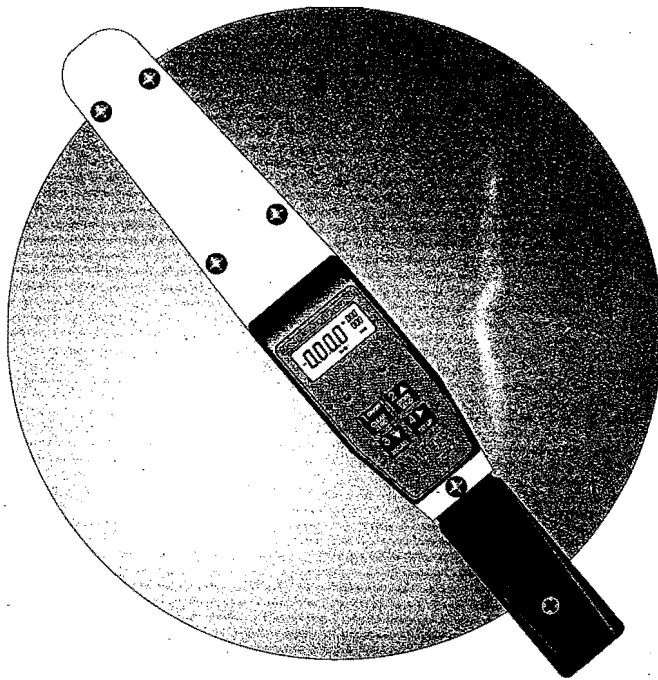


Manual No. 50AA8243

All New Electronics
DATATORQ
ELECTRONIC TORQUE WRENCH



Precision Tools for the 21st Century

Mitutoyo-

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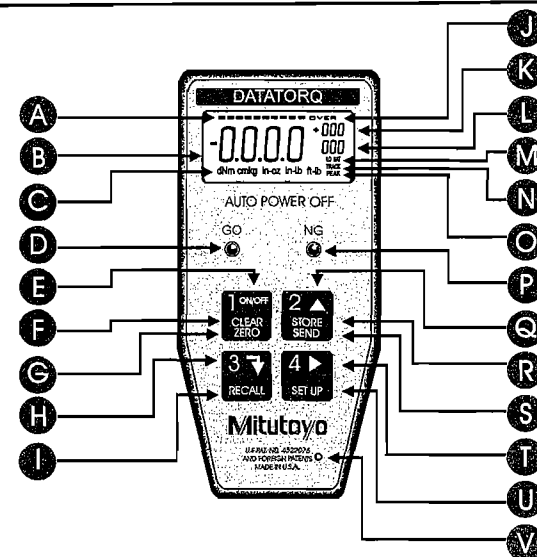
CONGRATULATIONS ON THE PURCHASE OF THE MOST SOPHISTICATED, YET USER FRIENDLY ELECTRONIC TORQUE WRENCH MANUFACTURED TODAY. WITH MINIMUM MAINTENANCE, YOUR WRENCH SHOULD PROVIDE YEARS OF TROUBLE FREE SERVICE. PLEASE READ THE ENTIRE OPERATING MANUAL TO OBTAIN THE MAXIMUM PERFORMANCE FROM YOUR NEW WRENCH.

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FEATURES OF DATATORQ

- ACCURACY TO +/- 1%
- LARGE STORAGE OF TORQUE DATA MEMORY
- NEWEST ELECTRONICS AVAILABLE TODAY
- EXTREMELY ACCURATE AND REPEATABLE
- MICROPROCESSOR AND STRAIN GAUGE BASED TECHNOLOGY
- SELECTABLE MODES OF OPERATION
- DOWN-LOADING OF TORQUE DATA VIA DIGIMATIC CODE OUT PORT
- EASY SET-UP OF TORQUE PARAMETERS
- LARGE RANGE OF TORQUE CAPACITIES 5 IN.LBS. TO 1,000 FT.LBS.
- USE OF STANDARD 9 VOLT ALKALINE BATTERIES
- AUDIO INDICATORS
- VISUAL INDICATORS
- TORQUE DIRECTIONAL INDICATOR
- ANALOG BAR GRAPH
- TARGET TORQUE VALUE SIGNALING WITH HI/LOW PERCENTAGE INDICATORS
- SEVEN (7) TORQUE ENGINEERING UNITS THAT ARE SELECTABLE
- OVER-LOAD INDICATOR
- SLEEP MODE FOR BATTERY CONSERVATION
- RECALL OF STORED MEMORY TORQUE VALUES ON LCD — UP TO 999
- DOWNLOADS TO MITUTOYO SPC PERIPHERALS
- AUDIO TONE FOR DATA ACCEPTANCE VIA KEYPAD
- LOW BATTERY INDICATOR
- AUTOMATIC COMPENSATION FOR USE WITH ADAPTERS AND
- MUCH, MUCH MORE...

DATATORQ



KEY PAD FUNCTIONS

- | | |
|--|--|
| <ul style="list-style-type: none"> Ⓐ ANALOG BAR GRAPH Ⓑ SUPER TWIST LIQUID CRYSTAL DISPLAY Ⓒ 7 TORQUE UNITS (Ft.Lb., In.Lb., In.Oz., Nm, dNm, MKG, CmKG) Ⓓ GREEN "GO" LIMIT LED Ⓔ POWER ON/OFF Ⓕ CLEAR LCD DISPLAY Ⓖ ZERO TARE Ⓗ ENTER (ACCEPT INFORMATION) Ⓘ RECALL TORQUE DATA STORED IN MEMORY Ⓛ OVER TORQUE "WARNING" Ⓚ SPECIFIC TORQUE NUMBER IN MEMORY BEING RECALLED AND SHOWN ON LCD Ⓛ NUMBER OF TORQUE VALUES IN MEMORY | <ul style="list-style-type: none"> Ⓜ LOW BATTERY INDICATOR Ⓝ TRACK MODE Ⓞ PEAK HOLD MODE Ⓟ RED "OVER TORQUE" LIMIT LED Ⓠ SCROLL UP (INCREASE VALUE DURING SET-UP) Ⓡ STORE DATA TO WRENCH Ⓢ SEND DATA TO COMPUTER/DATA LOGGER/PRINTER Ⓣ SHIFT TO NEXT FLASHING DIGIT (DURING SET-UP) Ⓤ SET-UP PARAMETERS (TOLERANCE LIMIT/TORQUE UNIT) Ⓡ AUDIO BUZZER |
|--|--|

ELECTRONIC WRENCH SETUP

• TO TURN WRENCH "ON"

Press Button #1 (on/off).

The red and green lights will flash.

Zeros will flash and then be displayed on the LCD along with the unit of torque measure.

The wrench is ready to use.

NOTE: If button #1 is pressed **and held** when first turning the wrench "on," the torque range capacity and current software version of program will be displayed.

• TO CHANGE MODE OF OPERATION: "TRACK" OR "PEAK"

1. Press Button #4 (set-up) one time.
Either "Track" or "Peak" will be flashing.
2. To change the mode, press Button #2 (store/send). Continued pressing of Button #2 (store/send) will toggle between "Track" or "Peak."
3. Press Button #3 (recall) to accept the desired "flashing" mode change into wrench memory.

• TO CHANGE UNIT OF TORQUE MEASURE: In.Lb., In.Oz., NM, dNM, MKG, CmKG, Ft.Lb.

1. Press Button #4 (set-up) two times.
The unit of measure will flash on the display.
2. To change the unit of measure, press Button #2 (store/send). Continue pressing Button #2 (store/send) until the unit of measure desired is blinking on the LCD.
3. Press Button #3 (recall) to accept this change into the wrench memory.

• TO SET A TARGET TORQUE VALUE:

1. Press Button #4 (set-up) three times.
The first zero (0) on the digital display will blink.
2. To set a nominal target value into wrench memory, press Button #2 (store/send).
As this button is repeatedly pressed, numbers zero through nine (0-9) will be displayed.
3. When the correct number is displayed on the first digit, press Button #4 (set-up). This will "hold" that number and cause the second digit to blink.
4. Again, press Button #2 (store/send) until the value desired is displayed (0-9).
5. Press Button #4 (set-up) to "hold" this value and cause the third digit to blink.
6. Continue the same steps above to set the values for the third and fourth digits.
7. After pressing Button #4 (set-up) on the last digit, the decimal point will be blinking. This "point" can be placed in three different locations by pressing Button #2 (store/send). Press Button #4 (set-up) when the decimal point is in the desired location.
8. Press Button #3 (recall) to accept this change into the wrench memory.

0000

250.0
EXAMPLE

0000
FLASHING

0000
FLASHING

155.0
FLASHING

• TO SET PERCENTAGE OF TOLERANCES:

1. Press Button #4 (set-up) until the first digit of two in the upper right corner is blinking.
2. This will be the first of two digits in the (+) maximum tolerance percentage. Again, as before, press Button #2 (store/send) until the first digit is set at the desired value. Press Button #4 (set-up) to accept this value and move to the next blinking number.
3. Repeat the above procedure for the second digit. When the desired digit is displayed, press Button #4 (set-up). The maximum tolerance is now entered.
4. The first digit of the (-) minimum tolerance should be flashing. Press Button #2 (store/send) to scroll through numbers (0-9). Press Button #4 (set-up) to accept this value and move to the second flashing digit. Press Button #2 (store/send) to scroll through numbers (0-9) until the second desired number is displayed.

NOTE: Review the entire LCD at this time. If everything is as desired, press Button #3 (recall) to accept **all** parameters into wrench memory. These parameters will remain in memory until they are changed.

EXAMPLE SET-UP (SEE PAGE 8 – QUICK SET-UP FLOW CHART)

To set a 250 in.lb. Datatorq to a nominal "target" value of 100 in.lbs. +/- 2%. The following steps would be necessary:

1. Press Button #1 to turn the wrench "on" (check to see if "peak" is active).
2. Press Button #4 twice and verify the active torque units are in in.lbs.
3. Press Button #4 one more time to activate the first blinking "0."
4. Press Button #2 until the number "1" is displayed.
5. Press Button #4 five times to scroll through the three remaining zeros and the decimal point placement.
6. Press Button #4 one more time to scroll through the first zero of the (+) maximum percentage. The second digit should be blinking.
7. Press Button #2 until the number "2" is displayed on the second digit.
8. Press Button #4 twice to the second digit of the (-) minimum percentage.
9. Press Button #2 until the number "2" is displayed on the second digit.
- * Review Entire LCD at this time.
10. Press Button #3 to place all above parameters into memory of wrench.

PLEASE NOTE: The wrench will sound an audible signal and a green light will flash when the applied torque to the wrench reaches the lower acceptable torque limit of 98 in.lbs. (100 in.lbs. - 2%). The green light and audible tone will continue until the torque value reaches the maximum preset limit of 102 in.lbs. (100 in.lbs. + 2%). The red & green lights will flash and intermittent tones will sound if the torque value exceeds the maximum percentage allowed. Loud audible tones and flashing lights will continue even when an over torque (of the range of the wrench) condition occurs. The display will then show "OVER" in small letters in the extreme upper right of the display. After a over torque of 50% of the range of the wrench, "Over" will be displayed on the LCD. Damage may have already occurred.

SAMPLE
155.0
FLASHING

SAMPLE
155.0
REVIEW

0000
READY TO TORQUE

0000
AFTER PRESSING BUTTON #1

100.0
REVIEW

098.0
SIGNALLING

25.12
EXAMPLE

Over

ELECTRONIC WRENCH FUNCTIONS

• TO USE IN "TRACK" MODE OF OPERATION:

1. Turn wrench "on." Check to see if wrench is in "TRACK" mode.
2. Place wrench on a fastener and apply a force. The value on the LCD will rise with the applied torque and then decrease when this force is removed. Thus, the values will "track-up" and then "track-down."

• TO USE IN "PEAK" MODE OF OPERATION:

1. Turn wrench "on."
2. Refer to page 4 - "TO CHANGE MODE OF OPERATION" if wrench is not in "PEAK" mode.
3. Apply a force with the wrench, the highest torque value will be held on the LCD.

• TO USE MEMORY FEATURE IN PEAK MODE OF OPERATION:

1. Set up wrench to "Peak" mode of operation (see page 4).
2. Load the wrench to correct applied torque desired. Release the force applied. The maximum torque (peak) will remain on the display.

NOTE: YOU NOW HAVE TWO OPTIONS

- A. Press Button #2 (store/send) to store this torque value into memory. The display will clear to all zeros (000.0). The number "001" will appear in the lower right of the display. Repeat step 2 above and then press Button #2 (store/send) until the desired number of applied torque values is reached.
- B. Press Button #1 (clear/zero) and LCD will clear...wrench is ready for new torque operation. No value is stored in memory.

• TO RECALL DATA STORED IN MEMORY TO THE LCD:

1. Press Button #3 (recall). The torque values placed in memory will appear on the digital display in the reverse order that they were placed in memory.
Example: Last torque value taken and placed into memory is first to be recalled. The sequence number will be displayed in the upper right of the display (just above the total number of stored torque values in memory).
2. Continued pressing of Button #3 (recall) will scroll through all torque values in memory to a total of 4,000.

• TO DOWNLOAD THE STORED DATA TO A PRINTER OR COMPUTER:

1. Press Button #3 (recall) at any time during the torque sequence (see above).
2. Then press Button #2 (store/send). The display will show the values are being sent by indicating "SEnd" on the LCD and will signal when all the data has finished being transmitted by an audible tone and the LCD display returning to the last torque value left on the display.
3. If, after a torque value has been taken, you wish to "send" this value to a peripheral, press and hold Button #2 (store/send) for approx. 2 seconds. A tone indicates completion of this function. If this torque value also needs to be placed into memory, press button #2 (store/send) once.

PLEASE NOTE: When downloading recalled memory to a printer the data will be sent and printed in the order torque values were taken.

Example: First value taken will be first value printed.

* Please refer to page 14 for proper cabling.

** If "Err" is displayed on the LCD during transmission of torque data, the battery may need to be replaced. See page 15 for battery replacement diagrams.

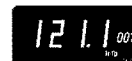
*** When downloading real time data to Mitutoyo microprocessor, press & hold Button #2 (store/send) for 2 seconds. The measured data (not stored in memory) will send to printer.



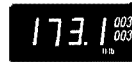
EXAMPLE



BEFORE



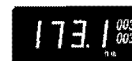
AFTER
PRESSING
BUTTON #2



AFTER
PRESSING
BUTTON #3



SCROLLING
THROUGH
MEMORY



BEFORE
SENDING



SENDING



AFTER ALL
VALUES SENT

OPTIONS:

- A. After data is sent, or, TO CLEAR MEMORY ANYTIME, press Button #1 (clear/zero) TWICE in rapid succession. An audible tone is sounded indicating all stored data in memory will be erased. The display will read "CLr" and then all zeros.

PLEASE NOTE: Data being sent to a printer may be terminated at any time by pressing Button #2 (store/send).

- B. To continue to add more values to the existing memory, press Button #4 (set-up) and take more torque reading.

PLEASE NOTE:

- A. To prevent stored torque values in memory from being cleared erroneously, an operator must first have recalled torque values on the LCD by pressing Button #3 (recall) and then pressing Button #1 (clear/zero) twice.
- B. While applying a load to the fastener, in "TRACK" mode, care must be used by the operator to assure that the applied torque is "held somewhat steady" while Button #2 (store/send) is pressed. Datatorq's microprocessor will capture and store the values on the display the instant Button #2 (store/send) is pressed.

• TO TURN WRENCH "OFF":

- A. Press and hold Button #1 (clear/zero) for approximately 2 seconds. An audible tone will signal and the display will turn blank.

• BAR GRAPH FUNCTION

- A. A ten segment bar graph on the top of the LCD is a reference for the operator of the relative position of applied torque to the full range of the wrench. This is whether in track or peak modes.

EXAMPLE: 250 Ft.Lb. Wrench -
Torquing in Clockwise Direction



If there is a TARGET torque value with percentage tolerances, the ten segment bar graph will show full scale AT THE TARGET VALUE - not the wrenches' full scale.

EXAMPLE: 250 Ft.Lb. Wrench set at 100 Ft.Lb. -
Torquing in Counter-Clockwise Direction



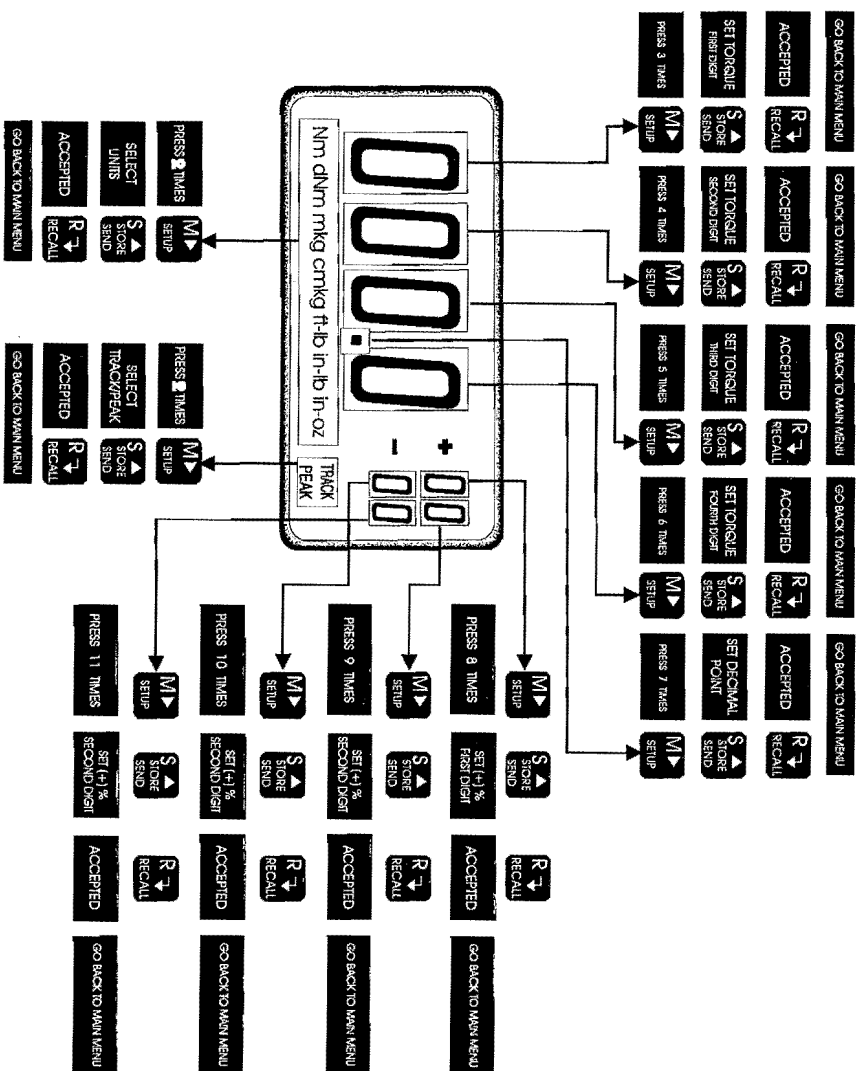
PLEASE NOTE:

- A. The next time the wrench is turned "ON," the same parameters as last used will still be active until changed.
- B. If "Err" is displayed on the LCD (flashes at any time) the wrench should be turned off and then on with NO LOAD on the wrench. If "Err" continually appears on the LCD after performing the above procedure, return the wrench to the factory for evaluation.

IMPORTANT NOTICE: Please read the following cautions and warnings before using your electronic torque wrench.

DATATORQ is, in effect, a transducer. Torque transducers are sensitive measuring instruments. "Over Torquing" past the useable torque range of the wrench may result in permanent damage. Always load the wrench slowly and do not exceed the useable range in any application.

DATATORQ SET UP FLOW CHART



CALIBRATION PROCEDURES FOR DATATORQ ELECTRONIC TORQUE WRENCHES

Due to the accuracy and the sensitivity of the Datatorq electronic torque wrench, a mechanical torque loader with a torque display (preferably electronic) must be used for input torque. The loader is necessary because the human hand cannot "push" or "pull" on the wrench with enough stability for the torque input to be an accurate value.

The calibration procedure must be done in both directions (CW and CCW).

Please consider the following calibration precautions:

- Make sure the Datatorq is level (or horizontal) while in the loader. If not, side loading may affect the true readings.
- Make sure the "reaction point" is in the center of the grip or handle.
- Make sure the least amount of sockets and adapters are used when mating to the calibration equipment.
- Check all sockets and adapters for "excessive play." This could result in false loads being applied and shown on the display.
- Make sure the wrench is in the proper torque engineering units prior to calibrating.
- Make sure the wrench mode of operation is in "TRACK." See page 4 for Set-Up.

ACCURACY OF ALL MODELS OF ELECTRONIC WRENCHES

+/- 1% FROM 20-100% OF RANGE OF WRENCH.

+/- 1%, PLUS 5 INCREMENTS, FROM 10-20% OF RANGE OF WRENCH.

SPECIFICATIONS

PART NUMBER	DR.	RANGE	INCRMT.	LGTH.	WT. LBS.
983-210	1/4"	5-50 In.Lbs.	.01 In.Lbs.	13.5"	1.5
983-211	3/8"	25-250 In.Lbs.	.1 In.Lbs.	14.9"	2.0
983-212	3/8"	5-50 Ft.Lbs.	.01 Ft.Lbs.	14.9"	2.0
983-213	1/2"	25-250 Ft.Lbs.	.1 Ft.Lbs.	21.5"	3.2
983-214	3/4"	60-600 Ft.Lbs.	.1 Ft.Lbs.	46.5"	9.9
983-215	1"	100-1000 Ft.Lbs.	1 Ft.Lbs.	74.0"	19.0

Wrenches may be set up in 7 different torque engineering units: Ft.Lb., In.Lb., In.Oz., NM, dNM, MKG or CmKG. See page 4 ("TO CHANGE UNIT OF TORQUE MEASURE")

Please Note: Datatorq has an exclusive feature – when using extensions or adapters, Datatorq's electronics can automatically compensate for these extra lengths. See page 8 for diagram.

EXERCISE THE BUILT-IN TRANSDUCER CLOCKWISE THREE TIMES BY APPLYING FULL LOAD IN THE ELECTRONIC DISPLAY OF THE CALIBRATED UNIT.

HOLD KEY  FOR 3 SECOND (BUZZER ON)  FIRST DIGIT WILL BLINK

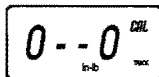
ENTER "CALIBRATE CW" CODE 5251 BY:

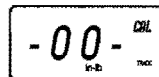
- A/- PRESS KEY  SCROLL UP TO (5) PRESS KEY  SHIFT NEXT DIGIT
- B/- PRESS KEY  SCROLL UP TO (2) PRESS KEY  SHIFT NEXT DIGIT
- C/- PRESS KEY  SCROLL UP TO (5) PRESS KEY  SHIFT NEXT DIGIT
- D/- PRESS KEY  SCROLL UP TO (1) PRESS KEY  SHIFT NEXT DIGIT
- E/- PRESS KEY  ACCEPTED CODE 5251

BUZZER WILL TURN ON AND LCD WILL DISPLAY



FULLY LOAD WRENCH IN CW DIRECTION UNTIL "LOAD" ON LCD DISAPPEARS AND DISPLAY SHOWS "0-0" / "00-"





FULLY UNLOAD WRENCH AND WAIT 10 SECONDS, THEN PRESS KEY  LCD WILL DISPLAY "0" KEEP AN EYE ON THE ELECTRONIC DISPLAY LOAD TO FIRST VALUE

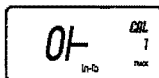
PRESS KEY  TO ACCEPT



① THE FIRST CALIBRATION POINT, SET BY MANUFACTURER

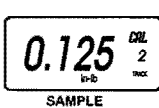
BUZZER WILL TURN OFF AND ON 10 TIMES LCD DISPLAY, WILL COUNT DOWN FROM 10 TO 0, AND DISPLAY "0"

② NOTE: DURING PROCESS, HOLD THE WRENCH VERY STILL UNTIL "0" IS DISPLAYED



LCD WILL DISPLAY "0" KEEP AN EYE ON THE ELECTRONIC DISPLAY LOAD TO SECOND VALUE

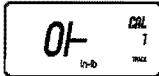
PRESS KEY  TO ACCEPT



② THE SECOND CALIBRATION POINT, SET BY MANUFACTURER

BUZZER WILL TURN OFF AND ON 10 TIMES LCD DISPLAY, WILL COUNT DOWN FROM 10 TO 0, AND DISPLAY "0"

③ NOTE: DURING PROCESS, HOLD THE WRENCH VERY STILL UNTIL "0" IS DISPLAYED



YOU ARE DONE

NOTE: Follow the above directions as closely as possible. Please be careful to "LOAD" the wrench ONLY during the indicated times - overtightening past the range of the wrench is very possible and could cause damage without audio/visual indicators being active.

NOTE: When "OK" is displayed after the second calibrations check point has been checked/adjusted, the LCD should then show the torque presently being applied

EXERCISE CCW DIRECTION

EXERCISE THE BUILT-IN TRANSDUCER COUNTERCLOCKWISE THREE TIMES BY APPLYING FULL LOAD IN THE ELECTRONIC DISPLAY OF THE CALIBRATED UNIT.

HOLD KEY  FOR 3 SECOND (BUZZER ON)  FIRST DIGIT WILL BLINK

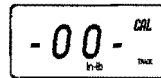
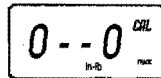
ENTER " CALIBRATE CCW " CODE 5252 BY :

- A/- PRESS KEY  SCROLL UP TO (5) PRESS KEY  SHIFT NEXT DIGIT
- B/- PRESS KEY  SCROLL UP TO (2) PRESS KEY  SHIFT NEXT DIGIT
- C/- PRESS KEY  SCROLL UP TO (5) PRESS KEY  SHIFT NEXT DIGIT
- D/- PRESS KEY  SCROLL UP TO (2) PRESS KEY  SHIFT NEXT DIGIT
- E/- PRESS KEY  ACCEPTED CODE 5252

BUZZER WILL TURN ON AND LCD WILL DISPLAY



FULLY LOAD WRENCH IN CCW DIRECTION UNTIL " LOAD " ON LCD DISAPPEAR AND DISPLAY SHOWS (" 0-0 " / " -00- ")



FULLY UNLOAD WRENCH AND WAIT 10 SECONDS , THEN PRESS KEY  LCD WILL DISPLAY "0" KEEP AN EYE ON THE ELECTRONIC DISPLAY LOAD TO FIRST VALUE

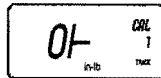
PRESS KEY  TO ACCEPT



① THE FIRST CALIBRATION POINT , SET BY MANUFACTURER

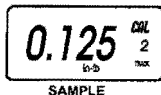
BUZZER WILL TURN OFF AND ON 10 TIMES LCD DISPLAY , WILL COUNT DOWN FROM 10 TO 0 , AND DISPLAY " 0 "

② NOTE : DURING PROCESS , HOLD THE WRENCH VERY STILL UNTIL " 0 " IS DISPLAYED



LCD WILL DISPLAY "0" KEEP AN EYE ON THE ELECTRONIC DISPLAY LOAD TO SECOND VALUE

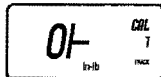
PRESS KEY  TO ACCEPT



③ THE SECOND CALIBRATION POINT , SET BY MANUFACTURER

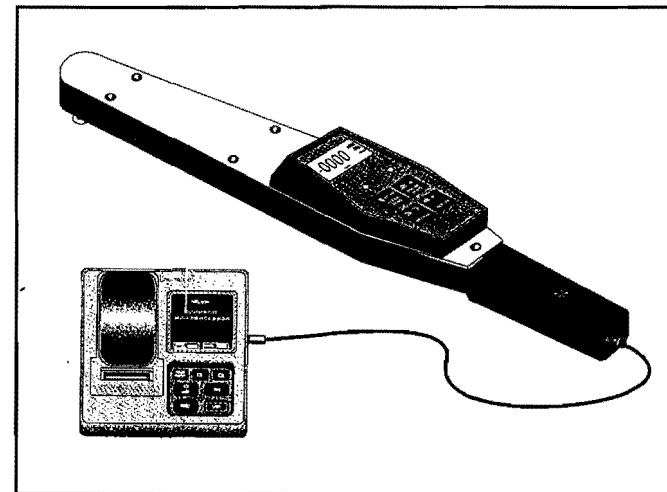
BUZZER WILL TURN OFF AND ON 10 TIMES LCD DISPLAY , WILL COUNT DOWN FROM 10 TO 0 , AND DISPLAY " 0 "

④ NOTE : DURING PROCESS , HOLD THE WRENCH VERY STILL UNTIL " 0 " IS DISPLAYED



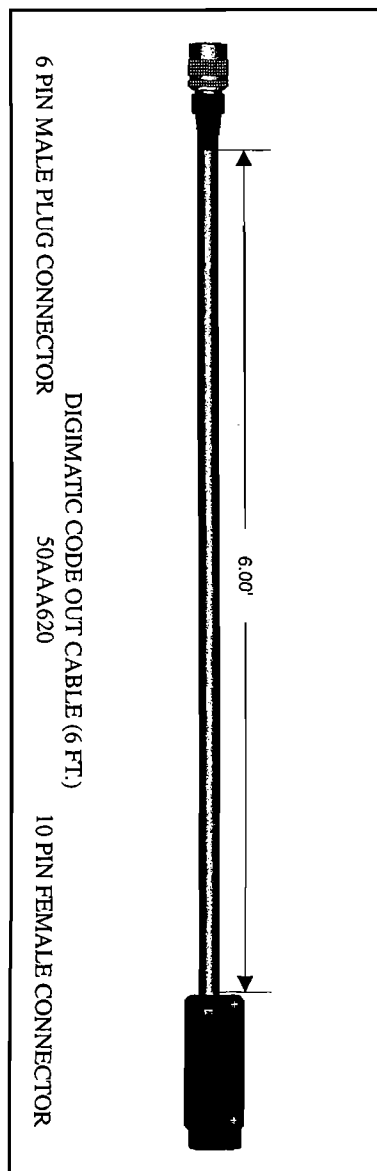
YOU ARE DONE

DATATORQ SHOWN CONNECTED TO DIGIMATIC MINIPROCESSOR



NOTE: Follow the above directions as closely as possible. Please be careful to "LOAD" the wrench ONLY during the indicated times - overtorquing past the range of the wrench is very possible and could cause damage without audio/visual indicators being active.

NOTE: When "OK" is displayed after the second calibrations check point has been checked/adjusted, the LCD should then show the torque presently being applied



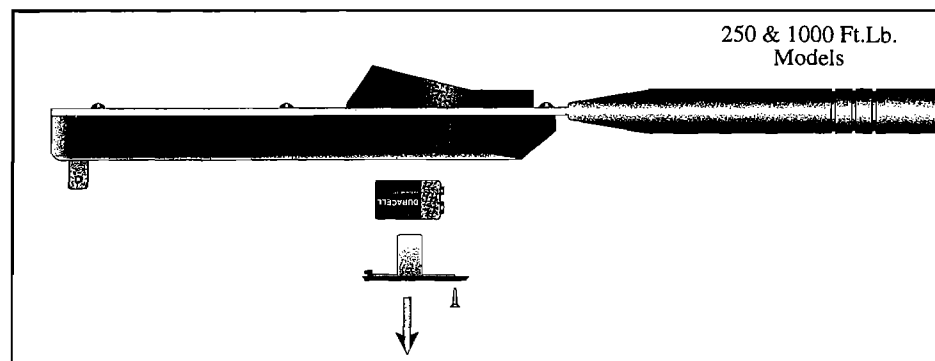
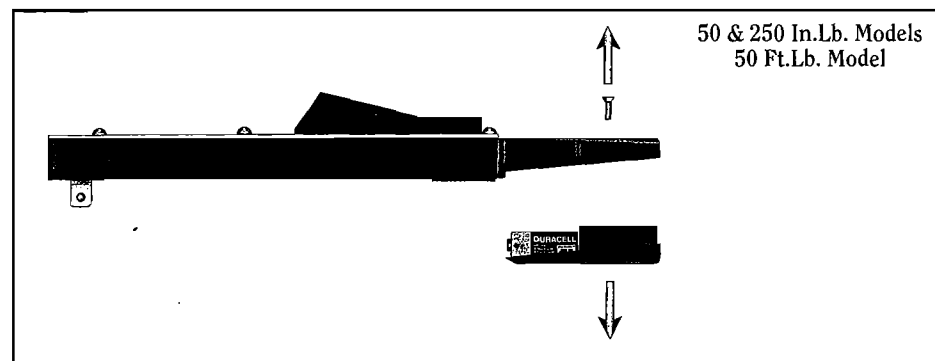
BATTERIES - REPLACEMENT OF COMMON ALKALINE

A 9-VOLT ALKALINE BATTERY IS STANDARD AND PROVIDES FOR APPROX. 60 HOURS OF OPERATION. A "LO-BAT" INDICATION ON THE DISPLAY SIGNALS FOR REPLACEMENT. THERE ARE 10 - 20 HOURS OF WRENCH OPERATION REMAINING, EVEN AFTER "LO-BAT" IS DISPLAYED. BATTERIES CAN BE CHANGED IN LESS THAN ONE MINUTE. PLEASE NOTE:

1. HAVE NEW AND FRESH BATTERIES READY TO INSTALL PRIOR TO BATTERY REPLACEMENT.
2. A FLASHING "LO-BAT" INDICATES BATTERY FAILURE IS IMMINENT. THERE ARE APPROX. 2-3 HOURS OF BATTERY LIFE REMAINING



IS INDICATION BATTERY NEEDS TO BE REPLACED



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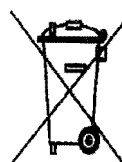
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IMPORTANT ENVIRONMENTAL NOTES:



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

THANK YOU FOR CARING ABOUT OUR ENVIRONMENT!

Mitutoyo R & D is constantly making improvements to its product line. Therefore, specifications are subject to change without prior notice. Please contact your Mitutoyo DRO distributor or your MTI regional office if you have questions about product specifications or applications.

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