

T H E M O S T S E R I O U S T O O L S E V E R M A D E

WTOOLS
william tools Co., Ltd

**RATCHET HANDLE. TORQUE WRENCH
TORQUE MULTIPLIER**



FM503535

WTOOLS
william tools Co., Ltd

- Ratchet handles, Torque tools
- Continually improving, reaching for perfection
- Gratitude for hard work, creating happy business

WILLIAM TOOLS CO., LTD.

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THE MOST SERIOUS TOOLS EVER MADE



William tools is founded in 1999 by William Chiang, who has more than 30 years experiences in hand tool manufacturing field. We specialize in developing and producing ratchet handles, torque multipliers, torque wrenches and torque tools as one of the illustrious manufacturer in Taiwan.

We are not only produce products with standard specification but also create customized commodity. Our R&D group owns plenty professional knowledge to satisfy customized specifications, structure, shapes and appearance.

Without doubt, quality is our top priority so we choose subcontractors strictly and execute strict QC every step from the beginning raw components collection to the final package for perfection achievement. Most important of all, our products are all passed high level test which exceeds ANSI, DIN and ISO standard before shipment. In this way, we are confident to guarantee one year warranty for proper use.

Base on brilliant appearance, durable structure and excellent accuracy, we obtain many glory national awards, such as rising star award, national awards of excellence, golden hand award, design award and so on that approves our value and enhance customer's trust.

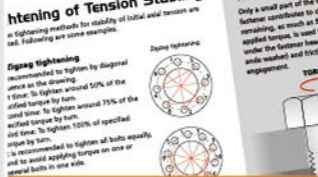
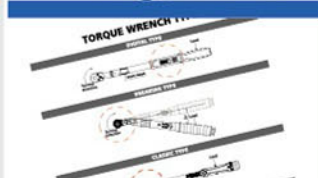
To be a reliable partner, we do our best to commit better customer service so we win many OEM/ODM projects from global heavyweight brand, such as FACOM, Stanley and Snap-on.

Furthermore, we also provide verification service by subsidiary William tools torque TAF laboratory to promote customer's operational efficiency.

Hence, we believe WILLIAM TOOLS is your best choice.



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Certificate No. : L3479-180621

財團法人全國認證基金會
Taiwan Accreditation Foundation

Certificate of Accreditation

This is to certify that

William tools Co., Ltd
Torque Calibration laboratory
No. 8, Keya Rd., CTSP, Taichung 42881, Taiwan

is accredited in respect of laboratory

Accreditation Criteria : ISO/IEC 17025:2005
Accreditation Number : 3479
Originally Accredited : June 21, 2018
Effective Period : June 21, 2018 to June 20, 2021
Accredited Scope : Calibration Field, see described in the Appendix

Chung-Lin Wang

Chung-Lin Wang
President, Taiwan Accreditation Foundation
Date : June 21, 2018

P1, total 4 pages

The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix



Calibration Laboratory
3479



THE MOST SERIOUS TOOLS EVER MADE WTOOLS



WTOOLS
william tools Co., Ltd

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Certificate of Conformance in Accordance with ISO6789-1:2017

Model No.: 40-200N.m Max Deviation / Tolerance: + 4%
 Serial No.: 19112101001 Units: N.m
 Range: 40-200

(The lowest value for torque certificate of conformance is from: 20% of the maximum torque value.)
 Inspection Direction: Clockwise
 Description: N/A
 Ambient Temperature: 24°C Humidity: 55% Inspector: Wu

Set Torque		Permissible Min. Max.		Test Results - CW (deviation)									
				1		2		3		4		5	
20%	40	38.4	41.6	39.86	-0.35%	39.95	-0.12%	39.93	-0.18%	39.82	-0.45%	39.71	-0.72%
60%	120	115.2	124.8	118.8	-1.00%	118.6	-1.17%	118.6	-1.17%	118.4	-1.33%	118.2	-1.50%
100%	200	192	208	200.85	0.44%	200.49	0.25%	200.19	0.09%	200.09	0.05%	199.59	0.20%

Accessories fitted to the Torque Wrench for the purposes of this test: N/A
 Dimensions: N/A

The limits shown, and the test equipment used for this Declaration of Conformance, comply with the requirements of ISO 6789 - 1 : 2017

The Test Results shown above, fall within the maximum permitted deviation - YES

Measurement Device used:
 Model No.: 50594.LOG Serial No.: 83855
 The Measurement Device used to conduct this test has been calibrated by: William Tools Co., Ltd. Torque Calibration Laboratory TAF3479 to meet ISO 17025:2017 traceability requirement

The measurement error of this equipment is less than 25% of the maximum permissible deviation.

Date of Test: 2020/2/19
 Quality Manager: Boren Yang Quality Manager: 

A. FEATURES

- Safety push button prevents unsuitable operation.
- Numeric screen display is easy to read the torque value.
- Ergonomic grip offers a better feel than other brands.
- Alloy steel pawl reinforces product stability and reliability.
- Two-point contact mechanism is more accurate.
- Special compression springs have great anti-elastic fatigue.
- Heat treatment steel pipe increases life cycles.
- All of our products are 100% made in Taiwan.

B. MARKING

Hand torque tools shall be marked, permanently and legibly, at least with the following information:

- The maximum and minimum torque values or [for Type II (Classes B and E)] the fixed adjusted torque value;
- The unit(s) of torque;
- Type II (Classes C and F) may also be marked in a non-permanent way with the nominal torque preset value in user specified units;
- The direction of operation (for tools capable of operating in one direction only);
- The force loading point [except Type I (Classes D and E) and Type II (Classes D, E and F)];
- The name or trademark of the manufacturer or responsible supplier;
- Where accompanied by a declaration of conformance, the torque tool shall have a serial or identification number. If necessary, an identification number shall be assigned.

C. TIPS

- We guarantee every William Tools Torque Wrench is within +/-4% uncertainty by calibration before shipping.
- In order to guarantee its precision, all the torque wrench tools require regular maintenance and calibration.
- Examine your torque wrench tools at least every 5,000 load cycles or once a year on a traceable calibrated test device.
- For the tools used intensively or irrelevantly, we recommend doing recalibration before operation.
- With reference to the first time using torque wrench tools or those long time unused, user should pre-operate with the highest torque setting for 5~10 times before actual operation. The purpose is to make the components to be completely lubricated by our special grease. The torque setting must be in the lowest when you don't use.
- User should stop operating immediately as soon as hearing "click" sound by reason of maintaining its precision and prolong its life time.

William tools Co., Ltd subsidiary torque calibration laboratory passes TAF lab base on " ISO /IEC 17025 " ; The laboratory number is TAF3479. William Tools subsidiary torque calibration laboratory executes torque calibration for various torque tools base on ISO /IEC 6789-1 & -2.

Laboratory ability data

1. 40-200 N-m SCREEN Torque Wrench

X_a	$\bar{X}_r$	b_{re}	b_{rep}	b_{od}	b_{int}	b_l	a_s	b_{ep}
Target indicated, set or nominal value depending on the type and class of the torque tool	Reference value determined by the measurement device	Variation due to the repeatability of the torque tool	Variation due to the reproducibility of the torque tool (Type I and Type II Classes A, D and G only)	Variation due to geometric effects of the output drive of the torque tool	Variation due to geometric effects of the interface between the output drive of the torque tool and the calibration system	Variation due to the variation of the force loading point	Calculated relative measurement error of the torque tool for the calibration torque	Stated relative measurement error of the measurement device
120 N · m	119.99 N · m	0.237 N · m	0.15 N · m	0.814 N · m	0 N · m	0.548 N · m	0.009 %	0.005 %

Relative uncertainty

X_a	w_r	w_{rep}	w_{od}	w_{int}	w_l	w_{re}	w_{md}	$W (k=2)$	$Uc(W)$
Target indicated, set or nominal value depending on the type and class of the torque tool	Relative standard measurement uncertainty due to resolution of the display of the torque tool (Type I and Type II Classes A, D and G only)	Component of w due to reproducibility of the torque tool (Type I and Type II Classes A, D and G only)	Component of w due to geometric effects of the output drive of the torque tool	Component of w due to geometric effects of the interface between the output drive of the torque tool and the calibration system	Component of w due to the length variation of the force loading point	Component of w due to repeatability of the torque tool	Relative standard measurement uncertainty of the measurement device at the calibration torque	Relative standard measurement uncertainty of the torque tool at the calibration torque	Relative measurement uncertainty interval of the torque tool at the calibration torque
120 N · m	0.12 %	0.036 %	0.196 %	0.137 %	0.132 %	0.088 %	0.71 %	0.947 %	0.96 %

2. 40-200 N-m Dual Way Torque Wrench

X_a	$\bar{X}_r$	b_{re}	b_{rep}	b_{od}	b_{int}	b_l	a_s	b_{ep}
Target indicated, set or nominal value depending on the type and class of the torque tool	Reference value determined by the measurement device	Variation due to the repeatability of the torque tool	Variation due to the reproducibility of the torque tool (Type I and Type II Classes A, D and G only)	Variation due to geometric effects of the output drive of the torque tool	Variation due to geometric effects of the interface between the output drive of the torque tool and the calibration system	Variation due to the variation of the force loading point	Calculated relative measurement error of the torque tool for the calibration torque	Stated relative measurement error of the measurement device
120 N · m	119.812 N · m	0.457 N · m	0.296 N · m	0.289 N · m	0 N · m	0.471 N · m	0.158 %	0.005 %

Relative uncertainty

X_a	w_r	w_{rep}	w_{od}	w_{int}	w_l	w_{re}	w_{md}	$W (k=2)$	$Uc(W)$
Target indicated, set or nominal value depending on the type and class of the torque tool	Relative standard measurement uncertainty due to resolution of the display of the torque tool (Type I and Type II Classes A, D and G only)	Component of w due to reproducibility of the torque tool (Type I and Type II Classes A, D and G only)	Component of w due to geometric effects of the output drive of the torque tool	Component of w due to geometric effects of the interface between the output drive of the torque tool and the calibration system	Component of w due to the length variation of the force loading point	Component of w due to repeatability of the torque tool	Relative standard measurement uncertainty of the measurement device at the calibration torque	Relative standard measurement uncertainty of the torque tool at the calibration torque	Relative measurement uncertainty interval of the torque tool at the calibration torque
120 N · m	0.12 %	0.071 %	0.07 %	0.092 %	0.113 %	0.171 %	0.71 %	0.896 %	1.059 %

counter-clockwise

X_a	$\bar{X}_r$	b_{re}	b_{rep}	b_{od}	b_{int}	b_l	a_s	b_{ep}
Target indicated, set or nominal value depending on the type and class of the torque tool	Reference value determined by the measurement device	Variation due to the repeatability of the torque tool	Variation due to the reproducibility of the torque tool (Type I and Type II Classes A, D and G only)	Variation due to geometric effects of the output drive of the torque tool	Variation due to geometric effects of the interface between the output drive of the torque tool and the calibration system	Variation due to the variation of the force loading point	Calculated relative measurement error of the torque tool for the calibration torque	Stated relative measurement error of the measurement device
120 N · m	119.6 N · m	0.533 N · m	0.138 N · m	0.329 N · m	0 N · m	0.513 N · m	0.336 %	0.005 %

X_a	w_r	w_{rep}	w_{od}	w_{int}	w_l	w_{re}	w_{md}	$W (k=2)$	$Uc(W)$
Target indicated, set or nominal value depending on the type and class of the torque tool	Relative standard measurement uncertainty due to resolution of the display of the torque tool (Type I and Type II Classes A, D and G only)	Component of w due to reproducibility of the torque tool (Type I and Type II Classes A, D and G only)	Component of w due to geometric effects of the output drive of the torque tool	Component of w due to geometric effects of the interface between the output drive of the torque tool and the calibration system	Component of w due to the length variation of the force loading point	Component of w due to repeatability of the torque tool	Relative standard measurement uncertainty of the measurement device at the calibration torque	Relative standard measurement uncertainty of the torque tool at the calibration torque	Relative measurement uncertainty interval of the torque tool at the calibration torque
120 N · m	0.121 %	0.033 %	0.079 %	0.158 %	0.124 %	0.199 %	0.71 %	0.955 %	1.296 %

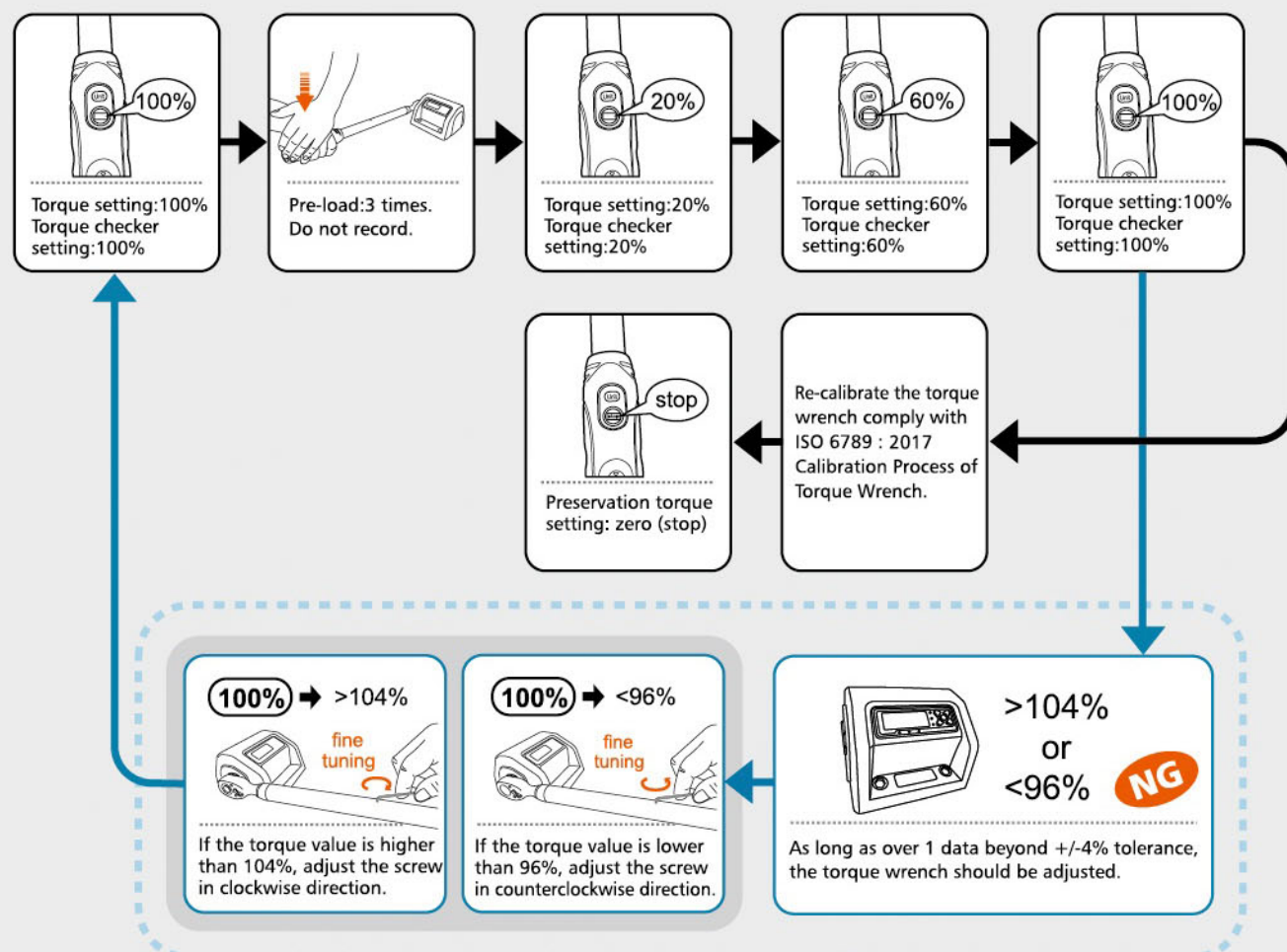
Screen Torque Wrench Calibration Manual

Subject: Wtools Screen Torque Wrench

Prepare: 1. Screen Torque Wrench X1

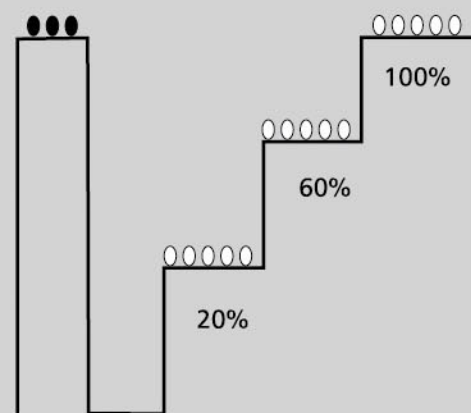
2. 2.5mm Allen Key X1

3. Torque Tester (Regard Wtools Torque Tester as the example)



Notice: If the torque data is not in the tolerance (+/- 4%) after adjusting; contact your dealer or send the torque wrench back to factory to do further adjustment.

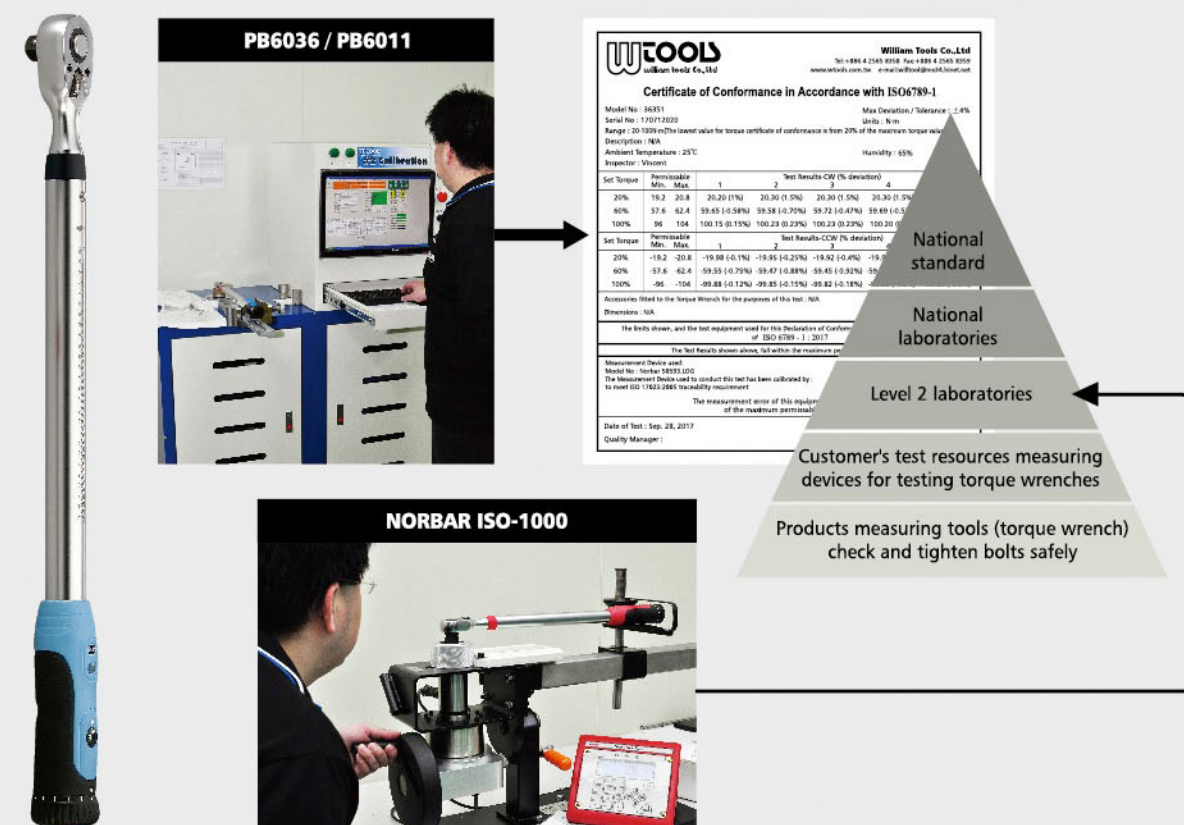
ISO 6789-1 : 2017 Calibration Process of Torque Wrench



Note: Before recording data, there always should have pre-operation to warm up the structure.

1. ○● are times of operating.
● means pre-operation, do not record.
○ means formal operation, record the data.
2. Operating 3 times ● in the Max torque(100%).
3. Loosen to the lowest torque.
4. Set to 20% of the Max. torque, operate 50.
5. Set to 60% of the Max. torque, operate 50.
6. Set to 100% of the Max. torque, operate 50.
7. Loosen to the lowest torque.

CALIBRATION WITH 100% SAFETY



RELATION FIGURE OF SCREW AND TORQUE

(Torque coefficient $K=0.2$)

Calculation formula

$$T = K \cdot d \cdot F$$

$$A = \frac{\pi}{4} \cdot d_2^2$$

$$\sigma = \frac{F_t}{A}$$

T : Tightening torque N·m

K : Torque coefficient ($\mu \approx 0.15$)

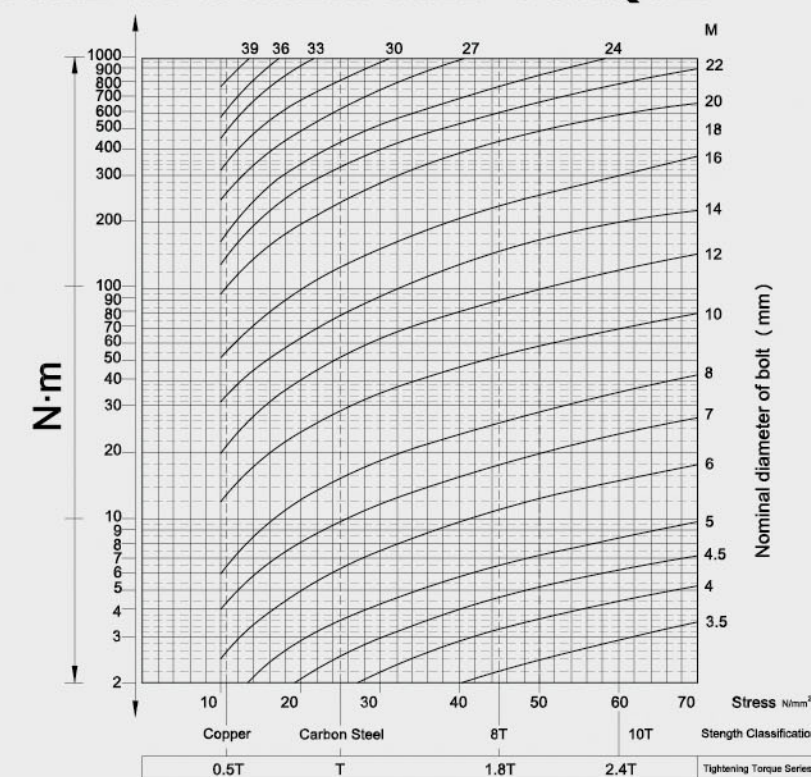
d : Nominal diameter of bolt mm

F_t : Axial tension N

A : Stress area of bolt mm²

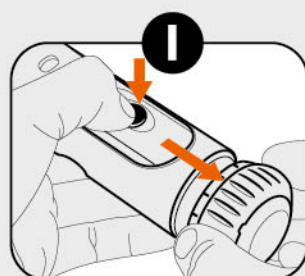
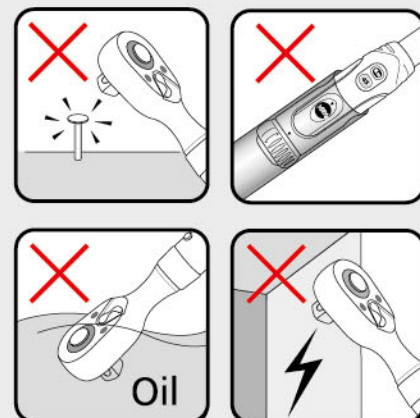
d_2 : Pitch diameter of bolt mm

σ : Tensile stress of bolt N/mm²



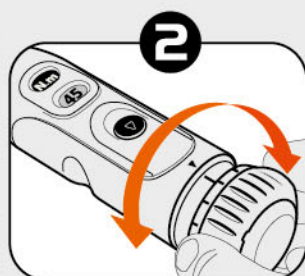
Attention of Torque Wrench

- Do not drop and protect it against shocks.
- The best application is 20% to 80% of the maximum torque.
- Disassembly of torque wrench should be carried out only by professional and authorized persons. Otherwise risk of damage.
- Torque wrenches are precision tools. They may look like simple wrenches, but they are not. To ensure maximum life of the torque wrench, we suggest use it to adjust critical torque screws only. The removal of screws and the mounting of parts without torque specifications should be done with regular wrenches.
- Never overload the torque wrench!
- Additional handle extension is not allowed.
- Some screws have to be tightened at the same time. The best way is to tighten all screws with low torque, and then tighten with higher torque. Operating the steps for 2-3 times.
- Insert the torque wrench with appropriate socket carefully and accurately in the screw. Only then tighten with adjust torque.



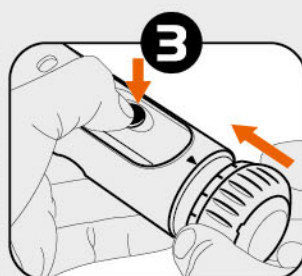
Press the safety button and simultaneously pull out the adjustment ring with scale at the same time.

Note:
Incorrect operating causes damage locking function.



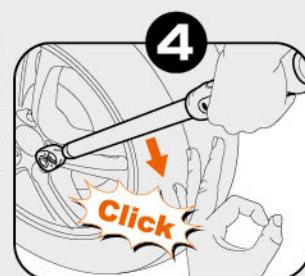
Turn the adjustment ring to adjust the desire value on the scale with convex lens.

Note:
Do not turn the adjustment knob neither below the lowest measurement ("stop" indicator) nor above the highest measurement.



Press the safety button and simultaneously press in the adjustment ring.

Note:
Conversion scale is on the tube. (N·m & Lbf·ft)



Hold the handle firmly in the middle to move the torque wrench clockwise carefully and stop immediately after "click".

Note:
It is quite easy to release at low torque and there is almost no audible "click" sound. Operator should test how it feels under low torque setting to avoid accidentally overtightening and damage device.

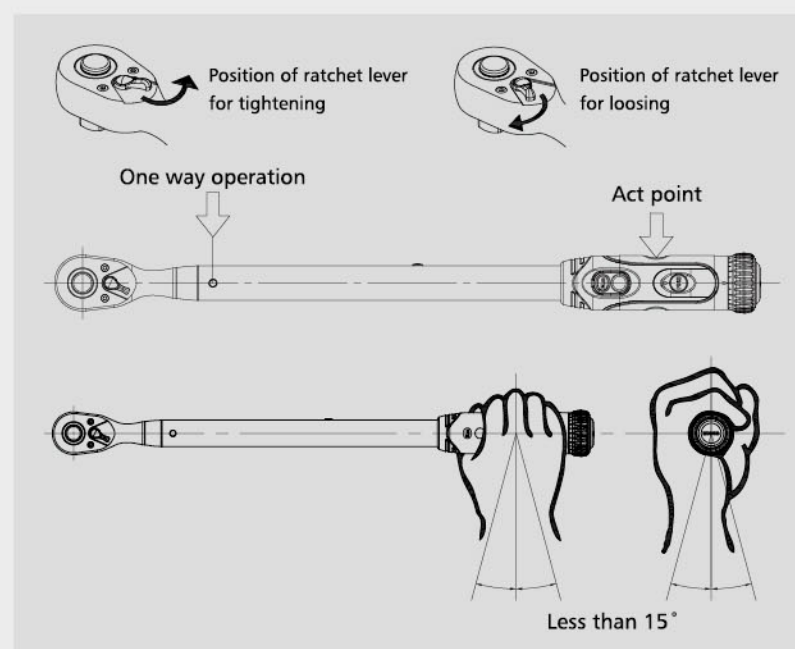
Occasion and frequency of calibration of the torque wrench

- After 12 months
- After 5000 applications
- After maintenance

Situations that may lead to malfunction:

- Fall or collision
- Overload
- Unuse for a long time
- Use at temperature of < 0°C or > 50°C

▲ Proper use of torque wrench



ISO 6789-1:2017

Terms and definitions

For the purposes of this document, the following terms and definitions apply.

setting torque tool (Type II)

tool sensing torque transmitted by comparing the torque applied with a self-contained standard and signalling the transmission of the pre-selected value by a physical impulse, with or without audible signal, causing a temporary reduction in the torque applied

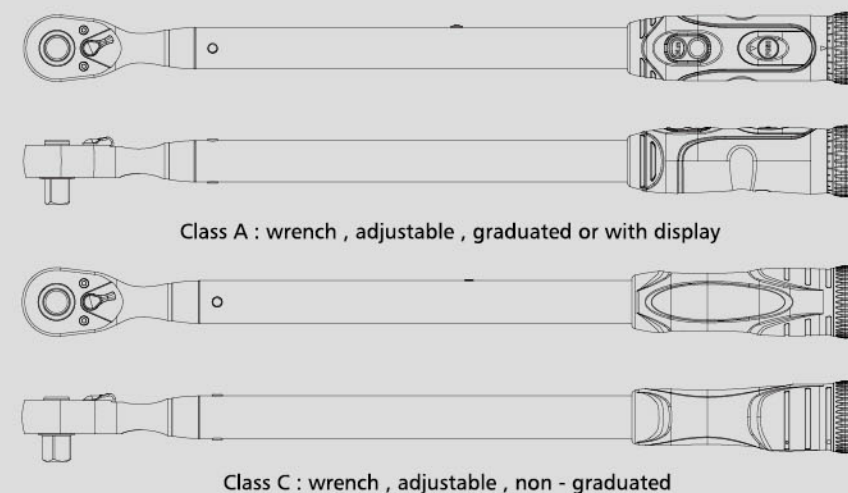
adjustable graduated torque tool (Type II, Class A, Class D and Class G)

tool designed to be adjusted by the user, which has a scale or a display to assist adjustment

adjustable non-graduated torque tool (Type II, Class C and Class F)

tool designed to be adjusted by the user with the aid of a torque measurement system

SETTING TORQUE TOOLS : TYPE II



Class A : wrench , adjustable , graduated or with display

Class C : wrench , adjustable , non - graduated

Maximum torque values

The size of the output drive limits the maximum torque value of the respective torque tool. The assignment is carried out according to the values given in Table 1.

Table 1 — 'D1 Maximum torque values of the torque tool

Square output drive nominal size ^a	Hexagonal output drive nominal size ^b	Maximum torque value N·m
—	3	4
—	4	10
—	5.5	25
6.3	6.3	30
—	8	70
10	—	135
—	11.2	200
12.5	12.5	340
20	—	1000
25	—	2100

^a Dimensions in accordance with ISO 1174-1. ^b Dimensions in accordance with ISO 1173.

Maximum permissible deviation

Permissible deviation of the torque value shall lie within the respective maximum permissible relative deviation for the type and class of that tool stated in Tables 2 and 3.

Table 2 — Maximum permissible relative deviation (Type I)

Class	Maximum torque value	
	≤ 10 N·m	> 10 N·m
A and D	± 6 %	
B, C and E	± 6 %	± 4 %

If a tool is operating in both directions, the maximum permissible relative deviation shall be met in each direction specified by the manufacturer.

Table 3 — Maximum permissible relative deviation (Type II)

Class	Maximum torque value	
	≤ 10 N·m	> 10 N·m
A, B and C	± 6 %	± 4 %
D, E, F and G	± 6 %	

If a tool is operating in both directions, the maximum permissible relative deviation shall be met in each direction specified by the manufacturer.

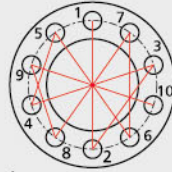
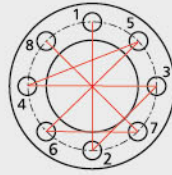
Tightening of Tension Stability

Various tightening methods for stability of initial axial tension are invented. Following are some examples.

(1) Zigzag tightening

It is recommended to tighten by diagonal sequence as the drawing. First time: To tighten around 50% of the specified torque by turn. Second time: To tighten around 75% of the specified torque by turn. Third time: To tighten 100% of specified torque by turn. It is recommended to tighten all bolts equally, and to avoid applying torque on one or several bolts in one side.

Zigzag tightening



(2) Two steps tightening

The tightening sequence will not follow, as this drawing if tightening will be done by multiple automatic nutrunners. Then in the first step it will be tightened provisionally (50% of the tightening torque). The final tightening will be done by 100% torque. The method to tighten is on two steps.

(3) Two times tightening

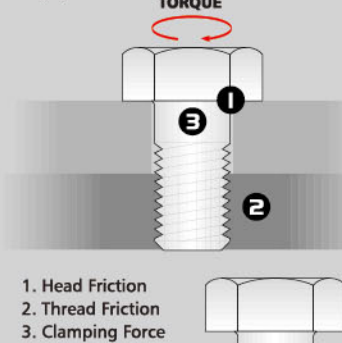
There's a delay for axial tension transmission and adequate initial axial tension will not be obtained because there's an existing soft part such as packing or rubber in the flap tightened. This method is a kind of tightening to get initial axial tension. First, it will be tightened with 100% torque and once more tightened with 100% torque.

(4) Stabilized tightening

This is a kind of tightening method to prevent initial axial tension drop by doing tightening with 100% torque, loosening the screw and doing tightening one more, when bearing surface will be deformed (including bur and surface roughness) by tightening.

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.



TORQUE
Head Friction: 45% - 55%
Thread Friction: 35% - 45%
Clamping Force: 10%

STANDARD TIGHTENING TORQUE

Standard tightening torque. (N-m)		(Reference value)				(kgf-cm)			
Nominal diameter	T (N-m)	0.5T series (N-m)	1.8T series (N-m)	2.4T series (N-m)	T (kgf-cm)	0.5T series (kgf-cm)	1.8T series (kgf-cm)	2.4T series (kgf-cm)	
M1	0.0195	0.0098	0.035	0.047	0.199	0.100	0.357	0.479	
(M1.1)	0.027	0.0135	0.049	0.065	0.275	0.138	0.500	0.663	
M1.2	0.037	0.0185	0.066	0.088	0.377	0.189	0.673	0.897	
(M1.4)	0.058	0.029	0.104	0.140	0.591	0.296	1.06	1.43	
M1.6	0.086	0.043	0.156	0.206	0.877	0.438	1.59	2.10	
(M1.8)	0.128	0.064	0.23	0.305	1.31	0.653	2.35	3.11	
M2	0.176	0.088	0.315	0.42	1.79	0.897	3.21	4.28	
(M2.2)	0.23	0.116	0.41	0.55	2.35	1.17	4.18	5.61	
M2.5	0.36	0.18	0.65	0.86	3.67	1.84	6.63	8.77	
M3	0.63	0.315	1.14	1.50	6.42	3.21	11.6	15.3	
(M3.5)	1	0.5	1.8	2.40	10.2	5.1	18.4	24.5	
M4	1.5	0.75	2.7	3.6	15.3	7.6	27.5	36.7	
(M4.5)	2.15	1.08	3.9	5.2	21.9	11.0	39.8	53.0	
M5	3	1.5	5.4	7.2	29.4	14.7	53.0	70.6	
M6	5.2	2.6	9.2	12.2	53.0	26.5	93.8	124	
(M7)	8.4	4.2	15	20.0	85.7	42.8	153	204	
M8	12.5	6.2	22	29.5	127	63.2	224	301	
M10	24.5	12.5	44	59	250	127	449	602	
M12	42	21	76	100	428	214	775	1020	
(M14)	68	34	122	166	693	347	1240	1690	
M16	106	53	190	255	1080	540	1940	2600	
M18	146	73	270	350	1490	744	2750	3570	
M20	204	102	370	490	2080	1040	3770	5000	
(M22)	282	140	500	670	2880	1430	5100	6830	
M24	360	180	650	860	3670	1840	6630	8770	
(M27)	520	260	940	1240	5300	2650	9590	12600	
M30	700	350	1260	1700	7140	3570	12800	17300	
(M33)	960	480	1750	2300	9790	4890	17800	23500	
M36	1240	620	2250	3000	12600	6320	22900	30600	
(M39)	1600	800	2900	3800	16300	8160	29600	38700	
M42	2000	1000	3600	4800	20400	10200	36700	48900	
(M45)	2500	1260	4500	6000	25500	12800	45900	61200	
M48	2950	1500	5300	7000	30100	15300	54000	71400	
(M52)	3800	1900	6800	9200	38700	19400	69300	93800	
M56	4800	2400	8600	11600	48900	24500	87700	118000	
(M60)	5900	2950	10600	14000	60200	30100	108000	143000	
M64	7200	3600	13000	17500	73400	36700	133000	178000	
(M68)	8800	4400	16000	21000	89700	44900	163000	214000	

Standard bolt stress: 210 (N/mm²) Stress area of bolt (JIS B 1082)

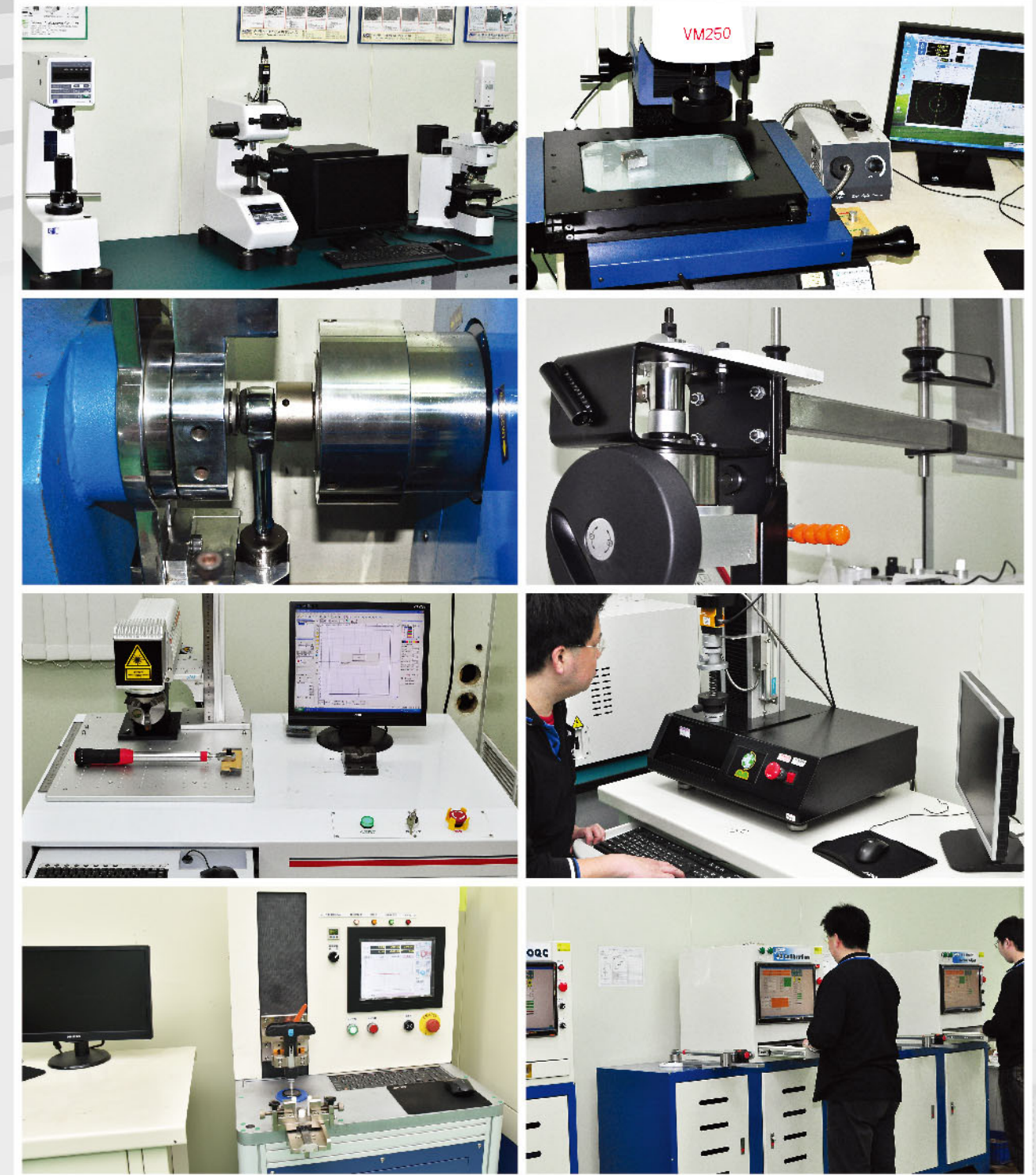
Note: Conversion values rolled up to effective 3-digits.

SCREW AND APPLICABLE "T" SERIES

	Standard T series	0.5T series	1.8T series	2.4T series
Applicable screws (Strengths) (Material)	4.6 - 6.8 SS, SC, SUS	Brass, Copper, Aluminum	8.8 - 12.9 SCr, SNC, SCM	10.9 - 12.9 SCr, SNC, SCM, SNCM
Axial tension standard value (N/mm ²) Min - Max	210 300 - 160	105 150 - 80	380 540 - 290	500 710 - 380
Application	To be applied to ordinary screws, unless otherwise specified	Male and female screws with copper, aluminum or plastic, for die-cast plastic products	Durable screw joints made of special steel including those affected by additional dynamic loads (Friction clamping)	
Applicable products	Ordinary products	Electronic products	Vehicles, Engines	Construction products

* The maximum to the axial stress is considered as the dispersion of the torque coefficient.
Example: max=210 x (0.2/0.14)=300 (N/mm²)
Torque coefficient: 0.14(minimum) - 0.2(average) - 0.26(maximum)

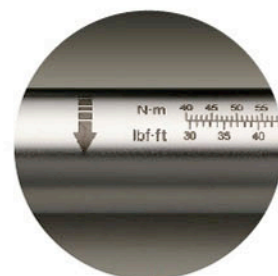
TECHNICAL FIELD SERVICE & TEST DEVICE



SCREEN TORQUE WRENCH

Setting Type Torque Wrench

Quick release allows easy socket changing



Easy to convert units between N·m and lbf·ft



Easy to read torque value

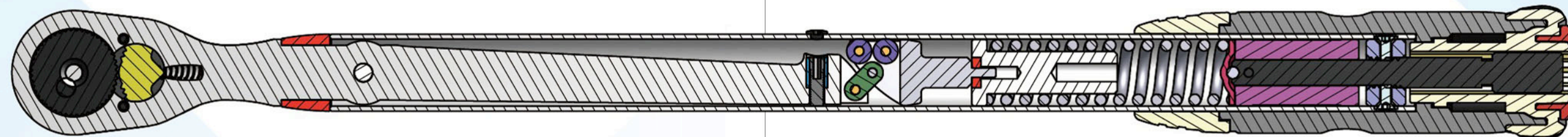


Ring scale to set target torque rapidly
Secondary scale allows accurate setting

Durable ratchet head with 48T gear to gear structure
Repair kits available

Chrome plated steel tube with heat treatment

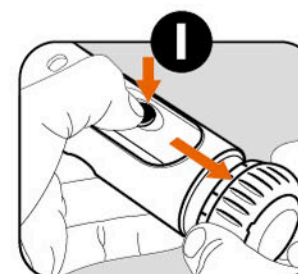
Ergonomic handle for comfortable operation
Reduce the risk of slipping-off and injury



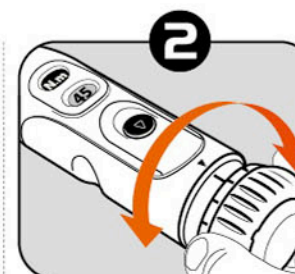
- Screen torque wrench min. model: 5~25 N·m, max. model: 200~1,000 N·m controlled screw tightening range: 5 N·m to 1000 N·m (guide for screw M5-6.8 to M23-10.9)
- Conform to DIN EN ISO 6789-1: 2017 Type II class A

- Patented mechanism for C.W. operation
- Click type

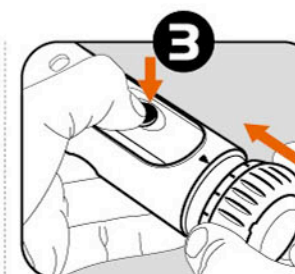
OPERATION TIPS



Press the safety button and simultaneously pull out the adjustment ring with scale at the same time.



Turn the adjustment ring to adjust the desire value on the scale with convex lens.



Press the safety button and simultaneously press in the adjustment ring.



Hold the handle firmly in the middle to move the torque wrench clockwise carefully and stop immediately after "click".



Fixed head

Interchangeable head



SCREEN TORQUE WRENCH

Setting Type Torque Wrench



Metric Unit

Repair and Industrial Application

Item Number	Torque Range	"	Fine Scale	mm	mm	Lf mm	g
34251	5~25 N·m	1/4"	0.1 N·m	323	23	248	760
34349	5~25 N·m	3/8"	0.1 N·m	323	23	248	765
34352	10~50 N·m	3/8"	0.5 N·m	400	32	325	983
34351	20~100 N·m	3/8"	0.5 N·m	400	32	325	988
34400	20~100 N·m	1/2"	0.5 N·m	400	32	325	998
34451	40~200 N·m	1/2"	0.5 N·m	517	42	442	1360
34551	60~340 N·m	1/2"	1 N·m	620	42	545	1730
34641	60~340 N·m	3/4"	1 N·m	620	42	545	1784
34648	110~550 N·m	3/4"	2 N·m	918	58	790	4528
34651	150~750 N·m	3/4"	2.5 N·m	1210	58	995	5850
34841	150~750 N·m	1"	2.5 N·m	1210	58	995	6168
34656	200~1000 N·m	3/4"	2.5 N·m	1500	67	1160	7108
34851	200~1000 N·m	1"	2.5 N·m	1500	67	1160	7426

SAE Unit

Repair and Industrial Application

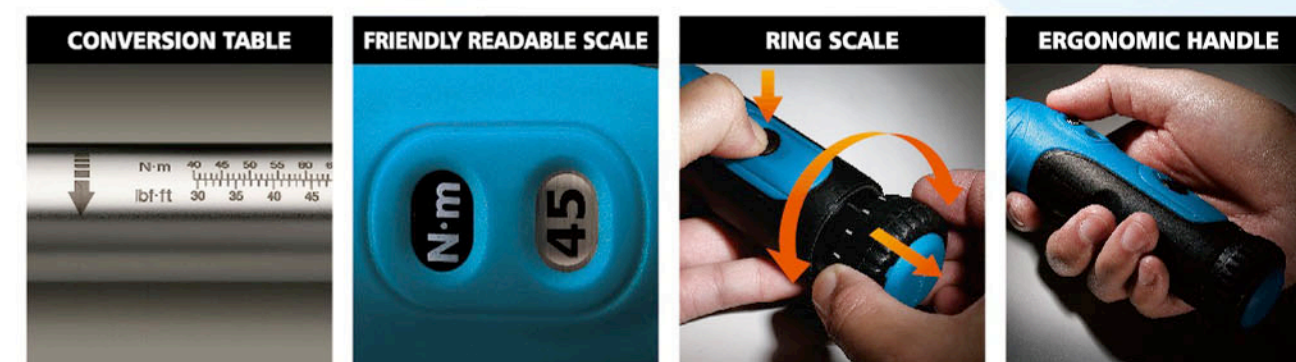
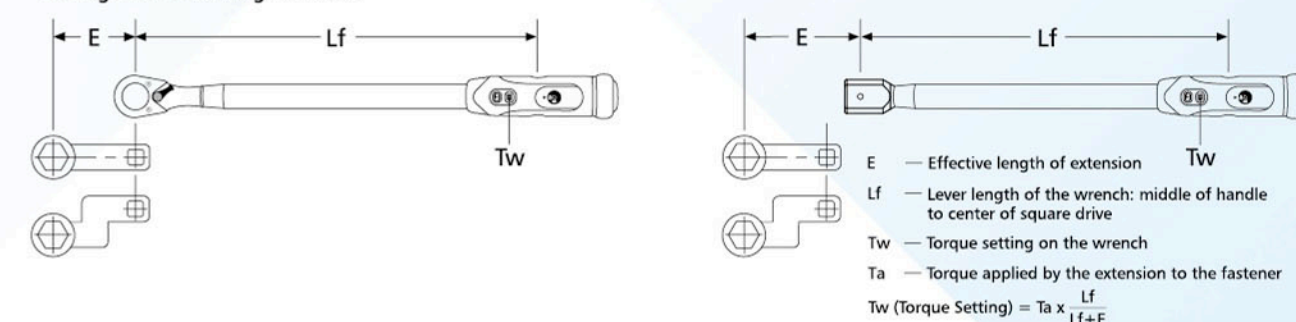
Item Number	Torque Range	"	Fine Scale	mm	mm	Lf mm	g
34272	50~250 lbf·in	1/4"	1 lbf·in	323	23	248	760
34374	50~250 lbf·in	3/8"	1 lbf·in	323	23	248	775
34364	7~35 lbf·ft	3/8"	0.5 lbf·ft	400	32	248	983
34361	15~75 lbf·ft	3/8"	0.5 lbf·ft	400	32	325	988
34401	15~75 lbf·ft	1/2"	0.5 lbf·ft	400	32	325	998
34461	30~150 lbf·ft	1/2"	0.5 lbf·ft	517	42	442	1360
34561	50~250 lbf·ft	1/2"	1 lbf·ft	620	42	545	1730
34642	50~250 lbf·ft	3/4"	1 lbf·ft	620	42	545	1784
34652	110~550 lbf·ft	3/4"	2.5 lbf·ft	1210	58	995	5850
34852	110~550 lbf·ft	1"	2.5 lbf·ft	1210	58	995	6168
34654	150~750 lbf·ft	3/4"	2.5 lbf·ft	1500	67	1160	7108
34853	150~750 lbf·ft	1"	2.5 lbf·ft	1500	67	1160	7426

INTERCHANGEABLE SCREEN TORQUE WRENCH

Setting Type Torque Wrench



In case it is impractical to use regular sockets, (a good example is tightening of threaded 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 with following formulas.



Metric Unit

Repair and Industrial Application

Item Number	Torque Range	Fitting Size	Fine Scale	mm	mm	Lf mm	g
34050	10~50 N·m	9x12mm	0.5 N·m	356	32	298	886
34051	20~100 N·m	9x12mm	0.5 N·m	356	32	298	886
34052	40~200 N·m	14x18mm	0.5 N·m	472	41	422	1180
34053	60~340 N·m	14x18mm	1 N·m	572	41	545	1554

SAE Unit

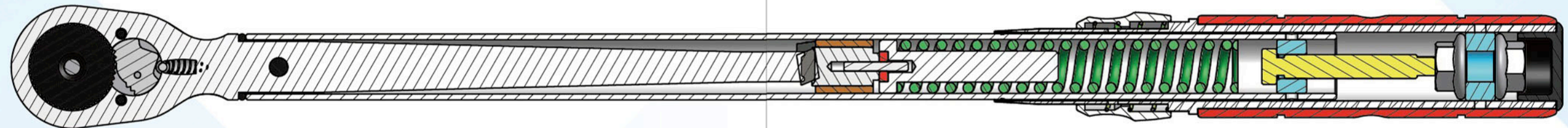
Repair and Industrial Application

Item Number	Torque Range	Fitting Size	Fine Scale	mm	mm	Lf mm	g
34061	15~75 lbf·ft	9x12mm	0.5 lbf·ft	356	42	298	886
34062	30~150 lbf·ft	14x18mm	0.5 lbf·ft	472	42	422	1180
34063	50~250 lbf·ft	14x18mm	1 lbf·ft	572	42	545	1554

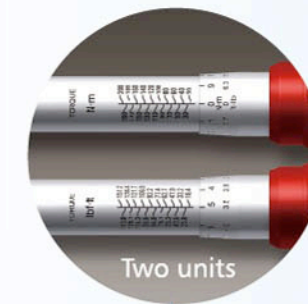
DUAL WAY TORQUE WRENCH

Setting Type Torque Wrench

- Quick release allows easy socket changing
- Chrome plated steel tube with heat treatment
- Durable ratchet head with 48T gear to gear type and 60T American type structure; model: 36250 1-5 N·m & 36254 2-10 N·m
- Repair kits available



- Dual way torque wrench min. model: 1~5 N·m, max. model: 200~1,000 N·m controlled screw tightening range: 1 N·m to 1000 N·m (guide for screw M4-4.6 to M23-10.9)
- Conform to DIN EN ISO 6789-1: 2017 Type II class A

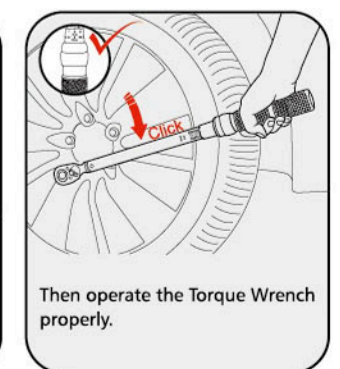
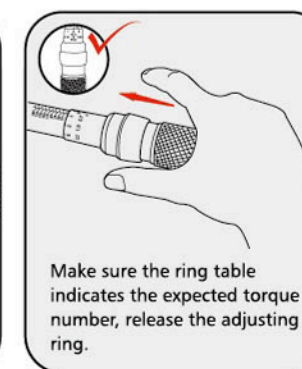
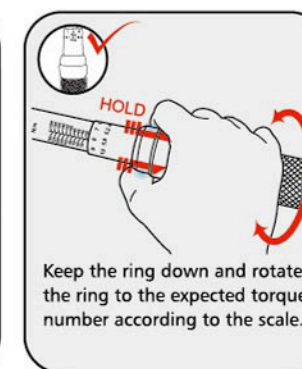
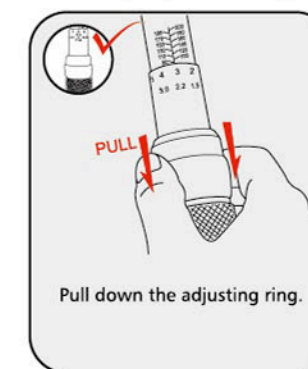


Two units

- Two units, easy to use N·m and lb·ft units
- Ergonomic metal handle for non-slipped operation
- Special adjustment ring with smooth fine adjusting operation
- Anodic treatment for prevention of oxidation, rust-resistance and avoid slipping-off
- Light weight

- Robust ratchet mechanism for C.W. and C.C.W. operation
- Click type

OPERATION TIPS



DUAL WAY TORQUE WRENCH

Setting Type Torque Wrench



Metric Unit

Repair and Industrial Application

Item Number	Main Torque Range	Secondary Torque Range	"	Fine Scale	mm	mm	mm	g
36250	1~5 N·m	6.6~46.5 lbf·in	1/4"	0.05 N·m	193	20.2	155	180
36254	2~10 N·m	13.3~92.9 lbf·in	1/4"	0.05 N·m	193	20.2	155	180
36251	5~25 N·m	39.8~225.7 lbf·in	1/4"	0.1 N·m	245	27.3	195.2	400
36354	5~25 N·m	39.8~225.7 lbf·in	3/8"	0.1 N·m	245	27.3	195.2	450
36353	10~50 N·m	9.2~38.7 lbf·ft	3/8"	0.5 N·m	410	36.4	329.5	1130
36351	20~100 N·m	9.2~75.6 lbf·ft	3/8"	0.5 N·m	410	36.4	329.5	1200
36450	20~100 N·m	9.2~75.6 lbf·ft	1/2"	0.5 N·m	410	36.4	329.5	1300
36451	40~200 N·m	18.4~151.2 lbf·ft	1/2"	1 N·m	520	41	435	1600
36551	60~340 N·m	36.9~258.1 lbf·ft	1/2"	2 N·m	610	41	525	1700
36648	60~340 N·m	36.9~258.1 lbf·ft	3/4"	2 N·m	610	41	525	1760
36649	110~550 N·m	83~414.9 lbf·ft	3/4"	2.5 N·m	1012	58	918.8	5400
36651	150~750 N·m	92.2~571.6 lbf·ft	3/4"	5 N·m	1125	58	1031.8	5720
36850	150~750 N·m	92.2~571.6 lbf·ft	1"	5 N·m	1125	58	1031.8	6050
36851	200~1000 N·m	92.2~756 lbf·ft	1"	5 N·m	1225	67	1127.6	6520

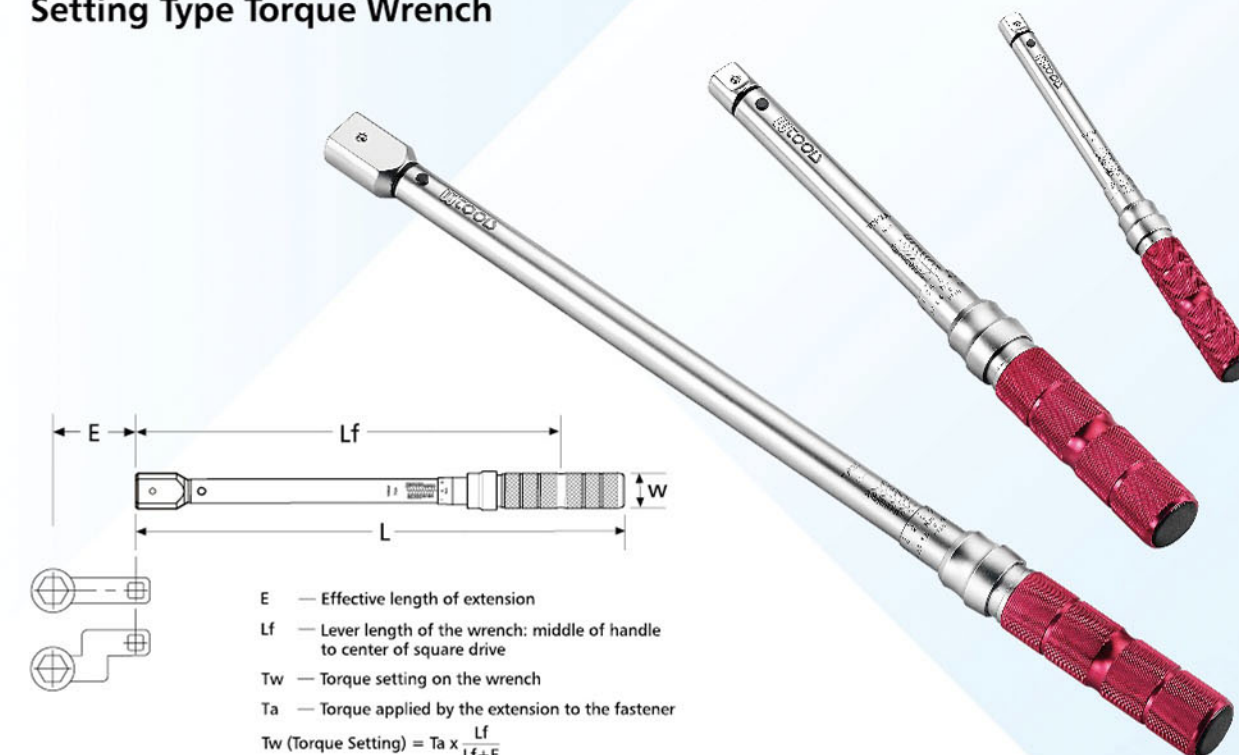
SAE Unit

Repair and Industrial Application

Item Number	Main Torque Range	Secondary Torque Range	"	Fine Scale	mm	mm	mm	g
36270	10~50 lbf·in	0.8~5.9 N·m	1/4"	0.5 lbf·in	193	20.2	155	180
36274	20~100 lbf·in	1.7~11.9 N·m	1/4"	1 lbf·in	193	20.2	155	180
36271	50~250 lbf·in	6.2~28.8 N·m	1/4"	1 lbf·in	245	27.3	195.2	400
36372	50~250 lbf·in	6.2~28.8 N·m	3/8"	1 lbf·in	245	27.3	195.2	450
36381	7~35 lbf·ft	10.2~50.8 N·m	3/8"	0.5 lbf·ft	410	36.4	329.5	1130
36373	15~75 lbf·ft	23.7~105.1 N·m	3/8"	0.5 lbf·ft	410	36.4	329.5	1200
36471	10~150 lbf·ft	20.3~210.1 N·m	1/2"	1 lbf·ft	520	41	435	1600
36571	30~250 lbf·ft	47.4~345.7 N·m	1/2"	2 lbf·ft	610	41	525	1700
36671	80~400 lbf·ft	142.3~559.2 N·m	3/4"	2.5 lbf·ft	1012	58	918.8	5400
36672	110~550 lbf·ft	183~779.5 N·m	3/4"	5 lbf·ft	1125	58	1031.8	5720
36871	150~750 lbf·ft	237.2~1050.6 N·m	1"	5 lbf·ft	1225	67	1127.6	6520

INTERCHANGEABLE DUAL WAY TORQUE WRENCH

Setting Type Torque Wrench



- E — Effective length of extension
 Lf — Lever length of the wrench: middle of handle to center of square drive
 Tw — Torque setting on the wrench
 Ta — Torque applied by the extension to the fastener
 $Tw \text{ (Torque Setting)} = Ta \times \frac{Lf}{Lf+E}$

Metric Unit

Repair and Industrial Application

Item Number	Main Torque Range	Secondary Torque Range	Fitting Size	Fine Scale	mm	mm	mm	g
36001	1~5 N·m	6.6~46.5 lbf·in	9x12mm	0.05 N·m	177	20	138	175
36002	2~10 N·m	13.3~92.9 lbf·in	9x12mm	0.05 N·m	177	20	138	175
36004	5~25 N·m	39.8~225.7 lbf·in	9x12mm	0.1 N·m	230	27	177	340
36005	10~50 N·m	9.2~38.7 lbf·ft	9x12mm	0.5 N·m	370	36	297	1033
36003	20~100 N·m	9.2~75.6 lbf·ft	9x12mm	0.5 N·m	370	36	297	1098
36051	40~200 N·m	18.4~151.2 lbf·ft	14x18mm	1 N·m	487	36	408	1420
36050	60~340 N·m	36.9~258.1 lbf·ft	14x18mm	2 N·m	577	36	498	1524

SAE Unit

Repair and Industrial Application

Item Number	Main Torque Range	Secondary Torque Range	Fitting Size	Fine Scale	mm	mm	mm	g
36011	10~50 lbf·in	0.8~5.9 N·m	9x12mm	0.05 lbf·in	177	20	138	175
36013	20~100 lbf·in	1.7~11.9 N·m	9x12mm	1 lbf·in	177	20	138	175
36014	50~250 lbf·in	6.2~28.8 N·m	9x12mm	1 lbf·in	230	27	177	340
36021	7~35 lbf·ft	10.2~50.8 N·m	9x12mm	0.5 lbf·ft	370	36	297	1033
36022	15~75 lbf·ft	23.7~105.1 N·m	9x12mm	0.5 lbf·ft	370	36	297	1098
36061	10~150 lbf·ft	20.3~210.1 N·m	14x18mm	1 lbf·ft	487	36	408	1420
36062	30~250 lbf·ft	47.4~345.7 N·m	14x18mm	2 lbf·ft	577	36	498	1524

SCREEN SCALE TORQUE WRENCH

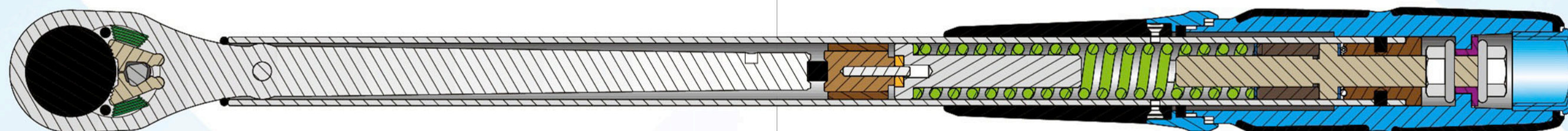
Setting Type Torque Wrench

- Durable ratchet head with 72T Japanese type structure



- Two units, easy to use N·m and lbf·ft units

- Repair kits available



- Screen scale torque wrench min. model: 5~25 N·m, max. model: 60~340 N·m control screw tightening range: 5 N·m to 340 N·m (guide for screw M5-6.8 to M21-6.8)
- Conform to DIN EN ISO 6789-1: 2017 Type II class A



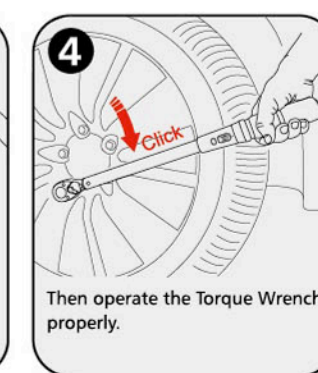
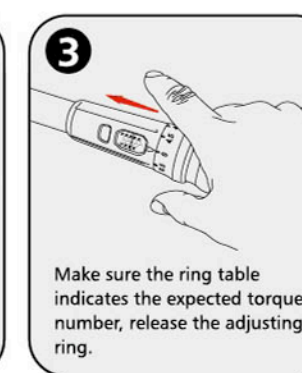
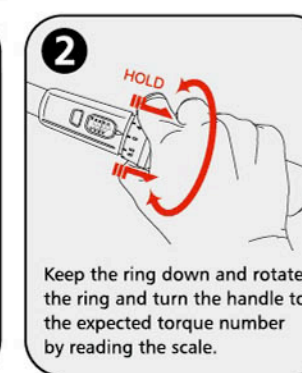
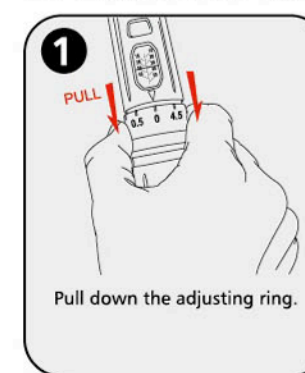
- Adjusting ring with secondary scale allows more accurate setting
- Special adjusting ring with smooth fine adjusting operation



- Ergonomic handle for comfortable operation
- Reduce the risk of slipping-off and injury

- Robust ratchet mechanism for C.W. and C.C.W. operation
- Click type

OPERATION TIPS



SCREEN SCALE TORQUE WRENCH

Setting Type Torque Wrench



Metric Unit

Repair and Industrial Application

Item Number	Main Torque Range	Secondary Torque Range	"	Fine Scale	mm	mm	Lf mm	g
42200	5~25 N·m	39.8~225.7 lbf-in	1/4"	0.1 N·m	275	23.6	216.4	370
42300	5~25 N·m	39.8~225.7 lbf-in	3/8"	0.1 N·m	275	23.6	216.4	420
42301	10~50 N·m	9.2~38.7 lbf-ft	3/8"	0.5 N·m	418	31.6	338.8	808
42302	20~100 N·m	9.2~75.6 lbf-ft	3/8"	0.5 N·m	418	31.6	338.8	878
42401	20~100 N·m	9.2~75.6 lbf-ft	1/2"	0.5 N·m	418	31.6	338.8	978
42400	40~200 N·m	18.4~151.2 lbf-ft	1/2"	1 N·m	502	38.3	421.2	1260
42500	60~340 N·m	36.9~258.1 lbf-ft	1/2"	2 N·m	594	38.3	511.2	1340
42600	60~340 N·m	36.9~258.1 lbf-ft	3/4"	2 N·m	594	38.3	511.2	1400

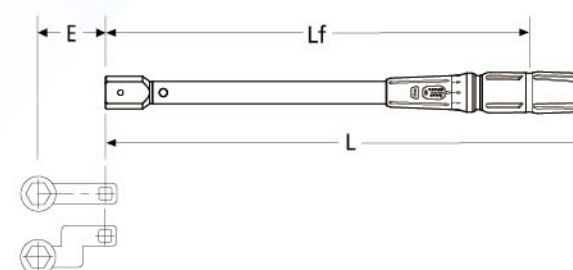
SAE Unit

Repair and Industrial Application

Item Number	Main Torque Range	Secondary Torque Range	"	Fine Scale	mm	mm	Lf mm	g
42240	50~250 lbf-in	6.2~28.8 N·m	1/4"	1 lbf-in	275	23.6	216.4	370
42340	50~250 lbf-in	6.2~28.8 N·m	3/8"	1 lbf-in	275	23.6	216.4	420
42341	7~35 lbf-ft	10.2~50.8 N·m	3/8"	0.5 lbf-ft	418	31.6	338.8	808
42342	15~75 lbf-ft	23.7~105.1 N·m	3/8"	0.5 lbf-ft	418	31.6	338.8	878
42440	10~150 lbf-ft	20.3~210.1 N·m	1/2"	1 lbf-ft	502	38.3	421.2	1260
42441	30~250 lbf-ft	47.4~345.7 N·m	1/2"	2 lbf-ft	594	38.3	511.2	1340

INTERCHANGEABLE SCREEN SCALE TORQUE WRENCH

Setting Type Torque Wrench



E — Effective length of extension

Lf — Lever length of the wrench: middle of handle to center of square drive

Tw — Torque setting on the wrench

Ta — Torque applied by the extension to the fastener

$$Tw \text{ (Torque Setting)} = Ta \times \frac{Lf}{Lf+E}$$

Metric Unit

Repair and Industrial Application

Item Number	Main Torque Range	Secondary Torque Range	Fitting Size	Fine Scale	mm	mm	Lf mm	g
42000	5~25 N·m	39.8~225.7 lbf-in	9x12mm	0.1 N·m	259	20	210.9	310
42001	10~50 N·m	9.2~38.7 lbf-ft	9x12mm	0.5 N·m	385	22	321.3	711
42002	20~100 N·m	9.2~75.6 lbf-ft	9x12mm	0.5 N·m	385	22	321.3	776
42052	40~200 N·m	18.4~151.2 lbf-ft	14x18mm	1 N·m	480	32	416.8	1080
42053	60~340 N·m	36.9~258.1 lbf-ft	14x18mm	2 N·m	570	32	506.8	1160

SAE Unit

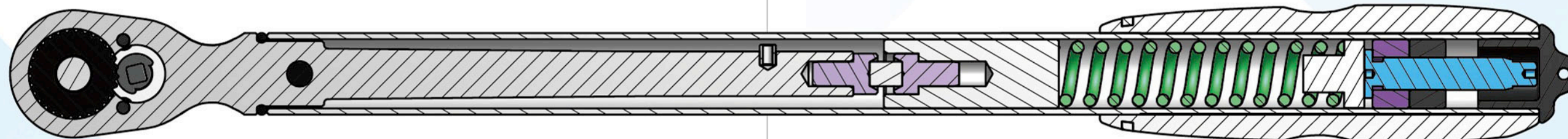
Repair and Industrial Application

Item Number	Main Torque Range	Secondary Torque Range	Fitting Size	Fine Scale	mm	mm	Lf mm	g
42026	50~250 lbf-in	6.2~28.8 N·m	9x12mm	1 lbf-in	259	20	210.9	310
42027	7~35 lbf-ft	10.2~50.8 N·m	9x12mm	0.5 lbf-ft	385	22	321.3	711
42028	15~75 lbf-ft	23.7~105.1 N·m	9x12mm	0.5 lbf-ft	385	22	321.3	776
42076	10~150 lbf-ft	20.3~210.1 N·m	14x18mm	1 lbf-ft	480	32	416.8	1080
42077	30~250 lbf-ft	47.4~345.7 N·m	14x18mm	2 lbf-ft	570	32	506.8	1160

PRESET TORQUE WRENCH

Setting Type Torque Wrench

- Quick release allows easy socket changing
- Chrome plated steel tube with heat treatment
- Durable ratchet head with 48T gear to gear structure
- Repair kits available



- Preset torque wrench min. model: 1~6 N·m, max. model: 40~420 N·m
B-type torque wrench min. model: 100~500 N·m, max model: 240~1200 N·m
- Conform to DIN EN ISO 6789-1: 2017 Type II class C



- Adjustable with setting key and torque calibration equipment
- Ergonomic handle for comfortable operation
- Reduce the risk of slipping-off and injury

- Robust ratchet mechanism for C.W. operation
- Click type

OPERATION TIPS

- 1** The setting key possesses two operating bars, Bar A and Bar B.
- 2** **Unlock the system**
Insert Bar B to the handle bottom, make sure the grooves inside are aligned with 2 points on Bar B. Turn it counterclockwise to unlock the system.
- 3** Use torque tester to proceed with torque adjustment; operator should apply force vertically on correct point. When checking the torque with torque tester, please make sure the equipment is fixed on a flat firmly.
- 4** **Adjust Torque**
Turn Bar A clockwise to increase torque, B turn counterclockwise to decrease torque.
Torque too low
Torque too high
- 5** **Lock the system**
After checking to the desirable torque by torque tester, pull out Bar A to keep it from the structure, then turn Bar B to tight it clockwise and finish locking system.

STANDARD PRESET TORQUE WRENCH

Metric Unit

Industrial Application and Assembly Line

Item Number	Torque Range	"	mm	mm	mm	g
38251	1~6 N·m	1/4"	145	26	109	180
38252	2~12 N·m	1/4"	145	26	109	180
38253	2~25 N·m	1/4"	200	28.6	147	260
38351	3~35 N·m	3/8"	200	28.6	147	260
38352	5~50 N·m	3/8"	262	28.6	207	340
38353	8~85 N·m	3/8"	375	34.2	306	560
38354	10~100 N·m	3/8"	375	34.2	306	560
38451	15~150 N·m	1/2"	404	41	324	920
38452	20~200 N·m	1/2"	508	41	423	1310
38453	30~340 N·m	1/2"	571	41	488	1440
38651	40~420 N·m	3/4"	617	41	533	1560

SAE Unit

Item Number	Torque Range	"	mm	mm	mm	g
38271	10~60 lbf·in	1/4"	145	26	109	180
38272	20~100 lbf·in	1/4"	145	26	109	180
38273	25~250 lbf·in	1/4"	200	28.6	147	260
38371	30~300 lbf·in	3/8"	200	28.6	147	260
38361	3.5~35 lbf·ft	3/8"	262	28.6	207	340
38362	6~60 lbf·ft	3/8"	375	34.2	306	560
38363	7.5~75 lbf·ft	3/8"	375	34.2	306	560
38461	10~110 lbf·ft	1/2"	404	41	324	920
38462	15~150 lbf·ft	1/2"	508	41	423	1310
38463	25~250 lbf·ft	1/2"	571	41	488	1440
38661	30~300 lbf·ft	3/4"	617	41	533	1560

INTERCHANGEABLE STANDARD PRESET TORQUE WRENCH

Metric Unit

Industrial Application and Assembly Line

Item Number	Torque Range	Fitting Size	mm	mm	mm	g
38051	1~6 N·m	9x12 mm	125	26	118	160
38052	2~12 N·m	9x12 mm	125	26	118	160
38053	2~25 N·m	9x12 mm	180	28.6	169	240
38054	3~35 N·m	9x12 mm	180	28.6	169	240
38055	5~50 N·m	9x12 mm	242	28.6	216	310
38056	8~85 N·m	9x12 mm	333	33.5	297	540
38057	10~100 N·m	9x12 mm	333	33.5	297	540
38058	15~150 N·m	9x12 mm	365	39.5	318	800
38151	20~200 N·m	14x18 mm	478	39.5	436	1140
38152	30~340 N·m	14x18 mm	538	39.5	501	1250
38153	40~420 N·m	14x18 mm	585	39.5	546	1330

SAE Unit

Item Number	Torque Range	Fitting Size	mm	mm	mm	g
38071	10~60 lbf·in	9x12 mm	125	26	118	160
38072	20~100 lbf·in	9x12 mm	125	26	118	160
38073	20~250 lbf·in	9x12 mm	180	28.6	169	240
38074	30~300 lbf·in	9x12 mm	180	28.6	169	240
38061	3.5~35 lbf·ft	9x12 mm	242	28.6	216	310
38062	6~60 lbf·ft	9x12 mm	333	33.5	297	540
38063	7.5~75 lbf·ft	9x12 mm	333	33.5	297	540
38064	10~110 lbf·ft	9x12 mm	365	39.5	318	800
38161	15~150 lbf·ft	14x18 mm	478	39.5	436	1140
38162	25~250 lbf·ft	14x18 mm	538	39.5	501	1250
38163	30~300 lbf·ft	14x18 mm	585	39.5	546	1330

SETTING KEY Item Number: 35096

PRESET TORQUE WRENCH

Metric Unit

Industrial Application and Assembly Line

Item Number	Torque Range	"	mm	mm	mm	g	Accuracy	Type
34412	40~200 N·m	1/2"	48	502	41	38	1326	±3%(CW) Click Type
34512	60~340 N·m	1/2"	48	620	41	38	1720	±3%(CW) Click Type
34413	40~200 N·m	14x18	-	460	32	27	1240	±3%(CW) Click Type
34513	60~340 N·m	14x18	-	558	32	27	1480	±3%(CW) Click Type

SAE Unit

Item Number	Torque Range	"	mm	mm	mm	g	Accuracy	Type
34416	350~1800 lbf·in	1/2"	48	502	41	38	1326	±3%(CW) Click Type
34516	500~3000 lbf·in	1/2"	48	620	41	38	1720	±3%(CW) Click Type
34417	350~1800 lbf·in	14x18	-	460	32	27	1240	±3%(CW) Click Type
34517	500~3000 lbf·in	14x18	-	558	32	27	1480	±3%(CW) Click Type

Item Number	Torque Range	"	mm	mm	mm	g	Accuracy	Type
34414	30~150 lbf·ft	1/2"	48	502	41	38	1326	±3%(CW) Click Type
34514	50~250 lbf·ft	1/2"	48	620	41	38	1720	±3%(CW) Click Type
34415	30~150 lbf·ft	14x18	-	460	32	27	1240	±3%(CW) Click Type
34515	50~250 lbf·ft	14x18	-	558	32	27	1480	±3%(CW) Click Type

B-TYPE PRESET TORQUE WRENCH

Metric Unit

Industrial Application and Assembly Line

Item Number	Torque Range	"	mm	mm	mm	g	Accuracy
34603	100~500 N·m	3/4"	870	58	58	4.4	±3%(CW)
34604	160~800 N·m	3/4"	1072	58	58	4.8	±3%(CW)
34803	240~1200 N·m	1"	1482	68	68	6.5	±3%(CW)

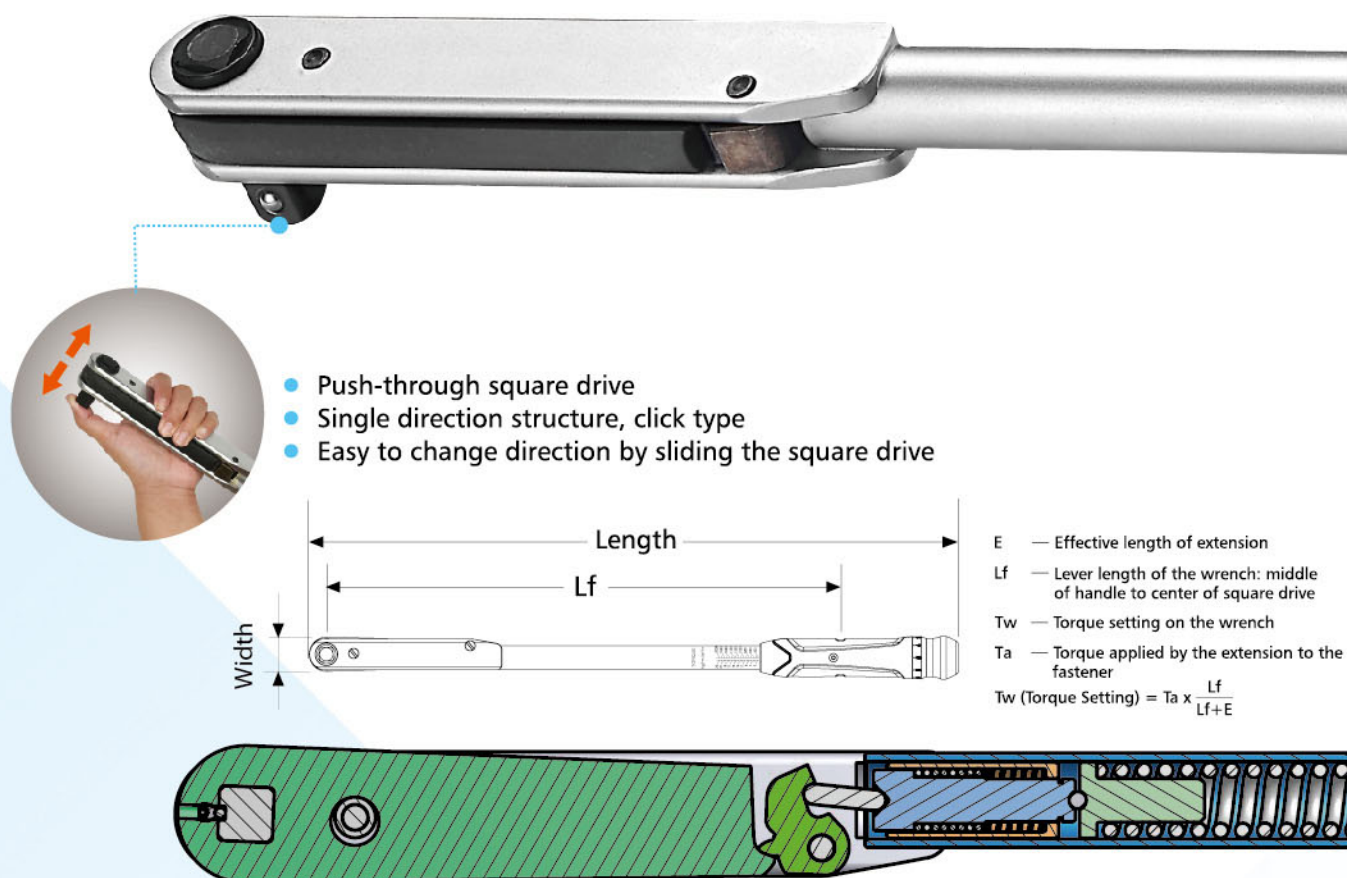
SAE Unit

Item Number	Torque Range	"	mm	mm	mm	g	Accuracy
34623	850~4500 lbf·in	3/4"	870	58	58	4.4	±3%(CW)
34624	1400~7100 lbf·in	3/4"	1072	58	58	4.8	±3%(CW)
34823	2100~10650 lbf·in	1"	1482	68	68	6.5	±3%(CW)

Item Number	Torque Range	"	mm	mm	mm	g	Accuracy
34613	80~400 lbf·ft	3/4"	870	58	58	4.4	±3%(CW)
34614	110~600 lbf·ft	3/4"	1072	58	58	4.8	±3%(CW)
34813	170~900 lbf·ft	1"	1482	68	68	6.5	±3%(CW)

BRITISH CLASSIC TORQUE WRENCH

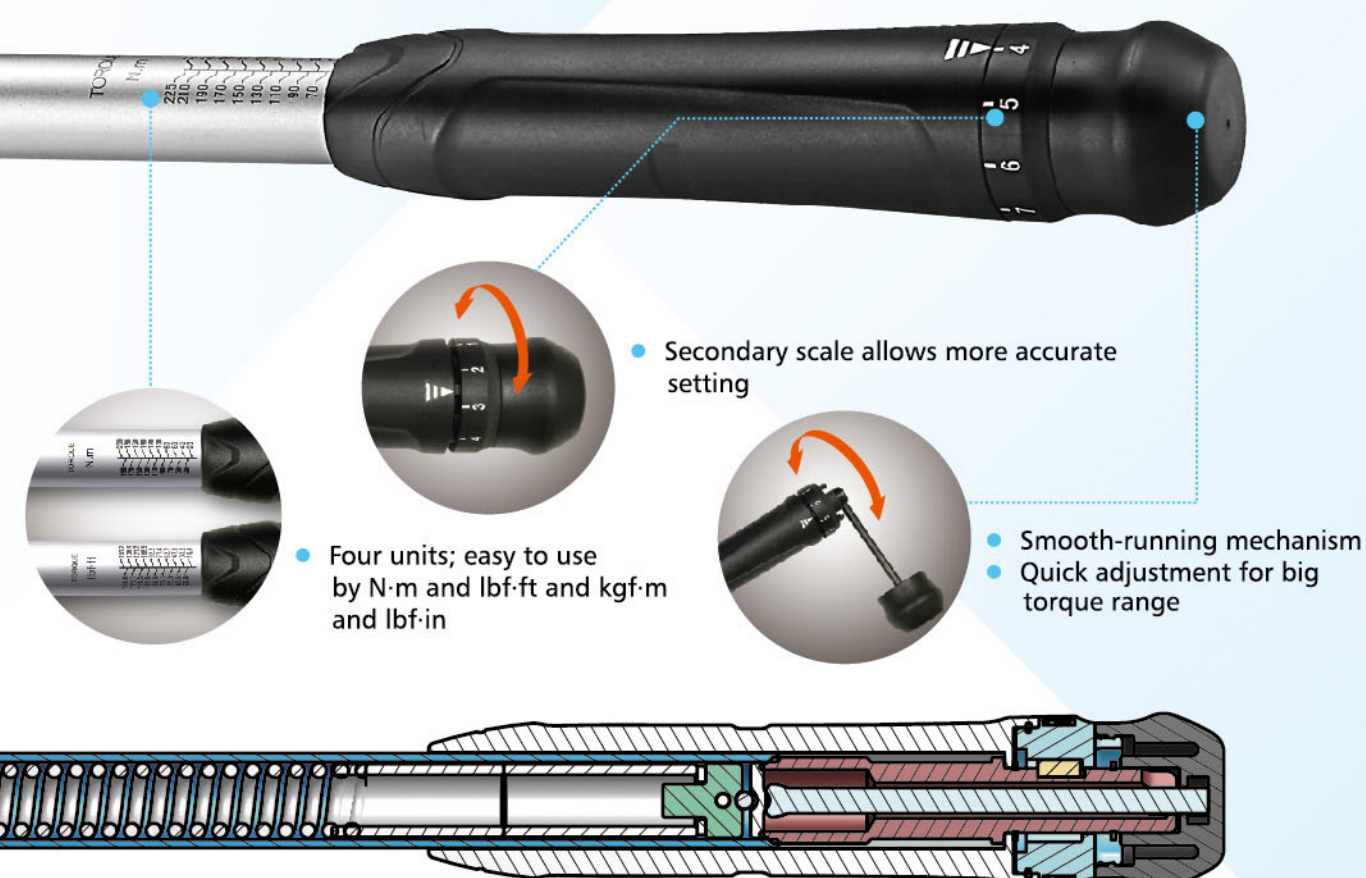
Setting Type Torque Wrench



- British classic torque wrench min. model: 2~10 N·m, max. model: 200~1000 N·m controlled screw tightening range: 2 N·m to 1000 N·m (guide for screw M5-6.8 to M23-10.9)
- Conform to DIN EN ISO 6789-1: 2017 Type II class A

Repair and Industrial Application

Item Number	Main Torque Range	Secondary Torque Range	"	Fine Scale	mm	mm	mm	g
39251	2~10 N·m	2~8 lbf·ft	1/4"	0.1 N·m	278	32	179	590
39351	2~10 N·m	2~8 lbf·ft	3/8"	0.1 N·m	278	32	179	590
39252	5~33 N·m	5~25 lbf·ft	1/4"	0.2 N·m	308	32	209	630
39352	5~33 N·m	5~25 lbf·ft	3/8"	0.2 N·m	308	32	209	630
39353	12~70 N·m	10~50 lbf·ft	3/8"	0.5 N·m	485.5	38	372	1210
39451	12~70 N·m	10~50 lbf·ft	1/2"	0.5 N·m	485.5	38	372	1210
39452	25~135 N·m	15~105 lbf·ft	1/2"	0.5 N·m	604.5	41	478.5	1700
39453	50~225 N·m	30~170 lbf·ft	1/2"	1 N·m	604.5	41	478.5	1700
39454	70~330 N·m	50~250 lbf·ft	1/2"	1 N·m	718.5	41	591	2200
39651	110~550 N·m	80~400 lbf·ft	3/4"	2.5 N·m	875	50	726	6500
39652	160~800 N·m	110~590 lbf·ft	3/4"	2.5 N·m	1036	50	888	7200
39851	200~1000 N·m	140~740 lbf·ft	1"	5 N·m	1424	65	1042	12500



OPERATION TIPS

- British Classic Torque Wrench is single direction click structure torque wrench. You have to push the sliding square drive to change direction between clockwise and counterclockwise operation.
- To adjust the torque, you have to hold the handle and pull out the bottom knob completely. The bottom part is rotating bar, and in the middle is fine tuning scale ring.
- When adjusting the torque, you hold the bottom knob and rotate the bar smoothly without significant force to make large range torque adjustment.
- When the torque closes to your desired number, rotate the middle scale ring for fine tuning to the accurate torque.
Note: Fine tuning scale ring only applies for main unit, it's not available for secondary unit.
- Make sure the number is aligned with the white arrow, and pull back the bottom knob and scale ring correctly.
- Then you can operate the torque wrench. When you hear audible "click" sound, you have to stop forcing the torque.

DIGIT-DISPLAY TORQUE WRENCH

Setting Type Torque Wrench



- Durable ratchet head with 48T gear to gear structure

"Click"

- Chrome plated steel tube with heat treatment

- Digit-display torque wrench min. model: 10~100 N·m, max. model: 30~340 N·m controlled screw tightening range: 10 N·m to 340 N·m (guide for screw M7-6.8 to M21-6.8)
- Conform to DIN EN ISO 6789-1: 2017 Type II class A



Ratchet Type

Item Number	Torque Range N·m / lbf·ft / kgf·m	"	Fine Scale	mm	mm	Lf mm	g
37351	10~100 N·m	3/8"	0.5 N·m	460	31.2	369.8	1000
37450	10~100 N·m	1/2"	0.5 N·m	460	31.2	369.8	1000
37451	20~200 N·m	1/2"	0.5 N·m	568	41	473	1400
37551	30~340 N·m	1/2"	0.5 N·m	650	41	555	1600

Repair and Industrial Application

Interchangeable Type

Item Number	Torque Range N·m / lbf·ft / kgf·m	Fitting Size	Fine Scale	mm	mm	Lf mm	g
37052	10~100 N·m	9x12mm	0.5 N·m	420	22	363.5	800
37056	20~200 N·m	14x18mm	0.5 N·m	535	32	486	1200
37057	30~340 N·m	14x18mm	0.5 N·m	617	32	568	1400

Repair and Industrial Application



- Digit-display is easy to read and adjust torque

- Torque Adjustment

- Unit switch: N·m / lbf·ft / lbf·in

- Ergonomic handle for comfortable operation

OPERATION TIPS

Mini USB Battery

1 Press the bottom turn on the screen, and choose unit.

Unit Switch: • Press for 1 sec.: turn on the screen.
• Press for 3 sec.: to enter units switch mode, every press the unit change as following, Torque Range N·m/lbf·ft/kgf·m
• When it is not in use for 1 minute, the screen is hibernate automatically for saving power.

2 Pull out the adjusting knob to **2** position, and adjust the torque by rotating the knob.

Adjusting Knob: • C.W direction to increase the torque;
C.C.W direction to decrease the torque.

3 When you rotate the adjusting knob follow its finescale to expected torque and find it's not at the normal direction to be pushed back.

Please follow below steps:

(A) Push the adjusting knob from **2** Position to **1** Position, now the torque is fixed.
(B) Then rotate the adjusting knob to be conform the handle.
(C) Push the adjusting knob back from **1** to **0** position.

4 After completing torque adjusting, you can start to operate Digit-display torque wrench.

5PC 1/2" SCREEN TORQUE WRENCH SOCKET SET

Item Number: **34433**

Repair and Industrial Application

Item Number	Type	Gear Tooth	Surface Finish	Torque Range	Fine Scale	Accuracy
34451	Click, Clockwise only	48	Matted	40~200N·m	0.5 N·m	±4%(CW)

Content :	
1/2" Screen Torque Wrench (34451)	x1PC
Deep Impact Socket 17mm	x1PC
Deep Impact Socket 19mm	x1PC
Deep Impact Socket 21mm	x1PC
1/2" Torque Extension Bar	x1PC



4PC 1/2" SCREEN TORQUE WRENCH SOCKET SET

Item Number: **34432**

Repair and Industrial Application

Item Number	Type	Gear Tooth	Surface Finish	Torque Range	Fine Scale	Accuracy
34451	Click, Clockwise only	48	Matted	40~200N·m	0.5 N·m	±4%(CW)

Content :	
1/2" Screen Torque Wrench (34451)	x1PC
Deep Impact Socket 17mm	x1PC
Deep Impact Socket 19mm	x1PC
Deep Impact Socket 21mm	x1PC



5PC 1/2" PRESET TORQUE WRENCH SET

1/2" Preset Torque Wrench, 5 different torque values.

Item Number: **34021**

Industrial Application and Assembly Line

Content :	
Type	Click Type
Torque	90, 103, 120, 138 & 150 N·m
Accuracy	±3%

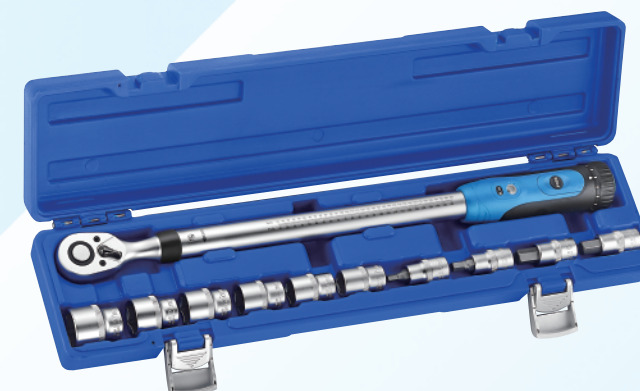


11PC SCREEN TORQUE WRENCH SET

Item Number: **34438**

Content :	
1PC: 1/2" Screen Torque Wrench (34451)	
6PCS 1/2" Hex Socket: 17, 19, 21, 22, 24, 27mm	
4PCS 1/2" Hex Bit Socket: 6, 8, 10, 12mm	

Item Number	Type	Gear Tooth	Surface Finish	Torque Range	Fine Scale	Accuracy
34451	Click, Clockwise only	48	Matted	40~200N·m	0.5N·m	±4%(CW)



Repair and Industrial Application

12PC INTERCHANGEABLE SCREEN TORQUE WRENCH SET

Item Number: **34060**

Content :	
1PC: 14X18 Screen Torque Wrench (34052)	
10PCS 14X18 Open Ended Torque Insert: 13, 14, 15, 17, 19, 22, 24, 27, 30, 32mm	
1PC: 14X18 1/2" Round Head Ratchet Insert	

Item Number	Type	Fitting Size	Surface Finish	Torque Range	Fine Scale	Accuracy
34052	Click, Clockwise only	14x18mm	Matted	40~200N·m	0.5N·m	±4%(CW)



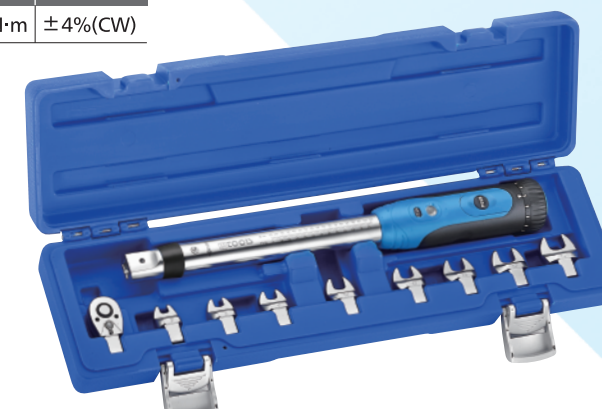
Repair and Industrial Application

10PC INTERCHANGEABLE SCREEN TORQUE WRENCH SET

Item Number: **34058**

Content :	
1PC: 9X12 Screen Torque Wrench (34050)	
8PCS 9X12 Open Ended Torque Insert: 7, 8, 9, 10, 11, 12, 13, 14mm	
1PC: 1/4" 9X12 L-L-R Ratchet Insert	

Item Number	Type	Fitting Size	Surface Finish	Torque Range	Fine Scale	Accuracy
34050	Click, Clockwise only	9x12mm	Matted	10~50N·m	0.5N·m	±4%(CW)



Repair and Industrial Application

12PCS 1/4" BIT DUAL WAY TORQUE WRENCH SET

Item Number: **36298**

Content :	
1PC: 1/4" 2-25N·m Bit Dual Way Torque Wrench	
10PCS: 1/4" 25mm Bit T25,H2,2.5,3,4,5,6,8,PH2,SL4	
1PC: 1/4" Bit Holder	

Item Number	Type	Gear Tooth	Surface Finish	Torque Range	Fine Scale	Accuracy
36298	Click, C.W & C.C.W	48	Matted	2~25N·m	0.1N·m	±4%(CW)



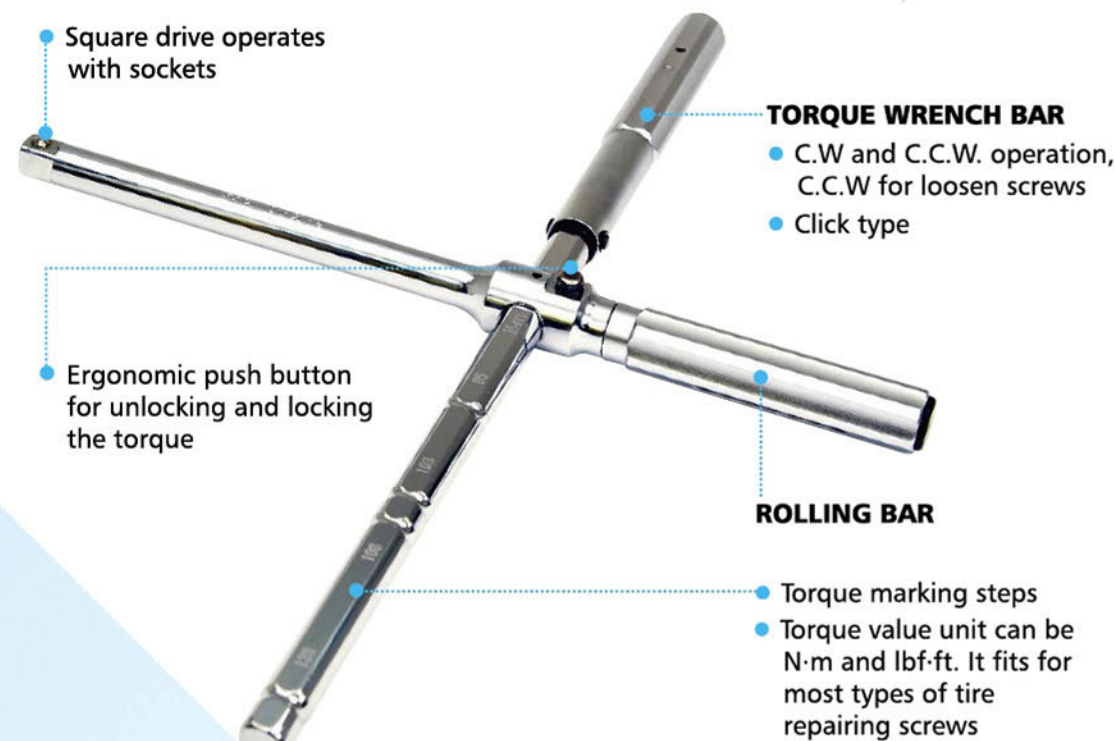
Repair and Industrial Application

CROSS TIRE TORQUE WRENCH

Setting Type Torque Wrench

Item Number: **25914**

PATENTED
PRODUCT

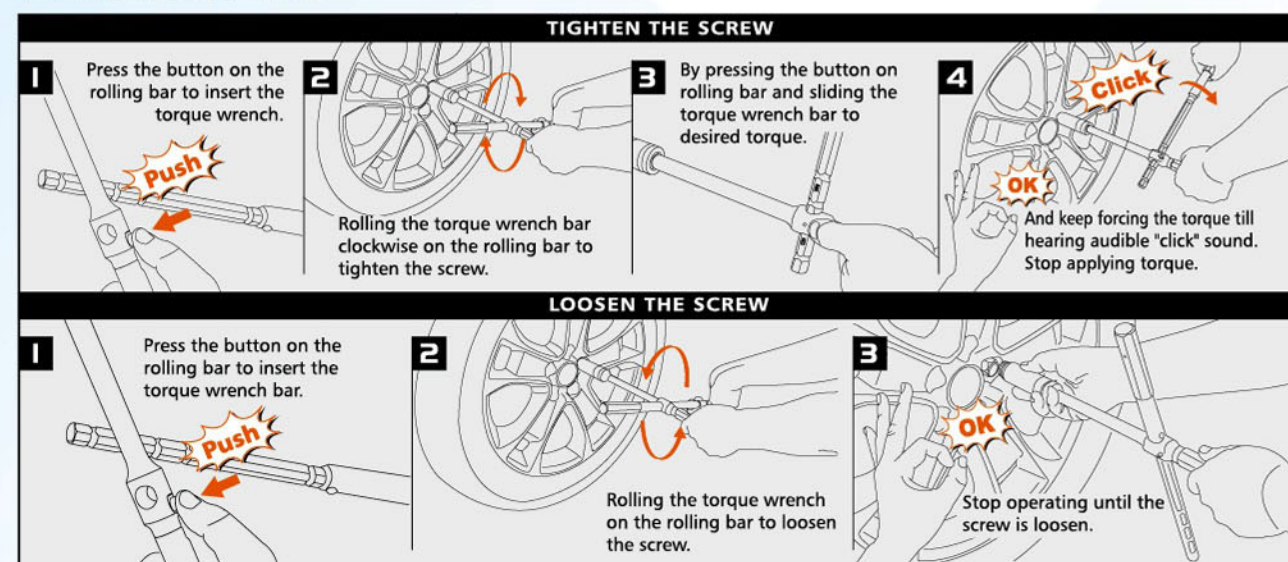


• Conform to DIN EN ISO 6789-1: 2017 Type II class A



Parts	Torque N·m	"	mm	Diameter (mm)	g
Torque Wrench Bar	85.103.108.138	-	400	23	664
Rolling Bar	-	1/2"	340	30	638

OPERATION TIPS



SCREEN SLIPPING

T-HANDLE TORQUE SCREWDRIVER SERIES



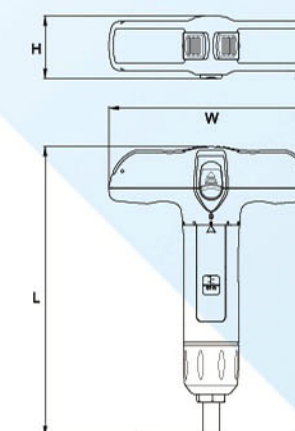
SCREEN SLIPPING T-HANDLE TORQUE SCREWDRIVER SET (Bits included)

Content :
Screen Slipping T-Handle Torque Screwdriver x1PC
1/4" Bit x 25L
(T8,10,15,20,25, PH1,2, SL3,4,5, H3,4) x12PCS

Item Number	Torque Range	"	Fine Scale	Length (mm)	Width (mm)	Height (mm)	g
32008	1-5 N·m	1/4"	0.1 N·m	173	122	37.5	440
32006	2-8 N·m	1/4"	0.1 N·m	173	122	37.5	440
32058	10-50 lbf·in	1/4"	1 lbf·in	173	122	37.5	440
32062	15-75 lbf·in	1/4"	1 lbf·in	173	122	37.5	440

SCREEN SLIPPING T-HANDLE TORQUE SCREWDRIVER (Bits not included)

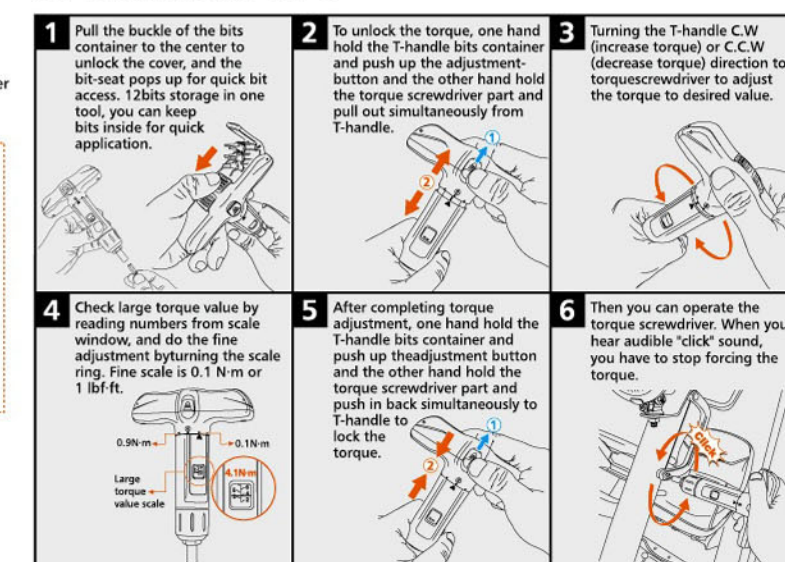
Item Number	Torque Range	"	Fine Scale	Length (mm)	Width (mm)	Height (mm)	g
32007	1-5 N·m	1/4"	0.1 N·m	173	122	37.5	370
32005	2-8 N·m	1/4"	0.1 N·m	173	122	37.5	370
32059	10-50 lbf·in	1/4"	1 lbf·in	173	122	37.5	370
32060	15-75 lbf·in	1/4"	1 lbf·in	173	122	37.5	370



SLIPPING MECHANISM



OPERATION TIPS



SCREEN SLIPPING TORQUE SCREWDRIVER



OPERATION TIPS

- 1 To unlock the torque, one hand hold the upper cap and push up the adjustment button and the other hand hold the torque screwdriver part and pull out simultaneously from upper cap.
- 2 Turning the upper cap C.W (increase torque) or C.C.W (decrease torque) direction to torque screwdriver to adjust the torque to desired value.
- 3 Check large torque value by reading numbers from scale window, and do the fine adjustment by turning the scale ring. Fine scale is 0.1 N-m or 1 lbf-ft.
- 4 After completing torque adjustment, one hand hold the upper cap and push up the adjustment button and the other hand hold the torque screwdriver part and push in back simultaneously to the upper cap to lock the torque.
- 5 Then you can operate the torque screwdriver. When you hear audible "click" sound, you have to stop forcing the torque.

Item Number	Torque Range	Hex	Fine Scale	Length (mm)	Diameter (mm)	Weight (g)
32069	1-5 N-m	1/4"	0.1 N-m	171	39	330
32070	2-8 N-m	1/4"	0.1 N-m	171	39	330
32084	10-50 lbf-in	1/4"	1 lbf-in	171	39	330
32085	15-75 lbf-in	1/4"	1 lbf-in	171	39	330

SLIPPING PRESET TORQUE SCREWDRIVER



Metric Unit

Item Number	Torque Setting	Apply to	Length(mm)	Diameter(mm)	Weight(g)
32000	0.4 N-m	Valve core on TPMS sensors	154	22	50
32011	0.6 N-m	1/4"	124	30	140
32012	1.5 N-m	1/4"	124	30	140
32013	2 N-m	1/4"	124	30	140
32014	3.5 N-m	1/4"	124	30	140
32015	5 N-m	1/4"	124	30	140
32016	6.5 N-m	1/4"	175	42	385

SAE Unit

Item Number	Torque Setting	Apply to	Length(mm)	Diameter(mm)	Weight(g)
32050	4 lbf-in	Valve core on TPMS sensors	154	22	50
32021	6 lbf-in	1/4"	124	30	140
32022	15 lbf-in	1/4"	124	30	140
32023	20 lbf-in	1/4"	124	30	140
32024	30 lbf-in	1/4"	124	30	140
32025	45 lbf-in	1/4"	124	30	140
32026	60 lbf-in	1/4"	175	42	385

ROUND HEAD RATCHET INSERT



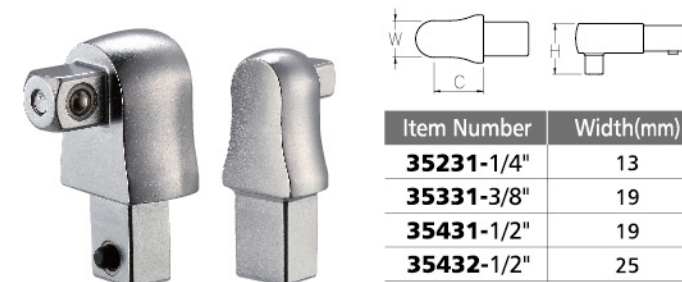
Item Number	Gear Teeth	Width(mm)	Height(mm)	C (mm)	Weight(g)	Fitting Size(mm)
35202-1/4"	52	25	23	17.5	69	9x12
35302-3/8"	52	34	33	17.5	143	9x12
35402-1/2"	52	34	38	17.5	154	9x12
35404-1/2"	52	41	43	25	300	14x18
35604-3/4"	52	41	51	25	338	14x18

L-LOCK RATCHET INSERT



Item Number	Gear Teeth	Width(mm)	Height(mm)	C (mm)	Weight(g)	Fitting Size(mm)
35206-1/4"	48	25	21.8	21	73	9x12
35306-3/8"	48	32	29.7	28	155	9x12
35406-1/2"	48	32	34.2	28	170	9x12
35408-1/2"	48	39	37.4	34	305	14x18
35608-3/4"	48	39	37.4	34	340	14x18

SQUARE DRIVE INSERT



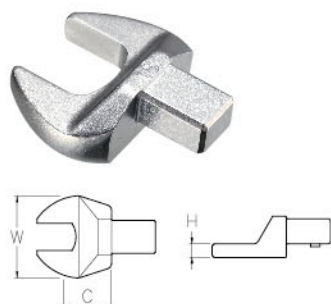
Item Number	Width(mm)	Height(mm)	C (mm)	Weight(g)	Fitting Size(mm)
35231-1/4"	13	19.5	17.5	39	9x12
35331-3/8"	19	27	17.5	74	9x12
35431-1/2"	19	32	17.5	81	9x12
35432-1/2"	25	35	25	179	14x18

INTERCHANGE SQUARE DRIVE INSERT



Item Number	Width(mm)	Height(mm)	C (mm)	Weight(g)	Fitting Size(mm)
35222-3/8"	13	-	17.5	58	9x12
35229-1/4"x3/8"	6.35	24.5	-	14	-
35329-3/8"x3/8"	9.53	27	-	18	-
35429-1/2"x3/8"	12.70	31	-	28	-

OPEN END INSERT 9X12mm



Metric Unit

Item Number	Width(mm)	Height(mm)	C (mm)	Weight(g)
35000- 7mm	20.7	5.7	17.5	40
35001- 8mm	22	5.7	17.5	39
35002- 9mm	23.5	5.7	17.5	38
35003- 10mm	24.8	5.7	17.5	42
35004- 11mm	26	5.7	17.5	41
35005- 12mm	27.5	5.7	17.5	43
35006- 13mm	28.8	5.7	17.5	48
35007- 14mm	31.5	7.7	20	52
35008- 15mm	33.5	7.7	20	51
35009- 16mm	36	7.7	20	58
35010- 17mm	37.7	7.7	20	60
35011- 18mm	39	7.7	20	71
35012- 19mm	41.6	7.7	20	74

SAE Unit

Item Number	Width(mm)	Height(mm)	C (mm)	Weight(g)
35150- 1/4"	20.7	5.7	17.5	40
35151- 5/16"	22	5.7	17.5	39
35152- 3/8"	24.8	5.7	17.5	42
35153- 7/16"	26	5.7	17.5	41
35154- 1/2"	28.8	5.7	17.5	48
35155- 9/16"	31.5	7.7	20	52
35156- 5/8"	36	7.7	20	58
35157- 11/16"	39	7.7	20	71
35158- 3/4"	41.6	7.7	20	74

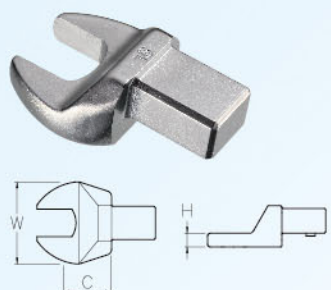
Metric Unit

Item Number	Width(mm)	Height(mm)	C (mm)	Weight(g)
35100- 13mm	29.7	7	25	128
35101- 14mm	31.1	7	25	129
35102- 15mm	33.4	7	25	132
35103- 16mm	35.8	9	25	140
35104- 17mm	37	9	25	136
35105- 18mm	38.6	9	25	147
35106- 19mm	40.6	9	25	147
35107- 21mm	45.2	11	25	171
35108- 22mm	47.3	11	25	165
35109- 24mm	50.8	11	25	167
35110- 27mm	58.7	14	32.5	219
35111- 30mm	62.7	14	32.5	245
35112- 32mm	65.2	14	32.5	246
35113- 34mm	66.5	14	32.5	239
35114- 36mm	66.5	14	32.5	275
35115- 38mm	66.5	14	32.5	265
35116- 41mm	82.5	14	40	307

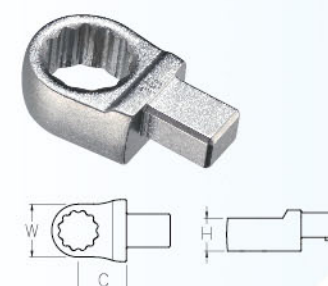
SAE Unit

Item Number	Width(mm)	Height(mm)	C (mm)	Weight(g)
35170- 1/2"	29.6	7	25	128
35171- 9/16"	31.3	7	25	129
35172- 5/8"	33.4	7	25	140
35173- 11/16"	38.6	9	25	147
35174- 3/4"	40.6	9	25	147
35175- 13/16"	45.2	11	25	171
35176- 7/8"	47.3	11	25	165
35177- 15/16"	50.8	11	25	167
35180- 1"	58.7	13.5	32.5	219
35159- 1-1/8"	62.7	13.5	32.5	245
35179- 1-1/4"	65.2	13.5	32.5	246
35181- 1-1/2"	66.5	13.5	32.5	265

OPEN END INSERT 14X18mm



RING END INSERT 9X12mm



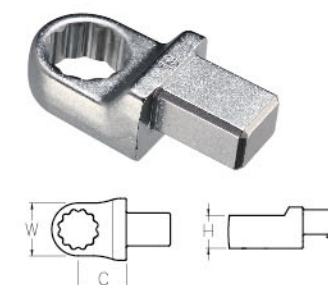
Metric Unit

Item Number	Width(mm)	Height(mm)	C (mm)	Weight(g)
35020- 7mm	13.1	8	17.5	37
35021- 8mm	13.1	8	17.5	40
35022- 10mm	17.6	8	17.5	44
35023- 11mm	19	8	17.5	41
35024- 12mm	20.3	12.2	17.5	49
35025- 13mm	21.1	12.2	17.5	56
35026- 14mm	23.4	12.2	17.5	52
35027- 15mm	24.4	12.2	17.5	52
35028- 16mm	26.4	13.2	17.5	54
35029- 17mm	27.4	13.2	17.5	59
35030- 18mm	28.9	13.2	17.5	56
35031- 19mm	31	13.2	17.5	65
35032- 21mm	33.4	14.7	17.5	71
35033- 22mm	35	14.7	17.5	74

SAE Unit

Item Number	Width(mm)	Height(mm)	C (mm)	Weight(g)
35076- 1/4"	13.1	8	17.5	37
35077- 5/16"	13.1	8	17.5	40
35078- 3/8"	17.6	8	17.5	44
35079- 7/16"	19	8	17.5	41
35080- 1/2"	21.1	12.2	17.5	56
35081- 9/16"	23.4	12.2	17.5	52
35082- 5/8"	26.4	13.2	17.5	54
35083- 11/16"	28.9	13.2	17.5	56
35084- 3/4"	31	13.2	17.5	65
35085- 13/16"	33.4	14.7	17.5	71
35086- 7/8"	35	14.7	17.5	74

RING END INSERT 14X18mm



Metric Unit

Item Number	Width(mm)	Height(mm)	C (mm)	Weight(g)
35120- 13mm	21	12	25	130
35121- 14mm	23	12	25	123
35122- 15mm	26	12	25	128
35123- 16mm	26	12	25	133
35124- 17mm	27.5	12.5	25	135
35125- 18mm	29.5	12.5	25	134
35126- 19mm	31	12.5	25	138
35127- 21mm	33	15	25	144
35128- 22mm	35	15	25	145
35129- 24mm	38	15	25	153
35130- 27mm	42	17.5	31	162
35131- 30mm	45.1	17.5	31	182
35132- 32mm	48	17.5	31	181
35133- 34mm	51	19	31	210
35134- 36mm	53	19	31	203
35135- 41mm	59.3	19	31	240

SAE Unit

Item Number	Width(mm)	Height(mm)	C (mm)	Weight(g)
35185- 1/2"	21	12	25	130
35186- 9/16"	23	12	25	123
35187- 5/8"	26	12	25	133
35188- 11/16"	29.5	12.5	25	134
35189- 3/4"	31	12.5	25	138
35190- 13/16"	33	15	25	144
35191- 7/8"	35	15	25	145
35192- 15/16"	38	15	25	153
35193- 1"	42	17.5	31	162
35194- 1-1/16"	42	17.5	31	162

OPEN RING INSERT

9X12mm

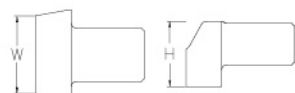
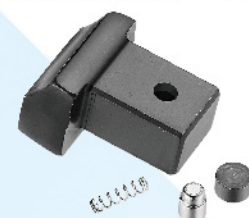


Metric Unit

Item Number	Width(mm)	Height(mm)	C (mm)	Weight(g)
35040- 10mm	21.2	12	17.5	57
35041- 11mm	22.6	12	17.5	55
35042- 12mm	24.1	12	17.5	59
35043- 13mm	25.2	12	17.5	55
35044- 14mm	27.3	13	17.5	60
35045- 16mm	30.1	13	17.5	65
35046- 17mm	31.6	13	17.5	64
35047- 18mm	33.3	15	17.5	74
35048- 19mm	34.6	15	17.5	80
35049- 21mm	37.7	15	17.5	88
35050- 22mm	39.3	15	17.5	92

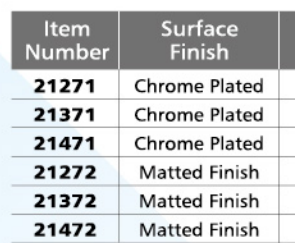
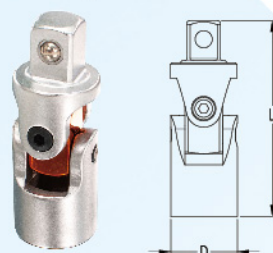
WELD-ON FITTING INSERT SET

9X12mm • 14X18mm



Item Number	Width(mm)	Height(mm)	Weight(g)	Size(mm)
26530	17.4	14.5	28	9x12
26531	26.3	22	94	14x18

A.R.(Auto Reset) UNIVERSAL JOINT



Item Number	Surface Finish	Driver	Allowable Torque	Width (mm)	Height (mm)	Weight (g)
21271	Chrome Plated	1/4"	42 N·m	14	38	24
21371	Chrome Plated	3/8"	127 N·m	19	51	59
21471	Chrome Plated	1/2"	296 N·m	25	68	133
21272	Matted Finish	1/4"	42 N·m	14	38	24
21372	Matted Finish	3/8"	127 N·m	19	51	59
21472	Matted Finish	1/2"	296 N·m	25	68	133

SLIM INSERT & RATCHET INSERT BIT SOCKET SET



17PC 1/4" 9X12mm

Item Number: 35900

Content :
1/4" 9x12mm Round Head Ratchet Insert x1PC
1/4" 9x12mm Square Drive Insert x1PC
Bit Socket(Hex): 2.5, 3, 4, 5, 6, 7, 8 mm
Bit Socket(Torx): T8,T10,T15,T20,T25,T27,T30,T40



18PC 3/8" 9X12mm

Item Number: 35901

Content :
3/8" 9x12mm Round Head Ratchet Insert x1PC
3/8" 9x12mm Square Drive Insert x1PC
Bit Socket(Hex): 4, 5, 6, 7, 8, 10, 12 mm
Bit Socket(Torx): T20,T25,T27,T30,T40,T45,T50,T55,T60



19PC 1/2" 14X18mm

Item Number: 35902

Content :
1/2" 14x18mm Round Head Ratchet Insert x1PC
1/2" 14x18mm Square Drive Insert x1PC
Bit Socket(Hex): 6, 7, 8, 10, 12, 14, 17, 19mm
Bit Socket(Torx): T40,T45,T50,T55,T60,T70,T80,T90,T100

SCREEN SLIPPING T-HANDLE TORQUE



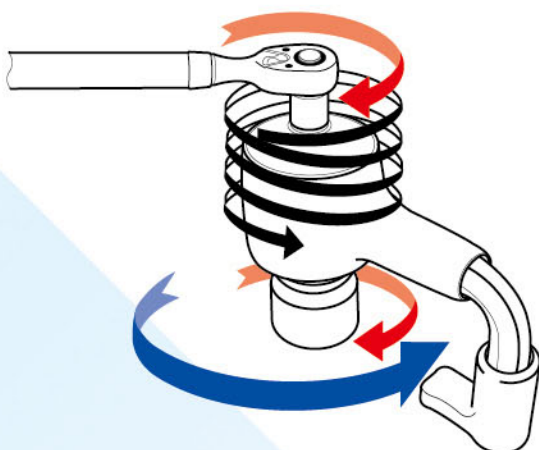
INDUSTRIAL TORQUE MULTIPLIER



SYSTEM OF TORQUE MULTIPLIER

TURNING
REACTION

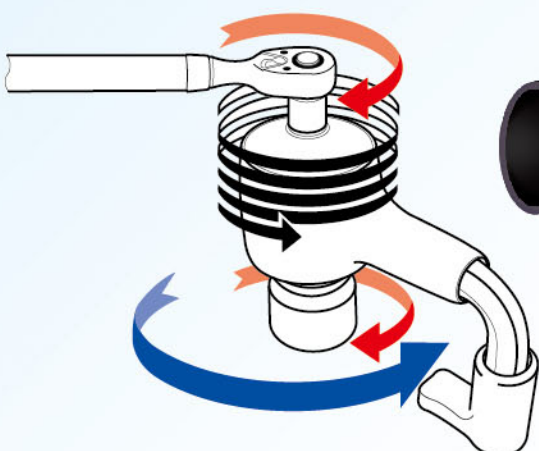
The gearbox wind-up forces and torsion wind-up forces must build up like a spring.



Multiplier achieve its maximum torque only after the spring is taken up.

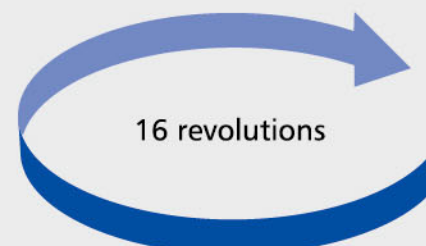
Important remark on safety:

When using upside down, an additional support is strongly recommended. If the screw connection breaks or torque multiplier releases its torsion wind-up forces, the device may fall out on the user.

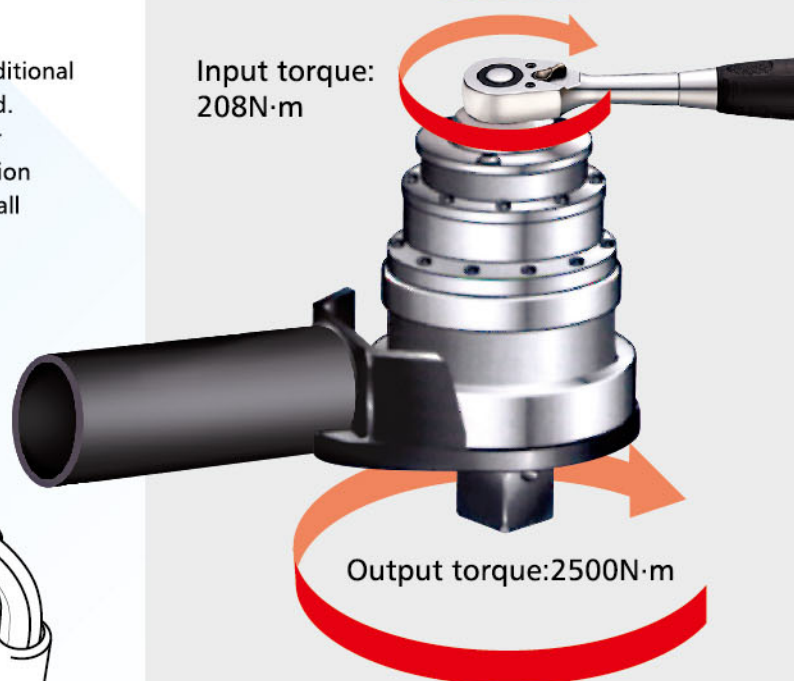


TURNING
VELOCITY

This representation shown in the chart is intended for elucidating the principle of torque multiplication. If we input 208N·m to the multiplier, then the output torque will be 2500N·m(multiplication). The multiplication of the torque can only be accomplished through an increased revolutions of input. A tool with a ratchet head function makes it easier for user to quickly obtain the necessary rotary speed.



Input torque:
208N·m



How to choose a suitable reaction arm?



W-Type

- Useful in narrow space.
- Adaptable reaction arm for different sustain points. Such as walls, adjacent screws, engineering equipment parts and stable platform.



H-Type

- Provide bigger radius than W-Type arm.
- The adjustable square drive is ideal for flange screw connections and those reaction points higher than screw tightening.



Break-away Adapter

- It's an important device of warning of overloading, and prevent torque multiplier structure from damage. Please refer to page 46

Protect Wind-Up System



Both H-Type and W-Type Torque Multiplier possess Protect Wind-up System by ratchet structure.

- To prevent from input tool fly backwards against the direction of the operation as the force suddenly released. With Protect Wind-up System, the torque multiplier can attach on the nut due to the force is all acted on the reaction point by this structure.

Industrial Level INDUSTRIAL TORQUE MULTIPLIER-W TYPE

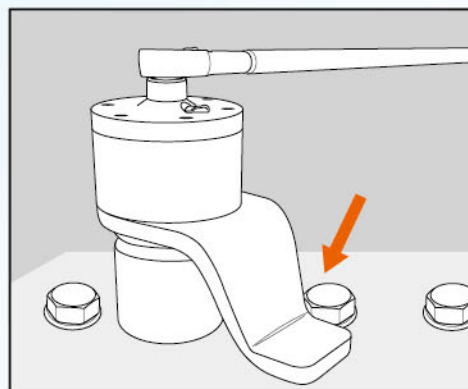
- Warp Type
- PWUS

⚠ **Warning:** Do not use with impact wrench

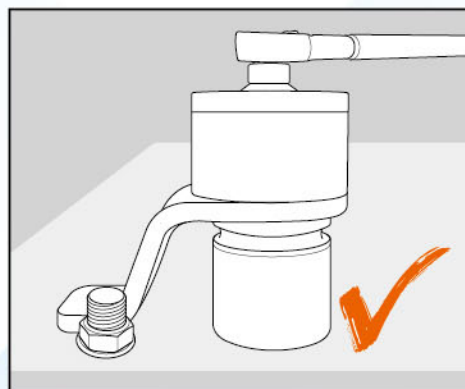


Item Number	Torque Ratio	Gear Ratio	Input Drive	Output Drive	Max. Input Torque	Max. Output Torque	Weight	Apply to Break-away adapter
11811	1:3.5	1:4	1/2"Dr. Female	3/4"Dr. Male	286 N·m	1000 N·m	3.6 kg	11781
11812	1:3.8	1:4.3	1/2"Dr. Female	3/4"Dr. Male	395 N·m	1500 N·m	3.8 kg	11782
11813	1:12.5	1:16	1/2"Dr. Female	1"Dr. Male	215 N·m	2700 N·m	7.6 kg	11785
11814	1:3.8	1:4	3/4"Dr. Female	1"Dr. Male	710 N·m	2700 N·m	6.9 kg	11783
11815	1:4.8	1:5.5	3/4"Dr. Female	1-1/2"Dr. Male	938 N·m	4500 N·m	11.8 kg	11784
11819	1:16.8	1:22	1/2"Dr. Female	1-1/2"Dr. Male	275 N·m	4500 N·m	13.2 kg	11789
11816	1:16.8	1:22	1/2"Dr. Female	1-1/2"Dr. Male	357 N·m	6000 N·m	18.1 kg	11786
11817	1:23.1	1:30.25	1/2"Dr. Female	1-1/2"Dr. Male	347 N·m	8000 N·m	29.9 kg	11787
11818	1:23.1	1:30.25	3/4"Dr. Female	1-1/2"Dr. Male	433 N·m	10000 N·m	33.7 kg	11788

• Please refer to 40 page for more break-away adapter detail.



The reaction arm is lean on the adjacent screw as sustain point.



Good sustain point is stable and firm when you apply force on the torque multiplier.
Correct sustain point also keep product duration.

Industrial Level INDUSTRIAL TORQUE MULTIPLIER-H TYPE

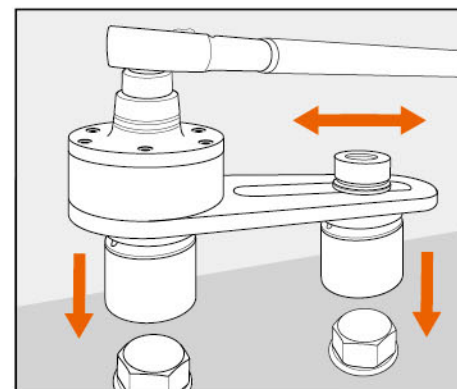
- Horizon Type
- PWUS

⚠ **Warning:** Do not use with impact wrench

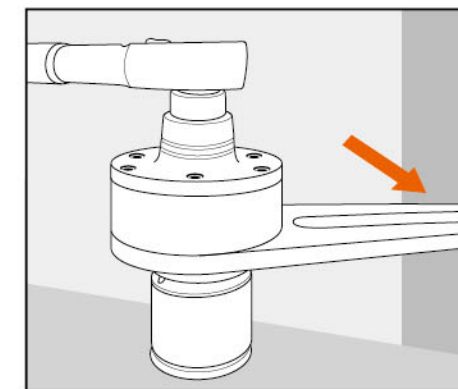


Item Number	Torque Ratio	Gear Ratio	Input Drive	Output Drive	Max. Input Torque	Max. Output Torque	Weight	Apply to Break-away adapter
11761	1:3.5	1:4	1/2"Dr. Female	3/4"Dr. Male	286 N·m	1000 N·m	3.8 kg	11781
11762	1:3.8	1:4.3	1/2"Dr. Female	3/4"Dr. Male	395 N·m	1500 N·m	3.9 kg	11782
11763	1:12.5	1:16	1/2"Dr. Female	1"Dr. Male	215 N·m	2700 N·m	8.3 kg	11785
11764	1:3.8	1:4	3/4"Dr. Female	1"Dr. Male	710 N·m	2700 N·m	7.5 kg	11783
11765	1:4.8	1:5.5	3/4"Dr. Female	1-1/2"Dr. Male	938 N·m	4500 N·m	12.3 kg	11784
11771	1:16.8	1:22	1/2"Dr. Female	1-1/2"Dr. Male	275 N·m	4500 N·m	13.6 kg	11789
11766	1:16.8	1:22	1/2"Dr. Female	1-1/2"Dr. Male	357 N·m	6000 N·m	20 kg	11786
11767	1:23.1	1:30.25	1/2"Dr. Female	1-1/2"Dr. Male	347 N·m	8000 N·m	32 kg	11787
11768	1:23.1	1:30.25	3/4"Dr. Female	1-1/2"Dr. Male	433 N·m	10000 N·m	35.8 kg	11788

• Please refer to 40 page for more break-away adapter detail.



The adjustable reaction square can be moved and firmed on an adjacent screw with an impact nut socket and also to be a sustain point to torque multiplier.



The adjustable reaction square is optional once there's a sustain point to be reacted e.g. wall.

Repair Level

1/2" F x 3/4" M 1500N·m MINI TORQUE MULTIPLIER



Warning:
Do not use with impact wrench

1/2" Dr. F x 3/4" Dr. M.

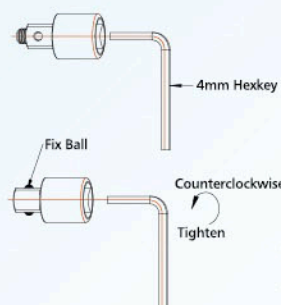
Item Number	11606
Gear Ratio: 1:16	
Torque Ratio: 1:9.5	
Max. Input Torque: 158 N·m	
Max. Output Torque: 1500 N·m	
Packing: Blowmold Case	

BREAK-AWAY
SAFETY ADAPTER

Prevent torque Multiplier structure
from damage



Warning:
Do not use with impact wrench



The break-away safety adapter is inserted into the square opening of the torque multiplier.



In case of overloading, break-away safety adapter will break and it's also a warning of overloading.



Use the hexkey by turning it clockwise to remove the parts of the break-away safety adapter which still remains in the torque multiplier.

Item Number	Torque Multiplier Application	Drive	Accuracy
11401	1/2"x3/4" 1500N·m	1/2"Fx1/2"M	231 N·m ± 10%
11402	1/2"x3/4" 2000N·m	1/2"Fx1/2"M	222 N·m ± 10%
11403	1/2"x3/4" 2500N·m	1/2"Fx1/2"M	208 N·m ± 10%
11404	1/2"x3/4" 1000N·m	1/2"Fx1/2"M	303 N·m ± 10%
11601	3/4"x1" 2500N·m	3/4"Fx3/4"M	758 N·m ± 10%

Item Number	Torque Multiplier Application	Drive	Accuracy
11781	1/2"x3/4" 1000N·m	1/2"Fx1/2"M	286 N·m ± 10%
11782	1/2"x3/4" 1500N·m	1/2"Fx1/2"M	395 N·m ± 10%
11783	3/4"x1" 2700N·m	3/4"Fx3/4"M	710 N·m ± 10%
11784	3/4"x1-1/2" 4500N·m	3/4"Fx3/4"M	938 N·m ± 10%
11785	1/2"x1" 2700N·m	1/2"Fx1/2"M	215 N·m ± 10%
11786	1/2"x1-1/2" 6000N·m	1/2"Fx1/2"M	357 N·m ± 10%
11787	1/2"x1-1/2" 8000N·m	1/2"Fx1/2"M	347 N·m ± 10%
11788	3/4"x1-1/2" 10000N·m	3/4"Fx3/4"M	433 N·m ± 10%
11789	1/2"x1-1/2" 4500N·m	1/2"Fx1/2"M	275 N·m ± 10%

Repair Level

TORQUE MULTIPLIER SET



Warning:
Do not use with impact wrench

Item Number	Torque Ratio	Gear Ratio	Input Drive	Output Drive	Max. Input Torque	Max. Output Torque
11651	1:3.3	1:4	1/2"Dr. Female	3/4"Dr. Male	300N·m (225 lbf·ft)	1000N·m (750 lbf·ft)

Content :

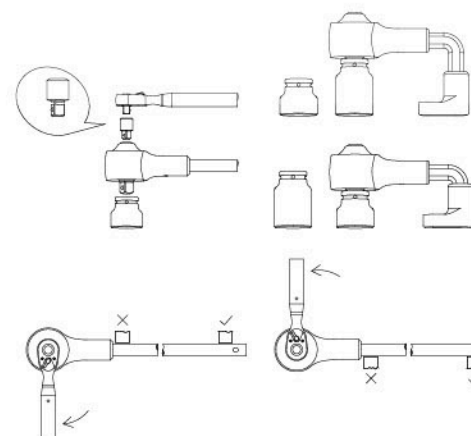
Torque Multiplier	1PC
1/2" Vortex Ratchet Handle	1PC
90° Reaction Bar	1PC
Straight Reaction Bar	1PC
Break-away Safety Adapter	2PCS
Release Kit	1PC
L Key	1PC



Item Number	Torque Ratio	Gear Ratio	Input Drive	Output Drive	Max. Input Torque	Max. Output Torque
11614	1:6.5	1:9	1/2"Dr. Female	3/4"Dr. Male	231N·m (170 lbf·ft)	1500N·m (1105 lbf·ft)
11711	1:9	1:12	1/2"Dr. Female	1"Dr. Male	222N·m (164 lbf·ft)	2000N·m (1474 lbf·ft)
11712	1:12	1:16	1/2"Dr. Female	1"Dr. Male	208N·m (153 lbf·ft)	2500N·m (1842 lbf·ft)
11714	1:3.3	1:4	3/4"Dr. Female	1"Dr. Male	758N·m (559 lbf·ft)	2500N·m (1842 lbf·ft)

Content :

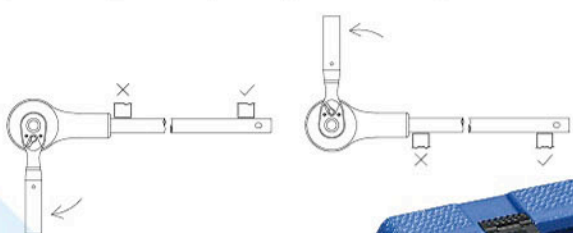
Torque Multiplier	1PC
Straight Reaction Bar	1PC
90° Reaction Bar	1PC
90° Reaction Base	1PC
Break-away Safety Adapter	2PCS
L Key	1PC



TORQUE MULTIPLIER

 **Warning:** Do not use with impact wrench

Item Number	Torque Ratio	Gear Ratio	Input Drive	Output Drive	Max. Input Torque	Max. Output Torque
11605	1:6.5	1:9	1/2"Dr. Female	3/4"Dr. Male	231N·m (170 lbf-ft)	1500N·m (1100 lbf-ft)
11705	1:9	1:12	1/2"Dr. Female	1"Dr. Male	222N·m (167 lbf-ft)	2000N·m (1500 lbf-ft)
11706	1:12	1:16	1/2"Dr. Female	1"Dr. Male	208N·m (154 lbf-ft)	2500N·m (1850 lbf-ft)
11707	1:3.3	1:4	3/4"Dr. Female	1"Dr. Male	758N·m (560 lbf-ft)	2500N·m (1850 lbf-ft)



4PC TORQUE MULTIPLIER SET

Item Number:	11753
Torque Multiplier:	3/4"x1" 2500N·m x1PC
Straight Reaction Bar:	x1PC
Ratchet Handle:	3/4" 24Teeth x1PC
Break-Away Safety Adapter:	x1PC

 **Warning:** Do not use with impact wrench

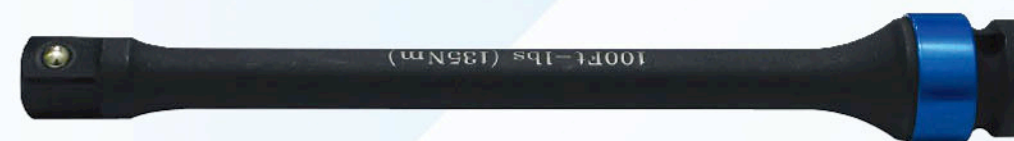
1/2" Dr. FEMALE & 3/4" Dr. MALE TORQUE MULTIPLIER

Item Number	Torque Ratio	Gear Ratio	Input Drive	Output Drive	Max. Input Torque	Max. Output Torque
11603	1:3.3	1:4	1/2"Dr. Female	3/4"Dr. Male	300N·m (225 lbf-ft)	1000N·m (750 lbf-ft)

 **Warning:** Do not use with impact wrench



► IMPACT TOOL ACCESSORIES 1/2" TORQUE EXTENSION BAR-TORQUE STICKS



Item Number	Torque	Square Drive	Length (mm)	Weight (g)
24450	90 N·m (65 lbf-ft)	1/2"	200	192
24451	100 N·m (75 lbf-ft)	1/2"	200	200
24452	110 N·m (80 lbf-ft)	1/2"	200	208
24453	120 N·m (90 lbf-ft)	1/2"	200	224
24454	135 N·m (100 lbf-ft)	1/2"	200	244
24455	150 N·m (110 lbf-ft)	1/2"	200	264
24456	160 N·m (120 lbf-ft)	1/2"	200	284
24457	175 N·m (130 lbf-ft)	1/2"	200	304
24458	190 N·m (150 lbf-ft)	1/2"	200	334
24459	200 N·m (150 lbf-ft)	1/2"	200	342



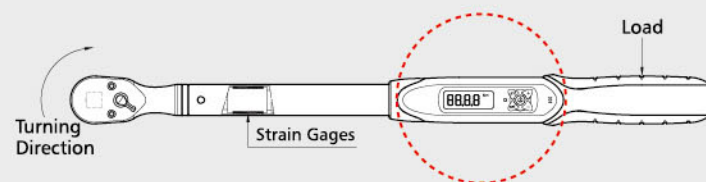
1/2" TORQUE EXTENSION BAR SET-TORQUE STICKS

Item Number: 24416

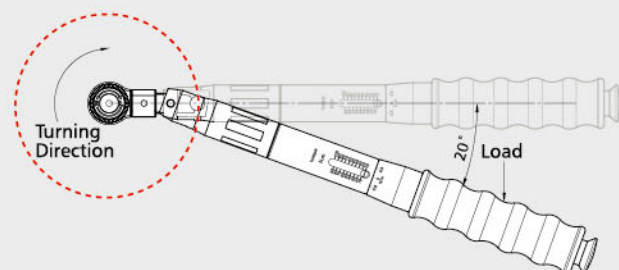


TORQUE WRENCH TYPE

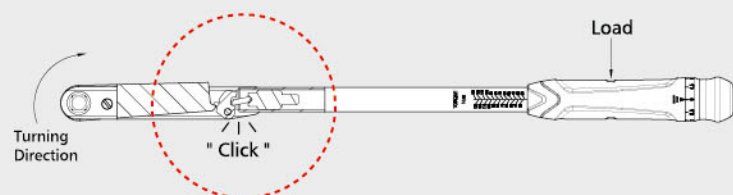
DIGITAL TYPE



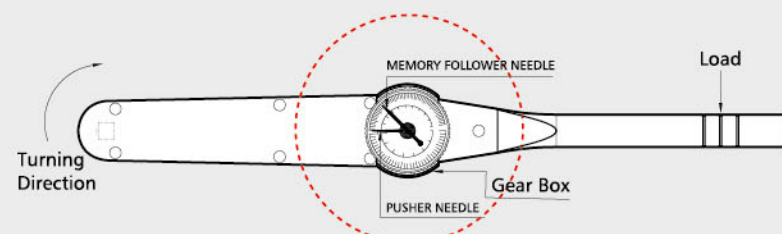
BREAKING TYPE



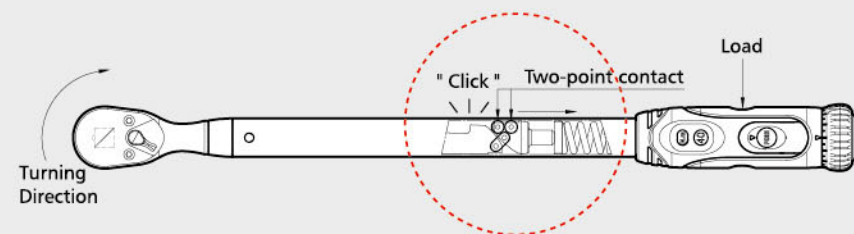
CLASSIC TYPE



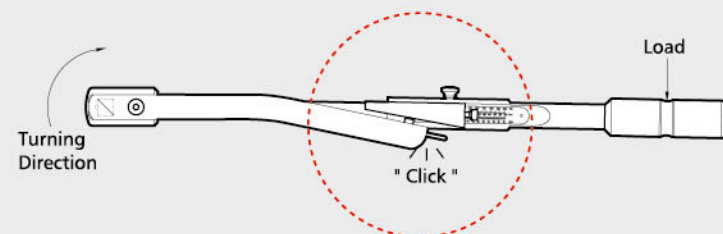
DIAL TYPE



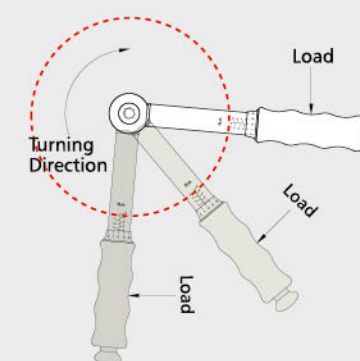
SINGLE DIRECTION CLICK TYPE



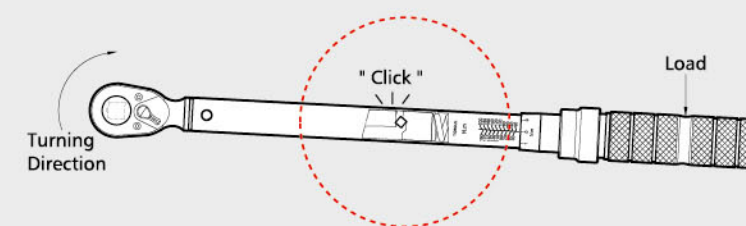
BEAM TYPE



SLIPPING TYPE



DUAL DIRECTION CLICK TYPE



STANDARD BOLT TIGHTENING TORQUE

Bolt Size mm	Pitch mm	Bolt Hex mm	Strength Grade (N·m)				
			4.6	6.8	8.8	10.9	12.9
3	0.5	5.5	0.51	1.01	1.35	1.90	2.27
4	0.7	7	0.95	1.91	2.54	3.57	4.29
5	0.8	8	2.28	4.56	6.09	8.56	10.3
6	1.0	10	3.92	7.85	10.5	14.7	17.7
8	1.25	13	9.48	18.9	25.3	35.5	42.7
10	1.5	17	19.1	38.1	50.9	71.5	86.8
12	1.75	19	32.6	65.1	86.9	122	146
14	2.0	22	51.9	104	139	195	234
16	2.0	24	79.9	160	213	299	359
18	2.5	27	110	220	293	413	495
20	2.5	30	156	312	416	585	702
22	2.5	32	211	422	563	792	950
24	3.0	36	270	539	719	1010	1213
27	3.0	41	398	795	1060	1490	1789
30	3.5	46	540	1080	1440	2025	2430

Torque Conversion Table

	Kgf·m	N·m	Lbf·ft	Lbf·in
kgf·m	1	0.102	0.14	0.012
N·m	9.8	1	1.36	0.11
lbf·ft	7.23	0.74	1	0.08
lbf·in	86.72	8.85	12	1

Cuft Conversion Table

	ft³ (1 cuft)	in³	m³	cm³
ft³ (1 cuft)	1	0.0005787	35.3	0.0000353
in³	1728.0	1	61024	0.061
m³	0.0283	0.0000164	1	0.000001
cm³	28317	16.4	1000000	1

SUPER SLIM SUPER SHARP 90T



SUPER SLIM 90T RATCHET HANDLE



Item Number	Surface	"	°	mm	mm	mm	g
19261	Chrome Plated	1/4"	90	131	22.7	17	52
19361	Chrome Plated	3/8"	90	199	30.7	22.5	126
19461	Chrome Plated	1/2"	90	249	38.8	29	233
19263	Satin Finish	1/4"	90	131	22.7	17	52
19363	Satin Finish	3/8"	90	199	30.7	22.5	126
19463	Satin Finish	1/2"	90	249	38.8	29	233

90T RATCHET HANDLE



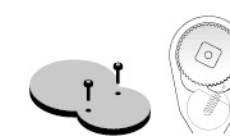
Item Number	Surface	"	°	mm	mm	mm	g
19201	Chrome Plated	1/4"	90	112	23	21	106
19301	Chrome Plated	3/8"	90	203	30	27	308
19401	Chrome Plated	1/2"	90	257	41	35	658

SHIELD ONE HAND RATCHET HANDLE



Item Number	Surface	"	°	mm	mm	mm	g
27201	Chrome Plated	1/4"	72	145	23	24	102
27301	Chrome Plated	3/8"	72	198	30	31	245
27401	Chrome Plated	1/2"	72	250	38	40	480
27202	Matted Finish	1/4"	72	145	23	24	102
27302	Matted Finish	3/8"	72	198	30	31	245
27402	Matted Finish	1/2"	72	250	38	40	480

120T RATCHET HANDLE

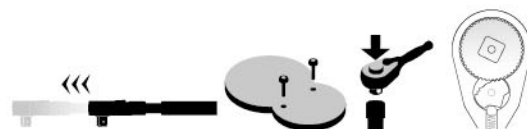


Item Number	Surface	"	°	mm	mm	mm	g
29251	Chrome Plated	1/4"	120	131	23	19	120
29351	Chrome Plated	3/8"	120	200	30	25	280
29451	Chrome Plated	1/2"	120	250	38	32	550
29252	Matted Finish	1/4"	120	131	23	19	120
29352	Matted Finish	3/8"	120	200	30	25	280
29452	Matted Finish	1/2"	120	250	38	32	550

EXTENDABLE RATCHET HANDLE

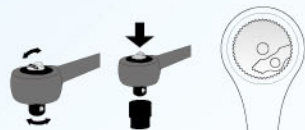


Item Number	Surface	"	mm	mm	mm	mm	g
092A6	Chrome Plated	1/4"	60	202	272	21	18.5
093A6	Chrome Plated	3/8"	60	258.8	360.8	29	24.6
094A6	Chrome Plated	1/2"	60	356	496	38	35.1
092A3	Matted Finish	1/4"	60	202	291	21	18.5
093A3	Matted Finish	3/8"	60	265	367	29	24.6
094A3	Matted Finish	1/2"	60	356	496	38	35.1



Item Number	Surface	"	mm	mm	mm	mm	g
032C3	Chrome Plated	1/4"	72	182.6	243.6	22.5	21.5
033C3	Chrome Plated	3/8"	72	232.5	334.5	30	29.8
034C3	Chrome Plated	1/2"	72	315	448	37	37.2
032B6	Matted Finish	1/4"	72	202	272	22.5	21.5
033B6	Matted Finish	3/8"	72	232.5	334.5	30	29.8
034B6	Matted Finish	1/2"	72	315	448	37	37

ROUND HEAD ONE-HAND RATCHET HANDLE



Item Number	Surface	"	mm	mm	mm	mm	g
13231	Chrome Plated	1/4"	52	131	25	22	108
13331	Chrome Plated	3/8"	52	197	33	36	286
13431	Chrome Plated	1/2"	52	248	38	44	478

EXTENDABLE SWIVEL HANDLE



Item Number	Surface	"	mm	mm	mm	mm	g
25304	Chrome Plated	3/8"	248	355	430	428	
25404	Chrome Plated	1/2"	414	529	642	1034	

CURVED RATCHET HANDLE



Item Number	Surface	"	mm	mm	mm	mm	g
02201	Chrome Plated	1/4"	72	145	25	24	120
02301	Chrome Plated	3/8"	72	199	35	36	280
02401	Chrome Plated	1/2"	72	250	42	44	540
02202	Satin Finish	1/4"	72	145	25	24	120
02302	Satin Finish	3/8"	72	199	35	36	280
02402	Satin Finish	1/2"	72	250	42	44	540
02203	Matted Finish	1/4"	72	145	25	24	120
02303	Matted Finish	3/8"	72	199	35	36	280
02403	Matted Finish	1/2"	72	250	42	44	540



Item Number	Surface	"	mm	mm	mm	mm	g
02211	Chrome Plated	1/4"	72	145	25	25	120
02311	Chrome Plated	3/8"	72	199	35	35	280
02411	Chrome Plated	1/2"	72	250	42	42	570
02212	Satin Finish	1/4"	72	145	25	25	120
02312	Satin Finish	3/8"	72	199	35	35	280
02412	Satin Finish	1/2"	72	250	42	42	570
02213	Matted Finish	1/4"	72	145	25	25	120
02313	Matted Finish	3/8"	72	199	35	35	280
02413	Matted Finish	1/2"	72	250	42	42	570



Item Number	Surface	"	mm	mm	mm	mm	g
02214	Chrome Plated	1/4"	72	145	25	25	120
02314	Chrome Plated	3/8"	72	199	35	35	280
02414	Chrome Plated	1/2"	72	250	42	42	580
02215	Satin Finish	1/4"	72	145	25	25	120
02315	Satin Finish	3/8"	72	199	35	35	280
02415	Satin Finish	1/2"	72	250	42	42	580
02216	Matted Finish	1/4"	72	145	25	25	120
02316	Matted Finish	3/8"	72	199	35	35	280
02416	Matted Finish	1/2"	72	250	42	42	580



Item Number	Surface	"	mm	mm	mm	mm	g
03201	Chrome Plated	1/4"	48	145	23	22	110
03301	Chrome Plated	3/8"	48	199	30	29	270
03401	Chrome Plated	1/2"	48	260	42	38	580
03202	Satin Finish	1/4"	48	145	23	22	110
03302	Satin Finish	3/8"	48	199	30	29	270
03402	Satin Finish	1/2"	48	260	42	38	580
03203	Matted Finish	1/4"	48	145	23	22	110
03303	Matted Finish	3/8"	48	199	30	29	270
03403	Matted Finish	1/2"	48	260	42	38	580

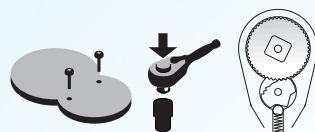
WILLIAM I LEVER TYPE RATCHET HANDLE



Item Number	Surface						
01267	Chrome Plated	1/4"	48	144	23	22	120
01367	Chrome Plated	3/8"	48	199	31	29	280
01467	Chrome Plated	1/2"	48	250	42	38	575

Item Number	Surface						
01264	Chrome Plated	1/4"	48	140	23	22	100
01364	Chrome Plated	3/8"	48	197	31	29	260
01464	Chrome Plated	1/2"	48	260	42	38	540
01268	Matted Finish	1/4"	48	140	23	22	100
01368	Matted Finish	3/8"	48	197	31	29	260
01468	Matted Finish	1/2"	48	260	42	38	540

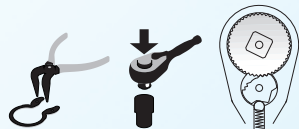
LONG RATCHET HANDLE



Item Number	Surface						
01266	Chrome Plated	1/4"	48	180	23	21	150
01366	Chrome Plated	3/8"	48	280	31	29	370
01466	Chrome Plated	1/2"	48	380	42	38	750

Item Number	Surface						
01283	Chrome Plated	1/4"	48	180	23	21	150
01383	Chrome Plated	3/8"	48	280	31	29	370
01483	Chrome Plated	1/2"	48	380	42	38	710
01285	Matted Finish	1/4"	48	180	23	21	150
01385	Matted Finish	3/8"	48	280	31	29	370
01485	Matted Finish	1/2"	48	380	42	38	710

WILLIAM II LEVER TYPE RATCHET HANDLE



Item Number	Surface						
05231	Chrome Plated	1/4"	48	128	23	22	100
05331	Chrome Plated	3/8"	48	198	31	29	280
05431	Chrome Plated	1/2"	48	250	42	38	540

Item Number	Surface						
05214	Matted Finish	1/4"	48	135	23	22	115
05314	Matted Finish	3/8"	48	198	31	29	280
05414	Matted Finish	1/2"	48	253	42	38	600
05215	Chrome Plated	1/4"	48	135	23	22	115
05315	Chrome Plated	3/8"	48	198	31	29	280
05415	Chrome Plated	1/2"	48	253	42	38	600

WILLIAM II STUBBY TYPE RATCHET HANDLE



Item Number	Surface						
05222	Chrome Plated	1/4"	48	90	23	22	80
05322	Chrome Plated	3/8"	48	120	31	28	200
05422	Chrome Plated	1/2"	48	155	42	38	420

Item Number	Surface						
05228	Chrome Plated	1/4"	48	108	23	22	100
05328	Chrome Plated	3/8"	48	141	31	28	220
05428	Chrome Plated	1/2"	48	170	42	38	480
05229	Matted Finish	1/4"	48	108	23	22	100
05329	Matted Finish	3/8"	48	141	31	28	220
05429	Matted Finish	1/2"	48	170	42	38	480

WILLIAM III MICRO HEAD RATCHET HANDLE



Item Number	Surface	"	mm	mm	mm	mm	g
09231	Chrome Plated	1/4"	60	130	19	19	90
09331	Chrome Plated	3/8"	60	198	27	25	230
09431	Chrome Plated	1/2"	60	250	35	33	450
09232	Satin Finish	1/4"	60	130	19	20	90
09332	Satin Finish	3/8"	60	198	27	25	230
09432	Satin Finish	1/2"	60	250	35	33	450

Item Number	Surface	"	mm	mm	mm	mm	g
09235	Chrome Plated	1/4"	60	138	19	19	80
09335	Chrome Plated	3/8"	60	198	27	25	220
09435	Chrome Plated	1/2"	60	250	35	33	437
09236	Matted Finish	1/4"	60	138	19	19	80
09336	Matted Finish	3/8"	60	198	27	25	220
09436	Matted Finish	1/2"	60	250	35	33	437

ROUND HEAD RATCHET HANDLE



Item Number	Surface	"	mm	mm	mm	mm	g
01277	Matted Finish	1/4"	72	145	25	25	120
01377	Matted Finish	3/8"	72	199	35	33	300
01477	Matted Finish	1/2"	72	255	40	45	500

Item Number	Surface	"	mm	mm	mm	mm	g
04218	Chrome Plated	1/4"	72	145	25	25	120
04318	Chrome Plated	3/8"	72	199	35	33	300
04418	Chrome Plated	1/2"	72	255	40	45	500

WILLIAM IV LEVER TYPE RATCHET HANDLE



Item Number	Surface	"	mm	mm	mm	mm	g
03221	Chrome Plated	1/4"	72	130	22.5	22	111
03321	Chrome Plated	3/8"	72	198	30	29	280
03421	Chrome Plated	1/2"	72	250	37	36	521

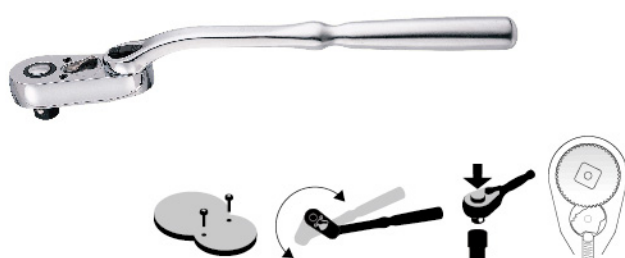
Item Number	Surface	"	mm	mm	mm	mm	g
03231	Chrome Plated	1/4"	72	137	22.5	22	101
03331	Chrome Plated	3/8"	72	195	30	29	254
03431	Chrome Plated	1/2"	72	250	37	36	489
03233	Matted Finish	1/4"	72	137	22.5	22	101
03333	Matted Finish	3/8"	72	195	30	29	254
03433	Matted Finish	1/2"	72	250	37	36	489



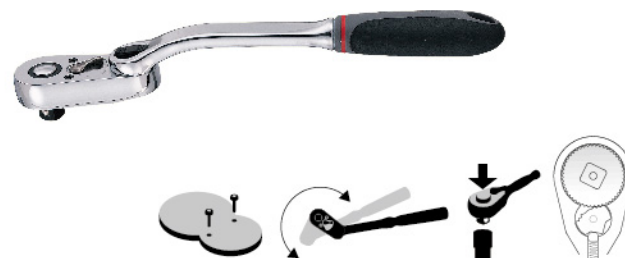
Item Number	Surface	"	mm	mm	mm	mm	g
03261	Chrome Plated	1/4"	72	145	22.5	22	102
03361	Chrome Plated	3/8"	72	198	30	29	261
03461	Chrome Plated	1/2"	72	250	37	36	490
03263	Matted Finish	1/4"	72	145	22.5	22	102
03363	Matted Finish	3/8"	72	198	30	29	261
03463	Matted Finish	1/2"	72	250	37	36	490

Item Number	Surface	"	mm	mm	mm	mm	g
03245	Chrome Plated	1/4"	72	147	22.5	22	105
03345	Chrome Plated	3/8"	72	200	30	29	276
03445	Chrome Plated	1/2"	72	250	37	36	524
03247	Matted Finish	1/4"	72	147	22.5	22	105
03347	Matted Finish	3/8"	72	200	30	29	276
03447	Matted Finish	1/2"	72	250	37	36	524

RAPID RATCHET HANDLE

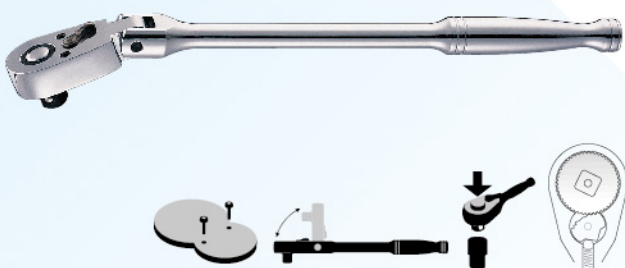


Item Number	Surface			 mm	 mm	 mm	 g
07201	Chrome Plated	1/4"	48	190	23	40	240
07301	Chrome Plated	3/8"	48	265	31	51	480
07401	Chrome Plated	1/2"	48	315	40	72	900
07203	Matted Finish	1/4"	48	190	23	40	240
07303	Matted Finish	3/8"	48	265	31	51	480
07403	Matted Finish	1/2"	48	315	40	72	900

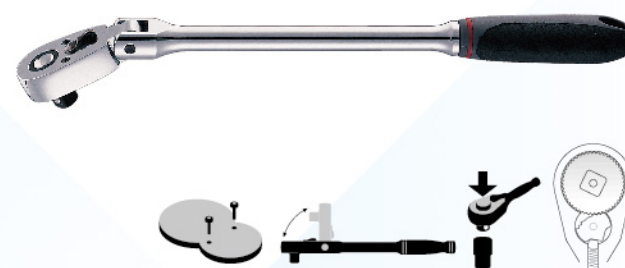


Item Number	Surface			 mm	 mm	 mm	 g
07211	Chrome Plated	1/4"	48	185	23	40	170
07311	Chrome Plated	3/8"	48	245	31	51	350
07411	Chrome Plated	1/2"	48	310	40	72	750
07213	Matted Finish	1/4"	48	185	23	40	170
07313	Matted Finish	3/8"	48	245	31	51	350
07413	Matted Finish	1/2"	48	310	40	72	750

FLEX. RATCHET HANDLE



Item Number	Surface	 "		 mm	 mm	 mm	 g
08201	Chrome Plated	1/4"	48	160	22	23	140
08301	Chrome Plated	3/8"	48	300	29	30	390
08401	Chrome Plated	1/2"	48	430	37	38	950



Item Number	Surface			 mm	 mm	 mm	 g
08211	Chrome Plated	1/4"	48	160	22	23	120
08311	Chrome Plated	3/8"	48	300	29	30	390
08411	Chrome Plated	1/2"	48	450	37	38	880
08213	Matted Finish	1/4"	48	160	22	23	120
08313	Matted Finish	3/8"	48	300	29	30	390
08413	Matted Finish	1/2"	48	450	37	38	880

FLEX. STUBBY RATCHET HANDLE



Item Number	Surface			 mm	 mm	 mm	 g
08221	Chrome Plated	1/4"	48	96	23	22	90
08321	Chrome Plated	3/8"	48	115	29	31	220
08421	Chrome Plated	1/2"	48	170	37	38	470

GO-THROUGH FLEXIBLE RAPID RATCHET HANDLE



Item Number	Surface	 mm		 mm	 mm	 mm	 g
07500	Chrome Plated	19	60	265	34	45	352
07501	Matted Finish	19	60	265	34	45	352

17PC GO-THROUGH FLEX. RAPID SOCKET SET

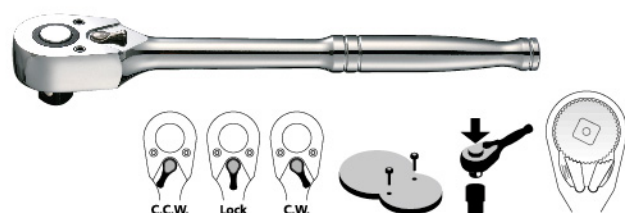


Item Number : 07004

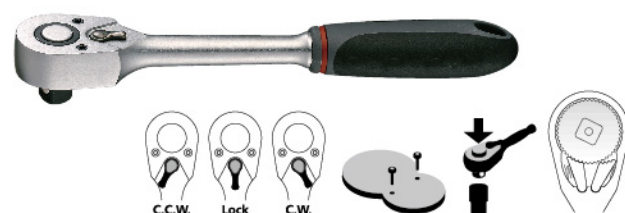
Content:

19mm Go-Through Flex. Rapid Ratchet Handle	x1PC
19mm Go-Through Spline Socket (10,11,12,13,14,15,16,17,18,19,21,22,24mm)	x13PCS
19mm x 1/4" Dr. Adaptor	x1PC
19mm x 3/8" Dr. Adaptor	x1PC
19mm Extension Bar x 80L	x1PC

L-LOCK-R RATCHET HANDLE



Item Number	Surface			 mm	 mm	 mm	 g
14201	Chrome Plated	1/4"	48	128.5	25	22	133
14301	Chrome Plated	3/8"	48	199	33	29.5	309
14401	Chrome Plated	1/2"	48	254	40	37.5	570



Item Number	Surface			 mm	 mm	 mm	 g
14211	Chrome Plated	1/4"	48	138	25	22	113
14311	Chrome Plated	3/8"	48	196	33	29.5	283
14411	Chrome Plated	1/2"	48	250	40	37.5	535
14212	Matted Finish	1/4"	48	138	25	22	113
14312	Matted Finish	3/8"	48	196	33	29.5	283
14412	Matted Finish	1/2"	48	250	40	37.5	535

1/2" DR. VORTEX RATCHET HANDLE



Item Number	Surface						
11411	Matted Finish	1/2"	48	250	41	36	640

3 SIZE HEAD RATCHET HANDLE



Item Number	Surface	 "		 mm	 mm	 mm	 g
01031	Chrome Plated	1/4" 3/8" 1/2"	72	198	31	50	330

1/2" DR. 24" HIGH TORQUE RATCHET HANDLE



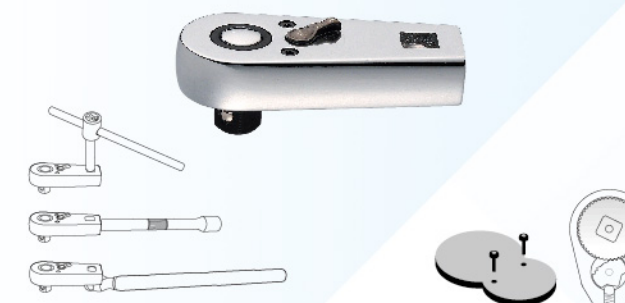
Item Number	Surface	 "		 mm	 mm	 mm	 g
25414	Chrome Plated	1/2"	36	610	41	35	1200

RATCHET ADAPTER



Item Number	Surface	 "		 mm	 mm	 g
04271	Matted Finish	1/4"	52	25	40	64
04371	Matted Finish	3/8"	52	34	54	158
04471	Matted Finish	1/2"	52	40	70	290

3/8" DR. MULTI-PURPOSE RATCHET HEAD



Item Number	Surface						
01321	Chrome Plated	3/8"	48	74	32	28	230

ROTATOR RATCHET HANDLE



Item Number	Surface						
06243	Chrome Plated	1/4"	60	180	27	23	18
06343	Chrome Plated	3/8"	60	240	36	29	38
06443	Chrome Plated	1/2"	60	290	42	37	64
06244	Matted Finish	1/4"	60	180	27	23	18
06344	Matted Finish	3/8"	60	240	36	29	38
06444	Matted Finish	1/2"	60	290	42	37	64

STUBBY BIT HOLDER RATCHET HANDLE



							
Item Number	Surface	 mm		 mm	 mm	 mm	 g
06252	Chrome Plated	6.35	60	120	28	15	126
06251	Matted Finish	6.35	60	120	28	15	126

29PC STUBBY BIT HOLDER ROTATOR SET



Item Number : 06014	
Content:	
1/4" Stubby Bit Rotator (06251/06252)	x1PC
1/4" Low Profile Socket (4,5,5.5,6,7,9,10,11,12,13mm)	x10PCS
1/4" Bit x 25L (SL3-4-5,PH1-2-3,T15-20-25,H3-4-5,PZ1-2-3)	x15PCS
1/4" Bit Adaptor x 1/4" Dr.	x1PC
1/4" Bit Adaptor x 3/8" Dr.	x1PC
1/4" Bit Holder	x1PC

MINI HEAD STUBBY RATCHET HANDLE



Item Number	Surface	"	mm	mm	mm	mm	g
04286	Chrome Plated	1/4"	60	95	21	22	60
04386	Chrome Plated	3/8"	60	115	27	29	130
04486	Chrome Plated	1/2"	60	140	33	39	240



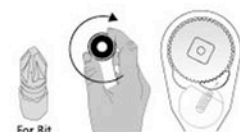
Item Number	Surface	"	mm	mm	mm	mm	g
04285	Chrome Plated	1/4"	60	95	21	22	70
04385	Chrome Plated	3/8"	60	115	27	29	120
04485	Chrome Plated	1/2"	60	150	33	39	250

NANO HEAD STUBBY DISC RATCHET HANDLE



Item Number	Surface	"	mm	mm	mm	mm	g
09931	Chrome Plated	1/4"	60	95	18	22	64
09933	Matted Finish	1/4"	60	95	18	22	64

NANO BIT HOLDER STUBBY DISC RATCHET HANDLE



Item Number	Surface	mm	mm	mm	mm	mm	g
09930	Chrome Plated	6.35	60	95	18	15	60
09932	Matted Finish	6.35	60	95	18	15	50

STUBBY BIT HOLDER



Item Number	Surface	mm	mm	mm	mm	mm	g
05284	Chrome Plated	6.35	48T	90	23	16	76
05384	Chrome Plated	10	48T	120	31	21	190



Item Number	Surface	mm	mm	mm	mm	mm	g
05281	Chrome Plated	6.35	48	103	23	18	80
05283	Matted Finish	6.35	48	103	23	18	80
05381	Chrome Plated	10	48	137	30	25	200
05383	Matted Finish	10	48	137	30	25	200

1/2" DR. 3 IN 1 LEVER TYPE RATCHET HANDLE SET



Item Number : **25002** Matted Finish

Content:	
48 Teeth Ratchet Handle	x1PC
500mm Extension Bar	x1PC
290mm Extension Bar	x1PC
150mm Extension Bar	x1PC

EXTEND-O-RATCHET HANDLE SET



Item Number	Surface	"	mm	mm	mm	mm	mm	g
01604	Matted Finish	3/4"	48	518	818	57	57	3500
01804	Matted Finish	1"	48	838	1143	69	69	5100

REPAIR KITS

02209 - 1/4" Dr.
02309 - 3/8" Dr.
02409 - 1/2" Dr.

Apply to curved
handle #02X01



02239 - 1/4" Dr.
02339 - 3/8" Dr.
02439 - 1/2" Dr.

Apply to curved
handle #02X14



04289 - 1/4" Dr.
04389 - 3/8" Dr.
04489 - 1/2" Dr.

Apply to mini hand
ratchet handle
#04X82 & #04X86



13239 - 1/4" Dr.
13339 - 3/8" Dr.
13439 - 1/2" Dr.

Apply to round head one-
hand ratchet handle
#13X31



07209 - 1/4" Dr.
07309 - 3/8" Dr.
07409 - 1/2" Dr.

Apply to rapid ratchet handle's joint #07X01



01269 - 1/4" Dr.
01369 - 3/8" Dr.
01469 - 1/2" Dr.

Apply to William I
lever type
#01X64 & #01X66
#01X67 & #01X68



05209 - 1/4" Dr.
05309 - 3/8" Dr.
05409 - 1/2" Dr.

Apply to William II lever type
#05X31 & #05X14
& #05X22



08209 - 1/4" Dr.
08309 - 3/8" Dr.
08409 - 1/2" Dr.

Apply to flex. ratchet handle's joint
#08X01 & #08X21



05289 - 1/4" Dr.
05389 - 3/8" Dr.

Apply to stubby bit holder #05X81



29259 - 1/4" Dr
29359 - 3/8" Dr
29459 - 1/2" Dr

Apply to 120 teeth ratchet handle
#29X51



14209 - 1/4" Dr
14309 - 3/8" Dr
14409 - 1/2" Dr

Apply to L-Lock-R ratchet handle
#14X01



03209 - 1/4" Dr
03309 - 3/8" Dr
03409 - 1/2" Dr

Apply to William IV lever type
#03X21 & #03X61



09229 - 1/4" Dr
09329 - 3/8" Dr
09429 - 1/2" Dr

Apply to William III
micro head #09X21



09239 - 1/4" Dr.
09339 - 3/8" Dr.
09439 - 1/2" Dr.

Apply to William III micro head
#09X62



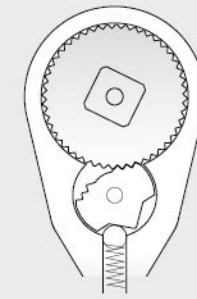
19209 - 1/4" Dr.
19309 - 3/8" Dr.
19409 - 1/2" Dr.

Apply to 90 teeth ratchet handle
#19X01

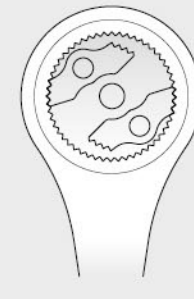


DIFFERENT TYPES OF RATCHET HANDLES

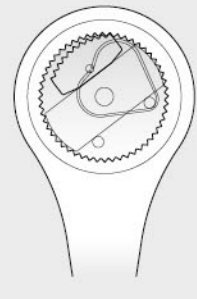
Gear to Gear Lever
Change Ratchet Handle



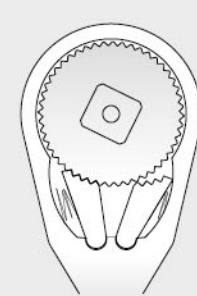
Twin Pawl Round Head
Ratchet Handle



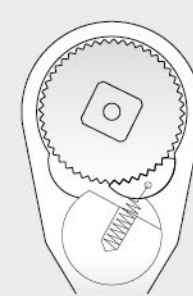
French Type Round
Head Ratchet Handle



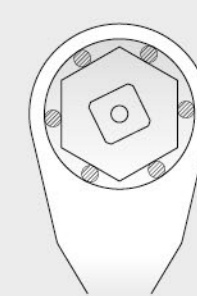
Japanese Type Lever Change
Ratchet Handle



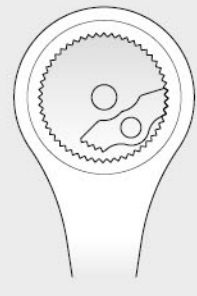
American Type Lever
Change Ratchet Handle



Gearless Ratchet Handle



One Pawl Round Head
Ratchet Handle



ANSI and DIN Standard Dimension

Dimension of Drive	ANSI			DIN		
	Length (in/mm) Min.	Width (in/mm) Max.	Height (in/mm) Max.	Length (mm) Max.	Width (mm) Max.	Height (mm) Max.
1/4" Dr.	4-3/8" (111)	1-1/8" (28.6)	19/32" (15.1)	150	25	24
3/8" Dr.	5-3/4" (146)	1-7/8" (47.6)	1-7/8" (22.2)	200	35	36
1/2" Dr.	9-1/2" (241)	1-15/16" (49.2)	1" (25.4)	300	50	45
3/4" Dr.	17" (432)	2-7/8" (73.0)	1-3/8" (34.9)	630	70	60
1" Dr.	20" (508)	3-7/8" (98.4)	1-3/4" (44.5)	900	90	80

Test Load

Drive	Reverse Torque ratchetting starting (N·m)	ANSI			DIN			William Tools		
		Test Load			Test Load			Test Load		
		(N·m)	(kgf·m)	(lbf·in)	(N·m)	(kgf·m)	(lbf·in)	(N·m)	(kgf·m)	(lbf·in)
		Max.	Min.	Min.	Min.	Min.	Min.	Min.	Min.	Min.
1/4" Dr.	0.07	51	5.2	450	62	6.3	549	78	8.0	690
3/8" Dr.	0.18	203	20.7	1800	202	20.6	1787	245	25.0	2168
1/2" Dr.	0.35	508	51.8	4500	512	52.2	4531	646	65.9	5716
3/4" Dr.	1.41	1356	138.4	12000	1412	144.1	12495	--	--	--
1" Dr.	2.12	2486	253.7	22000	2515	256.6	22255	--	--	--

William Tools Standard

Dimension of Drive	Test Load Min. (Nm)	Material of Body	Material of Drive	Hardness of Body	Hardness of Drive	Width of Drive (mm)
1/4" Dr.	78	Cr-V steel	Cr-Mo steel	Hrc40~45	Hrc48~52	6.27~6.35
3/8" Dr.	245	Cr-V steel	Cr-Mo steel	Hrc40~45	Hrc48~52	9.45~9.52
1/2" Dr.	646	Cr-V steel	Cr-Mo steel	Hrc40~45	Hrc48~52	12.60~12.70

Torque Conversion table

	Kgf·m	N·m	Lbf·ft	Lbf·in
Kgf·m	1	0.102	0.14	0.012
N·m	9.8	1	1.36	0.11
Lbf·ft	7.23	0.74	1	0.08
Lbf·in	86.72	8.85	12	1

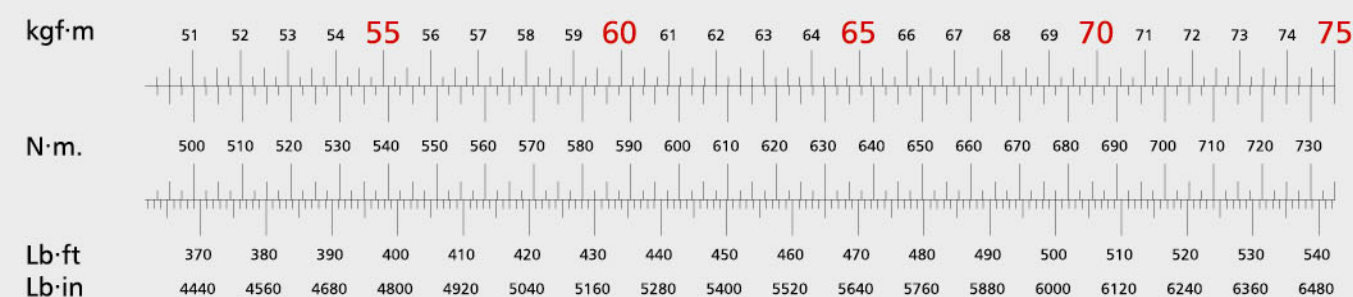
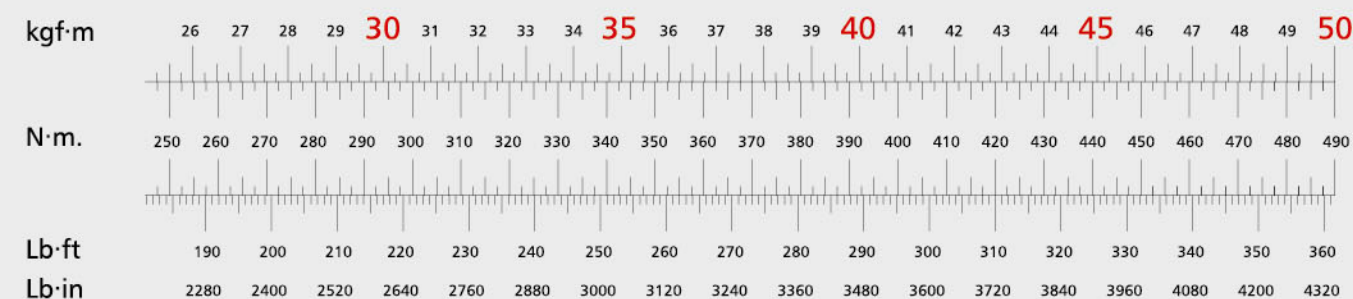
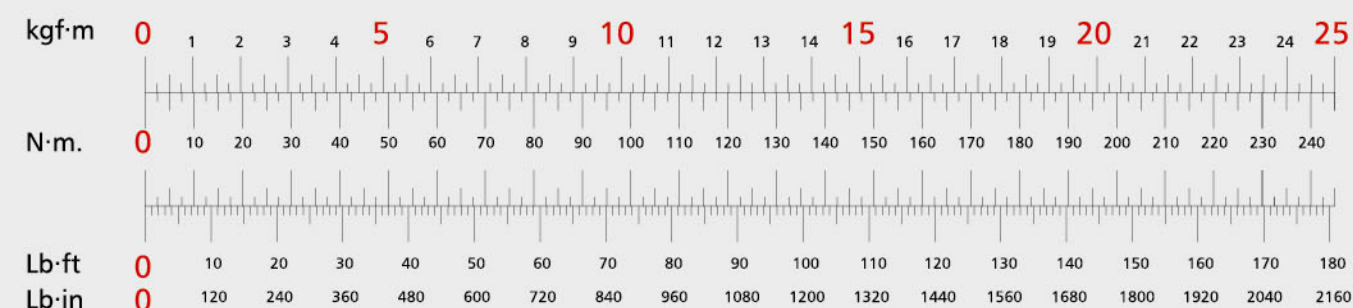
Cuft Conversion table

	ft³ (1 cuft)	in³	m³	cm³
ft³ (1 cuft)	1	0.0005787	35.3	0.0000353
in³	1728.0	1	61024	0.061
m³	0.0283	0.0000164	1	0.000001
cm³	28317	16.4	1000000	1

MECHANICAL PROPERTIES OF FASTENERS

Strength grade				3.6	4.6	4.8	5.6	5.8	6.6	6.8	6.9	8.8	10.9	12.9		
Tensile strength N/mm²			Min.		333	392		490		588			784	980	1176	
			Max.		480	539		686		784			980	1176	1372	
Hardness	Brinell Hardness		Min.		90	110		140		170			225	280	330	
			Max.		150	170		215		245			300	365	425	
	Rockwell Hardness		HRB	Min.	49	62		77		88			—			
				Max.	82	88		97		102			—			
	HRC	Min.	—	—		—		—			18	27	34			
		Max.	—	—		—		—			31	38	44			
	Yield strength N/mm²			Min.		196	235	314	294	392	353	421	529	627	882	1058

TORQUE CONVERSION SCALE



RELATION FORMULA BETWEEN BOLT AND TIGHTENING TORQUE

$$T = kdF$$

$$K = 1/2 \{ (d_1/d) \tan(\theta' + \beta) + (d_2/d) \} \approx 0.2$$

$$\theta' = \tan^{-1} \mu_1 / (\cos \alpha / 2)$$

T : Tightening torque -----N·m
 K : Torque coefficient
 d : Normal bolt size -----mm
 F : Axial tension -----N
 d₁ : Pitch diameter -----mm
 d₂ : Pitch diameter of underhead -----mm
 μ₁ : Thread friction coefficient
 μ₂ : Underhead friction coefficient
 α : Half angle of screw thread
 β : Lead angle
 θ' : Angle of friction screw thread

