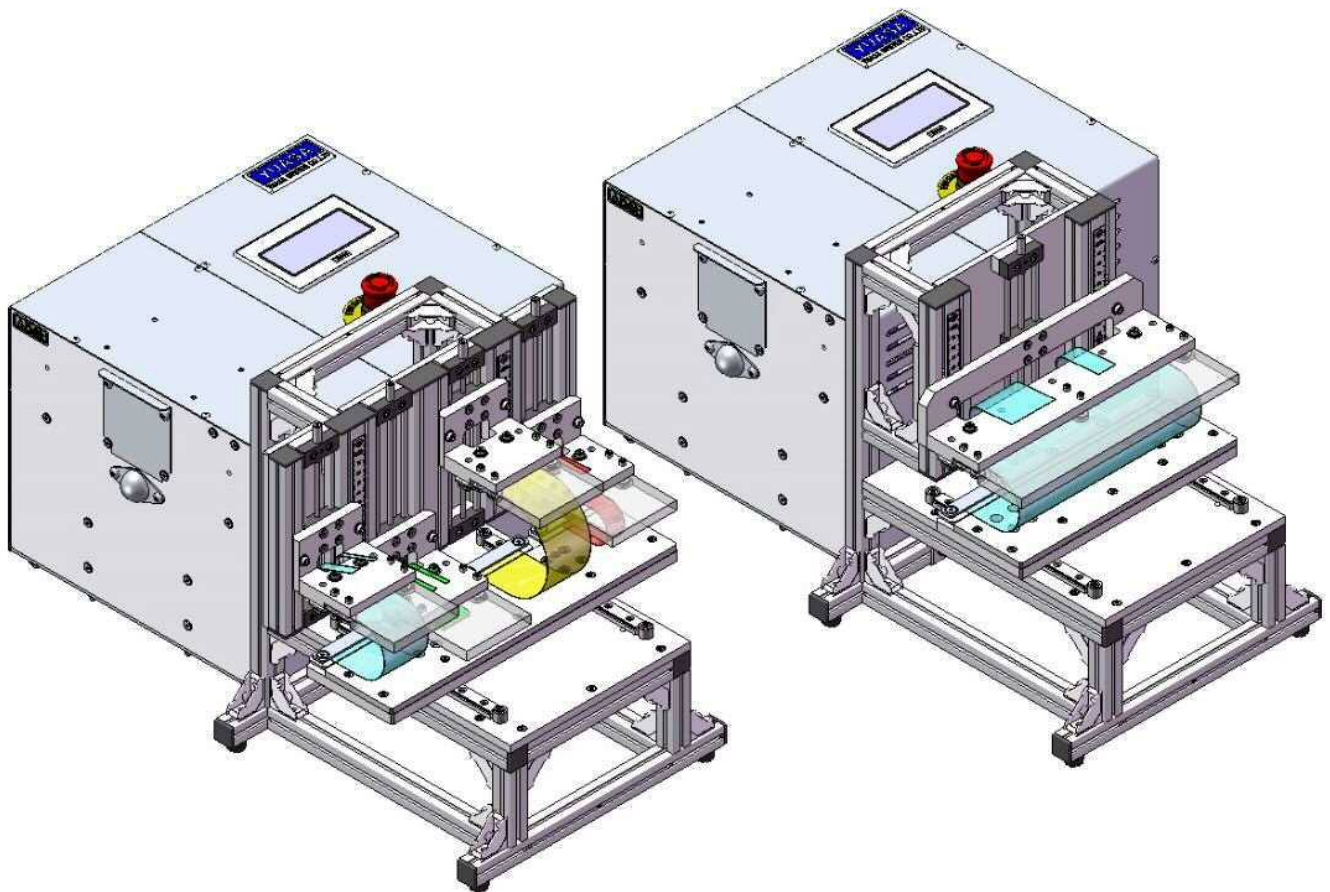


# INSTRUCTION MANUAL SLIDING-FOLDING

ET221001M0001/01



**Safety precaution are classified into five categories**

- WARNING** : Death or serious injury may result from not following product installation instruction.
- CAUTION** : Minor injury, as well as damage to the product may result from not following product instruction.
- NOTICE** : Inaccurate data may result from not following the test instructions.
- NOTE** : General knowledge.
- INTERLOCK** : Effect of the interlock system for safety.

- INTERLOCK** : Install the safety cover and prevent access to any moving parts.
- WARNING** : Installing, operating, maintaining or inspecting must be carried out by skilled and professional engineers.
- WARNING** : Make sure to tighten each screws as described in this manual.
- WARNING** : Make sure the Emergency Stop Button is maked work, and the machine is completely stopped before adjust the testing condition and change the part.
- WARNING** : Make sure the power is switched off, and the machine is completely stopped before carrying out maintenance and inspection.
- WARNING** : Do not use products beyond its capacity as specified in the specification.
- WARNING** : Do not remodel.
- CAUTION** : Do not change installation environment (temperature and humidity) rapidly.
- CAUTION** : Isolate the machine from sunlight.
- CAUTION** : Isolate the machine from any noise.
- CAUTION** : Isolate the machine from any dust.
- CAUTION** : Isolate the machine from large vibration.
- CAUTION** : Immediately stop the machine upon any sign of abnormal operation.
- NOTICE** : Make sure to tighten the screws as described in the manual.
- NOTE** : In some cases, illustrations with different shapes may be included.
- NOTE** : In some cases, a description different from the your equipment may be included.
- NOTE** : The scraps should be disposed as general waste by skilled professionals.

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## [- NOTICE -]

We make absolutely sure about the contents of this user manual.  
However, if you have some questions or find some incorrect, please contact us.

# 1. INTRODUCTION

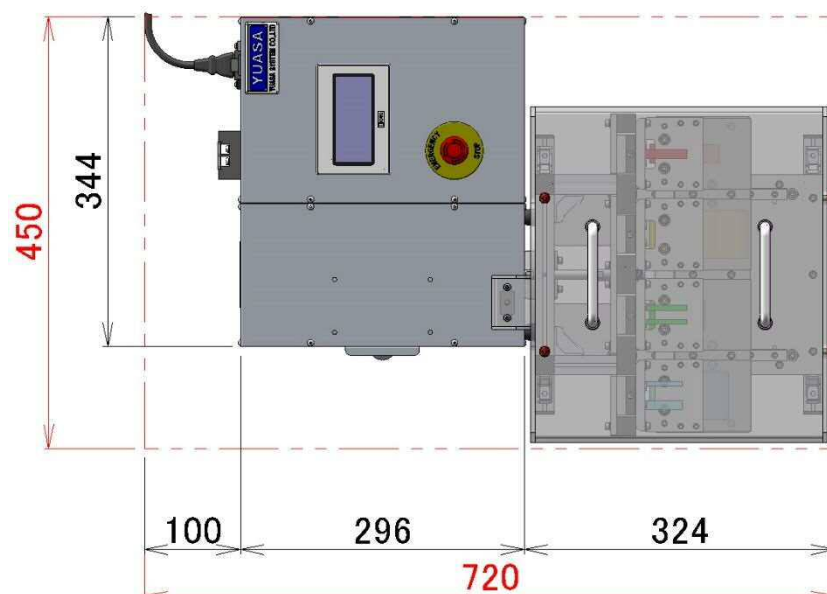
## 1.1 OVERVIEW

### ◆Ver. 4 lanes: ET221001A0001

|                          |   |
|--------------------------|---|
| Sample Size              | Thickness : max. 3 mm<br>Width : max.52 mm                            |
| Folding Angle            | 180 °   |
| Folding Radius           | 0~55 mm   |
| Rec. Distance            | 0~±60 mm  |
| Rec. Speed               | 90 r/min  |
| Mass                     | about 9 kg (about 20.0 lb)  |
| Installation Environment | Temp. : +5~+40 ° C (41~104 ° F)<br>Humi. : 15~85%Rh (No Condensation) |

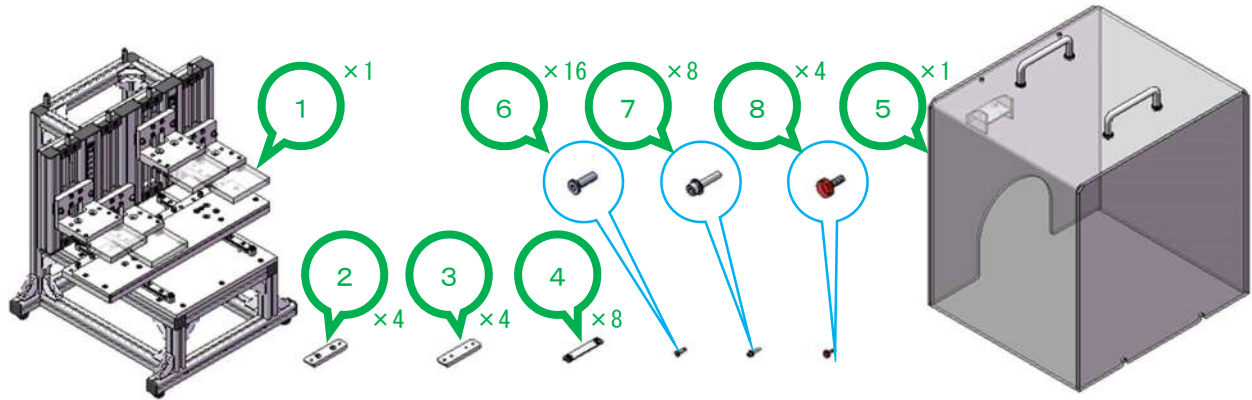
### ◆Ver. 1 lane: ET221001A0002

|                          |   |
|--------------------------|---|
| Sample Size              | Thickness : max. 3 mm<br>Width : max.52 mm                            |
| Folding Angle            | 180 °   |
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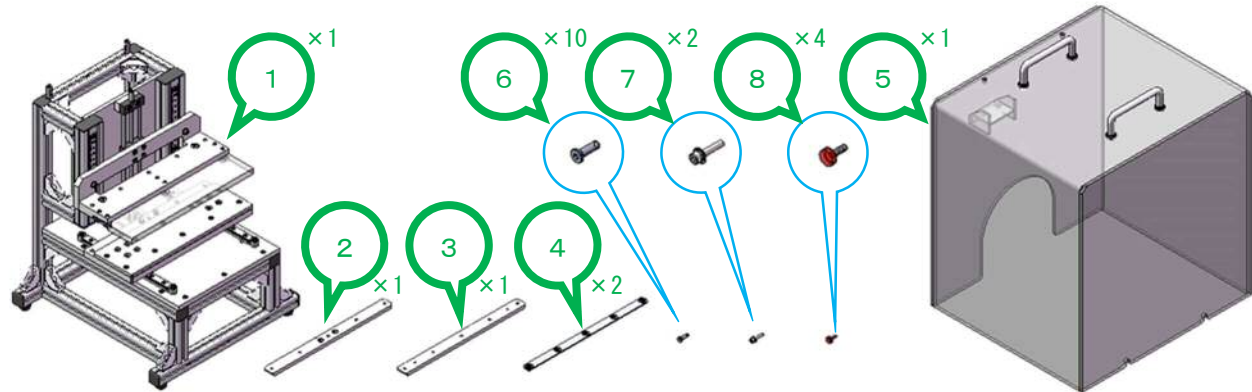
## 1.2 STRUCTURE and COMPONENTS

Ver. 4 lanes: ET221001A0001



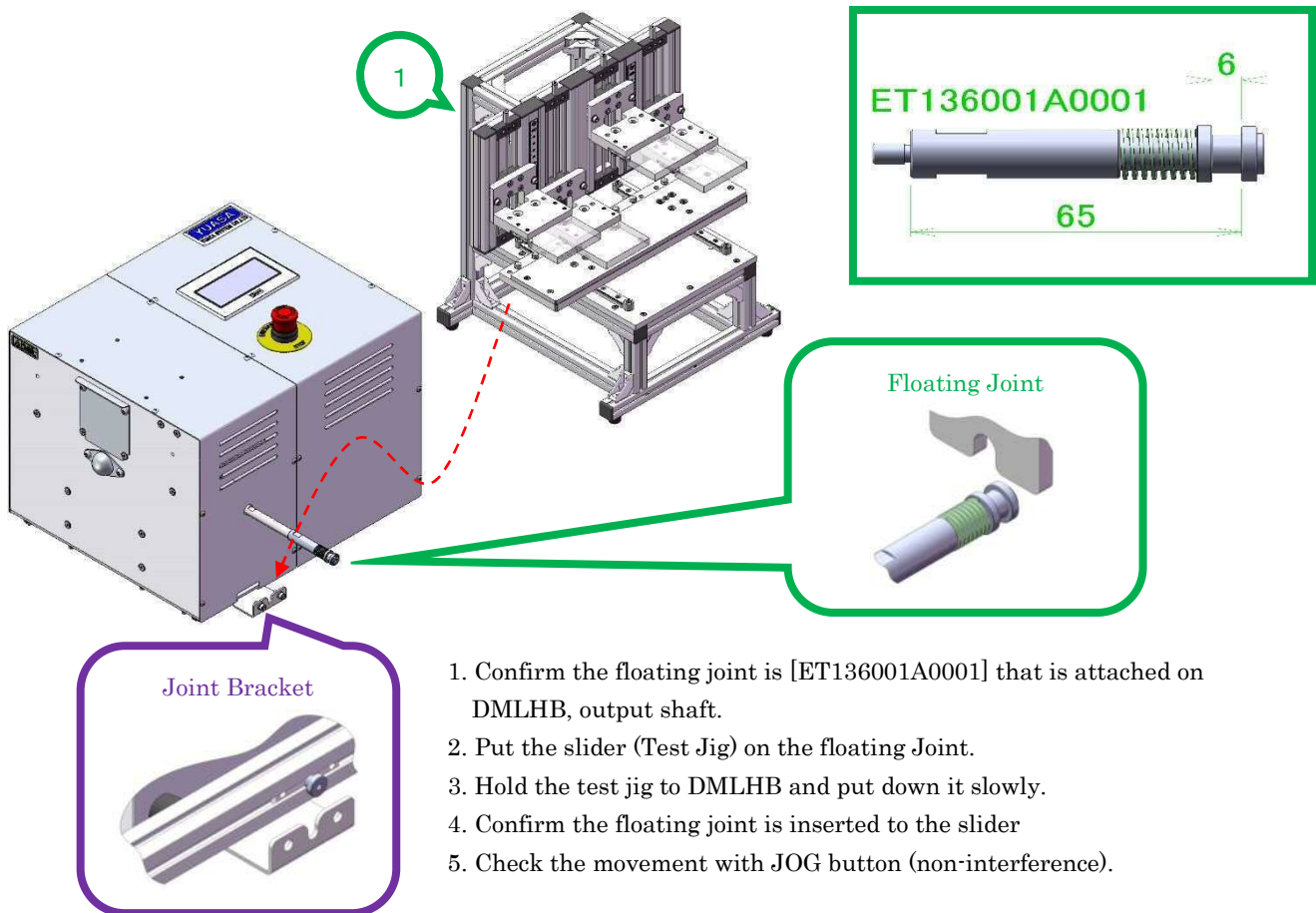
| No | NAME                         | TYPE                        | MANUFACTURE (MATERIAL) | NOTE                 |
|----|------------------------------|-----------------------------|------------------------|----------------------|
| 1  | Basic Unit, Sliding Folding  | ET221001A0001               | YUASA SYSTEM           |                      |
| 2  | Cartridge for moving side    | YP000P0000621               | YUASA SYSTEM           |                      |
| 3  | Cartridge for fixed side     | YP000P0000235               | YUASA SYSTEM           |                      |
| 4  | Clamping plate               | YP000P0000236+YP000P0000237 | YUASA SYSTEM           |                      |
| 5  | Safety Cover                 | ET503004A0003               | YUASA SYSTEM           |                      |
| 6  | Extra low head cap screw     | CBSTS5-16                   | MISUMI                 | To fix the clamp     |
| 7  | Cap screw +SW +PW            | M4x20                       | (Steel)                | To fix the cartridge |
| 8  | Screw with Knrled Rasin Head | CRKR4-12                    | MISUMI                 | To fix the cover     |

◆Ver. 1 lane: ET221001A0002



| No | NAME                         | TYPE                        | MANUFACTURE (MATERIAL) | NOTE                 |
|----|------------------------------|-----------------------------|------------------------|----------------------|
| 1  | Basic Unit, Sliding Folding  | ET221001A0002               | YUASA SYSTEM           |                      |
| 2  | Cartridge for moving side    | YP000P0000615               | YUASA SYSTEM           |                      |
| 3  | Cartridge for fixed side     | YP000P0000616               | YUASA SYSTEM           |                      |
| 4  | Clamping plate               | YP000P0000055+YP000P0000056 | YUASA SYSTEM           |                      |
| 5  | Safety Cover                 | ET503004A0003               | YUASA SYSTEM           |                      |
| 6  | Extra low head cap screw     | CBSTS5-16                   | MISUMI                 | To fix the clamp     |
| 7  | Cap screw +SW +PW            | M4x20                       | (Steel)                | To fix the cartridge |
| 8  | Screw with Knrled Rasin Head | CRKR4-12                    | MISUMI                 | To fix the cover     |

### 1.3 INSTALLATION [ Tool: 3 mm Hexagon Bar Wrench ]

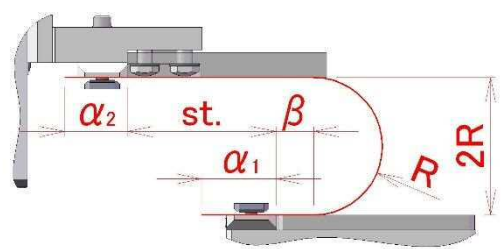


### 3. SETTING of TEST CONDITIONS [ Tool: 3 mm Allen wrench, 8 mm spanner ]

#### 3.1 ARRANGE THE SAMPLE (calculate the length of the sample)

- The length of the sample is calculated with the folding radius and sliding distance.

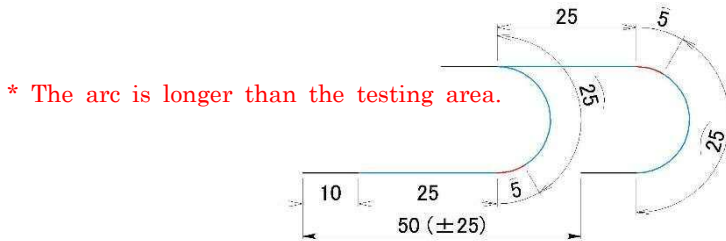
Length of Sample :  $L'$   
 Testing Area :  $L$   
 Folding Radius :  $R$   
 Sliding Distance :  $\pm st.$   
 Clamping Area :  $\alpha_1, \alpha_2 \leq 20$   
 Excess Length :  $\beta$



Length of Sample :  $L' = st. + \pi R + \alpha_1 + \alpha_2 + 2\beta$   
 Testing Area :  $L = st. + \pi R + 2\beta$

Ex. 『Folding Radius:  $R10\text{mm}$ , Sliding Distance:  $\pm 50\text{mm}$ , Clamping Area:  $15\text{mm}$ , Excess Length:  $5\text{mm}$  』  
 $L' = 50 + 3.14 \times 10 + 15 + 15 + 2 \times 5$  /  $L = 50 + 3.14 \times 10 + 2 \times 5$   
 $= 121.4 \text{ mm}$  /  $= 91.4 \text{ mm}$

**NOTICE** A part of arc keep bending if the sliding distance (st.) is longer than the length of the arc ( $\pi \times R$ )



#### 3.2 SLIDING DISTANCE (Reciprocation Distance)

- Refer to the attached manual, DMLHB.

#### 3.3 FOLDING RADIUS [TOOL: 3mm Allen wrench]

- The Folding radius is adjusted with the height position of the fixed guide.

Adjust the height position of the fixed guide to the folding diameter. (0~110mm)

- Loosen screws.

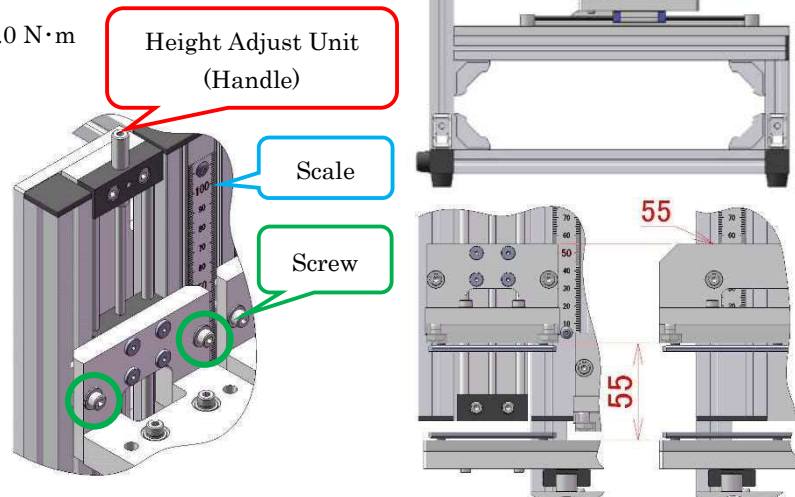
**CAUTION** Do not remove the screws because the plate nut fall down

- Turn the handle (the height adjusting unit) and adjust the position of the fixed guide to the scale.

**NOTE** Insert something (ex. Block gauges) between the slider and fixed guide if you want to set folding radius exactly.

- Fix the fixed guide with screws.

**CAUTION** Tightening torque:  $3.0 \text{ N} \cdot \text{m}$



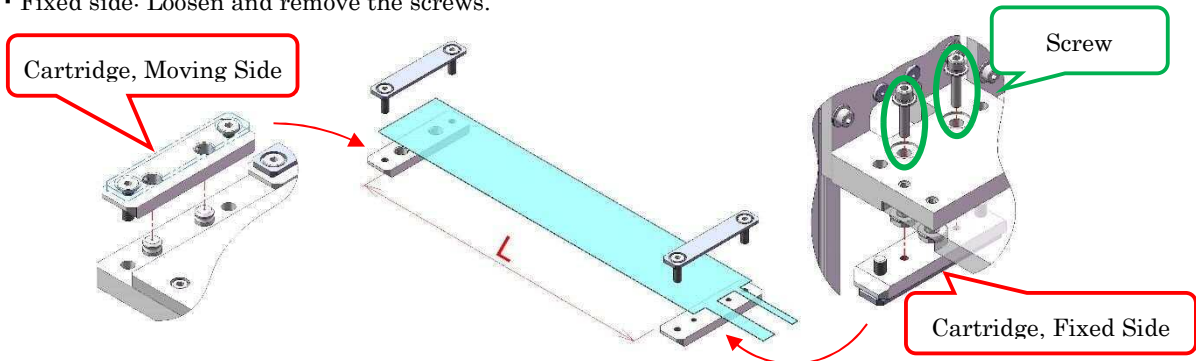
**NOTE** Set the folding radius after set the sample when the folding radius is too small to set the sample.

### 3.4 SET THE SAMPLE [TOOL: 3mm Hexagon Bar Wrench ]

- The sample is set to the test jig with cartridges.
- Can set the sample on cartridge still cartridge attach on the test jig.

#### 1. Remove cartridge from the test jig.

- Moving side: Pull up from the slider, locating pins.
- Fixed side: Loosen and remove the screws.



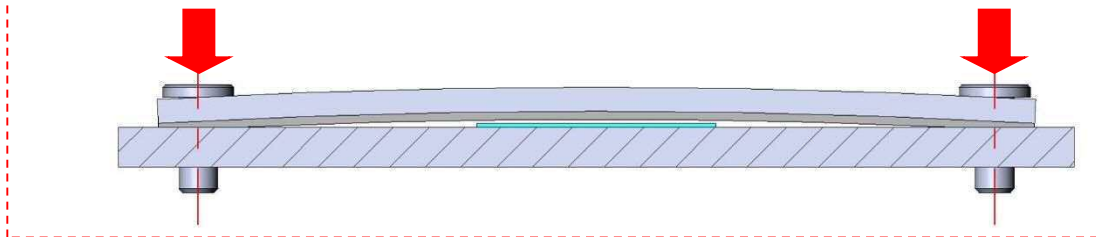
#### 2. Align cartridge so that distance becomes “L: Testing Area”, refer to preceding.

**NOTE** Turn ball plungers outside (moving side).

#### 3. Set the sample on cartridge.

**NOTE** Tightening torque varies according to the sample or test condition.

**CAUTION** The clamping plate become curve then cannot pinch the sample if tighten screws too huge torque.

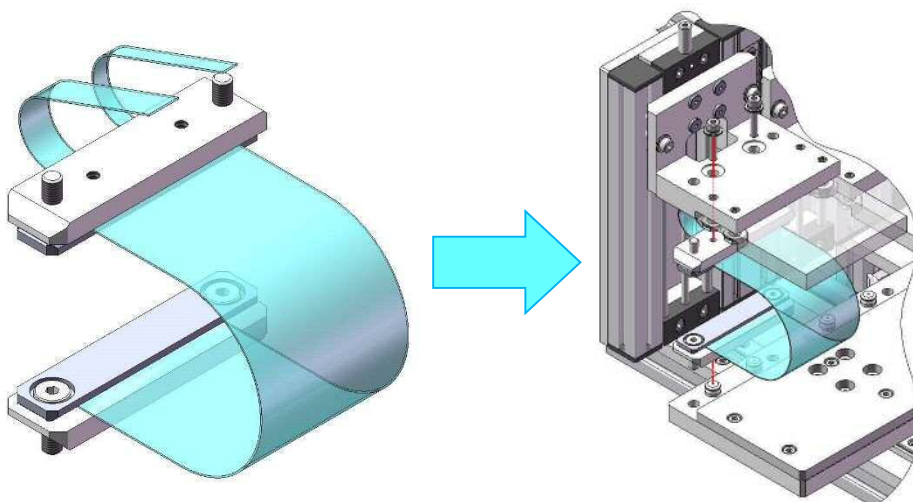


**NOTE** Set the sample on cartridges with adhesive tape (without clamping plates) when clamping plates mutually interfere, folding radius less than “thickness of the sample + 5 mm”.

#### 4. Put the cartridge on the slider, locating pins.

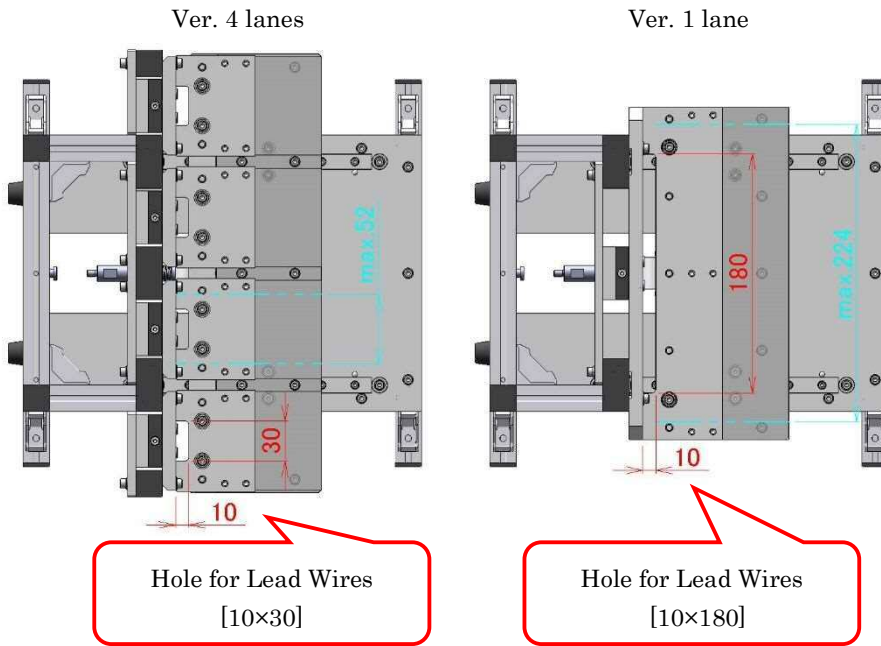
#### 5. Fix the cartridge under the fixed guide with screws.

**CAUTION** Tightening torque: 3.0 N·m

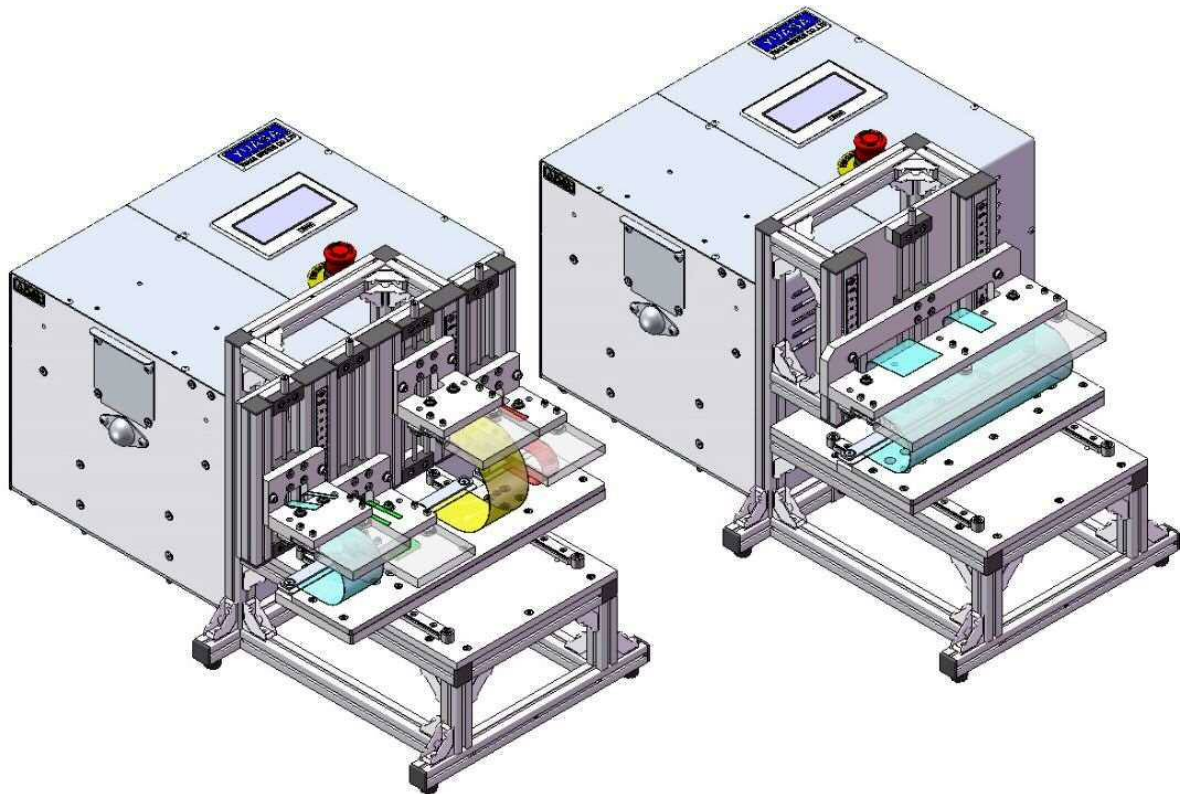




6. Draw lead wires out from the hole to prevent accidents.



7. Check interference each components with JOG button, DMLHB.



### 3.3 Safety Cover

**WARNING** Install a safety cover and prevent access to any moving parts.

**CAUTION** Fix the safety cover surely to prevent accidents by of the vibration.

**INTERLOCK** Cannot operate equipment with the operation panel whenever the safety cover opened.

#### 3.3.1 ATTACH THE COVER on THE TESTING JIG [Tool: --- ]

1) Loosen four screws with Knurled Resin Head.

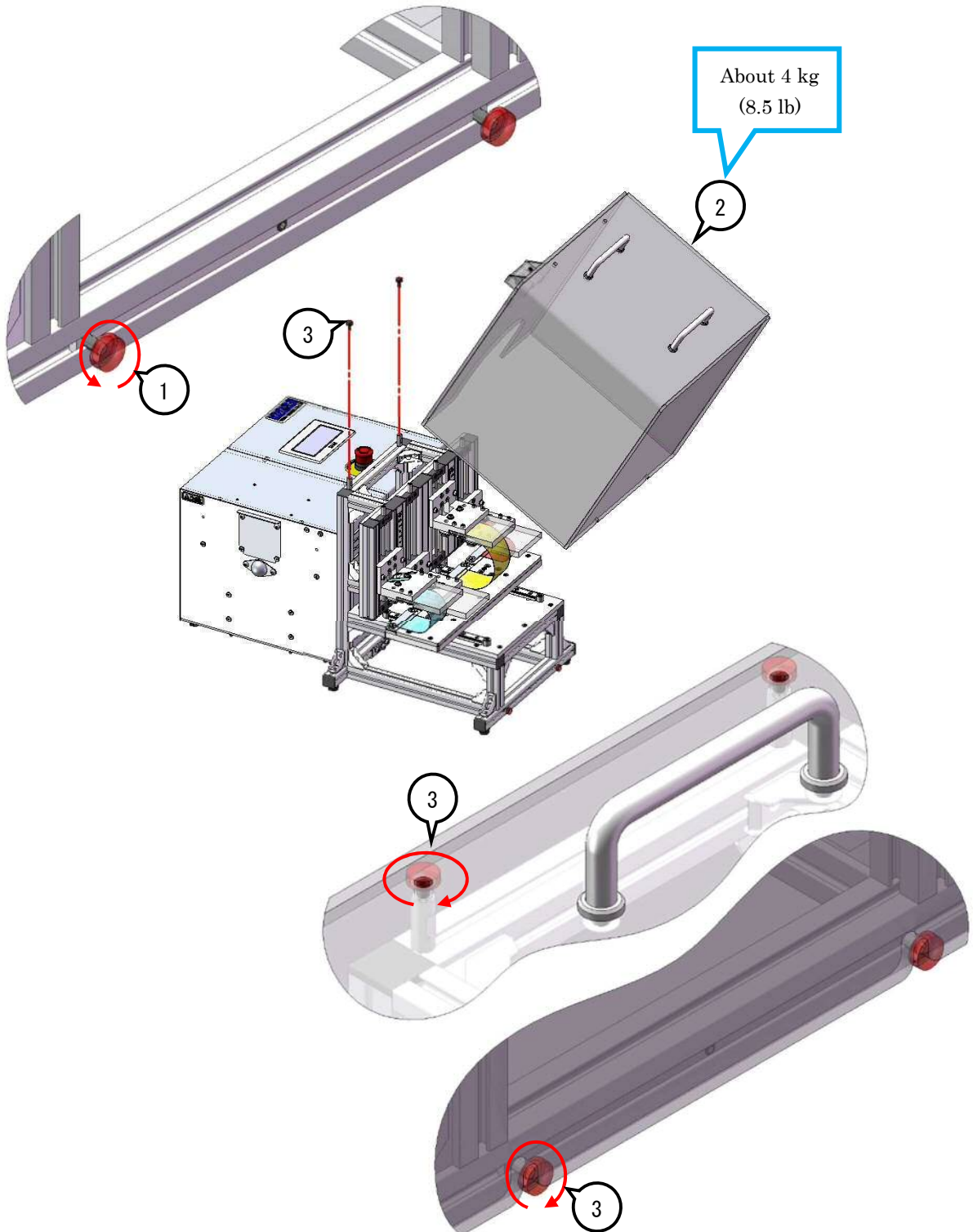
**NOTE** Do not remove screws.

2) Attach the cover on the test jig.

**NOTE** Confirm direction of the cover as below.

**CAUTION** Confirm screws are fit in the ditch of the cover.

3) Fix the cover with four screws.



#### 4. MAINTENANCE and INSPECTION

##### 4.1 INSPECTION

This Jig is maintenance-free.

Change to the new one if some components will go bad or break because of using condition or requirement.

Representative components

◆ Ver. 4 lanes: **ET221001A0001**

| No | NAME                           | TYPE                | NUM. | MANUFACTURE<br>(MATERIAL) | NOTE                               |
|----|--------------------------------|---------------------|------|---------------------------|------------------------------------|
| 1  | C-Lube Linear Way              | MLG12C1R175HS1      | 2    | IKO                       |                                    |
| 2  | Adjustment Unit                | XKNEF10-40-25-Z60-S | 4    | MISUMI                    |                                    |
| 3  | Ball Plunger                   | BPK4                | 8    | MISUMI                    | For Sample Cartirdge (moving side) |
| 4  | Sample Cartridge (moving side) | YP000P0000621       | 4    | YUASA SYSTEM              |                                    |
| 5  | Sample Cartridge (fixed side)  | YP000P0000235       | 4    | YUASA SYSTEM              |                                    |
| 6  | Plate (Clamp)                  | YP000P0000236       | 8    | YUASA SYSTEM              |                                    |
| 7  | Clamp Pad                      | YP000P0000237       | 8    | YUASA SYSTEM              |                                    |
| 8  | Extra low head cap screw       | CBSTS5-16           | 16   | MISUMI                    |                                    |
| 9  | Washer                         | WSSM10-4-1          | 8    | MISUMI                    |                                    |
| 10 | Cap screw + Spring Washer      | M4x20               | 8    | (Steel)                   |                                    |
| 11 | Screw with Knnrled Rasin Head  | CRKR4-12            | 4    | MISUMI                    | To fix the cover                   |

◆ Ver. 1 lanes: **ET221001A0002**

| No | NAME                           | TYPE                | NUM. | MANUFACTURE<br>(MATERIAL) | NOTE                               |
|----|--------------------------------|---------------------|------|---------------------------|------------------------------------|
| 1  | C-Lube Linear Way              | MLG12C1R175HS1      | 2    | IKO                       |                                    |
| 2  | Adjustment Unit                | XKNEF10-40-25-Z60-S | 1    | MISUMI                    |                                    |
| 3  | Ball Plunger                   | BPK4                | 2    | MISUMI                    | For Sample Cartirdge (moving side) |
| 4  | Sample Cartridge (moving side) | YP000P0000615       | 1    | YUASA SYSTEM              |                                    |
| 5  | Sample Cartridge (fixed side)  | YP000P0000616       | 1    | YUASA SYSTEM              |                                    |
| 6  | Plate (Clamp)                  | YP000P0000055       | 2    | YUASA SYSTEM              |                                    |
| 7  | Clamp Pad                      | YP000P0000056       | 2    | YUASA SYSTEM              |                                    |
| 8  | Extra low head cap screw       | CBSTS5-16           | 10   | MISUMI                    |                                    |
| 9  | Washer                         | WSSM10-4-1          | 2    | MISUMI                    |                                    |
| 10 | Cap screw + Spring Washer      | M4x20               | 2    | (Steel)                   |                                    |
| 11 | Screw with Knnrled Rasin Head  | CRKR4-12            | 4    | MISUMI                    | To fix the cover                   |

~ Further Improve Reliability



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The Contents of the instruction manual may change to improve without notice.