Tightening Data Management System

Manual

（Available after Ver.2.00）

TOHNICHI MFG. CO., LTD.

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Your Torque Partner
TOHNICHI

Contents

1 System Requirements

Operating System

Microsoft Windows XP (SP3 or later)
Microsoft Windows 7 32-bit
Microsoft Windows 8/8.1
Microsoft Windows 10

Microsoft Excel

Microsoft Excel 2000, XP (2002), 2003, 2007, 2010

* The “97-2000 Format (.xls)” is the compatible format.

2 Overview

The Tightening Data Management System uses a USB memory for connecting with a Tohnichi Manufacturing Co., Ltd. HT-V8 Handy Terminal or with a tablet or slate PC to register Measurement Portion Master files that were created on an optional PC using Microsoft Excel.
Communications are carried out between Tohnichi Digital products* and the HT-V8 or a tablet or slate PC using Bluetooth connection. The Measurement Data from the Tohnichi Digital products is received and the “Measured Value”, “OK/NG Judgment”, “Measurement Date”, and “Measurement Time” information is added to the registered Measurement Portion Master and is saved.
In addition, this software outputs as Excel files the three items consisting of the saved Measurement Data, the Measurement Values for Each Portion in which statistical processing has been carried out for each selected portion and spindle, and the Count for Each Item in which statistical processing has been carried out for each portion registered in the Measurement Portion Master.

* In this manual, CEM3-BT stands for "Tohnichi digital products". General usage of Tightening Data Management System would be same when used with other Tohnichi digital product.

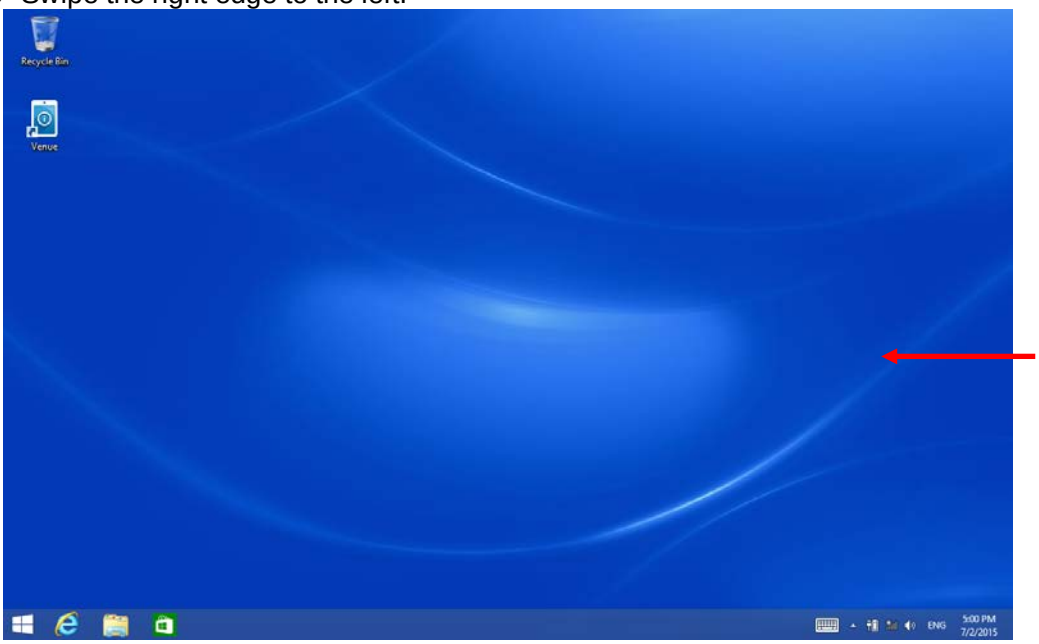
3 Setting the Bluetooth Connection with the Tohnichi digital products with Bluetooth version.

① The connection setting is carried out using the Bluetooth Settings screen on the PC. First, quit the software.

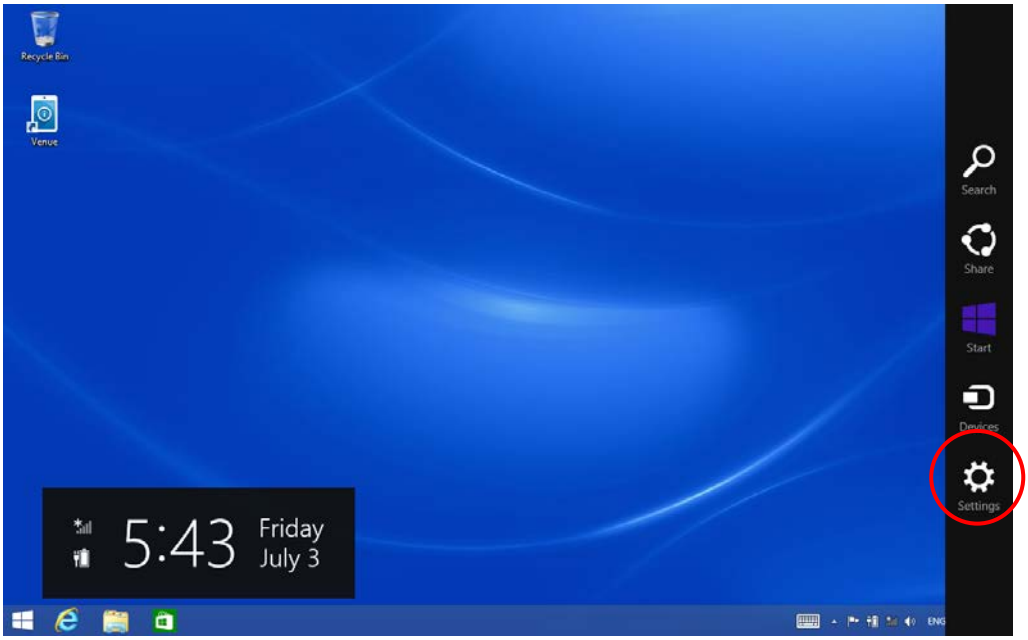
(To make the setting that only quits the software (without closing down the PC), refer to "**4.4.5 Shutdown Setting**".)

3.1 Situation when Using the Windows 8.1

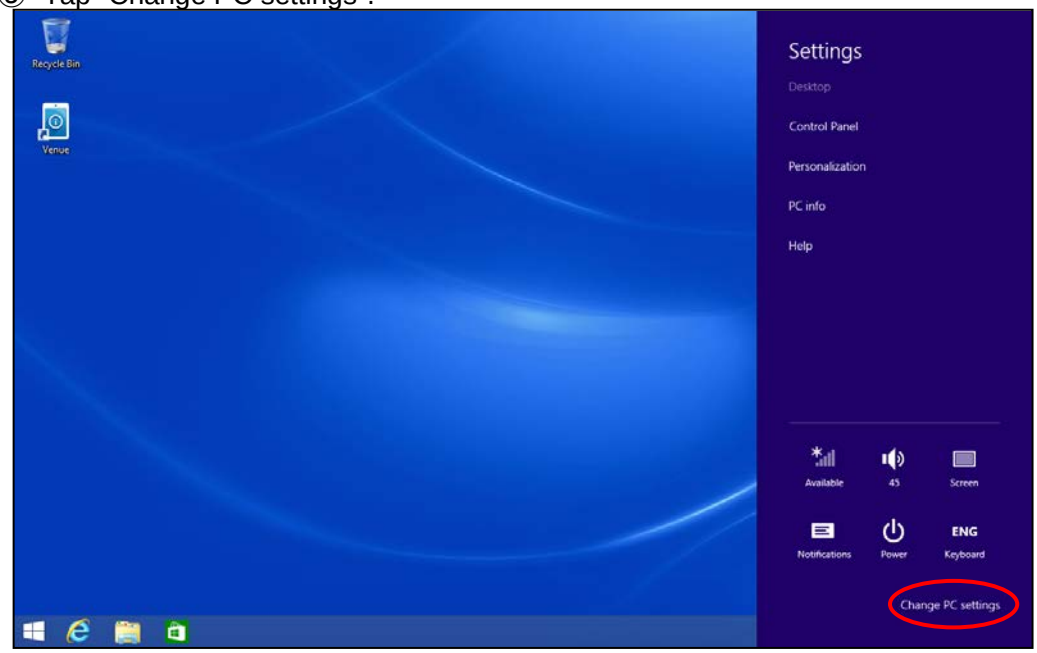
① Swipe the right edge to the left.



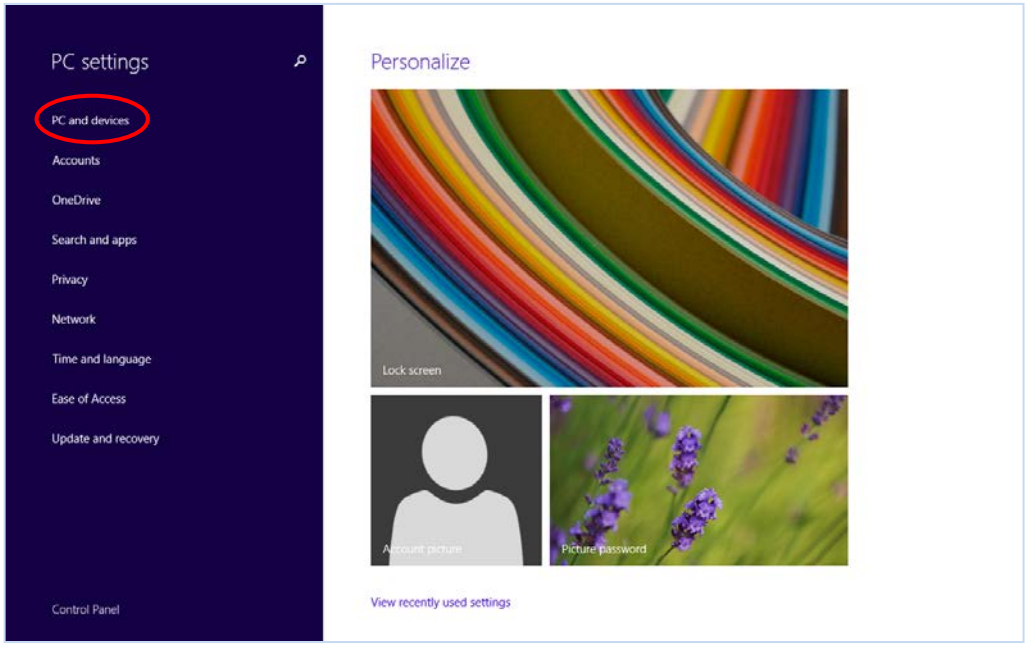
② Tap "Settings".



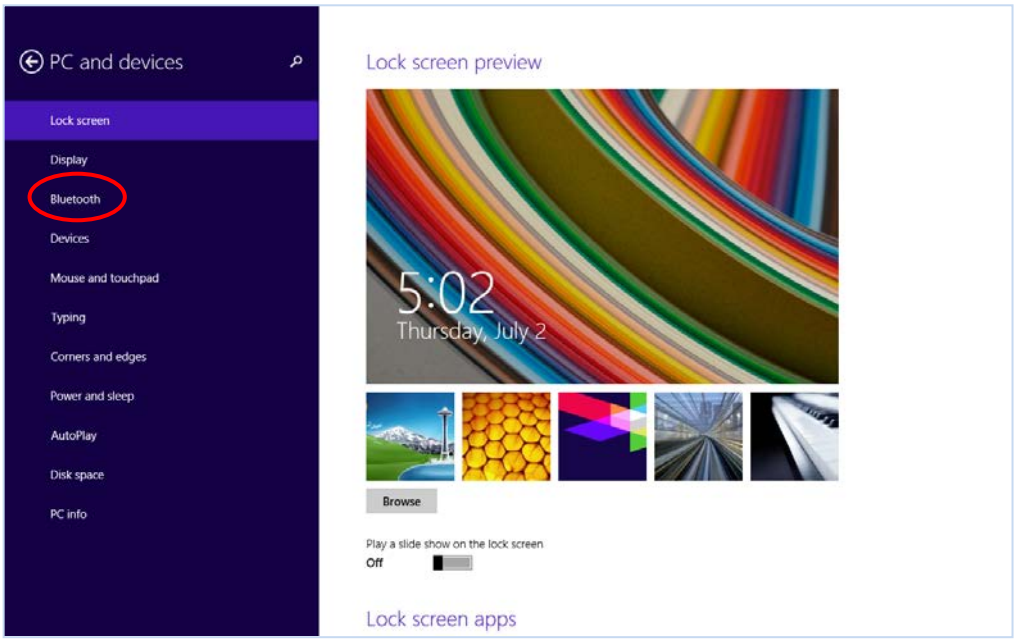
③ Tap “Change PC settings”.



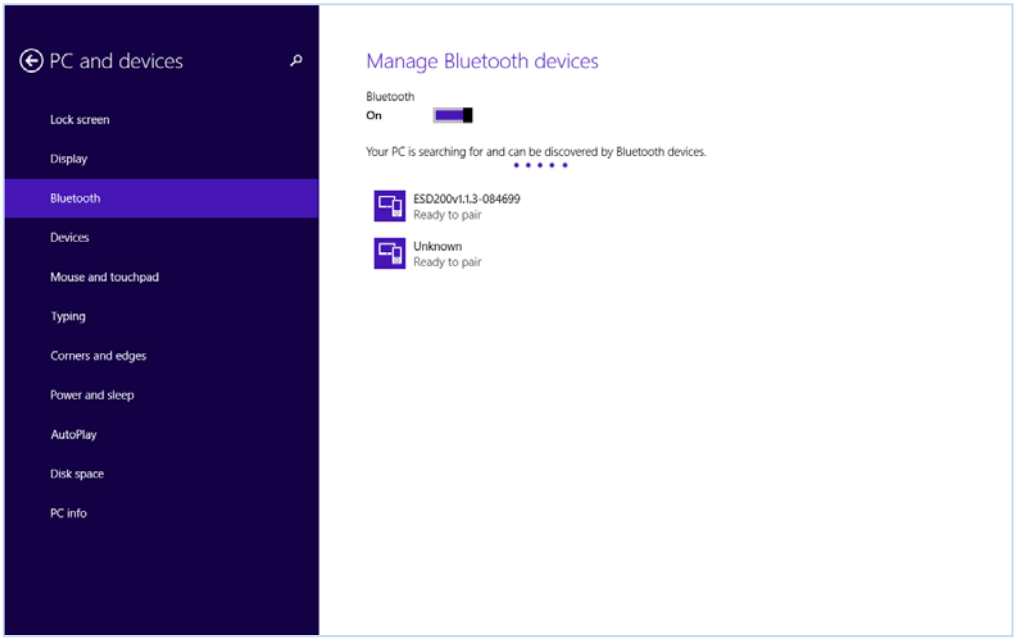
④ Tap “PC and device”.



⑤ Tap “Bluetooth”.

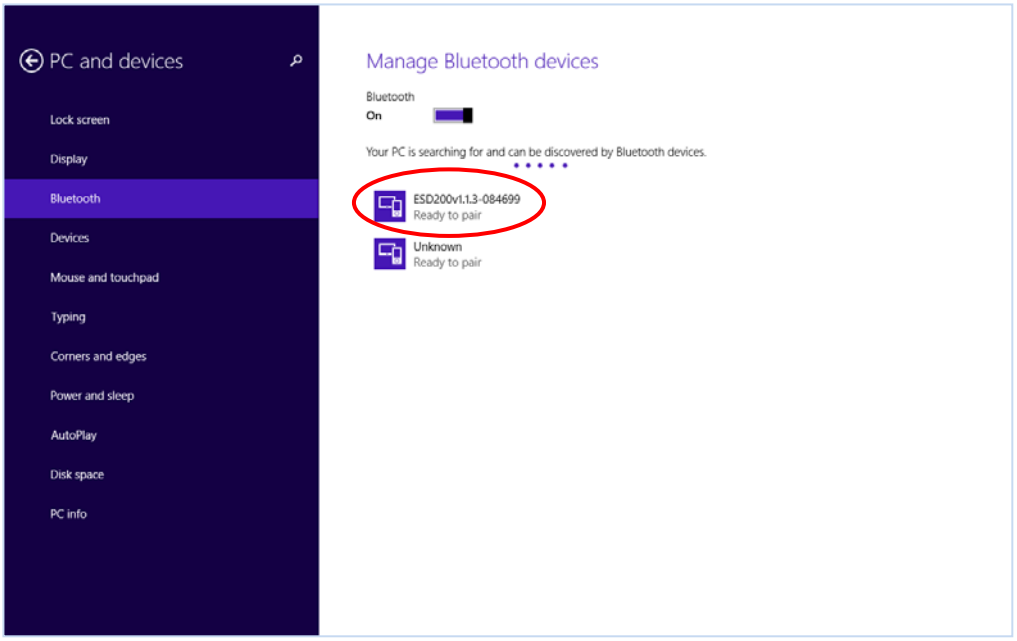


⑥ “Manage Bluetooth devices” appears.

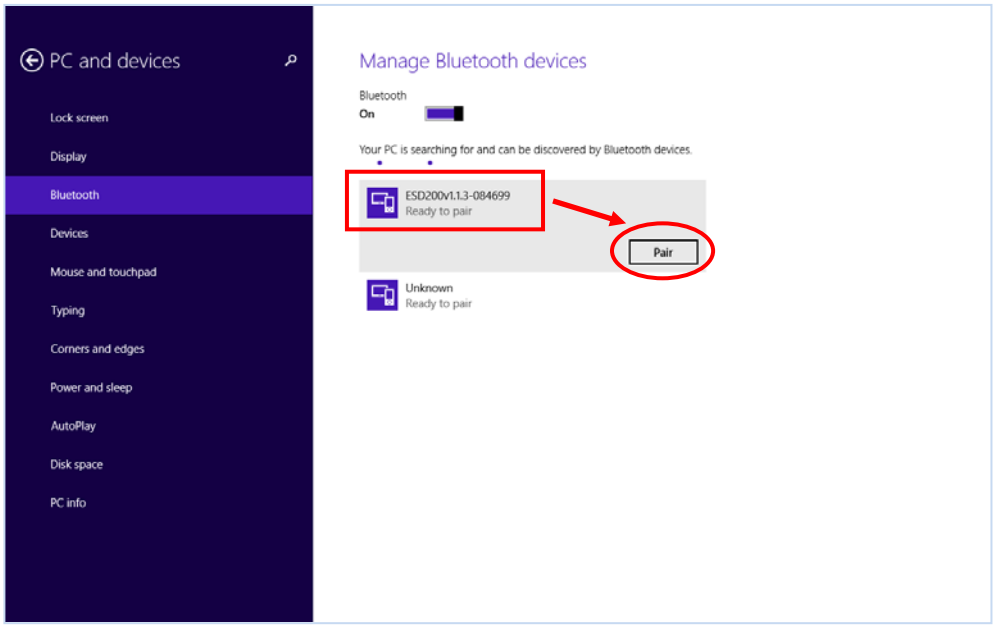


⑦ HT-V8 starts to search Tohnichi digital products.
This operating instruction describes based on the model CEM3-BT.
Power on the CEM3-BT and make sure “Power” LED turns red.

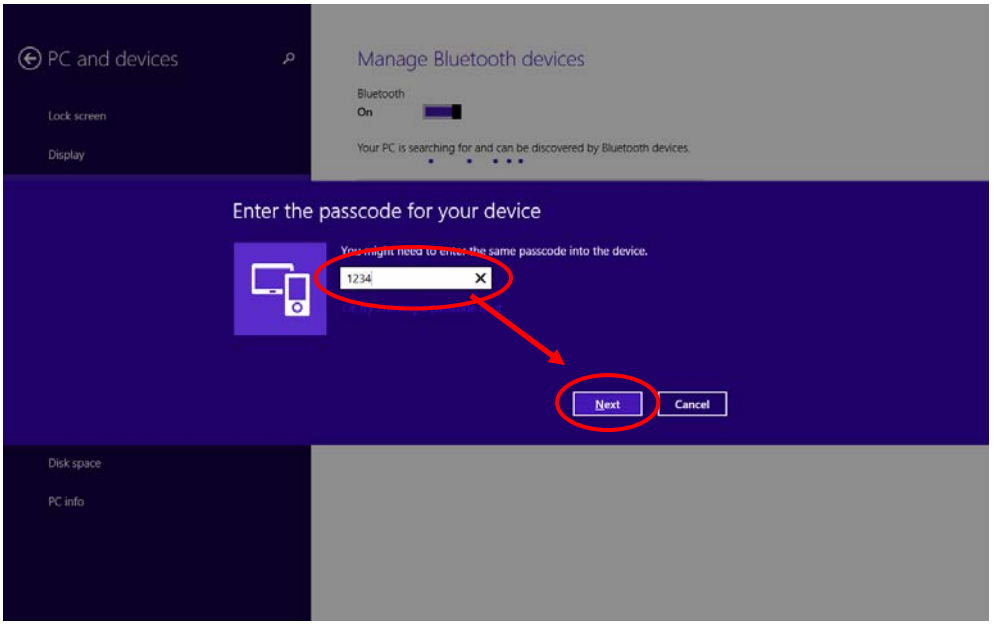
⑧ On “Manage Bluetooth devices” page, lists Tap the Bluetooth ID of CEM3-BT that is to be paired with HT-V8.



⑨ Choose the Bluetooth ID of CEM3-BT and Tap on the “Pair” icon.

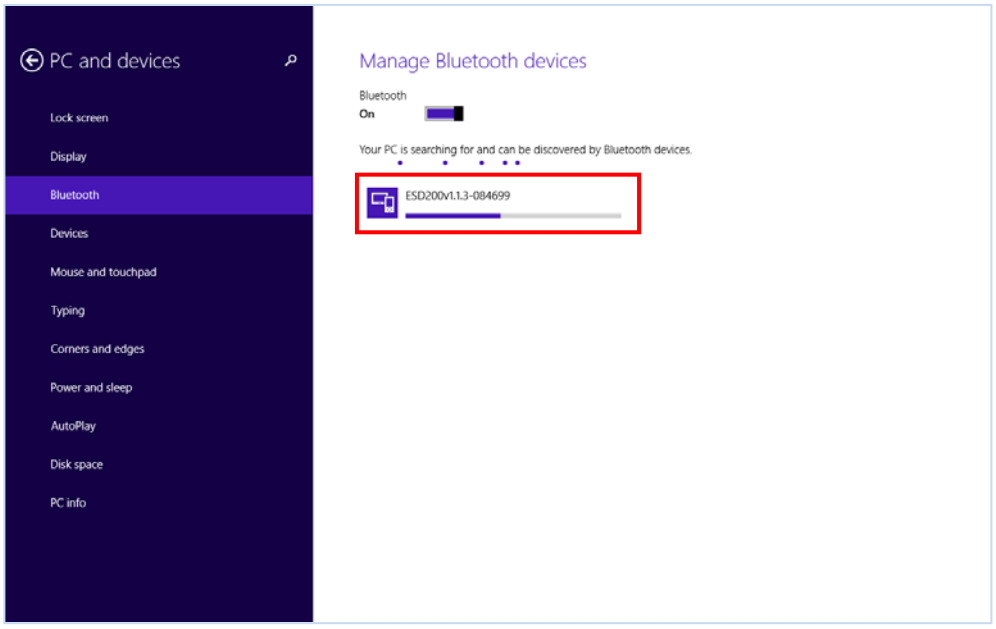


⑩ When you are asked for passcode for pairing of CEM3-BT and PC, Enter “**1234**” or “**0000**”, and tap “Next”.

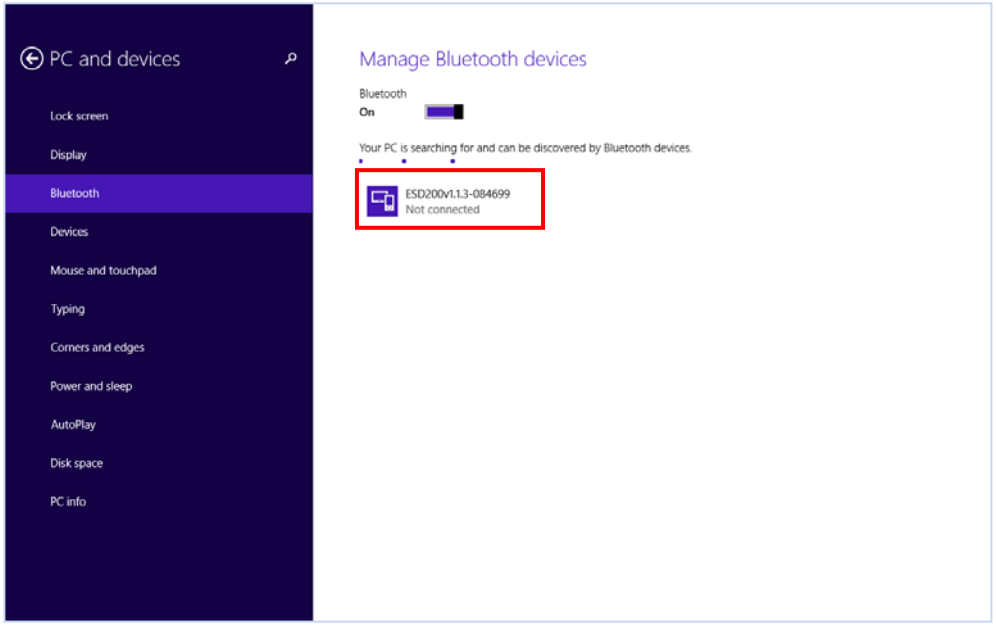


※ Passcode differs depending on the Bluetooth version. Refer to operating instruction of each digital product for details.

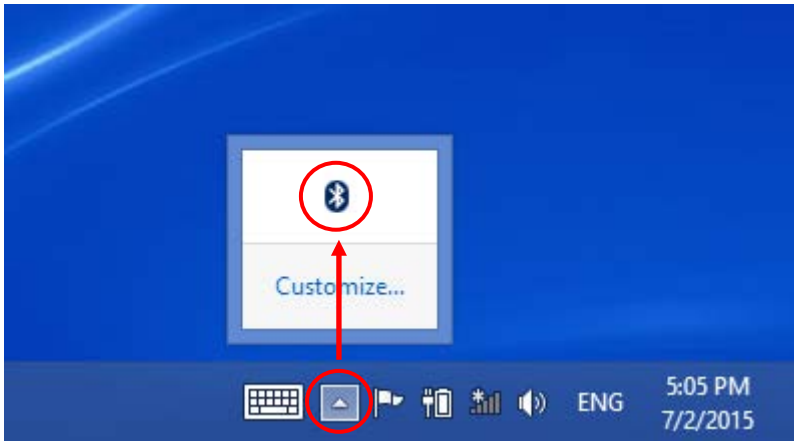
⑪ Bluetooth pairing begins.



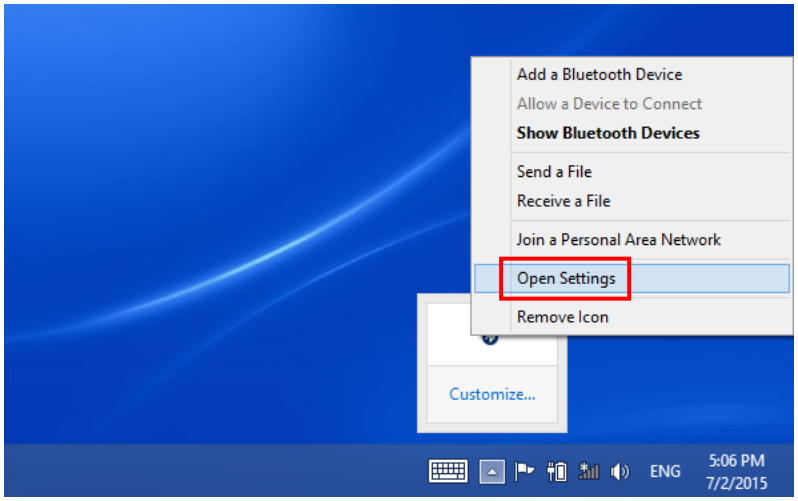
⑫ When pairing completed, status is changed to “Not connected”.



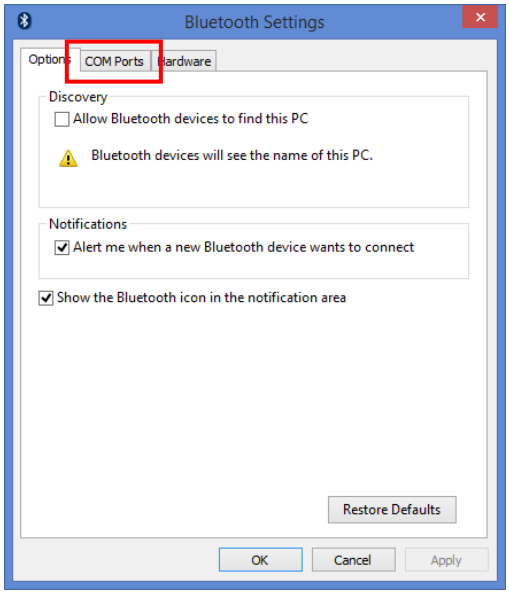
⑬ Return to desk top. Tap “▲” in the task bar, and tap the Bluetooth icon.



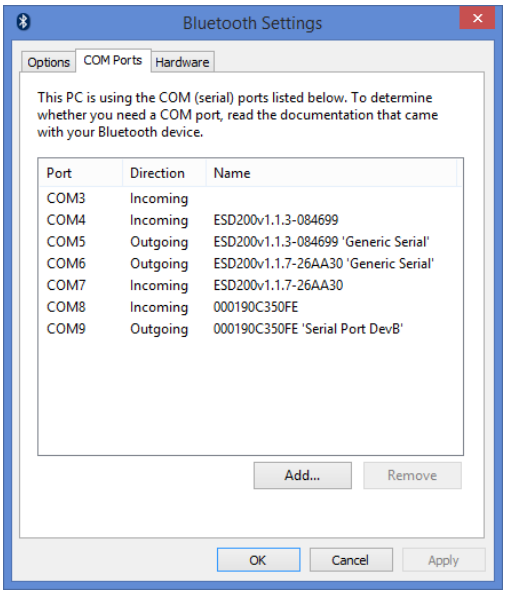
⑭ Tap “Open Settings”.



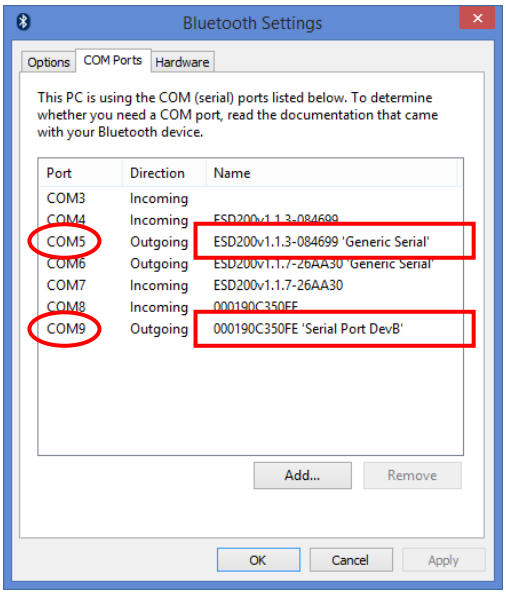
⑮ Tap “COM Ports” tab.



⑯ COM port settings which set in advance appear.



⑰ Take memo the COM port number tagged “Generic Serial” or “Serial Port DevB”.



3.2 Situation when using other PCs

① The Bluetooth connection should be established between the Tohnichi digital products with Bluetooth version and the PC using the “Profile for setting a Bluetooth device as a virtual serial port” known as the SPP (Serial Port Profile).

② Establish the connection between the Tohnichi digital products and the PC which is being used by utilizing the SPP. At this time you may be asked to input the pairing code, so input “**1234**” or “**0000**”.

Passcode differs depending on the Bluetooth version. Refer to operating instruction of each digital product for details.

③ When the connection has been completed, the “COM No.” of the serial port will be acquired. Remember this number, and set it using “**4.4.1 Tool Setting**”.

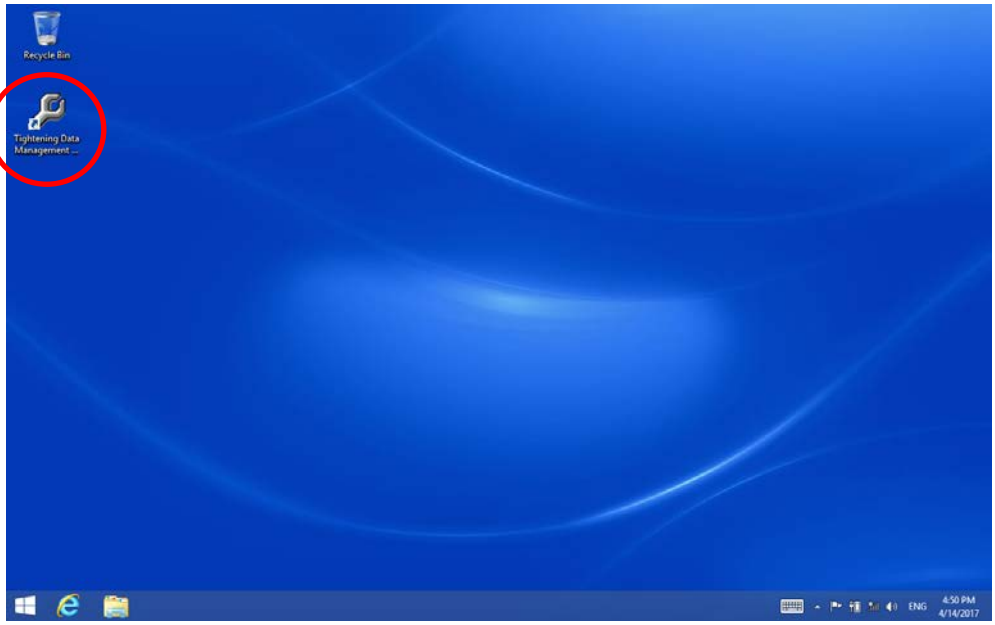
④ For the detailed setting methods, refer to the documentation of each PC.

4 Software

4.1 Startup Method

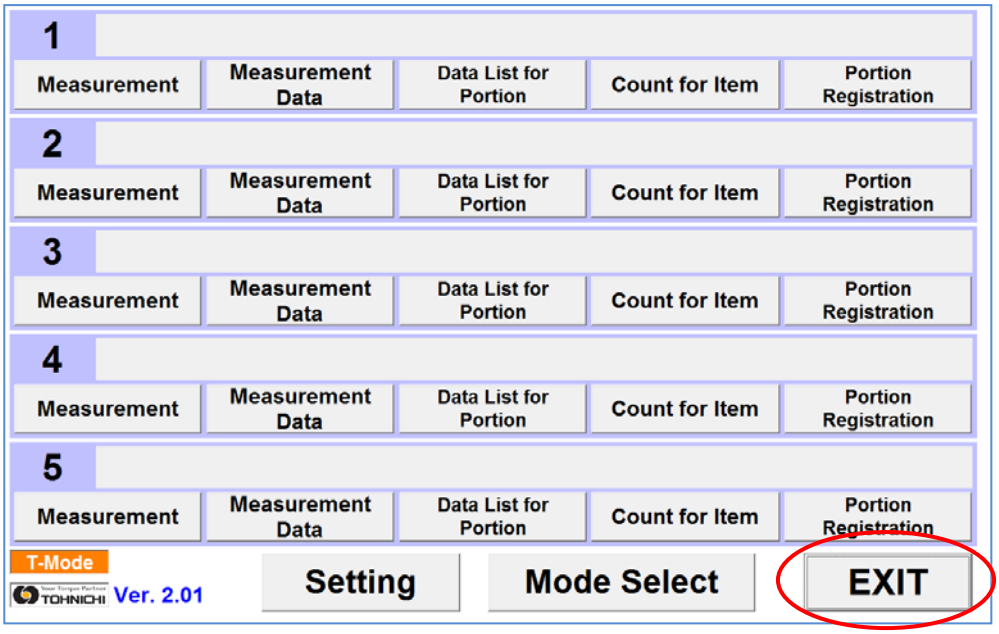
① Switch on the PC power. The software will start up automatically.

② Otherwise, tap the software icon shown on the desktop.



4.2 Quitting Method

① Tap “EXIT” in the Main menu of the software to quit the software. In the situation where “Software + PC” has been selected in “**4.4.5 Shutdown Setting**”, the PC power will also switch off.



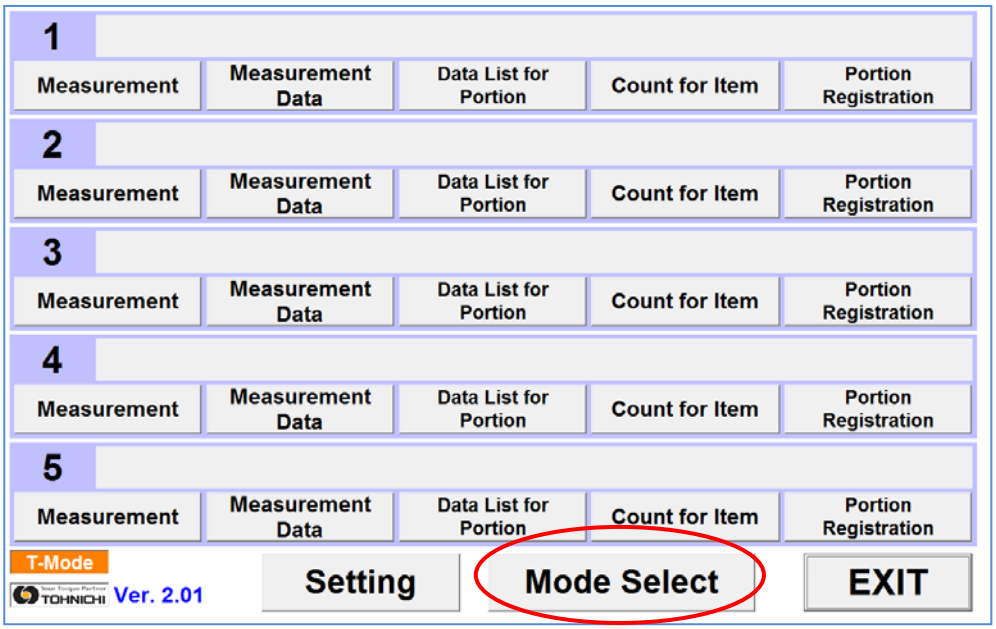
4.3 Mode Select

This software can be used with both duplex and simplex communication Tohnichi digital tools.

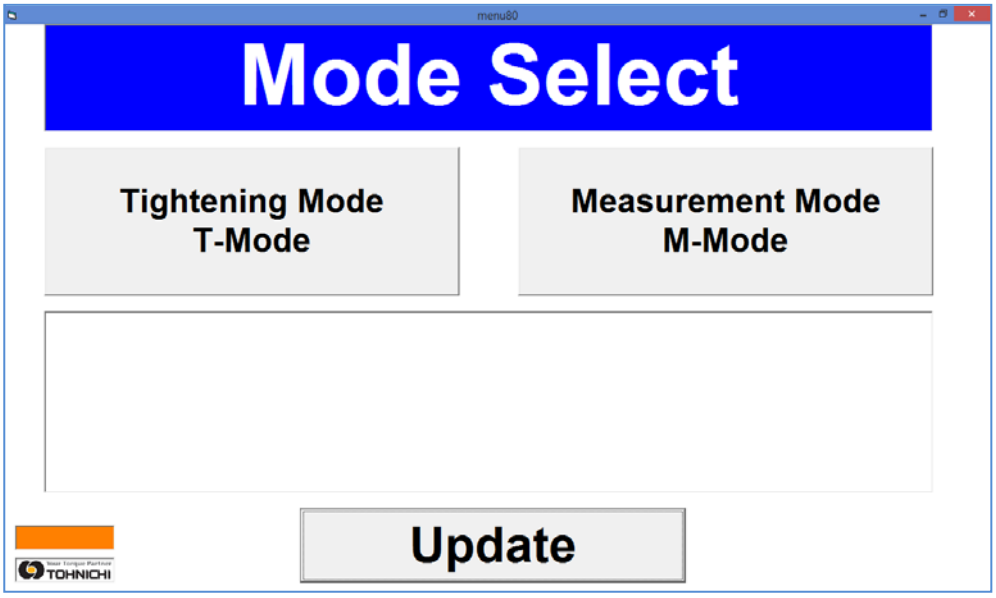
Tightening Mode (T-Mode) and Measurement Mode (M-Mode) are selectable. Tightening Mode is for duplex communication, and Measurement Mode is for simplex communication of Tohnichi digital tools.

Below screen appears in default setting.

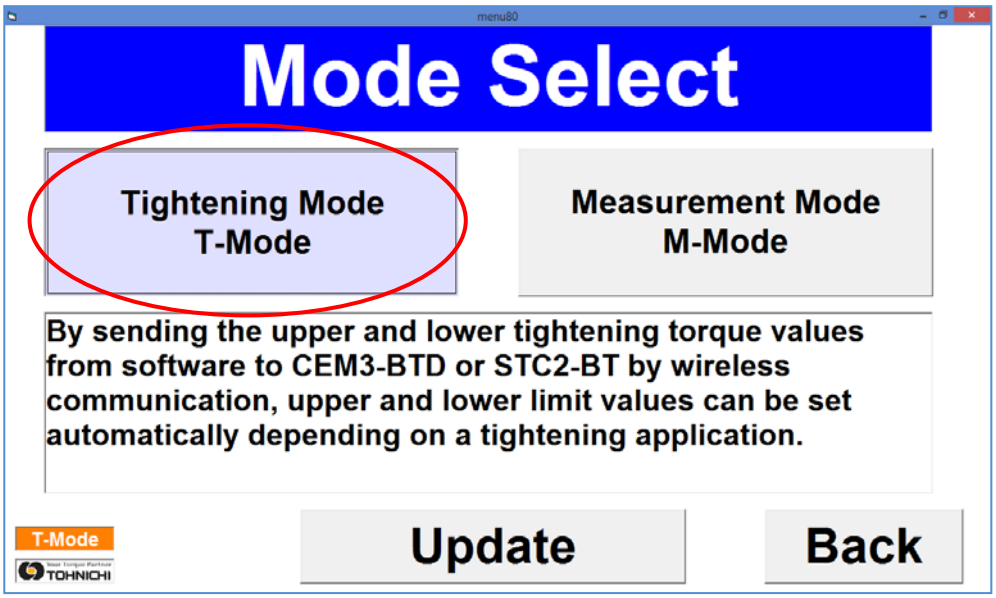
① Tap [Mode Select] on main menu.



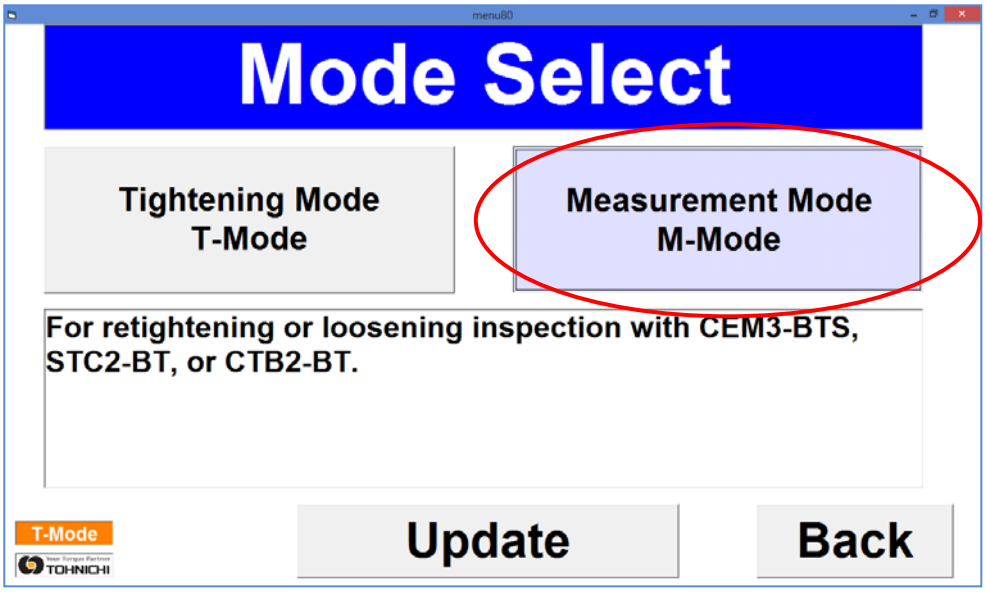
② Mode select screen appears.
To go back to main menu, tap [Back].
*[Back] button does not appear on this screen in default setting.



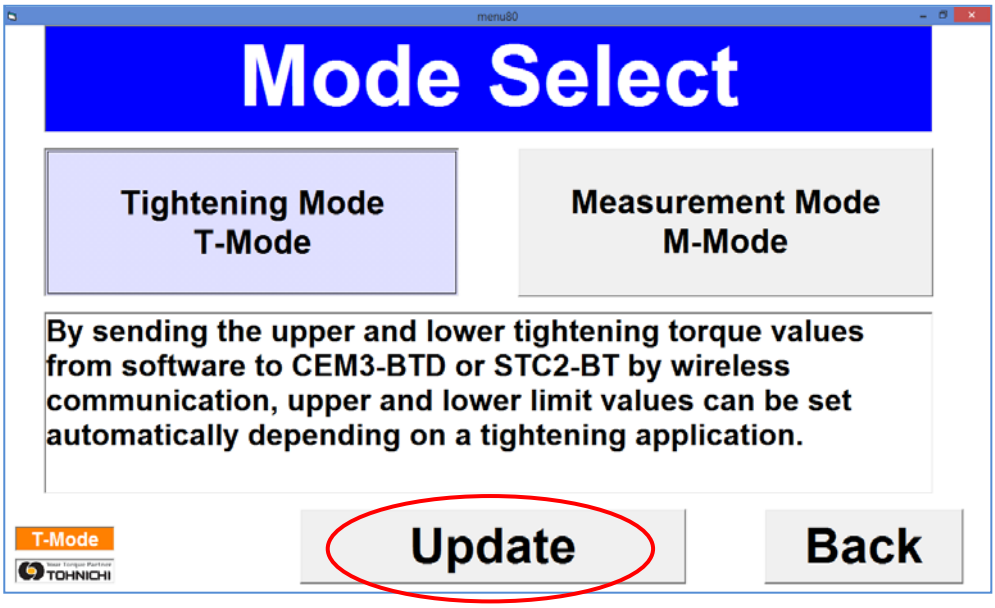
③ Select [Tightening Mode T-Mode] for tightening purpose.



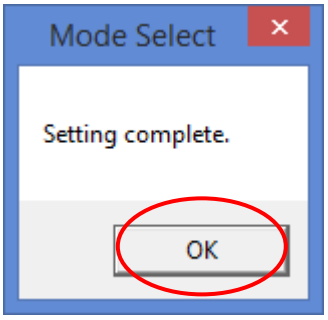
④ Select [Measurement Mode M-Mode] for inspection purpose.



⑤ After the mode selection, tap [Update].



⑥ "Setting complete" message appears. Tap [OK] to go back to main menu.



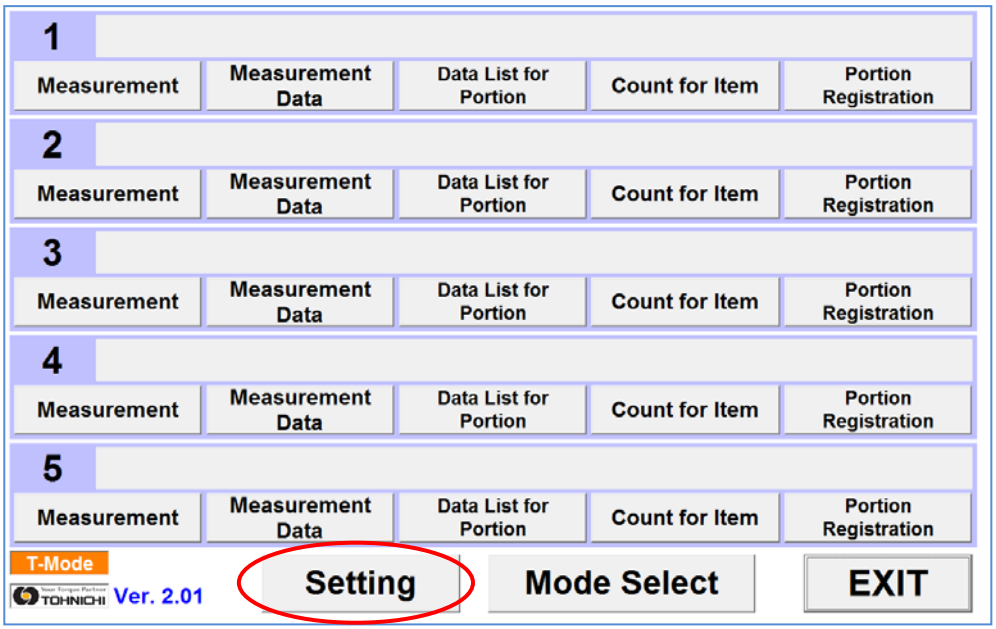
"**Tightening Mode T-Mode**"…Select this mode when use with CEM3-BTD or STC2-BT. This mode requires duplex communication measurement, sending and receiving upper/lower torque limit values between the software and the above mentioned tools. When in this mode, "T-Mode" appears on lower left corner of screen, and background color is white.

"**Measurement Mode M-Mode**"… Select this mode when use with CEM3-BT, STC2-BT, or CTB2-BT. This mode requires simplex communication measurement with the above mentioned tools. When in this mode, "M-Mode" appears on lower left corner of screen, and background color is gray.

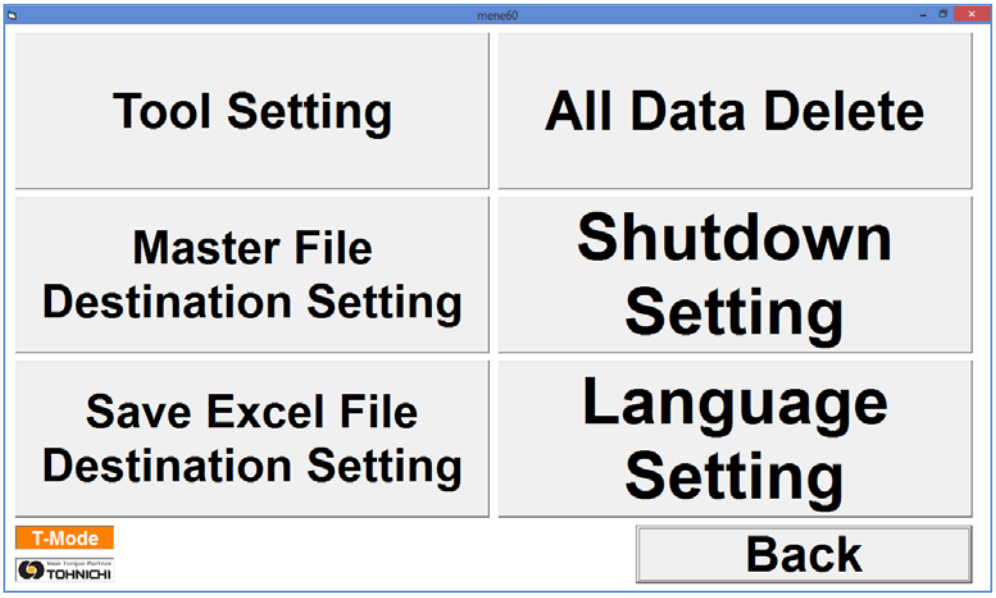
※ "Portion Master Registration" and "Tool Setting" are required to be set in each mode respectively. "Master File Destination Setting", "Save Excel File Destination Setting", and "Shutdown Setting" are common setting in both modes.

4.4 Settings

① Tap “Setting”.



② The Setting Menu screen will be displayed.
To return to the Main menu, tap “Back”.

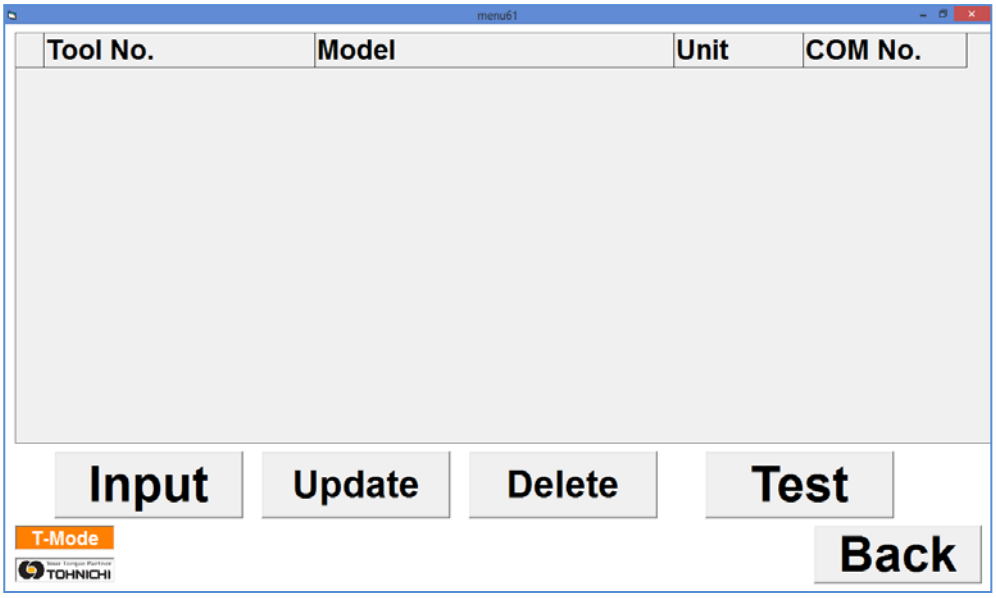


4.4.1 Tool Setting

Here, setting is carried out of the Tohnichi digital products which is being used.
The Tohnichi digital products and the PC are connected using Bluetooth communications. When this setting is carried out, the COM No. of the serial port is acquired, and the acquired COM No. should be set here.
ON the Measurement Portion Master Registration, the Tool No. which registered on this process will be linked with a Portion Master.
Without this initial registration, it is unable to link a tool to Portion Master.

① Tap [Tool Setting] in the Setting menu.

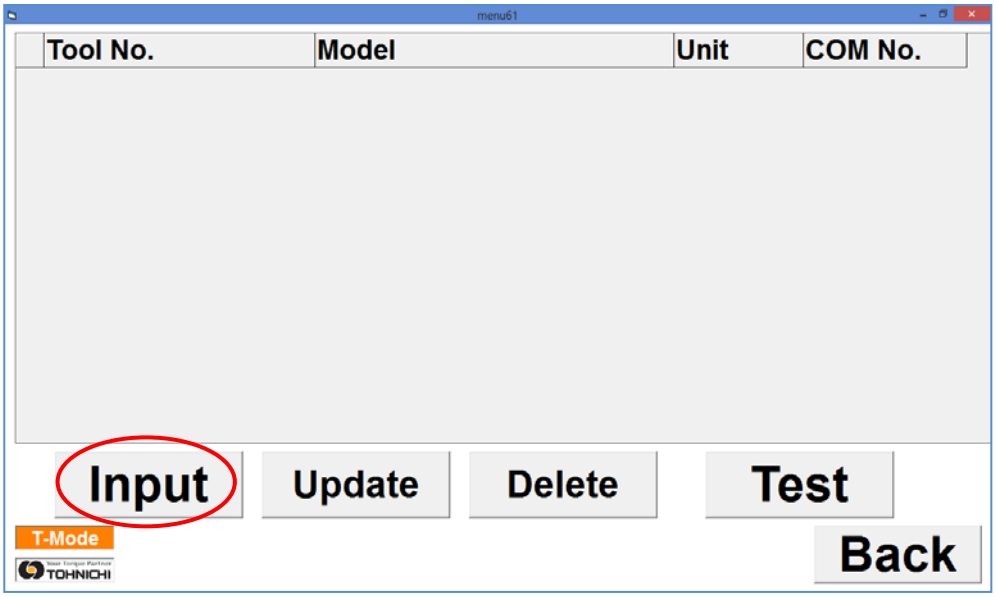
The Tool Setting screen will be displayed. To return to the Setting menu, tap "Back".



Input

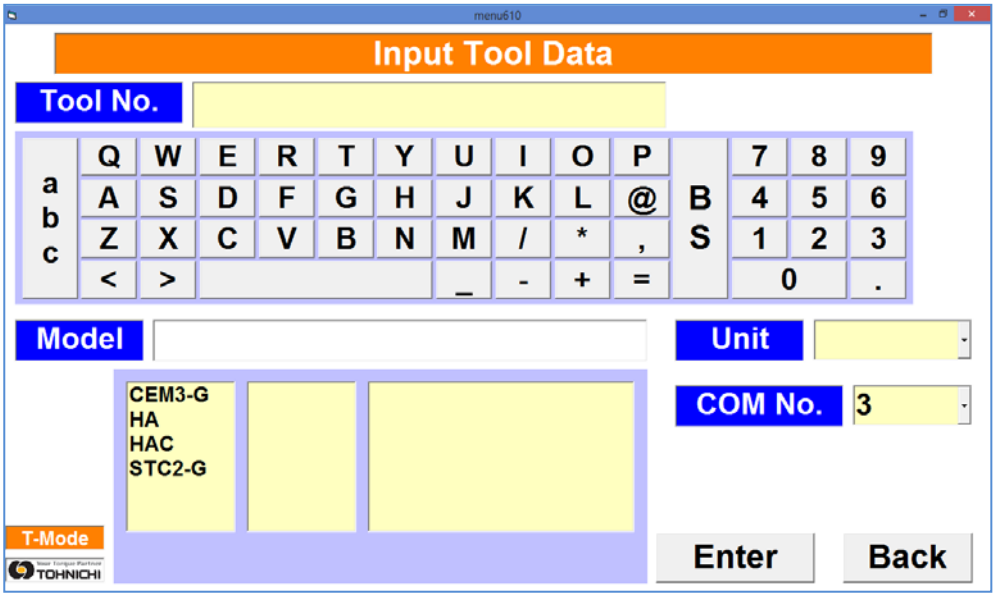
① Newly register a tool.

Tap "Input".



② Appears tool data input screen.

Tap “Back” to return to previous screen.



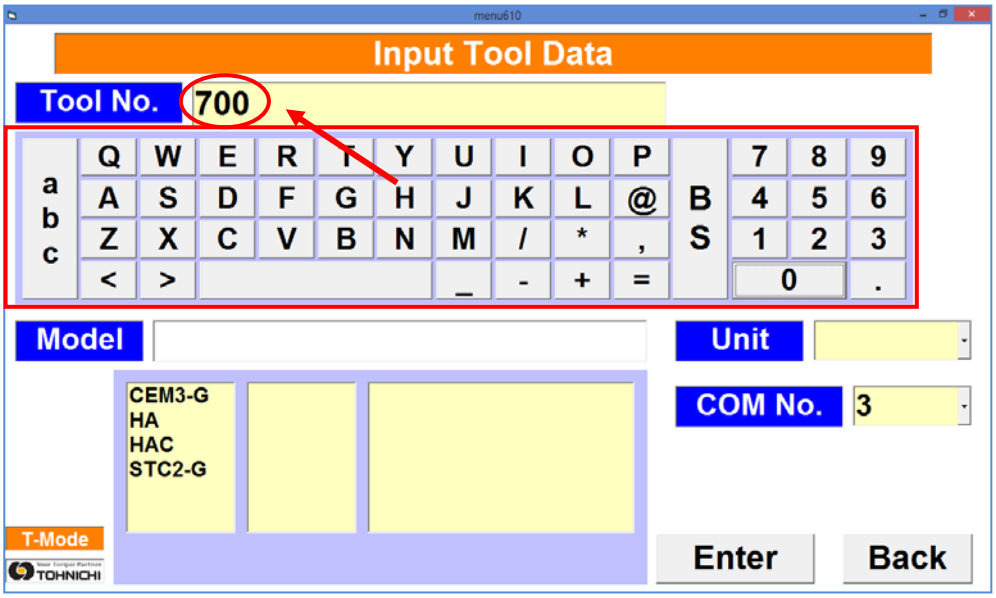
“**Tool No.**”… Serial No. or management No. of the tool.

“**Model**”…Model name of the tool

“**Unit**”…Torque unit of the tool

“**Com No.**”…Preset Bluetooth communication port No.

③ Input the tool No. by keyboard or use this software keyboard.



「**A**」-「**Z**」 …Input A～Z

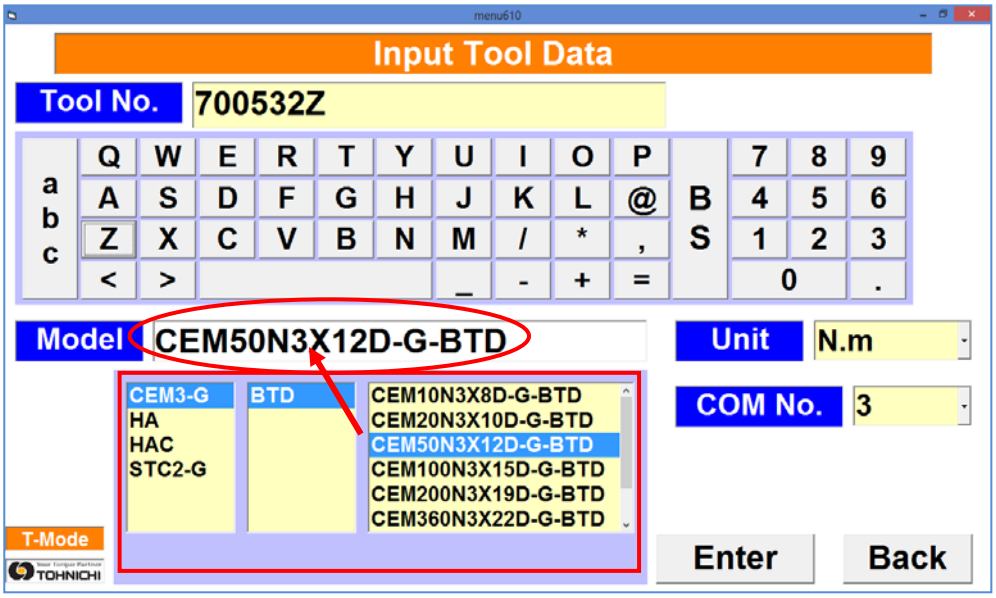
「**0**」-「**9**」 …Input 0～9

「@」etc. …Input a sign like @ etc.

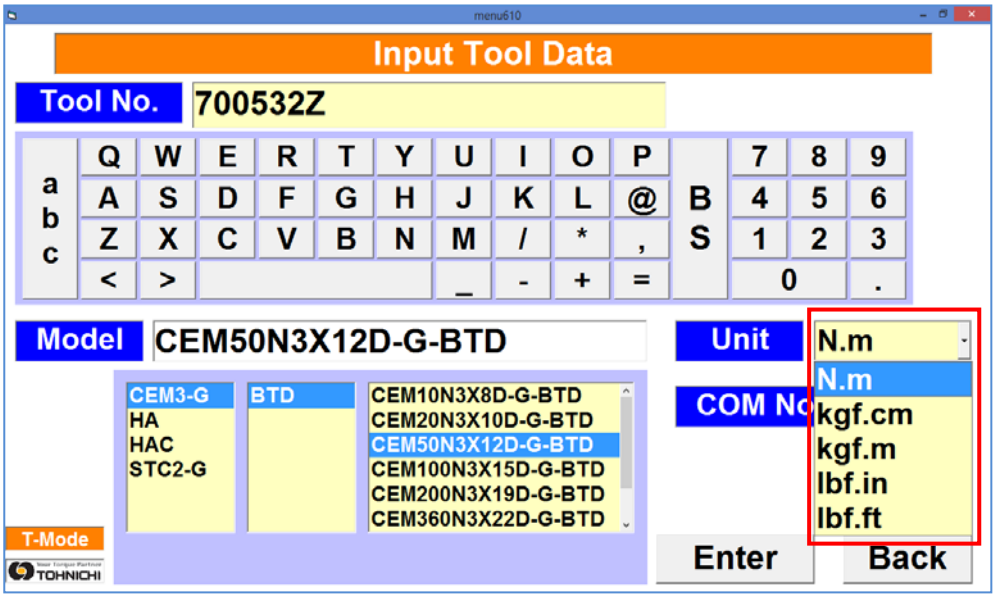
「**BS**」 …Back Space to delate a character.

「**abc**」/「**ABC**」…Change Capital letter/Small letter.

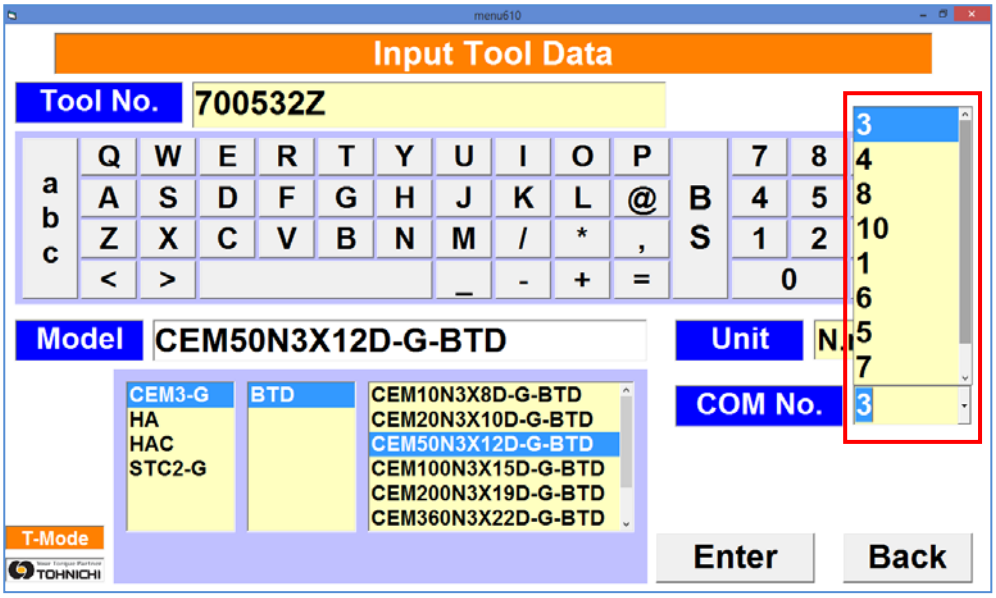
④ The tool model can be set by selecting the product from the column at the bottom of the screen.



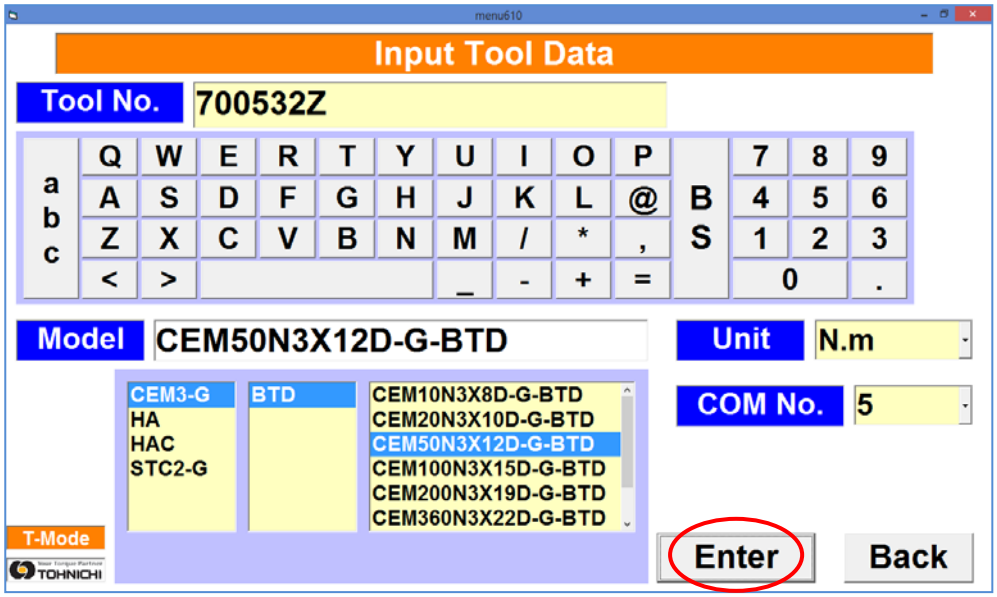
⑤ Select a Unit of the tool to be set up.



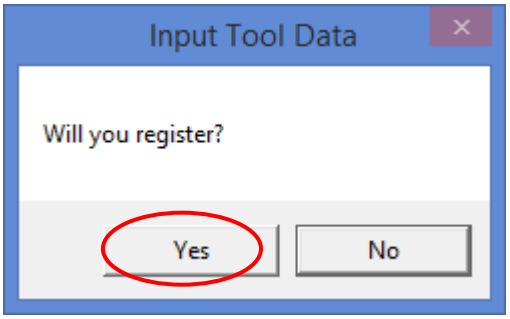
⑥ Select a Com No. for setting.



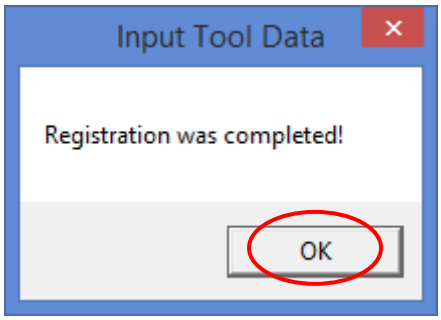
⑦ When completing all setting, tap “Enter”.



⑧ Message shows “Will you register?”, tap “Yes”.
To cancel, tap “No”

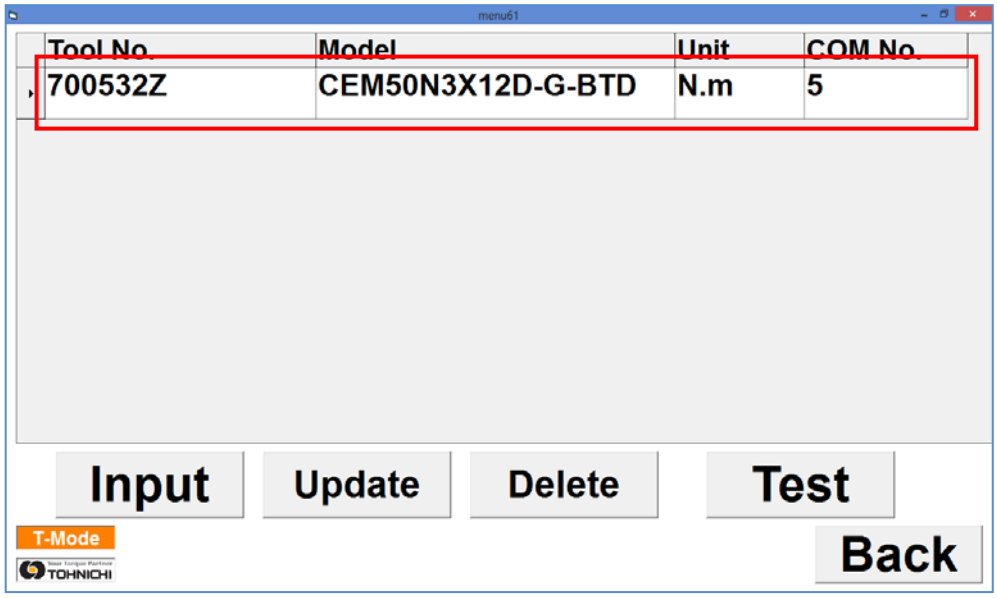


⑨ Message shows “Registration was completed!”, tap “OK”.



⑩ Return to Tool Setting screen.

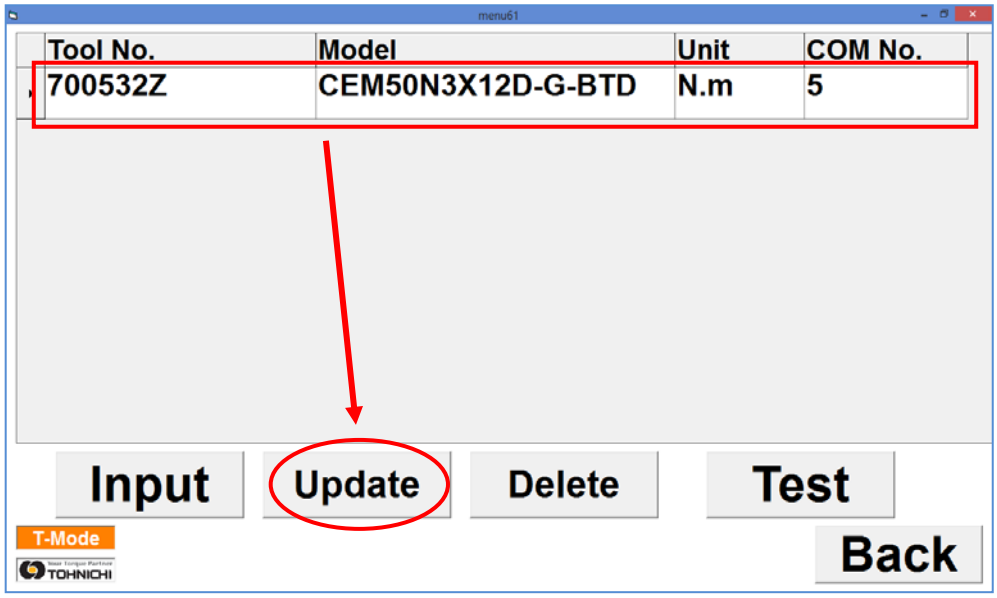
Registered Tool appears on the table.



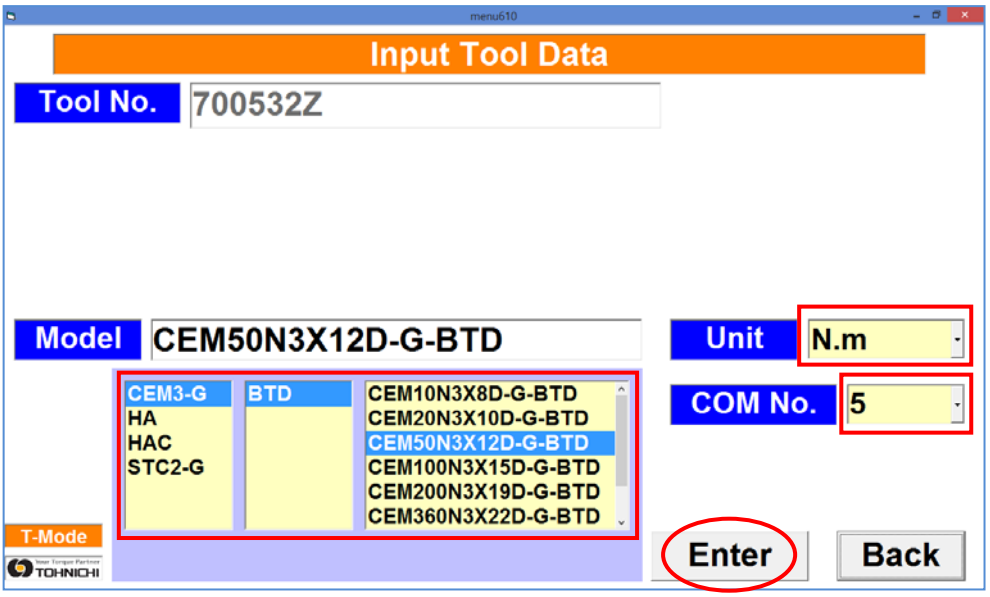
Update

① Update the registered Tool Setting.

Select a tool from the list and tap “Update”.

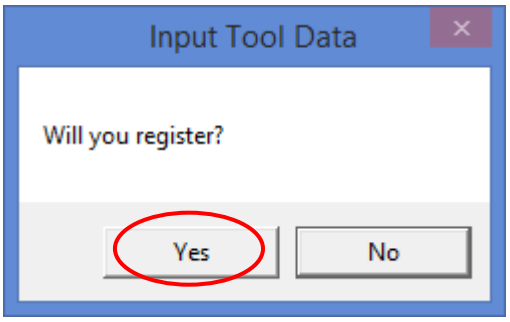


② Tool data input screen appears. Select “Model”, “Unit”, “Com No.”. Tool No. is unable to change.
When completing all setting, tap “Enter”.

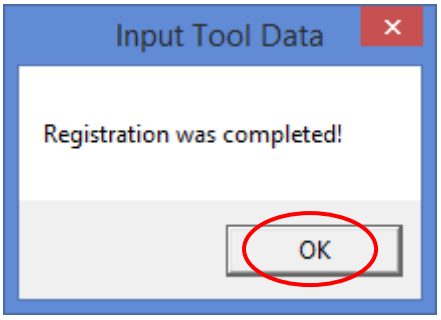


③ Message appears “Will you register?”, tap “YES”.

To cancel, tap “No.”.

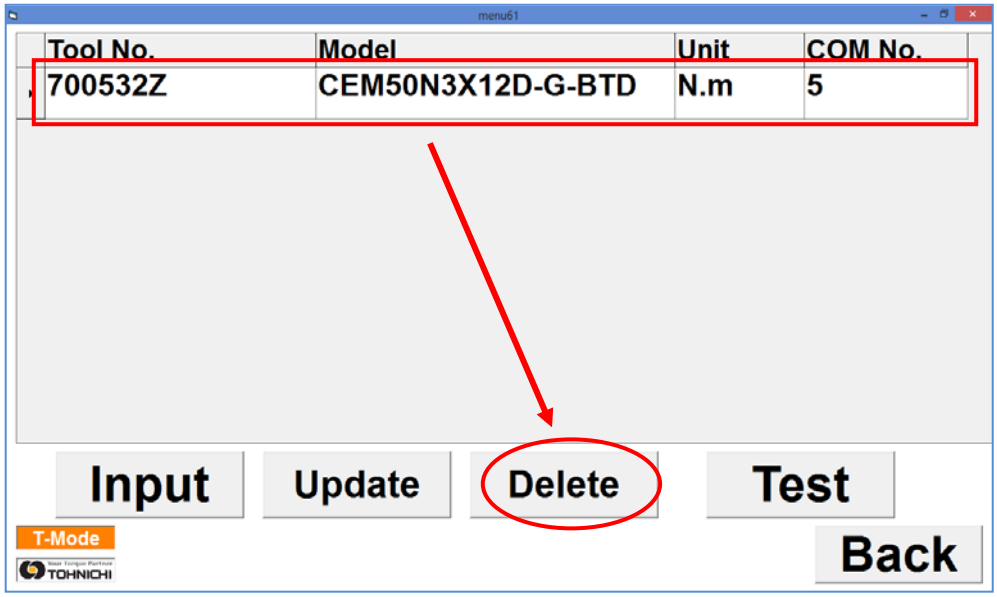


④ Message appears “Registration was completed!“ , tap “OK“.
Tools Setting has been updated.

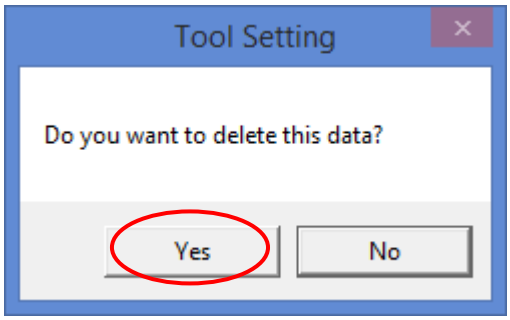


Delete

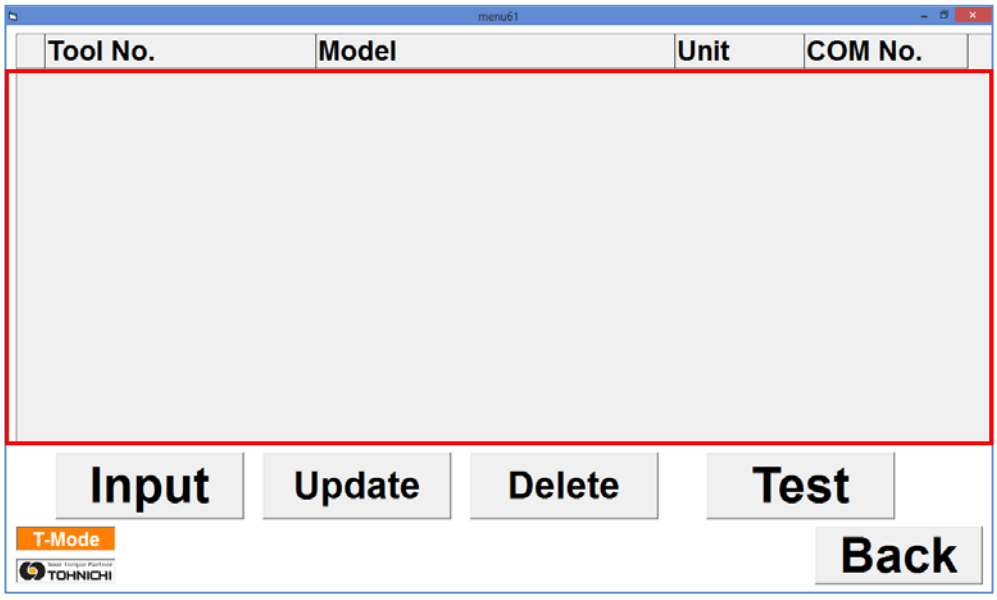
① Delete the registered Tool Setting.
Select a Tool to delete from the list and tap “Delete”.



② Message appears “Do you want to delete this data?”, tap “YES”.
To cancel, tap “No.”.

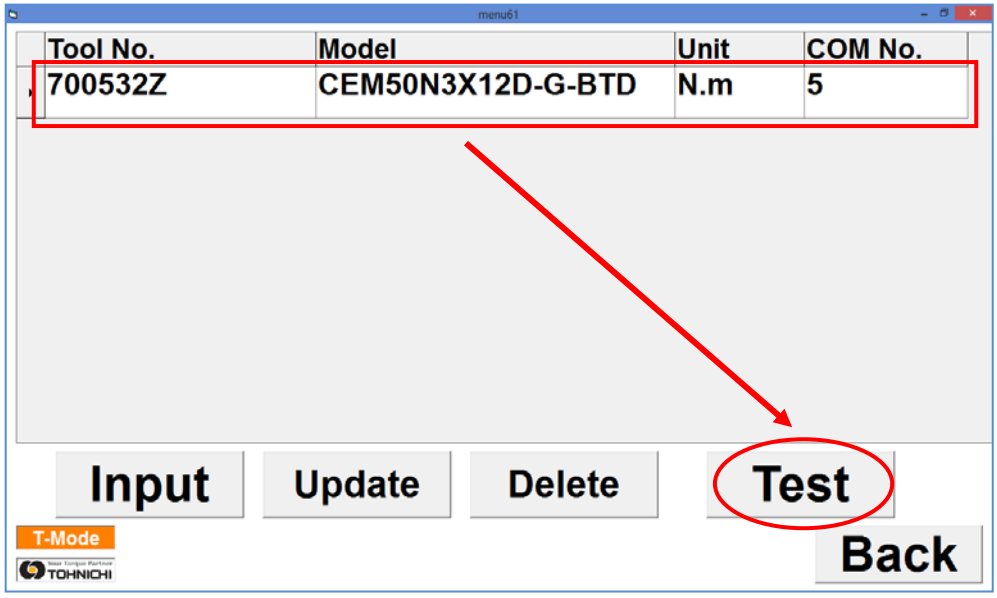


③ Selected Tool has been deleted.

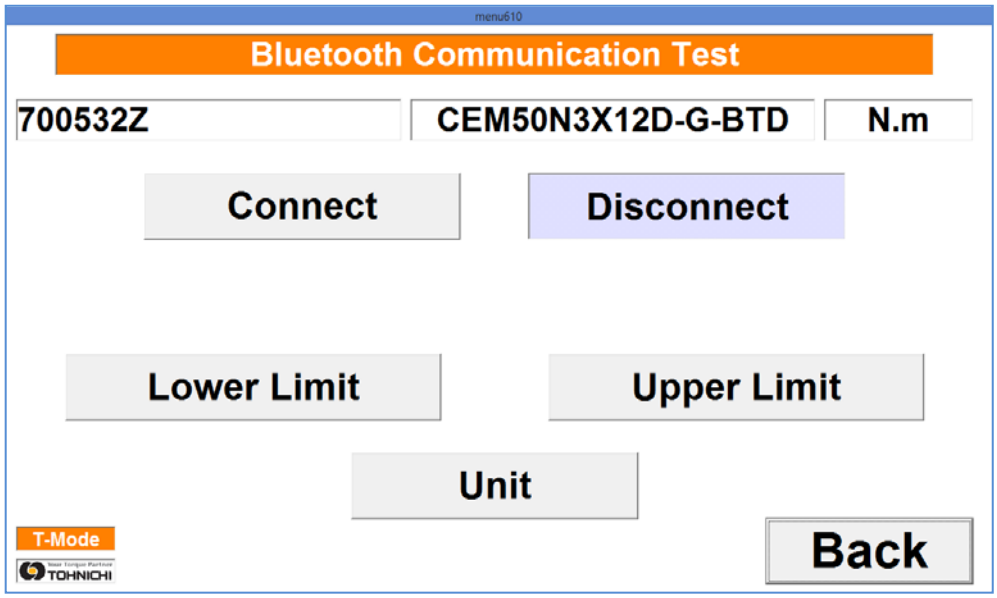


Bluetooth Communication Test

① Choose a Tool for communication test, and tap “Test”.

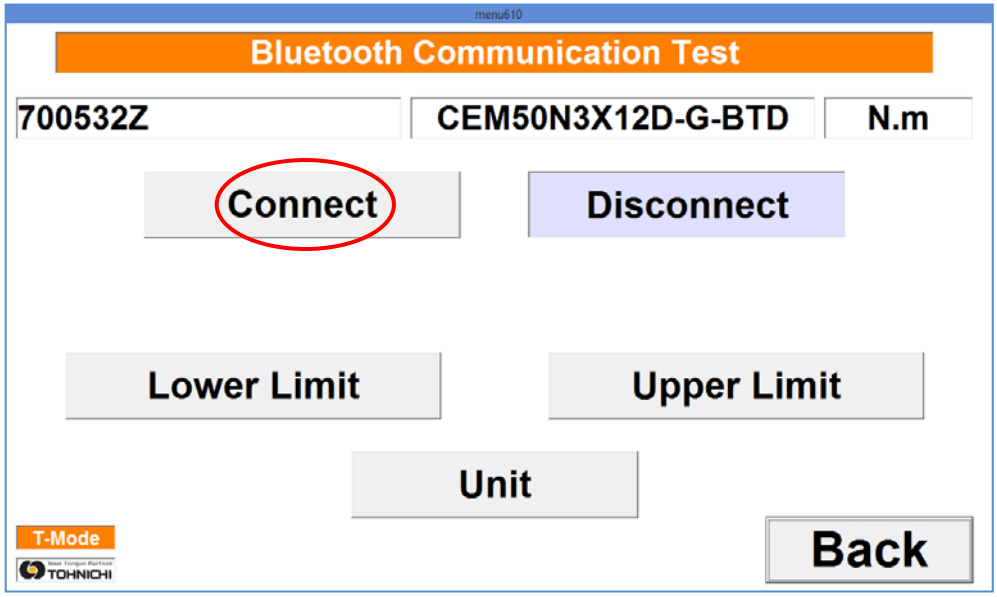


② Bluetooth Communication Test display appears.
Tap “Back” to cancel.



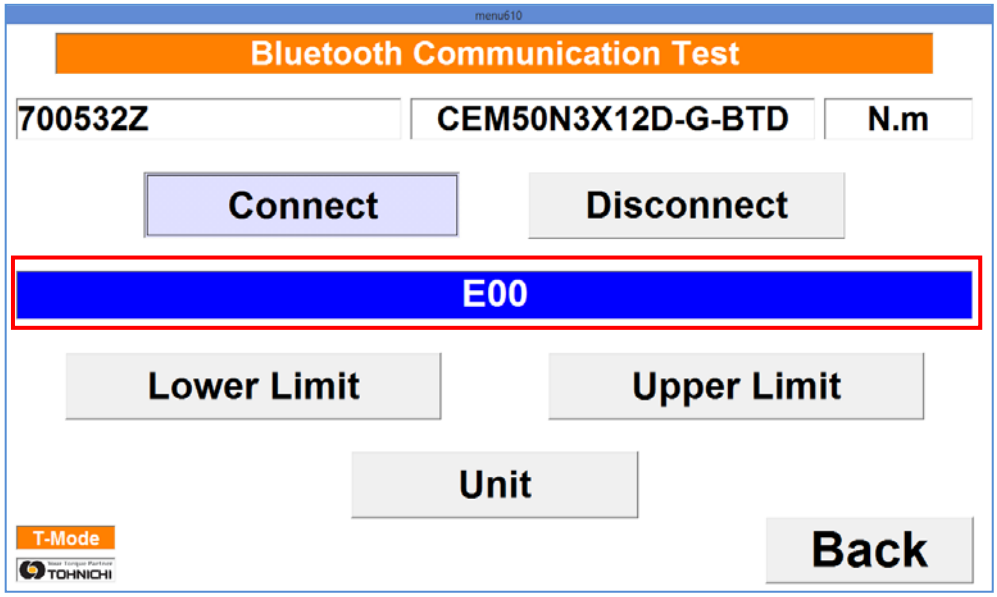
③ Turn on the Tohnichi digital product to perform communication test.
Confirm the “Power” LED on the Bluetooth transmitter lit on.
This operating instruction describes based on the model CEM3-BT.

④ Tap “Connect”.

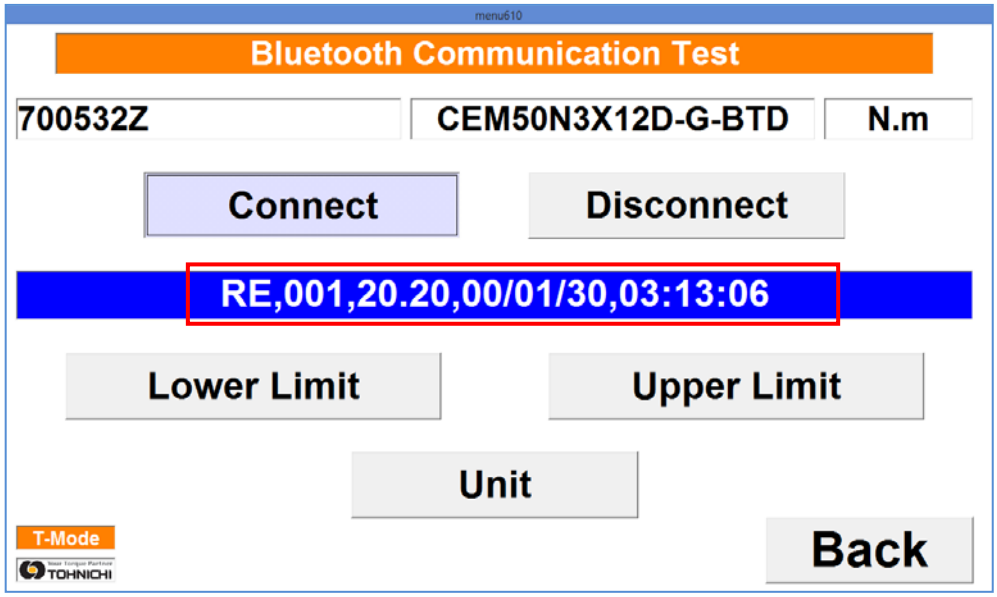


⑤ When Bluetooth is connected, “STATUS” LED turns Blue. Check the LED status before use.

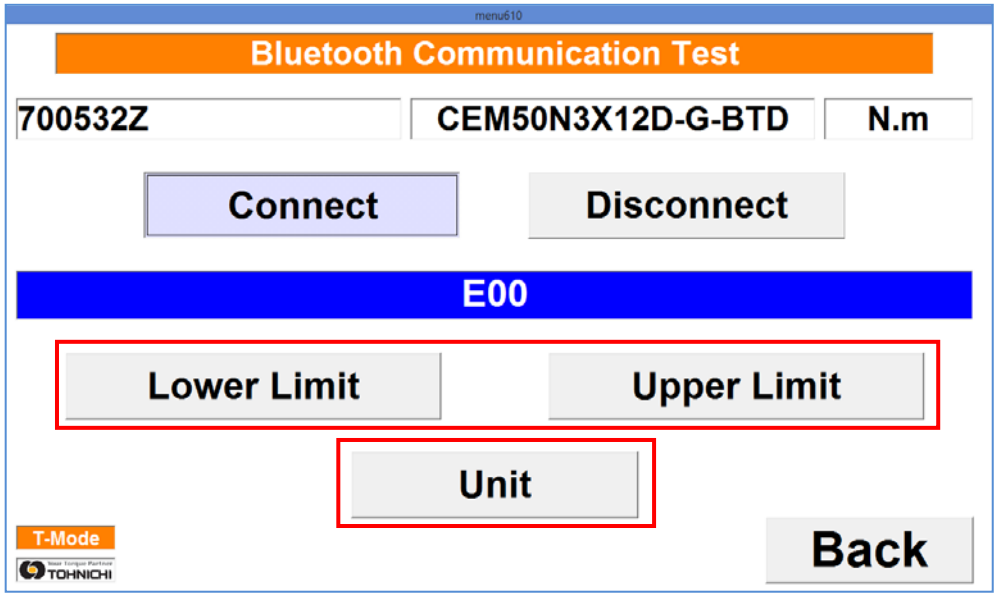
⑥ When Bluetooth communication has been established, PC sends confirmation command to CEM3-BT and CEM3-BT sends answer back command “E00” to PC.
The “E00” command will be shown in the blue column on the screen.



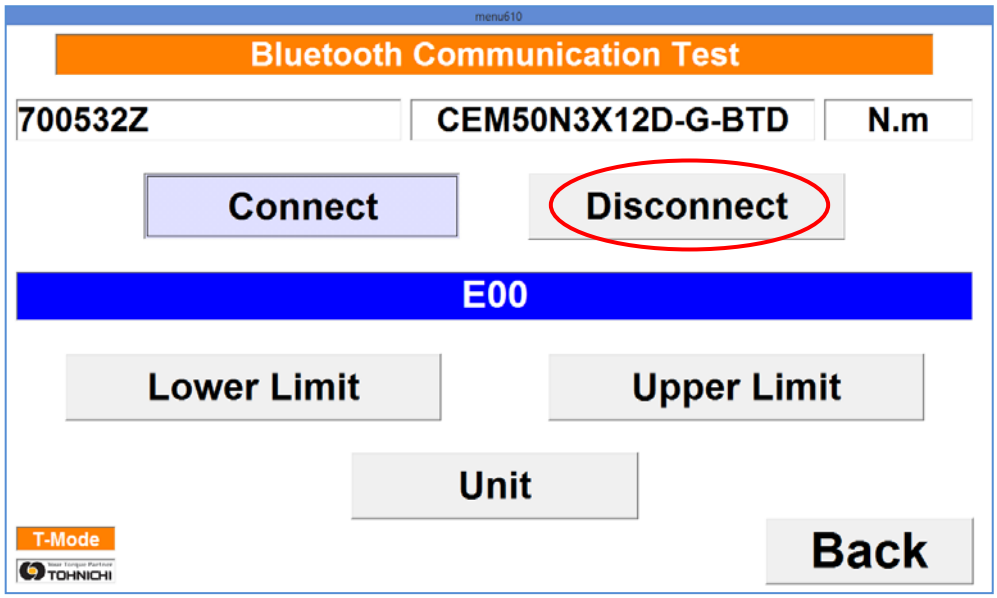
⑦ Send data from CEM3-BT. When the HT-V8 receives data, it shows received data in the blue column.



⑧ Tap “Lower Limit” or “Upper Limit” to send upper/lower limit to CEM3-BT.
Tap “Unit” to send Unit to CEM3-BT. * Unit transmission is only for CEM3-BT.

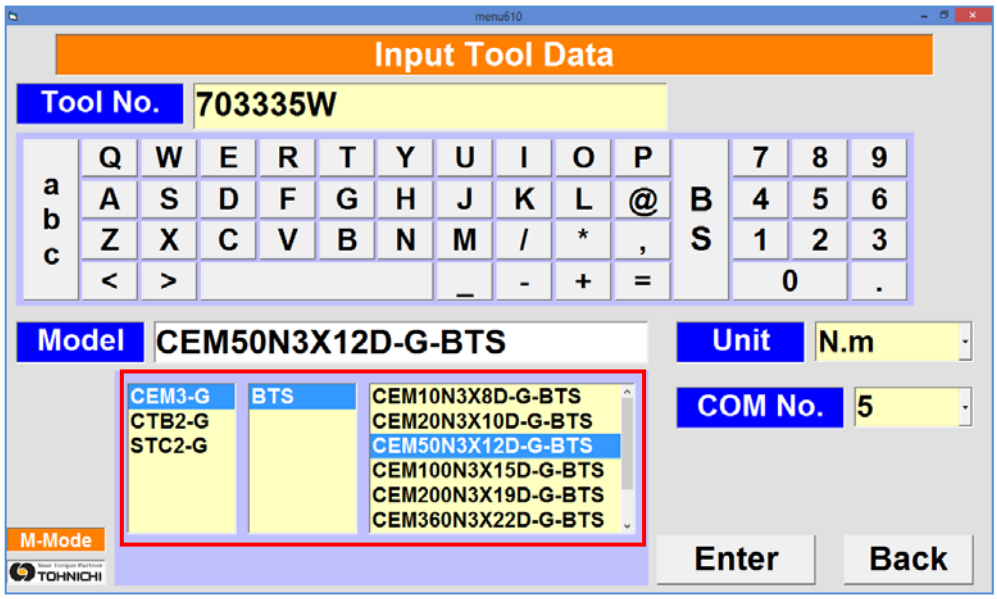


⑨ To finish communication test, tap “Disconnect”. The blue column will be disappeared and “STATUS” LED on the CEM3-BT will be turned off.



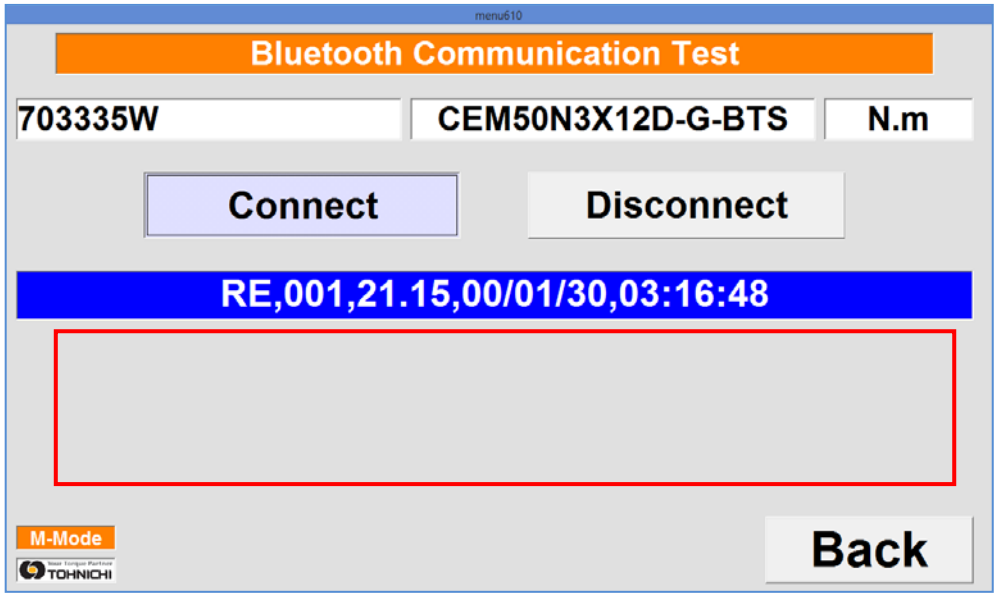
Measurement Mode Setting

① Tool setting in measurement mode is basically same as tightening mode.
At the measurement mode, it is selectable simplex communication model of Tohnichi digital products.



② It will be simplex communication test mode.

"Lower Limit", "Upper Limit" and "Unit" will not be displayed.

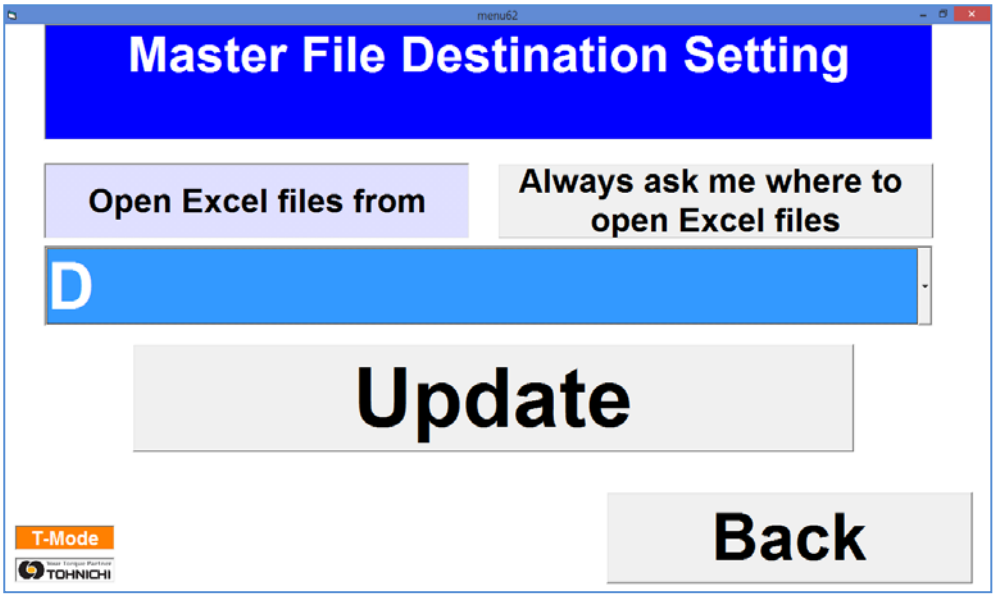


4.4.2 Master File Import Destination Setting

Here, setting is carried out using “Portion Registration” of where the Measurement Portion Master file that was created using Excel is to be imported from.
Setting is carried out of the drive name of the USB memory that is connected to the PC in which the Measurement Portion Master file was stored.
In addition, setting can also be carried out to select the import destination when importing the Measurement Portion Master file for Measurement Portion Registration.
This setting is common to measurement mode.

① Tap “Master File Destination Setting” in the Setting menu.

The Master File Destination Setting screen will be displayed. To return to the Setting menu, tap “Back”.



“**Open Excel files from**”

During the Measurement Portion Registration, the “Portion Master_ENG.xls” file on the USB memory with the drive name set here will be imported.

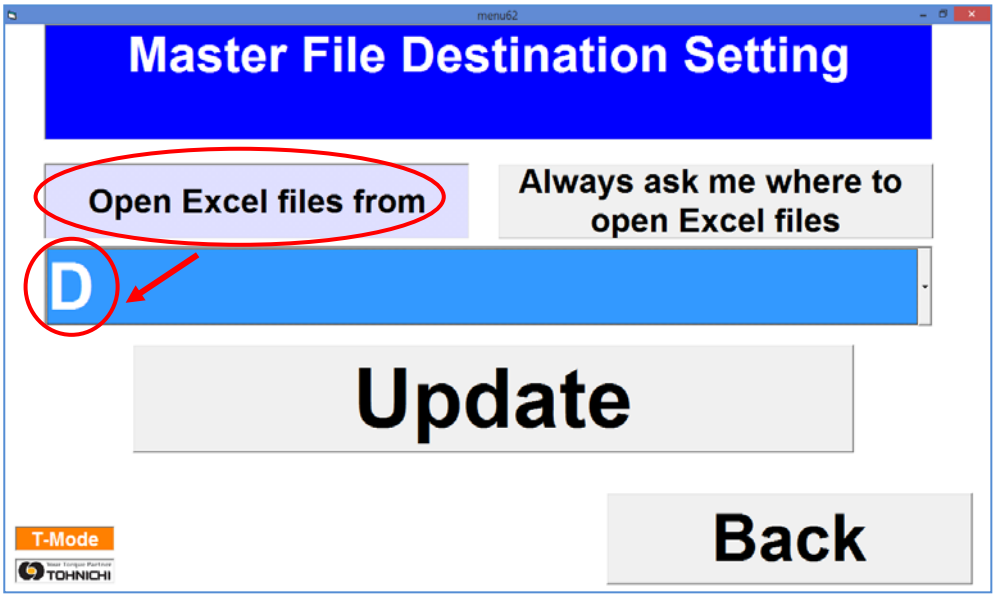
The drive name that was set will be fixed, so that the importing in Measurement Portion Registration will always be automatically read from the USB memory with the drive name that was set.

“**Always ask me where to open Excel files**”

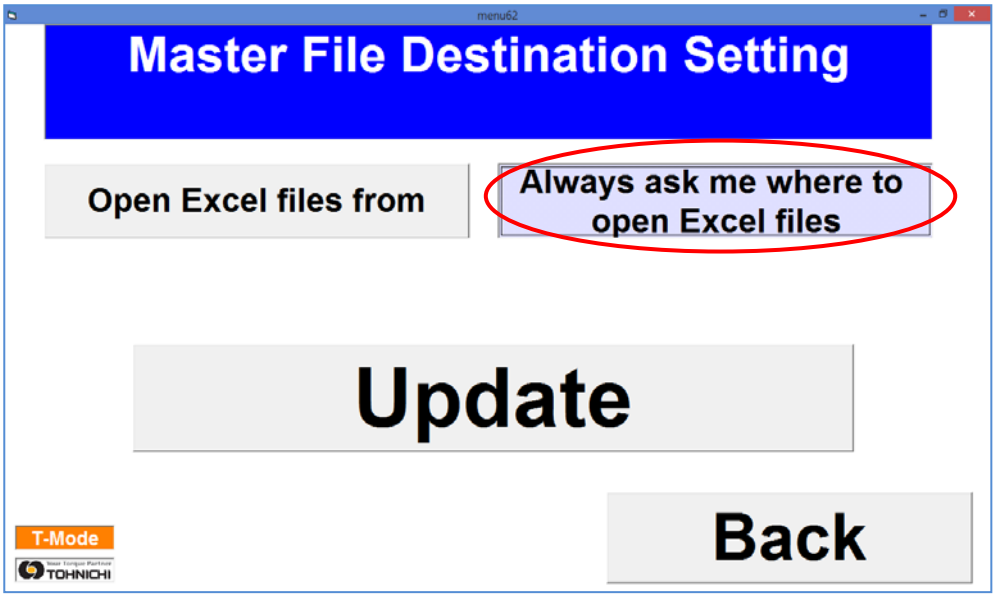
During the Measurement Portion Registration, the import destination of the “Portion Master_ENG.xls” file should be specified each time.

② In the situation during Measurement Portion Registration where the Measurement Portion Master file is to be fixed to always read from the USB memory with the drive name that was set, tap “Open Excel files from”.

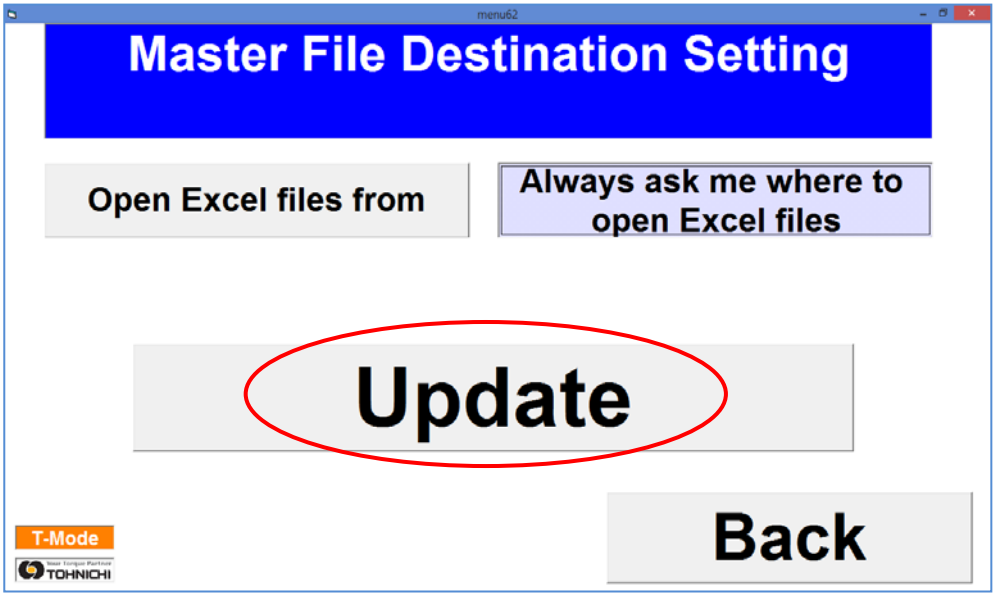
Select the drive name between “C” and “L” as shown below.



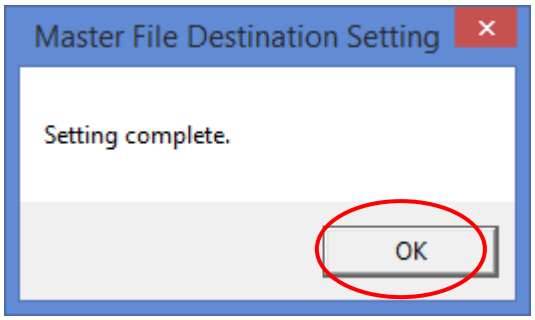
③ In the situation during Measurement Portion Registration where the destination for importing the Measurement Portion Master file is to be specified each time, tap “Always ask me where to open Excel files”.



② After the setting has been selected, tap “Update”.



③ When the setting has been completed, the “Setting complete.” message will be displayed. Tap “OK” to return to the Setting menu screen.

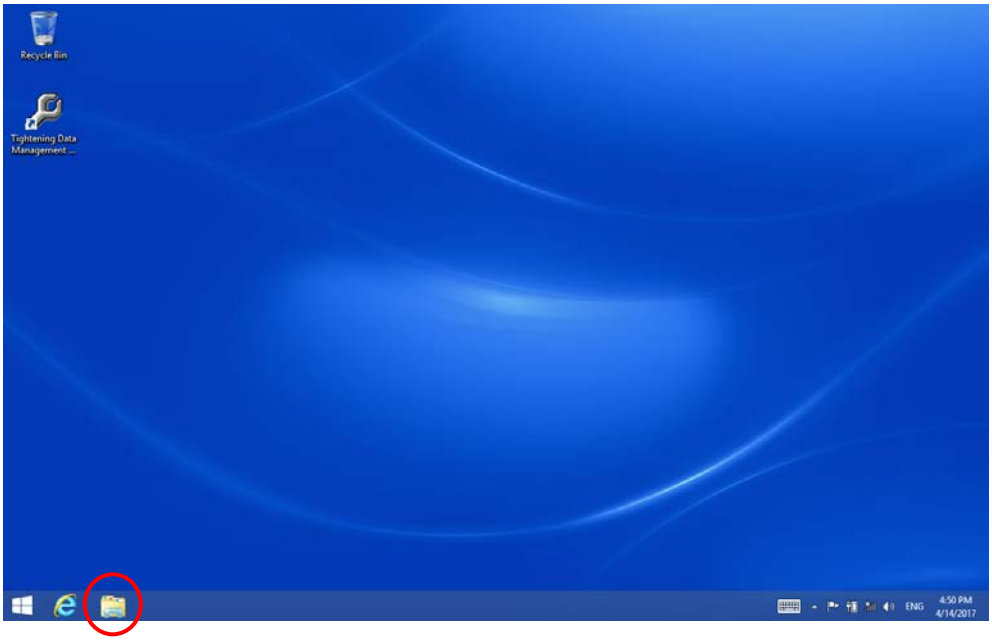


■ Method of Confirming the Drive Name of the USB Memory that is to be Used

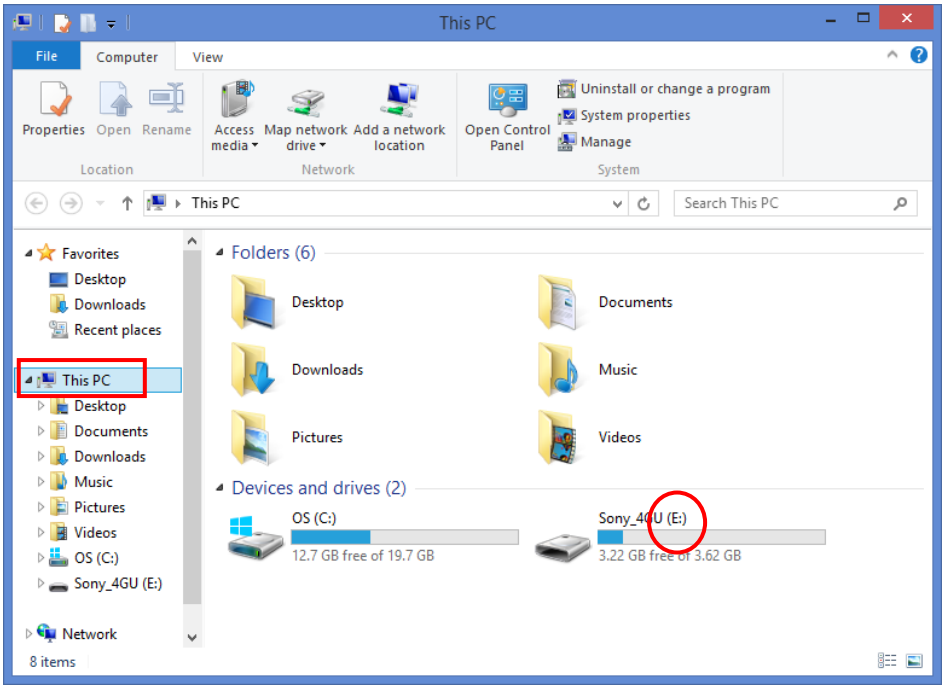
① Quit the software without closing down the PC, and insert the USB memory into the PC.

(To make the setting that only quits the software without closing down the PC, refer to "**4.4.5 Shutdown Setting**".)

② Tap the shortcut of the folder on the task bar.



③ Confirm the drive name of the corresponding removable disk shown in "Devices and drives" in the right side window.

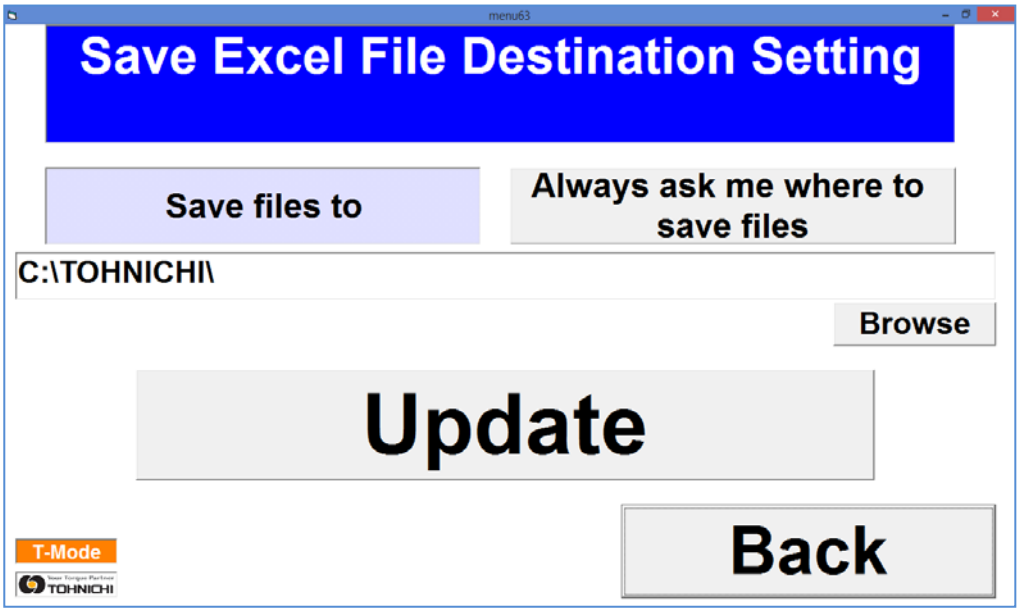


4.4.3 Save Excel File Destination Setting

Here, settings are carried out of the saving destination for outputting “Measurement Data”, “Data List for Portions”, and “Count for Items” to Excel files.
The saving destination should be set for saving the Excel files of each of the data types described above.
Further, it is also possible to carry out setting to select the saving destination when saving the Excel files of each data type.
This setting is common to measurement mode.

① Tap “Save Excel File Destination Setting” in the Setting menu.

The Save Excel File Destination Setting screen will be displayed. To return to the Setting menu, tap “Back”.



“**Save files to**”

The Excel files of each data type are saved to the saving destination set in this option.

The saving destination that was set will be fixed so that during saving, the saving will always be carried out automatically to the destination that was set.

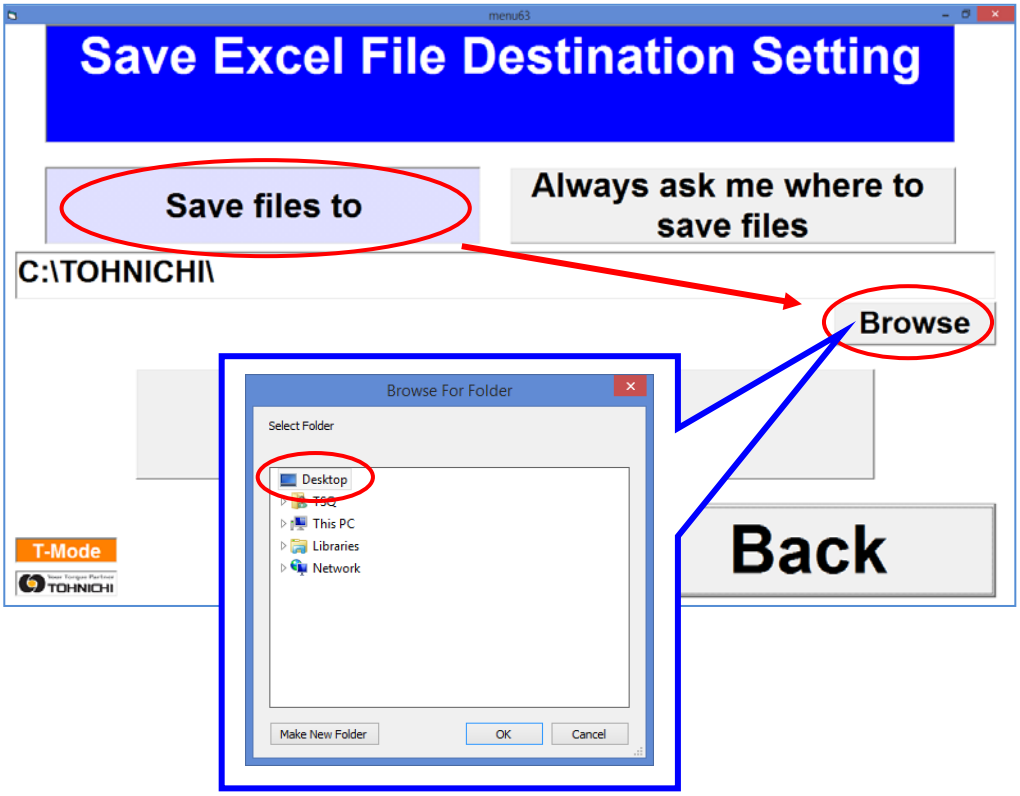
Note that when saving to a USB memory, the setting should be carried out in the condition where the USB memory is connected to the computer.

“**Always ask me where to save files**”

When saving each data type to an Excel file, the saving destination should be specified each time.

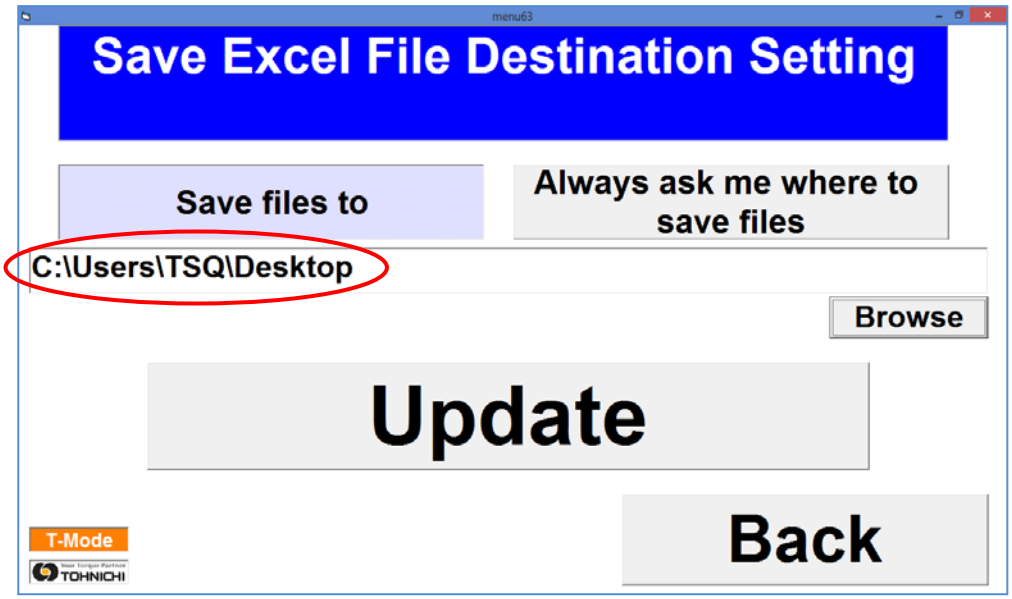
② In the situation where the Excel files of each data type are to be saved in the saving destination that was set, tap “Save files to”.

Tap “Browse” which is shown below. “Browse for Folder” will be displayed. In the situation where the saving destination is a USB memory, first connect the USB memory to the PC so that it is in the recognized condition.

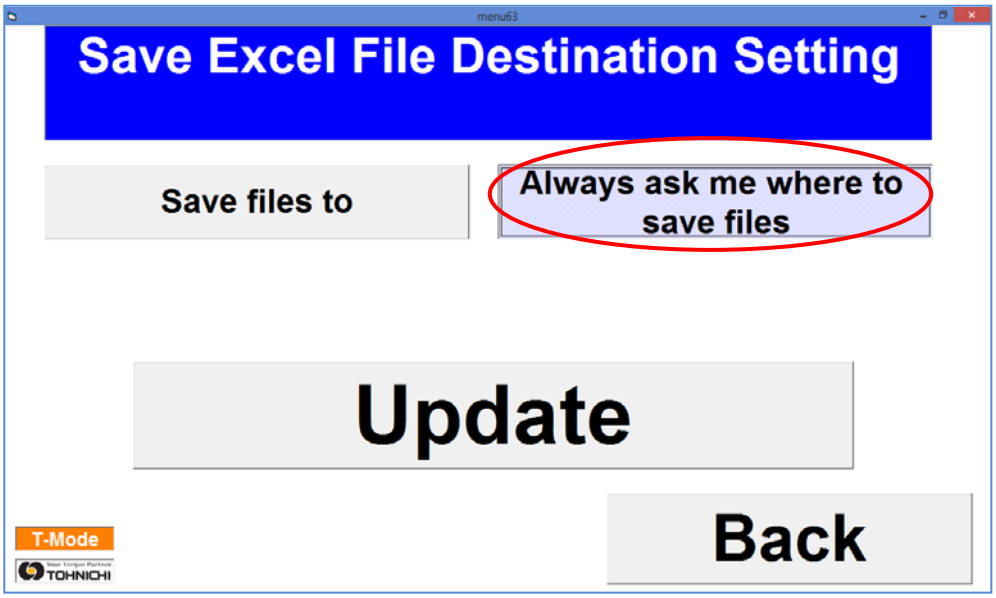


Specify the saving destination in “Browse for Folder”, and tap “OK”.

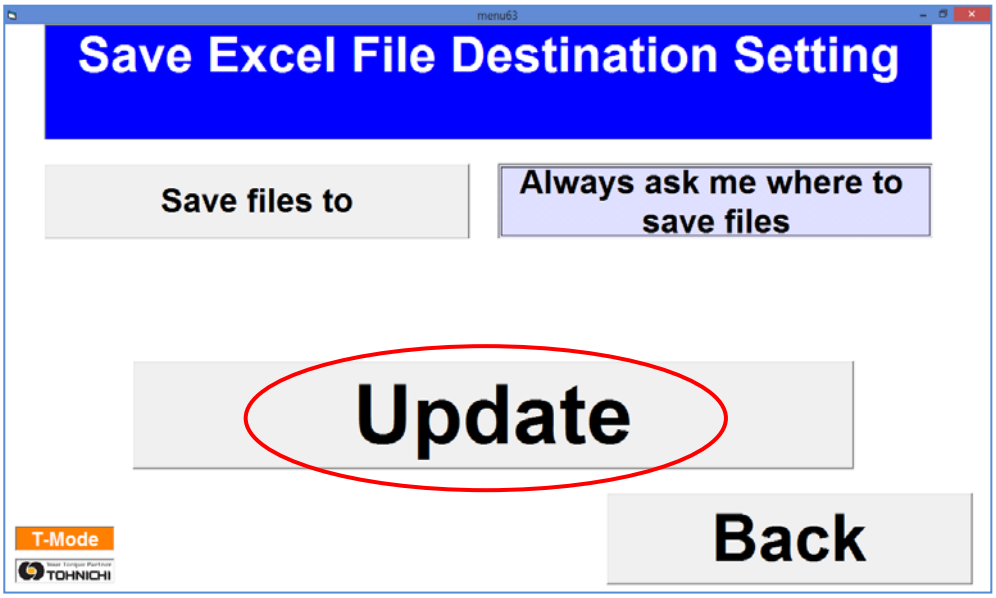
③ The specified saving destination will be displayed in the saving destination bar located below “Save files to”.



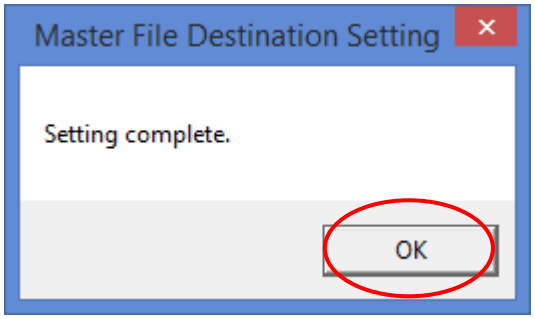
④ When saving the Excel files of each data type, in the situation where the saving destination is to be specified each time, tap “Always ask me where to save files”.



⑤ After selecting the settings, tap “Update”.



⑥ When the setting has been completed, the “Setting complete.” message will be displayed. Tap “OK” to return to the Setting menu screen.

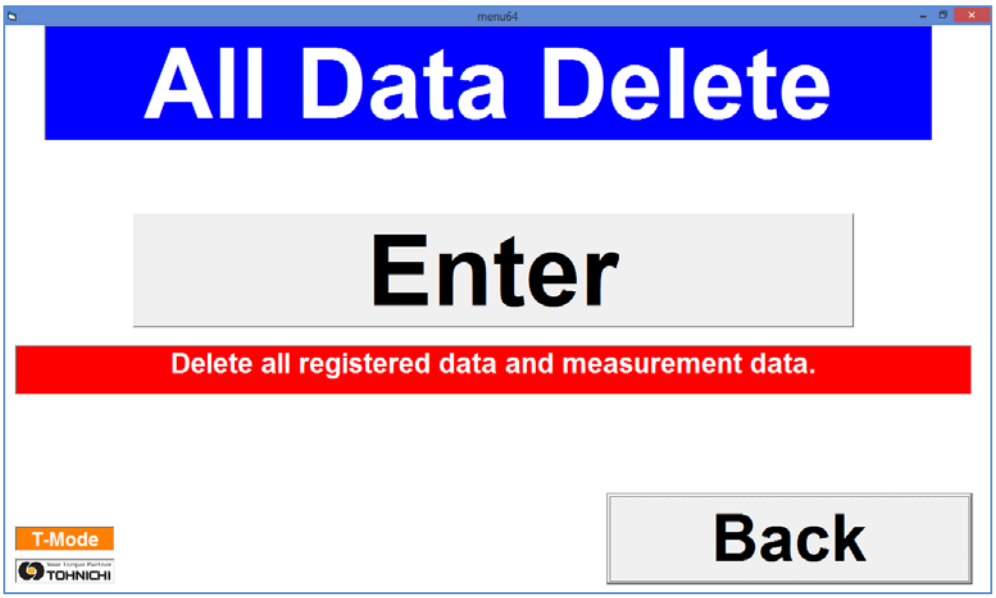


4.4.4 All Data Delete

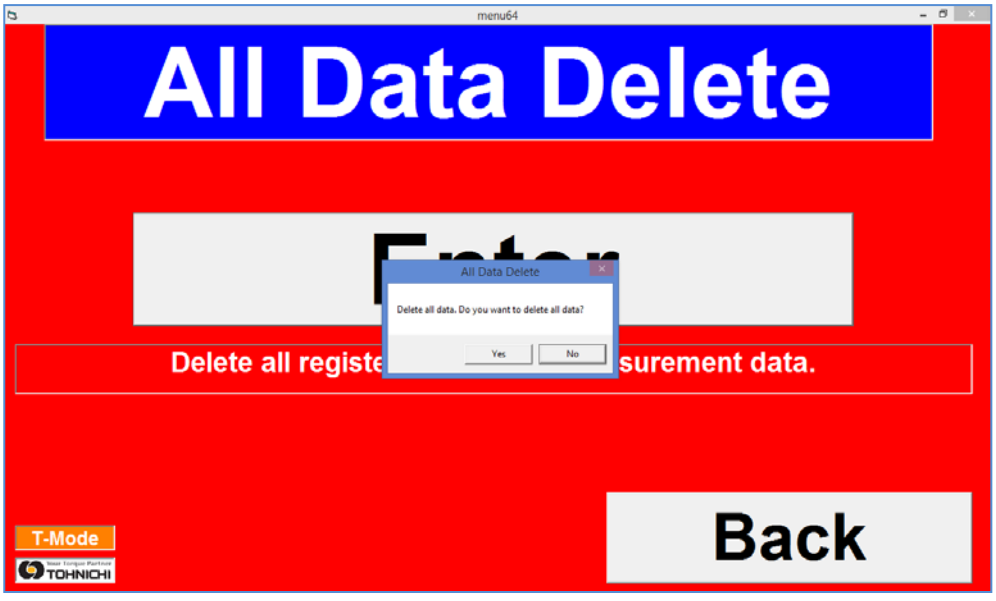
Here, deletion will be carried out of the Measurement Portion Master registered in locations 1-5 of the Main menu and all the measurement data. When conducting All Data Delete at the tightening mode, only the Measurement Portion Master and Measurement Data in tightening mode are deleted. The data in the inspection mode will remain as it is.

Note that the various settings that were set in “Settings” will not be deleted. Even after implementing All Data Delete, the settings will remain.

① Tap “All Data Delete” in the Setting menu.
The All Data Delete screen will be displayed. To return to the Setting menu, tap “Back”.

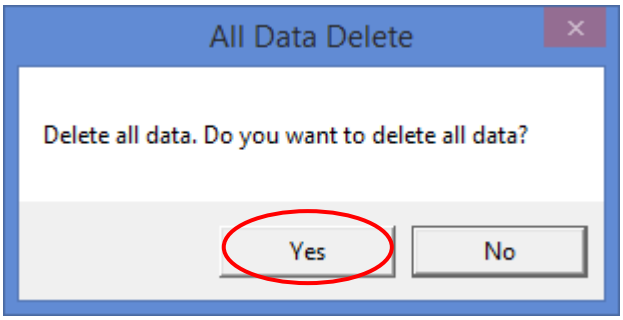


② Tap “Enter”. The screen will change to red, and a warning message will be displayed.



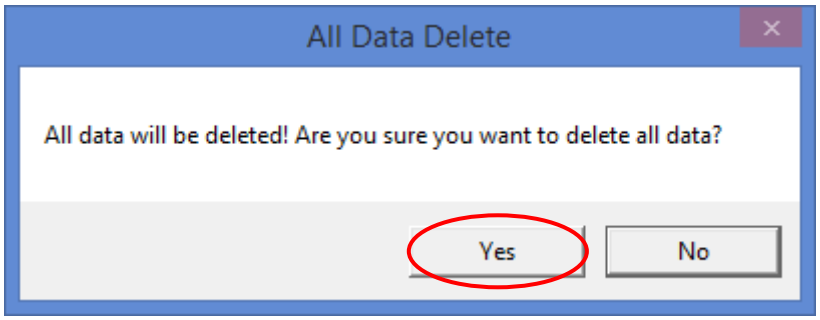
③ The “Delete all data. Do you want to delete all data?” message will be displayed. To carry out data deletion, tap “Yes”.

To discontinue the data deletion, tap “No”.

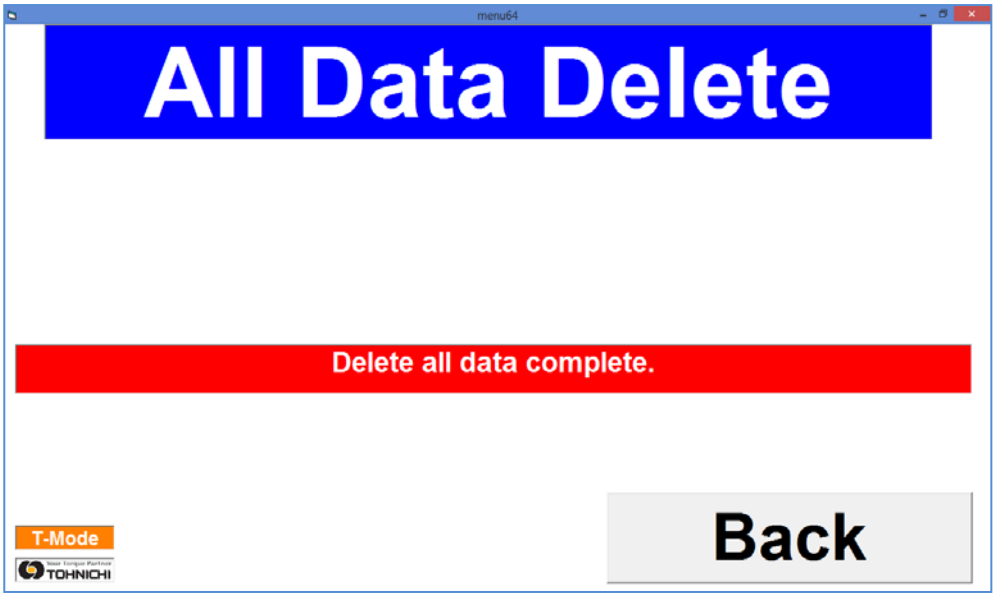


④ The “All data will be deleted! Are you sure you want to delete all data?” message will be displayed for reconfirmation. To carry out data deletion, tap “Yes”.

To discontinue the data deletion, tap “No”.



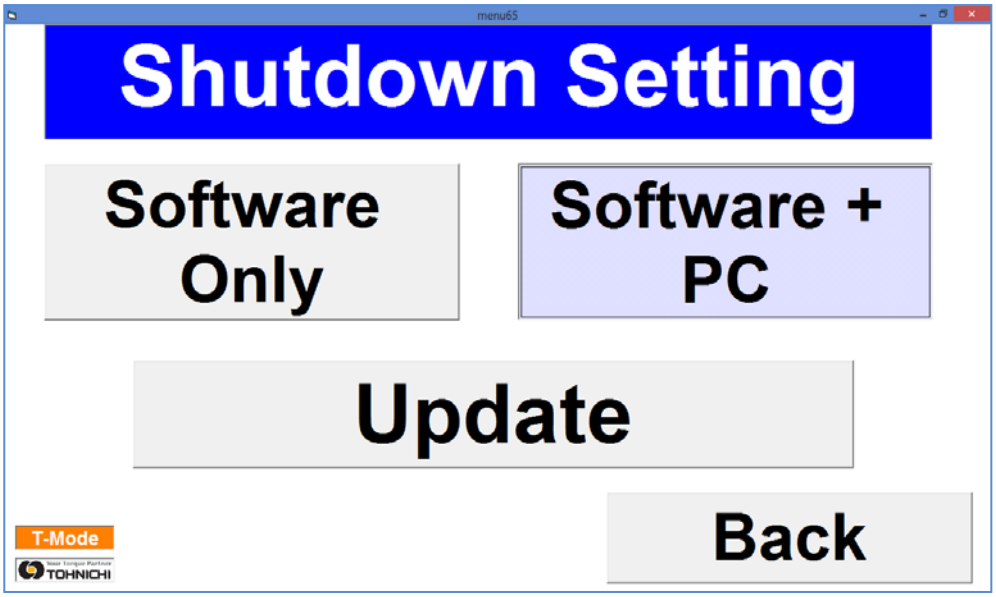
⑤ When the all data deletion has been completed, the “Delete all data complete.” message will be displayed.



4.4.5 Shutdown Setting

Here, setting is carried out when quitting the software of whether only the software will be quit or whether the PC will also close down at the same time that the software is quit.
This setting is common to measurement mode.

① Tap “Shutdown Setting” in the Setting menu.
The Shutdown Setting screen will be displayed. To return to the Setting menu, tap “Back”.



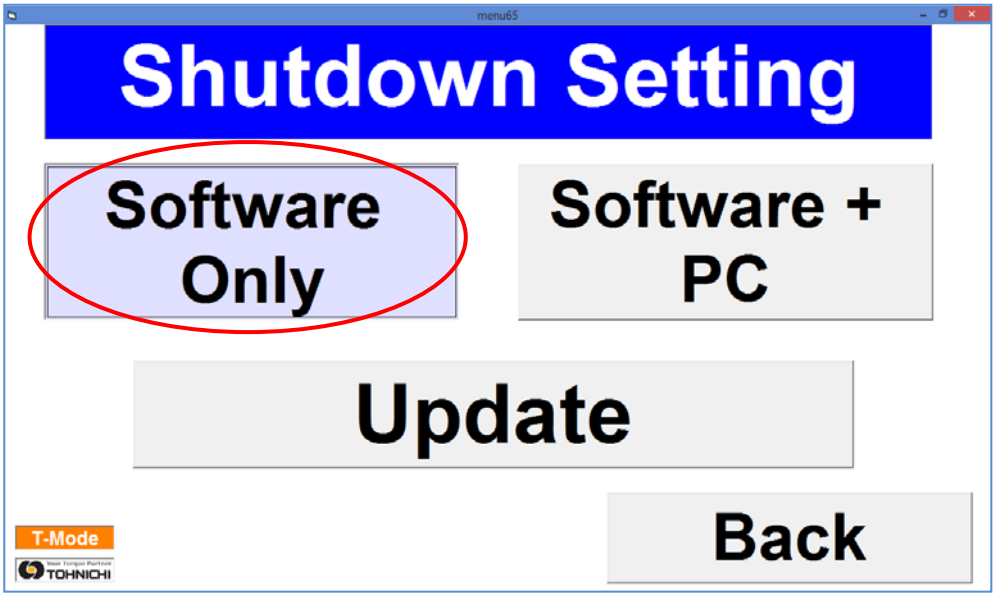
“**Software Only**”

When the software is quit, only the software will close down while the PC power will remain on.

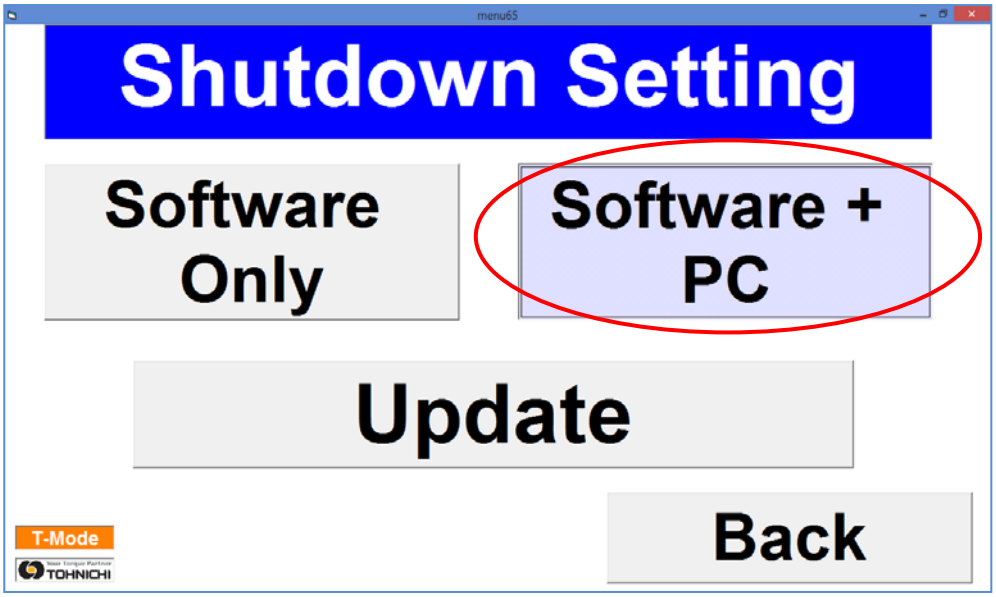
“**Software + PC**”

When the software is quit, the PC will also be shut down at the same time that the software closes down.

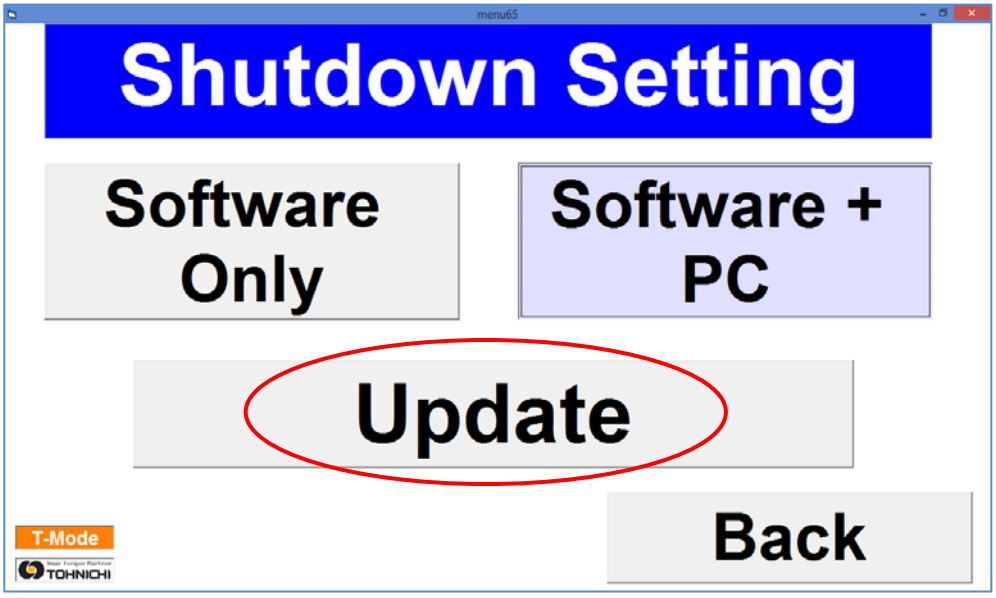
② In the situation where only the software is to be closed down when the software is quit, tap “Software Only”.



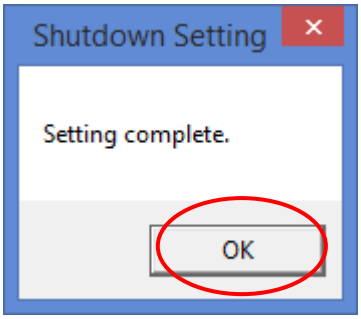
③ In the situation where the PC is also to be closed down at the same time that the software is quit, tap “Software + PC”.



④ After selecting the setting, tap “Update”.



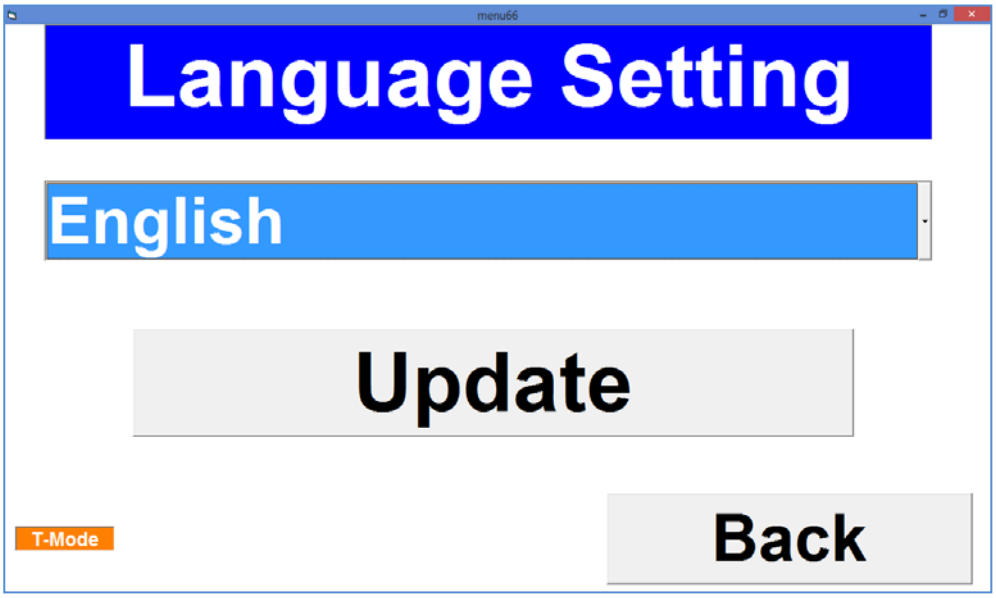
⑤ When the setting has been completed, the “Setting complete.” message will be displayed. Tap “OK” to return to the Setting menu screen.



4.4.6 Language Setting

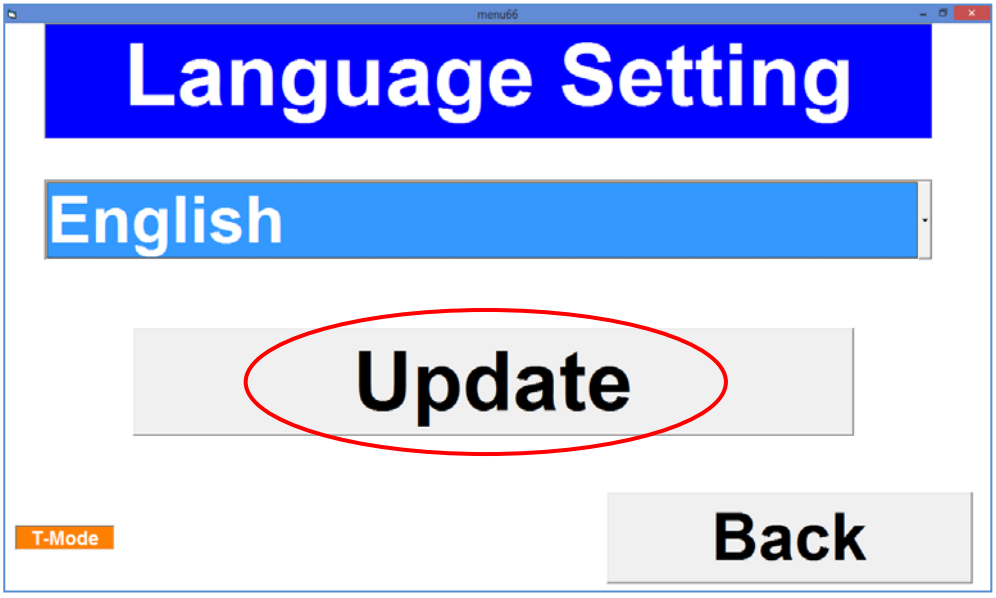
Here, the settings are carried out for changing the displayed language.
When displaying the selected language, set the configuration of the PC so that the specified language can be displayed.
This setting is common to measurement mode.

① Tap “Language Setting” in the Setting menu.
The Language Setting screen will be displayed. To return to the Setting menu, tap “Back”.

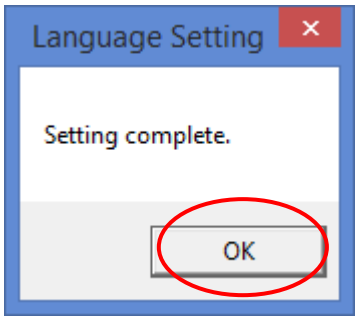


② Select the language to be displayed from the box.

③ After selecting the setting, tap “Update”.



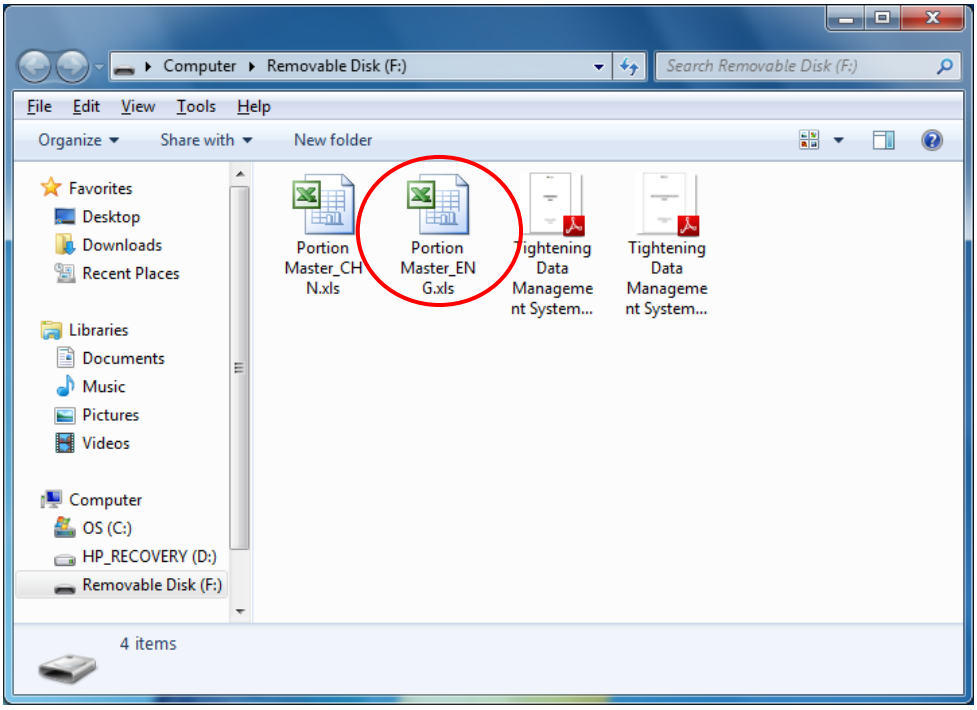
④ After the setting has been completed, the “Setting complete.” message will be displayed. Tap “OK” to return to the Setting menu screen.



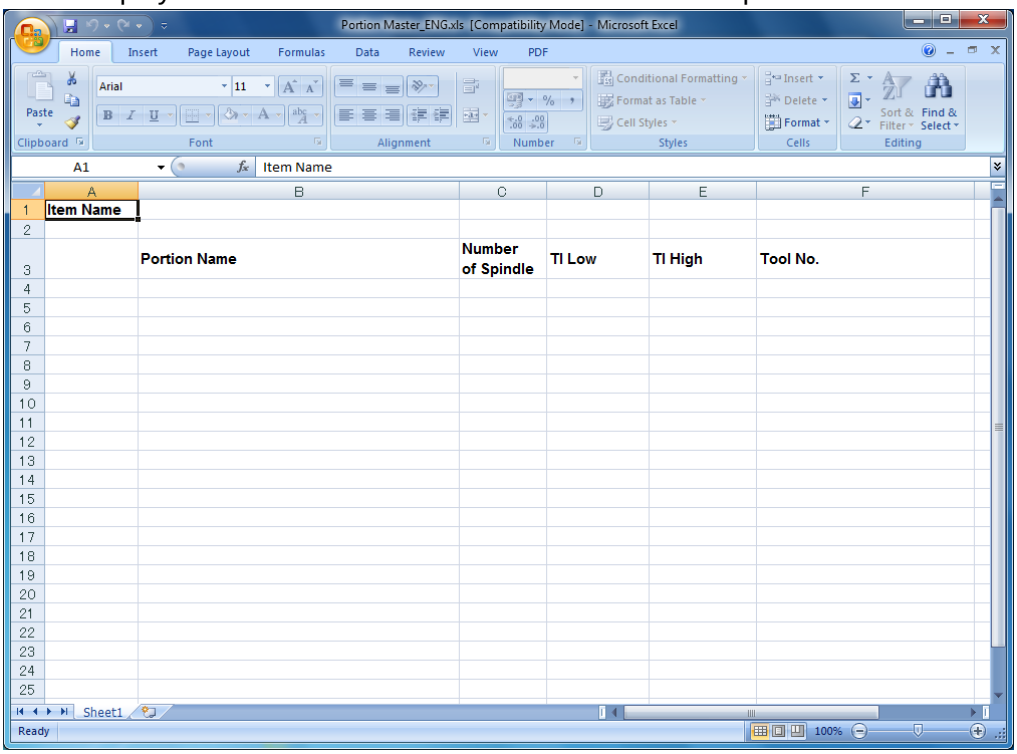
4.5 Measurement Portion Master (Excel File) Creation

The Measurement Portion Master file should be created using Excel. Using an optional PC (in which Microsoft Excel has been installed), information should be input to the existing “Portion Master_ENG.xls” file to create the Measurement Portion Master file.

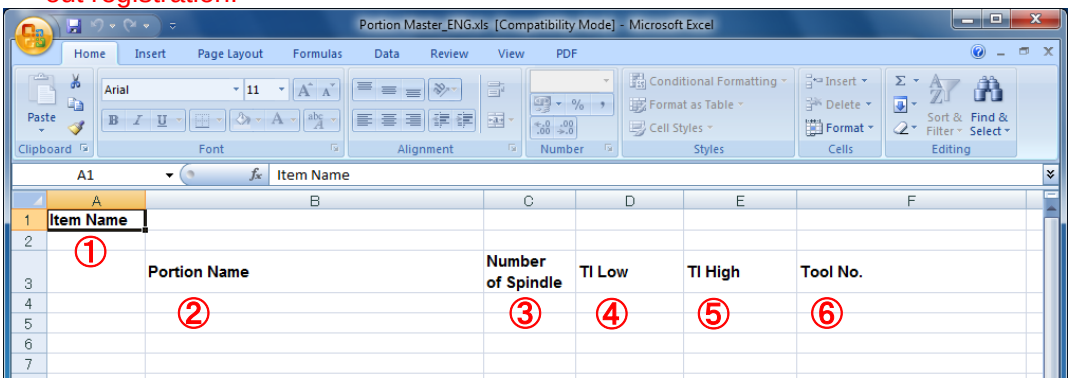
① Connect the accompanying USB memory to a PC that has Microsoft Excel installed. The “Portion Master_ENG.xls” file is located in the top layer of the USB memory.



② Open the “Portion Master_ENG.xls” file. A Measurement Portion Master Excel file will be displayed in which no master information has been input.

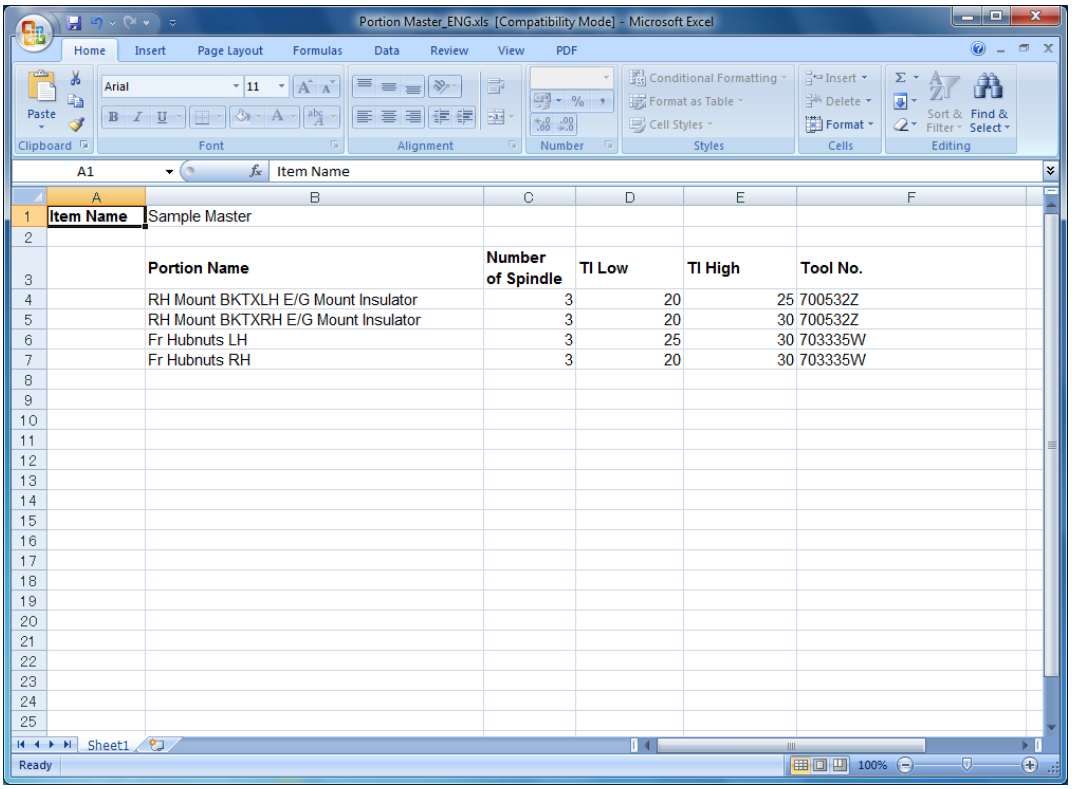


③ Input each of the information items, consisting of the “Item Name”, “Portion Name”, “Number of Spindle”, “TI Low” “TI High”, and “Tool No.”. It will only be possible to carry out input or editing in the input locations. Further, do not carry out editing of the sheet, since this will mean that importing will not be possible when carrying out registration.



“**Item Name**”: Input the item name such as the Master name in the B1 cell shown by ① in the above figure.
“**Portion Name**”: Input the names of the portions to be measured in the B4 and lower cells shown by ② in the figure above.
“**Number of Spindle**”: Input the number of portion spindles for tightening in the C4 and lower cells shown by ③ in the figure above.
“**TI Low**”: Input the portion torque lower limits in the D4 and lower cells shown by ④ in the figure above.
“**TI High**”: Input the portion torque upper limits in the E4 and lower cells shown by ⑤ in the figure above.
“**Tool No.**”: Input the Tool No. to be used in each Portion, to the cell F4 and below.
Referring to “**4.4.1 Tool Setting**” for setting of Tool No.
* There will be no limit to the number of portions that can be input (registered).

④ When the input has been carried out as shown in the following figure, save the file under the same name, and close down the Measurement Portion Master Excel file.



4.6 Measurement Portion Master Registration

This imports the “Portion Master_ENG.xls” file that was created and registers the Measurement Portion Master information in the software. There are two importing methods, consisting of a method of always reading from a location that has been set and a method in which an optional location is specified each time importing takes place. Carry out the change of settings as described in “**4.4.2 Master File Import Destination Setting**”.

4.6.1 Situation where the Master File Import Destination Setting is "Open Excel files from"

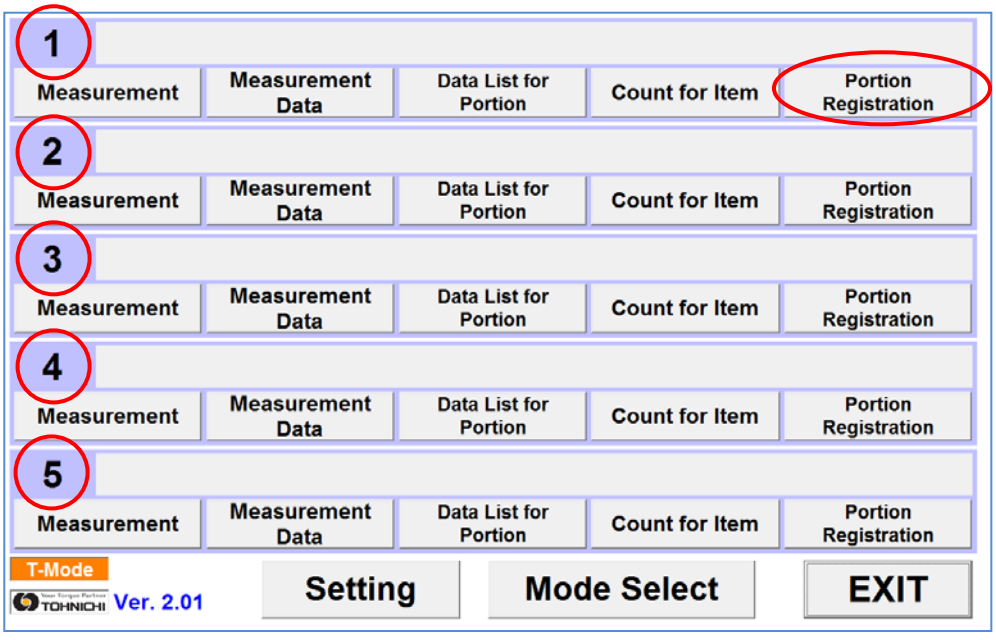
① The “Portion Master_ENG.xls” file that was created should be stored in the top layer of the USB memory.

Do not create a folder in the USB memory for storing the Excel file, and do not change the “Portion Master_ENG.xls” file name. In the situation where the file is fixed to be imported from a location that has been set, creating a folder or changing the file name will mean that importing will not be possible.

② Connect the USB memory in which the “Portion Master_ENG.xls” file has been stored into the PC.

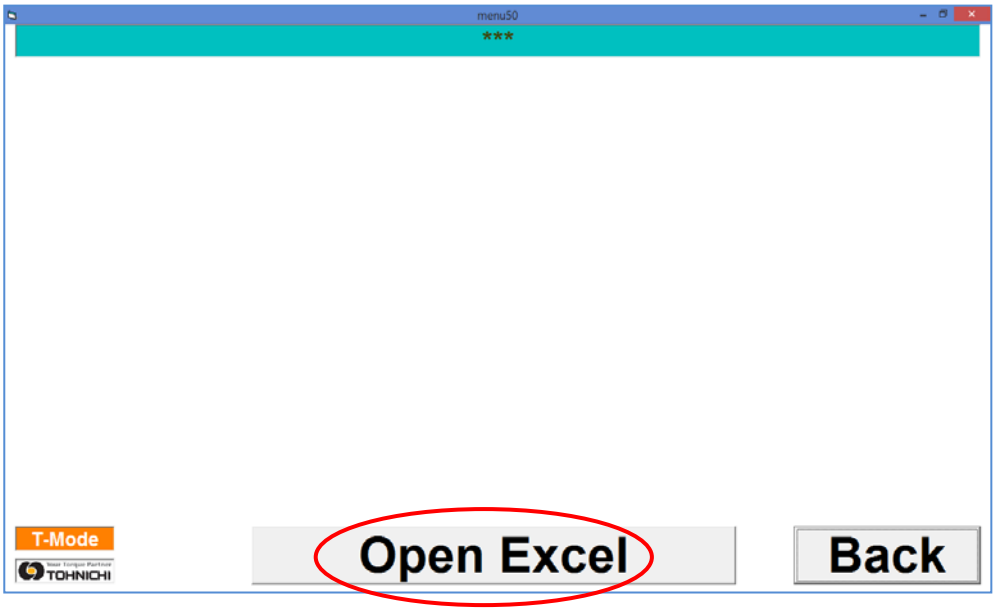
* In the situation where the drive for importing has been set to “C” using “**4.4.2 Master File Import Destination Setting**”, the “Portion Master_ENG.xls” file should be saved in the top layer of the C drive of the PC.

③ Measurement Portion Master files can be registered in the five locations shown by 1-5 in the Main menu. Tap “Portion Registration” of the measurement location in the Main menu where you wish to register the master.



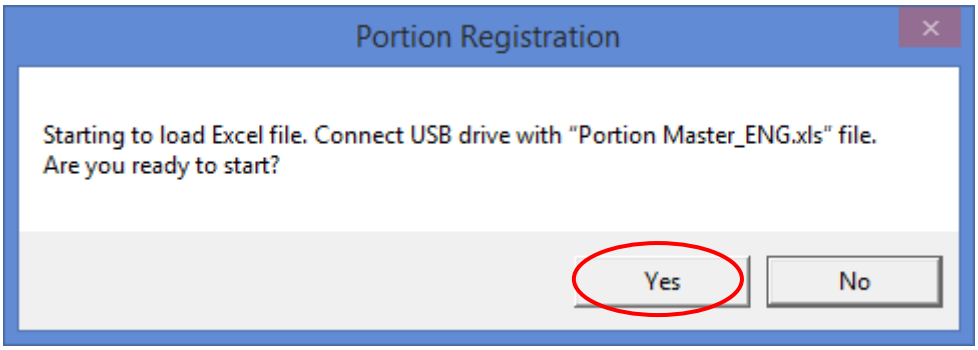
④ The Portion Registration screen will be displayed. Tap “Open Excel”.

To return to the Main menu, tap “Back”.

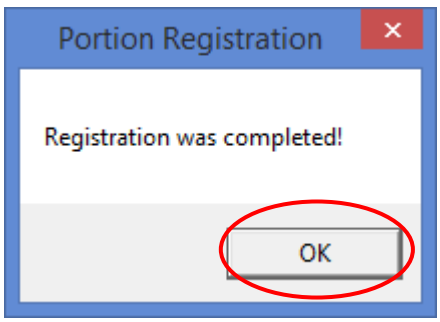


⑤ The “Starting to load Excel file. Connect USB drive with “Portion Master_ENG.xls” file. Are you ready to start?” message will be displayed. Confirm that the USB memory has been connected, and then tap “Yes” to start the importing.

To discontinue the loading, tap “No”.

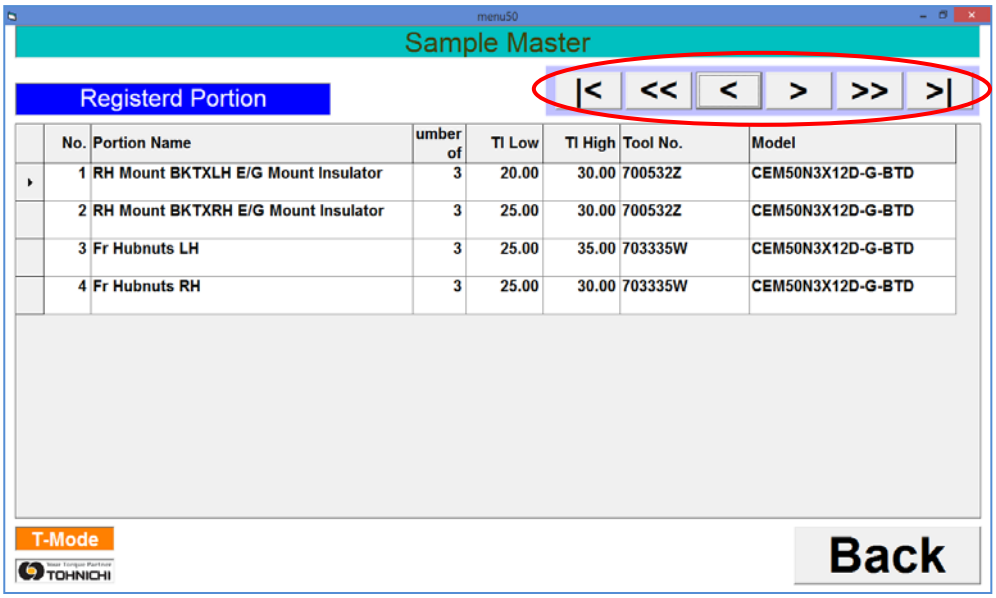


⑥ When the importing has been completed, “Registration was completed!” will be displayed. Tap “OK”.



⑦ The registered Measurement Portions that were imported from the “Portion Master_ENG.xls” file will be displayed.

To return to the Main menu, tap “Back”.



[**|<**]: Tap here to return to the initial portion.

[**<<**]: Tap here to move up 10 portions.

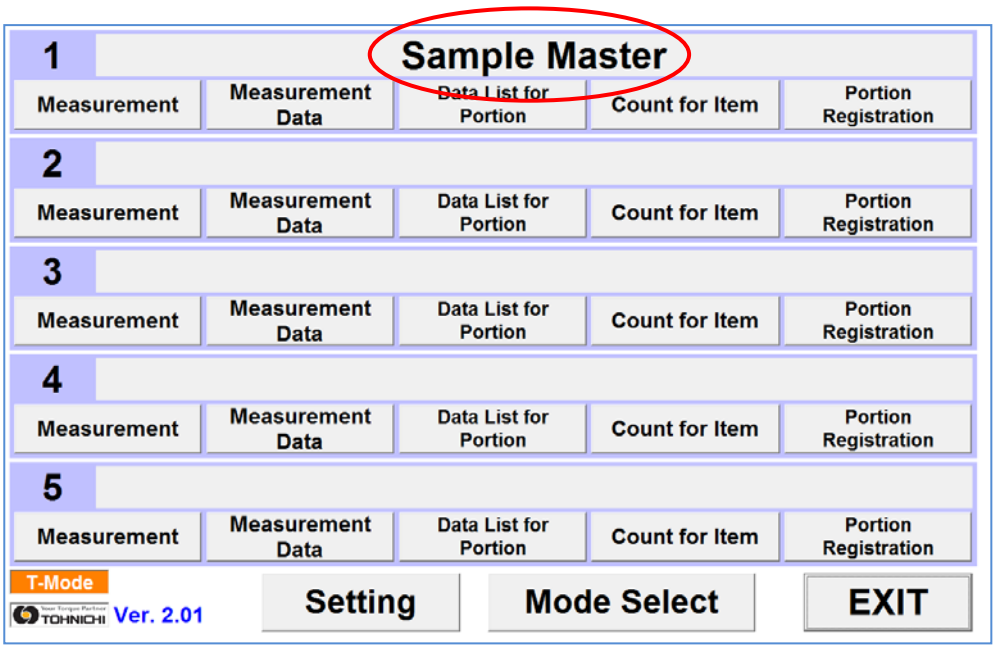
[**<**]: Tap here to move up one portion.

[**>**]: Tap here to move down one portion.

[**>>**]: Tap here to move down 10 portions.

[**>|**]: Tap here to move to the last portion.

⑧ After returning to the Main menu, the registered Measurement Portion Master item name will be displayed as the title of the registered measurement location (after the number).

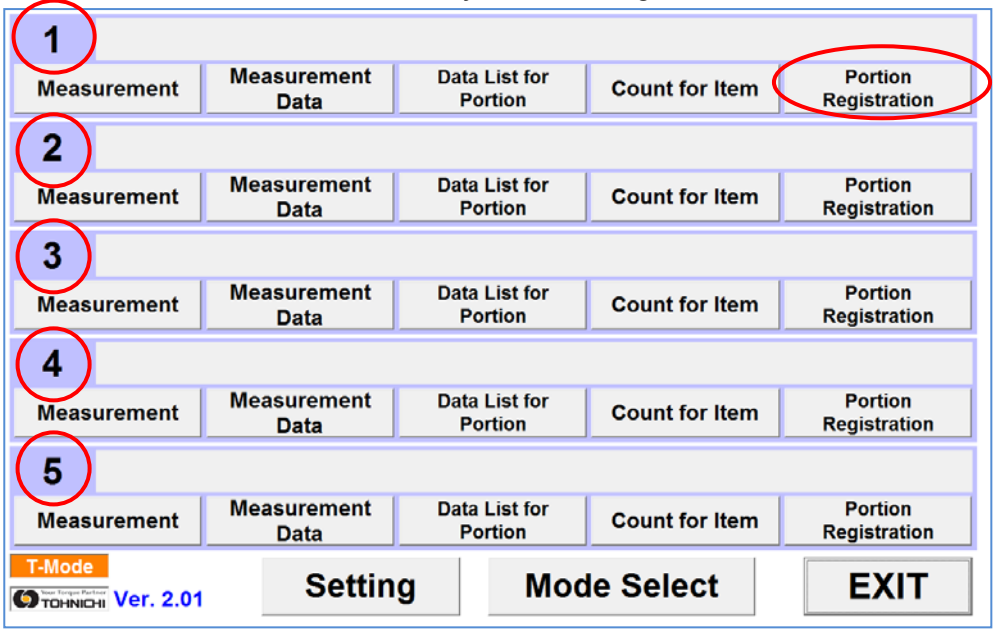


4.6.2 Situation where the Master File Import Destination Setting is "Always ask me where to open Excel files"

① Save the created “Portion Master_ENG.xls” file on the USB memory, and connect the USB memory to the PC.

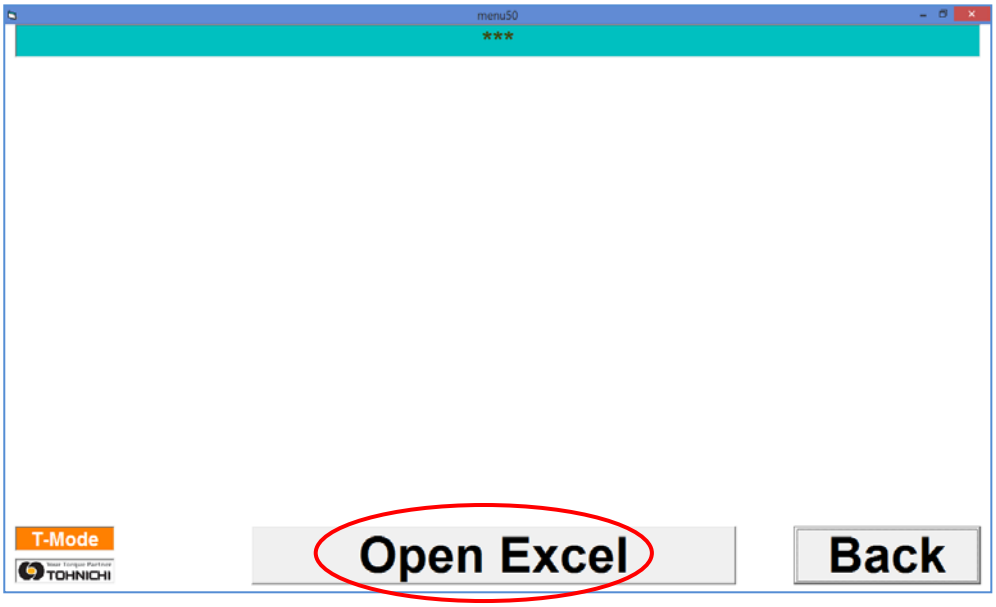
② Save the “Portion Master_ENG.xls” file in an optional location on the PC. When the specified location is inside the USB memory, leave the USB memory connected.

③ The Measurement Portion Master file can be registered in the five locations shown by 1-5 in the Main menu. Tap “Portion Registration” in the Measurement location in the Main menu where you wish to register the master.



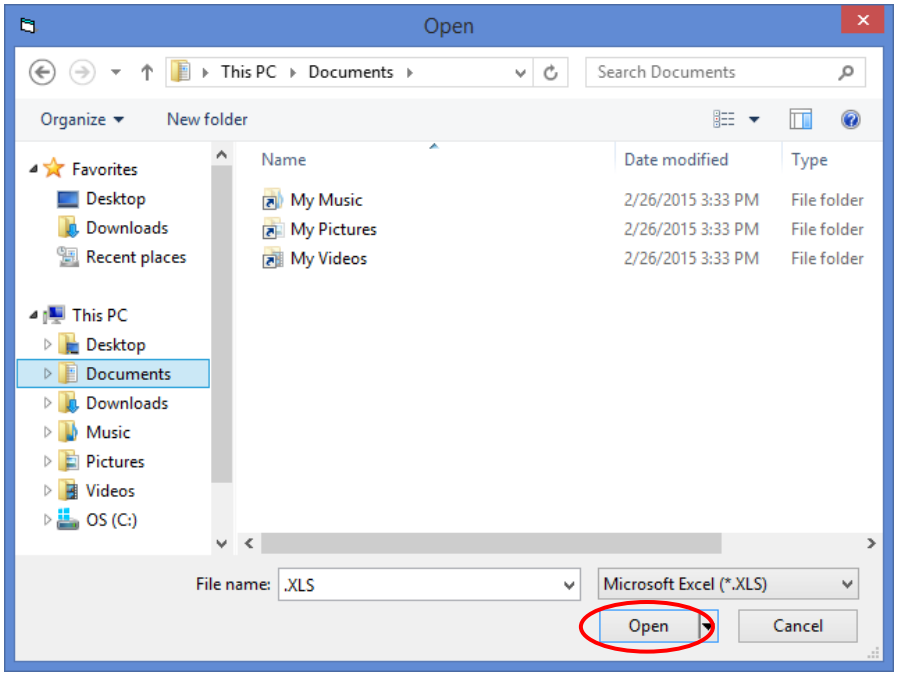
④ The Portion Registration screen will be displayed. Tap “Open Excel”.

To return to the Main menu, tap “Back”.

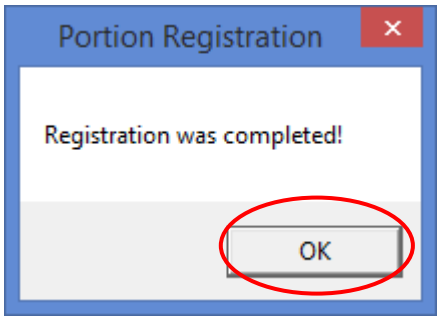


⑤ A window will be displayed for specifying the “Portion Master_ENG.xls” file that is to be imported. Select the “Portion Master_ENG.xls” file in the saved location, and tap “Open” to start the file importing.

To discontinue the importing, tap “Cancel”.

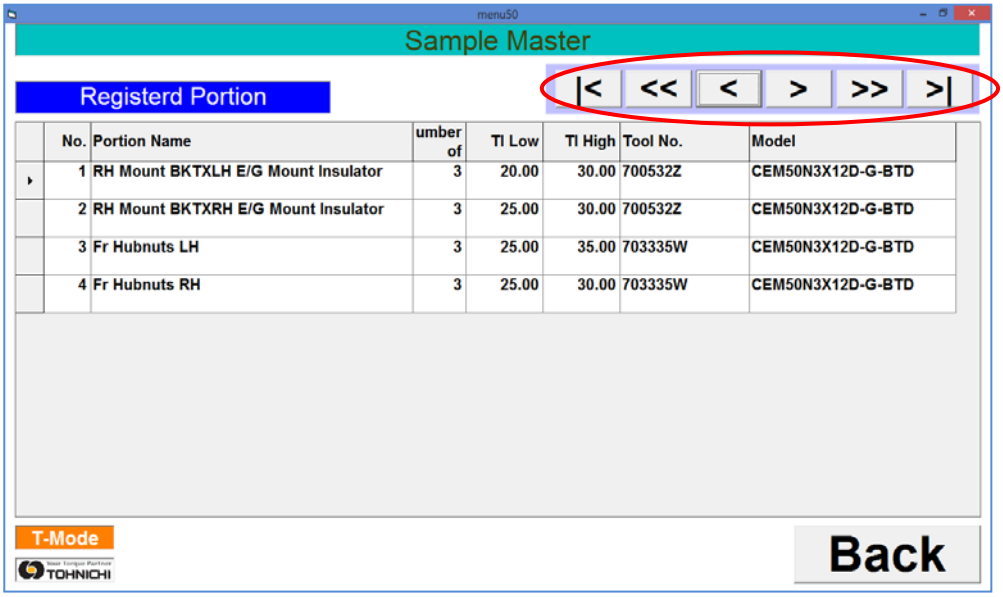


⑥ When the importing has been completed, “Registration was completed!” will be displayed. Tap “OK”.



⑦ The registered Measurement Portions that were imported from the “Portion Master_ENG.xls” file will be displayed.

To return to the Main menu, tap “Back”.



[**|<**]: Tap here to return to the initial portion.

[**<<**]: Tap here to move up 10 portions.

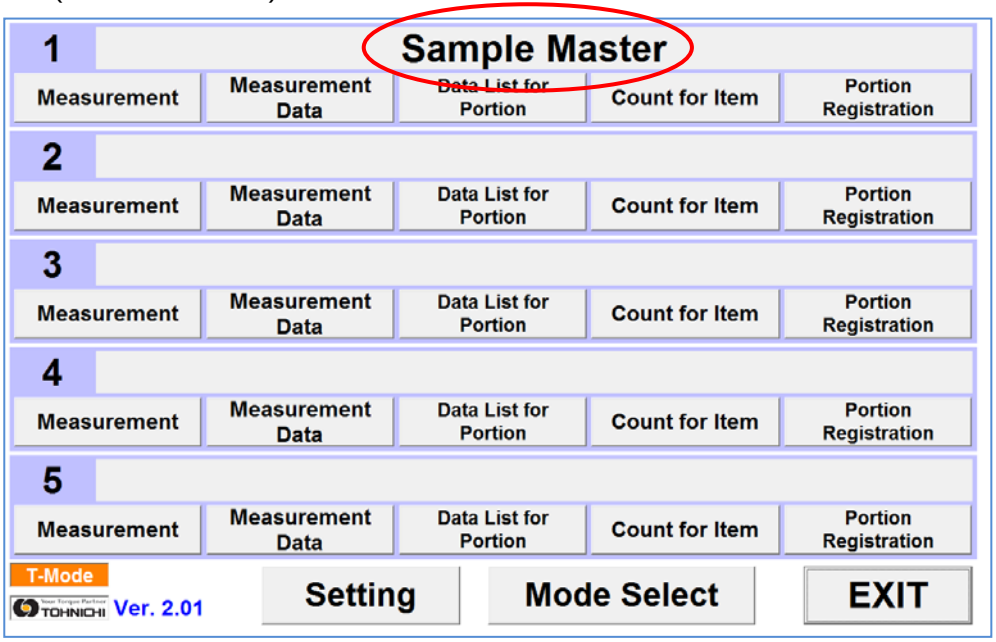
[**<**]: Tap here to move up one portion.

[**>**]: Tap here to move down one portion.

[**>>**]: Tap here to move down 10 portions.

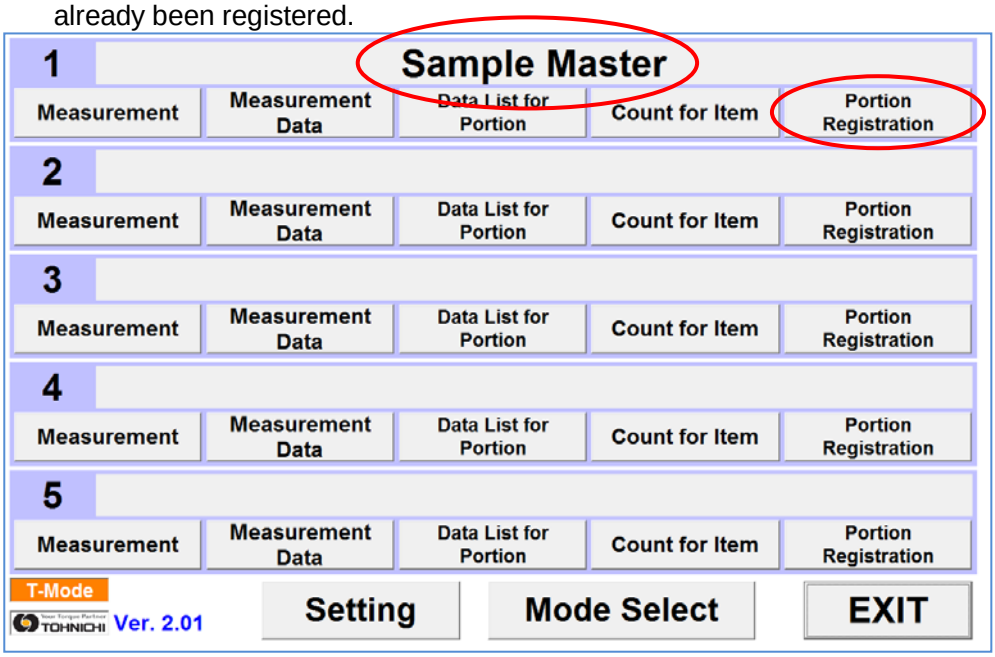
[**>|**]: Tap here to move to the last portion.

⑧ After returning to the Main menu, the registered Measurement Portion Master item name will be displayed as the title of the registered measurement location (after the number).

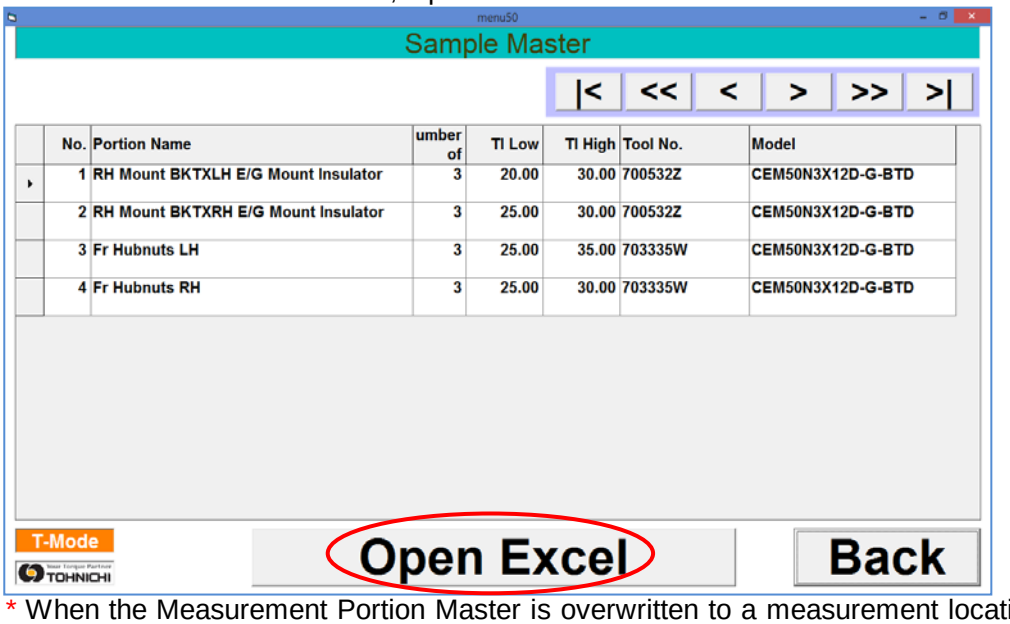


4.6.3 Situation when carrying out Registration to a Location that has already been Registered

① Tap “Portion Registration” in a measurement location in the Main menu that has already been registered.



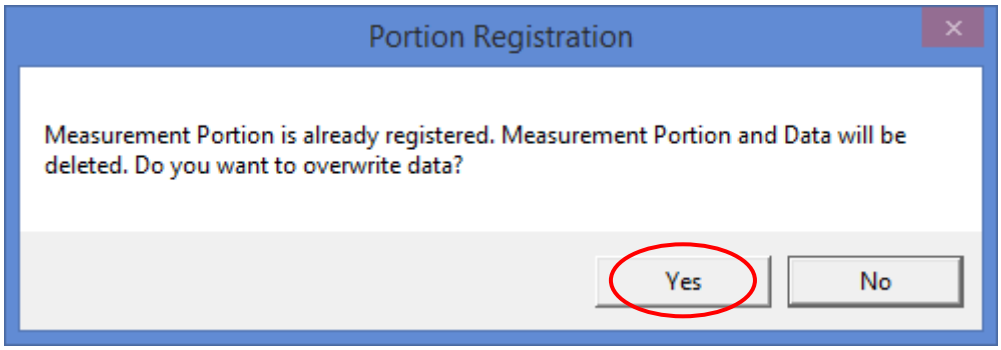
② The Portion Registration screen will be displayed. The Portion Registration screen displays a list of the measurement portions that have already been registered. In the situation where the Measurement Portion Master is to be overwritten in this measurement location, tap “Open Excel”.
To return to the Main menu, tap “Back”.



* When the Measurement Portion Master is overwritten to a measurement location that has already been registered, the Measurement Portion Master and the Measurement Data in the location that was registered will be deleted. Therefore, take care when carrying out overwriting.
(The Master and the Data in measurement locations that were not overwritten will not be cleared.)

③ In the situation where the measurement portion has already been registered, the “Measurement Portion is already registered. Measurement Portion and Data will be deleted. Do you want to overwrite data?” message will be displayed. In the situation where you wish to overwrite the data, tap “Yes” to start the overwriting.

To discontinue the overwriting, tap “No”.



④ For the subsequent procedures, refer to “**4.6.1 Situation where the Master File Destination Setting is "Open Excel files from"**” and “**4.6.2 Situation where the Master File Destination Setting is "Always ask me where to open Excel files"**”.

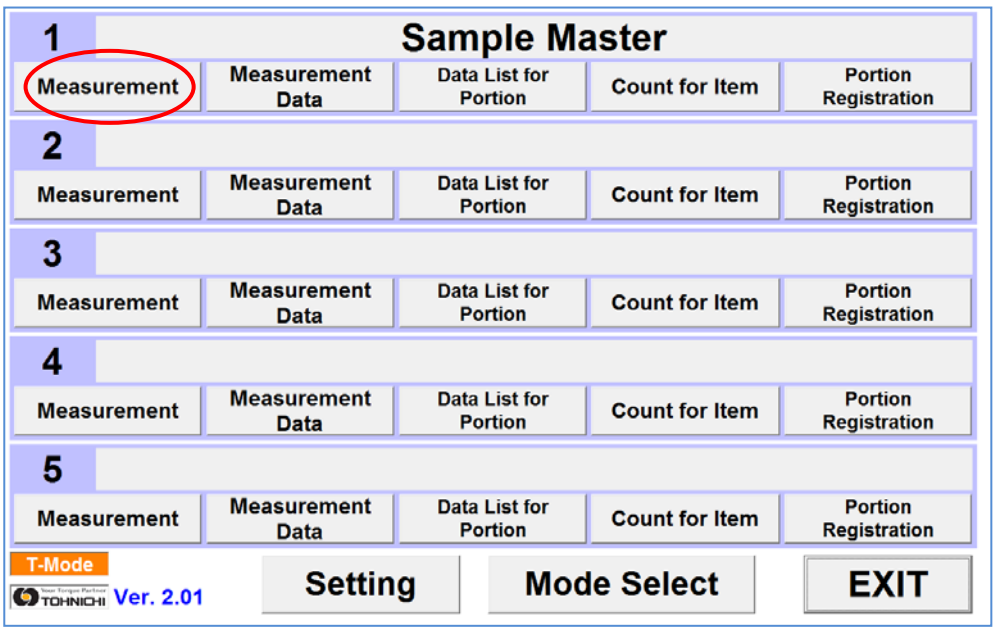
4.7 Measurement

Following the registered Measurement Portion Master, the measurement should be carried out using the Tohnichi digital products. This operating instruction describes based on the model CEM3-BT. The tightening measurement data will be sent to the PC using the Bluetooth communications, and the “Measured Torque”, “Judgment”, “Measurement Date”, and “Measurement Time” information will be saved. When the measurement of the spindles for all the portions in the Measurement Portion Master has been completed, the tightening Measurement Data should be saved as Measurement Log Data.

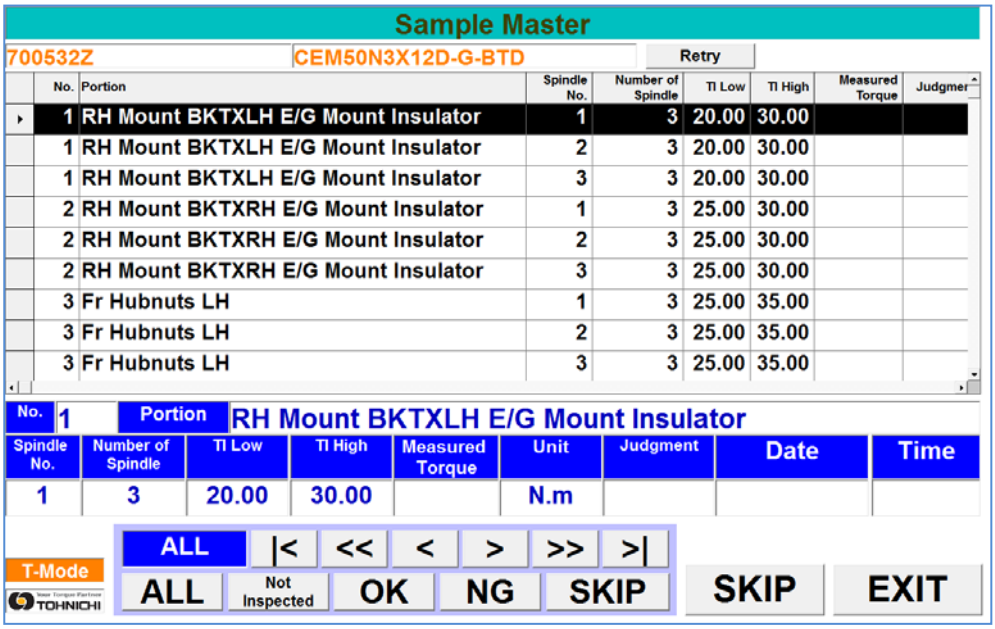
4.7.1 Measurement Start (Bluetooth Connection between the “Tohnichi digital products” and PC)

① Press the POWER button of the CEM3-BT that is to be used, and confirm that the CEM3-BT power has switched on and that the Bluetooth module “POWER” LED has lit in red. (For the detailed usage method, refer to the CEM3-BT operation manual.)
In the situation of using multiple CEM3-BT instruments, switch on the power of all the CEM3-BT units that are to be used.

② Tap “Measurement” in the Measurement location that has been registered in the Main menu.



③ The Measurement screen will be displayed.

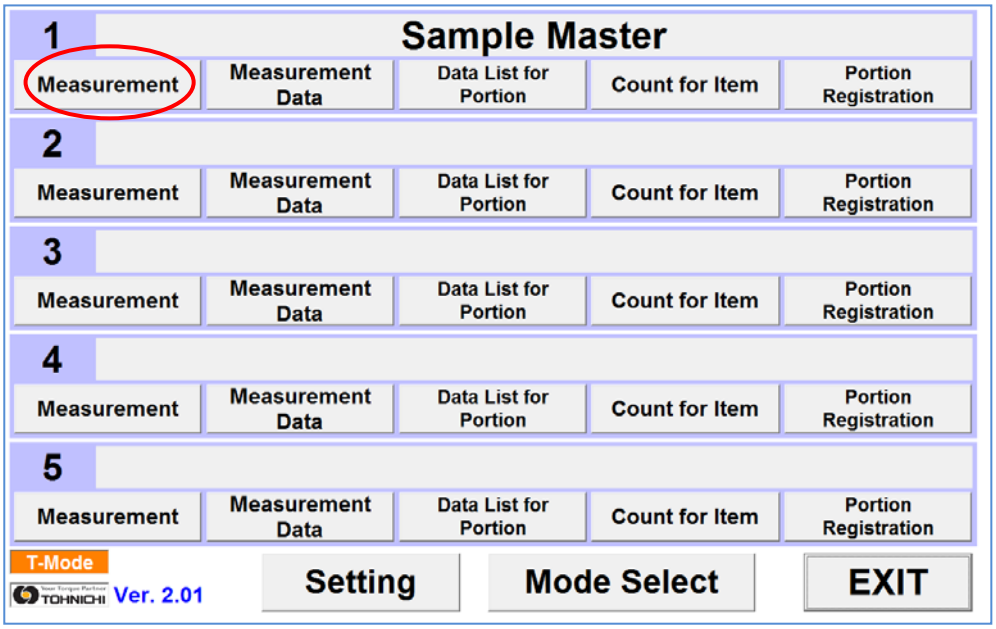


④ When the Measurement screen is displayed, the Bluetooth connection with the CEM3-BT that was set in "**4.4.1 Tool Setting**" will be made. Confirm that the "STATUS" LED of the CEM3-BT Bluetooth module that has been set is lit in blue. In the case where the LED does not light in blue, quit the Measurement screen and then enter the Measurement screen again.
In the situation where the Bluetooth module "STATUS" LED still does not light in blue, confirm the settings in "**3 Setting the Bluetooth Connection with the Tohnichi digital products** " and "**4.4.1 Tool Setting**".

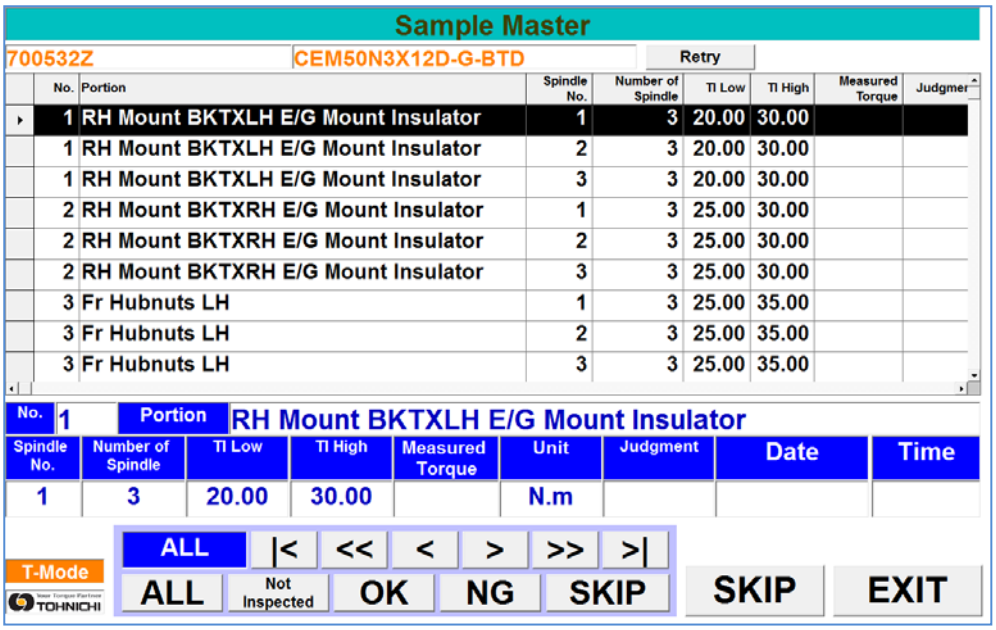
⑤ While the Measurement screen is being displayed, the CEM3-BT will remain in the condition where Bluetooth is connected. By tapping on "EXIT", the screen will return to the Main menu, the Bluetooth connection will be cut, and the Bluetooth module "STATUS" LED will switch off.

4.7.2 Measurement Work

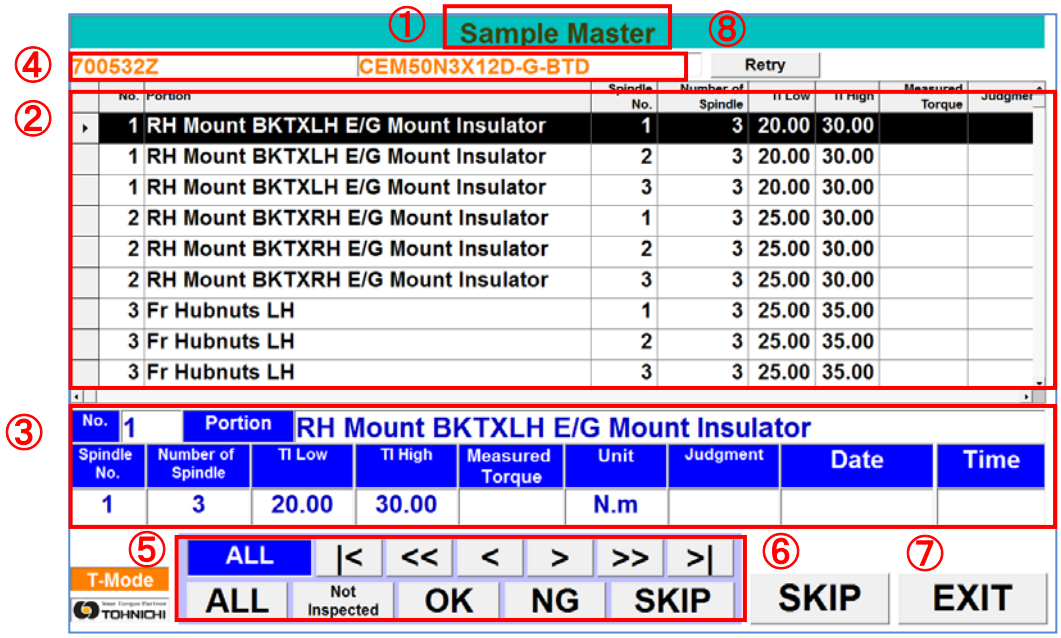
① Tap “Measurement” in a Measurement location that has been registered in the Main menu.



② The Measurement screen will be displayed.
To quit the measurement work, tap “EXIT”. The screen will return to the Main menu.



③ The Measurement Portion Master information that has been registered in the Measurement screen will be displayed.



① The item name of the registered Measurement Portion Master is displayed here.

② The registered Measurement Portion Master will be listed for each spindle.
"**No.**": This shows the registered Portion No.
"**Portion Name**": This is the registered Portion Name.
"**Spindle No.**": This is the portion's spindle No. (The number of each spindle)
"**Number of Spindles**": This is the portion's total number of spindles.
"**TI Low**": This is the portion's torque lower limit
"**TI High**": This is the portion's torque upper limit
"**Measured Torque**": The measured value measured by the CEM3-BT will be input here. When not yet measured, this will be "0.0".
"**Judgment**": The judgment of the measurement value that was input will be carried out based on the torque limits (L) (H). When not yet measured, this will be blank.
"**Date**": This shows the measurement date. When not yet measured, this will be blank.
"**Time**": This shows the measurement time. When not yet measured, this will be blank.

③ : This displays each piece of information of the spindle selected from the list.

④ : The tool No. and model name of the Spindle selected from the list is displayed.

⑤ : These are the List Display Format Switching buttons.
"**|<**": Tap here to return to the first spindle on the list.
"**<<**": Tap here to move up 10 spindles on the list.
"**<**": Tap here to move up one spindle on the list.
"**>**": Tap here to move down one spindle on the list.
"**>>**": Tap here to move down 10 spindles on the list.
"**>|**": Tap here to move to the last spindle on the list.
"**ALL**": This displays a list of all the spindles in the registered Measurement Portion Master.
"**Not Inspected**": This displays a list of only the spindles that have not yet been measured.
"**OK**": This displays a list of only the spindles that have an "OK" judgment.
"**NG**": This displays a list of only the spindles that have an "NG" judgment.
"**SKIP**": This displays a list of only the spindles that were skipped.
Blue column: This shows the condition of the List Display Format.

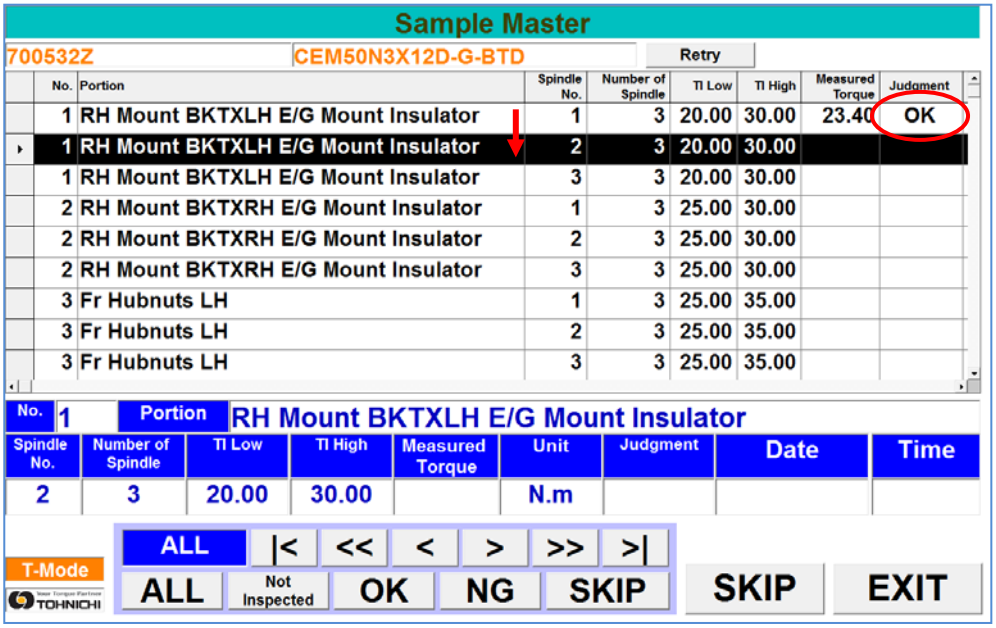
⑥ : Tap here to skip the selected spindle.

⑦ : This quits the Measurement Work.

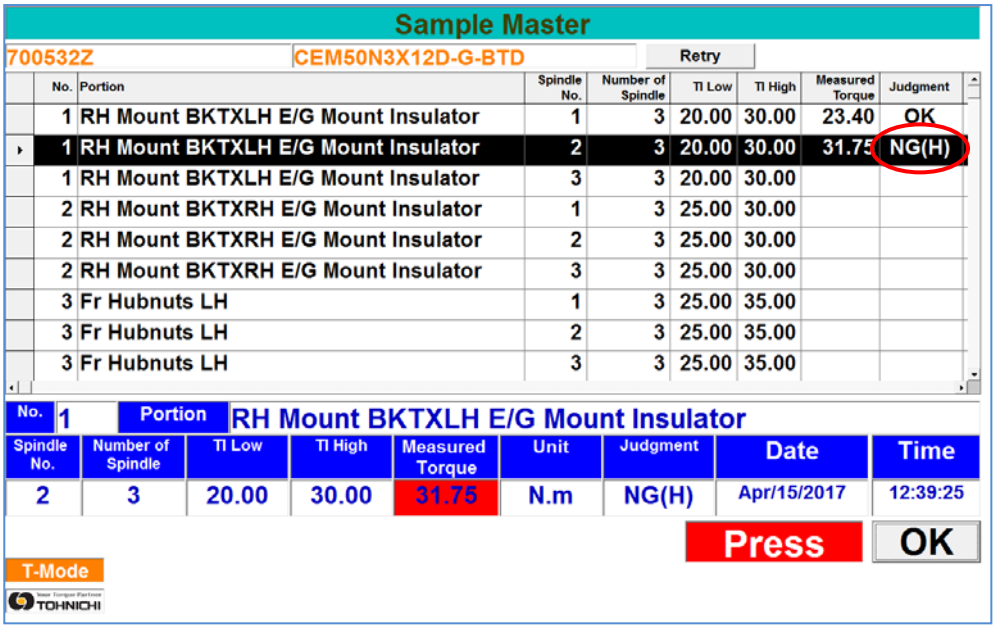
⑧ : Reconnect with all the tools you use.

④ Send the measurement data from the CEM3-BT. The “Measured Torque”, “Judgment", “Date”, and “Time” will be input to the spindle that is selected from the list on the screen.

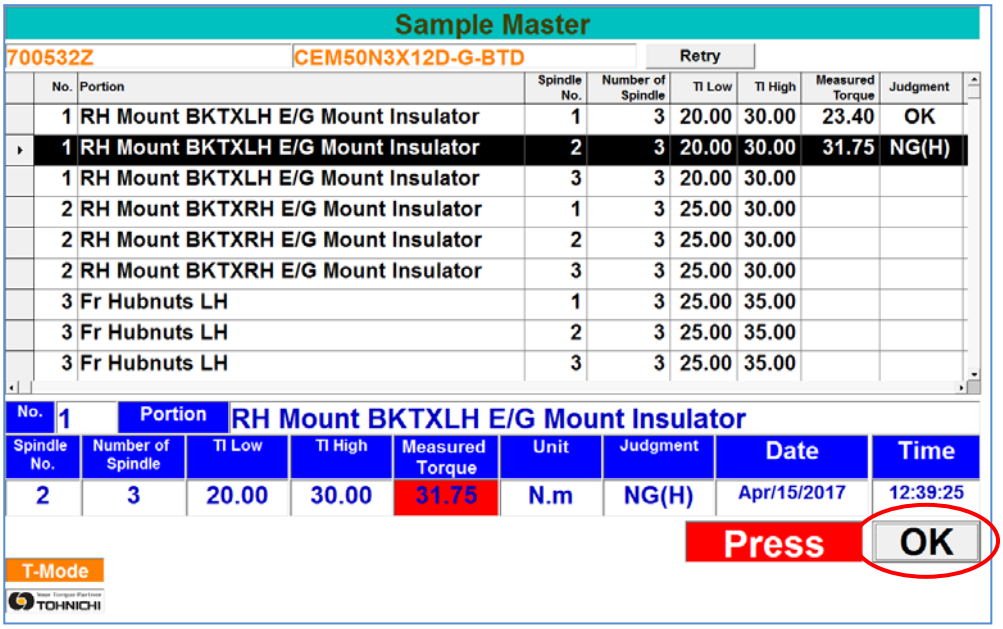
⑤ When the measured value is within the torque limit values, the “Judgment” will become “OK”, and the display will move automatically to the next spindle.
In tightening mode, the upper/lower limits of the next portion to be operated are transmitted from TDMS software to CEM3-BT. In case the next portion will be applied another tool, automatically connect to the next tool.
In measurement mode, it is unavailable to Upper/Lower limit setting by wireless.



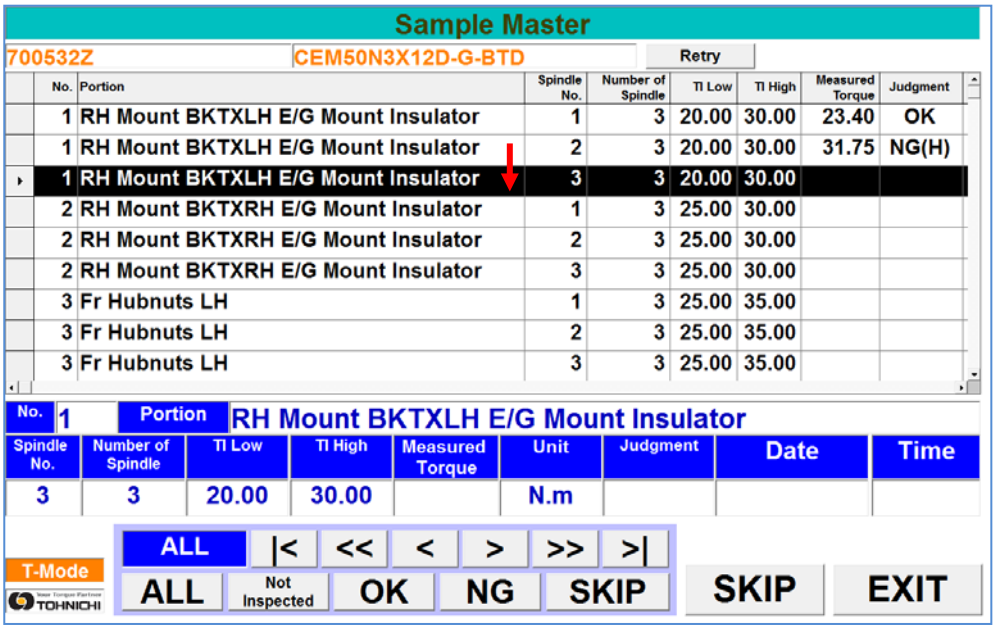
⑥ When the measured value is lower than the torque value lower limit, the “Judgment” will become “NG(L)”, and when the measured value is higher than the torque value upper limit, the “Judgment” will become “NG(H)”. The screen will become locked, and will not move on to show the next spindle.
When the Measurement Data is sent again, the measurement data will be overwritten. The locked condition will be maintained until the measurement value judgment becomes “OK”.



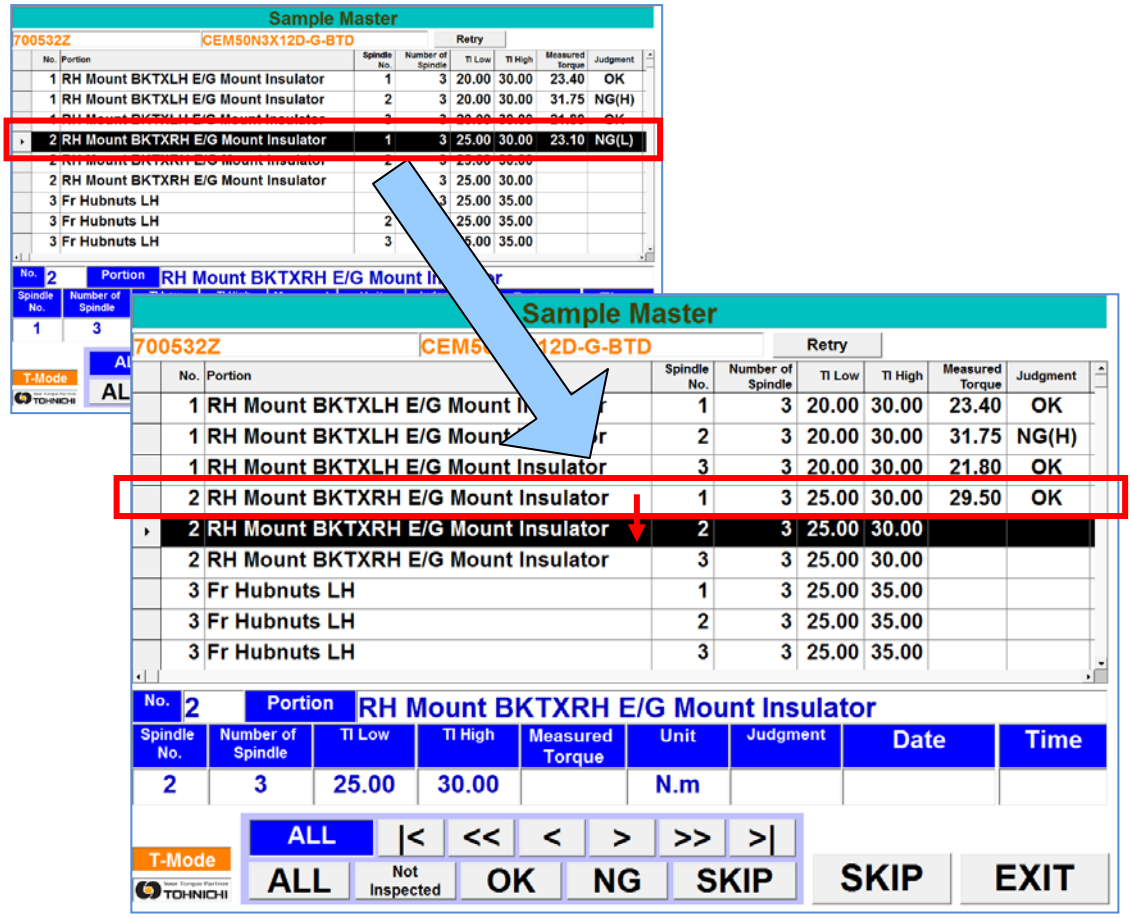
⑦ In the situation where the NG data is to be retained while moving on to the next spindle, tap “OK” next to “Press” that is displayed on the screen.



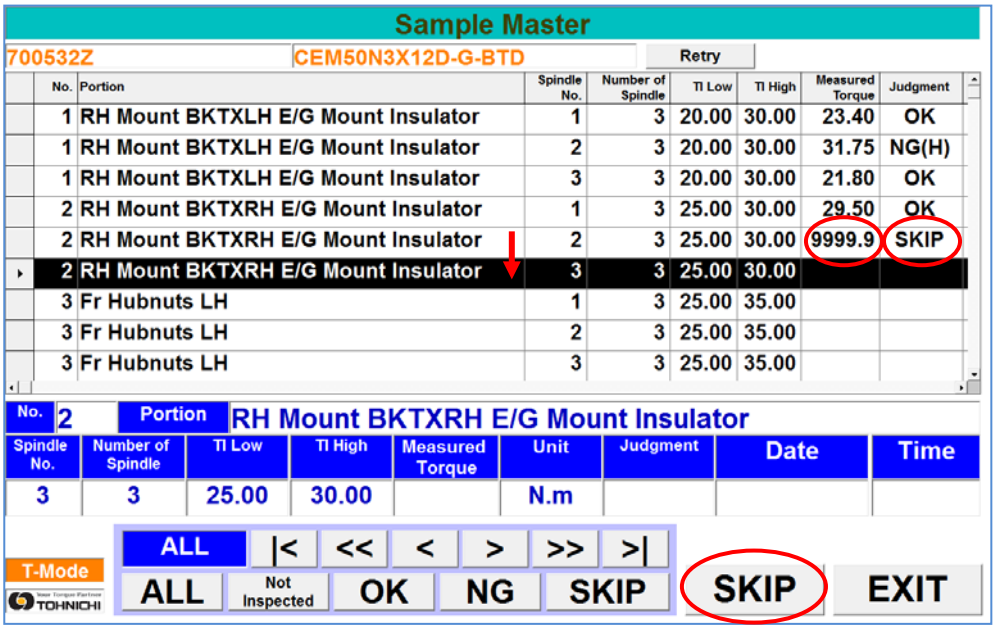
The screen moves on to show the next spindle while maintaining the OK/NG Judgment as “NG”.



⑧ The measurement data sent from the CEM3-BT will be input to the spindle that is selected in the list. In the situation of NG data, or when you wish to carry out a measurement again, select the spindle that you wish to measure from the list and send the measurement data from the CEM3-BT. The “Measured Torque”, “Judgment", “Date”, and “Time” information will be overwritten.



⑨ In the case where you do not wish to measure the selected spindle at the moment and would like to skip to the next spindle, tap “SKIP”. The measured value will be input as “9999.9”, the Judgment will be input as “SKIP”, and the screen will move to show the next spindle.

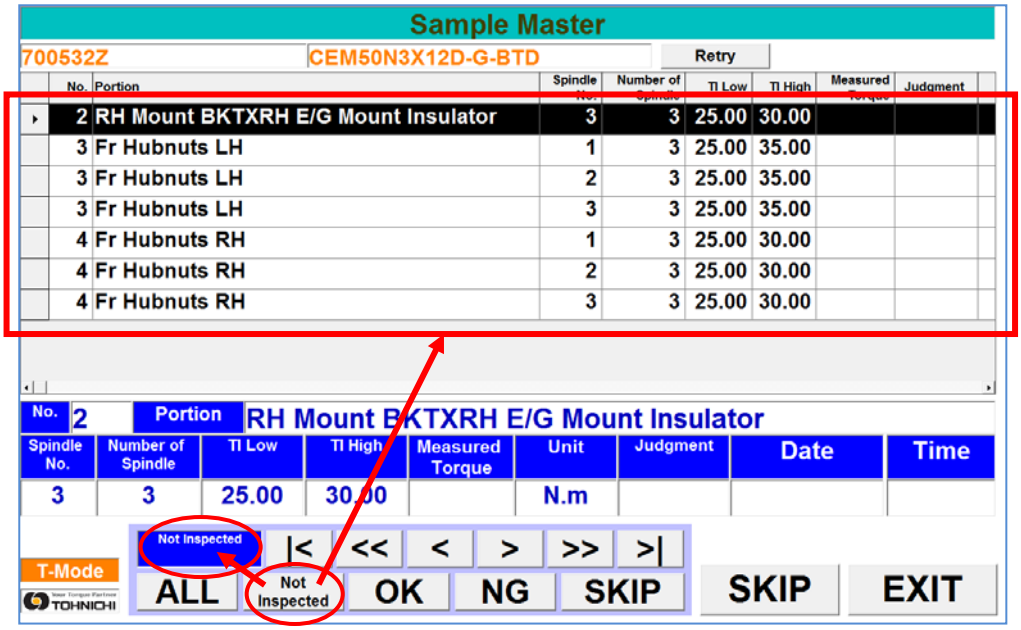


4.7.3 Switching the Measurement Screen Lists

By tapping on the List Display Format Switching buttons, the format of the Measurement Portion Master displayed in the list will change.

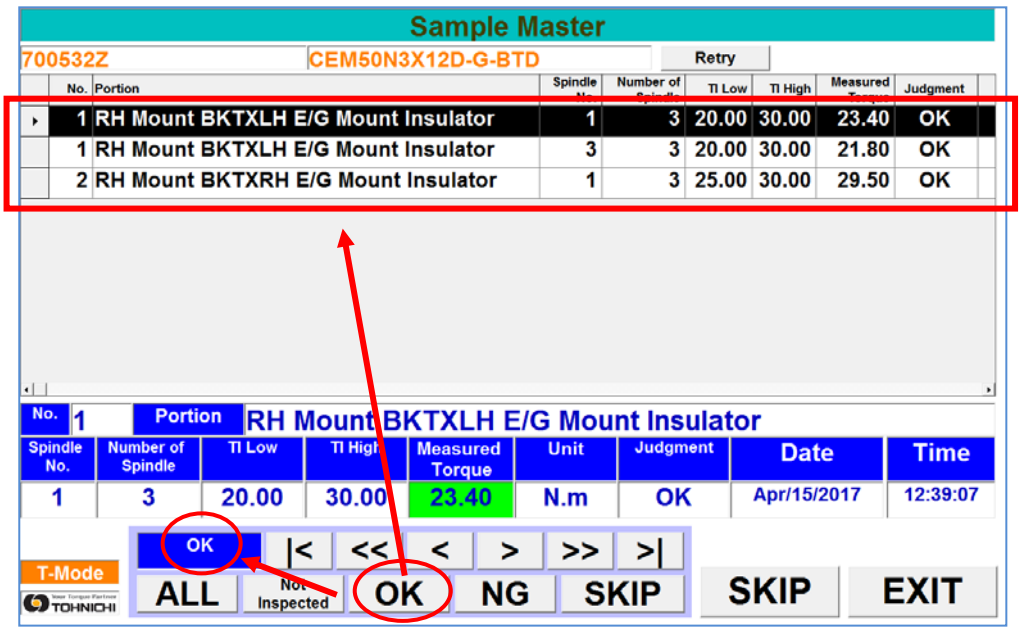
Normally, the “ALL” format is displayed which displays all the data.

① By tapping on “Not Inspected”, the list will only display the data that has not yet been inspected. Further, the blue column that shows the list display format condition will switch to show “Not Inspected”.

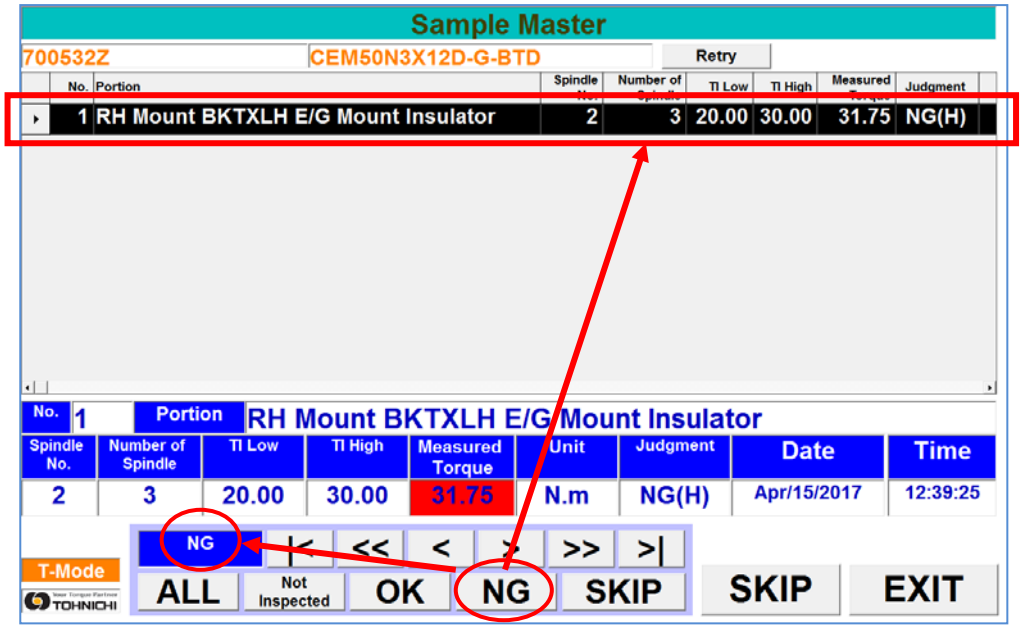


② By tapping on “OK”, the list will only display the OK judgment data. Further, the blue column that shows the list display format condition will switch to show “OK”.

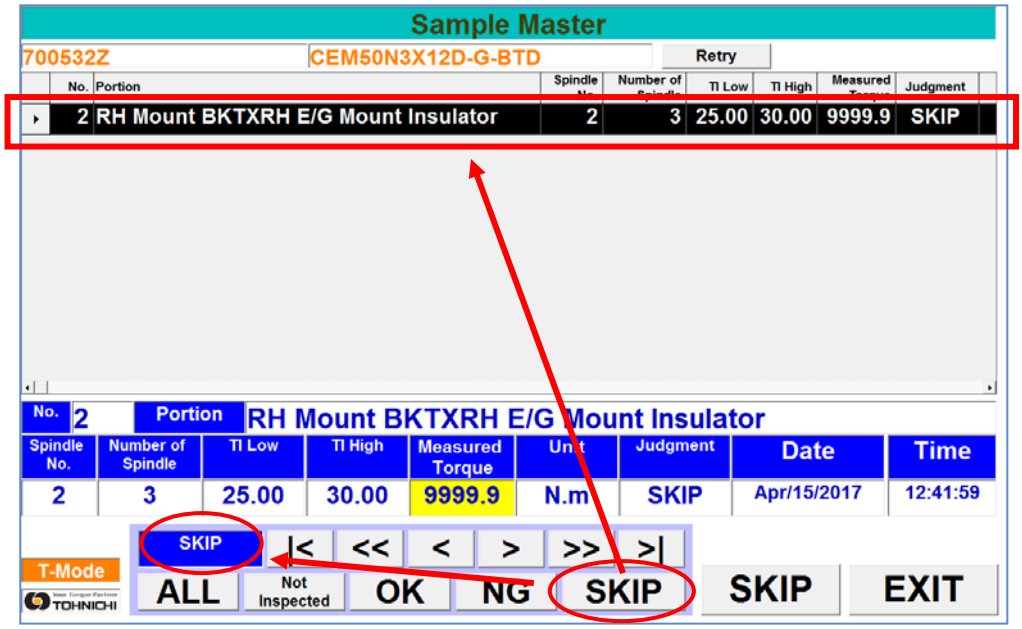
In addition, when the OK/NG Judgment of the selected spindle is OK, the measured torque value column will be displayed in green.



③ By tapping on “NG”, the list will only display the NG judgment data. Further, the blue column that shows the list display format condition will switch to show “NG”.
In addition, when the OK/NG Judgment of the selected spindle is NG, the measured torque value column will be displayed in red.

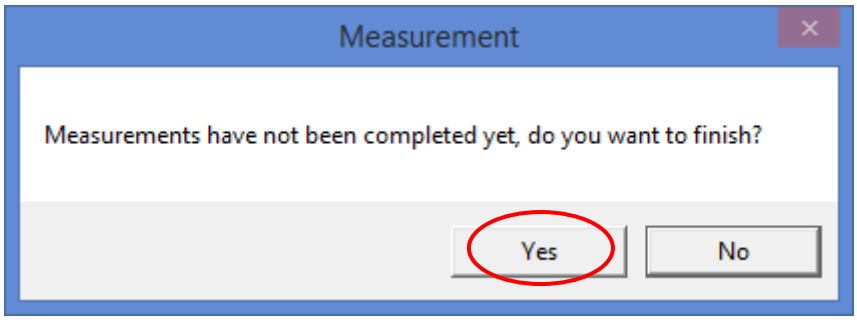


④ By tapping on “SKIP”, the list will only display the data that has been skipped. Further, the blue column that shows the list display format condition will switch to show “SKIP”.
In addition, when the selected spindle has been skipped, the measured torque value column will be displayed in yellow as “9999.9”.



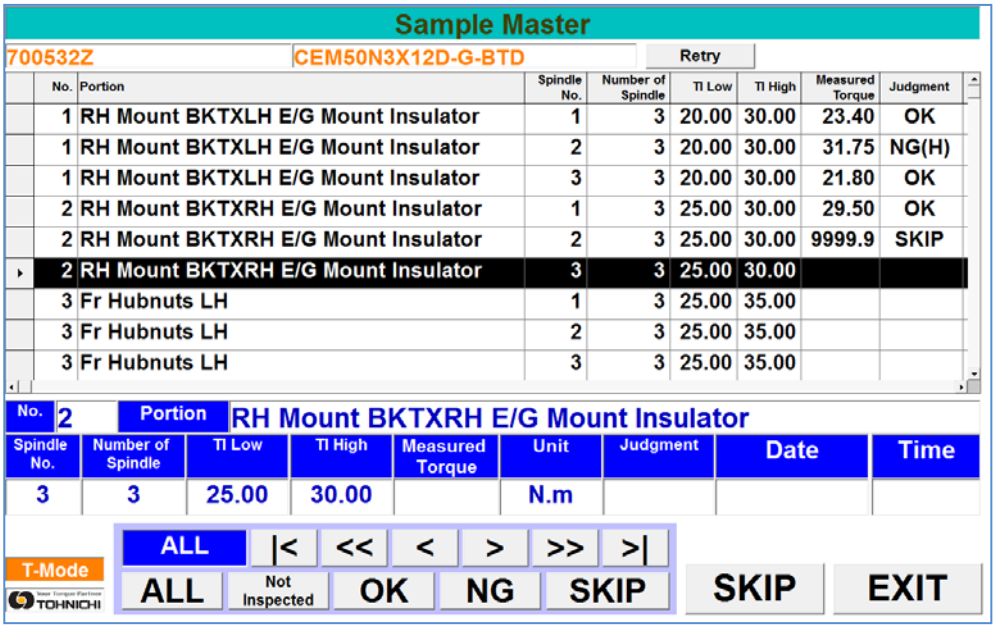
4.7.4 Measurement Finish (Measurement Data Saving)

① If “EXIT” is tapped in the condition where the measurement of all of the spindles in the registered Measurement Portion Master has not yet been completed, the “Measurements have not been completed yet, do you want to finish?” message will be displayed. In the case where you wish to finish, tap “Yes”.
In the case where you do not wish to finish, tap “No”.

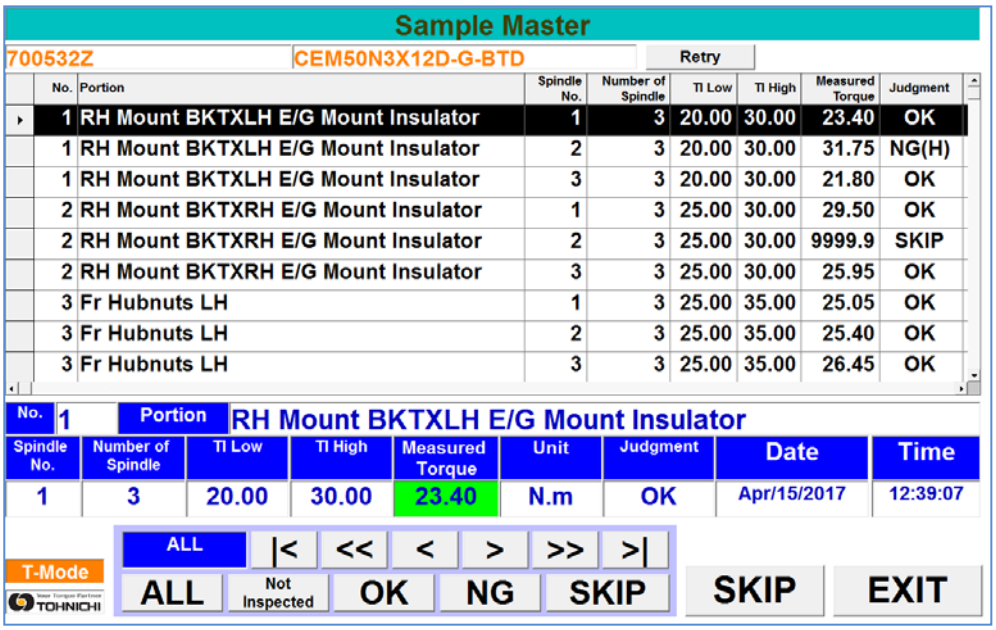


* Even if the measurement is finished in this condition, the Measurement Work Data will not be stored as the Measurement Data. It will be necessary to complete the measurement of all the spindles contained in the Measurement Portion Master that was registered.
If there is “Not Inspected” data for even one spindle, it will be considered that all of the measurements have not been completed. In the situation where a spindle is not to be measured, use “SKIP” to skip the spindle measurement.

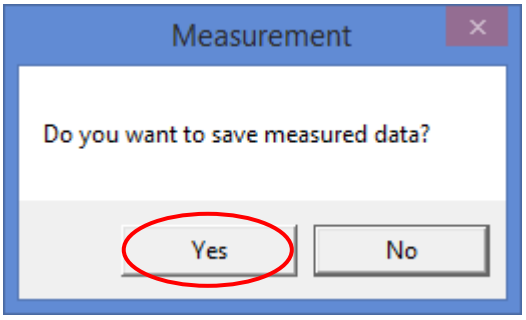
* Even if the measurement is finished in this condition, the Measurement Work Data that was being implemented will not be cleared. In this case, quit the Measurement, then re-enter the Measurement from the Main menu. This will allow the work to be started from the previously discontinued condition.



② When the measurement of the last spindle in the Measurement Portion Master that was registered has been completed, the screen will automatically return to the first spindle.



③ When “EXIT” is tapped in the condition where the measurement of all the spindles in the Measurement Portion Master that was registered has been completed, the “Do you want to save measured data?” message will be displayed. When the data is to be saved, tap “Yes”. The Measurement Data will be saved, and the screen will return to the Main menu.
In the case where the data saving is to be discontinued, tap “No”. The screen will return to the Main menu without saving the Measurement Data.



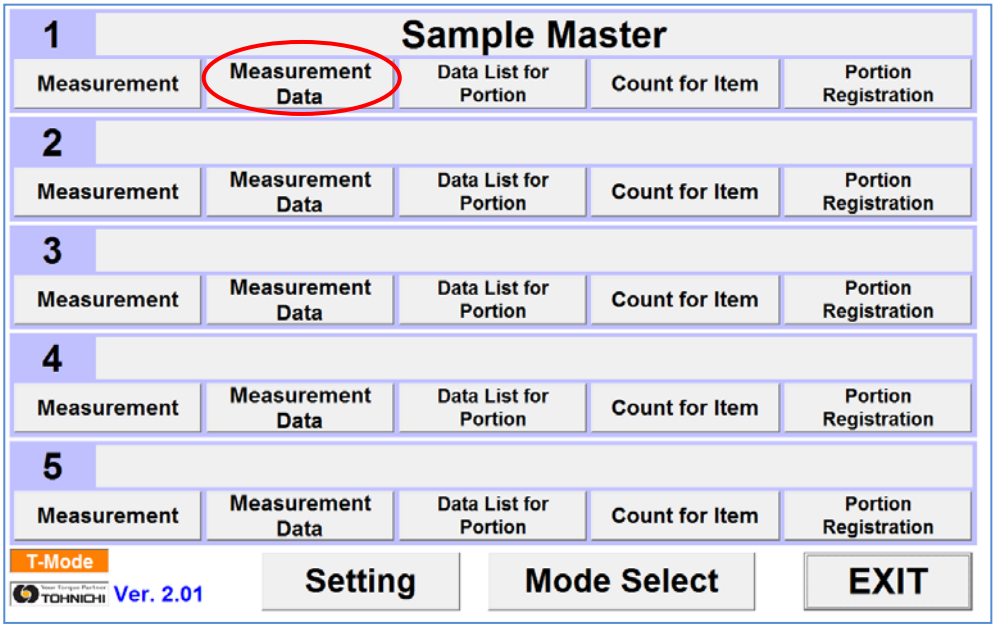
* Even after pressing “No” to return to the Main menu without saving the Measurement Data, the Measurement Work that was being carried out will not be cleared. When Measurement is entered again from the Main menu, the Measurement Work Data will be displayed in the condition where all of the spindle measurements have been completed.

4.8 Measurement Data Inquiry

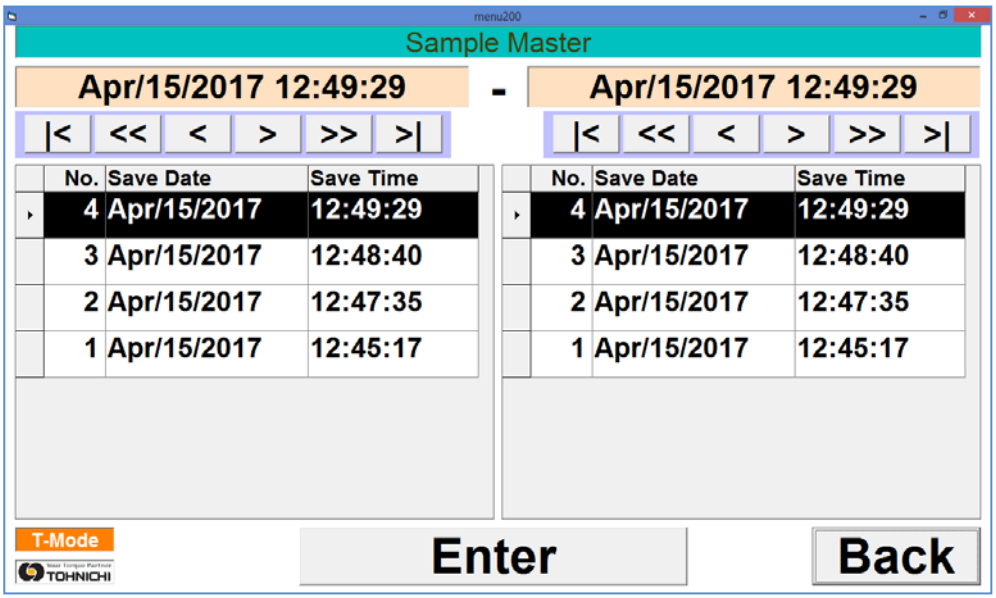
This carries out inquiry of the Measurement Data. The Measurement Data of a selected period will be listed, and will be output to an Excel file. The setting of the output destination of the Excel file should be carried out in "**4.4.3 Save Excel File Destination Setting**".

4.8.1 Measurement Data List Inquiry

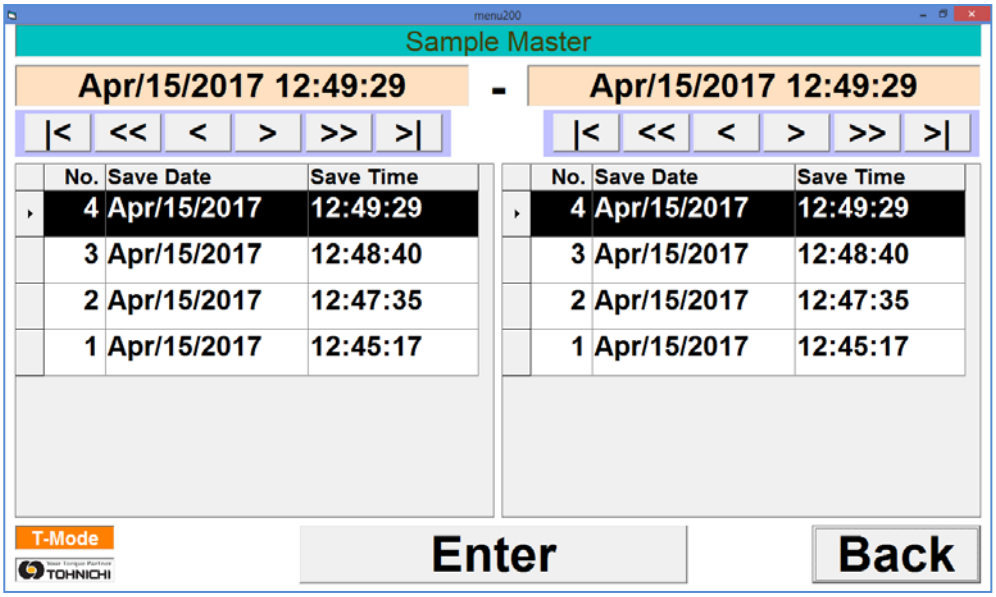
① Tap "Measurement Data" of the measurement location in the Main menu where the Measurement Data was saved.



② The Measurement Data Inquiry selection screen will be displayed.
To finish the Measurement Data Inquiry, tap "Back" to return to the Main menu.

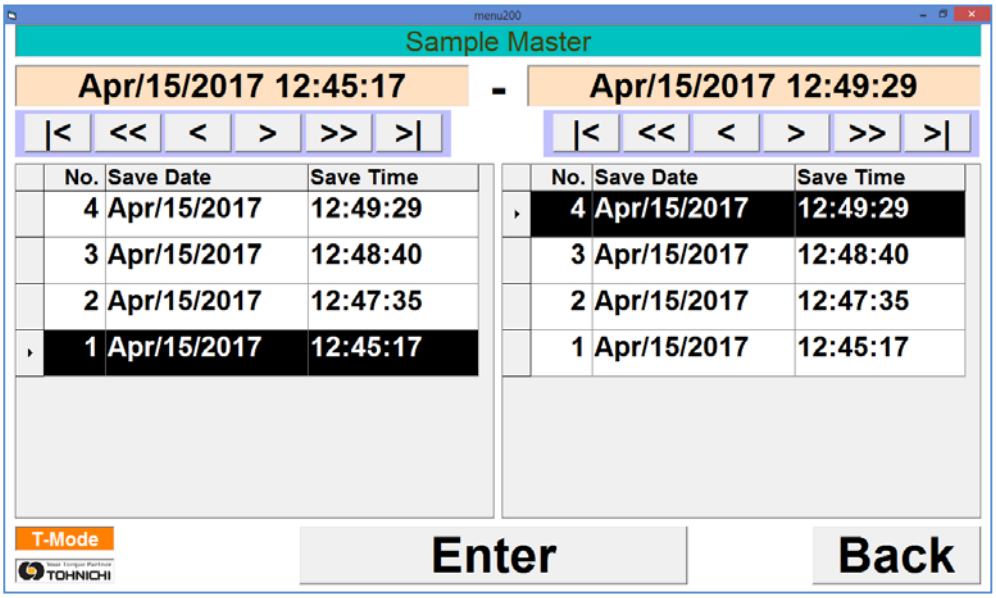


③ Selection of the period for the Measurement Data Inquiry should be carried out. The list shows the dates and times that the Measurement Data was stored, with the left side list showing the period start date and the right side list showing the period end date.
The lists are shown in descending order, so that the most recent Measurement Data that was saved last is displayed at the top of the list.
In the situation where the Measurement Data Inquiry is to be carried out for an optional saving date and time (only one saving date and time) without specifying a period, select the same storage date and time in the right and left columns as shown in the figure below.

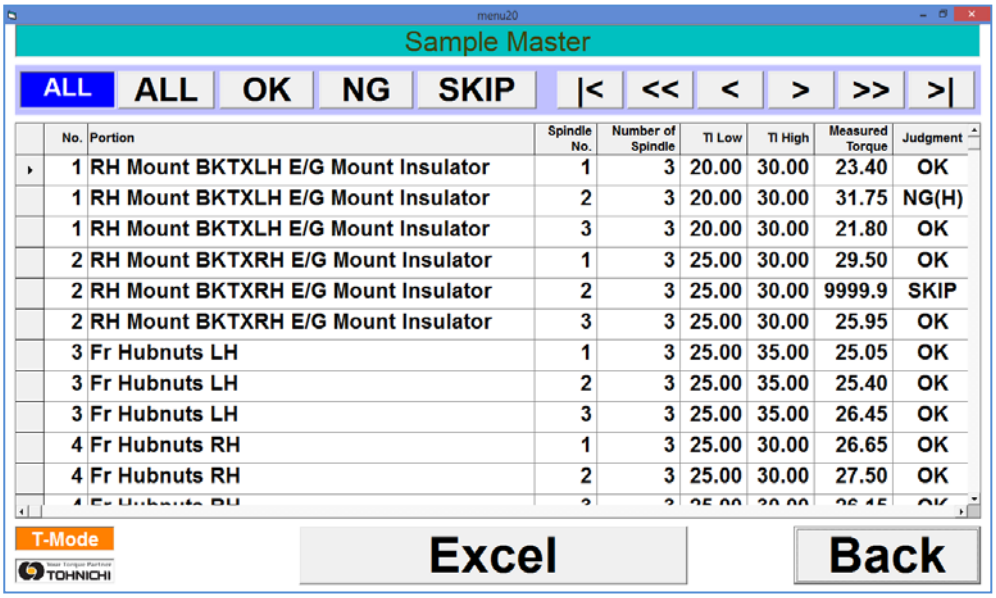


"**|<**": Tap here to return to the first portion.
"**<<**": Tap here to move up 10 portions.
"**<**": Tap here to move up 1 portion.
"**>**": Tap here to move down 1 portion.
"**>>**": Tap here to move down 10 portions.
"**>|**": Tap here to move to the last portion.

④ In the situation where the Measurement Data Inquiry is to be carried out by specifying a period, select an optional period as shown in the figure below. When a storage date and time is selected from the list, the display shown in the column above with the light orange color will switch to display the storage date and time of the selected data.



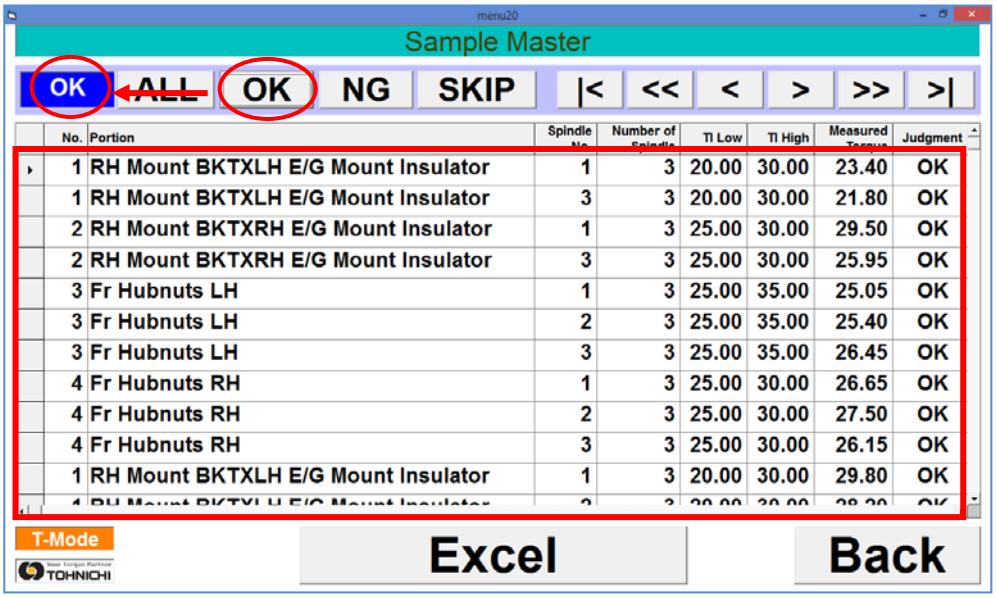
⑤ The Measurement Data from the selected period will be displayed.



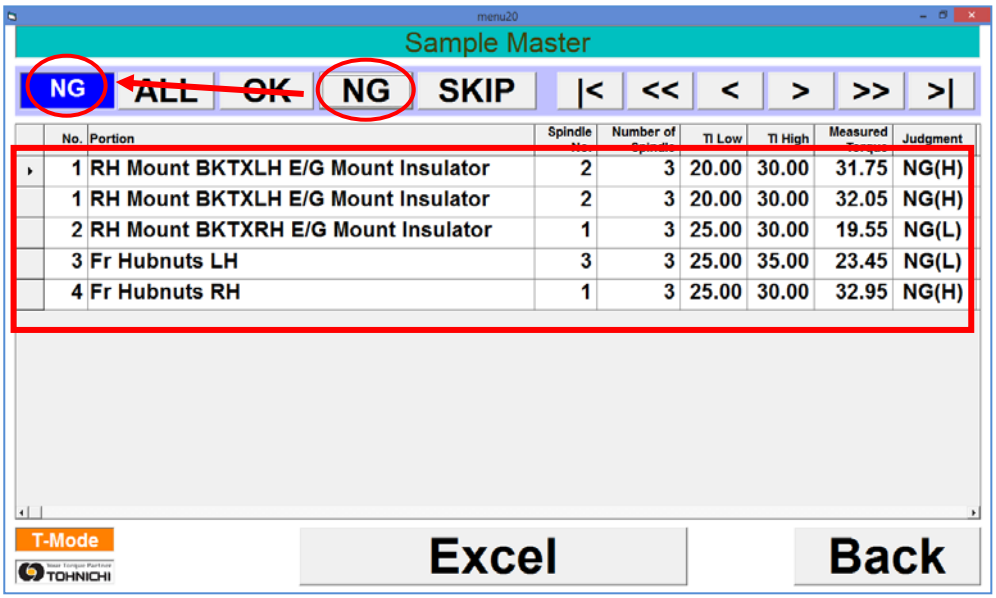
"**|<**": Tap here to return to the first portion.
"**<<**": Tap here to move up 10 portions.
"**<**": Tap here to move up 1 portion.
"**>**": Tap here to move down 1 portion.
"**>>**": Tap here to move down 10 portions.
"**>|**": Tap here to move to the last portion.

⑥ By tapping on the List Display Format Switching buttons, it will be possible to switch the Measurement Data displayed on the list.
Normally, the "ALL" format is displayed which displays all the data.

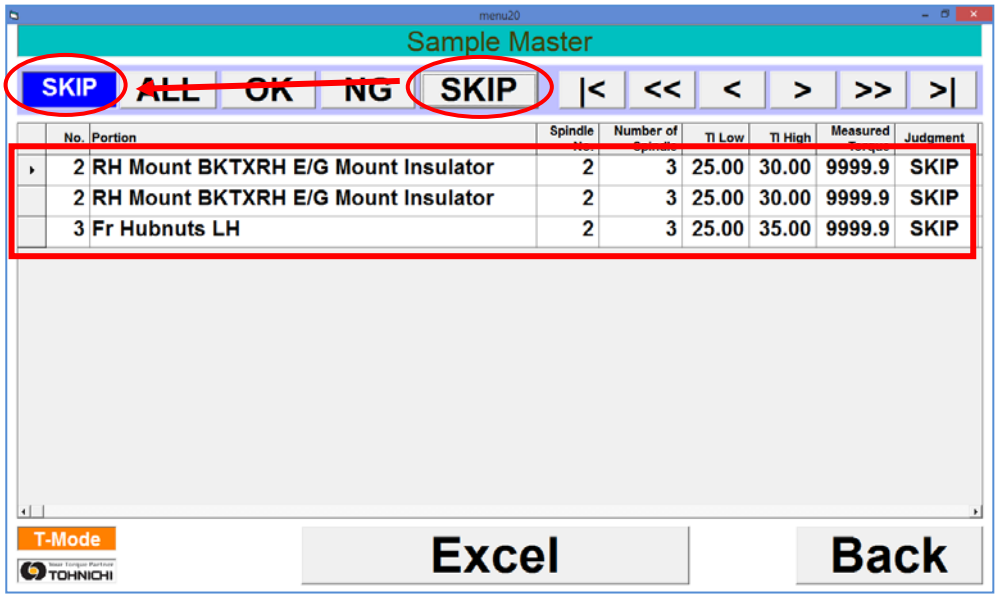
⑦ By tapping on "OK", the list will only display the OK judgment data. Further, the blue column that shows the list display format condition will switch to show "OK".



⑧ By tapping on “NG”, the list will only display the NG judgment data. Further, the blue column that shows the list display format condition will switch to show “NG”.

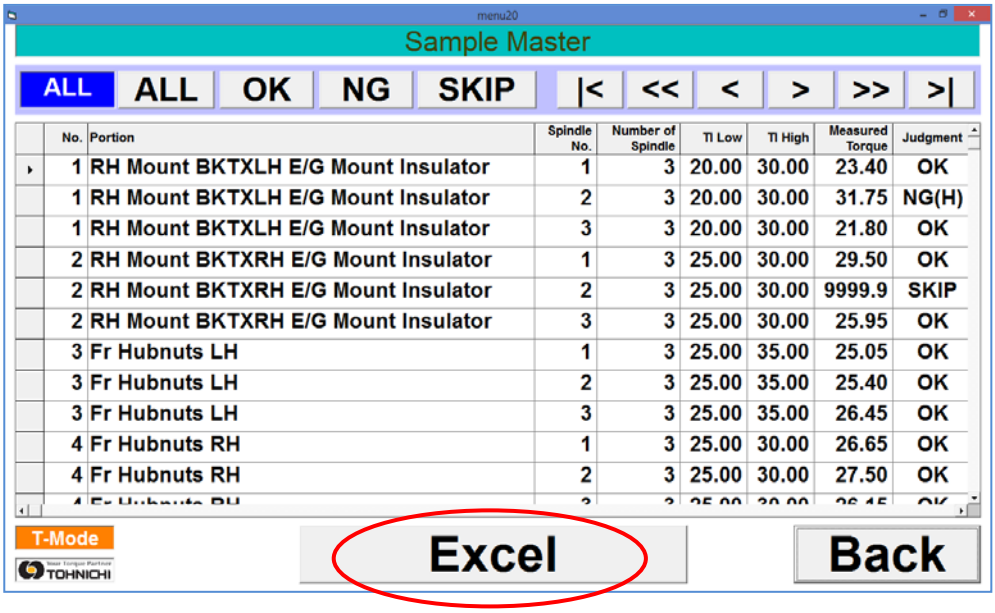


⑨ By tapping “SKIP”, the list will only display the data that has been skipped. Further, the blue column that shows the list display format condition will switch to show “SKIP”.



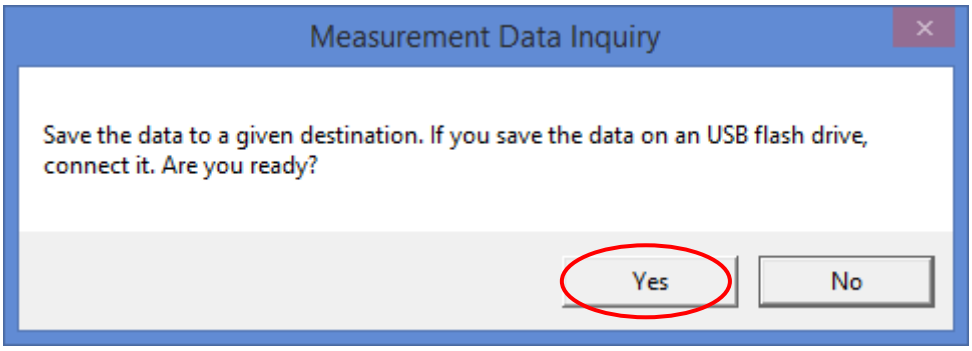
4.8.2 Situation where the Save Excel File Destination Setting is "Save files to"

① Tap “Excel” to output the Measurement Data that is displayed on the list to an Excel file.

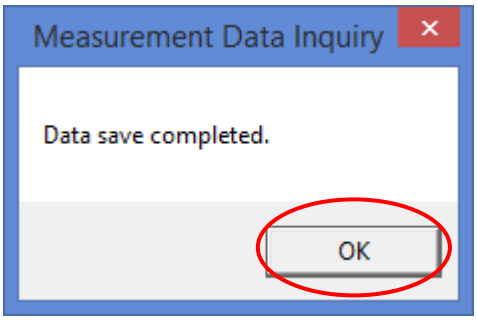


No.	Portion	Spindle No.	Number of Spindle	TI Low	TI High	Measured Torque	Judgment
1	RH Mount BKTXLH E/G Mount Insulator	1	3	20.00	30.00	23.40	OK
1	RH Mount BKTXLH E/G Mount Insulator	2	3	20.00	30.00	31.75	NG(H)
1	RH Mount BKTXLH E/G Mount Insulator	3	3	20.00	30.00	21.80	OK
2	RH Mount BKTXRH E/G Mount Insulator	1	3	25.00	30.00	29.50	OK
2	RH Mount BKTXRH E/G Mount Insulator	2	3	25.00	30.00	9999.9	SKIP
2	RH Mount BKTXRH E/G Mount Insulator	3	3	25.00	30.00	25.95	OK
3	Fr Hubnuts LH	1	3	25.00	35.00	25.05	OK
3	Fr Hubnuts LH	2	3	25.00	35.00	25.40	OK
3	Fr Hubnuts LH	3	3	25.00	35.00	26.45	OK
4	Fr Hubnuts RH	1	3	25.00	30.00	26.65	OK
4	Fr Hubnuts RH	2	3	25.00	30.00	27.50	OK

② The “Save the data to a given destination. If you save the data on an USB flash drive, connect it. Are you ready?” message will be displayed. To start the data output, tap “Yes”. The Measurement Data will be output as an Excel file.
To discontinue the data output, tap “No”.

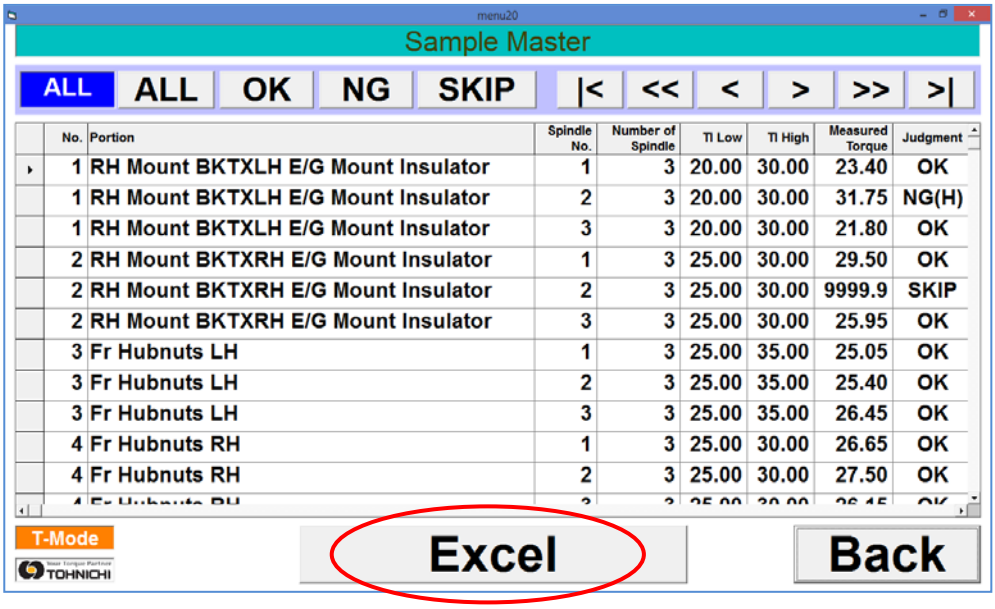


⑩ When the output has been completed, the “Data save completed.” message will be displayed. Tap “OK”.

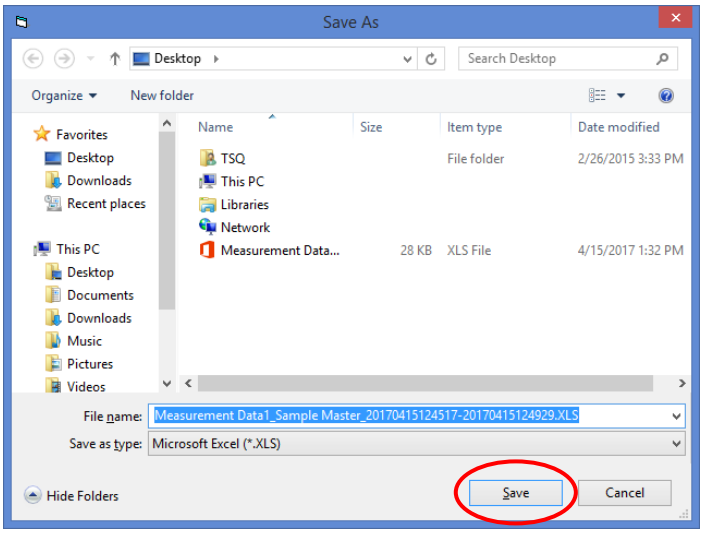


4.8.3 Situation where the Save Excel File Destination Setting is "Always ask me where to save files"

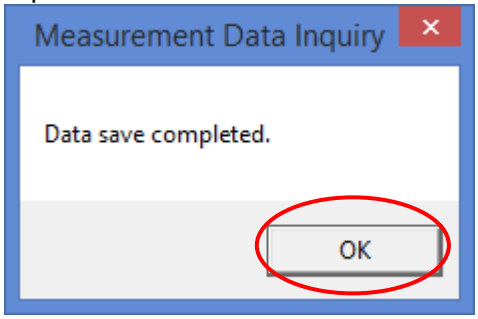
① Tap “Excel” to output the Measurement Data that is displayed on the list to an Excel file.



② A window for specifying the storage location of the Excel file will be displayed. Specify the saving destination and tap “Save” to output the Measurement Data as an Excel file.
To discontinue the data saving, tap “Cancel”.

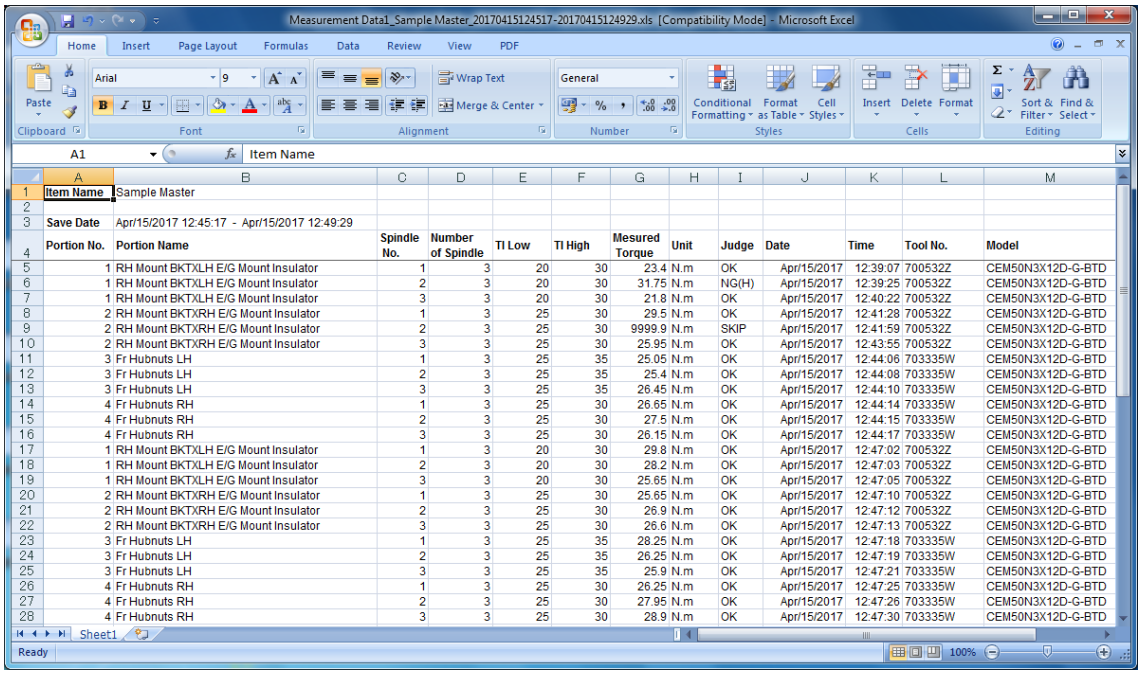


③ When the output has been completed, the “Data save completed.” message will be displayed. Tap “OK”.



4.8.4 Measurement Data (Excel File)

① Open the Measurement Data Excel file that was output.
The Measurement Data for each spindle has been input.



Portion No.	Portion Name	Spindle No.	Number of Spindle	TI Low	TI High	Mesured Torque	Unit	Judge	Date	Time	Tool No.	Model
1	RH Mount BKTXLH E/G Mount Insulator	1	3	20	30	23.4	N.m	OK	Apr/15/2017	12:39:07	700532Z	CEM50N3X12D-G-BTD
1	RH Mount BKTXLH E/G Mount Insulator	2	3	20	30	31.75	N.m	NG(H)	Apr/15/2017	12:39:25	700532Z	CEM50N3X12D-G-BTD
1	RH Mount BKTXLH E/G Mount Insulator	3	3	20	30	21.8	N.m	OK	Apr/15/2017	12:40:22	700532Z	CEM50N3X12D-G-BTD
2	RH Mount BKTXRH E/G Mount Insulator	1	3	25	30	29.5	N.m	OK	Apr/15/2017	12:41:28	700532Z	CEM50N3X12D-G-BTD
2	RH Mount BKTXRH E/G Mount Insulator	2	3	25	30	9999.9	N.m	SKIP	Apr/15/2017	12:41:59	700532Z	CEM50N3X12D-G-BTD
2	RH Mount BKTXRH E/G Mount Insulator	3	3	25	30	25.95	N.m	OK	Apr/15/2017	12:43:55	700532Z	CEM50N3X12D-G-BTD
3	Fr Hubnuts LH	1	3	25	35	25.05	N.m	OK	Apr/15/2017	12:44:06	703335W	CEM50N3X12D-G-BTD
3	Fr Hubnuts LH	2	3	25	35	25.4	N.m	OK	Apr/15/2017	12:44:08	703335W	CEM50N3X12D-G-BTD
3	Fr Hubnuts LH	3	3	25	35	26.45	N.m	OK	Apr/15/2017	12:44:10	703335W	CEM50N3X12D-G-BTD
4	Fr Hubnuts RH	1	3	25	30	26.65	N.m	OK	Apr/15/2017	12:44:14	703335W	CEM50N3X12D-G-BTD
4	Fr Hubnuts RH	2	3	25	30	27.5	N.m	OK	Apr/15/2017	12:44:15	703335W	CEM50N3X12D-G-BTD
4	Fr Hubnuts RH	3	3	25	30	26.15	N.m	OK	Apr/15/2017	12:44:17	703335W	CEM50N3X12D-G-BTD
1	RH Mount BKTXLH E/G Mount Insulator	1	3	20	30	29.8	N.m	OK	Apr/15/2017	12:47:02	700532Z	CEM50N3X12D-G-BTD
1	RH Mount BKTXLH E/G Mount Insulator	2	3	20	30	28.2	N.m	OK	Apr/15/2017	12:47:03	700532Z	CEM50N3X12D-G-BTD
1	RH Mount BKTXLH E/G Mount Insulator	3	3	20	30	25.65	N.m	OK	Apr/15/2017	12:47:05	700532Z	CEM50N3X12D-G-BTD
2	RH Mount BKTXRH E/G Mount Insulator	1	3	25	30	25.65	N.m	OK	Apr/15/2017	12:47:10	700532Z	CEM50N3X12D-G-BTD
2	RH Mount BKTXRH E/G Mount Insulator	2	3	25	30	26.9	N.m	OK	Apr/15/2017	12:47:12	700532Z	CEM50N3X12D-G-BTD
2	RH Mount BKTXRH E/G Mount Insulator	3	3	25	30	26.6	N.m	OK	Apr/15/2017	12:47:13	700532Z	CEM50N3X12D-G-BTD
3	Fr Hubnuts LH	1	3	25	35	28.25	N.m	OK	Apr/15/2017	12:47:18	703335W	CEM50N3X12D-G-BTD
3	Fr Hubnuts LH	2	3	25	35	26.25	N.m	OK	Apr/15/2017	12:47:19	703335W	CEM50N3X12D-G-BTD
3	Fr Hubnuts LH	3	3	25	35	25.9	N.m	OK	Apr/15/2017	12:47:21	703335W	CEM50N3X12D-G-BTD
4	Fr Hubnuts RH	1	3	25	30	26.25	N.m	OK	Apr/15/2017	12:47:25	703335W	CEM50N3X12D-G-BTD
4	Fr Hubnuts RH	2	3	25	30	27.95	N.m	OK	Apr/15/2017	12:47:26	703335W	CEM50N3X12D-G-BTD
4	Fr Hubnuts RH	3	3	25	30	28.9	N.m	OK	Apr/15/2017	12:47:30	703335W	CEM50N3X12D-G-BTD

"**Item Name**": This is the item name registered in the Measurement Portion Master.
"**Save Date**": This is the date and time that the Measurement Data was saved.
"**Portion No.**": This is the Portion No. registered in the Measurement Portion Master.
"**Portion Name**": This is the Portion Name registered in the Measurement Portion Master.
"**Spindle No.**": This is the Portion's spindle No. (The number of each spindle)
"**Number of Spindle**": This is the Portion's total number of spindles.
"**TI Low**": This is the torque value lower limit
"**TI High**": This is the torque value upper limit
"**Measured Torque**": This is the value measured by the CEM3-BT.
"**Unit**": Torque unit
"**Judge Code**": In the code, 1=OK, 2=NG(L), 3=NG(H), and 9=PASS.
"**Judge**": This is the judgment of the measurement value based on the torque value lower and upper limits.
"**Date**": This is the date of the measurement.
"**Time**": This is the time of the measurement.
"**Tool No.**": The tool No. which has been used for measurement.
"**Model**": The Tohnichi model name which has been used for measurement.

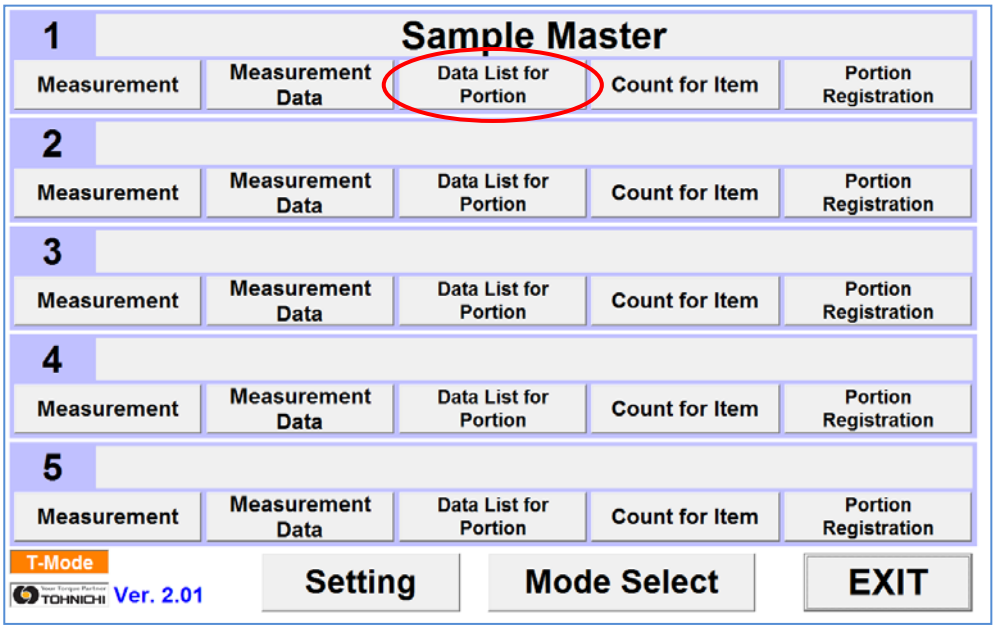
* The file name of the Measurement Data Excel file that was output will be as follows:
"Measurement Data + Measurement Registration Location" + "Item Name" + "Saving Date"
In the situation where the Measurement Data was selected as a period, the file name will be as follows:
"Measurement Data + Measurement Registration Location" + "Item Name" + "Saving Date (Period Start Date) + "Saving Date (Period End Date)"

4.9 Measurement Data List for Each Portion

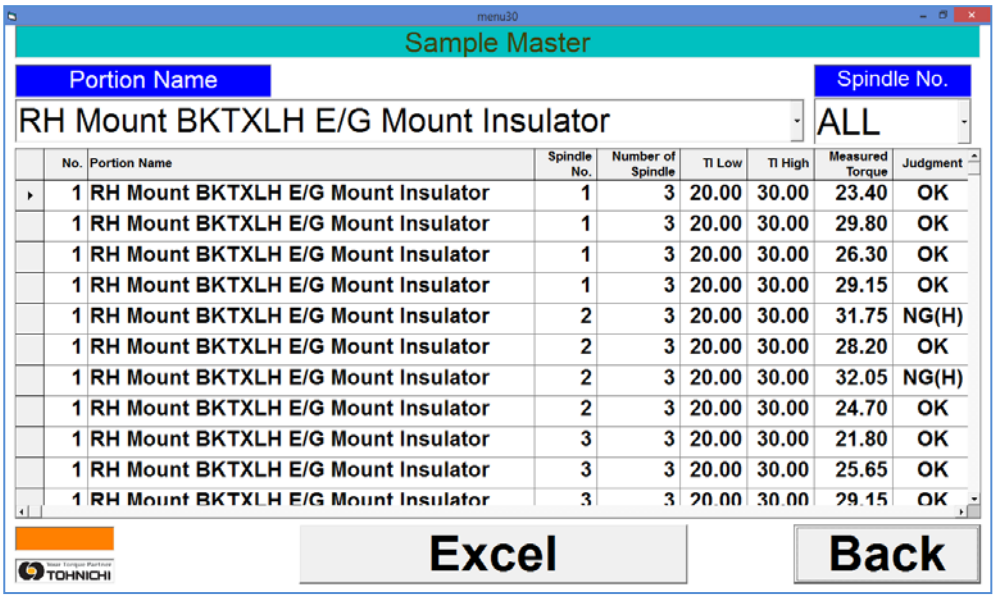
This selects Measurement Data portions that have been saved, and outputs an Excel file that calculates the “X-bar”, “σ”, “Cp”, and “Cpk”. The Excel file output destination setting should be carried out in “**4.4.3 Save Excel File Destination Setting**”.

4.9.1 Portion and Axis Selection

① Tap “Data List for Portions” in the measurement location of the Main menu where the Measurement Data was saved.

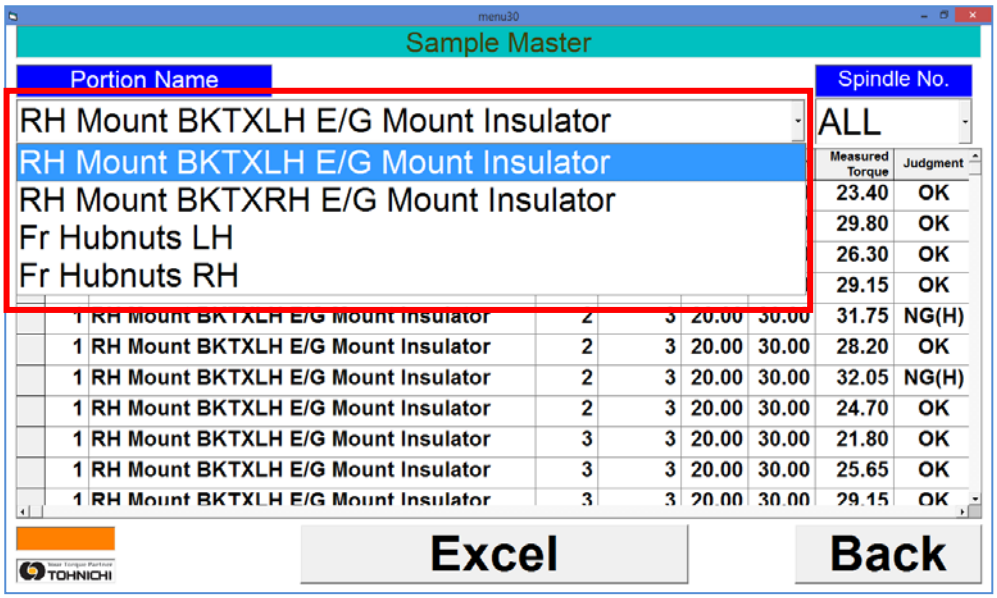


② The screen for selecting the portions and spindles registered in the Measurement Portion Master will be displayed.
To exit from Data List for Portions, tap “Back” to return to the Main menu.

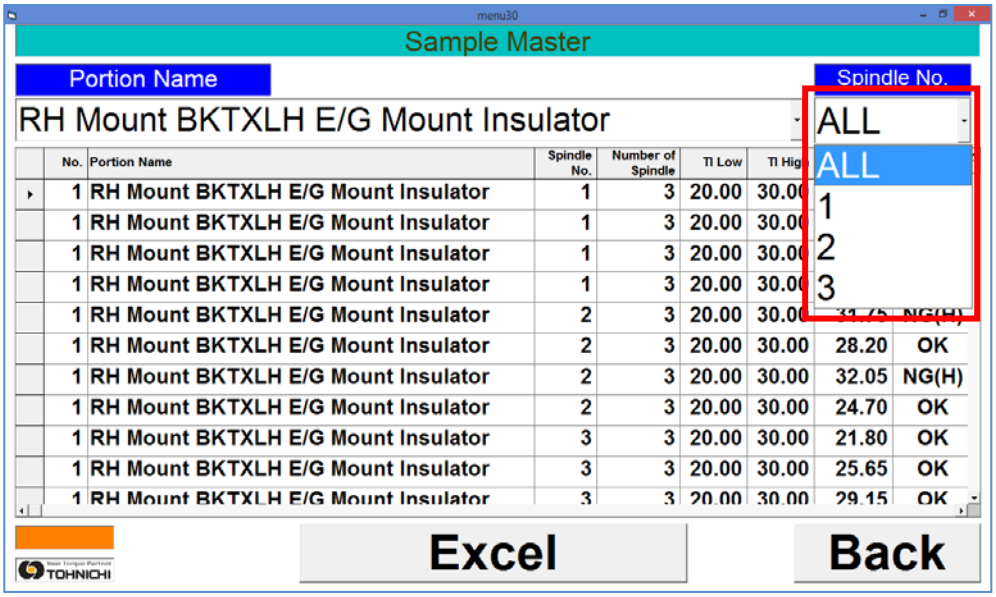


No.	Portion Name	Spindle No.	Number of Spindle	TI Low	TI High	Measured Torque	Judgment
1	RH Mount BKTXLH E/G Mount Insulator	1	3	20.00	30.00	23.40	OK
1	RH Mount BKTXLH E/G Mount Insulator	1	3	20.00	30.00	29.80	OK
1	RH Mount BKTXLH E/G Mount Insulator	1	3	20.00	30.00	26.30	OK
1	RH Mount BKTXLH E/G Mount Insulator	1	3	20.00	30.00	29.15	OK
1	RH Mount BKTXLH E/G Mount Insulator	2	3	20.00	30.00	31.75	NG(H)
1	RH Mount BKTXLH E/G Mount Insulator	2	3	20.00	30.00	28.20	OK
1	RH Mount BKTXLH E/G Mount Insulator	2	3	20.00	30.00	32.05	NG(H)
1	RH Mount BKTXLH E/G Mount Insulator	2	3	20.00	30.00	24.70	OK
1	RH Mount BKTXLH E/G Mount Insulator	3	3	20.00	30.00	21.80	OK
1	RH Mount BKTXLH E/G Mount Insulator	3	3	20.00	30.00	25.65	OK
1	RH Mount BKTXLH E/G Mount Insulator	3	3	20.00	30.00	29.15	OK

③ Select the portion that is to be output as a Data List for Portions Excel file from “Portion Name”.

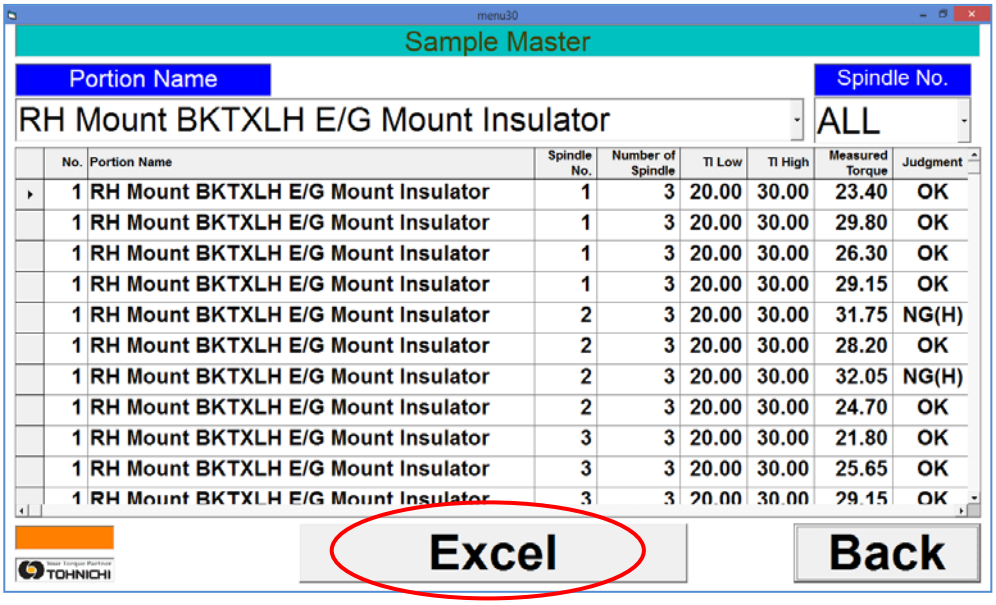


④ Select the spindles that have been registered in the portion from “Spindle No.”. Select “ALL” to select all the spindles.



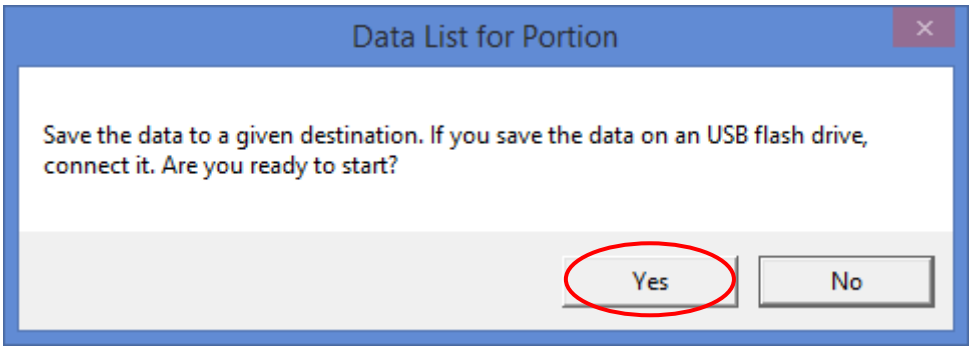
4.9.2 Situation where the Save Excel File Destination Setting is "Save files to"

① Tap “Excel” to output the Measurement Data displayed in the list to an Excel file.

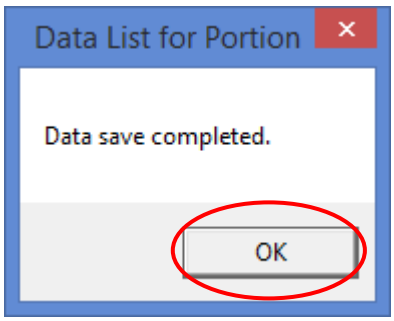


No.	Portion Name	Spindle No.	Number of Spindle	TI Low	TI High	Measured Torque	Judgment
1	RH Mount BKTXLH E/G Mount Insulator	1	3	20.00	30.00	23.40	OK
1	RH Mount BKTXLH E/G Mount Insulator	1	3	20.00	30.00	29.80	OK
1	RH Mount BKTXLH E/G Mount Insulator	1	3	20.00	30.00	26.30	OK
1	RH Mount BKTXLH E/G Mount Insulator	1	3	20.00	30.00	29.15	OK
1	RH Mount BKTXLH E/G Mount Insulator	2	3	20.00	30.00	31.75	NG(H)
1	RH Mount BKTXLH E/G Mount Insulator	2	3	20.00	30.00	28.20	OK
1	RH Mount BKTXLH E/G Mount Insulator	2	3	20.00	30.00	32.05	NG(H)
1	RH Mount BKTXLH E/G Mount Insulator	2	3	20.00	30.00	24.70	OK
1	RH Mount BKTXLH E/G Mount Insulator	3	3	20.00	30.00	21.80	OK
1	RH Mount BKTXLH E/G Mount Insulator	3	3	20.00	30.00	25.65	OK
1	RH Mount BKTXLH E/G Mount Insulator	3	3	20.00	30.00	29.15	OK

② The “Save the data to a given destination. If you save the data on an USB flash drive, connect it. Are you ready to start?” message will be displayed. Tap “Yes” to start saving the data. The Data List for Portion will be output to the Excel file. To discontinue the data saving, tap “No”.

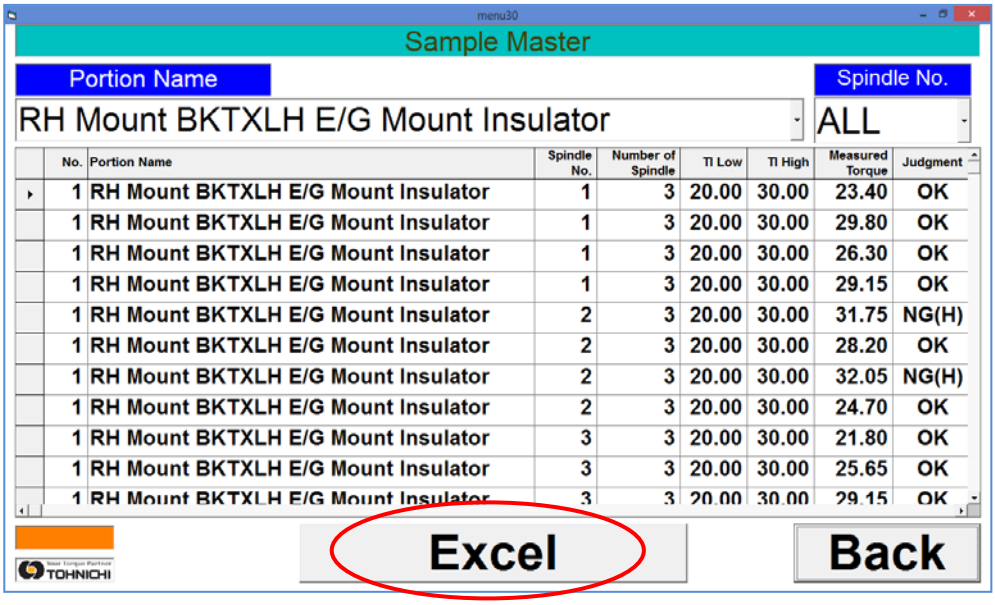


③ When the output has been completed, the “Data save completed.” message will be displayed. Tap “OK”.



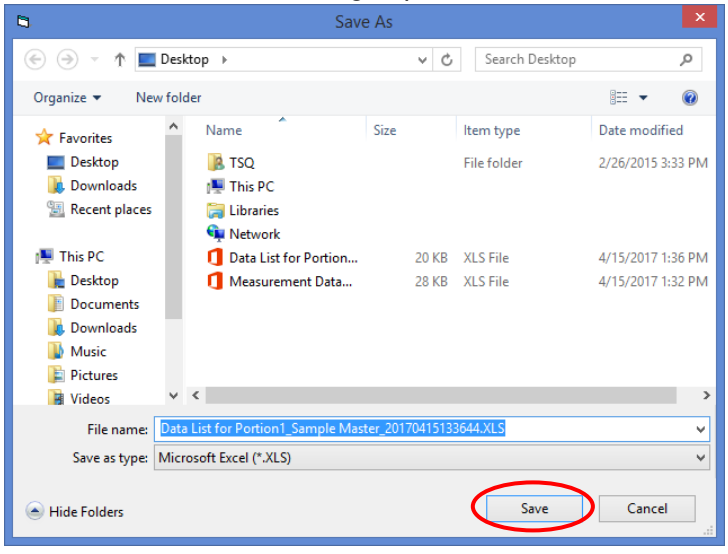
4.9.3 Situation where the Save Excel File Destination Setting is "Always ask me where to save files"

① Tap “Excel” to output the Measurement Data displayed in the list to an Excel file.

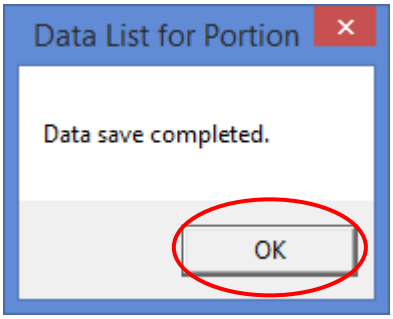


No.	Portion Name	Spindle No.	Number of Spindle	TI Low	TI High	Measured Torque	Judgment
1	RH Mount BKTXLH E/G Mount Insulator	1	3	20.00	30.00	23.40	OK
1	RH Mount BKTXLH E/G Mount Insulator	1	3	20.00	30.00	29.80	OK
1	RH Mount BKTXLH E/G Mount Insulator	1	3	20.00	30.00	26.30	OK
1	RH Mount BKTXLH E/G Mount Insulator	1	3	20.00	30.00	29.15	OK
1	RH Mount BKTXLH E/G Mount Insulator	2	3	20.00	30.00	31.75	NG(H)
1	RH Mount BKTXLH E/G Mount Insulator	2	3	20.00	30.00	28.20	OK
1	RH Mount BKTXLH E/G Mount Insulator	2	3	20.00	30.00	32.05	NG(H)
1	RH Mount BKTXLH E/G Mount Insulator	2	3	20.00	30.00	24.70	OK
1	RH Mount BKTXLH E/G Mount Insulator	3	3	20.00	30.00	21.80	OK
1	RH Mount BKTXLH E/G Mount Insulator	3	3	20.00	30.00	25.65	OK
1	RH Mount BKTXLH E/G Mount Insulator	3	3	20.00	30.00	29.15	OK

② A window for specifying the storage location of the Excel file will be displayed. Specify the saving destination and tap “Save” to output the Measurement Values for each Portion as an Excel file.
To discontinue the file saving, tap “Cancel”.

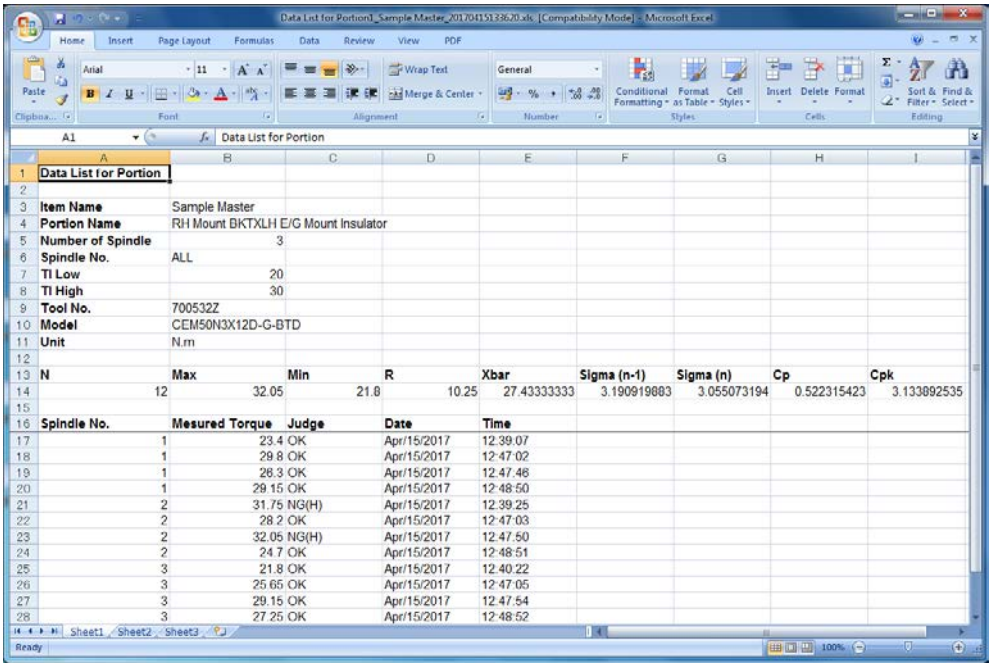


③ When the output has been completed, the “Data save completed.” message will be displayed. Tap “OK”.



4.9.4 Measurement Data List for Each Portion (Excel File)

① Open the Data List for Portions Excel file that was output.
Each of the selected Portion Names and Spindle No. information and the calculated data will be input.



	A	B	C	D	E	F	G	H	I
1	Data List for Portion								
2									
3	Item Name	Sample Master							
4	Portion Name	RH Mount BKTXLH E/G Mount Insulator							
5	Number of Spindle	3							
6	Spindle No.	ALL							
7	TI Low	20							
8	TI High	30							
9	Tool No.	700532Z							
10	Model	CEM50N3X12D-G-BTD							
11	Unit	N.m							
12									
13	N	Max	Min	R	Xbar	Sigma (n-1)	Sigma (n)	Cp	Cpk
14	12	32.05	21.8	10.25	27.43333333	3.190919883	3.055073194	0.522315423	3.133892535
15									
16	Spindle No.	Mesured Torque	Judge	Date	Time				
17	1	23.4	OK	Apr/15/2017	12:39:07				
18	1	29.8	OK	Apr/15/2017	12:47:02				
19	1	26.3	OK	Apr/15/2017	12:47:48				
20	1	29.15	OK	Apr/15/2017	12:48:50				
21	2	31.75	NG(H)	Apr/15/2017	12:39:25				
22	2	28.2	OK	Apr/15/2017	12:47:03				
23	2	32.05	NG(H)	Apr/15/2017	12:47:50				
24	2	24.7	OK	Apr/15/2017	12:48:51				
25	3	21.8	OK	Apr/15/2017	12:40:22				
26	3	25.65	OK	Apr/15/2017	12:47:05				
27	3	29.15	OK	Apr/15/2017	12:47:54				
28	3	27.25	OK	Apr/15/2017	12:48:52				

"**Item Name**": This is the item name registered in the Measurement Portion Master.
"**Portion Name**": This is the selected Portion Name.
"**Number of Spindle**": This is the Portion's total number of spindles.
"**Spindle No.**": This is the spindle No. selected in the portion. "ALL" indicates all of the spindles in the portion.
"**TI Low**": This is the portion torque value lower limit.
"**TI High**": This is the torque value upper limit.
"**Unit**": Torque unit
"**N**": This is the total number of spindles that have been measured until now. (Omitting SKIP)
"**Max**": This is the maximum value that has been measured until now.
"**Min**": This is the minimum value that has been measured until now.
"**R**": This is the range between "Max" and "Min".
"**Xbar**": This is the average value that has been measured until now.
"**σ(n-1)**": This is the Sigma (n-1) calculated from the values that have been measured until now.
"**σ（n）**": This is the Sigma (n) calculated from the values that have been measured until now.
"**Cp**": This is the Cp calculated from the values that have been measured until now.
"**Cpk**": This is the Cpk calculated from the values that have been measured until now.
"**Spindle No.**": This is the count portion that has been measured until now.
"**Measured Torque**": This is the value for each spindle No. measured using the CEM3-BT.
"**Judge**": This is the judgment of the measurement value based on the torque value lower and upper limits.
"**Date**": … This the date of the measurement.
"**Time**": … This the time of the measurement.

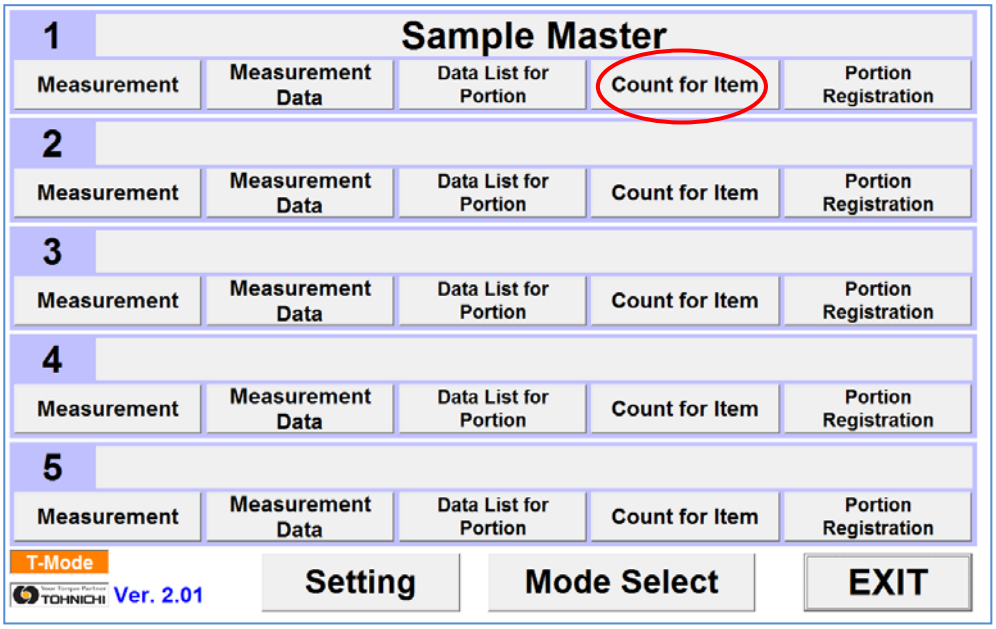
* The file name of the Data List for Portions Excel file that was output will be as follows:
"Data List for Portion + Measurement Registration Location" + "Item Name" + "Excel Output Date and Time"

4.10 Count for Each Item

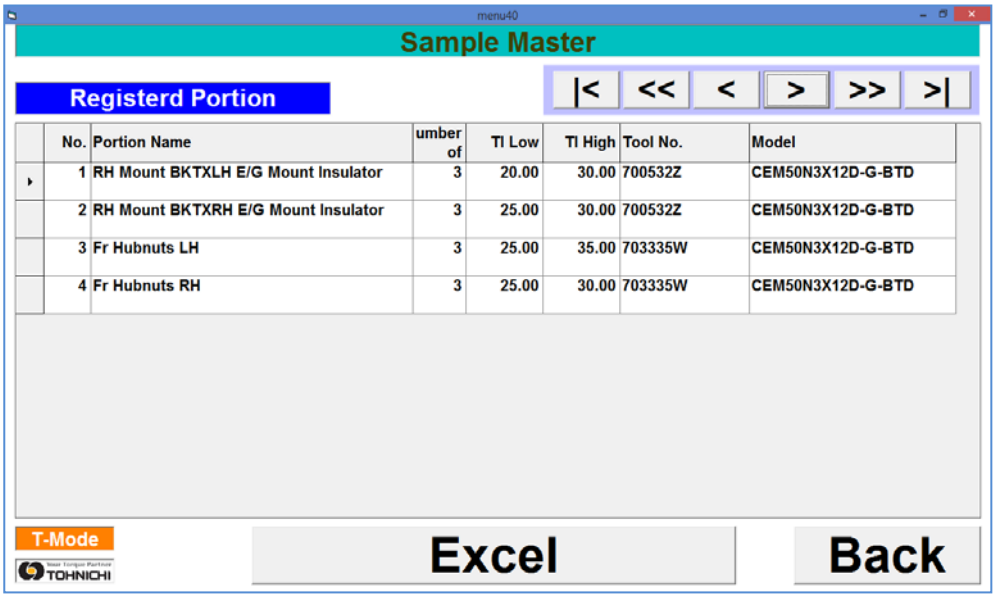
This outputs an Excel file that calculates the “X-bar”, “σ”, “Cp”, and “Cpk” for each portion of the Measurement Data that was saved. The Excel file output destination setting should be carried out in “**4.4.3 Save Excel File Destination Setting**”.

4.10.1 Registration Measurement Portion Display

① Tap “Count for Item” in the measurement location in the Main menu where the Measurement Data was saved.

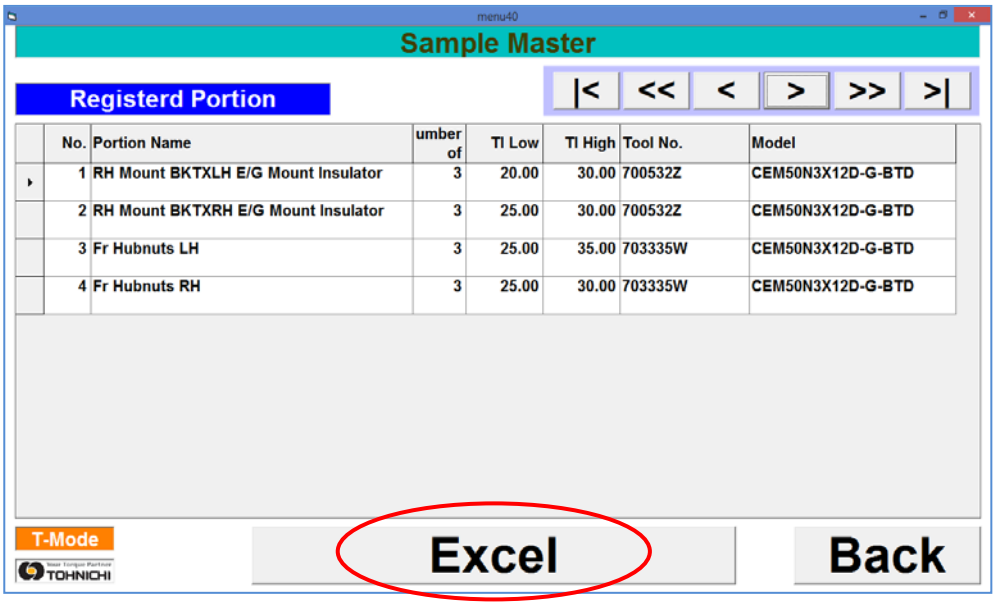


② A list of the registered Measurement Portion Masters will be displayed. To finish the Count for Items, tap “Back” to return to the Main menu.

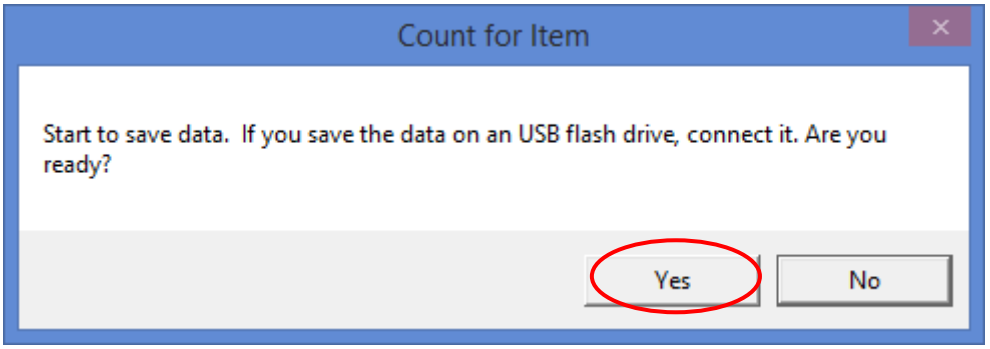


4.10.2 Situation where the Save Excel File Destination Setting is "Save files to"

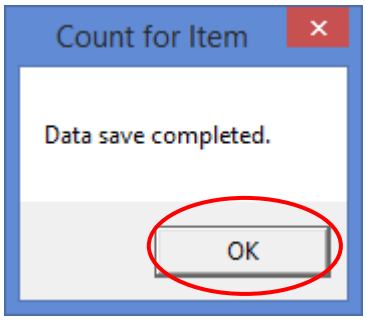
① Tap “Excel” to output the Count for Items of the Measurement Portion Masters displayed in the list to an Excel file.



② The “Start to save data. If you save the data on an USB flash drive, connect it. Are you ready?” message will be displayed. Tap “Yes” to start saving the data. The Count for Items will be output to an Excel file.
To discontinue the saving, tap “No”.

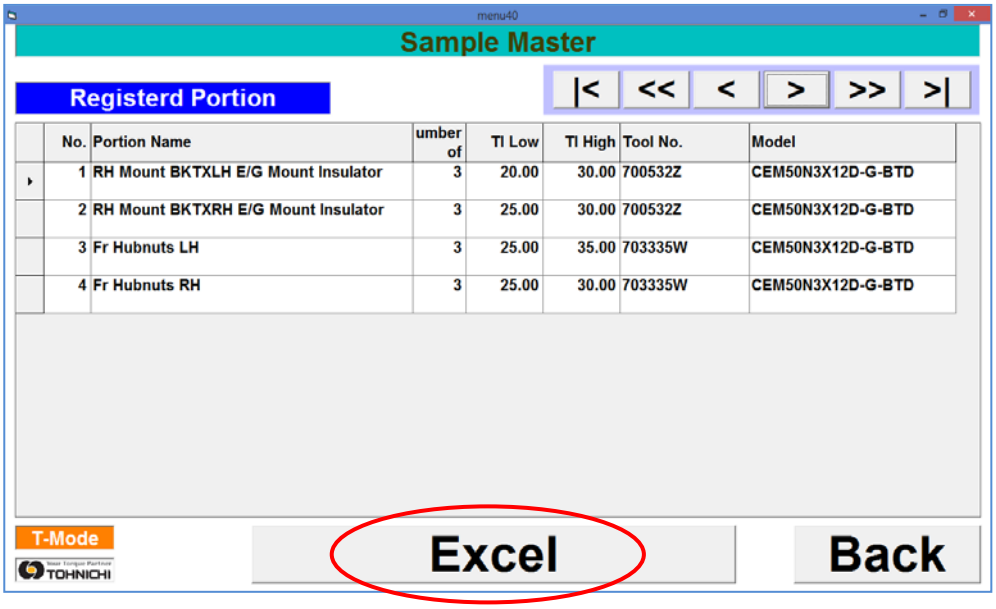


③ When the output has been completed, the “Data save completed.” message will be displayed. Tap “OK”.

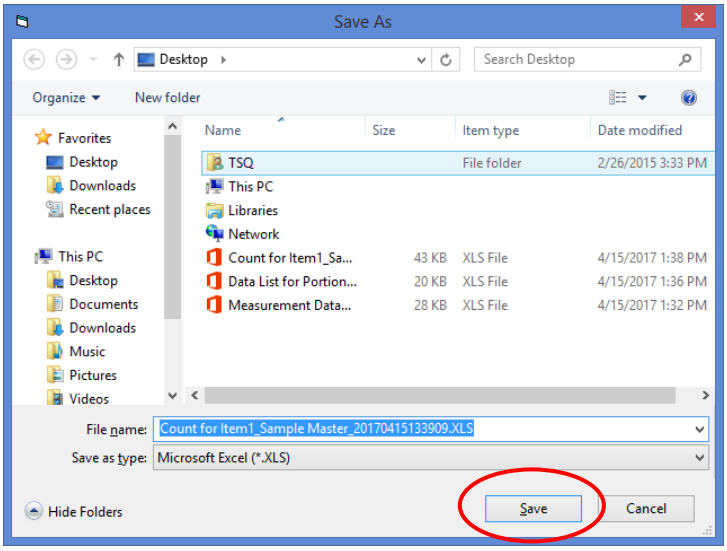


4.10.3 Situation where the Save Excel File Destination Setting is "Always ask me where to save files"

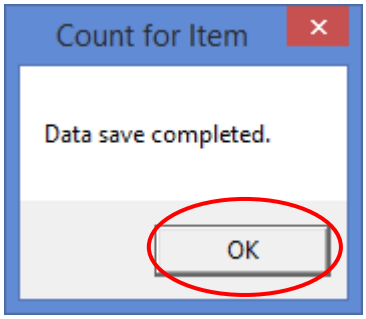
① Tap “Excel” to output the Count for Items of the Measurement Portion Masters displayed in the list to an Excel file.



② A window for specifying the storage location of the Excel file will be displayed. Specify the saving destination and tap “Save” to output the Count for Items as an Excel file.
To discontinue the saving, tap “Cancel”.

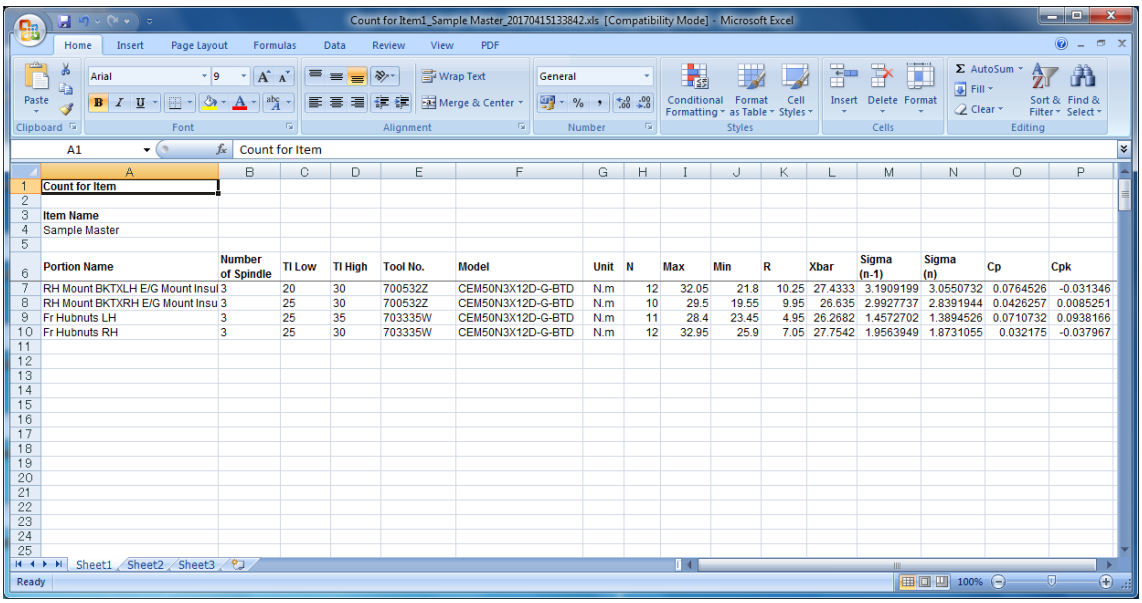


③ When the output has been completed, the “Data save completed.” message will be displayed. Tap “OK”.



4.10.4 Count for Each Item (Excel File)

① Open the Count for Items Excel file that was output.
The calculated data of each portion registered in the Measurement Portion Master will be input.



Portion Name	Number of Spindle	TI Low	TI High	Tool No.	Model	Unit	N	Max	Min	R	Xbar	Sigma (n-1)	Sigma (n)	Cp	Cpk
RH Mount BKTXLH E/G Mount Insul	3	20	30	700532Z	CEM50N3X12D-G-BTD	N.m	12	32.05	21.8	10.25	27.4333	3.1909199	3.0550732	0.0764526	-0.031346
RH Mount BKTXRH E/G Mount Insu	3	25	30	700532Z	CEM50N3X12D-G-BTD	N.m	10	29.5	19.55	9.95	26.635	2.9927737	2.8391944	0.0426257	0.0085251
Fr Hubnuts LH	3	25	35	703335W	CEM50N3X12D-G-BTD	N.m	11	28.4	23.45	4.95	26.2682	1.4572702	1.3894526	0.0710732	0.0938166
Fr Hubnuts RH	3	25	30	703335W	CEM50N3X12D-G-BTD	N.m	12	32.95	25.9	7.05	27.7542	1.9563949	1.8731055	0.032175	-0.037967

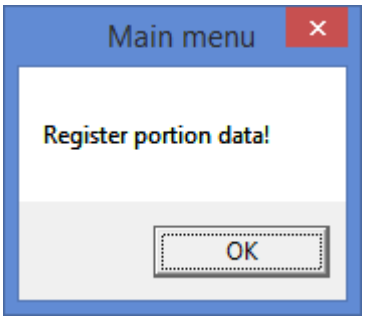
"**Item Name**": This is the item name registered in the Measurement Portion Master.
"**Portion Name**": This is the Portion Name.
"**Number of Spindle**": This is the Portion's total number of spindles.
"**TI Low**": This is the portion torque value lower limit.
"**TI High**": This is the torque value upper limit.
"**Tool No.**": The tool No. which has been used for measurement.
"**Model**": The Tohnichi model name which has been used for measurement.
"**Unit**": Torque unit
"**N**": This is the total number of spindles that have been measured until now. (Omitting SKIP)
"**Max**": This is the maximum value that has been measured until now.
"**Min**": This is the minimum value that has been measured until now.
"**R**": This is the range between "Max" and "Min".
"**Xbar**": This is the average value that has been measured until now.
"**σ(n-1)**": This is the Sigma (n-1) calculated from the values that have been measured until now.
"**σ（n）**": This is the Sigma (n) calculated from the values that have been measured until now.
"**Cp**": This is the Cp calculated from the values that have been measured until now.
"**Cpk**": This is the Cpk calculated from the values that have been measured until now.

* The file name of the Count for Items Excel file that was output will be as follows:
"Count for Items + Measurement Registration Location" + "Item Name" + "Excel Output Date and Time"

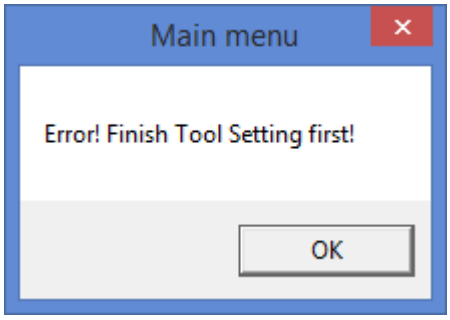
4.11 Error Messages

■ Main Menu

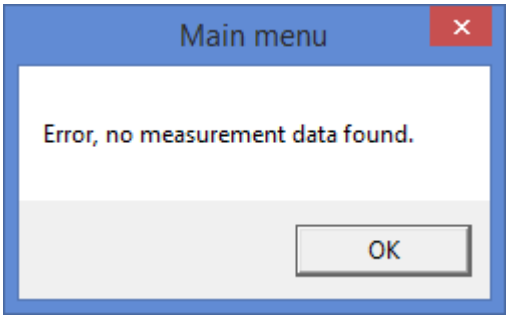
① When “Measurement” is tapped in the condition where the Measurement Portion registration has not been carried out, the “Register portion data!” message will be displayed.
Referring to “**4.6 Measurement Portion Master Registration**”, carry out Measurement Portion registration.



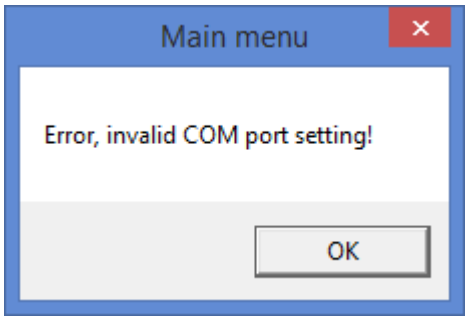
② When “Measurement” is tapped in the condition where the Tool setting has not been carried out, the “Error! Finish Tool Setting first!” message will be displayed.
Referring to “**4.4.1 Tool Setting**”, carry out the Tool setting.



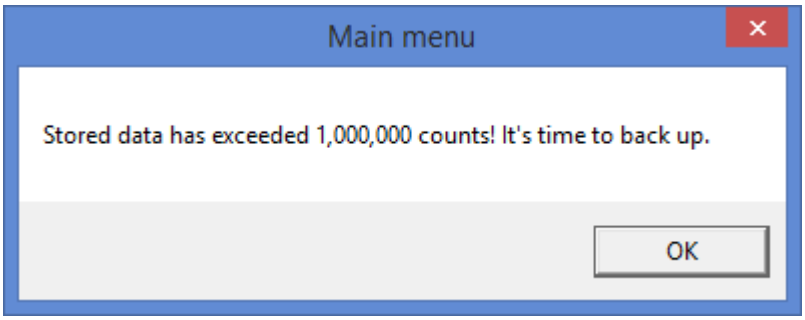
③ When “Measurement Data”, “Data List for Portions”, or “Count for Items” is tapped in the condition where the Measurement Data has not been saved (The measurement of all of the spindles in the Measurement Portion Master has not been completed), the “Error, no measurement data found.” message will be displayed.
Referring to “**4.7 Measurement**”, carry out the Measurement Work.



④ When “Measurement” is tapped in the condition when the com port setting is wrong, “Error, invalid COM port setting!” message will be displayed.
Referring to “**4.4.1 Tool Setting**” and carry out COM port setting.

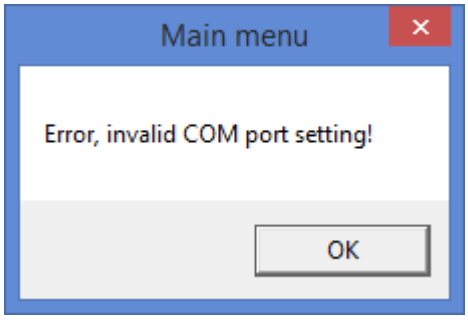


⑤ When “Measurement” is tapped in the condition where the Measurement Data exceeds 1,00,000 items, the “Stored data has exceeded 1,000,000 counts! It's time to back up.” message will be displayed.
Referring to “**4.8 Measurement Data Inquiry**”, “**4.9 Measurement Data List for Each Portion**”, and “**4.10 Count for Each Item**”, back up the data by outputting each of the data to Excel files.

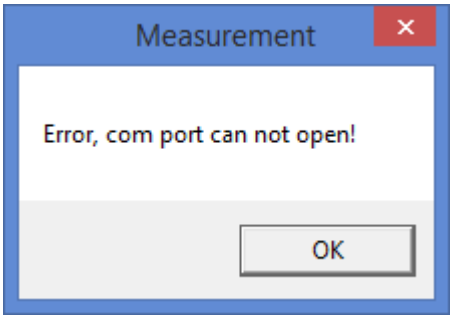


■ Measurement

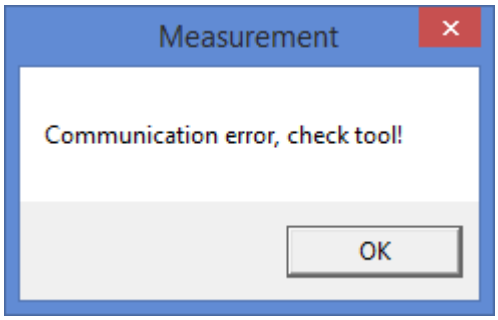
① When the setting of the com port is wrong, “Error, invalid COM port setting!” message will be displayed.
Referring to “**4.4.1 Tool Setting**” and carry out COM port setting.



② In case failing to open the COM port of the Tohnichi digital product to be conducted measurement, appears “Error, com port can not open!” message. Referring to “**3 Setting the Bluetooth Connection with the “Tohnichi digital products”**” and “**4.4.1 Tool Setting**” of “**Bluetooth Communication Test**”, and check the communication setting.

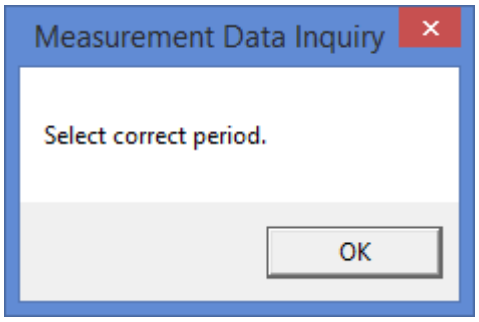


③ In case Bluetooth communication error between Tohnichi digital torque tool and HT-V8 or your device, appears “Communication error, check tool!” message. Referring to “**4.4.1 Tool Setting**” of “**Bluetooth Communication Test**”, and check the communication setting.

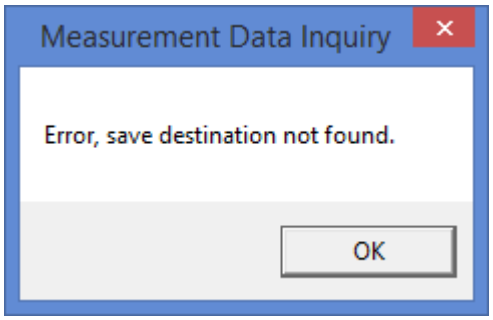


■ Measurement Data Inquiry

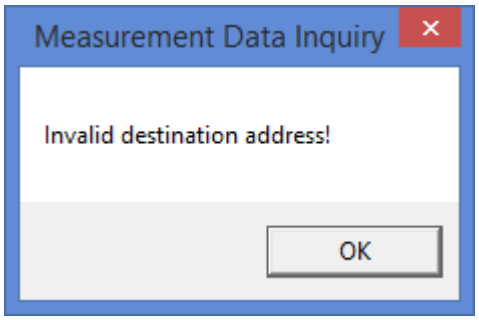
① When “Execute” is tapped in the condition where the period selection start date is later than the finish date, the “Select correct period.” message will be displayed.
Referring to “**4.8.1 Measurement Data List Inquiry**”, select the correct period.



② During Excel file output, when the saving destination that was set is not present (When the USB memory that was set is not connected, etc.), the “Error, save destination not found.” message will be displayed.
Either connect the USB memory that was set, or set the output Excel file saving destination referring to “**4.4.3 Save Excel File Destination Setting**”.

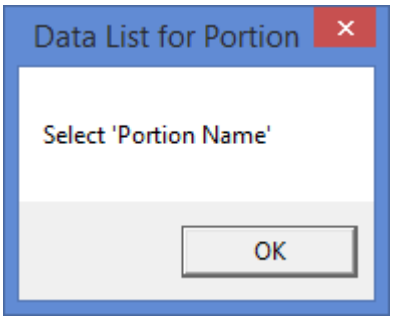


③ During Excel file output, when the saving destination that was set is wrong, the “Invalid destination address!” message will be displayed.
Confirm the USB memory connection. In addition, re-set the output Excel file saving destination referring to “**4.4.3 Save Excel File Destination Setting**”.

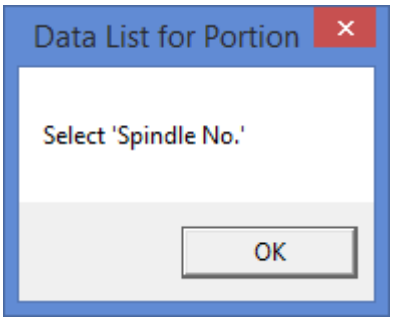


■ Data List for Portions

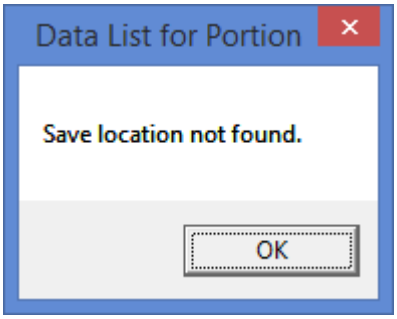
① When “Excel” is tapped in the condition where the portion name is not selected, the “Select ‘Portion Name’” message will be displayed.
Referring to “**4.9.1 Portion and Axis Selection**”, tap “Excel” when the portion name is in the selected condition.



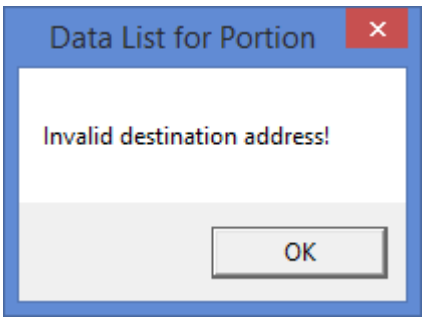
② When “Excel” is tapped in the condition where the spindle No. is not selected, the “Select ‘Spindle No.’” message will be displayed.
Referring to “**4.9.1 Portion and Axis Selection**”, tap “Excel” when the spindle No. is in the selected condition.



③ During Excel file output, if the saving destination that was set is not present (When the USB memory has not been connected, etc.) the “Save location not found” message will be displayed.
Either connect the USB memory, or re-set the output Excel file while referring to “**4.4.3 Save Excel File Destination Setting**”.

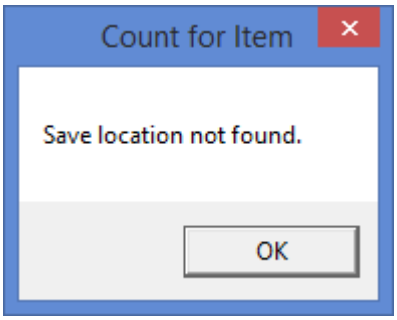


④ During Excel file output, when the saving destination that was set is wrong, the “Invalid destination address!” message will be displayed.
Confirm the USB memory connection. In addition, re-set the output Excel file saving destination referring to “**4.4.3 Save Excel File Destination Setting**”.

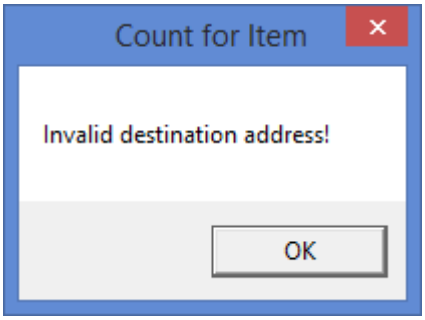


■ Count for Items

① During Excel file output, when the saving destination that was set is not present (When the USB memory has not been connected, etc.) the “Save location not found.” message will be displayed.
Either connect the USB memory, or re-set the output Excel file while referring to “**4.4.3 Save Excel File Destination Setting**”.

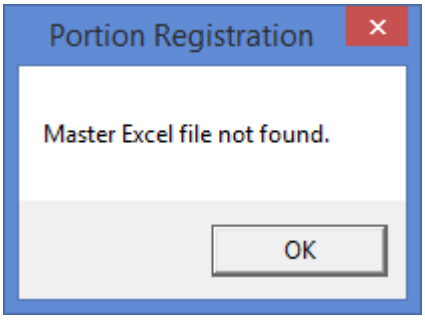


② During Excel file output, when the saving destination that was set is wrong, the “Invalid destination address!” message will be displayed.
Confirm the USB memory connection. In addition, re-set the output Excel file saving destination referring to “**4.4.3 Save Excel File Destination Setting**”.

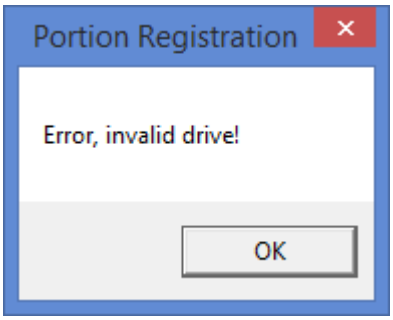


■ Portion Registration

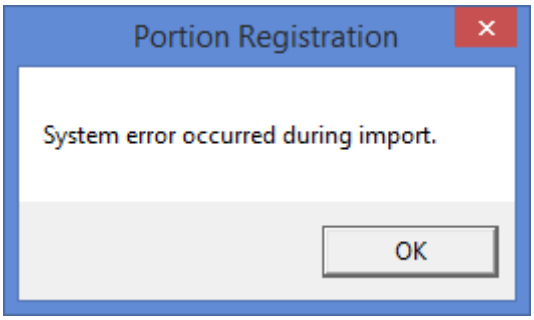
① During Excel file importing, if the “Portion Master_ENG.xls” file is not present in the importing destination that was set, the “Master Excel file not found.” message will be displayed.
Confirm that the “Portion Master_ENG.xls” file has been saved in the top layer of the USB memory that was set.



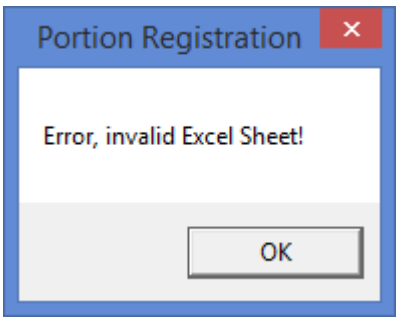
② During Excel file importing, if the drive name that was set is not recognized, the "Error, invalid drive!" message will be displayed.
Confirm the USB memory connection. In addition, re-set the importing destination of the "Portion Master_ENG.xls" file that is to be read referring to "**4.4.2 Master File Import Destination Setting**".



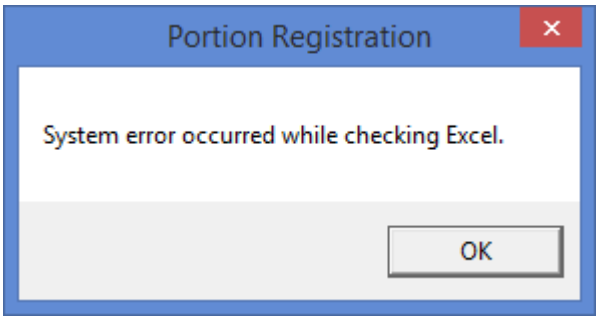
③ During Excel file importing, if there is a problem with the "Portion Master_ENG.xls" file, the "System error occurred during import." message will be displayed.
Referring to "**4.5 Measurement Portion Master (Excel File) Creation**", confirm that there is no problem with the "Portion Master_ENG.xls" file.



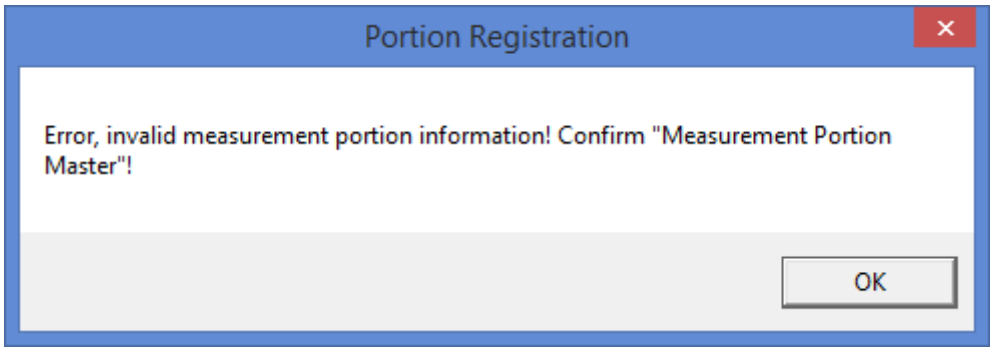
④ During Excel file importing, if the "Portion Master_ENG.xls" Excel sheet is wrong, the "Error, invalid Excel Sheet!" message will be displayed.
The format of the "Portion Master_ENG.xls" file sheet should not be changed.
Refer to "**4.5 Measurement Portion Master (Excel File) Creation**".



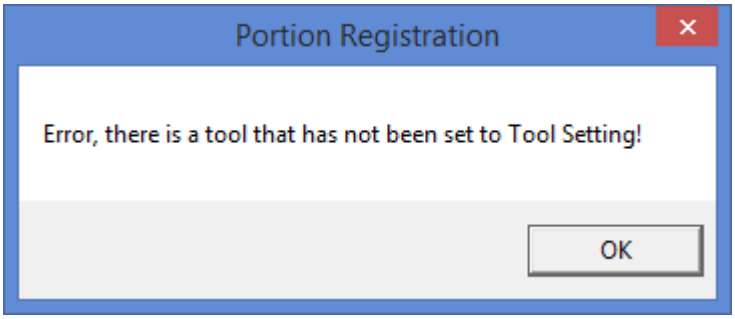
⑤ During Excel file importing, if a problem is found when checking the “Portion Master_ENG.xls” file, the “System error occurred while checking Excel.” message will be displayed.
Referring to “**4.5 Measurement Portion Master (Excel File) Creation**”, confirm that there is no problem with the “Portion Master_ENG.xls” file.



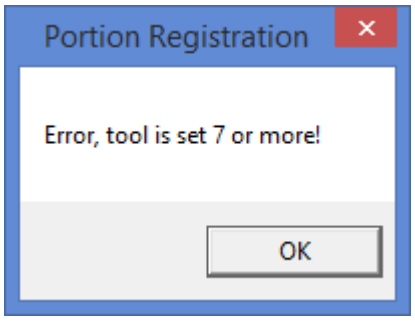
⑥ During Excel file importing, if the “Portion Master_ENG.xls” file has a problem, the “Error, invalid measurement portion information! Confirm "Measurement Portion Master"!” message will be displayed.
Referring to “**4.5 Measurement Portion Master (Excel File) Creation**”, confirm that there is no problem with the “Portion Master_ENG.xls” file.



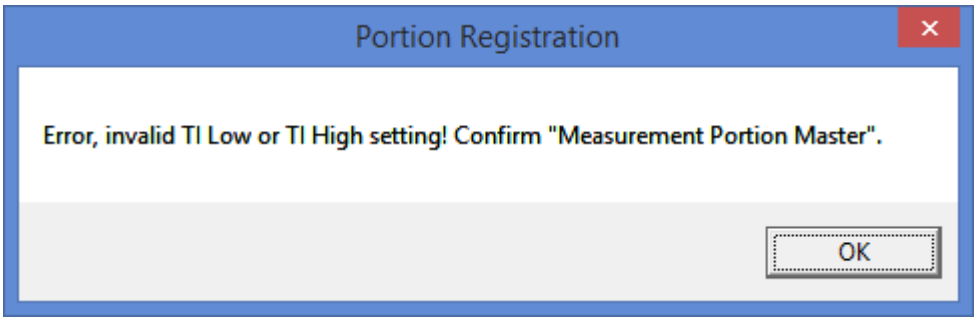
⑦ In case imported Portion Master File includes a Tool Number not registered in Tool Setting, appears “Error, there is a tool that has not been set to Tool Setting!” message.
Referring to “**4.5 Measurement Portion Master (Excel File) Creation**”, and entry the Tool No. or delete this Tool No. from Portion Master.



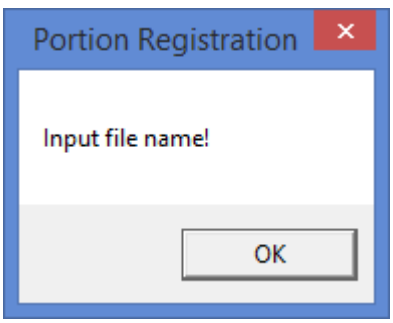
⑧ In case imported Portion Master File includes more than 7 pcs of tools, appears “Error, tool is set 7 or more!” message.
Referring to “**4.5 Measurement Portion Master (Excel File) Creation**”, and make the tools less than or equal to 7 pcs.



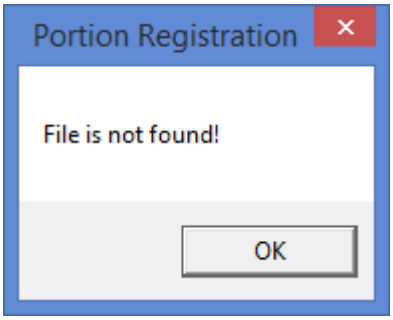
⑨ In case imported Portion Master File includes invalid Upper/Lower setting, appears “Error, invalid TI Low or TI High setting! Confirm “Measurement Portion Master”.” message.
Referring to “**4.5 Measurement Portion Master (Excel File) Creation**”, and correct the Upper/Lower limit value.



⑩ When specifying the Excel file importing destination in the window, if the Excel file name that is to be imported is blank, the “Input file name!” message will be displayed.
Referring to “**4.6.2 Situation where the Master File Import Destination Setting is "Always ask me where to open Excel files"**”, tap “Open” in the condition where the Excel file name has been input.

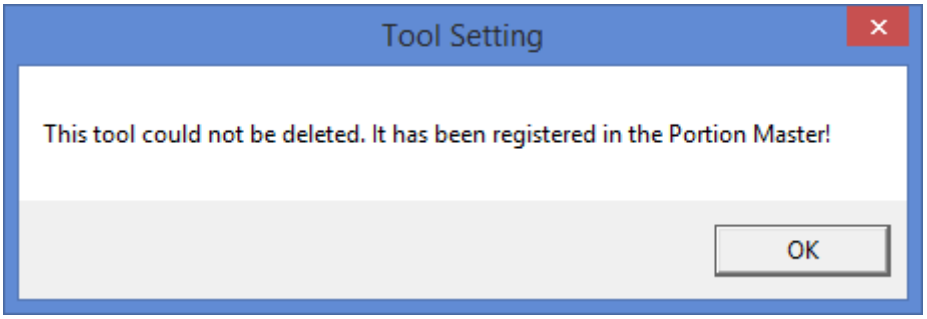


⑪ When specifying the Excel file importing destination in the window, if the selected Excel file name is not present, the “File is not found!” message will be displayed.
Confirm that the Measurement Portion Master Excel file name is saved in the saving destination which has been specified.



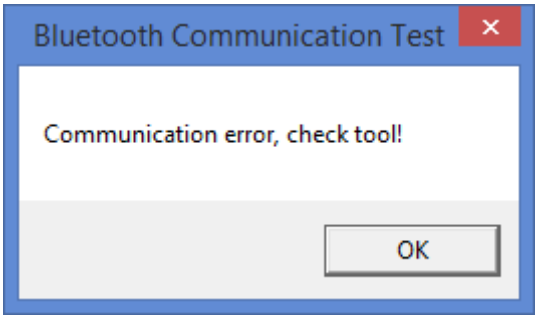
■ Tool Setting

① In case selecting a Tool which has been linked to Portion Master and tap “Delete”, appears “This tool could not be deleted. It has been registered in the Portion Master!” message.

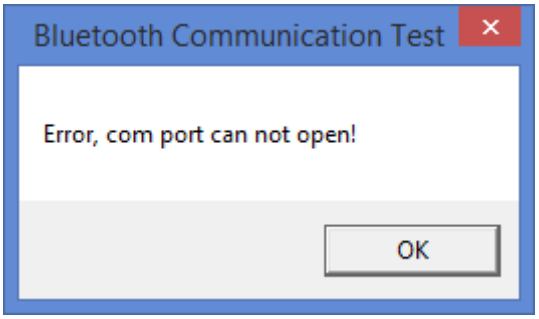


■ Bluetooth Communication test

① In case Bluetooth communication error between Tohnichi digital torque tool and HT-V8 or your device, appears “Communication error, check tool!” message.
Referring to “**4.4.1 Tool Setting**” of “**Bluetooth Communication Test**”, and check the communication setting.

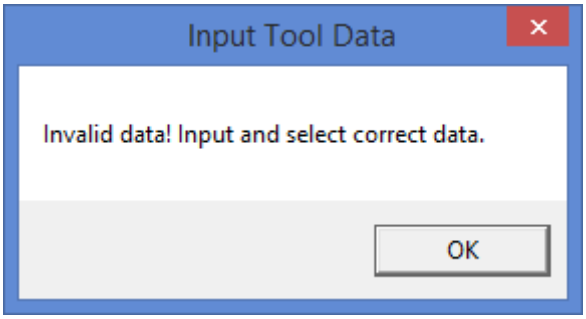


② In case failing to open the COM port of the Tohnichi digital product to be conducted communication test, appears “Error, com port can not open!” message. Referring to “**3 Setting the Bluetooth Connection with the “Tohnichi digital products”**” and “**4.4.1 Tool Setting**” of “**Bluetooth Communication Test**”, and check the communication setting.

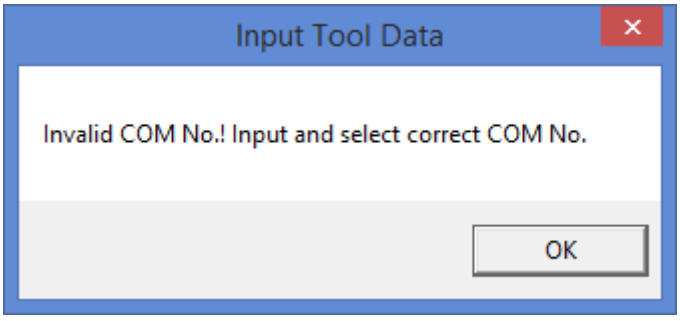


■ Input Tool Data

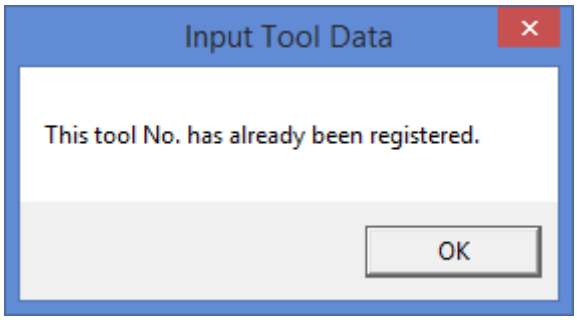
① In case inputted or selected Tool No. is invalid, appears “Invalid data! Input and select correct data.” message. Referring to “**4.4.1 Tool Setting**” of “Input”, and set upper/lower limit correctly.



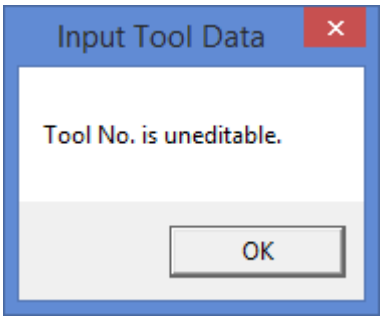
② In case inputted or selected Com No. is invalid, appears “Invalid COM No.! Input and select correct COM No.” message. Referring to “**4.4.1 Tool Setting**” of “Input”, and set correct Com. No.



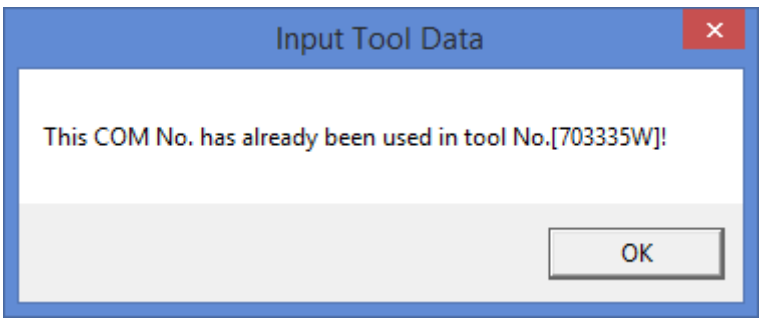
③ In case newly entering existing Tool No., appears “This tool No. has already been registered.” message. Referring to “**4.4.1 Tool Setting**” of “Input”, and input another Tool No.



④ In case the tool No. of the tool to be changed has already been changed, appears “Tool No. is uneditable.” message.



⑤ In case specify a Com No. used by another tool and try to newly register and change, appears “This COM No. has already been used in tool No.[XXXXXXX]!” message.



4.12 Troubleshooting

■ When the Measurement Portion Master cannot be imported

→ Have you changed the file name of the “Portion Master_ENG.xls” file? If the file name has been changed, importing cannot be carried out. (Only when the Master File Import Destination Setting is set to “Open Excel files from”.)
Do not change the name of the “Portion Master_ENG.xls” file.

→ Have you changed the sheet name or made changes such as adding or deleting items in the Measurement Portion Master Excel file sheet? If the Excel sheet has been changed, importing cannot be carried out.
Do not change the Measurement Portion Master Excel file sheet.

→ Is the saving destination of the “Portion Master_ENG.xls” file set to the top layer of the USB memory that is to be read? If you create a folder in the USB memory and save the file there, it will not be possible to read it. (Only when the Master File Import Destination Setting is set to “Open Excel files from”.)
Save the “Portion Master_ENG.xls” file in the top layer of the USB memory.

→ Have you specified the correct USB memory? If the “Portion Master_ENG.xls” file is not saved in the top layer of the USB memory that is specified, importing will not be possible. (Only when the Master File Import Destination Setting is set to “Open Excel files from”.)
Re-confirm the USB memory that is to be read.

■ When you do not know the drive name of the USB memory

→ Referring to “■ Method of Confirming the Drive Name of the USB Memory that is to be Used” in “**4.4.2 Master File Import Destination Setting**”, confirm the drive name.

■ During measurement, Bluetooth switched off and communications became impossible

→ Tap “EXIT” to change from the Measurement screen to the Main menu. Switch on the power of the CEM3-BT that is being used, confirm that the “POWER” LED of the Bluetooth module is lit in red, and then enter the Measurement screen again.

■ Bluetooth does not switch on

→ Have the Bluetooth settings been correctly carried out?
Referring to “**4 Setting the Bluetooth Connection with the CEM3-BT**” and “**4.4.1 Tool Setting**”, carry out reconfirmation of the Bluetooth settings.

■ **When the Measurement Data sent from the "Tohnichi digital products" is not received by the PC**

→ Is the "STATUS" LED lamp of the CEM3-BT Bluetooth module lit in blue? In the situation where the LED is not lit in blue, re-enter the Measurement screen to establish the Bluetooth connection.

→ In the situation of using the CEM3-BT, is the Measurement Data being sent by a different CEM3-BT? Confirm the CEM3-BT that is being used.

■ **Even though measurement was carried out, the "Error, No measurement data found" message is displayed, and the data is not entered in "Measurement Data Inquiry", "Data List for Portions", or "Count for Items"**

→ Has the measurement of all of the spindles been completed for the Measurement Portion Master that was registered? After completing all the measurements and returning from the Measurement screen to the Main menu, if the Measurement Data is not saved the Measurement Log Data will not be saved.
Referring to "**4.7.4 Measurement Finish (Measurement Data Saving)**", finish all of the spindle measurements and save the Measurement Data before moving to "Measurement Data Inquiry", "Data List for Portions", or "Count for Items".

■ **None of the "Measurement Data Inquiry", "Data List for Portions", or "Count for Items" data can be output to an Excel file**

→ In the situation where the saving destination that was set is a USB memory, is the USB memory connected to the PC? If the USB memory is not correctly connected to the PC, file output will not be possible. (Only when the Save Excel File Destination Setting is set to "Save files to".)
Reconfirm the USB memory.

→ Has the correct saving destination been set? If the specified saving destination is different, the Excel file will be output to the wrong location.
Reconfirm "**4.4.3 Save Excel File Destination Setting**".

■ **When quitting the software, the PC also shuts down**

→ Referring to "**4.4.5 Shutdown Setting**", change the settings.

■ When the registered Measurement Portion or Measured Data disappeared.

→ Measurement Portion, Measured Data, Tool Setting and All Data Delete are conducted separately on each Measurement mode and Tightening mode.
Master File Import Destination, Save Excel File Destination and Shutdown Settings share the setting.
Please refer to "**4.3 Model Select**" and change the measurement mode.

■ In case the message " Error, com port can not open!" appears on the measurement screen or Bluetooth communication test screen when com number is set as "16" or more.

There is a possibility that the system file necessary for communication is not installed due to the access authority of your PC.
Confirm with following process.

① Open [**TOHNICHI**] folder in the C Drive.
② If [**SystemFile_UpdateError.txt**] is in [**TOHNICHI**] folder, installation has not been completed correctly.

Install by manually as following process.

Windows 32 bit OS

① Open [**SDFDlibGdb**] folder in the C Drive.
② Copy [**xMSCOMM32.OCX**] in the [**SDFDlibGdb**] folder.
③ Open [**WINDOWS**] folder iin the C Drive.
④ Open [**System32**] folder in the [**WINDOWS**] folder.
⑤ Paste[**xMSCOMM32.OCX**] in [**System32**] folder and rename it as 「**MSCOMM32.OCX**」.

Windows 64 bit OS

① Open [**SDFDlibGdb**] folder in the C Drive.
② Copy [**xMSCOMM32.OCX**] in the [**SDFDlibGdb**] folder.
③ Open [**WINDOWS**] folder iin the C Drive.
④ Open [**SysWOW64**] folder in the [**WINDOWS**] folder.
⑤ Paste[**xMSCOMM32.OCX**] in [**SysWOW64**] folder and rename it as 「**MSCOMM32.OCX**」.

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