

TECHANGLE® STEEL MICRO

ELECTRONIC TORQUE-ANGLE WRENCH

SAFETY INSTRUCTIONS

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IMPORTANT SAFETY INSTRUCTIONS



WARNING *Risk of flying particles.*

Over-torquing can cause breakage. Force against flex stops on flex head can cause head breakage. An out of calibration angle wrench can cause part or tool breakage. Broken hand tools, sockets or accessories can cause injury. Excess force can cause crowfoot or flare nut wrench slippage.



- ❑ Read **this manual completely** before using ELECTRONIC WRENCH.
- ❑ To ensure accuracy, work must not move in angle mode.
- ❑ For personal safety, and to avoid wrench damage, follow good professional tool and fastener installation practices.
- ❑ Periodic recalibration is necessary to maintain accuracy.
- ❑ **Wear safety goggles, user and bystanders.**



- ❑ Be sure all components, including all adaptors, extensions, drivers and sockets are rated to match or exceed torque being applied.
- ❑ Observe all equipment, system and manufacturer's warnings, cautions and procedures when using this wrench.
- ❑ Use correct size socket for fastener.
- ❑ Do not use sockets showing wear or cracks.
- ❑ Replace fasteners with rounded corners.
- ❑ **To avoid damaging wrench:** Never use wrench with power off. Always turn ON wrench so applied torque is being measured.



- ❑ Do not press **POWER** ⏻ while torque is applied or while wrench is in motion.
- ❑ Never use this wrench to break fasteners loose.
- ❑ Do not use extensions, such as a pipe, on handle of wrench.
- ❑ Check that wrench capacity matches or exceeds each application before proceeding.
- ❑ Verify calibration if dropped.
- ❑ Make sure ratchet direction lever is fully engaged in correct position.
- ❑ Verify calibration of wrench if you know or suspect its capacity has been exceeded.
- ❑ Do not force head of flex head drives against stops.
- ❑ Always pull - do not push - on wrench handle and adjust your stance to prevent a possible fall should something give.
- ❑ Do not attempt to recharge Lithium cells.
- ❑ Store wrench in dry place.
- ❑ Remove batteries when storing wrench for periods longer than 3 months.



WARNING *Electrical Shock Hazard.*

Electrical shock can cause injury. Plastic handle is not insulated.
Do not use on live electrical circuits.

SAVE THESE INSTRUCTIONS

Disclaimer

Operation of TechAngle® Steel Micro Wrench is not warranted in an EU member state if operating instructions are not in that State's language. Contact Snap-on if a translation is needed.

Specifications

Head Type

- Square drive 72 teeth, sealed flex.
- B.B. retention or quick release button.

Display

- DISPLAY TYPE: Dot Matrix LCD (168 x 48 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, Nm, Kg-cm, dNm) 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 – 10 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 ± 1° of test fixture

	CW	CCW	
Torque:	±2%	±3%	of reading, 20% to 100% of full scale
(unflexed)	±4%	±6%	of reading, 5% to 19% of full scale

Operating Temperature:	0°F to 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:	Single "AA" Lithium Cell, up to 40 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+4% for targets above 20% to 100% of F.S. or target+10% for targets from 5% to 20% of F.S, or exceeded MAXIMUM Preset target (Note: Yellow lights also turn on with red).

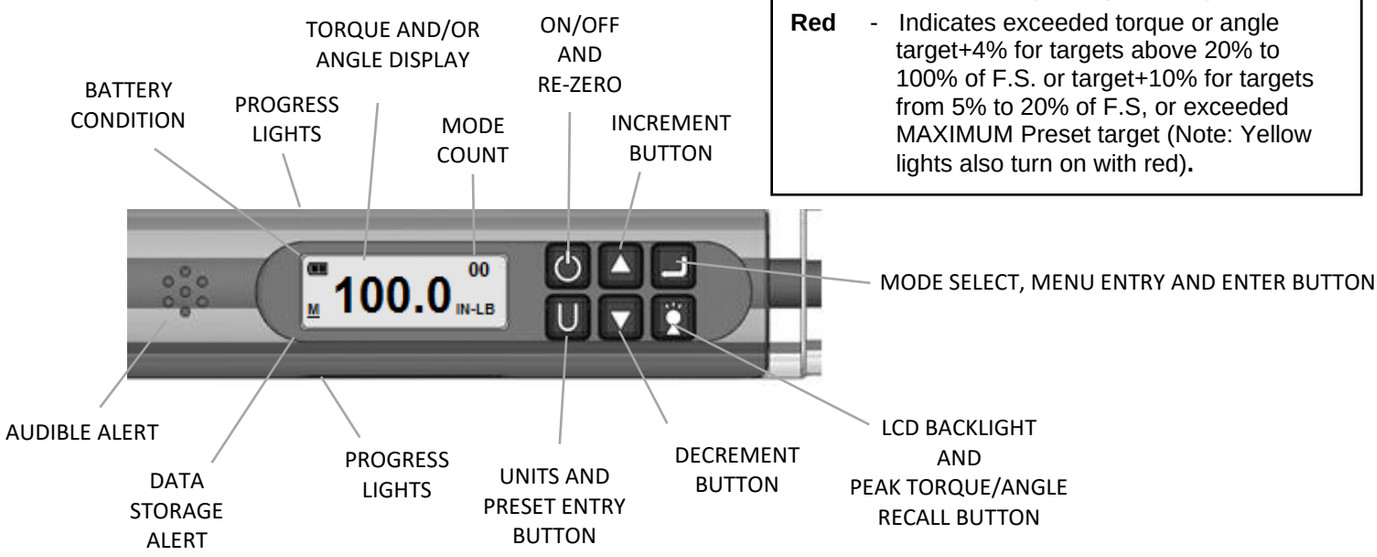


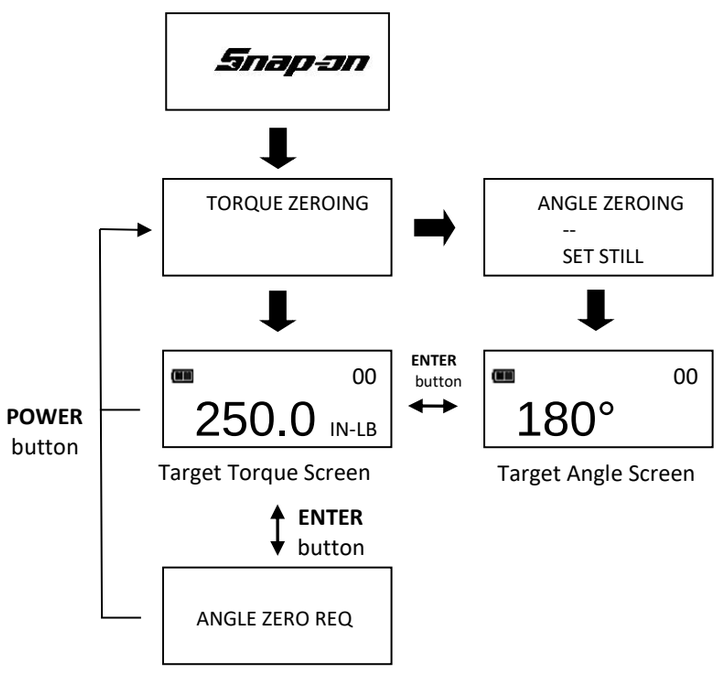
Figure 1

Install fresh "AA" cell into wrench handle.

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. Snap-on 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.

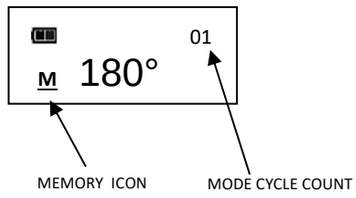
Angle Mode

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

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.

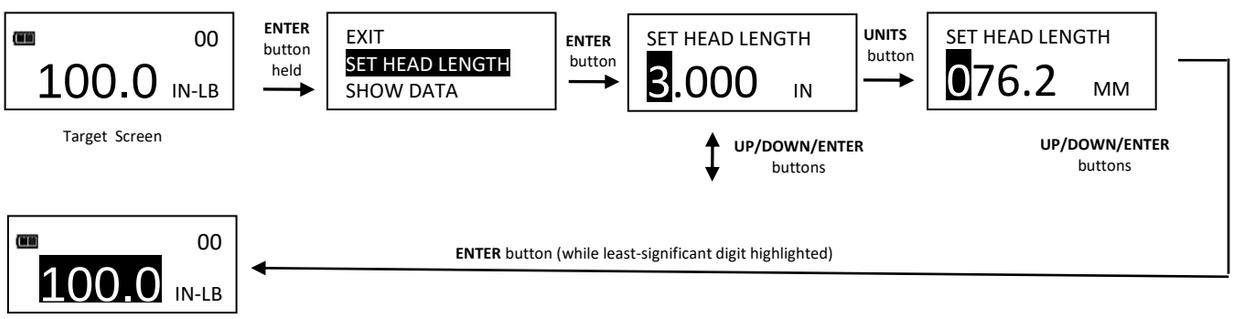
Menu Selections:

- EXIT - Exits Main menu and returns to target screen.
- 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.
- LANGUAGE - Displays language selection menu.
- SETTINGS - Displays advanced settings menu (see Advanced Settings Section).
- CONFIGURE - Displays advanced configuration menu (see Advanced Configuration Section).

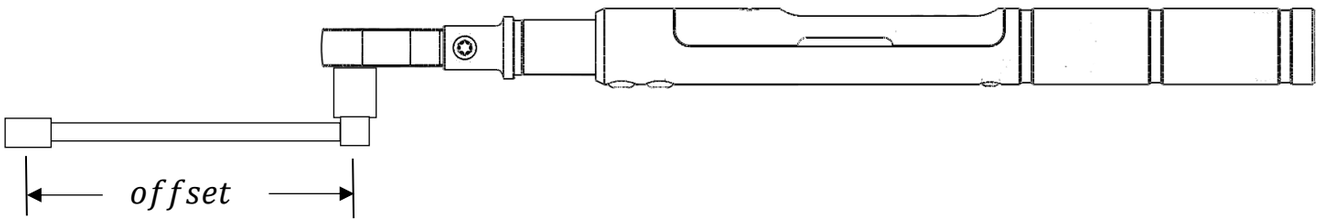
Setting Head Length

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.

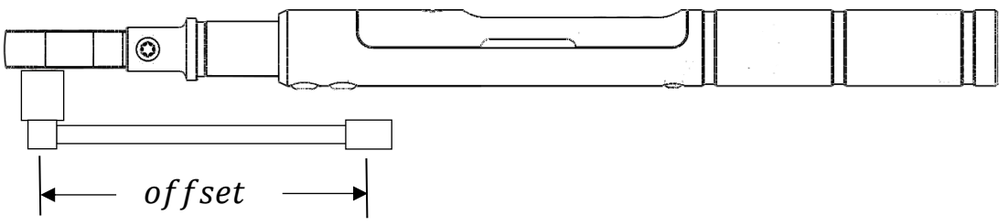


Note: Head length entered is offset length measured from center of drive to center of fastener.



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:

240 in-lb wrench:

Maximum Target Torque = offset * 24 + 240

Offset	Max Target
-1"	216 in-lb
-2"	192 in-lb
-3"	168 in-lb
-4"	144 in-lb

100 in-lb wrench:

Maximum Target Torque = offset * 7 + 100

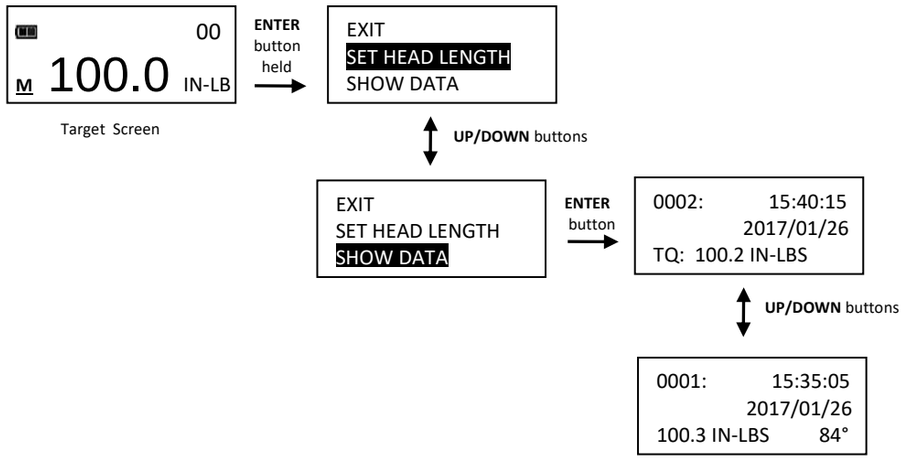
Offset	Max Target
-1"	93 in-lb
-2"	86 in-lb
-3"	79 in-lb
-4"	72 in-lb

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.

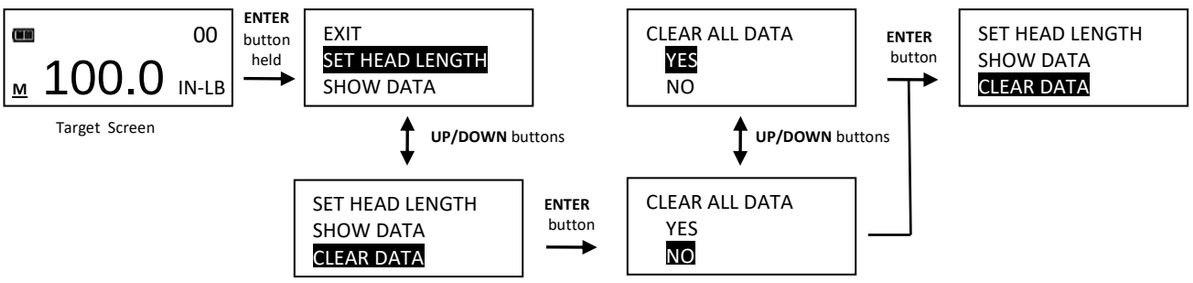
1. To view stored torque and angle data, from target torque or angle screen, press and hold **ENTER** ↵ button for 3 seconds.
2. Highlight SHOW DATA menu selection by pressing **UP** ▲**/DOWN** ▼ buttons then press **ENTER** ↵ button to display Show Data screen. To view stored torque and angle data, 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

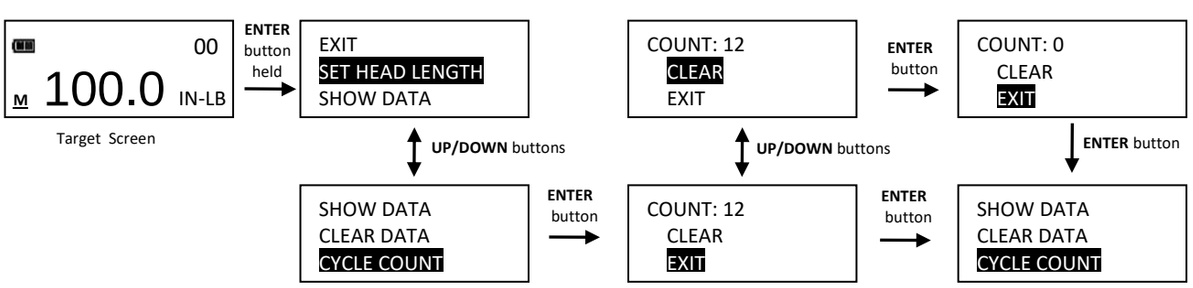
1. From target torque or angle screen, press and hold **ENTER** ↵ button for 3 seconds.
2. Highlight CLEAR DATA menu selection using **UP** ▲**/DOWN** ▼ buttons then press **ENTER** ↵ button to display CLEAR ALL DATA screen.
3. In CLEAR ALL DATA screen, highlight YES menu selection to delete all stored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



Viewing and Clearing Wrench Cycle Counter

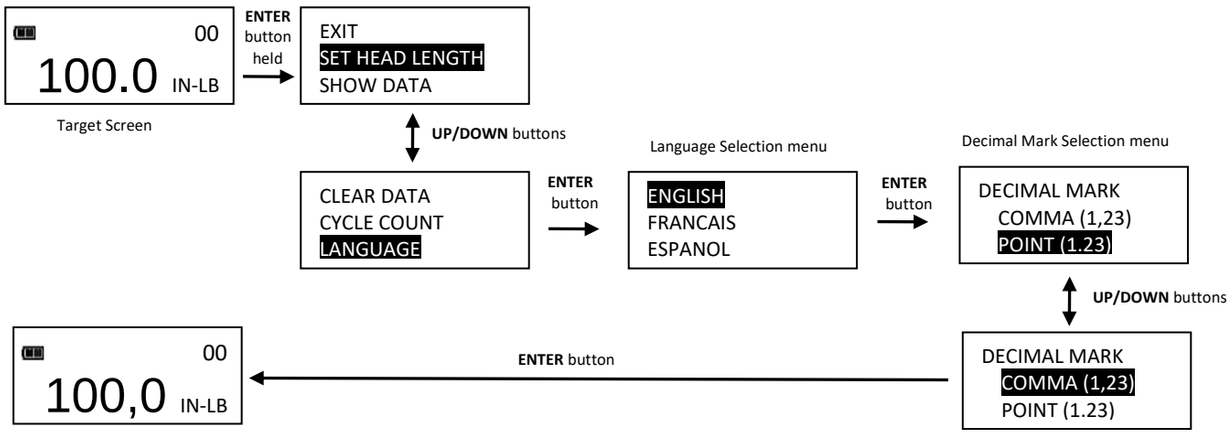
Each time torque or angle target is reached, wrench cycle counter is incremented. Maximum cycle count is 999999.

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.



Language

1. To select language menu, press **ENTER** ↵ button while LANGUAGE is highlighted then highlight desired language and press **ENTER** ↵ button.
2. Decimal Mark selection menu is displayed. Decimal separator can be a comma or decimal point. Use **UP** ▲**/DOWN** ▼ buttons to select decimal separator then press the **ENTER** ↵ button.

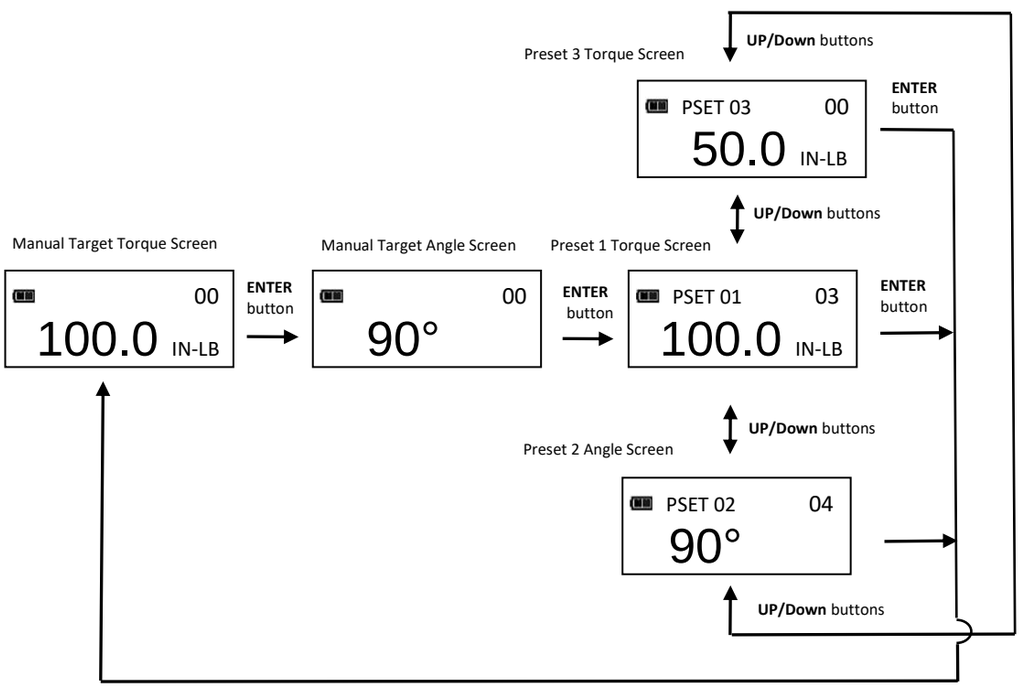


3. To exit Main menu and return to target torque or angle screen, press **ENTER** ↵ button while EXIT menu selection is highlighted.

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.

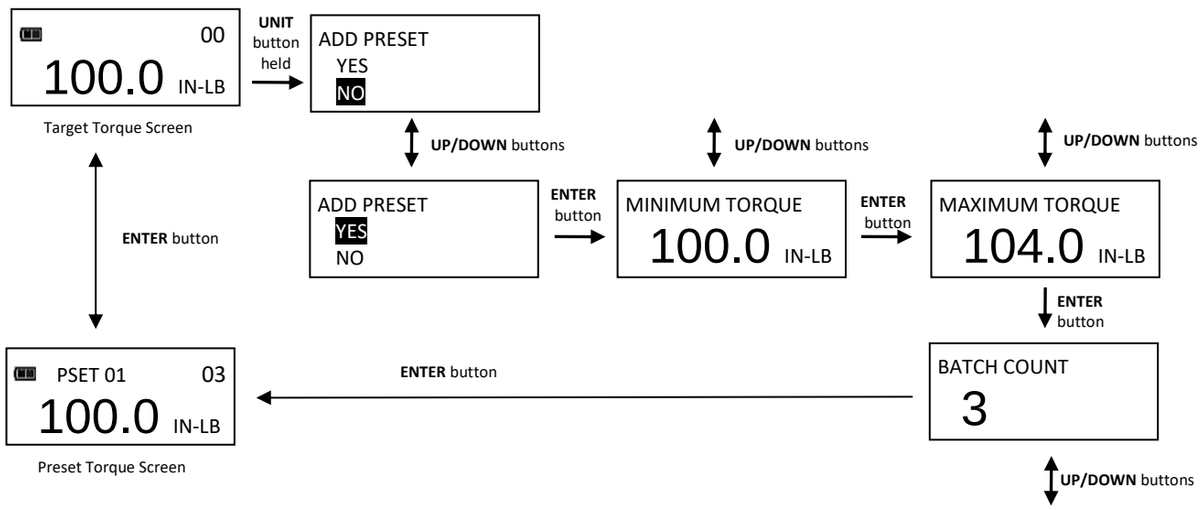
Note: After adding a Preset (see below), navigate between manual target torque, angle mode and PSET screen by repeatedly pressing **ENTER** ↵ button*. While PSET screen is displayed, press* **UP** ▲ **/DOWN** ▼ *buttons to select additional configured PSETs.*



Adding a Torque Preset

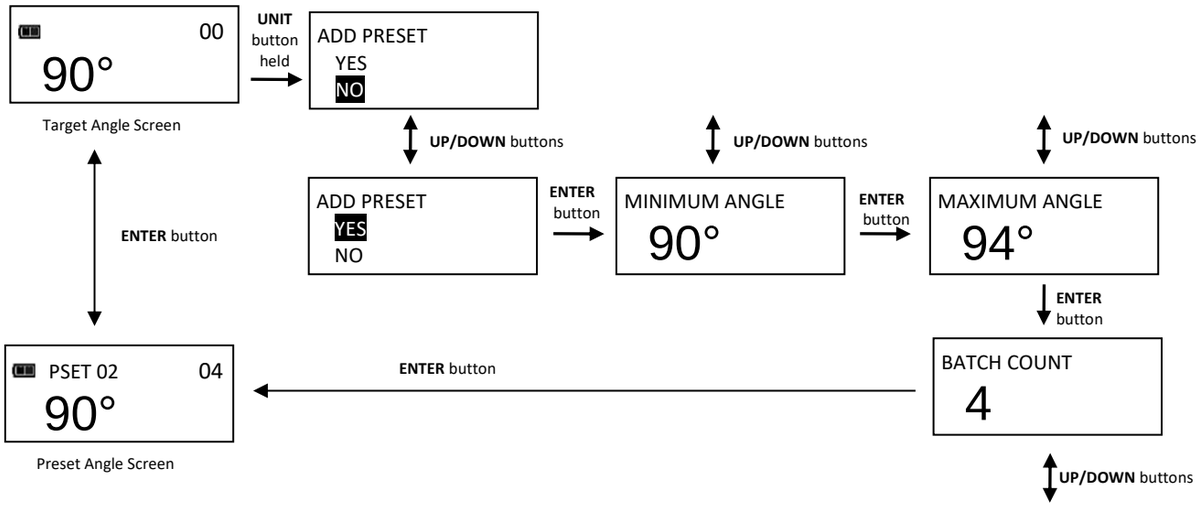
1. From target torque screen, select units of measure.
2. Press and hold **UNITS** U button for 3 seconds.
3. ADD PRESET confirmation screen is displayed. Highlight YES menu selection using **UP** ▲**/DOWN** ▼ buttons then press **ENTER** ↵button**.** NO menu selection returns to main menu without adding 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.



<u>Adding an Angle Preset</u>

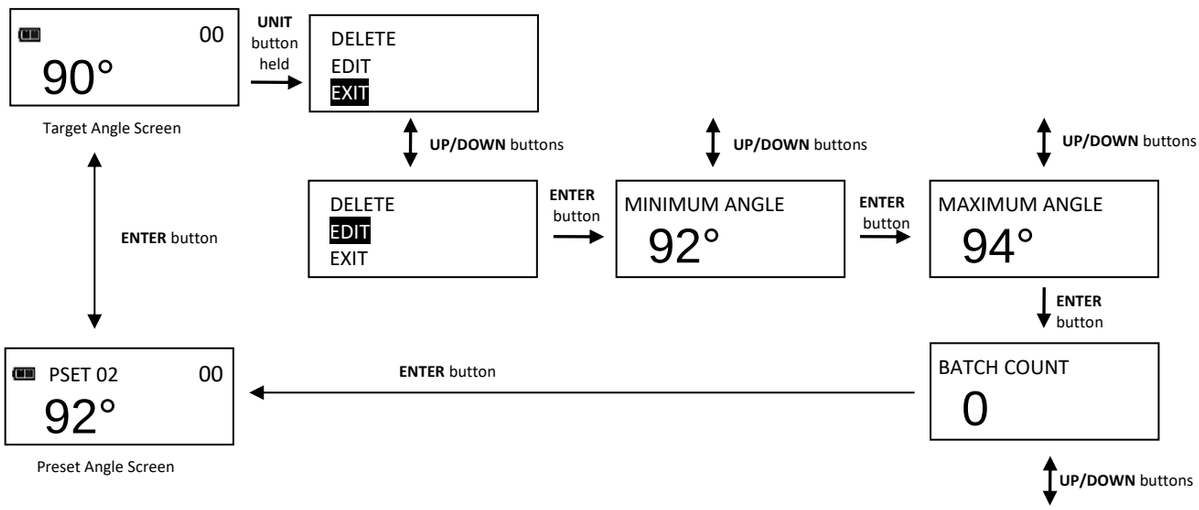
1. From target angle screen, press and hold **UNITS U** button for 3 seconds.
2. ADD PRESET confirmation screen is displayed. Highlight YES menu selection using **UP ▲/DOWN ▼** buttons then press **ENTER ↵** button**.** NO menu selection returns to main menu without adding a PSET.
3. MINIMUM ANGLE screen 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.



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.

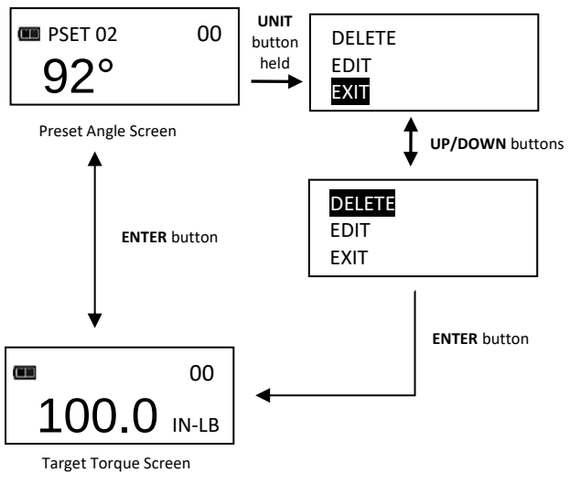


Note: Pressing **ENTER** ↵ *button while* EXIT *menu selection is highlighted will exit without editing PSET.*

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

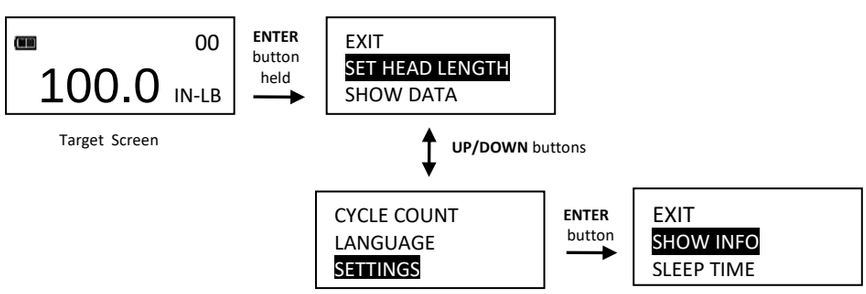
Accessing Advanced Settings

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 **BACKLIGHT** button toggle or timeout enable/disable screen.
   - VIBRATOR CONFIG - Displays vibrator ON/OFF configuration for when target reached.
   - BATTERY TYPE – Displays the battery type selection screen.
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.

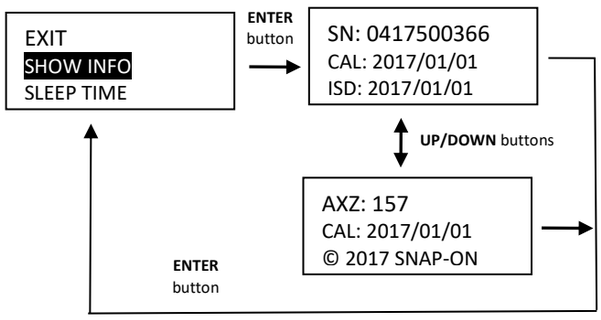
Show Info

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.
   - AZZ: Angle Z-Axis Zero Offset.
   - AXZ: Angle X-axis Zero Offset.
   - Copyright
4. Pressing **ENTER** ↵ button exits Show Info screen and returns to Settings menu.



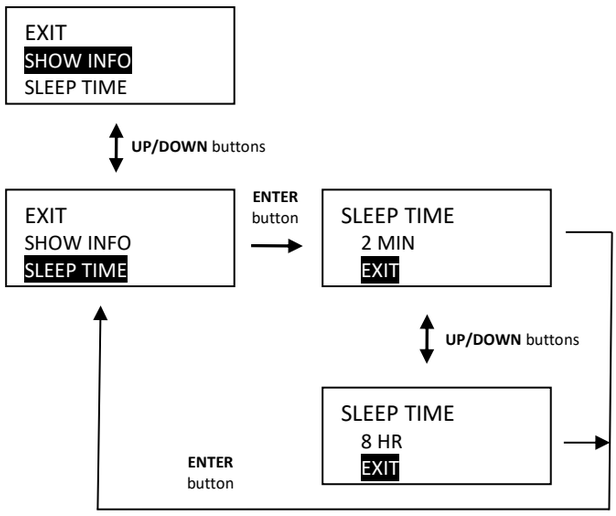
Setting Sleep Time

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:

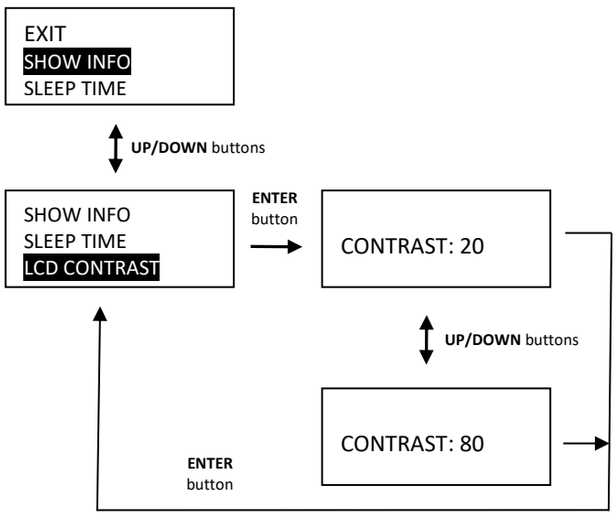
   - 2 MIN (factory default)
   - 5 MIN
   - 10 MIN
   - 30 MIN
   - 1 HR
   - 2 HR
   - 8 HR
4. Press **ENTER** ↵ button to accept selection and exit to Settings menu.



Setting LCD Contrast

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

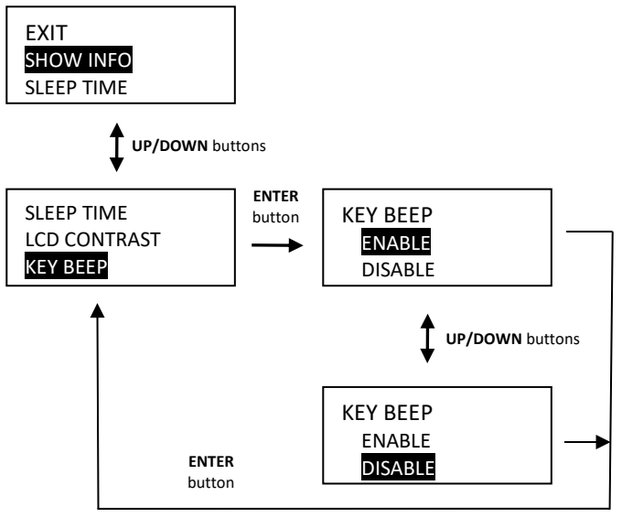
1. From Settings menu, use **UP ▲/DOWN ▼** buttons to highlight LCD CONTRAST selection then press **ENTER ↵** button.
2. CONTRAST screen is displayed.
3. Use **UP ▲/DOWN ▼** buttons while viewing display to change contrast to desired level.
   Selectable levels: 20 to 80 in increments of 5 (factory default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

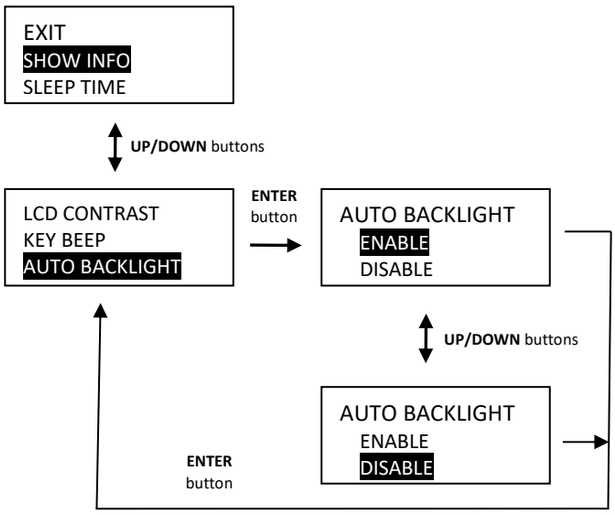
1. From Settings menu, use **UP ▲/DOWN ▼** buttons to highlight KEY BEEP selection then press **ENTER ↵** button.
2. KEY BEEP screen is displayed.
3. Use **UP ▲/DOWN ▼** buttons to highlight ENABLE (factory default) or DISABLE selection.
4. Press **ENTER ↵** button to accept selection and exit to Settings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



Auto Backlight Setup

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

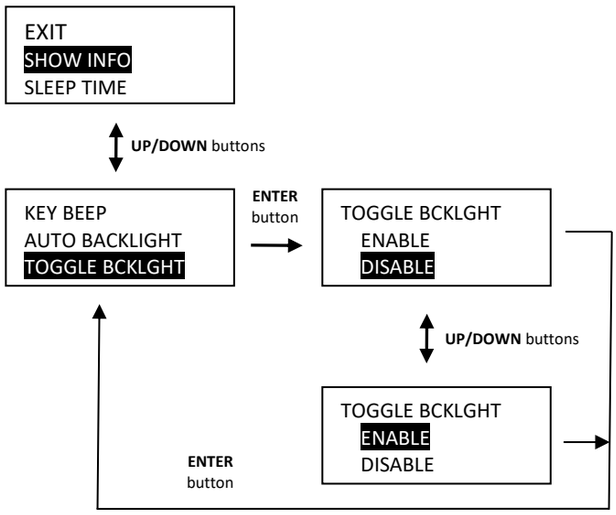
1. From Settings menu, use **UP ▲/DOWN ▼** buttons to highlight AUTO BACKLIGHT selection then press **ENTER ↵** button.
2. AUTO BACKLIGHT screen is displayed.
3. Use **UP ▲/DOWN ▼** buttons to highlight ENABLE (factory default) or DISABLE selection.
4. Press **ENTER ↵** button to accept selection and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



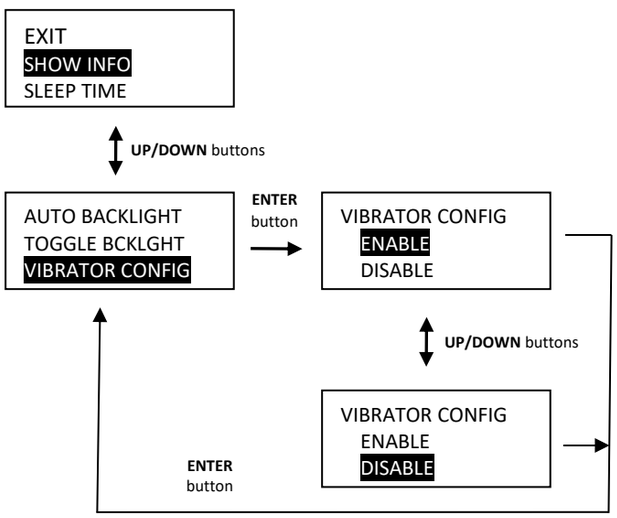
Note: Backlight will turn off when wrench powers down either by **POWER** *button press or sleep time.*

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.

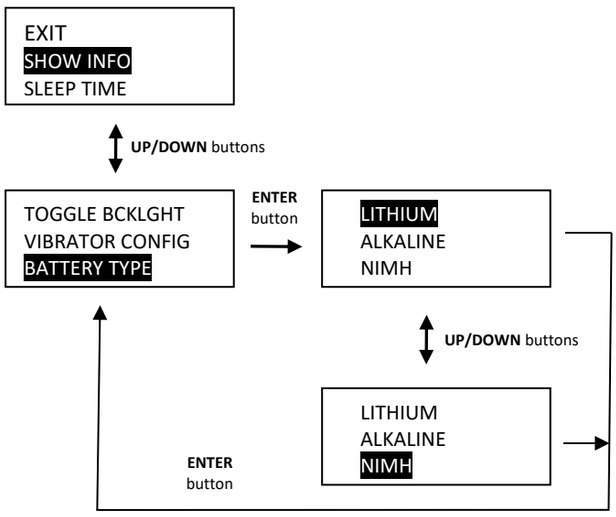
1. From Settings menu, use **UP /DOWN** buttons to highlight VIBRATOR CONFIG selection then press **ENTER** button.
2. VIBRATOR CONFIG screen is displayed.
3. Use **UP /DOWN** buttons to toggle ON or OFF selection.
4. Press **ENTER** button to accept selection and exit to Settings menu.



Battery Type Selection

This function will allow user to configure the battery discharge thresholds for the type of battery used.

1. From Settings menu, use **UP ▲/DOWN ▼** buttons to highlight BATTERY TYPE selection then press **ENTER ↵** button.
2. BATTERY TYPE screen is displayed.
3. Use **UP ▲/DOWN ▼** buttons to select the type of battery being used.
4. Press **ENTER ↵** button to accept selection and exit to Settings menu.



Note: Wrench is configured for Lithium battery shipped from factory. If Lithium battery is replaced with Alkaline or NiMH, battery type should be changed so battery level icon and LOW battery warnings function optimally. Battery life (REPLACE) will not be impacted, however 50% and Low will be optimized to show most accurate linear discharge time.

• Advanced Configuration

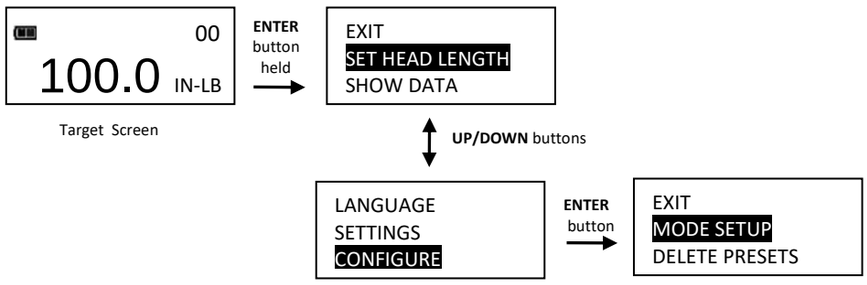
Accessing Advanced Configuration

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.
   - DELETE PRESETS - Displays delete all presets 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.

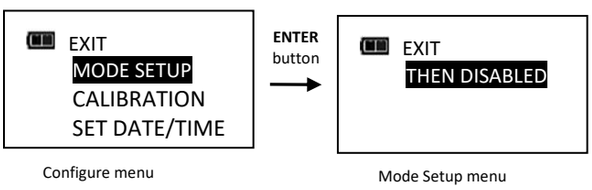
Mode Setup

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:

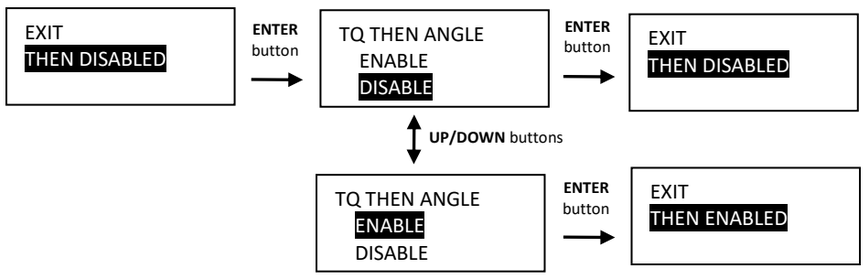
   - EXIT - Exits Mode setup menu and returns to Configure menu screen.
   - THEN DISABLED - Displays THEN Mode enable/disable screen.
3. Use **UP** ▲**/DOWN** ▼ buttons to highlight menu selections.
4. Press **ENTER** ↵ button while EXIT menu selection is highlighted to return to Configure menu.



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.

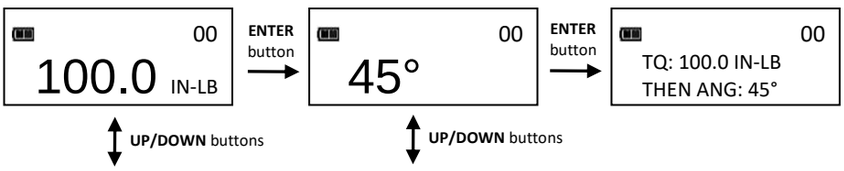


Note: Menu selection indicates current configuration (ENABLED or DISABLED).

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.

Calibration

Calibration menu is password protected. Contact your local Snap-on Repair Center regarding Calibration menu.



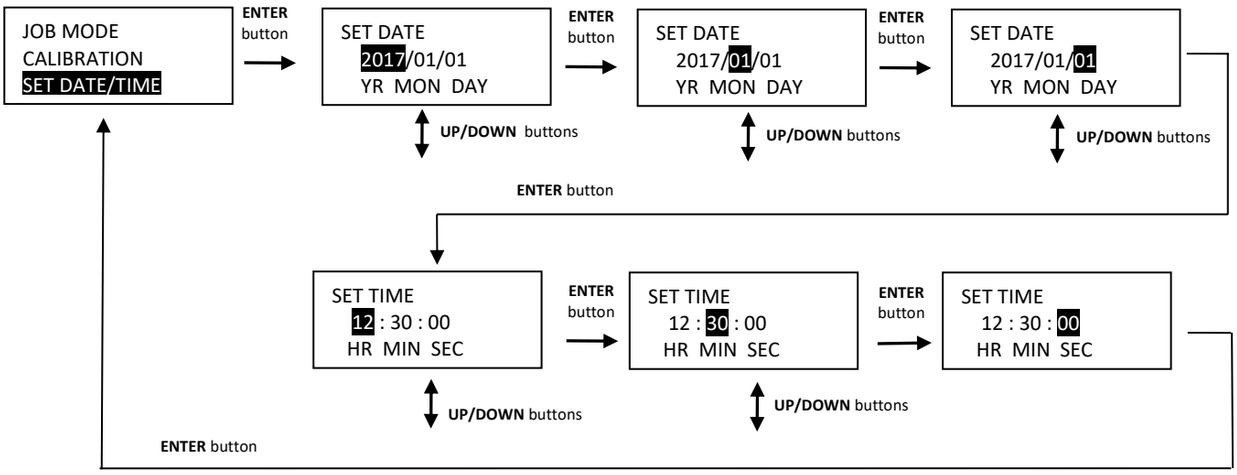
Setting Date and Time

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.

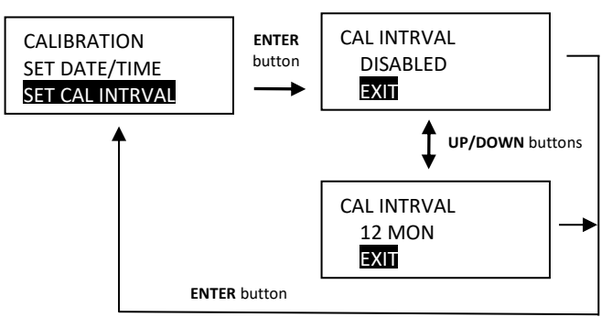
Setting Calibration Interval

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.

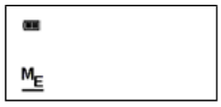
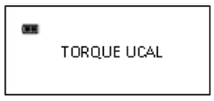
Note: Calibration interval is calculated from either In-Service Date or last Calibration date (see SHOW INFO menu) depending on which is more recent date. When clock Date is greater than In-Service or Last Calibration date, plus Cal Interval, "CAL NEEDED" message will be displayed on power up and after 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 (Contact your local Snap-on Repair Center regarding Calibration menu).

- # Troubleshooting

Note: If any of following issues persist, return wrench to an authorized Snap-on 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	Low battery	Press **ENTER** ↵ button to continue using wrench and replace batteries soon
REPLACE BATTERY	Dead battery	Press **POWER** ⏻ button to turn off wrench and replace batteries
TORQUE ZERO ERROR	Torque applied while zeroing	Remove torque and re-zero
	Wrench over torqued	Recalibrate
	Wrench improperly calibrated	Recalibrate
	Torque sensor failure	Return to Snap-on Repair Center
ANGLE ZEROING – – SET STILL	Wrench moving during zeroing	Place wrench on stable surface
	Gyro unstable	Return to Snap-on Repair Center
ANGLE ZERO ERROR	**POWER** ⏻ button pressed during angle zeroing (Aborted zeroing to access menus)	Place wrench on stable surface and press **POWER** ⏻ button to re-zero
OVERTORQUE	Over 125% of full scale torque applied	Cycle power using **POWER** ⏻ button and recalibrate
ANGLE ERROR	Wrench rotated too fast during angle measurement	Place wrench on stable surface and press **POWER** ⏻ button to re-zero
CAL NEEDED	Calibration interval exceeded or invalid date entered with calibration interval enabled	Calibrate wrench or press ENTER to continue. Disable calibration interval if not required.

Issue	Possible Cause	Resolution
	Memory failure	Clear data memory
	Torque uncalibrated	Calibrate torque
	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.

• CALIBRATION

Contact your Snap-on sales representative for calibration services.

• CERTIFICATION

This TechAngle® Steel Micro wrench was calibrated at factory using torque measurement instruments that are traceable to National Institute of Standards and Technology (N.I.S.T.). Torque parameters comply with ISO 6789-2003 and ASME B107-28-2010. Note: no U.S. or International Standards exist for angle wrenches. Angle calibration was performed on an angle gage with ±1 degree accuracy at each 45 degree indexing point throughout 180 degrees of rotation.

IMPORTANT!	Calibration events are recorded in wrench memory which provides evidence to void factory certification.

• MAINTENANCE / SERVICE

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

DO NOT immerse in anything.

Service, repair and calibration are to be done by Snap-on Service Centers only. Contact your Snap-on Tools representative. Ratchet head repair can be done by Snap-on Representative or user.

• Battery Replacement

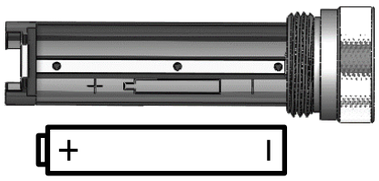
Replace with "AA" cell only.

- Do not attempt to recharge lithium cells.
- Store wrench in dry place.
- Remove battery when storing wrench unused longer than 3 months.

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

Note: Turn End Cap counter-clockwise to unscrew.





100% BATTERY

50% BATTERY LEVEL

LOW BATTERY

LOW BATTERY

REPLACE BATTERY

REPLACE BATTERY

UNSCREW END CAP
INSERT NEW CELL
NEGITIVE (-) END
INTO END CAP

Note: When Replace Battery screen is displayed wrench will no longer operate until battery is 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. Return to Snap-on Repair Center if persists after clearing memory.

IMPORTANTES INSTRUCTIONS DE SECURITE



DANGER : *Risque de projection de particules.*

L'application d'un couple excessif peut entraîner une rupture. L'application d'une force sur les butées de la tête articulée peut entraîner une rupture de la tête. L'utilisation d'une clé mal étalonnée peut entraîner une rupture de la pièce ou de l'outil lui-même. Des outils, douilles ou accessoires endommagés peuvent provoquer des blessures. L'emploi d'une force excessive peut entraîner un glissement d'une clé « crowfoot » ou le glissement d'une clé d'écrou évasé.



- **Lire l'intégralité de ce manuel** avant d'utiliser la CLE ELECTRONIQUE.
- Lors du travail en mode d'angle, la pièce doit rester immobile afin de garantir la précision de l'outil.
- Afin de garantir votre sécurité personnelle, ainsi que pour éviter d'endommager la clé, suivre à la lettre les bonnes pratiques professionnelles de travail relatives à l'utilisation des outils et à l'installation de systèmes de fixation.
- Un ré-étalonnage périodique est nécessaire pour maintenir le niveau de précision.
- **L'utilisateur et les personnes situées à proximité doivent porter des lunettes de sécurité.**



- S'assurer que tous les composants, incluant tous les adaptateurs, prolongateurs, les douilles et les clés à douille supportent un couple égal ou supérieur au couple employé.
- Respecter scrupuleusement l'ensemble des avertissements, des recommandations de prudence ainsi que les procédures énoncées par le fabricant pour l'ensemble des équipements et des systèmes associés avant d'utiliser cette clé dynamométrique.
- Utilisez une douille de taille correcte pour le dispositif de fixation considéré.
- Ne pas utiliser de douilles qui présenteraient des signes d'usure ou des fissures.
- Remplacer les dispositifs de fixation si leurs angles sont arrondis.
- **Afin d'éviter d'endommager la clé :** ne jamais utiliser la clé lorsqu'elle est hors tension. Toujours METTRE LA CLE SOUS TENSION afin que le couple appliqué puisse être mesuré.



- Ne pas appuyer sur le bouton **« MARCHE/ARRET »** pendant une opération de serrage ou lorsque la clé est en mouvement.
- Ne jamais utiliser cette clé pour desserrer un système d'attache.
- Ne pas utiliser de prolongateur, tel que du tube creux, pour étendre la longueur du manche de la clé.
- Vérifier au cas par cas que la capacité de serrage de la clé est égale, ou dépasse, les besoins spécifiques à l'application considérée avant l'utilisation proprement dite.
- Vérifier l'étalonnage si l'outil fait une chute sur le sol.
- S'assurer que le levier de sélection de direction du cliquet est complètement engagé dans la bonne direction.
- Vérifier l'étalonnage de la clé si vous savez ou que vous suspectez qu'elle a été utilisée au-delà de ses spécifications.
- Ne pas forcer sur la tête ou forcer la tête pivotante contre les butées.
- Toujours tirer – ne jamais pousser – sur le manche de la clé et ajuster votre posture pour éviter une chute dans le cas d'une rupture.
- Ne jamais **tenter derecharger des piles alcalines**.
- Entreposer la clé dans un endroit sec.
- Retirer les piles avant d'entreposer la clé pour des périodes supérieures à 3 mois.



DANGER ***Risque de décharge électrique.***

Une décharge électrique peut entrainer des blessures. Le manche en plastique n'est pas isolé. Ne pas utiliser sur des circuits électriques sous tension.

CONSERVER CES INSTRUCTIONS

Dégagement de responsabilité

L'emploi de cette clé TechAngle® n'est pas garanti à l'intérieur d'un état membre de l'Union Européenne si les instructions de fonctionnement ne sont pas dans la langue de l'état en question. Contacter Snap-on si vous avez besoin d'une traduction.

INSTRUCCIONES DE SEGURIDAD IMPORTANTES



ADVERTENCIA *Riesgo de partículas despedidas.*

El exceso de torsión puede provocar roturas. La fuerza ejercida contra los topes flexibles del cabezal flexible puede hacer que éste se rompa. Una llave acodada mal calibrada puede producir la rotura de la herramienta o de parte de ella. El uso de herramientas manuales, tubos o accesorios rotos pueden ocasionar lesiones. El exceso de fuerza puede causar que se suelten llaves crowfoot o para racores.

Lea **la totalidad de este manual** antes de utilizar la LLAVE ELECTRÓNICA.



- ❑ Para asegurar la precisión, el movimiento no debe realizarse en ángulo.
- ❑ Por motivos de seguridad personal y para evitar dañar la llave, siga las prácticas profesionales aceptadas para el uso de herramientas e instalación de piezas de fijación.
- ❑ Será necesario recalibrar la herramienta de forma periódica para asegurar su precisión.
- ❑ **Utilice gafas de seguridad, tanto para usted como para los observadores.**



- ❑ La capacidad nominal de todos los componentes, incluidos los adaptadores, las extensiones, los destornilladores y los tubos, deberá ser mayor o igual al par de torsión que se quiere aplicar.
- ❑ Cuando utilice la llave, respete todas las advertencias, precauciones y procedimientos del equipo, el sistema y el fabricante.
- ❑ Utilice un tubo del tamaño adecuado para la pieza de fijación.
- ❑ No use tubos desgastados o agrietados.
- ❑ Reemplace las piezas de fijación con esquinas redondeadas.
- ❑ **Para no dañar la llave:** nunca la use apagada. ENCIÉNDALA siempre para medir el par de torsión que se ejerce.



- ❑ No oprima el botón de **ENCENDIDO** ⏻ mientras la llave aplica torsión o está en movimiento.
- ❑ No utilice la llave para extraer piezas de fijación atascadas.
- ❑ No utilice extensiones, como por ejemplo barras, en el mango de la llave.
- ❑ Antes de comenzar, compruebe que la capacidad nominal de la llave sea mayor o igual a la aplicación.
- ❑ Si se le cae la herramienta, verifique la calibración.
- ❑ Compruebe que la palanca de dirección del trinquete esté conectada en la posición correcta.
- ❑ Verifique la calibración si sabe o sospecha que se superó su capacidad.
- ❑ No fuerce el cuadradillo del cabezal flexible contra los topes.
- ❑ Tire (no empuje) del mango de la llave y ajuste la posición para no caerse si algo cede.
- ❑ No intente recargar las pilas alcalinas.
- ❑ Mantenga la llave en un lugar seco.
- ❑ Retire las baterías si no va a utilizar la llave por períodos superiores a 3 meses.



ADVERTENCIA *Riesgo de descarga eléctrica.*

Las descargas eléctricas pueden producir lesiones. El mango de plástico no está aislado. No utilizar en circuitos eléctricos activos.

CONSERVE ESTAS INSTRUCCIONES

Descargo de responsabilidad

El funcionamiento de la llave TechAngle® no está garantizado en los países miembros de la UE si las instrucciones de funcionamiento no figuran en el idioma del país en cuestión. Póngase en contacto con Snap-on si necesita una traducción.

WICHTIGE SICHERHEITSHINWEISE



WARNUNG *Gefahr von herumfliegenden Partikeln.*

Ein Überdrehen kann zum Bruch führen. Gewalt gegen Flex-Stopper am Flex-Kopf kann zum Kopfbruch führen. Ein Drehwinkelschlüssel außerhalb der Kalibrierung kann zur Beschädigung des Werkstücks oder Werkzeugs führen. Defekte Hand-Werkzeuge, Stecknüsse oder Zubehörteile können zu Verletzungen führen. Übermäßige Kraftaufwendung kann zum Abrutschen des Hahnenfuß- oder Ringschlüssels führen.



- ❑ Vor dem Gebrauch des ELEKTRONISCHEN SCHLÜSSELS ist **diese Anleitung vollständig** durchzulesen.
- ❑ Um die Genauigkeit zu gewährleisten, darf sich das Werkstück im Winkelmodus nicht bewegen.
- ❑ Zur persönlichen Sicherheit und Vermeidung von Beschädigung des Schlüssels ist ein sorgfältiger Umgang mit Werkzeugen und Befestigungsmitteln erforderlich.
- ❑ Zur Erhaltung der Genauigkeit ist eine regelmäßige Kalibrierung notwendig.
- ❑ **Der Benutzer und umstehende Personen sollten Schutzbrillen tragen.**



- ❑ Sicherstellen, dass alle Komponenten einschließlich aller Adapter, Verlängerungen, Antriebsteile und Stecknüsse mindestens für die aufgewandten Drehmomente geeignet sind.
- ❑ Beim Gebrauch dieses Schraubenschlüssels sind alle Geräte-, System- und Hersteller-Warnhinweise, Vorsichtsmaßnahmen und Verfahren zu beachten.
- ❑ Eine Stecknuss der richtigen Größe für das Befestigungselement verwenden.
- ❑ Keine Stecknüsse mit Anzeichen von Verschleiß oder Rissen verwenden.
- ❑ Befestigungselemente mit abgerundeten Ecken ersetzen.
- ❑ **Zur Vermeidung von Schäden am Schlüssel:** Den Schlüssel keinesfalls im ausgeschalteten Zustand verwenden. Zuerst stets den Schlüssel einschalten, damit das aufgebrachte Drehmoment gemessen wird.



- ❑ Nicht die Taste **EIN/AUS** ⏻ betätigen, während ein Drehmoment aufgebracht wird oder der Schlüssel in Bewegung ist.
- ❑ Den Schlüssel keinesfalls zum Losbrechen von Befestigungselementen verwenden.
- ❑ Keine Verlängerungen, beispielsweise ein Rohr, am Griff des Schlüssels verwenden.
- ❑ Vor Gebrauch sicherstellen, dass die Kapazität des Schlüssels für den Anwendungsfall ausreichend ist.
- ❑ Wurde der Schlüssel fallen gelassen, muss die Kalibrierung überprüft werden.
- ❑ Sicherstellen, dass der Ratschenhebel vollständig in der richtigen Position (Richtung) arretiert ist.
- ❑ Die Kalibrierung des Schlüssels kontrollieren, falls seine Kapazität vermutlich überschritten wurde.
- ❑ Den Kopf von Flex-Kopfantriebsteilen nicht mit Gewalt gegen die Anschläge drehen.
- ❑ Stets am Schlüsselgriff ziehen – nicht drücken – und einen sicheren Stand einnehmen, um nicht zu stürzen, falls eine Komponente nicht standhält.
- ❑ Die Alkalibatterien nicht wiederaufzuladen versuchen.
- ❑ Den Schlüssel an einem trockenen Ort aufbewahren.
- ❑ Die Batterien entfernen, wenn der Schlüssel länger als 3 Monate gelagert werden soll.



WARNUNG *Gefahr eines elektrischen Schlags.*

Ein elektrischer Schlag kann zu Verletzungen führen. Der Kunststoffgriff ist nicht isoliert. Nicht an spannungsführenden Leitungen verwenden.

BEWAHREN SIE DIESE ANLEITUNG AUF

Haftungsausschluss

Es besteht keine Garantie für den Betrieb des TechAngle® Schlüssels in einem EU-Mitgliedstaat, wenn die Betriebsanweisungen nicht in der betreffenden Landessprache abgefasst sind. Wenden Sie sich an Snap-on, wenn eine Übersetzung benötigt wird.

ISTRUZIONI CAUTELARI IMPORTANTI



AVVERTENZA *Pericolo di schegge vaganti.*

Un serraggio eccessivo può causare rotture. Forzando fermi flessibili contro teste duttili si corre il rischio di rompere le viti. Una chiave angolare calibrata erroneamente potrebbe provocare la rottura del pezzo in lavorazione o dell'utensile. Utensili manuali, bussole o accessori rotti possono provocare infortuni. Una forza eccessiva su dadi a croce o conici può causare lo slittamento della chiave.



- ❑ Leggere **attentamente questo manuale** prima di utilizzare la CHIAVE ELETTRONICA.
- ❑ Per garantire la precisione, il movimento di lavoro non deve essere angolare.
- ❑ Per la propria incolumità e per evitare di danneggiare la chiave, seguire le direttive di categoria per il serraggio delle viti e la meccanica professionale.
- ❑ Per mantenerne la precisione, è necessario ricalibrare l'utensile periodicamente.
- ❑ **È necessario che l'operatore e le persone circostanti indossino appositi occhiali di sicurezza.**
- ❑ Verificare sempre che tutti i componenti, compresi eventuali riduttori, prolunghe, alberini e bussole, siano omologati per una coppia uguale o superiore a quella applicata.



- ❑ Durante l'utilizzo di questo utensile, rispettare sempre tutte le indicazioni e istruzioni cautelari fornite dai rispettivi produttori di accessori e impianti.
- ❑ Per il serraggio, utilizzare sempre una bussola di dimensione adatta per quella vite.
- ❑ Non utilizzare bussole che presentino segni di usura o di rottura.
- ❑ Sostituire le viti con bordi smussati.
- ❑ **Per evitare di danneggiare la chiave:** non usare mai la chiave quando è spenta. Accenderla sempre per poter misurare la coppia di serraggio applicata a ogni uso.



- ❑ Non premere il tasto **ALIMENTAZIONE** quando la chiave è in tiro o in movimento.
- ❑ Non utilizzare mai questa chiave per allentare viti, dadi e bulloni.
- ❑ Non utilizzare prolunghe, come un tubo, sul manico della chiave.
- ❑ Prima di procedere, controllare che la portata della chiave corrisponda o superi quella richiesta per il lavoro.
- ❑ In caso di caduta accidentale, controllare la calibrazione.
- ❑ Controllare che la levetta di direzione del cricchetto sia ingranata nella posizione giusta.
- ❑ Controllare la calibrazione della chiave anche al solo sospetto che sia stata ecceduta la sua portata.
- ❑ Non forzare la testa di viti e bulloni duttili contro i fermi.
- ❑ Tirare sempre - e mai spingere - il manico della chiave e bilanciare la propria posizione in modo da rimanere sempre in equilibrio anche nell'eventualità di un cedimento.
- ❑ Non tentare di ricaricare le celle delle batterie alcaline.
- ❑ Conservare sempre la chiave in un luogo asciutto.
- ❑ Estrarre sempre le batterie quando si conserva una chiave per un periodo superiore a tre mesi.



AVVERTENZA *Rischio scosse elettriche.*

Le scosse elettriche possono causare infortuni. Il manico in plastica non è isolato.
Non utilizzare su circuiti elettrici sotto tensione.

CONSERVARE QUESTE ISTRUZIONI

ESONERO DI RESPONSABILITÀ:

Non si garantisce l'uso della chiave TechAngle® nei Paesi membri della CEE dove le istruzioni per l'uso non sono in lingua locale. Contattare la Snap-on per l'eventuale traduzione.

BELANGRIJKE VEILIGHEIDSINSTRUCTIES



WAARSCHUWING *Risico van wegvliegende fragmenten.*

Te ver aandraaien kan breuk veroorzaken. Forceren voorbij de flex-aanslagposities op de flex-kop kan leiden tot breuk van de kop. Een verkeerd gekalibreerde hoeksleutel kan breuk van onderdelen of gereedschappen veroorzaken. Defecte handgereedschappen, doppen en accessoires kunnen letsel veroorzaken. Bij gebruik van teveel kracht kan een steeksleutel of open ringsleutel slippen.

- ❑ Lees deze handleiding **helemaal** door voordat u de ELEKTRONISCHE SLEUTEL gebruikt.
- ❑ Voor een nauwkeurige prestatie mag het werkstuk in de hoekmodus niet bewegen.
- ❑ Volg voor uw persoonlijke veiligheid en om beschadiging van de sleutel te voorkomen altijd de juiste professionele methoden bij het gebruik van gereedschappen en de installatie van bevestigingsmateriaal.
- ❑ Voor het behoud van de nauwkeurigheid is regelmatige kalibratie vereist.
- ❑ **Draag een veiligheidsbril, dit geldt zowel voor gebruiker als omstanders.**
- ❑ Zorg dat alle componenten (inclusief verloopstukken, verlengstukken, schachten en doppen) ten minste zijn goedgekeurd voor het gebruikte koppel.



- ❑ Neem bij gebruik van deze sleutel alle waarschuwingen, aandachtspunten en procedures voor de apparatuur, voor het systeem en van de fabrikant in acht.
- ❑ Gebruik doppen van de juiste maat voor het bevestigingsmateriaal.
- ❑ Gebruik nooit doppen die versleten of gebarsten zijn.
- ❑ Vervang bevestigers waarvan de hoeken gestript zijn.
- ❑ **Voorkom beschadiging van de sleutel:** Gebruik de sleutel nooit terwijl hij is uitgeschakeld. Zet de sleutel altijd AAN zodat het uitgeoefende koppel wordt gemeten.



- ❑ Druk niet op **STROOM** ⏻ terwijl u iets aantrekt of terwijl de sleutel beweegt.
- ❑ Gebruik deze sleutel nooit om bevestigers met geweld los te halen.
- ❑ Gebruik geen verlengstukken (bijv. een stuk pijp) op de greep van de sleutel.
- ❑ Controleer of de capaciteit van de sleutel voldoende is voor het beoogde gebruik voordat u aan de slag gaat.
- ❑ Controleer de kalibratie als de sleutel is gevallen.
- ❑ Zorg dat de ratelrichtingspal goed in de juiste stand staat.
- ❑ Controleer de kalibratie van de sleutel als u weet of vermoedt dat de capaciteit ervan is overschreden.
- ❑ Druk de kop van sleutels met flexibele kop niet met kracht tegen aanslagen aan.
- ❑ Trek altijd aan de sleutelgreep (duw er niet tegen) en ga zo staan dat u niet kunt vallen als een onderdeel plotseling meegeeft.
- ❑ Probeer niet om de alkalicelbatterijen op te laden.
- ❑ Bewaar de sleutel op een droge plaats.
- ❑ Verwijder de batterijen als u de sleutel langer dan 3 maanden opbergt.



WAARSCHUWING *Gevaar van elektrische schokken.*

Elektrische schokken kunnen letsel veroorzaken. De kunststof greep is niet geïsoleerd.
Niet gebruiken op onder stroom staande circuits.

BEWAAR DEZE GEBRUIKSAANWIJZING

Disclaimer

Er geldt geen garantie voor het gebruik van de TechAngle®-sleutel in lidstaten van de EU als de gebruiksaanwijzing niet in de taal van het land in kwestie beschikbaar is. Neem contact op met Snap-on voor vertalingen.

INSTRUÇÕES DE SEGURANÇA IMPORTANTES



ATENÇÃO *Risco de projeção de partículas.*

O torque excessivo pode causar ruptura. Forçar os batentes flexíveis da cabeça flexível pode fazer com que esta se quebre. Uma chave de ângulo descalibrada pode quebrar peças ou ferramentas. Ferramentas manuais, soquetes ou acessórios quebrados podem causar ferimentos. A aplicação de força excessiva pode fazer com que chaves pé de galo ou chaves de porca aberta escorreguem.

- ❑ Leia **este manual completamente** antes de usar o TORQUÍMETRO ELETRÔNICO.
- ❑ Para garantir a precisão, não se deve movimentar o torquímetro no modo de ângulo.
- ❑ Para a segurança pessoal e para evitar danos ao torquímetro, siga as boas práticas profissionais para o uso de ferramentas e a instalação de peças de fixação.
- ❑ A recalibragem periódica é necessária para manter a precisão.
- ❑ **Use óculos de proteção, seja como usuário ou espectador.**
- ❑ Certifique-se de que todos os componentes, inclusive todos os adaptadores, extensões, chaves de fenda e soquetes, sejam regulados para aguentar o torque aplicado.



- ❑ Cumpra todos os avisos, cuidados e procedimentos de equipamentos, sistemas e fabricantes quando utilizar este torquímetro.
- ❑ Use um soquete de tamanho correto para a peça de fixação.
- ❑ Não utilize soquetes desgastados ou rachados.
- ❑ Substitua as peças de fixação com bordas arredondadass.
- ❑ **Para evitar danos ao torquímetro:** Nunca utilize o torquímetro desligado. Sempre LIGUE o torquímetro para que o torque aplicado seja medido.



- ❑ Não aperte o botão **LIGA/DESLIGA** ⏻ ao aplicar torque ou enquanto o torquímetro estiver em movimento.
- ❑ Nunca utilize o torquímetro para soltar peças de fixação.
- ❑ Não utilize extensões, como um cano, no punho do torquímetro.
- ❑ Verifique se o torquímetro é capaz de resistir a cada aplicação antes de prosseguir.
- ❑ Verifique a calibragem se a ferramenta cair.
- ❑ Certifique-se de que a alavanca de sentido da catraca esteja totalmente engatada na posição certa.
- ❑ Verifique a calibragem do torquímetro caso saiba ou suspeite que sua capacidade foi excedida.
- ❑ Não force o encaixe da cabeça flexível contra batentes.
- ❑ Sempre puxe (não empurre) o punho do torquímetro e ajuste sua postura para impedir uma possível queda caso algo ceda.
- ❑ Não tente recarregar as pilhas alcalinas.
- ❑ Guarde o torquímetro em local seco.
- ❑ Remova as pilhas quando for guardar o torquímetro por mais que 3 meses.



AVISO *Risco de choque elétrico.*

O choque elétrico pode causar ferimentos. O punho plástico não é isolante. Não utilize em circuitos elétricos energizados.

GUARDE ESTAS INSTRUÇÕES

Aviso de isenção de responsabilidade

A operação do torquímetro TechAngle® não é permitida em nenhum Estado-membro da União Europeia se as instruções operacionais não estiverem no idioma do Estado em questão. Entre em contato com a Snap-on se uma tradução for necessária.

Snap-on Tools Company

EC Declaration of Conformity

The undersigned representing the following supplier:

CE

Snap-On Specialty Tools
19220 San Jose Ave.
City of Industry, CA 91748
USA

Herewith declare that the Products:

Brand:	Snap-on
Series:	TechAngle Steel Micro Torque Wrench
Models:	ATECH1FS100 ATECH1FS240 ATECH2CS100 ATECH2CS240 ATECH2FM100 ATECH1FQS240 SPP1901

These products are in conformity with the provisions of the following EC directives (and their amendments) when installed in accordance with the installation instructions contained in the product documentation.

2014/30/EU	- EMC Directive
2011/65/EU	- Restriction of certain hazardous substances (RoHS)
2012/19/EU	- Waste electrical and electronic equipment (WEEE)

And that the standards referenced below have been applied:

EN 61326-1:2013	Electrical Measurement, Control and Laboratory Equipment, EMC requirement Part 1 - General Requirement
EN 55011:2016 + A11:2020	Industrial, scientific and medical equipment. Radio-frequency disturbance characteristics. Limits and methods of measurement - Radiated Emissions
EN 61000-4-2:2009	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test
EN IEC 61000-4-3:2020	Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test
EN 61000-4-8:2010	Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test
EN IEC 63000:2018	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Year of CE marking: 2021

Company Authorized to Compile the Technical File:
Snap-on Tools Company
2801 80th Street
Kenosha, WI 53141-1410, USA

Authorized Representative within
the European Union (EU) is:
Francesco Frezza
Snap-on Equipment
Via Prov. Carpi, 33
42015 Correggio RE
Italy

Signature: _____

Director, Engineering: Nathan Lee
Snap-on Specialty Tools
19220 San Jose Avenue
City of Industry, CA 91748
October 2021

Snap-on Tools Company

UK Declaration of Conformity

The undersigned representing the following supplier:

Snap-on Specialty Tools
19220 San Jose Ave.
City of Industry, CA 91748
USA

Herewith declare that the Products:

Brand:	Snap-on
Series:	TechAngle Steel Micro Torque Wrench
Models:	ATECH1FS100 ATECH1FS240 ATECH2CS100 ATECH2CS240 ATECH2FM100 ATECH1FQS240 SPP1901

These products are in conformity with the provisions of the following UK Statutory Instruments (and their amendments) when installed in accordance with the installation instructions contained in the product documentation.

2016 No. 1091	The Electromagnetic Compatibility Regulations 2016
2012 No. 3032	The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012
2013 No. 3113	The Waste Electrical and Electronic Equipment Regulations 2013

And that the standards referenced below have been applied:

BS EN 61326-1:2013	Electrical Measurement, Control and Laboratory Equipment, EMC requirement Part 1 - General Requirement
BS EN 55011:2016 + A11:2020	Industrial, scientific and medical equipment. Radio-frequency disturbance characteristics. Limits and methods of measurement - Radiated Emissions
BS EN 61000-4-2:2009	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test
BS EN IEC 61000-4-3:2020	Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test
BS EN 61000-4-8:2010	Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test
BS EN IEC 63000:2018	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Year of UKCA marking: 2021

Company Authorized to Compile the Technical File:
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2801 80th Street
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Kettering, Northants
NN16 8SN
United Kingdom

Signature: _____

Director, Engineering: Nathan Lee
Snap-on Specialty Tools
19220 San Jose Avenue
City of Industry, CA 91748
October 2021

AUTHORIZED SNAP-ON REPAIR CENTERS

USA

Eastern Repair Center
6320 Flank Drive
Harrisburg, PA 17112
Phone: 717-652-7914
Fax: 717-652-7123

Northern Repair Center
3011 E. State Rt. 176, Dock A
Crystal Lake, Il 60014
Phone: 815-479-6850
Fax: 815-479-6857

Western Repair Center
3602 Challenger Way
Carson City, NV 89706-0753
Phone: 775-883-8585
Fax: 775-883-8590

CANADA

Western Repair Centre
7403-48 Street SE
Calgary, Alberta
Canada, T2C-4H6
Phone: 403-720-0525
Fax: 403-720-0524

INTERNATIONAL

United Kingdom Repair Center
Telford Way
Telford Way Industrial Estate
Kettering, Northants
NN16 8UN England
Phone: 44-1-536-413855
Fax: 44-1-536-413900

Australia Repair Centre
Snap-on Tools Australia PTY.LTD
80 Holbeche Road
Arndell Park NSW 2148
Australia
Phone: 61-2-9837-9155
Fax: 61-2-9837-9192

Singapore Repair Center
Snap-on Tools Singapore Pte Ltd
25 Tagore Lane, #01-01,
Singapore, 787602
Phone: 65-64515570
Fax: 65-64515574

Japan Repair Center
Snap-on Tools Japan K.K.
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Koto-ku, Tokyo 136-0082
Japan
Phone: 81-3-5463-1280
Fax: 81-3-5463-1284

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Kunshan, Jiangsu 215300,
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Phone: 86-51257708282 ext. 2068

Korea Repair Center:
Snap-on Tools Korea
#201-205, Sambo Techno Tower 122
Jomaru-ro 385beon-gil,
Bucheon, Gyeonggi-do
Republic of Korea 14556.
Phone: 82-323267310
Fax: 82-323267312

India Repair Center:
Snap-on Tools Private Limited
Gat No 2328, Ganga Retreat Club Road
Off Nagar Road
Wagholi, Pune - 413207
India.
Phone: +91 8956422112

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 DISTRIBUTOR OR A DESIGNATED COLLECTION CENTER

THANK YOU FOR CARING ABOUT OUR ENVIRONMENT!

Snap-on Tools Company
Kenosha, WI 53141-1410 USA

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