



MAC MASTER[®]

TORQUE WRENCHES

HEAVY

DUTY

INDUSTRIAL

TOOLS

TORQUE WRENCH CATALOGUE



SPECIAL TORQUE WRENCH



RATCHET TYPE TORQUE WRENCH



OPEN JAW TORQUE WRENCH



RING TYPE TORQUE WRENCH



STANDARD TORQUE WRENCH



INTERCHANGEABLE TORQUE WRENCH



TORQUE SCREW DRIVER

MAC MASTER is the torque equipment manufacturer to be able to offer tool calibration services to the original factory standard. The company has grown from strength to strength and design, development and production of torque tightening equipment. MAC MASTER remain every bit as passionate about providing customers with high quality, value for money products and services.

MAC MASTER quality assurance system has been certified to internationally recognised standards. National Award Winner of Small Scale Industries by Govt. of India was awarded in the 2005. MAC MASTER is an ISO 9001 : 2000 Co. Most importantly, through continuous improvement, MAC MASTER is dedicated to providing products and services that we are proud of.

All Mac Master Torque Wrenches are Calibrated on Electronic Torque Tester to an accuracy of $\pm 5\%$ as laid down in IS 7145-1973. The Torque tester Calibrated by force providing instrument and the Force Providing Instrument is Certified by 'NABL'. The Mac Master Torque Wrenches are warranted against any manufacturing defects.

The Production Type Torque Wrenches, Open Jaw Torque Wrenches & Special Torque Wrenches can also be supplied against specific order.



SPECIFICATION OF STANDARD CLICK TYPE TORQUE WRENCH

| Model No. | TORQUE RANGE | | | | | | Square Drive | OAL at Min Capacity mm | Head Width mm | Head Depth (with Bit) mm | Weight Appx. (Kg) |
|-----------|--------------|----|-----------|----|---------|----|--------------|------------------------|---------------|--------------------------|-------------------|
| | lbt. ft. | | N.m | | Kgf. m | | | | | | |
| | Range | LC | Range | LC | Range | LC | | | | | |
| TW 10 | 2-10 | .5 | 3-14 | .5 | .3-1.4 | .1 | 3/8 | 315 | 25 | 35 | 0.5 |
| TW 25 | 5-25 | 1 | 5-35 | 2 | .5-3.5 | .2 | 3/8 | 340 | 25 | 35 | 0.6 |
| TW 50 | 8-50 | 2 | 12-68 | 2 | 1-7 | .2 | 1/2 | 460 | 30 | 42 | 1.0 |
| TW 100 | 20-100 | 2 | 25-135 | 5 | 3-14 | .5 | 1/2 | 560 | 32 | 49 | 1.60 |
| TW 160 | 40-160 | 5 | 50-220 | 5 | 5-23 | 1 | 1/2 | 580 | 32 | 52 | 2.20 |
| TW 250 | 50-250 | 5 | 70-340 | 10 | 7-35 | 1 | 1/2 | 785 | 32 | 52 | 2.80 |
| TW 400 | 100-400 | 10 | 135-540 | 15 | 14-56 | 1 | 3/4 | 1010 | 48 | 62 | 6.20 |
| TW 500 | 100-500 | 10 | 135-675 | 15 | 14-70 | 2 | 3/4 | 1060 | 48 | 62 | 6.20 |
| TW 600 | 145-605 | 10 | 200-815 | 15 | 20-84 | 2 | 3/4 | 1060 | 48 | 62 | 6.20 |
| TW 750 | 350-750 | 20 | 475-1015 | 20 | 49-105 | 2 | 3/4 | 1250 | 56 | 72 | 11.3 |
| TW 750S | 350-750 | 20 | 475-1015 | 20 | 49-105 | 2 | 1 | 1250 | 61 | 82 | 12.6 |
| TW 1000 | 400-1000 | 20 | 540-1380 | 40 | 55-140 | 5 | 1 | 1300 | 70 | 83 | 13.6 |
| TW 1400 | 750-1400 | 25 | 1000-1900 | 50 | 105-195 | 5 | 1 | 1420 | 70 | 83 | 15.0 |
| TW 2000 | 1000-2000 | 50 | 1350-2700 | 50 | 135-275 | 5 | 1 | 1510 | 70 | 83 | 20.0 |
| TW 2500 | 1500-2500 | 50 | 2030-3430 | 50 | 207-347 | 5 | 1 | 1620 | 70 | 83 | 21.5 |

LC = Least Count



SPECIFICATION OF RATCHET TYPE TORQUE WRENCH

| Model No. | TORQUE RANGE | | | | | | Square Drive | OAL at Min Capacity | Head Width | Head Depth (with Bit) | Weight Appx. (Kg) |
|-----------|--------------|----|-----------|----|---------|----|--------------|---------------------|------------|-----------------------|-------------------|
| | lbt. ft. | | Nm | | Kgf. m | | | | | | |
| | Range | LC | Range | LC | Range | LC | | | | | |
| TW 10R | 2-10 | .5 | 3-14 | .5 | .3-1.4 | .1 | 3/8 | 345 | 36 | 35 | 0.65 |
| TW 25R | 5-25 | 1 | 5-35 | 2 | .5-3.5 | .2 | 3/8 | 375 | 36 | 35 | 0.70 |
| TW 50R | 8-50 | 2 | 12-68 | 2 | 1-7 | .2 | 1/2 | 495 | 42 | 42 | 1.10 |
| TW 100R | 20-100 | 2 | 25-135 | 5 | 3-14 | .5 | 1/2 | 590 | 48 | 49 | 1.90 |
| TW 160R | 40-160 | 5 | 50-220 | 5 | 5-23 | 1 | 1/2 | 600 | 48 | 52 | 2.50 |
| TW 250R | 50-250 | 5 | 70-340 | 10 | 7-35 | 1 | 1/2 | 810 | 48 | 52 | 3.00 |
| TW 400R | 100-400 | 10 | 135-540 | 15 | 14-56 | 1 | 3/4 | 1080 | 72 | 62 | 7.30 |
| TW 500R | 100-500 | 10 | 135-675 | 15 | 14-70 | 2 | 3/4 | 1130 | 72 | 62 | 7.30 |
| TW 600R | 145-605 | 10 | 200-815 | 15 | 20-84 | 2 | 3/4 | 1130 | 72 | 62 | 7.30 |
| TW 750R | 350-750 | 20 | 475-1015 | 20 | 49-105 | 2 | 3/4 | 1320 | 79 | 72 | 13.7 |
| TW 1000R | 400-1000 | 20 | 540-1380 | 40 | 55-140 | 5 | 1 | 1400 | 100 | 83 | 17.6 |
| TW 1400R | 750-1400 | 25 | 1000-1900 | 50 | 105-195 | 5 | 1 | 1520 | 100 | 83 | 20.0 |
| TW 2000R | 1000-2000 | 50 | 1350-2700 | 50 | 135-275 | 5 | 1 | 1615 | 100 | 83 | 22.1 |
| TW 2500R | 1500-2500 | 50 | 2030-3430 | 50 | 207-347 | 5 | 1 | 1720 | 100 | 83 | 25.0 |

LC = Least Count

Note : We at Macmaster Tools also manufacturer Torque Wrench (Both in standard & Ratchet type) in fix type upto capacity 5000 Nm.



TORQUE SCREW DRIVER

| Part No. | Lbf. in | Kgs. cm. | Nm | Sq. Drive | OAL | Wt. (kg) |
|----------|---------|----------|---------|-----------|-----|----------|
| MSD 15 | 1-15 | 1-15 | 0.1-1.5 | 1/4 | 156 | 0.25 |
| MSD 50 | 10-50 | 10-50 | 1-5 | 1/4 | 156 | 0.45 |

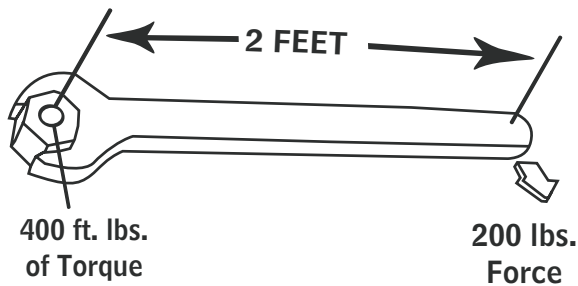
TORQUE FACTS

WHAT IS TORQUE?

According to Webster:

- A twisting or wrenching effect, or moment, exerted by a force acting at a distance on a body, equal to the force multiplied by the perpendicular distance between the line of action of the force, and the center of rotation at which it is exerted.
- A force, which tends to produce rotation. The measurement of torque is based on the fundamental law of the lever.

Basic Torque Formula L (length) x F (force) = T (torque)



Example: A two foot lever at a right angle to the fastener with 200 pounds at the end will produce 400 foot/pounds of torque.

Torque Formula: $L \times F = T$

What are we trying to achieve with a torque wrench?

Answer: **Proper Clamping Force**

TORQUE AND CLAMPING FORCE

Controlling the torque applied in tightening threaded fasteners is the most commonly used method for the application of clamping force. There are many factors which may affect the relationship between torque and clamping force of threaded fasteners. Some of these are: the type of lubricant used on the threads, the material from which the bolt and nut are made, the type of washers used, the class and finish of threads and various other factors. It is not possible to establish a definite relationship between torque and clamping force which will be applicable for all conditions.

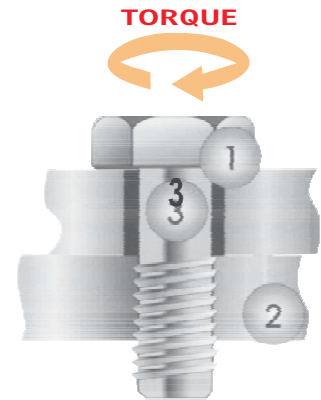
Torque is expressed in commonly used units of measurement such as:

- in. lbs. = inch pounds
- in ozs. = Inch ounces
- ft. lbs. = foot pounds
- Nm = Newton meter
- cNm = Centi Newton Meter



TORQUE VERSUS CLAMPING FORCE

Only a small part of the torque applied to a fastener contributes to clamping force. The remaining, as much as 90% of the total applied torque, is used to overcome friction under the fastener head (or between nut and washer) and friction in thread engagement.



1. Head Friction
2. Thread Friction
3. Clamping Force

TORQUE

Head Friction:
45% - 55%

Thread Friction:
35% - 45%

Clamping Force:
10%



COMMON TORQUE ABBREVIATIONS

| |
|--------------------------|
| Foot Pounds - ft. lbs. |
| Inch Pounds - in. lbs. |
| Inch Ounces - in.ozs. |
| Newton Meter - Nm |
| Centi-Newton Meter - cNm |
| Meter Kilogram - Mkg |
| EASY-TO-USE TORQUE |
| CONVERSION TABLE |

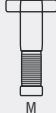

| To Convert From | To | Multiply by |
|-----------------|---------|-------------|
| in. oz. | in. lb. | 0.0625 |
| in. lb. | in. oz. | 16 |
| in. lb. | ft. lb. | 0.08333 |
| in. lb. | cmkg | 1.1519 |
| in. lb. | mkg | 0.011519 |
| in. lb. | Nm | 0.113 |
| in. lb. | dNm | 1.13 |
| ft. lb. | in. lb. | 12 |
| ft. lb. | mkg | 0.1382 |
| ft. lb. | Nm | 1.356 |
| dNm | in.lb | 0.885 |

| To Convert From | To | Multiply by |
|-----------------|---------|-------------|
| dNm | Nm | 0.10 |
| Nm | dNm | 10 |
| Nm | cmkg | 10.2 |
| Nm | mkg | 0.102 |
| Nm | in.lb | 8.85 |
| Nm | ft. lb. | 0.7376 |
| cmkg | in. lb. | 0.8681 |
| cmkg | Nm | 0.09807 |
| mkg | in. lb. | 86.81 |
| mkg | ft. lb. | 7.236 |
| mkg | Nm | 9.807 |

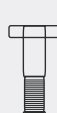

Torque Specifications

Maximum recommended tightening Torque

Metric Sizes

| Bolt Size  | A/F  | Tightening Force = P(N) | | Torque = M _A (Nm) | | | |
|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------|----------------|--------------------------------|----------------|---------|----------------|
| | | 8.8 | | 10.9 | | 12.9 | |
| | | P | M _A | P | M _A | P | M _A |
| | | N | Nm | N | Nm | N | Nm |
| M 2 | 4 | 863 | 0.373 | 1216 | 0.520 | 1461 | 0.628 |
| M 2.3 | 4.5 | 1245 | 0.598 | 1755 | 0.843 | 2099 | 1.010 |
| M 2.6 | 5 | 1598 | 0.863 | 2246 | 1.206 | 2697 | 1.451 |
| M 3 | 5.5 | 2206 | 1.344 | 3109 | 1.883 | 3727 | 2.256 |
| M 3.5 | 6 | 2962 | 2.060 | 4168 | 2.893 | 5001 | 3.481 |
| M 4 | 7 | 3825 | 3.040 | 5374 | 4.315 | 6453 | 5.148 |
| M 5 | 8-9 | 6257 | 6.031 | 8806 | 8.483 | 10591 | 10.200 |
| M 6 | 10 | 8836 | 10.300 | 12405 | 14.710 | 14906 | 17.625 |
| M 7 | 11-12 | 12945 | 17.162 | 18191 | 24.517 | 21771 | 28.439 |
| M 8 | 13-14 | 16230 | 25.497 | 22751 | 35.304 | 27360 | 42.168 |
| M 10 | 15-17 | 25791 | 50.014 | 36284 | 70.608 | 43541 | 85.317 |
| M 12 | 19-21 | 37657 | 87.279 | 52956 | 122.60 | 63547 | 147.10 |
| M 14 | 22-23 | 51681 | 138.30 | 72667 | 194.20 | 87279 | 235.40 |
| M 16 | 24-26 | 71196 | 210.80 | 100027 | 299.10 | 120131 | 357.90 |
| M 18 | 27 | 86494 | 289.30 | 121602 | 411.90 | 146118 | 490.30 |
| M 20 | 30 | 111305 | 411.90 | 156415 | 578.60 | 187796 | 696.30 |
| M 22 | 32 | 139254 | 559.00 | 195642 | 784.50 | 234378 | 941.40 |
| M 24 | 36 | 160338 | 711.00 | 225552 | 1000 | 270662 | 1196 |
| M 27 | 41 | 210842 | 1049 | 296159 | 1481 | 355980 | 1775 |
| M 30 | 46 | 255952 | 1422 | 359902 | 2010 | 432471 | 2403 |
| M 33 | 50 | 319695 | 1932 | 449142 | 2716 | 539363 | 3266 |
| M 36 | 55 | 374612 | 2481 | 527595 | 3491 | 632526 | 4197 |
| M 39 | 60 | 451104 | 3226 | 633506 | 4531 | 760992 | 5443 |
| M 42 | 65 | 515827 | 3991 | 725688 | 5609 | 870826 | 6727 |
| M 45 | 70 | 604087 | 4992 | 850232 | 7012 | 1019886 | 8414 |
| M 48 | 75 | 679597 | 6021 | 956144 | 8473 | 1147372 | 10150 |
| M 52 | 80 | 815909 | 7747 | 1147372 | 10885 | 1377827 | 13092 |
| M 56 | 85 | 940453 | 9650 | 1323891 | 13582 | 1588669 | 16279 |
| M 60 | 90 | 1098339 | 11964 | 1544540 | 16867 | 1853447 | 20202 |
| M 64 | 95 | 1245438 | 14416 | 1750478 | 20300 | 2098612 | 24320 |
| M 68 | 100 | 1425787 | 17615 | 2005013 | 24771 | 2406016 | 29725 |
| M 72 | 105 | 1620036 | 21081 | 2278175 | 29645 | 2733810 | 35575 |
| M 76 | 110 | 1826672 | 24973 | 2568758 | 35118 | 3082510 | 42141 |
| M 80 | 115 | 2045697 | 29314 | 2876762 | 41222 | 3452115 | 49467 |
| M 90 | 130 | 2647453 | 42525 | 3722982 | 59801 | 4467578 | 71761 |
| M 100 | 145 | 3326624 | 59200 | 4678066 | 83250 | 5613679 | 99900 |

Imperial Sizes

| Bolt Size  | A/F  | Tightening Force = P(N) | | Torque = M _A (Nm) | | | |
|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------|----------------|--------------------------------|----------------|--------|----------------|
| | | P | | S | | T | |
| | | P | M _A | P | M _A | P | M _A |
| | | N | Nm | N | Nm | N | Nm |
| 1/4" | 7/16" | 4379 | 5.43 | 8320 | 10.3 | 8980 | 11.1 |
| 5/16" | 1/2" | 7344 | 11.2 | 13954 | 21.3 | 15061 | 23.0 |
| 3/8" | 9/16" | 10951 | 19.9 | 20807 | 37.7 | 22458 | 40.9 |
| 7/16" | 5/8" | 15065 | 31.9 | 28623 | 60.7 | 30894 | 65.5 |
| 1/2" | 3/4" | 20244 | 48.8 | 38463 | 92.7 | 41516 | 100 |
| 9/16" | 7/8" | 26075 | 70.4 | 49542 | 134 | 53474 | 144 |
| 5/8" | 15/16" | 32452 | 97.4 | 61658 | 185 | 66552 | 200 |
| 3/4" | 1.1/8" | 49781 | 178 | 94584 | 338 | 102091 | 364 |
| 7/8" | 1.5/16" | 67157 | 279 | 127599 | 530 | 137725 | 572 |
| 1" | 1.1/2" | 88221 | 418 | 167620 | 795 | 180923 | 858 |
| 1.1/8" | 1.11/16" | 111007 | 593 | 210913 | 1126 | 227652 | 1216 |
| 1.1/4" | 1.7/8" | 142135 | 837 | 270091 | 1591 | 291527 | 1717 |
| 1.3/8" | 2.1/16" | 168641 | 1096 | 320417 | 2083 | 345847 | 2248 |
| 1.1/2" | 2.1/4" | 206578 | 1456 | 392498 | 2767 | 423648 | 2987 |
| UNF | | | | | | | |
| 1/4" | 7/16" | 5232 | 6.28 | 9941 | 11.9 | 10730 | 12.9 |
| 5/16" | 1/2" | 8410 | 12.5 | 15979 | 23.8 | 17247 | 25.7 |
| 3/8" | 9/16" | 12911 | 22.7 | 24531 | 43.2 | 26478 | 46.6 |
| 7/16" | 5/8" | 17416 | 35.9 | 33091 | 68.2 | 35717 | 73.6 |
| 1/2" | 3/4" | 23685 | 55.4 | 45002 | 105 | 48574 | 114 |
| 9/16" | 7/8" | 30075 | 79.0 | 57143 | 150 | 61678 | 162 |
| 5/8" | 15/16" | 38156 | 111 | 72496 | 210 | 78250 | 227 |
| 3/4" | 1.1/8" | 56078 | 195 | 106549 | 370 | 115005 | 399 |
| 7/8" | 1.5/16" | 76297 | 309 | 144965 | 587 | 156470 | 634 |
| 1" | 1.1/2" | 99200 | 459 | 188480 | 873 | 203439 | 942 |
| 1.1/8" | 1.11/16" | 128738 | 667 | 244602 | 1267 | 264015 | 1368 |
| 1.1/4" | 1.7/8" | 161358 | 925 | 306580 | 1757 | 330911 | 1896 |
| 1.3/8" | 2.1/16" | 199331 | 1252 | 378728 | 2378 | 408786 | 2567 |
| 1.1/2" | 2.1/4" | 240377 | 1642 | 456717 | 3119 | 492965 | 3367 |

Newton - Meter Nm to Foot-Pounds Lbf. ft. (1Nm = 0.738 lbf. ft.)
 Kilogram - Force Meter to Newton - Meter (1 Kgm = 9.80 Nm)

SPECIFICATION OF INTERCHANGEABLE CLICK TYPE TORQUE WRENCH

| Model No. | T O R Q U E R A N G E | | | | | | Square Drive (inch) | OAL at Min Cap. (mm) | Weight Appx. (kgs) |
|-----------|-----------------------|-----|--------|-----|---------|-----|---------------------|----------------------|--------------------|
| | lbf. ft. | | Nm | | kgf. m | | | | |
| | Range | LC | Range | LC | Range | LC | | | |
| TW 10 | 2-10 | 0.5 | 3-14 | 0.5 | 0.3-1.4 | 0.1 | 5/8" | 342 | 0.6 |
| TW 25 | 5-25 | 1 | 5-35 | 2 | 0.5-3.5 | 0.2 | 5/8" | 365 | 0.65 |
| TW 50 | 8-50 | 2 | 12-68 | 2 | 1-7 | 0.2 | 5/8" | 490 | 1.15 |
| TW 100 | 20-100 | 2 | 25-135 | 5 | 3-14 | 0.5 | 5/8" | 587 | 1.75 |
| TW 160 | 40-160 | 5 | 50-220 | 5 | 5-23 | 1 | 5/8" | 600 | 2.45 |
| TW 250 | 50-250 | 5 | 70-340 | 10 | 7-35 | 1 | 5/8" | 804 | 3.10 |

SPECIFICATION OF INTERCHANGEABLE SPANNER

| S.No. | Square head size (inch) | A/F size (mm) | Length (mm) | Breadth (mm) | Thickness (mm) | Weight Appx. (kgs) |
|-------|-------------------------|---------------|-------------|--------------|----------------|--------------------|
| 1 | 5/8 | 7 | 56.0 | 29.0 | 9 | 0.1 |
| 2 | 5/8 | 8 | 56.0 | 29.0 | 9 | 0.1 |
| 3 | 5/8 | 9 | 56.0 | 31.5 | 9 | 0.1 |
| 4 | 5/8 | 10 | 56.0 | 31.5 | 9 | 0.1 |
| 5 | 5/8 | 11 | 56.0 | 32.6 | 9 | 0.1 |
| 6 | 5/8 | 12 | 56.0 | 33.8 | 9 | 0.1 |
| 7 | 5/8 | 13 | 56.0 | 35.0 | 9 | 0.1 |
| 8 | 5/8 | 14 | 56.0 | 36.5 | 9 | 0.1 |
| 9 | 5/8 | 15 | 56.0 | 37.8 | 9 | 0.1 |
| 10 | 5/8 | 16 | 56.0 | 39.0 | 9 | 0.1 |
| 11 | 5/8 | 17 | 56.0 | 40.3 | 9 | 0.1 |
| 12 | 5/8 | 18 | 58.0 | 46.6 | 11 | 0.15 |
| 13 | 5/8 | 19 | 58.0 | 47.8 | 11 | 0.15 |
| 14 | 5/8 | 20 | 58.0 | 49.0 | 11 | 0.15 |
| 15 | 5/8 | 21 | 58.0 | 50.3 | 11 | 0.20 |
| 16 | 5/8 | 22 | 58.0 | 51.5 | 11 | 0.20 |
| 17 | 5/8 | 24 | 58.0 | 51.5 | 11 | 0.20 |
| 18 | 5/8 | 25 | 68.0 | 59.8 | 14 | 0.25 |
| 19 | 5/8 | 26 | 68.0 | 61.0 | 14 | 0.25 |
| 20 | 5/8 | 27 | 68.0 | 62.2 | 14 | 0.25 |
| 21 | 5/8 | 28 | 68.0 | 63.5 | 14 | 0.28 |
| 22 | 5/8 | 29 | 68.0 | 64.8 | 14 | 0.28 |
| 23 | 5/8 | 30 | 68.0 | 66.0 | 14 | 0.35 |
| 24 | 5/8 | 32 | 68.0 | 68.5 | 14 | 0.35 |
| 25 | 5/8 | 33 | 68.0 | 69.8 | 14 | 0.38 |
| 26 | 5/8 | 34 | 68.0 | 71.0 | 14 | 0.38 |
| 27 | 5/8 | 35 | 68.0 | 72.8 | 14 | 0.40 |
| 28 | 5/8 | 36 | 68.0 | 73.5 | 14 | 0.40 |

MAC MASTER INDUSTRIAL HAND TOOLS

Mac Master industrial tools are designed to meet the requirements of Heavy Industries, Thermal Power Plants, Oil Industries, Petroleum, Automobiles, Railways, General Engineering Industries.

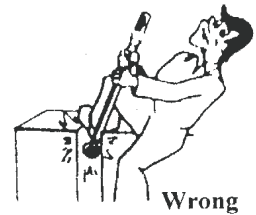
Mac Master offers a wide selection of tools and equipment to fill the majority of your tool requirements. In addition to our standard product line, Mac Master will also design and manufacture special tools to help solve your special tool problems.

HOW TO USE MAC MASTER TORQUE WRENCHES

Mac Master Torque wrenches are used in various operations where proper torquing of nuts, bolts and other fasteners is critical. Such operations include assembly and inspection of gear trains and bearings, setting of clutches and brakes, maintenance, repair, overhaul and experimental work.

Mr. John should try with a crow Bar-Not a torque wrench.

Always work with clean threads that are free of corrosion. It is important to follow the product manufacturer's instructions for specific torque loadings - particularly whether recommendations are for dry, oiled or plated threads, and other instructions which apply to a particular tool. Avoid over tightening a nut or bolt with a conventional wrench before applying a torque wrench. When not in use, the adjustable type wrench should be set to the lowest torque.



ABUSE/MISUSE

A Torque wrench is a precision instrument and should not be roughly handled. Never use it as a hammer, a pry or as a conventional wrench-use it only as a torque tool. Avoid dropping. When using adjustable wrenches do not over torque by applying torque past the release point. At low torque setting, the "click" Signal might be very soft. Learn the feel of the release, rather than relying on the sound.

Read torque values on indicating torque wrenches by looking at the dial at 90° to its surface (this eliminates parallax error). If this is difficult to do, compensate by observing how much the apparent scale readings change when viewing from different angles.

Mac Master torque wrenches operate accurately when they are held by their designated grips. Cheater bars should never be used unless specifically permitted (or supplied) by the wrench manufacturer.

Mac Master torque wrenches are manufactured to the highest quality standard and subject to rigorous quality control and inspection procedures.

MAC MASTER TOOLS PVT. LTD.

Dera Bassi Unit :

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Foacal Point,

Dera Bassi (Punjab)-140507

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