CRAFTSMAN®

944595

www.craftsman.com

20 to 150 ft-lbs. / 33.9 to 210.1 N•m

1/2-in. Drive

Microtork®
Torque Wrench

High Strength Ratchet
For dependability and long service life.

Precision Internal Components
Provides durability along with accurate torque measurements.

Dual Scales
Provides Inch and Metric setting capability.

Locking Mechanism
For maximum control of torque setting.

Hardened and Plated Carbon Steel Body

Large Ergonomic Handle
Easily turns to set torque.

Reusable Storage Tray

Operating Instructions Included

Full One-Year Warranty on Craftsman Torque Wrench
If this Craftsman Torque Wrench fails due to a defect in material or workmanship within one (1) year from the date of purchase, return it to your nearest Sears store or Sears Parts and Repair Center, and it will be repaired free of charge.
If this Torque Wrench needs recalibration within 90 days from the date of purchase, return it to your nearest Sears store or Parts and Repair Center, and it will be recalibrated free of charge. After 90 days you must pay for recalibration.
This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Sears, Roebuck and Co., D/817WA, Hoffman Estates, IL 60179

Made in U.S.A.
Sold by Sears, Roebuck and Co.,
Hoffman Estates, IL, 60179

Made in USA

ONE YEAR GUARANTEED

7 14994 44595 1

This torque wrench complies with American National Standard B107.14M and International Standard ISO 6789

CRAFTSMAN®

Microtork® Torque Wrench

Made in USA

Owner's Manual

Model No's:
44593
44594
44595

Sold by Sears, Roebuck and Co.,
3333 Beverly Road, Hoffman Estates, IL 60179

SAFETY RULES

1. STUDY THIS BOOKLET CAREFULLY BEFORE ATTEMPTING TO OPERATE THIS WRENCH.
2. Never apply more torque than the maximum scale reading.
3. This torque wrench is designed for manual tightening of threaded fasteners only. DO NOT USE IT AS A NUT-BREAKER OR FOR ANY OTHER PURPOSE.
4. Overtorqued or defective fasteners and sockets may suddenly break. Ratchets that are improperly engaged, worn out, damaged, or overtorqued may slip or break. TO PREVENT INJURY, KEEP PROPER FOOTING AND BALANCE AT ALL TIMES. DO NOT USE THE WRENCH IN PLACES FROM WHICH YOU MAY FALL OR SLIP, OR AROUND OPERATING MACHINERY.
5. This wrench will not prevent you from applying more torque than set—it is not a torque limiting tool. At low settings the release is gentle and there usually is no audible 'click' signal. Learn how different amounts of torque 'feel', so you will reduce the possibility of damage and/or injury due to accidental overtorquing.
6. APPLY FORCE TO THE GRIP ONLY. DO NOT USE 'CHEATER BARS' (a piece of pipe placed over the hand grip).
7. There are no user-serviceable components inside the wrench. Disassembling the wrench or making any adjustments will result in the loss of accuracy, and will void the warranty.

FEATURES

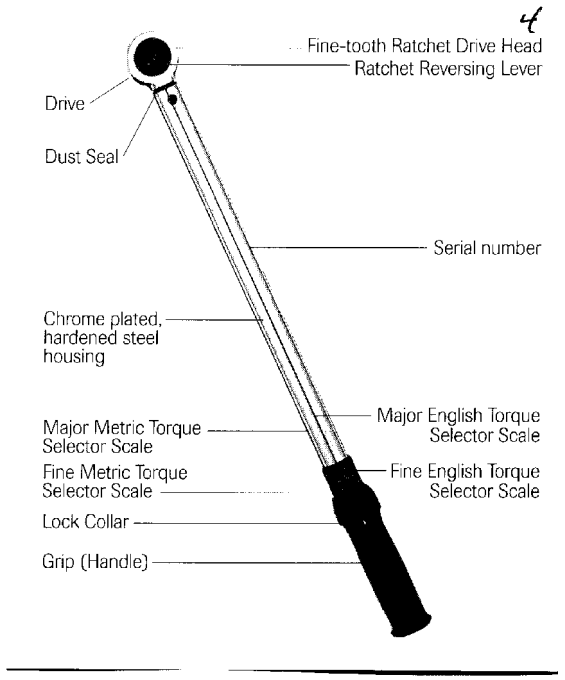
The CRAFTSMAN MICROTORK® Torque Wrench indicates when the pre-set torque value has been reached by releasing the handle for a few degrees of free travel. This release or 'give' is usually accompanied by an audible 'click' signal and tells the operator to stop applying pressure.

The torque is adjusted by unlocking and turning the handle. The amount of torque is shown on micrometer type scales stamped into the housing and the handle. There are two scales: one for English torque units (inch pounds or foot pounds, depending on a particular model), the other one for metric torque units (Newton meters).

The wrench is equipped with a reversible ratchet head which may be used in both right and left hand directions. The ratchet head accommodates sockets, extensions, crowfoot adapters, and other attachments to fit a multitude of fasteners in automotive, aircraft, marine, industrial, and other applications.

The wrench housing is made from precision drawn steel which is heat treated for hardness and strength, polished, and chrome plated for corrosion protection and superior appearance. The ergonomic grip design is contoured to fit securely into the hand.

Thank you for buying another fine CRAFTSMAN® product. For best results, please read this booklet carefully prior to using your new torque wrench.


Fine-tooth Ratchet Drive Head
Ratchet Reversing Lever
Drive
Dust Seal
Serial number
Chrome plated, hardened steel housing
Major English Torque Selector Scale
Major Metric Torque Selector Scale
Fine Metric Torque Selector Scale
Fine English Torque Selector Scale
Lock Collar
Grip (Handle)

OPERATING INSTRUCTIONS

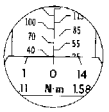
TO SET TORQUE

1. Unlock the grip by turning the lock collar in the unlock direction.
2. Rotate the grip until the desired torque is indicated on the micrometer scale. See examples of readings below.
3. Lock the grip by turning the lock collar in the lock direction.

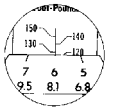
WARNING: Use only hand pressure—pliers, wrenches, or other tools may over tighten and damage the lock collar

Examples of Torque Settings*

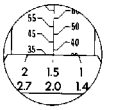
English Scales



40 In.-Lbs. (40+0)
(250 In.-Lbs. wrench)



126 Ft.-Lbs. (120+6)
(150 Ft.-Lbs. wrench)

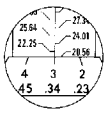


36.5 Ft.-Lbs. (35+1.5)
(75 Ft.-Lbs. wrench)

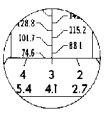
*Various models and capacities of wrenches are illustrated. Though they might be different from your particular wrench, the principle of obtaining the scale reading is the same.

Examples of Torque Settings*

Metric Scales**



20.90 N•m (20.56+.34)
(250 In.-Lbs. wrench)



78.7 N•m (74.6+4.1)
(150 Ft.-Lbs. wrench)

** By necessity, metric scales are not calibrated in even numbers. Consequently, when using Metric scales, set the wrench at a reading closest to the desired torque.

WARNING: 1. Do not attempt to turn the grip while it is locked.
2. Do not turn the grip either below the lowest scale reading or above the highest scale reading.

TO APPLY TORQUE

1. Attach the proper socket or other attachment to the drive. Set the reversing lever for the proper direction of operation.

NOTE: If special attachments are used, torque setting must be corrected in accordance with the directions given on the page explaining Extensions..

2. Place the socket or attachment onto the fastener to be torqued.
3. Utilizing the ratcheting head, you may 'spindown' the fastener until resistance is felt.
4. While holding the wrench BY THE GRIP ONLY,* apply SLOW AND STEADY pull until a momentary release impulse is felt. Release tightening pressure immediately when the release is felt.

WARNING: At low torque settings the release is gentle and there usually is no audible 'click' signal. Learn how the release feels BEFORE you torque to avoid accidental overtightening or damage.

*When using long sockets or extensions, the wrench may be supported at the head (only at the head) with only negligible effects on accuracy.

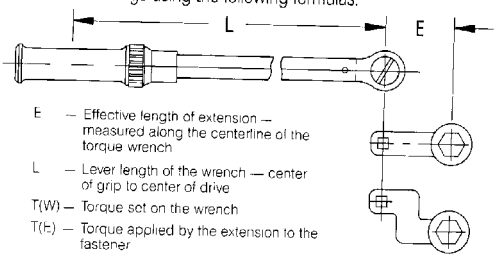
5. The wrench resets automatically and is ready for the next operation.

IMPORTANT SUGGESTIONS

1. Threads on bolts, nuts and other mating components should be clean and smooth. A lubricant applied to the threads and under the heads of bolts will produce more accurate and consistent results.
2. Never torque a fastener that is already tightened. Loosen it first, then re-torque to the desired value. The same applies to fasteners that were accidentally overtorqued.
3. When tightening many fasteners holding one component (engine head, pipe flanges, etc.) follow manufacturer's recommended procedures. If such procedures are not available, torque in a criss-cross manner, first 60-70% of the desired torque, then to the final torque.
4. DO NOT apply more torque than the rated capacity of the torque wrench. Do not use it as a nut-breaker!!

EXTENSIONS

At times, it is impossible or impractical to use regular sockets, (a good example being the tightening of threaded tubing connectors), and a special attachment must be utilized. Such attachments change the calibration of the torque wrench, and it is necessary to calculate the correct settings using the following formulas.



E — Effective length of extension — measured along the centerline of the torque wrench

L — Lever length of the wrench — center of grip to center of drive

T(W) — Torque set on the wrench

T(E) — Torque applied by the extension to the fastener

$$T(W) = T(E)\frac{L}{L+E} \qquad T(E) = T(W)\frac{L+E}{L}$$

NOTE: Regular socket extensions which extend directly under the drive head along the axis of rotation of the ratchet do not affect the calibration of the torque wrench.

WARNING: Handle extensions (a piece of pipe put onto the wrench in order to make torquing easier) SHOULD NOT BE USED under

any circumstances. Their use will result in erroneous torque readings, and may damage the grip or the adjusting mechanism. While applying torque, the wrench should be held ONLY BY THE GRIP. At high torque readings, if both hands are necessary to apply enough pressure to operate the wrench, hold the grip in one hand and put the other hand on the top of the first hand, never on the wrench body.

TORQUE INFORMATION

WHAT IS TORQUE?

Torque, by definition, is the result of a force applied to an object through a lever arm, thus tending to rotate the object.

$$T = F \times L$$

T – Torque
F – Applied Force
L – Lever length measured from the center of rotation to, and at 90° to, the direction of force.

Since both force and length can be expressed in many different units of measurement, so can torque. However, the most common units are: Inch pound (in-lb or lb-in), foot pound (ft-lb or lb-ft), meter kilogram (mkg) and Newton meter (N•m). When torque is applied to a threaded fastener, it produces a clamping force that holds the components together. Too much force, and the fastener will break. Not enough, and the assembly will not stay together. By controlling the amount of torque, the clamping or holding force is controlled.

WHY IS TORQUE IMPORTANT?

SAFETY: Bolts or nuts which are not tightened enough may vibrate loose, while overtightened ones may break.

ECONOMY: Improperly tightened components may cause damage or accelerated wear. 'Blown out' gaskets and broken head bolts are typical examples of such costly errors.

PERFORMANCE: Today's equipment is made of many precision parts which need to be assembled just right to achieve maximum efficiency and performance. Improperly tightened head bolts may result in poor compression, overtightened bearings may bind, etc.

GENERAL CONVERSION TABLE FOR TORQUE UNITS

To Obtain / Multiply Number of	Inch Ounces	Inch Pounds	Foot Pounds	Centi-meter Kilograms	Meter Kilograms	Newton Meters
Inch Ounces	1	16	192	13.89	1389	141.6
Inch Pounds	.0625[1]	1	12	.8680	86.80	8.851
Foot Pounds	.005208	.08332[2]	1	.07233	7.233	.7376
Centimeter Kilograms	.07201	1.152	13.83	1	100	10.20
Meter Kilogram	.0007201	.01152	.1383	.01	1	.1020
Newton-Meters	.007061	.1130	1.356	.09806	9.806	1

[1] or divide by 16
[2] or divide by 12

CARE AND MAINTENANCE

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1. The CRAFTSMAN MICROTORK® Torque Wrench is a precision instrument and should be handled and stored with care. *It should never be used as a hammer or prybar.*
2. DO NOT apply more torque than the rated capacity of the torque wrench. DO NOT use it as a nut-breaker!!
3. When the wrench is not in use, keep it set below 25% of capacity. If you leave the wrench set at a reading over 50% of the wrench capacity for more than a few hours, set the wrench at the lowest setting and leave it there for a few minutes before using it again.
4. The wrench is lubricated for life with a special lubricant. Do not oil it in any manner except that the ratchet head may be lubricated as needed for smooth operation.
5. The plastic grip is not affected by petroleum products. But it will be damaged by certain industrial solvents. It may be cleaned with a clean cloth wetted in mineral spirits or denatured alcohol. *Never immerse the wrench or any portion of it in any liquid.*
6. Periodically, the wrench should be checked for accuracy. This should be done regularly if the wrench is used frequently or is subjected to abnormal handling or storage. In assembly line type of usage, the wrench should be checked every 5,000 torque applications. Calibration service is available by returning your wrench to your Sears store.

7. With the exception of the ratchet mechanism, the wrench is not user serviceable. *Return it to the nearest Sears store for service.*
8. The ratchet head may be repaired by ordering repair kits #44525 for 3/8" drive and #43445 for 1/2" drive models from Sears, Dept. 98, Source 449.

SPECIFICATIONS

Model No.	44593	44594	44595
Drive:	3/8" Ratchet	3/8" Ratchet	1/2" Ratchet
Capacity:	25-250 in-lbs 3.61-29.03 N•m	10-75 ft-lbs 16.9-105.1 N•m	20-150 ft-lbs 33.9-210.1 N•m
Increments:	1 in-lbs .11 N•m	.5 ft-lbs .7 N•m	1 ft-lbs 1.4 N•m
Dimensions:	13"x1.4"x1.5"	17.2"x1.4"x1.5"	20.4"x1.4"x1.6"
Weight, lb/oz (gm):	1/10 (730)	1/15 (870)	2/5 (1060)
Lever Length*:	– Varies with different torque settings –		

* Center of drive to center of handle

ACCURACY: ±4% on clockwise or right-hand readings greater or equal to 20% of capacity.

Complies with American National Standard B107.14M and International Standard ISO 6789

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FULL 90-DAY WARRANTY ON CRAFTSMAN MICROTORK® MICRO ADJUSTING TORQUE WRENCH

If within 90 days from the date of purchase, this Craftsman Microtork® torque wrench fails, due to a defect in material or workmanship, Sears will repair and/or recalibrate it free of charge.

LIMITED WARRANTY

After 90 days and until one year from the date of purchase, Sears will repair any defect in material or workmanship in the torque wrench free of charge. This warranty coverage does not include recalibration.

Warranty service is available by returing the torque wrench to the nearest Sears store throughout the United States.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Sears, Roebuck and Co., Dept. 817WA, Hoffman Estates, IL 60179

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