

HYTORC

The World's Most Trusted Industrial Bolting Systems



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

Operations Manual

Firmware Version 1.23

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Mahwah, NJ 07430
USA

800-FOR-HYTORC
(800-367-4986)
201-512-9500

hytorc.com

TECHNICAL CERTIFICATIONS

Models

BTM-0250	BTM-0250-DOC
BTM-0700	BTM-0750-DOC
BTM-1000	BTM-1000-DOC
BTM-2000	BTM-2000-DOC
BTM-3000	BTM-3000-DOC

Technical Certifications

Conforms to UL STDS 60745-1 & 60745-2-2
Certified to CSA STD C22.2 Nos. 60745-1 & 60745-2-2
For Hand-Held Motor-Operated Electric Tools.



EN ISO 12100-1:2011
EN ISO 12100-2:2011
EN ISO 14121-1:2007
EN ISO 11148-6:2012

EN, EN-ISO, ISO Standards: For a complete EC declaration of conformity or if you require any further assistance, please contact your local HYTORC representative, or call 1-800-FOR-HYTORC, or visit HYTORC.com.

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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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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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HYTORC

Model: HTM7000
HYTORC
333 Ni 15 N
Makelid: N1
www.hytorc.com
MADE IN USA

LITHIUM SERIES 700

HYTORC

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1. IMPORTANT SAFETY INFORMATION



Read and understand this material before operating or servicing the **LITHIUM SERIES®** Electronic Torque Tool. Failure to understand how to safely operate this tool could result in an accident causing serious injury or death.

- 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.
- Failure to follow correct tool usage could result in personal injury, co-worker injury, and/or damaged tools and equipment.
- Ensure your working area is clean and unobstructed before beginning work.
- Tool maintenance and repair must be performed by a qualified technician.
- 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 expose the gun to high humidity or large temperature variations.



SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE



PERSONAL PROTECTIVE EQUIPMENT

Always wear the appropriate personal protective equipment when operating a tool including gloves, safety goggles, hearing protection, hard hat, and safety shoes.

TOOL SAFETY WARNINGS

Read all safety warnings and all instruction. Failure to follow the warnings and instructions may result in electric shock, fire, and/or serious injury.

THE NOISE EMISSION DECLARATION

The A-weighted emission sound pressure level produced by the torque tool does not exceed 70 dB(A).

DECLARATION OF VIBRATIONS TRANSMITTED BY PORTABLE HAND-HELD MACHINE

The value measured on the torque tool does not exceed 2.5 m/s².

WORK SAFETY AREA

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

PERSONAL SAFETY

- **Stay alert, watch what you are doing and use common sense when operating the tool. Do not use the tool while you are tired or under the influence of drugs, alcohol, or medication.** A moment of inattention while operating the tool may result in serious personal injury.
- **Use personal protective equipment. Always wear eye protection.** Protective equipment such as 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 the tool with your finger on the switch or energizing power tools that have the switch on invites accidents.
- **Remove any adjusting key or wrench before turning the tool on.** A wrench or a key left attached to a rotating part of the tool may result in personal injury.
- **Do not overreach. Keep proper footing and balance at all times.** This enables better control of the tool in unexpected situations.
- **Dress properly. Do not wear loose clothing or jewelry.** Keep your hair, clothing and gloves away from the 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.

LITHIUM TOOL USE AND CARE

- **Do not force the tool. Use the correct tool for your application.** The correct tool will do the job better and safe at the rate for which it is designed.
- **Do not use the tool if the switch does not turn it on and off.** Any tool that cannot be controlled with the switch is dangerous and must be repaired.
- **Disconnect the plug from the power source and/ or the battery pack from the tool before making any adjustments, changing accessories, or storing tool.** Such preventive safety measures reduce the risk of starting the tool accidentally.
- **Store idle tools out of the reach of children and do not allow persons unfamiliar with the tool or these instructions to operate the tool.** Tools are dangerous in the hands of untrained users.
- **Maintain tools. Check the misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power of tool's operation. If damaged, have the tool repaired before use.** Many accidents are caused by poorly maintained tool.
- **Use the tool, accessories in accordance with these instructions, taking into account the working conditions and the work to be performed.**
- **Using the tool for the operations different from those intended could result in a hazardous situation**
- **Rechargeable only with the charger specified by manufacturer.** A charger that is suitable for one type of battery pack may create as risk of fire when used with another battery pack.
- **Use the tool only with specifically designated battery packs.** Use of any other battery pack may risk injury and fire.
- **When the battery pack is not in use, keep it away from other metal objects, like paper clips, coins, keys, nails, screws and 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 it with water. If liquid contacts eyes, additionally seek medical help.** Liquid ejected from the battery may cause irritation or burns.

SERVICE

- **Have your tool serviced by a qualified repair person using identical replacement parts.** This will ensure that the safety of the tool is maintained.

IMPORTANT BATTERY PACK INSTRUCTIONS

- **Do not splash or immerse in water or other liquids.**
- **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.
- **If battery contents come into contact with the skin, immediately wash area with mild soap and water.**
- **If battery liquid gets into the eyes, rinse over the open eye for 15 minutes or until irritation ceases.** If medical attention is needed, the battery electrolyte is composed of a mixture of liquid organic carbonates and lithium salts.
- **Contents of opened battery cells may cause respiratory irritation.** Provide fresh air. If symptoms persist, seek medical attention.
- **Charge the battery packs only in battery chargers supplied for charging this product.**
- **Do not pack with conductive items.**



WARNING!

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



WARNING!

Fire hazard. Do not store or carry battery so that metal objects can contact exposed battery terminals. For example, do not place battery in aprons, pockets, tool boxes, product kit boxes, drawers with loose nails, screws, keys etc. Transporting batteries can possibly cause fires if the battery terminals inadvertently come in contact with conductive materials such as keys, coins, hand tools and the like.



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.



US DEPARTMENT OF TRANSPORTATION HAZARDOUS MATERIALS REGULATIONS

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.

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 pull-ing 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.**
- **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.
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- **Do not block any ventilation slots on charger power supply.**



WARNING!

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



WARNING!

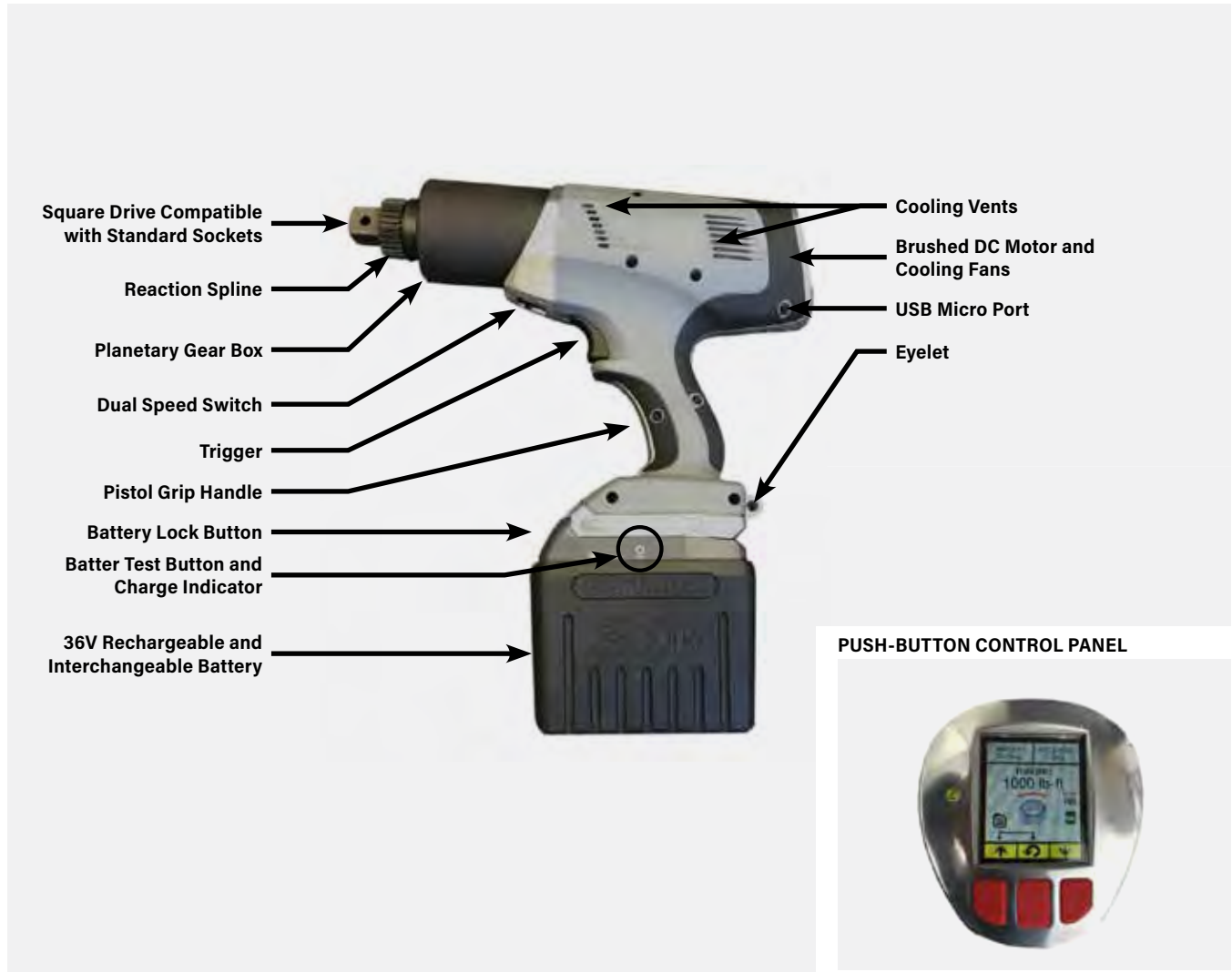
Burn hazard. To reduce the risk of injury, charge only tool batteries. Other types of batteries may burst causing personal injury and damage.



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.

2. 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.

3. SERVICE



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
- User training for first-time rentals
- Warranty repairs including return-freight
- Annual product inspection on request
- Product demonstrations
- 12-Month no-questions-asked warranty
- Upgrades during the lifetime of the tool to enhance safety, durability, and function

*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 within six months
- 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



4. CARE AND HANDLING



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 will withstand light splashing but do not submerge or subject to continuous rain or extreme humidity.
- The operating temperature of the tool should be less than 150°F.
- 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.

5. CHARGE, TEST & INSTALL BATTERY



CHARGE THE BATTERY

- The LITHIUM SERIES II Tool is supplied with the HYTORC U85105 120W 36V/18V Battery Charger and two long life HYTORC 10S2P 36 volt batteries.
- 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 in the following environmental conditions: 32°F (0°C) to 104°F (40°C) 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 for the local power outlet.
- Insert the battery by sliding it into the charger and locking into place. The power indicator will be illuminated green when plugged in.
- The charging indicator flashes green while charging and turns solid green when the battery is fully charged.
- The 18 volt battery is fully charged in approximately 90 minutes.

CHARGING INDICATOR

- POWER INDICATOR green when charger is plugged into AC outlet.
- CHARGING INDICATOR is flashing green while battery is charging.
- CHARGING INDICATOR solid green when battery is fully charged.
- 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 140°F (60°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 need simply swap batteries from the charger to the tool.
 - Batteries can be charged hundreds of times without any noticeable loss in capacity
 - Batteries can be returned at no charge for recycling at HYTORC locations or local recycling centers.
- 1. 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.

1. Press the release button on the battery and slide battery pack off the charger.
2. 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.
3. 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.

BATTERY RECYCLING

The RBRC (Rechargeable Battery Recycling Corporation) Seal on the lithium ion battery (or battery pack) indicates that the costs to recycle the battery (or battery pack) at the end of its useful life have already been paid by HYTORC. The RBRC, in cooperation with HYTORC and other battery users, has established programs in the United States to facilitate the collection of spent lithium ion batteries. Help protect our environment and conserve natural resources by returning the spent lithium ion battery to an authorized HYTORC service center for recycling. You may also contact your local recycling center for information on where to drop off the spent battery. RBRC is a registered trademark of the Rechargeable Battery Recycling Corporation.

6. OPERATING THE CONTROL PANEL



PRIMARY CONTROL FEATURES

- Press Any Button to Power-On Tool (the tool automatically turns off after 5 min)
- 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

- Set the Torque Value is set by simply pushing the left button ↑ to increase the torque or by pushing the right button ↓ to decrease the torque.
- 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).
- Output units may 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 fastener clockwise or counter clockwise rotation associate 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).



SET ANGLE

- Certain bolt tightening 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. Where TT = number of turns and DDD = angle. Value can be increased or decreased using arrow buttons from "0 + 0" to "99 + 359".
- The Angle Value is increased simply by pushing the left button ↑ to increase the angle or by pushing the right button ↓ to decrease the angle.
- If an Angle Value is set the gun 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 continuing to hold the trigger after the tool successfully completes the TORQUE.
- The angle force is applied after a time delay set in the Angle Delay menu – typical ½ second 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.
- The gun provides a feature to release the tool from the nut by setting 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 in the opposite direction that would turn or loosen the nut.
- While the tool has a capability to set the RELEASE between 0 and 359 degrees, the RELEASE is typically set on the lower end and 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. Under certain conditions the operator may need higher RELEASE Angle settings and these should be verified to make sure that the nut is not being loosened by the higher setting.
- The automatic release feature is actuated by continuing to hold the trigger after the tool successfully completes TORQUE (and ANGLE if set).
- During the operation the screen will change to 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 second to 3 seconds.

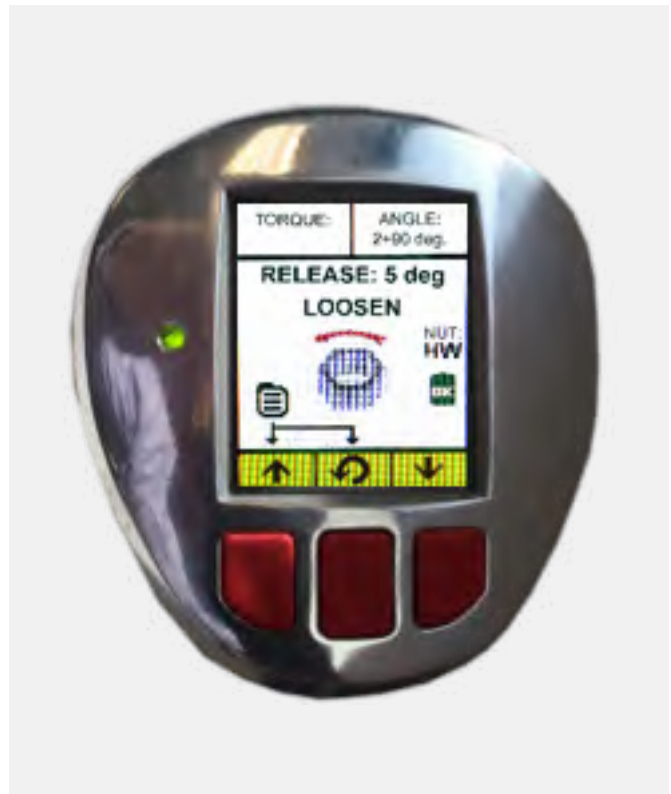
LOOSEN MODE



From the Home Screen, toggle the directional switch to the 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.

Press the left button to increase the RELEASE ANGLE and the right button to decrease the release angle value. RELEASE ANGLES may be adjusted based on job conditions anywhere from 0 degrees to 999 degrees.

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

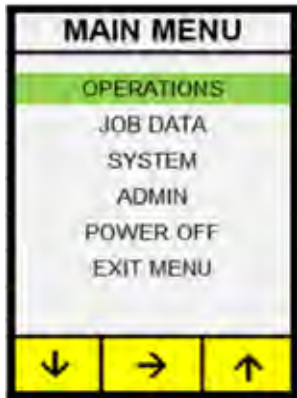
7. NAVIGATING THE MENUS



MAIN MENU AND SUB-MENUS

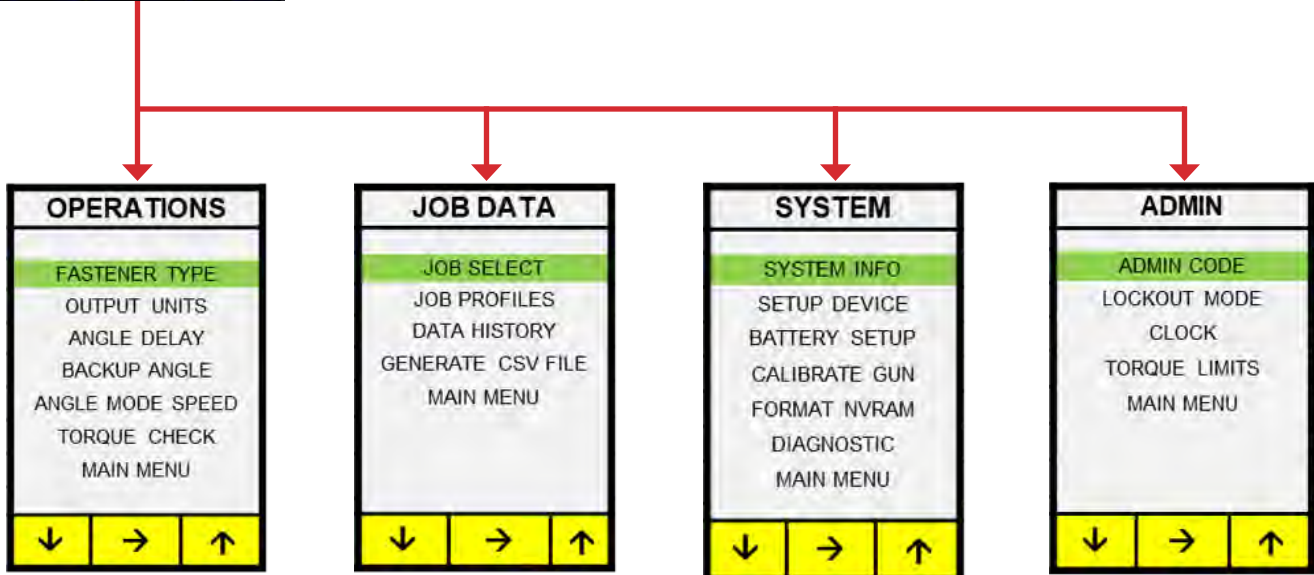
The Main Menu provides Operations, Job Data, System, Admin and the Exit and Power Off options.

Press and hold the left and center buttons simultaneously for approximately three seconds, release buttons when the Main Menu is displayed.



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 Operation 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)



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.

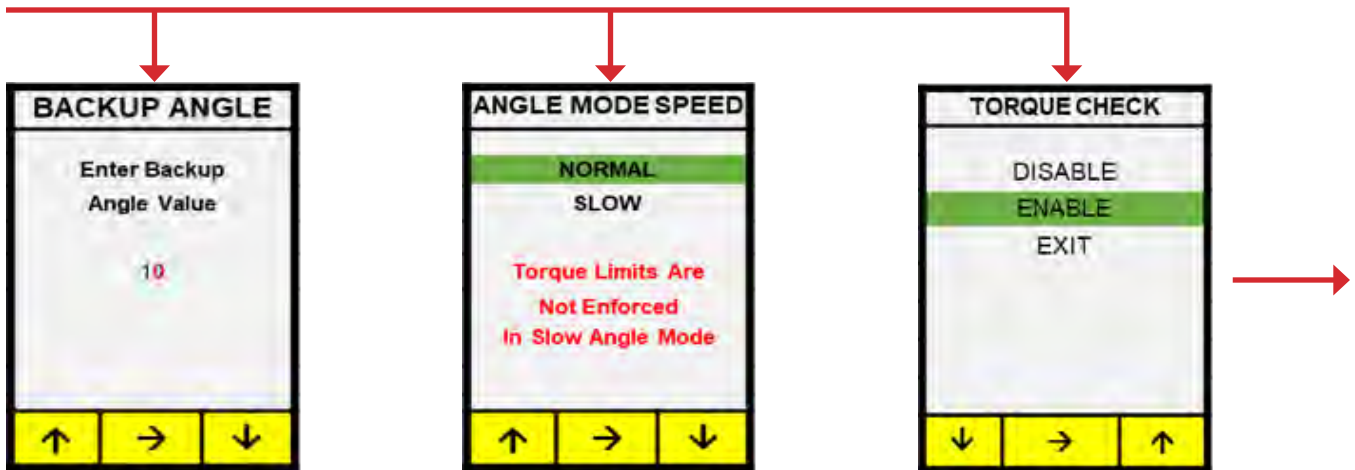
Any selection → returns users to OPERATIONS menu.

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.

The user can adjust the time delay for applying the ANGLE and RELEASE following the TORQUE operation – the delay can range from 0ms to 3000ms. The time delay is applied after the TORQUE value by continuing to hold the trigger. Push up button ⏮ to increase the delay or down button ⏭ to decrease the delay. Select → to return to the 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.

(OPERATION MENU continued from previous page)



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.

Provides capability to change motor speed during Angle operation.

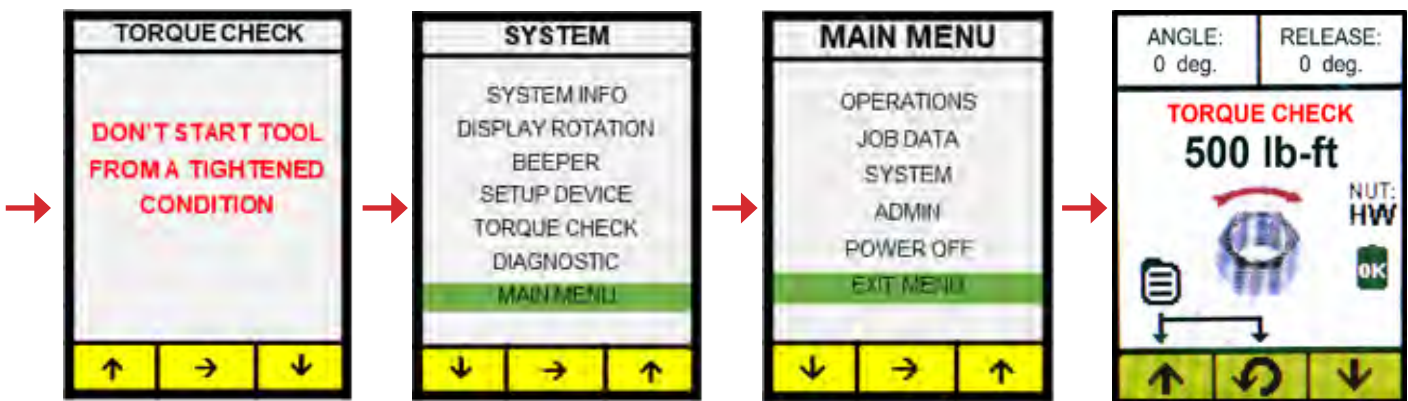
NORMAL Normal Angle Mode Speed

SLOW ANGLE MODE Turns 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.

For the BTM 1000, 2000 and 3000, the user can optionally enable or disable TORQUE CHECK. If enabled, TORQUE CHECK applies torque at a slower speed to achieve higher accuracy for verification purposes.

Scroll down ↓ or scroll up ↑ to select and push → to select the desired option.



To allow the tool to achieve running speed, leave adequate space between the reaction surface and the reaction arm before applying torque to the nut.

The tool will return to the SYSTEM menu.

Scroll down ↓ to select the MAIN menu.

Scroll down ↓ to select the EXIT menu.

Press the left button to increase the Torque check value and the right button to decrease the Torque check value.

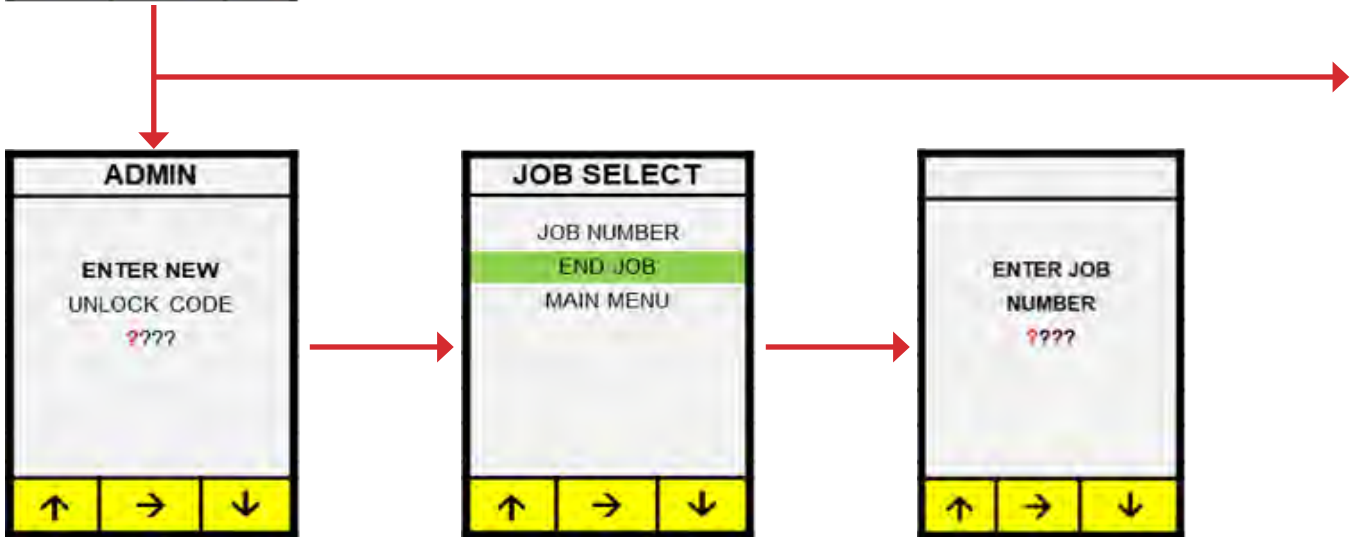
Torque Check value is typically set 10% below the spec torque. As the operator applies torque, the operator will visually inspect the fastener for movement. If the fastener does not move, the nut is considered to be within spec.



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



In order to record data the user must first enter the 4-digit UNLOCK CODE to unlock the tool. 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). When the correct 4-digit code is entered 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.

User selects JOB NUMBER to turn on Data Recording for a particular job. After selecting JOB NUMBER the user is prompted for a 4 digit job number to begin recording data.

Alternatively the user may select END JOBS to stop recording.

The user is asked to enter a 4 digit JOB NUMBER (0001 to 9999) for identifying the data record. 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 to indicate the tool is now recording all job data.



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.

This screen prompts the user to 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 in Excel format. 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

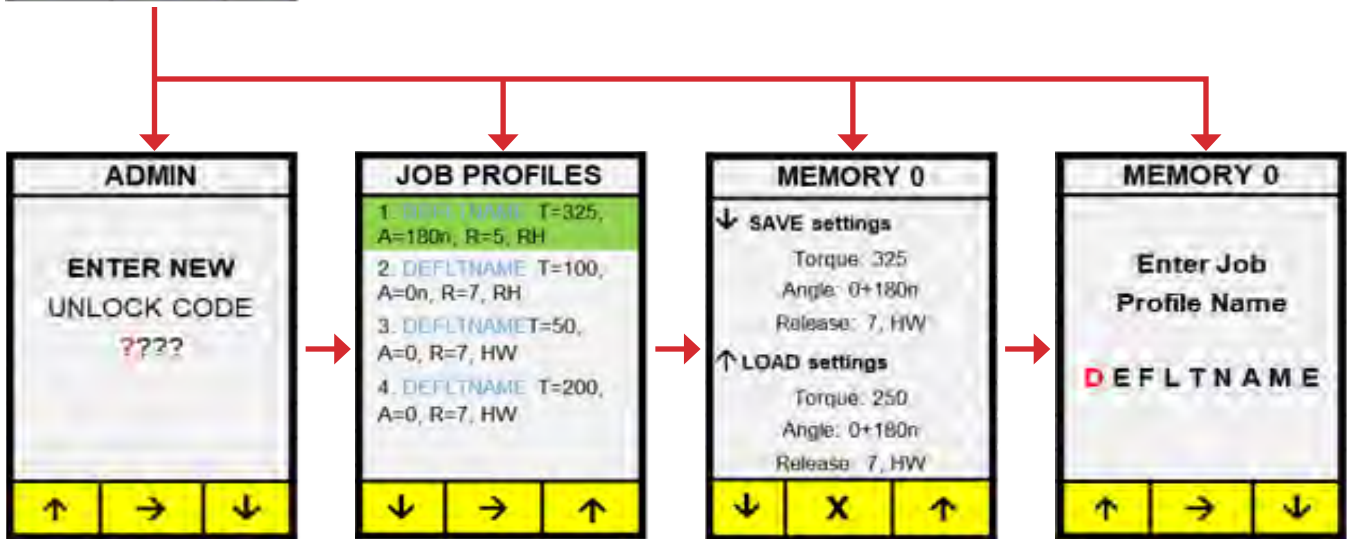
17-22-08	10:45:58	2	27	0	0	101	1	25	20	TIGHTEN	RH	FT.-LB.	Torque OK
17-22-08	10:46:20	2	27	0	0	101	17	25	20	TIGHTEN	RH	FT.-LB.	Torque OK
17-22-08	10:46:49	2	27	0	0	101	1	25	20	TIGHTEN	RH	FT.-LB.	Torque OK
17-22-08	10:46:54	2	27	0	0	101	3	25	20	TIGHTEN	RH	FT.-LB.	Torque OK
17-22-08	10:47:00	2	27	0	0	101	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



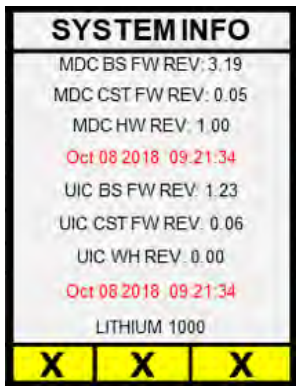
In order to save or load a job profile the user must first enter the 4-digit code to unlock the tool. To enter the code press button ↑ to increase the digit or ↓ to decrease the digit, press → to advance to the next digit until the correct code is entered (default 0000). When the 4-digit code is entered correctly press → again to JOB DATA.

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 previously saved parameters (SJPs) from memory. The tool can save up to 4 job profiles; each profile includes saved 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.



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

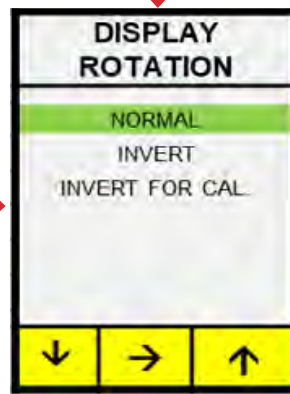
NOTE: BATTERY SETUP, CALIBRATE GUN, FORMAT NVRAM and DIAGNOSTIC options are not intended for field use, these are only accessed by HYTORC authorized service personnel.

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 / 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



The user can optionally 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.

Provides capability to orient the display in normal or inverted mode:
NORMAL Screen is legible when battery is down.
INVERT Screen is legible when battery is up.
INVERT FOR CAL Inverted for calibration

Scroll down ↓ or scroll up ↑ to reach desired orientation for the display and push → to select the orientation and return to the SYSTEM menu.

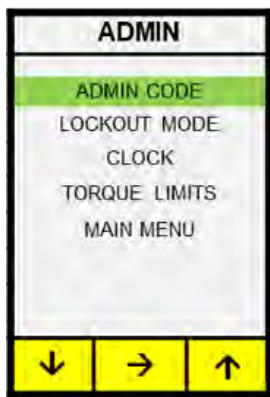
The user can optionally enable or disable the beeper.

Press buttons to scroll ↑ or ↓ to highlight the desired state for the beeper, press → to select beep OFF or ON and return to the SYSTEM menu.

If enabled, the beeper will sound 1 time for each successful operation and 4 times to indicate an error.

Provides capability to adjust the brightness of the LED indicator (0 = OFF, 10 = Maximum Brightness)

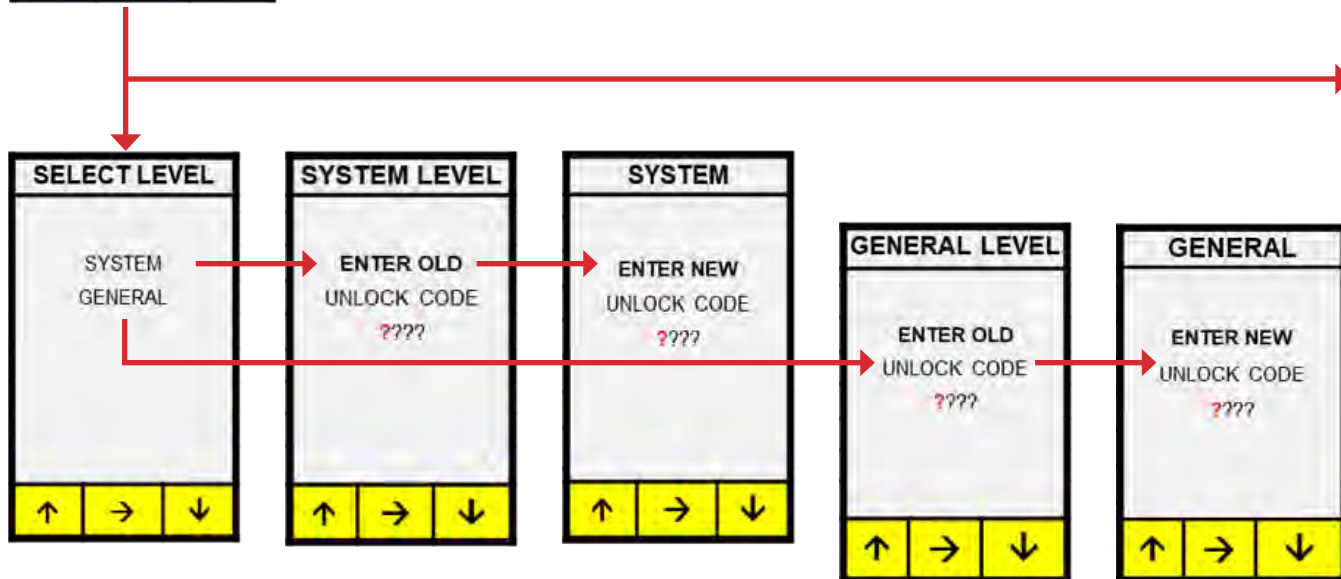
Press up button ↑ to increase the value, press down button ↓ to decrease the value. Press → to select the current value and return to the SYSTEM menu.



ADMIN MENU

The ADMIN menu contains less seldom used features or those 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



The user is prompted to 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.

System level user must first 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.

General administrator must first enter the old 4 digit unlock code (default 0000) for access and then enter a new unlock code for system access.



The ADMIN may enable a lockout mode that prevents any user from changing the following functions:

T/L ONLY Torque/Loosen Only

T/L+TORQUE Torque/Loosen and torque

ANGLE DELAY Angle Only

This allows the administrator to lock the tool at desired settings for various users. **NOTE:** The tool must be powered off in order for the settings to take effect.

Scroll down ↓ or scroll up ↑ to select the function to enable or disable lockout mode for and push → to select.

Press the buttons ↑↓ to scroll to ENABLE or DISABLE lockout mode for the selected function and press → to select. The tool will return to the ADMIN menu.

Allows user to set 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.



ADMIN MENU / SET TORQUE LIMITS SUBMENU

- 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



General administrator must first enter the 4 digit unlock code (default 0000) for access.



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

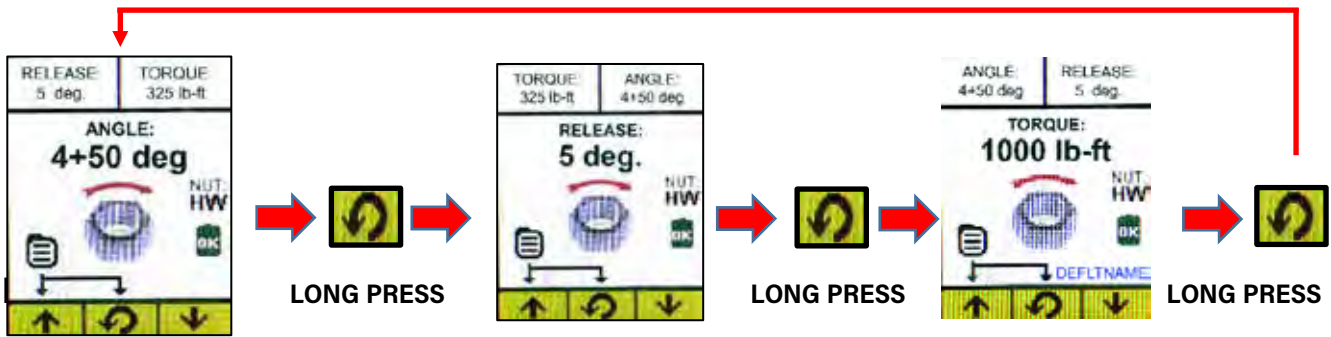
Press → to save the lower torque limit – screen flashes “Saving setting” and then displays the upper torque limit screen.



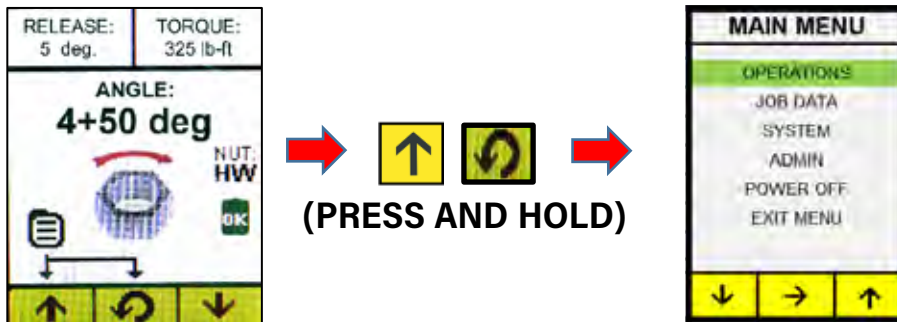
To adjust the maximum TORQUE limit press button ↑ to increase the value or ↓ to decrease the value.

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

8. SHORTCUTS



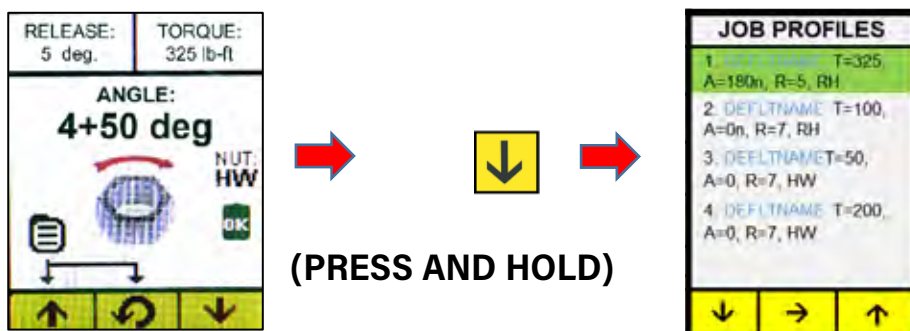
MAIN MENU SHORTCUT



CALIBRATION SHORTCUT



JOB PROFILES SHORTCUT



9. BOLTING WITH CONVENTIONAL REACTION ARM



WARNING!

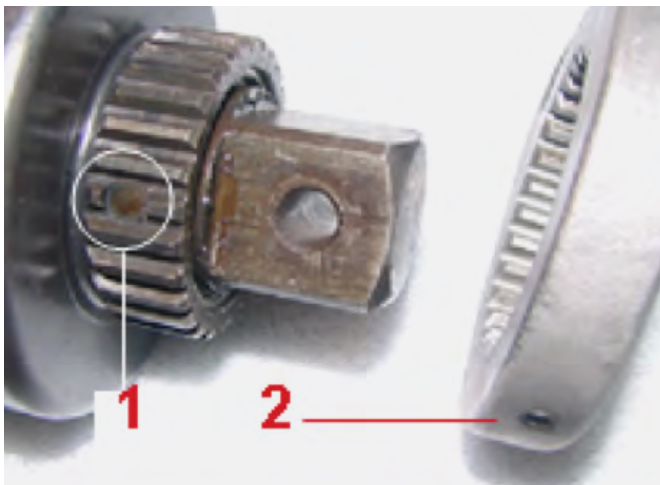
Failure to make sure the reaction arm is in direct contact with an immovable object before fastening could result in serious injury. Make sure that no part of your body is in the path of the reaction arm when the nut is tightened to avoid injury.

INSTALL REACTION ARM



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

TIGHTEN ALLEN SET SCREW



The **LITHIUM SERIES** 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



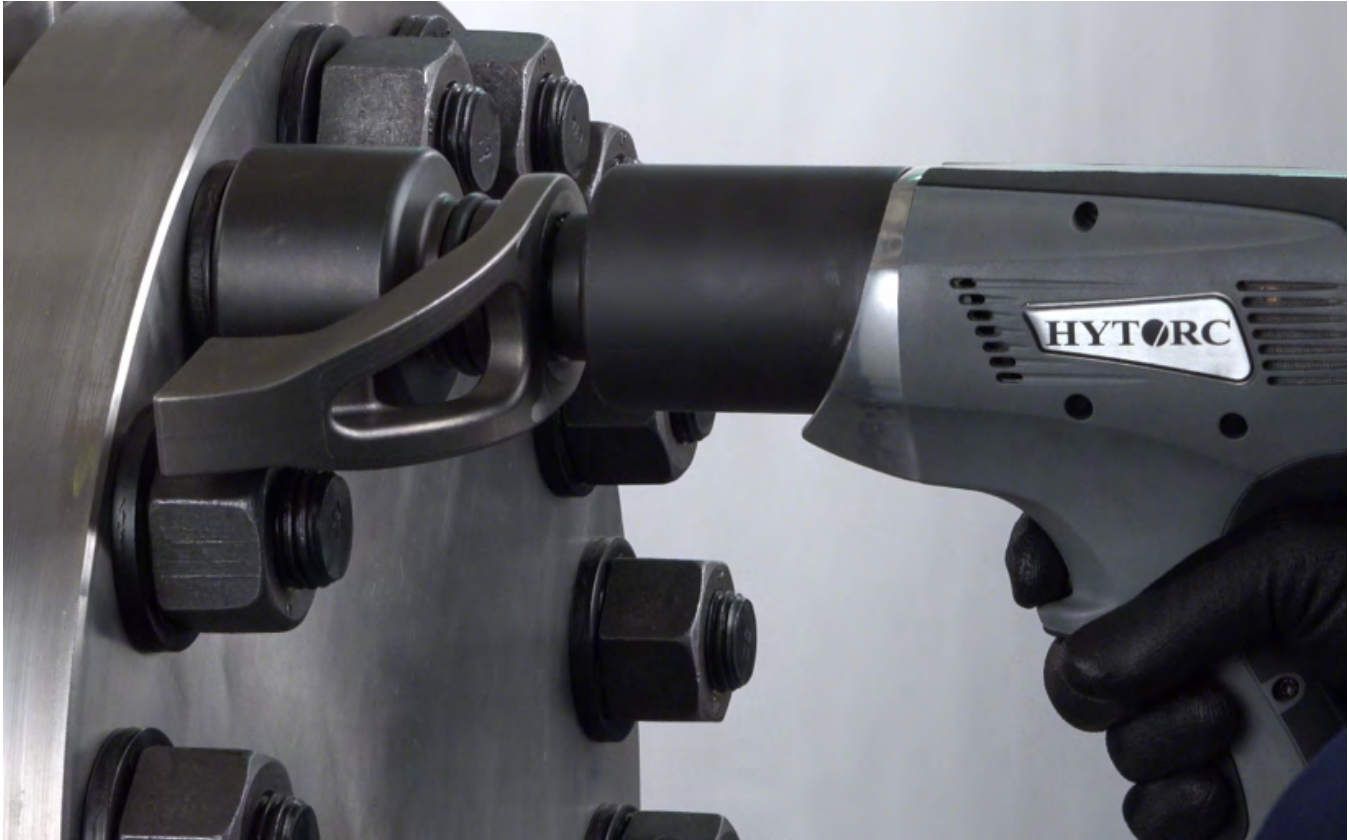
- Set the Torque Value is set by simply pushing the left button ← to increase the torque or by pushing the right button ↓ to decrease the torque.
- Torque may be set to any value from the minimum to the maximum capability of the tool (or MAX MIN Torque Limits set in the ADMIN menu).
- Output units may 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 fastener clockwise or counter clockwise rotation associate 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 RUN DOWN to quickly run down the nuts until they are 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



- To begin the TORQUE operation, pull and hold the trigger.
- With Right or Left 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.
- As soon as the user pushes the drive will turn.
- Once the tool starts the reaction arm will move to firmly press against the reaction surface and then the tool will 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 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 socket 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.

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 and firmly press against the reaction surface. The tool will then begin applying torque to loosen the nut.
- The status light 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 driver from the nut.

10. BOLTING WITH THE HYTORC WASHER

INSTALL THE HYTORC WASHER DRIVER



- The **LITHIUM SERIES** 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 RUN DOWN to quickly run down the nuts until they are flush against the flange. Set the speed switch back to Torque after the run down is complete.
- 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 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.
- During the operation the status light 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 socket 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 the operation the status light 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 driver from the nut.

11. BOLTING WITH THE HYTORC NUT

INSTALL THE HYTORC NUT DRIVER



- The **LITHIUM SERIES** 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 the 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 angle. Then the tool can be released from the nut.
- Release the trigger after the tool has completed all specified operations.
- The status light 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 socket 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 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 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 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 driver from the nut.

12. ADDENDUM FOR BTM-DOC MODELS ONLY (IMPORTANT)

THIS ADDENDUM SUPERSEDES INFORMATION CONTAINED IN THE PRODUCT MANUAL

WHAT HAS CHANGED?

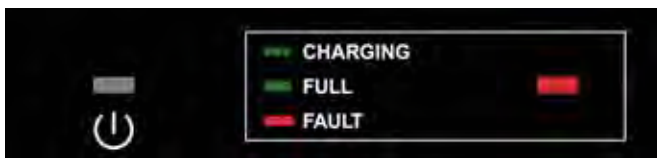
This product contains the new and faster HYTORC U85105 120W 36V/18V Battery Charger.

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

HYTORC WORLD HEADQUARTERS

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THE HYTORC UNIVERSE IS MADE UP OF
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