HYTORC

Since 1968

Lithium

OPERATIONS MANUAL

Software Version BMDC 2.03 / BUIC 2.05

3rd. Edition Mar. 2017

This manual applies to all tool part numbers in the Lithium Product Family. It is recommended that the manual is kept up-to-date by checking the edition and date code at the bottom of this page. The most recent edition can always be found on the Torque Gun Company website.

LITHIUM GUN PRODUCT FAMILY:

BTM-0250, BTM-0700, BTM-1000, BTM-2000, BTM-3000

EN, EN-ISO, ISO Standards:

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

For a complete EC declaration of conformity or if you require any further assistance please contact your local Torque Gun representative or call 1-888-GUN-2-GUN (1-888-486-2486) or use our website at www.torquegun.com.

TORQUE GUN
A HYTORC COMPANY
120 Wesley Street
Hackensack, NJ 07606
U.S.A.

Intertek
5002282

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.

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Product Modifications: *The Torque Gun Company* ***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 Torque Gun Company representative and they will be able to obtain the assistance for any modification that may be required.*

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Complies with Standards Publication BS EN 82079-1:2012

WITH THE PURCHASE OF TORQUE GUN CO. TORQUE MACHINES (PAST, PRESENT, FUTURE) YOU HAVE OBTAINED THE LATEST TECHNOLOGY AND LIFETIME, WORLDWIDE LOCAL SERVICE.

FREE SERVICES

- **FREE** User Safety Training upon Receipt of Merchandise
- **FREE** Semi-Annual User Safety Training on Request
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- **FREE** Product Demonstrations
- **FREE** 12 Month No-Questions-Asked Warranty
- **FREE** 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
- Repairs are Subject to Labor and Part Cost, as Outlined in the Official TORQUE GUN CO. Price List
- All Warranty Repairs are FREE of All Charges Including Return-Freight
- All Repairs Will be Tested and Calibrated to Ensure the Highest Quality Repairs

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
- Return Freight Charges are FREE
- Rental Tools are Guaranteed to Perform and are Subject to the FREE Loaner Tool Policy of TORQUE GUN CO.

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TORQUE GUN
A HYTORC COMPANY

HELP: If you require any further assistance, please call your local Torque Gun Co. Representative or 1-888-GUN-2-GUN (1-888-486-2486), on the web at torcgun.com - 24/7! **It's live!**

LITHIUM GUN™

OPERATIONS MANUAL

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WARRANTY

TORQUE GUN
A HYTORC COMPANY

The Lithium Torque Gun has a one year limited warranty. Every TORQUE GUN tool is tested before leaving the factory and is warranted to be free from defects in workmanship and materials. TORQUE GUN 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 non-TORQUE GUN authorized repair facilities.

The repair and replacement remedies described herein are exclusive. In no event shall TORQUE GUN 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 TORQUE GUN A HYTORC COMPANY warranty, contact our customer service center at 201-828-5270.

IMPORTANT SAFETY INFORMATION

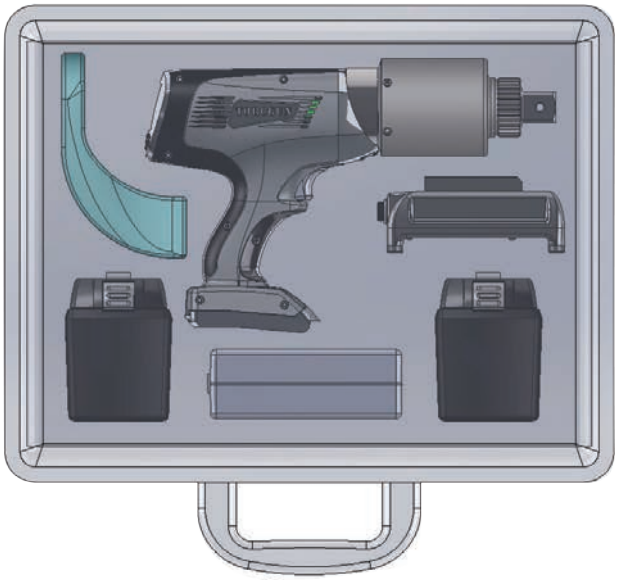
Read and understand this material before operating or servicing this equipment. Failure to understand how to safely operate this tool could result in an accident causing serious injury or death.

- Inspect all lithium 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.
- Lithium maintenance and repair must be performed by a qualified technician.
- Modifying a lithium or lithium 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 LITHIUM and LITHIUM accessories in the plastic storage case supplied with the tool. Do not expose the gun to high humidity or large temperature variations.

Personal Protective Equipment

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

Figure 1 - Lithium Gun



Lithium Ion Battery Care

Read and understand this material before operating or servicing this equipment. Failure to understand how to safely operate this tool could result in an accident causing serious injury or death.

- Never disassemble, crush, or puncture a battery.
- Never short the external contacts on a battery.
- Never dispose of a battery in fire or water.
- Never expose a battery to temperatures above 60 °C (140 °F).
- Never drop or impact the battery in any way.
- Never expose the battery to excessive shock or vibration.
- Never use a damaged battery

Battery Gun Safety Warnings:

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

Save all warnings and instructions for future reference

1) Work Safety Area

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

2) Personal Safety

- **Stay alert, watch what you are doing and use common sense when operating the Battery Gun. Do not use the Battery Gun while you are tired or under the influence of drugs, alcohol, or medication.** A moment of inattention while operating the Battery Gun 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 Battery Gun 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 Battery Gun on.** A wrench or a key left attached to a rotating part of the Battery Gun may result in personal injury.
- **Do not overreach. Keep proper footing and balance at all times.** This enables better control of the Battery Gun 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.

3) Battery Gun use and care

- **Do not force the Battery Gun. Use the correct Battery Gun for your application.** The correct Battery Gun will do the job better and safe rat the rate for which it is designed
- **Do not use the Battery Gun if the switch does not turn it on and off.** Any Battery Gun 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 Battery Gun before making any adjustments, changing accessories, or storing Battery Gun.** Such preventive safety measures reduce the risk of starting the Battery Gun accidentally.
- **Store idle Battery Guns out of the reach of children and do not allow persons unfamiliar with the Battery Gun or these instructions to operate the Battery Gun.** Battery Guns are dangerous in the hands of untrained users.
- **Maintain Battery Guns. 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 Battery Gun repaired before use.** Many accidents are caused by poorly maintained Battery Gun.
- **Use the Battery Gun, accessories in accordance with these instructions, taking into account the working conditions and the work to be performed.** Using the Battery Gun for the operations different from those intended could result in a hazardous situation.

4) Battery Gun use and care

- **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 Battery Gun only with specifically designated battery packs.** Use of any other battery pack my 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.

5) Service

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

Reaction Arm or HYTORC Washer

Use the appropriately sized reaction arm or HYTORC Washer based on your application. The LITHIUM is usually supplied with a reaction arm in standard length. However, a custom reaction arm may have been delivered for your special application.

Figure 2 - Reaction Arm

Figure 3 - HYTORC Washer and Driver

WARNING!
Never modify a Reaction Arm! Changes in the reaction arm may lead to personal injury or damage to the tool.

NOTE:
Reaction modifications result in loss of warranty for the reaction arm and the LITHIUM Gun. If you need a custom reaction arm, please consult with your local TORQUE GUN dealer.

Reaction Assembly and Drive

- If using the HYTORC Washer system, please follow the installation and assembly instructions in the “Overview HYTORC Washer” section.
- Please clean the splined surface of the LITHIUM before mounting the reaction arm.
- Slide the reaction arm on the appropriate gear so that the extension of the reaction arm is facing outward.

Figure 4 - Reaction Arm Assembly

WARNING!
Always attach the reaction arm so that the foot points away from the body of the gun. Incorrect installation of the reaction arm can cause the reaction arm to come into contact with your hand or other body parts causing injury.

Figure 5 - Reaction Arm Attachment

Attach the Reaction to the LITHIUM so that the attachment screw with the recess corresponds to the teeth, tighten and then loosen it a 1/4th turn.

Figure 6 - Reaction Arm Fastening

Figure 7 - Socket Drive

Secure the socket by means of locking pin on the square.

Figure 8 - Socket Drive Attachment

Store the reaction arm and LITHIUM gun in the tool box supplied after use and during work breaks.

Basic Safety Instructions for Handling

Make sure the reaction arm sits directly in contact with a suitable immovable object before you start to tighten the nut.

Figure 9 - Reaction Arm Positioning

The use of the HYTORC Washer makes the use of external reaction arms unnecessary and thereby contributes to an increase in the safety of the user. (See section “Overview HYTORC Washer”)

- Keep all body parts from the reaction point.
- Make sure the operator is safe and secure in place before starting.
- Make sure the square drive is seated correctly and completely onto the socket.

WARNING!
If the reaction arm is not in direct contact with an immovable object before you start the fastening process. It could cause you to lose control of the tool and get injured. Make sure that any part of your body is never in the path of the reaction arm, (the immovable object in contact with the reaction arm) when the nut is tightened, otherwise serious injury may occur.

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.

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

- **Charge the battery packs only in battery chargers supplied for charging this product.**
- **DO NOT pack with conductive items.**

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.

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.**

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.

THE RBRC™ SEAL

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.

IMPORTANT BATTERY CHARGER SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS: This manual contains important safety instructions for battery chargers:

- Before using charger, read all instructions and cautionary markings on charger, battery pack and product using battery pack.

WARNING: Shock hazard. Do not allow any liquid to get inside charger.

CAUTION: Burn Hazard. To reduce the risk of injury, charge only Torque Gun 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, aluminium 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.

- **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 guns 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.**
- **Do not mount charger on wall or permanently fix charger to any surface.** The charger is intended to be used on a flat surface (i.e. table top, bench top).
- **Do not operate charger with damaged cord or plug.** Have any damaged plug or cord replaced immediately.
- **Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way.**
- **Do not disassemble charger; take it to an authorized Torque Gun service center when service or repair is required.**
- **This charger is designed to operate on standard household electrical power (120V/220V 60hz/50hz).**

OPERATION

General

Each Lithium Torque Gun is supplied completely assembled and ready for use. A full kit contains:

- Lithium Torque Gun
- Two 36V Li-ion 3.9Ah Battery Packs
- 36V Battery Charger
- Battery Charger Power Supply
- Reaction Arm

Figure 10 - LITHIUM Gun Overview

SETUP

Two Speed Operation

Each Lithium Torque Gun is equipped with a two speed gearbox. The gearbox has two modes:

- **RUNDOWN MODE:** Used to run nuts down to seated position ready to torque.
- **TORQUE MODE:** Used for final torqueing in TORQUE ONLY and TORQUE AND ANGLE sub-modes.

To switch between RUNDOWN and TORQUE settings, flip the gear select switch located underneath the front aluminium bearing housing. In the rare event the gear selector doesn't engage, a very brief pulse from the trigger is all that is needed to allow gear engagement.

Figure 11 - Gear Switch Detail

Battery Pack Installation and Removal

To install the battery pack into the tool handle, align the base of the battery with the rails in the tool handle and slide the battery pack firmly into the handle until you hear the lock snap in to place.

To remove the battery pack from the tool, press the release button (as shown above) and firmly slide the battery pack out of the tool handle.

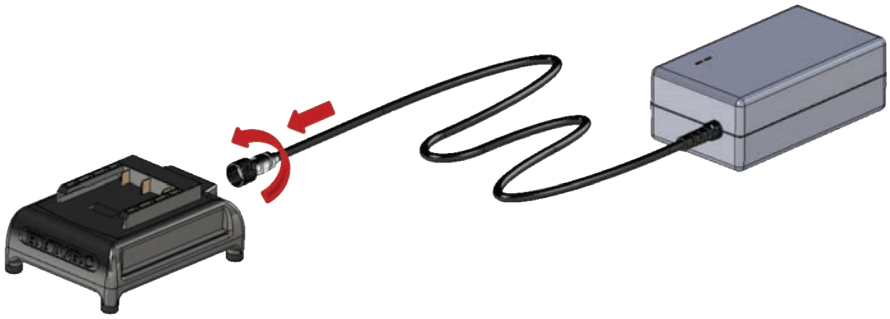
Charging Procedure

1. Plug the charger power supply into the charger cradle using the three pin plug, then tighten the retaining collar on the plug.
2. Plug the charger power supply into an appropriate outlet before inserting a battery pack.
3. Insert the battery pack into the charger cradle. The charger is equipped with a two light charge indicator that will be either red or green according to the charged level of the battery pack.
4. The completion of the charge is indicated by a green light which also indicates an idle state. The pack is fully charged and may be used at this time or left on the charger.

LED Indicators:

- No Battery — Solid Green Light
- Charging — Solid Red Light
- Fully Charged — Solid Green Light
- Short Circuit — Flashing Red Light
- Reverse Polarity — Flashing Red Light
- Damaged Battery — Flashing Red Light

Figure 12 - Charger Power Supply to Battery Cradle Connection



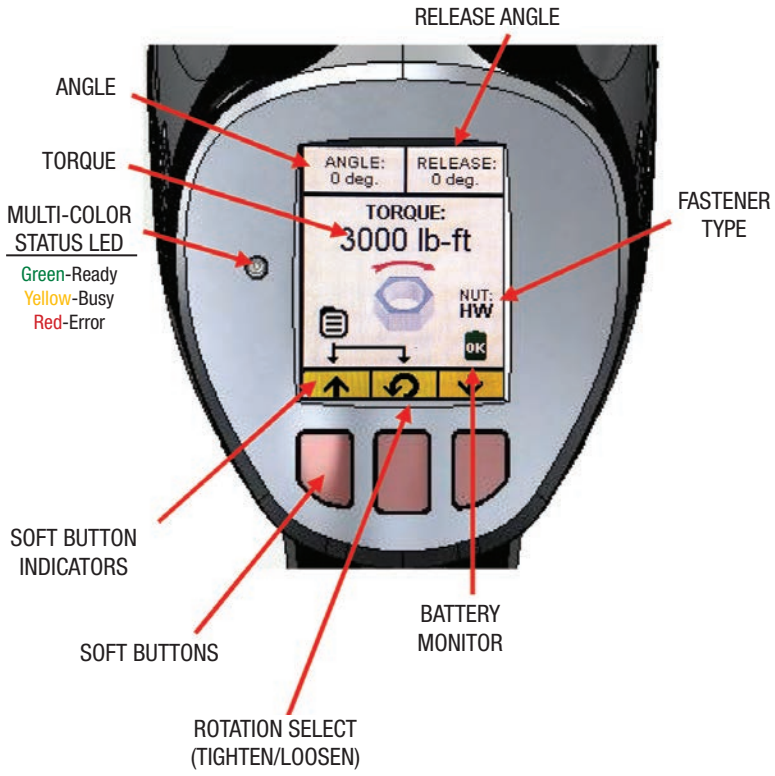
Power
The LITHIUM gun battery charger can operate at 110V or 220V AC. The plug is configured for North American outlets, so other regions may require adapters.

Reaction Arm
Each LITHIUM gun is equipped with a universal reaction arm. The reaction arm is used to absorb and counteract any opposing forces created by the operation of the torque gun. Use the appropriately sized reaction arm or HYTORC Washer based on your application.

Basic Operation

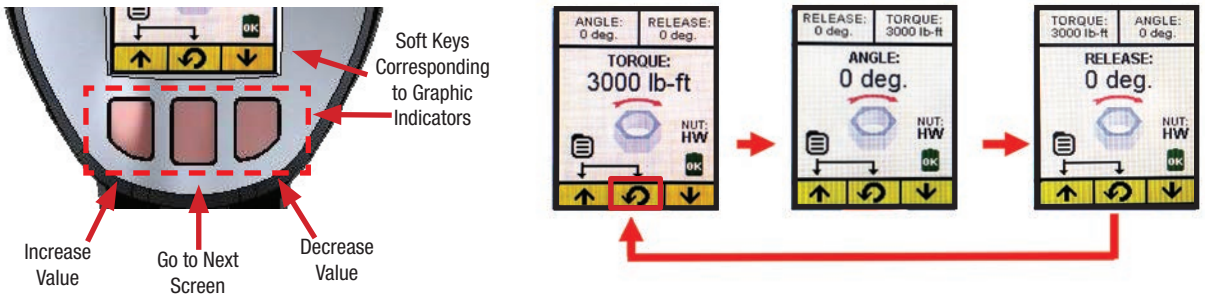
Press any button to start the gun. The gun will shut itself off after 3 minutes of inactivity. See Figure 13 for the LITHIUM Torque Gun's Main Screen Display. All gun parameters will be saved from the most recent session.

Figure 13 - Main Screen Display



Setting Torque and Release Angle

Figure 14 - Setting Torque and Angle



Press and hold center key to toggle through screens for setting Torque, Angle and Release Angle. While on screen, use the up and down arrow keys to select value.

Basic Function Descriptions

Torque: Allows the operator to enter the target torque that the gun will seek when the trigger is pulled and held.

Angle: If an angle setting is above “0” the gun will add this angle of rotation to a completed torque operation using the maximum output of the unit.

Release Angle: After completing an operation, the gun will automatically run backwards the specified angle to release windup from reaction torque. This will allow the operator to remove the tool without loosening the fastener.

Torque and Angle Operation Caution: If the torque required to rotate the fastener through the selected angle is unknown the torque may exceed the capacity of the tool in which case a failure warning will be displayed: “Motor Stalled at Full Power.”

In order to determine if the tool is capable of meeting the requirement the following is suggested:

1. Tighten the fastener to the desired torque in Torque Mode.
2. Mark the position of the fastener.
3. With the tool still in Torque Mode set the tool to max output and measure how far the fastener rotates.
4. If the fastener does not meet the angle requirement (with some margin) the torque to achieve the angle is beyond the tools capacity and a larger tool should be used.

Note: This procedure will subject the fastener to max tool output torque. If unsure the fastener can safely handle max torque do not perform this operation.

TORQUE GUN OPERATION

Tightening

1. Use the options menu to specify the type of fastener being used.
2. Set the tool to the desired torque level.
3. Set the tool to the desired post-torque angle. (**REMEMBER:** the gun will apply AT LEAST its maximum rated torque while turning the fastener through this requested angle. Accidental application of this post-torque angle feature, or accidental retorqueing of a fastener while using angle feature, can lead to damage of the fastener and fastened equipment.)
4. Set the tool to the desired release angle. (**REMEMBER:** the gun will apply AT LEAST its maximum rated torque while turning the system in the “Loosen” direction. Depending on the reaction arrangement of your system, and the requested release angle, this could cause the fastener itself to loosen.)
5. Make sure the Lithium gun and fastener equipment are positioned properly.
6. Make sure the torque reaction arrangement is placed securely (HYTORC Washer, HYTORC Nut, or Reaction Arm).
7. Pull the trigger to start the torqueing operation.
8. The tool will torque the fastener until the requested torque value is reached.
9. If a post-torque angle has been specified, the tool will turn the fastener the requested angle after the torqueing operation.
10. If a release angle has been specified the tool will back-off the requested angle at the end of the operation.
11. The tool will now indicate the status of the operation.

Loosening

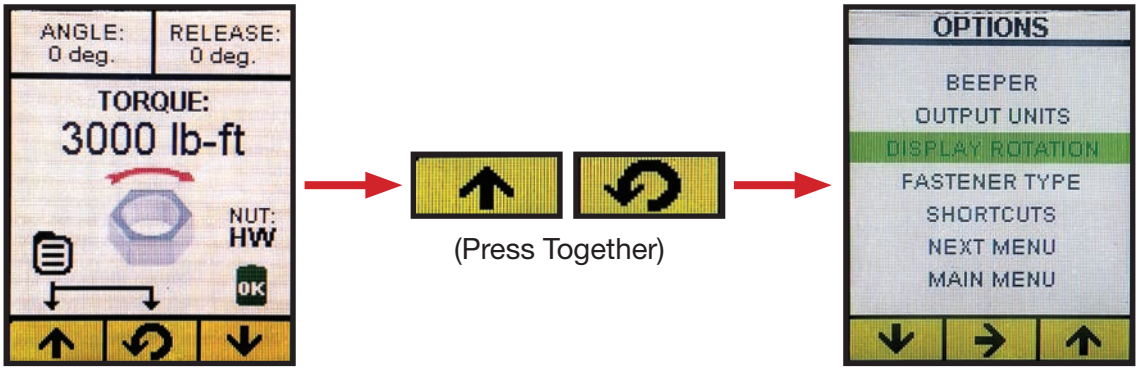
1. Use the options menu to specify the type of fastener being used.
2. Make sure the Lithium gun and fastener equipment are positioned properly.
3. Make sure the torque reaction arrangement is placed securely (HYTORC Washer, HYTORC Nut, or Reaction Arm).
4. Instruct the tool to loosen the fastener by pressing the center button.
   CAUTION: the tool will use AT LEAST the maximum rated torque of the tool to loosen the fastener.
5. Pull the trigger to start the loosening operation.
6. Release the trigger to stop loosening the fastener.

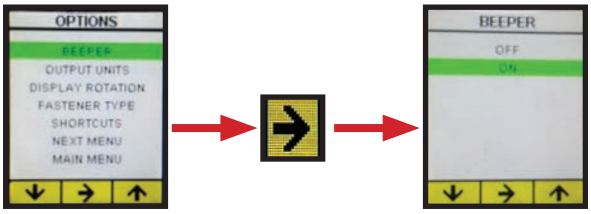
CAUTION
In reverse direction, the torque gun is set to MAXIMUM torque setting in order to loosen the nut. Use extreme caution when running in this mode.

OPTIONS

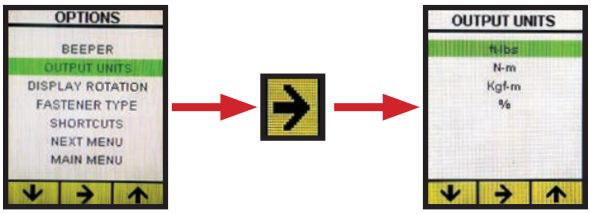
Getting to the Options Menu

By simultaneously pressing the leftmost and center buttons and holding them, the Options menu will be displayed. Figure 15 shows the options menu. Press the corresponding up/down arrow keys to highlight the different selection. Press the center button to select the highlighted option.

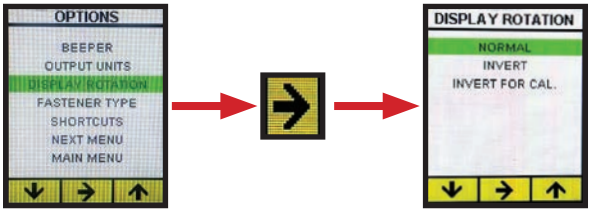




BEEPER: Turn beeper On/Off. The beeper beeps 4 times to indicate an error. It beeps 1 time for a successful operation.



OUTPUT UNITS: Change the units to be displayed for the torque setting. It allows the operator to select the preferred units of torque to display.

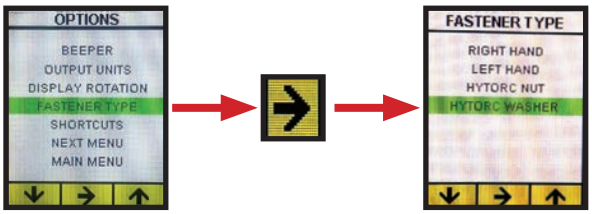


NORMAL: The screen is legible when battery is down.

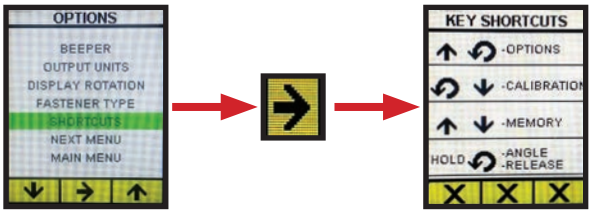
INVERT: The screen is legible when battery is up.

I**NVERT for CAL:** The screen is inverted when calibrating.

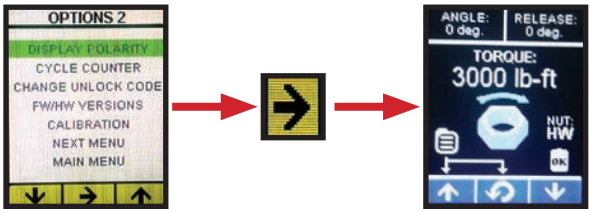
Options *(Continued)*



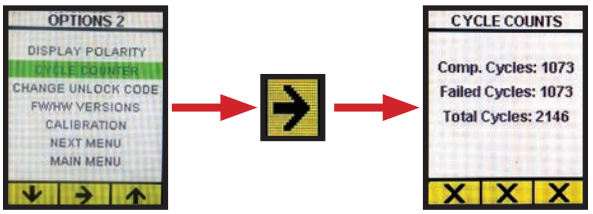
FASTENER TYPE: Allows setting of left handed or right handed threads and sets functions accordingly. Also offers a setting for “HYTORC Nut” and “HYTORC Washer”.



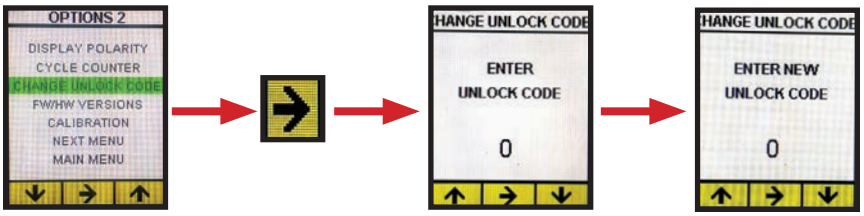
SHORTCUTS: Shows the button press shortcut combinations.



DISPLAY POLARITY: Inverts the display color from white to black (for better visibility in some lighting).

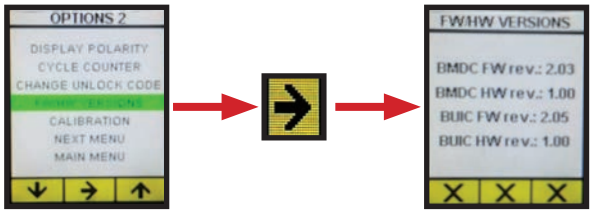


CYCLE COUNTER: Shows the number of completed, failed, and total cycles.

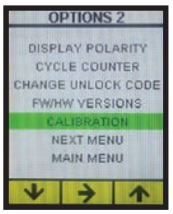


CHANGE UNLOCK CODE: Allows the user to change the unlock code of the gun (this code is required for entering calibration mode and changing either the upper or lower torque limits). Changing some features, such as calibration, requires the use of an unlock code. This function allows you to change the code from the default. The default code is 0.

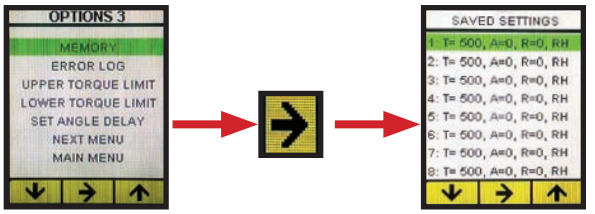
Options *(Continued)*



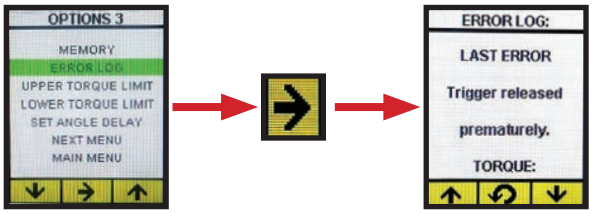
FW / HW VERSIONS: Shows the current hardware and software versions of the gun.



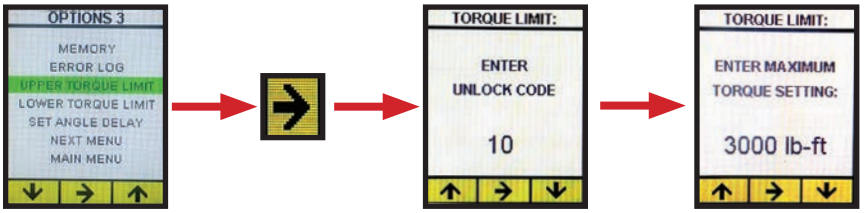
CALIBRATION: Enters the calibration routine (see "Calibration Section" of the manual).



MEMORY: Allows the user to save the current gun parameters to a memory location, or load gun parameters from a memory location.

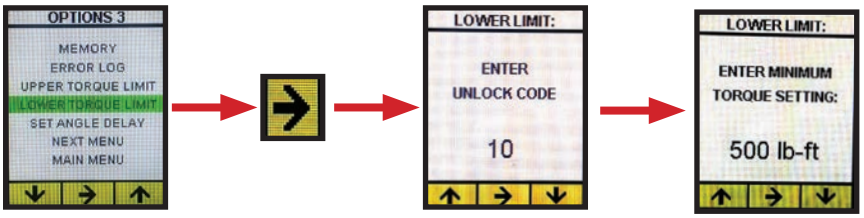


ERROR LOG: A running list of the error codes generated by the gun.

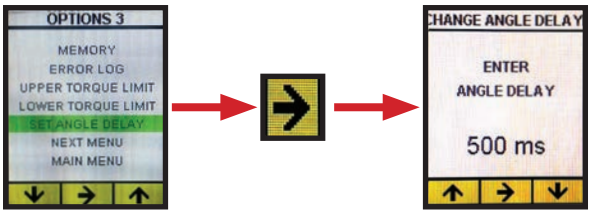


UPPER TORQUE LIMIT: The default Unlock Code is 0 (to change the unlock code see "change unlock code" option on page 26).

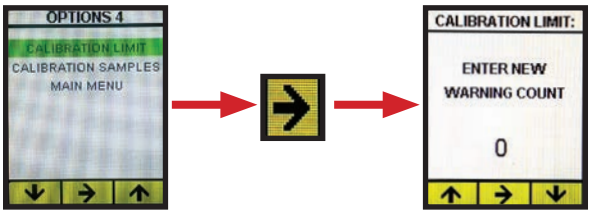
Options *(Continued)*



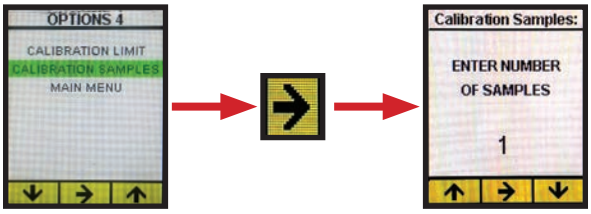
LOWER TORQUE LIMIT; he default Unlock Code is 0 (to change the unlock code see "change unlock code" option on page 26).



SET ANGLE DELAY: The user can adjust the time delay between the gun reaching torque and when it starts turning through the specified angle. This is the time that the tool will pause between the Torque and Angle Operations.



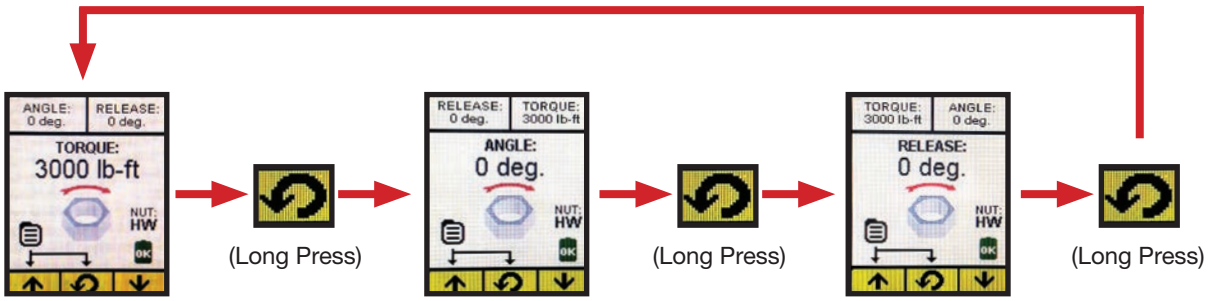
CALIBRATION LIMIT: The user can specify the number of operations the gun can perform before it needs to be calibrated. When this number of operations is exceeded the gun will warn the operator before each subsequent operation. If set to zero this feature is disabled.



CALIBRATION SAMPLES: The user can set the number of Calibration Samples to take per calibration point. See the "Calibration" section of the manual.

SHORTCUTS

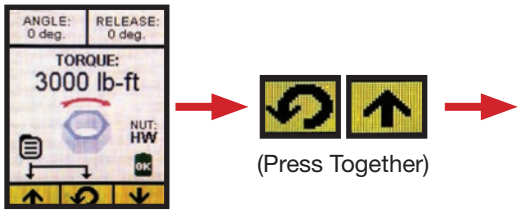
MAIN SCREEN BUTTON SHORTCUTS:



GETTING TO THE OPTIONS MENU

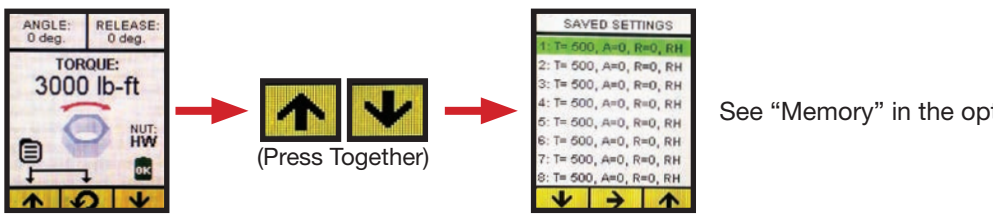
See “Options” Section.

CALIBRATION



This shortcut starts the calibration routine. See “Calibration Section”.

MEMORY



See “Memory” in the options section.

HYTORC WASHER OVERVIEW

The HYTORC Washer makes having a Reaction Arm unnecessary. It is sold and distributed exclusively by HYTORC. The HYTORC Washer is a washer that fits under a standard nut and is used in conjunction with the HYTORC Washer Driver. The nut is driven by the inner sleeve of the drive. The reaction of the tool is transmitted to the outer sleeve of the HYTORC Washer drive.

Figure 15 - HYTORC Washer and Driver

Safety increases as there are no external moving parts. The system provides a universal HYTORC reaction point for all applications, making custom reaction arms unnecessary. The fact that the tightening and the reaction takes place in the same axis, eliminates lateral forces, balances surface friction and increases bolt load accuracy.

HYTORC Washer Requirements

- Always use the appropriately sized HYTORC Washer for the nuts and bolts you use.
- All specifications of the connection (screw size, material, seal type, etc.) must be coordinated.
- When installing the HYTORC Washer, use only original HYTORC accessories. Never use a wrench or other torque drive.

HYTORC Washer Assembly, Use and Service (SETUP)

Correct preparation and use of HYTORC Washers are a prerequisite for good rundown and for safe handling.

Important Preparation Steps for the HYTORC Washer

- Before using the HYTORC Washer the connection and the connection elements must be carefully checked and cleaned.
- The HYTORC Washer must be completely dry and free from oil and grease.
- The nut to be mounted above the HYTORC Washer must be lubricated according to the specifications and application requirements.

Important Installation Steps for the HYTORC Washer

- Slide bolts through the bolt hole.
- Determine which side of the connection is more suitable for fastening and tightening the bolts. (Working space for bolting, lighting, accessibility).
- Install the clean, dry nut on the opposite side from which you want to tighten.
- Install the HYTORC Washer on the side which you want to tighten by rotating the bolt clockwise until it is hand tight.
- Now install the lubricated nut (on the same side as the HYTORC Washer) by turning it clockwise until it is hand tightened against the HYTORC Washer.

Figure 16 - HYTORC Washer Installed

CAUTION
For a correct installation only 3 to 4 threads should be seen beyond the nut to be tightened.

Once all the bolts are prepared following the previous instructions for assembly, tighten the nuts using the HYTORC Washer Driver.

Figure 17 - Installing Set Screw on HYTORC Washer Driver

Installing HYTORC Washer Driver

- The set screw for fastening the HYTORC Washer Driver is aligned with the milled recess in the ring gear of the tool. See Figure 18 and Figure 19.
- Tighten the set screw and then loosen it again by ¼ turn.

Figure 18 - Tighten Set Screw

Tightening with HYTORC Washer

- Put the tool in tightening mode.
- Put the tool in HYTORC Washer mode (Refer to the Options section)
- Place the HYTORC Washer Driver on the battery powered tool and tighten the set screw.
- Engage the HYTORC Washer Driver and tool with the nut by placing it over the top of the bolt to be tightened.
- Repeat the steps for tightening a bolt as shown for standard torque in this manual.

Figure 19 - HYTORC Washer Driver on LITHIUM

MAINTENANCE

Preventive Maintenance

Even though the LITHIUM Torque Gun can operate virtually maintenance free; good care, proper repairs and preventive maintenance will contribute significantly to longer lasting tool life.

- Sufficient cooling must always be ensured. The cooling vents must be kept clean, free of adhering dirt and dust, and may not be closed for any reason.
- Keep tools clean and protected from damage.
- Have worn or damaged fittings or cords replaced.

WARNING!
During maintenance, the power supply must be disconnected. Damaged power cables or cords can be hazardous.

CALIBRATION

Calibration should be done by a qualified technician. For standard bolting work, calibration must be done on a soft joint fixture. The LITHIUM Gun can collect and average many samples for each calibration point.

1. Enter the desired number of samples to be taken per calibration point by changing the “Calibration samples” value in the options menu.
2. Enter calibration mode through the Options menu or by pressing, and holding, the middle and right buttons simultaneously.
3. Enter the unlock code (default code is “0”).
4. Enter optional release angle.

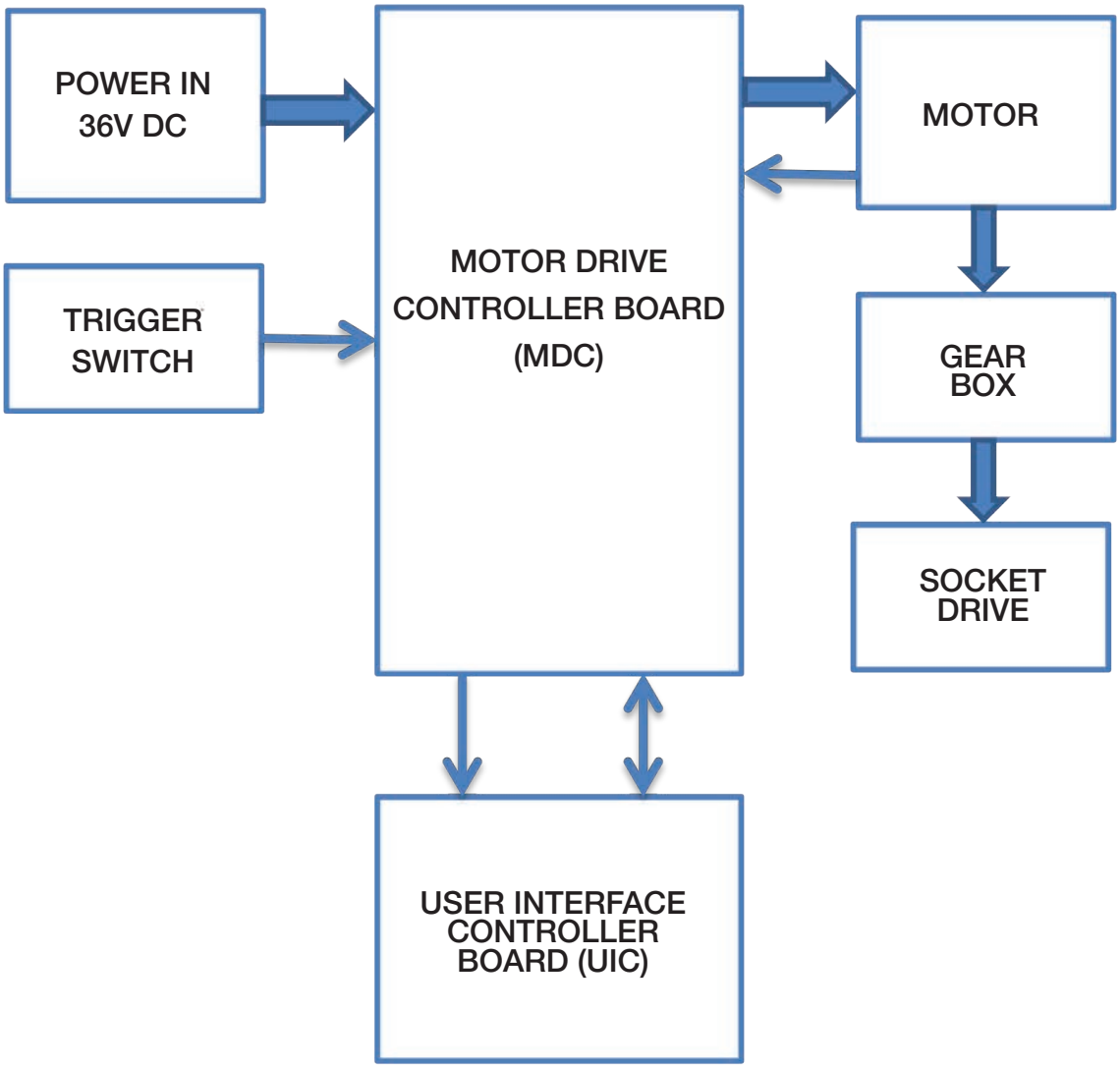
5. Calibration routine will now begin: Be aware, the gun will now operate WITHOUT prompting the operator to also press one of the back buttons.
    - When “Cal Point X – Y operate gun & record torque” is displayed: (**Note:** X = the current calibration point, Y = the current sample of the calibration point).
        - Pull and hold the trigger.
        - The gun will torque until it reaches its calibration point.
        - When it stops, enter the final torque using the rear buttons.
    - The torque gun will now temporarily store this calibration point.
    - Repeat at the gun prompts.
6. When all calibration points are completed, the torque gun will ask if you would like to save or cancel. If you select “save”, the temporary calibration data will now be locked into memory.

Note: If the first calibration point generated torque values ABOVE the minimum rated torque for the tool you are calibrating, the calibration has failed. If by the LAST calibration point, the gun failed to generate torque that EXCEEDS the maximum rated torque of the gun, the calibration has failed. In either case please contact The Torque Gun Company for support.

APPENDIX A

LITHIUM GUN BLOCK DIAGRAM

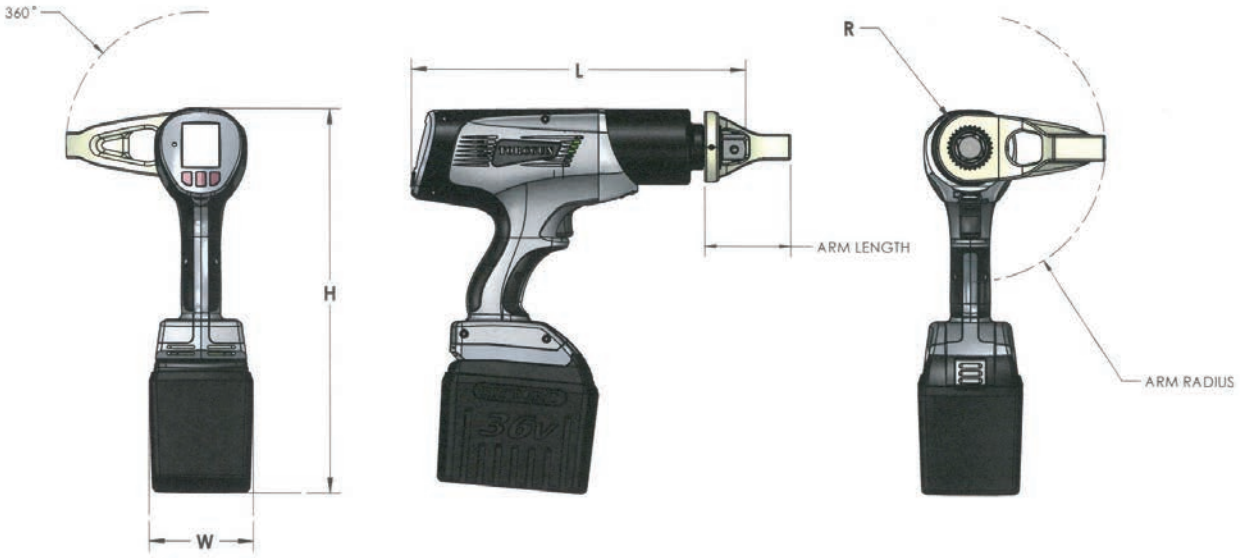
Figure 20 - Lithium GUN Block Diagram



APPENDIX B

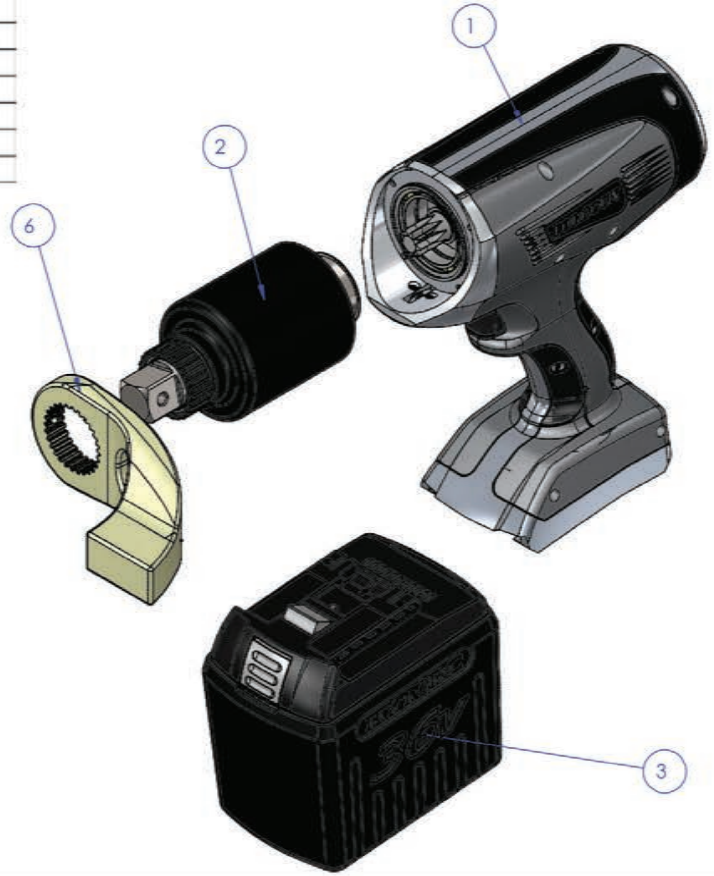
LITHIUM GUN DIMENSIONS

Figure 21 - Lithium Gun Dimensions



MODEL	BTM-0250	BTM-0700	BTM-1000	BTM-2000	BTM-3000
TORQUE RANGE	34-325 ft-lbs.(47-441 Nm)	150-700 ft-lbs. (203-949 Nm)	200-1200 ft-lbs. (271-1627 Nm)	325-2000 ft-lbs. (339-2711 Nm)	500-3000 ft-lbs. (678-4067 Nm)
DRIVE SIZE	½" SQ.	¾" SQ.	¾" SQ.	1" SQ.	1" SQ.
HEIGHT (H)	12.85" (32.6 cm)	12.85" (32.6 cm)	12.85" (32.6 cm)	13.20" (33.5 cm)	13.20" (33.5 cm)
LENGTH (L)	10.12" (25.7 cm)	11.12" (28.2 cm)	11.44" (29.0 cm)	13.29" (33.8 cm)	13.54" (34.4)
WIDTH (W)	3.47" (8.8 cm)	3.47" (8.8 cm)	3.47" (8.8 cm)	3.47" (8.8 cm)	3.47" (8.4 cm)
RADUIS	1.12" (2.8 cm)	1.59" (4.0 cm)	1.59" (4.0 cm)	1.75" (4.4 cm)	1.75" (4.4 cm)
ARM LENGTH	2.75" (7.0 cm)	2.75" (7.0 cm)	2.75" (7.0 cm)	3.5" (8.9 cm)	3.5" (8.9cm)
ARM RADUIS	4.19" (10.6 cm)	4.55" (11.4 cm)	4.55" (11.4 cm)	6.18" (15.7 cm)	6.18" (11.4 cm)
WEIGHT WITH BATTERY	9.52 lbs (4.32 kg)	10.2 lbs (4.63 kg)	10.6 lbs (4.81 kg)	14.2 lbs (6.44 kg)	15.6 lbs
RUNDOWN RPM (NO LOAD)	180 RPM	85 RPM	40 RPM	23 RPM	15 RPM
FINAL TORQUE RPM	17 RPM	8.5 RPM	4 RPM	1.8 RPM	1.6 RPM

ITEM NO.	DESCRIPTION	QTY PER ASSY	TGC PART NUMBER
1	HANDLE ASSEMBLY	1	A000741
2	GEABOX ASSEMBLY	1	SEE CHART
3	36V 3.9Ah BATTERY	2	P002036
4	36v BATTERY CHARGER	1	A000750 (NOT SHOWN)
5	PACKAGING LAYOUT	REF	A000745
6	REACTION ARM	1	AV01-C25M



Gearbox	Drawing No.	TGC Part No.
Bp25	BTM-0250	A000746
Bp7	BTM-0700	A000748
B1	BTM-1000	A000739
B2	BTM-2000	A000749

REF. DWG. .

TOLERANCE
.XXX=±.005
.XX=±.010
X/X=±1/64
∠=±1°
UNLESS OTHERWISE SPECIFIED

MATERIAL

FINISH

SHEET 1 OF 1

SCALE 1:12

TITLE: TOP LEVEL ASSEMBLY
BATTERY TORQUE GUN

HYTORC Since 1968

DRAWN: PF
DATE: 7/15/14

CHECKED:
APPROVED:

SIZE A | DWG. NO. BTM-XXXX | REV A

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