SEARS
CRAFTSMAN®

TORQUE WRENCH
9 44642   9 44644

Precision-Engineered for
Accuracy, Dependability, Durability

SQUARE
DRIVE —

— HEAD

BEAM —

— POINTER

DUAL
SCALE
PLATE —

— METRIC

— ENGLISH

HANDLE —

— PIVOT
POINT
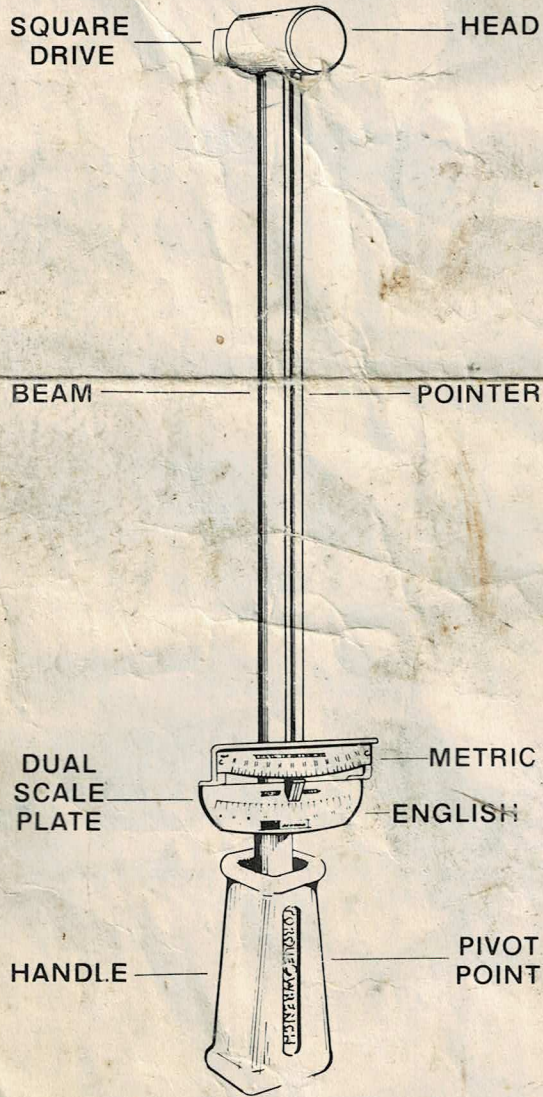
SELECTING THE PROPER SIZE TORQUE WRENCH

A torque wrench is most accurate in the mid-range of its scale. Therefore, you should choose a torque wrench on which the torque you most often apply falls within that area on the scale.

THE BASICS OF TORQUE
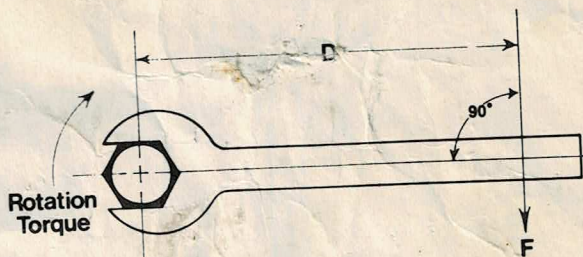
Torque is the twisting movement which produces rotation about an axis. It is the product of force times the distance from the axis of rotation to the point where the force is applied.

Torque (T) = Force (F) × Distance (D)

If D is measured in inches and F in pounds, T is expressed in Pound-Inches (lb.-in.)

If D is measured in feet and F in pounds, T is expressed in Pound-Feet (lb.-ft.)

If D is measured in meters and F in Newtons, T is expressed in Newton-Meters (N-m)

Force (F) on the wrench handle in the direction indicated will produce clockwise torque (T) on the bolt. Force applied in the opposite direction will produce counter-clockwise torque on the bolt. To produce a given amount of torque, more force must be applied as the distance from the bolt is reduced.

HOW TO USE
YOUR TORQUE WRENCH

1. Check to see that the pointer lines up with the "0" mark on the scale plate. If it doesn't, bend the pointer near the torque wrench head until it does. This will not damage the pointer or make the wrench inaccurate. When not in use, the pointer may make slight contact with the scale plate. When in use, however, it should not touch the scale plate. If it does, bend the pointer up or down until it "floats" when in use. To raise the pointer, wedge a screwdriver between the pointer and the beam; to lower the pointer, gently clamp the pointer and beam in a vise, near the head of the wrench. Be careful! Inspect for "0" reading occasionally to assure accuracy—especially after first use.

2. Grip the handle lightly and pull so that the force you apply is balanced at the pivot point. Try to pull so that no other part of the handle touches the beam. If it does, accuracy can be greatly affected. Pull the handle in a flat plane so there is no up or down bending of the beam. Do not allow the pointer to rub against the scale plate.

3. Turn the nut or bolt you are tightening with an even, steady pull, applying even pressure. As turning resistance increases, turn more slowly. For accuracy, the nut or bolt must be in motion when the final torque measurement is made.

If, as you approach the final correct torque reading, you hear or feel a "popping" or "snapping" noise or sensation from the fastener, it could mean that the fastener is seizing or galling. Remove the fastener and check for foreign matter or burrs on the threads. Clean the threads if necessary. You might also consider using a hardened steel washer, a better grade of fastener or the application of an anti-gall lubricant. Simply removing and re-torquing the fastener may suffice.

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A TORQUE WRENCH PRIMER

A torque wrench enables you to accurately measure the torque applied to a nut or bolt, so that you can tighten it the proper amount. When used properly, a torque wrench can help you avoid damaging the fastener or the parts with which the fastener interacts. Certain kinds of mechanical work and certain materials require precise torquing. This quality tool gives you that precision.

THIS IS A DIRECT-READING, BEAM-TYPE TORQUE WRENCH
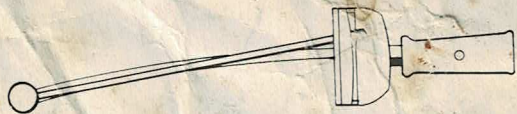
When you use it to apply torque to a fastener, the beam bends, while the pointer remains straight, indicating directly on the scale plate how much torque, in foot-pounds and Newton-meters, is being applied. When torque is released, the beam straightens and the pointer returns to zero. This torque wrench features an impact-resistant handle which concentrates the force you apply at a floating pivot point for greatest possible accuracy.

RIGHT

WRONG
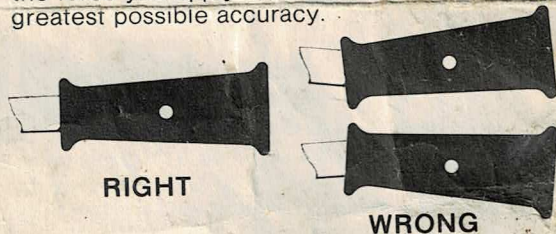
While other types of torque wrenches wear and fatigue with use and become inaccurate, a beam-type wrench will not become inaccurate unless the measuring element is actually broken.

Other features of this torque wrench include:

- Pointed, hard, spring steel pointer gives precise readings, resists bending.
- Satin finish on scale plate reduces glare for easy reading. Scale can be read conveniently regardless of direction of pull.
- Nickel-chrome plate is handsome and durable.
- Meets or exceeds Federal Specification GGG-W-686C.
- Beam has no holes or welds which could reduce life or accuracy.
- Heavy-duty square drive.

1. Clean a.. hread surfaces on fasteners and remove burrs.
2. If permanent marking of your wrench is absolutely necessary, mark only the scale plate, handle or head. Engrave or etch only . . . do not stamp. Defacing the beam in any way will affect accuracy or result in beam failure.
3. Do not strike your torque wrench or use it as a striking tool.
4. If you use flexible adaptors or crow-foot extensions, be sure to properly re-calculate the torque using the torque formula ($T = F \times D$).
5. Store your wrench where it won't be damaged. Even though it is extremely rugged, it is a precision instrument and should be treated as such.
6. Do not overtorque any fastener.

SUGGESTED MAXIMUM TORQUE VALUES FOR FASTENERS OF DIFFERENT MATERIALS

Bolt Size	Low Carbon Steel in-lbs	18-8 St St in-lbs	Brass in-lbs	Silicon Bronze in-lbs	Aluminum 24ST-4 in-lbs	316 St St in-lbs	Monel in-lbs
2-56	2.2	2.5	2.0	2.3	1.4	2.6	2.5
2-64	2.7	3.0	2.5	2.8	1.7	3.2	3.1
3-48	3.5	3.9	3.2	3.6	2.1	4.0	4.0
3-56	4.0	4.4	3.6	4.1	2.4	4.6	4.5
4-40	4.7	5.2	4.3	4.8	2.9	5.5	5.3
4-48	5.9	6.6	5.4	6.1	3.6	6.9	6.7
5-40	6.9	7.7	6.3	7.1	4.2	8.1	7.8
5-44	8.5	9.4	7.7	8.7	5.1	9.8	9.6
6-32	8.7	9.6	7.9	8.9	5.3	10.1	9.8
6-40	10.9	12.1	9.9	11.2	6.6	12.7	12.3
8-32	17.8	19.8	16.2	18.4	10.8	20.7	20.2
8-36	19.8	22.0	18.0	20.4	12.0	23.0	22.4
10-24	20.8	22.8	18.6	21.2	13.8	23.8	25.9
10-32	29.7	31.7	25.9	29.3	19.2	33.1	34.9
1/4"-20	65.0	75.2	61.5	68.8	45.6	93.8	85.3
1/4"-28	90.0	94.0	77.0	87.0	57.0	99.0	106.0
5/16"-18	129	132	107	123	80	138	149
5/16"-24	139	142	116	131	86	147	160
3/8"-16	212	236	192	219	143	247	266
3/8"-24	232	259	212	240	157	271	294
7/16"-14	338	376	317	349	228	393	427
7/16"-20	361	400	327	371	242	418	451
1/2"-13	465	517	422	480	313	542	584
1/2"-20	487	541	443	502	328	565	613
9/16"-12	613	682	558	632	413	713	774
9/16"-18	668	752	615	697	456	787	855
5/8"-11	1000	1110	907	1030	715	1160	1330
5/8"-18	1140	1244	1016	1154	798	1301	1482
3/4"-10	1259	1530	1249	1416	980	1582	1832
3/4"-16	1230	1490	1220	1382	958	1558	1790
7/8"-9	1919	2328	1905	2140	1495	2430	2775
7/8"-14	1911	2318	1895	2130	1490	2420	2755
1"-8	2832	3440	2815	3185	2205	3595	4130
1"-14	2562	3110	2545	2885	1995	3250	3730
	ft-lbs	ft-lbs	ft-lbs	ft-lbs	ft-lbs	ft-lbs	ft-lbs
1 1/8"-7	340	413	337	383	265	432	499
1 1/8"-12	322	390	318	361	251	408	470
1 1/4"-7	432	523	428	485	336	546	627
1 1/4"-12	396	480	394	447	308	504	575
1 1/2"-6	732	888	727	822	570	930	1064
1 1/2"-12	579	703	575	651	450	732	840

TORQUE VALUE CONVERSIONS

Ft-Lb to In-Lb		Ft-Lb to In-Lb		In-Lb to Ft-Lb		In-Lb to Ft-Lb	
1	12	40	480	1	.08	60	5.00
2	24	50	600	2	.17	80	6.66
3	36	60	720	3	.25	100	8.33
4	48	70	840	4	.33	200	16.66
5	60	80	960	5	.42	300	24.99
6	72	90	1080	6	.50	400	33.33
7	84	100	1200	7	.58	500	41.65
8	96	110	1320	8	.67	600	50.00
9	108	120	1440	9	.75	700	58.31
10	120	130	1560	10	.83	800	66.64
20	240	140	1680	20	1.67	900	74.97
30	360	150	1800	40	3.33	1000	83.33

METRIC TORQUE VALUE CONVERSIONS

Ft-Lb to N-m		Ft-Lb to N-m		In-Lb to N-m		In-Lb to N-m	
1	1.36	40	54	1	.113	60	6.78
2	2.7	50	68	2	.226	80	9.04
3	4.1	60	81	3	.339	100	11.3
4	5.4	70	95	4	.452	200	23
5	6.8	80	108	5	.565	300	34
6	8.1	90	122	6	.678	400	45
7	9.5	100	136	7	.791	500	56
8	10.8	110	149	8	.904	600	68
9	12.2	120	163	9	1.02	700	79
10	13.6	130	176	10	1.13	800	90
20	27	140	190	20	2.26	900	102
30	41	150	203	40	4.52	1000	113