

JFT-S100A

Static grasping force Tester

INSTRUCTION MANUAL



- This instruction manual is for production engineers and maintenance personnel in charge of operation of this product. When a beginner uses this product, receive instructions from experienced personnel, the distributor or our company.
- Before installing, operating or maintaining this equipment, carefully read this manual and the safety labels attached to the equipment. Failure to follow these instructions and safety precautions could result in serious injury, death, or property damage.
- Store this manual near equipment for future reference.
- If any questions related to safety arise about this manual, please confirm them with the distributor or our company.

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Preface

This manual provides detailed information about how to safely and correctly use the Static grasping force Gripping Tester JFT-S100A.

Before starting to use this power chuck, read this manual carefully and always follow the instructions and warnings in "**Important Safety Precautions**" and "**Precautions for Use**" at beginning of the manual. Failure to follow these precautions could result in a serious accident.

Terms and Symbols Used for Safety Messages

In this manual, precautions for handling that are considered especially important are classified and displayed as shown below depending on the damage of risk including the seriousness of the harm that could result. Please sufficiently understand the meanings of these terms and follow the instructions for safe operation.

Safety Alert Symbol

The triangle is the safety alert symbol used to alert you to potential safety hazards that could result in injury or death.



Indicates a hazardous situation which, if you not avoided, will result in death or serious injury.



Indicates a hazardous situation which, if you not avoided, could result in death or serious injury.



Indicates a hazardous situation which, if you not avoided, could result in minor or moderate injury.



Indicates instructions which, if not avoided, could result in damage to the equipment or a shortened work life.

Liability and How to Use this Manual

This equipment is used for measuring the gripping force of Power Chuck. For any other applications, please contact us.

Our company will not assume responsibility for injury, death, damage, or loss resulting from not following the instructions in this manual.

There are countless things that cannot or should not be done, and it is impossible to cover all of them in this manual.

Therefore, do not perform any actions unless they are specifically allowed in this manual. If any questions related to safety arise about operation, control, inspection and maintenance which are not specified in this manual, please confirm them with our company or distributor before performing them

Guarantee and Limitation of Liability



The meter's warranty period is a single year following its delivery to you.

All of the parts to use, other than the battery, are to be supplied by Kitagawa Iron Works. In the case that using any part not supplied by Kitagawa Iron Works has resulted in a problem and/or an accident, Kitagawa is not to be held responsible in any way for such a problem/accident. Also, in the case that any part that is not a genuine part manufactured by Kitagawa Iron Works is used, the whole warranty becomes invalid.

Information on disposal

Dispose of this unit in accordance with the laws and regulations of your country.

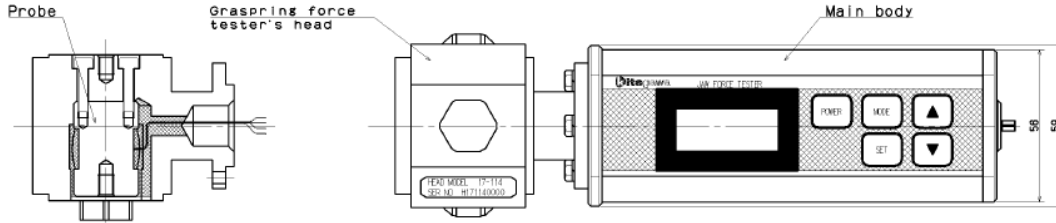
Table of Contents

1.	Structural Drawings and List of Parts-----	1-1
	1-1 Structural drawings-----	1-1
	1-2 List of parts-----	1-2
2.	 Important Warnings for Safety -----	2-1
3.	Specifications -----	3-1
4.	Functional-----	4-1
	4-1 Zero point setting-----	4-1
	4-2 Automatic zero adjustment-----	4-1
	4-3 Automatic power-off-----	4-1
	4-4 Measured value memory-----	4-1
	4-4-1 Measured value memory-----	4-1
	4-4-2 Measured value memory delete-----	4-1
5.	How to Operate and Use-----	5-1
	5-1 Operations-----	5-1
	5-1-1 Operation switches-----	5-1
	5-1-2 Operation screens-----	5-1
	5-1-2-1 Startup-----	5-1
	5-1-2-2 Measurement mode screen selection-----	5-1
	5-1-2-3 Measurement mode screen-----	5-1
	5-1-2-4 Display warning message-----	5-2
	5-1-3 Screen transition-----	5-2
	5-2 How to use-----	5-3
	5-2-1 Gripping method-----	5-3
	5-2-2 External power source connection-----	5-3
6.	Shape Forming of load button-----	6-1
	6-1 Removing the Static Gripping Tester's head-----	6-1
	6-2 Shape Forming of load button-----	6-1
	6-3 Installation of Static Gripping Tester's head-----	6-2
7.	 Instructions for Use -----	7-1

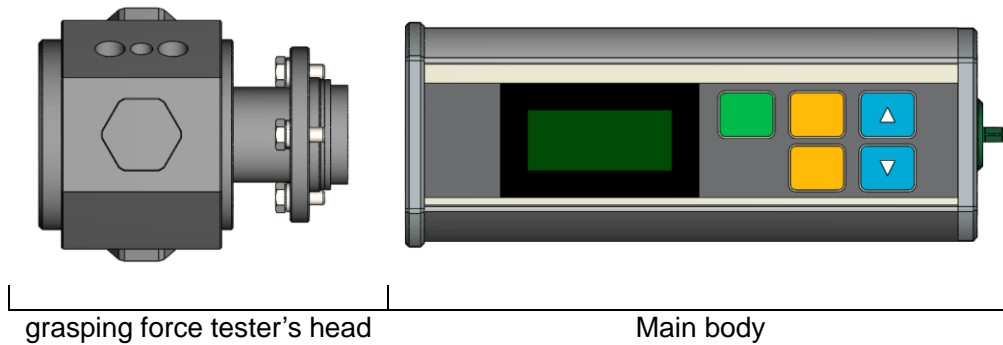
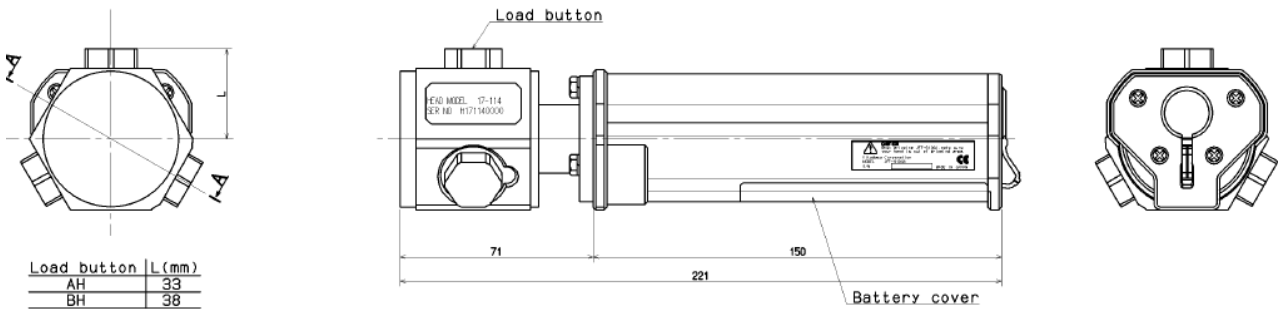
8.	Maintenance -----	8-1
8-1	Changing the battery -----	8-1
8-2	What to do in the case of a warning or a problem -----	8-1
9.	Other information-----	9-1
9-1	Information about markings of product-----	9-1

1. Structural Drawings and List of Parts

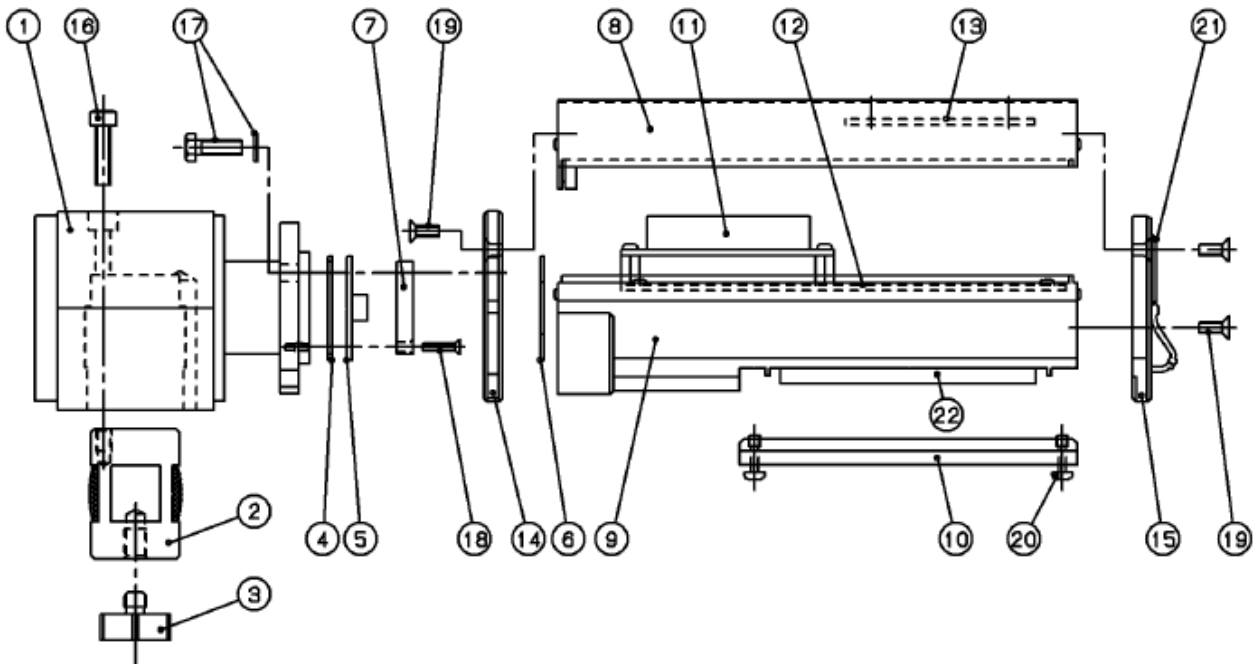
1-1. Structural drawings



Sectional drawing A



1-2. List of parts




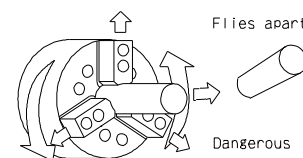
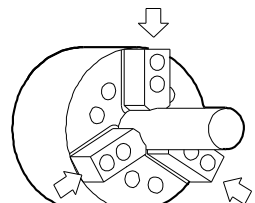





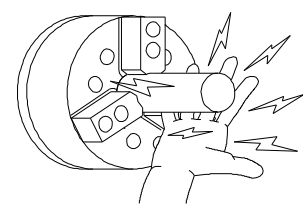
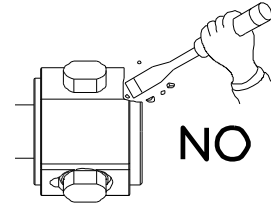



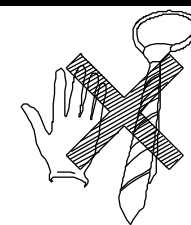
No.	Name of part	Qty.	No.	Name of part	Qty.
1	Frame	1	12	Main substrate	1
2	Probe	1	13	Panel substrate	1
3	Load buttons (attachments)	3+3	14	Frame side plate	1
4	Frame side rubber gasket	1	15	External power source side plate	1
5	Connector substrate	1	16	Hexagon socket head cap screw	2
6	Connector side rubber gasket	1	17	Hexagon head bolt & Spring washer	3set
7	Connector guard	1	18	Small flat-head Phillips screws	4
8	Upper part of the case	1	19	Small flat-head Phillips screws	4*2
9	Lower part of the case	1	20	Cross-recessed head captive screw	2
10	Battery cover	1	21	Dust cap	1
11	LCD display	1	22	Battery for operation check (Accessory)	2

This static grasping force tester has attached to it three of both Load Buttons A and B, as shown above at 3.

2. Important Safety Precautions

Important safety precautions are summarized below. Please read this section before first starting to use this product.

 DANGER Failure to follow the safety precautions below will result in serious injury or death.	
 <p>Do not clamp the Static Gripping Tester onto a rotating body and rotate it.</p>	 <p>Input value into the Static Gripping Tester must not exceed 150 kN allowed.</p>
<ul style="list-style-type: none"> If you clamp the Static Gripping Tester onto a rotating body and rotate it, the meter will fly apart and be very dangerous. 	<ul style="list-style-type: none"> Excessive force input destroys or damages the Static Gripping Tester. 

 WARNING Failure to follow the safety precautions below could result in serious injury or death.	
 <p>When making a chuck grip the Static Gripping Tester, be careful not to let the chuck grip your finger.</p>	 <p>Do not alter any part of the Static Gripping Tester, unless permitted by the Kitagawa.</p>
	<ul style="list-style-type: none"> Such an alteration destroys or damages the Static Gripping Tester and invites danger. Alteration of the load buttons is permitted only to Specified range is allowed. 
 <p>Do not operate the machine after drinking alcohol or taking medication.</p>	 <p>Do not operate the machine wearing gloves, a necktie, and other loose clothing or jewelry.</p> <p style="text-align: right;">For All Users</p>
<ul style="list-style-type: none"> Dangerous since these lead to operation mistakes and misjudgment. 	<ul style="list-style-type: none"> Dangerous since it will be caught. 

3. Specifications

Loading Cell	
Rated capacity	100 kN (per jaw)
Overload permitted	150% (Against the rated capacity)
Gripped points	Two or three positions
Measurable diameter	φ 62~65mm (with Loading button AH) φ 62~75mm (with Loading button BH)
Precision	Within 2%
Display	
Range measurable	0.5 to 100.0 kN
Unit of measurement displayed	0.1 kN
Operation switches	Silicon seat switch panel (5 contacts)
Display section	LCD character display (8 x 2 lines, with a back light)
battery runtime	40 hours* ¹
Functional	
Automatic zero adjustment	Function setting <ul style="list-style-type: none"> ● None: The automated zero-point adjustment function not used ● B mode: The zero-point is set when the power is turned on. ● R mode: The zero-point is set to real time.
Automatic power-off	Shut off after the specified time length. The time length is chosen from 3, 10, and 30 minutes. This function can also be set to "off."
Measured storage number	3
Display warning message	Warning message content <ul style="list-style-type: none"> ● * : Battery voltage drop warning display ● zErr : Zero point error display ● OL. : Overrange display
Others	
Power	Lithium battery (CR123A x 2)
External power source	DC5V ±5% (External power source connector shape: USB B connector female.)
Operating temperature range	0 to 50 °C
Storage temperature range	-10 to 50 °C
Operating humidity range	80%RH or less (Condensation or freezing not to be occurred.)
Storage humidity range	95%RH or less (Condensation or freezing not to be occurred.)
Safekeeping place	Store the unit in a place free from wetting, condensation, or freeze

※1 It differs depending on Operating temperature range.

4. Functional

4-1. Zero point setting

Zero point setting is a function to correct current measured value to 0.0kN.

Zero point setting is not executed under a loaded condition exceeding the Zero point setting range*1.

※1 It varies depending on the condition.

4-2. Automatic zero adjustment

This function automatically performs different types of zero adjustment according to operation modes.

operation modes	Contents
None	Automatic zero adjustment is not executed.
B mode	If the difference between Measured value at power ON and zero point setting value is 0.5kN or less, zero adjustment is automatically executed.
R mode	If the difference between Measured value at power ON and zero point setting value is 0.5kN or less, zero adjustment is automatically executed. Moreover, if the difference between measured value per 10 seconds and zero point setting value is 0.05kN or less, zero adjustment is automatically executed.

4-3. Automatic power-off

This function automatically cuts off the power to prevent continuous power supply.

Set time	Contents
OFF	Automatic power-off is not used.
3min	Power is cut off at the set time. However, it is canceled once in the following cases. <ul style="list-style-type: none">● Measured value exceeded 0.5kN.● Switch pressed
10min	
30min	

4-4. Measured value memory

4-4-1. Measured value memory

Within the range of -10.0~110.0kN, up to three points can be stored using the function to store arbitrary measured value.

4-4-2. Measured value memory delete

Currently selected measurement memory is deleted. The display is reset to 0.0kN.

5. How to Operate and Use

5-1. Operations

5-1-1. Operation switches

Power switch



Turns the Static Gripping Tester's power on/off.

MODE switch



Let's you select the mode of your choice for the screen.

SET switch



Used to set up the zero-point and to clear the measurement memory.

Selection switches



Used to choose an item and switch between screens.

5-1-2. Operation screens

5-1-2-1. Startup

JFT
Ver 1.00

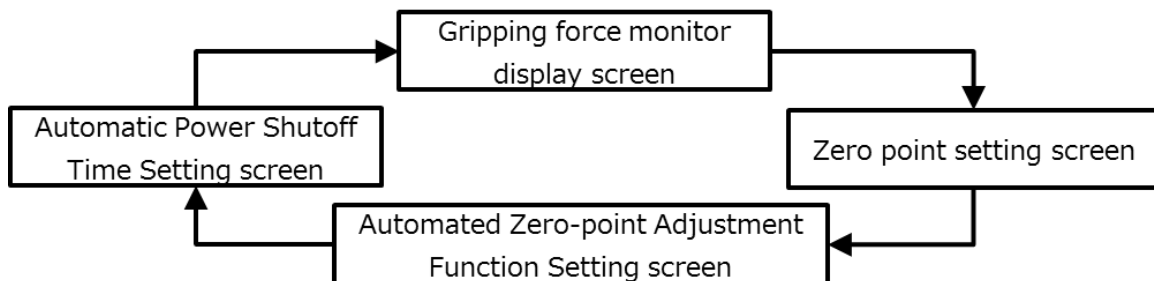
Startup screen

Displays the Product name and Version.

Appears for around 2 seconds and then gives way to the Gripping Force monitor display screen.

5-1-2-2. Measurement mode screen selection

Screens change in the measurement mode each time the <MODE> switch is pressed.



5-1-2-3. Measurement mode screen

Mon M1
0.0 kN

Gripping force monitor display screen

Displays the current gripping force. A number appears in the upper right corner of the screen, "M*" to indicate the number corresponding to the measured value memorized.

Pressing the <SET> switch stores the measured value in the memory and displays the Measurement Memory screen.

Pressing the <▲> switch changes the upper number corresponding to the memorized measurement value.

Pressing the <▼> switch brings up the Measurement Memory screen.

ZeroAdj
0.0 kN

Zero point setting screen

Set up the zero-point.

Pressing the <SET> switch the measured value as the zero point and

AutoZero
[B mode]

brings up the Gripping Force Monitor screen.

Automated Zero-point Adjustment Function Setting screen

Sets the operation mode of automatic zero point adjustment.

Press either the <▲> or <▼> switch to choose from operational modes available.

PowerOff
[10]min

Automatic Power Shutoff Time Setting screen

Set the automatic power shutoff Time setting time.

Press either the <▲> or <▼> switch to choose.

Memory1
0.0kN

Measurement Memory Display screen

The value memorized is displayed.

Pressing the <▼> switch changes measurement number, and the memorized value for each number appears.

Pressing the <▲> switch changes the screen to the Gripping force monitor display screen.

5-1-2-4. Display warning message

Mon M1 *
0.0kN

Battery voltage drop warning display

The "*" Blinks at a cycle of 500 ms in the upper right corner of the screen.

Mon M1
zErr kN

Zero point error display

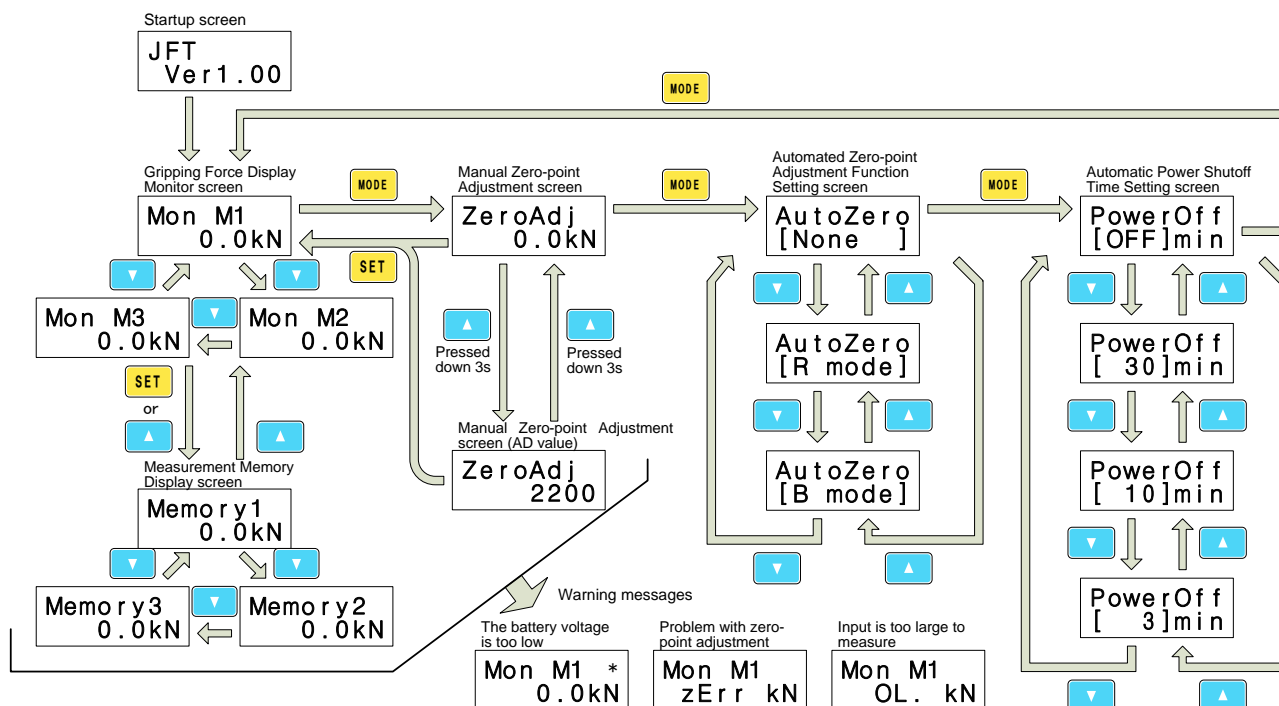
"zErr" is displayed for three seconds in the measured value display position. After three seconds, measured value is displayed.

Mon M1
OL. kN

Overrange display

"OL." Is displayed at the display position of the measured value.

5-1-3. Screen transition



5-2. How to use

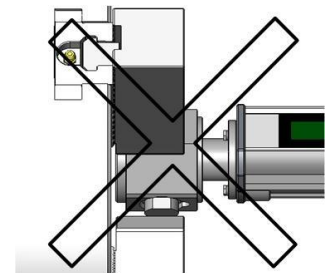
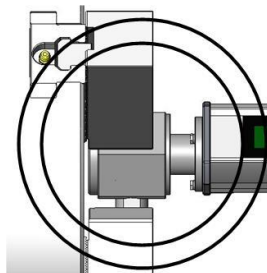
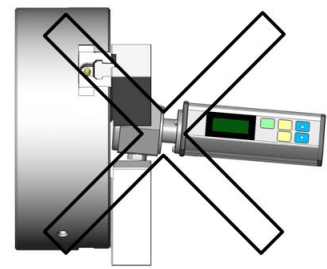
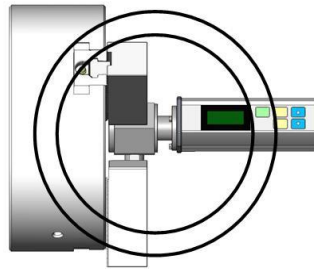


- The Static Gripping Tester measures the gripping force working on a single jaw. Therefore use the formula below to obtain the gripping force of the whole chuck.

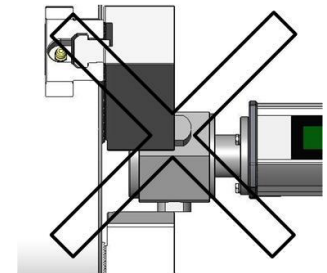
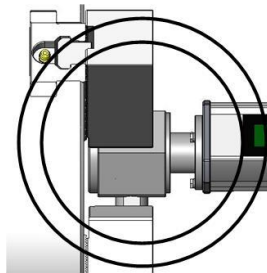
$$\text{Chuck's gripping force} = \text{Measured value} \times \text{No. of jaws}$$

5-2-1. Gripping method

Set up the Static Gripping Tester in a way that applies the force to the probe (measuring section) at right angles.



Make the whole of the probe (measuring section) subject to the load.

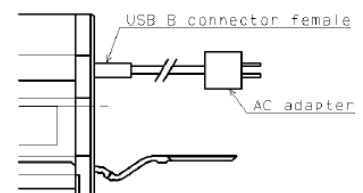
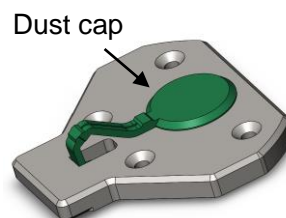


5-2-2. External power source connection

To supply power from outside, remove dust cap shown in the right figure and connect external power source to the USB connector. It is not necessary to consume battery power by connecting measured value.

For specifications, refer to "3.Specifications".

When not using external power source, fit dust cap.



External power source connection example

6. Shape Forming of load button

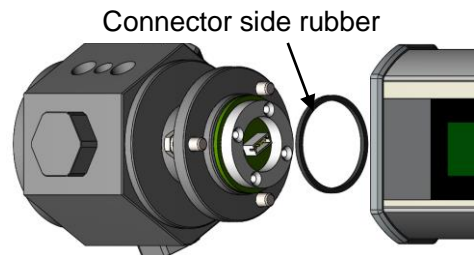
To enable the chuck to grip the Static Gripping Tester with its jaws, you need to form the meter's head into a shape that matches those of the chuck's jaws.

6-1. Removing the Static Gripping Tester's head

- ① Remove the hexagon head bolt & Spring washer.
- ② Pull the main-body-side connector off the connector substrate. Then remove the Static Gripping Tester's head from the main body.

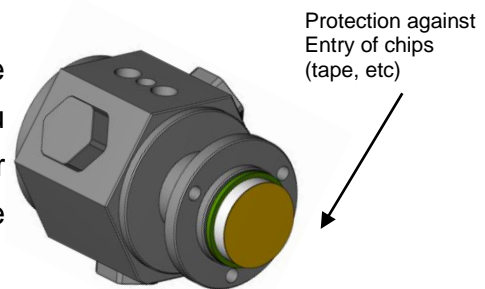
Things to note

- The meter's head is connected to the main body through wiring. Therefore, do not pull the head too hard.
- There is packing rubber at the joint combining the head and the main body. Be careful not to lose the rubber when and after you remove the head from the main body.



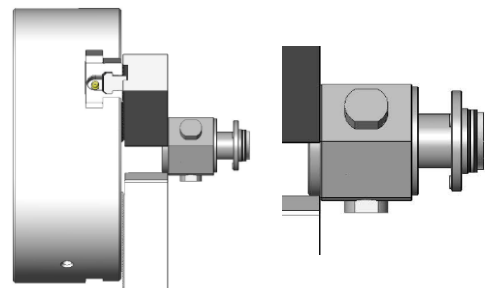
6-2. Shape Forming of load button

- ① Protect the Static Gripping Tester's connector. To form the shape of the load buttons of the meter's head, carve those buttons. While you do this carving, cover up the head's connector with tape, etc. so that no chip could enter the connector.



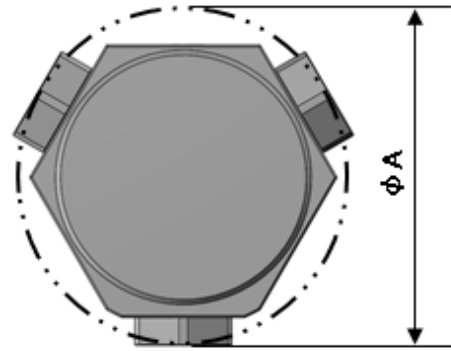
- ② Grip the Static Gripping Tester's head. Grip the edge of the meter's head.

Hold Static Gripping Tester's head at the end of it as shown in the right figure. Do not hold the body (hexagonal part) of the gripping force meter. Perform additional work within the following specified range.



③ Shape Forming of load button

While gripping the meter's head process the load cell (dimension: ϕA). Process the ϕA section to the size that fits the chuck's jaws. Also, process the section's surface to a roughness of 6 s or below.



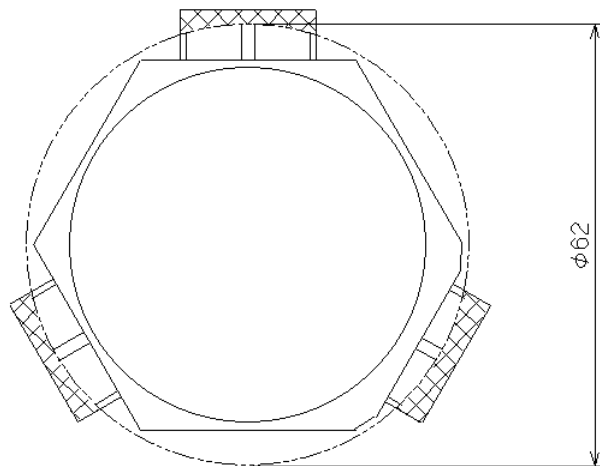
! DANGER

- During the processing above, set the cutting (carving) torque and the gripping torque as below.

Gripping torque = (Gripping force – Centrifugal force) x Friction resistance x Radius of the grip
Note) Friction resistance: 0.1 for a soft jaw. 0.2 for a hard jaw.

Cutting (carving) torque < Gripping torque x 1/2.5

- Perform additional work within the following specified range.



XXXX: Specified range

6-3. Installation of Static Gripping Tester's head

- ① Install the body side connector to the connector board.
- ② Install the hexagon head bolt and spring washer.

Be sure to tighten with the specified torque $1.3N \cdot m \pm 10\%$.

7. Instructions for Use

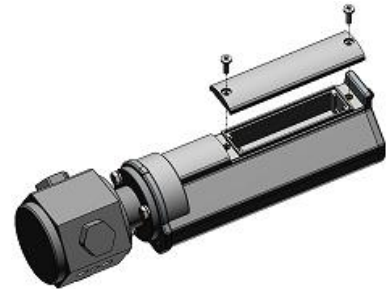
CAUTIONS

- Do not drop or apply an impact to the Static Gripping Tester. Such a shock damages the meter's electronic parts.
- Do not let the meter get in contact with oil or water. Any entry of water or oil into the meter's inside damages its electronic parts.
- A radical change in the temperature, even within the operating temperature range, disturbs the meter's measuring.
- When installing load button to Static Gripping Tester's head, be sure to tighten with the specified torque $6\text{N}\cdot\text{m}\pm 10\%$. If not, the screw of load button may be damaged.

8. Maintenance

8-1. Changing the battery

- ① Remove the battery cover mounting screws and take off the battery cover.
- ② Install the battery at the right polarity direction and attach the battery cover back on.



8-2. What to do in the case of a warning or a problem

“*” Battery voltage drop warning display

[Cause of the warning]	[How to fix]
Battery voltage has dropped to 4.9V or less.	Replace the battery with a new one.

“zErr” Warning: Problem with zero-point adjustment

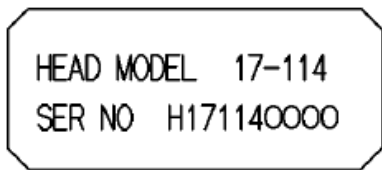
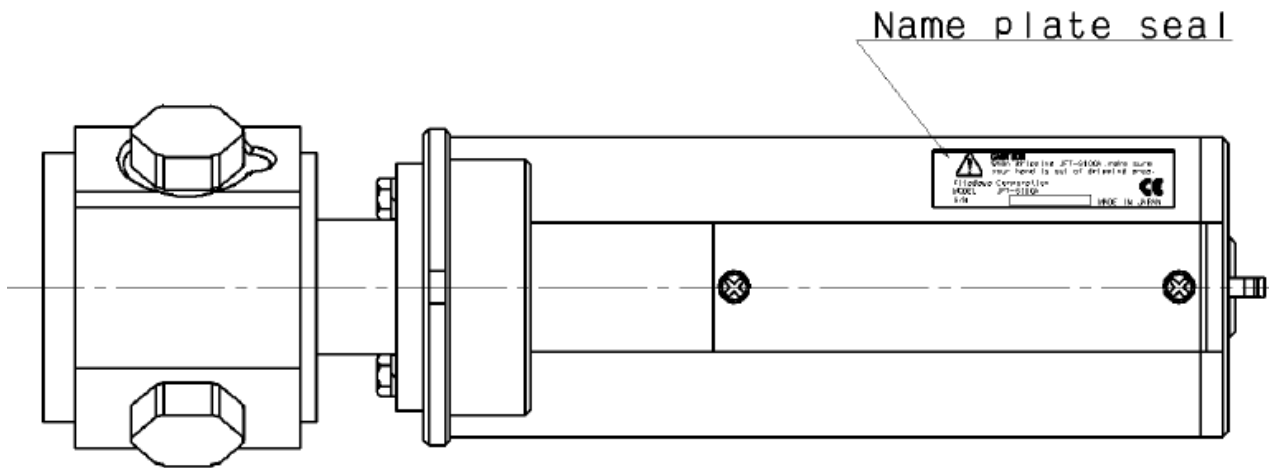
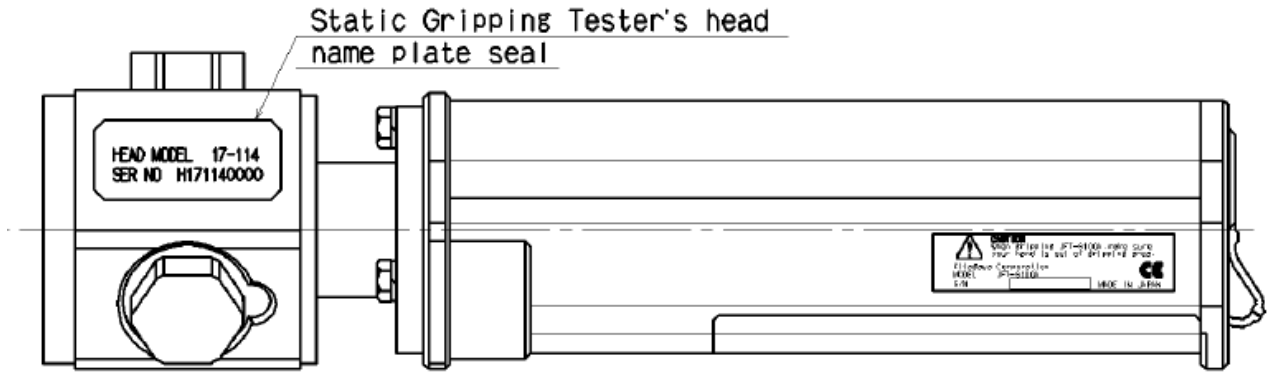
[Cause of the warning]	[How to fix]
Measured value at power ON exceeds 0.5kN.	Release the meter from the chuck and try the zero-point adjustment again with no load applied. If zero point setting cannot be performed even under an unloaded condition, replace Static Gripping Tester's head.
Measured value exceeds the zero point setting range at zero point setting.	

“OL.” Warning: Input is too large to measure (out of the range)

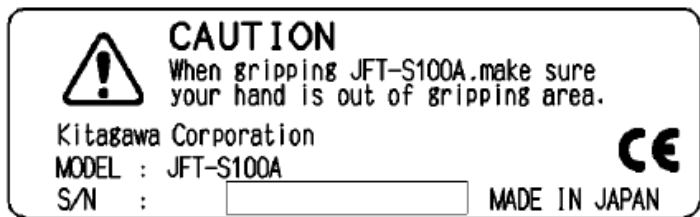
[Cause of the warning]	[How to fix]
Excessive load (110 kN or above) is at work on the meter.	Use the meter at or below its rated capacity.

9. Other information

9-1. Information about markings of product



Static Gripping Tester's head name plate seal detail



Name plate seal detail

EC DECLARATION OF CONFORMITY

Product : Static grasping force Tester
Type : JFT-S100A
Directives : EMC Directive 2014/30/EU
Low Voltage Directive 2014/35/EU

Conforms with the essential requirements of the EMC Directive 2014/30/EU,
based on the following specifications applied:

EMC Directive:

Emission : EN55011:2009+A2:2010(group 1, class A)
Immunity : EN61000-6-2:2005
EN61000-4-2:2009
EN61000-4-3:2006 + A1:2008 / A2:2010
EN61000-4-4:2012
EN61000-4-5:2014
EN61000-4-6:2009
EN61000-4-8:2010
EN61000-4-11:2004

Low Voltage Directive:

EN61010-1:2010

and therefore complies with the essential requirements and provisions of the
EMC Directive 2014/30/EU and the Low Voltage Directive 2014/35/EU

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■ OVERSEAS

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