# *Dial Wrench Operating Instructions*
Rev 2.6 (4/10/17)

Operating Dial Torque Wrenches

1. Fit appropriate socket or attachment.
2. Move Slave Pointer to zero. For models that are fitted with a signal light, set the Slave Pointer to required torque load.
3. Apply a steady pull to the wrench handle until the required torque figures is reached. The Slave Pointer will follow the Main Indicating Needle and record the maximum torque applied. Reset the Slave Pointer by hand.
4. With Signal Light models, when Main Indicating Needle reaches the Slave Pointer setting, the Signal Light automatically illuminates. Should you exceed this setting, the Slave Pointer will then indicate the maximum torque applied.
5. Built in ratchet on all models except "E" enables tool to be used in confined spaces.

Clockwise   CounterClockwise

Models
ADS
BDS

Models
ADS - S
BDS - S
CDS - S
DDS-S
EDS
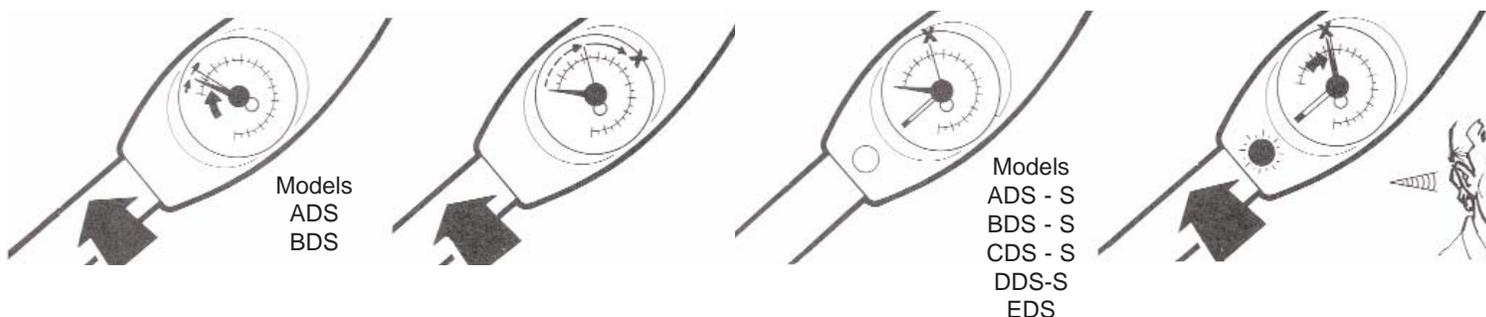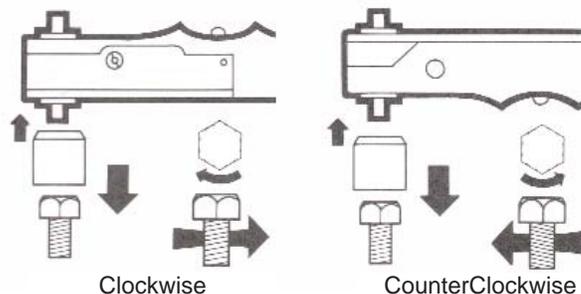
Extension Spanners

Special extension spanners are available upon request. When ordering, please provide the following information:

A) Square Drive Size
B) Size of spanner end
C) End type - Box, Open or Flared
D) Center distance between the square drive and the spanner end fitting
E) Maximum torque to be applied

Note: Due to the low torque ranges and high accuracy, it is recommended that Models ADS4 & ADS8 should not be used with Extension Spanners.

When using extension spanners or adapters, the torque applied to the fastener is greater than that shown on the torque wrench dial. To calculate the increase, please use the formula on page 2.

Open End   Flare End   Box End
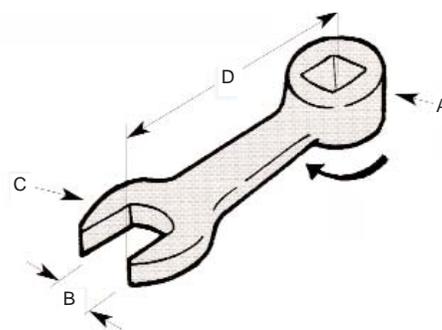
Care

1. Dial Indicating Wrench is a precision measuring instrument and should be handled carefully at all times.
2. Do not use chemical solvents for cleaning the dial window. Keep the tool exterior clean and dry. Do not lubricate.
3, Periodically check the accuracy of the wrench with a suitable torque analyzer.
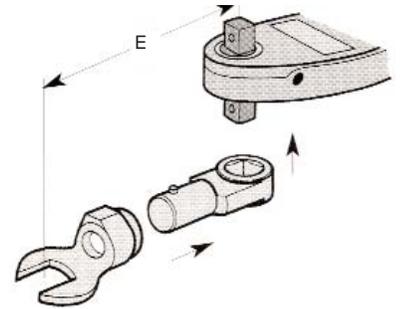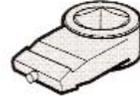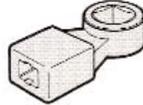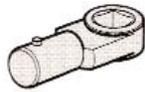
Extension Adapters

Adapters offer alternative solution for overcoming space and access imitations and are available upon request.

1. Place the end fitting to the extension adapter.
2. Then attach to the square drive of the wrench.
3. Measure and note distance "E" from the center of the end fitting to the wrench square drive.

Square Dr	Item #	Item #	Item #
3/8" Drive	20-A96102	20-A96112	20-A96122
1/2" Drive	20-A96103	20-A96113	20-A96123

Note: Extension Adapters cannot be used with the ADS4, ADS8, ADS12D.

When using extension spanners or adapters, the torque applied to the fastener is greater than that shown on the torque wrench dial. To calculate the increase, please use the formula below.

Calculations for Torque Wrench Adapters & Spanners

Note than when using extension adapters and spanners, the torque applied to the nut is greater that that shown on the torque wrench dial. To calculate the increase, use the formula below.

$$TT = \frac{DR(L + E)}{L}$$

TT = True Torque
DR = Dial Reading
E = Extension Length
L = Effective Wrench Length
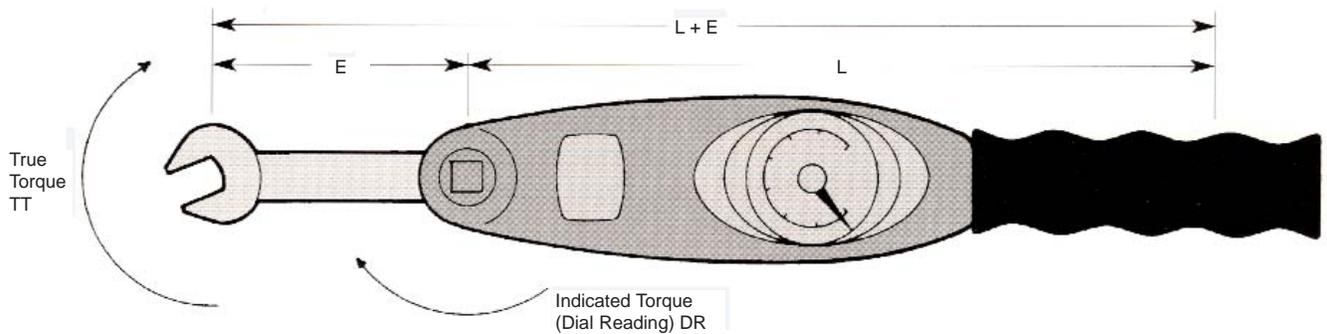
To ensure that the correct torque is applied when using extension spanners, keep the extension "in-line" with the axis of the wrench (as shown in diagram). Should you wish to permanently use an extension spanner on the Dial wrenches, we can lock the ratchet mechanism and re-calibrate the dial to show a true torque reading for that particular extension. The following table gives the value of dimensions "L" for all Dial wrenches. It is important to have the "L" dimension for any wrench where an extension is required.

Model	All ADS Models		BDS80, A/AS/E/ES		Other BDS models		CDS models		DDS models		EDS models	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
Dimension L	7.5	190	14.5	368	17.5	445	25	635	33	850	68	1727

Battery for Signal Light Models

1. For models fitted with optional light signal, use leak proof batteries whenever possible. Check the batteries frequently to avoid corrosion problems, especially if the wrench is used in damp or humid conditions.
2. If the wrench is likely to be stored for a period of time, first remove the batteries before storing.
3. For accessing the battery see drawings below.
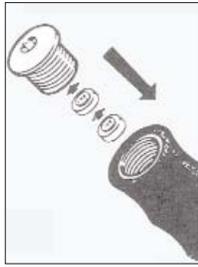
ADS-S
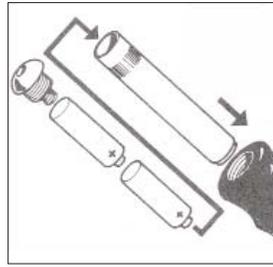
BDS-S
CDS-S
DDS-S
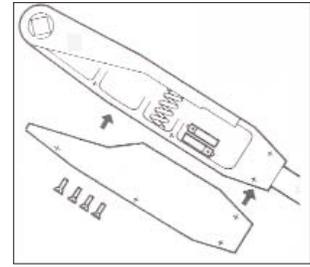
EDS-S

Calibration
1. Check wrench against an appropriate torque tester to verify accuracy.
2. After checking, determine if wrench is within tolerance.
   Designed and manufactured to meet or exceed the accuracy and repeatability requirements of ISO 6789:2003
   (Tools < 10 N.m (+/- 6% of setting): ADS4 & ADS8 models
   (Tools > 10 N.m are +/- 4% of setting): All other Dial Wrench models.
3. If out of tolerance, then make the according adjustments.

Coil Spring Mounted on Eccentric Pivots

Square Drive

Tie Bolt

Adjustment Screw

Stop Overload Protection

Solid Rack & Pinion Mechanism
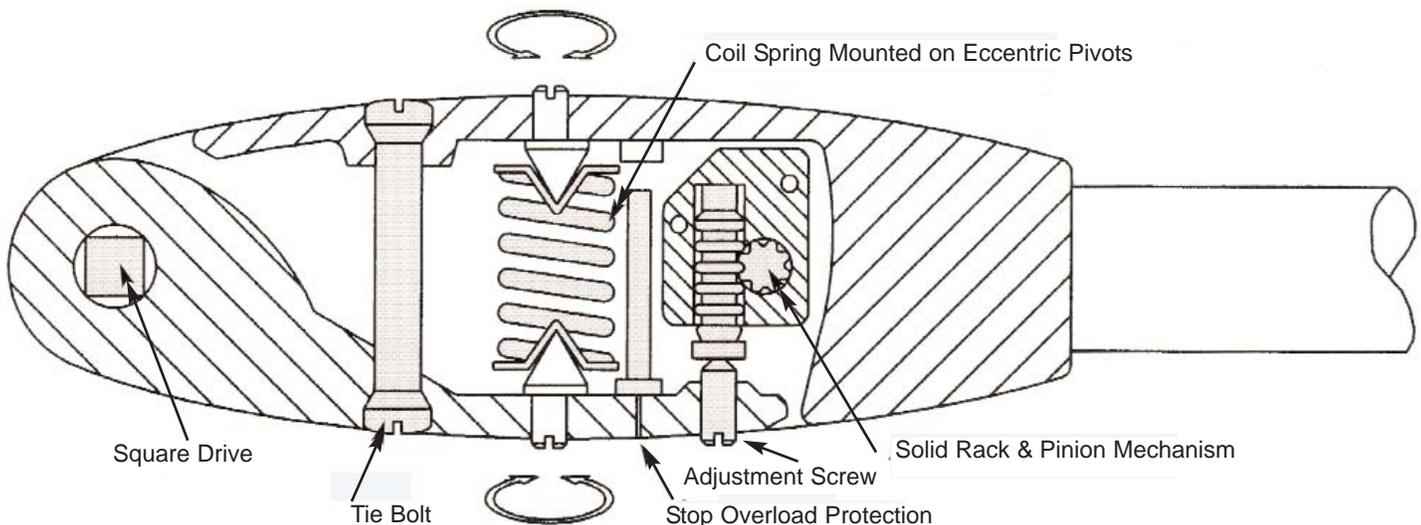
Preparation before Calibration

1. Ensure that the wrench spindle rotates smoothly without excessive friction and that the ratchet operates (Not EDS model).
2. Ensure that the rack and pinion assembly operates smoothly and that the main pointer is free to rotate without coming into contact with the dial or window.
3. Ensure that the torque needed to rotate the slave pointer in the window bush is 0.03 cN.m +/-10% and when rotated the pointer does not contact the dial face or window moulding.

4. Two dials varying values (-,0) are available for each model of a dial wrench. If a main spring has been changed it may be necessary to ensure that the replacement spring corresponds to the value of the dial fitted.
5. If the wrench is a signal model check the functioning of the electric signalling system.
6. Movement of the two halves of the wrench about the main spindle should be possible manually, but without excessive play or end float. The movement should be easier for lower ranged models and stiffer for models of increasing capacity. ADS & BDS wrenches are now fitted with a threaded spindle bush that will allow axial adjustment of the halves relative to the spindle axis without the use of shims.

    The threaded bush is fitted to the lower half casting of ADS wrenches and to the top half casting of BDS wrenches, and cannot be retrofitted to earlier models. Adjustment requires the use of a special thin "C" type key and may be carried out as follows:
    A)   Remove black sealant from the socket set screw fitted adjacent to the spindle in the lower half casting.
    B)   Release this screw by one turn.
    C)   Using the special key, engage the key in one of the three radial slots machined in the head of the bronze bush.
    D)   Turn anti-clockwise to decrease the axial clearance of clockwise to increase.
    E)   When the correct end float has been achieved retighten the socket set screw and reseal the hexagon socket. Do not apply excessive force on this screw, which could result in damage to the bush.

Calibration Procedure for ADS and BDS Wrenches

1. Apply Loctite 290 after assembly to the flat faces of the eccentric pivots and set to their mid position indicated by the screwdriver slot lying along the length of the wrench with the small land towards the top (window side) of the body.
2. Apply a torque value to the wrench equivalent to the lowest major graduation on the dial. This should be done in conjunction with an appropriate calibration device*.
3. Using the M5 adjustment screw, set the main pointer to the torque value applied. Nip up the M3 locking set screw.
4. Check the wrench at the maximum main graduation of the dial.
5. The eccentric pivots may have to be rotated to achieve the correct sweep of the main pointer such that the wrench calibrates at both the lowest and highest readings. To increase the sweep of the main pointer, the eccentric pivots smaller land should be rotated towards the tie bolt. To decrease the sweep of the pointer rotate away from the tie bolt.
6. Starting at the lowest main dial graduation ensure that the wrench calibrates at all the main graduation points.
    A tolerance of the following allowable: (Tools < 10 N.m (+/- 6% of setting): ADS4 & ADS8 models
                                                     (Tools > 10 N.m are +/- 4% of setting): All other Dial Wrench models.

    Repeat steps (2) and (6) until satisfactory results are obtained.

7. Set the overload stop to a position equivalent to 5% above the maximum value of the wrench capacity.
8. Thoroughly degrease and apply Loctite to threads of the tie bolt and nut. Assemble and tighten such that the main pointer lies within the black zero area of the dial.
9. Finally tighten the M3 lock screw and rubber bung seal the overload adjustment screw.

Calibration Procedure for CDS, DDS and EDS Wrenches

1. Locate the main spring in the top half of the body casting such that the exposed "tail end" of the coil spring is adjacent to the rack and pinion mechanism.
2. Apply a torque value to the wrench equivalent to the lowest major graduation on the dial. This should be done in conjunction with an appropriate calibration device*.
3. Using the M5 adjustment screw, set the main pointer to the torque value applied. Nip up the M3 locking set screw.
4. Check the wrench at the maximum main graduation of the dial.
5. The main spring may have to be rotated to achieve the correct sweep of the main pointer such that the wrench calibrates at both the lowest and highest readings.

6. Starting at the lowest main dial graduation ensure that the wrench calibrates at all the main graduation points. A tolerance of the following allowable: (Tools > 10 N.m are +/- 4% of setting): All other Dial Wrench models.

   Repeat steps (2) and (6) until satisfactory results are obtained.

7. Set and lock the overload stop to a position equivalent to 5% above the maximum value of the wrench capacity.

8. Thoroughly degrease and apply Loctite to threads of the tie bolt and nut. Assemble and tighten such that the main pointer lies within the black zero area of the dial.

9. Finally tighten the M3 lock screw and rubber bung seal the overload adjustment screw.

10. Fit cover plate
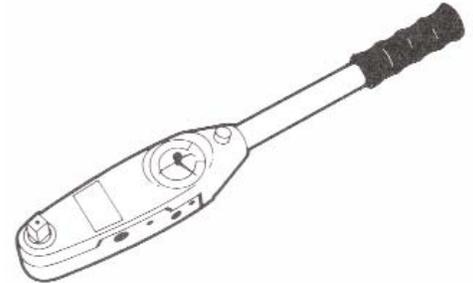
* Calibration Device

Ideally a calibrated beam and weight system should be used to check the calibration of dial indicating torque wrenches. Alternatively a Torque Tester with an appropriately ranged torque sensor should be used.

In all cases the torque wrench should be used to apply torque to the calibration device until the required test reading is obtained on the calibration device and the reading on the torque wrench is noted at this point.

Mountz Calibration & Repair Services

Mountz Inc. features an experienced calibration and repair staff. Our trained technicians can calibrate and repair most any tool. Mountz provides rapid service with quality that you can trust as we offer three state-of-the-art calibration lab and repair facilities that can calibrate up to 20,000 lbf.ft.

Since 1965, Mountz Inc. has proven its in-depth knowledge of torque and torque solutions by consistently developing, producing, marketing and servicing highly sophisticated, cutting-edge tools. We perform calibrations in accordance with ANSI/NCSL-Z540. Mountz is dedicated solely to the manufacturing, marketing and servicing of high quality torque tools.

Tool Service & Repair Capability

- Torque Wrench Calibration: Click Wrench, Dial Torque Wrench, Beam Wrench, Cam-Over & Break-Over Wrench
- Torque Screwdrivers: Dial, Micrometer, Preset & Adjustable
- Torque Analyzers/Sensors: All brands
- Electric Screwdrivers: All brands
- Air Tools: All brands
  Impact Wrenches, Drills, Pulse Tools, Grinders, Percussive Tools, Air Screwdrivers, Nutrunners, DC Controlled Nutrunners
- Torque Multipliers: All brands

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