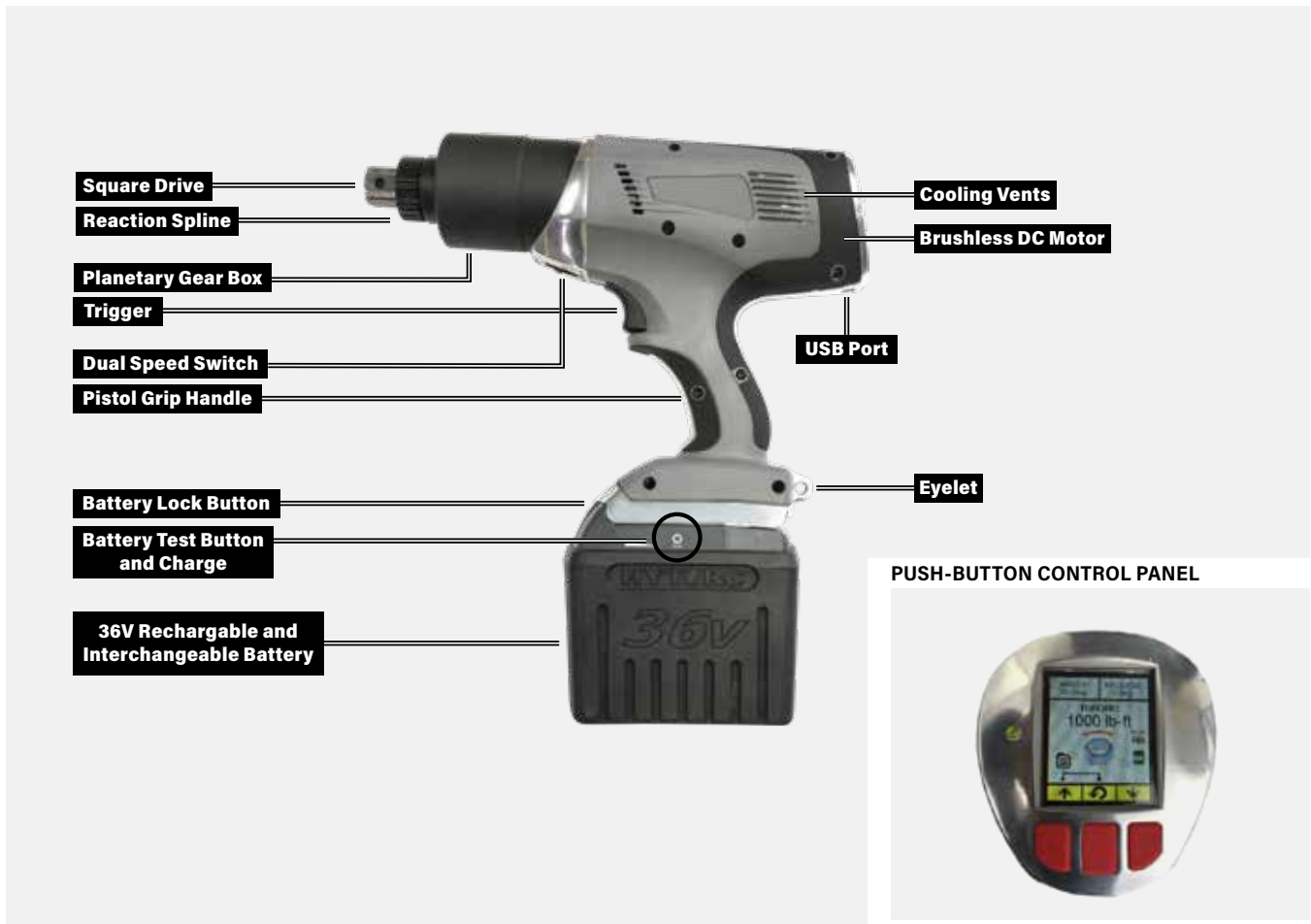
HELP

If you require any further assistance, please call your local HYTORC Representative or 1-800-FOR-HYTORC (1-800-367-4986). Please visit us at HYTORC.com.

FOLLOW US ONLINE



3. TOOL DESCRIPTION



The **LITHIUM SERIES**® Electric Torque Tool provides the following:

- High-strength planetary gear drive powered by brushed DC electric motor.
- Two Speeds: Fast run-down, high powered torque.
- Electronic control and setup via push-button menu.
- Heads-Up LCD display.
- Ergonomic lightweight hand-held design with pistol-grip and trigger activation.
- Portable tool powered by rechargeable extended-life 36V lithium ion battery.
- Standard square-drive with dual-reaction spline.
- Integrated data acquisition and export capability.



INSPECT TOOLS & CALIBRATION

- Inspect all components; if damaged report any sign of damage to the shipper and do not use the tool.
- Inspect the tool before each use; repair or replace any obviously worn or damaged parts.
- Maintenance must be performed by a qualified technician.
- Modifying any of the components invalidates the warranty.
- Check the calibration date on the tool. HYTORC recommends tool recalibration annually.
- If more than a year has passed since last calibration, contact HYTORC for recalibration.
- When not in use store all tool components in the plastic storage case.
- Save all instructions and calibration reports in the storage case.

ENVIRONMENTAL CONSIDERATIONS



The LITHIUM SERIES Tool is a rugged industrial tool with an electric motor and electronic control. The following environmental considerations will help maintain reliable tool operation. Pictured above, keep cooling vents clear (1), and secure the tool per local practice (2) to protect from dropping.

- The tool should not be exposed to moisture. Do not operate in rain, snow or extreme humidity.
- The operating temperature of the tool is -4°F (-20°C) to 140°F (60°C).
- All Cooling Vents should be kept clear of dust, dirt and debris to allow internal fans to maintain airflow to keep the motor and electronics within temperature limits, do not subject the tool to extreme dust environments that would clog the vents or do not cover the vents with your hand.
- The tool and electronic components are not certified or approved for explosive environments or areas containing combustible chemical materials.

CHARGE THE BATTERY

- The LITHIUM SERIES® II Tool is supplied with the HYTORC Battery Charger (Model: A000791) and two long-life HYTORC 36-volt batteries (Model: P002036-1)
- Before charging a battery verify the local voltage supply to ensure capability with the charger; this will typically be 110 Volts or 220 Volts AC.
- Only operate the battery charger between 32°F (0°C) to 104° F (40° C) and with 10% to 90% ambient relative humidity (no condensate)
- Connect the charging cradle to the power supply
- Connect the power cord to a grounded outlet
- If necessary connect the plug adapters to the local power outlet
- Insert the battery by sliding it into the charger and locking into place
- The 36-volt battery is fully charged in approximately 90 minutes

CHARGING/FAULT INDICATOR

- POWER INDICATOR green when charger is plugged into AC outlet
- CHARGING/FAULT INDICATOR is flashing green while battery is charging
- CHARGING/FAULT INDICATOR solid green when battery is fully charged
- CHARGING/FAULT INDICATOR is flashing red for battery fault not charging

BATTERY STORAGE

- Only store the battery and charger in the following environmental conditions:
- -4°F (-20°C) to 122°F (50°C) 5% to 95% ambient relative humidity



TEST THE BATTERY



The Lithium-Ion battery has a long run life and will power the tool at full speed until the battery is depleted, so there is no gradual drop in power during use

- For continuous use, have one or more spare battery packs charging while the tool is in use. When needed, simply swap batteries from the charger to the tool.
- Batteries can be charged hundreds of times without any noticeable loss in capacity
- Push the TEST button on the side of the battery and the LED's will provide an approximate indicator of remaining battery life

- 1 LED ON < 25% Battery Charge Left
- 2 LEDs ON < 50% Battery Charge Left
- 3 LEDs ON < 75% Battery Charge Left
- 4 LEDs ON < 100% Battery Charge Left

INSTALL THE BATTERY



The battery easily slides onto the tool body and snaps into place

- Press the release button on the battery and slide battery pack off the charger
- Align the base of the tool with the rails in the battery and slide the battery pack firmly into the handle until you hear (or see) the lock snap in place
- To remove the battery pack from the tool, press the release button on the battery and firmly pull the battery pack out of the tool

NOTE: When not in use, remove the battery pack from the tool

BATTERY RECYCLING

Do not ship batteries if they can be disposed of or recycled locally. All defective, damaged or spent batteries should be disposed of or recycled properly according to these guidelines.

- **Dispose of Properly:** Li-Ion battery packs should not be disposed of in the household (municipal) waste stream; they must be taken to an authorized waste collection center or battery recycling center
- **Protect the Environment:** Drop off your old batteries at a local recycling center near you



PRIMARY CONTROL FEATURES

- Press Any Button to Power-On Tool (the tool automatically turns off after 5 minutes)
- A new tool shows the factory default settings
- A tool that has been used before displays the last settings used on the tool before it was powered off
- Left Button Increases the Torque Value
- Right Button Decreases the Torque Value
- Screen Features; Torque, Angle, Release, Direction, Battery Status, Fastener Type, Data Record Indicator
- Push and hold center button to cycle; TORQUE, ANGLE and RELEASE
- Hold 2 Left Buttons to display main and sub-menu options

TOGGLE TORQUE, ANGLE & RELEASE

The tool provides simple access to set Torque, Angle and Release by toggling the center button.

- Press and hold the center button for approximately 3 seconds and release it to access the Angle screen.
- Press and hold the center button for approximately 3 seconds and release it to access the Release screen.
- Press and hold the center button for approximately 3 seconds and release it to access the Torque screen.
- The torque setup screen is the home screen for operating the tool.

TORQUE

ANGLE

RELEASE



Push.
Hold for 3 seconds.
Release.

Push.
Hold for 3 seconds.
Release.

Push.
Hold for 3 seconds.
Release.



SET TORQUE

- Push the left button ↑ to increase the Torque value. Push the right button ↓ to decrease.
- Torque may be set to any value from the minimum to the maximum capability of the tool (or MAX MIN Torque Limits set in the ADMIN menu).
- Torque can be displayed in lb-ft, N-m, kgf-m or %. (See output unit settings under the ADMIN menu)
- The Torque rotational direction arrow and the rotating nut icon reflect the direction associated with the specific fastener type. The fastener type may be set under the Operation – Fastener Type menu.



SET ANGLE

- Certain bolting specifications may require an Angle value in-addition to or instead of a Torque value.
- The current Angle setting will be displayed in "TT + DDD" format. TT = number of turns and DDD = angle. Value can be increased or decreased using arrow buttons from "0 + 0" to "99 + 359".
- Push the left button ↑ to increase the Angle value. Push the right button ↓ to decrease.
- If an Angle value is set the tool will add the desired angle of rotation by applying additional torque after the completed Torque operation, up to the maximum output of the tool.
- The Angle feature is actuated by holding the trigger after the tool has completed Torque operation.
- Angle is applied after a time delay set in the Angle Delay menu – typical ½ to 3 seconds.



SET RELEASE

- When the tool achieves the Torque value (and Angle, if set) the motor automatically stalls and the gear box continues to exert force (and reaction force) essentially locking the tool onto the nut.
- Set a Release Angle to reverse the motor slightly thus taking the applied force off the gear box and reaction point and releasing the tool from the nut without loosening the nut.
- The Release Angle setting may vary depending on the application and may need to be developed iteratively by testing the value on the application; the objective is to set the minimum RELEASE angle required to release the tool without applying a force that would turn or loosen the nut.
- Release Angle is typically set to less than 10 degrees (1-to-3 degrees for HYTORC Washer, or 3-to-7 degrees for reaction arms) so that nut is not loosened.
- The automatic release feature is actuated by continuing to hold the trigger after the tool successfully completes Torque operations (and Angle if set).
- During operation the screen will show the release angle and direction, the tool motor will reverse by the desired release angle and then stall again to allow the tool to be removed from the nut.
- The Release Angle is applied following application of Torque (and Angle, if set) and after an additional time delay set in the Angle Delay menu – typical ½ to 3 seconds.

LOOSEN MODE



From the Home Screen, press the middle button to alternate between Torque and Loosen mode. If no angle is set, the maximum rated torque will be applied in the loosen direction.

SET LOOSEN ANGLE

The Loosen Angle feature allows the user to loosen by number of full turns (expressed as TT with a range of 0-99), and degrees of angle (expressed as DDD with a range 0-359).



Press and hold the center button for approximately 3 seconds to enter a new Loosen Angle.

The current Loosen Angle setting will be displayed in "TT + DDD" format. Where TT = number of turns and DDD = angle. Value can be increased or decreased using arrow buttons from "0 + 0" to "99 + 359".

Press and hold the center button for approximately 3 seconds and release it to access the Loosen Release screen. A release is required in some applications.

Push the left button ↑ to increase the Release Angle value. Push the right button ↓ to decrease.

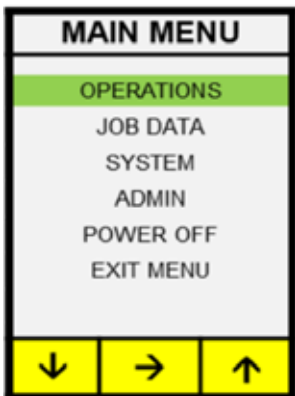
Press and hold the center button for approximately 3 seconds to return to the Loosen Mode screen.



MAIN MENU AND SUB-MENUS

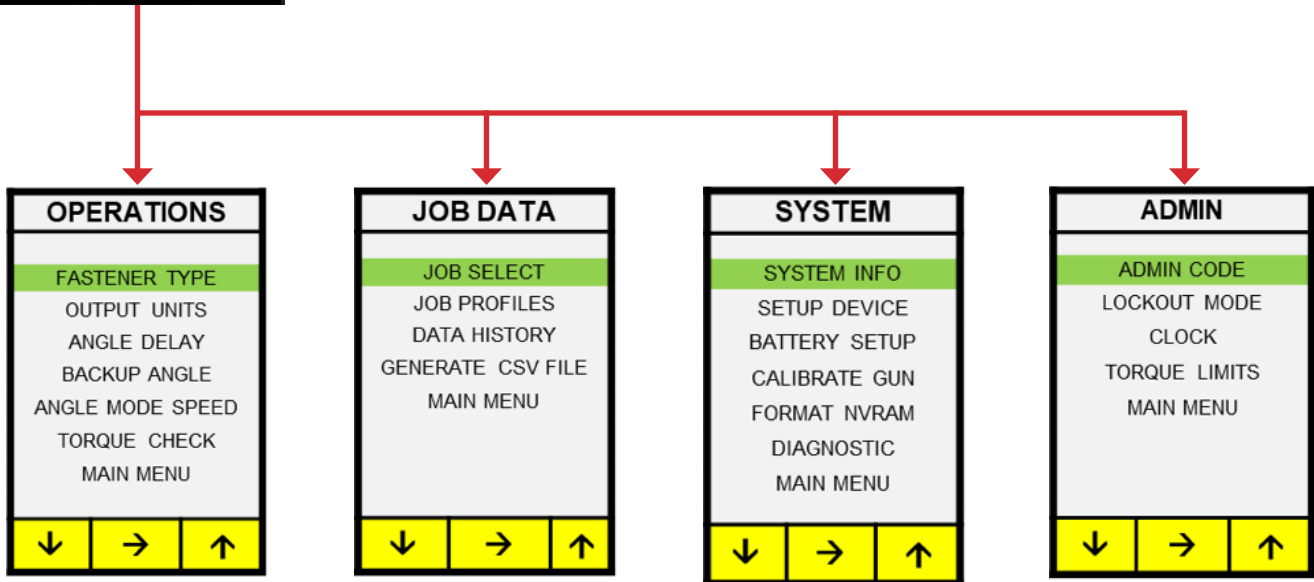
The Main Menu provides Operations, Job Data, System, Admin and the Exit and Power Off options.

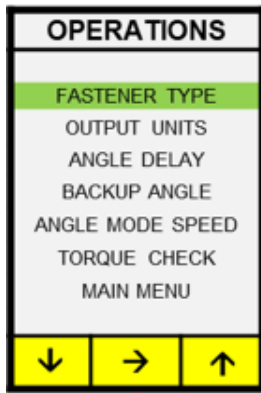
Press and hold the left and center buttons simultaneously for approximately three seconds, to display the Main Menu.



MAIN MENU

- The green bar highlights the current position
- Press left button (↓) to scroll down, right button (↑) to scroll up
- Press the center button (→) to select and display a sub-menu



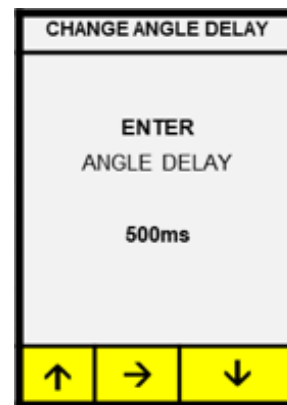
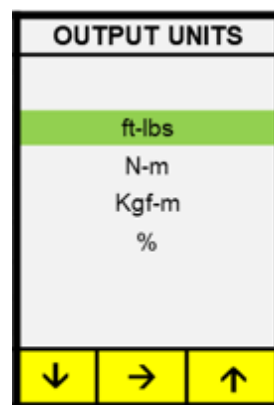


OPERATIONS MENU

The Operations menu contains most functions for everyday operation.

- The green bar highlights the current position
- Press left button (↓) to scroll down, right button (↷) to scroll up
- Press the center button (→) to select and display a sub-menu

(Continued on following page)



FASTENER TYPE

Press appropriate button ↓↑ to scroll up or down, push → select fastener type:

RH RIGHT HAND bolts tightened clockwise.

LH LEFT HAND bolts tightened counterclockwise.

HN HYTORC NUT tightened counterclockwise.

HW HYTORC WASHER tightened clockwise.

Any selection → returns users to OPERATIONS menu.

NOTE: When HYTORC WASHER is selected, the safety feature requiring a push of the button before operation is disabled. Tool should never be used with a reaction arm in this setting.

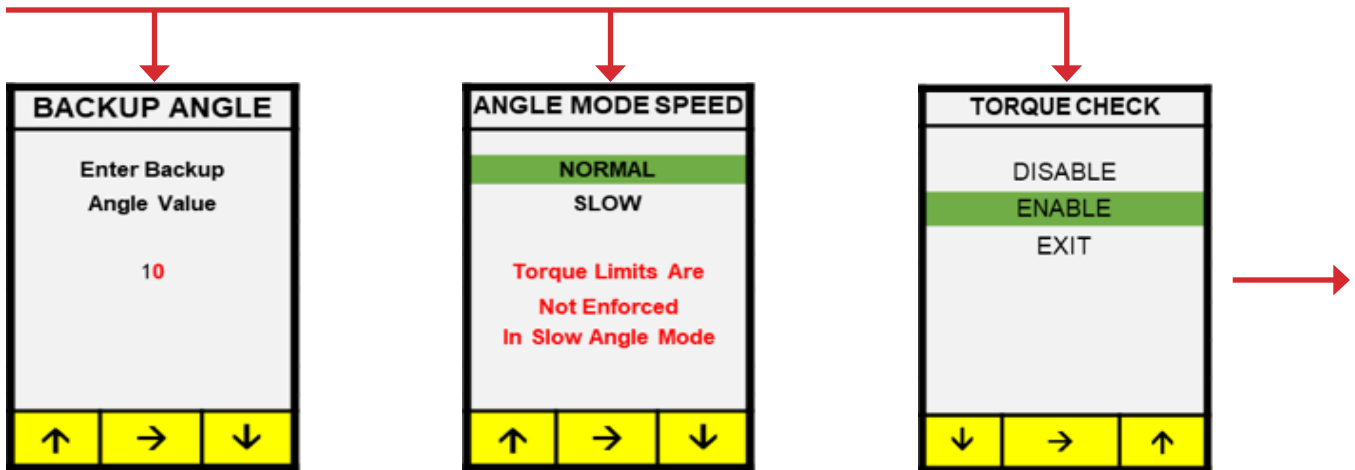
OUTPUT UNITS

Allows the operator to select the preferred units of the torque display. Press buttons to scroll ↑ or ↓ to highlight the desired units, press → to select desired units and return to the OPERATIONS menu.

ANGLE DELAY

The user can adjust the time delay between Angle and Release following a Torque operation – from 0ms to 3000ms. Push up button ↑ to increase the delay or down button ↓ to decrease the delay. Select → to return to the OPERATIONS menu.

(OPERATION MENU continued from previous page)



BACKUP ANGLE

The Backup Angle will turn the fastener through a specified angle range (0-10 degrees) in the direction opposite to the current torque direction.

Backup Angle is required in certain bolting applications to avoid a Failure to Reach Torque Speed (FTRTS) error. For example, a situation where an operator has already partially tightened a bolt (e.g., after the first pass in ASME 4 pass tightening).

Push up button ↑ to increase the Backup angle or down button ↓ to decrease it. Select → to return to the OPERATION menu.

ANGLE MODE SPEED

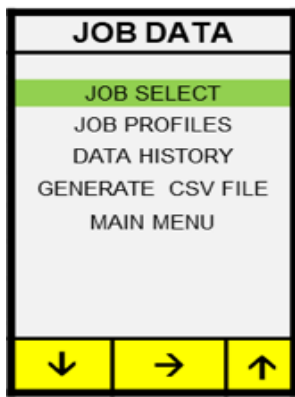
Provides capability to turn the fastener slowly during Angle operation for alignment purposes (e.g. Aligning safety pin holes for aircraft wheels).

Scroll down ↓ or scroll up ↑ to select the Angle Mode Speed and push → to select the desired option and return to the Home Screen.

TORQUE CHECK

When enabled, applies torque at a slower speed to achieve greater accuracy for verification purposes. Torque Check value is typically set 10% below the spec torque. As the operator applies torque, the operator will visually inspect the fastener for movement. If the fastener does not move, the nut is considered to be within spec.

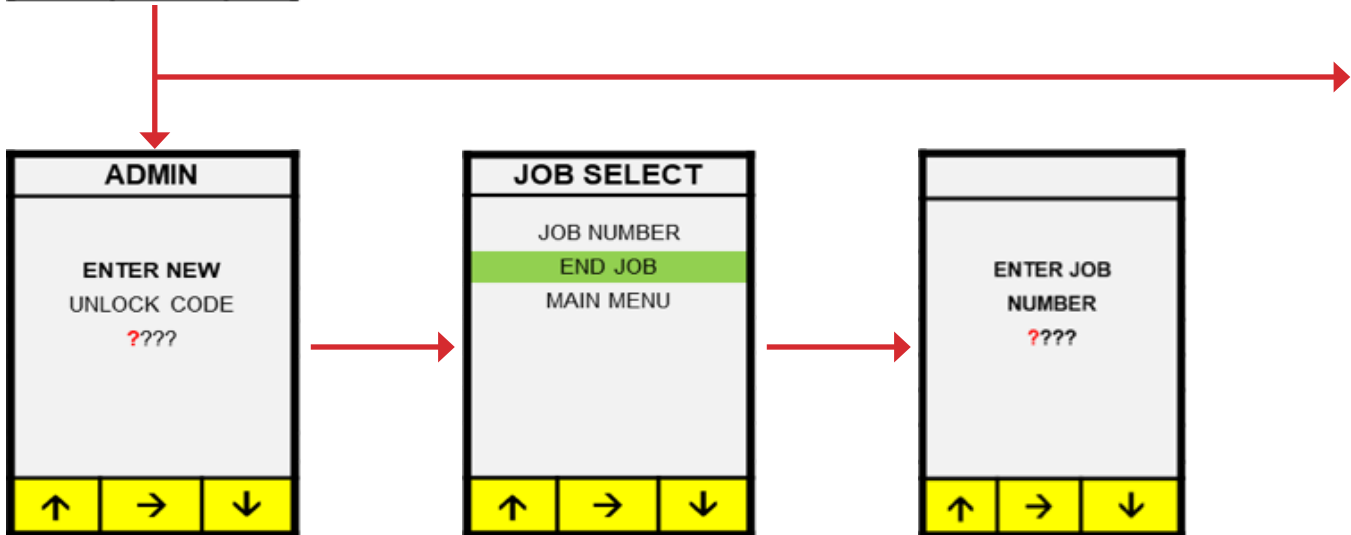
NOTE: Only available on BTM 1000, 2000 and 3000



JOB DATA MENU

The Job Data menu contains settings needed to record and download data from the tool.

- The green bar highlights the current position
- Press left button (↓) to scroll down, right button (↑) to scroll up
- Press the center button (→) to select and display a sub-menu



JOB SELECT

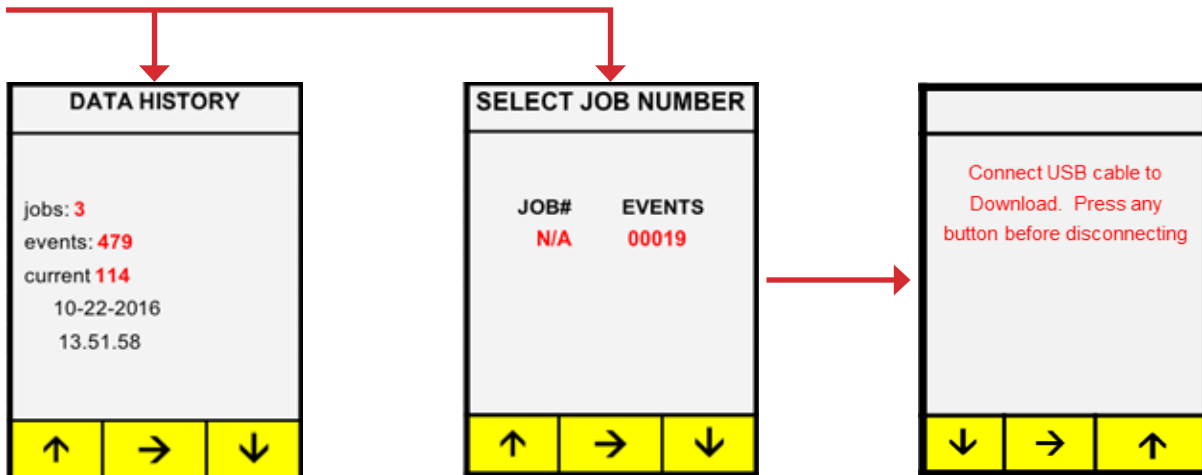
In order to record data the user must first enter the 4-digit UNLOCK CODE. To enter the code press button ↑ to increase the digit or ↓ to decrease the digit, press → to advance to the next digit until the correct code is entered (default 0000). Press → again to proceed to JOB SELECT MODE.

NOTE: Wrong code returns user to previous screen. No limit on number of attempts. See administrator for correct code.

Select JOB NUMBER to turn on Data Recording for a particular job.

Alternatively, select END JOBS to stop recording.

To enter the Job Number press ↑ to increase the digit or ↓ to decrease the digit, press → to advance to the next digit until the code is entered. Press → to begin DATA RECORDING and return to the JOB DATA menu. The tool is now recording and the JOB ON and JOB NUMBER are now displayed on the home screen.



DATA HISTORY

Provides a summary of jobs and events currently being saved in memory.

Press the buttons $\uparrow\downarrow$ to scroll through the job numbers to select the data set you want to download. Press \rightarrow to select the job number and to generate the CSV file.

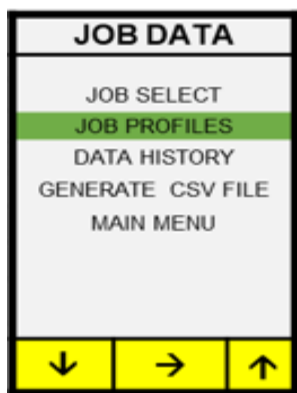
Connect a standard USB cable between the PC (Type A) to the tool (Micro A). The tool is discovered by the PC just as any mass storage device. The PC will display a folder allowing the user to click to open the JOB DAT file. The file serves as an electronic record of the JOB DATA. When done, press \rightarrow button to exit the GENERATE CSV FILE mode and return to the JOB DATA menu.

CONNECT USB CABLE



SAMPLE EXCEL FILE

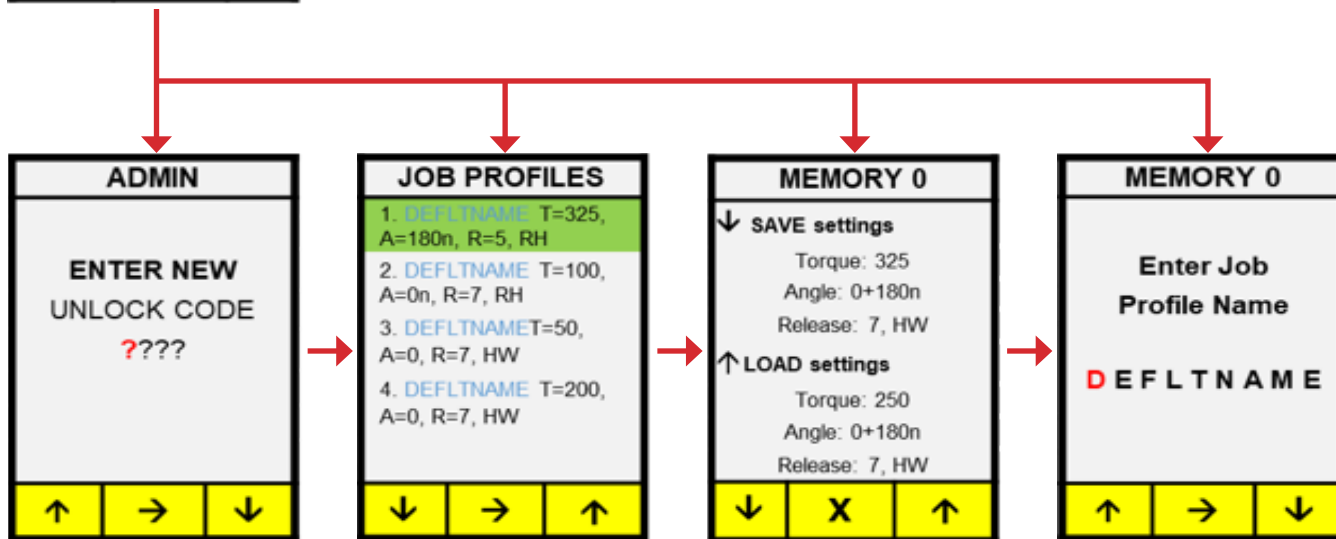
17-22-08	10:45:58	2	27	0	0	101	1	25	20	TIGHTEN	RH	FT.-LB.	Torque OK
17-22-08	10:46:20	2	27	0	0	101	17	25	20	TIGHTEN	RH	FT.-LB.	Torque OK
17-22-08	10:46:49	2	27	0	0	101	1	25	20	TIGHTEN	RH	FT.-LB.	Torque OK
17-22-08	10:46:54	2	27	0	0	101	3	25	20	TIGHTEN	RH	FT.-LB.	Torque OK
17-22-08	10:47:00	2	27	0	0	101	2	30	20	LOOSEN	RH	FT.-LB.	Torque OK
17-22-08	10:47:05	2	27	0	0	101	2	30	20	LOOSEN	RH	FT.-LB.	Torque OK
17-22-08	13:53:51	2	100	100	100	101	9	25	19	TIGHTEN	RH	FT.-LB.	Torque OK



JOB PROFILES SUB-MENU

The Job Profiles sub-menu allows access to Job Profile parameters.

- The green bar highlights the current position
- Press left button (↓) to scroll down, right button (↑) to scroll up
- Press the center button (→) to select and display a sub-menu



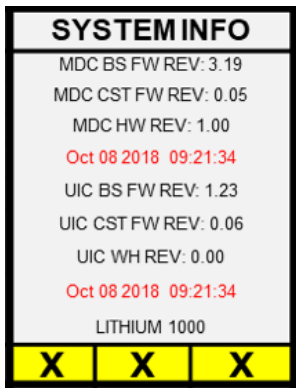
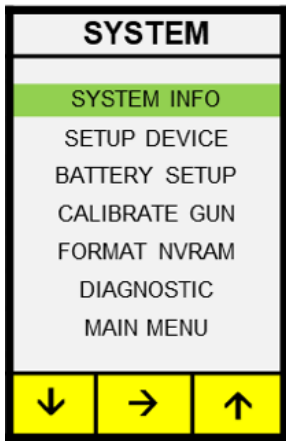
In order to save or load a job profile the user must first enter the 4-digit code to unlock the tool (default 0000).

NOTE: Wrong code returns user to previous screen. No limit on number of attempts. See administrator for correct code.

Allows the user to save tool parameters to memory as a Saved Job Profile (SJP), or to load SJPs from memory. The tool can save up to 4 job profiles; each profile includes values for JOB NAME, TORQUE (T), ANGLE (A) [as total number of degrees], including indicator for NORMAL (n) or SLOW (s) angle mode speed, RELEASE (R) and fastener type. Scroll and select the desired setup values – then select →, or if saving new setup values select →, to access submenu to either SAVE or LOAD settings.

The user can SAVE the settings currently on the home display – now shown in SAVE settings - by pushing the left button ← also adds the profile to the top of JOB PROFILES. Alternatively the user can LOAD the selected profile – now shown in LOAD settings - by pushing the right button →. Exit to JOB DATA without load or save by hitting the center button X.

The user must enter a 7-character Job Profile name. To enter the name, press button ↑ to increase the character or ↓ to decrease the character. Press → to advance to the next character. When the Job Profile name is entered correctly, press → again to JOB DATA.



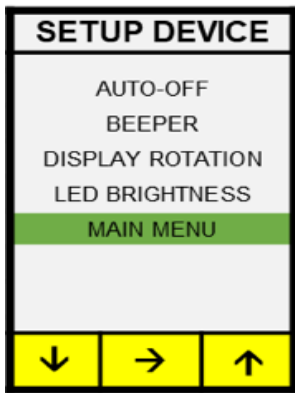
Displays Firmware (FW) and Hardware (HW) versions for MDC (Motor Drive Control) And UIC (User Interface Control). Press any button to return to SYSTEM menu.

SYSTEM MENU

The SYSTEM menu contains additional settings for tool configuration.

- The green bar highlights the current position
- Press left button (←) to scroll down, right button (→) to scroll up
- Press the center button (↔) to select and display a sub-menu

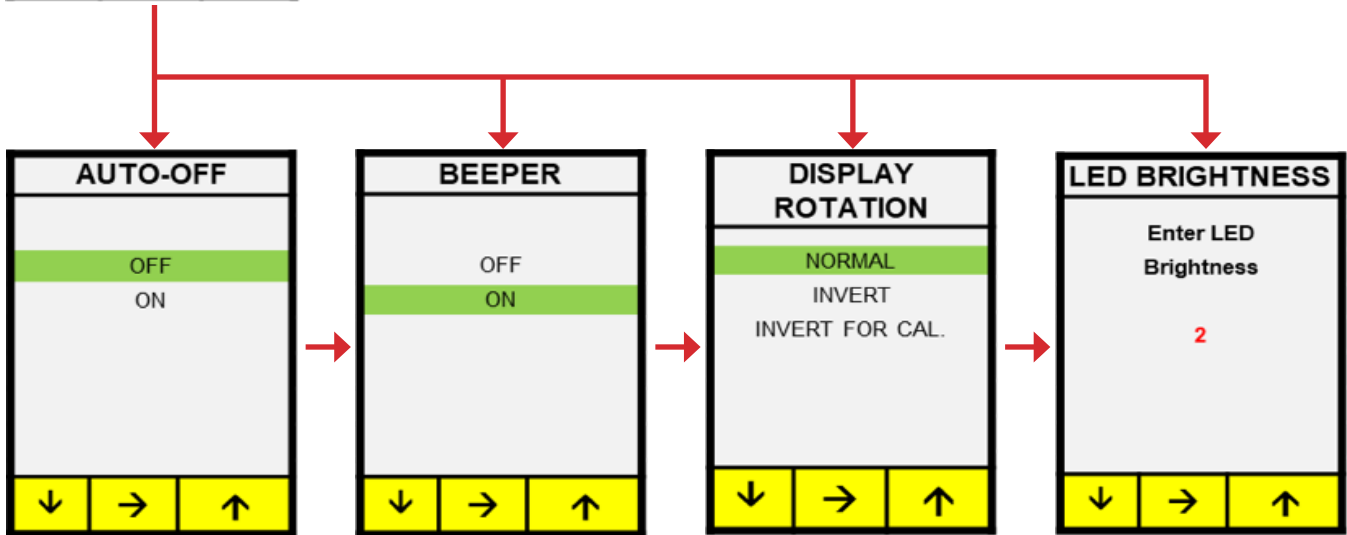
NOTE: BATTERY SETUP, CALIBRATE GUN, FORMAT NVRAM and DIAGNOSTIC options are not intended for field use, these are only accessed by HYTORC authorized service personnel.



SYSTEM MENU / SETUP DEVICE SUB MENU

The Setup Device Sub-menu contains device-level settings.

- The green bar highlights the current position
- Press left button (←) to scroll down, right button (→) to scroll up
- Press the center button (→) to select and display a sub-menu



AUTO-OFF

The user can enable or disable AUTO-OFF. If enabled, AUTO-OFF will power down the tool after 5 minutes of activity.

Scroll down ↓ or scroll up ↑ to select AUTO-OFF state and push → to select desired option and return to the SYSTEM menu.

BEEPER

When enabled, the beeper will sound once for each successful operation, and 4 times to indicate an error.

DISPLAY ROTATION

Orient the display in normal or inverted mode.

NORMAL: Legible when battery is down.

INVERT: Legible when battery is up.

INVERT FOR CAL:

Inverted for calibration

LED BRIGHTNESS

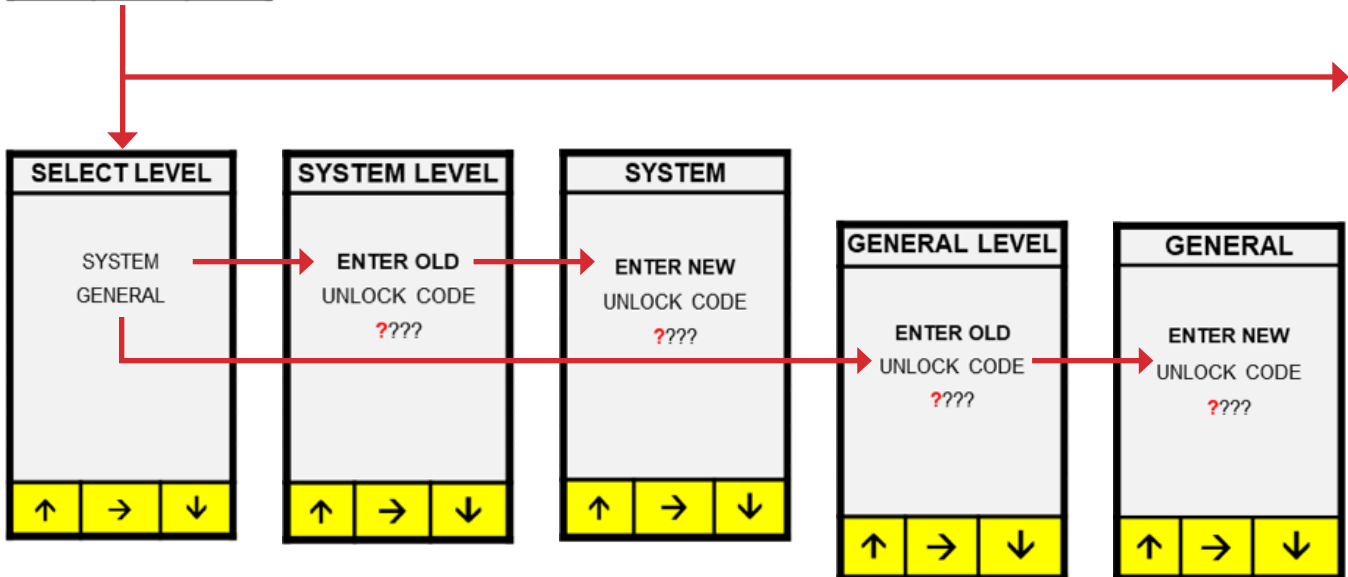
Adjust brightness of display screen (10 = max, 0 = off)



ADMIN MENU

The ADMIN menu contains features typically only configured by an administrator or supervisor.

- The green bar highlights the current position
- Press left button (↓) to scroll down, right button (↷) to scroll up
- Press the center button (→) to select and display a sub-menu



ADMIN CODE

Select either SYSTEM or GENERAL access level.

The SYSTEM level is only used by certified personnel for calibrating the tool.

The GENERAL level password is assigned by an administrator to provide security for setting torque limits, setting the clock and putting the tool in lockout mode.

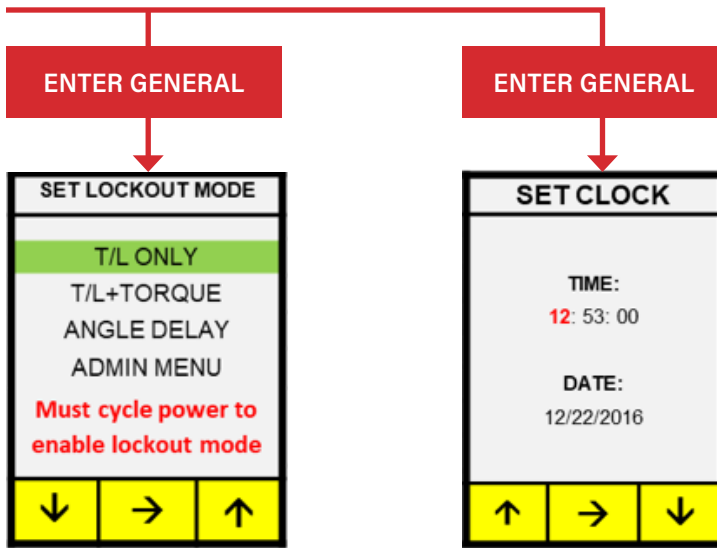
ADMIN CODE - SYSTEM

Enter the old 4 digit unlock code (default 0000) for access and then enter a new unlock code for system access.

NOTE: When System password is entered the General password is cleared to 0000.

ADMIN CODE - GENERAL

Enter the old 4 digit unlock code (default 0000) for access and then enter a new unlock code for system access.



LOCKOUT MODE

This allows the administrator to restrict user access to certain functions and settings by enabling one of three modes:

T/L ONLY: Users can Tighten/ Loosen only.

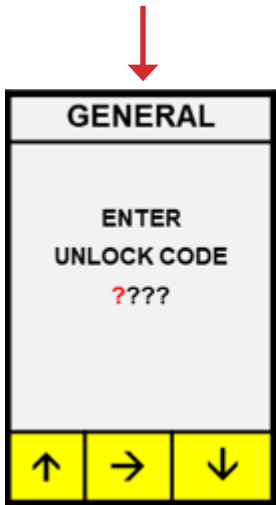
T/L+TORQUE: Users can Tighten/ Loosen and adjust Torque.

ANGLE DELAY: Prevents users from adjusting Angle Delay.

CLOCK

Set the time and date by entering appropriate numerical values.

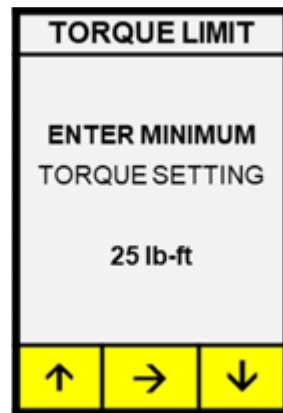
Press up button ↑ increases the value and down button ↓ to decrease the value, select → to advance to the next numerical value, after setting year push → to return to SYSTEMS SETTINGS menu.



Enter the 4 digit unlock code (default 0000) for access.

TORQUE LIMITS

- The green bar highlights the current position
- Press left button (↓) to scroll down, right button (↑) to scroll up
- Press the center button (→) to select and display a sub-menu



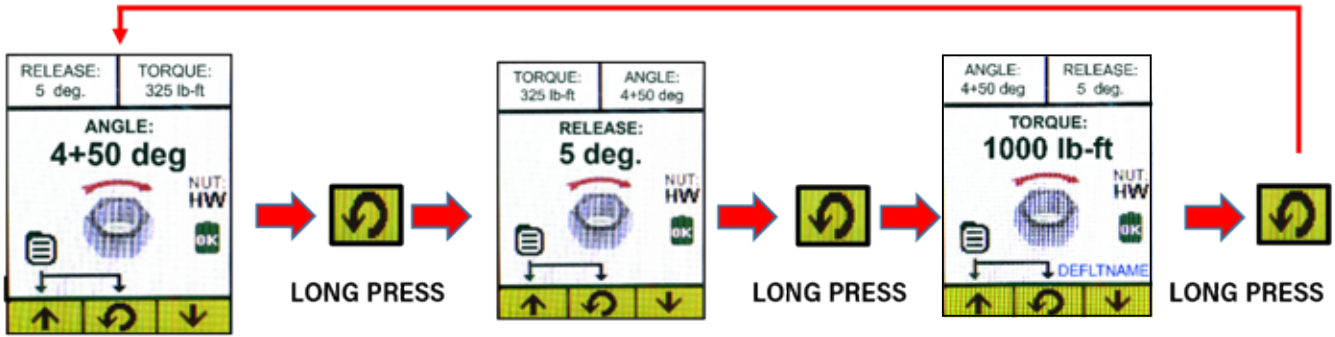
To adjust the minimum TORQUE limit press button ↑ to increase the value or ↓ to decrease the value.

Press → to save the lower torque limit – screen flashes “Saving setting” and then displays the upper torque limit screen.



To adjust the maximum TORQUE limit press button ↑ to increase the value or ↓ to decrease the value.

Press → to save the upper torque limit – screen flashes “Saving setting” and then exits to ADMIN menu.



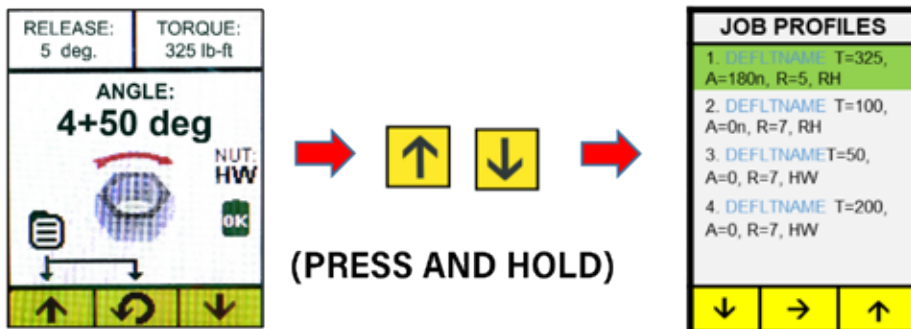
MAIN MENU SHORTCUT



CALIBRATION SHORTCUT



JOB PROFILES SHORTCUT





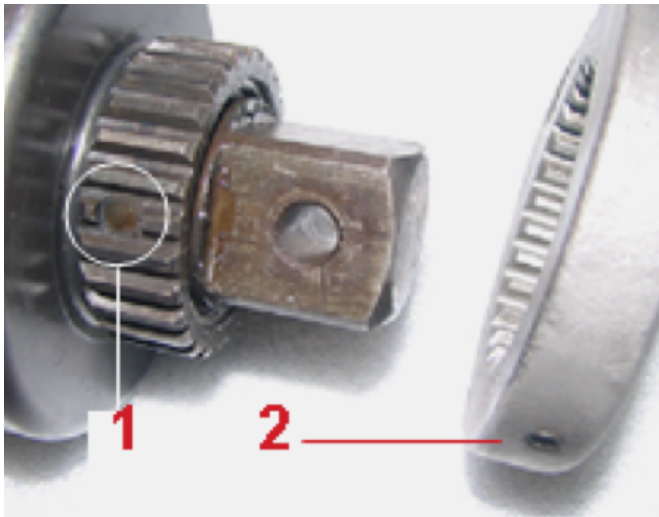
WARNING!

Make sure the reaction arm is in direct contact with an immovable object before fastening and that no part of your body is in the path of the reaction arm when the nut is tightened to avoid injury.

INSTALL REACTION ARM



1. FLAT ON REACTION SPLINE. 2. ALLEN SET SCREW



TIGHTEN ALLEN SET SCREW



The Tool is easily configured for conventional torque applications with standard sockets and reaction arms.

- The reaction arm is quickly secured to the tool
- Slide the reaction arm over the drive while aligning the set screw with the flat on the Spline
- Tighten the set screw to firmly attach the reaction arm.
- Challenge the reaction arm to make sure it is firmly secured.
- Never modify a reaction arm as this may lead to personal injury or damage to the tool.

INSTALL SOCKET



- Set the Torque Value using the left button ↑ and right button ↓.
- Output units may be displayed in lb-ft, N-m, kgf-m or %. (See output unit settings under the ADMIN menu)
- The direction arrow and rotating nut icon reflect the direction associated with the specific fastener type. (The fastener type may be set under the Operation – Fastener Type menu: Right-Hand, Left-Hand, HYTORC NUT and HYTORC Washer).

CONVENTIONAL TORQUE SETUP



- Power on the tool, adjust the settings and select fastener. For conventional torque applications the fastener will be right or left hand.
- If necessary set the speed switch to Rundown to quickly run down the nuts until flush against the flange.
- Prior to applying torque, position a back wrench to prevent the back nut from turning during tightening.
- Place the socket on the nut, making sure to fully engage the nut.
- Make sure the reaction arm is firmly abutted against a stationary object before applying torque.

CONVENTIONAL TORQUE TIGHTENING



- Pull and hold the trigger to begin the TORQUE operation.
- For Right or Left Hand Fasteners, a message is displayed instructing the user press an additional button on the control panel to ensure the operator keeps both hands clear of the reaction arm.
- Once the tool starts the reaction arm will move against the reaction surface. The tool will then begin applying torque and tighten the nut.
- Continue holding the trigger until the tool reaches the desired torque and stops.
- If an ANGLE has been specified, continue holding the trigger, the tool will pause and restart after the angle delay.
- If a RELEASE has been specified, continue holding the trigger, the tool will pause and restart after the angle delay.
- Release the trigger after the tool has completed all specified operations.
- The status light will turn amber during operation. If the operation is successful, the status light will turn green, if unsuccessful the status light will turn red.
- If the BEEPER is enabled the tool will provide an audible beep upon completion of the operations.
- Remove the tool from the nut.
- Should torque be applied without a release angle the tool may lock onto the nut. If this happens set the tool to Loosen to free the tool and repeat the operation.

CONVENTIONAL TORQUE LOOSENING



- The Tool provides the maximum torque capacity in reverse providing a powerful breakout capability.
- Press the center button to toggle to the loosen mode.
- When using conventional torque install a back wrench to keep the back nut from turning.
- Position the tool over the nut.
- Position the reaction arm against a firm surface.
- Pull and hold the trigger and any button on the rear panel to apply torque to loosen the nut.
- Once the tool starts the reaction arm will move against the reaction surface. The tool will then begin to loosen the nut.
- The status light will turn amber during operation. If the operation is successful, the status light will turn green, if unsuccessful the status light will turn red.
- Remove the tool from the nut.

INSTALL THE HYTORC WASHER DRIVER



- The Tool is easily configured for tightening bolts where the HYTORC Washer is used.
- Identify the appropriate size HYTORC Washer Driver.
- Slide the washer driver over the square drive and spline while aligning the thumb screw with the flat on the spline.
- Tighten the thumb screw to secure the Driver.
- Challenge the driver to make sure it is securely attached.

TIGHTENING WITH THE HYTORC WASHER DRIVER



- Power on the tool, adjust tool settings and set the fastener type to HYTORC WASHER.
- If necessary set the speed switch to Rundown to quickly run down the nuts until they are flush against the flange. Set the speed switch back to Torque.
- Position the tool over the nut and HYTORC Reaction Washer.



- Pull the trigger to apply torque until the tool reaches the desired torque and stops.
- If an Angle has been specified, continue holding trigger, the tool will pause and restart after the angle delay.
- If a Release has been specified, continue holding the trigger, the tool will pause and restart.
- Release the trigger after the tool has completed all specified operations.
- During operation the status light will turn amber. If the operation is successful the status light will turn green, if unsuccessful the status light will turn red
- If the Beeper is enabled the tool will provide an audible beep upon completion of the operations.
- Remove the tool from the nut.
- Should torque be applied without a release angle the tool may lock onto the nut. If this happens set the tool to Loosen to free the tool and repeat the tighten operation.

LOOSENING WITH THE HYTORC WASHER DRIVER



- The Tool provides the maximum torque capacity in reverse providing a powerful breakout capability.
- Press the center button to toggle to the Loosen mode.
- Position the driver over the nut and HYTORC reaction washer and hold the trigger and begin applying torque.
- During operation the status light turns amber. If the operation is successful the status light will turn green, if unsuccessful the status light will turn red
- Remove the tool driver from the nut.

INSTALL THE HYTORC NUT DRIVER



- The Tool is easily configured for tightening HYTORC Nuts.
- Identify the appropriate size HYTORC Nut Driver
- Slide the nut driver over the square drive and spline while aligning the set screw with the flat on the spline.
- Tighten the set screw to secure nut driver.
- Challenge the nut driver to make sure it is securely attached.

TIGHTENING THE HYTORC NUT



NOTE: The HYTORC Nut inner sleeve is tightened in a counter clockwise direction (left hand threads).

- Power on the tool, adjust tool settings and set the fastener type to HYTORC Nut.
- Position the tool over the nut.
- Pull the trigger to apply torque until the tool stalls at the specified torque
- If a Release Angle has been specified continue holding the trigger and the tool will restart and then stall again after completing the Release. Then the tool can be released from the nut.
- Release the trigger after the tool has completed all specified operations.
- The status light turns amber during operation. If the operation is successful, the status light will turn green, if unsuccessful the status light will turn red.
- If the Beeper is enabled the tool will provide an audible beep upon completion of the operations.
- Should torque be applied without a release angle the tool may lock onto the nut. If this happens set the tool to loosen to free the tool and repeat the tighten operation.

LOOSENING THE HYTORC NUT



- The Tool provides the maximum torque capacity in reverse providing a powerful breakout capability.
- Press the center button to toggle to the loosen mode.
- It may be necessary to install a back wrench to keep the back nut from turning.
- When loosening HYTORC Nuts position the driver and hold the trigger until the HYTORC Nut is loose.
- The status light turns amber during operation. If the operation is successful, the status light will turn green, if unsuccessful the status light will turn red.
- Remove the tool from the nut.

THIS ADDENDUM SUPERSEDES INFORMATION CONTAINED IN THE PRODUCT MANUAL

WHAT HAS CHANGED?

This product contains the new and faster HYTORC U85105 120W 36V/18V Battery Charger.

HOW HAS IT CHANGED?

This new battery charger contains a single combined **Charge Status/Fault LED** Indicator, circled below in red.



THE CHARGING/FAULT LED INDICATOR OPERATES AS FOLLOWS:



OPERATIONAL STATUS	LED INDICATOR
Power Off	Off
Power On / Standby	Off
Charging	Flashing Green
Full Charged	Solid Green
Fault or Charge Pending	Solid Red

05/02/2018 - The top of page 16 has been revised to include the Basic Function Descriptions of Torque, Angle, Release Angle, and a Torque and Angle Operation Caution.

04/16/2018 - Addendum that pertains to an update regarding the Charging/Fault/LED Indicator, page 37.

07/09/2019 - Back cover updated. For future-proofing all global locations have been removed from the back cover in favor of our HYTORC universe map.


09/04/2019 - FCC statement updated.

11/04/2019 - Important information pertaining to Lithium tool and battery pack safety revised on pages, 6, 7, 8, 9 and 12.

01/14/2020 - Universal functionality updates.

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