VØLTORK™

USER MANUAL

BATTERY TORQUE WRENCH MODELS:

NT200B
NT500B
NT800B
NT1300B
NT2600B

NexTORK

INTRODUCTION

Thank you for choosing NexTORK as your torque tool manufacturer. We understand that our customers have many options when selecting their equipment and we truly appreciate the opportunity to serve your bolting needs.

Our company firmly believes that the development of any product starts with first understanding the needs of our customers and apprehending the challenges they encounter with the equipment they currently use. The NexTORK design team then tackles these challenges and implements innovative resolutions in the design it develops. Next, we prototype and evaluate our designs gauging not only performance, but also robustness. Every one of our designs goes through an exhaustive life test taking into account every possible situation that might occur during normal operation. As our tools enter the production phase, each unit is calibrated throughout its operating range and our technical staff reviews each calibration certificate before signing off and releasing it.

Please take the time to review the rest of this manual, paying special attention to the safety instructions associated with your equipment.

If you have additional questions please feel free to contact your sales representative or the factory directly.

Thank you again for choosing NexTORK!

TABLE OF CONTENTS

SAFETY

Safety is our primary concern and we want to ensure that our customers enjoy the benefits of our tools while observing all appropriate safety measures. Our tools are intended to only be operated by trained, skilled personnel.

Never disassemble or modify any portions of the tool supplied by NexTORK – doing so may result in personal injury and the product warranty to become void. Never strike or force any portion of the torque wrench as this may cause damage to the equipment, create an unsafe situation and void the warranty.

Reading this manual in its entirety is mandatory prior to operating the equipment described in it. Additional training may be required by your company's training or safety advisor.

PPE – (Personal Protective Equipment)

Always wear protective eyewear when operating power tools or entering an industrial environment.

Always wear hearing protection when operating power tools or environmental conditions may exceed 85 dB(A) of noise.

Never place your hands or other body parts near the reaction arm or any moving component – avoid pinch points.

It is a good practice to also wear work gloves, a hard hat, steel toe shoes and any other protective equipment suitable for the task being performed. Please consult with your company's safety advisor for more information.

WARRANTY

NexTORK LLC is proud to offer a **one year limited warranty** *for your torque wrench and accessories. We are confident in and stand behind all of the products we manufacture and sell.*

NexTORK LLC warrants this product against all material and workmanship defects for the duration specified above from the date of initial purchase. In the event that this product is found to be defective after being examined by NexTORK LLC and in accordance with the terms specified in this section, the defective product will be repaired or replaced, at the discretion of NexTORK LLC without cost to the end user.

The following list of reasons (investigated and assessed by NexTORK LLC) will cause this warranty to become void and null in its entirety:

1. *Any modifications, previous repairs or attempted repairs performed by parties other than NexTORK LLC or factory authorized repair facilities.*
2. *Any visible marks or signs indicating the equipment has been abused or mishandled, other than normal wear of the equipment.*
3. *Improper maintenance of the equipment according to the instructions in this manual.*

This warranty covers all the equipment supplied except:

1. *Packaging materials*
2. *The output drive*
3. *The reaction arm*
4. *The batteries*

NexTORK LLC shall in no event be found liable for any damages including personal or material, including loss of profits of any parties involved.

Please contact your sales representative or the factory directly with any questions you may have regarding this warranty.

ABOUT THE TOOL

The NT series tool is a single speed battery operated torque wrench designed to output continuous torque to a preset value or using the turn-of-the-nut method. The tool is based on an ultra efficient brushless motor driving a high reduction multi-stage planetary gearbox.

When tightening or loosening fasteners requiring torque in the range offered by this tool, there are many other methods available: large breaker bars, manual torque multipliers, impact wrenches or hydraulic wrenches. Breaker bars and manual torque multipliers are the lowest cost option, but are labor intensive and some have questionable torque accuracy. Impact wrenches are relatively low cost, but have no torque accuracy and generate a large amount of vibration and noise – these factors may present serious health risks. Hydraulic wrenches are more expensive, move very slow and require heavy hydraulic pumps. Continuous torque wrenches like the NT series offer a good balance of power, speed, ergonomics and cost.

Figure 1 - *FRONT VIEW OF TOOL*

Figure 2 - *REAR VIEW OF TOOL*

OPERATING INSTRUCTIONS

Before starting completely read this manual and ensuring all steps are understood. Any additional questions may be answered by contacting your sales representative or the factory.

Only impact sockets may be used with your torque tool, properly installed with locking pins and retainer ring (see Figure 8). The NT series tool is normally supplied with a standard square drive, unless a different size was specified or purchased separately. To change the size of the square drive see "REMOVING AND INSTALLING THE OUTPUT DRIVE" section later in this manual.

Figure 3 - *IMPACT SOCKET*

A reaction arm is necessary for the operation of the tool in order to keep the gearbox housing from turning under extreme torque output conditions. While operating, the reaction arm must be resting against a robust stationary object (usually a nearby fastener) capable of withstanding a reaction force equal to the torque being generated by the tool. During operation the tool handle may be rotated with respect to the gearbox housing as not to transmit a reaction torque greater than several foot pounds to the operator of the tool.

REMOVING AND INSTALLING THE TOOL EXTENSION

Your tool may be equipped with an optional extension depending on your application. The tool extension may be easily removed and re-installed for increased tool versatility. It can be installed in one of 8 positions on the spline of the gearbox housing. To install, remove the set-screw located on the tool extension using a 1/8" hex wrench. Slide out the tool extension retaining pin – if the retaining pin does not slide out easily, it may be pushed out with the 1/8" hex wrench. Ensure that the inside of the gearbox receptacle is well lubricated as shown using a lithium or petroleum based grease. It is also a good practice to check the lubrication on the extension journal by sliding out the inner shaft of the extension – lubricate using lithium or petroleum based grease and re-insert the inner shaft into the extension housing. Fully engage the spline of the tool extension with the spline of the gearbox housing and insert the retaining pin. Replace the setscrew in the tool extension and re-tighten.

Figure 4 – *TOOL EXTENSION INSTALLATION*

To remove the tool extension, remove the set screw and retaining pin, then slide the extension off the gearbox. Be careful not to drop the inner shaft out of the assembly.

REMOVING AND INSTALLING THE REACTION ARM

The reaction arm may be installed in one of 8 positions on the spline of the gearbox housing. To install, remove the set-screw located on the reaction arm using a 1/8" hex wrench. Slide out the retaining pin – if the retaining pin does not slide out easily, it may be pushed out with the 1/8" hex wrench. Ensure that the output drive journal is well lubricated as shown using a lithium or petroleum based grease. Fully engage the spline of the reaction arm with the spline of the gearbox housing and insert the retaining pin. Replace the setscrew in the reaction arm and tighten.

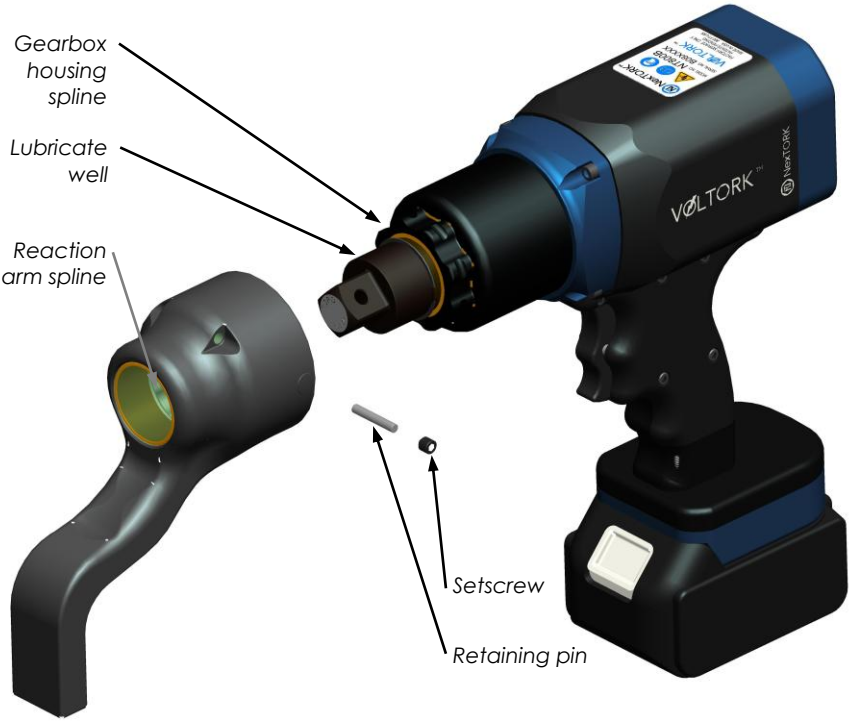

Figure 5 - *REACTION ARM INSTALLATION*

To remove the reaction arm, remove the set screw and reaction arm retaining pin, then slide the reaction arm off the gearbox.

REMOVING AND INSTALLING THE OUTPUT DRIVE

The output drive (square drive) of the torque wrench is designed to be field replaceable by the operator. Some of the reasons for changing the output drive could be changing the square drive size, replacing a broken output drive or replacing the standard output drive with a custom output drive. Regardless of the reason for replacing the output drive, it's as easy as removing one set screw.

Start by removing the reaction arm – see "REMOVING AND INSTALLING THE REACTION ARM" in the previous pages. Continue by simply pulling the square drive out.

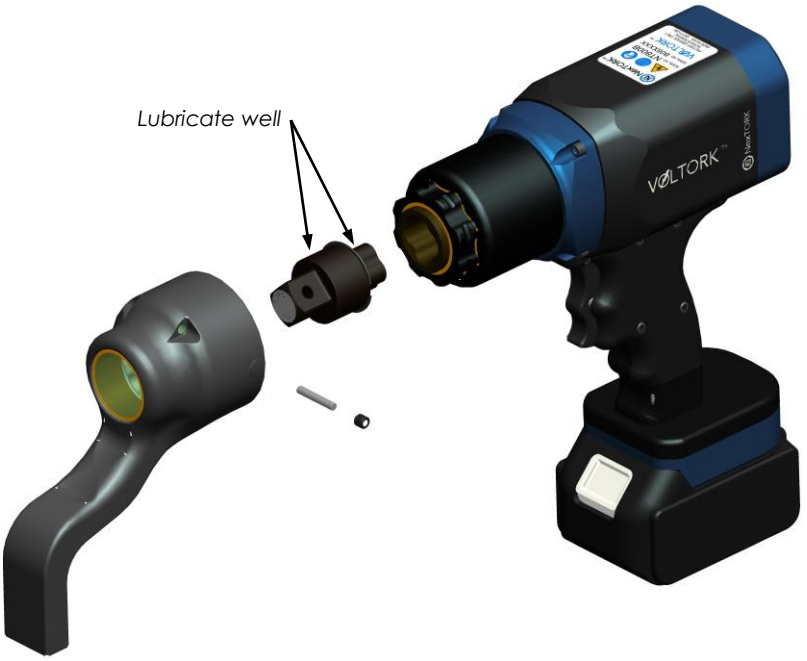

Figure 6 – *OUTPUT DRIVE INSTALLATION*

If removing a broken output drive the part should just slide out – if it doesn't, a pair of pliers or screw driver may be used.

To re-install an output drive, first lubricate the output drive journal and quadrilobe areas as shown using a lithium or petroleum based grease, engage output drive to gearbox and replace reaction arm - see "REMOVING AND INSTALLING THE REACTION ARM" in the previous pages.

INSTALLING THE IMPACT SOCKET

Only impact sockets must be used with your torque tool. They must be properly installed with locking pins and retainer ring. The output drive of your tool may be ¾", 1" or 1-1/2" depending on how the tool was ordered or what additional accessories were purchased with it.

First slide the retainer ring (o-ring) over the socket as shown below.

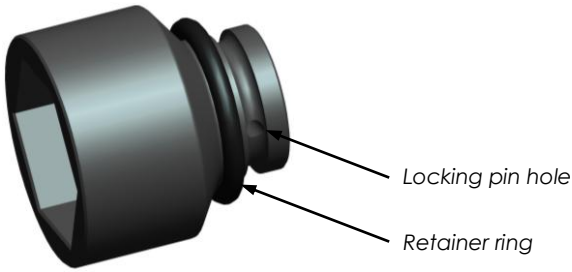

Figure 7 - *IMPACT SOCKET*

Place the socket over the torque tool output drive (square drive) aligning the locking pin hole with the hole in the output drive. Slide in the locking pin as shown below.

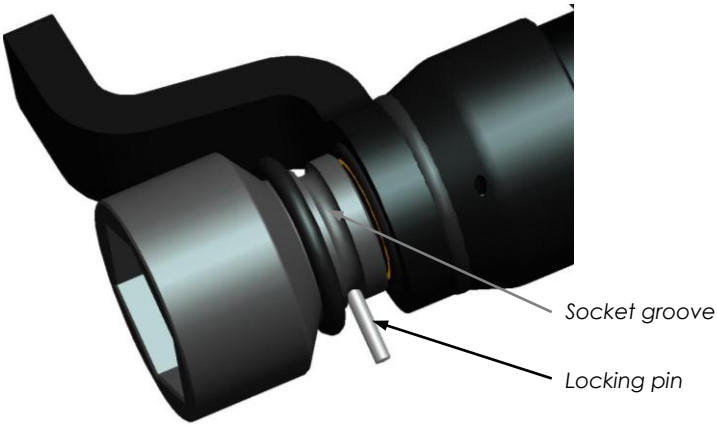

Figure 8 - *SOCKET INSTALLATION*

Finish the socket installation by rolling the retainer ring into the socket groove to keep the locking pin in place.

MULTIPLE PERSONALITY TOOLS: CHANGING TOOLS

If you have purchased a NT2600B you will be happy to know that it can be used as both a 2600 ft-lb and 800 ft-lb tool. To switch between modes the 2600 reducer will need to be removed or installed.

To detach the 2600 reducer use a 1/8" hex wrench to remove the 2 setscrews and pins shown. Slide off the reaction fixture and replace with an output drive and reaction arm – now the tool will operate as an 800 ft-lb tool.

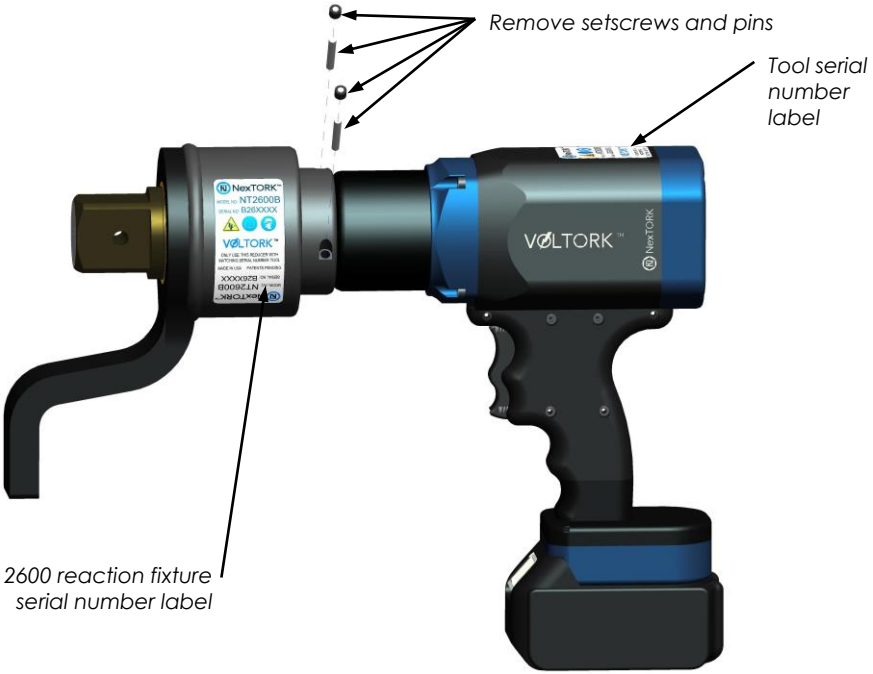

Figure 9 - *2600 REDUCER REMOVAL/INSTALLATION*

To change back to 2600 mode remove the reaction arm and output drive and reinstall the 2600 reducer, securing it with the 2 setscrews and pins previously removed. It may be necessary to slightly rotate the square drive of the reaction fixture to be able to re-install. Use a 1/8" hex wrench to secure the set screws.

⚠ *Always make sure that the serial number on the label of the 2600 reducer matches the serial number on the back of the tool otherwise the toque output will be incorrect.*

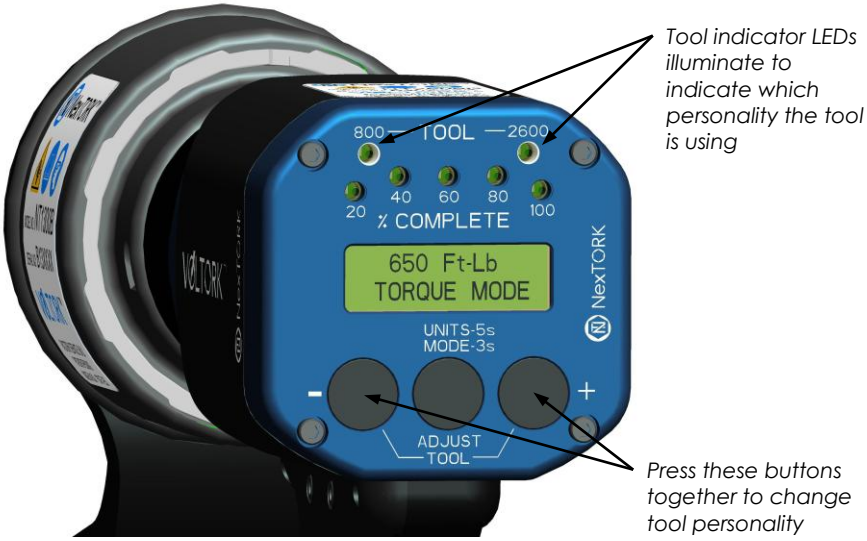

Figure 10 - *NT2600B CONTROL PANEL*

Now we must set the tool processor to use different calibration parameters. To complete the tool personality change press the "-" first and then the "+" button. You will see the tool indicator LEDs shift from one to the other.

CHARGING THE BATTERY

Just like all other cordless power tools, the battery NT tool also requires its batteries charged periodically.

⚠ *Always make sure that the charger is plugged into an outlet of the appropriate voltage (see label under the charger) – failure to do so will damage the charger.*

Figure 11 - *MAKITA® CHARGER*

Slide the battery into the charger and look at the 3 LEDs to understand the charging status using the table below.

SYMBOL	LIGHTS	MEANING
		Ready to charge
		Delay charge (Battery too hot or too cold)
		Charging in process
		Charging almost complete
		Charging complete
		Defective battery
		Conditioning battery
		Cooling abnormality

TORQUE MODE: ADJUSTING SETTINGS

Press any button or the trigger to power on the tool. If your application requires applying a specific torque then you must use the tool in TORQUE MODE. In this mode the tool will automatically stop once the set torque is achieved. You know you are in this mode if you see "TORQUE MODE" on the display. If you don't see this press and hold the middle button for 3 seconds and then release to change the operating mode.

Display indicates tool is in TORQUE MODE

Press this button once to adjust torque values
Hold it for 3 seconds to change between TORQUE and TORQUE AND ANGLE operating modes
Hold for 5 seconds to change units

Figure 12 – *TOOL DISPLAY IN TORQUE MODE*

With the tool in the appropriate mode press the middle button once to change the set torque. The display will show the current set torque on top and the word "ADJUST" on the bottom. Press and hold either the "-" or "+" buttons to change the set torque. Press the middle button again or the trigger to complete the adjustment.

To change the units displayed press and hold the middle button until the units change (about 5 seconds).

TORQUE AND ANGLE: ADJUSTING SETTINGS

Press any button or the trigger to power on the tool. If your application requires using a preliminary torque first followed by a specific number of degrees then you must use the tool in TORQUE

AND ANGLE MODE. In this mode the tool will automatically stop once the preliminary torque is achieved followed by a rotation of a set number of degrees. You know you are in this mode if you see both a torque value and number of degrees on the display. If you don't see this press and hold the middle button for 3 seconds and then release to change the operating mode.

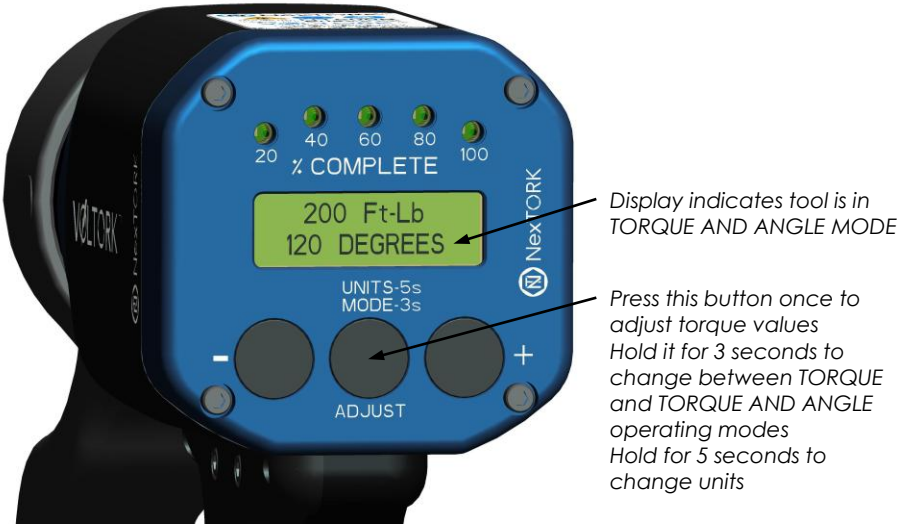

Figure 13 – *TOOL DISPLAY IN TURN-OF-THE-NUT MODE*

With the tool in the appropriate mode press the middle button once to change the preliminary torque. The display will show the current preliminary torque on top and the word "ADJUST" on the bottom. Press and hold either the "-" or "+" buttons to change the preliminary torque. Press the middle button again to change the set angle. The display will show the current set angle on the bottom and the word "ADJUST" on top. Press and hold either the "-" or "+" buttons to change the set angle. Press the middle button again or the trigger to complete the adjustment.

To change the units displayed press and hold the middle button until the units change (about 5 seconds).

If your application requires the fasteners to be marked after the preliminary torque and inspected after final rotation, first use the tool in TORQUE MODE set to the appropriate torque value. Upon marking the fasteners set the tool to TORQUE AND ANGLE MODE using the same or lower preliminary torque value as before and the appropriate angle setting.

TIGHTENING

Once the reaction arm and appropriate size impact socket have been installed and the correct mode/torque for your application has been set, you are ready to tighten your fastener. Depending on your application, you may be required to use lubrication on the nut being tightened and a backup wrench on the nut on the opposite end of the stud – please consult the instructions supplied by the fastener manufacturer or the engineering instructions supplied for the project.

⚠ *Be sure to wear appropriate PPE (Personal Protective Equipment) – please see the sections on "SAFETY" and "PPE" at the beginning of this manual. Never place your hands or other body parts near the reaction arm or any moving component.*

Depress the upper trigger until the reaction arm touches a robust, stationary object like a nearby fastener or other similar metal feature (see Figure 15).

Remember that the gearbox and reaction arm assemblies can rotate with respect to the tool handle to accommodate the most favorable work angle for the operator.

Figure 14 - *SOCKET OVER FASTENER*

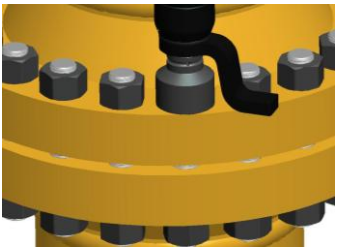

Figure 15 - *REACTION ARM AGAINST NEARBY FASTENER*

Fully depress trigger until socket stops turning. The 5 progress LEDs will illuminate yellow one by one indicating completion. When complete they will all illuminate green and remain that way for several seconds. If tightening cannot be completed they will illuminate red and remain that way for several seconds. Upon successful tightening, the tool will also automatically rotate in reverse slightly to ease disengagement of socket. Once the fastener is tightened do not depress the trigger again – doing so may increase the torque applied to the fastener by an undesirable amount.

LOOSENING

When loosening a fastener, it is generally safe to use the maximum available torque. As such, the tool operates at maximum torque in reverse.

⚠ *Be sure to wear appropriate PPE (Personal Protective Equipment) – please see the sections on "SAFETY" and "PPE" at the beginning of this manual. Never place your hands or other body parts near the reaction arm or any moving component.*

Place the impact socket over the fastener (see Figure 16). Depress the lower trigger until the reaction arm touches a robust, stationary object like a nearby fastener or other similar rigid feature (see Figure 17).

Remember that the gearbox and reaction arm assemblies can rotate with respect to the tool handle to accommodate the most favorable work angle for the operator.

Figure 16 - *SOCKET OVER FASTENER*

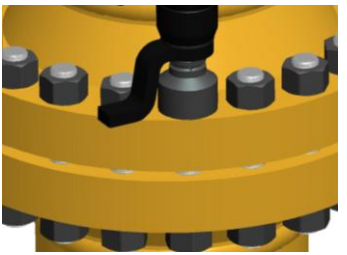

Figure 17 - *REACTION ARM AGAINST NEARBY FASTENER*

Fully depress trigger until the fastener is removed.

The progress LEDs will not light up while tool is used in reverse.

BEST PRACTICES

Several steps should be taken when using the torque tool to maintain maximum torque accuracy:

1. *If tool has not been used for a period of time, run it idle for a few seconds prior to using it on your application.*
2. *Never re-torque a fastener to the same setting – it will result in a higher than desired torque value. The tool is designed to achieve proper torque only in dynamic situations.*

CARE AND MAINTENANCE

There is minimal maintenance required for your torque wrench.

Before performing maintenance please be sure to read and understand this manual in its entirety. If you still have questions please contact your sales representative or the factory directly.

The torque wrench is designed to generally be maintenance free for the duration of its life, however depending on the duty cycle and the environment in which it's used in, there may be a few parts requiring replacement if a failure was to occur.

The output drive has a limited life and after several thousand cycles at full load, may require replacement – please see the section entitled "REMOVING AND INSTALLING THE OUTPUT DRIVE" for further instructions. Lubricate periodically – see Figure 6. ¾ " square drive are only recommended for use with up to 800 ft-lbs of torque.

The electric motor has no brushes and requires no maintenance.

The gearbox is lubricated for life and will not require additional grease to be added by the operator. After intensive use it may need to be rebuilt, but this can only be performed by the factory – please contact your sales representative or the factory for additional information including cost.

TOOL CALIBRATION

The torque tool is factory calibrated when initially sold, but in order to ensure accurate delivery of torque, a periodic re-calibration is required. NexTORK recommends that the torque tool be calibrated at least once a year. Tools that are used at a higher duty cycle might require calibration every 6 months or at a different interval. Please consult with your sales representative or the factory for the appropriate interval.

Calibration services are available by contacting your sales representative or the factory directly and should only be performed at factory authorized facilities.

TROUBLESHOOTING

If you experience problems while operating the torque tool, please use the chart below prior to contacting your sales representative or the factory.

PROBLEM	POSSIBLE CAUSE	ACTION
The tool doesn't turn when trigger is pressed – the motor doesn't make any noise, display is off	1. *Battery not installed properly* 2. *Battery is discharged* 3. *The battery is defective* 4. *The tool is defective*	1. *Remove and re-install battery* 2. *Charge battery* 3. *Replace battery* 4. *Contact factory for repair*
*Display shows "Cooling **** Down Motor"*	1. *Tool has overheated*	1. *Allow tool to cool off*
*Display shows "Batt voltage Low **.**"*	1. *Battery is discharged*	1. *Charge battery*
The tool doesn't turn when trigger is pressed – the motor makes a soft buzzing noise but the output drive doesn't turn	1. *The tool is engaged with a fastener and has reached the max torque* 2. *The gearbox or motor are defective*	1. *Remove tool from fastener and press trigger to ensure proper operation* 2. *Contact factory for repair*
The tool makes an abnormal or irregular sound while running	1. *The gearbox or motor are defective*	1. *Contact factory for repair*
The motor sounds normal but the socket doesn't turn	1. *The output drive is broken*	1. *Replace, contact factory for spare*
The tool is not delivering desired torque	1. *Calibration not up to date* 2. *The gearbox or motor are defective*	1. *Contact factory for calibration* 2. *Contact factory for repair*

OPTIONS & ACCESSORIES

NT800B with 12” extension, 3/4” square drive and standard reaction arm

NT1300B with lanyard option and custom reaction arm

NT2600B with 18” extension

NT500B with wheel attachment

NT1300B with 6” extension and wheel attachment

TOOL SPECIFICATIONS

	NT200B		NT500B		NT800B		NT1300B		NT2600B	
PARAMETER	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC
Output Drive	3/4” SQ		3/4” or 1” SQ		3/4” or 1” SQ		1” SQ		1” or 1-1/2” SQ	
Max Torque	200 ft-lbs	271 N-m	500 ft-lbs	678 N-m	800 ft-lbs	1085 N-m	1300 ft-lbs	1763 N-m	2600 ft-lbs	3525 N-m
Min Torque	20 ft-lbs	27 N-m	50 ft-lbs	68 N-m	80 ft-lbs	108 N-m	130 ft-lbs	176 N-m	260 ft-lbs	353 N-m
Max Speed	60.1 RPM		17.4 RPM		12.2 RPM		6.6 RPM		3.0 RPM	
System Accuracy	<5%									
Tool Weight [1]	9.0 lbs	4.1 Kg	10.0 lbs	4.5 Kg	10.0 lbs	4.5 Kg	11.3 lbs	5.1 Kg	19.9 lbs	9.0 Kg
Total Weight	10.6 lbs [2]	4.8 Kg [2]	11.7 lbs [2]	5.3 Kg [2]	13.4 lbs [3]	6.1 Kg [3]	14.9 lbs [3]	6.8 Kg [3]	19.9 lbs	9.0 Kg
Battery	Makita® compatible18V Li-Ion 4.0 Ah standard (3.0 Ah, 5.0 Ah and 6.0 Ah also available)									
Warranty	1 year limited									

1 - Includes bare tool and battery – no reaction arm or square drive
2 - Includes bare tool, battery, standard aluminum reaction arm and square drive
3 - Includes bare tool, battery, standard steel reaction arm and square drive

Patents Pending