Your Torque Partner
TOHNICHI

DIGITAL TORQUE GAUGE
MODEL BTGE-G

OPERATING INSTRUCTION

BTGE-G **BTGE-G Model**

CE

To use this product properly and safely, please read this manual carefully before use. If you have any question about the product and its operations, please contact your nearest distributor or TOHNICHI MFG. CO., LTD.

Safety Precautions

To customers: Before using this product, please read this operating instruction carefully to use it properly. If you have any question, please contact your nearest distributor or TOHNICHI MFG. CO., LTD. This operating instruction should be stored in a safe place.

Safety Symbol

⚠ This symbol is used for drawing attention to "safety precautions". If you see this symbol in this operating instruction, attention should be paid to safety. Take preventative actions according to the description and conduct "safe operations and proper control".

Signal Words

The signal words are the headers which indicate the level of hazard that should be known for human safety and in handling devices. The signal words for safety are "Danger", "Warning" and "Caution" depending on the level of hazard to human. The signal words are used with the safety symbol to indicate the following situations.

"⚠ Danger": Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

"⚠ Warning": Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

"⚠ Caution": Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

⚠ Warning

- **Do not use this instrument in an atmosphere of flammable gas or steam.**
  · Use in such an atmosphere may cause a fire.
- **Disassembly or modification of the instrument is prohibited.**
  · It may result in loss of safety, degradation in functions, shortening of product life, or failure.
- **Do not heat or throw batteries into fire.**
  · Batteries may explode if they are heated or thrown into fire.
- **Consider the environment of the workplace.**
  · Do not use the instrument body and battery in the rain or in damp or wet places.
  Use in such a place may cause an electric shock or smoking.
- **Be sure to use the specified accessories or options.**
  · Do not use any accessory or option other than those specified in this operating instruction.
  Use of any unspecified accessory may result in accident or injury.

⚠ Caution

- **Be sure to use a coin shaped lithium battery CR2450 for power source.**
  · Do not use any other battery than that specified in this operating instruction.
- **When inserting the battery, be careful to ensure correct polarity.**
- **Do not use or store the instrument in places subject to high temperature, high humidity, dust, water which may enter the instrument, strong vibration or unstableness.**
  · Use or storage in such a place may cause a failure in the instrument body.
- **Store in an appropriate place when not in use.**
  · Store the instrument in a dry and lockable place. Otherwise, an injury or accident may be caused. Do not store the instrument body and batteries in a place where the temperature may exceed 50°C. Storage in such a place may degrade batteries, causing smoking or ignition.
- **For safe and efficient operation, conduct the work with a torque value suited to the capacity of the instrument.**
  · Work with a torque value beyond the capacity may cause an accident.
- **Do not use the instrument for any purpose other than that specified.**
  · Use for any purpose other than that specified may result in an injury.

- **Carefully perform maintenance of the instrument.**
  - · For replacement of accessories, follow their operating instructions. If you don't follow the operating instruction, it may cause a failure.
- **Always keep the grip dry and clean and free of oil or grease.**
  - · Otherwise, it may result in an injury.
- **Check the parts for damage.**
  - · Before use, fully check the case and the other parts for damage and make sure that the instrument operates normally and fulfills the specified functions.
  - · Check the parts and all other portions that may affect the operation for damage, abnormality and installation status.
  - · For replacement or repair of a damaged case and other parts, contact your nearest distributor or TOHNICHI MFG. CO., LTD.
- **For proper and safe use**
  - · Do not use any battery other than that specified.
  - · Avoid shock or vibration to this instrument.
  - · Do not use this product in an environment other than that specified in the operating instruction.
  - · Before use, make a pre-operation inspection and check the settings.
  - · If this product gets wet with water or grease, it may break down or burn out. Be careful not to drop water or grease.
  - · Do not let this product fall or bump. It may result in damage or failure.
  - · Use this product within the measurement range specified in the operating instruction.
  - · Be sure to conduct a periodic inspection.
  - · Before make measurement, make sure that "zero" is displayed.
  - · Be sure to perform a daily inspection and calibration at intervals decided in your company.

  Should this product give out abnormal smell or catch fire during use, stop using it immediately. Then, move the torque gauge to a safe place and contact your nearest distributor or TOHNICHI MFG. CO., LTD.

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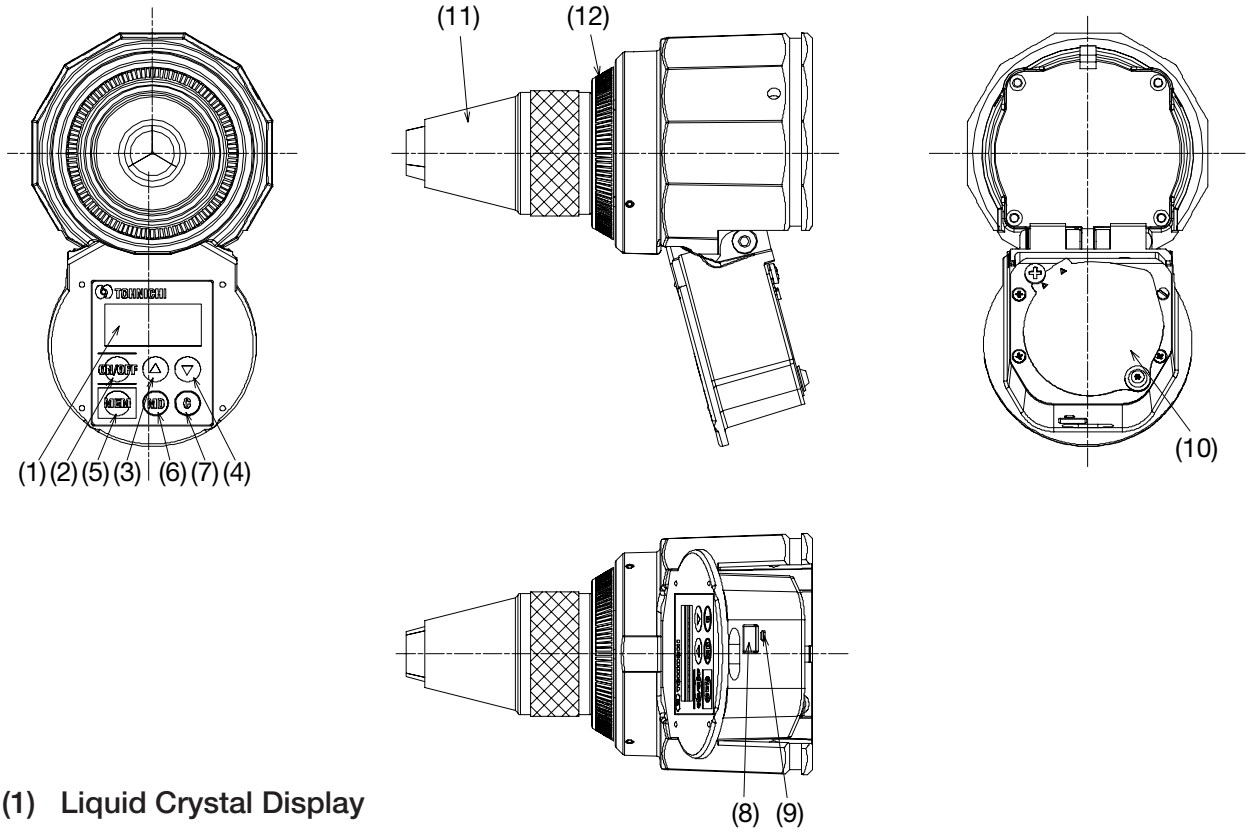
1 Features

(1) Digital torque gauge integral with the digital display.
(2) Hand-held type microcapacity torque meter for measuring the clockwise and counterclockwise torque.
(3) The angle of the torque display can be adjusted according to the working posture.
(4) The integral-type display that has excellent ease of operation and workability.
(5) This torque gauge is best suited for measurement of small torque for precision machines, electronic instruments, etc. and for assembly work.
(6) It also can be used to check torque screwdrivers.
(7) Its tip forms a three-jaw chuck, which can clamp an object to be measured.
(8) It is equipped with a stopper against excessive load.
(9) Up to 999 measurement data can be stored. Data can be automatically counted by the auto memory function.
(10) For the counted data, the number of samples, maximum value, minimum value and mean value can be displayed.
(11) A coin shaped lithium battery (CR2450) is adopted for power source. Continuous operation time is 10 hours. The battery remaining indicator is provided.
(12) Data can be transmitted directly to PC through the USB interface.
(13) This instrument has CE marking for international use including EU.
(14) Measurement Board (Part No. 809) is available to quickly fix the BTGE-G body for measuring works.
(15) Continuous operation capability with using external USB/AC adapter (BA-5).

2 Components

1) Main unit.....1 set
2) Coin shaped lithium battery (CR2450), which is inserted into the body before shipment .....1 set
3) Operating instruction .....1 set
4) Carrying case .....1 set

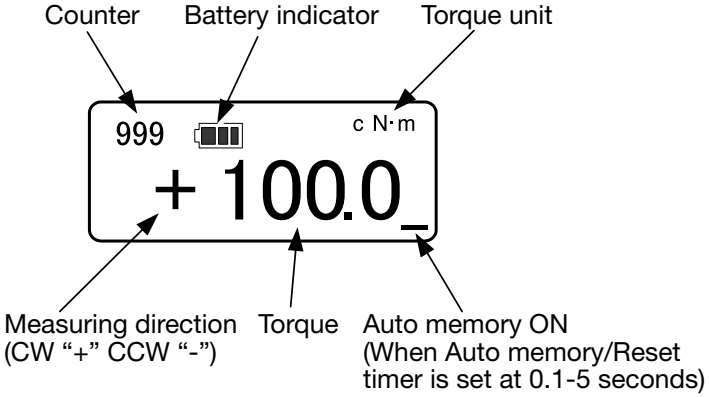
3 Names of Parts and Descriptions



(1) Liquid Crystal Display

Displays the counter, auto memory, battery remaining indicator, unit and torque value.

[Display]



(2) ON/OFF Power Switch

Turns the power to ON/OFF. When the power is turned ON, key checks are conducted.

(3) ▲ Count Forward Key

Moves the counter forward by one or continuously to read out a measured data. After the count forward key is pressed long by 15 consecutive data, the counter can be moved forward by +10 data.

(4) ▼ Count Backward Key

Moves the counter backward by one or continuously to read out a measured data. After the count backward key is pressed long by 15 consecutive data, the counter can be moved backward by -10 data.

(5) MEM Memory Key

Stores the measured data and moves the counter forward by one. The displayed measurement data is output to the external output device. When auto memory (0.1 to 5 sec.) is effective, Memory key cannot be used.

(6) MD Mode Key

This is a key for selecting the computing start position when the counter indicates a number other than 000, the number of samples, maximum value, minimum value or mean value. Keep pressing the key for 2 seconds to make various settings (auto memory/reset, communication baud rate).

(7) C Clear Key

In the PEAK mode, this key is used to reset the peak value or to delete the stored data.
In the RUN mode, auto zero adjustment is performed.

(8) External Output Terminal

This is the terminal for connecting the USB connection cable (option).

(9) Reset Switch

If any display error or malfunction occurs, press the reset switch.

(10) Battery Cover

A coin shaped lithium battery (CR2450) is contained inside the cover.
At the time of purchase, a insulated film is inserted. Take out this film before use.

(11) Three-jaw Chuck

Clamps the object to be measured.

(12) Chuck Holder

When clamping an object with the three-jaw chuck, hold this part to tighten or loosen in order to hold the object.

(13) Fixing Groove

This groove is used in order to fix the torque gauge on a jig, etc. (width: 3.5mm, depth 1.5mm)

4 Detailed Descriptions of Various Functions

(1) Continuous display (RUN mode)

When the counter is set at 000, the torque increases as torque load is applied, and if the load is released, the torque display is returned to 0.

(2) Maximum value display (PEAK mode)

When the counter is set at any value in the range of 001-999, the torque increases as load is applied, and even if the load is released, the display holds the maximum torque value (PEAK HOLD).

However, if the torque is about 15 % or less of the maximum measurement torque, PEAK HOLD is not effective. When Auto memory is on, the displayed PEAK value will be reset after the set timing, and it goes to the next measurement.

(3) Auto Zero function

In the continuous display (RUN mode), press the clear key to activate the auto zero function. (However, the torque load must be within about 20% of the maximum value.)

<<When "Err 9" is displayed>>

- Under no load condition, press the power switch and the clear key.
  - · If the "Err 9" message disappears, the torque gauge functions properly.
  - · If the "Err 9" message remains displayed, press the reset switch, and then press the power switch and the clear key again. If the "Err 9" message still remains displayed, the sensor or the plated circuit may have a problem. Contact TOHNICHI MFG. CO., LTD.

<<When Err 0 is displayed>>

Err 0 may appear if Auto Zero is activated whlile the torque value is still unstable

- Under stable condition, press clear key again.
  - · If Err 0 message disappear, then it can be used normally.
  - · If Err 0 remains displayed, press reset switch, press clear again under stable condition. If it still remains there may be a sensor problem. Contact TOHNICHI to seek further assistance.

Note) When Err 0 or Err 9 is displayed, if the displayed torque value is more than 15% of the torque value, turn off the power or take out the lithium coin battery, otherwise it consumes battery.

(4) Error message

When the power is OFF, press the power switch to ON. Then, the key check function will activate. If there is anything wrong with the key functions, the following error message appears.

<<Err 1: The Count Forward Key is left depressed>>

<<Err 2: The Count Backward Key is left depressed>>

<<Err 3: The Memory Key is left depressed>>

<<Err 4: The Clear Key is left depressed>>

<<Err 5: The Mode Key is left depressed>>

<<Err 8: There is something wrong with the internal memory.>>

Err 1 to 5, or 8 is displayed

- Turn off the power switch. Then, without touching any key, turn on the power again. If the "Err" message disappears, the torque gauge functions properly.

- If the "Err" message remains displayed, turn off the power, and then press the power switch and the clear key at the same time. If the Err message remains displayed, turn off the power once, then press the power switch and the clear key at the same time. If it still remains, the membrane switch, the plated circuit or the internal memory may have problem. Contact TOHNICHI to seek further assistance. If the Err remains displayed, it is advised to turn off the power or take out the lithium battery to stop electricity consumption.

(5) Auto Memory/Reset function

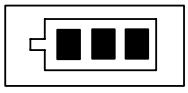
In PEAK mode (Counter 001 _ 999), the peak value will be automatically stored within a given setting range (0.1 to 5 sec, later) and the counter moves forward by one. If the Auto Memory/Reset function is not used, set the time at 0.0 sec.

(6) Auto Power OFF function

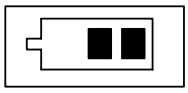
If no key operation is conducted or no torque load (10% or less of the maximum measurement value) is applied for 3 minutes, the power is turned off. When the alarm " — " occurs, regardless of the above condition, the power will be turned off within one minute.
Note) Auto Power OFF function does not work while using USB power supply.

(7) Remaining battery indicating function

The LCD indicates the remaining battery status in 4 steps.



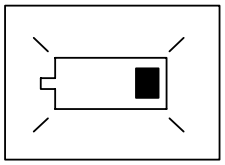
· There is enough battery remaining.



· The remaining battery amount is not enough. The battery life is half of the full operating time.

· It is almost time to replace the battery.

Battery alarm



There is no battery remaining. Immediately charge the battery. " — " is displayed on the LCD, and any switch other than the power switch cannot be operated. In one minute after this battery alarm occurs, the power will be turned off.

Note) Remaining battery indicator is not displayed while using USB power supply.

(8) Over torque alarm

If the torque exceeds about 105% of the maximum measurement torque, the torque value and " — " are Displayed by turns repeatedly and a buzzer sounds (When Buzzer setting is ON).

(9) Over torque alarm and peak hold start torque

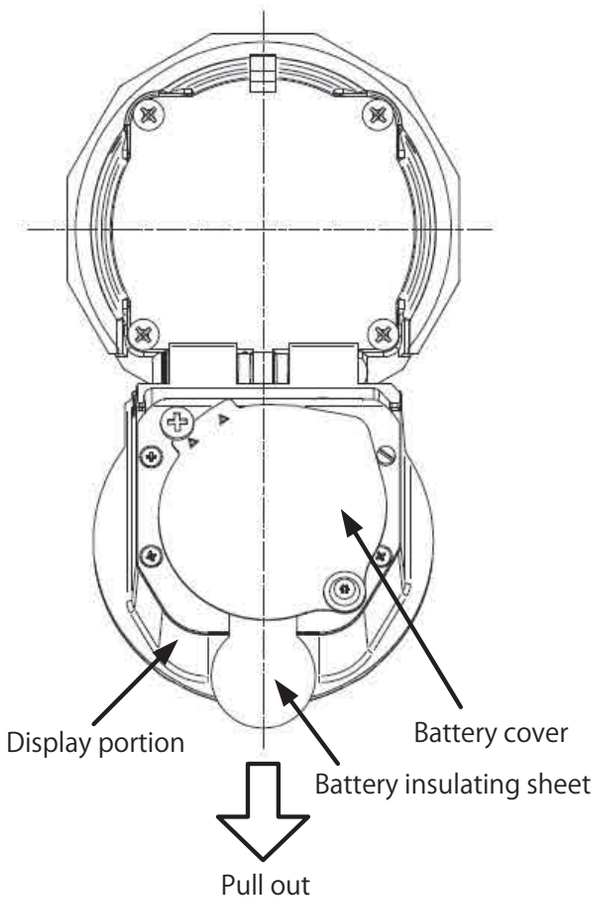
Unit (cN·m)

Model	Torque Range		1digit	105% of max torque	10% of max torque	Auto zero range
	Min.	Max.		Over torque alarm	Peak hold start torque	(within 200 digit)
BTGE10CN-G	2.00	10.00	0.01	10.50	1.50	2.00
BTGE20CN-G	4.00	20.00	0.02	21.00	3.00	4.00
BTGE50CN-G	10.00	50.00	0.05	52.50	7.50	10.00
BTGE100CN-G	20.0	100.0	0.10	105.0	15.00	20.00
BTGE200CN-G	40.0	200.0	0.20	210.0	30.00	40.00

5 How to Use

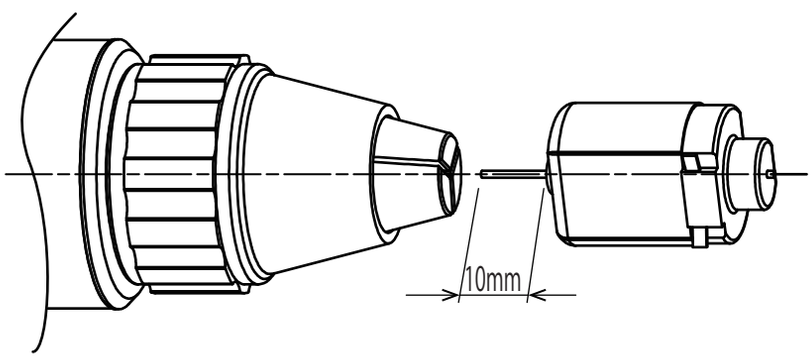
5-1. Before use

· Before using the torque gauge, open the display portion and remove the battery insulating sheet.



· Turn on the power of the torque gauge and make sure that there is enough battery remaining.

· If the battery indicator is flashing, change the battery.



· To hold an object firmly in the chuck, the length should be 10mm or longer.

5-2. When rotating measuring object to measure

· Using the fixing groove, fix the torque gauge to the jig table.

· Holding the chuck holder fixed, open the three-jaw chuck and put the object to be measured in the chuck.

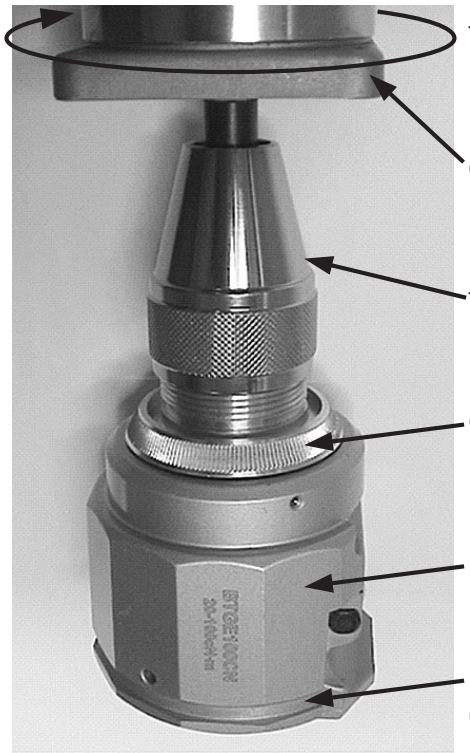
· Place the object to be measured in the center of three-jaw chuck, and while holding the chuck holder fixed, tighten the chuck.

· Turn on the power of the torque gauge.

· If the counter is 000, the continuous display (RUN mode) is set. If the counter is 001-999, the maximum value hold (PEAK mode) is set. It works bi-directionally.

· Before measurement, check the torque value on the display is zero. If it is not zero, press clear at no load condition to activate Auto Zero.

· Rotate the object to measure in RUN mode or PEAK mode and check the torque value on the torque gauge.



Note * Make sure to hold the chuck holder when rotating the three-jaw check, otherwise the torque may transfer to the main body directly and damage the product.

* Make sure to fix the measuring object in the center and keep it level against the torque gauge in order to measure the accurate torque.

5-3. Rotating the torque gauge to measure

· Holding the chuck holder fixed, open the three-jaw chuck and put the object to be measured inside.

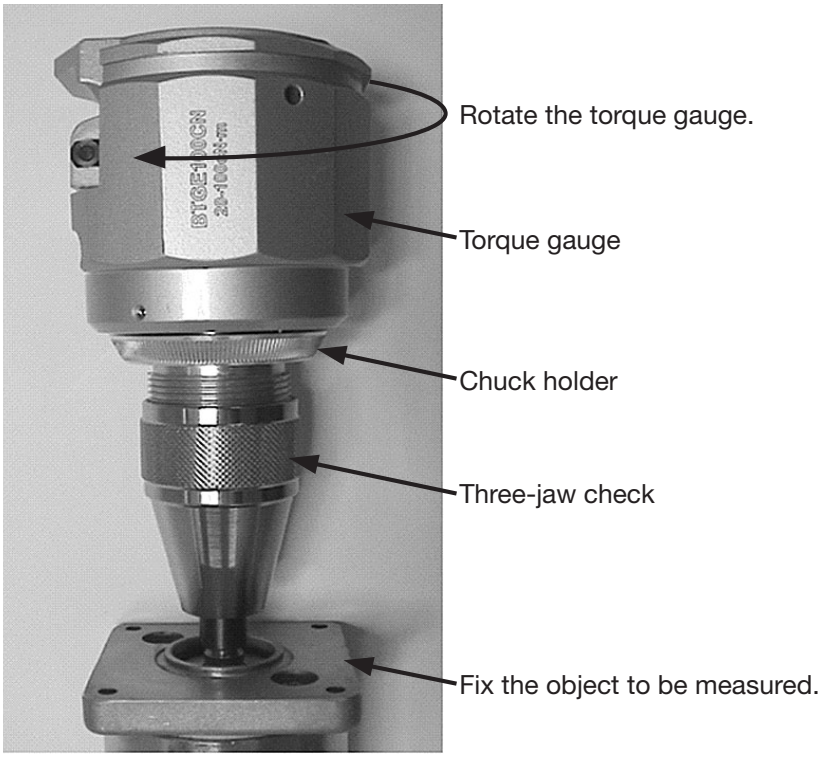
· Place the object to be measured in the center of three-jaw chuck, and while holding the chuck holder fixed, tighten the chuck.

· Turn on the power of the torque gauge.

· If the counter is 000, the continuous display (RUN mode) is set. If the counter is 001-999, the maximum value hold (PEAK mode) is set. Both clockwise and counterclockwise torque can be measured. It works bi-directionally.

· Before measurement, check the torque value on the display is zero. If it is not zero, press clear at no load condition to activate Auto Zero.

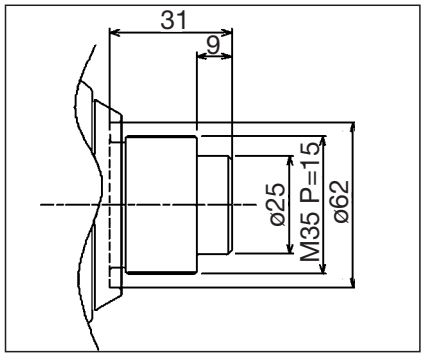
· Rotate the torque gauge in RUN mode or PEAK mode and check the torque value.



Note * Keep the torque gauge straight and level against the object to measure in order to measure the accurate torque.

* If the clamping part of the measuring object is too big for three-jaw chuck to hold, then the three-jaw chuck can be removed and apply a special adapter with which to hold the object to measure.

Drawing: How to fix the adapter.



5-4. How to measure torque screwdriver

· Open the display portion to the fullest extent, and put the instrument body on the worktable with the three-jaw chuck facing upward. (See below picture.)

· Holding the chuck holder fixed, open the three-jaw chuck and put the torque screwdriver bit in it.

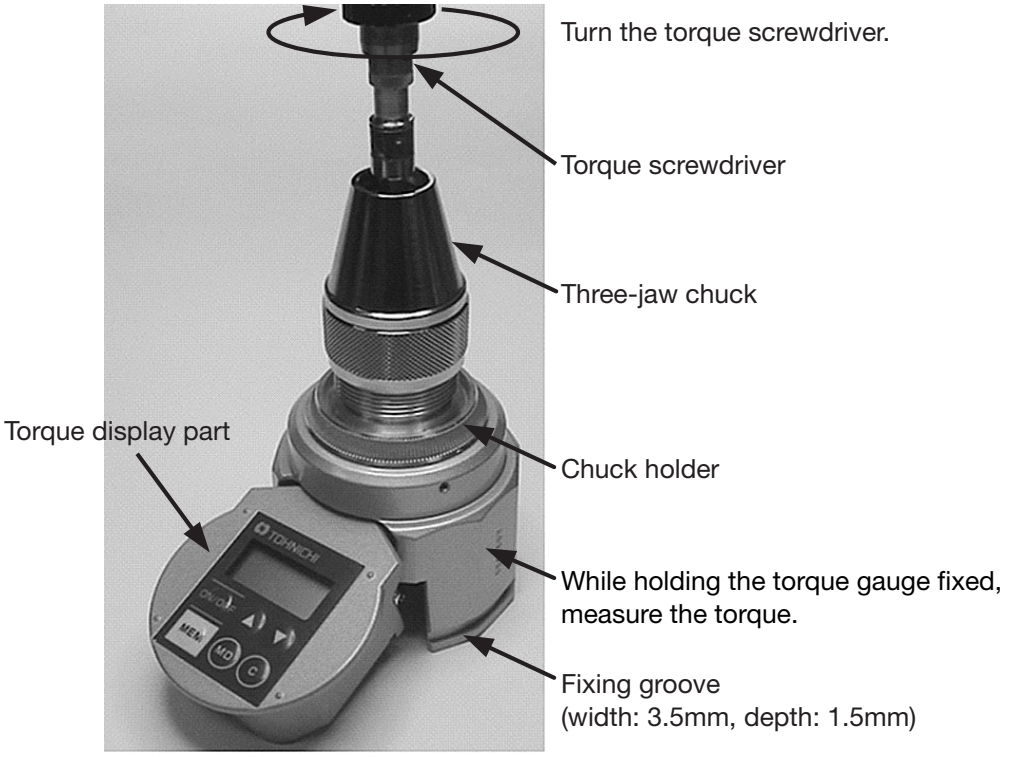
· Place the torque screwdriver bit in the center of three-jaw chuck. While holding the chuck holder fixed, tighten the chuck, and ensure that the bit is set completely.

· Turn on the power of the torque gauge.

· Set the counter at the maximum value hold (PEAK mode) in the range of 001-999.

· Before measurement, make sure that the torque display shows zero. If not, conduct Auto Zero.

· While holding the torque gauge fixed, turn the torque screwdriver and measure the torque.



Note * Hold the screw driver upright when measuring.

* Avoid applying any load on the chuck holder.

* Do not set torque of the screwdriver which exceeds the maximum capacity of the torque gauge.

6 Operating Examples

6-1. Calculation function

The number of data, maximum value, minimum value and mean value of the measurement data in the specified range are calculated.

Using ▲ ▼, set the counter at the upper limit value in the range of data to be calculated.

Press MD.

Ex.1) To calculate in the range of 001-200:
Set the counter at 200, press the MD key, and set Stt at 001.

Ex.2) To calculate in the range of 101-200:
Set the counter at 200, press the MD key, and set Stt at 10.

Using ▲ ▼, set the counter at the lower limit value in the range of data to be calculated.

Press MD.

Press C to cancel.

To display the number of data

Press MD to proceed to max. value.

Press C to cancel.

To display max. value

Press MD to proceed to min. value.

Press C to cancel.

To display min. value

Press MD to proceed to mean value.

Press C to cancel.

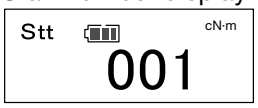
To display mean value

Press MD.

Press C to cancel.

Memory display

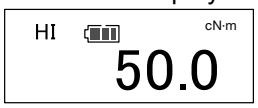
Start number display



Flashing

Number of data display

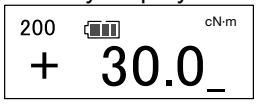
Max. value display



Min. value display

Mean value display

Memory display



6-2. All measurement data output at a time

All measurement data in the specified range is output at a time to an external device (PC).
Make sure output baud rate is set and USB cable (Part No. 384) is connected in advance.

Using ▲ ▼, set the counter at the upper limit value in the range of data to be output.

Press MD.

Ex.1) To output data in the range of 001-200:
Set the counter at 200, press the MD key, and set Stt at 001.

Ex.2) To output data in the range of 101-200:
Set the counter at 200, press the MD key, and set Stt at 101.

Ex.3) To output all measurement data:
Set the counter at 999, press the MD key, and set Stt at 001.

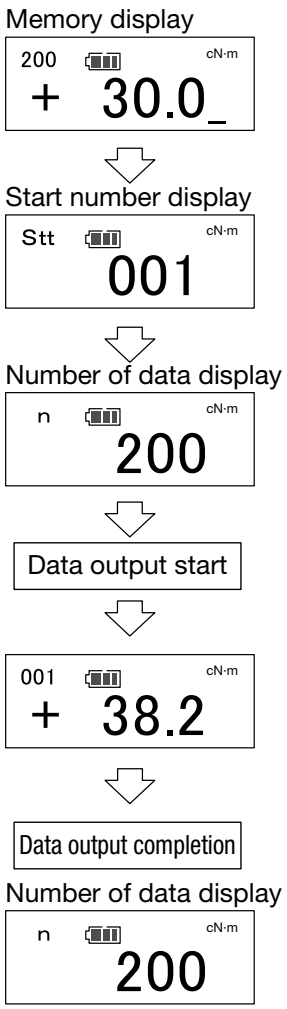
Using ▲ ▼, set the counter at the lower limit value in the range of data to be output.

Press MD to proceed.

Press C to cancel.

When the display shows the number of data, press ▲ to output all measurement data.

Press C to cancel.



* To stop data output, press the Clear key.
While data is output, any other key cannot be operated.

6-3. Delete measurement data

Measurement data can be deleted as follows.

(1) Delete 1 data

Display the counter number of data to be deleted.

Press (C) to delete.

The measurement data is deleted.

(2) Delete data in the specified range

Using (▲) (▼), set the counter at the upper limit value in the range of data to be deleted.

Press (MD).

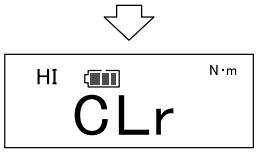
Ex.1) To delete data in the range of 001-200:
Set the counter at 200, press the MD key, and set Stt at 001.
Ex.2) To delete data in the range of 101-200:
Set the counter at 200, press the MD key, and set Stt at 101.
Ex.3) To delete all measurement data:
Set the counter at 999, press the MD key, and set Stt at 001.

Using (▲) (▼), set the counter at the lower limit value in the range of data to be deleted.

Press (MD).

Press (C) to cancel.

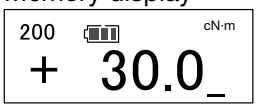
While any of the displays shown in the right box appears, holding the MD key down, press the C key. Then, release both keys.



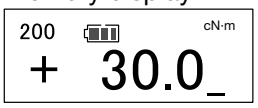
Measurement data memory is deleted.

After deleting, the counter returns to the start counter number and goes back to measurement display.

Memory display



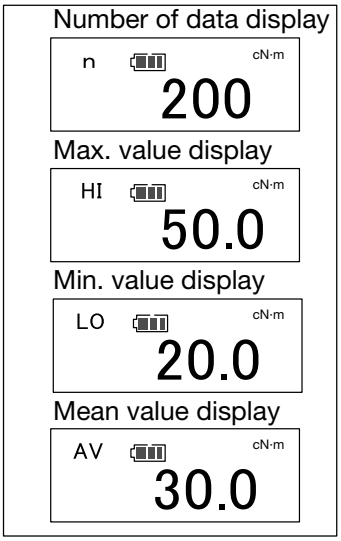
Memory display



Clear start number display

Flashing

Number of data display



7 External Output Specifications

USB Interface		USB1.1 compliant (USB-serial conversion chip used)
Connector		USB mini B
Serial Interface	Baud rate	2400/4800/9600/19200 bps (selectable)
	Data length	8 bits
	Stop bit	1 bit
	Parity	None
	Flow control	None

• USB Output Method

The USB connection cable and communication driver are optionally available (Part No. 384).

· Preparation (PC)

(1) Install the communication driver to a USB-compliant PC.
(The communication driver is contained in the CD-ROM supplied with the product.)

(2) Make settings of the PC port and communication format.
(For the installation procedure and communication settings, see the instruction manual in the CD-ROM.)

· Preparation (BTGE-G)

(3) Turn on the power of BTGE-G.

(4) Select the communication baud rate. (2400/4800/9600/19200 bps)

· Communication

(5) Connect the USB connection cable (option) to the PC and BTGE-G.

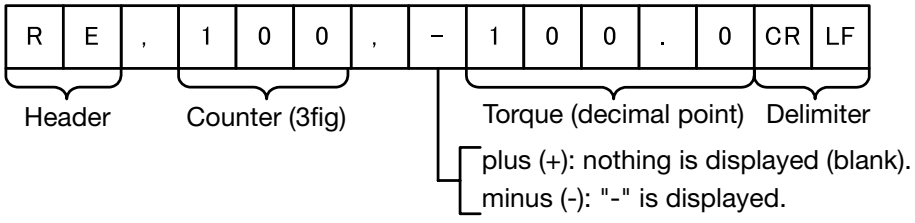
(6) Start up the communication software. (The communication software is not included with the product.)

· Data output

(7) Data Output Method (See the "All measurement data output at a time".)

* Use the optionally available USB connection cable to connect to a PC.
* Connect the cables to PC before starting up the sofrware. Otherwise, communication may not be established.
* If the BTGE-G and multiple Tohnichi's USB serial output devices (CEM3, R-DT999, ST2) are connected to a PC at the same time, communication may not be established.
* Do not connect BTGE-G to PC with USB cable when no battery is installed, or when the battery is running out (Battery alarm).

• Output Format



8 Procedures of Various Settings

This chapter explains various settings.

* Before making settings, make sure that the counter shows 000 (RUN mode).

Press (MD) for over 2 seconds till the mode setting display appears. Then, release the MD key.

8-1. Unit setting

Using (▲) (▼), select measurement unit.
(cN·m ⇔ mN·m ⇔ gf·cm ⇔ ozf·in ⇔ cN·m)

Press MEM to save the setting and proceed to next.

Press (C) to cancel. The display returns to the measurement display.

Press (MD) to proceed to next without saving.

Stored measurement data is also converted into the selected unit.
Unit conversion is calculated by the following coefficient on the cN·m based measurement value.

kgf·cm	0.101972
ozf·in	1.41612
lbf·in	0.088508

8-2. Auto Memory/Reset setting

Using (▲) (▼), change the setting for the Auto Memory/Reset timer. (0.0 ⇔ 0.1 ⇔ 0.2 ⇔ 0.3 ⇔ 0.4 ⇔ 0.5 ⇔ 1.0 ⇔ 2.0 ⇔3.0 ⇔ 4.0 ⇔ 5.0 ⇔ 0.0 sec.) If you prefer manual memory (Auto Memory is not used.), set it as 0.0.

Press MEM to save the setting and proceed to next.

Press (C) to cancel. The display returns to the measurement display.

Press (MD) to proceed to next without saving.

8-3. Communication baud rate setting

Using (▲) (▼), change the setting for the communication baud rate. (2400 ⇔ 4800 ⇔ 9600 ⇔ 19200 ⇔ 2400)

Press MEM to save the setting and proceed to next.

Press (C) to cancel. The display returns to the measurement display.

Press (MD) to proceed to next without saving.

8-4. Buzzer ON/OFF setting

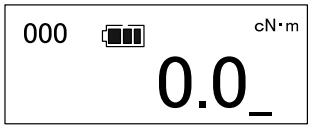
Using (▲) (▼), switch buzzer ON/OFF. (ON ⇔ OFF)

Press MEM to return to measurement display.

Press (C) to return to measurement display.

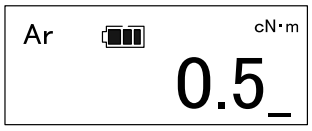
Press (MD) to return to measurement display without saving.

Measurement display

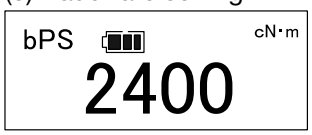


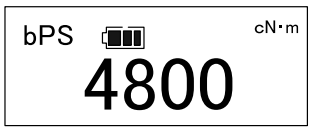
(1) Unit setting

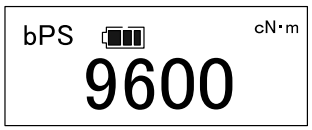
(2) Auto Memory/Reset setting

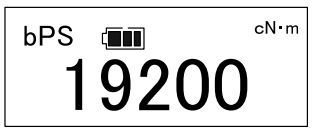


(3) Baud rate setting

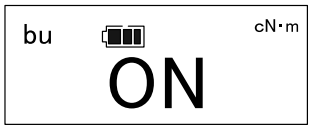


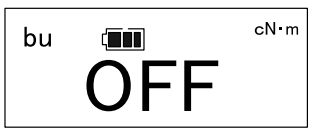






(4) Buzzer ON/OFF setting





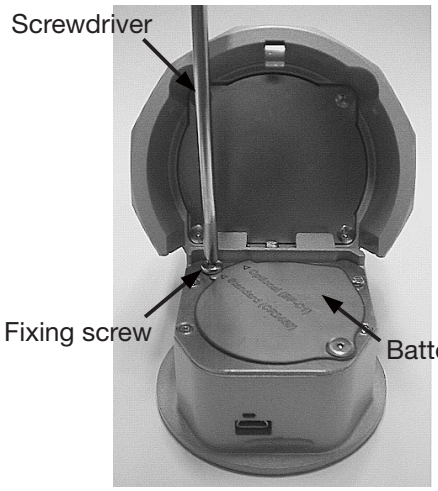
Measurement display

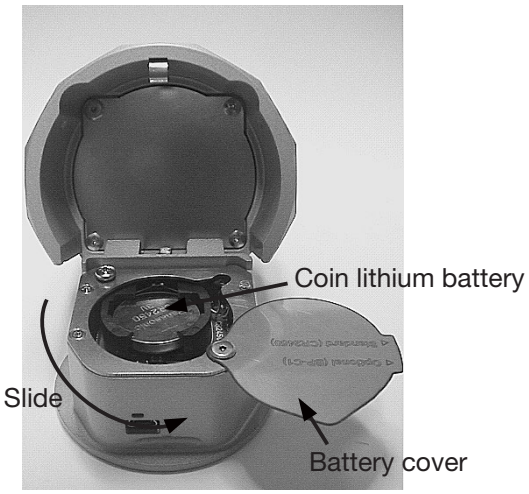
9 Change of Battery

(1) If the battery alarm is displayed, the battery needs replacement.

(2) Open the display part, and loosen the fixing screw on the rear of the display with a screwdriver. (See below left).

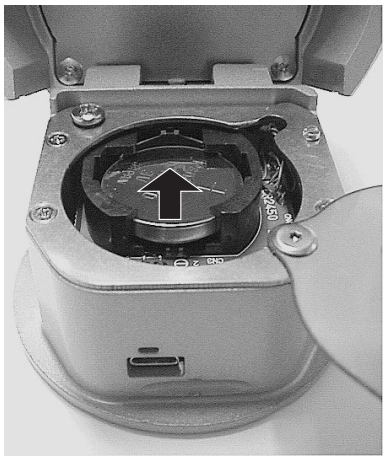
(3) Slide open the battery cover, remove the battery from the holder, and replace it with a new battery.



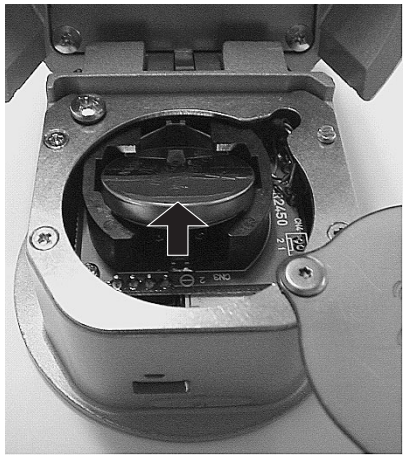


(4) Slide forward the battery to take it out. (See the arrow.)

(5) Keeping the battery forward, pull it up. Remove the battery and replace it with a new one.

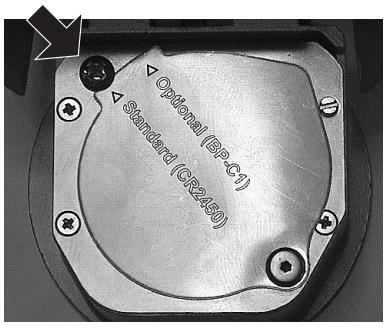


Slide forward the battery



Lift up the battery while sliding forward

(6) After changing battery, put back the battery cover and securely tighten the fixing screw with a screwdriver. Check the position of the battery cover by "Standard (CR2450)" mark.



Note

(1) Use the Coin-shaped lithium battery (CR2450) only.

(2) Make sure to slide the battery sideways and replace the battery. Otherwise, the circuit board may be damaged.

(3) Put the battery in the specified direction. Setting it in wrong direction may cause a failure.

(4) The coin shaped lithium battery has the positive and negative terminals. Before setting the battery, be sure to check the direction of terminals.

10 Optional Accessories

(1) Connecting cable

· BTGE-G → PC

Part No. 384

(2) USB/AC Adapter

· BTGE-G → No. 384 Cable → BA-5

For operating BTGE-G with external power supply through USB connecting cable (No. 384). Need to slide the internal switch for this operation. (Refer to P24)

In case "BATT" is selected

Auto Power OFF and remaining battery indicator is activated.

In case "USB" is selected

Auto Power OFF and remaining battery indicator is NOT activated.

BA-5

(3) Calibration device for torque gauge

· BTGTCL150CN

Components: Device body, calibration pulley x 2, calibration wire x 3, scale pan (5g, 100g)

Combination weights are sold separately. (WS-TCL2)

BTGTCL150CN

(4) Calibration adapter for BTGE-G

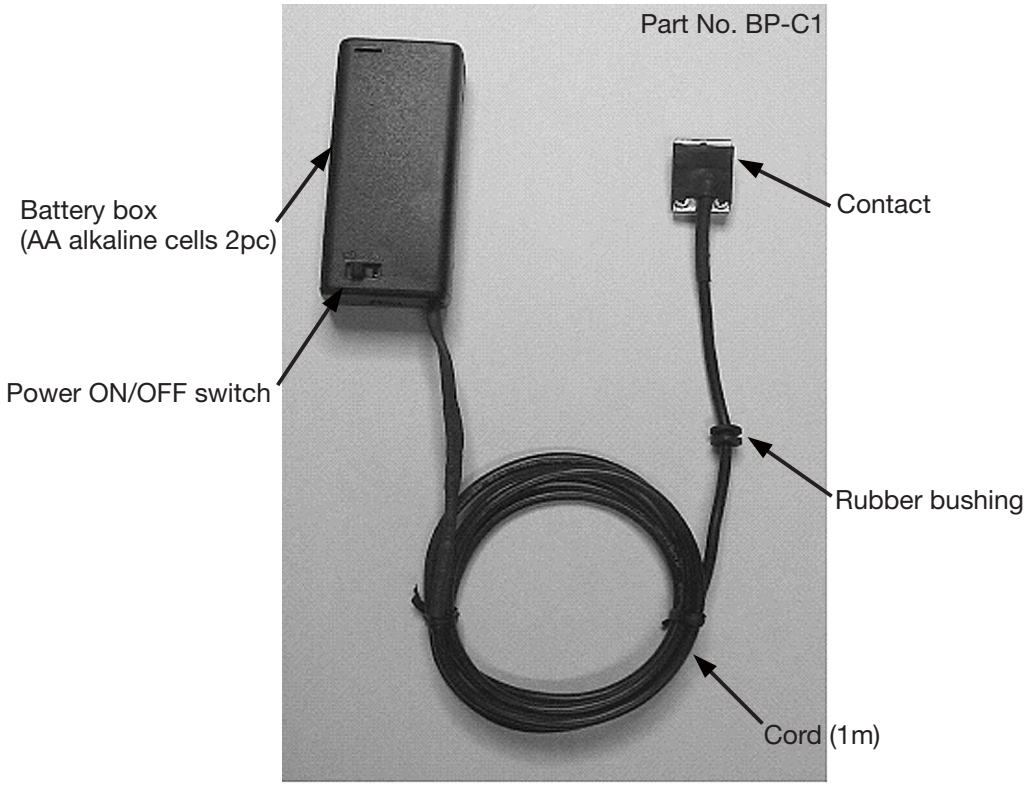
For calibration of BTGE-G, the calibration device (BTGTCL150CN) and the calibration adapter (Catalog No. 807) are needed.

Part No. 807

(5) Battery pack

With BP-C1, maximum 50 hours of continuous use is possible.

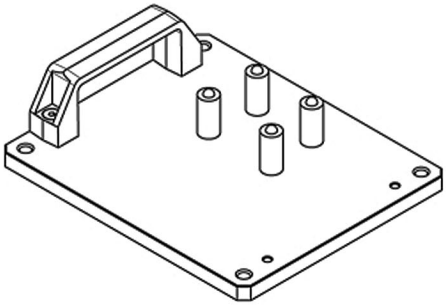
BP-C1 itself does not contain batteries. Purchase 2pc of AA alkaline batteries.



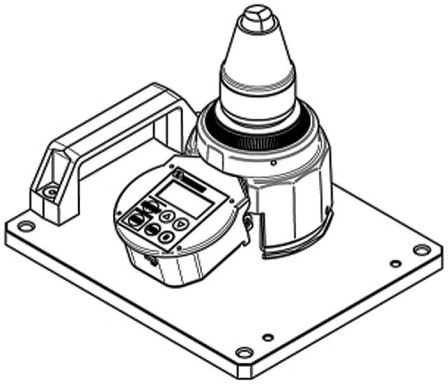
(6) Measurement Board

Measurement Board for BTGE-G is to quickly fix the BTGE-G body for measuring works. Ideal for checking accuracy of torque screwdrivers with monitoring the values on the flip-up display.

Part No. 809



Measurement Board



Measurement Board with BTGE-G

11 How to Use Optional Accessories

(1) Connecting cable (Part No. 384)

Refer to USB Output Method on External Output Specifications.

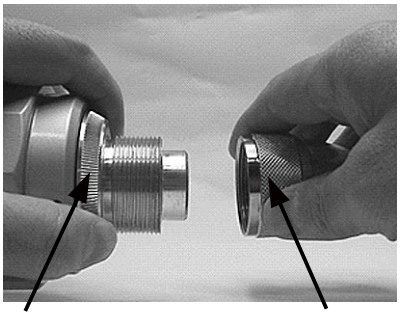
(2) Calibration device for torque gauge (BTGTCL150CN)

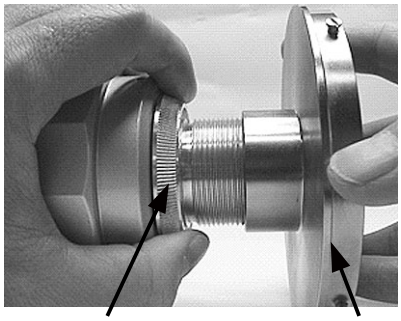
Refer to the operating manual for the calibration device.

(3) How to use BTGE-G calibration adapter (Part No. 807)

· Hold the chuck holder of the torque gauge itself, and remove the three-jaw chuck holder.

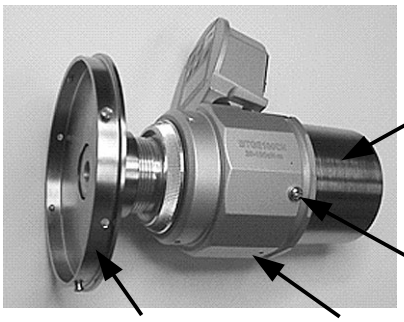
· Hold the chuck holder of the torque gauge and screw in the calibration pulley fully until it is securely fixed.





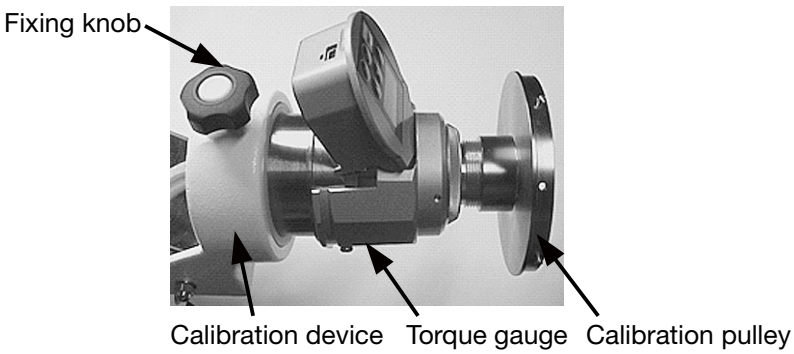
· Put forward the display part of the torque gauge to fullest extent.

· Fix the calibration adapter onto the torque gauge with 2 fixing screws.



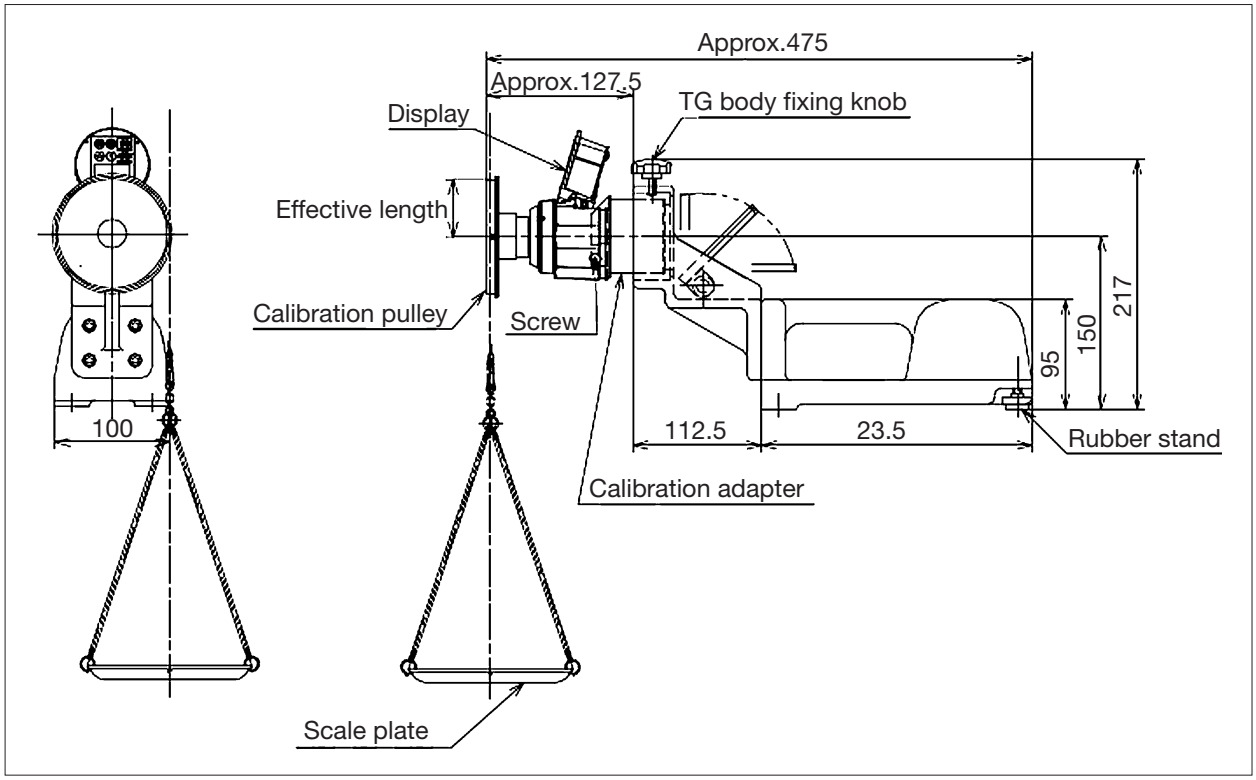
· Hold the torque gauge with the display part on top position and set it to the calibration device. Tighten the fixing knob to fix the position.

· Turn on the power of the torque gauge. Set the counter 000 (RUN mode).



Note

For other calibration devices, refer to their operating instructions.



Calibration device technical drawing

Calibration pulley

Calibration Device	Torque Gauge	Effective length of pulley	Fixed Torque cN·m	Calibration Wire
BTGTCL150CN	BTGE10CN-G	5.0	300	ø 0.27
	BTGE20CN-G			
	BTGE50CN-G	10.0		ø 0.54 (long/short)
	BTGE100CN-G			
	BTGE200CN-G			

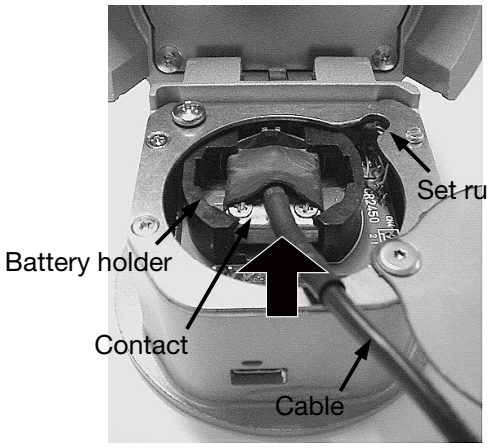
BTGE model and weight for calibration

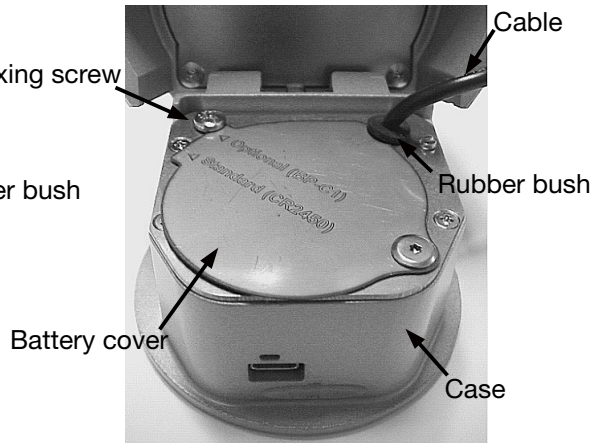
Conversion: 1 kgf·cm = 9.80665 cN·m

Model	Torque (cN·m) / Weight (kg)					Pulley effective length (cm)
BTGE10CN-G	2	3	5	7	10	5.0
	0.0408	0.0612	0.1020	0.1428	0.2039	
BTGE20CN-G	4	6	10	14	20	
	0.0816	0.1224	0.2039	0.2855	0.4079	
BTGE50CN-G	10	15	25	35	50	10.0
	0.1020	0.1530	0.2549	0.3569	0.5099	
BTGE100CN-G	20	30	50	70	100	
	0.2039	0.3059	0.5099	0.7138	1.020	
BTGE200CN-G	40	60	100	140	200	
	0.4079	0.6118	1.020	1.428	2.039	

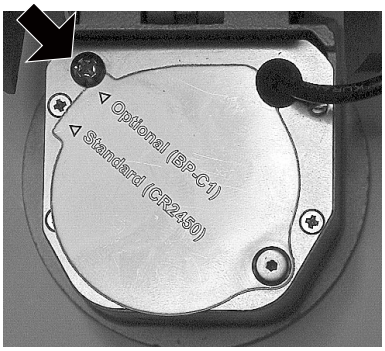
(4) How to use Battery Pack (BP-C1)

- Use 2pc of AA Alkaline batteries. Place them in the battery pack (pay attention to the positive/negative terminals).
- Turn off the power of the battery box.
- Open the display part of the torque gauge, and loosen the fixing screws on the opposing side of the display part.
- Slide to open the battery cover and remove the battery. Set the contact of the battery pack to the battery holder. (See the arrow.)
- Set the rubber bush on the part indicated below, and push in the cable in the case before the rubber bush. Put the battery cover back and screw it with fixing screws.

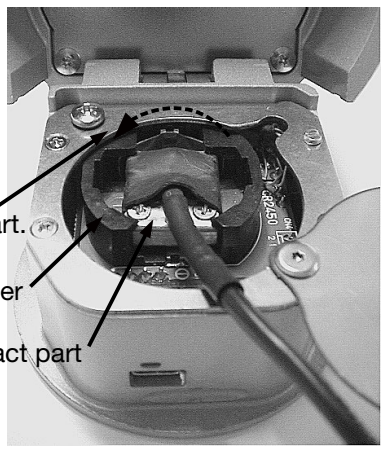




- Fix the position of the battery cover by "Optional (BP-C1)" mark in case of using external power source.



- To remove the contact part, rotate it gently inside the battery holder (see the arrow), then it can be removed easily.

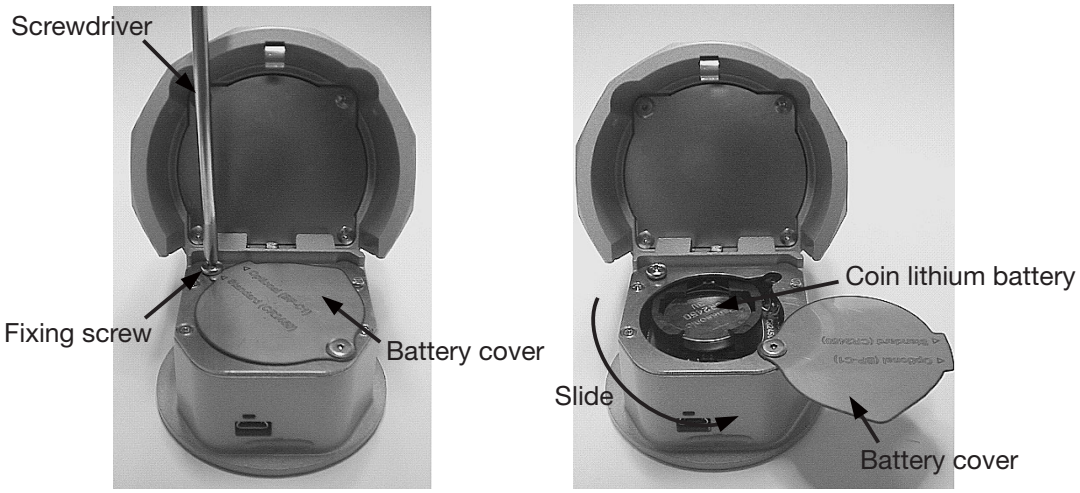


- Turn on the power of the battery box, then it is ready for measurement.

(5) How to use USB/AC Adapter (BA-5)

· Open the display part, and loosen the fixing screw on the rear of the display with a screwdriver. (See below left.)

· Slide to open the battery cover.

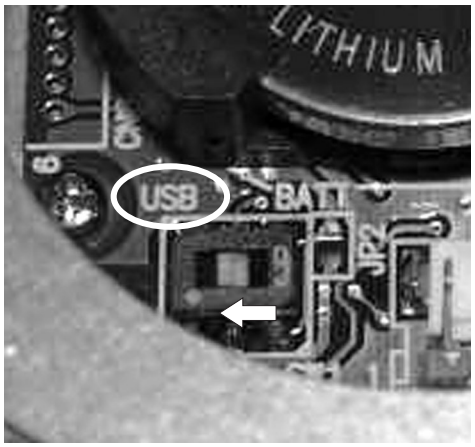


· Slide the power selection switch to "USB". (See Figure 1.) After that, put the battery cover back, and tighten up the fixing screw.

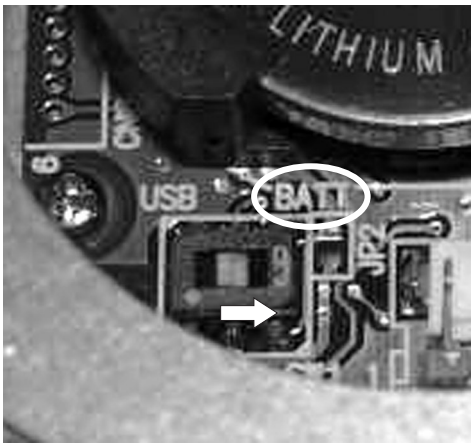
· Connect the USB cable (No. 384) to USB/AC adapter (BA-5) and BTGE-G body.

· Insert USB mini B male terminal on the cable to BTGE-G USB B mini female terminal.

· Turn on the BTGE-G to be ready for measurement.



(Figure 1)

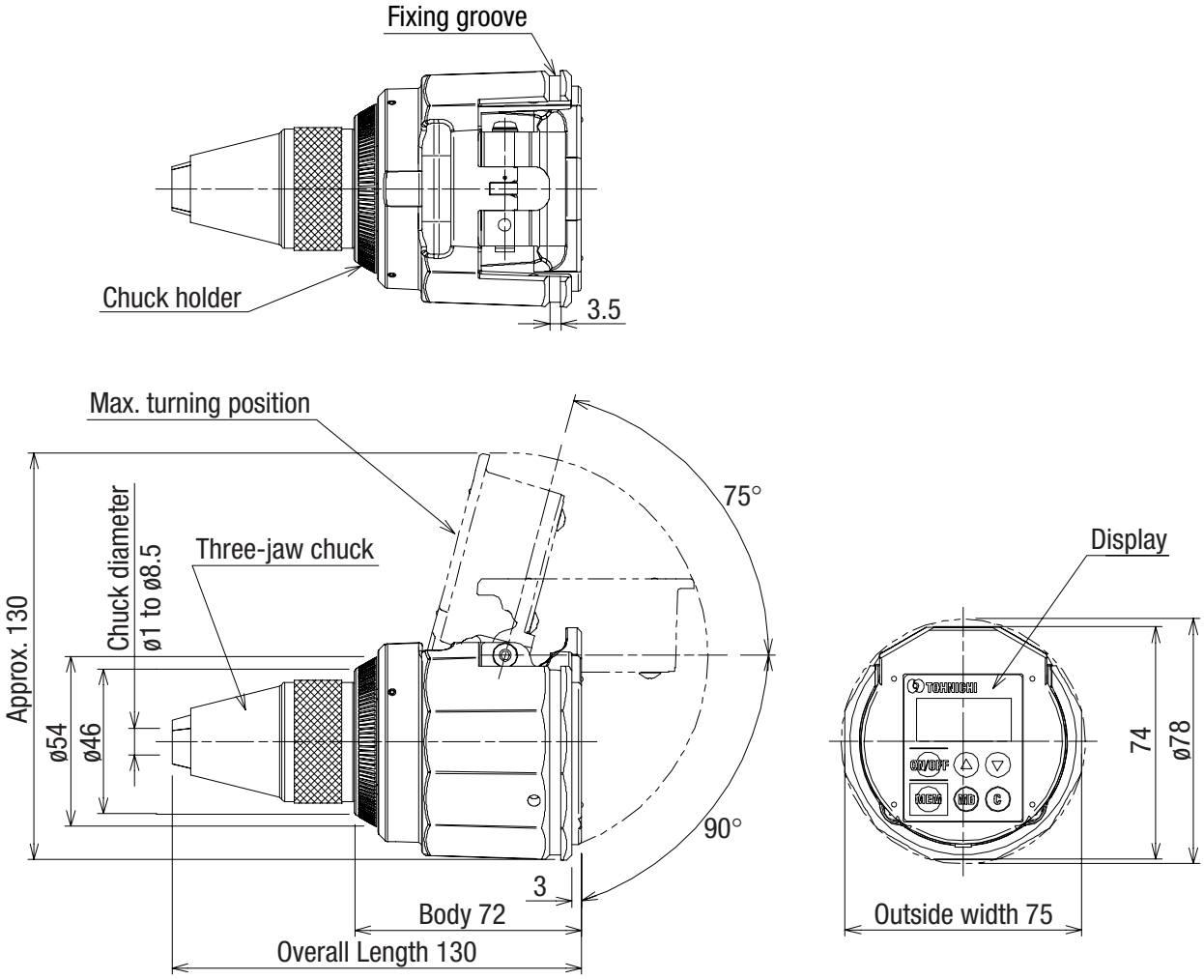


(Figure 2)

· If you need to use Coin Battery or BP-C1 Battery Pack, slide the power selection switch to "BATT". (See figure 2.)

12 Specifications

Technical drawing



Specifications

Accuracy ±2%+1digit

Model	Torque range (cN·m)		Torque range (kgf·cm)		Torque range (ozf·in)		Torque range (lbf·in)	
	Min.-Max.	1digit	Min.-Max.	1digit	Min.-Max.	1digit	Min.-Max.	1digit
BTGE10CN-G	2-10	0.01	0.2-1	0.001	3-14	0.01	0.2-0.88	0.001
BTGE20CN-G	4-20	0.02	0.4-2	0.002	6-28	0.02	0.4-1.7	0.002
BTGE50CN-G	10-50	0.05	1-5	0.005	15-70	0.05	1-4.4	0.005
BTGE100CN-G	20-100	0.1	2-10	0.01	30-140	0.1	2-8.8	0.01
BTGE200CN-G	40-200	0.2	4-20	0.02	60-280	0.2	4-17	0.02

Conversion rate (Standard Unit: cN·m)	
kgf·cm	0.101972
ozf·in	1.41612
lbf·in	0.088508

Chuck diameter (kg)	Overall Length (mm)		Weight (kg)
	Total length	Outside Width	
ø1 to 8.5	130	75	0.65

Common specifications

Direction	Clockwise and counterclockwise
Display	7 segment LCD display Counter value: 3 digits (character height 3mm) Torque value: 4 digits (character height 7mm), Unit, Battery remaining, measuring direction
Measurement Mod	PEAK/RUN
Data Memor	999 readings
Statistical Processing	Number of samples, maximum value, minimum value, mean value
Data Output	USB output (USB mini B terminal)
Power	Coin shaped lithium battery (CR2450)
Coninuous Operating Hours	Approx. 10 hours when using coin battery, Approx. 50 hours when using battery pack BP-C1
Other functions	Auto power off (3min), Auto Memory/Reset 0.5 to 5 seconds variable, Auto Zero adjustment, Battery remaining indicator (in 4 steps), Multiple units of measure selection
Operating Temperature Range	0 to 40 degree (Non condensing)
Display turning range	0 to 165 degrees

Designs and specifications are subject to change without notice.

Your Torque Partner
TOHNICHI

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