Digital Torque Wrench Tester
Model TCC2-G

OPERATING MANUAL

TOHNICHI

TCC2 Manual
For your safety
Warning
Caution
Attention

To Customers,
Read this operation instruction before use. Contact local Tohnichi distributors or Tohnichi for further details, and keep this operation instruction in a safe place.

Signal Word
Signal word indicates the tips users should know for safety and correct handling of product. There are three signal words for safety "Danger" "Warning" and "Attention" by the level of danger.

Danger : impending danger which could result in serious damage
Warning : potential danger which could cause serious damage
Attention : potential danger which could cause some damage

Warning
1 Stop using the product when you see smoke or strange smell comes out of the product. It may cause electric shock, or fire. Turn the power off and unplug immediately and contact local Tohnichi distributor or TOHNICHI.
2 Do not try to disassemble or modify the product. It causes malfunctions, and short life of the product.
3 Stop using the product when you find liquid or unusual object inside the product. It may cause electric shock or fire.
4 Please use the accompanying accessories or option units which are specified in the instructions.
5 Do not use TCC2 tablet PC for other purpose nor install any other software on it.

Attention
1 Use this product only in the conditions specified in this instructions.
2 Check the product and its setting before use.
3 Use this product under free of water or oil. It may cause malfunction
4 Do not drop or hit this product against other object. It cause damage and malfunction.
5 Use this product only within the specified torque range.
6 Conduct periodic inspection on the product.
7 Check with ZERO value on the display of TCC2-G
8 Check on TCC2-G and its parts to make sure it is free of any damages. Contact your agent or Tohnichi for repair or replacement.

Safety Precaution for relocation and installation

Warning
1 Set TCC2 on stable place or where there is no vibration. TCC2 itself or its accessories may fall down.
2 Avoid placing TCC2 with a flammable liquid and gas. It may cause electric shock or the fire.
3 Relocating TCC2 must be done by two personnel for TCC100N2 and TCC100N2-D or 4 personnel for TCC500N2 and TCC1000N2.

Attention
Avoid places with dust, humid, and wet, or under direct sunlight. It may cause electric shock, fire, malfunction and error.

Safety Precaution for electric source

Warning
1 Do not plug in and unplug by wet hand.
2 Power voltage must be in the range of 100V ~240V only. It may cause electric shock and fire.
3 Do not use damaged power supply cord. It may cause electric shock and fire.
Handle power-supply cord carefully and follow next instructions.
- Do not modify or process original cord.
- Do not pull and put heavy thing on it.
- Do not bend, twist, and bundle-up.
- Do not use other power-supply cords except for specified.
- Do not use for other apparatuses.

4 Keep power cord clean. Dust attached on electric plug may cause short-circuit and fire.
5 Pull out plug with holding plug. Pulling cord may damage plug and cause electric shock and fire.

Attention

1 Use power-supply cord which comes with TCC2.
Apply power-supply cord to each local standard and refer to the following table.

Cord	Range of Voltage	Region
A Type	AC100V to 125V	Japan / USA
C Type	AC200V to 240V	Europe, except for some areas

2 In order to protect from possible electric shock or malfunction by static electricity, Use accompanied electric cord, 3-way and plug it in the 3-way electric outlet which is firmly connected to GND.
3 Use only designated fuse, AC1A.
4 Keep power-supply cord clean. Regularly unplug and make a cleaning. Dust attached on electric plug may cause short-circuit and fire.
5 Unplug in case of no using for a long term.
6 If TCC2 is being moved, make sure main power is off and unplugged all cords. Do not give physical impact or vibration on product which may damage electric cord and it may cause electric shock, fire, or malfunction.
7 Measurement beyond its specification may cause accident or damage. Select tools matching specification of TCC2.
8 Check on TCC2 and its parts to make sure that there are no damages. Contact your agent or Tohnichi for repair or replacement.
9 If it is unusual odor or catches fire, move TCC2 to safe place immediately and contact Tohnichi Mfg. Co., Ltd.

1 Outline

Features

- Super Wide Torque Range
- Tool management software installed
- High-definition full-color LCD monitor
- Touch panel easy operation
- Compatible with ISO6789
- Standard accessories

2 Components

• TCC2	1 pc
• TCC2 Display, tablet PC	1 pc
• Cradle for TCC2 Display	1 pc
• Power-Supply Cord A	1 pc
• AC Adaptor for Display	1 pc
• Power cable for AC Adapter A type, optional accessory	1 pc
• Power cable for AC Adapter C type	1 pc
• USB cable	1 pc
• Loading Device for Torque Driver	1 pc, TCC100N2-D only
• Socket Adapter	1 pc, TCC100N2-D only
• Hexagon Head Adapter	2 / 4 pcs, refer page 6
• Down Adapter	1 / 2 pcs, refer page 6
• Conversion Adapter 3P-2P	1 pc
• Operation Manual	1 pc

TCC2 Display

Cradle for TCC Display

Power-Supply Cord A

AC Adapter for Display

Power Cable A type

Power Cable C type

USB Cable

Loading Device

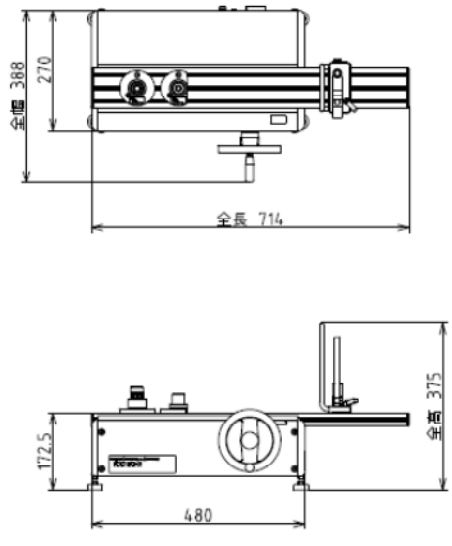
Socket Adapter

Hex. Adapter

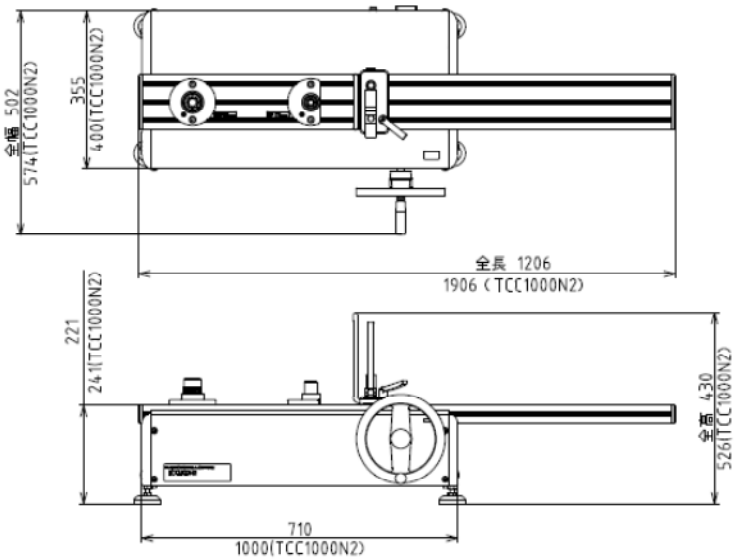
Down Adapter

3 Specifications

TCC100N2、TCC100N2-D



TCC500N2、TCC1000N2



Model	CH	Measurable Effective Length mm	Overall Length mm	Overall Width mm	Overall Height mm	Weight kg
TCC100N2-G	1	575	714	388	375	35
	2	482				
TCC100N2-D-G	1	575				
	2	482				
TCC500N2-G	1	1035	1206	502	430	75
	2	769				
TCC1000N2-G	1	1700	1906	574	526	115
	2	1212				

		CH1				CH2			
	Unit	**Inlet**	**Minimum**	**Maximum**	**1digit**	**Inlet**	**Minimum**	**Maximum**	**1digit**
TCC100N2-G	cN.m	12.7	400	10000	1	9.53	100.0	2500.0	0.2
	N.m		4.00	100.00	0.01		1.000	25.000	0.002
	kgf.cm		40.0	1000.0	0.1		10.00	250.00	0.02
	kgf.m		0.400	10.000	0.001		0.1000	2.5000	0.0002
	ozf.in		570	14000	1		142.0	3500.0	0.2
	lbf.in		35.5	885.0	0.1		9.00	220.00	0.02
	lbf.ft		3.00	73.00	0.01		0.800	18.000	0.002
TCC100N2-D-G	cN.m	12.7	400	10000	1	6.35	20.00	600.00	0.05
	N.m		4.00	100.00	0.01		0.2000	6.0000	0.0005
	kgf.cm		40.0	1000.0	0.1		2.000	60.000	0.005
	kgf.m		0.400	10.000	0.001		N/A		
	ozf.in		570	14000	1		30.00	800.00	0.05
	lbf.in		35.5	885.0	0.1		2.000	50.000	0.005
	lbf.ft		3.00	73.00	0.01		N/A		
TCC500N2-G	cN.m	19.05	2000	50000	5	12.7	400	10000	1
	N.m		20.00	500.00	0.05		4.00	100.00	0.01
	kgf.cm		200.0	5000.0	0.5		40.0	1000.0	0.1
	kgf.m		2.000	50.000	0.005		0.400	10.000	0.001
	ozf.in		2900	70000	5		570	14000	1
	lbf.in		180.0	4400.0	0.5		36.0	880.0	0.1
	lbf.ft		15.00	360.00	0.05		3.00	73.00	0.01
TCC1000N2-G	cN.m	25.4	N/A			19.05	2000	50000	5
	N.m		50.0	1000.0	0.1		20.00	500.00	0.05
	kgf.cm		500	10000	1		200.0	5000.0	0.5
	kgf.m		5.00	100.00	0.01		2.000	50.000	0.005
	ozf.in		N/A				2900	70000	5
	lbf.in		445	8800	1		180.0	4400.0	0.5
	lbf.ft		37.0	730.0	0.1		15.00	360.00	0.05

Common Specifications

Display	10.1 inch slate PC
Registration Data for Tool	Management Number, Model Name, Measuring Point, Accuracy, Number of Measuring, Channel, Operator, Measurement Mode, Type of Tool and Existed Record
Measurement Mode	Regular Measurement Mode Registered Measurement Mode • Click Type • Direct Reading Type
Channel Switching	Measurement range switch (Touch panel operation)
OK/NG Judgment	Accuracy level setting (+/-1 to 10%) OK, NG judgment
Zero Adjustment	Automatic, by press C key
Reset	Touch panel operation / Auto-reset, 00.1 to 5 sec

Service Condition

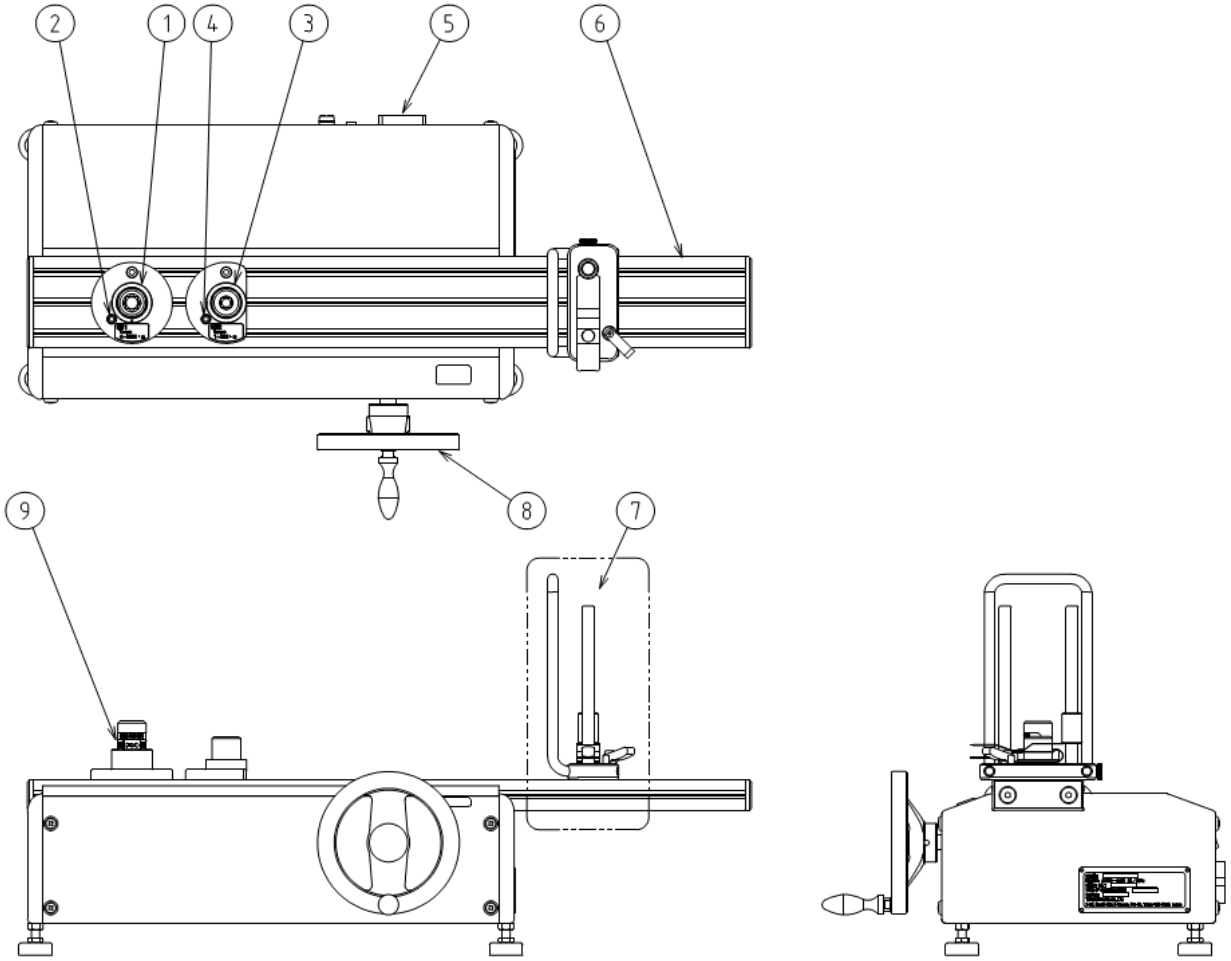
Operating temperature range, Celsius	5 to 40 Degree Celsius, 0 to 35 on Display
Operating humidity range	Less 80%
Operating altitude	Less 1000m
Temperature range during transport/storage	-5 to 55 Degree Celsius
Power source(Rating)	AC100V to 240V +/-10%, 50/60Hz 1A
Transient voltage	Overvoltage Category 2 according to IEC60664-1
Pollution Degree	Pollution Degree 2 according to IEC60664-1
Europe Directive	Low Voltage Directive 2006/95/EC EMC Directive 2004/108/EC

Adapters

Model	CH	Accessory	
		Hex. Adapter	Down Adapter
TCC100N2	1	Sq12.7-10・13・19	DA3-2 DA4-3
	2		
TCC100N2-D	1	Sq12.7-12・14・17	DA4-3
	2		
TCC500N2	1	Sq12.7-10・13・19 Sq12.7-12・14・17	DA4-3
	2	Sq19.05-17・22・27 Sq19.05-19・24・30	DA6-4
TCC1000N2	1	Sq19.05-17・22・27 Sq19.05-19・24・30	DA6-4
	2	Sq25.4-36・46 Sq25.4-41・50	DA8-6

4 Each Part and Function

A. Main body



1 CH1 Spindle
Spindle for CH1. Put square drive of torque wrench into spindle.

2 CH1 Blue LED
CH1 Blue LED is lit when CH1 is selected under Tool management or regular measurement. CH1 Blue LED flashes when overloading on CH1 or loading CH1 under selecting CH2. Also, CH1 Blue LED blinks up 0.1 sec. every 10 seconds under neither measuring model.

3 CH2 Spindle
Spindle for CH2. Put square drive of torque wrench into spindle.

4 CH2 Blue LED
CH2 Blue LED is lit when CH2 is selected under Tool management or regular measurement. CH2 Blue LED flashes when overloading on CH2 or loading CH2 under selecting CH1. Also, CH2 Blue LED blinks up 0.1 sec. every 10 seconds under neither measuring model.

5 Power/Display Connecting Panel

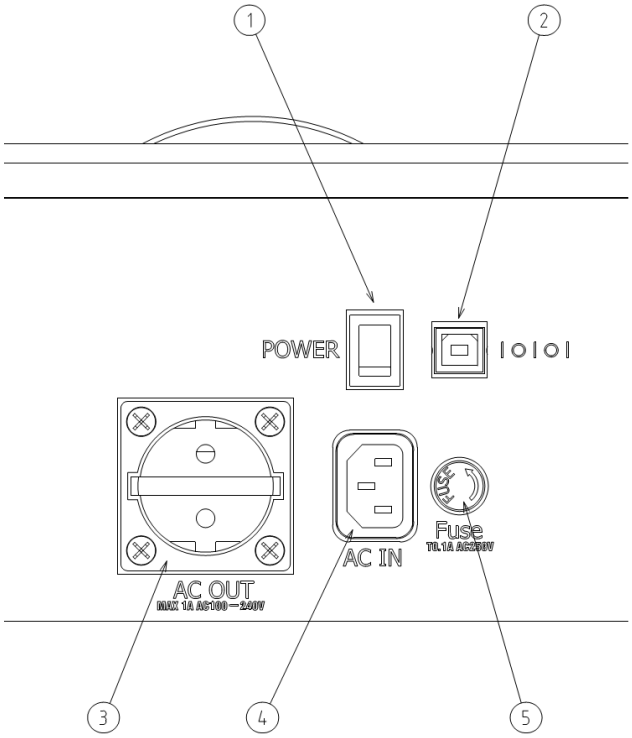
6 Loading Plate

7 Pole Holder
To set torque wrench horizontally

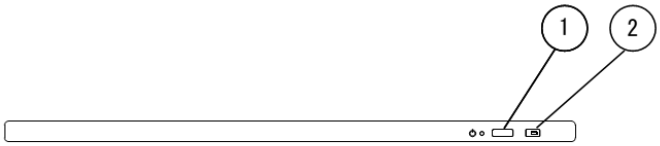
8 Handle

9 Rotating Angle Indication Plate
To make sure loading angle in both direction, upto 40 degree

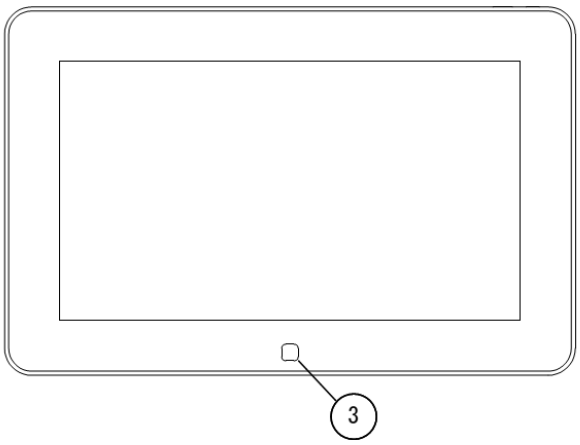
B. Back Panel



1 Main Switch
Power Switch for Main Body, the display has different power source.
2 USB Connector
To connect with tablet PC as display, USB B Type Receptacle
3 Plug for TCC2 Display
To supply AC power from TCC2 to tablet PC display. Use attached power cable
4 Power Input Terminal
Connect with attached power cable, AC100V to 240 +/-10% 50Hz/60Hz
5 Fuse Holder
1A φ5.2×20, Midget type



C. Display, tablet PC



1 ON/OFF, Main Power Switch
To start software of display, slate PC.
2 Screen Lock Button
Please use under lock
3 Start Button
Press button to start Windows. Do not press the button during TCC2 operation.
If press the button in error, press it again or icon of TCC2 on “Start Menu”.
Regarding other parts of display, refer “Setup and Features Information” attached to display.

D. Function

- RUN, Continuity Mode
  In both “Regular Measurement” and “Registered Measurement” mode, torque value increases during loading and decrease remove loading. It is mainly used for direct reading torque wrench and digital torque wrench/driver or at calibration of TCC2.

- PEAK, Maximum Value Mode
  In both “Regular Measurement” and “Registered Measurement” mode, torque value increases during loading and stops at maximum value. Maximum value is hold even after unloading. It is mainly used for click type torque wrench/driver. The maximum torque value will be held as “Peak Hold Value” when it is over 2% of maximum point of each measuring channel.

- Auto Zero Adjustment
  When 

key is pressed in both “Regular Measurement” and “Registered Measurement” mode, the automatic zero function is activated. Auto Zero must be completed with unloaded.

- Over-torque Alarm
  When loading torque exceeds 110% of the maximum measurement value, warning indication is displayed by flashing and buzzer.

- OK/NG Judgment
  When 

key is tapped or “Auto Reset” is activated in “Registered Measurement” mode, it is judged in OK or NG. If it is OK, it gets ready for next measurement. If it is NG, the measured value is turned to red color. OK means that the measuring value is within range and NG means that measuring value is out of range. Calculating formulas of tool’s accuracy in each judgment method are as follows. Initial setting is “A”. Refer “Set-Up Mode” for setting change.

$$\text{A : Accuracy \%} = \frac{\text{Value of Torque Wrench} - \text{Value of TCC2}}{\text{Value of TCC2}} \times 100$$

$$\text{B : Accuracy \%} = \frac{\text{Value of TCC2} - \text{Value of Torque Wrench}}{\text{Value of Torque Wrench}} \times 100$$

- Measuring Data Memory
  When 

key is tapped or “Auto Reset” is activated in “Registered Measurement” mode, it starts to judge, OK/NG. If the result is OK, the data is stored and it gets ready for next measurement. When NG sign is shown, press 

key to store the torque value.
  When 

key is tapped or “Auto Reset” is activated in “Regular Measurement” mode, it starts to judge, OK/NG. If the result is OK, the data is stored and it gets ready for next measurement. The measured data will not be stored when less than 2% at lowest torque range or over 110% at maximum torque range on each spindle.

- Auto Memory/Reset
  In “Registered Measurement” mode, it captures peak value and it is judged OK/NG. If it is judged OK, the measuring value is saved and TCC2 gets ready for next measurement. If it is judged NG, torque value is turned to red to indicate. The timing of data saving can be set between 0.1 to 5.0 seconds. In “Regular Measurement” mode, it captures peak value and saves the data after the load is released. TCC2 gets ready for next measurement. The timing of data saving can be set between 0.1 to 5.0 seconds.

5 Installation

A. Setting Condition

Set TCC2 under following condition.

Operating Temperature Range	5 to 35 degree Celsius
Operating Humidity Range	Less than 80 %
Power Source	AC100V to 240V +/- 10%, 50/60Hz

B. Location

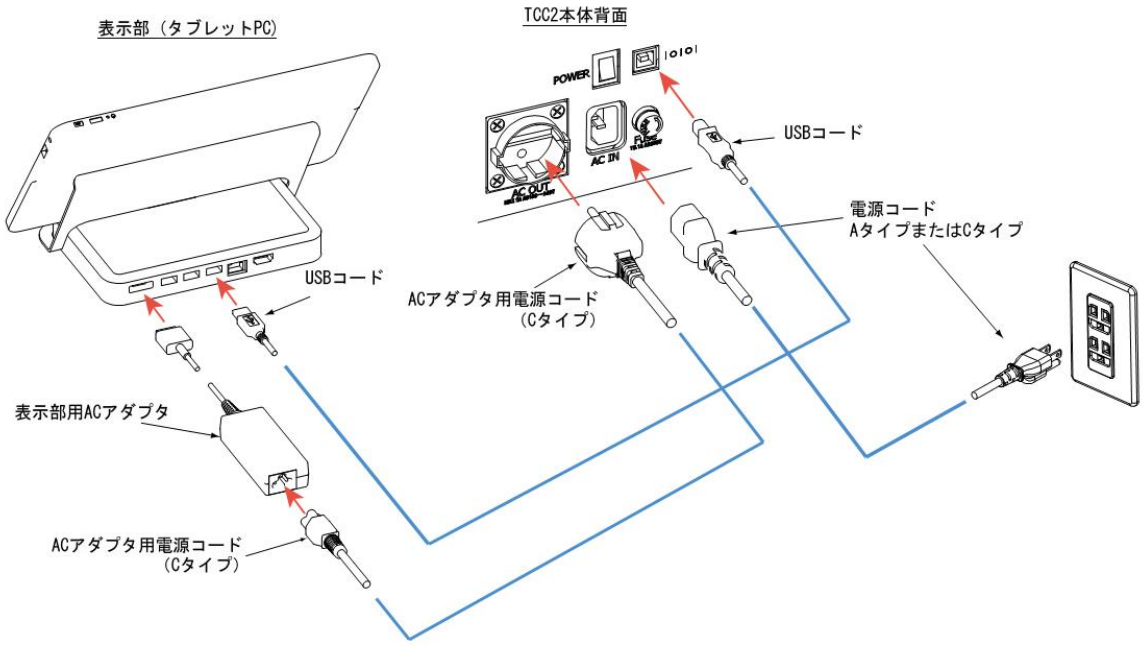
Place TCC2 under following condition.

Attention

- Flat, horizontal, and it is no vibrated.
- Bing away from an outer wall as follows.
- Install TCC2 at proper place. The place must be tolerance enough for TCC2 with all together such as display, socket adapter, accessories, torque wrench, and other devices.
- In case of calibration, consider calibration kit and weight.
- Relocating TCC2 must be done by two personnel for TCC100N2 and TCC100N2-D or 4 personnel for TCC500N2 and TCC1000N2.
- Relocating work must be done after all the items such as torque wrench, socket adapter, etc are taken off and locker stand and safety guide are fixed.

Model	Weight, kg
TCC100N2	35
TCC100N2-D	35
TCC500N2	75
TCC1000N2	115

C. Wiring Work



Wiring Process

1. Turn power off.
2. Connect cradle and TCC main unit with Power Cable C type.
3. Connect Power Supply Cord A to your power supply.
4. Connect USB Cord, cradle to TCC2 main unit.
5. Set tablet PC on a cradle.

Attention

Make sure TCC2 is turned off during wiring work. It may cause damage on TCC2 if it is power-on.
Use attached power code.
As for AC adapter A type, display can be hooked up with power source.
Check with range of voltage in your area.
Except for the areas below, check power-supply voltage and prepare applicable power cable.

Cord	Range of Voltage	Areas
Power Cable A type	AC100V to 125V	Japan, USA
Power Cable C type	AC200V to 240V	Europe, except for some areas

6 Summary of Each Measuring Mode

TCC2 has 2 types of measuring mode and Set-Up mode.

Regular Measurement Mode

In this mode, measuring is done by PEAK/RUN within torque range of each channel.
TCC2 is calibrated in RUN mode of manual measurement mode.

Registered Measurement Mode

Tool information can be registered.
OK/NG judgment is available under specified measuring condition.
Existed measuring data of tool is referable.

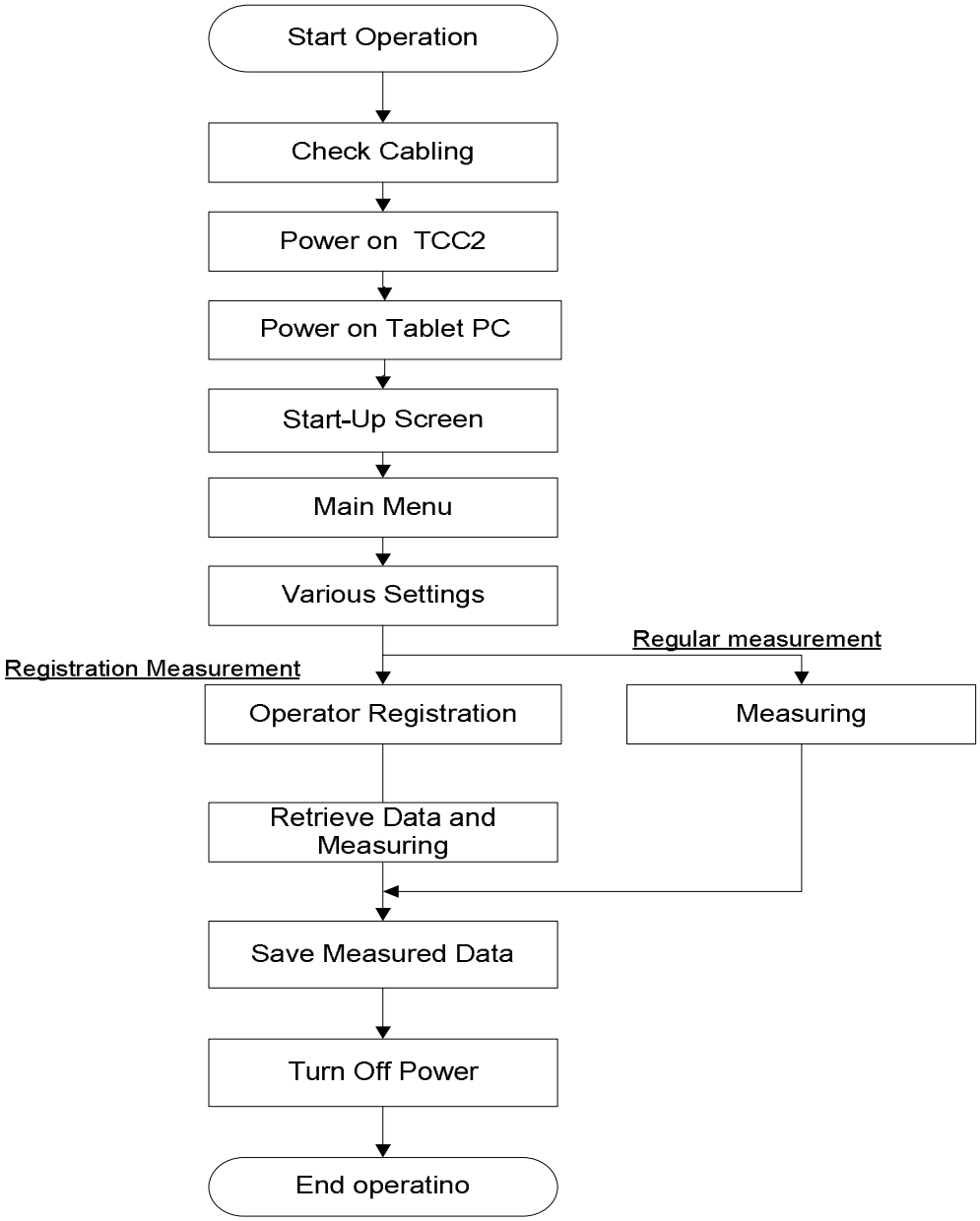
Set-Up Mode

In this mode, following functions are available.

- Transferring backup data to USB.
- Auto memory/Reset setting, Clock setting, Judgment setting.
- Registration of measuring person up to 5 persons.

7 Basic Operation

A. Operation Procedure



1 Check wiring between TCC2 and tablet PC. #5-C
2 Power on TCC2, and wait at least 30 minutes before operation.
3 Power on tablet PC.
4 Display startup screen. It automatically moves to main menu.
5 Auto Memory, reset, judging mode, date settings. #10-D

Regular Measurement
6 Start to measurement. #8-D
7 Power off tablet PC. Power off TCC2 when not use long time.

Registered Measurement
8 Register tool management data, managing number, tool model name and requirements. #9-A
9 Register operators. #10-C
10 Start to measurement. #9-D

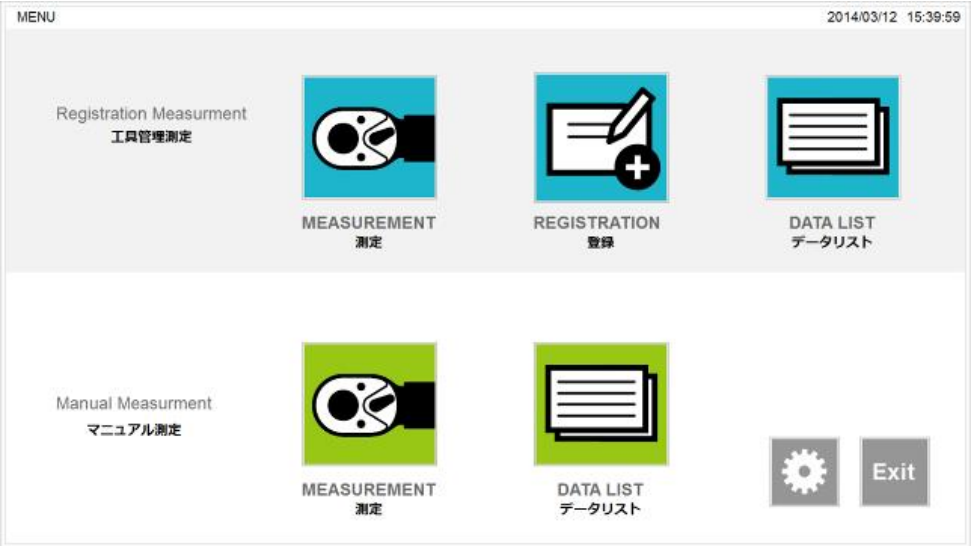
B. Startup and Shutdown

a. Power on

1 Confirm wiring between TCC2 and display

2 Turn power on TCC2, and wait at least 30 minutes before using.
After turned power on, LED blinks two times with buzzer sound. After that LED blinks once per 10 seconds except for in measurement screen.

3 Turn power on the display, and it will move to the main menu automatically.

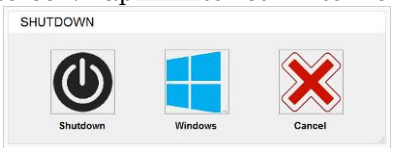


Main Menu Screen

b. Shut down tablet PC

Tap 

on main menu to open the shut down window. Tap  to shut down. Tap  to return to Windows desktop screen. Tap  to return to menu.



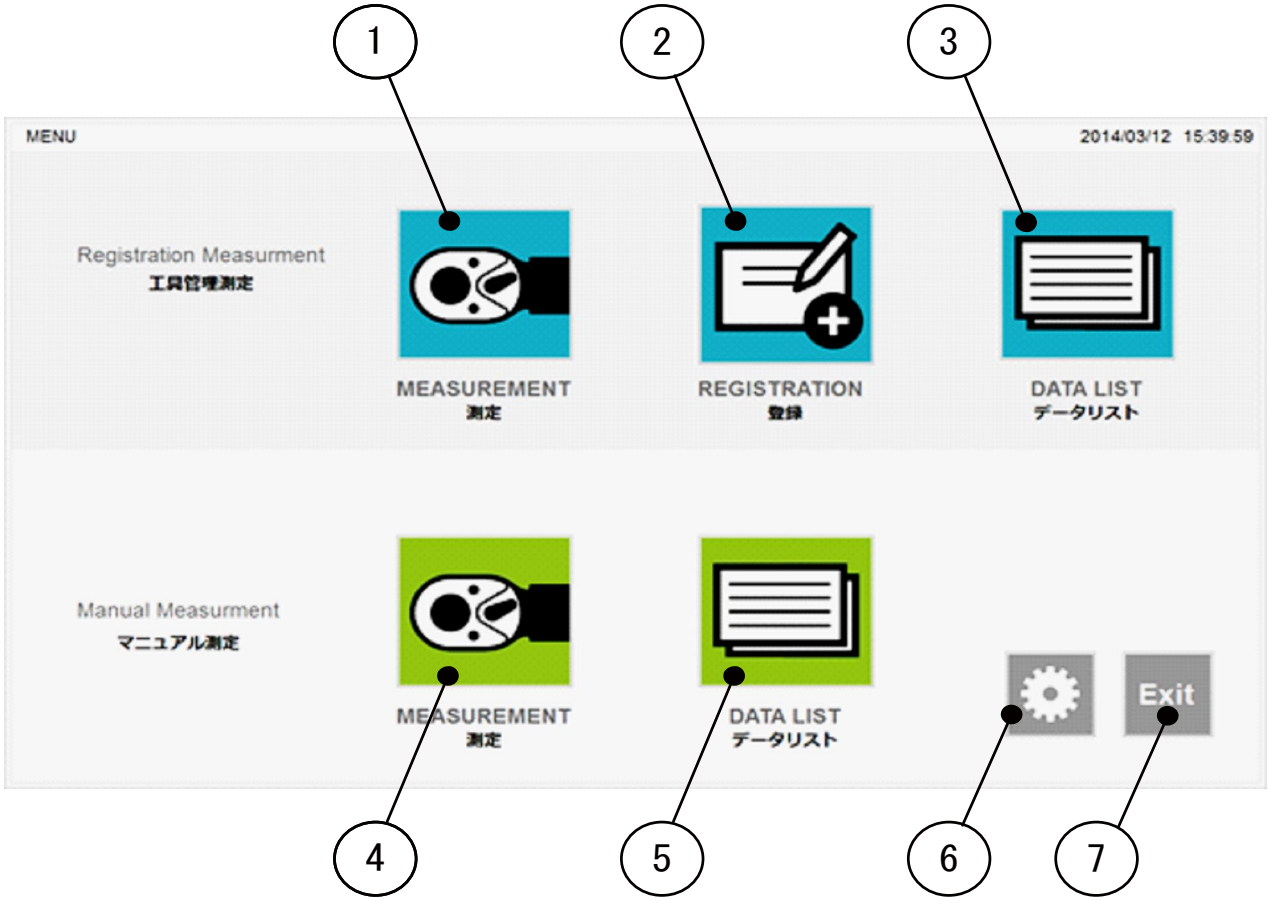
Shut down window

c. Power on TCC2 software from desktop・Windows Menu.
Confirm the wiring between TCC2 and display. Tap icon of TCC2 on the desktop, and TCC2 menu will be appeared.

Please do not push the start switch that is on the center of down side of the tablet PC, since the screen will move to Windows start menu even during measuring. In case pushed the switch by mistake, push start button or tap TCC2 icon from start menu again.

For tablet PC operations, please refer to its operation manual.

C. Main Menu



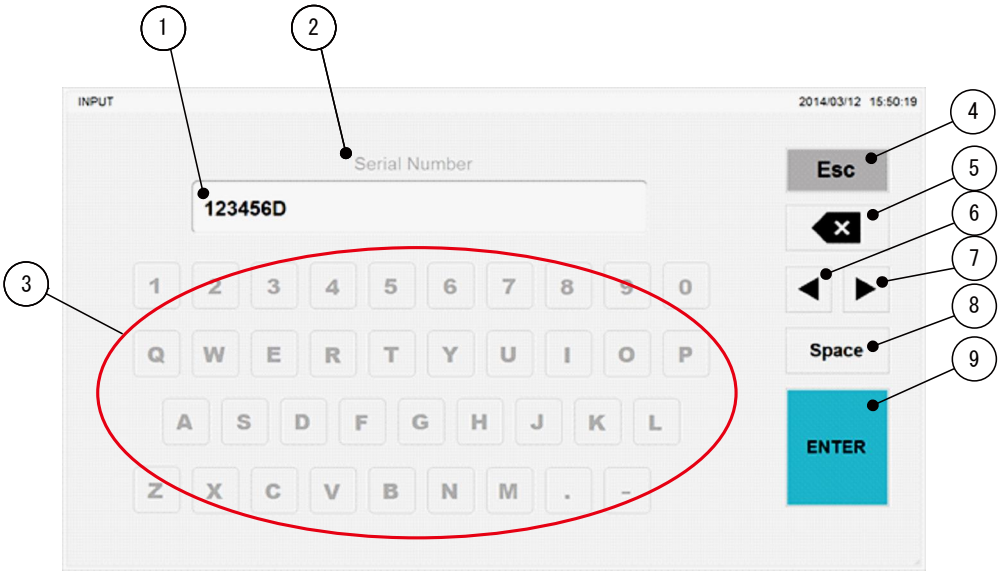
Registration Measurement Mode
1. To start registration measurement
2. To register tool management data
3. To refer and transfer tool management data to outside.

Regular Measurement Mode
4. To start manual measurement
5. To refer and transfer date to outside

Setup Mode
6. Various settings and creating backup

End Measurement
7. Select shut down tablet PC or return to Windows screen

D. Key

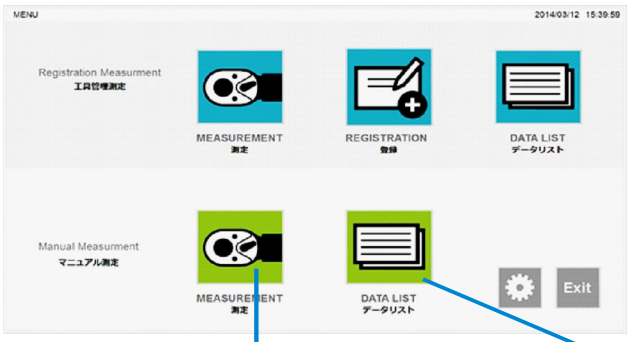


1 Inputted words displayed in here
2 Title
3 Key panel
4 Return to previous screen
5 Delete
6 Move cursor leftward
7 Move cursor rightward
8 Space
9 Enter

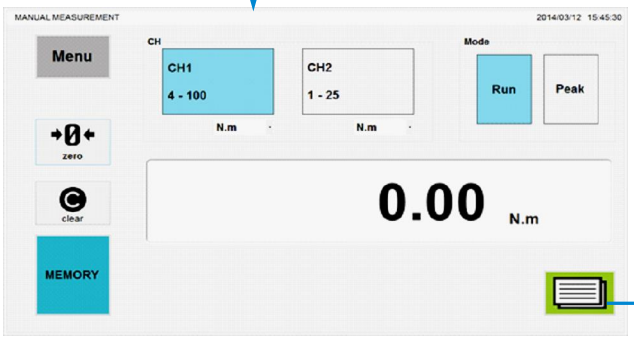
8 Regular Measurement Mode

For Run measurement or Peak measurement.
TCC2 calibration should be done at RUN mode in manual measurement.
Manual measurement configuration is as follows.

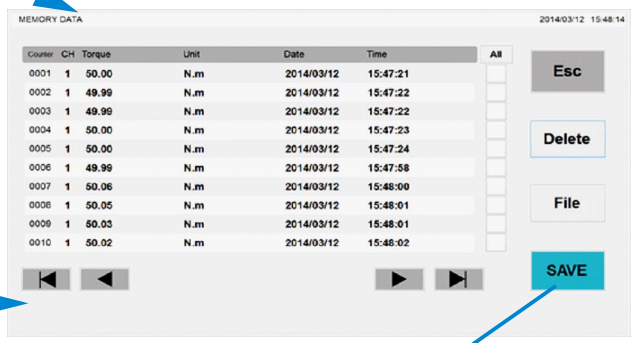
「メインメニュー」画面



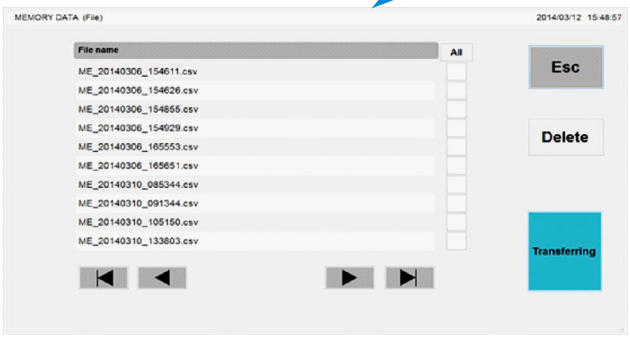
「マニュアル測定」画面



「マニュアル測定データー覧」画面

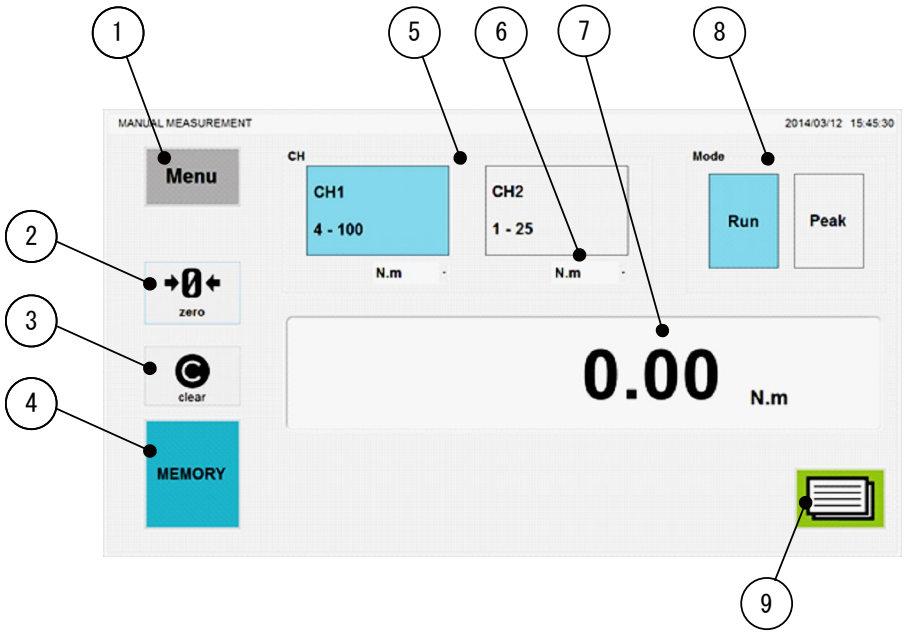


「測定データファイルー覧」画面



A. Regular Measurement Mode Screen

a. Screen



1 Menu, Return to main menu

2 Auto-Zero, Execute Auto Zero. It must be executed under the condition a torque wrench removed and no-loading. Error message will appear if execute Auto Zero with loading.

3 Clear, To clear measured value.

4 Memory, To save measured data
*Peak measurement mode is not usable under condition in which Auto Reset or Memory setting is effective.

5 Channel, Selected CH is shaded in blue.
CAUTION: If operation on the deferent CH, “Ch Error” would appear on screen and buzzer sound alert.

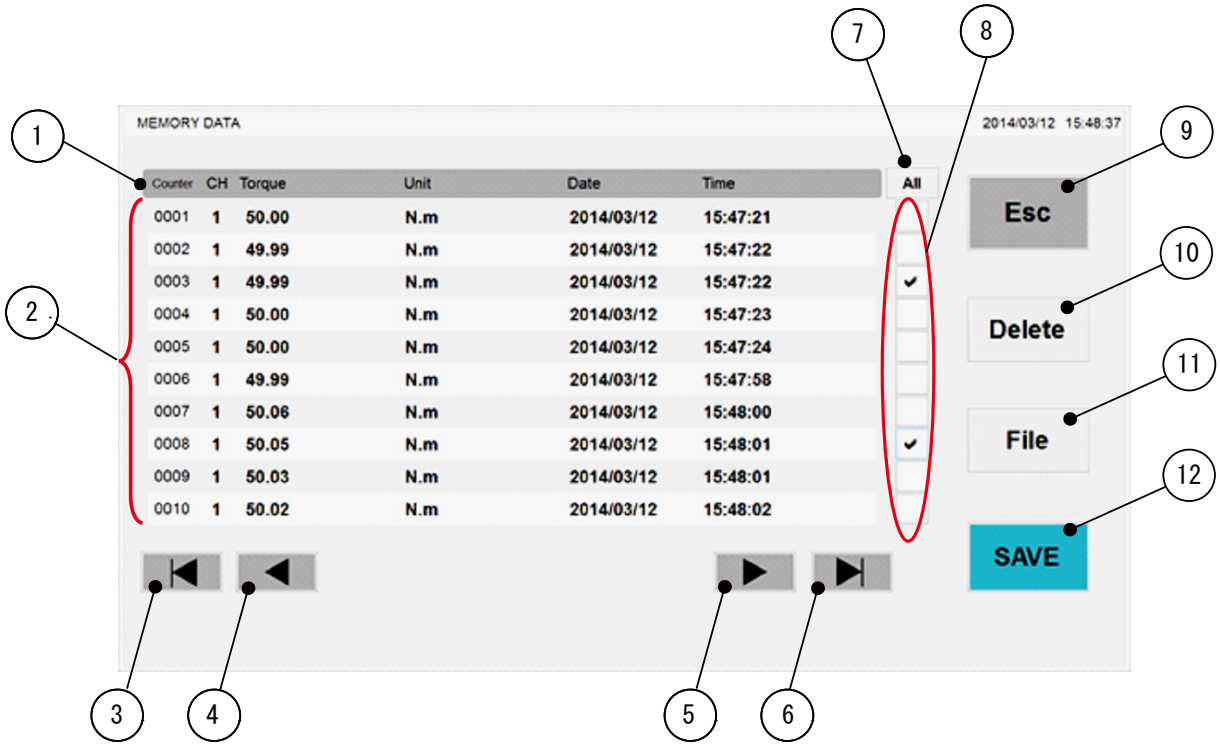
6 Unit, Select unit

7 Measuring value

8 Mode selection
Run : Run measurement, Continuous measurement
Peak : Peak measurement, MAX value measurement

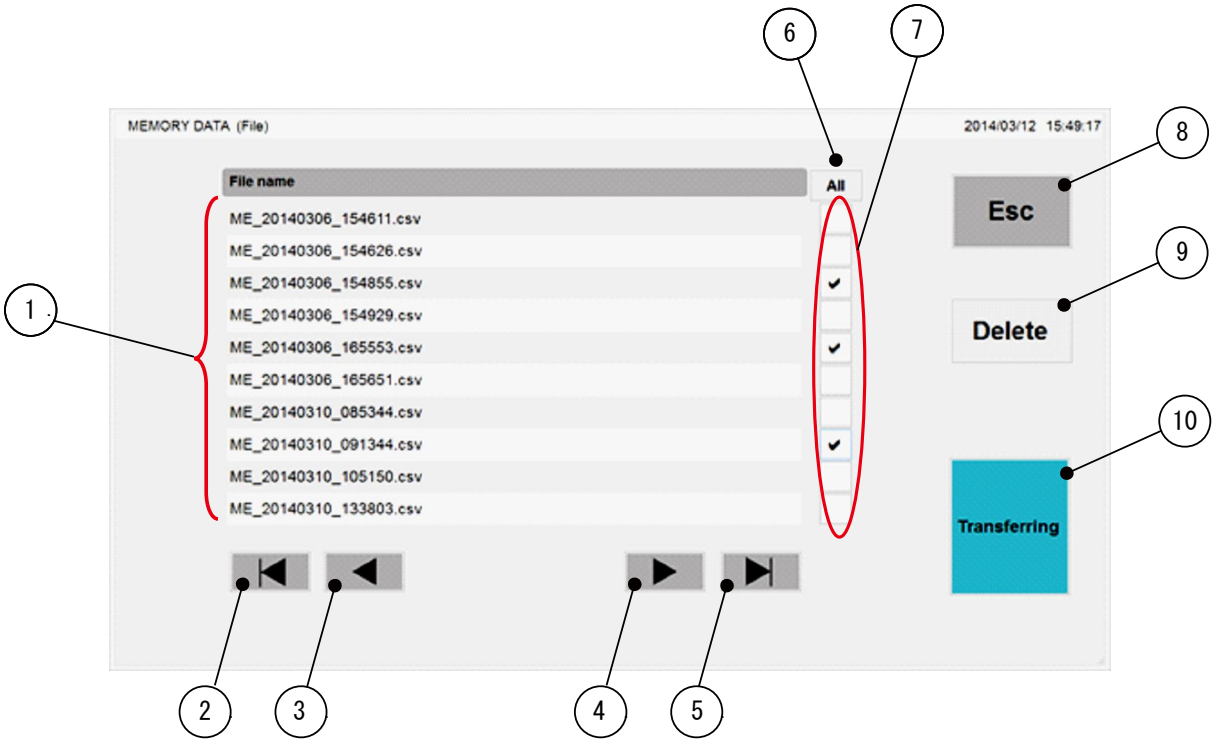
9 Data List, To check measurement results

b. Manual Measurement Data List



1 Headings : count number, CH, torque value, unit, date, and time
2 Data list
3 Top
4 Back page
5 Next page
6 Last
7 Select all check boxes
8 Check box
9 Esc
10 Delete
11 File
12 SAVE

c. Measured Data File List

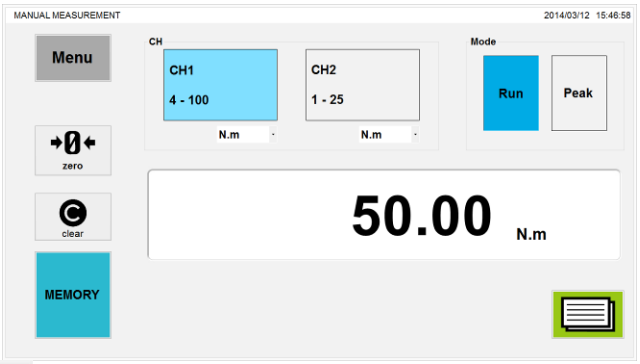


1 Measured files
2 Top
3 Back page
4 Next page
5 Last
6 To select all check boxes
7 Check box
8 Esc
9 Delete
10 Transferring

B. How to Operate

As an example, the followings are the explanation for signal type torque wrench measurement

1. Tap  on main menu.



2. Tap  and select a channel.

3. Tap  under no-loading condition to execute Auto Zero.

4. Set torque wrench on the selected channel. Refer to #11-B for measuring.
   Select correct channel depends on torque value.

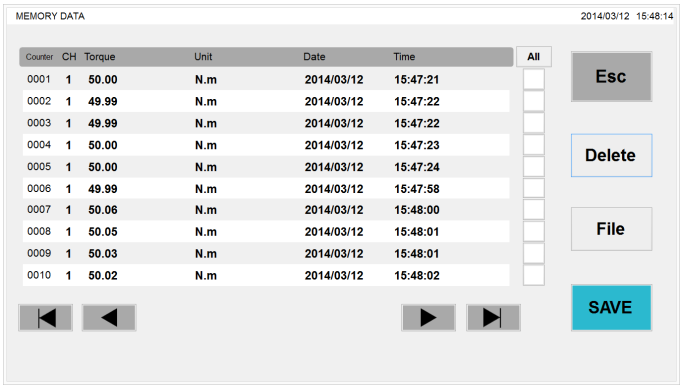
5. Select Peak mode by tapping  .
6. Turn the TCC2 handle until hear a click sound.
7. Once the torque wrench clicked, unload torque wrench.
   *During Peak mode, since the measured value is peak held, the value will not change even after unloaded.
   *If Auto Memory Reset is in effective, the measured value is automatically saved and it will be reset to move to the next measurement.

8. Tap  to save measured value.
   Tap  to clear data without saving.

   A thousand data is the maximum memory for manual measurement. After passed a thousand data, the old data will be overwritten to the new one.

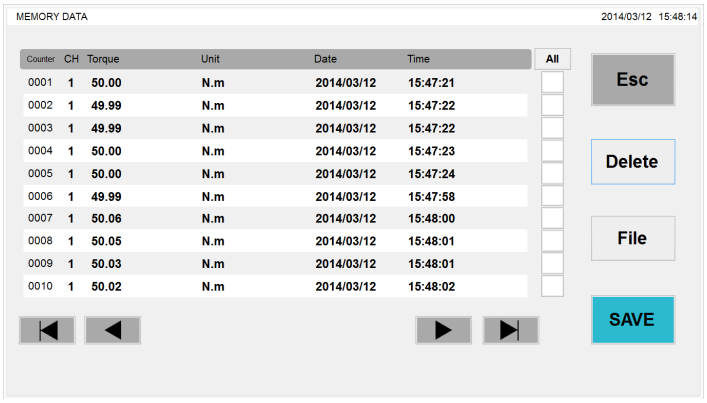
C. Data List

1. Tap  .
A thousand data is the maximum memory for manual measurement. After passed a thousand data, the old data will be overwritten to the new one.

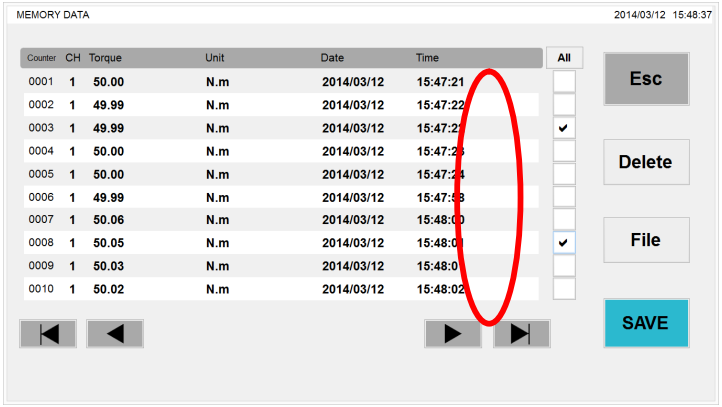


D. Delete Data

1. Tap  .



2. Select data to delete



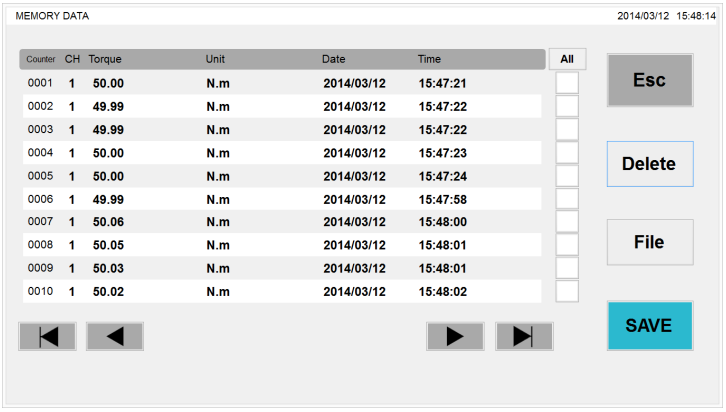
3. Tap Delete.

E. Save Data

1 Tap  .

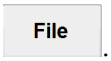
2 Select data

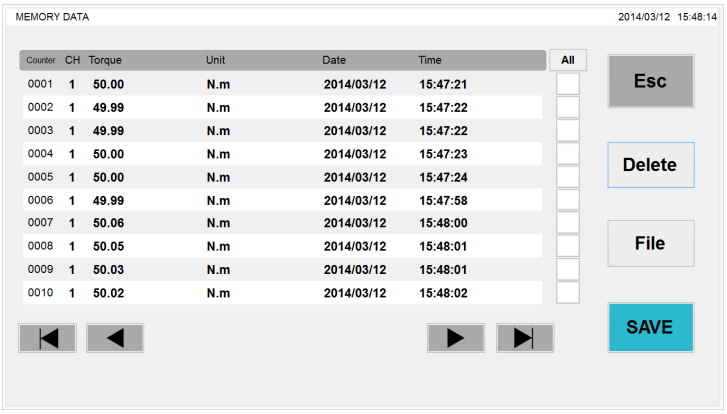
3 Tap  .



F. Transfer File

1 Tap  .

2 Tap  .

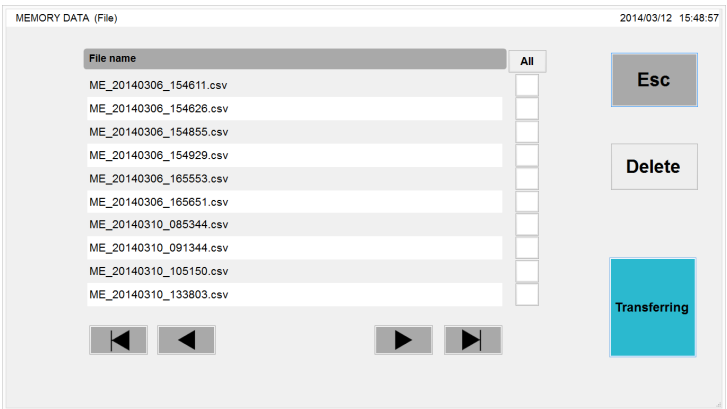


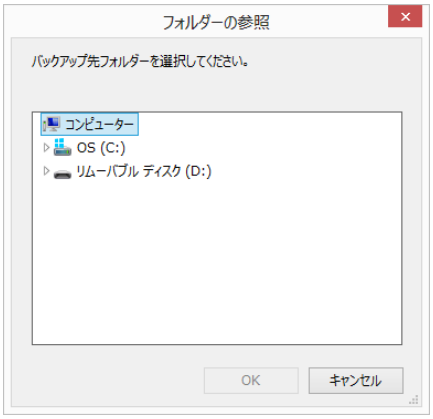
3 Select files to transfer

4 Connect external storage such as USB memory with tablet PC.

5 Tap  .

6 Select folder for save.





9 Registered Measurement Mode

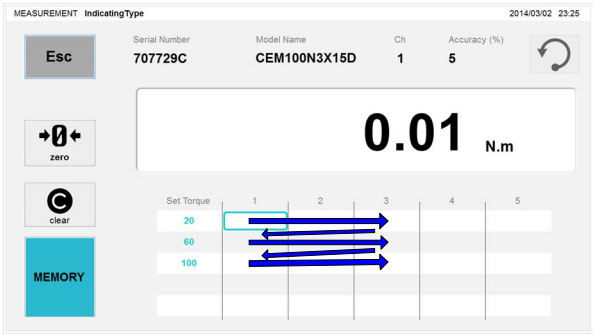
On this mode, you can perform registration tool data, measuring and referring test results. Judgments of test result are available, and you can refer all stored data.

A. Data Article

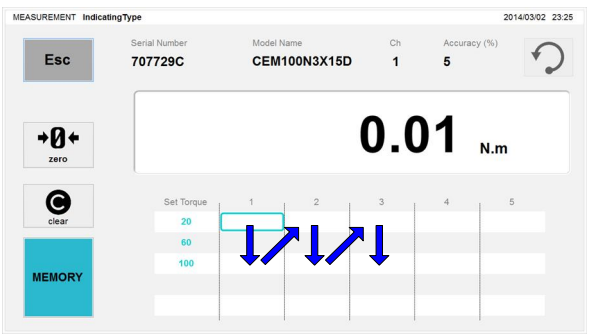
- Management Number
  Enter control number such as tool serial number.
- Model Name
  Enter torque tool model name
- Measuring Points
  Input measuring points, upto 5 points
- Scale Unit
  Select measuring scale unit. Except for –G models, scale unit selection is fixed as N.m
- Channel
  Select channel, CH1 or CH2.
- Accuracy, +/-1 to 10%
  Input measuring accuracy and judgment accuracy.
- Measuring Mode
  Select torque wrench style

Type of torque wrench	Mode	Tool
Click Type Torque Wrenches and Drivers	Peak	QL、QLE、SP、RTD、LTD
Direct Reading Type Torque Wrenches and Drivers	Run	DB、F、FTD
Digital Torque Wrenches and Drivers	Run	CEM、CTA、CTB、STC

- Direction, CW/CCW/Both
  Select measuring direction, Clockwise, Counter Clockwise or Both
- Number of Measuring, 1 to 10
  Select number of measuring. 1 to 10 times for single measuring point, 1 to 5 times for multi points.
- Measuring Sequence, Row→ or Line↓
  Select Line or Row when multi measuring times with multi points.
  Row→ : As picture shows, each three time on measurement point 20, 60 and 100.
  Line↓ : Each 20, 60 and 100 pints continuously in three times



Row→

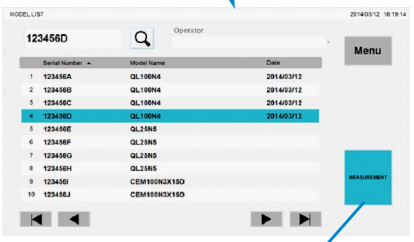


Line↓

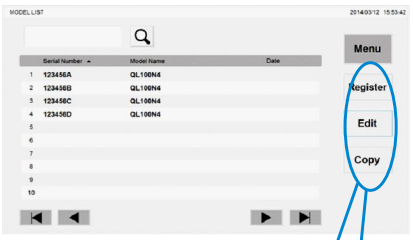
B. Organization

「メインメニュー」画面

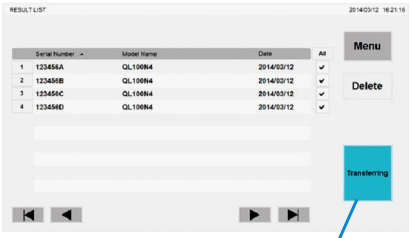
「工具一覧（測定）」画面



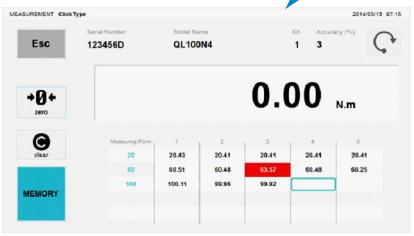
「工具一覧（登録）」画面



「工具管理測定データ一覧」画面

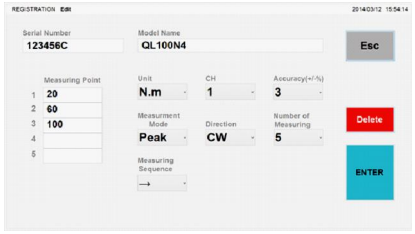


「工具管理測定」画面

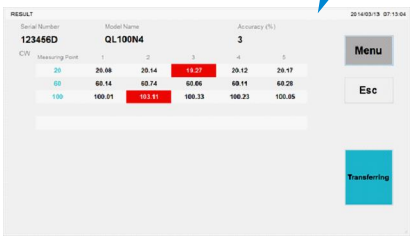


「工具管理データ登録」画面

「工具管理データ編集」画面

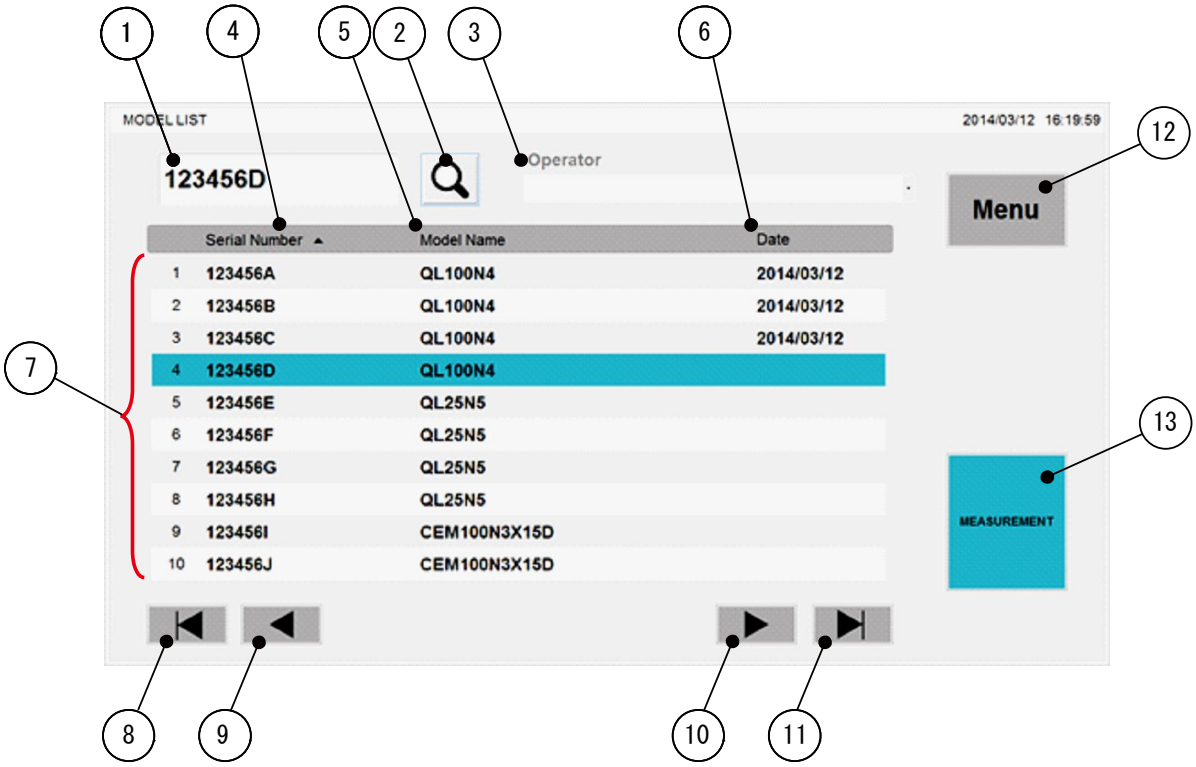


「工具管理測定データ参照」画面



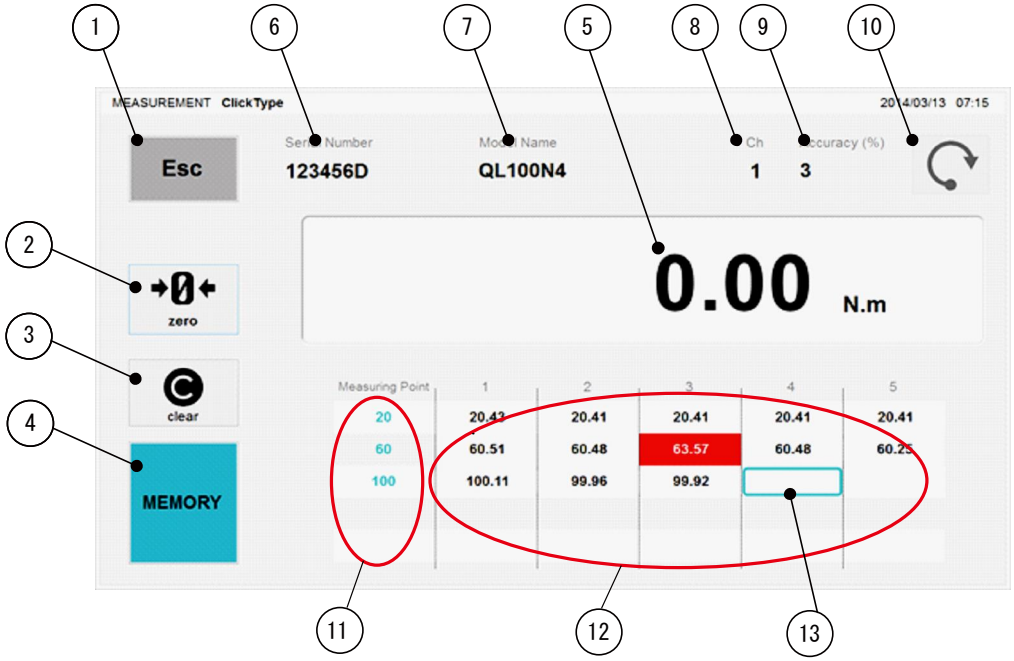
C. Registered Management Mode Screen

a. Model



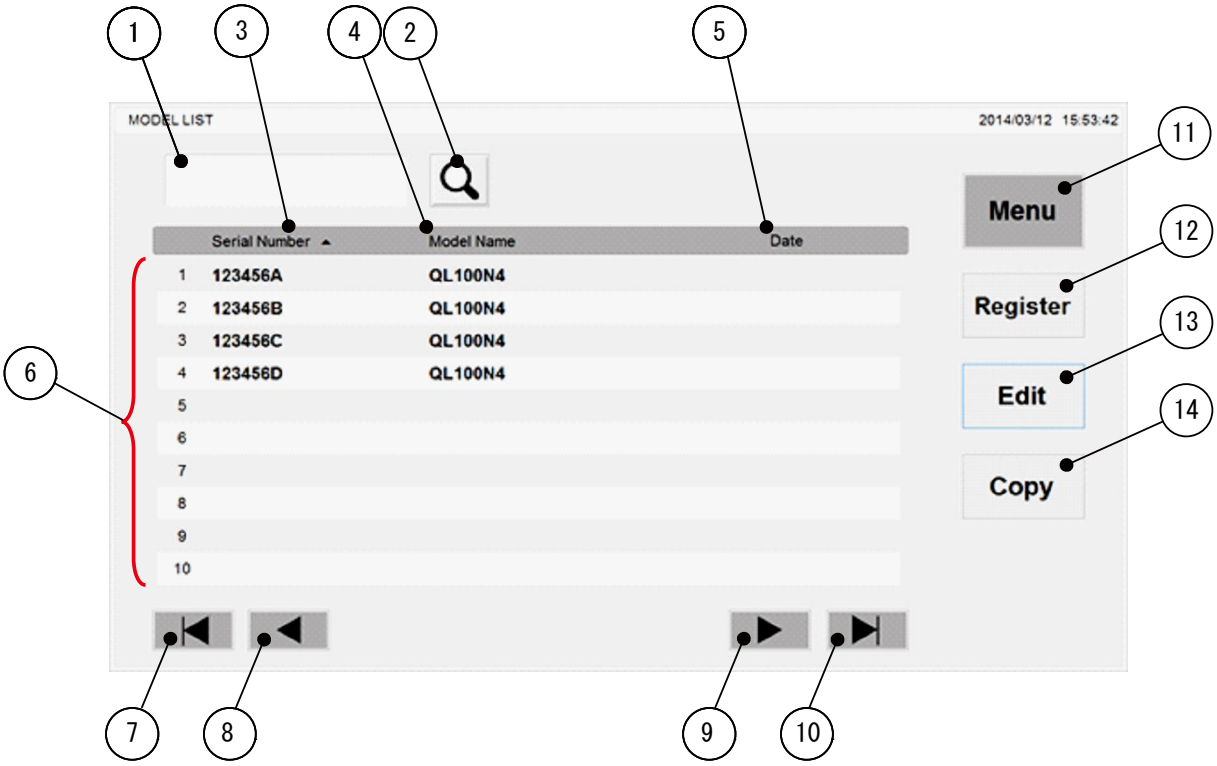
1 Search box : Touch and enter “Input Screen”. Input management number such as serial.
2 Search Key : Find registered tool as search box.
3 Operator Key : Touch and select registered operator.
4 Management Number : Sort a list of tools in the alphabetical order.
5 Model Name : Sort a list of tools in the alphabetical order.
6 Last Calibration Date : Sort a list of tools sequentially on the date of the final calibration.
7 A list of tools : Touch and select tool.
8 Top key : Show ten tools from top.
9 Page turn key : Show next 10 tools.
10 Page return key : Show previous 10 tools.
11 Bottom Key : Show last ten tools.
12 Menu key : Return to "Main Menu".
13 Measurement key : Move on to "Tool Management Measurement"

b. Registered Measurement Screen



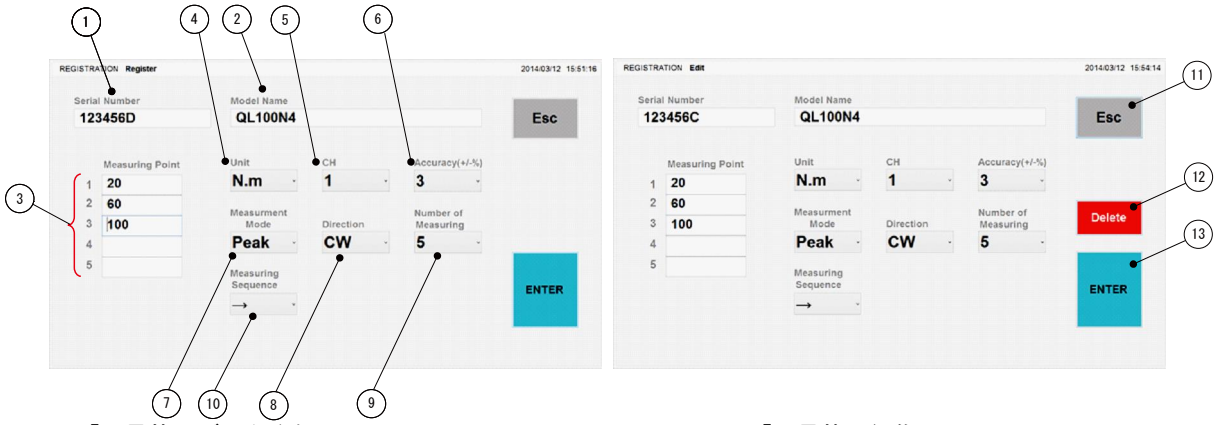
1 Esc key : Return to previous screen.
2 Auto-Zero key : Forcibly correct Zero value. Do not load anything.
3 Clear key : Clear measurement value.
4 Memory key : Judge test results and record the value if within the specified accuracy. If out of tolerance, NG result shown in red.
5 Current Measurement Value
6 Management number
7 Model Name
8 Current CH Number
9 Your set accuracy
10 Direction : Current direction of measurement. Touch and change direction when required.
11 Measurement points : Your registered measuring points shown. Touch and start measuring.
12 Test results : Result in red is out of tolerance.
13 Cursor position : Shown your current test.

c. Tool List Screen



1 Search box : Touch and enter “Input Screen” and input management number such as serial.
2 Search Key : Find registered tool as search box.
3 Management Number : Sort a list of tools in the alphabetical order.
4 Model Name : Sort a list of tools in the alphabetical order.
5 Last Calibration Date : Sort a list of tools sequentially on the date of the final calibration.
6 A list of tools : Touch and select tool.
7 Top key : Show ten tools from top.
8 Page turn key : Show next 10 tools.
9 Page return key : Show previous 10 tools.
10 Bottom Key : Show last ten tools.
11 Menu key : Return to "Main Menu".
12 Register key : Touch and enter “Tool Management Register”
13 Edit key : Touch and enter “Tool Management Edit”
14 Copy key : Touch and enter “Tool Management Register” when create newly using registered data.

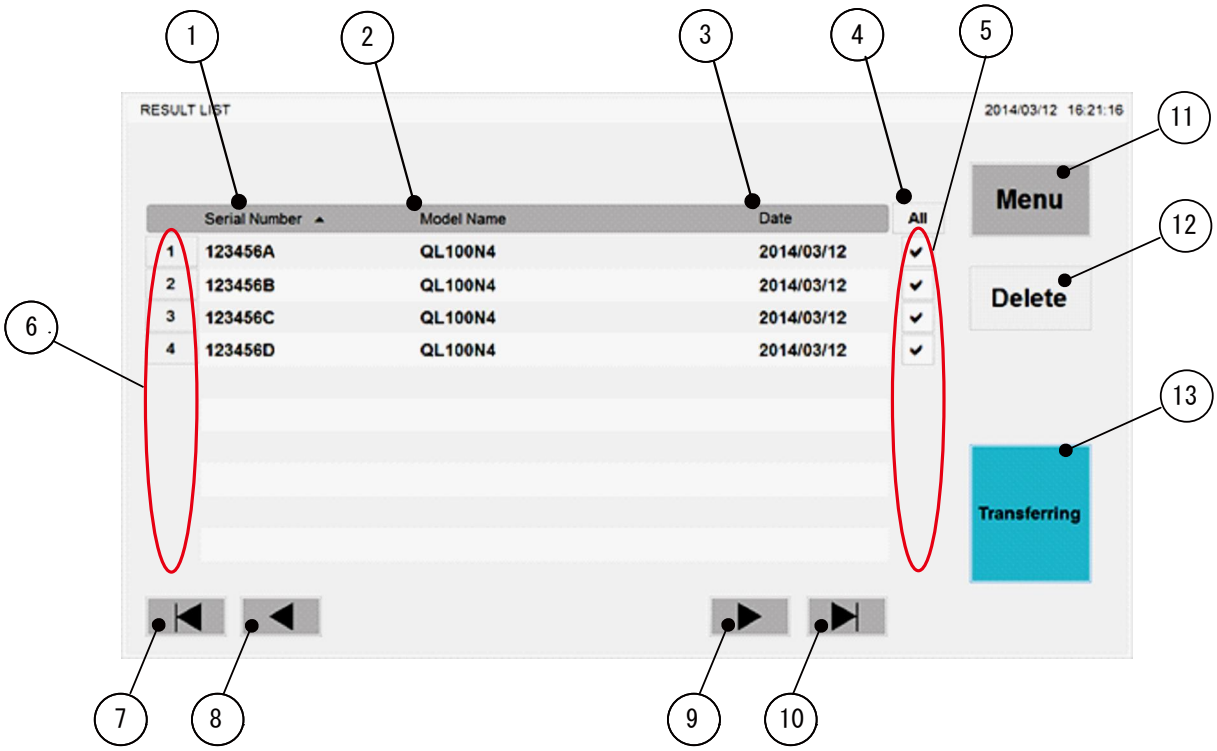
d. Registered Management Mode Register/Edit Screen



「工具管理データ登録」画面　　「工具管理編集」画面

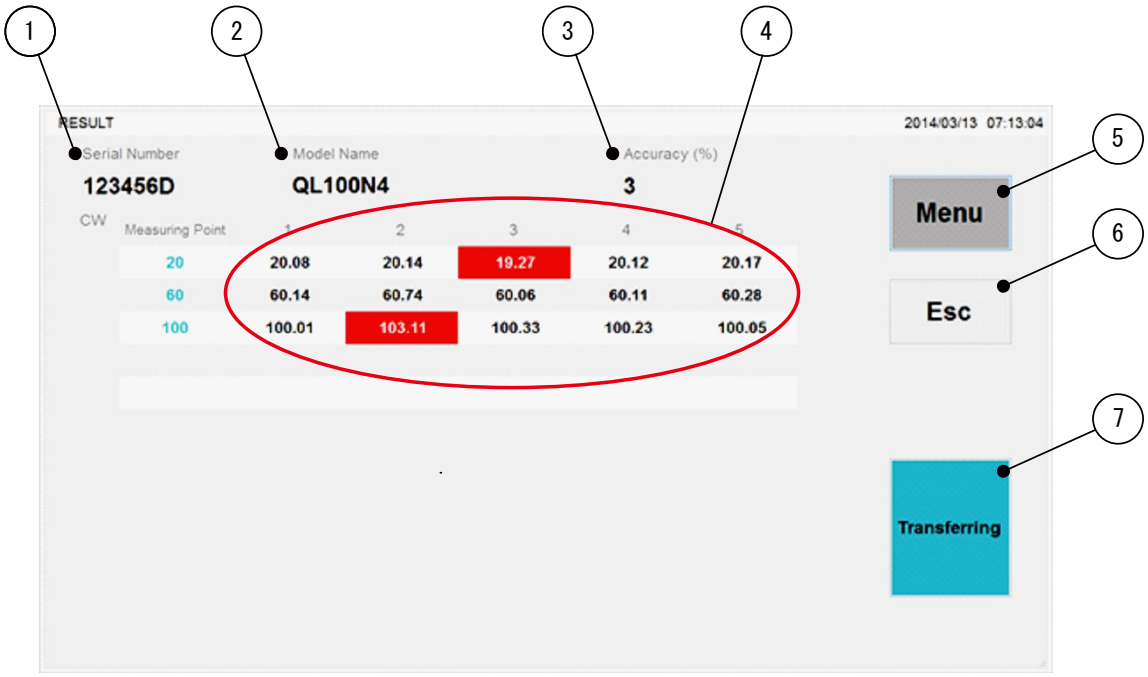
1 Management Number : Touch and enter “Input Screen”. Input and edit management number.
2 Model Name : Touch and enter “Input Screen”. Input and edit model name.
3 Measuring Points : Touch and enter “Input Screen”. Input measuring points.
4 Measuring Unit : Select measuring unit.
5 Channel Selection : Touch and Select
6 Accuracy Setting : Touch and Select
7 Mode Selection : Select Peak or Run mode
8 Measuring Direction : Touch and Select
9 Number of Measuring : Set Number of Measurement
10 Measuring Sequence : Touch and Select Row or Line
11 Esc Key : Back to Previous Screen
12 Delete Key : Delete your current data
13 Enter Key : Confirm and Save Your Data

e. Registered Management Data Screen



1 Management Number : Sort a list of tools in the alphabetical order.
2 Model Name : Sort a list of tools in the alphabetical order.
3 Calibration Date : Sort a list of tools sequentially on the date of the final calibration day.
4 All key : ☑and all select
5 Check Box : Touch and Mark
6 Reference key : Move on to "Tool Management Reference Data" screen
7 Top key : Show ten tools from top.
8 Page turn key : Show next 10 tools.
9 Page return key : Show previous 10 tools.
10 Bottom Key : Show last ten tools.
11 Delete key : Touch and Delete ☑Marked Data
12 Transfer key : Touch and Create CSV File in to the specified folder

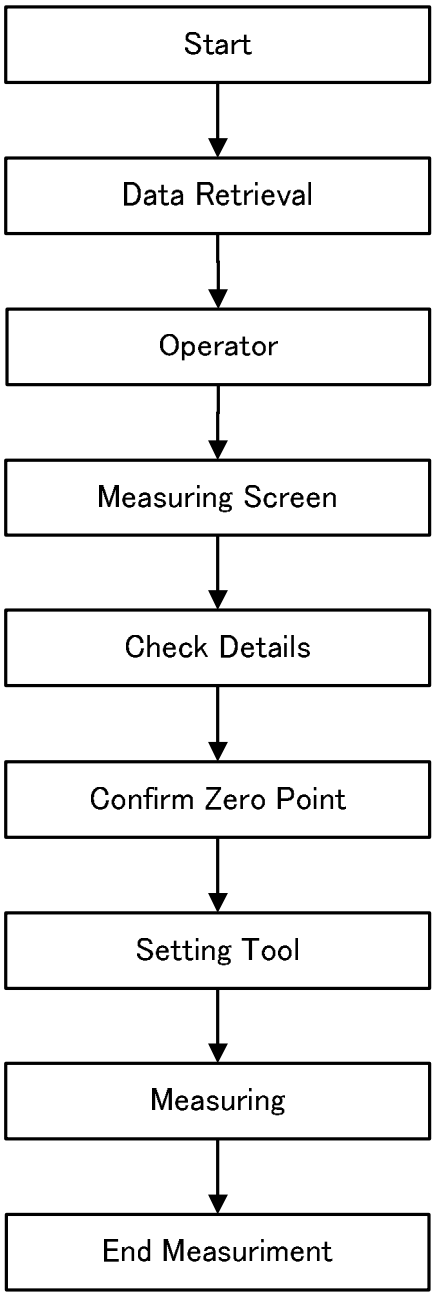
f. Registered Management Reference Data screen



1 Management Number
2 Model Name
3 Accuracy
4 Test results : Result in red is out of tolerance.
5 Menu key : Back to Main Menu
6 Esc key Back to Previous Screen
7 Transfer key : Touch and Create CSV File in to the specified folder

D. How to operate

Procedure for calibration of registered tool



Search registered data

Select operator

Press Measurement key to change screen

Make sure Model, Each Measuring Points and Accuracy.

No loading and set Zero.

Set the tool

Actual Measurement

Save the data after Measurement

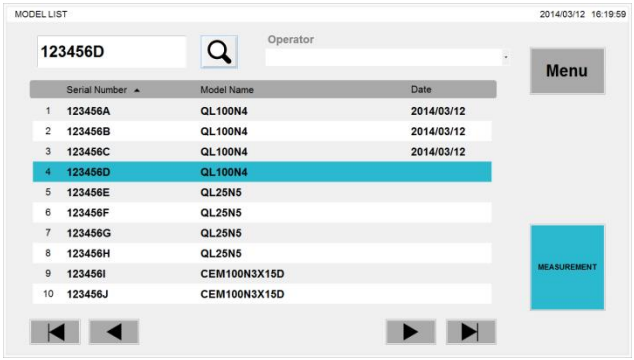
Sample Measurement

Sample Measurement Number : 123456D
Model Name : QL100N4
Measuring Channel : CH1
Accuracy : +/-3
Measuring Mode : Quick
Direction : CW
Number of Measuring : 3
Measuring Sequence : Row
Points : 20, 60 and 100N.m

1. Start from Main Menu

   Press  on Main menu and move to Tool List

2. Tool List Screen.



- Select Tool
  Find and touch your selected tool, and the line turns into blue.
  Sort of a list of tool when touch title, Serial number, Model name or Date.

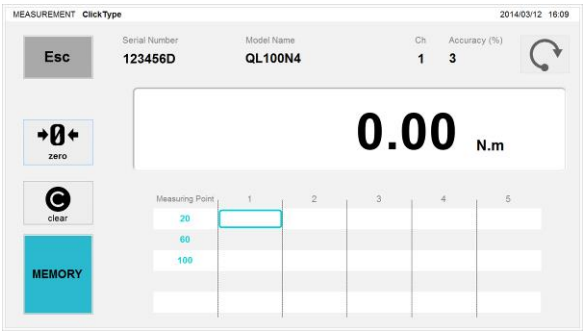
- Operator
  Touch and select registered operator.
  Blank shown if no registered operator.

- Measurement Screen

  Select tool and operator, then touch 

  to Measurement screen.

3. Measurement



1 Make sure Serial Number, Model Name, Accuracy, Direction, Each Measuring Points.
Cursor position : Shown your current test.

2 Press 

in no loading and set Zero condition.

3 Error Message comes up if Press Zero key with loading.

4 Confirm your torque wrench set value and put it on right CH position.

5 Turn TCC2 operation handle to load 'till the torque wrench clicks.

6 " Ch Error " indication and a buzzer sound when load on a different channel.

7 Release loading torque wrench clicks

8 Result is Peak hold value

9 Touch 

key to judgment.

10 Calibration result is OK, press memory to continue.
When calibration result is out of tolerance, it shows in red.

Touch memory key to keep the result, and 

key to re-calibrat.
If you set as Auto-Memory/Reset, automatically judge result.

11 When finish number calibration you set, move to next calibration point.

12 If you want to re-calibrate particular result, touch the calibration point.

13 After calibrating all points, message "Save and Finish"comes. Press Yes to save the data and finish the calibration. Press No, finish without saving. Cancel, return measurement screen.

14 When you want to back after press Cancel, press 

key. "Save and Finish"message comes again.

15 If you press 

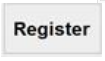
key during measuring, a message "Finish Measuring?" comes. Press yes to finish, and No to continue measuring.

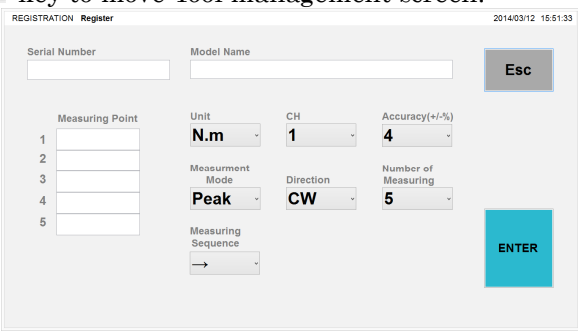
E. Register and Edit

Registration, edit and deletion of Management number, Model name, Measuring channel, accuracy, direction, number of measurement, measurement mode, measuring points.

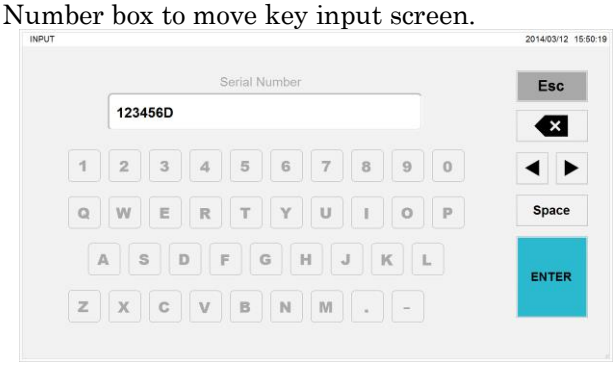
a. Initial Registration

1. Touch  key on main menu to move Tool list screen.

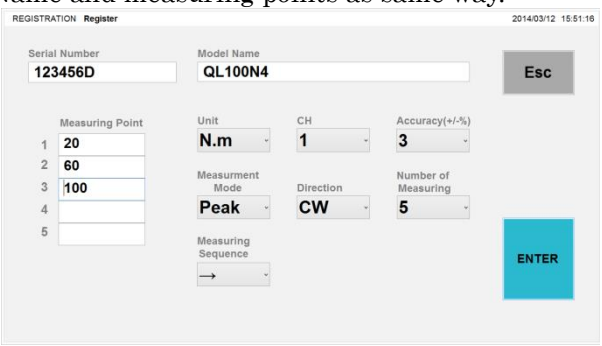
2. Touch  key to move Tool management screen.



3. Touch Serial Number box to move key input screen.



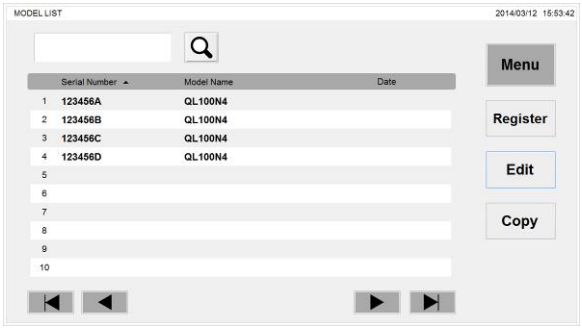
4. Touch  after entering management number to back.
5. Enter Model Name and measuring points as same way.



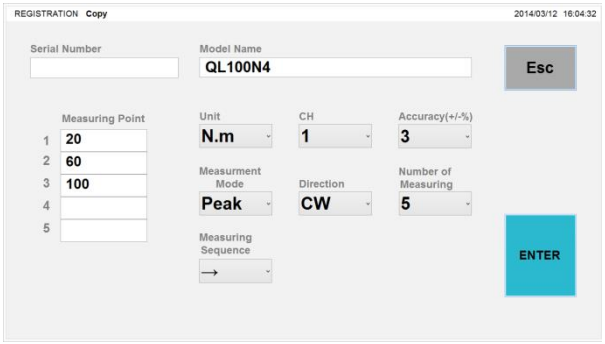
6. Touch Unit box to open list, and select one scale unit.
7. Select Channel, Accuracy, Mode, Direction, Number and Sequence.
8. Touch  key to confirm each details.

b. Data Copy and paste

1. Touch  key on main menu to move tool list screen.

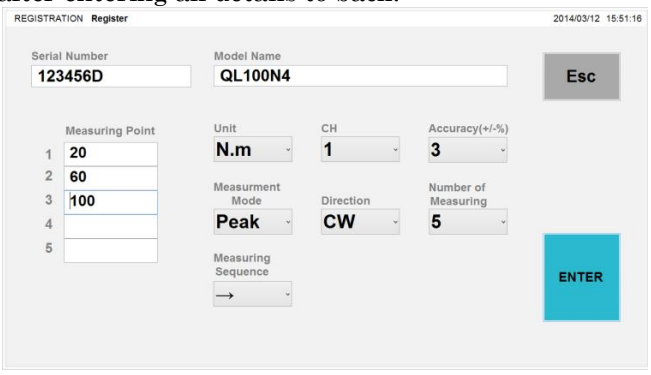


2. Select particular data and touch Copy key, tool management screen is shown without management number.



3. Touch Tool management box to move key input screen.

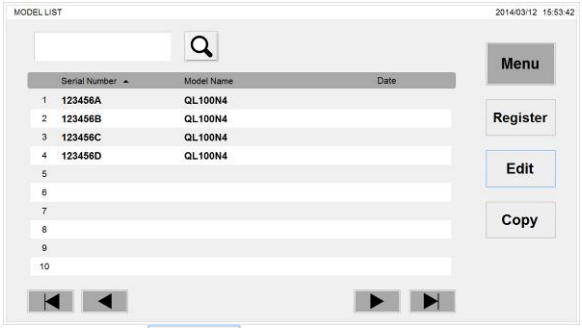
4. Touch ENTER key after entering all details to back.



5. Touch ENTER key if all details OK to confirm.

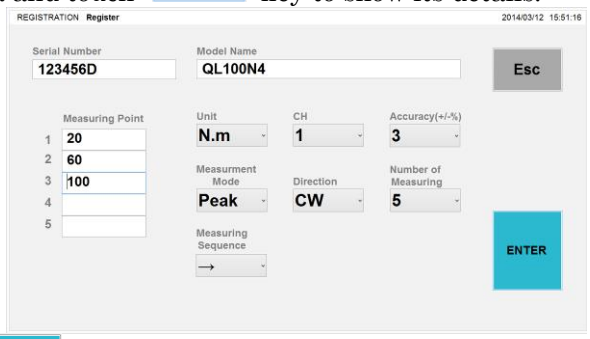
c. Edit registered data

1. Touch  key on main menu to move Tool list screen.



2. Select particular data and touch 

key to show its details.



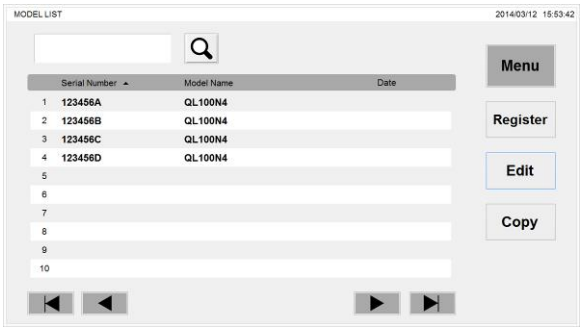
3. After editing, touch 

key if all details OK to confirm.

d. Delete data

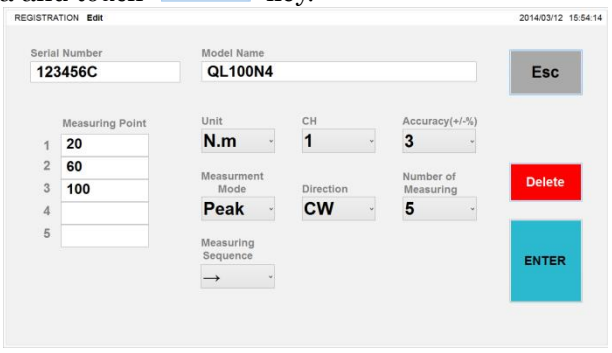
Deletion is performed each data.

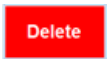
1. Touch  key on main menu to move Tool list.



2. Select particular data and touch 

key.

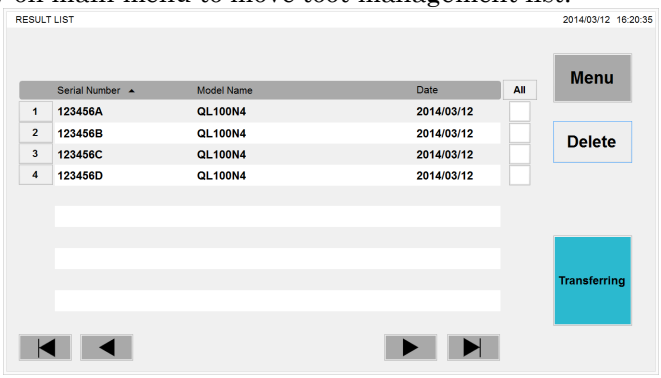


3. Touch 

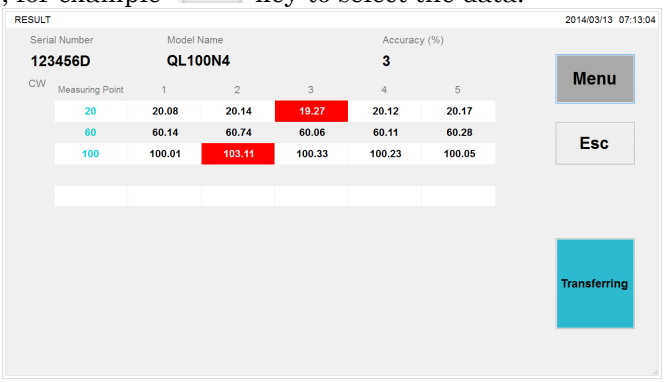
key and press “Yes” to delete.

F. Refer data
Refer measured data from tool management list

1. Touch  key on main menu to move toot management list.

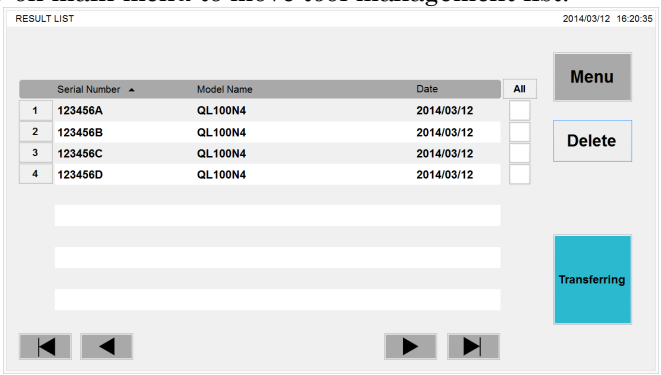


2. Touch line number, for example key to select the data.

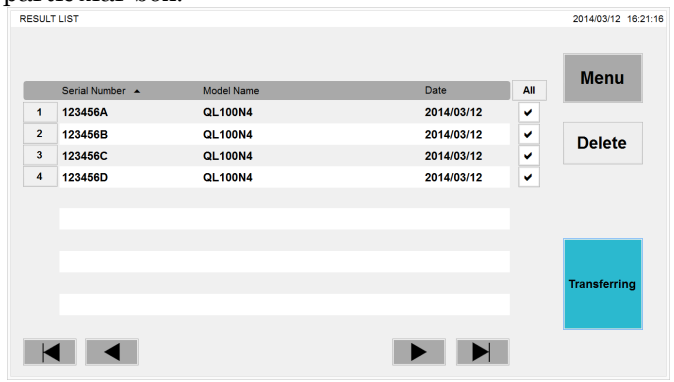


G. Transfer Selected data
Transferring selected data to external storage. Backup regularly is recommended.

1. Touch  key on main menu to move tool management list.



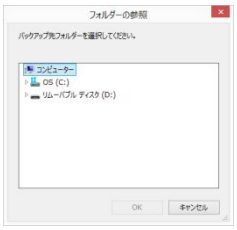
2. Check mark on particular box.



3. Connect your external storage.

4. Touch 

key to move folder list screen.



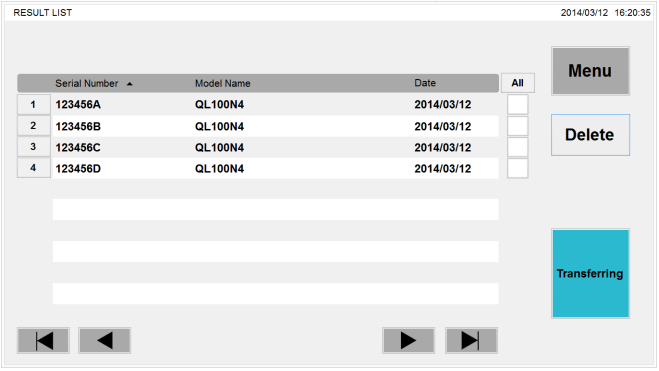
5. Select and touch “OK” and start transferring by CSV format.

Management Number, Model Name, Measuring Date, Time, Scale Unit, Accuracy, Measuring Mode, Number of Measuring, Direction, Measuring Points, Operator, All results, data average, judgment of average.

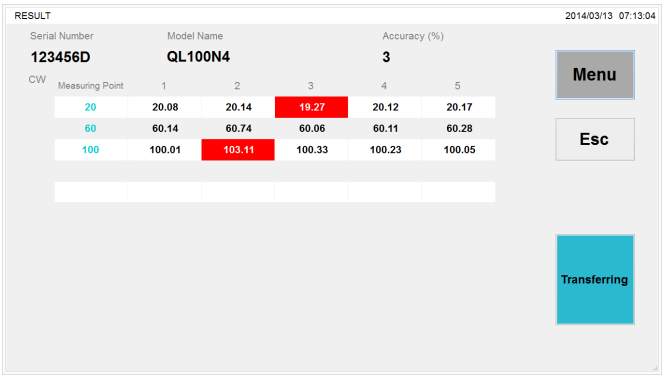
Date and time information will be provided on CSV file automatically.

H. Transfer whole data
Transferring plural data to external storage. Backup regularly is recommended.

1. Touch  key on main menu to move Tool Management List screen.



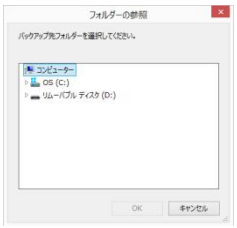
2. Touch line number to refer the details.



3. Connect your external storage.

4. Touch 

key to move folder list screen.



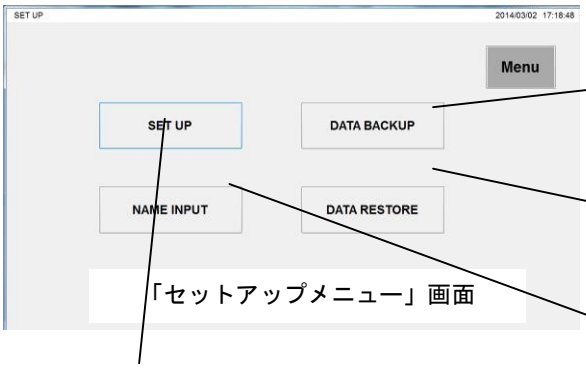
5. Select and touch “OK” and start transferring by CSV format.

Management Number, Model Name, Measuring Date, Time, Scale Unit, Accuracy, Measuring Mode, Number of Measuring, Direction, Measuring Points, Operator, All results, data average, judgment of average.

Date and time information will be provided on CSV file automatically.

10 Set-Up Mode

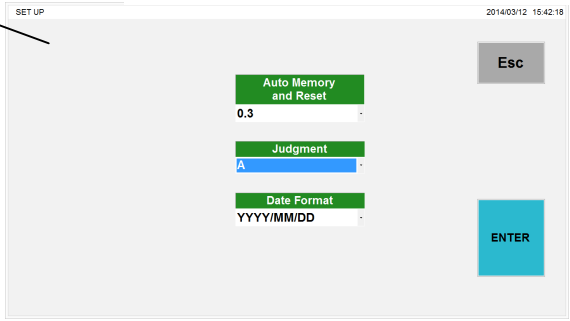
Tough key to move each setup menu screen.

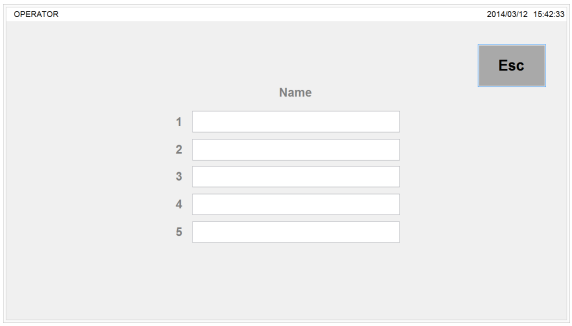


「セットアップメニュー」画面

Registered Data Backup：
transferring to external storage.

Data re-entering：
Transferring from external storage.

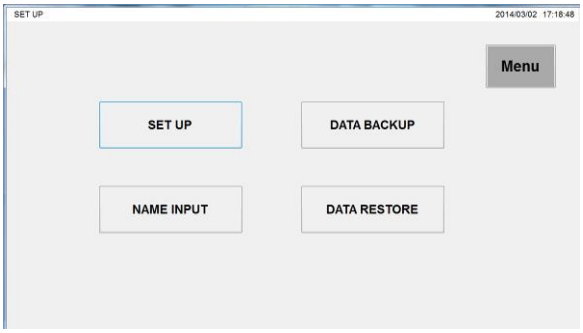




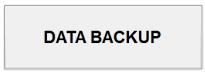
Setup Auto-Memory, Reset, Judgment and Date Format

A. Registered Data backup
Tool management data, test result of registered & regular measurement, Auto-Reset memory, Judgment condition, date format, configuration file for TCC2 are transferred to external storage. CSV file of regular measurement result is not available to this back up.

1 Touch  key on main menu to move Setup screen.



2 Connect your external storage.

3 Touch 

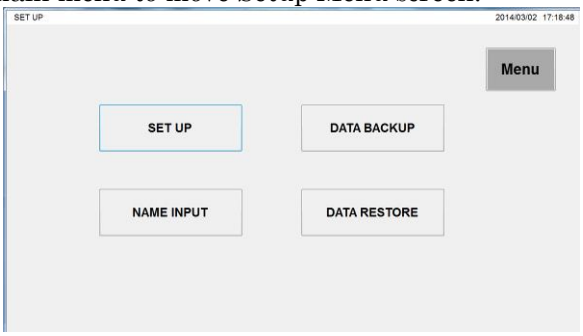
key to move folder list screen.

4 Select your storage device and press “OK”.

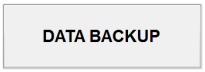
5 “Backup Completion” message comes and touch “OK” to back set up screen.

B. Data Re-Entering
Tool management data, test result of registered & regular measurement, Auto-Reset memory, Judgment condition, date format, configuration file for TCC2 are transferred from external storage.

1 Touch  key on main menu to move Setup Menu screen.



2 Connect your external storage.

3 Touch  key to move folder list screen.

4 Select your storage device and press “OK”.

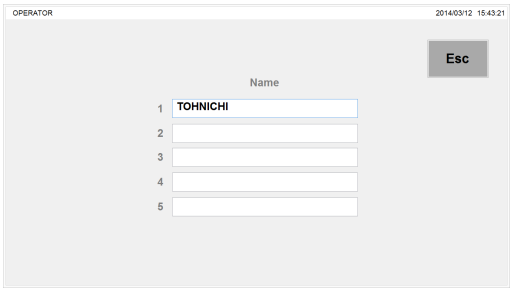
5 “Backup Completion” message comes and touch “OK” to back set up screen.

C. Operator Registration

Touch [NAME INPUT] key on setup menu to move Operator Registration Screen.
Upto 5 people can be registered.

Touch particular box to move input screen.
Register operator name, upto 30 characters.

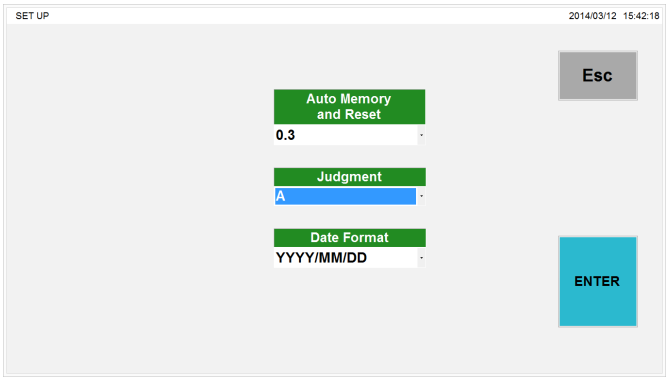
Example : Touch [ENTER] key after input TOHNICHI.



Touch [Esc] key. Registration is completed and back to Setup Menu.

D. Auto-Reset & Memory, Judgment and Date Format

Touch SET UP key on Setup Menu Screen to move.



1 Auto-Memory & Reset, Factory Default : off
Touch “Auto Memory and Reset”and select one from drop-down list.
OFF／0.1／0.2／0.3／0.4／0.5／1.0／2.0／3.0／4.0／5.0

Selected “OFF” means Memory and Reset function by manual.

Touch ENTER to record.

2 Judgment, Factory Default : A type
Touch “Judgment” to select formula, A or B type from drop-down list.

Touch ENTER to record.

Each formula of accuracy is shown below. OK judgment in tolerance and NG as out of tolerance.

$$A : \text{Accuracy, } \% = \frac{\text{Value of Torque Wrench} - \text{Value of TCC2}}{\text{Value of TCC2}} \times 100$$

$$B : \text{Accuracy, } \% = \frac{\text{Value of TCC2} - \text{Value of Torque Wrench}}{\text{Value of Torque Wrench}} \times 100$$

3 Date Format, Factory Default : YYYY/MM/DD
Touch “Date Format”and select one from drop-down list.

Touch ENTER to record.

YYYY/MM/DD : 2014/12/31
MM/DD/YYYY : 12/31/2014
DD/MM/YYYY : 31/12/2014

Touch Esc key to back setup Screen.

11 Operation

A. Measuring Condition

a. Measuring Temperature
Temperature should be kept within the range of 18 – 28 degree C and should not change more than +/-1 degree C during calibration.

b. Check the followings prior to calibration.
- Torque wrench tester should be set on a flat and stable stand.
- For direct-reading type torque wrenches, the direction of reading is vertical to the scale.
- For click type torque wrenches, five releases without measurement have been carried out at the maximum value in the operating direction to be calibrated. For calibrating in any other operating direction, this procedure shall be repeated.
- For indicating torque wrenches, prior to calibrating, one pre-loading up to the maximum value has been carried out in the operating direction to be calibrated and after release of load, the pointer or digital display has been set to zero. For calibrating in any other operating direction, this procedure shall be repeated.
- For the torque wrenches, apply force within the range specified in Fig.1 at the centre of the grip or the marked loading point.
- For the torque screw drivers, apply force within the range specified in Fig.2.

c. Precaution
- Click type torque wrenches shall be loaded on the torque wrench tester with increasing force up to approximately 80% of the respective target torque value. From 80% to the final target torque value, the load shall be applied slowly and uniformly during a period of 0.5s to 4s. Except Preset type, measuring must start at the low torque value.

- Indicating torque wrenches shall be loaded on the torque wrench tester with increasing force until the torque tool indicates the respective torque value. If the applied torque exceeds the target torque, this calibration stage shall be repeated from zero position.

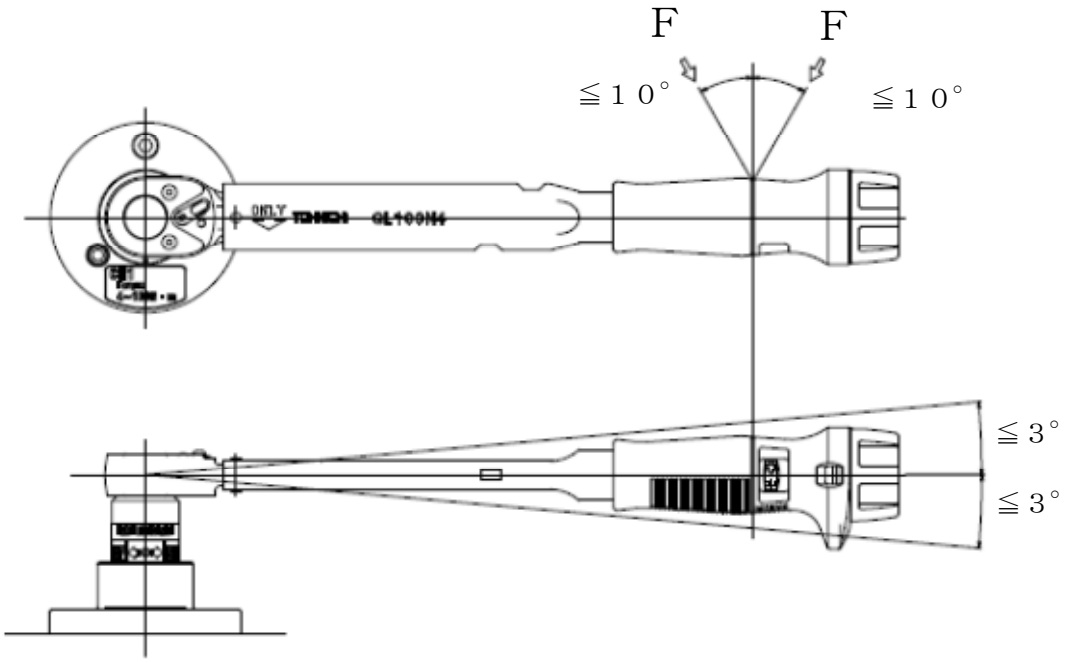


Figure 1-Measurement of a torque wrench in a vertical position

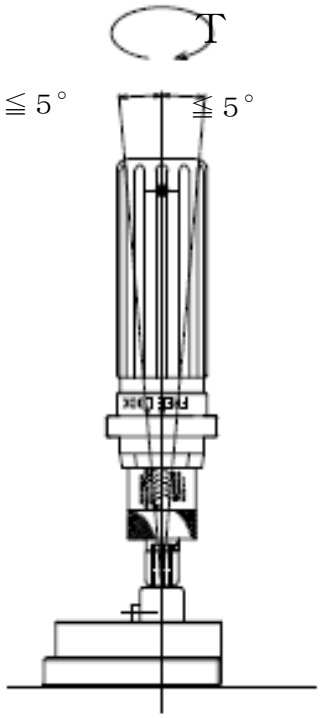


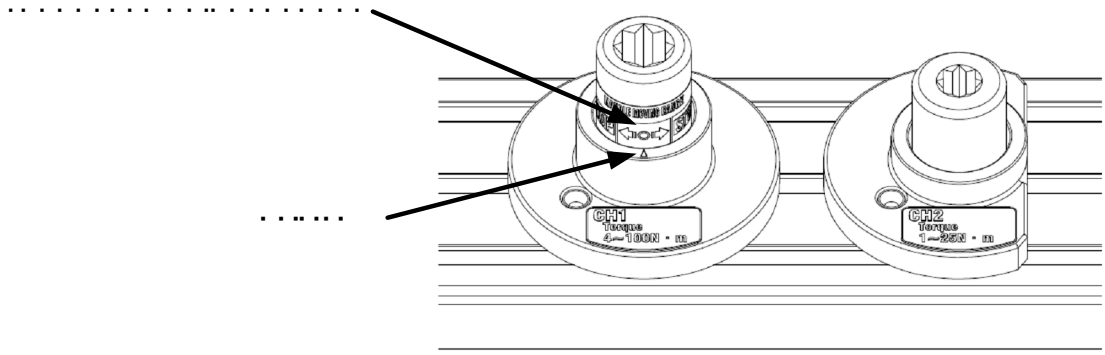
Figure 2-Measurement of a torque screwdriver in horizontal and vertical position

B. Measuring each type of torque wrench

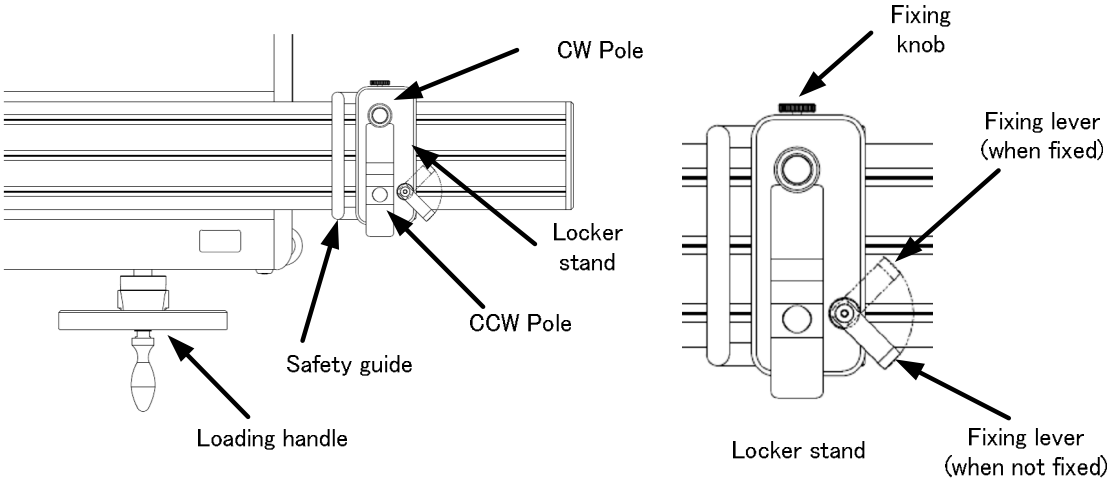
a. Measuring QL type

1 Set the torque wrench to inlet on TCC2 according to the measuring torque.

2 Check the HANDLE MOVING RANGE and rotate the loading handle so that the pointer is set in the middle.



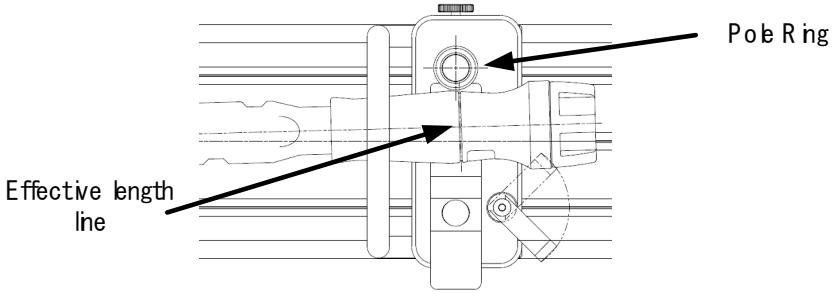
3 Check the safety guide is fixed. If it is loose, rotate the fixing knob to fix it.



4 Set the measuring torque of the torque wrench

5 Set the square drive of the torque wrench to the inlet of TCC2.
The torque wrench with ratchet adjusts the direction of the square drive when setting.
Use auxiliary DA, Down Adapter, to change the square driver size.
Torque wrench must be set between CW and CCW pole.

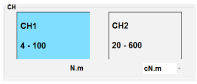
6 Move the locker stand until the effective length line of the torque wrench aligns with the center of the pole. Make sure that the locker stand is fixed.



7 Check the torque wrench is set horizontally.

8 Adjust the height of the pole plate so that the torque wrench is level or inclined a little to the grip side. Height of the pole can be adjusted by pinching the lever.

9 If the torque wrench has ratchet, make sure the ratchet is for clockwise, and rotate the loading handle in clockwise direction. For counter-clockwise torque wrench, set the pole ring to CCW pole. Then rotate the loading handle in counter-clockwise direction.

10 Tap 

and select a channel depending on the measurement torque value. Check the registered measurement channel in Registration Measurement mode.

11 Tap 

and select “PEAK” in Manual Measurement mode.

12 Tap 

under no-loading condition to execute Auto Zero.

13 Measure torque.

14 Turn the loading handle to measurement direction.

15 Apply force smoothly to the measuring point.

16 When it reaches the measuring point and hears a click sound, turn the loading handle to opposite direction quickly. The measured data is automatically stored in TCC2.

17 In case of rotating the loading handle after “click” of the torque wrench, torque value on the display continue to increase and it causes over torque.

Attention
Do not apply excessive torque beyond capacity of the torque wrench or TCC2 itself.

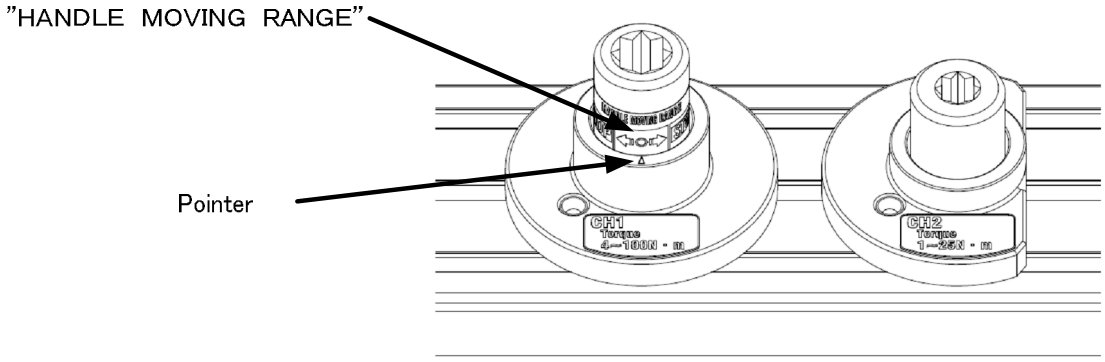
18 After measuring, check the inlet of the square drive and the locker to make sure it is fixed firmly. If it is loose, adjust it again.

19 Repeat the above steps19-18 on the required measurement torque.

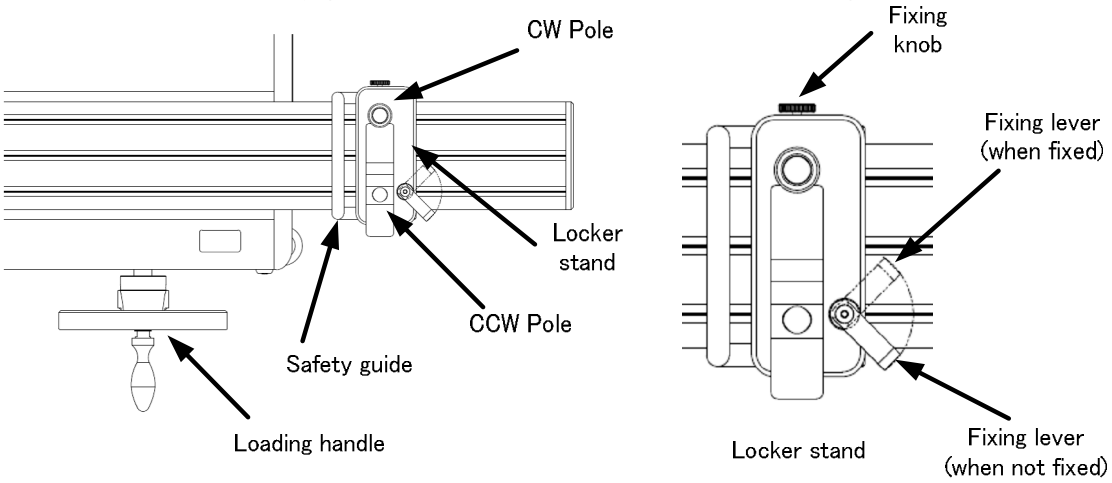
b. Measuring SP type

1 Set the torque wrench to inlet on TCC2 according to the measuring torque.

2 Check the HANDLE MOVING RANGE and rotate the loading handle so that the pointer is set in the middle.

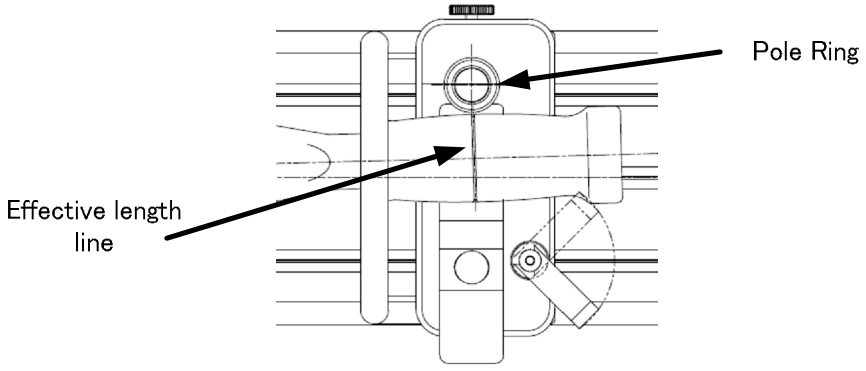


3 Check the safety guide is fixed. If it is loose, rotate the fixing knob to fix it.



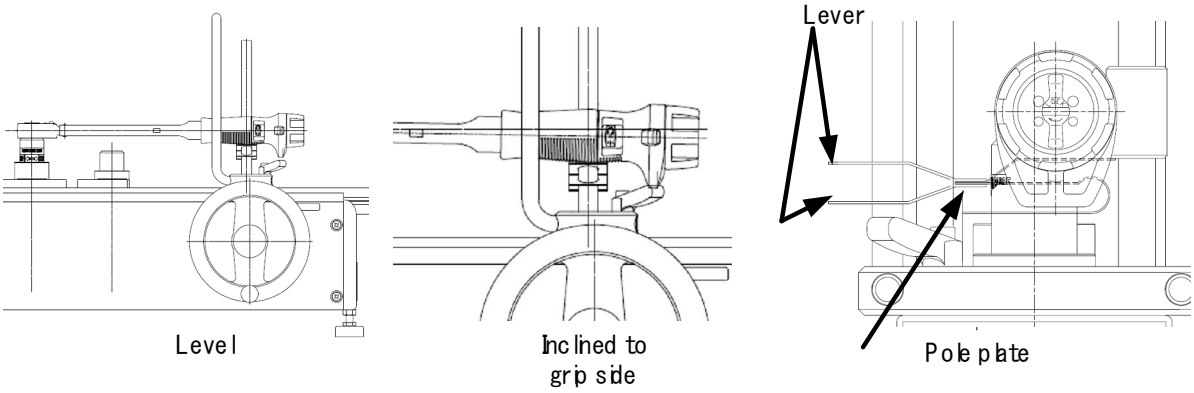
4 Select the hex adapter with the matching width across flat, and insert into the inlet of TCC2. Torque wrench must be set between CW and CCW pole.

5 Move the locker stand until the effective length line of the torque wrench aligns with the center of the pole. Make sure that the locker stand is fixed.

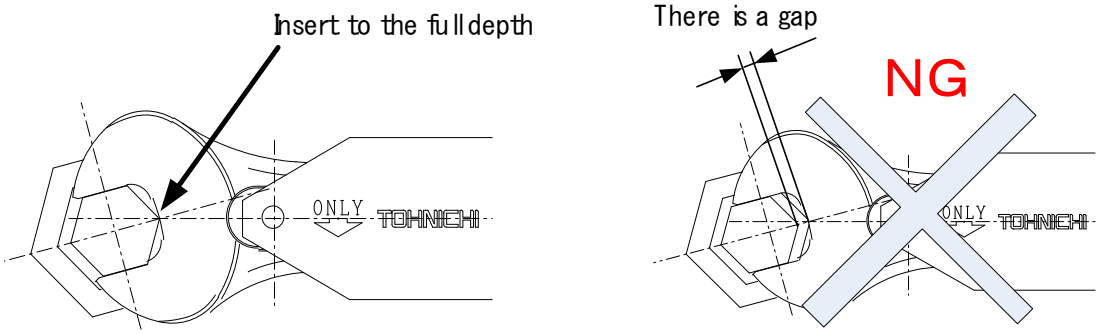


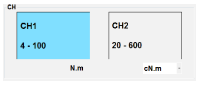
6 Check the torque wrench is set horizontally.

7 Adjust the height of the pole plate so that the torque wrench is level or inclined a little to the grip side. Height of the pole can be adjusted by pinching the lever.



8 Make sure the head of the torque wrench is fit in all the way on the hex adapter and the loading handle in clockwise direction. For counter-clockwise direction, change the pole ring, or special pole on the CCW pole, and rotate the handle in the counter clockwise direction.



9 Tap  and select a channel depending on the measurement torque value. Check the registered measurement channel in Registration Measurement mode.

10 Tap  and select “PEAK” in Manual Measurement mode.

11 Tap  under no-loading condition to execute Auto Zero.

12 Measure torque

13 Turn the loading handle to measurement direction.

14 Apply force smoothly to the measuring point.

15 When it reaches the measuring point and hears a click sound, turn the loading handle to opposite direction quickly. The measured data is automatically stored in TCC2.

16 In case of continuing to rotate the loading handle after “click” of the torque wrench, torque value on the display continue to rise, but it causes over torque.

Attention : Do not apply excessive torque beyond capacity of the torque wrench or TCC2 itself.

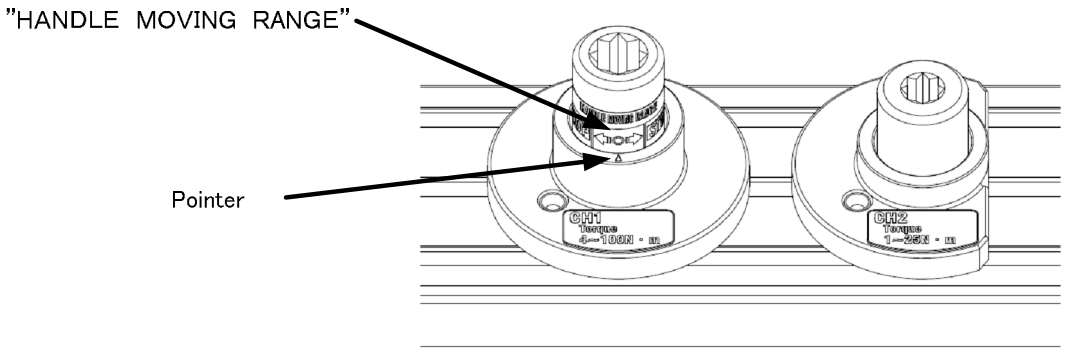
17 After measuring, check if torque wrench is fit in all the way on the hex adapter and the locker to make sure it is fixed firmly. If it is loose, adjust it again.

18 Repeat the above steps □-□ on the required measurement torque.

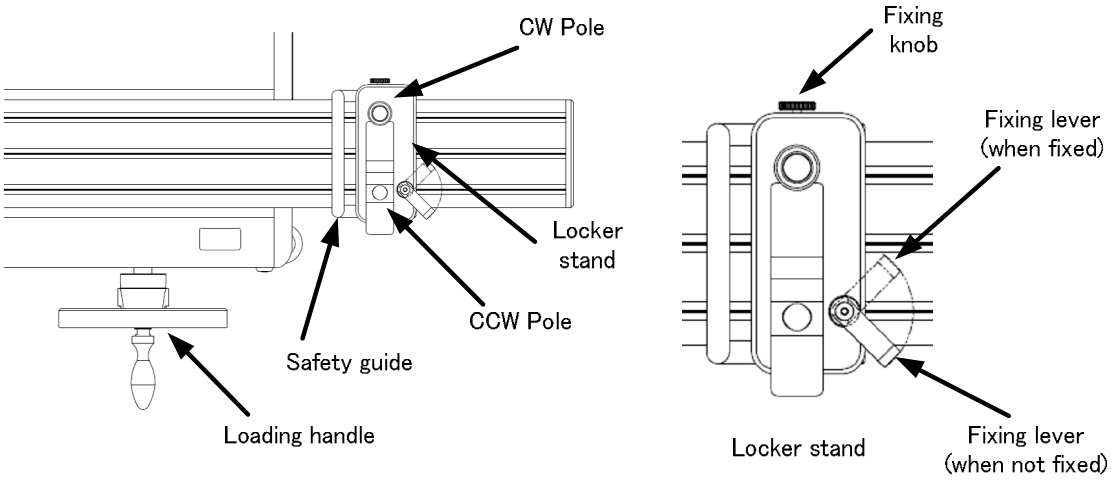
c. Measuring DB/F/CEM type

1 Set the torque wrench to inlet on TCC2 according to the measuring torque.

2 Check the HANDLE MOVING RANGE and rotate the loading handle so that the pointer is set in the middle.

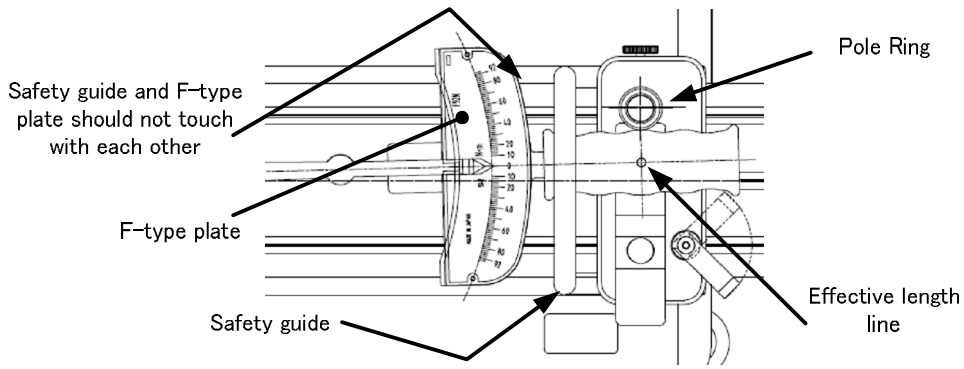


3 Check the safety guide is fixed. If it is loose, rotate the fixing knob to fix it.



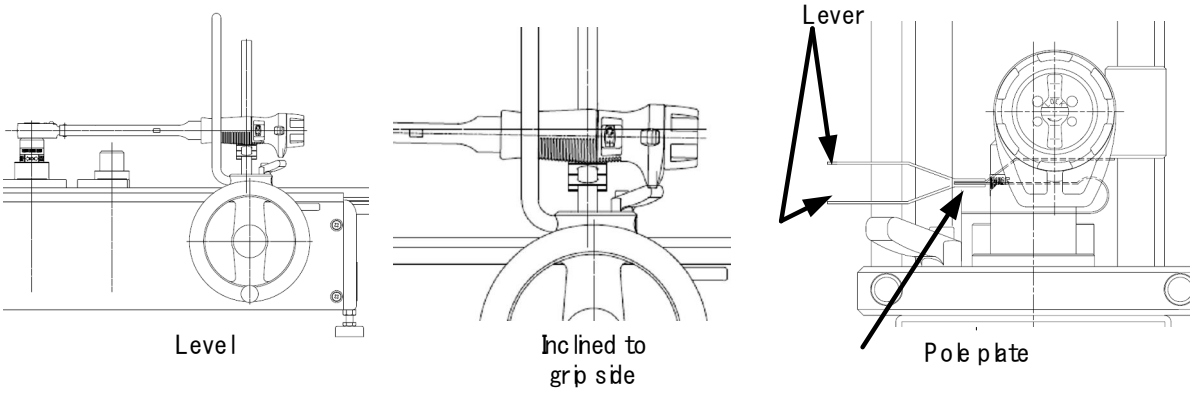
4 Set the square drive of the torque wrench to the inlet of TCC2.
The torque wrench with ratchet adjusts the direction of the square drive when setting.
Use auxiliary DA, Down Adapter, to change the square driver size.
Torque wrench must be set between CW and CCW pole.

5 Move the locker stand until the effective length line of the torque wrench aligns with the center of the pole. Make sure that the locker stand is fixed.

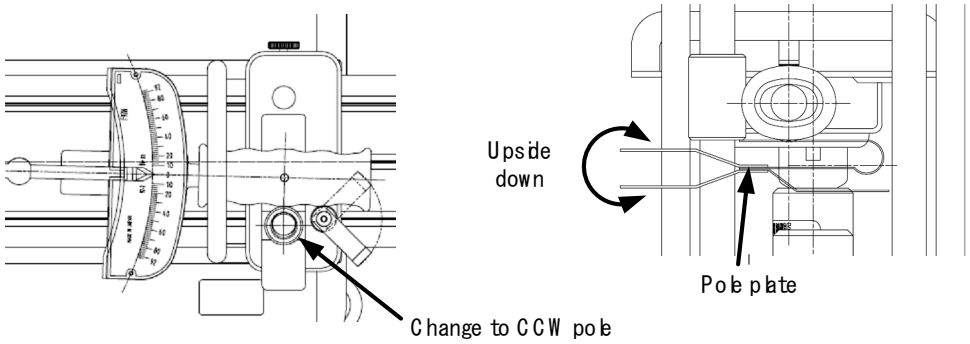


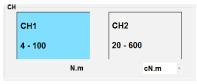
6 Check the torque wrench is set horizontally.

7 Adjust the height of the pole plate so that the torque wrench is level or inclined a little to the grip side. Height of the pole can be adjusted by pinching the lever.



8 If the torque wrench has ratchet, make sure the ratchet is for clockwise, and rotate the loading handle in clockwise direction. For counter-clockwise torque wrench, set the pole plate upside down and put the pole ring on CCW pole. Then rotate the loading handle in counter-clockwise direction.



9 Tap 

and select a channel depending on the measurement torque value. Check the registered measurement channel in Registration Measurement mode.

10 Tap 

and select “RUN” in Manual Measurement mode.

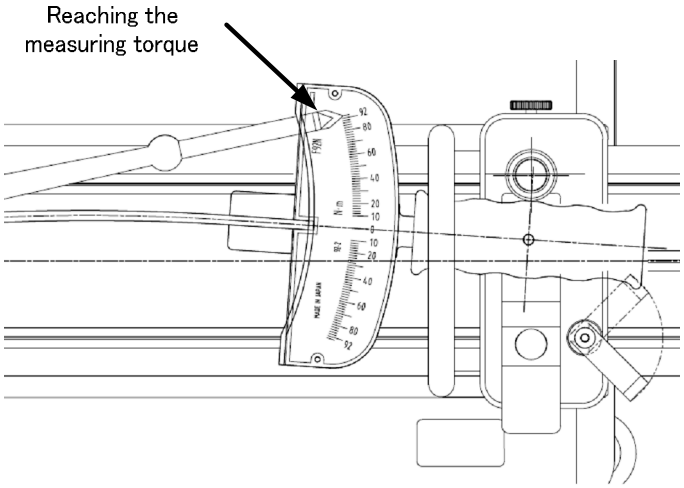
11 Tap 
under no-loading condition to execute Auto Zero.

12 Measure torque

13 Turn the loading handle to measurement direction.

14 When it reaches the measuring point, tap 

and stored in TCC2. After measuring, rotate the handle to the opposite direction to unload torque.
Attention: Do not apply excessive torque beyond capacity of the torque wrench or TCC2 itself.



15 After measuring, check the inlet of the square drive and the locker to make sure it is fixed firmly. If it is loose, adjust it again.

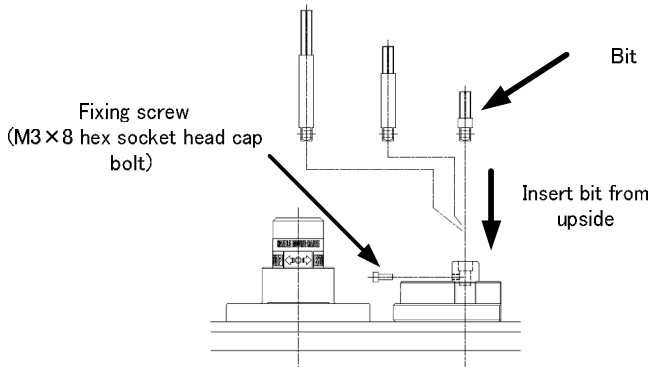
16 Repeat the above steps □-□ on the required measurement torque.

c. Measuring Torque Screw Drivers, RTD/LTD type.
Loading Device for Click type Torque Screw Drivers: STA
Refer to STA operation manual.

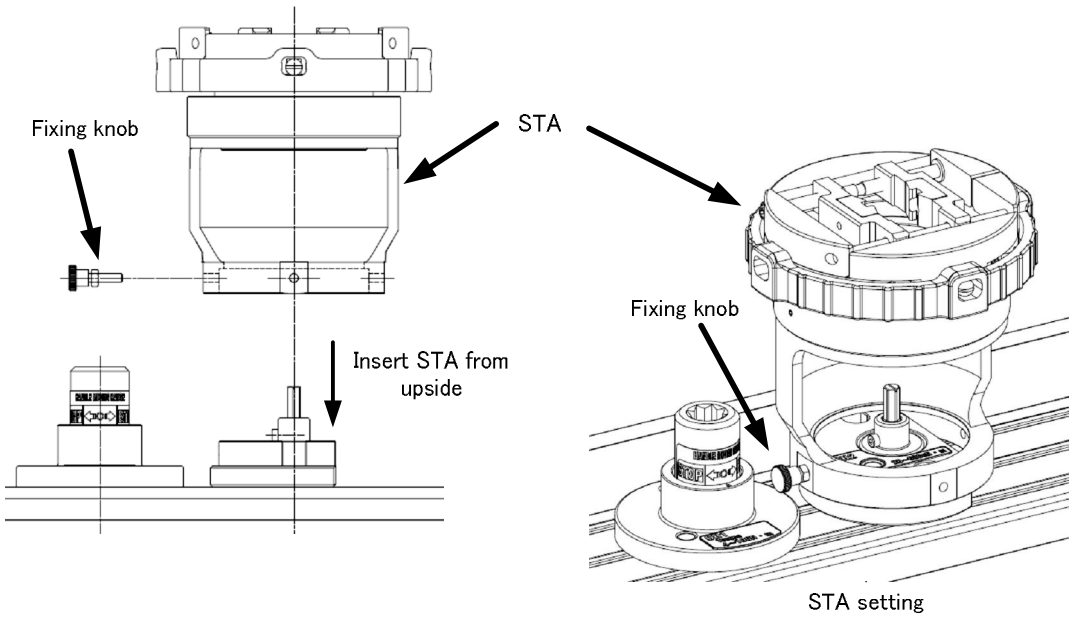
1 Select appropriate bit for a torque screw driver.

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

2 Insert a selected bit to CH2, and fix with fixing screw.



3 Set loading device, STA, on CH2 and fix.



4 For registration measurement mode, tap 

and select CH2.

5 For manual measurement mode, tap 

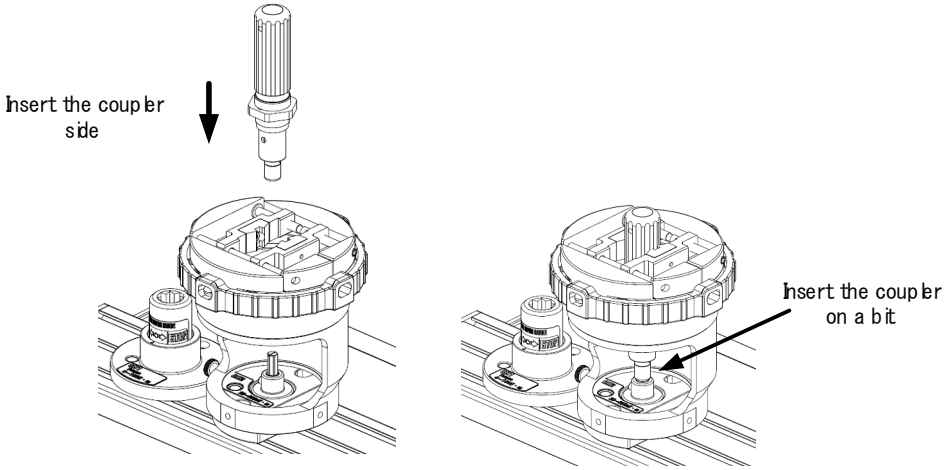
and select "PEAK"

6 Execute Auto Zero 

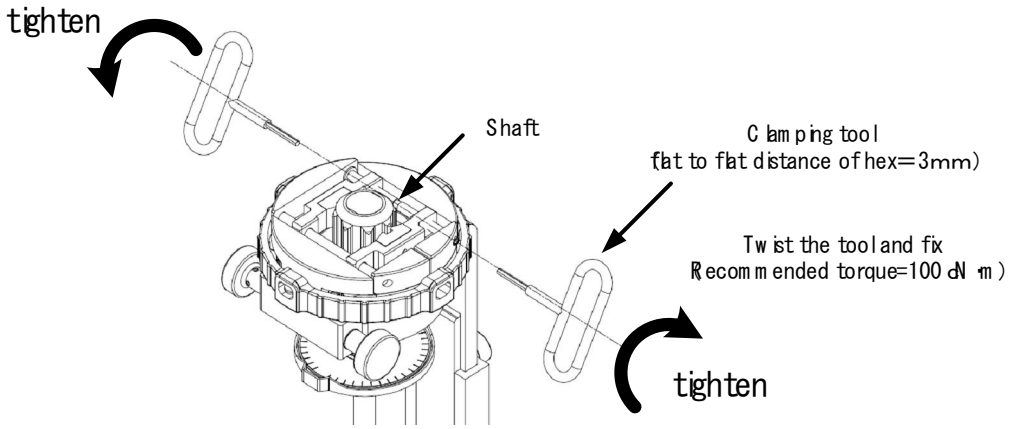
under unloading condition.

7 Measure torque.

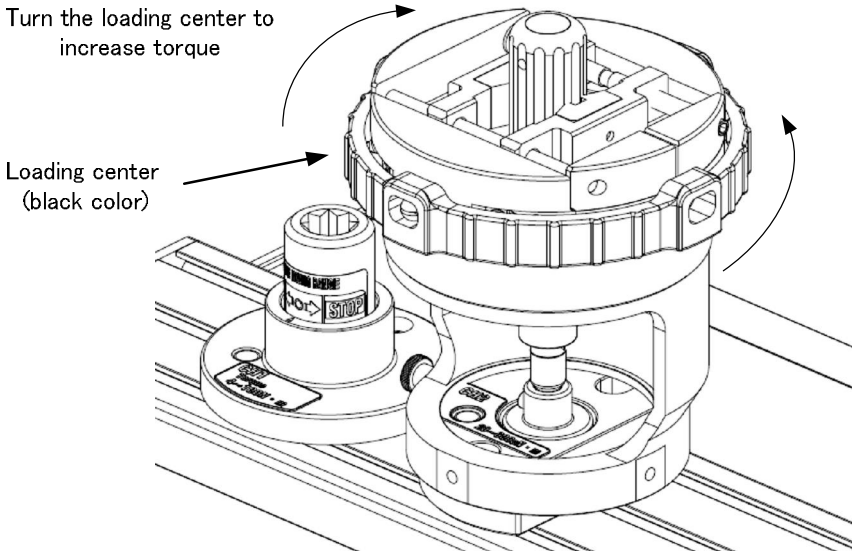
8 Set the measurement torque value on RTD and insert coupler side to STA. If driver has the resign grip, remove it and set to STA



9 Using clamping tool, tighten the shaft and fix torque screw driver. If not tighten enough, torque screw driver may slip during measurement.



10 Turn the loading center to increase torque. The measured data is automatically stored in TCC2.



11 Set the measurement torque value and repeat procedure □-□.

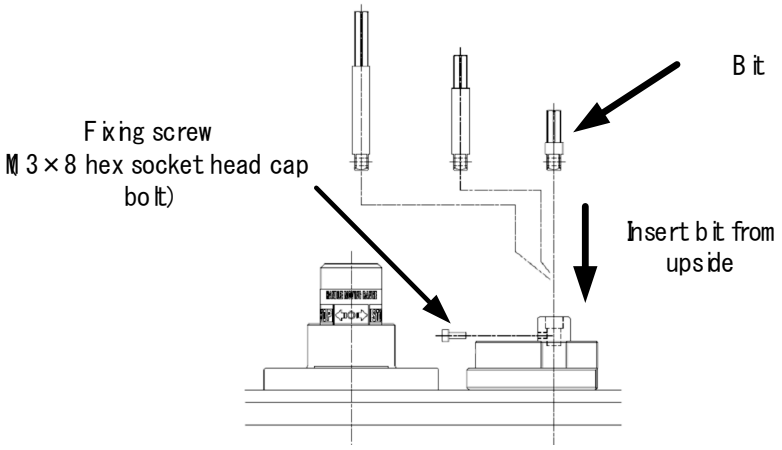
After measurement, loosen the shaft and remove a torque screwdriver from TCC100N2-D-G.

d. Measurement Torque Screw Drivers（FTD・STC type）
Loading Device for Direct Reading style Torque Screw Drivers: LTA
Refer to LTA operation manual.

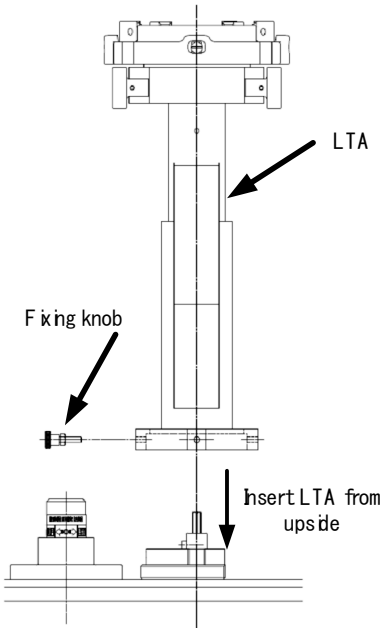
1 Select appropriate bit for a torque screw driver.

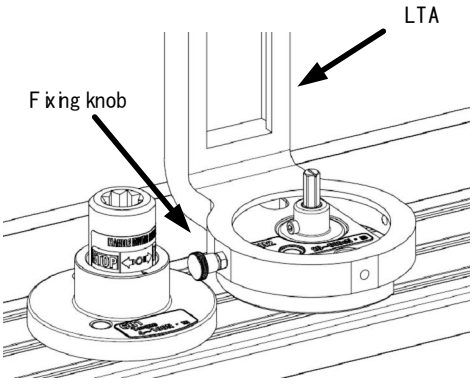
Torque Driver Model	Applicable Bit			Applicable Clamp Block		plicable Hei	
	Standard	S Bit	L Bit	Standard Clamp Block	S Clamp Block	Up	Down
FTD2CN-S～20CN-S			●		●		●
FTD50CN2-S～400CN2-S		●		●		●	
FTD50CN～100CN	●			●			●
FTD200CN～400CN		●		●		●	
STC50CN			●		●		●
STC200CN～400CN		●		●			●

2 Insert a selected bit to CH2, and fix with fixing screw.

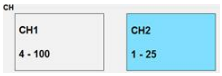


3 Set loading device (LTA) on CH2, and fix.





LTA setting

4 For registration measurement mode, tap 

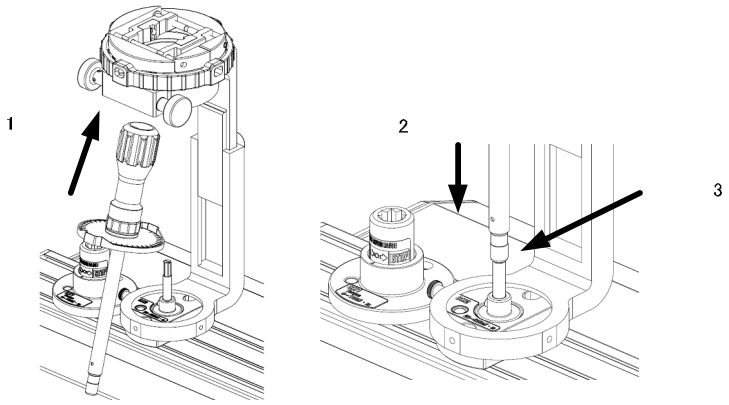
and select CH2.

5 For manual measurement mode, tap 

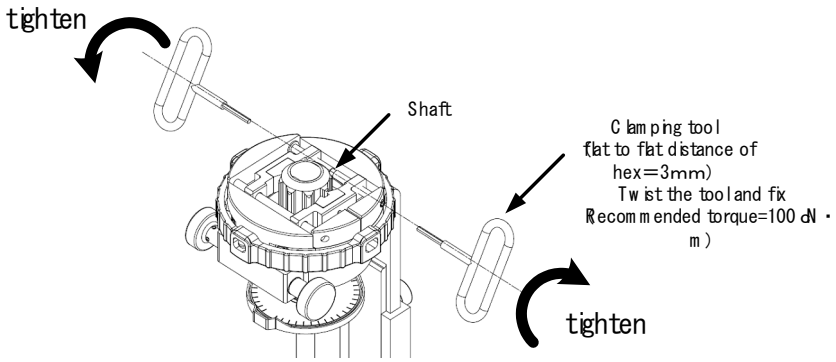
and select “RUN” Run measurement mode.

6 Execute Auto Zero  under unloading condition.

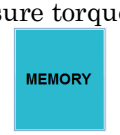
7 Insert grip side of the FTD･STC driver to LTA first, and then insert coupler side on a bit.



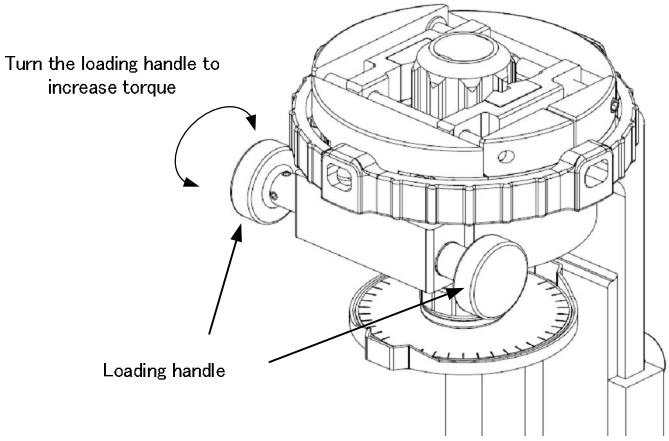
8 Using clamping tool, tighten the shaft and fix torque screw driver. If not tighten enough, torque screw driver may slip during measurement.

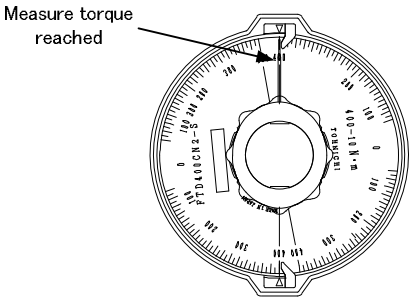


9 Measure torque

10 Tap 

to save measured data to TCC100N2-D.





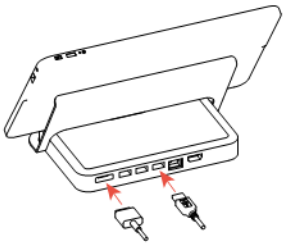
11 Repeat procedure ⑨and ⑩

12 After measurement, loosen the shaft and remove a bit from torque screwdriver, and remove it from LTA.

12 Trouble Shooting

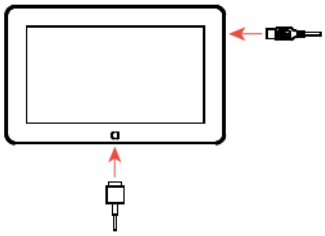
Message	Cause	Solution
No answer back	Communication Error	Check USB cabling again, and reboot TCC2 and tablet PC.
'Com Port ○' Not Existed	Not connected with TCC2	
The I/O operation has been aborted because of either a thread exit or an application request.	Communication Error	
Reception Error, RE1	Communication Error	
Reception Error, RE8	Problem in TCC2 ROM	Reboot TCC2 and tablet PC. If the problem still exists, contact Tohnichi or nearest Tohnichi distributor.
The port 'COM−'does not exist.	Failure to find necessary files to operate	Reboot tablet PC. If the problem still exists, contact Tohnichi or nearest Tohnichi distributor.
Communication error	Communication Error	Confirm cabling again, and reboot TCC2 and tablet PC.
Receive error	Communication Error	
The port is closed.	Not connected with TCC2	
−−−−−−	Over torque. (More than 110%)	Unload torque. If the problem still exists, contact Tohnichi or nearest Tohnichi distributor.
Zero Adjustment is not available, Release the load torque.	Executed Auto Zero under loading condition.	Unload torque and retry Auto Zero. If the problem still exists, contact Tohnichi or nearest Tohnichi distributor.
ChErr	Selected wrong CH	Unload torque and check CH setting.

USBCabling



With cradle

Or



Without cradle

13 Optional Accessories

Calibration Equipment

- TCCTCL100N2, Calibration Kit for TCC100N2
- TCCTCL100N2-D, Calibration Kit for TCC100N2-D
- TCCTCL500N2, Calibration Kit for TCC500N2
- TCCTCL1000N2, Calibration Kit for TCC1000N2

Loading Device

- LTA, Loading Device for Direct Reading Style Torque Drivers on TCC100N2-D only