

DIGITAL TORQUE SCREWDRIVER TESTER MODEL TDT3-G

OPERATING INSTRUCTION

TDT3-G TDT3-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 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

- (1) Stop using the product when smoke comes out or strange smell or unusual noise occurs.
Use in an abnormal state may result in electric shock or fire.
Immediately turn off the power, remove the plug from the outlet and contact your nearest distributor or TOHNICHI MFG. CO., LTD.
- (2) Do not disassemble or modify this tester.
It may result in loss of safety, degradation in functions, shortening of product life, or failure.
- (3) Stop using the product when foreign matter or liquid such as water gets inside.
If not, you may be exposed to the danger of electric shock or fire.

- (4) Do not connect or disconnect the power plug with wet hands.
You may be exposed to the danger of electric shock.

- (5) Do not use this tester with a power voltage other than that specified (AC100V to 240V).

Use with any unspecified power voltage may result in electric shock or fire.

- (6) Do not use a damaged power cable.

Use of a damaged power cable may result in electric shock or fire.

When handling the power cable, follow the instructions below.

- Do not damage, extend or heat the power cable.
- Do not yank the power cable, put heavy objects on it, or pinch it.
- Do not bend the power cable by force, twist it or bind it.
- Do not use a power cable other than that supplied with the product.
- Do not use the power cable with other devices.

- (7) Handle the power plug carefully.

Improper handling may result in fire.

- Remove any foreign matter such as dust before inserting the plug into outlet.
- Be sure to insert the power plug fully into outlet.

- (8) When removing the power plug from outlet, grasp the plug by hand.

Do not pull on the power cable. It may damage the cable, resulting in fire or electric shock.

- (9) Do not place this tester on an unstable or shaky place such as a rickety table or slope.

The tester may fall, resulting in injury.

- (10) Do not put this tester in a place where inflammable liquid or combustible gas is present.

It may cause electric shock or fire.

- (11) 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**

- (1) Do not put this tester in a place of much moisture or dust, in a place that is exposed to water or direct sunlight, or in a place where the humidity or temperature fluctuates largely.
It may result in electric shock, fire, malfunction, degradation of performance or failure.
- (2) Clean the power plug periodically. Before cleaning, disconnect the plug from outlet and clean the root of the plug and the portion between the blades.
Accumulation of dust at the root of the power plug may cause a short circuit, leading to fire.
- (3) If this tester is not to be used for a long time, be sure to disconnect the power plug from outlet for safety's sake.
- (4) Before moving this tester to another place, be sure to turn off the power, remove the power plug from outlet and disconnect all connecting cables. When

moving the tester, avoid shock or vibration to it.

It may damage the power cable or connecting cables, resulting in fire, electric shock or malfunction.

- (5) Do not use this tester to conduct measurements beyond its capacity.
For safe and efficient operation, use this tester to measure the torque wrenches suited to the capacity.
Measurement beyond the capacity may cause accident or damage.
- (6) Check for any damaged parts.
Before use, check the tester, accessories and other parts for damage and make sure that it operates normally and fulfills the specified functions.
Check the parts and all other portions that may affect the operation for damage, installation status, etc.
For replacement or repair of damaged parts, contact your nearest distributor or TOHNICHI MFG. CO., LTD.

Precautions for Use

For proper and safety use

- (1) Source voltage is limited to AC100-240V $\pm 10\%$ range and it cannot be used beyond this range.
- (2) Make sure to use the accompanying AC adapter only.
- (3) Do not apply vibration or physical impact on this tester.
- (4) Do not use this tester in conditions not specified in this operating instruction.
- (5) Check the functions and settings before use.
- (6) Be careful not to expose the product to water or oil as it may cause malfunction.
- (7) Do not drop the product or hit it against other objects as it may cause product failures.

- (8) Do not use the product beyond its capacity specified in this operating instructions.
- (9) This tester is designed to use for torque screwdrivers only. Do not use it for measuring other products.
- (10) Make sure to conduct periodic inspection.
- (11) Make sure to conduct zero adjustment before measuring.

If there should be strange smell or fire on usage, immediately stop using. Move this instrument to a safe place and contact TOHNICHI.

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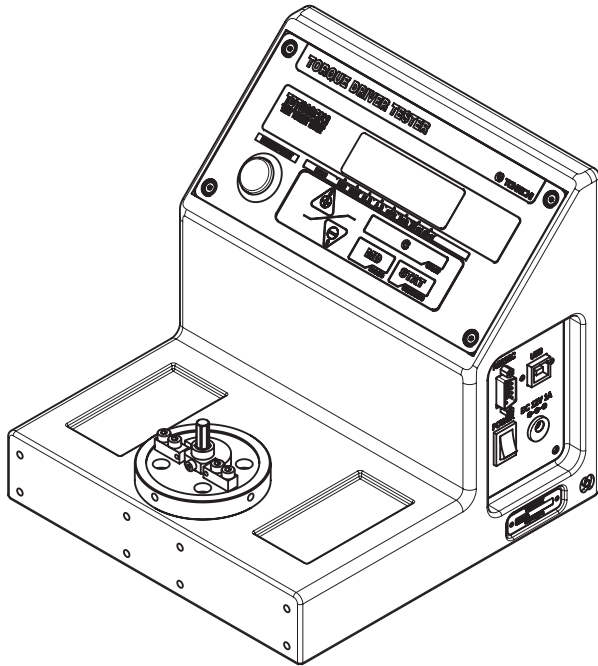
1 Features

TDT3-G torque screwdriver tester has the following features.

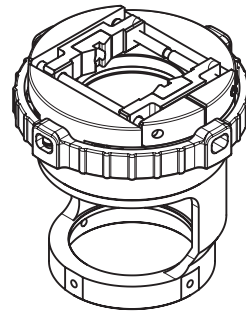
- Mechanical loading eliminates errors caused by varied factors such as operator's measuring speed or application force.
- Torque screwdriver will be firmly fixed by the loading device, which minimizes individual margin of errors, especially when calibrating direct-reading torque screwdrivers.
- Up to 1000 pc of data can be stored. The number of samples, maximum value, minimum value or mean value of the stored data can be calculated and displayed.
- Judgment function allows users to register upper/lower limit torque value, and have TDT3-G give judgment on the measured value against the registered torque range. Blue light is lit when OK, and red light is lit when the value is out of the registered range.
10 different kinds of upper limit value and lower limit value can be registered.
- RS232C (compliant) connector and USB connector (B type) are equipped as standard. They can be easily connected to PC and TOHNICHI printer.
- This tester has CE marking and can be used in EU without problem.

2 Components

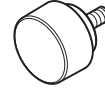
TDT3-G tester and accessories



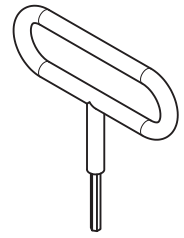
· TDT3-G main body



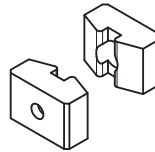
· STA loading device



· Fixing knob



· Clamp tool



· Standard clamp block



· Standard bit



· bit S

· AC adapter (BA-6)

· Power connector conversion adapter (C type)

· Operating instruction

· Operation sticker

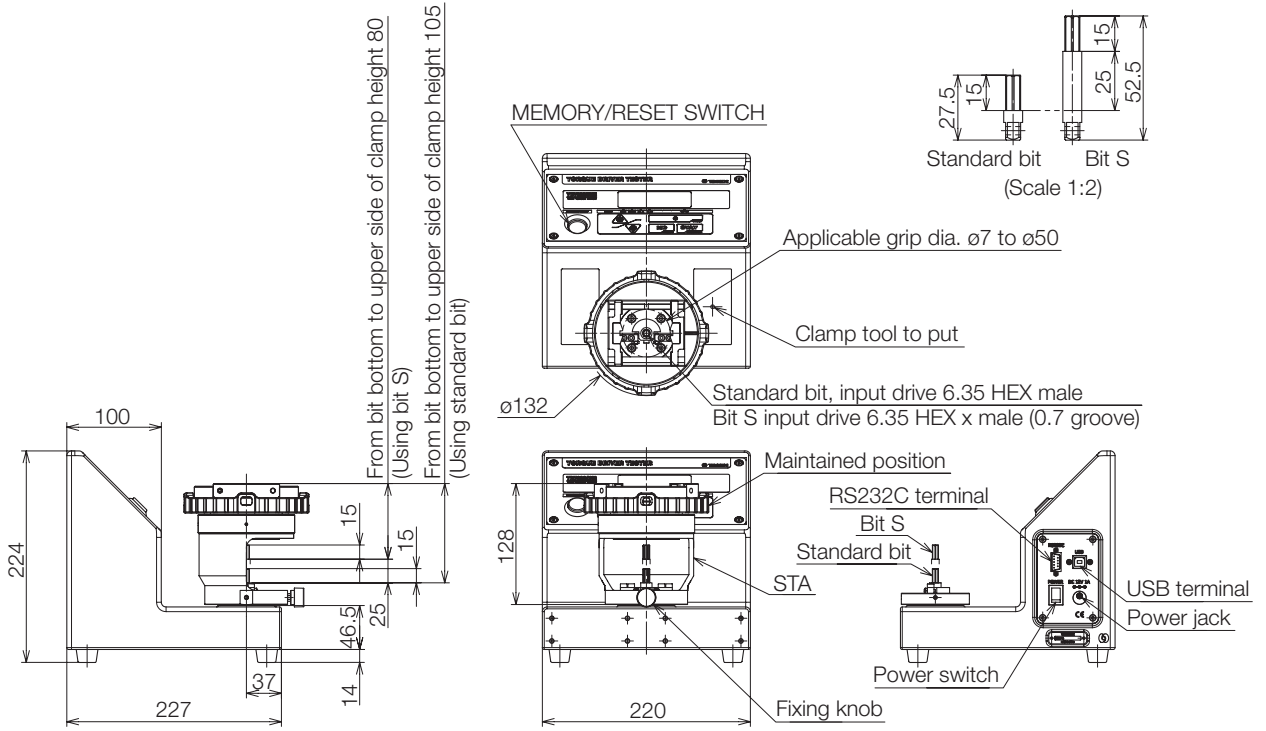
* When purchasing, TDT3-G package includes STA loading device, fixing knob, standard clamp block, and standard bit.

⚠ When measuring direct reading torque screwdrivers, use LTA loading device (optional).

3 Specifications

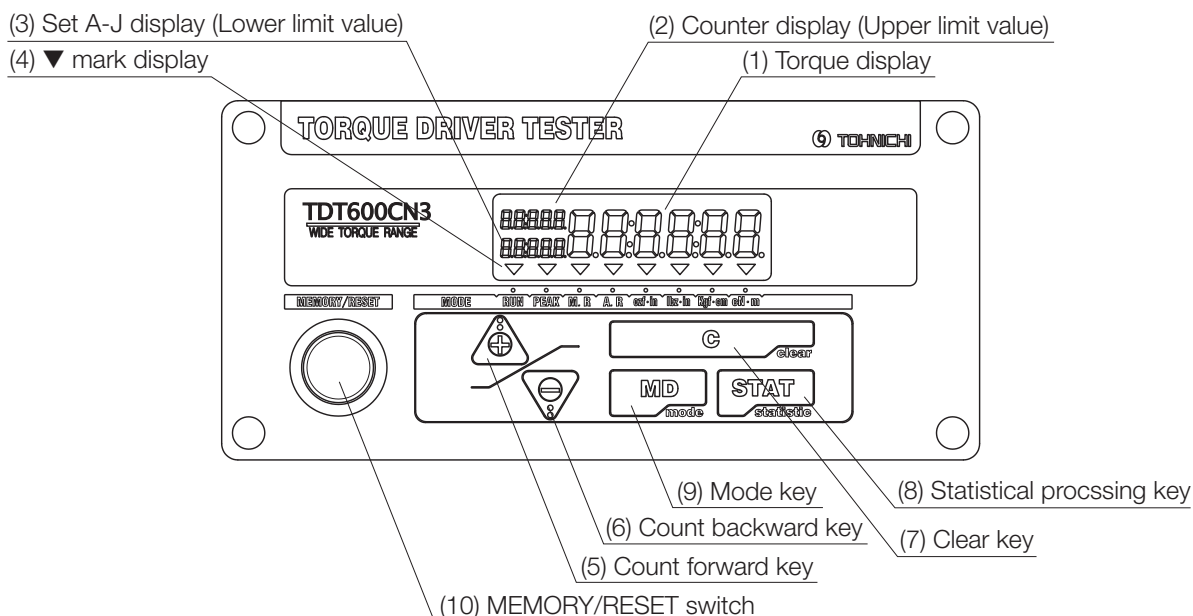
Model			TDT60CN3-G	TDT600CN3-G
Torque Range	Newton [cN·m]	Min. to Max.	2 to 60	20 to 600
		1 digit (in M99 mode)	0.005 (0.01)	0.05 (0.1)
	Metric [kgf·cm]	Min. to Max.	0.2 to 6	2 to 60
		1 digit (in M99 mode)	0.0005 (0.001)	0.005 (0.01)
	American [ozf·in]	Min. to Max.	3 to 80	30 to 800
		1 digit (in M99 mode)	0.005 (0.01)	0.05 (0.1)
American [lbf·in]	Min. to Max.	0.2 to 5	2 to 50	
	1 digit (in M99 mode)	0.0005 (0.001)	0.005 (0.01)	
Measuring Direction			CW/CCW	
Accuracy			±1% + 1digit	
Data Memory			1000 (99 in M99 mode)	
Measuring Mode			PEAK/RUN	
Statistical Processing			Number of samples/max./min./mean value	
Upper/Lower Limit Value Setting			10 kinds	
Zero Adjustment			Auto	
Reset			Manual/Auto (0.1-5.0 sec. selectable)	
Data Output			RS232C (compliant), USB (B type) serial communication	
Square Drive			Hex 6.35 (male) minus 0.7mm (with groove)	
Operating Temperature			0-40 degree (without condensation)	
Power			AC100-240V 50/60Hz	
Weight			Approx. 11kg	
STA (LTD/RTD loading device)			Applicable grip diameter ø7-50mm	
LTA (loading device for FTD)				
Models	Loading Device FTD	LTD/RTD	15, 30, 60CN	(60), 120, 260, 500CN
		NTD/RNTD	15, 30, 60CN	(60), 120, 260, 500CN
		AML D	(4), 8CN	
		BML D	15, 30CN	
		RTDZ/RNTDZ		260, 500CN
	Loading Device LTA (option)	FTD	50CN	(50), 100, 200, 400CN
		FTD2-S	(5), 10, 20, 50CN	(50), 100, 200, 400CN
		STC	50CN	(50), 200, 400CN

	Applicable Model
Standard bit	LTD/RTD60CN-500CN, NTD/RNTD120CN-260CN, RTDLS260CN-500CN, RTDZ500CN
Bit S	LTD/RTD15CN-30CN, NTD/RNTD15CN-30CN, RTDLS120CN, RNTDLS120CN-500CN, RNTDZ260CN-500CN, RTDZ260CN, AMLD/AMRD1CN-8CN



4 Names of Parts

4-1. Indicator and Operating Parts



(1) Torque display

It displays torque value. It shows in blue when judgement is OK and red when judgement is either LO or HI.

(2) Counter display (Upper limit value)

It shows the memory counter or the upper limit value.

(3) Set A-J display (Lower limit value)

It shows the limit value registration (Set A-J). It also shows Lower limit value.

(4) ▼ mark display

- RUN: RUN mode is selected.
- PEAK: PEAK mode is selected.
- M.R: PEAK mode is selected. (Auto memory/Reset is off.)
RUN mode is selected.
- A.R: PEAK mode is selected. (Auto memory/Reset is on.)
- Unit: ▼ appears on the unit (ozf·in, lbf·in, cN·m or kgf·cm) is selected.

(5) Count forward key (▲ key)

It moves the counter forward by one or continuously to read out measured data.

(6) Count backward key (▼ key)

It moves the counter backward by one or continuously to read out measured data.

(7) Clear key (C key)

Use this key in PEAK mode to clear the displayed data. Use this key in RUN mode for auto zero adjustment.

(8) Statistical processing key (STAT key)

Use this key to select samples, maximum value, minimum value or average value.

(9) Mode Key (MD key)

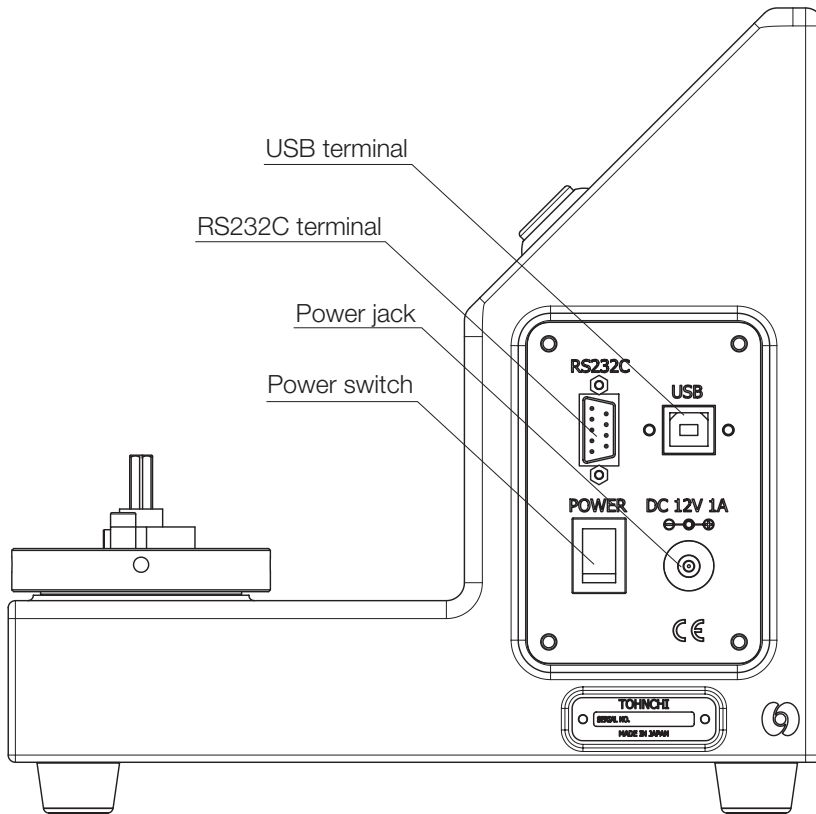
Push this key to select RUN mode or PEAK mode.

Keep pushing this key for 2 seconds or more, then it turns to upper/lower limit value selection.

(10) MEMORY/RESET switch

After giving judgement to the measured data, it moves the counter forward by one.

4-2. Power Source and Output



(1) Power jack (12V, 1A, center plus)

Use the included AC adapter (BA-6).

(2) Power switch

Turn power ON and OFF.

(3) RS232C terminal

Use RS232C communication cable to connect.

(4) USB terminal (B type), serial terminal

Connect USB communication cable.

* RS232C terminal and USB terminal should not be connected to external device at the same time.

5 Functions and Operation

5-1. RUN MODE

Torque value increases as torque is applied, and decreases and returns to 0 as it is released. ▼ mark appears above RUN. This mode is used when measuring a direct-reading torque screwdriver or calibrating TDT3-G itself. Push MD key to switch to PEAK MODE.

5-2. PEAK HOLD MODE

Torque value increases as torque is applied, and the displayed value stays at the peak value after releasing load. ▼ mark appears above PEAK on the display panel. This mode is used mainly for measuring click-type torque screwdrivers. Push MD key to switch to RUN MODE.

5-3. Selecting Upper and Lower Limit Value

Select pre-registered upper/lower limit value.

- (1) Keep pushing MD key for 2 seconds and the display proceeds to upper/lower limit selection.
- (2) Using ▲▼ key, select upper and lower limit value.
- (3) Push STAT key to decide upper/lower limit value and returns to measuring condition. If you push MD key, it returns to measuring condition with previous upper/lower limit value settings.
(For setting upper/lower limit value, refer to chapter 6 Various Settings.)

5-4. OK/NG Judgment/Data Memory

As MEMORY/RESET button is pushed (or AUTO MEMORY/RESET function operates), judgment will be conducted, and measured data will be saved up to 1000pc. When judgment is OK, the digital display turns blue for 0.5 seconds. When judgment is LO/HI, the digital display turns red for 1 second. Judgment will not be conducted when upper/lower limit value is set to 0. Judgment will be conducted with the following conditions.

HI: Upper limit value < Measured value

OK: Lower limit value ≤ Measured value ≤ Upper limit value

LO: Measured value < Lower limit value

5-5. Auto Memory/Reset

In Auto Memory/Reset function, judgment will be conducted 0.1-5.0 seconds after releasing load (PEAK HOLD) and the measured value is saved automatically. The display proceeds to the next counter. When the judgment is OK, the digital display turns blue for 0.5 seconds. When the judgment is LO/HI, the digital display turns red for 1 second. When upper/lower limit value is set to 0, judgment will not be conducted.

5-6. Deletion of Data

(1) Delete one data

Select the data you want to delete by using ▲▼ key. Push C key to delete the data.

(2) Delete a range of data

Select the last counter of the data range you want to delete by using ▲▼ key. Push STAT key, the “Stt” appears on the display. Then select the first counter of the data range you want to delete by using ▲▼ key and push STAT key again. While the display shows “n”, “HI”, “Lo” or “Av”, push STAT key and C key at the same time to delete the selected range of data.

(3) Delete all data

While pushing MEMORY/RESET switch, turn on the power. “CLEAR” appears on the display and all the data will be deleted.

Attention

* Before deleting data, check again if the data is really OK to delete.

* Before turning the power off, make sure to transfer all the necessary data to an external device.

5-7. Statistical Processing Function (Number of sample, Max, Minimum, Mean value)

(1) Using ▲▼ key, select the last counter of the data range you want to calculate.

(2) Push STAT key, then “Stt” appears on the display. Using ▲▼ key, select the first counter of your selected data range.

Push STAT key, then it shows the number of sample “n”, maximum value “HI”, lowest value “Lo”, and the mean value “Av” in order.

5-8. Auto Zero Adjustment

Auto zero function will be activated when pushing C key or turning power off/on. Auto zero function works only when the displayed value is below the values shown in the below table. Remove the torque screwdriver from the tester when activating Auto Zero Adjustment.

TDT60CN3	3 cN·m
TDT600CN3	30 cN·m

When the torque load is above the value shown on the table, the display shows “Err9”.

<<In case Err9 appears>>

- Push C key at no load condition.
 - If Err9 disappears, it functions properly.
- If Err9 does not disappear, turn off the power once, turn it on and try again.
 - If Err9 does not disappear, the torque sensor or the circuit board may have error.

5-9. Over-Torque Alarm

If applied torque exceeds 110% of the maximum limit of the measurable torque range, the value on the display flashes for alarming.

5-10. Error Display

TDT3-G includes self-check function, and Err1-9 will be displayed when there is an error.

<<when Err1-5 appears>>

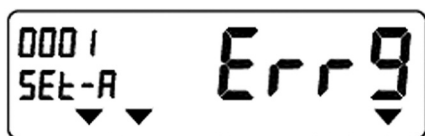
- Turn off the power, and turn it on without touching any keys.
 - If Err disappears, it is restored.
 - If Err continues to stay, contact your nearest distributor or TOHNICHI to seek assistance.

<<when Err8 appears>>

- Contact your nearest distributor or TOHNICHI for repair.

<<when Err9 appears>>

- Push C key at no load condition.
 - If Err9 disappears, it is restored.
- If Err9 continues to stay, turn off the power once and turn it on again.
 - If Err9 still continues to stay, contact your nearest distributor or TOHNICHI for repair.



6 Various Settings

Refer to below table for various settings, functions and operation.

6-1. Settings

- Registration of Upper/Lower limit value

	Setting Subject	Upper Left Screen	Lower Left Screen	Main Display	
				Default	Select TDT60CN3 (TDT600CN3)
1	Select subject to set	- -		torq-S	PArA-S
2	Measuring unit	Unit		cN·m	4 different measurement unit by ▼ mark
3	Upper limit value (A)	HI	SEt-A	00.000 (000.00)	00.000-60.000 (000.00-600.00)
4	Lower limit value (A)	Lo	SEt-A	00.000 (000.00)	00.000-60.000 (000.00-600.00)
5	Upper limit value (B)	HI	SEt-b	00.000 (000.00)	00.000-60.000 (000.00-600.00)
6	Lower limit value (B)	Lo	SEt-b	00.000 (000.00)	00.000-60.000 (000.00-600.00)
23	Upper limit value (J)	HI	SEt-J	00.000 (000.00)	00.000-60.000 (000.00-600.00)
24	Lower limit value (J)	Lo	SEt-J	00.000 (000.00)	00.000-60.000 (000.00-600.00)

* When memory mode is set to "99", upper/lower limit value will be 4 digits at max.

- Parameter settings

	Setting Subject	Upper Left Screen	Lower Left Screen	Main Display	
				Default	Selection
1	Auto memory/Reset	Ar		0.0	0.1/0.2/0.3/0.4/0.5/1.0/2.0/3.0/4.0/5.0
2	Key operation sound	bU		on	oFF
3	External output	doUt		PC	Prn
4	Baud rate	bPS		2400	4800/9600/19200
5	Data length	LngtH		7bit	8bit
6	Parity	PArty		nonE	odd/EVEn
7	Memory mode	dCnt		1000	99
8	Default setting	dFLt		dFLt-n	dFLt-y

6-2. Registration of Upper/Lower Limit Value

- Changing to setting mode

At no load condition, push C => STAT => MD key in order, then the screen shows item selection after “----”.

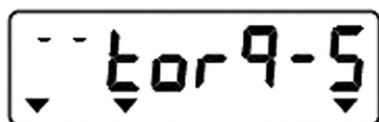


- Selecting items to set

Register upper/lower limit value and other parameter settings.

While it shows “torq-S”, press MD key or STAT key then it proceeds to next.

(If you press C key, it returns to measuring display without setting.)



- Selecting measuring unit (default: cN·m)

Select measuring unit.

Use ▲▼ key to select unit and push STAT key to decide.

(If you press C key, it returns to measuring display without setting.)



- Registering upper limit value (A) (default: 0)

Register upper limit value (A) for judgment.

Use ▲ key to select digit, and ▼ key to select number, and STAT key to decide and proceed to lower limit value (A) setting.

(If you push MD key, it proceeds to next without saving. If you push C key, it returns to measuring display. If the input value is out of the measurable range, it shows “SEtErr” and automatically returns to upper limit value setting.)



- Register lower limit value (A) (default: 0)

Register lower limit value (A) for judgment.

Use ▲ key to select digit, ▼ key to select number, and STAT key to decide and proceed to upper limit (B) setting.

(If you push MD key, it proceeds to next without saving. If you push C key, it returns to measuring display. If the input value is out of the measurable range, it shows “SEtErr” and automatically returns to upper limit value setting)



In the same way, register upper and lower limit value (B to J).

After registering the lower limit value (J), it returns to the measuring display.

If you want to cancel settings, push C key to return to the measuring display without setting.

6-3 Parameter Settings

- Setting mode

At no load condition, push C => STAT => MD key, then it turns to setting.



- Selecting items to set

Select upper/lower limit or parameter setting.

Use ▲▼ key to change it to “PAR-A-S” and push MD key or STAT key to proceed to next.

(If you press C key, it returns to measuring display without setting.)



- Auto memory/Reset (default: 0.0)

Using ▲▼ key, set the timing from 0.1 to 5.0 seconds and push STAT key to decide and proceed to next.

To cancel Auto memory/Reset mode (manual mode), set it to 0.0.

(If you press C key, it returns to measuring display without setting.)

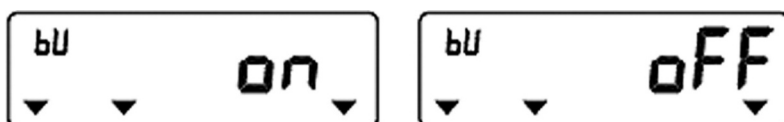


- Key operation sound (default: on)

Turn on or off the operation sound. Even if you set “oFF”, over-torque alarm cannot be cancelled.

Using ▲▼ key, select “on” or “oFF” and push STAT key to decide. It proceeds to communication setting.

(If you press C key, it returns to measuring display without setting.)



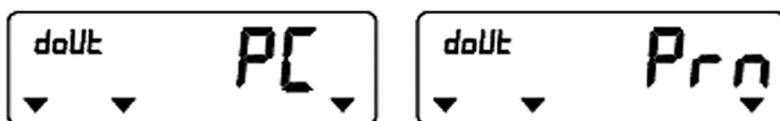
- Communication settings

(1) Output format (default: PC)

Set the external communication format to “Printer” or “PC”.

Use ▲▼ key, select “Prn” for printer output and “PC” for PC output. Push STAT key to decide. It proceeds to baud rate setting.

(If you press C key, it returns to measuring display without setting.)



(2) Baud rate setting (default: 2400bps)

Set baud rate.

Use ▲▼ key to select 2400/4800/9600/19200 bps and push STAT key to decide. It proceeds to data length setting.

(If you press C key, it returns to measuring display without setting.)

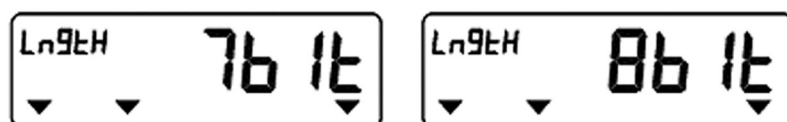


(3) Data length (default: 7 bit)

Set data length

Using ▲▼ key, select 7 bit or 8 bit, and push STAT key to decide. It proceeds to parity setting.

(If you press C key, it returns to measuring display without setting.)



(4) Parity (default: none)

Set parity

Using ▲▼ key, select “nonE” for none, “EVEN” for even, “odd” for odd and push STAT key to decide. It returns to measuring condition.

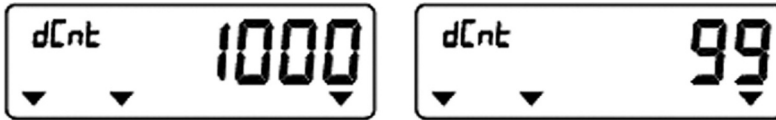
(If you press C key, it returns to measuring display without setting.)



• Memory mode (default: 1000)

Select “1000” or “99” for number of data to store in memory. (1000: 1000pc of data can be stored. 99: 99pc of data can be stored. Compliant with TDT2 communication format.

* If you select 99, torque value can be max 4 digit.



Using ▲▼ key to select 1000 or 99, and push STAT to confirm.

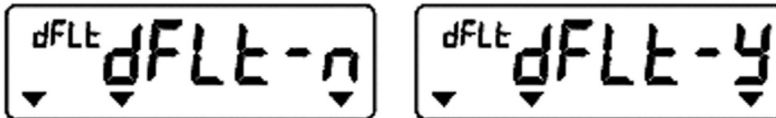
(If you press C key, it returns to measuring display without setting.)



Push STAT key to switch memory mode, clear the memory data and proceed to next.

* By switching the memory mode, the measured data will be deleted.

(If you press C key, it returns to measuring display without setting.)



• Default setting

Put settings back to original setting (default setting).

Use ▲▼ key and select “dFLt-Y” and push STAT key. All settings will be set back to original setting (default setting).

(If you press C key, it returns to measuring display without setting.)

7 Measuring a Torque Screwdriver (Recommended)

7-1-1. Operating Temperature

Measuring should be conducted at temperature in 18-28°C range. Temperature fluctuation should be within $\pm 1^\circ\text{C}$.

7-1-2. Check the Following before Calibrating the Torque Screwdriver.

- (1) Torque screwdriver tester should be set at stable working table.
- (2) For calibration of direct reading torque screwdriver, make sure to read the value from upright position to avoid reading errors by angle.
- (3) For calibration of click-type torque screwdriver (RTD/LTD), apply training torque at the maximum value for 5 times without measuring prior to the official calibration. Do the same training for the other direction as well.
- (4) For calibration of direct reading torque screwdriver (FTD, STC), apply training torque to the max torque value once and release the torque. Then set the digital display back to zero. Repeat the same procedure for the other direction as well.

7-2. Attention for Measuring Torque Screwdrivers

- (1) For measuring click-type torque screwdrivers (RTD/LTD), apply torque slowly and evenly. Except for preset type (such as RNTD/NTD), click-type torque screwdrivers (such as RTD/LTD) must measure from the lower point, and adjust to respective torque value.
- (2) For measuring direct-reading type torque screwdriver (FTD/STC, etc), use torque screwdriver tester to apply torque to the measurement value. If the applied torque exceed the measurement point, it needs to be redone.

* LTA loading device is an optional kit.

7-3. How to Measure

- (1) Set TDT3-G on stable work table free of vibration.
- (2) Connect AC adapter to the power jack on side of TDT3-G. Make sure the power is switched off, then connect the adapter to power source.
- (3) Turn on the power. (Leave it on for 30 minutes or more.)
- (4) Conduct all settings.

Refer to Chapter 6 Various Settings for Auto memory/Reset and other communication settings.

- (5) Set the measuring mode based on the torque screwdriver to measure.

Click type torque screwdriver (RTD/LTD): Peak mode (PEAK)

- (6) Conduct auto zero adjustment.

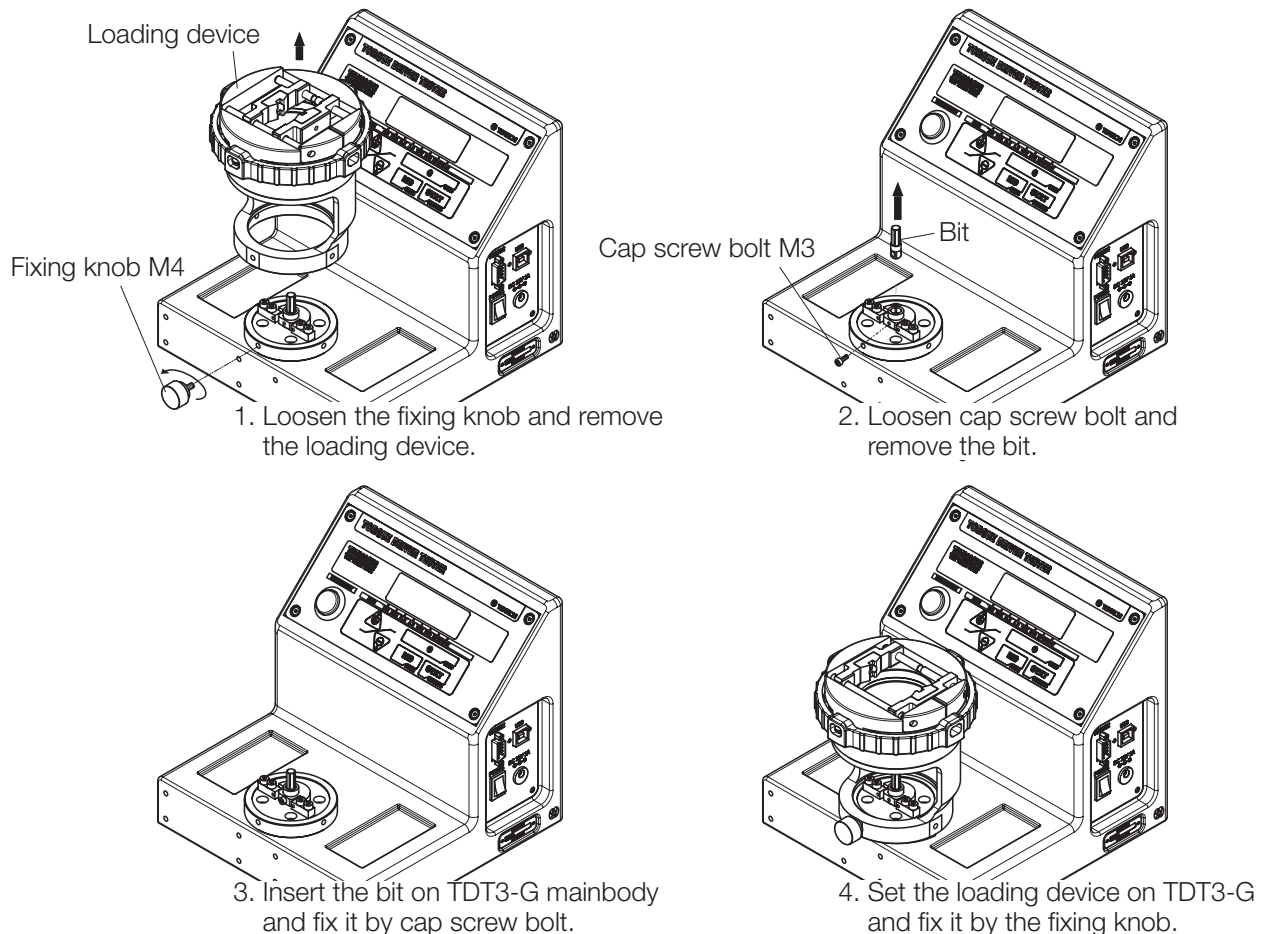
Remove the torque screwdriver from the main body and push C to activate auto zero adjustment.

- (7) Set the bit according to the measuring model.

(See below table to see which bit suit your screwdriver.)

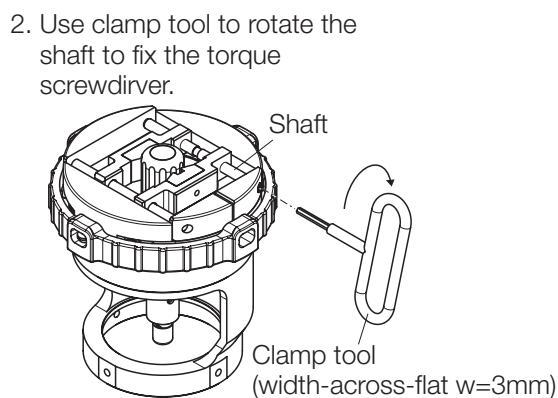
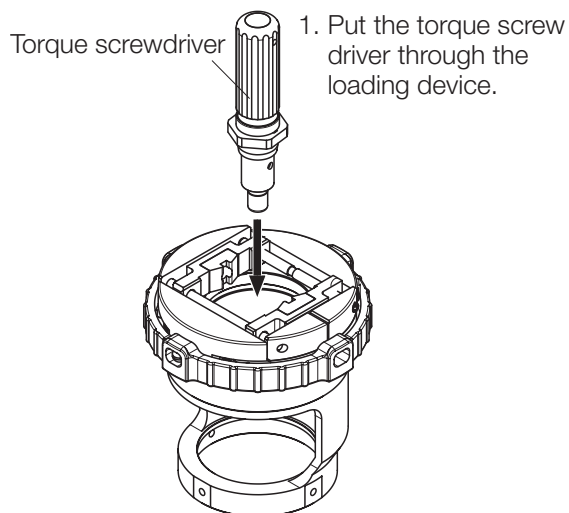
At purchase, TDT3-G package includes STA loading device and the standard bit.

⚠ For measuring direct-reading torque screwdriver, purchase LTA loading device (optional).



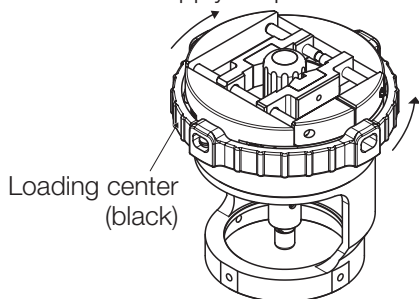
- (8) Check the measured value of the torque screwdriver.
- (9) Put the torque screwdriver through the loading device and fix it by the clamp tool.

⚠ If the resin grip is on the screwdriver, remove it before setting.



- (10) Apply torque by loading device until the torque screwdriver clicks (operates).

Hold the external rim (black) of the loading center and apply torque.



⚠ Caution

To hold and fix the torque screwdriver firmly, set it in such way that clamp block and the surface of the screwdriver fit well.

Clamp block

Surface of torque screw driver.

○ GOOD × BAD

⚠ If you hold other places than the loading center, accurate measurement cannot be done.

- (11) Upon clicking of the torque screwdriver, release torque. In manual memory mode, push MEMORY/RESET switch to save the data, then it resets. In auto memory/reset mode, it saves data upon releasing the torque (2% of the max capacity), then send one counter and reset.
- (12) Repeat (10) (11) process to measure.

Table STA loading device and bit selection

	Applicable Model
Standard bit	LTD/RTD60CN-500CN, NTD/RNTD120CN-260CN, RTDLS260CN-500CN, RTDZ500CN
Bit S	LTD/RTD15CN-30CN, NTD/RNTD15CN-30CN, RTDLS120CN, RNTDLS120CN-500CN, RNTDZ260CN-500CN, RTDZ260CN, AMLD/AMRD1CN-8CN

8 External Output

8-1. Printer Output

Connect TDT3-G and the printer (EPP16M2) using the cable (No. 382). Set the communication output format to “Prn” and other communication settings compliant with printer settings (Refer to chapter 6 for details.)

* Do not use the cable for printer and the USB cable at the same time.

- Communication settings of EPP16M2

Data format	: Compliant with RS232C
Data transmission	: Start-top synchronization
Baud rate	: 2400bps
Data length	: 7bit
Stop bit	: 1bit
Parity	: None

(1) Printing one by one

After measurement, press Memory/Reset key to print the measured data. In this mode, the results of statistical processing are not printed. In Auto Memory/Reset mode, printing starts automatically.

(2) Printing a certain range of data

Using ▲ or ▼ key, select the last count value in the print range and press STAT key, then “ST” will be displayed. Using ▼ or ▼ key, select the first count value in the print range and press STAT key. Then, press ▲ key while “n” is displayed. The measured value, sampling quantity “n”, maximum value “MAX”, minimum value “MIN” and mean value “x” of the selected range will be printed out.

(3) Printing only statistical processing value

Using ▲ or ▼ key, display the last count value in the print range and press STAT key. Then, “ST” will be displayed. Using ▲ or ▼ key, display the first count value in the print range and press STAT key. Press ▼ key while “n” is displayed. Only the sampling quantity “n”, maximum value “MAX, minimum value “MIN” and average value “x” of the selected range will be printed out.

• Continuous printing

In case of memory mode 1000

1 : OK SET - A	← Memory counter: judgement result, upper/lower
30. 000 c N · m	← Limit value symbol, torque unit
21 : HI SET - A	
31. 000 c N · m	
3 : --	← "--" for no judgement "--"
==. ==. c N · m	← Torque value =====
.	
.	
.	
20 : OK SET - A	
30. 000 c N · m	

n = 18	← Number of sample
HI : 31. 000 c N · m	← Max value
LO : 29. 000 c N · m	← Min value
x : 30. 000 c N · m	← Mean value

In case of memory mode

1 : 30. 00 c N · m	← Torque value unit
2 31. 00 c N · m	
3 : ==. == c N · m	
.	
.	
.	
20 : 30. 00 c N · m	

n = 18	← Number of sample
HI : 31. 00 c N · m	← Max value
LO : 29. 00 c N · m	← Min value
x : 30. 00 c N · m	← Mean value

"====" shows when the measured value is "0" or over 110%.

8-2. PC Output

Connect TDT3-G and external device by cable (No. 383 or No. 385).

Set the communication output format to “PC” and set it in line with other communication settings. (Refer to Chapter 6 for details.)

* Do not use RS232C cable and USB cable at the same time.

* To use No. 385 cable, the screwdriver needs to be installed. Use the CD-R attached on No. 385 cable.

- Communication setting

- Data format : RS232C compliant
- Communication method : Asynchronous serial communication
- Baud rate : 2400/4800/9600/19200bps
- Data length : 7bit/8bit
- Stop bit : 1bit
- Parity : None/Even/Odd

- (1) Printing one by one

Push Memory/Reset switch or automatically print by Auto memory/Reset function.

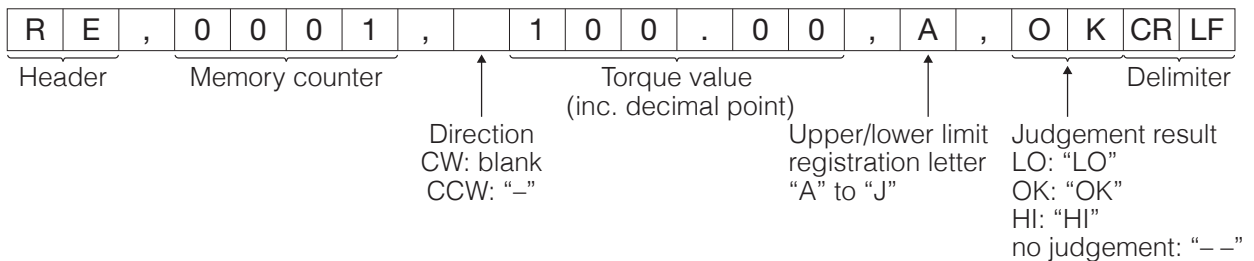
- (2) Printing all at one time

Set the last counter of the data range you wish to print out and push MD key. It shows “Stt”.

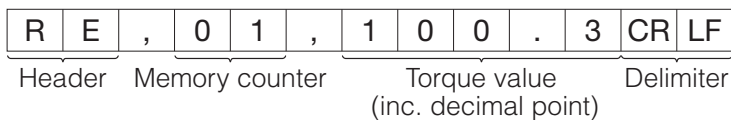
Use ▲▼ key to select the first counter of the printing range and push MD key. When it shows “n”, push STAT to start printing all data.

- PC output format

· In case of memory mode 1000



· In case of memory mode 99 (TDT3-G compliant)



9 Optional Accessories

- (1) PrinterEPP16M2
- (2) Cable for printer.....No. 382
- (3) Cable for PC
 - TDT3-G -> PC (D-SUB9 Pin connector).....No. 383
 - TDT3-G -> PC (USB B type).....No. 385
- (4) Calibration device
 - TDTCL60CN (Applicable model TDT60CN3-G)
 - TDTCL600CN (Applicable model TDT600CN3-G)
- (5) Loading device for FTDLTA
- (6) Loading device for torque wrench.....TDTLA3

Error list

Error Message	Meaning	Measures to Take
Err1-5	Switch is kept being pushed.	Turn off the power. Turn it on without touching any key. If the error is cancelled, it can be used. If it still shows the error, contact your nearest distributor or TOHNICHI.
Err8	CPU/memory problem	Contact your nearest distributor or TOHNICHI for repair.
Err9	Torque sensor/internal circuit problem	Push C key at no load condition. If the error is cancelled, it can be used. If not, the sensor or the internal circuit has problems. Contact your nearest distributor or TOHNICHI for repair.

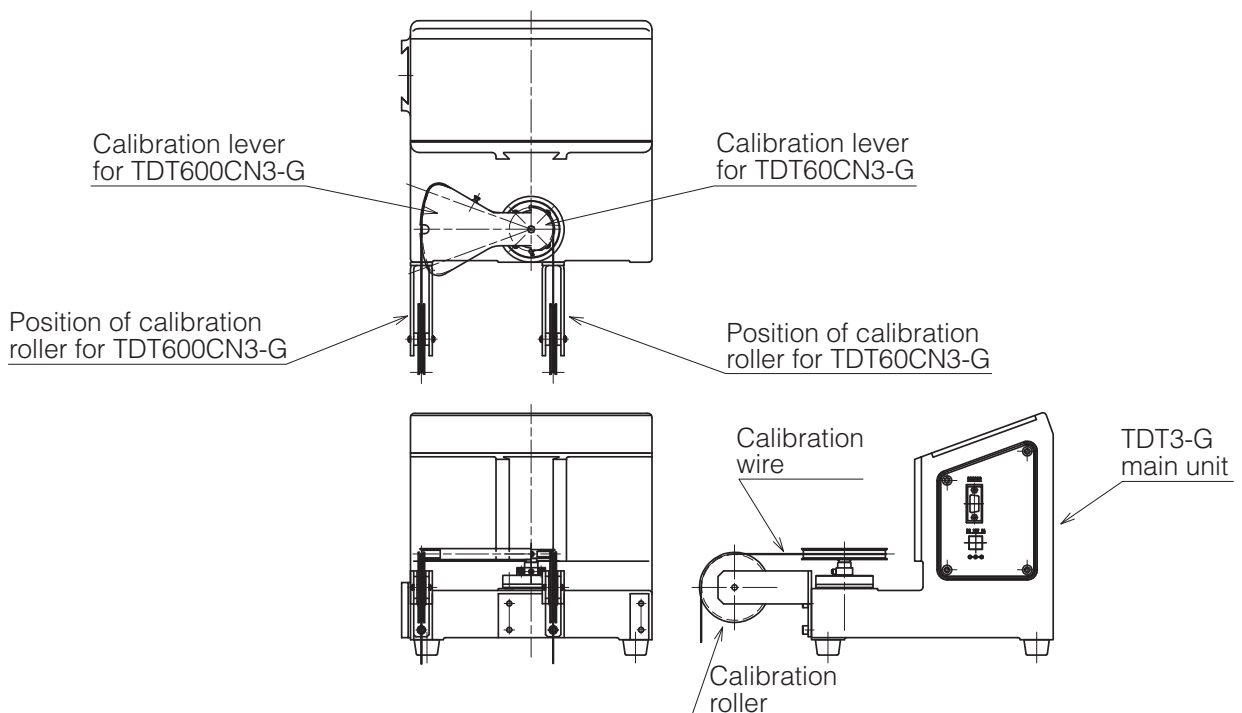
10 Calibration Procedure

(1) Precautions for use

- 1) Be careful not to drop weights on your foot.
- 2) Place a weight gently.
- 3) Start calibration at the minimum value.
- 4) Before calibration, secure the main unit in fixed position to prevent it from moving during calibration.
- 5) Hook wire on the calibration lever securely.

(2) Calibration procedure

- 1) Place TDT3-G on the measurement table in a horizontal position.
- 2) Turn on the power of TDT3-G. (After the power is turned on, leave the unit as it is for 30 minutes or more for stabilization.)
- 3) Set TDT3-G in RUN mode.
- 4) Insert the square drive of the calibration lever into the TDT3-G sensor portion so that the calibration lever is leveled.
- 5) Hook the wire on the calibration lever, and press "C" key on TDT3-G to make zero adjustment.
- 6) Refer to the table on next page (Weights Information for TDT3-G Calibration), and check the weight. Place weight on the TDT3-G accordingly, and proceed calibration.



Weights Information for TDT3-G Calibration

Newton Unit

TDT60CN3-G			TDT600CN3-G		
Measuring Point [cN·m]	Loading Weights [kg]	Remarks	Measuring Point [cN·m]	Loading Weights [kg]	Remarks
2	0.1020	Scale Pan + 2g	20	0.2039	Scale Pan + 203.9g
20	1.020	Scale Holder + 20g	200	2.039	Scale Holder + 1.039kg
30	1.530	Scale Holder + 530g	300	3.059	Scale Holder + 2.059kg
40	2.039	Scale Holder + 1.039kg	400	4.079	Scale Holder + 3.079kg
60	3.059	Scale Holder + 2.059kg	600	6.118	Scale Holder + 5.118kg

Metric Unit

TDT60CN3-G			TDT600CN3-G		
Measuring Point [kgf·cm]	Loading Weights [kg]	Remarks	Measuring Point [kgf·cm]	Loading Weights [kg]	Remarks
0.2	0.1	Scale Pan	2	0.2	Scale Pan + 100g
2	1.0	Scale Holder	20	2.0	Scale Holder + 1kg
3	1.5	Scale Holder + 500g	30	3.0	Scale Holder + 2kg
4	2.0	Scale Holder + 1kg	40	4.0	Scale Holder + 3kg
6	3.0	Scale Holder + 2kg	60	6.0	Scale Holder + 5kg

American Unit (lbf·in)

TDT60CN3-G			TDT600CN3-G		
Measuring Point [lbf·in]	Loading Weights [kg]	Remarks	Measuring Point [lbf·in]	Loading Weights [kg]	Remarks
0.2	0.1152	Scale Pan + 15.2g	2	0.230	Scale Pan + 130g
1	0.5761	Scale Pan + 476.1g	10	1.152	Scale Holder + 152g
3	1.728	Scale Holder + 728g	30	3.456	Scale Holder + 2.456g
4	2.304	Scale Holder + 1.304kg	40	4.608	Scale Holder + 3.608kg
5	2.880	Scale Holder + 1.880kg	50	5.761	Scale Holder + 4.761kg

American Unit (ozf·in)

TDT60CN3-G			TDT600CN3-G		
Measuring Point [ozf·in]	Loading Weights [kg]	Remarks	Measuring Point [ozf·in]	Loading Weights [kg]	Remarks
3	0.1080	Scale Pan + 8.0g	30	0.2160	Scale Pan + 116.0g
20	0.7200	Scale Pan + 620.0g	200	1.440	Scale Holder + 440g
40	1.440	Scale Holder + 440g	400	2.880	Scale Holder + 1.880kg
60	2.160	Scale Holder + 1.160kg	600	4.320	Scale Holder + 3.320kg
80	2.880	Scale Holder + 1.880kg	800	5.760	Scale Holder + 4.760kg

Required weights

- (1) For TDT60CN3-G: 1 piece of WS-TCL2 required.
- (2) For TDT600CN3-G: 1 piece of WS-TCL2, 1 piece of WP-TCL2 and 1 piece of WP-TCL5 required.

Components of TDT3-G Calibration Kit:

Calibration Scale Pan	100g	1 pc.
Calibration Scale Holder	1 kg	1 pc.
Calibration wire		1 pc.
Calibration lever		1 pc.
Calibration roller		1 pc.
Mounting bolt		2 pcs.

Designs and specifications are subject to change without notice.



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