FOR YOUR PERMANENT FILE

WRENCH MODEL NUMBER:

_____

WRENCH SERIAL NUMBER:

_____

For Warranty Claims, Contact CDI Torque Products at (626) 965-0668.

LIMITED WARRANTY

The CDI Torque and Angle 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!

CDI TORQUE PRODUCTS

A Snap-on Specialty Tools Brand

19220 SAN JOSE AVENUE • CITY OF INDUSTRY, CA 91748 • USA
(626) 965-0668

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Form 20-1900-CDI
6/2010 Rev. N/C

OPERATION MANUAL

TORQUE AND ANGLE ELECTRONIC TORQUE WRENCH

CDI TORQUE PRODUCTS

SAFETY MESSAGES

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 crow foot or flare nut wrench slippage.

READ THIS MANUAL COMPLETELY BEFORE USING THE CDI TORQUE & ANGLE WRENCH

- To insure 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 tool accuracy.

USERS AND BYSTANDERS SHOULD ALWAYS WEAR EYE PROTECTION

- Be sure all components, including adapters, extensions, drivers and sockets are rated to match or exceed the torque being applied with tool.
- Observe all equipment, system and manufacturer's warnings, cautions and procedures when using this wrench.
- Always use the correct size socket for the fastener being torqued.
- Do not use damaged sockets, showing signs of wear or cracks.
- Always replace damaged fasteners before applying torque.

WARNING - To avoid damaging Torque & Angle Wrench

- Never operate wrench when powered OFF. Always power wrench ON prior to applying torque.
- Do not press ON/OFF key while torque is being applied.
- Never use this wrench to loosen fasteners.

SAFETY MESSAGES

- Never use extensions, such as a pipe, on the handle of the wrench.
- Always make sure the ratchet Forward/ Reverse Switch is fully engaged in the correct position.
- Always verify that the wrench capacity matches or exceeds each application before proceeding.
- Always verify the calibration of the wrench if you know or suspect its capacity has been exceeded.
- Never 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 while applying torque.

WARNING - Electrical Shock Hazard

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

MAINTENANCE / SERVICE

1. **IMPORTANT** - Service, repair and calibration are to be performed by CDI Torque Products only. Calibration by the user is recorded in the wrench and voids factory certification.

2. The torque wrench's internal mechanism is permanently lubricated during assembly. **Do not attempt to lubricate the internal mechanism.**

3. To safely clean the torque wrench, wipe with a damp cloth. **NEVER use solvents, thinners, or engine cleaners of any kind. NEVER immerse the torque wrench in liquids of any kind.**

4. Store torque wrench in protective tube at its lowest torque setting. **Do not force handle below lowest setting.**

INTRODUCTION

The CDI Torque & Angle wrench digitally displays and monitors fastener torque and angular rotation (turn).

DISPLAY MODES

TORQUE - wrench functions as an adjustable torque wrench.

ANGLE - wrench functions as an adjustable angle wrench and simultaneously monitors torque to prevent fastener or wrench overload.

SETTINGS - Adjustable torque and angle settings for fastener installation specifications. The preset values are programmable from 5% to 100% of full-scale torque and 5 to 360 degrees of rotation. The scrolling display rolls-over at both ends for convenient and quick setting.

OVERLOAD - If the wrench is used beyond 100% torque capacity, the audible tone will pulse rapidly to warn the user to stop.

ZERO/RESET - Automatic self-check, torque zero and angle reset at power-on and anytime the ON/OFF key is pushed. (This is not a calibration check).

FUNCTION DETAILS - To **PRESET** the wrench, select the **UNIT** of measure (**Nm, ft-lb, in-lb or degrees**) desired. Use the **UP** and **DOWN** keys to set the required torque or angle.

In the **torque display mode**, the display shows the torque **PRESET** value until 5% or more of full scale torque is applied. The display then switches to **TRACK** mode showing the applied toque in real time. When applied torque is within -10% of the preset value, the Yellow LED turns ON. When applied torque is within +/-4% of the preset value, the Green LED turns ON, the buzzer sounds for 1/2 second, and the handle vibrates continuously until torque is released. If torque is re-applied, the display will immediately switch to TRACK mode. If torque exceeds +4% of the preset value, the Red LED turns On, the buzzer pulses, and the handle vibrates until torque is released. Exceeding 125% of full scale the display will lockup showing "- - - -" and the buzzer pulses. The wrench must be reset by pushing the **ON/OFF** button.

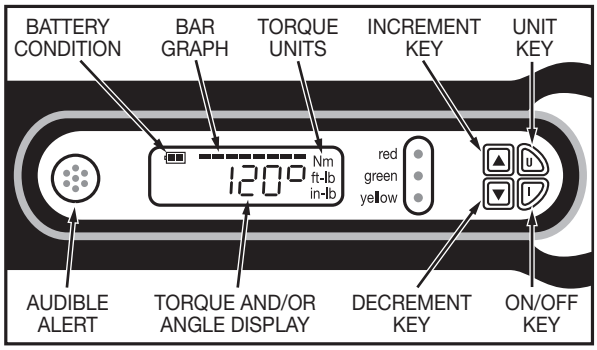
In the **angle display mode**, the display shows the angle **PRESET** value until 5% or more of full scale torque is applied. Rotation is accumulated in angular degrees. When torque is released, the accumulated torque and angle values will flash alternately for 10 seconds. The display will continue to accumulate if torque is reapplied within 10 seconds. This allows time for reverse (ratchet) motion. When the accumulated angle is within -10 degrees of preset value, the Yellow LED turns ON. When the accumulated angle is within -5 degrees of preset value, the buzzer turns ON while the Yellow LED remains ON. When accumulated angle is within -1 degree of preset value, the Green LED turns ON, the buzzer sounds for 1/2 second, and the handle vibrates continuously until torque is released. If accumulated angle exceeds +2 degrees of the preset value, the Red LED turns On, the buzzer pulses, and the handle vibrates until torque is released, If angle preset is reached and torque is released, angle accumulation is reset to zero automatically. This allows moving on to the next fastener immediately.

The yellow LED illuminates within 10% of target torque.

The green LED illuminates within 4% of target torque. Continuous buzzer sounds when target is reached.

The red LED illuminates 4% beyond target torque, indicating fastener was overtorqued. Rapid "alarm" buzzer sounds.

OPERATOR INSTRUCTION



1. Turn the wrench **ON** by momentarily pushing the **ON/OFF** key. The display will return to the mode of operation and preset values previously set up.

2. To change the mode of operation, **TORQUE** or **ANGLE**, scroll the selections by momentarily pushing the UNITS key. The preset values for each mode will be displayed.

3. Use the **UP** and **DOWN** keys to change the preset values.
   (Note: **TORQUE** is also measured in **ANGLE** mode).

4. Grasp the center of the handle and slowly apply torque to the fastener until the Green LED, audible buzzer, or handle vibration alerts you to stop.

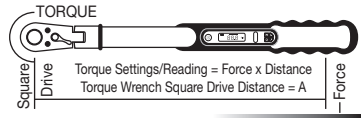
5. Release torque. Note the **PEAK** reading flashing on the display for 10 seconds, unless torque is re-applied or the **ON/OFF** key is pushed to clear the display.

6. In **ANGLE** mode, place the wrench on a flat surface during **ZEROTARE**.

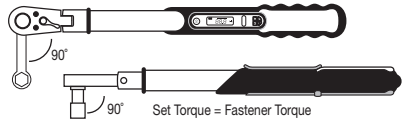
7. The Bar Graph shows measured **TORQUE** or **ANGLE** as a percentage (10-100%) of Preset.

USE OF ADAPTERS, EXTENSIONS AND UNIVERSALS

Anytime an adapter, extension or universal is used with a torque wrench in such a way that the fastener distance is different that the torque wrench square drive distance, 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.



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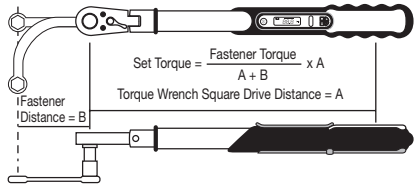
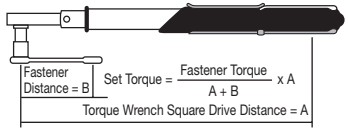
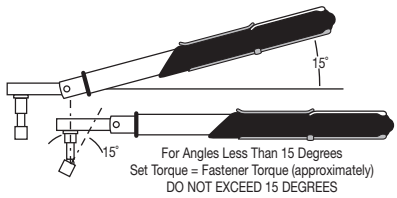


Fastener torque is greater than torque wrench square drive torque. Calculated setting will be lower that desired fastener torque.



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



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

SPECIFICATIONS

RATCHET HEAD - Square drive, 36 teeth, sealed flex

DISPLAY - 4-digit LCD, torque units, CCW and battery condition flags

SEALED KEY PAD

- **POWER** - ON/OFF - auto self check - torque zero - angle reset
- **UP** - increments torque and angle setting
- **DOWN** - decrements torque and angle setting
- **UNITS** - unit mode select (ft-lb, in-lb, Nm, °)

FUNCTIONS

SET - torque and angle - adjustable - audible and tactile alert

TRACK - accumulated angular rotation with real time update

PEAK HOLD - 10 sec. flashing at torque release

ACCURACY (72° F)
ANGLE: +/-1% of reading +/-1° angular velocity › 10°/sec ‹ 180°/sec
TORQUE:

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

PRESET RANGE
ANGLE: 5 to 360° CW or CCW (Display Resolution 10)
TORQUE: (Display Resolution as shown below)

Model	ft-lb	Nm	in-lb	overload (ft-lb)
1002TAA	5.0-100.0	6.8-135.6	60-1200	125
2503TAA	12.5-250.0	16.9-338.9	150-3000	312

OPERATING TEMPERATURE: 55° to 95° F (13° to 35° C)

STORAGE TEMPERATURE: -1° to 122° F (-20° to 50° 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

SPECIFICATIONS

DIMENSIONS

PART NUMBER	DRIVE	LENGTH	WEIGHT
1002TAA	3/8”	17 in.	2.2 lbs.
2503TAA	1/2”	27 in.	3.5 lbs.

BATTERY - Two (2) “CR123” Lithium cells, over 80 hours continuous operation.

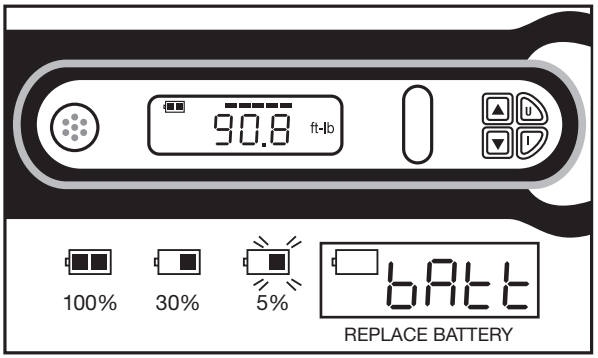
AUTO SHUT-OFF - Auto power OFF will occur after 2 minutes of non-usage to conserve battery power.

PLEASE NOTE

1. **EQUIPMENT REQUIRED** - Precision test bars and certified calibration weights or another torque source, accurate to 0.5% of reading.

2. **NOTES**
   - If the display shows **“Err0”** at power on, the wrench is damaged and must be returned to CDI Torque Products for repair.
   - If the display shows **“ErrA”** in the angle mode, fastener rotation speed has exceeded the capacity of the wrench.
   - The wrench must be held still during angle mode reset. Motion is indicated by alternating outside center segments of the display **“- -”**
   - Remove battery when stored for extended periods.

3. **BATTERY REPLACEMENT** - Replace with two (2) “CR123” Lithium cells only (available anywhere). To replace battery, remove cover on underside of handle (opposite display).



CERTIFICATION

This torque wrench as calibrated at the factory, is certified to meet the current ASME specification. Additionally, all wrenches are calibrated on a torque standard traceable to the National Institute of Standards and Technology (N.I.S.T.).

CONVERSION TABLE

To Convert From	To	Multiply By
in. oz.	in. lb.	0.06250
in. lb.	in. oz.	16
in. lb.	ft. lb.	0.08333
in. lb.	cmkg	1.15212
in. lb.	mkg	0.01152
in. lb.	Nm	0.11298
in. lb.	dNm	1.12984
ft. lb.	in. lb.	12
ft. lb.	mkg	0.13825
ft. lb.	Nm	1.35581
dNm	in. lb.	0.88507
dNm	Nm	0.1
Nm	dNm	10
Nm	cmkg	10.1971
Nm	mkg	0.10197
Nm	in. lb.	8.85074
Nm	ft. lb.	0.73756
cmkg	in. lb.	0.86796
cmkg	Nm	0.09806
mkg	in. lb.	86.7961
mkg	ft. lb.	7.23301
mkg	Nm	9.80665

USE OF EXTENSIONS AND ADAPTERS

When using an extension or adapter (increasing the effective length of the torque wrench) the output torque value will change. To calculate the new torque output of the wrench use the following formula:

$$TW = \frac{TA \times L}{L + A}$$

TA = Torque exerted @ end of adapter
L = Distance between square drive and hand position
TW = Wrench scale reading
A = Length of adapter or extension

A number of variables can affect torque accuracy. These include the length of an adapter or extension, length of the wrench and variations in hand position on the wrench will affect the accuracy of the above calculation.

NOTES