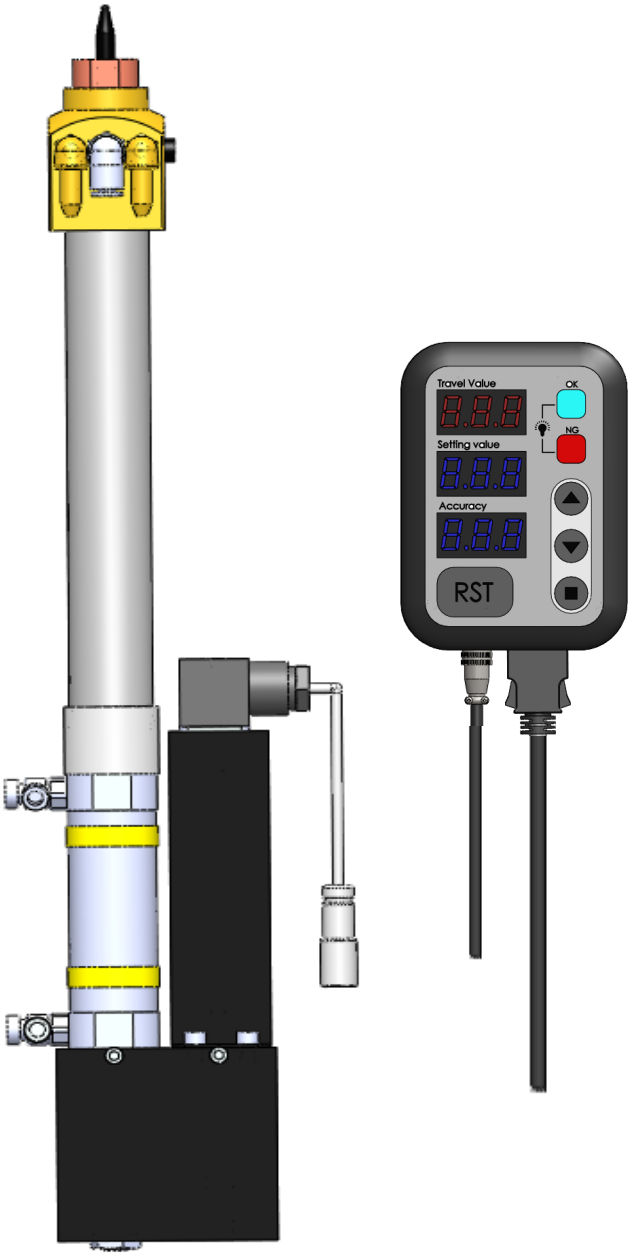


NUT MANAGER

NMJ-006S

Instruction Manual

Read the Instructions Manual carefully and use it correctly before using it.

KYOKUTOH CO.,LTD.

Content

Precautions

- ❖ Never disassemble or modify.
  - ➢ Abnormal operation causes injury or ignition.
- ❖ Do not immerse in water or spray large amounts of water (0.07 liters/min, 10 minutes in a row).
  - ➢ Causes abnormal operation.
- ❖ Be sure to stop the air and electricity supply before installing it.
  - ➢ Causes personal injury during installation.
- ❖ Do not use parts other than those specified for operating parts.
  - ➢ Causes failure and accidents.
- ❖ Do not scratch, break, bend and pull too much, lift heavy objects, or squeeze too much into the wiring.
  - ➢ Wiring is broken, it causes poor operation.
- ❖ Do not insert fingers or hands between moving parts or gaps during operation.
  - ➢ You may get sucked in or caught, and you may get injured.
- ❖ Keep metal and foreign objects, such as pins and needles, from entering the gap between the screw cap and the guide pin during operation.
  - ➢ Abnormal motion may result in personal injury.
- ❖ Do not use chlorine or acid-type detergent in the main body.
  - ➢ Poisonous gas caused from the detergent may damage your health.
- ❖ Do not use screw caps or guide pins other than setting.
  - ➢ Damage to the main body may cause an accident.
- ❖ When exchanging guide pins and screw caps, stop supplying air and electricity.
  - ➢ Causes a major personnel accident.
- ❖ Secure the main body and use it.
  - ➢ If the body is not fixed, it may cause welding, poor detection, failure, and accident.
- ❖ If alcohol or thinner is used to clean the main body, wipe it well and use it.
  - ➢ If spatter is splashed in the gasoline lubricant, it causes ignition.
- ❖ Remove spatter on the main body regularly.
  - ➢ If the spatter is stacked on the main body, it will cause abnormal operation.

When finished read it, keep it in a place that is always visible to the operator or administrator.

CAUTION: NMJ is a fixed weld that determines weld defect. We don't hold no liability the failure due to use outside of the intended.

1. Characteristics

1. 1 Outline

How to measure

Measure and determine the drop value of the guide pin.

If the value has been compared to the set value and passed, then it can be started to do welding. In case of failure, open the gun and do not energize it.

Basic function

Sequential measurement type	Can be measured in the order that the nuts are remembered in advance. (You can take action on changes in work thickness depending on the location of the RBI)
Condition change method	It is possible to change the condition with an external input signal. It is possible to set a maximum of 7 trillion patterns.
After welding, measurement	It can be checked for proper welding after the bump of the nut melted.
Before welding measurement	It is possible to detect Nut abnormality, such as 'Nut abnormality, out of position'.
Allows to select method of reset	You can select manual and automatic the method of release in case of error. If you select automatic reset, you can reset the time after caused error.

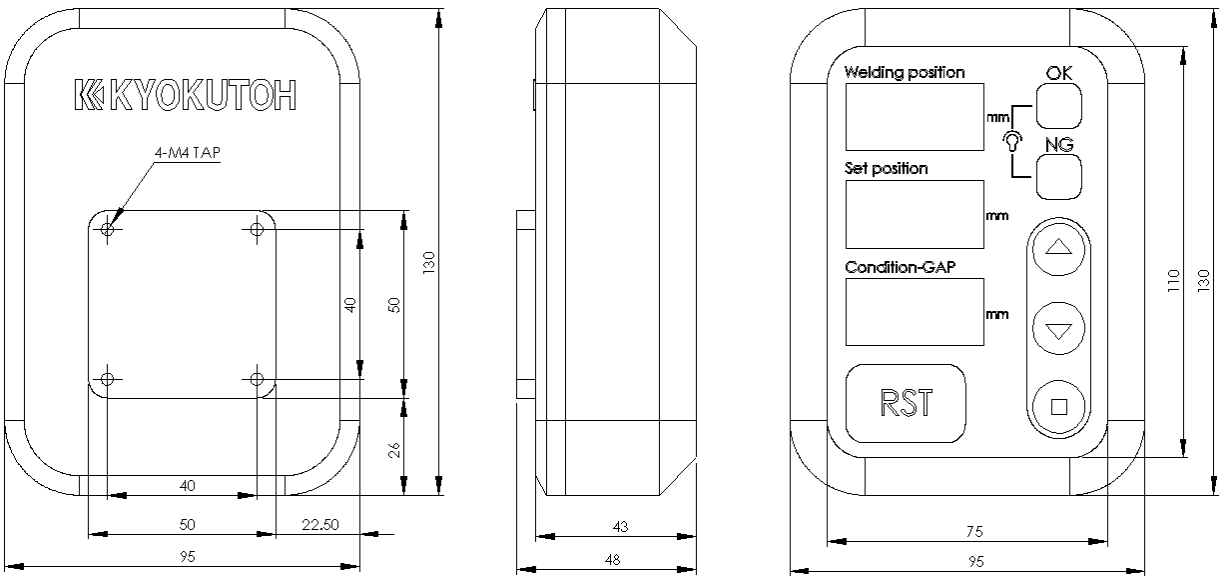
1. 2 Error detection example

				
Position faulty	Welding completed Nut	Size faulty	Direction faulty	Dropped(1)
				
Cap Looseness	Dropped(2)	Work Position Faulty	No Nut	Work faulty
				
No Work	Nut overlap	Work overlap		

2. Appearance and specification

Type	NMJ-006S
Power	DC24V
Control Cable	Standard Length 2.5m
Sensor input/output Cable	Standard Length 2.5m
Sensor input / output	No (Power input into control cable)
Control Sensor	Relay Output: DC24V Load Current 300mA
Measurement Value	0.1mm
Max measurement Range	50mm
Consumption power	Not more than 50W
Weight	About 0.95kgs

Basic size

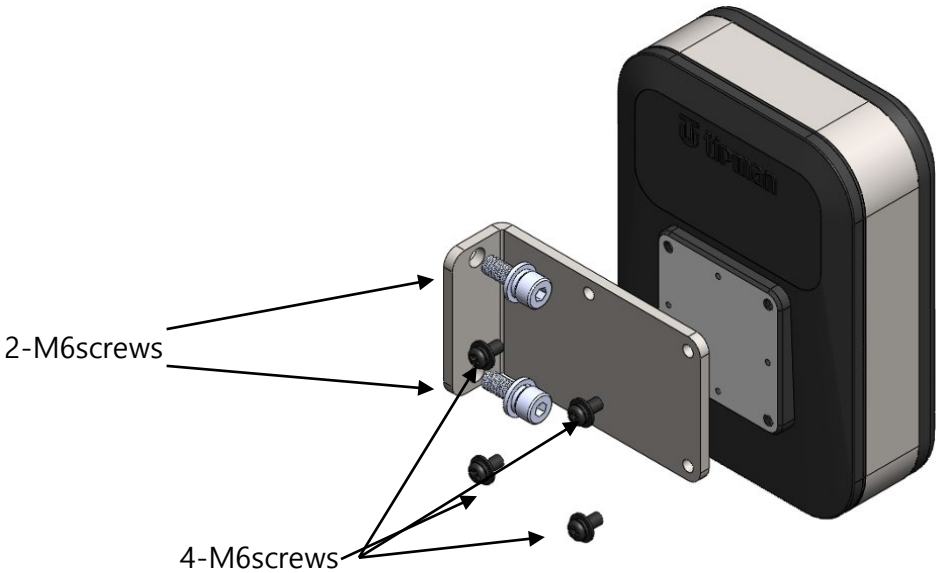


3. How to install

1. Secure the rear face with 4-M4 in any position.
   Optional fixing bracket is provided.

❖ Mounting method of fixing bracket (Option)

1. Mount the fixing bracket with four M4 screws on the back of the NMJ-006K.
2. Secure it in any position with two M6 screws.



Fixed bracket size

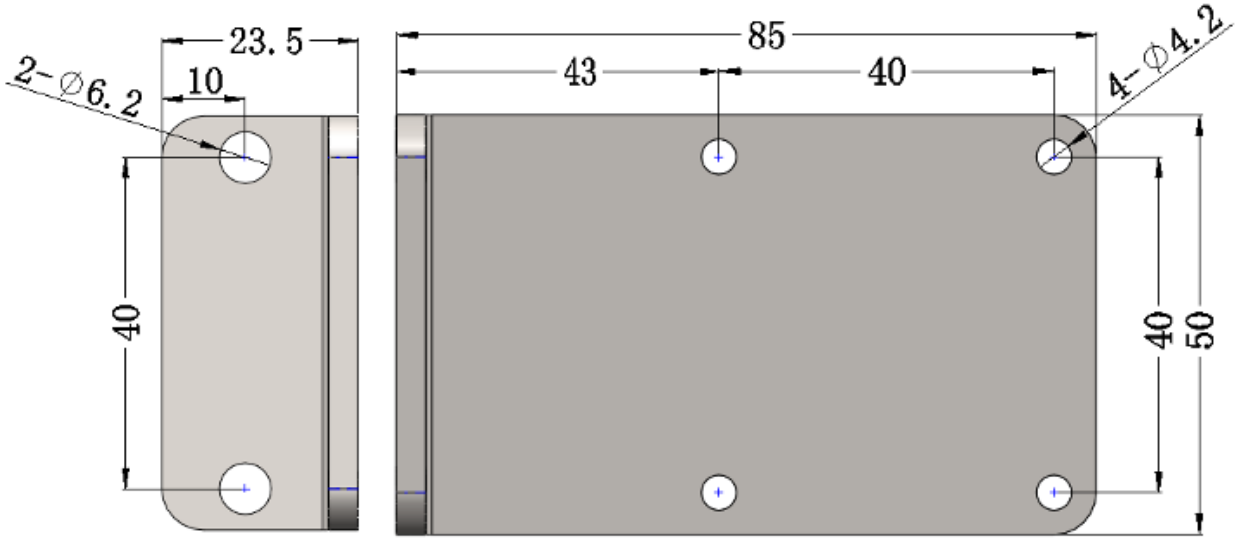
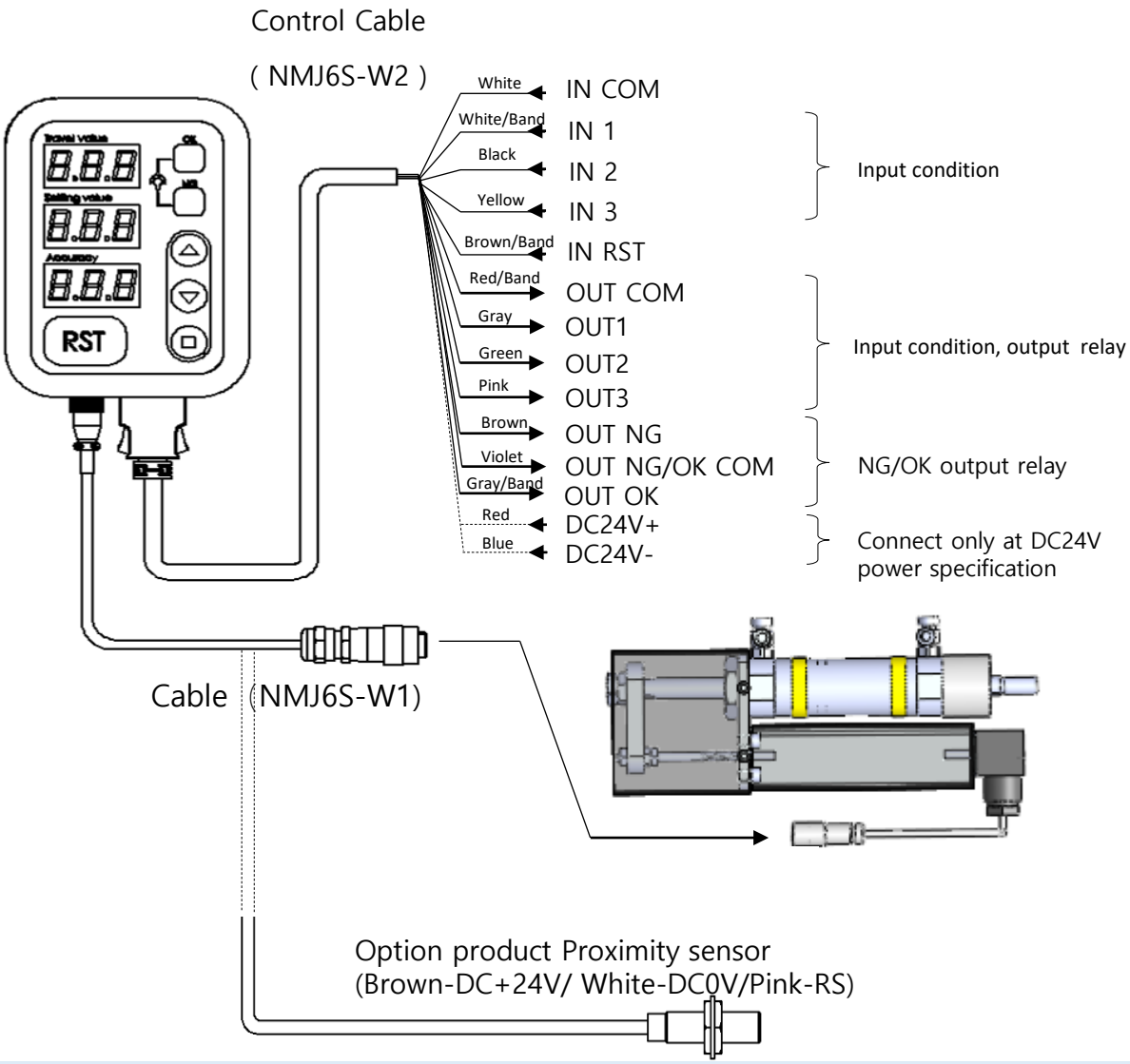


Plate thickness: 3.5mm

4. How to do wiring

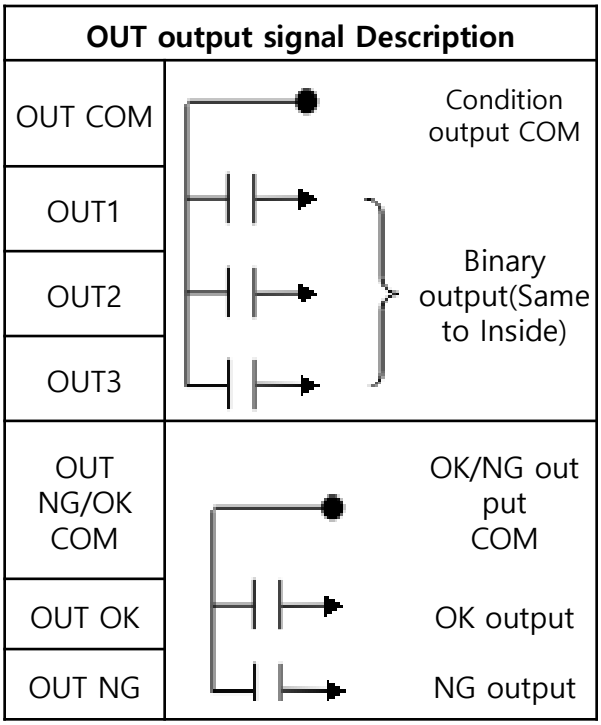


Control Cable Input / Output signal description of (NMJ6-W2)

IN input signal Description	
IN COM	Input signal COM
IN1	Condition signal. (Activation signal) Signal binary input. See next page for combinations
IN2	
IN3	
IN RST	Error Clear

Version 5.0 (basic Ver) Combination of Description signal (Binary)

Condition combination list table			
Combination Condition NO	T condition signal		
	IN1 (OUT1)	IN2 (OUT2)	IN3 (OUT3)
conditionL1	ON	OFF	OFF
conditionL2	OFF	ON	OFF
conditionL3	ON	ON	OFF
conditionL4	OFF	OFF	ON
conditionL5	ON	OFF	ON
conditionL6	ON	ON	OFF
conditionL7	ON	ON	ON

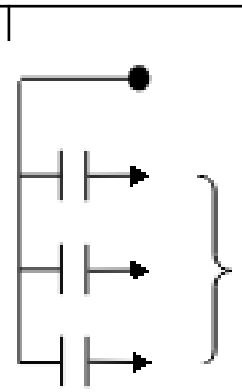


(REFERENCE) CONTROL Version NMJ-005K Vr3.0 & Vr3.3 (Automatic) / NMJ-006K Vr5.0 / CONTROL Version Confirmation – Touch simultaneously to display the front.

Version 3.1 The combination description signal (Binary)

Condition combination list table			
Combination Condition NO	T condition signal		
	IN1 (OUT1)	IN2 (OUT2)	IN3 (OUT3)
conditionL1	ON	OFF	OFF
conditionL2	OFF	ON	OFF
conditionL3	ON	ON	OFF
conditionL4	OFF	OFF	ON
conditionL5	ON	OFF	ON
conditionL6	ON	ON	OFF
conditionL7	ON	ON	ON

OUT output signal Description

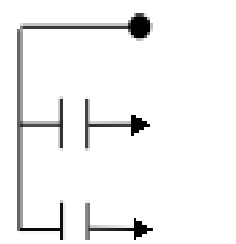


(REFERENCE) CONTROL Version NMJ-005K Vr3.0 & Vr3.3 (Automatic) / NMJ-006K Vr5.0 / CONTROL Version Confirmation – Touch simultaneously to display the front.

Version 3.3 Description

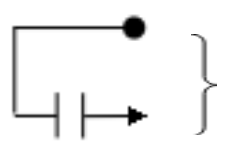
condition combination list table		
Combination Condition NO	T condition signal	
	IN1 (OUT1)	IN2 (OUT2)
conditionL1	ON	OFF
conditionL2	OFF	ON
conditionL3	ON	ON

OUT output signal description



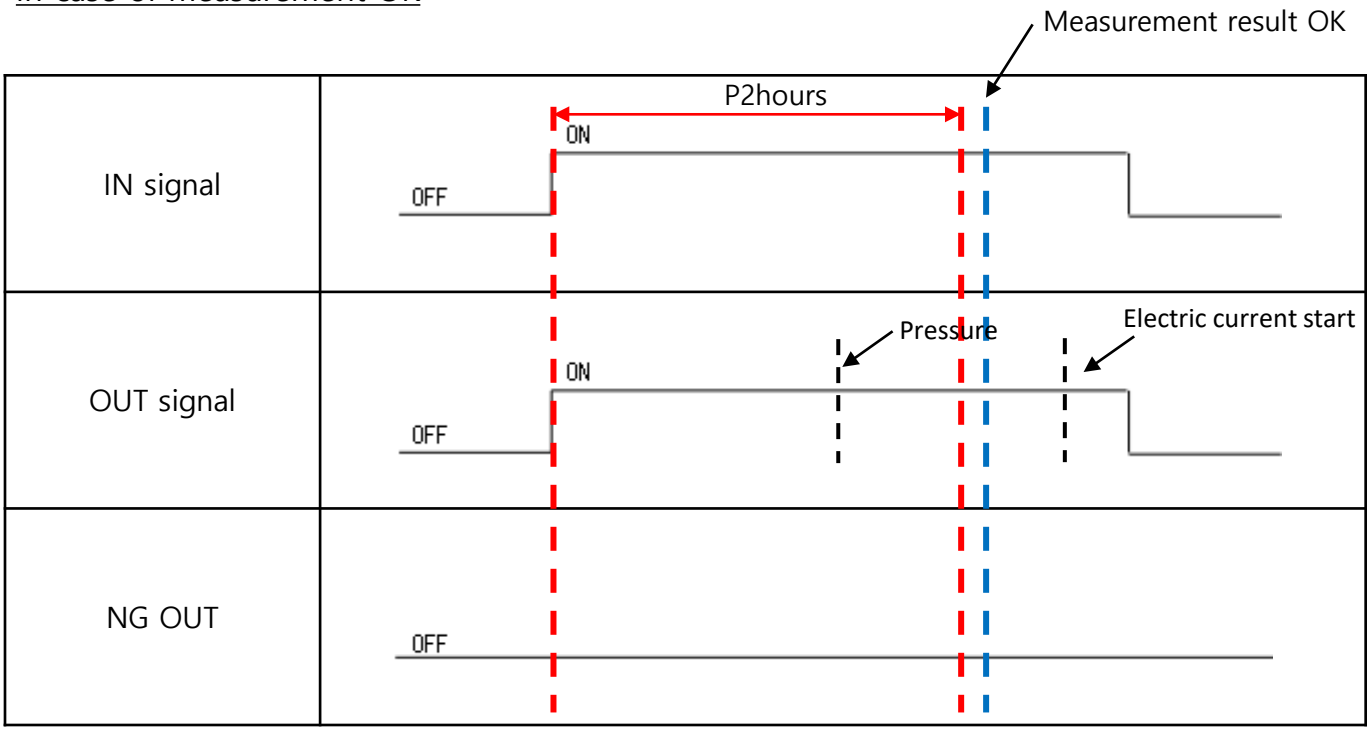
Output 3 kinds of condition.

OUT3: Output electric contact when OK mark is displayed after passing test.

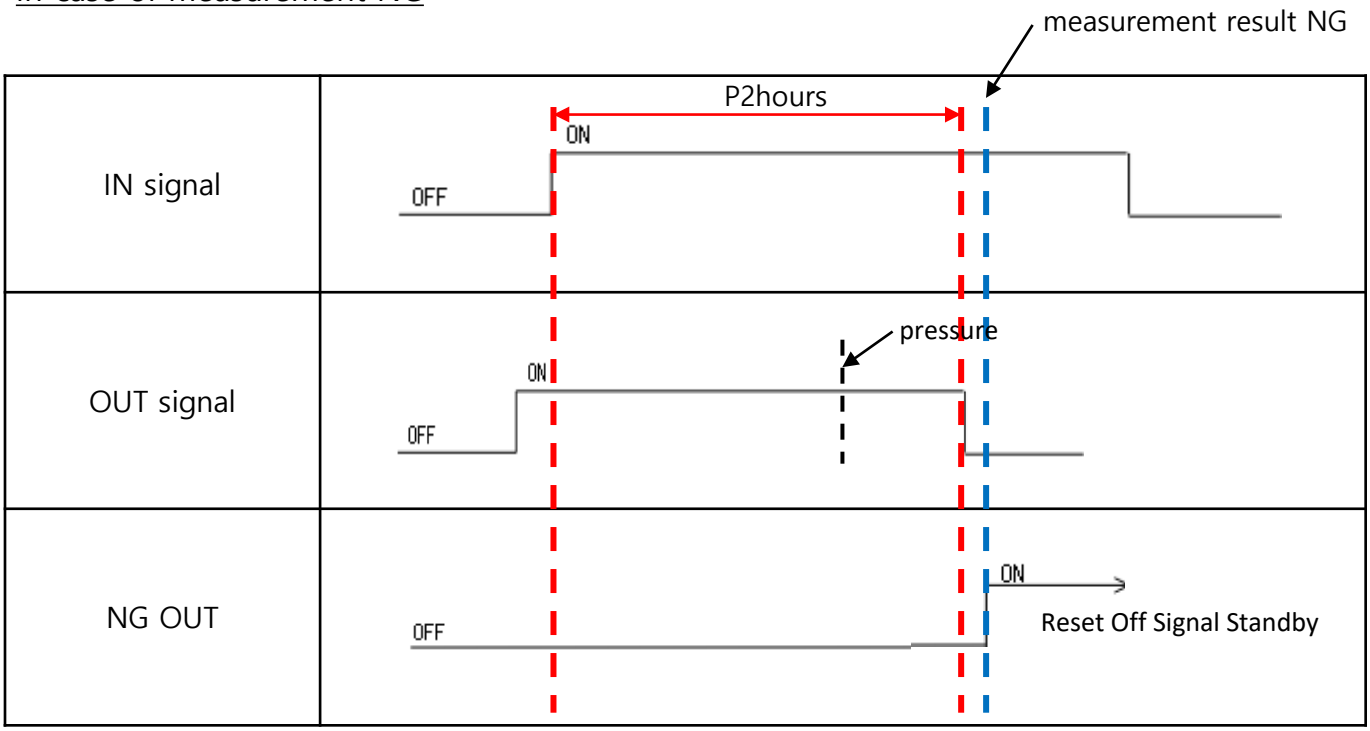


5. Input ▪ output timing chart

In case of measurement OK

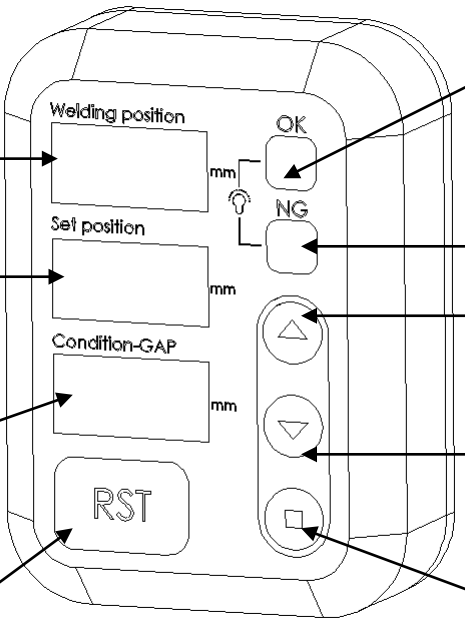


In case of measurement NG



OUT signal is output to condition (combination) such as IN signal.
e.g.) when IN1, IN2 input, above OUT signal is output from OUT1,OUT2.

6. Controller Description



Digital Display1
Position of guide pins during measurement and setting display

Digital Display2
Welding position and setting display

Digital Display3
Tolerance deviation and condition display

RST Switch
Reset Switch

OK signal
Measurement result OK display

NG signal
Measurement result NG or alarm

▲Switch
Setting Switch for +

▼Switch
Setting Switch for -

■Switch
Setting Switch for Confirmation & reservation

Display example

Display Content Description		
Display	Definition	Description
L**	Condition Code	Using condition
E**	Nut Quantity	Welding quantity (Residual)
P**	Parameter	Parameter Code
H**	Error	Error Code
Figure	According to sign	Welding position – Welding position Set position – Standard value Condition – GAP – Allowance range and condition

The position of the guide pin during the welding is 5.5mm

Welding quantity of (residual) Nuts are 6

Using condition 2

During L2 conditioning measurement, H-1Error (no position change in guide pin)

7. Mode Description

There are five types of following modes:

1.Measuring mode

Use this mode for normal.

The initial state is in this mode.

2.P value setting mode

Use this mode when setting the base parameter.

3.Standard value setting mode

It is used to adjust standard value setting and quantity of nut (E) that it is possible to do welding.

4.Error Mode

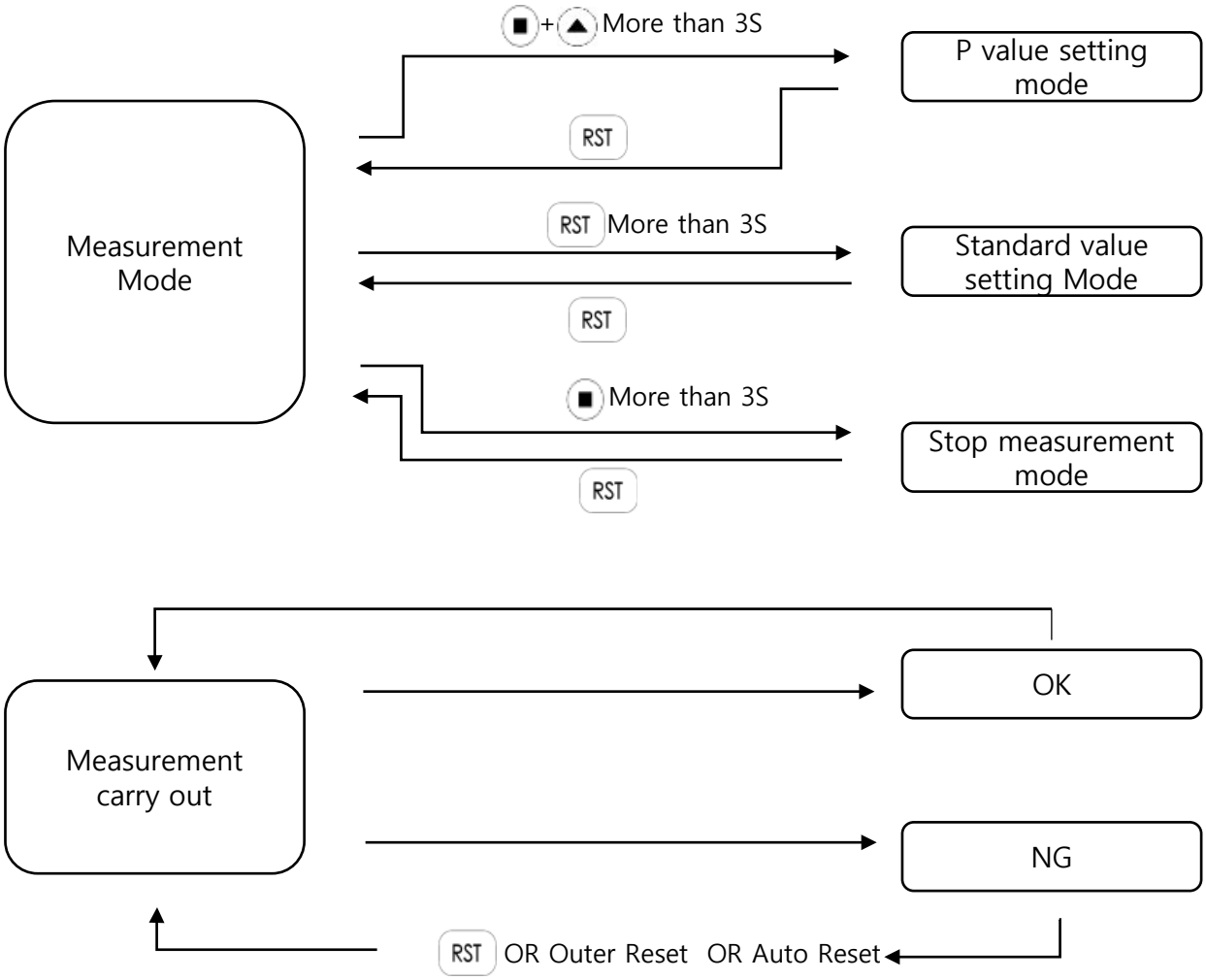
If an error occurs due to measurement result NG, etc., the mode is automatically entered.

5.measure stop mode

If you select this mode, Nut Manager function will be stopped.

(Regardless of OK, NG, Welding is possible.

How to Move to Each Mode



8. Setting and Description of Parameter

When install the parameter, make sure to set it up.
Please set it up according to the Instruction Manual.

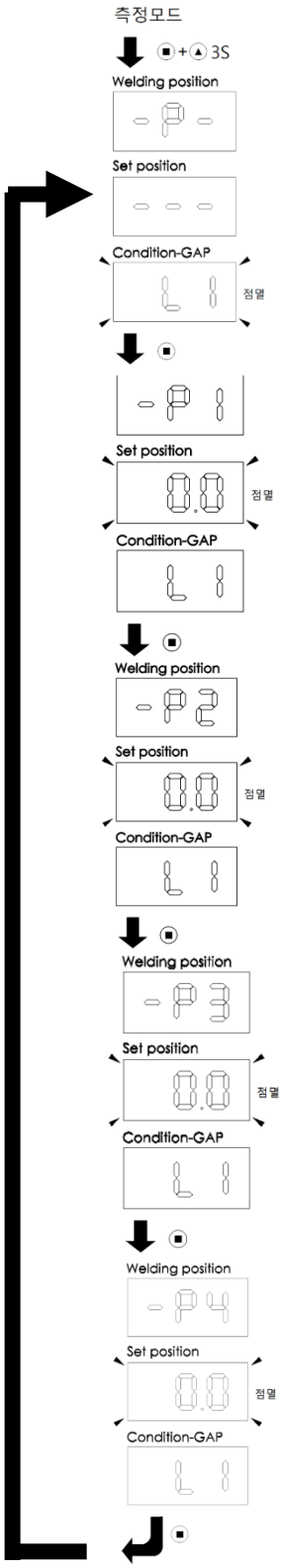
8. 1 Parameter Code

Parameter Code list		
Code	Setting quantity	Content
P1	0.0~9.9	Setting error reset method
P2	0.0~9.9	Setting measurement stand by hours
P3	0.0~9.9	Setting pass range
P4	0.0~9.9	Setting measurement after welding

Initial value of the parameter during shipping out		
Code	Initial setting value	Content
P1	0.0	Clear Error, Manual Reset
P2	0.4	Measurement is initiated after 0.4 seconds when IN signal input.
P3	0.3	Setting value ± 0.3mm
P4	0.0	Measurement invalidation after Welding

8-2 How to set up Parameter setting

Be sure to set up the settings during installation.
Set gradually P1 and set P4, press ▪ the button, the setting value can be preserved.
If you press reset before setting all conditions, it is not preserved and enters measurement mode.



Select the pattern you want to set.
Condition-GAP flashes. Set condition code (L1 - L7) by using ▲ or ▼ .
After setting, press ▪ and enter the next setting.

Setting of P1 Parameter
Set position flash. It adjusts the parameter by using ▲ or ▼ .
Press ▪ and change the setting status of P2.

Setting of P2 Parameter
Set position flash. It adjusts the parameter by using ▲ or ▼ .
Press ▪ and change the setting status of P3.

Setting of P3 Parameter
Set position flash. It adjusts the parameter by using ▲ or ▼ .
Press ▪ and change the setting status of P4.

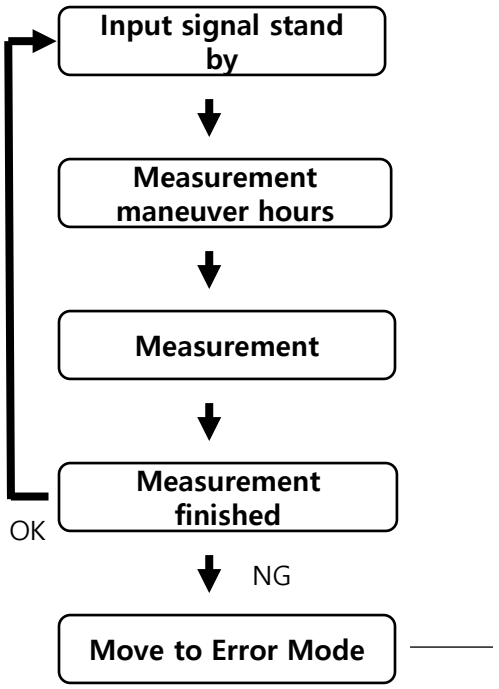
Setting of P4 Parameter
Set position flash. It adjusts the parameter by using ▲ or ▼ .
If press ▪ , all Parameter will be preserved.
After preserving the parameter data, return to measurement mode.

8-2 How to set up Parameter setting

P1/ Error Reset setting

P1 Parameter is the setting of the return method from Error Mode.

0.0 – Manual Reset: Press the RST button or perform an Outer signal reset when in Error mode.
0.1 to 9.9 – Automatically return from Error mode to measurement mode in setting time.
The unit of setting time is second.



In case the P1 parameter is set to Auto Reset,
When set hours, returns to measurement mode automatically.
(In Error mode, NG signal is maintained.)
Press the manual reset setting on the P1 parameter or Keep the Error mode until you input reset signal from outer.
(In Error mode, NG signal is maintained.)

P2/measurement stand by hours setting

P2 Parameter is a hour setting, which starts measurement a few seconds after input INSignal.
P2Parameter's setting value must be set according to the Welding Machine used by the customer in order to the electric current.
Refer to 4.2 Input and Output Timing Charts in the Installation Manual.
If the setting value is not properly set, It can not to be measured properly. Please be careful

P3/Allowance range setting

Setting allow to the remembered Standard value.
The acceptance range is as follows.

Maximum = Standard value + P3 value remembered
Minimum = Standard value – P3 value remembered

8. Setting and Description of Parameter

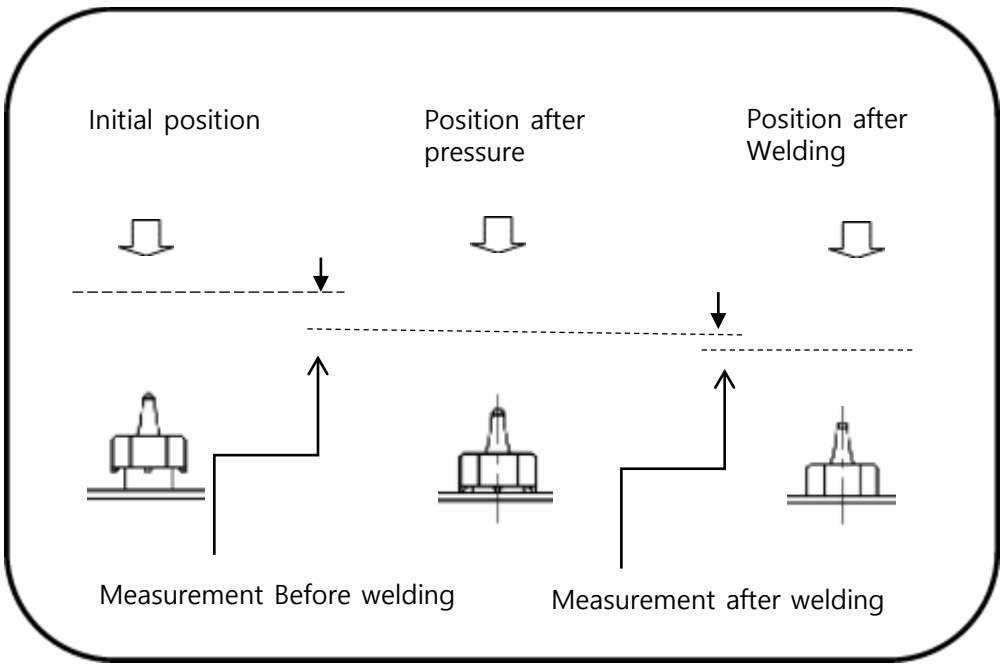
Measurement P4/Welding

Measure the amount of movement of the guide pins after Welding to ensure that the bump in the nut melt and that the Welding is properly performed.
Set the pass standard value for the amount of movement of this guide pins.

0.0 – Do not measure after Welding.
0.1~9.9 – Measure the amount of movement, since the position of the guide pin is lowered further after Welding.

If the amount of movement is bigger than the value set, it is belongs to pass.
Please set it according to the height of the bump in the nut you are using.

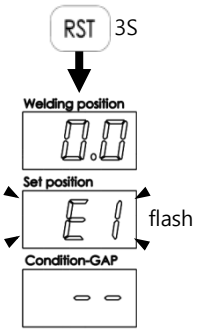
Position relationship of guide pins measured before and after Welding



9. How to set up welding standard

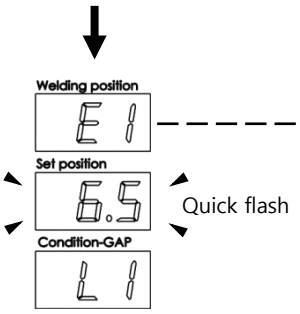
Remember the actual Work (Nut) as the Standard value.
When setting, turn the Welding off for safety.
(Measurements size variation and other measurement errors may be occurred during Welding during measurement.)
If you press Reset, it doesn't set up all conditions in the setting, it will not be preserved.
If you change the INcondition in the setting, it will be an error.

In case save the memory of Nut



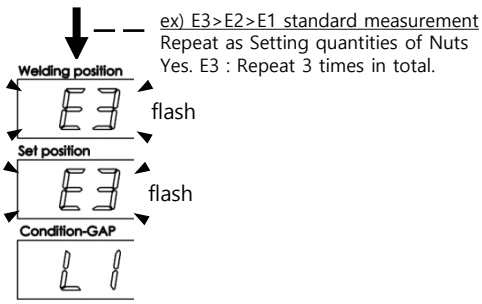
Adjust by using ▼ ▲ these button

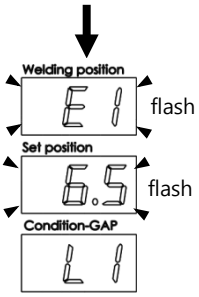
If it is remembered for a multiple nut
※ Evalue is set up to maximum 20



It appears as fast flash in the memory.

Maximum quantity of measurement nuts adjusted
※ From the quantity of Evalue settings, it appears as quick flash in the memory of the sequential standard setting.
When the memory is complete, the value decreased by 1 and moves to the setting of the next nut.
E20 > Measurement in order of E1





If flash appears on both sides, setting is complete.
(Three nut position settings completed on L1)
Caution: Please use it, even in measurement, the same number must be set in the same order.

If flash appears on both sides, setting is complete.
Press ■ and preserve the setting and return to measurement mode with the RST.

10. Supplementary Description

NMJ-006K has condition change (L1 - L7) and function of sequential measurement (E1 - E20).
Set it up according to the actual use environment.

1. Welding Nut (Work) is all the same.
Use condition1(L1) only, and also use sequential measure E1 only.
2. Different kinds of welding Nut (Work).
Set the condition (L1 - L7) per nut, and change the condition to measure.
Use only E1 for sequential measure.
3. Nut is the same, but the position where the guide pin comes down during actual Welding is different (for example, the thickness of the work is different).
In the sequential measure (E2~E20), measure all the RBIs by remembering them.
If the drop position of the guide pin is less than 7 pattern, it is also possible to change the condition (L1 - L7) to measure it.
(Use E1 only for Sequential Measurement)
4. I want to change the setting condition to Auto.
Set condition (L1 - L7) by work.
If necessary, perform a sequential measurement (E1 - E20) for each condition (L1 - L7).
5. If you want to have a stable measurement,
If the electrodes are worn out, please replace them quickly. Then, perform the standard value setting again.

A Study on Display of Sequential Measurement (E1~E20)
The value of the sequential measure (Evalue) is subtracted.
It's the same as the table below.

Display Example

E4	1st RBI (4 RBIs remained)
E3	2nd RBI (3 RBIs remained)
E2	3rd RBI (2 RBIs remained)
E1	4th RBI (1 RBIs remained)

Precautions for Sequential Measification
CAUTION: If an error occurs during a sequence measurement, check which nut the value represents after reset Please make sure it is in order.
In case of resetting an error before Welding
After resetting the error before Welding, the sequential measure(E) does not change.
Please try Welding again.
In case of resetting an error after Welding,
we recommend you to destroy your work.
If there is no problem with Welding and you do not destroy Work, reduce Evalue by 1 to start welding with the next RBI.
In case the sequence is confused and the sequence is not known
Enter "Stop measurement mode", finish the remained Welding, and return to measurement mode.
Number E goes back to the beginning and starts again.
(However, in the meantime, we don't determine whether you passed or not, so be careful.)

11. Stop measurement Mode

Enter "Stop measurement mode" in the following order: In this state, the Nut Manager will not decide pass or failure

Press this button more than 4 seconds

Display in position setting state	
Display place	Display content
Welding position	Current position value
Set position	Flash
Condition-GAP	Flash

If press this button in this status, return to measurement Mode.

Use stop measurement Mode example

In the Welding position, the current position of the guide pin is normally displayed.
You can determine the position and position value of the nut to be measured.
(You can use the error range data by looking at the gap between actual figures and others.)
•In case of power outage or other problems during ranking measurement (for more than E2), it will be Auto Reset.
• If you do not want to destroy the work because the Welding is not finished, you can continue to Welding in Stop Measurement Mode. (However, in the meantime, It doesn't determine if it is pass or not.)

12. About Error Mode- 1

In Welding, the NMJ-006K is normally measured in the following order, and if an error occurs, the process is stopped at that point and changed to Error Mode.

L Condition input

1. Read the setting Evalue(Start position).
2. Calculate the upper and lower limits at setting position and P3.
3. Stand by setting hours of P2.
4. Read the current position of the guide pin.
5. Is the position in the upper and lower standard values?
   - **If it is outside of the Standard value, then it is Error(failure)**
6. Reduce Evalue by 1.(E1, Reset after final RBI)
7. Nut Welding
   - **It is Error, if it is less than measurement (P4)setting value after Welding(Failure)**
8. If measurement result is OK, stand by until carry out next measurement after condition input.

Precautions in Error

CAUTION: If measurement (P4) is valid after Welding, measure it twice during Welding.
Before you go to Welding, Measure once, and measure again after Welding.
If there is an error in measurement result, check if there is a problem with the Welded Nut.●
Measurement error before Welding (measurement flash of the Welding position)

- Make sure that there is no problem with the nut or specification on Work.
- Remove the nut before Welding, reset it, and use the new nut to do Welding.

● Measurement Error after Welding **(Display as H-3 in the Welding position)**

- Check if the nut is Welded.
- If the welding doesn't work after reset, remove the nut and reset it.

12. About Error Mode - 2

Precautions for error

Error Mode Check list		
Error Code	**Error content**	**Check list**
No code NG lamp flash	Before welding, measurement NG	1. Make sure the nut and work are correct. 2. If there are no problems with the nut and the work, check the guide pins and the cap. 3. Check if there is no mistake in setting value.
H-1	No change in the position of the guide pin when it is pressurized.	1. Check that the air is supplied properly. 2. Check if the setting of P2 is too short. 3. Check that the cable on the LCE-W8 is connected properly. 4. Check the status of the nut, guide pin, and upper holder. 5. Check that the air is supplied properly.
H-2 (When use option proximity sensor)	Nut overlap	1. Check if the nut overlaps. 2. Check the proximity switch.
H-3	After welding, Measurement NG	1. Check for welds. 2. Check that the setting value of P4 is proper.
H-4	Conditions (L1 - L7) changed during sequential measurement use.	1. Re-check operation method

Trouble Shooting	
Cause	Check list
No digital display	Check the power is on.
Error occurred during pressure	Measurement hours setting on P2 is short. Check the setting value of P2.
Input, output no response	Check the Control Cable is connected properly and that the connection is correct.

13. Cable

1. Sensor Cable 2. Control Cable

Controller Part List

Controller consumables list		
NO.	Name	Remark
1	Sensor Cable **(NMJ6S-W1)**	The length 2.5 meters is prepared. (Please contact about special items.)
2	Control Cable **(NMJ6S-W2)**	

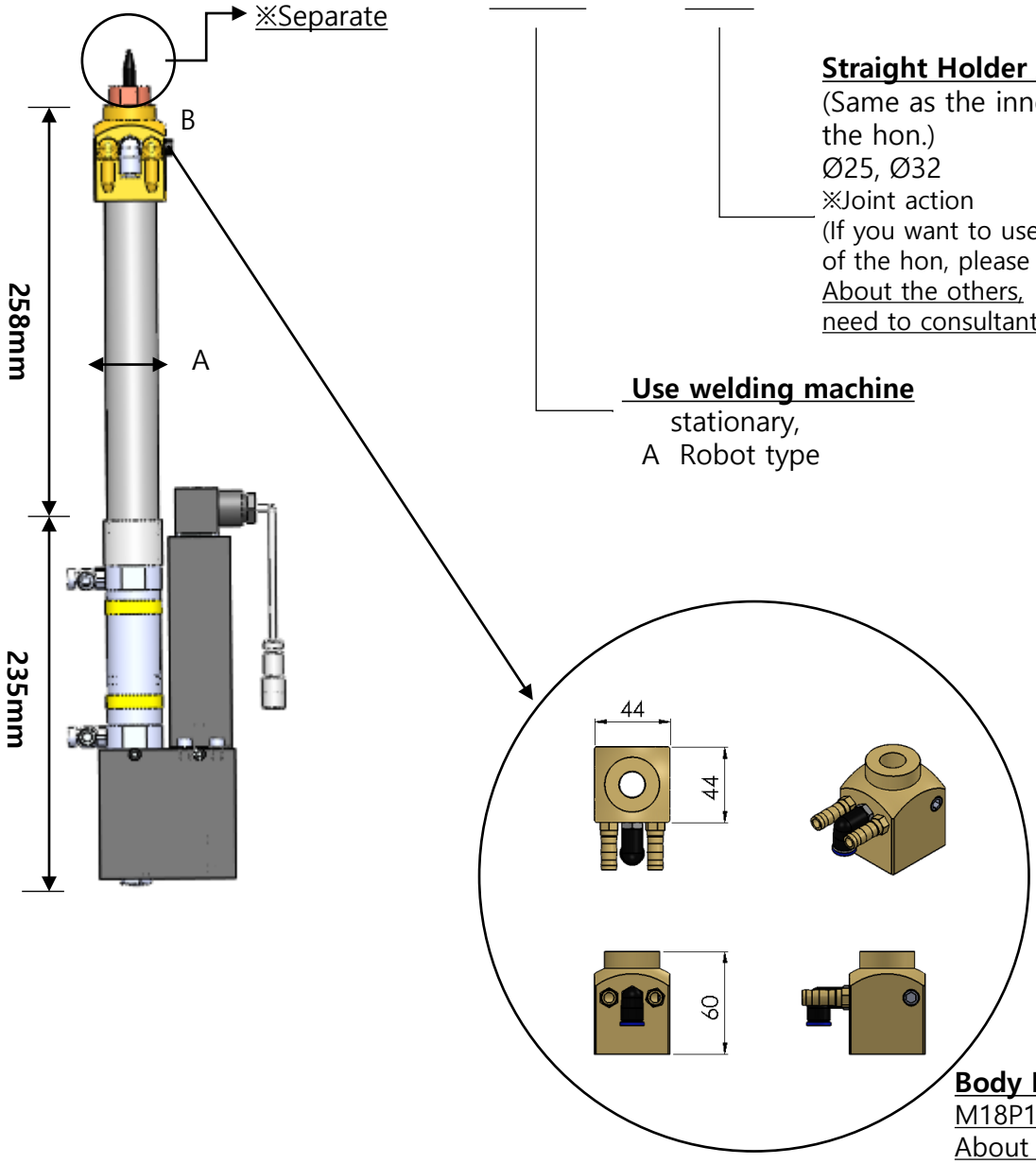
14. Stroke Electrode

Select Straight Holder and Body.

Prepare the cap, guide pin, and drawing in use (O parts of the picture below are separate).
If you have any questions, please contact us. (Please ask us about the special stroke electrodes.)

How to select type

NMJ□ - 006S - □



Straight Holder A size
(Same as the inner diameter of the hon.)
Ø25, Ø32
※Joint action
(If you want to use outer diameter of the hon, please contact us)
About the others,
need to consultant.

Use welding machine
stationary,
A Robot type

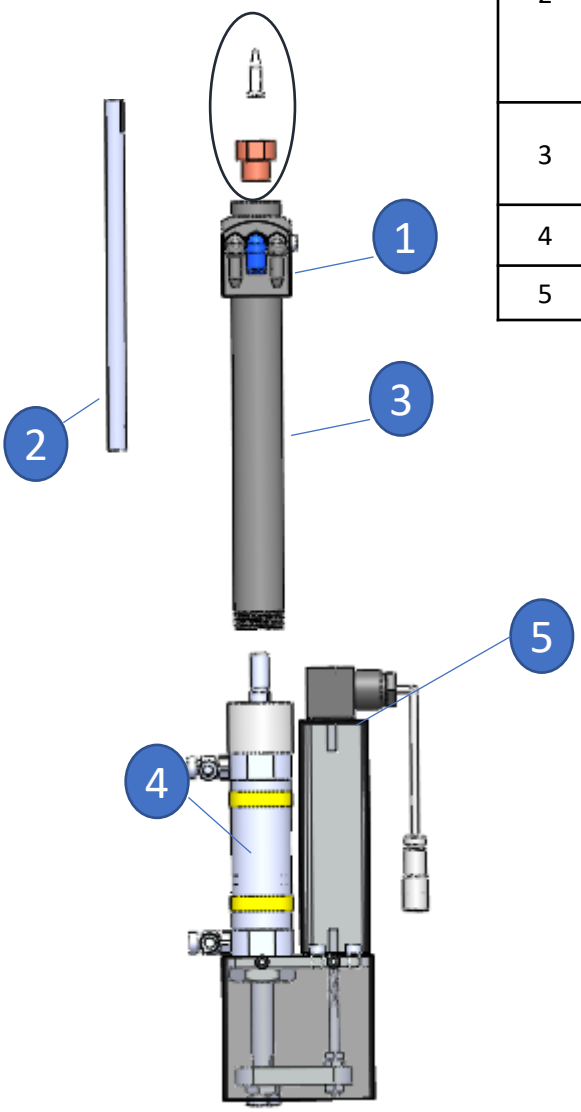
Body B size
M18P1.5 / M20P2.0
About the others,
need to consultant.

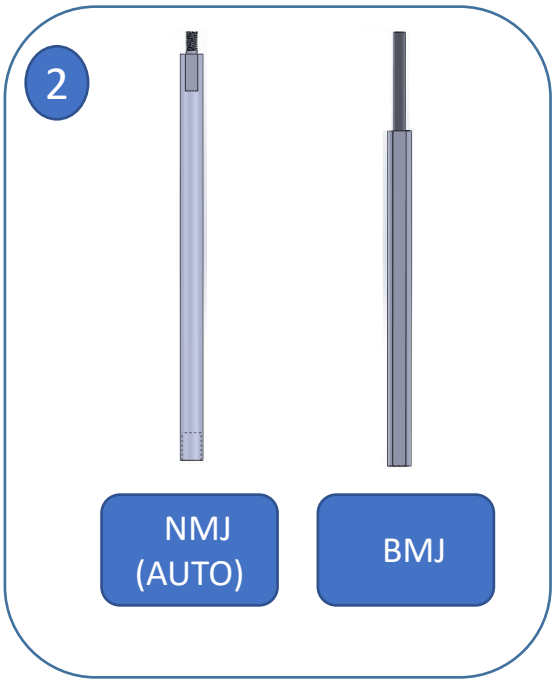
14.1 Stroke Electrode Consumables

※Bottom electrode, guide pin are not included (see bottom picture circle).

Parts List		
NO	NAME	Remark
1	NMJ water-cooled body	NMJ-006-BL-CU-45- * * ☞ M18 P1.5 / M20 P 1.5
2	NMJ Rod	NMJ-006-PART-SS-12-200
	NMJ rod (auto)	NMJ-006-PART-SUS-12-220-M6
	BMJ rod	BMJ-006-PART-SUS-12-6-220
3	NMJ straight holder	NMJ-006-PART-CU-* ☞Φ25/Φ32
4	cylinder	CDM2WB32-5OZ-A93(SMC)
5	SENSOR	NMJ-006S-SENSOR-KTC-50mm

※Separate





15. Inquiry

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