WILLIAMS®

FOR YOUR PERMANENT FILE

TORQUE WRENCH MODEL NUMBER:

_____

TORQUE WRENCH SERIAL NUMBER:

_____

LIMITED WARRANTY
The WILLIAMS Electronic Torque Wrench is backed by a one year warranty. This warranty covers manufacturer defects and workmanship. The warranty excludes misuse, abuse and normal wear and tear. Exclusion is not allowed in some states and may not apply. This warranty gives you specific legal rights, and you may have other rights, which vary from state to state.

Please Recycle

IMPORTANT ENVIRONMENTAL NOTES:
1. This equipment may contain hazardous materials which can be harmful to the environment.
2. Do not dispose of this equipment as municipal waste. Return it to the distributor or a designated collection center.
Thank you for caring about our environment!

Applicable to the following Model Numbers:
1002EFRMH
2401EFRMH
2503EFRMH
12002EFRMH
6004ERMH

Form 20-3102-WIL
2021-02 Rev A

OPERATION MANUAL

ELECTRONIC TORQUE WRENCH

WILLIAMS®

SAFETY MESSAGES

WARNING

Read operation manual completely before using torque instrument and store for future reference.

Wear safety goggles-both user and Bystanders

- An out of calibration torque wrench can cause part or tool breakage.
- Periodic re-calibration is necessary to maintain accuracy.
- Do not exceed rated torque as overtorquing can cause screwdriver or part failure.
- Do not use torque instrument to break fasteners loose.

- Do not use cheater extension on the handle to apply torque.
- Broken or slipping tools can cause injury.

CAUTION - RATCHET HEAD

Ratchet mechanism may slip or break if dirty, mismatched or worn parts are used, or direction lever is not fully engaged. Ratchets that slip or break can cause injury.

Specifications

Head Type

- Square drive Fixed and Flex Quick Release 36 teeth Ratchet.

Display

- DISPLAY TYPE: Dot Matrix LCD (168 x 48 Resolution) and (192 x 65 Resolution)
- VIEWING ANGLE: 6:00
- BACKLIGHT: WHITE (LED)

Sealed Button Pad


POWER - ON/OFF and torque and angle re-zero


ENTER - measurement mode select and menu entry


UP – increments torque and angle settings and menu navigation


DOWN - decrements torque and angle settings and menu navigation


UNITS - units select (ft-lbs, in-lbs, in-oz (depending on range), Nm, Kg-cm, dNm or cNm depending on range) and enter PSET (preset) menu


LCD BACKLIGHT – Illuminates all screens and last peak torque or angle recall

Functions

- Set - torque or angle target
- Track - real time display of torque or accumulated angular rotation with progress lights
- Peak Hold – 5 sec. flashing of peak torque or alternating peak torque/angle on release of torque
- Peak Recall - display last peak torque or peak torque/angle on button press
- Memory - display of last 50 peak torque or peak torque/angle readings

Accuracy

- Temperature: @ 22 C (72°F)
- Angle: ±1% of reading ±1° @ angular velocity > 10°/sec < 180°/sec
- Torque: (Unflexed)

	CW	CCW	
	±2%	±3%	of reading, 20% to 100% of full scale
	±4%	±6%	of reading, 10% to 19% of full scale
	±8%	±10%	of reading, 5% to 9% of full scale

Operating Temperature: 0°F - 130°F (-18°C to 54°C)

Storage Temperature: 0°F to 130°F (-18°C to 54°C)

Measurement Drift: ANGLE: -0.12 Angular Degrees per Degree C
TORQUE: +0.01% of reading per Degree C

Humidity: Up to 90% non-condensing

Battery: Micro Series: Single "AA" alkaline Cell, up to 40 hours continuous operation. Alkaline or rechargeable NiMH batteries may be used (exceeds ASME battery life requirement of 10 hours continuous operation).
Standard Series: Three "AA" Alkaline Cells, up to 80 hours continuous operation

Default Auto Shut-off: After 2 minutes idle – (Adjustable, see Advanced Settings)

User Instructions

- Basic Functions (Quick Start)

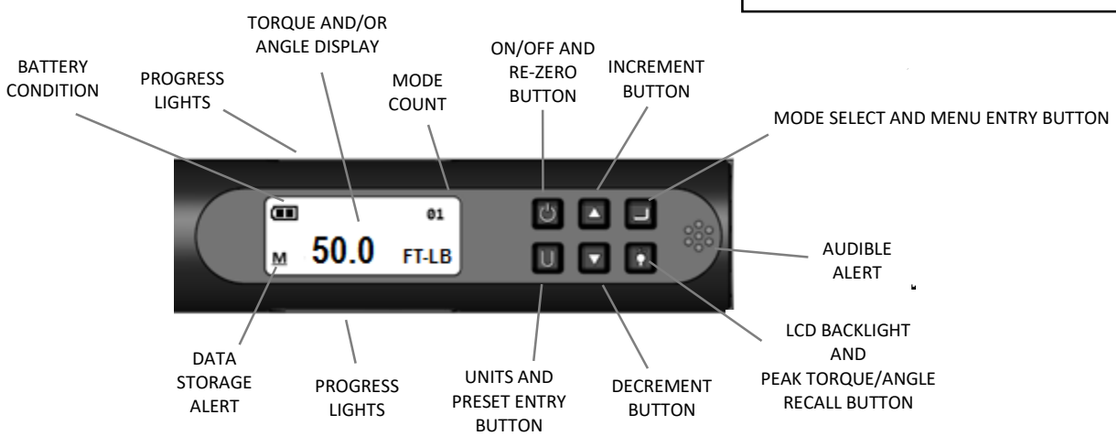
PROGRESS LIGHTS

Yellow - First light indicates 40% of target torque or angle reached. Second indicates 60% of target reached. Third indicates 80% of target reached.

Green - Indicates target torque or angle reached.

Red - Indicates exceeded torque or angle target plus 4% or exceeded maximum Preset target.

Figure 1

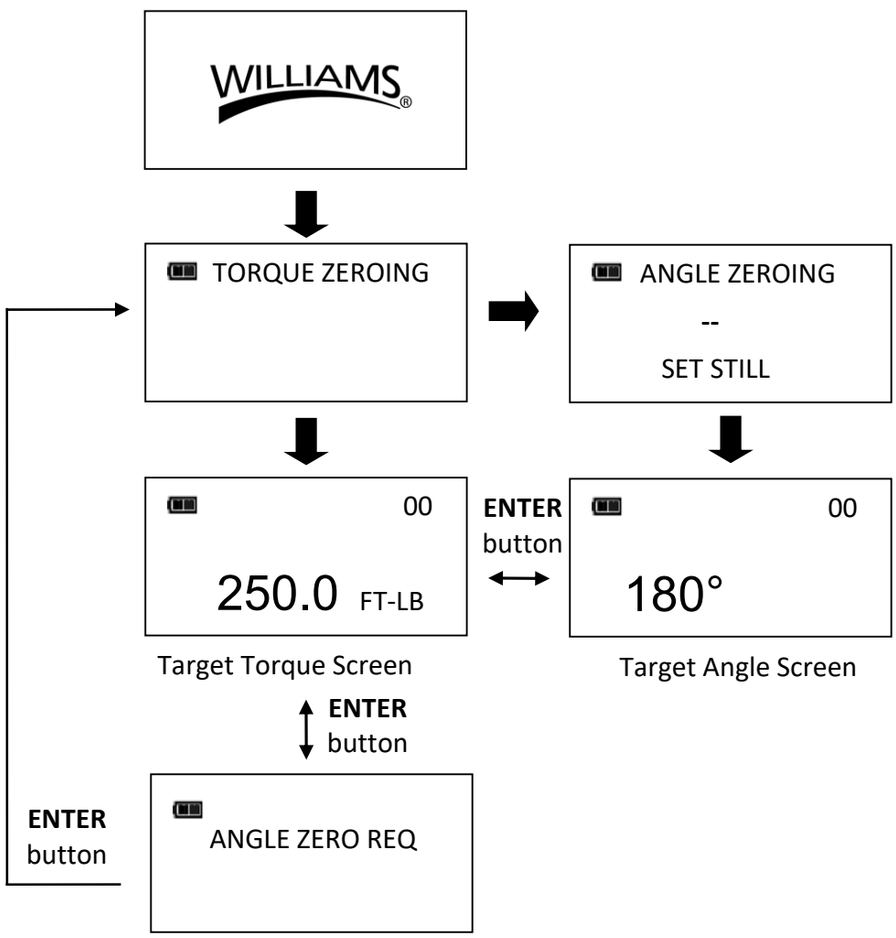


Install fresh "AA" cell into handle of wrench.

Wrench Power On Sequence

*Note: Do not turn on wrench while torque is applied, otherwise torque zero offset will be incorrect and wrench will indicate a torque reading when torque is released. If this occurs, re-zero wrench by momentarily pressing **POWER** button while wrench is on a stable surface with no torque applied.*

1. Turn On Wrench.
   Momentarily press **POWER** button. Williams logo is displayed followed by torque re-zeroing screen. If previous measurement was angle measurement, then angle re-zeroing screen follows the torque zeroing screen. After re-zeroing, the target torque or target angle screen is displayed depending on previous measurement mode.
2. Select Measurement Mode.
   Toggle between target TORQUE and ANGLE screens by repeatedly pressing **ENTER** button.



Note: If wrench is powered up in torque only measurement mode, angle is not zeroed until mode is changed to angle measurement mode, at which time torque and angle zeroing begins automatically after 2 seconds. Wrench should be placed on a stable surface with no torque applied.

Note: Pressing **ENTER** ↵ *button while angle is zeroing will abort zeroing function to allow user to select another measurement mode.*

Torque Mode

1. Set Target.
   Use **UP** ▲**/DOWN** ▼ buttons to change TORQUE target value.
2. Select Units of Measure.
   Repeatedly press **UNITS** **U** button while on target TORQUE screen until desired units are displayed.
3. Apply TORQUE.
   Grasp center of handle, (DO NOT pull on battery end-cap) and slowly apply torque to fastener until progress lights display green and a ½ second audible alert and handle vibration alerts user to stop.
4. Release TORQUE.
   Note peak TORQUE reading flashing on LCD display for 10 seconds. Pressing **BACKLIGHT** button while peak torque is flashing will continue to display value until button is released. Momentarily press **UP** ▲**/DOWN** ▼**, ENTER** ↵ or **UNITS** **U** button to immediately return to target TORQUE screen. Reapplying TORQUE will immediately start another TORQUE measurement cycle.
5. Recall Peak TORQUE Reading
   To recall last peak TORQUE measurement, press and hold **BACKLIGHT** button for approximately 3 seconds. Peak TORQUE will flash for 10 seconds.

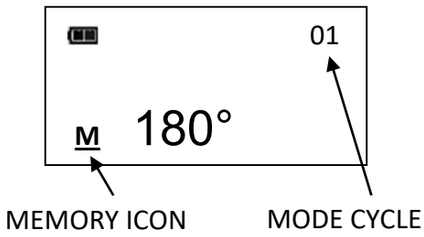
Angle Mode

Note: Do not apply torque while torque and angle are zeroing otherwise torque zero offset will be incorrect and wrench will indicate an angle reading when torque is released. If this occurs, re-zero wrench by momentarily pressing **POWER** *button with wrench setting on a stable surface with no torque applied.*

1. Angle Zero
   If "ANGLE ZERO REQ" message is displayed, wait 2 seconds for automatic angle zeroing sequence before applying torque or moving wrench.
2. Set target.
   Use **UP** ▲**/DOWN** ▼ buttons to change target ANGLE value.
3. Apply Torque and Rotate Wrench.
   Grasp center of handle, (DO NOT pull on battery end-cap) and slowly apply torque to fastener and rotate wrench at a moderate consistent speed until progress lights display green and a ½ second audible alert and handle vibration alerts user to stop.
4. Release torque.
   Note alternating peak TORQUE and ANGLE readings flashing on LCD display for 10 seconds. Pressing **BACKLIGHT** button while peak angle is flashing will continue to display value until button is released. Momentarily press **UP** ▲**/DOWN** ▼**, ENTER** ↵ or **UNITS** **U** button to immediately return to target ANGLE screen. Reapplying torque (ratcheting) before target screen is displayed will continue ANGLE accumulation as wrench is rotated.
5. Recall Peak ANGLE Reading
   To recall last peak ANGLE measurement, press and hold **BACKLIGHT** button for approximately 3 seconds. Peak TORQUE and ANGLE will be displayed alternately for 10 seconds**.**

Mode Cycle Count

TechAngle® mode cycle count feature is used to indicate number of times wrench has reached target torque in torque measurement mode or target angle in angle measurement mode.



Torque and Angle Mode Cycle Counting

1. Numerical counter located in top right of target torque or target angle screen will increment after each torque or angle cycle if applied torque or angle has reached target value.
2. When toggling between torque mode or angle mode using **ENTER** ↵ button or if target is changed, numerical counter will reset back to 00. Counter WILL NOT reset when re-zeroing, on menu entry/exit or power down.
3. Memory icon will turn on indicating at least one torque or angle cycle data has been stored in memory.

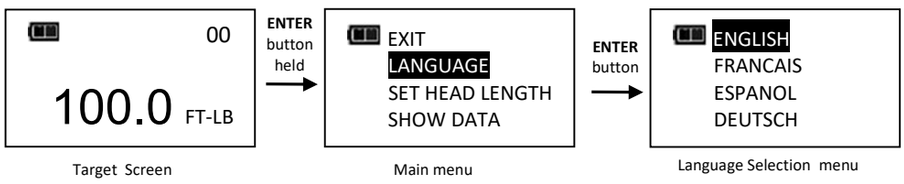
Main Menu

Main menu displays wrench operational information.

1. From target torque or angle screen, press and hold **ENTER** ↵ button for 3 seconds.
2. Use **UP** ▲ **/DOWN** ▼ buttons to highlight menu selection then press **ENTER** ↵ button.

   Menu Selections:

   - EXIT - Exits Main menu and returns to target screen.
   - LANGUAGE - Displays language selection menu.
   - SET HEAD LENGTH - Displays wrench head length entry screen.
   - SHOW DATA - Displays stored torque and angle data.
   - CLEAR DATA - Clears stored torque and angle data.
   - CYCLE COUNT - Displays torque/angle cycle count screen.
   - SETTINGS - Displays advanced settings menu (see Advanced Settings Section).
   - CONFIGURE - Displays advanced configuration menu (see Advanced Configuration Section).
3. To select the menu language, press the **ENTER** button while LANGUAGE is highlighted then highlight the desired language and press the **ENTER** button



Note: If French, Spanish or German language is selected, decimal mark selection menu is displayed. Comma or decimal point can be selected. English defaults to decimal point.

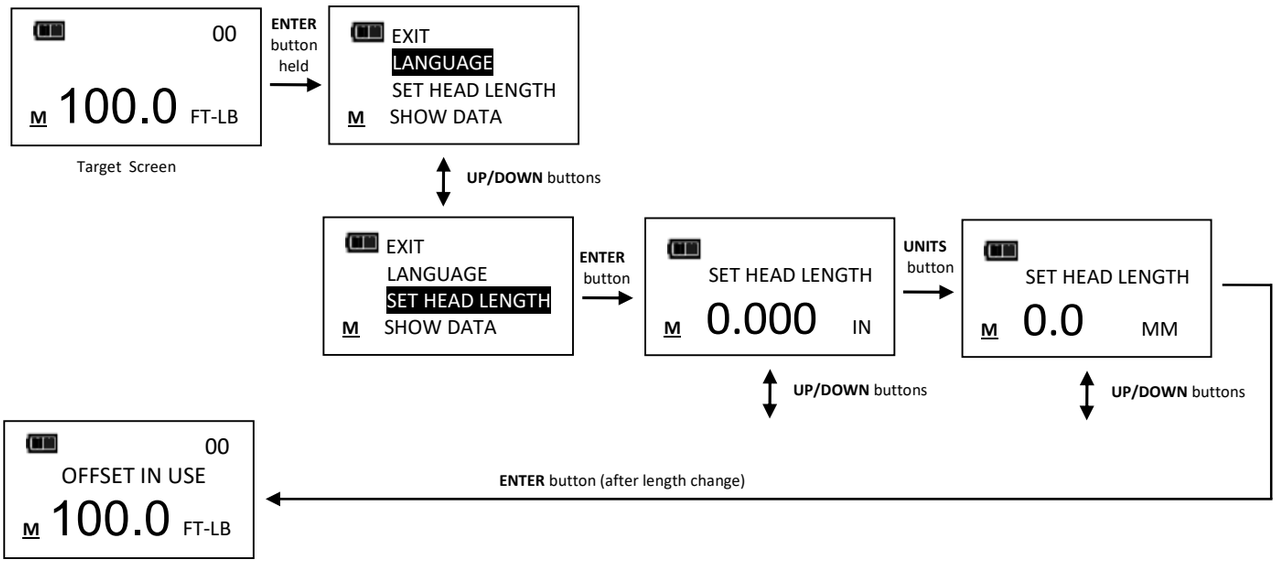
4. To exit Main menu and return to target torque or angle screen, press **ENTER** ↵ button while EXIT menu selection is highlighted.

Setting Head Length

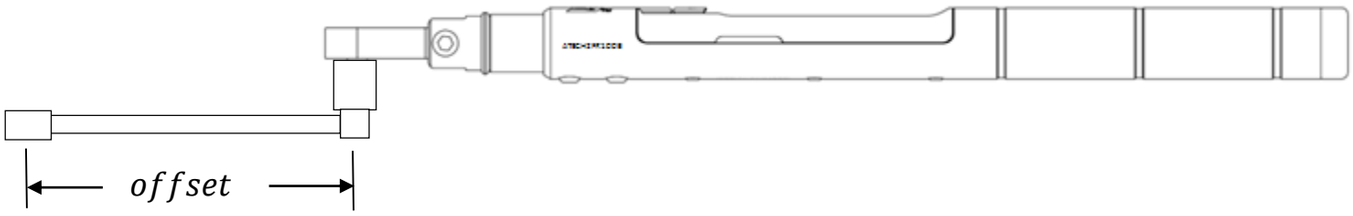
Note: If an adapter or extension is added to wrench, length of adapter/extension being used can be entered to correct for a different length than head used to calibrate wrench without requiring re-calibration.

1. To enter a head length, from target torque or angle screen, press and hold **ENTER** ↵ button for 3 seconds.
2. With SET HEAD LENGTH menu selection highlighted, momentarily press **ENTER** ↵ button.
3. Set Head Length screen is displayed next. Default head length is length of head at calibration. Use **UP** ▲ **/DOWN** ▼ buttons to increment/decrement head length.
4. Pressing and holding **UP** ▲ **/DOWN** ▼ buttons will progressively increment/decrement value faster. Pressing **UP** ▲ and **DOWN** ▼ buttons simultaneously will reset head length to zero.
5. Default units of length is in inches. Press **UNITS** **U** button to change to millimeters.

6. Pressing **ENTER** ↵ button after length is set returns to main menu. If length is changed from default, "OFFSET IN USE" message will be displayed on target screen.

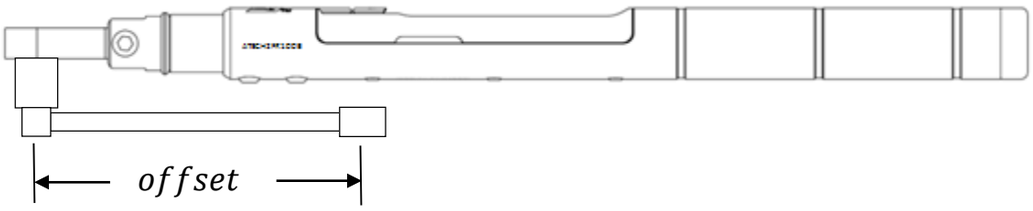


Note: Head length entered is offset length measured from center of drive to center of fastener.



Use of Negative Offsets

Note: Enter a negative value for offset when used in reverse direction.



When length of an offset is negative, maximum fastener target is limited by following formulas:

100 ft-lb wrench:
Maximum Target Torque =
offset * 8 + 100

Offset	Max Target
-1"	92 ft-lb
-2"	84 ft-lb
-3"	76 ft-lb
-4"	68 ft-lb

250 ft-lb wrench:
Maximum Target Torque =
offset * 12 + 250

Offset	Max Target
-1"	238 ft-lb
-2"	226 ft-lb
-3"	214 ft-lb
-4"	202 ft-lb

600 ft-lb wrench:
Maximum Target Torque =
offset * 14 + 600

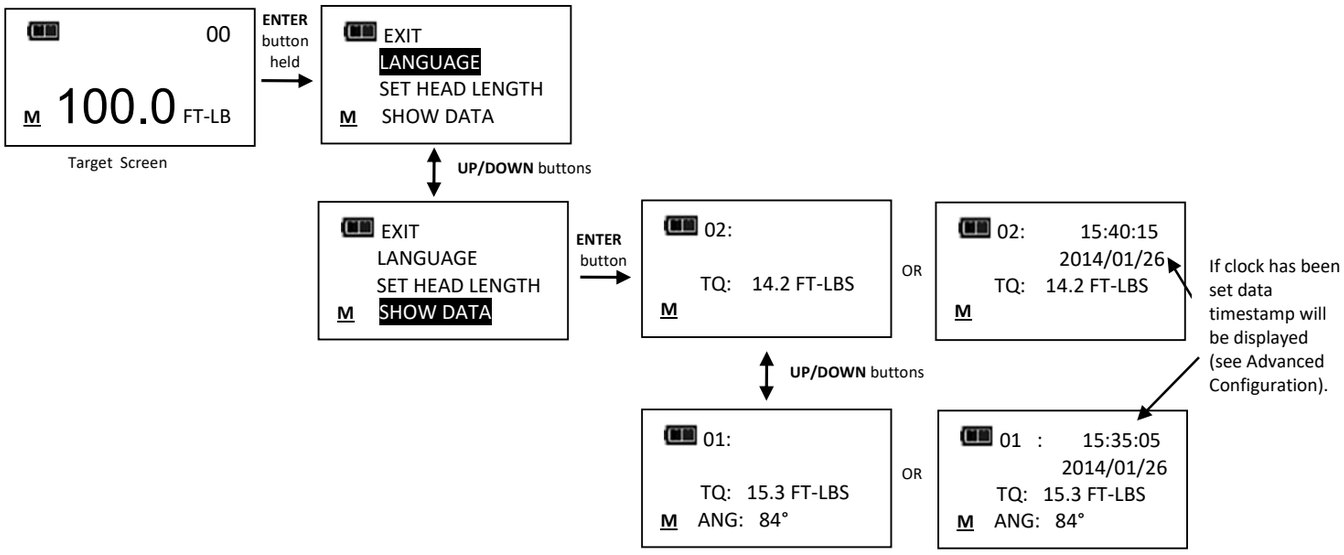
Offset	Max Target
-1"	586 ft-lb
-2"	572 ft-lb
-3"	558 ft-lb
-4"	544 ft-lb

Note: When using a negative offset, entering a target torque greater than maximum values above may cause an overtorque error before reaching fastener target torque and possibly damage wrench.

Viewing Stored Torque and Angle Data

Torque data is stored in memory after each torque cycle if applied torque has reached target value. Torque and angle data is stored in memory after each angle cycle if applied angle has reached target value. Memory Indicator is displayed when data is stored in non-volatile memory.

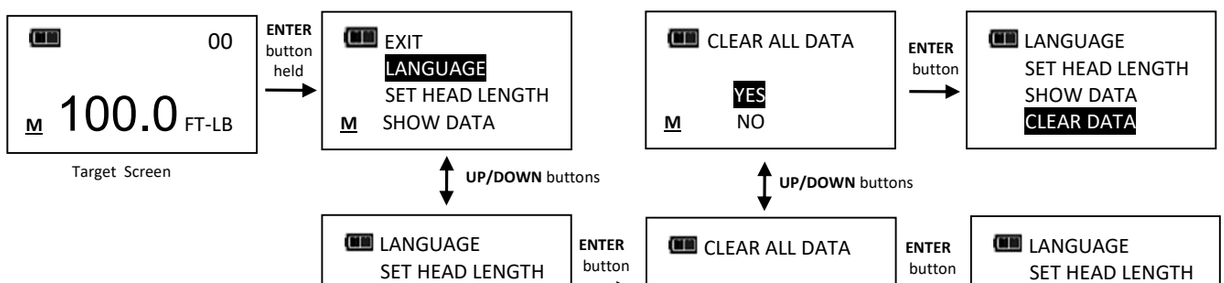
1. To view stored torque and angle data, from target torque or angle screen, press and hold **ENTER** ↵ button for 3 seconds.
2. Highlight SHOW DATA menu selection by pressing **UP** ▲**/DOWN** ▼ buttons then press **ENTER** ↵ button to display Show Data screen. To view stored torque and angle data, from target torque or angle screen, press and hold **ENTER** ↵ button for 3 seconds.
3. Highlight SHOW DATA menu selection by pressing **UP** ▲**/DOWN** ▼ buttons then press **ENTER** ↵ button to display Show Data screen.
4. In Show Data screen, scroll through each stored data record by pressing **UP** ▲**/DOWN** ▼ buttons.
   Example: 02 = Show Data List Counter: TQ = Peak torque value
   01 = Show Data List Counter: TQ = Peak torque value: ANG = Peak angle value
5. Pressing **ENTER** ↵ button while on Show Data screen returns to main menu.



Note: A maximum of 50 data records can be stored in memory. Memory full icon will be displayed when full. New data will replace oldest record until memory is cleared.

Deleting Stored Torque and Angle Data

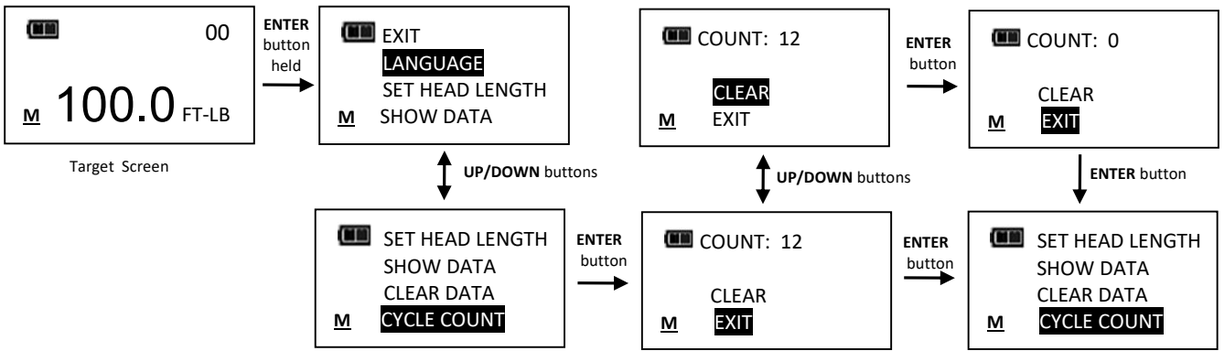
1. From target torque or angle screen, press and hold **ENTER** ↵ button for 3 seconds.
2. Highlight CLEAR DATA menu selection using **UP** ▲**/DOWN** ▼ buttons then press **ENTER** ↵ button to display CLEAR ALL DATA screen.
3. In CLEAR ALL DATA screen, highlight YES menu selection to delete all stored data, or NO menu selection to exit without deleting data.
4. Press **ENTER** ↵ button after making selection.



Viewing and Clearing Wrench Cycle Counter

Each time torque or angle target is reached, wrench cycle counter is incremented. Maximum cycle count is 999999.

1. From target torque or angle screen, press and hold **ENTER** ↵ button for 3 seconds.
2. Highlight CYCLE COUNT menu selection using **UP** ▲**/DOWN** ▼ buttons.
3. Press **ENTER** ↵ button to display COUNT screen.
4. To exit CYCLE COUNT screen without clearing count, press **ENTER** ↵ button while EXIT menu selection is highlighted.
5. To reset wrench cycle count to 0, highlight CLEAR menu selection then press **ENTER** ↵ button.
6. EXIT menu selection is automatically highlighted after count is cleared. Press **ENTER** ↵ button to return to main menu.



Target Presets (PSET)

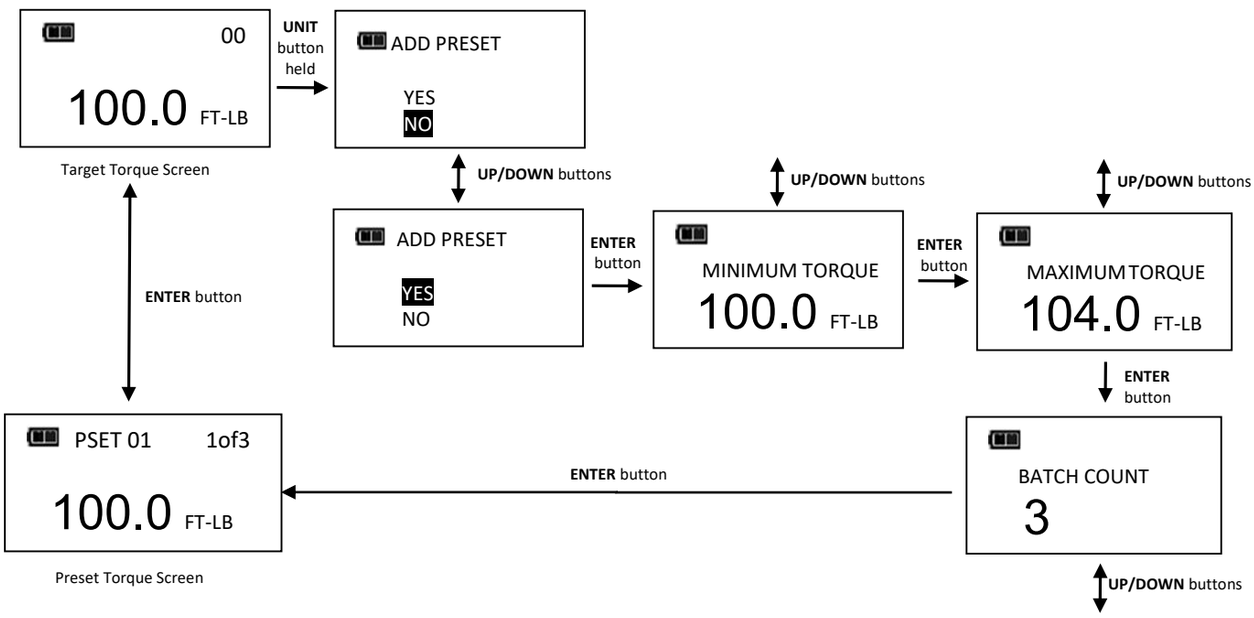
PSET function gives user ability to configure 10 preset target torque or target angle settings, each with a minimum (target), maximum (over range) and batch count value. PSETs are stored in non-volatile memory so that they are retained while power is off.

Adding a Torque Preset

1. From target torque screen, select units of measure.
2. Press and hold **UNITS** U button for 3 seconds.
3. ADD PRESET confirmation screen is displayed. Highlight YES menu selection using **UP** ▲**/DOWN** ▼ buttons then press **ENTER** ↵ button**.** NO menu selection returns to main menu without adding a PSET.
4. MINIMUM TORQUE is target value at which green progress lights, audible alert and vibrator turn on. Initial MINIMUM TORQUE value is value from target torque screen. MINIMUM TORQUE can be set to any value within wrench torque range by pressing **UP** ▲**/DOWN** ▼ buttons. Once desired target torque value has been set, press **ENTER** ↵ button**.**
5. MAXIMUM TORQUE screen is displayed next. MAXIMUM TORQUE is torque value above which red progress lights turn on. Initial MAXIMUM TORQUE value will be MINIMUM TORQUE plus 4%. Maximum torque value can be set greater than MINIMUM TORQUE value to 10% above wrench maximum range by pressing **UP** ▲**/DOWN** ▼ buttons. Once desired value has been set, press **ENTER** ↵ button**.**
6. BATCH COUNT screen is displayed next. Default value is zero. Batch count range is 0 to 99. Press **UP** ▲**/DOWN** ▼ buttons to increment/decrement batch count. Mode Count increments each

time target torque is reached if a batch count of zero is entered. Mode Count decrements if a non-zero batch count is entered and resets to batch count value when count reaches zero. Once desired value has been set, press **ENTER** ↵ button**.**

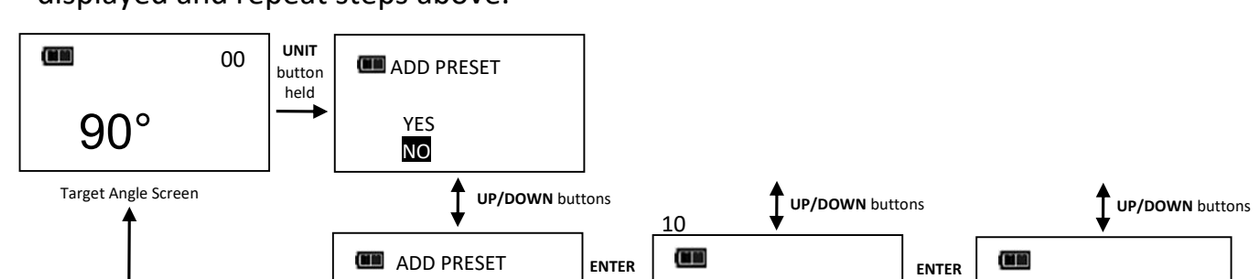
7. PSET target screen is displayed labeled with next available PSET number from 01 to 10.
8. To enter additional torque presets, repeatedly press **ENTER** ↵ button until target torque screen is displayed and repeat steps above.



Note: To select a stored PSET or manual target torque or angle mode, repeatedly press **ENTER** ↵ *button until desired PSET or manual mode is displayed.*

<u>Adding an Angle Preset</u>

1. From target angle screen, press and hold **UNITS** **U** button for 3 seconds.
2. ADD PRESET confirmation screen is displayed. Highlight YES menu selection using **UP** ▲**/DOWN** ▼ buttons then press **ENTER** ↵ button**.** NO menu selection returns to main menu without adding a PSET.
3. MINIMUM ANGLE screen is displayed. MINIMUM ANGLE is target value at which green progress lights, audible alert and vibrator turn on. Initial MINIMUM ANGLE value is value from target angle screen. MINIMUM ANGLE can be set from 0 to 360° by pressing **UP** ▲**/DOWN** ▼ buttons. Once desired target angle value has been set, press **ENTER** ↵ button**.**
4. MAXIMUM ANGLE screen is displayed next. MAXIMUM ANGLE is angle value above which red progress lights turn on. Initial MAXIMUM ANGLE value will be MINIMUM ANGLE plus 4%. Maximum angle value can be set to any value greater than MINIMUM ANGLE by pressing **UP** ▲**/DOWN** ▼ buttons. Once desired value has been set, press **ENTER** ↵button**.**
5. BATCH COUNT screen is displayed next. Default value is zero. Batch count range is 0 to 99. Press **UP** ▲**/DOWN** ▼ buttons to increment/decrement batch count. Mode Count increments each time target angle is reached if a batch count of zero is entered. Mode Count decrements if a non-zero batch count is entered and resets to batch count value when count reaches zero. Once desired value has been set, press **ENTER** ↵button**.**
6. PSET target screen is displayed labeled with next available PSET number from 01 to 10.
7. To enter additional angle presets, repeatedly press **ENTER** ↵button until target angle screen is displayed and repeat steps above.

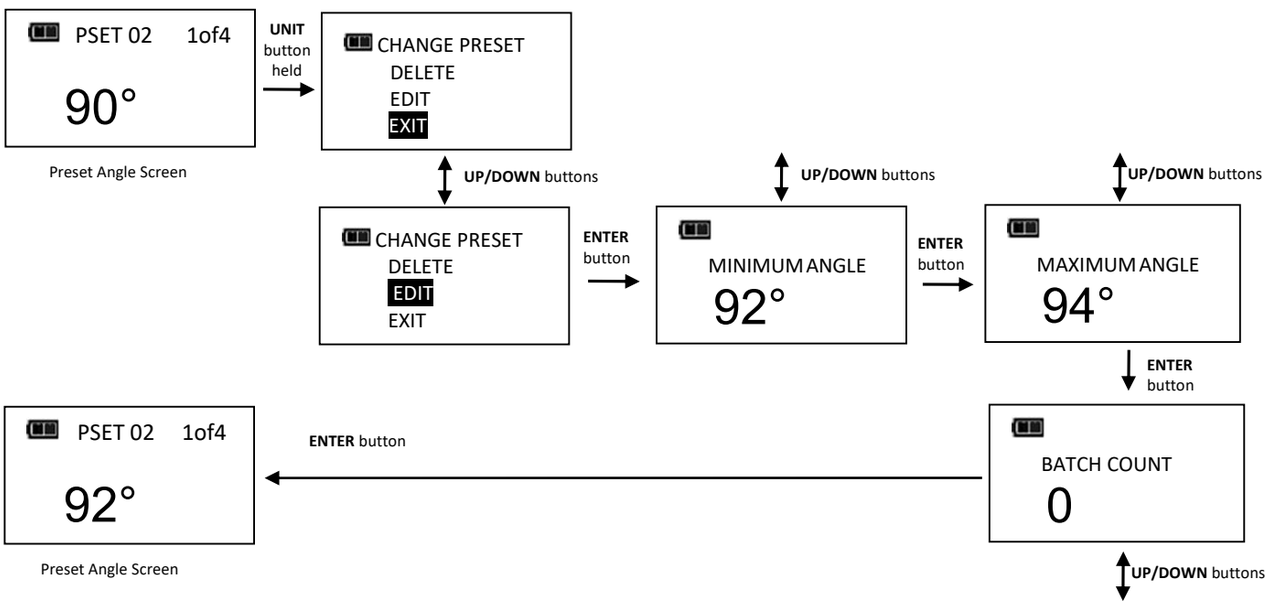


Note: To select a stored PSET or manual target torque or angle mode, repeatedly press **ENTER** ↵ *button until desired PSET or manual mode is displayed.*

Editing a Preset

Edit PSET function gives user ability to edit stored PSETS on wrench.

1. From Preset screen to be edited, press and hold **UNITS** **U** button for 3 seconds.
2. CHANGE PRESET screen is displayed.
3. Highlight EDIT selection using **UP** ▲**/DOWN** ▼ buttons then press **ENTER** ↵button.
4. MINIMUM TORQUE or ANGLE screen is displayed. Value can be changed by pressing **UP** ▲**/DOWN** ▼ buttons. Once desired target torque or angle value has been set, press **ENTER** ↵button**.**
5. MAXIMUM TORQUE or ANGLE screen is displayed next. Value can be changed by pressing **UP** ▲**/DOWN** ▼ buttons. Once desired target torque or angle value has been set, press **ENTER** ↵button**.**
6. BATCH COUNT screen is displayed next. Value can be changed by pressing **UP** ▲**/DOWN** ▼ buttons. Once desired batch count value has been set, press **ENTER** ↵button**.**
7. PSET target screen is displayed labeled with same PSET number.

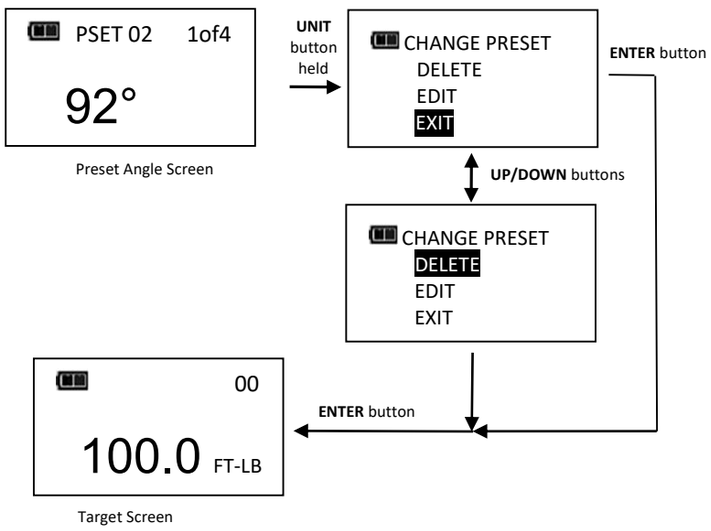


Note: Pressing **ENTER** ↵ *button while* EXIT *menu selection is highlighted will exit without editing PSET.*

Deleting a Preset

Delete PSET function allows user to remove stored presets from wrench.

1. From Preset screen to be deleted, press and hold **UNITS** **U** button for 3 seconds.
2. CHANGE PRESET screen is displayed.
3. Highlight DELETE menu selection using **UP** ▲**/DOWN** ▼ buttons and press **ENTER** ↵ button**.**
4. Target screen is displayed and deleted PSET is no longer available for selection.



Note: Pressing **ENTER** ↵ *button while* EXIT *menu selection is highlighted will exit without deleting PSET.*

Note: When a PSET is deleted, all other stored PSET's will retain their original PSET numbers. When a new PSET is entered, it will be assigned first available PSET number in sequence.

• Advanced Settings

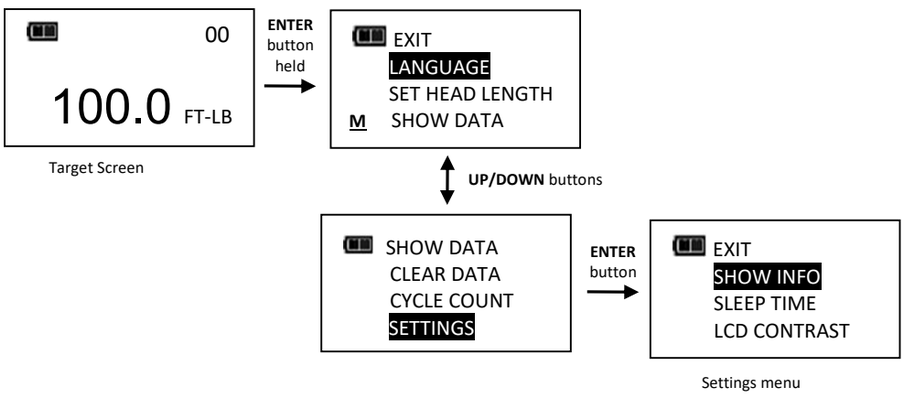
Accessing Advanced Settings

Advanced settings are accessed from SETTINGS menu selection on main menu.

1. From target torque or angle screen, press and hold **ENTER** ↵ button for 3 seconds.
2. Highlight SETTINGS menu selection using **UP** ▲**/DOWN** ▼ buttons.
3. Press **ENTER** ↵ button to display Settings menu.

   Menu Selections:

   - EXIT - Exits Settings menu and returns to target screen.
   - SHOW INFO - Displays wrench operational information.
   - SLEEP TIME - Displays power down interval setup screen.
   - LCD CONTRAST - Displays LCD contrast setup screen.
   - KEY BEEP - Displays button press beep enable/disable setup screen.
   - AUTO BACKLIGHT - Displays auto backlight enable/disable screen to turn on backlight during measurement.
   - TOGGLE BACKLGHT - Displays B**ACKLIGHT** button toggle or timeout enable/disable screen.
   - VIBRATOR CONFIG - Displays vibrator ON/OFF configuration for when target reached.
4. To exit Settings menu and return to target torque or angle screen, press **ENTER** ↵ button while EXIT menu selection is highlighted.



Note: All user configurable settings are stored in non-volatile memory and are retained while power is off.

Show Info

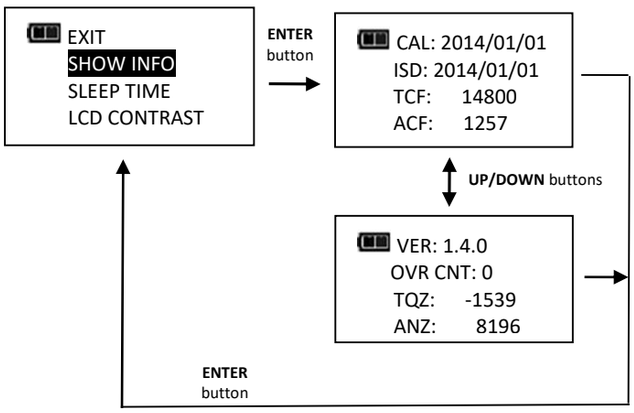
Show Info menu selection displays wrench operational information.

1. From Settings menu, press **ENTER** ↵ button while SHOW INFO selection is highlighted.
2. SHOW INFO screen is displayed.
3. **UP** ▲**/DOWN** ▼ buttons are used to scroll screen.

   Operational Information:

- CAL: Date of last wrench calibration.
- ISD: In-Service Date.
- TCF: Torque Calibration Factor.
- ACF: Angle Calibration Factor.
- VER: Software version.
- OVR CNT: Overtorque Counter tracks how many times an over-torque event occurred on wrench (torque >125% of full scale).
- TQZ: Torque Zero Offset.
- ANZ: Angle Zero Offset.

4. Pressing **ENTER** ↵ button exits Show Info screen and returns to Settings menu.



Setting Sleep Time

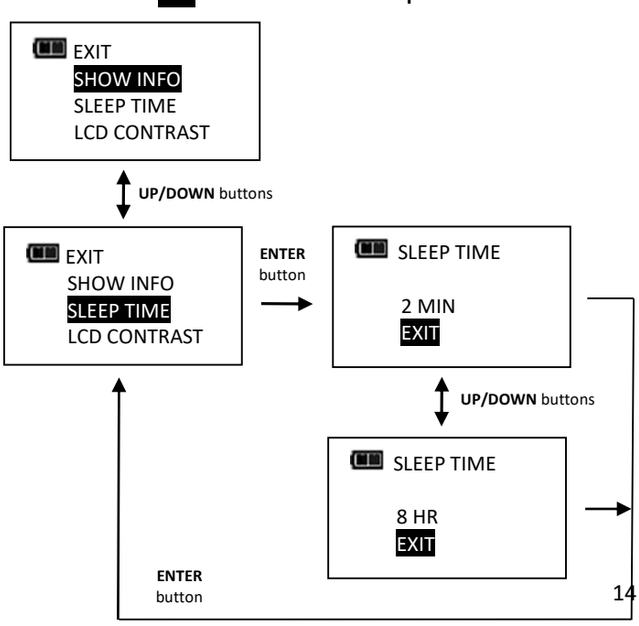
This function will allow user to set interval wrench enters power-down state following last applied torque or button press.

1. From Settings menu, use **UP** ▲**/DOWN** ▼ buttons to highlight SLEEP TIME selection then press **ENTER** ↵ button.
2. SLEEP TIME screen is displayed.
3. Use **UP** ▲**/DOWN** ▼ buttons to select sleep interval.

   Selectable Intervals:

   - 2 MIN (factory default)
   - 5 MIN
   - 10 MIN
   - 30 MIN
   - 1 HR
   - 2 HR
   - 8 HR

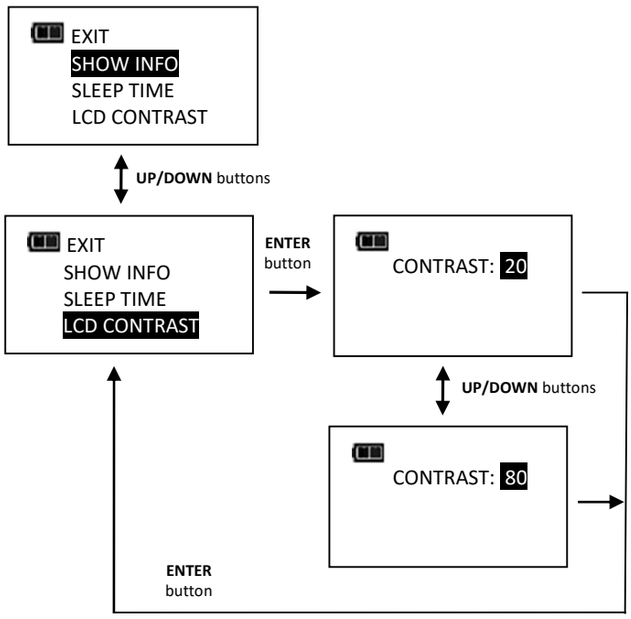
4. Press **ENTER** ↵ button to accept selection and exit to Settings menu.



Setting LCD Contrast

This function will allow user to set LCD contrast for optimal viewing.

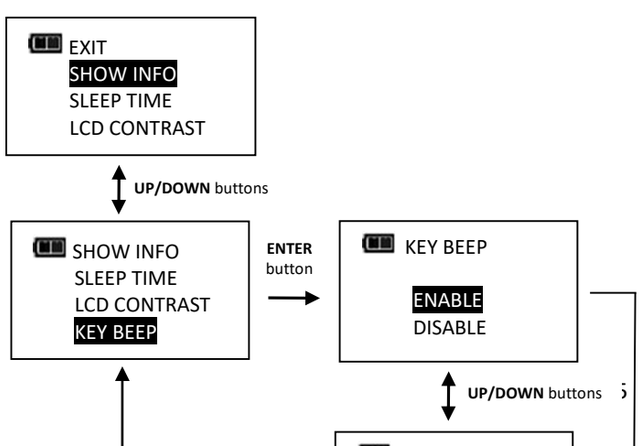
1. From Settings menu, use **UP ▲/DOWN ▼** buttons to highlight LCD CONTRAST selection then press **ENTER ↵** button.
2. CONTRAST screen is displayed.
3. Use **UP ▲/DOWN ▼** buttons while viewing display to change contrast to desired level.
   Selectable levels: 20 to 80 in increments of 5 (factory default = 40).
4. Press **ENTER ↵** button to accept selection and exit to Settings menu.



Key Beep Setup

This function will allow user to enable or disable audio feedback when a button is pressed.

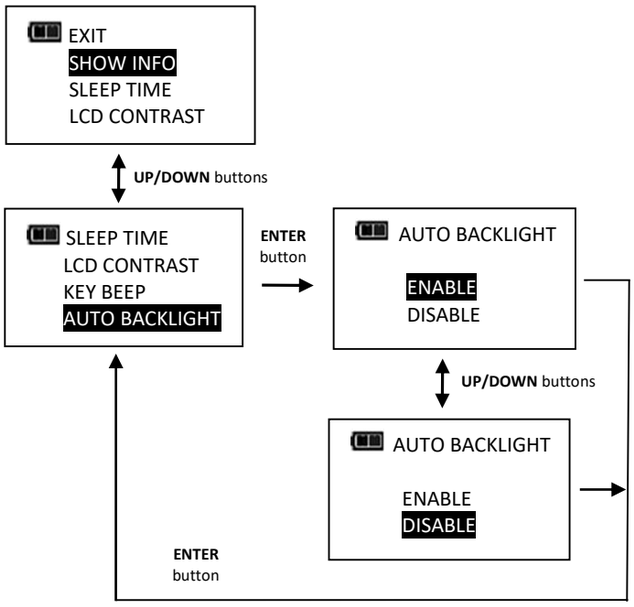
1. From Settings menu, use **UP ▲/DOWN ▼** buttons to highlight KEY BEEP selection then press **ENTER ↵** button.
2. KEY BEEP screen is displayed.
3. Use **UP ▲/DOWN ▼** buttons to highlight ENABLE (factory default) or DISABLE selection.
4. Press **ENTER ↵** button to accept selection and exit to Settings menu.



Auto Backlight Setup

This function will allow user to enable or disable backlight from turning on during torque or angle measurement.

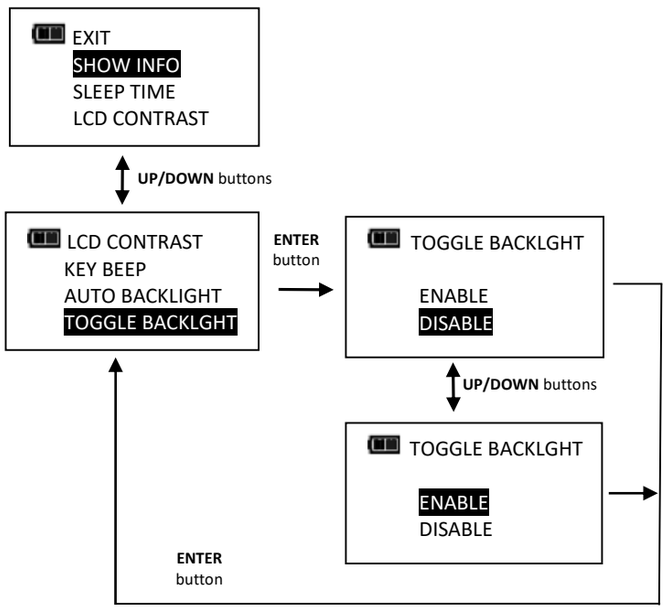
1. From Settings menu, use **UP ▲/DOWN ▼** buttons to highlight AUTO BACKLIGHT selection then press **ENTER ↵** button.
2. AUTO BACKLIGHT screen is displayed.
3. Use **UP ▲/DOWN ▼** buttons to highlight ENABLE (factory default) or DISABLE selection.
4. Press **ENTER ↵** button to accept selection and exit to Settings menu.



Toggle Backlight Setup

This function will allow user to enable or disable backlight toggle function. If toggle mode is disabled, **BACKLIGHT** button turns on backlight and it automatically turns off after five seconds following any last button press. If toggle mode is enabled, a **BACKLIGHT** button press will turn on backlight and it will remain on until next **BACKLIGHT** button press.

1. From Settings menu, use **UP ▲/DOWN ▼** buttons to highlight TOGGLE BACKLGHT selection then press **ENTER ↵** button.
2. TOGGLE BACKLGHT screen is displayed.
3. Use **UP ▲/DOWN ▼** buttons to highlight ENABLE or DISABLE (factory default) selection.
4. Press **ENTER ↵** button to accept selection and exit to Settings menu.



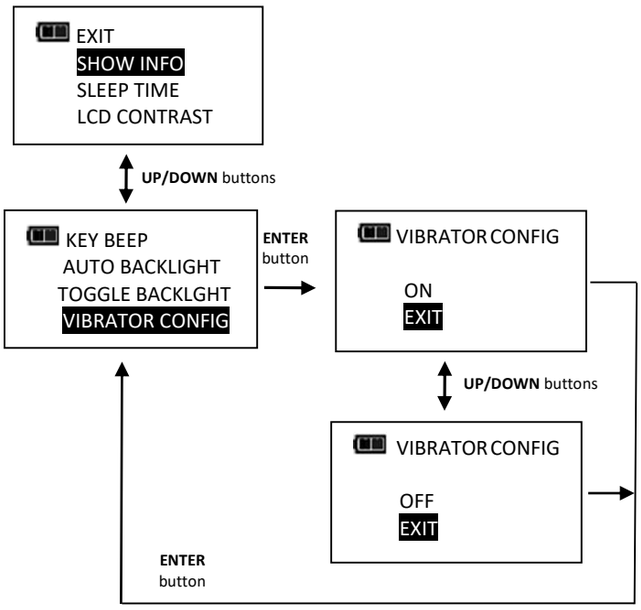
Note: Backlight will turn off when wrench powers down either by **POWER** *button press or sleep time.*

Note: If toggle backlight is enabled and backlight is on, backlight will remain on during and after applying torque.

Vibrator Configuration

This function will allow user to configure vibrator for On or Off when target is reached for preference and/or battery power savings.

1. From Settings menu, use **UP ▲/DOWN ▼** buttons to highlight VIBRATOR CONFIG selection then press **ENTER ↵** button.
2. VIBRATOR CONFIG screen is displayed.
3. Use **UP ▲/DOWN ▼** buttons to toggle ON or OFF selection.
4. Press **ENTER ↵** button to accept selection and exit to Settings menu.



• Advanced Configuration

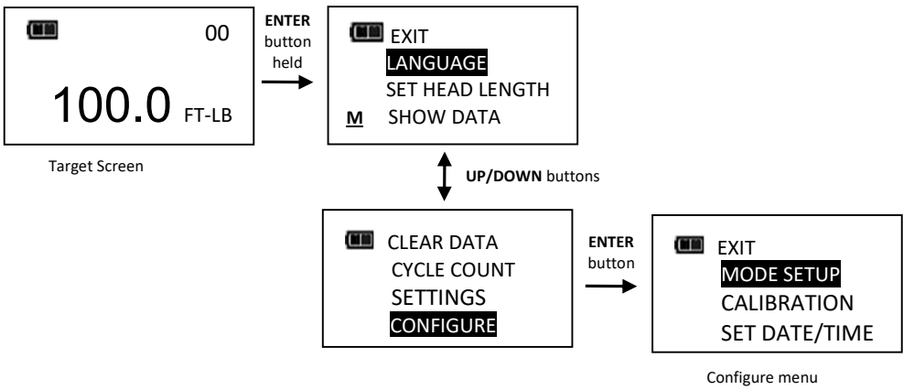
Accessing Advanced Configuration

Advanced configuration is accessed from CONFIGURE menu selection on main menu.

1. From target torque or angle screen, press and hold **ENTER** ↵ button for 3 seconds.
2. Highlight CONFIGURE menu selection using **UP** ▲**/DOWN** ▼ buttons.
3. Press **ENTER** ↵ button to display Configure menu.

   Menu Selections:

   - EXIT - Exits Configure menu and returns to target torque or angle screen.
   - MODE SETUP - Displays wrench mode setup menu.
   - CALIBRATION - Displays wrench calibration menu (password protected).
   - SET DATE/TIME - Displays clock date and time entry screens.
   - SET CAL INTRVAL - Displays calibration interval setup screen (requires clock date and time setup).
4. To exit Configure menu and return to target torque or angle screen, press **ENTER** ↵ button while EXIT menu selection is highlighted.



Note: All user configurable settings are stored in non-volatile memory and are retained while power is off.

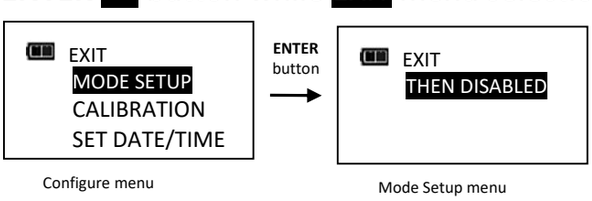
Mode Setup

Mode setup menu allows user to enable/disable Torque THEN angle mode.

1. From Configure menu, press **ENTER** ↵ button while MODE SETUP selection is highlighted.
2. Mode Setup menu is displayed.

   Menu Selections:

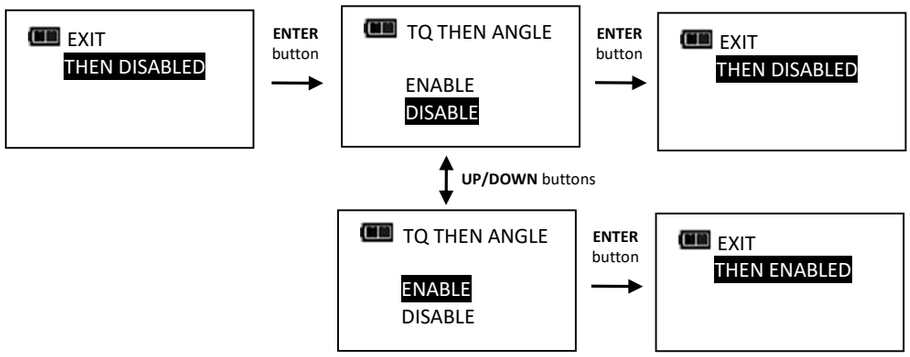
   - EXIT - Exits Mode setup menu and returns to Configure menu screen.
   - THEN DISABLED - Displays THEN Mode enable/disable screen.
3. Use **UP** ▲**/DOWN** ▼ buttons to highlight menu selections.
4. Press **ENTER** ↵ button while EXIT menu selection is highlighted to return to Configure menu.



Enable/Disable Torque THEN Angle Mode

This function will allow user to enable or disable Torque THEN Mode.

1. From Mode Setup menu, use **UP** ▲**/DOWN** ▼ buttons to highlight THEN DISABLED selection (factory default) then press **ENTER** ↵ button.
2. TQ THEN ANGLE enable/disable screen is displayed.
3. Use **UP** ▲**/DOWN** ▼ buttons to select ENABLE or DISABLE selection.
4. Press **ENTER** ↵ button to accept selection and exit to Mode Setup menu.

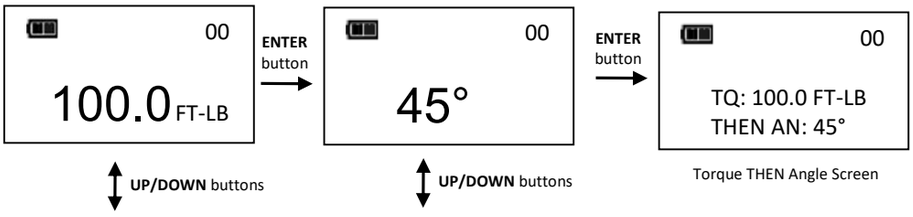


Note: Menu selection indicates current configuration (ENABLED or DISABLED).

Torque THEN Angle Mode

Torque THEN Angle mode is setup by first setting a target torque and units then a target angle before selecting Torque THEN Angle mode. In Torque THEN Angle mode, when applied torque reaches target torque, wrench automatically switches to angle mode for angle measurement. Progress lights indicate applied torque progress while torque is measured and angle when angle is measured.

1. From target torque screen, use **UP ▲/DOWN ▼** buttons to set target torque and **UNITS U** button to select torque measurement units then press **ENTER ↵** button.
2. Angle target screen is displayed. Use **UP ▲/DOWN ▼** buttons to set target angle then press **ENTER ↵** button.
3. Torque THEN Angle mode screen is displayed.
4. Apply torque until target is reached then rotate wrench to target angle.



Note: **UNITS U** *button can be used to select torque units while on Torque THEN Angle screen.*

Note: Torque THEN Angle Presets are entered by pressing and holding Units button while on Torque THEN Angle screen. Refer to "Adding a Torque Preset" and "Adding an Angle Preset" in Basic section for parameter entry.

Note: Torque cycle is not recorded in memory unless both torque and angle reach targets.

Note: Red and yellow progress lights turn on if torque exceeds 110% of wrench full scale or if angle exceeds target plus 4% in manual mode.

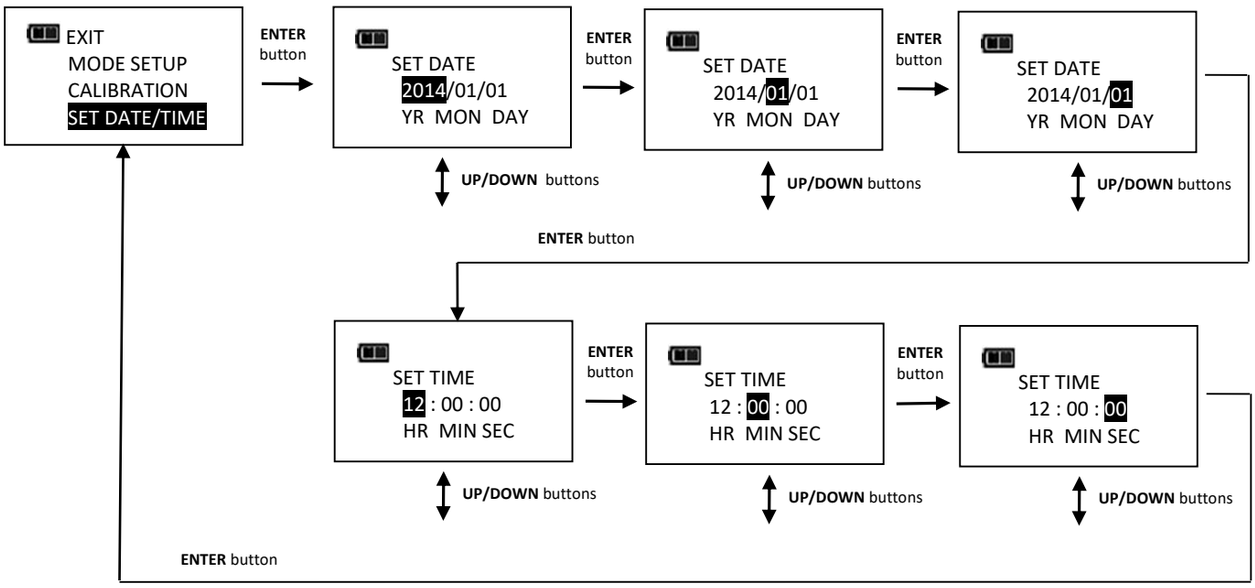
Note: Red and yellow progress lights turn on if torque exceeds maximum torque or if angle exceeds maximum angle in Preset mode.

Setting Date and Time

Set Date/Time function allows user to set real-time-clock date and time for time stamping data records, recording last calibration date and notifying user of an expired calibration interval.

Note: When date and time is set for first time, In-Service date is also set and is used for calculating initial calibration interval (see "Setting Calibration Interval" in Advanced Configuration section).

1. From Configure menu, use **UP ▲/DOWN ▼** buttons to highlight SET DATE/TIME selection then press **ENTER ↵** button.
2. SET DATE screen is displayed with year highlighted.
3. Use **UP ▲/DOWN ▼** buttons to set year then press **ENTER ↵** button to highlight month.
4. Use **UP ▲/DOWN ▼** buttons to set month then press **ENTER ↵** button to highlight day.
5. Use **UP ▲/DOWN ▼** buttons to set day then press **ENTER ↵** button.
6. SET TIME screen is displayed with Hour highlighted.
7. Use **UP ▲/DOWN ▼** buttons to set hour then press **ENTER ↵** button to highlight minutes.
8. Use **UP ▲/DOWN ▼** buttons to set minutes then press **ENTER ↵** button to highlight seconds.
9. Use **UP ▲/DOWN ▼** buttons to set seconds then press **ENTER ↵** button.
10. Clock is set and Configure menu is displayed.



Note: Year selection will scroll up from 2014. Month selection will scroll from 1 to 12. Day selection will scroll from 1 to 31.

Note: Hour selection will scroll through 0 to 23. Minute and Second selections will scroll through 0 to 59.

Note: If batteries are removed from wrench for longer than 20 minutes, clock will revert to default settings and must be re-entered at power on.

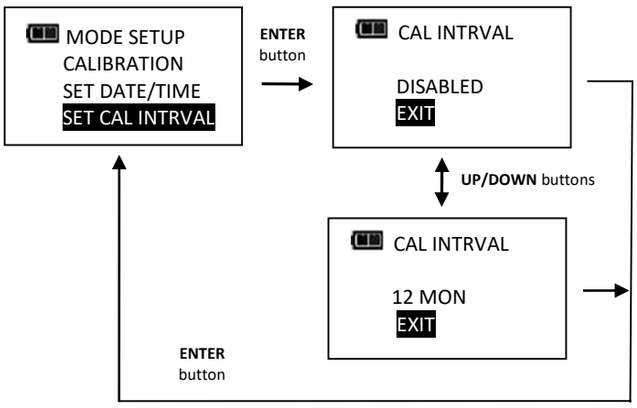
Setting Calibration Interval

This function will allow user to set calibration interval for when "CAL NEEDED" message will be displayed.

1. From Configure menu, use **UP ▲/DOWN ▼** buttons to highlight SET CAL INTRVAL selection then press **ENTER ↵** button.
2. CAL INTERVAL screen is displayed.
3. Use **UP ▲/DOWN ▼** buttons to change calibration interval.

   Selectable Intervals:

   - DISABLED (factory default)
   - 3 MON
   - 6 MON
   - 12 MON
4. Press **ENTER ↵** button to accept selection and exit to Configure menu.



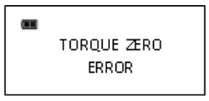
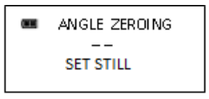
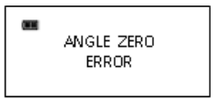
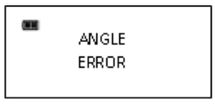
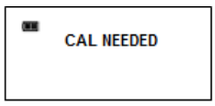
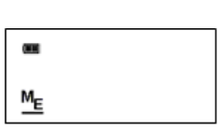
Note: Clock Date and Time must be set before calibration interval will function. If batteries are removed from wrench for longer than 20 minutes, clock will revert to default settings and must be re-entered at power on.

Note: Calibration interval is calculated from either In-Service Date or last Calibration date (see SHOW INFO menu) depending on which is more recent date. When clock Date is greater than In-Service or Last Calibration date, plus Cal Interval, "CAL NEEDED" message will be displayed on power up and after a re-zero. Pressing **ENTER** ↵ *button will continue to target menu. Applying torque while "CAL NEEDED" message is displayed will immediately display torque or angle measurement and return to target menu when released.*

Note: As an alternative to calibration interval, a Calibration Cycle Counter is provided in Calibration menu

• Troubleshooting

Note: If any of following issues persist, return wrench to an authorized Williams repair center.

Issue	Possible Cause	Resolution
Wrench does not turn on when **POWER** ⏻ button pressed	Dead/No batteries	Replace batteries
	Software glitch	Cycle power using end-cap
Torque reading out of spec	Calibration required	Recalibrate
	Incorrect head length entered	Enter correct offset head length
Wrench did not retain settings while batteries were removed	Batteries removed before settings were saved in non-volatile memory.	Clear data, re-enter settings and press and hold **POWER** ⏻ button to power down wrench before removing batteries
Torque or angle displayed while no torque applied	Torque or angle zeroed while torque applied	Place wrench on stable surface with no torque applied and press **POWER** ⏻ button to re-zero wrench
	Low battery	Press **ENTER** ↵ button to continue using wrench and replace batteries soon
	Dead battery	Press **POWER** ⏻ button to turn off wrench and replace batteries
	Torque applied while zeroing	Remove torque and re-zero
	Wrench over torqued	Recalibrate
	Wrench improperly calibrated	Recalibrate
	Torque sensor failure	Return to Williams Repair Center
	Wrench moving during zeroing	Place wrench on stable surface
	Gyro unstable	Return to Willams Repair Center
	**POWER** ⏻ button pressed during angle zeroing (Aborted zeroing to access menus)	Place wrench on stable surface and press **POWER** ⏻ button to re-zero
	Over 125% of full scale torque applied	Cycle power using **POWER** ⏻ button and recalibrate
	Wrench rotated too fast during angle measurement	Place wrench on stable surface and press **POWER** ⏻ button to re-zero
	Calibration interval exceeded or invalid date entered with calibration interval enabled	Calibrate wrench or press ENTER to continue. Disable calibration interval if not required.
	Memory failure	Clear data memory
	Torque uncalibrated	Calibrate torque

Issue	Possible Cause	Resolution
	Angle uncalibrated	Calibrate angle

- USE OF ADAPTORS, EXTENSIONS AND UNIVERSALS

Anytime an adaptor, extension or universal is used with a torque wrench in such a way that fastener distance is different than torque wrench square drive distance at calibration, an adjustment to head length is required to get a proper fastener torque reading.

When using wobble extension or a universal, do not exceed more than 15 degrees of offset from perpendicular drive. Do not use a long extension with flex-drive at full flex.

- MAINTENANCE / SERVICE

Clean wrench by wiping with a damp cloth. DO NOT use solvents, thinners or carburetor cleaners. DO NOT immerse in anything.

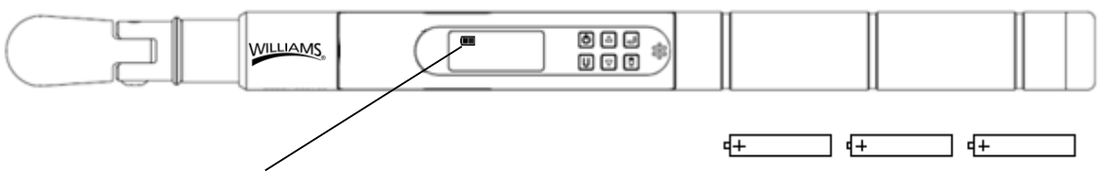
- Battery Replacement

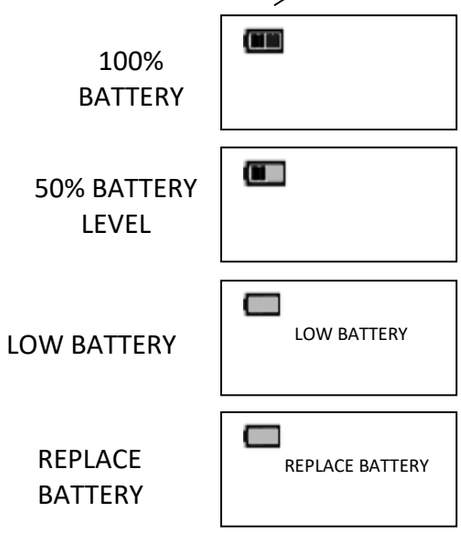
Replace with three "AA" cells only.

- Do not attempt to recharge alkaline cells.
- Do not mix different battery types.
- Replace all batteries at same time.
- Store wrench in dry place.
- Remove batteries when storing wrench unused longer than 3 months.

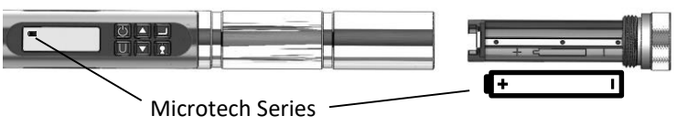
Note: When replacing batteries, real-time-clock will maintain date and time for 20 minutes.

Note: Turn End Cap counter-clockwise to unscrew.





UNSCREW END CAP
INSERT NEW CELLS
POSITIVE (+) END
INTO HANDLE FIRST



Microtech Series
Battery Configuration

Note: When Replace Battery screen is displayed wrench will no longer operate until batteries are replaced. Only **POWER** *button functions which immediately turns off wrench.*

- Memory Indicators

DATA IN MEMORY	M	Less than 50 torque and angle records
MEMORY FULL	M_F	50 torque or angle records stored in memory. Oldest record will be replaced by next record.
MEMORY ERROR	M_E	Memory read or write error.

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