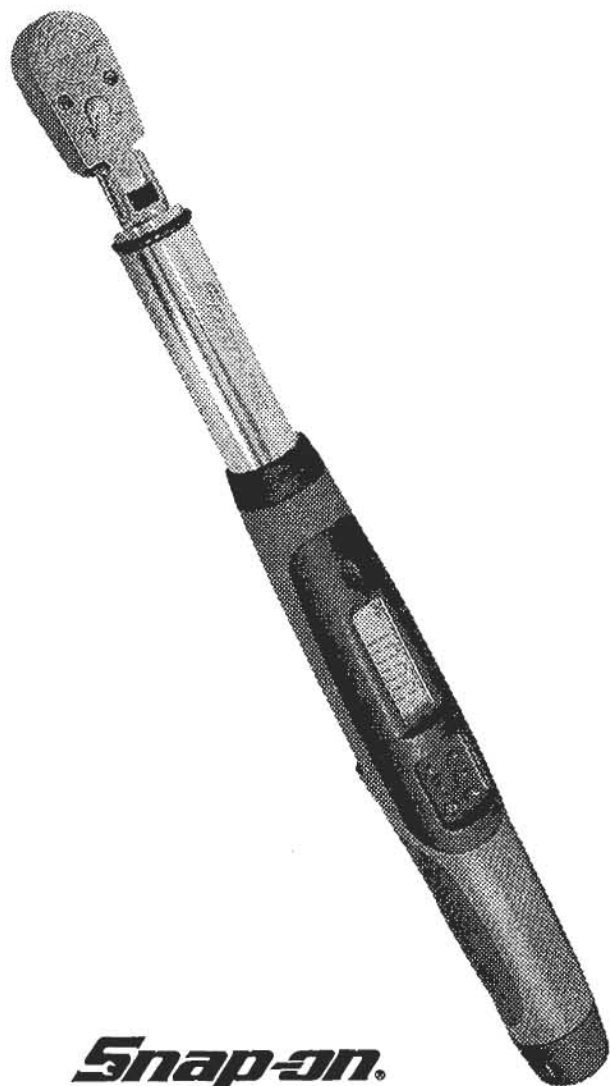


Instructions



Snap-on.

TECHMEMORY™
ELECTRONIC TORQUE WRENCH

CE

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 torque wrench can cause part or tool breakage. Broken hand tools, sockets or accessories can cause injury. Excess force can cause crow-foot or flare nut wrench slippage.



❑ **Read this manual completely** before using the TECH-WRENCH.

❑ For personal safety and to avoid wrench damage, follow good professional tool 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 the torque being applied.

❑ Observe all equipment, system and manufacturer's warnings, cautions and procedures when using this wrench.

❑ Use the correct size socket for the fastener. .

❑ Do not use sockets showing wear or cracks.

❑ Replace fasteners with rounded corners.

❑ **To avoid damaging the wrench:** Never use the wrench with the power off. Always turn ON the wrench so the applied torque is being measured.

❑ Do not press ON/ZERO while torque is applied.

❑ Never use this wrench to break fasteners loose.

❑ Do not use extensions, such as a pipe, on the handle of the wrench.

❑ Check that the wrench capacity matches or exceeds each application before proceeding.

❑ Make sure the ratchet direction lever is fully engaged in the correct position.

❑ Verify the calibration of the wrench if you know or suspect its capacity has been exceeded.

❑ Do not force the head of flex head drives against stops.

❑ Always pull - do not push - on the wrench handle and adjust your stance to prevent a possible fall should something give.



WARNING *Electrical Shock Hazard.*

Electrical shock can cause injury. Plastic handle is not insulated.

❑ Do not use on live electrical circuits.



SAVE THESE INSTRUCTIONS

SPECIFICATIONS

Display Capacity and Resolution

Model	Square Drive	Range ft-lb	in-lb	Nm
TECH1M	1/4in	2.00-20.00	24.0-240.0	2.80-28.00
TECH2M	3/8in	5.0-100.0	60-1200	6.7-135.6
TECH3M	1/2in	25.0-250.0	300-3000	33.9-339.0
TECH4M	3/4in	60.0-600.0	720-7200	81.3-813.6

Note: "SJ" models display Nm units of measure only

Display Modes SETUP (PRESET), TRACK, PEAK HOLD, MEMORY RECALL

Accuracy (72°F)	CW	CCW
Fixed or Flex	+/-1%	+/-1.5% of reading, 20% to 100% of full scale
Ratchet Head	+/-2%	+/-3% of reading, 10% to 19% of full scale
(non-flexed)	+/-4%	+/-8% of reading, 5% to 9% of F.S. (TECH2 only)
	CW	CCW
J, Y, X, and Z	+/-4%	+/-6% of reading, 20% to 100% of full scale
Interchangeable	+/-8%	+/-12% of reading, 10% to 19% of full scale
Tool Heads	+/-16%	+/-20% of reading, 5% to 9% of F.S. (TECHY only)

Torque Setting Resolution	TECH1M	0.1 ft-lb, 0.1 Nm, 0.01 in-lb
	TECH2M	1.0 ft-lb, 1.0 Nm, 1 in-lb.
	TECH3M	1.0 ft-lb, 1.0 Nm, 1 in-lb.
	TECH4M	1.0 ft-lb, 1.0 Nm, 1 in-lb.

Tolerance Setting fixed* at -2% of torque setting (all except "D" models)
adjustable (+ and -) 1 to 16% of torque setting ("D" models)
***Output alert occurs 2% below setting for ergonomic compensation**

Output Alert	Audible tone and Vibrating Handle
Memory Capacity	1000 readings - Reading number, torque value, units of measure
Digital Download	RS232 (True) - selectable 1200 to 19.2K Baud

Sealed Key Pad

-  **ON/ZERO** - auto self check (not a calibration check) - zero tare
-  **UP** - increments torque setting, tolerance and scrolls memory
-  **DOWN** - decrements preset torque setting and scrolls memory
-  **UNITS** - selects Nm, ft-lb, or in-lb, display
-  **MEMORY** - store, recall and clear peak readings
-  **PRINT** - RS232 download to computer or serial printer and port setup

Operating Temperature - 5 to 42°C (40 to 110°F)

Storage Temperature - -20 to 50°C (-1 to 122°F)

Humidity - up to 90% non-condensing

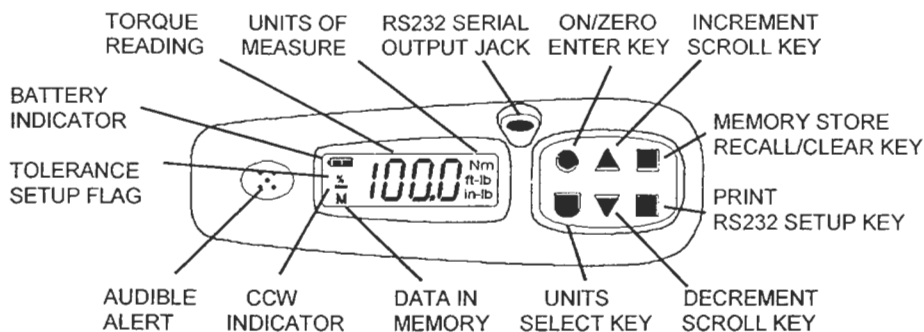
Dimensions -	length	weight	length	weight (w/o tool head)
TECH1FRM	15 in	1.7 lbs.	TECH1JM	13.5 in 1.6 lbs.
TECH2FRM	17 in	2.2 lbs.	TECH2YM	15.5 in 1.9 lbs.
TECH3FRM	26 in	3.7 lbs.	TECH3XM	23.5 in 2.9 lbs.
TECH4FRM	48 in	10.0 lbs.	TECH4ZM	45.5 in 7.0 lbs

Battery - three "AA" Alkaline cells, up to 80 hours continuous operation.

Auto Shut-off - after 2 minutes idle

OPERATOR INSTRUCTION

Display and Keypad



- 1. POWER ON** - With no torque applied, push the **"ON/ZERO"** key – the wrench will self-test and then show the torque preset value.
On "D" models the torque preset value is shown for two seconds and then the display shows "0000."
- 2. UNITS SELECT** - Push the **UNITS** key – to select **"Nm," "ft lb,"** or **"in lb."**
- 3. PRESET ADJUST** - Use the **INCREMENT** and **DECREMENT** keys to set the torque preset value. (Display will roll-over at each end).
*On "D" models, momentarily push the **ON/ZERO** key while holding down the **INCREMENT** key until the display flashes the torque preset value. Use the **INCREMENT** and **DECREMENT** keys to change the torque preset value. Push the **ON/ZERO** key to enter the new torque preset value and return to measurement mode.*
- 4. TOLERANCE ADJUST ("D" models only)**
*Momentarily push the **ON/ZERO** key while holding down the **DECREMENT** key until the display flashes tolerance percent. Use the **INCREMENT** and **DECREMENT** keys to change the tolerance value between 1% and 16%. Push the **ON/ZERO** key to enter the new tolerance value and return to measurement mode.*
- 5. APPLY TORQUE SLOWLY** until **audible** alert is heard and **vibration** alert is felt in the handle. **DO NOT APPLY LOAD TO THE ENDCAP.** The display will **TRACK** applied torque until load is released.
- On load release, the **PEAK** torque value is displayed, flashing, for 10 seconds or until torque is re-applied or any key is pushed.
- To **STORE** the **PEAK** reading, momentarily push the **MEMORY** key while the **PEAK** display is flashing.

Function Detail

The wrench will alert the user with a 1/2-second tone and handle vibration when the applied torque equals the torque preset value less the tolerance percent. Tolerance is fixed at -2% of reading for non-D versions. On "D" models, a three-tone burst will indicate that the applied torque exceeds the torque preset value plus tolerance percent.

Example: A wrench is preset to 80 ft-lb. On non-"D" models, the alert will occur at $80 - 2\% = 78.4$ ft-lb. On "D" models, if the tolerance is set to $\pm 10\%$ then the lower alert (1/2 sec tone and continuous vibration) will occur at $80 - 10\% = 72$ ft-lb and the overtorque alert (three-tone burst) will occur at $80 + 10\% = 88$ ft-lb.

A rapidly pulsing tone indicates that the full-scale capacity of the wrench is exceeded and the user must stop increasing torque. At 125% of wrench capacity the display will show "----" to indicate that possible damage may have occurred. Push the **ON/ZERO** key to initiate self-test. If the wrench has been damaged, the display will read "Err0" indicating that repair is necessary. If torque is applied while in the **PRESET** or **TOLERANCE ADJUST** modes, the wrench will output a continuous tone and handle vibration, and the display will show "ErrP."

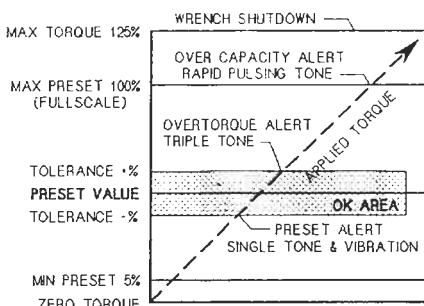


Figure 1—PRESET AND TOLERANCE RANGE

J, Y, X and Z Interchangeable Tool Head Versions

NOTE: Wrench accuracy is affected by tool length. The TECHWRENCH is designed to use Snap-on A-suffix QJ, QY, QX and QZ interchangeable tools.

Tool length is measured from the center of the locking pin to the center of the fastener drive. Calibrated drive distance is from the center of the fastener drive to the calibration mark on the wrench handle.

Model	Tool Length	Calibrated Drive Distance
TECH1J	2.5 in.	12.35 in.
TECH2Y	3.0 in.	14.82 in.
TECH3X	4.5 in.	24.30 in.
TECH4Z	5.75 in.	46.60 in.

If the insert tool is longer (+) or shorter (-) than the calibrated tool length, refer to the formulas in "USE OF ADAPTORS..." section of this manual for **torque setting** adjustment.

To derive correct **torque readings**, calculate an adjustment factor as follows: Divide the sum of the drive distance and the difference in tool length by the drive distance. Example: using a tool that is short by 1/4 inch, (-0.25) on the TECH2Y wrench, fastener torque will be lower than the display value by a factor of $(14.82 - 0.25) / 14.82 = 0.983$. Multiply all readings by 0.983.

Memory Functions

The **TECHMEMORY™** wrench will store, recall and download data to a computer or printer via RS232 true standard. A download software disk is included with the wrench for use with an IBM PC running WINDOWS or NT operating system. Refer to the **TORQLOG™** disk for PC installation instructions. Refer to your serial printer instruction manual for installation instructions - see *Setup serial baud rate* below.

Two Excel templates are provided on your **TORQLOG™** disk for your convenience. Copy them to your hard drive, rename them, and make whatever changes suit your needs. NOTE: *Snap-on Tools does not provide technical support for these templates.* Use the **DOWNLOAD** Template to print the previously stored data list from the wrench. The **PRINT** function of the wrench sends out the number of the reading, the torque value and the units of measure. Use the **DATE-TIME** Template to automatically create a **DATE** and **TIME** stamp for each reading, while the wrench is connected to the computer. Individual readings are both stored in the wrench and are sent out the serial port simultaneously. Only the torque value and the units of measure are sent out during the store function.

STORE - Momentarily push the **MEMORY** key to store **PEAK** readings captured on the flashing display. The audible alert will sound once and the reading will be stored and numbered in memory, and the reading will be sent out the RS232 port simultaneously. The "**M**" indicator will turn on when at least one reading is stored in memory.

RECALL - To review the data in memory, push and hold the **MEMORY** key for three seconds. The last reading will be displayed alternating with its memory location number. Use the **INCREMENT** and **DECREMENT** keys to scroll through the data list. Push **ON/ZERO** key to return to measurement mode.

CLEAR - To clear a reading, enter the **RECALL** mode as above. Scroll to the memory location number that you want to clear and hold the **MEMORY** key for three seconds. The display will show '**CLr**' for one second and decrement to the next reading. If this was not the last reading stored, all subsequent readings will shift down one memory location. Push **ON/ZERO** key to return to measurement mode.

CLEAR ALL - To clear the entire data list, enter the **RECALL** mode as above. Hold the **MEMORY** key and the **INCREMENT** key simultaneously for three seconds. The "**M**" indicator will turn off and the wrench will revert to measurement mode.

PRINT - To send the entire data list out the RS232 port, push the **PRINT** key momentarily. The audible alert will sound twice and the display will read "**SEnd**" until the data stream is finished. The wrench will then revert to measurement mode.

Setup serial baud rate:

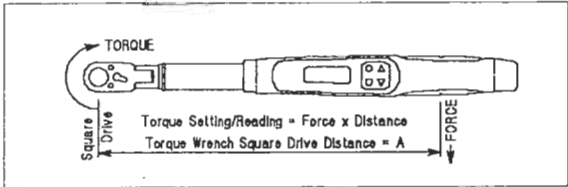
Note: RS232 protocol is true, 8 data bits, 1 stop bit, carriage return delay is 600 mS and character delay is 14 mS. Default is 9600 baud. Push the **ON/ZERO** key to exit the setup mode at any time without changing previous baud setup.

To change output baud rate, push and hold the **PRINT** key for three seconds to enter setup mode. Display shows previously programmed baud rate flashing and **UNITS** display is off. Use the **INCREMENT** and **DECREMENT** keys to select the required baud rate, "0012"=1200, "0024"=2400, "0048"=4800, "0096"=9600 or "0192"=19.2K. Push the **PRINT** key momentarily to accept the new baud rate. Audible alert will sound once and display will revert to measurement mode.

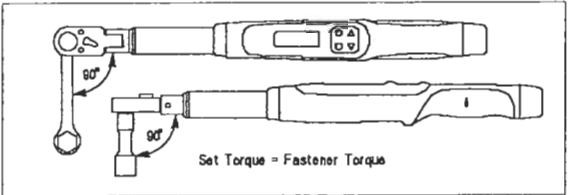
SE OF ADAPTORS, EXTENSIONS AND UNIVERSALS

rytime an adaptor, extension or universal is used with a torque wrench in such a ay that the fastener distance is different than the torque wrench square drive dis- nce, an adjustment to the set torque is required to get proper fastener torque.

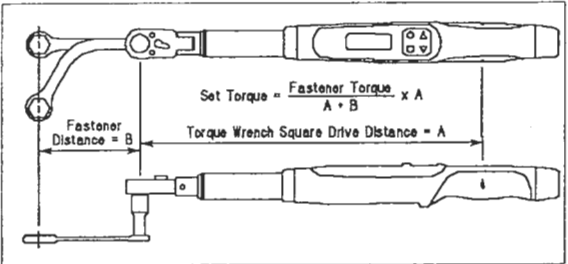
Fastener torque equals torque wrench square drive torque. Wrench setting is equal to desired fastener torque.



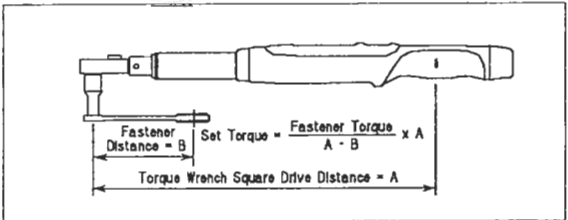
Fastener torque equals torque wrench square drive torque. Wrench setting is equal to desired fastener torque.



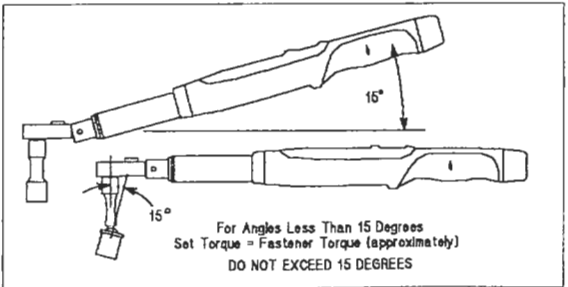
Fastener torque is greater than torque wrench square drive torque. Calculated setting will be lower than desired fastener torque.



Fastener torque is less than torque wrench square drive torque. Calculated setting will be higher than desired fastener torque.



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 the flex-drive at full flex.



CALIBRATION

Contact your *Snap-on* sales representative for calibration services.

If you have an in-house calibration capability, instructions are available at:

www.snapon.com/torque/techwrench

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

Equipment Required: A torque source, accurate to 1/4% of reading.

CERTIFICATION

This torque wrench, as calibrated at the factory, is certified to meet the accuracy specified in International Standard ISO 6789 and ANSI Standard B107-28 and was calibrated on a torque standard traceable to the National Institute of Standards Technology (N.I.S.T.). All TECHMEMORY wrenches comply with EEC Directives.

Note: To insure specified accuracy;

1. Apply load to the "V" notch on the handle.
2. On flex-ratchet models, the head must be straight.
3. Check calibration every 5,000 cycles or annually.

MAINTENANCE / SERVICE

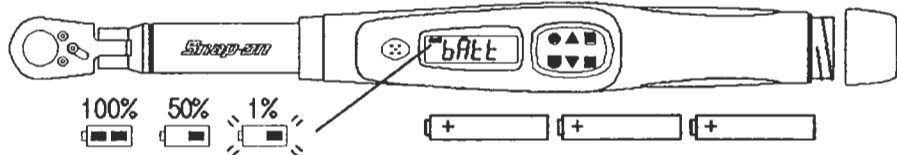
Clean torque wrench by wiping with a damp cloth. Do NOT use solvents, thinners or carb cleaners. Do NOT immerse in anything. Service, repair and calibration are to be done by Snap-on Service Centers only. Contact your Snap-on Tools representative. Ratchet head repair can be done by Snap-on Representative or user.

NOTE: If the display shows "Err0" at power on, the wrench is damaged and must be returned for repair

BATTERY REPLACEMENT

Replace with three "AA" Alkaline cells only.

Remove battery when wrench is in storage.



ACCESSORIES

Download CD for IBM PC
RS232 Output Cable to IBM PC

Part Number

TWSTORQLOG
TWS110003

PATENTS: US 4,958,541 and Pending

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

2151 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
Unit 6/110 Station Road
Seven Hills, NSW 2147
Australia
Phone: 61-2-8937-9155
Fax: 61-2-9624-2445

Singapore, Repair Center

Snap-on Tools Singapore PTE Ltd
128 Tagore Lane, Blk 4 Singapore
787554 Republic of Singapore
Phone: 011-65-451-5570
Fax: 011-65-451-5574

Japan Repair Center

Snap-on Tools Japan K.K.
3-5-12 Konan
Minato-KU, Tokyo 108
Japan
Phone: 81-3-5463-1280
Fax: 81-3-5463-1284

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