

DIGITAL TORQUE TESTER/WRENCH DTW 200 and DTW 750 USER'S GUIDE

LIST OF EQUIPMENT

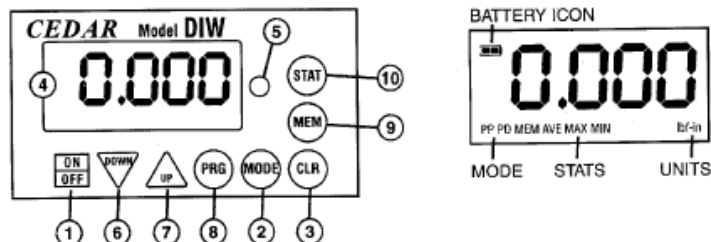
1. Torque Tester
2. Stepless CW one-way clutch (included for DTW 200, available for DTW 750)
3. AC adapter/charger
4. Carrying case

Read First: Safety Information

For safety, and for damage avoidance, be sure to read this manual thoroughly. The warranty is only valid when the product is used following the instructions provided within this manual.

- Do not use tester in high temperature, high humidity, or in damp or wet areas.
- Recommended operating temperature is between 0-42°C (32-100°F).
- Do not apply torque exceeding the rated capacity (180 lbf-in), regardless of whether the unit is On or Off. Avoid shock load. Do not use with impact wrenches.
- When charging the battery, be sure to use the provided AC adapter/charger exclusively.
- Do not use lacquer thinner or any solvent to clean the unit.
- Do not disassemble or modify the unit.

1. **ON/OFF Switch** Press once to turn on, press again to turn off. After 10 minutes of non-use, unit will shut off automatically.
2. **MODE Select** **GO** (Real Time), **PP** (Peak), **PD** (Peak Down), **C** (Continuous Output Mode)
3. **CLEAR** Reset display to zero and send data to memory
4. **LCD Display** Displays torque value, battery icon, mode and units
5. **GO/NG Indicator** Green for values between LO and HI setpoints, flashing red for values above HI, solid green for data output.
6. **DOWN** Change values or numeric places
7. **UP** Change values or options
8. **PRG** Enter programming mode or enter values
9. **MEM** Display memory locations and data
10. **STAT** Display statistics; number of records, Max, Min, and Ave.

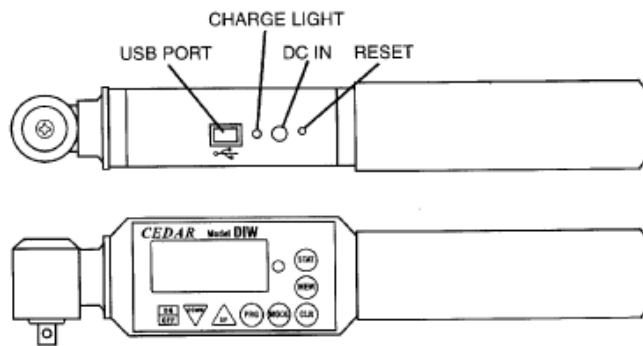


USB Port Send data to computer via USB cable

Charge light Lights when charging, off when complete

DC IN AC Charger /adapter receptacle

Reset System reset button



General Operation

1. Press and hold MODE for one second to select from the following measuring modes:

Real Time – displays torque transients (no output or indicator)

PP Mode – Peak, captures peak torque (peak data output, PP appears on the display)

PD Mode – First Peak, capture first peak value (peak data output, PD appears on the display)

C Mode – Continuous RS-232 output, Display and output torque transients (12 or 180 data/sec., C appears on the display).

2. Place the appropriate size socket onto the drive, and if desired, the one-way clutch also.
3. Rotate the wrench head so the display may be viewed while measuring.
4. Press the CLEAR button on the display unit to zero the display. Insert the socket onto the bolthead, hold perpendicularly (not at an angle) and turn to measure.
5. After measuring, press CLEAR to zero display for the next test.

Programming

Click ON/OFF to turn on. Press PRG for one second. The display shows HI and then the High setpoint value. This confirms the tester is ready for the following programming steps.

1. High Setpoint (HI)

After HI is displayed, and the high setpoint value, press DOWN to move the numeric place and press UP to select values, then press PRG to enter.

2. Low Setpoint (LO)

After high value is entered, LO is displayed, then the low setpoint value. Press DOWN to move the numeric place and press UP to select values, then press PRG to enter.

3. Peak Down Minimum (PdLO)

After low value is entered, PdLO is displayed, then the PdLO value. Press down to move the numeric value and press up to select values, and press PRG to enter.

PdLO sets a minimum torque value for Peak Down mode. For example, if PdLO value is set at 5.0 lbf-in, only a reading over that will be measured in Peak Down mode.

4. Continuous Data Output Minimum

After Peak Down value is entered, CLO is displayed, then the CLO value. . Press DOWN to move the numeric place and press UP to select values, then press PRG to enter.

5. Auto Zero Reset (AC)

After Continuous Data Output Minimum is entered, AC is displayed and then the Auto Zero Reset duration value. Press Up or Down to select 0.0C-0.1C-0.5C-1.0C-1.5C-2.0C-2.5C-3.0C, and press PRG to enter (0.1C for 0.1 second and 0.0C for Manual Reset)

6. Batch Counter (CO)

After the Zero Value is entered, CO is displayed then the CO value. Use the UP or DOWN keys to select a value and PRG to enter (0-99, clockwise only)

7. Interval (In)

After the Batch Counter value is entered, In is displayed then the In value. the UP or DOWN keys to select a value and PRG to enter (0-24 in 22-second increments)



8. Beeper (bp)

After Interval value is entered, bp is displayed and then On. Press UP or DOWN switch to select On. OFF, or FF, then press PRG to enter.

ON- beeper sounds for Good, NG and capacity overload

OFF- beeper sounds for overload only

FF- beeper sounds for NG and capacity overload

9. Units (Un)

After the beeper is programmed, UN is displayed, then the current unit selection. Press UP to cycle the units; lbf-in, ozf-in, kgf-cm, N-m and N-cm.

After the units are entered, -S- is displayed to confirm programming completion and zero is shown.

After High and Low setpoints are set and beeper is set to ON;

In PP mode,

Under LO setpoint - no LED or beep

Over LO setpoint – Green LED lights

Over HI – red LED flashes and beeps sounds

In PD mode, no indicator or beep for values before Peak Down is sensed.

Under LO setpoint - Red LED flashes and slow beep sounds

Between LO and HI – Green LED lights and constant tone sounds

Over HI – Red LED flashes and fast beep sounds

In Real Time and C mode

Under LO setpoint - no LED light or beep

Between LO and HI – Green LED lights and beep sounds

Over HI – Red LED lights and beep sounds

DATA MEMORY

Storing and Recalling Data from Memory

Memory functions work in PP and PD modes. Store up to 800 values in memory.

1. Measure torque in PP or PD mode, when the display resets by either Auto Zero or manually pressing CLR, the peak value is stored.
2. To recall a value, press MEM and the last stored memory is displayed. Press UP or DOWN to select a memory location and torque value. The display cycles between location and value.

Clearing Data from Memory

Single clear: Press MEM, then press UP or DOWN to move to a memory location. When the desired memory location is displayed, press CLR. Press CLR again to clear the data and ---- is displayed to confirm deletion.

All clear: Press CLR and hold until the display shows ALL then press CLR again and ---- is displayed to confirm deletion.

Downloading Memory Data

1. Press ON/OFF to turn on.
2. Press MEM and after memory data is displayed press MEM again and FA is displayed. Press UP or DOWN to select the first memory location then press MEM and LA is displayed. Use UP or DOWN to select the last memory location. Press MEM again and the data is sent. While data is output –P- is displayed.

NOTE: by pressing DOWN switch for more than 1 second, the download function can be terminated.

Statistics

Press Statistics and the number of data, Max, Min, and Avg are displayed in sequence.

Auto Power Off

To maximize the life of the battery, power automatically shuts off after 10 minutes of non-use.

Low Battery Indicator

Battery indicator status shows full, half or recharging. If the battery power is empty, power is turned off immediately.



IMPORTANT! Use the Cooper/Cedar AC adapter/charger exclusively and plug into the correct AC output. It takes 5 hours to fully recharge for 12 hours of continuous use. When fully charged, the charge light goes off.

System Reset

When battery power is completely depleted, the tester may not work even though it has been recharged. In this case, press the System Reset Button.

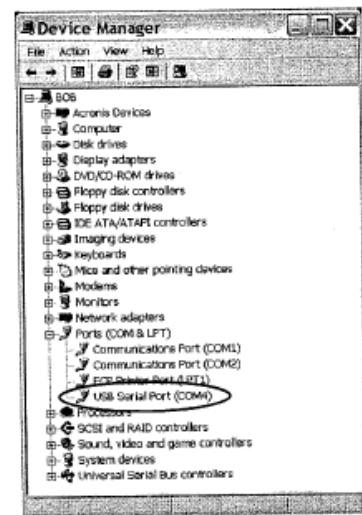
OUTPUT

USB Virtual COM Port

When the tester is connected to a computer's USB port and turned on, Windows XP or Vista will recognize the tester and ask to connect to the Internet. Allow Windows Update to connect and follow the instructions on your screen to download and install two drivers for the USB Virtual Com Port. For Windows 98, ME and MAC, go to www.ftdchip.com/Drivers/VCP.htm.



The PC and tester will communicate through the USB port the same as a com port. To verify the COM port number, open the Device Manager.



Output is available in PP, PD and C modes. In PD and PP modes, peak data is output when ZERO is pressed or activated by the AUTO ZERO function. In C mode, the gauge outputs data continuously 180 data/second.

Comport signal

8 data, 2 stop, no parity. Baud rate: 19,200 bps.

Output connector

USB A/B cable

Peak Data Output Format

[CAN] _ _ _ [SO] [value] _ [SI] [unit] [CR]
 (_ _ _ is memory location)
[CAN]: ASCII control code 24
_ : Space (code 32)
[SO]: ASCII control code 14
[value]: Output data with sign and decimal point. Plus sign represents CW torque and minus sign for CCW. [value] always occupies six locations and empty locations will be filled with spaces.
[SI]: ASCII control code 15
[unit]: N*m _ _ _ =N·m
 kgf*cm=kg·cm
 lb*in=lb·in
[CR]: ASCII control code 13 (Carriage Return)

Continuous Output Data Format

[CAN] [value] [CR]

Changing the Continuous Output Data Rate

1. Turn the tester off
2. Click ON/OFF while holding PRG, 00 is displayed.
3. Press UP to select either 00 or 01
 00 = 12 data / second
 01 = 180 data / second
4. Press PRG to save and exit.

WARRANTY REPAIR POLICY

Limited Warranty on Products

Any Cooper Instruments product which, under normal operating conditions, proves defective in material or in workmanship within one year of the date of shipment by Cooper will be repaired or replaced free of charge provided that a return material authorization is obtained from Cooper and the defective product is sent, transportation charges prepaid, with notice of the defect, and it is established that the product has been properly installed, maintained, and operated within the limits of rated and normal usage. Replacement or repaired product will be shipped F.O.B. from our plant. The terms of this warranty do not extend to any product or part thereof which, under normal usage, has an inherently shorter useful life than one year. The replacement warranty detailed here is the buyer's exclusive remedy, and will satisfy all obligations of Cooper whether based on contract, negligence, or otherwise. Cooper is not responsible for any incidental or consequential loss or damage which might result from a failure of any and all other warranties, express or implied, including implied warranty of merchantability or fitness for particular purpose. Any unauthorized disassembly or attempt to repair voids this warranty.

Obtaining Service under Warranty

Advance authorization is *required* prior to the return to Cooper Instruments. Before returning the item, contact the Repair Department c/o Cooper Instruments at (540) 349-4746 for a Return Material Authorization number. Shipment to Cooper shall be at buyer's expense and repaired or replacement items will be shipped F.O.B. from our plant in Warrenton, Virginia. Non-verified problems or defects may be subject to a \$100 evaluation charge. Please return the original calibration data with the unit.

Repair Warranty

All repairs of Cooper products are warranted for a period of 90 days from date of shipment. This warranty applies only to those items that were found defective and repaired; it does not apply to products in which no defect was found and returned as is or merely recalibrated. It may be possible for out-of-warranty products to be returned to the exact original specifications or dimensions.

* Technical description of the defect: In order to properly repair a product, it is *absolutely necessary* for Cooper to receive information specifying the reason the product is being returned. Specific test data, written observations on the failure and the specific corrective action you require are needed.