

Programing console for battery pulse tools

PC-1

Instruction Manual



Thank you for purchasing YOKOTA products.

Before use, please read this Instruction Manual carefully and

Use the product properly after fully understanding Manual.

Please be sure to keep this Instruction Manual.



Head Office/Factory 5-55 Nishiiwata 3-chome, Higashiosaka City, 578-0947 Osaka, Japan

TEL.: +81-6-6788-1381 FAX. +81-6-6781-4519

<http://www.yokota-kogyo.co.jp>

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1. Safety Care





Warning

Please be sure to thoroughly read this Operation Manual and fully understand the instruction to use correctly, before installation, operation and inspection.

In this Instruction Manual, safety precautions prefix either of the following safety alert pictograms.

All are important items relating to safety and must be observed.

 **Warning** . . . Cases where mishandling induces a potentially hazardous situation, which, if not avoided, could result in a death or serious personal injury

 **Warning** . . . Cases where mishandling induces a potentially hazardous situation, which, if not avoided, may result in minor or moderate personal injury or property damage.

※ **Notes:** Even items described in “  **Caution** ” may lead to serious consequences depending on circumstances.

- Retain this instruction Manual in a place where it is always available for anyone who needs to use it.
- In cases where you lost this Instruction Manual or the warning label affixed to the product or made it dirty, immediately contact us or your YOKOTA representative to obtain the Manual or the warning label, and then properly retain the Manual or replace the warning label.
- In cases where you transfer or rent this product, be sure to attach this Instruction Manual to it.
- Should you have any questions about the product you purchased or this Instruction Manual, please contact us or your YOKOTA representative.

■ **Please use this product by connecting with the power supply supplied from "Electric work for the business" decided by the Article 38 of Electric Business Act. It is not possible to use it by connecting with "Electric work for general" (generally, commercial power source in the home, the shop, etc.).**

1.1. Work Environment



Warning

- Ensure that the workplace is sufficiently light. Working in a dark place may result in accident or injury.
- Do not operate the tool and charge the battery in explosive atmospheres, such as in the presence of flammable liquids, gases or dusts. There is fear of fire.
- Keep anyone, particularly children, other than those involved in the work away from the work site. Not doing so could induce a hazardous situation. Otherwise, it may cause injury.
- Take drop preventive measures such as use of safety wire to work in high places. Also be careful for the falling-off accident, by confirming surely the safety of scaffolding.

- Do not install this product in a place likely to be exposed to water, direct sunlight, much dust, heat, oil, or moving parts of industrial equipment. Otherwise, it may cause fire, electric shock, or accident.

1.2. Electrical Safety



Warning

- This product is for the indoor exclusive use. Do not use it in rain, in a damp place and a wet place. Moreover, never use it in the place with the fear of the ignition and the explosion, because those are hazardous situations.
- Be sure to use the designated cable. Use of other cable may cause malfunction, heat generation, or fire.
- Do not move by holding the cable. Do not pull the cable to remove the plug from the socket-outlet. Avoid damage of cable due to stepping, entangling, or unreasonable force.
- Avoid pinching of cable in the object to be tightened or surrounding facility in the tool operation and avoid the contact with rotating parts. The cable may be damaged and it may result in accident.
- Keep away from sources generating large electromagnetic noise, such as welder, DC brush motor.
- Be sure to fully insert the cable to connector.
Failure to do so may result in fire due to heat generation.
- If you do not use the product, unplug from the connector.
Wipe out dust or stain accumulated on the connector with a dry cloth.
Failure to do so may result in electric shock or fire.

1.3. Human Safety



Warning

- Do not use the tool when you are tired or under influence of drugs, alcohol or medication. A moment of inattention during the use of tool may result in serious personal injury.
- To protect yourself, wear personal protective equipment such as a hard hat(helmet), safety glasses, safety shoes. And depending on work environment, wear earplugs, a dust mask etc.
- Working in unusual positions is dangerous. Hold the tool securely and carry out working in stable posture, preparing for accidental movement at the same time.
- Dress properly. When working, do not wear loose clothes or jewellery such as necklace. If your hairs are long, bundle them with rubber ring to avoid contact with the tool and wear a protective cover such as cap. Otherwise, it may cause injury.

1.4. Operation and Care



Warning

- To prevent bodily injury due to installation, e.g. in the event of earthquake, install the product firmly.
- Install the product on nonflammable material such as metal. Failure to do so may result in fire.
- Do not place flammables near the product. Failure to do so may result in fire.
- Install the product in a stable, less vibrating place capable of withstanding its weight, in consideration of the communication range with the tool used.
- Ask electrical work professionals to do wiring work. Failure to do so may result in electric shock or fire.
- Ensure correct and secure wiring.
- Avoid tangle or pinching of the power supply cord.
- Avoid the use by persons inexperienced for handling. Otherwise, it may result in injury and/or accident.
- Handle the power tool carefully. Abuse may cause accident and/or malfunction. Do not give impacts on it by throwing or dropping it.
- Do not make the foreign object such as metal pieces, invaded to the product. There is fear of fire.
- NEVER make any modification. Doing so could result in accidents. In addition, never use the spare part other than the genuine one.
- Do not remove the parts. If you use as the mounted parts or screws removed, it may cause accident.
- If you feel uneasiness during the use, stop using the tool immediately and ask repair and inspection to YOKOTA or YOKOTA-authorized or designated servicing factory via the sales outlet or sales representative. If any accident or problem occurs due to the customer's intended action such as disassembly of this product, we shall not be liable for such trouble.
- Store the product in the dry area, where children or untrained person cannot get access to. It is dangerous for the untrained person to use it.

1.5. Maintenance, Inspection and Repair



Warning

- Before maintenance, inspection, or replacement, unplug the power supply cord.
- Only qualified service personnel are allowed to do maintenance and repair. Repair or maintenance performed by non-qualified personnel may result in serious personal injury of the user.
- Wipe out the dirt on the housing of the tool by using the dry and soft cloth.
Do not use the chlorinated solvent, gasoline, thinners and the like, which work to melt the plastic.
- Ask repair and inspection to YOKOTA or YOKOTA-authorized or designated servicing factory via the sales outlet or sales representative where you bought the product. If any accident or problem occurs due to the customer's intended action such as disassembly of this product, we shall not be liable for such trouble.

2. Glossary

(1) Tightening Torque:

Output torque on completion of tightening.

(2) Tightening Pulses:

The number of pulses between the display start torque and tightening completion.

(3) Work:

A set of tightening points under the same tightening conditions.

(4) WORK Start:

The work selection input becomes start. With the group management function is on, when the work switching input is turned on, the remaining number of bolts is initialized and the group management starts.

(5) AUTO CLEAR:

A function used to automatically clear the count when the number of remaining tightening points reaches zero.

(6) END LS:

A function to judge group management with the LS set as END LS turned ON.

(7) COUNT NG:

Output when the tightening bolt number does not reach to the preset number at the input of END LS. After COUNT NG, when the tightening number reaches to the preset number, the output becomes OFF.

(8) WORK SEL:

Following work selection can be selected:

「BIT」 :Work can be selected by inputting work a ~ d.

「DATA」 :Work a ~ d can be selected by the input combination of input terminals WORK a and WORK b.

When selecting 「DATA」 , a ~ d Work can be selected by the input combination of input terminals WORK a and WORK b. And after the establishment of WORK c input, designated work can be changed.

| | a | b | c | d |
|--------|---|---|---|---|
| WORK a | x | x | o | o |
| WORK b | x | o | x | o |
| WORK c | o | o | o | o |

o : 入力 x : 入力なし

(9) Sleep Time [SLEEP TIME] :

Time after throttle OFF till the power to the tool is turned off.

(10) STARTTRQ.:

Threshold torque to judge OK or NG.

No judgement of OK or NG is made if the torque is less than this threshold value.

(11) SWITCH TRQ.:

Torque at which middle speed is switched to high speed.

(12) MIN. TRQ.:

A lower limit value to make a judgment of OK/NOK.

(13) CUTTRQ.:

A torque value at which motor is automatically stopped while tightening.

(14) MAXTRQ.:

A upper limit value to make a judgment of OK/NOK.

(15) FREERUNNING ANG:

Angle between the point where a main shaft starts to rotate and the display start torque.

(16) FINALANG:

Angle between the display start torque and the tightening completion point.

(17) FREERUNNINGTIME:

Time to display start torque after main shaft starts rotation.

(18) FINAL TIME:

Time to tightening completion from display start torque.

(19) STOP ABORT TIME:

When the rotation of main shaft is stopped for more than this time, free running angle will be set to 0.

(20) MOTOR LOWSPEED:

Rotation speed at no load when the tool throttle lever is set to the first step.

- (at forward and reverse rotation)

(21) MOTOR MID. SPEED:

Rotation speed at no load when the tool throttle lever is set to the 2nd stage. (when right rotation)

※In case of reverse rotation, setting of mid-speed is not valid (only low and high speed is valid).

(22) MOTOR HIGH SPEED:

Rotating speed at no load when the Middle to High speed switching torque is achieved. (when right rotation)

Rotation speed at no load when the tool throttle lever is set to the 2nd stage. (when left rotation)

(23) JUDGE TIME:

A set period of time to make a tightening judgment if there is no pulse during the period after the pulsing.

(24) BOLT CO-EFFICIENT:

A coefficient number to recalculate the displayed torque of the Wireless Unit if the displayed torque greatly differs from actual torque.

(25) AVERAGE NUM.:

The arithmetic average from the preset number of pulses to display torque.

(26) SKIP NUM.:

The number of pulses in excess of the displayed start torque, which will be ignored.

(27) SLOW ERR NO.:

The number of pulses in excess of the preset number of pulses. Consequently, a slow error will result.

(28) COMPENSATION NUM:

The number of pulses preset as compensation pulses, which will be performed after the display torque exceeds the cut torque, and the motor will be automatically stopped.

(29) BOLT NUMBER:

The number of tightening points of a single work with the group management function used.

(30) PASS:

The forced completion of work.

(31) RESET:

A function to cancel the output of each relay and initialize the remaining bolt number.

(32) SLOW2:

A tightening state where the number of pulses in excess of the number of SLOW ER pulses though the range of torque tightening is okay.

(33) RELAY TIME:

A function to specify the time to keep relay pulse output signal on.

(34) RUNDOWN:

Tightening data per one bolt.

(35) AD Val:

A mode in which a torque signal applied to the main shaft is displayed.

(36) Maintenance Warning (Bolt Warning)

This function is used to determine the capacity degradation of the tool. Collect the tightening data of total maintenance number and warn when the tightening number of SLOW ER and SLOW2 are more than maintenance warning number.

(37) Date and Time

Wireless unit internally backs up the date and time. When it is used for the first time or has not been turned on the power more than one month, please set the correct date and time.

(38) A USBconnector:

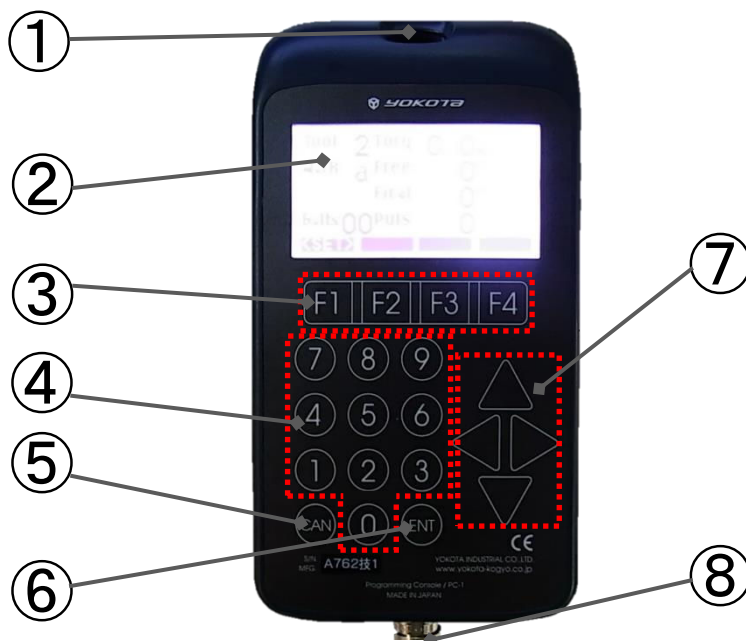
A USB thumb drive (USB flash storage) is connected to save data and the set value. A USB thumb drive formatted by the FAT32 form with the capacity 8GB or less can be used. There is a possibility that the USB thumb drive cannot be used according to the usage condition of the USB memory or a type of the USB thumb drive. Moreover, as the data to be saved is going to saved under the same file name, please make sure to copy or save the existing file written in the USB thumb drive to another media. The USB thumb drive formatted by the NTFS or other form must be reformatted by the FAT32 form using a PC. In that case, all the data previously saved will be deleted. Therefore, please make sure to format the USB thumb drive after making a backup of the data to another media.

If USB memory is provided with special function such as write-protect, its operation may be limited or it cannot be used.

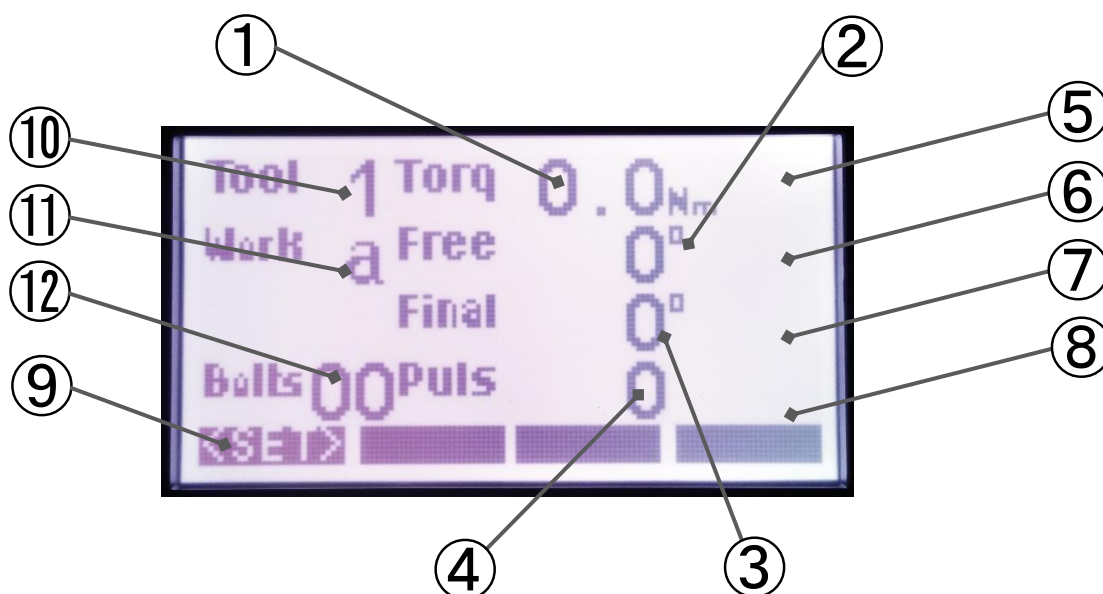
3. Specification

| | |
|-------------------------------|---|
| Model | PC-1 |
| External dimension | 100mm(W)×185mm(H)×24mm(D) (Excluding protrusions) |
| Weight | 0.3Kg |
| Ambient operating temperature | 0~40°C |
| Ambient operating humidity | 35~80%RH (without condensation) |
| Power supply capacity | DC12V±10% 0.16A |
| Connector | I2C male connector (6-pin) The length of the cable must be less than 10m |
| Standard accessory cable | PRC05 connector harness 5m |

4. Each part description



| | |
|--------------------------------|--|
| ① Mounting hole | |
| ② Display screen | Show tightening result, setting item and set value |
| ③ Function key | Switching of setting screen and tightening screen or of display screen |
| ④ Numeric key | Enter the set value |
| ⑤ CAN key | Return to the previous screen |
| ⑥ ENT key | Determine items and input value |
| ⑦ Up, down, left and right key | Move the selection of setting items up and down |
| ⑧ PRC05 connector | Connector for connecting cable |



| | |
|------------------------------------|---|
| ① Torque value | Display the tightening torque |
| ② Free running angle | Display the rotated angle before defecting a start torque |
| ③ Tightening angle | Display the angle of from detection of the display start torque until the end of the tightening |
| ④ Pulse number | Display tightening pulse number |
| ⑤ Torque determination | Display 「OVER」 when the torque exceeds the upper limit and 「UNDER」 when the torque is less than the lower limit |
| ⑥ Free running angle determination | Display 「OVER」 when the free running angle exceeds the upper limit and 「UNDER」 when the free running angle is less than the lower limit |
| ⑦ Tightening angle determination | Display 「OVER」 when the tightening angle exceeds the upper limit and 「UNDER」 when the tightening angle is less than the lower limit |
| ⑧ Pulse determination | Display 「SLOW」 in that case of SLOW ER and 「SLOW2」 in that case of SLOW2 |
| ⑨ SET | Hold to move to the set screen |
| ⑩ Tool number display | Display the tool number that is currently selected |
| ⑪ Work number display | Display the work number that is currently selected |
| ⑫ Bolt number display | Display the tightening number or remaining number |

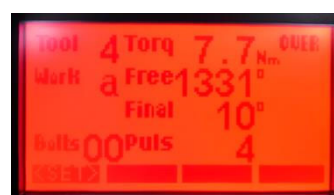
Display (Setting)




Display (Tightening OK)



Display (Tightening NG)



● Descriptions of symbols

 **WARNING** : Indicating that mishandling may result in death or serious injury of the user.

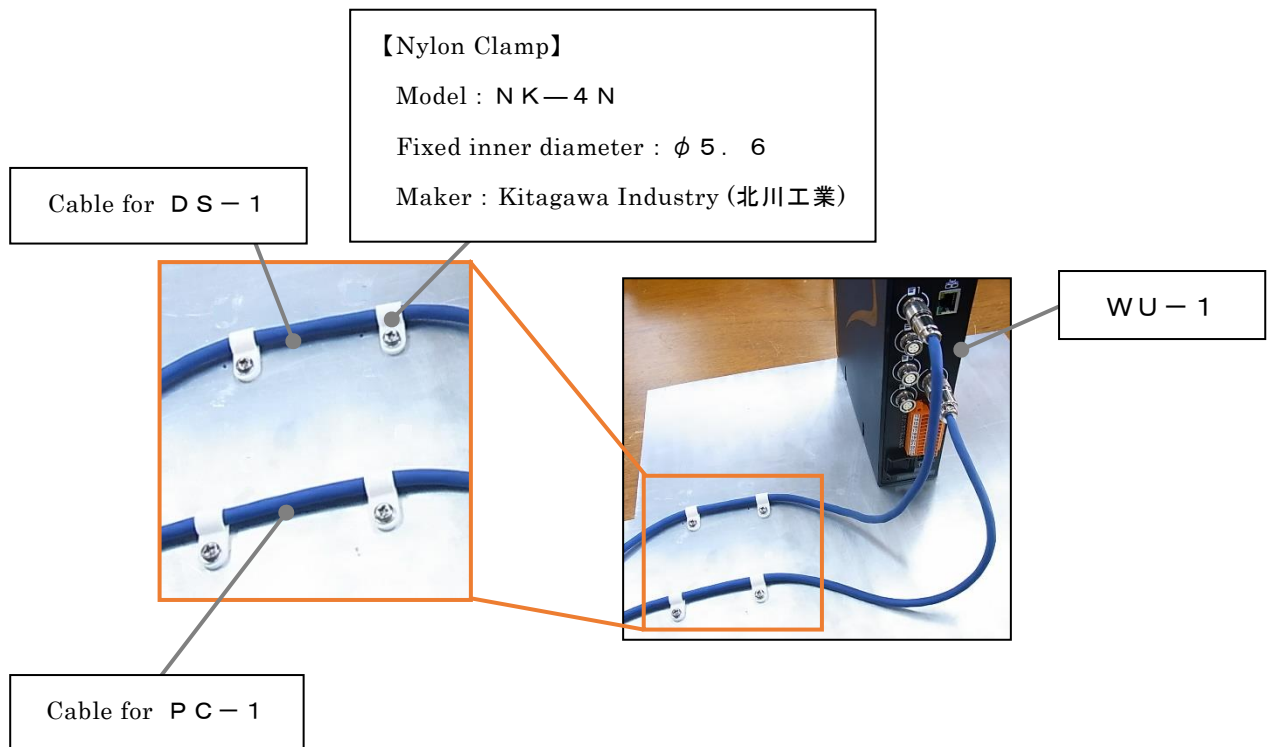


: Be sure to read this Manual before use and use the product correctly after you fully understand contents.

● Fixed cable

Please fix the cable if there is a possibility that the PC-1 or WU-1 (wireless unit) is dragged by the cable.

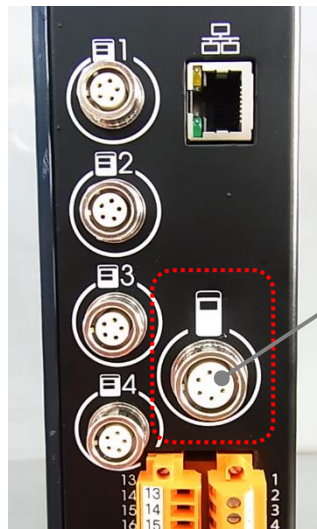
- Below is an example of fixing method. Please select the appropriate method depending on the situation.
- Fix the cable with some spaces not to apply strong stress on the connector part of the cable
- Inspect the fixed part regularly and confirm whether clamp has no abnormality such as looseness.



5. Connection with WU-1, Start-up

5.1. Connect WU-1 and PRC05 with connector harness

- ※Please be careful of the grooves of harness and direction of the convex of the connector
- ※The power of WU-1 can be either ON/OFF in connection



Connector for P C - 1

P C - 1 side

W U - 1 side

Note the convex and groove when you connect

Note the convex and groove when you connect

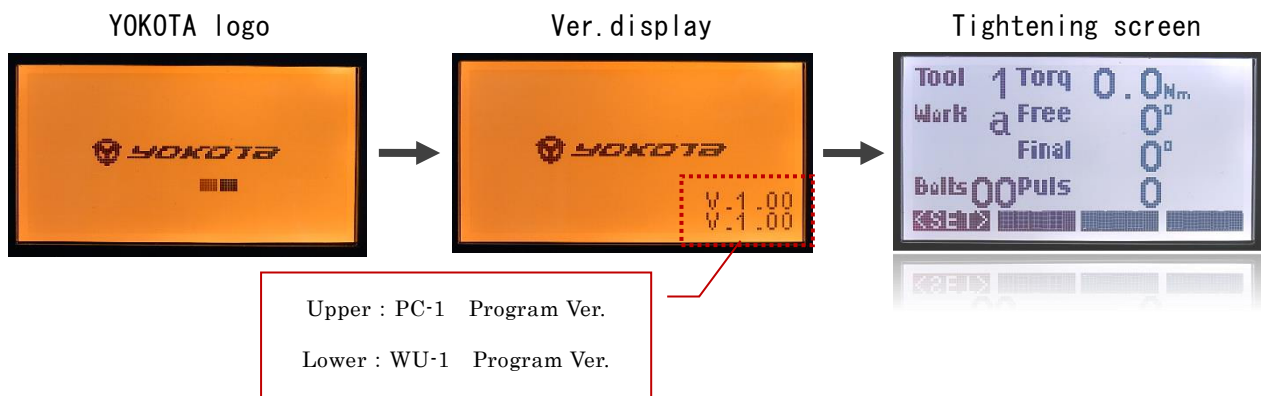


5.2. Start PC-1

- Turn on the power of WU-1
- PC-1 starts automatically after it connects the connector harness.

5.3. YOKOTA logo, VER. and tightening screen is displayed.

- Operation is possible after the tightening screen is displayed.



6. Setting method

※During the setting of PC-1, do not set at the browser of WU-1.

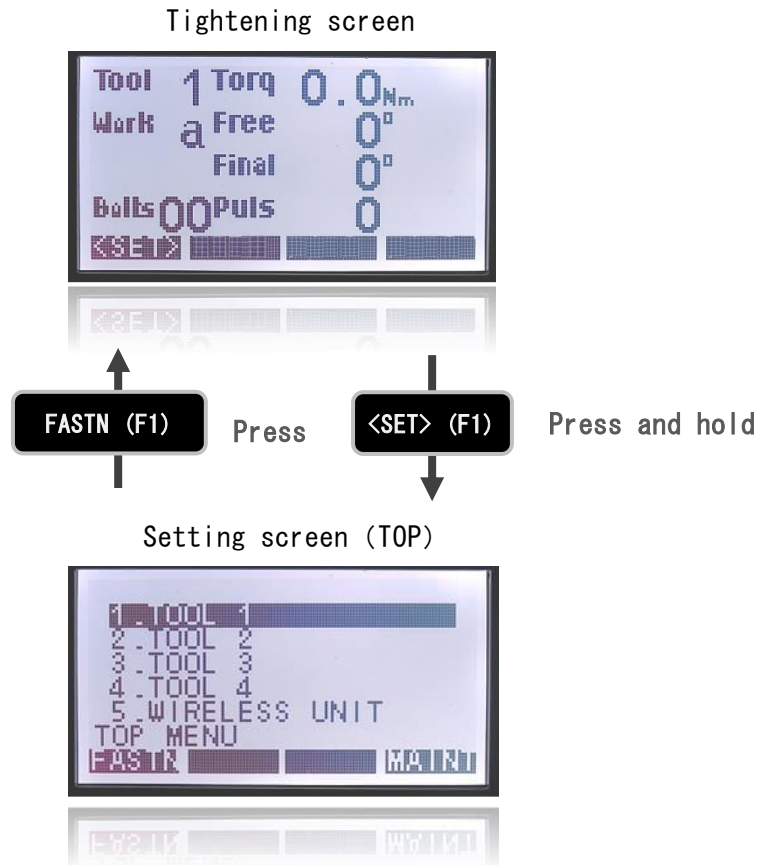
The change of the setting value is performed at the time of tightening screen transition.

(Setting value in WU-1 is rewritten at the time of tightening screen transition and sent to the tool.)

6.1. The transition of the tightening screen and setting screen (TOP)

The tightening screen is switched to the setting screen (TOP) by pressing and holding 「<SET> (F1)」

The setting screen (TOP) is switched to the tightening screen by pressing 「FASTEN (F1)」



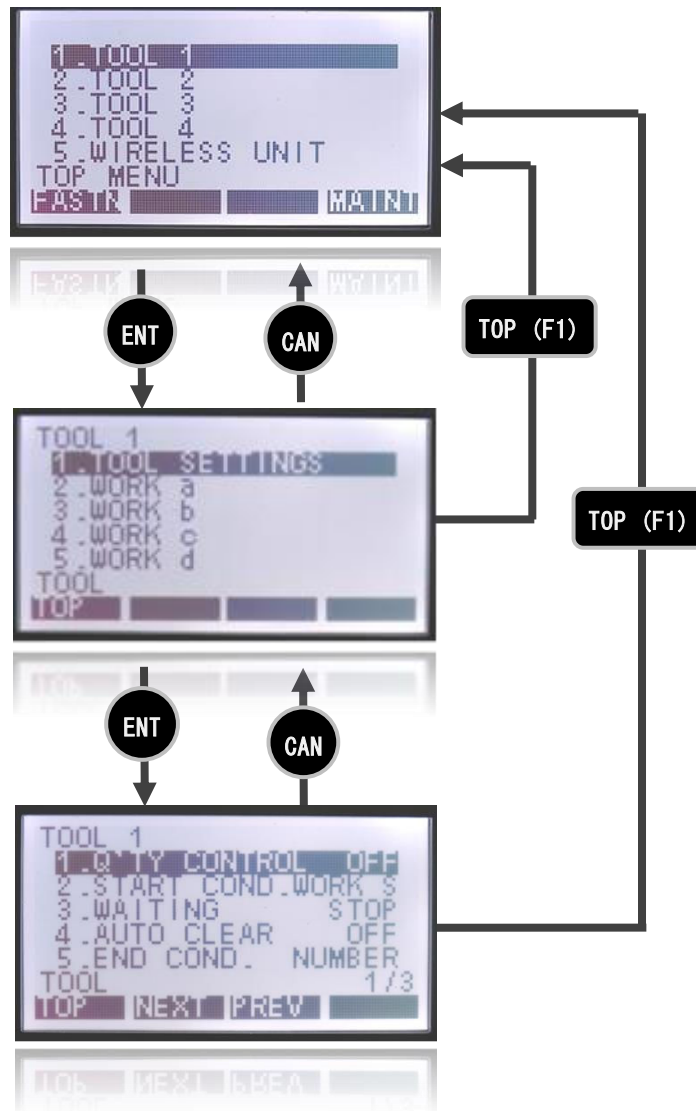
6.2. The transition from the setting screen (TOP) to each setting screen

After select of item in the setting screen (TOP), press 「ENT」 to switch to the each setting screen.

Select item with up and down key or numeric key.(The numeric key corresponds to the first number of each item.)

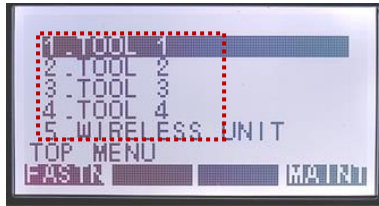
Press 「CAN」 to return to the previous setting screen.

Press 「TOP (F1)」 to return to the setting screen (TOP).

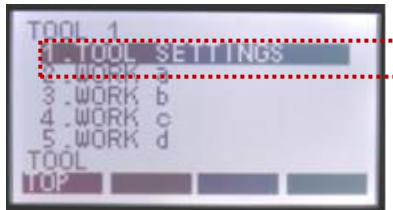


6.2.1. The transition from the setting screen (TOP) to the common setting screen for all work (Chapter 8.1.1.)

- ① Select one of the 「1.TOOL 1」 ~ 「4.TOOL 4」 in the setting screen (TOP) and press 「ENT」 . (Use up and down key or numeric key to select)

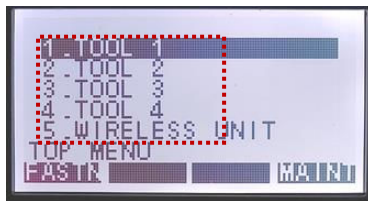


- ② Select 「1.TOOL SETTING」 and press 「ENT」 .

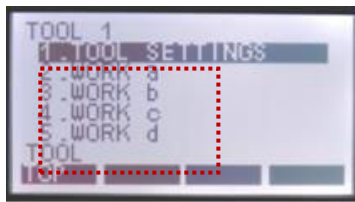


6.2.2. The transition from the setting screen (TOP) to the setting screen of each work (Chapter 8.1.2)

- ① Select one of the 「1.TOOL 1」 ~ 「4.TOOL 4」 in the setting screen (TOP) and press 「ENT」 . (Use up and down key or numeric key to select)

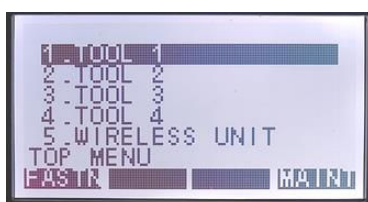


- ① Select one of the 「S2.WORK a」 ~ 「5.WORK d」 in the setting screen (TOP) and press 「ENT」 . (Use up and down key or numeric key to select)



6.2.3. The transition from the setting screen (TOP) to the setting screen of wireless unit (Chapter 8.2)

- ① Select 「5.WIRELESS UNIT」 in the setting screen (TOP) and press 「ENT」 .



6.2.4. The transition from the setting screen (TOP) to the maintenance screen (Chapter 8.3.)

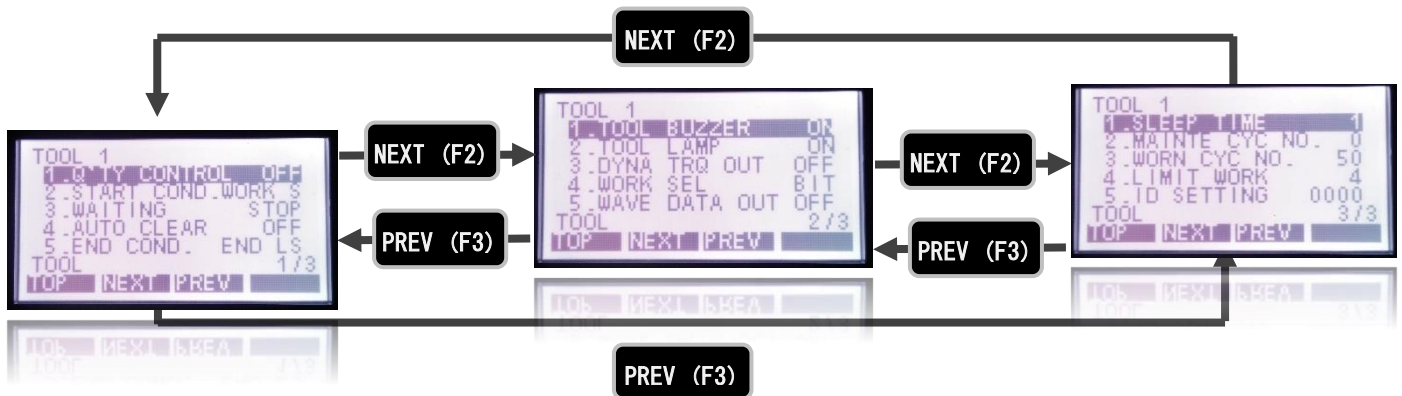
- ① Press 「MATNT(F4)」 in the setting screen



6.3. Transition of the page of the setting screen

If the setting item is more than one page, press 「NEXT (F2)」 to move to the next page and press 「PREV(F3)」 to move to the previous page.

Move to the final page by pressing 「PREV(F3)」 at the first page and move to the first page by pressing 「NEXT(F2)」 on the final page.



6.4. The input and change of setting value

Select the setting item and press 「ENT」 .

Set and change the setting value by the following operation

- Input the value : Select the digit with the left and right key and input the value with the numeric key
- Switching of the setting value (ON⇌OFF) : Switch the item with up and down key

Press 「ENT」 to set the input value

Press 「CAN」 to cancel the input value

7. Notes on use USB memory use

When you use USB memory to perform the following tasks, please carry out the procedure of Chapter 7.1 or 7.2 in advance.

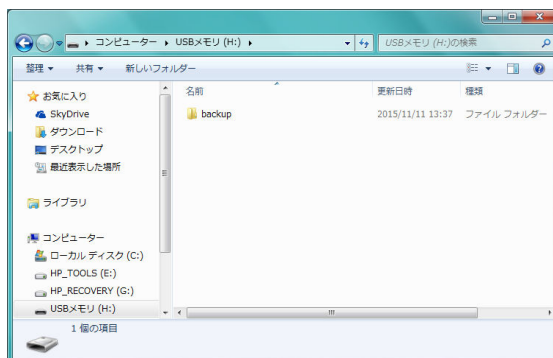
- To save the setting value and tightening result stored in WU-1 to USB memory : Chapter 7.1
- To write the setting value saved in USB memory to WU-1 : Chapter 7.2

※ This task corresponds to WU-1 Ver.1.10 or later

7.1. Save the setting value and tightening result stored in WU-1 to USB memory

7.1.1. Create 「backup」 folder in the root of USB memory

(Root : The top floor layer in the hierarchical file structure)



7.1.2. Insert USB memory used in 7.1.1 to USB connector of WU-1

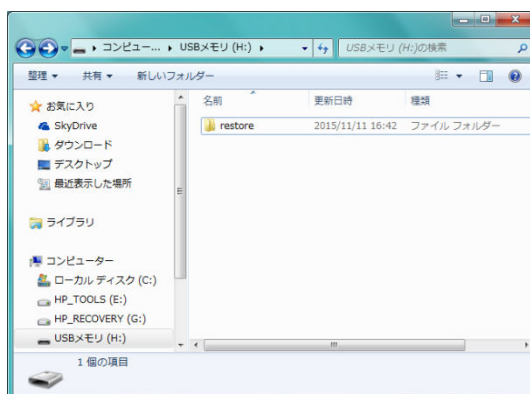
7.1.3. Save it

(Refer Chapter 8.3.2 how to save the setting value and Chapter 8.3.3 for the tightening result)

7.2. Write the setting value saved in USB memory to WU-1

7.2.1. Create 「restore」 folder in the root of USB memory

(Root : The top floor layer in the hierarchical file structure)



7.2.2. Restore the date file of setting value that you write to WU-1 in 「restore」 folder

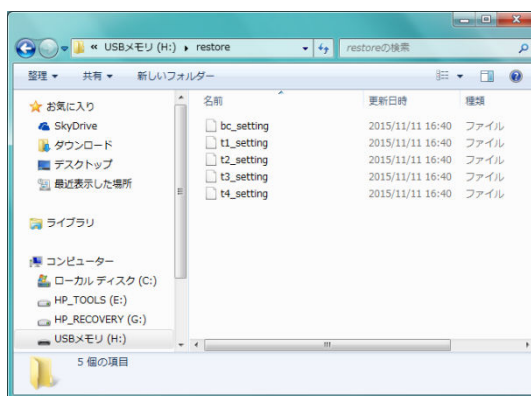
- TOOL1 setting value : t1_setting
- TOOL2 setting value : t2_setting
- TOOL3 setting value : t3_setting
- TOOL4 setting value : t4_setting
- WU-1 setting value : bc_setting

※ Only restore the date file that you would like to write to 「restore」 folder
Write all restored file to WU-1

Example 1 : In case of writing the setting value only in TOOL1 : Restore only t1_setting file

Example 2 : In case of writing the setting value of TOOL2 and WU-1 : Restore t2_setting and bc_setting file

Example 3 : In case of writing the setting value of TOOL1~TOOL4 and WU-1 : Restore all files (The figure below)



7.2.3. Insert USB memory used in 7.2.2 to USB connector of WU-1

7.2.4. Run the writing (Refer to Chapter 8.3.2)

※ If you create the wrong folder or USB memory does is not inserted to WU-1, the work will not be done correctly.

(The message of 「writing」 will be displayed in PC-1, but the screen will switch to the setting screen after a few seconds.)

8. Setting items

8.1 Setting of TOOL 1 - 4

8.1.1 All work common setting items

Q'TY CONTROL

| Set contents | Selection | Default |
|--------------------------------|-----------|---------|
| Setting ON/OFF of Q'TY CONTROL | OFF ON | OFF |

START COND.

| Set contents | Selection | Default |
|---|-----------------|---------|
| Selecting the start condition of Q'TY CONTROL | WORK S FASTN | WORK S |

If the setting is changed, remove and insert the battery pack of the tool.

WAITING

| Set contents | Selection | Default |
|---|-------------|---------|
| Selecting the operation after completion of the work. | STOP RUN | STOP |

AUTO CLEAR

| Set contents | Selection | Default |
|---------------------|-----------|---------|
| Setting AUTO CLEAR. | OFF ON | OFF |

ON: When the remaining quantity becomes zero, it is cleared.

*This setting is valid only when the start condition is FASTN.

OFF : Even when the remaining quantity becomes zero, it is not cleared.

When PASS, RESET signal, or WORK S signal is entered, the remaining quantity is cleared.

END COND.

| Set contents | Selection | Default |
|--|------------------|---------|
| Selecting END CONDITION of Q'TY CONTROL. | END LS NUMBER | END LS |

TOOL BUZZER

| Set contents | Selection | Default |
|--|-----------|---------|
| Setting ON/OFF of tool buzzer at tightening judgement. | OFF ON | ON |

TOOL LAMP

| Set contents | Selection | Default |
|--|-----------|---------|
| Setting ON/OFF of tool lamp at tightening judgement. | OFF ON | ON |

** DYNA TRQ OUT

| Set contents | Selection | Default |
|--|-----------|---------|
| Setting ON/OFF of dynamic torque | OFF | OFF |
| ON : Output from the tool to the wireless unit | ON | |
| OFF : Not output from the tool to the wireless unit | | |
| ※To send output to external device from the wireless unit, set "DYNAMIC TORQUE DESTINATION" ON.(Chapter 8.2.3.3) | | |

WORK SEL

| Set contents | Selection | Default |
|-------------------|-----------|---------|
| Setting WORK SEL. | BIT | BIT |
| | DATA | |

WAVE DATA OUT

| Set contents | Selection | Default |
|---|-----------|---------|
| Setting ON/OFF of WAVE DATA OUTPUT. | OFF | OFF |
| ON: Output from the tool to the wireless unit. | ON | |
| OFF: No output from the tool to the wireless unit. | | |
| * To send output to external device from the wireless unit, set "WAVE DATA DESTINATION" ON. (see Cl. 8.2.3.3.) | | |

SLEEP TIME

| Set contents | Selection | Default |
|--------------------|---|---------|
| Setting SLEEP TIME | 0~100 (min) | 1 |
| | If "0" entered : Not sleep | |
| | ※If WU-1 is before Ver.1.08 and YS-e controller board is before Ver.1.02, 0~10(min) | |

** MAINTE CYC NO.

| Set contents | Selection | Default |
|---|--|---------|
| Sum up the tightening date for set number as a maintenance warning date | 0~255 | 0 |
| | 0 : Not use the maintenance warning | |

** WARN CYC NO.

| Set contents | Selection | Default |
|--|-----------|---------|
| Warning when the tightening number of SLOW and SLOW2 is more than the set number in total maintenance number | 1~255 | 50 |

LIMIT WORK

| Set contents | Selection | Default |
|--------------|-----------|---------|
|--------------|-----------|---------|

| | | |
|--|---|---|
| Setting the number of work to be used. | 1 : Only a 2 : a,b 3 : a,b,c 4 : a,b,c,d | 1 |
|--|---|---|

ID SETTING

| Set contents | Selection | Default |
|------------------------------------|-----------|---------|
| Setting the ID number of the tool. | 0~9999 | 0000 |

8.1.2 Setting items for every work (WORK a~WORK d)

START TRQ

| Set contents | Selection | Default |
|---|----------------|---------|
| Setting the value of start torque to be indicated. Set the value to be as follows: Upper limit torque \geq cut torque \geq lower limit torque \geq start torque. | 0.0~999.0(N·m) | 3.0N·m |

SWITCH TRQ

| Set contents | Selection | Default |
|--|----------------|---------|
| Set the torque to switch from motor mid-speed to motor high speed. | 0.0~999.0(N·m) | 3.0N·m |

MIN TRQ

| Set contents | Selection | Default |
|---|----------------|---------|
| Setting the lower limit of torque. Set the value to be as follows: Upper limit torque \geq cut torque \geq lower limit torque \geq start torque. | 0.0~999.0(N·m) | 3.0N·m |

CUT TRQ

| Set contents | Selection | Default |
|--|----------------|---------|
| Setting cut torque. Set the value to be as follows: Upper limit torque \geq cut torque \geq lower limit torque \geq start torque. | 0.0~999.0(N·m) | 3.0N·m |

MAX TRQ

| Set contents | Selection | Default |
|--|----------------|---------|
| Setting the upper limit torque. Set the value to be as follows: Upper limit torque \geq cut torque \geq lower limit torque \geq start torque. | 0.0~999.0(N·m) | 3.0N·m |

FREANGMIN

| Set contents | Selection | Default |
|--|-------------|---------|
| Setting the lower limit of free-running angle Set the value to be as follows: Upper limit of free-running angle \geq lower limit of free-running angle. | 0~30000 (°) | 0 |

FREANGMAX

| Set contents | Selection | Default |
|--|-------------|---------|
| Setting the upper limit of free-running angle. Set the value to be as follows: | 0~30000 (°) | 30000 |

Upper limit of free-running angle \geq lower limit of free-running angle.

FNL ANGMIN

| Set contents | Selection | Default |
|--------------|-----------|---------|
|--------------|-----------|---------|

| | | |
|---|------------|---|
| Setting the lower limit of final angle. Set the value to be as follows: | 0~9999 (°) | 0 |
|---|------------|---|

Upper limit of final angle \geq lower limit of final angle.

FNL ANGMAX

| Set contents | Selection | Default |
|--------------|-----------|---------|
|--------------|-----------|---------|

| | | |
|---|------------|------|
| Setting the upper limit of final angle. Set the value to be as follows: | 0~9999 (°) | 9999 |
|---|------------|------|

Upper limit of final angle \geq lower limit of final angle.

FRE ABORT

| Set contents | Selection | Default |
|--------------|-----------|---------|
|--------------|-----------|---------|

| | | |
|---|-------------|------|
| Setting the free running stop abort time. | 0.1~0.5 (s) | 0.10 |
|---|-------------|------|

LOW SPEED

| Set contents | Selection | Default |
|--------------|-----------|---------|
|--------------|-----------|---------|

| | | |
|--------------------------|----------------|------|
| Setting motor low speed. | 1200~1500(rpm) | 1200 |
|--------------------------|----------------|------|

MIDDLE SPEED

| Set contents | Selection | Default |
|--------------|-----------|---------|
|--------------|-----------|---------|

| | | |
|-----------------------------|----------------|------|
| Setting motor middle speed. | 1500~3000(rpm) | 2000 |
|-----------------------------|----------------|------|

HIGH SPEED

| Set contents | Selection | Default |
|--------------|-----------|---------|
|--------------|-----------|---------|

| | | |
|---------------------------|----------------|------|
| Setting motor high speed. | 1500~4800(rpm) | 3000 |
|---------------------------|----------------|------|

JUDGE TIME

| Set contents | Selection | Default |
|--------------|-----------|---------|
|--------------|-----------|---------|

| | | |
|---------------------|--------------|------|
| Setting judge time. | 0.02~0.99(s) | 0.50 |
|---------------------|--------------|------|

BOLT CO-EFF

| Set contents | Selection | Default |
|--------------|-----------|---------|
|--------------|-----------|---------|

| | | |
|---------------------------|-----------|------|
| Setting bolt coefficient. | 0.60~1.50 | 1.00 |
|---------------------------|-----------|------|

AVERAGE NO.

| Set contents | Selection | Default |
|--------------|-----------|---------|
|--------------|-----------|---------|

| | | |
|---------------------------|-----|---|
| Setting bolt coefficient. | 1~6 | 3 |
|---------------------------|-----|---|

AVERAGE MODE

| Set contents | Selection | Default |
|--------------|-----------|---------|
|--------------|-----------|---------|

| | | |
|-------------------------|--------|------|
| Selecting average mode. | CONT : | CONT |
|-------------------------|--------|------|

| | | |
|---------------------------------|--------|--|
| CONT: Averaging continuous data | PEAK : | |
|---------------------------------|--------|--|

PEAK: Averaging by extracting data for average number from peak value.

SKIP NO.

| Set contents | Selection | Default |
|----------------------|-----------|---------|
| Setting skip number. | 0~5 | 2 |

SLOW ER NO.

| Set contents | Selection | Default |
|----------------------------|-----------|---------|
| Setting slow error number. | 10~70 | 20 |

COMPEMC. NO.

| Set contents | Selection | Default |
|------------------------------|-----------|---------|
| Setting compensation number. | 0~5 | 0 |

Torque is also measured throughout compensation number.

FREERUNNING NG STOP

| Set contents | Selection | Default |
|---|-----------|---------|
| Setting ON/OFF of free-running NG stop. | OFF | OFF |

ON: In the event of free-running angle NG, the tool stops.

OFF: In the event of free-running angle NG, the tool does not stop.

ANG NG STOP

| Set contents | Selection | Default |
|--|-----------|---------|
| Setting ON/OFF of final angle NG stop. | OFF | OFF |

ON: In the event of final angle NG, the tool stop.

OFF: In the event of final angle NG, the tool does not stop.

** HAND RELEASE

| Set contents | Selection | Default |
|---|-----------|---------|
| If the tightening is in OK range when you release the throttle lever before shut off, determine whether it is OK or NG. | NG | NG |

OK

NG : Set NG even if it is in OK range. (NG for SLOW2)

OK : Set OK if it is in OK range (OK for SLOW2)

BOLT NO.

| Set contents | Selection | Default |
|---|-----------|---------|
| Setting bolt number under quantity control. | 0~99 | 2 |

** START REV NO.

| Set contents | Selection | Default |
|---|-----------|---------|
| When the tool start-up, the main shaft is rotated in the reverse direction for set times. | 0~5.0 | 0.0 |

0 : Not reverse rotation during start-up

** START REV SPD

| Set contents | Selection | Default |
|--------------|-----------|---------|
|--------------|-----------|---------|

| | | |
|--|----------------|------|
| Setting the start reverse rotation speed | 300~1200 (rpm) | 1200 |
|--|----------------|------|

**** REV PROHIBIT**

| Set contents | Selection | Default |
|--|-----------|---------|
| Set the operation of the tool when the reverse lever is in the reverse rotation direction. | OFF | OFF |
| | ON | |
| OFF : Not prohibit the reverse rotation | B.C. | |
| ON : Always prohibit the reverse rotation | | |
| B.C. : Prohibit the reverse rotation when the number is controlled | | |

8.2 WIRELESS UNIT

8.2.1 IN ALLOCATION

IN ALLOCATION

| Set contents | Selection | Default |
|--|-------------|---------|
| Assign any of WORKa, WORKb, WORKc, WORKd, Tool stop (OFF), PASS, RESET, or END to input terminal 1 to 8, respectively. | WORKa : 0~8 | 0 |
| | WORKb : 0~8 | 0 |
| If "0" is entered, nothing is assigned. | WORKc : 0~8 | 0 |
| Assignment can be made to TOOL1, TOOL2, TOOL3, and TOOL4 respectively. | WORKd : 0~8 | 0 |
| For terminal numbers, see WU-1 Chapter 9. | OFF : 0~8 | 0 |
| | PASS : 0~8 | 0 |
| | RESET : 0~8 | 0 |
| | END : 0~8 | 0 |

8.2.2 RELAY ALLOCATION

8.2.2.1 FASTENING

FASTENING ASSIGNMENT

| Set contents | Selection | Default |
|---|---------------|---------|
| Assign any of NG, OK, OVER, UNDER, SLOW, Count NG, Pass, SLOW2, **WARN to output terminal 1 to 8. | NG : 0~8 | 0 |
| | OK : 0~8 | 0 |
| If "0" is entered, nothing is assigned. | OVER : 0~8 | 0 |
| Assignment can be made to TOOL1, TOOL2, TOOL3 and TOOL4 respectively. | UNDER : 0~8 | 0 |
| For terminal numbers, see Chapter 9. | SLOW ER : 0~8 | 0 |
| | CNT NG : 0~8 | 0 |
| | PASS : 0~8 | 0 |
| | SLOW2 : 0~8 | 0 |
| | **WARN : 0~8 | 0 |

8.2.2.2 ASSIGNMENT OF WORK OUTPUT

WORK ASSIGNMENT

| Set contents | Selection | Default |
|---|-----------------|---------|
| Assign any of WORKa finish, WORKb finish, WORKc finish, WORKd finish WORKa select, WORKb select, WORKc select and WORKd select to output terminal 1 to 8. | WORKa FIN : 0~8 | 0 |
| If "0" is entered, nothing is assigned. | WORKb FIN : 0~8 | 0 |
| Assignment can be made to TOOL1, TOOL2, TOOL3 and TOOL4 respectively. | WORKc FIN : 0~8 | 0 |
| For terminal numbers, see Chapter 9. | WORKd FIN : 0~8 | 0 |
| | WORKa SEL : 0~8 | 0 |
| | WORKb SEL : 0~8 | 0 |
| | WORKc SEL : 0~8 | 0 |
| | WORKd SEL : 0~8 | 0 |

8.2.2.3 RELAY TIME

WORK FIN

| Set contents | Selection | Default |
|---|-----------|---------|
| Setting work finish output time. | 0.0~9.9 | 0.0 |
| If 0, 0 is selected, outputting is continued. | | |

WORK SEL

| Set contents | Selection | Default |
|---|-----------|---------|
| Setting work select output time. | 0.0~9.9 | 0.0 |
| If 0, 0 is selected, outputting is continued. | | |

COUNT NG

| Set contents | Selection | Default |
|---|-----------|---------|
| Setting count NG output time. | 0.0~9.9 | 0.0 |
| If 0, 0 is selected, outputting is continued. | | |

OK

| Set contents | Selection | Default |
|---|-----------|---------|
| Setting OK output time. | 0.0~9.9 | 0.0 |
| If 0, 0 is selected, outputting is continued. | | |

OVER

| Set contents | Selection | Default |
|---|-----------|---------|
| Setting OVER output time. | 0.0~9.9 | 0.0 |
| If 0, 0 is selected, outputting is continued. | | |

OTHER RY

| Set contents | Selection | Default |
|-----------------------------------|-----------|---------|
| Setting other signal output time. | 0.0~9.9 | 0.0 |

If 0, 0 is selected, outputting is continued.

8.2.3 COMMUNICATION SETTING

8.2.3.1 SERIAL

BAUD RATE BAUD RATE

| Set contents | Selection | Default |
|--------------------|-----------|---------|
| Setting baud rate. | 2400 | 9600 |
| | 4800 | |
| | 9600 | |
| | 19200 | |
| | 38400 | |
| | 115200 | |

PARITY PARITY

| Set contents | Selection | Default |
|-----------------|-----------|---------|
| Setting parity. | NON | NON |
| | EVN | |
| | ODD | |

8.2.3.2 LAN

IP ADDRESS

| Set contents | Selection | Default |
|-------------------------|------------------|-----------------|
| Designating IP address. | 000.000.000.000 | 192.168.124.020 |
| | ~255.255.255.255 | |

After change, reboot the wireless unit.

SUBNET MASK

| Set contents | Selection | Default |
|-----------------------|------------------|---------------|
| Entering subnet mask. | 000.000.000.000 | 255.255.255.0 |
| | ~255.255.255.255 | |

After change, reboot the wireless unit.

PORT NO.

| Set contents | Selection | Default |
|----------------------|-----------|---------|
| Setting port number. | 0~65535 | 10001 |

After change, reboot the wireless unit.

MAC ADDRESS.

| Set contents | Selection | Default |
|---------------------|-----------|---------|
| Display Mac address | — | — |

Only display, cannot be changed

8.2.3.3 OUTPUT DESTINATION

RUNDOWN DATA

| Set contents | Selection | Default |
|--|-----------|-------------|
| Setting ON/OFF of SERIAL and LAN output of tutdown data per piece. | OFF | SERIAL : ON |
| | ON | ETHER : OFF |

WAVE DATA

| Set contents | Selection | Default |
|--|-----------|---------|
| Setting ON/OFF of serial output of wave data. | OFF | OFF |
| ON: Wave data is outputted from the wireless unit to external device. | ON | |
| OFF: Wave data is not outputted from the wireless unit to external device. | | |

* Before setting to ON, make sure that "WAVE DATA OUTPUT" is ON (see Cl.8.1.1).

** DYNAMIC TRQ

| Set contents | Selection | Default |
|---|-----------|---------|
| Setting ON/OFF of SERIAL output of dynamic torque date | OFF | OFF |
| ON : Dynamic torque date is outputted from the wireless unit to external device. | ON | |
| OFF : Dynamic torque date is not outputted from the wireless unit to external device. | | |

※Before setting to ON, make sure that "DYNAMIC TORQUE DATA OUTPUT" is ON

(Chapter .8.1.1).

8.2.3.4 TIGHTENING RESULT PRINT FORMAT

※ 通信仕様は通信仕様書「76-SS79130000」を参照下さい。

TOOL NUM PRINT.

| Set contents | Selection | Default |
|--|-----------|---------|
| Setting ON/OFF of printing of tool number for rundown. | OFF | ON |
| ON: Tool number is printed. | ON | |
| OFF: Tool number is not printed. | | |

REMAIN PRINT

| Set contents | Selection | Default |
|---|-----------|---------|
| Setting ON/OFF of remain print for rundown results. | OFF | ON |
| ON : Remaining quantity is printed. | ON | |
| OFF : Remaining quantity is not printed. | | |

PULS PRINT

| Set contents | Selection | Default |
|---|-----------|---------|
| Setting ON/OFF of remain print for rundown results. | OFF | ON |
| ON: Remaining quantity is printed. | ON | |
| OFF: Remaining quantity is not printed. | | |

DATE PRINT

*WU-1 Ver1.08 以降に対応 **WU-1 Ver1.10 以降に対応

| Set contents | Selection | Default |
|---|-----------|---------|
| Setting ON/OFF of date print for rundown results. | OFF | ON |
| ON: Date is printed. | ON | |
| OFF: Date is not printed. | | |

ID NO.

| Set contents | Selection | Default |
|---|-----------|-----------|
| Setting ON/OFF of LAN input for ID number | OFF | LAN : OFF |
| ON : ID number is outputted | ON | |
| OFF : ID number is not outputted | | |
| ※Before setting to ON, make sure that LAN output of 「tightening date output destination」 in WU-1 is ON. (Chapter 8.2.3.3) | | |

*** FIXED PRNT**

| Set contents | Selection | Default |
|---|-----------|---------|
| Setting fixed length/variable length for printing of rundown results. | OFF | ON |
| ON: Printing in fixed length. | ON | |
| OFF: Printing in variable length. | | |

8.2.4 DATE AND TIME SETTING

DATE

| Set contents | Selection | Default |
|--------------|------------|------------|
| Setting date | ----/--/-- | ----/--/-- |

TIME

| Set contents | Selection | Default |
|-------------------------|-----------|---------|
| Setting time (24 hours) | -- : -- | -- : -- |

8.3 MAINTENANCE

8.3.1 SYSTEM CHECK

SYSTEM CHECK

| Set contents | Selection | Default |
|--------------|-----------|---------|
|--------------|-----------|---------|

| | | |
|---|---|---|
| Display the AD and angle value of TOOL1 | - | - |
|---|---|---|

※Display in conjunction when it is connected with DS-1. (Set TOOL1 display)

**Display Ver. of WU-1(W)、TOOL1(T1)、TOOL2(T2)、TOOL3(T3)、TOOL4(T4)

8.3.2 SET VALUE

** OVER SERIAL

| Set contents | Selection | Default |
|--------------|-----------|---------|
|--------------|-----------|---------|

| | | |
|------------------------------------|---|---|
| SERIAL output of the setting value | - | - |
|------------------------------------|---|---|

** OVER LAN

| Set contents | Selection | Default |
|--------------|-----------|---------|
|--------------|-----------|---------|

| | | |
|---------------------------------|---|---|
| LAN output of the setting value | - | - |
|---------------------------------|---|---|

** USB BACKUP

| Set contents | Selection | Default |
|--------------|-----------|---------|
|--------------|-----------|---------|

| | | |
|--------------------------------------|---|---|
| Save the setting value in USB memory | - | - |
|--------------------------------------|---|---|

The following date files are created

- t1_setting : TOOL1 setting value
- t2_setting : TOOL2 setting value
- t3_setting : TOOL3 setting value
- t4_setting : TOOL4 setting value
- bc_setting : WU-1 setting value

Before disconnect USB memory, please make sure saving message is disappeared and switched to the setting screen.

** USB RESTORE

| Set contents | Selection | Default |
|--------------|-----------|---------|
|--------------|-----------|---------|

| | | |
|--|---|---|
| Write the setting value saved in USB memory in WU-1. | - | - |
|--|---|---|

※Before disconnect USB memory, please make sure writing message is disappeared and switched to the setting screen.

** CLEAR

| Set contents | Selection | Default |
|--------------|-----------|---------|
|--------------|-----------|---------|

| | | |
|--|---|---|
| Return the setting value to the initial value. | - | - |
|--|---|---|

※Once you select this item and press ENT, clear work is immediately performed.
Please be careful not to press wrongly.

*WU-1 Ver1.08 以降に対応 **WU-1 Ver1.10 以降に対応

8.3.3 STORED DATA

** OVER SERIAL

| Set contents | Selection | Default |
|--|-----------|---------|
| SERIAL output of the tightening result accumulated in WU-1 | - | - |

** OVER LAN

| Set contents | Selection | Default |
|--|-----------|---------|
| LAN output the tightening result accumulated in WU-1 | - | - |

** USB BACKUP

| Set contents | Selection | Default |
|--|-----------|---------|
| Save the tightening result accumulated in WU-1 to USB memory | - | - |

Following date file is created.

· fout.txt

※Before disconnect USB memory, please make sure saving message is disappeared and switched to the setting screen.

** CLEAR

| Set contents | Selection | Default |
|--|-----------|---------|
| Clear the tightening result accumulated in WU-1. | - | - |

※Once you select this item and press ENT, clear work is immediately performed.

Please be careful not to press wrongly.

** MAINT # RESET

| Set contents | Selection | Default |
|---|----------------------------|---------|
| Clear the date of SLOW and SLOW2. | MAINT1 RESET (Clear TOOL1) | - |
| Please clear the date when you exchange the tool. | MAINT2 RESET (Clear TOOL2) | |
| | MAINT3 RESET (Clear TOOL3) | |
| | MAINT4 RESET (Clear TOOL4) | |

8.3.4 PROGRAM UPDATE

** PROGRAM UPDATE

| Set contents | Selection | Default |
|---|-----------|---------|
| Items for program update | - | - |
| Please do not use this, because we will do. | | |

8.3.5 SETTING OF WIRELESS MODULE

** PAIR# CLEAR

| Set contents | Selection | Default |
|--|-------------------------|---------|
| Clear the pairing information of TOOL1,TOOL2,TOOL3 and TOOL4 | PAIR1 CLR (Clear TOOL1) | - |

*WU-1 Ver1.08 以降に対応 *WU-1 Ver1.10 以降に対応

※Once you do the pairing, LED of TOOL number of WU-1 will flush orange.

PAIR2 CLR (Clear TOOL2)

Use when you need to clear the orange flush.

PAIR3 CLR (Clear TOOL3)

When you do the pairing of the same tool number again or of exchanging tool, you do not need to do this.

PAIR4 CLR (Clear TOOL4)

ALL CLR (Clear TOOL1~4)

**** CHANGE WIRELESS CHANNEL #**

| Set contents | Selection | Default |
|-----------------------------|------------|---------|
| Change the wireless channel | CHANNEL 1 | - |
| | CHANNEL 2 | |
| | CHANNEL 3 | |
| | CHANNEL 4 | |
| | CHANNEL 5 | |
| | CHANNEL 6 | |
| | CHANNEL 7 | |
| | CHANNEL 8 | |
| | CHANNEL 9 | |
| | CHANNEL 10 | |
| | CHANNEL 11 | |

*WU-1 Ver1.08 以降に対応 **WU-1 Ver1.10 以降に対応

9. Trouble shooting

Before asking repair, carry out the following checks.

If the trouble cannot be solved by the following actions, or if other trouble occurs, stop using this product immediately, and be sure to ask us or our qualified (designated) servicing factory via your sales outlet or sales agent.

| Trouble | Probable cause | Action |
|-----------------------|-------------------------|--------------------|
| PC-1 does not operate | WU-1 is not ON. | Turn ON WU-1. |
| | Cable is not connected. | Connect the cable. |
| | Cable is broken. | Replace the cable. |

10. External view

