

FEATURES

- ◆ Audible click and/or impulse when torque setting is reached.
- ◆ $\pm 4\%$ accuracy in both directions between 20% and 100% of range.
- ◆ Complies with: American standard ASME B107.300-2010
- ◆ Dual-scale, US and Metric readings.
- ◆ Anodized aluminum handle with no-slip features.
- ◆ Detent-style lock collar prevents accidental change of torque setting.
- ◆ Chrome-plated, hardened steel construction.
- ◆ Packaged in protective storage case.

Proper use of this professional torque wrench will give you complete satisfaction in its performance and reliability.

1. **WARNING** – never use your torque wrench to apply more torque than its rated capacity. Do not continue to apply torque after the click. Never use a torque wrench as a breaker bar.
2. **WARNING** - Improper use of this product, including but not limited to the application of excessive force, will affect performance and may result in injury.
3. Accuracy is assured by gripping the wrench properly. Grasp the **HANDLE**, not the **BARREL**, and always apply force smoothly.
4. Each torque wrench is lubricated before leaving the factory. If it has not been used for some time, it should be operated several times to re-distribute the lubricant within the working mechanism.
5. Never attempt to turn the **HANDLE** when the **LOCK COLLAR** is in the lock position.
6. Never attempt to set the torque value higher or lower than the stated range.
7. For greater accuracy, clean all thread surfaces and remove any burrs on the fasteners being torqued.

DO NOT OVERTORQUE

CERTIFICATION

This torque wrench was calibrated prior to shipment from the factory within tolerance limits of $\pm 4\%$ between 20% and 100% of range.



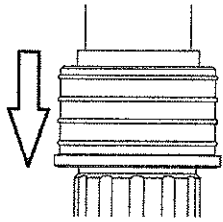
MICROMETER ADJUSTABLE TORQUE WRENCHES

OPERATING INSTRUCTIONS

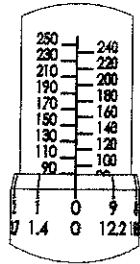
MODEL NUMBER
97353A, 97355A, 97352A,
97351A, 97361B, 97362

SETTING YOUR MICROMETER TORQUE WRENCH

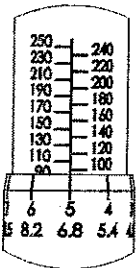
CAUTION – Do not turn HANDLE with the LOCK COLLAR in the locked position. Damage may occur.



1. To UNLOCK, hold HANDLE with one hand and use thumb to pull the LOCK COLLAR towards hand, and hold in this position.

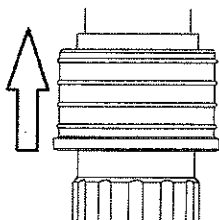


2. Rotate HANDLE until "0" on the MINOR SCALE aligns with the MAIN SCALE centerline on the BARREL, at the MAIN SCALE graduation nearest to, but smaller than the desired torque setting.

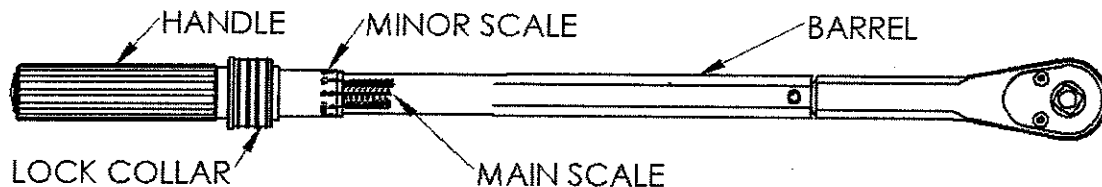


3. Continue rotating HANDLE until the correct MINOR SCALE graduation lines up with the centerline. (The MAIN SCALE graduation may no longer be fully visible)

Example shown is 95 FT-LB



4. To lock, release LOCK COLLAR and if necessary, twist grip slightly in either direction until the LOCK COLLAR springs forward and the HANDLE cannot be rotated.



EXAMPLES OF TORQUE SETTINGS

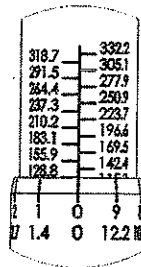
NOTE: Many models have both American and Metric scales on the same wrench.

The American MAIN SCALE is on the front of the BARREL, and the MINOR SCALE is on the HANDLE, closest to the beveled edge.

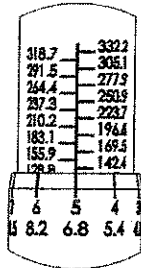
The Metric MAIN SCALE is on the reverse side of the BARREL, and the MINOR SCALE is below the American graduations on the HANDLE.

See "SETTING YOUR MICROMETER TORQUE WRENCH" for an example using the American Scale.

METRIC SCALE EXAMPLE: 135.6 N-m



1. After unlocking, rotate the HANDLE until the "0" on the MINOR SCALE aligns with the METRIC MAIN SCALE centerline on the BARREL, at the MAIN SCALE graduation nearest to, but smaller than the desired torque setting. This is 128.8 N-m



2. Continue rotating the HANDLE until the correct MINOR SCALE graduation lines up with the centerline. (The MAIN SCALE graduation may no longer be fully visible)

$128.8 + 6.8 = 135.6 \text{ N-m}$

Ensure handle is locked before use.

HOW TO APPLY TORQUE

1. This Micrometer Adjustable Torque Wrench is designed so that when force is properly applied to the HANDLE, an audible signal and/or an impulse feel will indicate that the desired torque has been attained. DO NOT continue beyond this point.

CAUTION: The audible signal and/or impulse feel is an indicator that proper torque has been attained. Over-torquing beyond this point could cause fastener failure.

Additionally, when wrench is set at low end of torque range, the degree of signal will be less than when set at the high end of the range. Therefore, care must be taken at the low end of the range to detect the signal.

2. To properly apply torque, attach socket securely on torque wrench square drive and position socket on fastener so that tilting will not occur. Grasp the center of HANDLE and apply a slow steadily increasing force perpendicular to the torque wrench body, and perpendicular to the centerline of the square drive, socket, and fastener.

3. Tighten the fastener with a smooth and even force applied to the handle of the torque wrench. As turning resistance increases, pull more slowly. To assure accuracy, the fastener must be in motion when the torque measurement is made.

WARNING: Any change from the above procedure will result in a change of torque being applied. This includes standard torque wrenches, flex-head torque wrenches, universal joints, and universal sockets. DO NOT USE universal joints or universal sockets due to the complexity of determining the associated error. If you need angular access, use a flex head torque wrench and compute the associated error as indicated below.

FLEX-HEAD TORQUE WRENCHES

To compute the torque applied by a flex-head torque wrench:

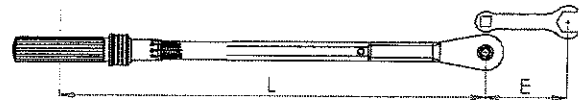
Wrench setting = (Torque required) / cosine (angle of flex)
Example: with head flexed 20 degrees and required torque of 100 FT-LB:

$$\text{Wrench setting} = 100 / \cos 20^\circ = 106.4 \text{ FT-LB}$$

EXTENSIONS

When it is necessary to use an extension that changes the effective lever length of the torque wrench, torque being applied will change. Compute adjustment as follows:

TW = Torque set on wrench
TE = Torque applied by the extension to the fastener



$$\text{TW} = (\text{TE} \times \text{L}) / (\text{L} + \text{E})$$

$$\text{TE} = (\text{TW} \times (\text{L} + \text{E})) / \text{L}$$

NOTICE: Socket extension bars that are axially in line with the square drive do not cause error and need no adjustment.