

3. MEASURING and INSULATED TOOLS

DIGITAL TORQUE WRENCHES

TORQUE WRENCHES

GAUGES

INSULATED TOOLS



3. MEASURING and INSULATED TOOLS

DIGITAL TORQUE WRENCHES



DIGITAL RATCHET ® PAT. D.PAT. Good Design Award Winning Product



DIGITAL RATCHET

Advanced Digital Torque Tool
DIGITAL RATCHET

Quickly and reliably achieves a wide range of high-precision torque management

Advanced Digital Torque Tool
DIGITAL RATCHET [MEMORQ]

Send the measurement data to a PC!!

Digital torque wrench that's equipped with a strict torque control function that has light operability and digital display. It can be used in various torque management scenes of various manufacturing such as industrial machine, analytical instrument and automobile, construction, civil, engineering, various maintenance, etc.

New function to automatically "record and control" work history is added to Digital Ratchet. Transfers the work history (data) to a PC via wireless or USB. Measurement result can be used as the quality control or maintenance record. Definite "management" that leaves a record of work history leads to the improved trust, risk avoidance and cost reduction.

FEATURES OF DIGITAL RATCHET

Checks the torque with sound and light

Confirms the tightening torque with number. Notifies the set torque with LED and buzzer.

Power sensor equipped fixed grip is adopted

High accuracy measurement is made possible regardless of the work-posture or proficiency level.

Authentic torque measurement function that passes the international standards (ISO)

Allows the measurement of both right and left-hand threads as well as the issuance of calibration and calibration certificate.

"Custom settings" that can comfortably manipulate various functions

Usability is further increased by customizing Digital Ratchet as preferred by customizing the measurement mode or display mode.

Application range is further extended by the adjustable wrench type & head replaceable type

In addition to general ratchet handle type, adjustable wrench type and head replaceable type are available. Application range is further extended.



Large and easy-to-view LED

When 90% of the set torque is reached, LED will flash and tone burst (beeps) will sound.

When the set torque is reached, LED lights up and buzzer will change to continuous tone (beep). Maximum torque is displayed at the end of tightening by the peak-hold function.

<p>Memory No./Mode Display</p> <ul style="list-style-type: none"> Displays the memory No. and mode in use Error display <p>LED Lamp</p> <ul style="list-style-type: none"> Illuminates when power is turned on or setting torque is reached <p>P Key</p> <ul style="list-style-type: none"> Power on Power off by long press Unit change of converted value Custom setting by simultaneously pressing P and M button <p>M Key</p> <ul style="list-style-type: none"> Mode switch Memory registration by long press 	<p>Torque Display</p> <ul style="list-style-type: none"> Displays the measurement, setting and converted value <p>Unit Display</p> <ul style="list-style-type: none"> Displays the measurement, setting and converted value. <p>+ (Plus) /C (Clear) Key</p> <ul style="list-style-type: none"> Increase of torque setting Change of custom setting Torque display clear Error release <p>- (Minus) Key</p> <ul style="list-style-type: none"> Reduction of set torque Change of custom setting
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Switch measurement mode

Torque measurement method can be selected from the following 3 modes according to the usage.

- Measurement mode**: Digitally displays the tightening torque. Torque control by visual inspection is possible. It is useful for confirming the measured value in general tightening.
- Pre-set mode**: Reaching the configured target torque is informed by the LED emission and buzzer. Capable of registering the maximum of 5 memories, making it ideal for the work in engine assembly or mold mounting.
- Judgment mode**: Upper and lower limits of the target torque are configured, allowing the acceptance decisions and passes to be counted. Acceptance range can be configured, allowing the over-torque or lack of torque to be easily grasped.

Switch measured value display mode

Display method of the measured values can be selected from the following 3 modes according to the usage.

- Peak hold mode**: Displays the maximum value of tightening torque. Whether the accurate tightening is made can be confirmed after the work, making it suitable for the tightening of oil filters and plugs.
- Auto-clear mode**: Peak hold display can be returned to zero at constant time. Suitable for the continuous work of identical torques such as tightening of piping junctions or wheel nuts.
- Track mode**: It displays the torque value in real-time without maintaining the maximum measured value. It supports the measurement of such as sliding torque of clutch and steering torque of power steering.

Switch ON/OFF of buzzer

It is equipped with ON/OFF function of the buzzer that notifies the button operation and reaching of set torque.

- Buzzer sound ON mode**: Button operation and reaching set torque is informed by buzzer.
- Buzzer sound OFF mode**: Turns off the buzzer that informs the button operation and reaching set torque. Convenient for work at office or late night where buzzer should not sound.

* DIGITAL RATCHET and MEMORQ are registered trademarks of KYOTO TOOL.

See also the Digital Ratchet feature page. P.5~10

*Please check the merchandise inventory for a product that is marked by before placing an order.

Digital Ratchet Line Up

* 3 variations of special resin case (small) included, special resin case (large) included and socket wrench set Digital Ratchet model are available, with common Digital Ratchet body for all.

■ DIGITAL RATCHET P.176~177

	Digital Ratchet With special resin case (small)	Digital Ratchet With special resin case (large)	Socket Wrench Set Digital Ratchet Model With special resin case (large) + socket set
Torque measurement range: 6~30N·m 	No.GEK030-R2 Case size: W268xD107xH57 	No.GEK030-R2-L Case size: W324xD166xH58 	No.TB206WG1 Case size: W324xD166xH58 <small>Set Contents No.GEK030-R2-L, EHB205 B2-07W, 08W, 10W, 12W, 14W</small>
Torque measurement range: 2~30N·m 	No.GEK030-C3A Case size: W268xD107xH57 		
Torque measurement range: 6~30N·m 	No.GEK030-C3 Case size: W268xD107xH57 	No.GEK030-C3-L Case size: W324xD166xH58 	No.TB306WG3 Case size: W324xD166xH58 <small>Set Contents No.GEK030-C3-L, EHB305 B3-07W, 08W, 10W, 12W, 14W</small>
Torque measurement range: 12~60N·m 	No.GEK060-R3 Case size: W268xD107xH57 	No.GEK060-R3-L Case size: W324xD166xH58 	No.TB306WG1 Case size: W324xD166xH58 <small>Set Contents No.GEK060-R3-L, EHB305 B3-08W, 10W, 12W, 14W, 17W</small>
Torque measurement range: 17~85N·m 	No.GEK085-R3 Case size: W322xD107xH57 	No.GEK085-R3-L Case size: W324xD166xH58 	No.TB306WG2 Case size: W324xD166xH58 <small>Set Contents No.GEK085-R3-L, EHB305 B3-10W, 12W, 14W, 17W, 19W</small>
Torque measurement range: 17~85N·m 	No.GEK085-R4 Case size: W322xD107xH57 	No.GEK085-R4-L Case size: W324xD166xH58 	No.TB406WG1 Case size: W324xD166xH58 <small>Set Contents No.GEK085-R4-L, EHB405 B4-10W, 12W, 14W, 17W, 19W</small>
Torque measurement range: 27~135N·m 	No.GEK135-R4 Case size: W428xD107xH57 		
Torque measurement range: 40~200N·m 	No.GEK200-R4 Case size: W628xD107xH57 		

* GEK030-C3 and GEK030-C3A are compact head type set with 1/4"sq. ratchet head and 3/8"sq. drive square.

* Special resin case (large) can be used for storage with a socket attached to the socket holder (No.EHB205,305,405).

* However, socket, bit socket, etc. that exceed 70mm total length and 32mm outer diameter cannot be stored.

Storage state of No.TB306WG1 ▶

■ DIGITAL RATCHET ADJUSTABLE WRENCH TYPE P.177

Torque measurement range 17~85N·m	No.GEK085-W36 Case size: W322xD107xH57
Torque measurement range 27~135N·m	No.GEK135-W36 Case size: W428xD107xH57
Torque measurement range 40~200N·m	No.GEK200-W36 Case size: W628xD107xH57

■ DIGITAL RATCHET SCREWDRIVER TYPE P.180

Torque measurement range 12~60cN·m	No.GLK060 Case size: W322xD107xH57
Torque measurement range 50~250cN·m	No.GLK250 Case size: W322xD107xH57
Torque measurement range 100~500cN·m	No.GLK500 Case size: W322xD107xH57

■ DIGITAL RATCHET INTERCHANGEABLE HEAD TYPE P.178

Torque measurement range 8~40N·m	No.GEK040-X13 Case size: W324xD166xH58
Torque measurement range 17~85N·m	No.GEK085-X13 Case size: W324xD166xH58

Interchangeable head that supports a wide range of work scenes P.178~180

■ DIGITAL RATCHET SPECIFICATIONS

Product Name Digital Ratchet	
Measurement accuracy	Right and left-hand threads ± 3% + 1 digit within the torque measurement range GEK030-R2 and GEK030-C3 Right and left-hand threads ± 4% + 1 digit within the torque measurement range GEK030-C3A 2~2.98N·m within the torque measurement range: right and left-hand threads ± 12% + 1 digit 3~5.98N·m: right and left-hand threads ± 8% + 1 digit 6~30N·m: right and left-hand threads ± 4% + 1 digit GEK040-X13 and GEK085-X13 Right and left-hand threads ± 4% + 1 digit (digit = minimum display unit) within the torque measurement range
Measurement direction	Left-hand thread, right-hand thread
Measurement unit	N·m (convertible by switching kgf·m, lbf-in, lbf-ft)
Power	Coin-type lithium battery CR2354×1
Number of set torque	Pre-set mode ×5, admission decision mode ×1
Auto-off	Power automatically shuts off in approx. 2 minutes of idling (modifiable)

* Commercially available coin-type lithium battery CR2354 can be used for the battery. (Batteries other than Panasonic may not be usable.)
* Spare parts are established. Please contact your dealer for details.

Product Name Digital Ratchet Adjustable Wrench Type	
Measurement accuracy	± 3% + 1 digit (digit = minimum display unit) within the torque measurement range * Accuracy is guaranteed only for the lower jaw measurement direction and hex. tightening objects.
Measurement direction	Lower jaw direction only (turned around when measuring left-hand thread)
Measurement unit	N·m (convertible by switching kgf·m, lbf-in, lbf-ft)
Power	Coin-type lithium battery CR2354×1
Number of set torque	Pre-set mode ×5, admission decision mode ×1
Auto-off	Power automatically shuts off in approx. 2 minutes of idling (modifiable)

Product Name Digital Ratchet Screwdriver Type	
Measurement accuracy	Right and left-hand threads ± 3% + 1 digit (digit = minimum display unit) within the torque measurement range
Measurement direction	Left-hand thread, right-hand thread
Measurement unit	cN·m, N·m (convertible by switching kgf·m, ozf-in, lbf-in, lbf-ft)
Power	Coin-type lithium battery CR2354×1
Number of set torque	Pre-set mode ×5, admission decision mode ×1
Auto-off	Power automatically shuts off in approx. 2 minutes of idling (modifiable)

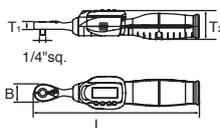
● 1/4" sq. DIGITAL RATCHET ® PAT. D.PAT.



DIGITAL RATCHET

No.	Torque measurement range (N·m)	Minimum display unit (N·m)	B	L	T ₁	T ₂	▼g	☒
GEK030-R2	6~30	0.02	22	211	10	36	330	1
GEK030-R2-L	6~30	0.02	22	211	10	36	330	1

- GEK030-R2 comes with a special resin case (small). (Case size: W268xD107xH57)
- GEK030-R2-L comes with a special resin case (large). (Case size: W324xD166xH58)
- Special resin case (large) can be used for storage with a socket attached to the socket holder EHB205 (separately sold). (Socket, bit socket, etc. that exceed 70mm total length and 32mm outer diameter cannot be stored)



- Repair kit (BR2E-K) is configured for the ratchet head.
- * Recommend to calibrate and adjust when using a repair kit.

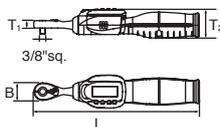
● 3/8" sq. DIGITAL RATCHET ® SMALL TORQUE TYPE PAT. D.PAT.



DIGITAL RATCHET

No.	Torque measurement range (N·m)	Minimum display unit (N·m)	B	L	T ₁	T ₂	▼g	☒
GEK030-C3A	2~30	0.02	22	211	10	36	330	1

- Comes with a special resin case (small). (Case size: W268xD107xH57)
- Repair kit (BRC3-K) is configured for the ratchet head.
- * Recommend to calibrate and adjust when using a repair kit.
- * Pre-set mode cannot be used in 2~2.98N·m range. (Measurement only)



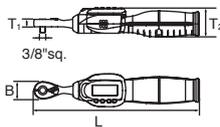
● 3/8" sq. DIGITAL RATCHET ® COMPACT HEAD TYPE PAT. D.PAT.



DIGITAL RATCHET

No.	Torque measurement range (N·m)	Minimum display unit (N·m)	B	L	T ₁	T ₂	▼g	☒
GEK030-C3	6~30	0.02	22	211	10	36	330	1
GEK030-C3-L	6~30	0.02	22	211	10	36	330	1

- GEK030-C3 comes with a special resin case (small). (Case size: W268xD107xH57)
- GEK030-C3-L comes with a special resin case (large). (Case size: W324xD166xH58)
- Special resin case (large) can be used for storage with a socket attached to the socket holder EHB305 (separately sold). (Socket, bit socket, etc. that exceed 70mm total length and 32mm outer diameter cannot be stored)



- Repair kit (BRC3-K) is configured for the ratchet head.
- * Recommend to calibrate and adjust when using a repair kit.

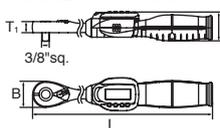
● 3/8" sq. DIGITAL RATCHET ® PAT. D.PAT.



DIGITAL RATCHET

No.	Torque measurement range (N·m)	Minimum display unit (N·m)	B	L	T ₁	T ₂	▼g	☒
GEK060-R3	12~60	0.05	33	217	13.5	36	400	1
GEK060-R3-L	12~60	0.05	33	217	13.5	36	400	1

- GEK060-R3 comes with a special resin case (small). (Case size: W268xD107xH57)
- GEK060-R3-L comes with a special resin case (large). (Case size: W324xD166xH58)
- Special resin case (large) can be used for storage with a socket attached to the socket holder EHB305 (separately sold). (Socket, bit socket, etc. that exceed 70mm total length and 32mm outer diameter cannot be stored)



- Repair kit (BR3E-K) is configured for the ratchet head.
- * Recommend to calibrate and adjust when using a repair kit.

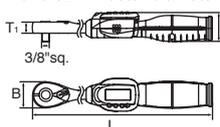
● 3/8" sq. DIGITAL RATCHET ® PAT. D.PAT.



DIGITAL RATCHET

No.	Torque measurement range (N·m)	Minimum display unit (N·m)	B	L	T ₁	T ₂	▼g	☒
GEK085-R3	17~85	0.1	33	271	13.5	36	440	1
GEK085-R3-L	17~85	0.1	33	271	13.5	36	440	1

- GEK085-R3 comes with a special resin case (small). (Case size: W322xD107xH57)
- GEK085-R3-L comes with a special resin case (large). (Case size: W324xD166xH58)
- Special resin case (large) can be used for storage with a socket attached to the socket holder EHB305 (separately sold). (Socket, bit socket, etc. that exceed 70mm total length and 32mm outer diameter cannot be stored)



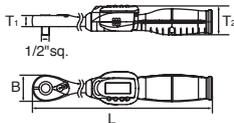
- Repair kit (BR3E-K) is configured for the ratchet head.
- * Recommend to calibrate and adjust when using a repair kit.

DIGITAL RATCHET

No.	Torque measurement range (N-m)	Minimum display unit (N-m)	B	L	T ₁	T ₂	▼g	☒
GEK085-R4	17~85	0.1	39.5	274	18	36	590	1
GEK085-R4-L	17~85	0.1	39.5	274	18	36	590	1

- GEK085-R4 comes with a special resin case (small). (Case size: W322xD107xH57)
- GEK085-R4-L comes with a special resin case (large). (Case size: W324xD166xH58)
- Special resin case (large) can be used for storage with a socket attached to the socket holder EHB405 (separately sold). (Socket, bit socket, etc. that exceed 70mm total length and 32mm outer diameter cannot be stored)
- Repair kit (BR4E-K) is configured for the ratchet head.

* Recommend to calibrate and adjust when using a repair kit.



● 1/2"sq. DIGITAL RATCHET ® PAT. D.PAT.



GEK085-R4

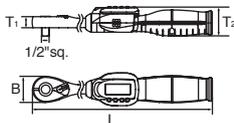
GEK085-R4-L

DIGITAL RATCHET

No.	Torque measurement range (N-m)	Minimum display unit (N-m)	B	L	T ₁	T ₂	▼g	☒
GEK135-R4	27~135	0.1	39.5	380	18	36	700	1

- Comes with a special resin case. (Case size: W428xD107xH57)
- Repair kit (BR4E-K) is configured for the ratchet head.

* Recommend to calibrate and adjust when using a repair kit.



● 1/2"sq. DIGITAL RATCHET ® PAT. D.PAT.



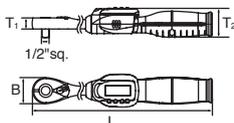
GEK135-R4

DIGITAL RATCHET

No.	Torque measurement range (N-m)	Minimum display unit (N-m)	B	L	T ₁	T ₂	▼g	☒
GEK200-R4	40~200	0.2	39.5	580	18	36	990	1

- Comes with a special resin case. (Case size: W628xD107xH57)
- Repair kit (BR4E-K) is configured for the ratchet head.

* Recommend to calibrate and adjust when using a repair kit.



● 1/2"sq. DIGITAL RATCHET ® PAT. D.PAT.



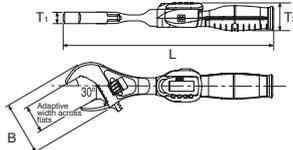
GEK200-R4

DIGITAL RATCHET

No.	Torque measurement range (N-m)	Minimum display unit (N-m)	Adaptive width across flats (mm)	B	L	T ₁	T ₂	▼g	☒
GEK085-W36	17~ 85	0.1	10~36	69	275.2	14.5	36	560	1
GEK135-W36	27~135	0.1	10~36	69	381.2	14.5	36	680	1
GEK200-W36	40~200	0.2	10~36	69	581.2	14.5	36	990	1

* Accuracy is guaranteed only for the lower jaw measurement direction and hex. tightening objects.

- Comes with a special resin case. (GEK085-W36 case size: W322xD107xH57) (GEK135-W36 case size: W428xD107xH57) (GEK200-W36 case size: W628xD107xH57)



● DIGITAL RATCHET ® ADJUSTABLE WRENCH TYPE PAT. D.PAT.



GEK085-W36



It is suitable for piping, etc. where socket wrench or the like cannot be used.

Adjustable wrench head
High precision measurement is made possible by the adoption of dedicated head which effective length does not change when the aperture changes.

Digital Ratchet Adjustable Wrench Type

Effective length (distance from the bolt center to force point) mostly does not change even when the bolt size changes.

Ordinary Adjustable Wrench

Central axis of the bolt changes.

* Change in the effective length causes error in the measured value.

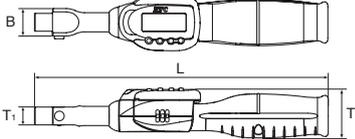
DIGITAL RATCHET® INTERCHANGEABLE HEAD TYPE PAT. D.PAT.



DIGITAL RATCHET

No.	Torque measurement range (N·m)	Minimum display unit (N·m)	B	L	T ₁	T ₂	▽g	📦
GEK040-X13	8~40	0.05	20	213	13	36	340	1
GEK085-X13	17~85	0.1	20	213	13	36	340	1

- Power sensor equipped fixed grip is adopted. It is a head replaceable type of advanced digital torque tool "Digital Ratchet" that's made the easy and high-level torque management possible regardless of proficiency or work attitude.
- Head replaceable type Digital Ratchet that further extends the use range. It is used in combination with various replacement heads.
- Comes with a special resin case. (Case size: W324xD166xH58)
- Special resin case can be used for storage with a socket attached to the socket holder EHB205, EHB305 or EHB405 (separately sold). (Socket, bit socket, etc. that exceed 70mm total length and 32mm outer diameter cannot be stored.)



Combination example with ratchet head

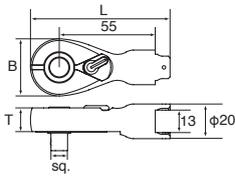
RATCHET HEAD D.PAT.



DIGITAL RATCHET

No.	sq.	Allowable torque (N·m)	B	L	T	▽g	📦
GX13-R2	1/4"	30	23	74.5	10	100	1
GX13-C3	3/8"	30	23	74.5	10	100	1
GX13-R3	3/8"	85	33	80	13.7	160	1
GX13-C4	1/2"	85	33	80	13.7	160	1

- It is a replacement head for Digital Ratchet head replaceable type.
- Repair kit (BR2E-K for GX13-R2, BRC3-K for GX13-C3, BR3E-K for GX13-R3, BRC4-K for GX13-C4) is configured.
- Standard oval ratchet head is adopted.
- It can be mounted to Digital Ratchet in both front and back directions. Comfortable operability with union mechanism, integrated claw and 36 teeth gear.



Combined state

DIGITAL RATCHET® INTERCHANGEABLE HEAD TYPE 3/8"sq. RATCHET HEAD SET PAT. D.PAT.



DIGITAL RATCHET

No. TGEK040X132	▽g 500	📦 1
Interchangeable Head Type Digital Ratchet	GEK040-X13	
Ratchet Head	GX13-R3	

- Power sensor equipped fixed grip is adopted. It is a head replaceable type of advanced digital torque tool "Digital Ratchet" that's made the easy and high-level torque management possible regardless of proficiency or work attitude.
- It is a set of head replaceable type Digital Ratchet and ratchet head.
- Comes with a special resin case. (Case size: W324xD166xH58)
- Special resin case can be used for storage with a socket attached to the socket holder EHB305 (separately sold). (Socket, bit socket, etc. that exceed 70mm total length and 32mm outer diameter cannot be stored.)



It can be used with the head turned over

DIGITAL RATCHET® INTERCHANGEABLE HEAD TYPE 3/8"sq. RATCHET HEAD SET PAT. D.PAT.



DIGITAL RATCHET

No. TGEK085X132	▽g 500	📦 1
Interchangeable Head Type Digital Ratchet	GEK085-X13	
Ratchet Head	GX13-R3	

- Power sensor equipped fixed grip is adopted. It is a head replaceable type of advanced digital torque tool "Digital Ratchet" that's made the easy and high-level torque management possible regardless of proficiency or work attitude.
- It is a set of head replaceable type Digital Ratchet and ratchet head.
- Comes with a special resin case. (Case size: W324xD166xH58)
- Special resin case can be used for storage with a socket attached to the socket holder EHB305 (separately sold). (Socket, bit socket, etc. that exceed 70mm total length and 32mm outer diameter cannot be stored.)



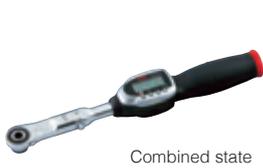
It can be used with the head turned over

*Please check the merchandise inventory for a product that is marked by before placing an order.

DIGITAL RATCHET

No. TGX13MR147	▼g 201	📦 1
Ratchet Box End Wrench Head	GX13-MR14	
Socket for Ratchet Box End Wrench Head	BZ14-08W, 10W, 12W, 13W, 14W	
3/8"sq. Drive Adapter for Ratchet Box End Wrench	BZ14-BA3	

- It is a replacement head for Digital Ratchet head replaceable type.
- Rotational direction can be switched with the lever on the head side, allowing the use in both tightening and loosening.
- Tooth number of 72 and 5° ratchet feed allows the fine feeding.



Combined state



Head is thin, supporting the work in tight spaces where it was difficult with conventional Digital Ratchet

●RATCHET BOX END WRENCH HEAD SET



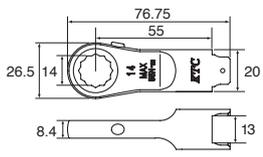
DIGITAL RATCHET

No.	Allowable torque (N-m)	Bore size (mm)	▼g	📦
GX13-MR14	55	14	90	1

- It is a replacement head for Digital Ratchet head replaceable type.



Combined state



●RATCHET BOX END WRENCH HEAD



Ratchet offset wrench & socket (single) and 3/8"sq. drive adapter are published in CONVENTIONAL TOOLS.



Ratchet Offset Wrench & Socket
➡ P.130



3/8"sq. Drive Adapter
➡ P.130

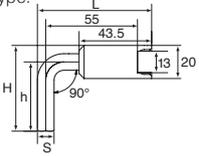
DIGITAL RATCHET

No.	Allowable torque (N-m)	S	L	H	h	▼g	📦
GX13-H04	11	4	65.5	37	27	78	1
GX13-H05	19	5	66	40.5	30.5	81	1
GX13-H06	46	6	66.5	45	35	85	1
GX13-H08	85	8	67.5	50	40	96	1
GX13-H10	85	10	68.5	55	45	110	1

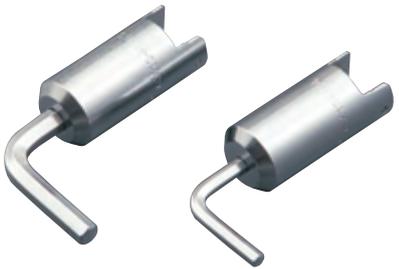
- It is a replacement head for Digital Ratchet head replaceable type.



Combined state



●HEX. HEAD STANDARD TYPE



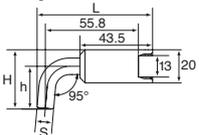
DIGITAL RATCHET

No.	Allowable torque (N-m)	S	L	H	h	▼g	📦
GX13-H04S	11	4	66.3	24.5	14.5	77	1
GX13-H05S	19	5	66.8	26.5	16.5	79	1
GX13-H06S	46	6	67.3	29	19	81	1
GX13-H08S	85	8	68.2	32	22	88	1
GX13-H10S	85	10	69.2	35	25	99	1

- It is a replacement head for Digital Ratchet head replaceable type.
- With the under-head bending angle set at 95 degrees, space for finger is secured.



Combined state



●HEX. HEAD SHORT TYPE



*Please check the merchandise inventory for a product that is marked by before placing an order.

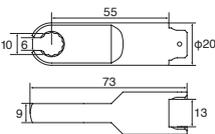
●BRAKE TOOL STRAIGHT TYPE



DIGITAL RATCHET

No.	Allowable torque (N·m)	Bore size (mm)	▼g	📦
GX13-MZ10	25	10	80	1

- It is a replacement head for Digital Ratchet head replaceable type.
- Ideal for the torque management in installation and removal of automobile brake pipe and ABS actuator.



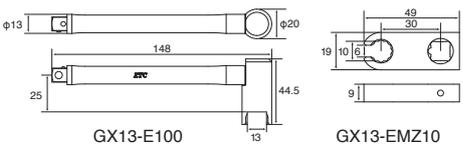
Combined state

●BRAKE TOOL OFFSET TYPE SET



GX13-E100

GX13-EMZ10



GX13-E100

GX13-EMZ10



Combined state

DIGITAL RATCHET

No.	Allowable torque (N·m)	▼g	📦
No. TGX13E1002		250	1
Brake Tool Extension Tool			GX13-E100
Brake Tool 10mm Offset Type			GX13-EMZ10

- It is a replacement head for Digital Ratchet head replaceable type.
- Ideal for the torque management in installation and removal of automobile brake pipe and ABS actuator.
- * Junction of the extension tool and wrench is specially designed. It cannot be used in combination with other socket wrenches or accessories.

Brake Tool Extension Tool

No.	Allowable torque (N·m)	▼g	📦
GX13-E100	25	180	1

Brake Tool 10mm Offset Type

No.	Allowable torque (N·m)	Bore size (mm)	▼g	📦
GX13-EMZ10	25	10	70	1

●DIGITAL RATCHET® SCREWDRIVER TYPE D.PAT.



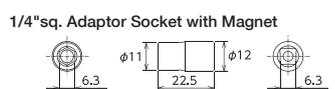
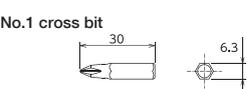
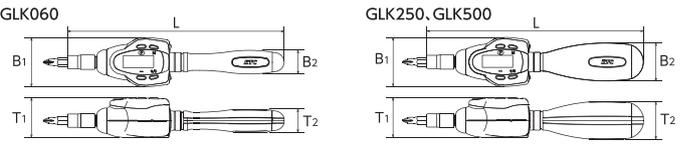
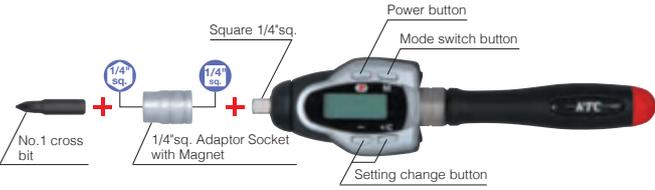
GLK250 · GLK500

GLK060

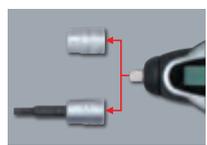
DIGITAL RATCHET

No.	Torque measurement range	Minimum display unit	B ₁	B ₂	L	T ₁	T ₂	▼g	📦
GLK060	12~60cN·m (0.12~0.6N·m)	0.05cN·m (0.01N·m)	41	20	179	33	19	170	1
GLK250	50~250cN·m (0.5~2.5N·m)	0.1cN·m (0.01N·m)	41	32	179	33	31	190	1
GLK500	100~500cN·m (1.0~5.0N·m)	0.1cN·m (0.01N·m)	41	32	179	33	31	190	1

- * Measurement unit can be set in both cN·m and N·m. (100cN·m = 1N·m)
- Driver type of advanced digital torque tool "Digital Ratchet" that supports the minimal torque.
- It supports a wide range of scenes that requires minimal torque control such as electric facility, electric circuit board, replacing cutter chip and assembling of resin and aluminum parts.
- Bit is detachable by magnet, allowing the use of bit with 6.3mm axis opposing side such as insert changeable flat ratchet screwdriver (P.142) by removing the attached No.1 cross bit. (Double-headed bit cannot be used)
- After removing the adaptor socket, sockets and bit sockets of 1/4"sq. square can be used.
- It comes with a plastic case that's convenient for No.1 cross bit, 1/4"sq. adaptor socket with magnet and storage.



Tip bit is detachable by magnet



1/4"sq. socket can also be used



Easy-to-read LED position and shape

■ Supply parts

No.	Product Name
GLK-B2	1/4"sq. Adaptor Socket with Magnet
GLK-RA2	1/4"sq. Ratchet Adapter



Leaves records

Easy one-button record
Easily record the measurement results with REC button.
■ Automatic recording mode available
■ 200 data can be recorded in the body

Exports the recorded data in CSV
Measurement results that are sent to PC can be exported in CSV. Data can be used as the quality control or maintenance record.

Check the torque with sound and light!

Ring-shaped LED adopted
Achieves the field of view of 360°. Informs the torque status by sound and light.

LED can easily be identified with 3 color changes



LOW OK OVER

DIGITAL RATCHET [MEMORQ]

Advanced Digital Torque Tool
DIGITAL RATCHET [MEMORQ]
PAT. D.PAT.

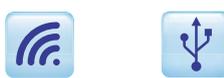


Send the measurement data to a PC!!
Reliable torque management is achieved by managing the work history.

2 output methods

Wireless connection type
It can wirelessly record to a PC.

USB type
It can be connected to a PC with USB cable.



3 heads



Ratchet Head Adjustable Wrench Head Head Replaceable Type

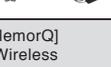
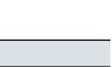
International Standards (ISO) are met
ISO standards are met with ±3% or less measurement accuracy of right-hand and left-hand threads. * Allows the measurement of both right and left-hand threads as well as the issuance of calibration and calibration certificate (paid).
* Excludes some products.

Power sensor equipped fixed grip is adopted
High accuracy torque measurement is made possible regardless of the work-posture or proficiency level. Soft resin that enhances the visibility and fit is used for the grip end.

Work in which "torque is managed but record is not left" or "handwritten data is input on a PC" is significantly improved by introducing the torque management system of Digital Ratchet [MemorQ] Series, achieving the "work efficiency" and "improved data reliability".

* Digital Ratchet [MemorQ] is available in 3 variations of wireless connection host module set, for wireless communication and for USB.

Digital Ratchet [MemorQ] Line Up

	Torque setting range	Wireless connection host module set 	For wireless communication 	For USB 
Digital Ratchet [MemorQ]	6~30N·m	No.TGED030R2Z 	No.GED030-R2-Z 	No.GED030-R2-U 
Digital Ratchet [MemorQ] Small Torque Type	2~30N·m	No.TGED030C3AZ 	No.GED030-C3A-Z 	No.GED030-C3A-U 
Digital Ratchet [MemorQ] Compact Head Type	6~30N·m	No.TGED030C3Z 	No.GED030-C3-Z 	No.GED030-C3-U 
Digital Ratchet [MemorQ]	12~60N·m	No.TGED060R3Z 	No.GED060-R3-Z 	No.GED060-R3-U 
Digital Ratchet [MemorQ]	17~85N·m	No.TGED085R3Z 	No.GED085-R3-Z 	No.GED085-R3-U 
Digital Ratchet [MemorQ]	17~85N·m	No.TGED085R4Z 	No.GED085-R4-Z 	No.GED085-R4-U 
Digital Ratchet [MemorQ]	27~135N·m	No.TGED135R4Z 	No.GED135-R4-Z 	No.GED135-R4-U 
Digital Ratchet [MemorQ]	40~200N·m	No.TGED200R4Z 	No.GED200-R4-Z 	No.GED200-R4-U 
Digital Ratchet [MemorQ] Adjustable Wrench Type	17~85N·m	No.TGED085W36Z 	No.GED085-W36-Z 	No.GED085-W36-U 
Digital Ratchet [MemorQ] Adjustable Wrench Type	27~135N·m	No.TGED135W36Z 	No.GED135-W36-Z 	No.GED135-W36-U 
Digital Ratchet [MemorQ] Adjustable Wrench Type	40~200N·m	No.TGED200W36Z 	No.GED200-W36-Z 	No.GED200-W36-U 
Digital Ratchet [MemorQ] Interchangeable Head Type	8~40N·m	No.TGED040X13Z 	No.GED040-X13-Z 	No.GED040-X13-U 
Digital Ratchet [MemorQ] Interchangeable Head Type	17~85N·m	No.TGED085X13Z 	No.GED085-X13-Z 	No.GED085-X13-U 
		Digital Ratchet [MemorQ] Host Module for Wireless Communication	No.GED-Z 	

■ Digital Ratchet [MemorQ] Specifications

Head Type Ratchet Head Type

Measurement accuracy: Right-hand and left-hand threads ±3%+1digit (digit = minimum display unit) within torque measurement range GED030-R2-Z (-U) and GED030-C3-Z (-U), right-hand and left-hand threads ±4%+1digit within torque measurement range GED030-C3A-Z (-U), 2~2.98N·m within torque measurement range: right-hand and left-hand threads ±12%+1digit, 3~5.98N·m: right-hand and left-hand threads ±8%+1digit, 6~30N·m: right-hand and left-hand threads ±4%+1digit

Measurement direction: Right-hand and left-hand threads

Head Type Adjustable Wrench Type

Measurement accuracy: ±3% + 1 digit (digit = minimum display unit) within the torque measurement range
*Accuracy is guaranteed only for the lower jaw measurement direction and hex. tightening objects.

Measurement direction: Lower jaw direction only (turned around when measuring left-hand thread)

Head Type Head Replaceable Type

Measurement accuracy: Right and left-hand threads ±4% + 1 digit (digit = minimum display unit) within the torque measurement range

Measurement direction: Right-hand and left-hand threads

Common Specifications

Measurement unit: N·m (convertible by switch kgf·m, lbf·in, lbf·ft)
Power: Lithium battery CR123A x1
Number of set torques: Pre-set mode x5, admission decision mode x1
Number of records: 200 in the body
Auto-off: Power automatically shuts off in the fixed time of idling. Time until power off can be configured (1~10 minutes).

Wireless Connection Host Module Specification

Maximum connectable number: 10 Max. (USB MemorQ cannot be connected)
Radiowave frequency: 2.4GHz
Communication range: 10~20m (may vary depending on the work environment)

*Please check the merchandise inventory for a product that is marked by  before placing an order.

Advanced Digital Torque Tool

DIGITAL RATCHET [MEMORQ] WIRELESS HOST MODULE SET



- Function that automatically "records and manages" the work history is added to the advanced digital torque tool "Digital Ratchet".
- It is a set of Digital Ratchet body [MemorQ] for wireless communication and host module for wireless communication (GED-Z P.184).
- Wireless connection to a PC is possible only with this set.
- With a special aluminum case.

Wireless connection type

Measurement results can be wirelessly recorded to a PC in real-time.



Easy one-button record

Records up to 200 measurement results on the body with REC button. Automatic recording is available by mode switching.



Exporting CSV date

Measurement results that have been transferred to a PC can be utilized as quality control or maintenance record by linking to applications.

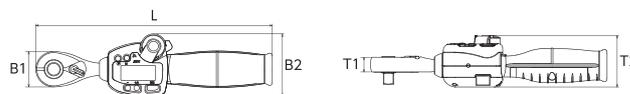


1/4"sq. DIGITAL RATCHET [MEMORQ] WIRELESS HOST MODULE SET



With special aluminum case
Size: W265xD190xH95

DIGITAL RATCHET [MEMORQ]									
No. TGED030R2Z	▼ g 400 (case: 0.9kg)	📦 1							
1/4"sq. Digital Ratchet [MemorQ] for Wireless Communication			GED030-R2-Z						
Digital Ratchet [MemorQ] Host Module for Wireless Communication			GED-Z						
Digital Ratchet [MemorQ] Body Specifications									
No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	📦	
GED030-R2-Z	6~30N·m	22	58.4	211	10	48	350	1	



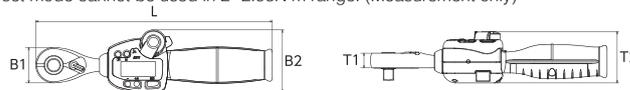
3/8"sq. DIGITAL RATCHET [MEMORQ] SMALL TORQUE TYPE WIRELESS HOST MODULE SET



With special aluminum case
Size: W265xD190xH95

DIGITAL RATCHET [MEMORQ]									
No. TGED030C3AZ	▼ g 400 (case: 0.9kg)	📦 1							
3/8"sq. Digital Ratchet [MemorQ] Small Torque Type for Wireless Communication			GED030-C3A-Z						
Digital Ratchet [MemorQ] Host Module for Wireless Communication			GED-Z						
Digital Ratchet [MemorQ] Body Specifications									
No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	📦	
GED030-C3A-Z	2~30N·m	22	58.4	211	10	48	350	1	

* Pre-set mode cannot be used in 2~2.98N·m range. (Measurement only)

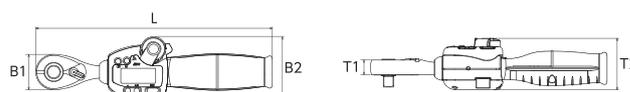


3/8"sq. DIGITAL RATCHET [MEMORQ] COMPACT HEAD TYPE WIRELESS HOST MODULE SET



With special aluminum case
Size: W265xD190xH95

DIGITAL RATCHET [MEMORQ]									
No. TGED030C3Z	▼ g 400 (case: 0.9kg)	📦 1							
3/8"sq. Digital Ratchet [MemorQ] Compact Head Type for Wireless Communication			GED030-C3-Z						
Digital Ratchet [MemorQ] Host Module for Wireless Communication			GED-Z						
Digital Ratchet [MemorQ] Body Specifications									
No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	📦	
GED030-C3-Z	6~30N·m	22	58.4	211	10	48	350	1	

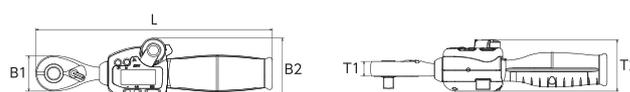


3/8"sq. DIGITAL RATCHET [MEMORQ] WIRELESS HOST MODULE SET



With special aluminum case
Size: W265xD190xH95

DIGITAL RATCHET [MEMORQ]									
No. TGED060R3Z	▼ g 470 (case: 0.9kg)	📦 1							
3/8"sq. Digital Ratchet [MemorQ] for Wireless Communication			GED060-R3-Z						
Digital Ratchet [MemorQ] Host Module for Wireless Communication			GED-Z						
Digital Ratchet [MemorQ] Body Specifications									
No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	📦	
GED060-R3-Z	12~60N·m	33	58.4	217	13.5	48	420	1	

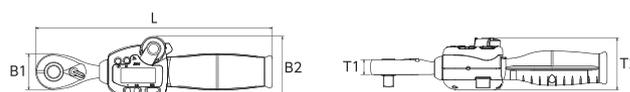


3/8"sq. DIGITAL RATCHET [MEMORQ] WIRELESS HOST MODULE SET



With special aluminum case
Size: W325xD190xH95

DIGITAL RATCHET [MEMORQ]									
No. TGED085R3Z	▼ g 510 (case: 1.1kg)	📦 1							
3/8"sq. Digital Ratchet [MemorQ] for Wireless Communication			GED085-R3-Z						
Digital Ratchet [MemorQ] Host Module for Wireless Communication			GED-Z						
Digital Ratchet [MemorQ] Body Specifications									
No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	📦	
GED085-R3-Z	17~85N·m	33	58.4	271	13.5	48	460	1	



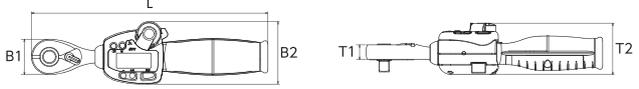
*Please check the merchandise inventory for a product that is marked by before placing an order.

DIGITAL RATCHET [MEMORQ]

No. TGED085R4Z ▼g 660 (case: 1.1kg) ☞ 1
 1/2"sq. Digital Ratchet [MemorQ] for Wireless Communication GED085-R4-Z
 Digital Ratchet [MemorQ] Host Module for Wireless Communication GED-Z

Digital Ratchet [MemorQ] Body Specifications

No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	☞
GED085-R4-Z	17~85N·m	39.5	58.4	274	18	48	610	1



●1/2"sq. DIGITAL RATCHET [MEMORQ] WIRELESS HOST MODULE SET



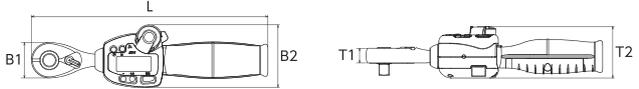
With special aluminum case
 Size: W325xD190xH95

DIGITAL RATCHET [MEMORQ]

No. TGED135R4Z ▼g 770 (case: 1.6kg) ☞ 1
 1/2"sq. Digital Ratchet [MemorQ] for Wireless Communication GED135-R4-Z
 Digital Ratchet [MemorQ] Host Module for Wireless Communication GED-Z

Digital Ratchet [MemorQ] Body Specifications

No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	☞
GED135-R4-Z	27~135N·m	39.5	58.4	380	18	48	720	1



●1/2"sq. DIGITAL RATCHET [MEMORQ] WIRELESS HOST MODULE SET



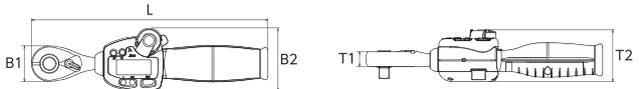
With special aluminum case
 Size: W630xD190xH95

DIGITAL RATCHET [MEMORQ]

No. TGED200R4Z ▼g 1060 (case: 1.6kg) ☞ 1
 1/2"sq. Digital Ratchet [MemorQ] for Wireless Communication GED200-R4-Z
 Digital Ratchet [MemorQ] Host Module for Wireless Communication GED-Z

Digital Ratchet [MemorQ] Body Specifications

No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	☞
GED200-R4-Z	40~200N·m	39.5	58.4	580	18	48	1010	1



●1/2"sq. DIGITAL RATCHET [MEMORQ] WIRELESS HOST MODULE SET



With special aluminum case
 Size: W630xD190xH95

DIGITAL RATCHET [MEMORQ]

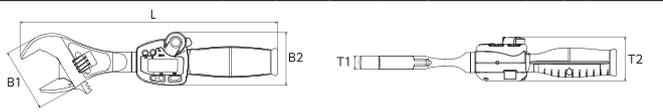
No. TGED085W36Z ▼g 630 (case: 1.1kg) ☞ 1
 Digital Ratchet [MemorQ] Adjustable Wrench Type for Wireless Communication GED085-W36-Z
 Digital Ratchet [MemorQ] Host Module for Wireless Communication GED-Z

No. TGED135W36Z ▼g 750 (case: 1.6kg) ☞ 1
 Digital Ratchet [MemorQ] Adjustable Wrench Type for Wireless Communication GED135-W36-Z
 Digital Ratchet [MemorQ] Host Module for Wireless Communication GED-Z

No. TGED200W36Z ▼g 1060 (case: 1.6kg) ☞ 1
 Digital Ratchet [MemorQ] Adjustable Wrench Type for Wireless Communication GED200-W36-Z
 Digital Ratchet [MemorQ] Host Module for Wireless Communication GED-Z

Digital Ratchet [MemorQ] Body Specifications

No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	☞
GED085-W36-Z	17~ 85N·m	69	58.4	275	14.5	48	580	1
GED135-W36-Z	27~135N·m	69	58.4	381	14.5	48	700	1
GED200-W36-Z	40~200N·m	69	58.4	581	14.5	48	1010	1



●DIGITAL RATCHET [MEMORQ] ADJUSTABLE WRENCH TYPE WIRELESS HOST MODULE SET



With special aluminum case
 Size (TGED085W36Z): W325xD190xH95
 Size (TGED135W36Z): W630xD190xH95
 Size (TGED200W36Z): W630xD190xH95

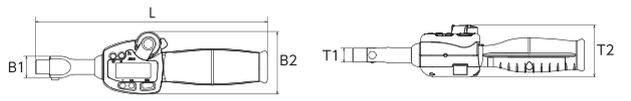
DIGITAL RATCHET [MEMORQ]

No. TGED040X13Z ▼g 410 (case: 1.1kg) ☞ 1
 Digital Ratchet [MemorQ] Head Replaceable Type for Wireless Communication GED040-X13-Z
 Digital Ratchet [MemorQ] Host Module for Wireless Communication GED-Z

No. TGED085X13Z ▼g 410 (case: 1.1kg) ☞ 1
 Digital Ratchet [MemorQ] Head Replaceable Type for Wireless Communication GED085-X13-Z
 Digital Ratchet [MemorQ] Host Module for Wireless Communication GED-Z

Digital Ratchet [MemorQ] Body Specifications

No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	☞
GED040-X13-Z	8~40N·m	20	58.4	213	13	48	360	1
GED085-X13-Z	17~85N·m	20	58.4	213	13	48	360	1



●DIGITAL RATCHET [MEMORQ] INTERCHANGEABLE HEAD TYPE WIRELESS HOST MODULE SET



With special aluminum case
 Size: W325xD190xH95

*Please check the merchandise inventory for a product that is marked by before placing an order.

Advanced Digital Torque Tool

DIGITAL RATCHET [MEMORQ] For Wireless Communication

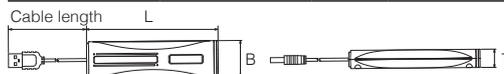
Wireless communication with PC becomes possible with the use of separately sold host module for wireless communication.



- It is configured of Digital Ratchet for wireless communication [MemorQ] body only.
- To perform the wireless connection with a PC, a host module for wireless communication (GED-Z) is required.
- With a special aluminum case.

Host module for wireless communication

No.	L	B	T	Cable length	▽g	☒
GED-Z	32	114.5	16	380	50	1



Maximum connectable number: 10 Max. (USB MemorQ cannot be connected)
 Radiowave frequency: 2.4GHz
 Communication range: 10~20m (may vary depending on the work environment)



1/4"sq. DIGITAL RATCHET [MEMORQ] For Wireless Communication

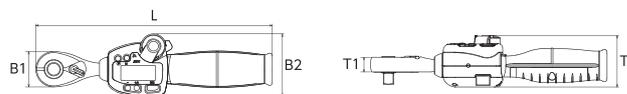


With special aluminum case
 Size: W265xD190xH95

DIGITAL RATCHET [MEMORQ]

No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▽g	☒
GED030-R2-Z	6~30N·m	22	58.4	211	10	48	350	1

- Minimum display unit is 0.02N·m.
- Repair kit (BR2E-K) is configured for the ratchet head.
- Case: 0.9kg
- * Recommend to calibrate and adjust when using a repair kit.
- * Spare parts, BR2E-K, are configured. ➔ P.53



3/8"sq. DIGITAL RATCHET [MEMORQ] SMALL TORQUE TYPE For Wireless Communication

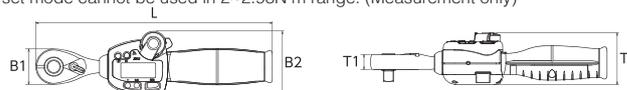


With special aluminum case
 Size: W265xD190xH95

DIGITAL RATCHET [MEMORQ]

No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▽g	☒
GED030-C3A-Z	2~30N·m	22	58.4	211	10	48	350	1

- Minimum display unit is 0.02N·m.
- Repair kit (BR2E-K) is configured for the ratchet head.
- Case: 0.9kg
- * Recommend to calibrate and adjust when using a repair kit.
- * Spare parts are configured. ➔ P.63
- * Pre-set mode cannot be used in 2~2.98N·m range. (Measurement only)



3/8"sq. DIGITAL RATCHET [MEMORQ] COMPACT HEAD TYPE For Wireless Communication

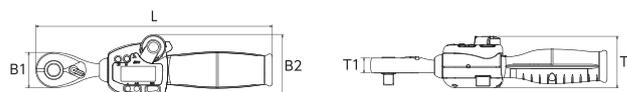


With special aluminum case
 Size: W265xD190xH95

DIGITAL RATCHET [MEMORQ]

No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▽g	☒
GED030-C3-Z	6~30N·m	22	58.4	211	10	48	350	1

- Minimum display unit is 0.02N·m.
- Repair kit (BRC3-K) is configured for the ratchet head.
- Case: 0.9kg
- * Recommend to calibrate and adjust when using a repair kit.
- * Spare parts are configured. ➔ P.63



3/8"sq. DIGITAL RATCHET [MEMORQ] For Wireless Communication

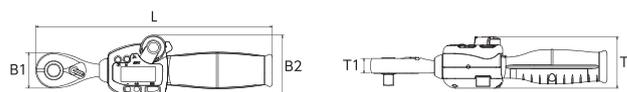


With special aluminum case
 Size: W265xD190xH95

DIGITAL RATCHET [MEMORQ]

No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▽g	☒
GED060-R3-Z	12~60N·m	33	58.4	217	13.5	48	420	1

- Minimum display unit is 0.05N·m.
- Repair kit (BR3E-K) is configured for the ratchet head.
- Case: 0.9kg
- * Recommend to calibrate and adjust when using a repair kit.
- * Spare parts are configured. ➔ P.63



3/8"sq. DIGITAL RATCHET [MEMORQ] For Wireless Communication

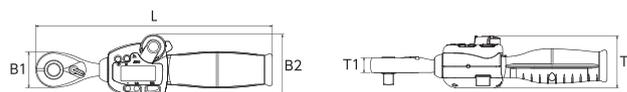


With special aluminum case
 Size: W325xD190xH95

DIGITAL RATCHET [MEMORQ]

No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▽g	☒
GED085-R3-Z	17~85N·m	33	58.4	271	13.5	48	460	1

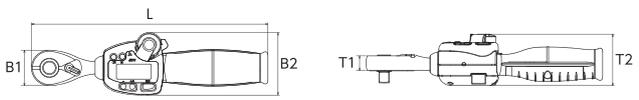
- Minimum display unit is 0.1N·m.
- Repair kit (BR3E-K) is configured for the ratchet head.
- Case: 1.1kg
- * Recommend to calibrate and adjust when using a repair kit.
- * Spare parts are configured. ➔ P.63



DIGITAL RATCHET [MEMORQ]

No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	☒
GED085-R4-Z	17~85N·m	39.5	58.4	274	18	48	610	1

- Minimum display unit is 0.1N·m.
- Repair kit (BR4E-K) is configured for the ratchet head.
- Case: 1.1kg
- * Recommend to calibrate and adjust when using a repair kit.
- * Spare parts are configured. ➔ P.70



**●1/2"sq. DIGITAL RATCHET [MEMORQ]
For Wireless Communication**



With special aluminum case
Size: W325xD190xH95

DIGITAL RATCHET [MEMORQ]

No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	☒
GED135-R4-Z	27~135N·m	39.5	58.4	380	18	48	720	1

- Minimum display unit is 0.1N·m.
- Repair kit (BR4E-K) is configured for the ratchet head.
- Case: 1.6kg
- * Recommend to calibrate and adjust when using a repair kit.
- * Spare parts are configured. ➔ P.70



**●1/2"sq. DIGITAL RATCHET [MEMORQ]
For Wireless Communication**



With special aluminum case
Size: W630xD190xH95

DIGITAL RATCHET [MEMORQ]

No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	☒
GED200-R4-Z	40~200N·m	39.5	58.4	580	18	48	1010	1

- Minimum display unit is 0.2N·m.
- Repair kit (BR4E-K) is configured for the ratchet head.
- Case: 1.6kg
- * Recommend to calibrate and adjust when using a repair kit.
- * Spare parts are configured. ➔ P.70



**●1/2"sq. DIGITAL RATCHET [MEMORQ]
For Wireless Communication**

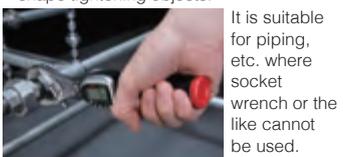


With special aluminum case
Size: W630xD190xH95

DIGITAL RATCHET [MEMORQ]

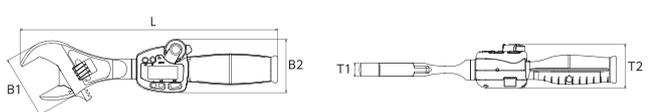
No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	☒
GED085-W36-Z	17~ 85N·m	69	58.4	275	14.5	48	580	1
GED135-W36-Z	27~135N·m	69	58.4	381	14.5	48	700	1
GED200-W36-Z	40~200N·m	69	58.4	581	14.5	48	1010	1

- Minimum display unit is 0.1N·m for GED085-W36-Z and GED135-W36-Z, and 0.2N·m for GED200-W36-Z.
- Adaptive width across flats is 10~36mm.
- * Accuracy is guaranteed only for the lower jaw measurement direction and hexagonal shape tightening objects.



It is suitable for piping, etc. where socket wrench or the like cannot be used.

High precision measurement is made possible by the adoption of dedicated head which effective length does not change when the aperture changes.



**●DIGITAL RATCHET [MEMORQ]
ADJUSTABLE WRENCH TYPE
For Wireless Communication**



With special aluminum case
Size (TGED085W36Z): W325xD190xH95
Case: 1.1kg
Size (TGED135W36Z): W630xD190xH95
Size (TGED200W36Z): W630xD190xH95
Case: 1.6kg

DIGITAL RATCHET [MEMORQ]

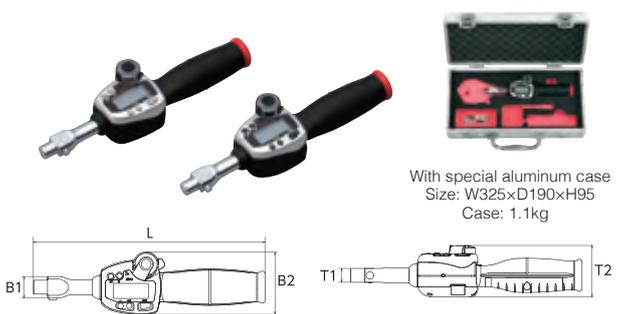
No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	☒
GED040-X13-Z	8~40N·m	20	58.4	213	13	48	360	1
GED085-X13-Z	17~85N·m	20	58.4	213	13	48	360	1

- Head replaceable type Digital Ratchet [MemorQ] that further extends the use range. It is used in combination with various replacement heads.
- Minimum display unit is 0.05N·m for GED040-X3-Z and 0.1N·m for GED085-X13-Z.

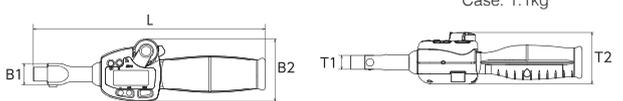
Replacement head that supports a wide range of work scenes ➔ P.178~180



**●DIGITAL RATCHET [MEMORQ] HEAD
REPLACEABLE TYPE
For Wireless Communication**



With special aluminum case
Size: W325xD190xH95
Case: 1.1kg



*Please check the merchandise inventory for a product that is marked by ⚡ before placing an order.

Advanced Digital Torque Tool



DIGITAL RATCHET [MEMORQ] For USB

- Function that automatically "records and manages" the work history is added to the advanced digital torque tool "Digital Ratchet".
- It is a type that records on the Digital Ratchet body and transfers to a PC via USB, convenient when a PC cannot be placed nearby or in on-site operation.
- With a special aluminum case.

USB type

Measurement results can be transferred to a PC via USB.



Easy one-button record

Records up to 200 measurement results on the body with REC button. Automatic recording is available by mode switching.



Exporting CSV data

Measurement results that have been transferred to a PC can be utilized as quality control or maintenance record by linking to applications.



1/4"sq. DIGITAL RATCHET [MEMORQ] For USB



With special aluminum case
Size: W265xD190xH95

DIGITAL RATCHET [MEMORQ]									
No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	☒	
GED030-R2-U	6~30N·m	22	58.4	211	10	48	350	1	

- Minimum display unit is 0.02N·m.
- Repair kit (BR2E-K) is configured for the ratchet head.
- Case: 0.9kg
- * Recommend to calibrate and adjust when using a repair kit.
- * Spare parts are configured. ➡ P.53



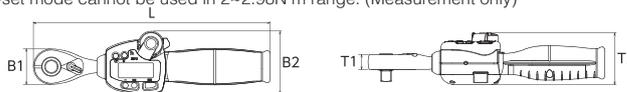
3/8"sq. DIGITAL RATCHET [MEMORQ] SMALL TORQUE TYPE For USB



With special aluminum case
Size: W265xD190xH95

DIGITAL RATCHET [MEMORQ]									
No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	☒	
GED030-C3A-U	2~30N·m	22	58.4	211	10	48	350	1	

- Minimum display unit is 0.02N·m.
- Repair kit (BR2E-K) is configured for the ratchet head.
- Case: 0.9kg
- * Recommend to calibrate and adjust when using a repair kit.
- * Spare parts are configured. ➡ P.63
- * Pre-set mode cannot be used in 2~2.98N·m range. (Measurement only)



3/8"sq. DIGITAL RATCHET [MEMORQ] COMPACT HEAD TYPE For USB



With special aluminum case
Size: W265xD190xH95

DIGITAL RATCHET [MEMORQ]									
No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	☒	
GED030-C3-U	6~30N·m	22	58.4	211	10	48	350	1	

- Minimum display unit is 0.02N·m.
- Repair kit (BRC3-K) is configured for the ratchet head.
- Case: 0.9kg
- * Recommend to calibrate and adjust when using a repair kit.
- * Spare parts are configured. ➡ P.63



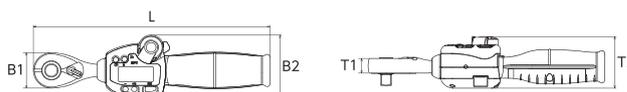
3/8"sq. DIGITAL RATCHET [MEMORQ] For USB



With special aluminum case
Size: W265xD190xH95

DIGITAL RATCHET [MEMORQ]									
No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	☒	
GED060-R3-U	12~60N·m	33	58.4	217	13.5	48	420	1	

- Minimum display unit is 0.05N·m.
- Repair kit (BR3E-K) is configured for the ratchet head.
- Case: 0.9kg
- * Recommend to calibrate and adjust when using a repair kit.
- * Spare parts are configured. ➡ P.63



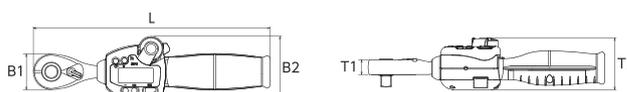
3/8"sq. DIGITAL RATCHET [MEMORQ] For USB



With special aluminum case
Size: W325xD190xH95

DIGITAL RATCHET [MEMORQ]									
No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	☒	
GED085-R3-U	17~85N·m	33	58.4	271	13.5	48	460	1	

- Minimum display unit is 0.1N·m.
- Repair kit (BR3E-K) is configured for the ratchet head.
- Case: 1.1kg
- * Recommend to calibrate and adjust when using a repair kit.
- * Spare parts are configured. ➡ P.63

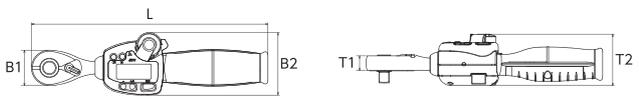


*Please check the merchandise inventory for a product that is marked by before placing an order.

DIGITAL RATCHET [MEMORQ]

No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	☒
GED085-R4-U	17~85N·m	39.5	58.4	274	18	48	610	1

- Minimum display unit is 0.1N·m.
- Repair kit (BR4E-K) is configured for the ratchet head.
- Case: 1.1kg
- * Recommend to calibrate and adjust when using a repair kit.
- * Spare parts are configured. ➡ P.70



**●1/2"sq. DIGITAL RATCHET [MEMORQ]
For USB**



With special aluminum case
Size: W325xD190xH95

DIGITAL RATCHET [MEMORQ]

No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	☒
GED135-R4-U	27~135N·m	39.5	58.4	380	18	48	720	1

- Minimum display unit is 0.1N·m.
- Repair kit (BR4E-K) is configured for the ratchet head.
- Case: 1.6kg
- * Recommend to calibrate and adjust when using a repair kit.
- * Spare parts are configured. ➡ P.70



**●1/2"sq. DIGITAL RATCHET [MEMORQ]
For USB**



With special aluminum case
Size: W630xD190xH95

DIGITAL RATCHET [MEMORQ]

No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	☒
GED200-R4-U	40~200N·m	39.5	58.4	580	18	48	1010	1

- Minimum display unit is 0.2N·m.
- Repair kit (BR4E-K) is configured for the ratchet head.
- Case: 1.6kg
- * Recommend to calibrate and adjust when using a repair kit.
- * Spare parts are configured. ➡ P.70



**●1/2"sq. DIGITAL RATCHET [MEMORQ]
For USB**



With special aluminum case
Size: W630xD190xH95

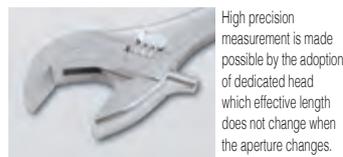
DIGITAL RATCHET [MEMORQ]

No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	☒
GED085-W36-U	17~ 85N·m	69	58.4	275	14.5	48	580	1
GED135-W36-U	27~135N·m	69	58.4	381	14.5	48	700	1
GED200-W36-U	40~200N·m	69	58.4	581	14.5	48	1010	1

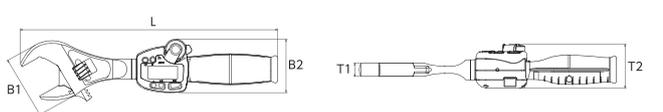
- Minimum display unit is 0.1N·m for GED085-W36-U and GED135-W36-U, and 0.2N·m for GED200-W36-U.
- Adaptive width across flats is 10~36mm.
- * Accuracy is guaranteed only for the lower jaw measurement direction and hexagonal shape tightening objects.



It is suitable for piping, etc. where socket wrench or the like cannot be used.



High precision measurement is made possible by the adoption of dedicated head which effective length does not change when the aperture changes.



**●DIGITAL RATCHET [MEMORQ]
ADJUSTABLE WRENCH TYPE
For USB**



With special aluminum case
Size (TGED085W36U): W325xD190xH95
Case: 1.1kg
Size (TGED135W36U): W630xD190xH95
Size (TGED200W36U): W630xD190xH95
Case: 1.6kg

DIGITAL RATCHET [MEMORQ]

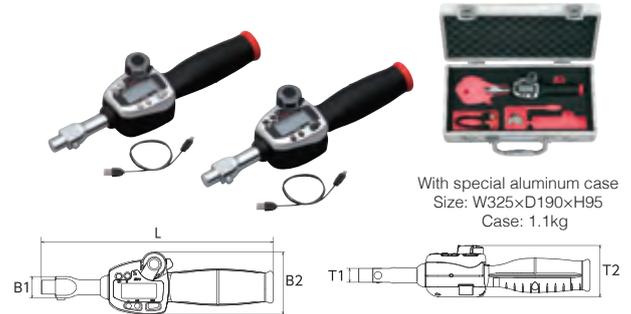
No.	Torque measurement range	B ₁	B ₂	L	T ₁	T ₂	▼g	☒
GED040-X13-U	8~40N·m	20	58.4	213	13	48	360	1
GED085-X13-U	17~85N·m	20	58.4	213	13	48	360	1

- Head replaceable type Digital Ratchet [MemorQ] that further extends the use range. It is used in combination with various replacement heads.
- Minimum display unit is 0.05N·m for GED040-X3-U and 0.1N·m for GED085-X13-U.

Replacement head that supports a wide range of work scenes ➡ P.178~180



**●DIGITAL RATCHET [MEMORQ]
INTERCHANGEABLE HEAD TYPE
For USB**



With special aluminum case
Size: W325xD190xH95
Case: 1.1kg

*Please check the merchandise inventory for a product that is marked by ⚡ before placing an order.

3. MEASURING and INSULATED TOOLS

TORQUE WRENCHES



CAUTION

TORQUE WRENCHES

- BE SURE TO READ INSTRUCTIONS AND OTHER MANUALS BEFORE USE.
- DO NOT USE A TORQUE WRENCH TO LOOSEN BOLTS.
- DO NOT ATTEMPT TO EXTEND BY CONNECTING A PIPE, ETC.
- DO NOT USE A TORQUE WRENCH AS A SUBSTITUTE FOR A HAMMER.
- DO NOT APPLY IMPACT BY HITTING WITH A HAMMER, ETC.
- BE SURE TO INSERT THE SQUARE DRIVE TO THE DEEP END, ETC.

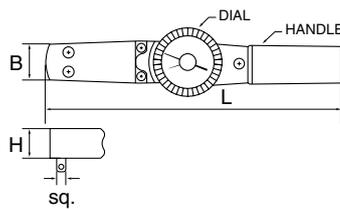
- THE RELATION BETWEEN THE FASTENING TORQUE AND RESISTANT POWER OF THE SCREW VARIES DEPENDING ON PLURAL FACTORS, INCLUDING THE CONDITION AND STRUCTURE OF THE SCREW AND COEFFICIENT OF FRICTION.
- READ THE HANDLING INSTRUCTIONS AND PRECAUTIONS FROM THE MANUFACTURER CAREFULLY BEFORE USING THE TOOL.
- USE THE TORQUE WRENCH WITHIN THE RANGE OF A MEASURABLE TORQUE.
- IT IS RECOMMENDED TO HAVE THE INSTRUMENTS CALIBRATED PERIODICALLY.



● TORQUE WRENCH DIAL TYPE



With Plastic case



TORQUE WRENCH DIAL TYPE

Features

The dial scale is easy to read, and the pointer remains in the measured position to facilitate confirmation of the measurement.

Accuracy

- The unique, long torsion bar shows the torque difference more clearly and makes the measurement more accurate.
- The pointer system allows detailed confirmation of measurement, facilitating accuracy of measurement.

Ease of handling

- The long torsion bar reduces overall size, weight and thickness.
- The measurement scale is indicated in N-m scale in compliance with the SI (international standard). A kgf-cm scale is also provided to meet both past and present standards.
- The scale 0-point located on the center line of the tool facilitates reading as well as counterclockwise torque measurement. Operations in invisible locations (including upside down use of the wrench) are possible thanks to the use of the pointer.

Endurance

- The long torsion bar provides good stability. Without excessive force applied, the tool can maintain high accuracy indefinitely.
- The main body is accommodated by a rugged plastic case that is suitable for protection and storage.

No.	sq.	Torque Range kgf-cm	Minimum Scale	L	B	H	▼kg	📦	Main Applications & Purposes
CMD0091	1/4"	1.8~ 9	0.2	290	26	27	0.46	1	Precision measurement and pre-load measurement of low voltage parts and small torque.
CMD0172	3/8"	3.5~ 17.5	0.5	290	26	27	0.46	1	Effective for management of small torque such as bearing pre-load measurement.
CMD0282	3/8"	6~ 28	0.5	290	26	27	0.46	1	Effective for management of small torque such as bearing pre-load measurement.
CMD072	3/8"	14~ 70	2	375	36	27	0.76	1	3/8"sq. basic model, widely applicable to passenger vehicles and motorcycles.
CMD143	1/2"	30~ 140	2	545	48	32	1.34	1	1/2"sq. models which can also be transformed into beam type models. Easy to use with passenger vehicles.
CMD243	1/2"	50~ 240	5	545	48	32	1.33	1	1/2"sq. models which can also be transformed into beam type models. Easy to use with passenger vehicles.
CMD353	1/2"	70~ 350	10	545	48	32	1.34	1	1/2"sq. model with a wide application range.
CMD484	3/4"	100~ 480	10	708	56	39	2.78	1	3/4"sq. model, effective for engines of medium-sized vehicles.
CMD804	3/4"	160~ 800	20	1185	56	38.5	4.1	1	Widely applicable in construction, construction machinery and medium-sized vehicles.
CMD805	1"	160~ 800	20	1185	56	38.5	4.14	1	Widely applicable in construction, construction machinery and medium-sized vehicles.

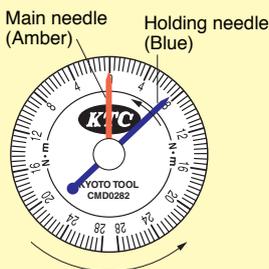
* The graduations on the scale indicates N-m. (1kgf-m ≒ 10N-m 1N-m ≒ 0.1kgf-m)



• DO NOT APPLY A LOAD LARGER THAN THAT WHICH A FULLY LOADED SCALE CAN HANDLE.

● Clockwise torque measurement

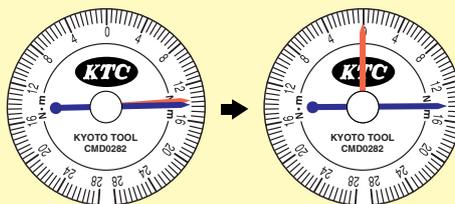
1 Set main pointer needle to 0.



Turn counterclockwise.

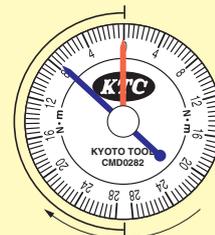
Turn dial counter-clockwise to superimpose holding needle (blue) on main needle (amber). Turn dial further until main needle indicates zero on outer scale.

2 Start measurement.



Turn handle clockwise. The main and holding needles swing until the torque value. When tightening force is released, main needle returns to scale 0 automatically while holding needle remains at torque value. When measuring same torque values successively, it is recommended to leave holding needle in position.

3 To measure the counterclockwise torque:



Turn clockwise

Holding needle is set form reverse direction to clockwise torque measurement, i.e. from left side of main needle (by turning clockwise). Counterclockwise torque should be measured by reading inner scale.

*Please check the merchandise inventory for a product that is marked by before placing an order.

PRE-SET TORQUE WRENCH

● PRE-SET TORQUE WRENCH

Features

Because they are capable of setting torque value to be measured prior to measurement, the preset torque wrenches are effective in successive operations or operations in places where scale readout is difficult.

Accuracy

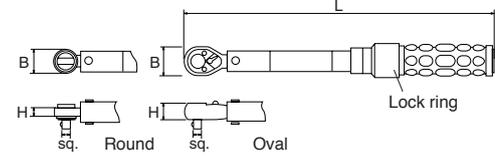
- The unique preset mechanism can set the torque value to be measured easily and accurately in detail.
- The preset value can be locked.

Ease of handling

- The measurement scale is indicated in N-m scale in compliance with the SI (international standard). The scale is stamped so it does not fade out.
- The operator is informed that the preset value is reached by the ratchet which changes angle at the neck.
- The counterclockwise torque can be measured as well as the clockwise torque.
- The head consists of a circular ratchet with a 60-tooth gear (having feed angle 6°), that is suitable for operations in tight spaces.

Endurance

- The main body is accommodated in a rugged plastic case which is suitable for protection and storage.
- The handle grip is made of rubberized material which resists slippage and the effects of shock.
- The entire mechanism is sealed to prevent penetration of dirt and dust, thereby reducing the possibility of malfunction.



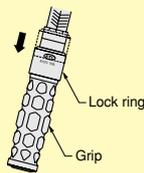
No.	sq.	Torque Range N-m (kgf-cm)	Minimum Scale	Type	L	B	H	▼kg	☞	Main Applications & Purposes
CMPB0152	1/4"	3~ 15	0.1	Oval	247	22	10	0.3	1	Effective for successive tightening with small torque of small parts, etc.
CMPB0253	3/8"	5~ 25	0.1	Oval	278	22	10	0.3	1	Suitable for compact aluminum engines, etc.
CMPB0503	3/8"	10~ 50	0.5	Oval	337	33	13.5	0.8	1	Basic model for motorcycles, but can also be used widely in general applications.
CMPB1003	3/8"	20~100	0.5	Oval	397	33	13.5	0.9	1	3/8"sq. 1000 kgf type. The standard tool of the future.
CMPB0504	1/2"	10~ 50	0.5	Oval	337	33	13.5	0.8	1	1/2"sq. compact and easy to use.
CMPB1004	1/2"	20~100	0.5	Oval	397	33	13.5	0.9	1	1/2"sq. model covering a wide range of torque.
CMPB2004	1/2"	40~200	2	Oval	475	39.5	18	1.2	1	Effective for constructions and medium-sized vehicles.
CMPB3004	1/2"	60~300	2	Oval	480	39.5	18	1.2	1	1/2"sq. model covering a wide range of torque.
CMPB8006	3/4"	150~800	5	Oval	1050	68	29	4.5	1	
CMPB8008	1"	150~800	5	Oval	1050	68	27.5	4.5	1	

* The graduations on the scale indicates N-m. (1kgf·m ≒ 10N·m 1N·m ≒ 0.1kgf·m)

⚠ CAUTION • WHEN THE WRENCH GENERATES A "CLICK" SOUND OR YOUR HAND FEELS A LIGHT SHOCK, DO NOT APPLY FURTHER LOAD TO THE WRENCH. • DO NOT USE THIS WRENCH FOR LOOSENING A BOLT OR NUT.

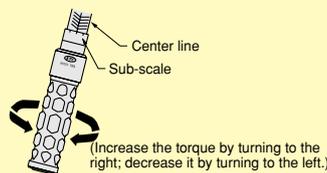
● How to preset the torque.

1 Pull grip down



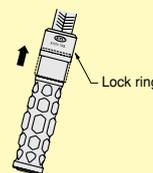
Hold grip and pull it downward while shaking it a little to the left and right.

2 Preset to desired torque



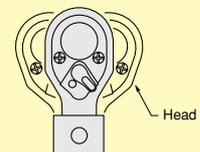
The torque is determined by the main scale and the sub-scale on the grip.

3 Lock the torque.



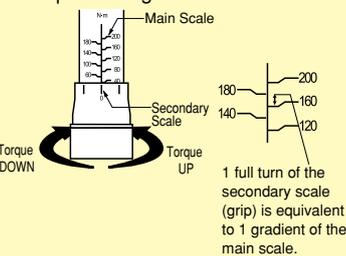
Release your hand from the lock ring, and it will return automatically and the torque will be set.

4 Start measurement.



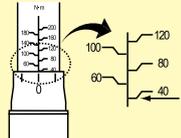
Perform measurement. When preset value is reached, a light shock is felt and neck angle changes.

<Torque Setting>



○ Setting the value of the main scale to a set value.

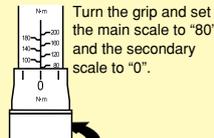
Example) Setting to 40N · m (For CMPA203)



Pull down the lock ring and turn the grip. Set the main scale to the (a) position and set the secondary scale to "0" position.

○ Setting a value between the two scales to a set value.

Example) Setting to 92N · m (For CMPA203)



Turn the grip further to set the secondary scale to "12".

Main Scale 80 + Secondary Scale 12 = Set Value 92

*The turning direction of the grip is reversed when setting the torque from a high level.

TORQUE WRENCH PRE-SET TYPE



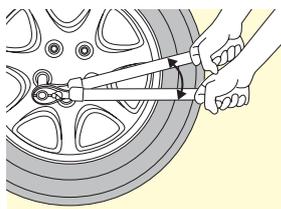
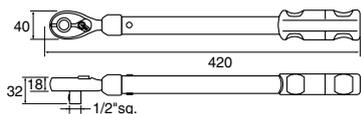
* It is not covered for repair.

TORQUE WRENCH PRE-SET TYPE

No.	Torque measurement range (cN-m)	Minimum scale (cN-m)	D	L	▼g	☞
GDP-080	16~ 80	1	28	140	212	1
GDP-200	40~200	2	28	159	249	1
GDP-450	90~450	5	32	171	330	1

- * Measurement scale is only cN-m. (1N-m = 100cN-m)
- 90° grip will idly rotate along with a click when the set torque is reached.
- Measurement accuracy is ±6%, passing ISO standards. Measurement direction is right (clockwise) only.
- Bit is detachable by magnet, allowing the use of the bit with 6.3mm axis opposing side that's published in CONVENTIONAL TOOLS. ➔ P.142
- * Double-headed bit cannot be used.
- * There are sizes that cannot retain the magnetic force if 1/4"sq. adaptor is used.
- * Please configure the set torque at the minimum value in storage.

1/2"sq. WHEEL NUT TORQUE WRENCH SET
D.PAT.



Confirm the tightening torque with the wrench positioned between the arrows, as shown in the diagram.

WHEEL NUT TORQUE WRENCH SET

No.	TWCMQA221	kg	☞
1/2"sq. Torque wrench for wheel nut		1.3	1
1/2"sq. Exclusive socket for wheel nut 21mm			
	WCMPA103		
	B38Z-21H		

- Usage**
- This tool is a pre-set type torque wrench that is used to tighten vehicle wheel nuts 17, 19, and 21mm at a specified torque of 103N-m (10.5kgf-m). (The 17, 19mm sockets are sold separately.)
 - Applicable for clockwise rotation tightening. (Is not applicable for anti-clockwise rotation tightening)
- Characteristics**
- Reliable operation is possible through torque management. (For confirmation during inspection on completion)
 - Work hours have been reduced with the employment of the ratchet head. (36 plate gears) The union structure allows for the firm sustenance of the socket. Socket replacement can be carried out easily.
 - The full optimum length is designed so that the tire and the mechanic's hands do not interfere. (Full length has been set at 420mm, 55mm longer than in previous models.) The load on the handle has also been reduced during operation.
 - The head angle changes with a light shock to the hands when the tightening torque is reached, enabling recognition of completion.
 - The rubber cap attached to the base prevents entry of dirt and dust.
 - Provided with a soft case that makes storage easy.
- * Replaceable parts are available for the ratchet section. Check with your dealer for details.

Compatibility Table (Domestic Vehicles)

Nut size (mm)	Manufacturer	Examples of Compatible Cars
19	Honda, Subaru	All passenger vehicles (except recreational and light vehicles)
	Isuzu	All passenger vehicles
21	Toyota, Nissan	All passenger vehicles (except recreational and light vehicles)
	Mitsubishi, Daihatsu	All passenger vehicles (except recreational and light vehicles)
	Mazda	All passenger vehicles (except recreational and light vehicles)

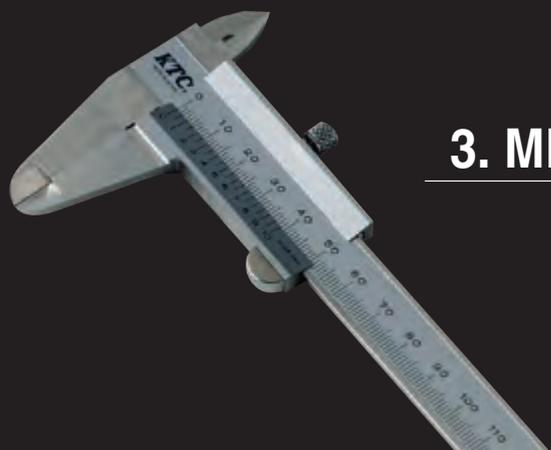
*19mm socket is required (sold separately)

- * The torque value for light vehicles with 17mm nuts differs from the one for regular vehicles. For this reason, the torque wrench above cannot be used. However, the torque wrench can be used on some foreign cars made outside of Japan.
- * Compatible with wheel tightening torque value of 103N-m. (Not applicable to certain vehicles and wheels.)
- * The wrench cannot be used for trucks and recreational vehicles, as the torque value required is too high.
- * Check the torque value before using wrench on non-standard wheels.



CAUTION

1. This torque wrench is exclusively designed for wheel nuts. Do not use this tool to tighten or loosen other bolts/nuts.
2. The wheel tightening torque is set for domestically manufactured vehicle standard wheels. Check the torque settings for special wheels before use.
3. This product is a measurement tool. Take extreme care when handling. Be sure to avoid dropping, throwing, or hitting this product.
4. Hold the grip at the line as the center and apply even firm pressure.
5. Applying pressure at other places (pipe part etc.) than the grip will give inaccurate torque readings.
6. Use this product multiple times to avoid misleading when the tool has been stored for a long time.
7. Do not use during rain, high humidity levels, and in conditions where the tool is exposed to water.
8. Do not disassemble this product. The torque settings can become faulty.
9. Immediately stop use and request for an inspection/ disassembly and adjustment when this product is dropped, submerged in water, emits abnormal sound, or operates faultily.
10. Do not apply force after operation.



3. MEASURING and INSULATED TOOLS GAUGES



CAUTION

Gauges

- Make sure that you read the Owner's Operator Manual carefully before using the gauges.
- Do not use in areas with high levels of humidity or dust. Damage may occur if the gauges come into direct contact with water or oil.
- Look at the gauge straight on when taking readings.
- Do not use gasoline or thinners for cleaning purposes. These agents could damage the shape of the gauge.

- Do not use the gauge outside its designated usage.
- The precision of the gauge will need to be checked if it has been dropped, is cracked, or has been used in a rough manner.

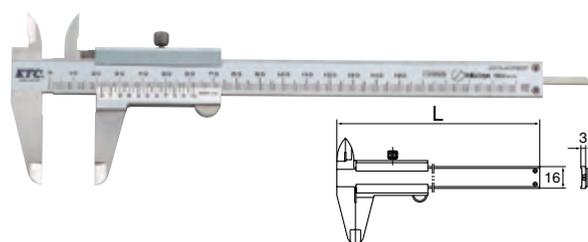
SLIDE GAUGE

No.	Measuring Range	L	▽g	☞
GMM -15	0~150	230	150	1
-20	0~200	290	180	1
-30	0~300	405	355	1

- Long vernier for easy reading.
- Stepped surface for avoiding entry of dust, etc.

*Replacement parts are available. Check with your dealer for details.

●SLIDE GAUGE



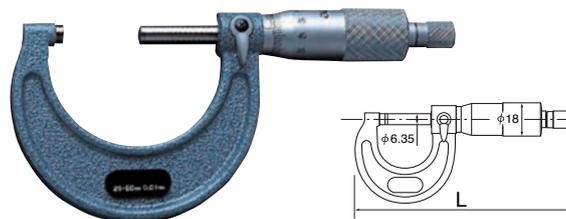
MICROMETER

No.	Measuring Range	L	▽g	☞
GMM-025	0~25	120	160	1
-050	25~50	145	215	1
-075	50~75	175	315	1

- Painted frame for rust resistance.
- Super hand alloy tip attached.
- With constant pressure device.

*Replacement parts are available. Check with your dealer for details.

●MICROMETER



VOLTAGE TESTER

No.	ZGEV-750	▽g	200	☞	1
Body Size	W70xD30xH238				
Measurement Range	Voltage	6-1000V AC/DC, 0-400Hz			
	Resistance	0~2000Ω voltage			
	Continuity	0-150Ω (sound signal)			
Power	AAA batteries (1.5V DC) × 2				
Available Temperature Range	-10°C~50°C				

- It is a digital tester with small capacity path for measurement.

●VOLTAGE TESTER



ANGULAR TORQUE GAUGE

No.	sq.	A	H	D	L	ℓ	d	▽g	☞
ATG30-1	12.7	24.2	55	78.5	97	52	4.8	365	10

Usage • For the fastening angle measurement of fastening bolt in plastic region (angle fastening bolt).

Features • Small scale can measure in 5° increments, allowing the wide range of use for various engines of every manufacturer. (It can be used for imported cars as well as domestic.)

How to Use 1. Have the head bolt tightened by specific torque using a torque wrench.

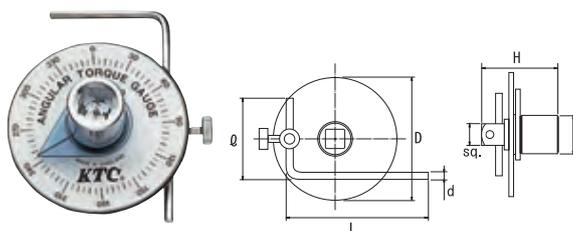


2. Set the angular torque gauge and stop the rotation with L-shape stopper.

3. Set the gauge needle at 0.

4. Tighten up to the specified angle with a spinner handle, etc.

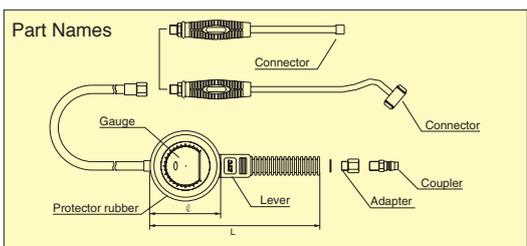
●ANGULAR TORQUE GAUGE



- Please don't tighten with a torque wrench when using this product. Torque wrench may be damaged by exceeding the set torque.

*Please check the merchandise inventory for a product that is marked by before placing an order.

● TIRE AIR GAUGE



TIRE AIR GAUGE							
No.	Measuring range	Minimal scale	Thickness	ℓ	L	▼g	📦
AGT231	0~ 500kPa (0~ 5kg/cm ²)	10kPa	95	100	270	800	1
AGT232	0~1200kPa (0~12kg/cm ²)	10kPa	95	100	270	800	1

Purpose
 ● To measure, increase and decrease the air pressure of automobile tires.

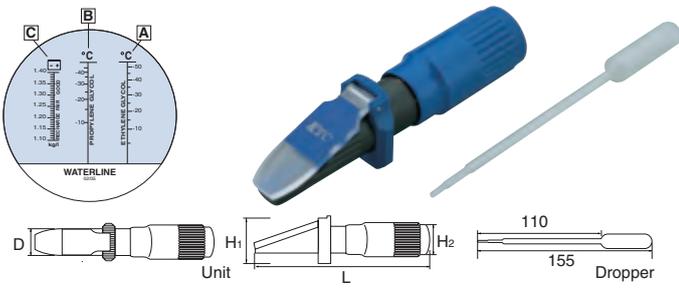
Application
 ● Tire Air Gauge 500: Passenger cars and commercial cars (vans).
 ● Tire Air Gauge 1200: Motorcycles, passenger cars, trucks and buses.

Features
 ● The lever is lightweight for fine adjustments with ease.
 ● The gauge is large (ø70mm) and easy to read measurements. The pressure can be measured and decreased without connection to the air hose.
 ● With the swivel joint, the hose is not easily twisted.
 ● The ultra thin straight connector on the tip (the tip is 11mm diameter) enables use for almost all aluminum wheels (AGT231).
 ● The long type double connector facilitates use for double tires (AGT232).
 ● The connector on the tip is replaceable (option).
 *Replacement parts are available. Check with your dealer for details.

The connectors for replacement:

Connectors	Product No.
Straight connector 	AGT23-A1
Double connector 	AGT23-A2
Clip connector 	AGT23-A3

● FLUID TESTER



FLUID TESTER						
No.	D	H ₁	H ₂	L	▼g	📦
AG601	25	40	32	150	150	1

Attachments: Dropper for Liquid Measurements, Soft Storage Case (Cloth)

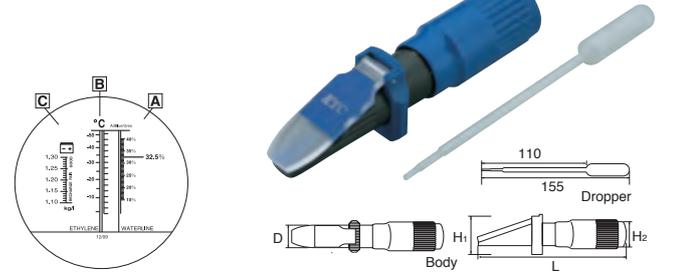
Usage
 ● Measuring coolants freezing temperature (LLC) (Scale "A" · "B")
 ● Measuring the relative density of battery electrolyte (Scale "C")

Characteristics
 ● Measurements can be made simply by dropping liquid on a prism surface and looking through the lens.

Measurable Range
 ● Coolant (LLC) ... Ethylene: 0~-55°C Scale ("A")
 Propylene: 0~-50°C (Scale "B")
 Battery fluid ... 1.10~1.40kg/l (minimum scale of 0.01kg/l)

*Replacement parts are available. Check with your dealer for details.

● FLUID TESTER (Urea concentration testing)



FLUID TESTER						
No.	D	H ₁	H ₂	L	▼g	📦
AG602	25	40	32	150	150	1

Attachment: Liquid metering dropper, soft case for body storage (fabric)

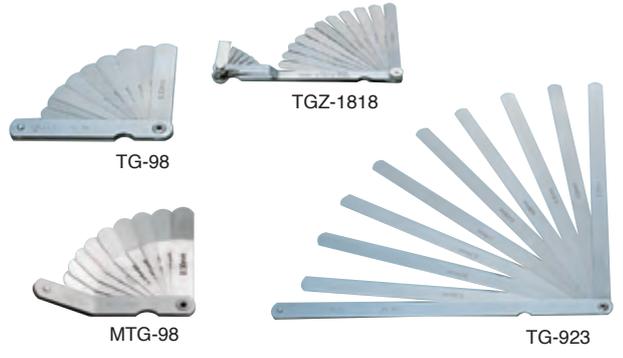
Usage
 ● Urea concentration measurement of urea water for exhaust gas purifying device in large vehicles (scale A)
 ● Measurement of freezing temperature for coolant (LLC) (Scale B)
 ● Measurement of specific gravity of battery electrolyte (Scale C)

Features
 ● It can be measured simply by dropping the liquid on the prism surface and looking through the lens.

Measurement range
 ● urea concentration...15~40% (0.5% minimum scale)
 ● Coolant (LLC)...ethylene: 0~-50°C (5°C minimum scale)
 ● Battery fluid...1.10~1.40kg/l (0.01kg/l minimum scale)

*Spare parts are configured. Please contact your dealer for details.

● THICKNESS GAUGE



THICKNESS GAUGE

No. TG-98	▼g 34	📦 10
90×13 9pcs. set (mm)	.04 .05 .06 .07 .08 .10 .15 .20 .30	
No. TG-923	▼g 79	📦 10
230×13 9pcs. set (mm)	.04 .05 .06 .07 .08 .10 .15 .20 .30	
No. TGB-98	▼g 34	📦 10
90×13 9pcs. set (in)	.0015 .002 .003 .004 .006 .008 .010 .012 .015	
No. TGB-923	▼g 79	📦 10
230×13 9pcs. set (in)	.0015 .002 .003 .004 .006 .008 .010 .012 .015	
No. MTG-98 (With angle)	▼g 34	📦 10
90×13 9pcs. set (mm)	.04 .05 .06 .07 .08 .10 .15 .20 .30	
No. TGZ-1818 (Maintenance Gauge Set)	▼g 100	📦 10
For valve clearance 11pcs. set (mm)	.15 .18 .20 .25 .28 .30 .33 .35 .36 .38 .40	
For point plug 6pcs. set (mm)	.45 .50 .80 .90 1.10 1.30	
Hook for adjusting plug 1pce.		
No. RGG-20 (Maintenance Gauge Set)	▼g 100	📦 400
For valve clearance 13pcs. set (mm)	.05 .15 .18 .20 .25 .28 .30 .33 .35 .36 .38 .40	
For point plug 6pcs. set (mm)	.45 .50 .80 .90 1.10 1.30	
Hook for adjusting plug 1pce.		

*Please check the merchandise inventory for a product that is marked by  before placing an order.

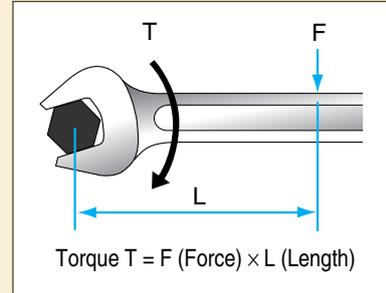
Torque

● What is torque?

As shown in the diagram, the turning pressure (T) that is put upon a bolt when force (F) is applied to a certain point on the spanner's length (L).

(Example) If a force of 100N*(approx. 10kgf) is applied to the spanner at a length of 1m, the torque is calculated as (F) 100N ~ (L) 1m = 100N · m (approx. 10kgf · m).

If a torque of 100N · m (approx. 10kgf · m) is required to be applied to a 200mm wrench, the force that must be applied to the wrench is 500N (approx. 51kgf). This can be calculated as shown below. Therefore, in normal circumstances it would be difficult to apply this amount of force to a wrench of this length.



$$F \times 0.2m = (T) 100N \cdot m$$

$$F = 100 \div 0.2$$

$$= 500N \text{ (Approx. 51kgf)}$$

● Measuring Torque

Torque has conventionally been shown in measurements of kgf · m. However, with the introduction of the “New Measurement Act 1993”, torque is now measured in SI units (ISO International Specification). Units of force are now shown by N (Newton), and torque N · m (Newton-meter).

1N · m is 0.10197kgf · m, and 1kgf · m is 9.8067N · m. Therefore, in actual operations, 1kgf · m can be roughly estimated to be 10N · m.

(Refer to the supplement at the end of the volume regarding Kg and N · m conversions.)

Tool basics

The difference between N (Newton) and kg

The conventional unit of kgf is the force given by the mass of a 1kg object with a standard gravity acceleration rate of 9.8m/s². However, N (Newton) units are simpler, as they refer to the application of acceleration 1m/s² of an object with a mass of 1kg.

In other cases, the unit for pressure has changed from kgf/cm² to Pa (Pascal).

Note that a unit of kgf/cm² can be changed to Pa as shown by the calculation below:

$$1\text{kgf/cm}^2 = 98.0665\text{kPa (kilo-Pascal)} = 0.0980665\text{MPa (mega-Pascal)}$$

● Torque / Wrench Length

As torque is measured by “Force × Length”, larger amounts of torque can be applied as the length of the wrench becomes longer. However, the torque of the bolt is specified. There is an appropriate tightening torque for each bolt. The wrench is made to bear the necessary torque, and is of a set length to apply that torque when loosening or tightening bolts.

For example, the specified torque for most wheel nuts of passenger vehicles is set to 103N · m. If tightening a nut with a 400mm wrench, the force required will be 257.5N (approx. 26kgf) as shown below. Bolts may become over-tightened even with a moderate force, if one bends at the waist and then recoils, or if one steps on the wrench when tightening.

$$F \times 0.4m = 103N \cdot m$$

$$F = 103 \div 0.4$$

$$= 257.5N \text{ (Approx. 26kgf)}$$

Take care when using longer wrenches made for use in confined areas. If too much force is applied, the bolt can be severed, or the wrench may even break.

Long wrenches are made to reach difficult places, or to apply required torque with a lesser force. They are not designed to apply excessive torque. Always take care not to apply excessive torque.

3. MEASURING and INSULATED TOOLS

INSULATED TOOLS



WARNING

About the Handling of Insulated Tools

- Before using this product, please fully understand the user's manual and work instructions of the manufacturer.
- Qualifications stipulated by law may be required when working under high voltage. Such work should be performed by a worker who is suitable for the conditions.
- Please ensure in advance that where this product is used is below AC1000V or DC1500V.

- If the red part of this product is worn and yellow part is exposed, please discontinue use immediately.
- Do not use this product in combination with other tools.
- When using this product, please wear protective gear (insulated gloves, insulated shoes, etc.) that have undergone type examination.
(* Configured protective gear is also available. Please contact your dealer for details)

Ideal for the maintenance of hybrid vehicles!! KTC Insulated Tool Series

Strong current flows through next-generation automobiles such as hybrid vehicles (HV) and electric vehicles (EV), making insulated tools essential from the viewpoint of "worker safety" and "equipment damage". While the spread of next-generation automobiles progresses rapidly, maintenance infrastructure is delayed, raising the demand for insulation tools from maintenance shops and accident processing scenes.

● Meets IEC 60900:2004 Standards

It is a product that meets IEC 60900:2004 Standards, the only international standards for insulated tools.

	Electric and electronic technologies	Electric and electronic technologies are the only excluded industries
International standards (World-class)	IEC standards (IEC International Electrotechnical Commission)	ISO standards (ISO International Standardization Organization)
European standards (Regional level)	EN standards (CENELEC European Committee for Electrotechnical Standardization)	EN standards (CEN European Committee for Standardization)

● Absolutely needed items are selected

Process is inspected from the KTC perspective, selecting only the required tools for the maintenance of hybrid vehicles. Unnecessary tools are eliminated, preventing hesitation at work.

● Easy to manage, easy to carry

Dedicated case that protects the tools from ultraviolet rays is plastic and can easily be carried around, with "red" color that stands out at the work site.

It comes with a dedicated tray that can be used for molded storage.

With a voltage tester that can confirm 0V (zero volts) before work (ZTB311V, ZTB310V)



Voltage measurement prior to work is specified in the manufacturer manual.

Insulated tools that ensure the safety of workers and prevent the equipment damage

- It is a product that meets IEC 60900:2004 Standards, the only international standards for insulated tools.
- It contains tools that are ideal in the maintenance of hybrid vehicles (HV).
- Aperture of the socket prevents the concentration of stress and bolt · nut-friendly power fit shape is used.
- To prevent the falling off of the socket (*), union mechanism for ratchet handle and "fall-proof screw" for extension bar and T-handle are adopted.
- With a dedicated red tray that stands out in the work site.
(Case size: W450xD365xH105)

* "Mechanical lock retention system" is required by IEC 60900:2004 Standards.



2-layer insulation coating for high safety



"Fall-proof screw" that prevents the falling off of the socket

No.	Product Name	Insulated Tool Set A No.ZTB311	Insulated Tool Set B No.ZTB311V	Insulated Tool Set C No.ZTB310	Insulated Tool Set D No.ZTB310V
		▼kg 2.9	▼kg 3.1	▼kg 2.5	▼kg 2.7
ZGEV-750	Voltage Tester		●		●
ZBE3-125	3/8"sq. Extension Bar 125mm	●	●	●	●
ZBE3-250	3/8"sq. Extension Bar 250mm	●	●	●	●
ZBR3	3/8"sq. Ratchet Handle	●	●		
ZTH3	3/8"sq. T-Shaped Wrench	●	●	●	●
ZB3-08	3/8"sq. Socket 8mm (6pt.)	●	●	●	●
ZB3-10	3/8"sq. Socket 10mm (6pt.)	●	●	●	●
ZB3-12	3/8"sq. Socket 12mm (6pt.)	●	●	●	●
ZB3L-08	3/8"sq. Deep Socket 8mm (6pt.)	●	●	●	●
ZB3L-10	3/8"sq. Deep Socket 10mm (6pt.)	●	●	●	●
ZB3L-12	3/8"sq. Deep Socket 12mm (6pt.)	●	●	●	●
ZD1M-100	Flat Screwdriver	●	●	●	●

INSULATED TOOL SET

No. ZTB311	▼kg 2.9	📦 1
3/8"sq. Extension Bar		ZBE3-125, 250
3/8"sq. Ratchet Handle		ZBR3
3/8"sq. T-Shaped Handle Wrench		ZTH3
3/8"sq. Socket (6pt.)		 ZB3-08, 10, 12
3/8"sq. Deep Socket (6pt.)		 ZB3L-08, 10, 12
Flat Screwdriver		ZD1M-100

● INSULATED TOOL SET A

3/8" sq.



INSULATED TOOL SET

No. ZTB311V	▼kg 3.1	📦 1
3/8"sq. Extension Bar		ZBE3-125, 250
3/8"sq. Ratchet Handle		ZBR3
3/8"sq. T-Shaped Handle Wrench		ZTH3
3/8"sq. Socket (6pt.)		 ZB3-08, 10, 12
3/8"sq. Deep Socket (6pt.)		 ZB3L-08, 10, 12
Flat Screwdriver		ZD1M-100
Voltage Tester		ZGEV-750

● INSULATED TOOL SET B

3/8" sq.



INSULATED TOOL SET

No. ZTB310	▼kg 2.5	📦 1
3/8"sq. Extension Bar		ZBE3-125, 250
3/8"sq. T-Shaped Handle Wrench		ZTH3
3/8"sq. Socket (6pt.)		 ZB3-08, 10, 12
3/8"sq. Deep Socket (6pt.)		 ZB3L-08, 10, 12
Flat Screwdriver		ZD1M-100

● INSULATED TOOL SET C

3/8" sq.



INSULATED TOOL SET

No. ZTB310V	▼kg 2.7	📦 1
3/8"sq. Extension Bar		ZBE3-125, 250
3/8"sq. T-Shaped Handle Wrench		ZTH3
3/8"sq. Socket (6pt.)		 ZB3-08, 10, 12
3/8"sq. Deep Socket (6pt.)		 ZB3L-08, 10, 12
Flat Screwdriver		ZD1M-100
Voltage Tester		ZGEV-750

● INSULATED TOOL SET D

3/8" sq.



Insulated tool set A~D are sold only as a set. Tools are supplied for those who use the set.

No.	Product Name	
ZB3-08	3/8"sq. Socket 8mm (6pt.)	
ZB3-10	3/8"sq. Socket 10mm (6pt.)	
ZB3-12	3/8"sq. Socket 12mm (6pt.)	
ZB3L-08	3/8"sq. Deep Socket 8mm (6pt.)	
ZB3L-10	3/8"sq. Deep Socket 10mm (6pt.)	
ZB3L-12	3/8"sq. Deep Socket 12mm (6pt.)	
ZBR3	3/8"sq. Ratchet Handle	
ZTH3	3/8"sq. T-Shaped Handle Wrench	
ZBE3-125	3/8"sq. Extension Bar 125mm	
ZBE3-250	3/8"sq. Extension Bar 250mm	
ZD1M-100	Flat Screwdriver	

3/8" sq.



1/4" sq. 3/8" sq.

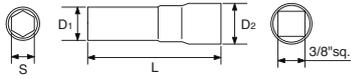
● 3/8"sq. INSULATED MAGNETIC DEEP SOCKET



3/8"sq. INSULATED MAGNETIC DEEP SOCKET

No.	S	D ₁	D ₂	L	▼g	☒
ZB3L-08MG	8	16	22	80	60	1
ZB3L-10MG	10	18	22	85	70	1
ZB3L-12MG	12	21	22	85	90	1

- Prevents the falling of bolt · nut with the built-in magnet in the bore.



WARNING • Magnet may break if the product is dropped.

● 3/8"sq. INSULATED TORQUE WRENCH



3/8"sq. INSULATED TORQUE WRENCH

No.	Torque range N·m	Minimum scale	Feed angle	Total length	▼kg	☒
ZGWPA30550	10~50	2.5	11°	370	1.1	1

- It is a pre-set type insulated torque wrench that can be used in combination with insulated tool set (ZTB311, ZTB311V, ZTB310 and ZTB310V).
- It is a product that meets IEC 60900:2004 standards.
- Torque measurement range that's ideal in the maintenance of hybrid vehicles (HV).
- Set torque can be changed simply by pulling and turning the grip end.
- Union mechanism that prevents the dropping of socket.
- Measurement accuracy clears ±8%. (Measurement direction is right-hand thread only)
- Dedicated storage bag included.

WARNING • Please do not use this product except for insulated tool set (ZTB311, ZTB311V, ZTB310, ZTB310V).

* It is not covered for repair.

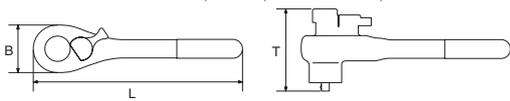
● 1/4"sq. INSULATED RATCHET HANDLE



1/4"sq. INSULATED RATCHET HANDLE

No.	Feed	B	T	L	▼g	☒
ZBR2	10°	40	70	140	300	1

- Union mechanism is adopted to prevent the dropout of the socket.



WARNING • Please operate the switching lever on left and right securely since it may be the cause of damage or idling.

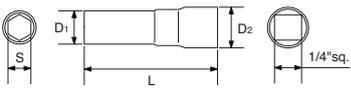
● 1/4"sq. INSULATED DEEP SOCKET



1/4"sq. INSULATED DEEP SOCKET

No.	S	D ₁	D ₂	L	▼g	☒
ZB2L-08	8	17	20	70	40	1
ZB2L-10	10	19	20	70	45	1

- Aperture has the power-fit shape that prevents the concentration of stress and hardly damages the bolt · nut.



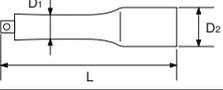
● 1/4"sq. INSULATED EXTENSION BAR



1/4"sq. INSULATED EXTENSION BAR

No.	D ₁	D ₂	L	▼g	☒
ZBE2-050	13	20	70	35	1
ZBE2-075	13	20	90	50	1
ZBE2-150	13	20	170	80	1

- * Fall prevention screw that prevents the accidental falling of the socket is not adopted.



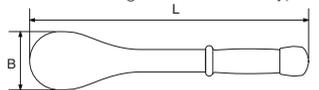
● 1/4"sq. INSULATED TORQUE WRENCH



1/4"sq. INSULATED TORQUE WRENCH

No.	Torque range	Minimum scale	Feed	B	L	▼g	☒
ZGWPA20525	5~25N·m	1.25	9°	40	210	390	1

- It is a preset-type insulated torque wrench that can be used in combination with 1/4"sq. insulated tools.
- It is a product that meets IEC60900:2004 standards.
- Torque measurement range that's ideal in the maintenance of hybrid vehicles (HV).
- Set torque can be changed simply by pulling and turning the grip end.
- Measurement accuracy clears ±8%. (Measurement direction is right-hand thread only)
- Dedicated storage bag included.
- * It is not supported for the repair or calibration service.



WARNING • Please do not use this product except for 1/4"sq. insulated tools.

*Please check the merchandise inventory for a product that is marked by [Warning Symbol] before placing an order.

VOLTAGE TESTER

No. ZGEV-750	▼g 200	📦 1
Body Size	W70×D30×H238	
Measurement Range	Voltage 6-1000V AC/DC, 0-400Hz	
	Resistance 0-2000Ω voltage	
	Continuity 0-150Ω (sound signal)	
Power	AAA batteries (1.5V DC) × 2	
Available Temperature Range	-10°C~50°C	

• It is a digital tester with small capacity path for measurement.

● VOLTAGE TESTER



* It is not covered for repair.



WARNING

Insulated screwdriver types ⚡1000V

The screwdrivers comply with EN60900 (European Regulation Standardization Committee). This screwdriver withstands up to AC (alternating current) 1000V and DC (direct current) 1500V.

- Disconnect the live wires of the electrical circuit before starting work.
- Insulation is only provided on the grip and the orange-covered section of the shaft.
- Always wear insulated gloves when using this tool.
- Do not use this tool when damage can be seen on the insulation covering or the tool itself.

INSULATED SCREWDRIVER SET (4pcs.)

No. PMDEZ4	▼g 270	📦 1
Insulated Screwdriver (Cross)No.1	PDEZ-1	
	No.2 PDEZ-2	
Insulated Screwdriver (Flat) 4×100	MDEZ-4	
	5.5×150 MDEZ-5	



WARNING

Insulated Screwdrivers ⚡1000V

It complies with EN60900 (European Committee for Standardization Standards). It supports up to AC 1000V and DC 1500V.

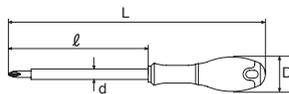
- Please turn off any active line of the electric circuit before work.
- Only the grip and orange cover in the axis part are insulated.
- Insulated gloves must be worn during use.
- Do not use it if damage or the like is seen on the insulation coating or tool body.

● INSULATED SCREWDRIVER SET (4pcs.)



INSULATED SCREWDRIVER

No.	Count	d	D	L	ℓ	▼g	📦
PDEZ-1	No.1	7	32	205	100	65	5
PDEZ-2	No.2	8	32	230	125	85	5

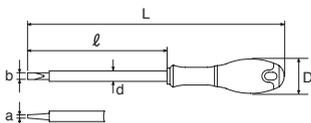


● INSULATED SCREWDRIVER (CROSS) NON-PENETRATING TYPE



INSULATED SCREWDRIVER

No.	a	b	d	D	L	ℓ	▼g	📦
MDEZ-4	0.4	4	6	27	202	100	40	5
MDEZ-5	0.9	5.5	7.5	32	255	150	80	5



● INSULATED SCREWDRIVER (FLAT) NON-PENETRATING TYPE



*Please check the merchandise inventory for a product that is marked by ⚡ before placing an order.

● INSULATED NUT DRIVER

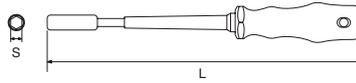
NEW



Tip shape

INSULATED NUT DRIVER

No.	S	L	▼g	☐	
ZND-08	8	225	110	1	



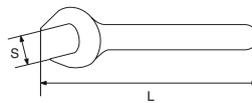
● INSULATED OPEN END WRENCH

NEW



INSULATED OPEN END WRENCH

No.	S	L	▼g	☐	
ZS2-08SE	8	110	25	1	
ZS2-10SE	10	110	30	1	
ZS2-12SE	12	130	60	1	



● INSULATED RESIN NOSE PLIERS

NEW

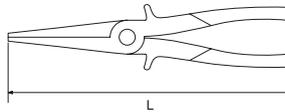


Tip shape

INSULATED RESIN NOSE PLIERS

No.	Material	L	▼g	☐	
ZPSL-220R	Resin	220	145	1	

- Long nose that can be used in narrow, deep spots.
- It can easily remove terminals stuck in place and difficult to remove.
- It is a resin-made that hardly damages the power distribution panel, wiring and the like.



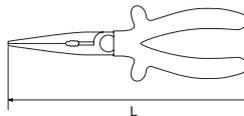
● INSULATED NEEDLE NOSE PLIERS

NEW



INSULATED NEEDLE NOSE PLIERS

No.	L	▼g	☐	
ZPSL-160	160	150	1	



WARNING • Only the grip and red cover in the axis part are insulated.

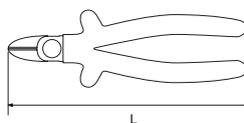
● INSULATED DIAGONAL CUTTING PLIERS

NEW



INSULATED DIAGONAL CUTTING PLIERS

No.	L	▼g	☐	
ZPN1-160	160	210	1	



WARNING • Only the grip and red cover in the axis part are insulated.