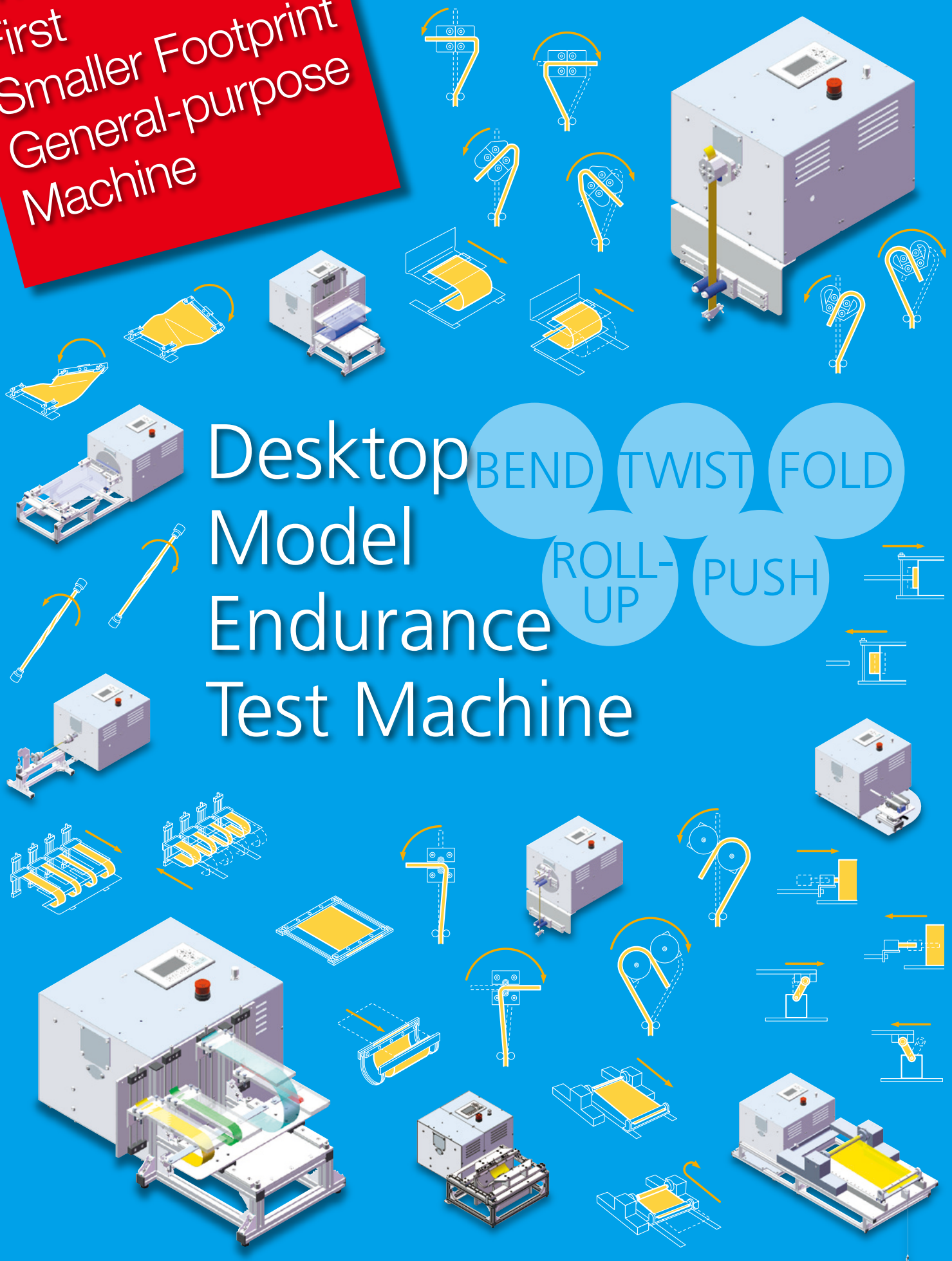


The Industry's  
First  
Smaller Footprint  
General-purpose  
Machine



Desktop  
Model  
Endurance  
Test Machine

- BEND
- TWIST
- FOLD
- ROLL-UP
- PUSH

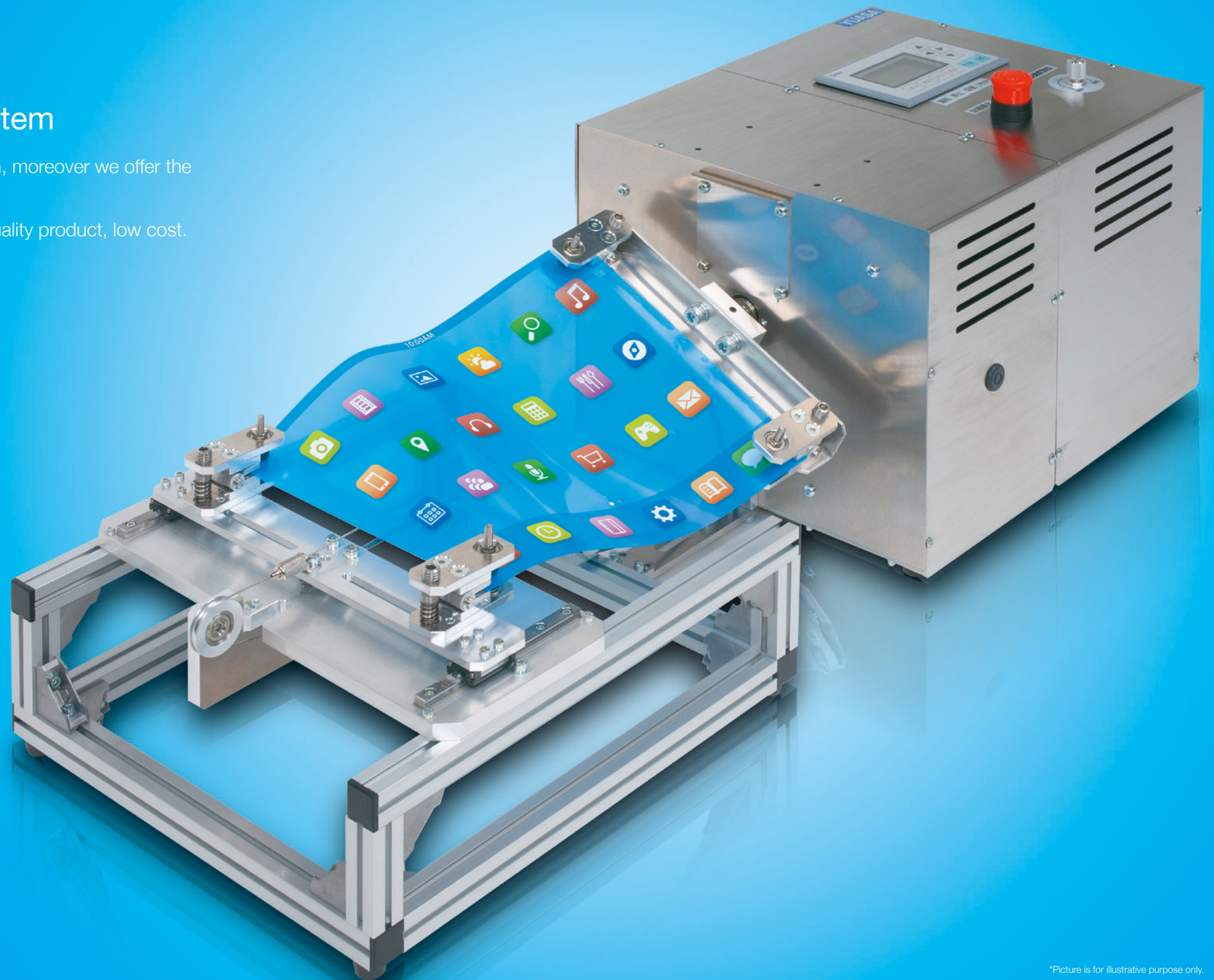
# Further Improve Reliability

## Multipurpose endurance test system

Yuasa System quickly gets the trend and test information, moreover we offer the endurance test system which can use in all process.

Our advantage is a wide range of know-how and high quality product, low cost.

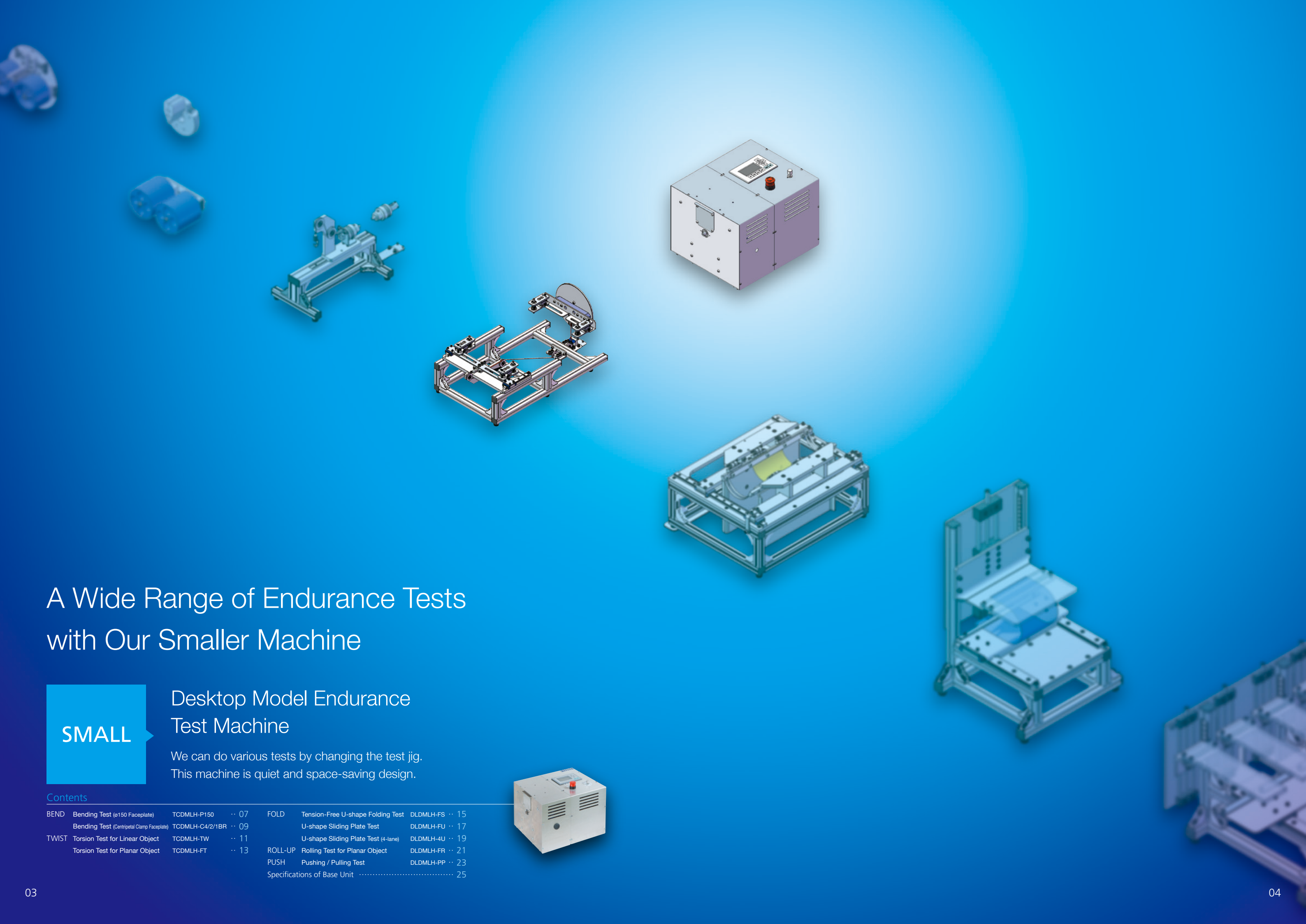
To improve the reliability, we keep evolving.



**YUASA SYSTEM  
ENDURANCE TEST  
SYSTEM**

\*Picture is for illustrative purpose only.





# A Wide Range of Endurance Tests with Our Smaller Machine

SMALL

## Desktop Model Endurance Test Machine

We can do various tests by changing the test jig.  
This machine is quiet and space-saving design.

### Contents

BEND	Bending Test (ø150 Faceplate)	TCDMLH-P150	.. 07	FOLD	Tension-Free U-shape Folding Test	DLTMLH-FS	.. 15
	Bending Test (Centripetal Clamp Faceplate)	TCDMLH-C4/2/1BR	.. 09		U-shape Sliding Plate Test	DLTMLH-FU	.. 17
TWIST	Torsion Test for Linear Object	TCDMLH-TW	.. 11		U-shape Sliding Plate Test (4-lane)	DLTMLH-4U	.. 19
	Torsion Test for Planar Object	TCDMLH-FT	.. 13	ROLL-UP	Rolling Test for Planar Object	DLTMLH-FR	.. 21
				PUSH	Pushing / Pulling Test	DLTMLH-PP	.. 23
					Specifications of Base Unit		25

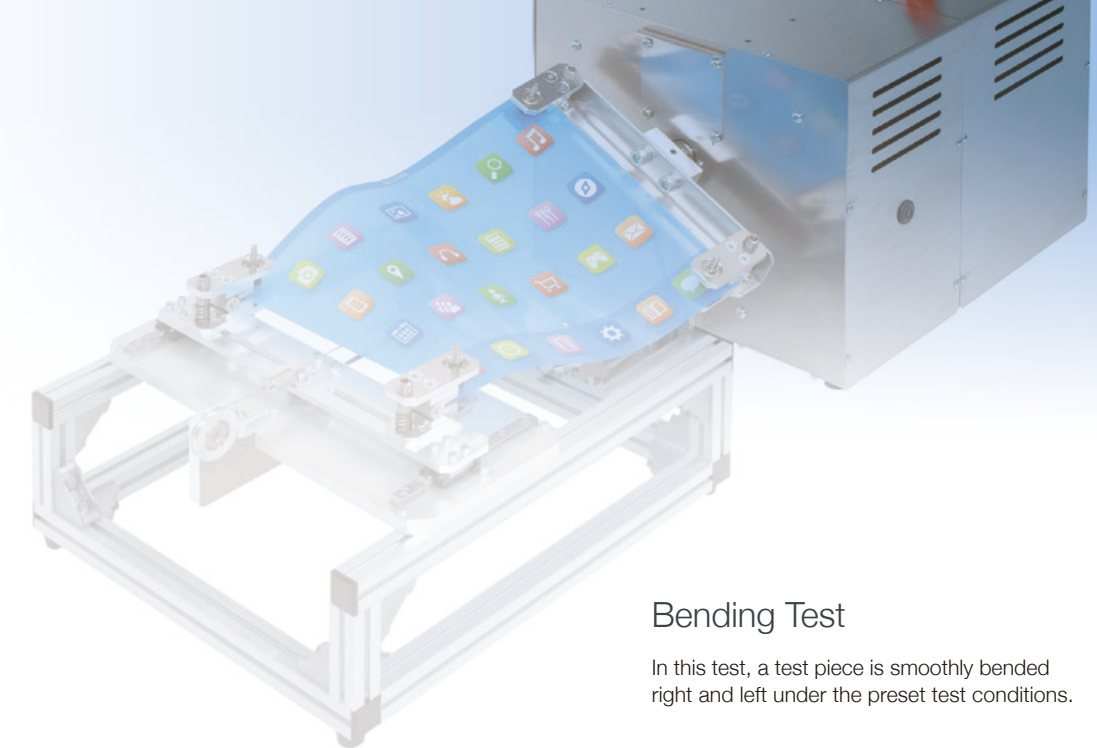


## Basic Motions

Yuasa's Desktop Model Endurance Test Machines provide

## 5 Basic Motions

5 different motions: bending, torsion, folding, rolling, and pushing / pulling are available for testing with our machines.



### Bending Test

In this test, a test piece is smoothly bended right and left under the preset test conditions.

## BEND

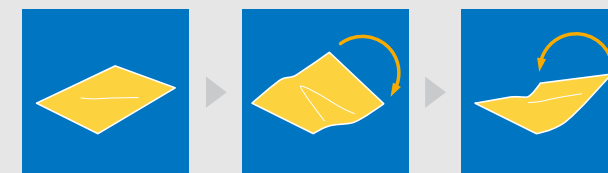


## TWIST



### Torsion Test

In this test, a test piece is smoothly twisted right and left under the preset test conditions.

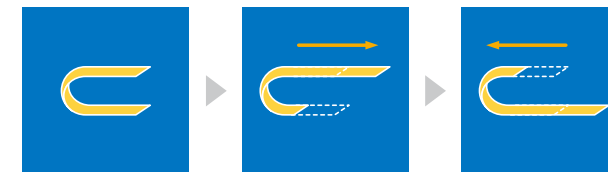


## FOLD



### Folding Test

In this test, a U-shaped test piece is smoothly moved under the preset test conditions.



## ROLL-UP



### Rolling Test

In this test, a test piece is smoothly rolled up and unrolled under the preset test conditions.

#### Example of Test Pieces

##### • Linear Test Piece ...

»Cables (Electric Wires, Optical Fibers) »Harness  
»Cable Guides »Tubes »Wires »Fibers

##### • Planar Test Piece ...

»Flexible Displays »Organic Electroluminescence Devices  
»Barrier Film »Flexible Printed Circuits  
»Flat Cables

## PUSH



### Pushing / Pulling Test

In this test, a test piece is smoothly pushed and pulled under the preset test conditions.

BEND  
Bending Test

TWIST  
Torsion Test

FOLD  
Folding Test

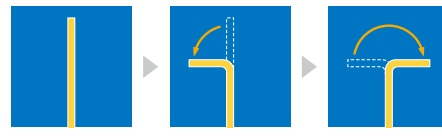
ROLL-UP  
Rolling Test

PUSH  
Pushing / Pulling Test

Specifications of  
Base Unit



# BEND



SMALL

TCDMLH-P150

Desktop Model Endurance Test Machine

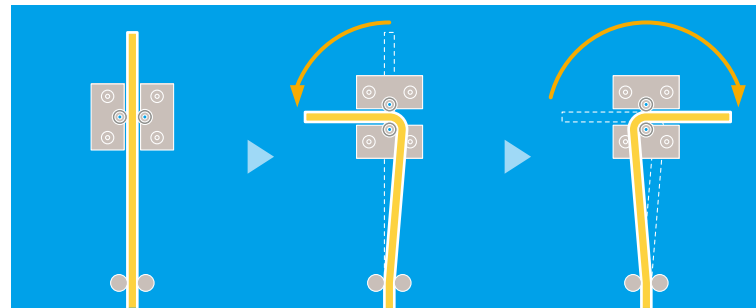
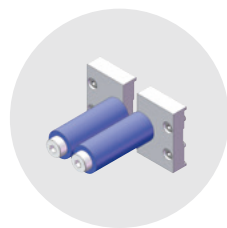
Bending Test (ø150 Faceplate)

Using an object such as cable, harness, element wire and fine line as well as belt-shaped objects up to 30mm in width, various bending tests are conducted quickly and easily.

## Attachment (Test Jig)

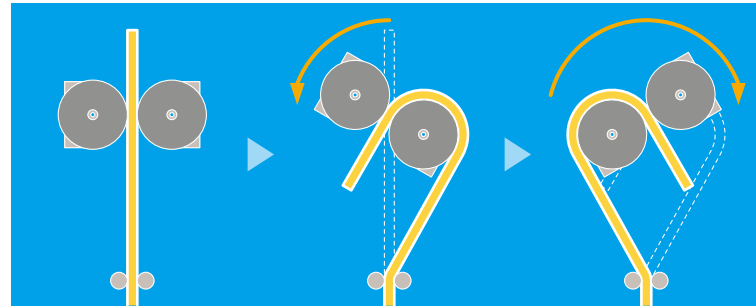
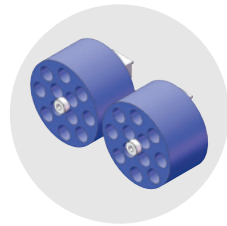
### Bend Radius:10mm (Accessory)

A two-piece set of bend radius jig (mandrel) holds a test piece and bend it.



### Bend Radius:40mm (max.)

Maximum bending radius is R40mm, operating range is up to  $\pm 180^\circ$ .



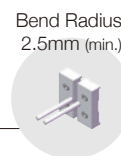
#### Test Pieces

- Linear Test Piece ... »Cables (Electric Wires, Optical Fibers) »Harness »Cable Guides »Tubes »Wires »Fibers
- Planar Test Piece ... »Flexible Displays »Organic Electroluminescence Devices »Barrier Film »Flexible Printed Circuits »Flat Cables

#### Notes

»CE Marking

It is possible to change the bend radius from 2.5mm - 40mm.



Bend Radius:  
2.5mm (min.)



Bend Radius:  
30mm

...

## Web

Please check the latest specification on the web.

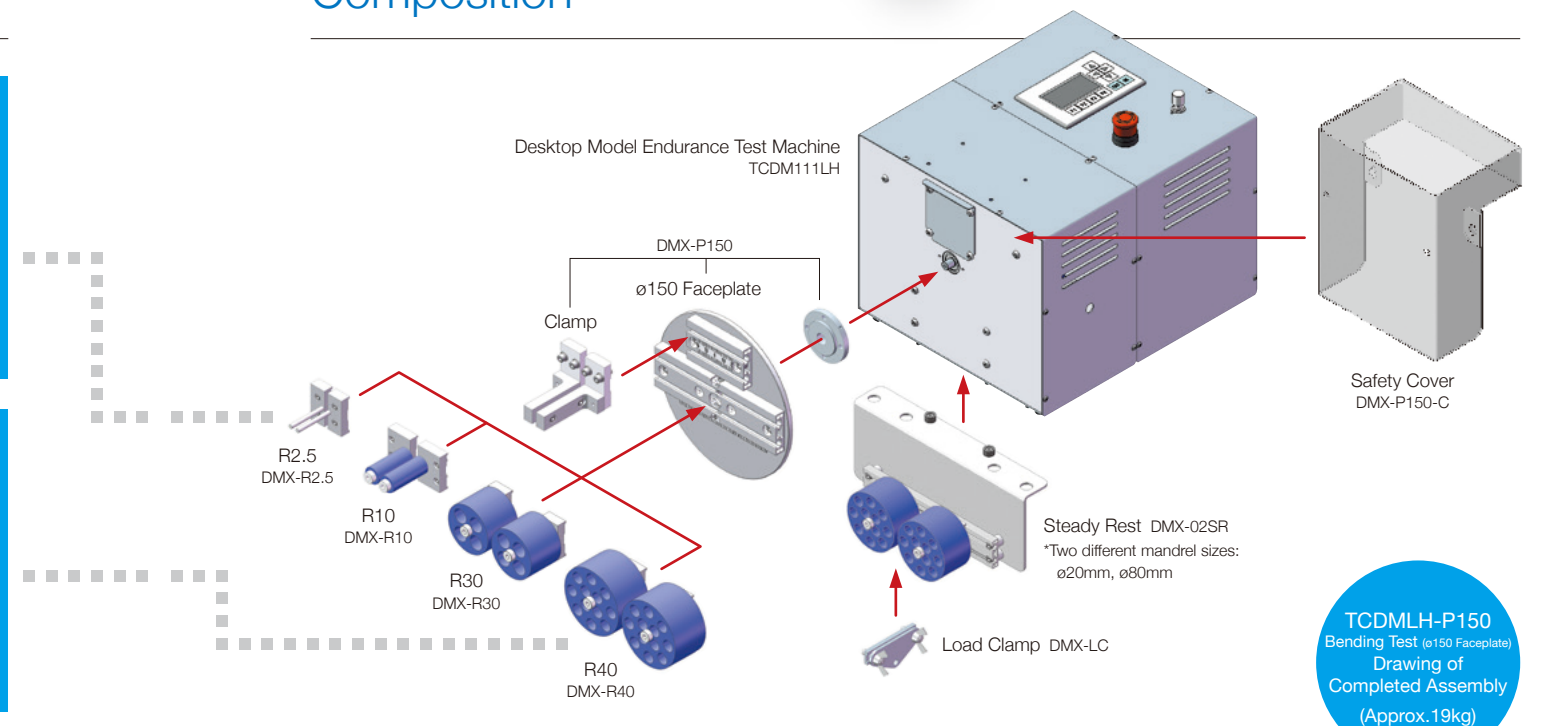
<https://www.yuasa-system.jp/en>

MODELS



You can download the specification. If you have any question, please ask us.

## Composition



TCDMLH-P150  
Bending Test (ø150 Faceplate)  
Drawing of Completed Assembly  
(Approx. 19kg)

### A wide range of bending tests confirming to JIS

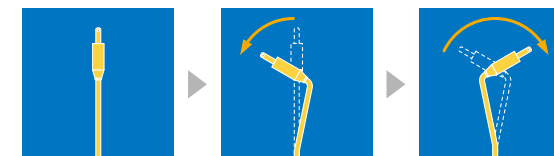
Based on JIS, this machine offers many different tests such as cable tests using weights. Moreover, belt-shaped objects like FFCs and FPCs up to 30mm in width will be tested.

### Free bending angle up to $\pm 180^\circ$

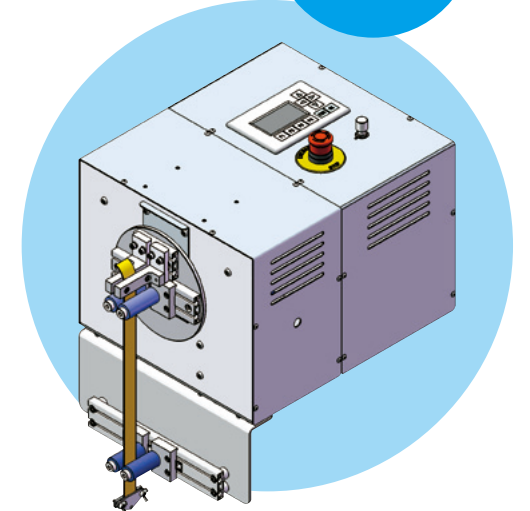
A test piece and operating angle determine an operating angle. (ex. ø2mm Copper Wire :  $\pm 90^\circ \rightarrow 120\text{r/min}$  /  $\pm 180^\circ \rightarrow 60\text{r/min}$ )

### Connector test without bending radius

Please ask us about the clamp jig.



\*Refer to p.25 regarding the driving specification.



A safety cover is available for the flexible area as an option.  
No weights are included.

BEND  
Bending Test (ø150 Faceplate)

TWIST  
Torsion Test

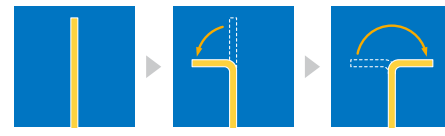
FOLD  
Folding Test

ROLL-UP  
Rolling Test

PUSH  
Pushing / Pulling Test

Specifications of  
Base Unit

# BEND



SMALL

TCDMLH-C4BR / TCDMLH-C2BR / TCDMLH-C1BR  
(4R-block) (2R-block) (1R-block)

Desktop Model Endurance Test Machine

Bending Test (Centripetal Clamp Faceplate)

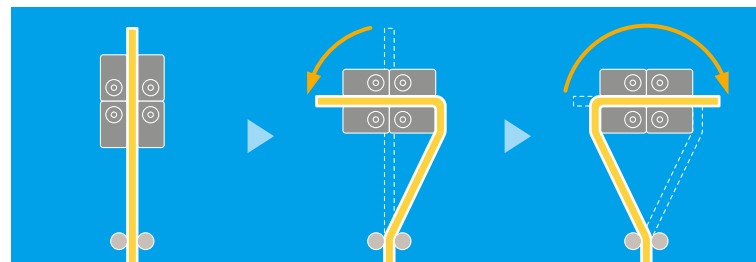
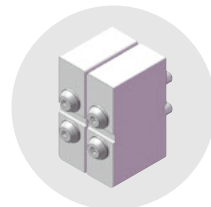
With an effective combination of the clamp and bending radius blocks(R-block), a wide range of bending tests will be performed.  
This machine is made for testing in smaller bend radii. There are some objects that can be tested with conventional mandrels.

## Attachment (Test Jig)

Bending block is usable as clamp.

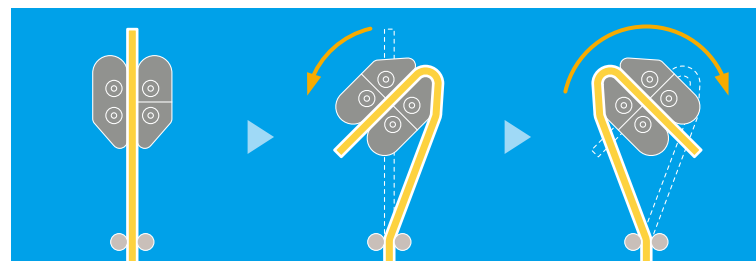
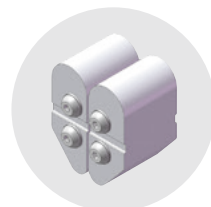
### 4R-block

Operating Range :  
up to  $\pm 90^\circ$   
Requirements for  
R-Adjustment :  
up to R10mm (Free  
setting per R0.5mm)



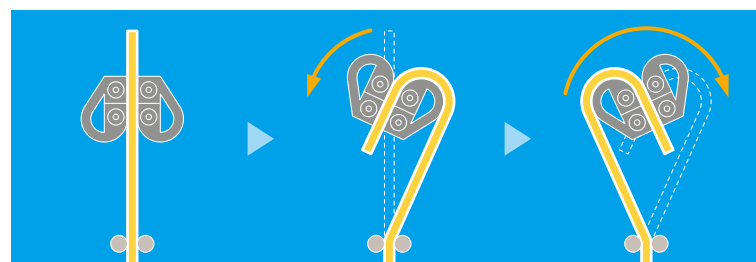
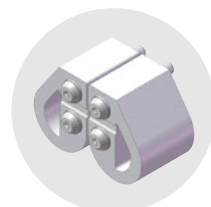
### 2R-block

Operating Range :  
up to  $\pm 135^\circ$   
Requirements for  
R-Adjustment :  
R10 mm (Fixed),  
and up to R11mm  
(Free setting per  
R0.5mm)



### 1R-block

Operating Range :  
up to  $\pm 180^\circ$   
Requirements for  
R-Adjustment :  
R10 - 50mm (Free  
setting per R5mm)



#### Test Pieces

• Linear Test Piece ... »Cables (Electric Wires, Optical Fibers) »Harness »Cable Guides »Tubes »Wires »Fibers  
• Planar Test Piece ... »Flexible Displays »Organic Electroluminescence Devices »Barrier Film »Flexible Printed Circuits »Flat Cables

#### Notes

»CE Marking

#### Web

Please check the  
latest specification  
on the web.

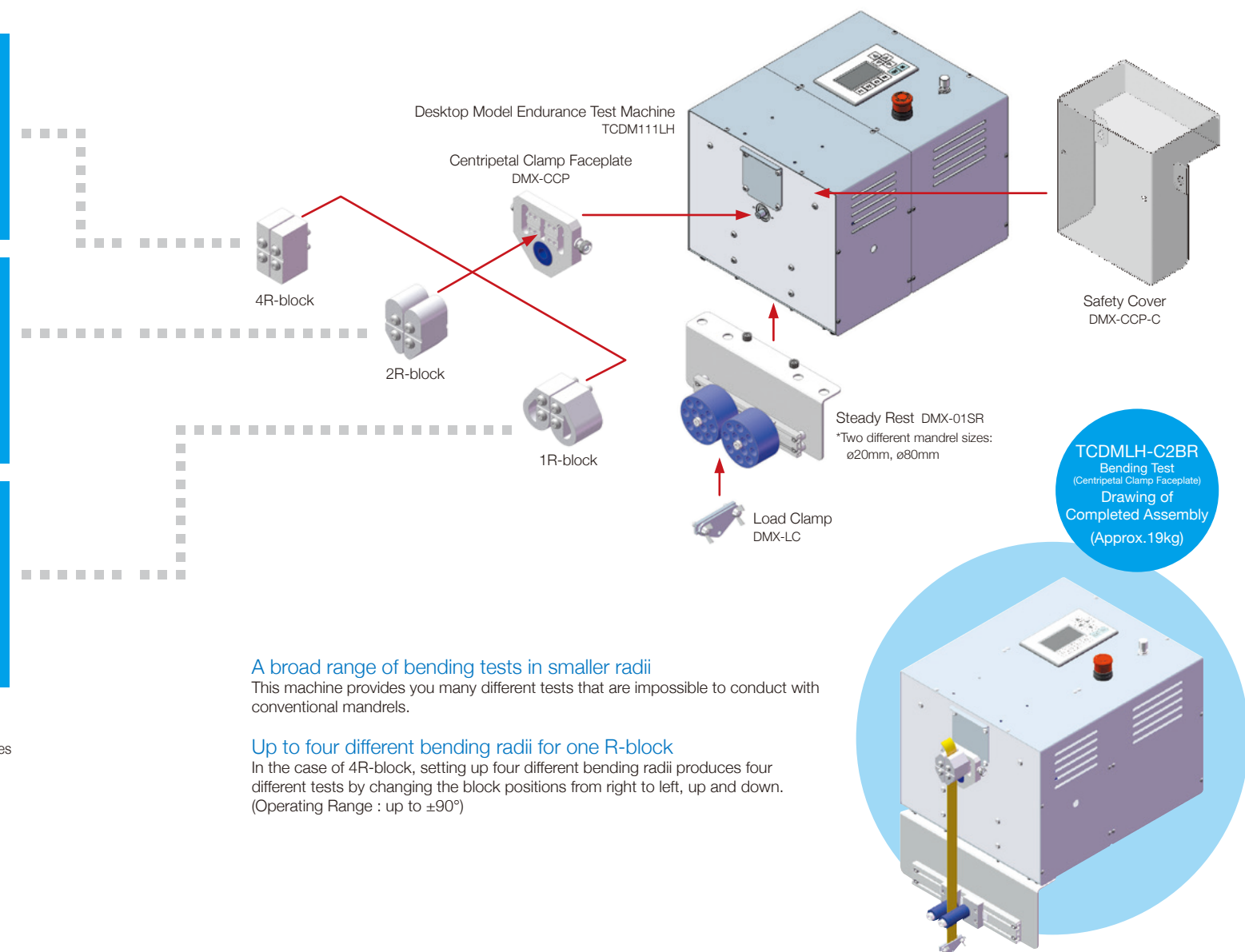
<https://www.yuasa-system.jp/en>

MODELS



You can download the specification. If you have any question, please ask us.

## Composition



### A broad range of bending tests in smaller radii

This machine provides you many different tests that are impossible to conduct with conventional mandrels.

### Up to four different bending radii for one R-block

In the case of 4R-block, setting up four different bending radii produces four different tests by changing the block positions from right to left, up and down.  
(Operating Range : up to  $\pm 90^\circ$ )

A safety cover is available for the flexible area as an option.  
No weights are included.

\*Refer to p.25 regarding the driving specification.

BEND  
Bending Test (Centripetal Clamp Faceplate)

TWIST  
Torsion Test

FOLD  
Folding Test

ROLL-UP  
Rolling Test

PUSH  
Pushing / Pulling Test

Specifications of  
Base Unit



# TWIST



SMALL

TCDMLH-TW

Desktop Model Endurance Test Machine

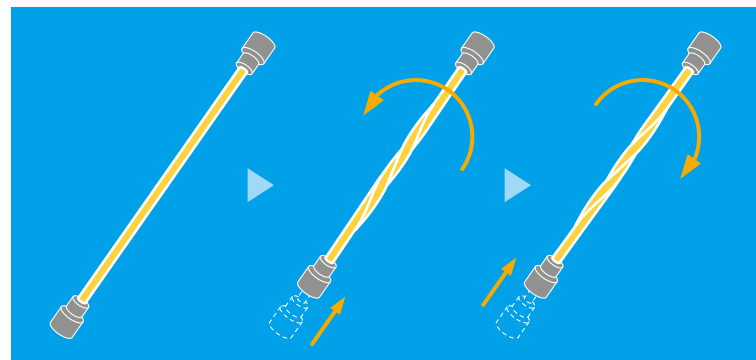
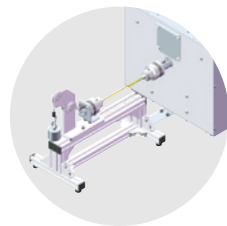
Torsion Test for Linear Object

This machine offers profitable tests for linear objects like cables and fibers.

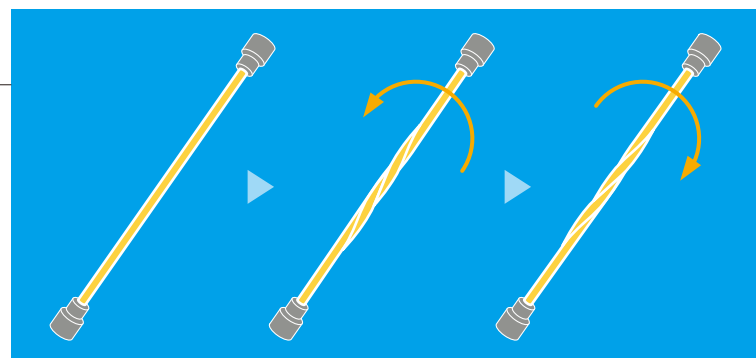
## Attachment (Test Jig)

### Test Jig for Linear Object

Holding a test piece with the chuck jig, the output axis twists one end of the object while the jig frame secures the other end.



Not following



#### Test Pieces

• Linear Test Piece ... »Cables (Electric Wires, Optical Fibers) »Harness »Cable Guides »Tubes »Wires »Fibers

#### Notes

»CE Marking

#### Web

Please check the latest specification on the web.

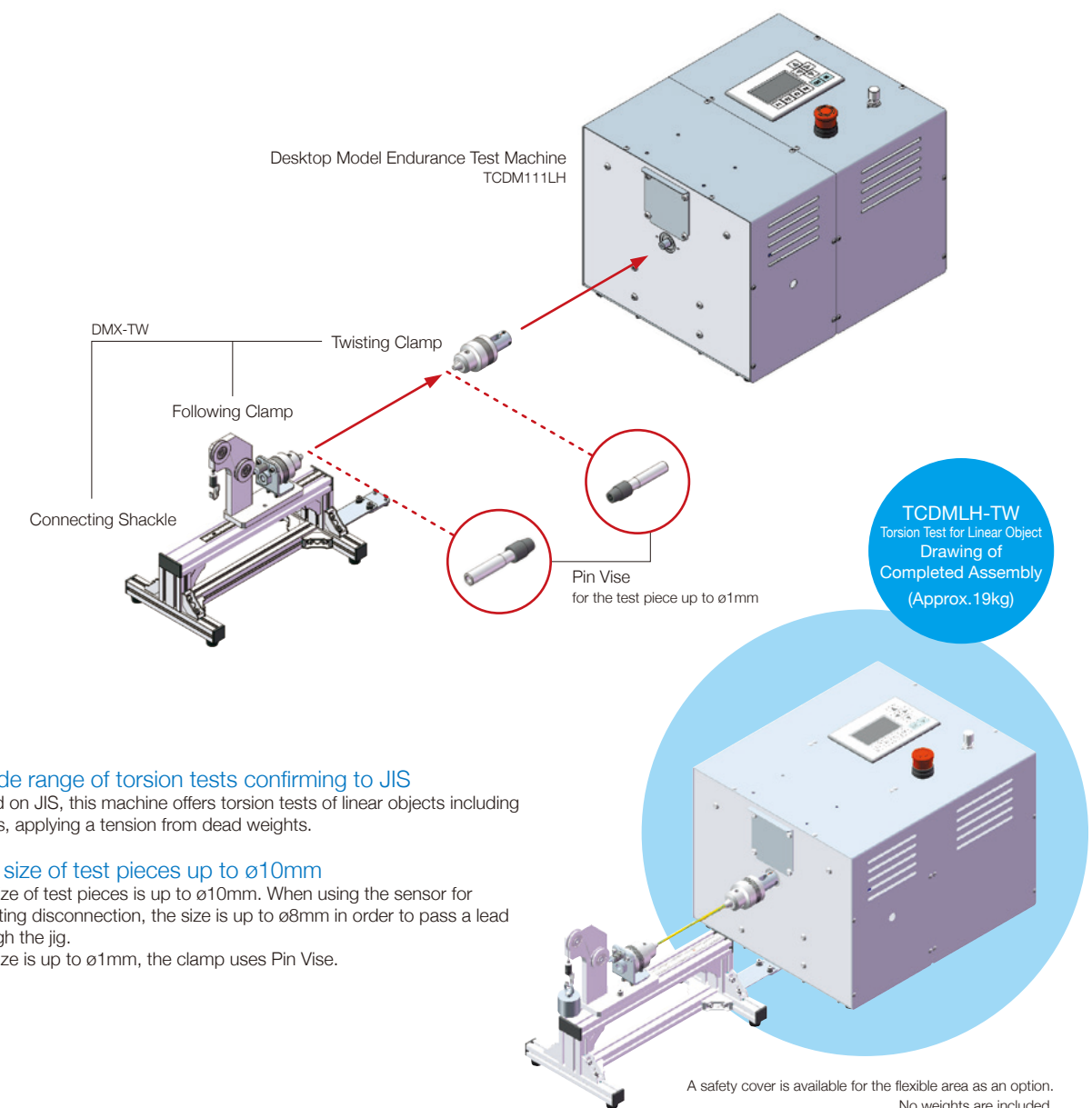
<https://www.yuasa-system.jp/en>

MODELS



You can download the specification. If you have any question, please ask us.

## Composition



### A wide range of torsion tests confirming to JIS

Based on JIS, this machine offers torsion tests of linear objects including cables, applying a tension from dead weights.

### Free size of test pieces up to $\phi 10$ mm

The size of test pieces is up to  $\phi 10$ mm. When using the sensor for detecting disconnection, the size is up to  $\phi 8$ mm in order to pass a lead through the jig.

The size is up to  $\phi 1$ mm, the clamp uses Pin Vise.

\*Refer to p.25 regarding the driving specification.

BEND  
Bending Test

TWIST  
Torsion Test for Linear Object

FOLD  
Folding Test

ROLL-UP  
Rolling Test

PUSH  
Pushing / Pulling Test

Specifications of  
Base Unit

# TWIST



SMALL

TCDMLH-FT

Desktop Model Endurance Test Machine

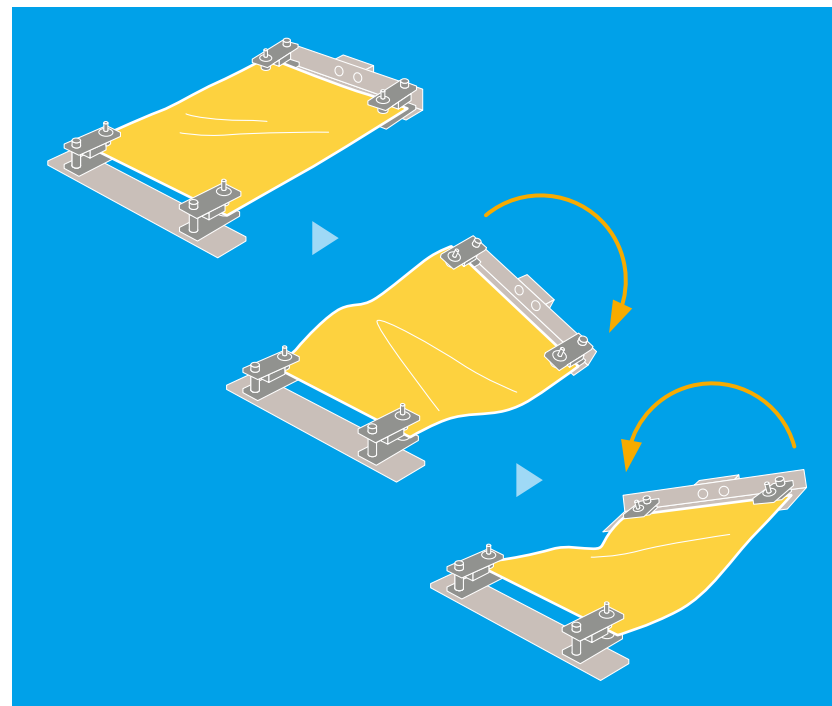
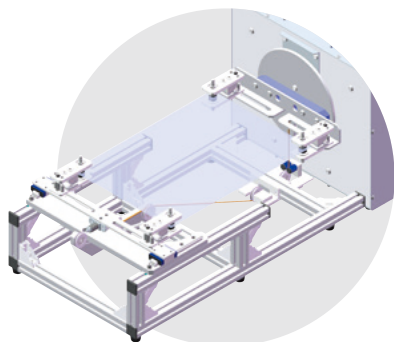
Torsion Test for Planar Object

This machine realizes profitable tests for planar objects like flexible displays.

## Attachment (Test Jig)

### No-tension Torsion Test Jig for Planar Object

Holding a test piece with the clamp jig, the output axis twists one edge of the object while the jig frame clamp secures the other edge.



#### Test Pieces

• Planar Test Piece ...  
»Flexible Displays »Organic Electroluminescence Devices »Barrier Film »Flexible Printed Circuits »Flat Cables

#### Notes

»CE Marking

#### Web

Please check the latest specification on the web.

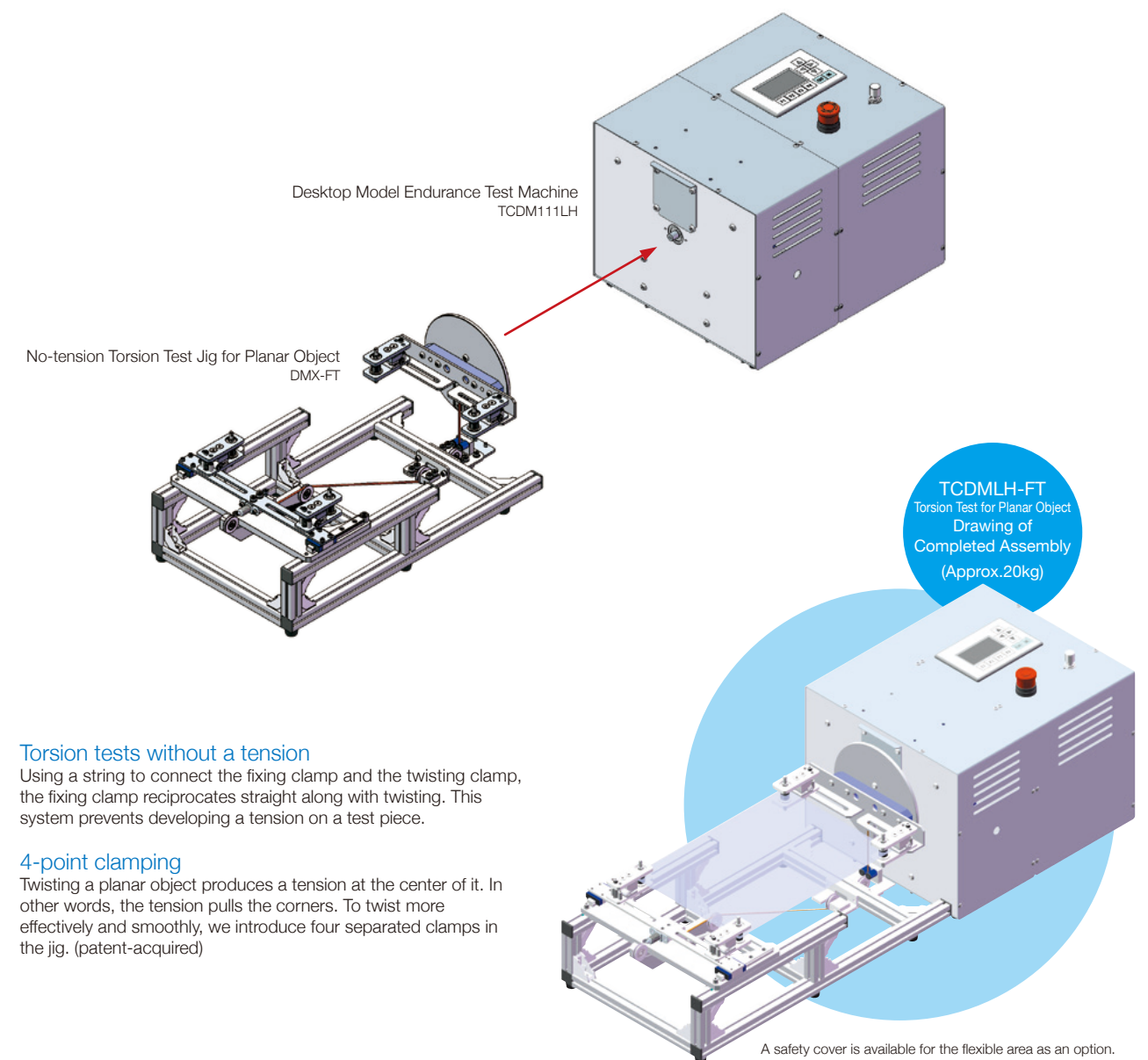
<https://www.yuasa-system.jp/en>

MODELS



You can download the specification. If you have any question, please ask us.

## Composition



### Torsion tests without a tension

Using a string to connect the fixing clamp and the twisting clamp, the fixing clamp reciprocates straight along with twisting. This system prevents developing a tension on a test piece.

### 4-point clamping

Twisting a planar object produces a tension at the center of it. In other words, the tension pulls the corners. To twist more effectively and smoothly, we introduce four separated clamps in the jig. (patent-acquired)

\*Refer to p.25 regarding the driving specification.

BEND  
Bending Test

TWIST  
Torsion Test for Planar Object

FOLD  
Folding Test

ROLL-UP  
Rolling Test

PUSH  
Pushing / Pulling Test

Specifications of  
Base Unit



# FOLD



SMALL

DLDMLH-FS

Desktop Model Endurance Test Machine

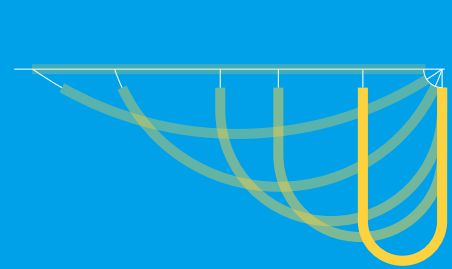
Tension-Free U-shape Folding Test



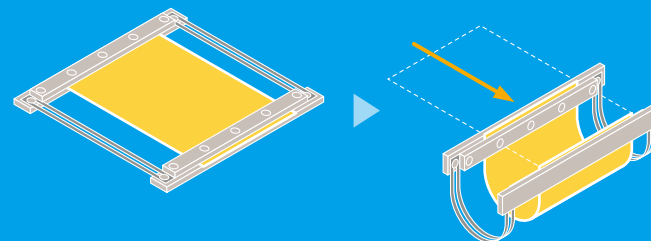
The bending load is applied by having one side of the sample move straight towards the other side. The sample only receives bending load so there are no applied tension or friction.

## Attachment (Test Jig)

### Basic Movement



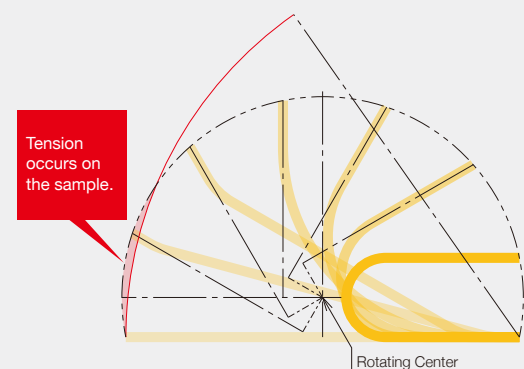
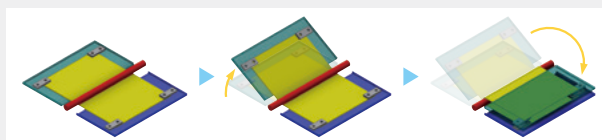
### Jig Movement



Set the sample flat on the tilt clamp. The equipment will repeat flat and bend motion. When bending, the tilt clamp moves downward so the sample would bend in natural U-shape. It is possible to perform vertical tests by setting the tilt clamp up right.

### Issues During General Folding Test

When conducting tests with equipments shown in the below diagram, a large tension occurs on the sample when the test starts. The cause of this is clear when drawing a circle with radius the same length as the sample on the movement track of the test machine, shown on right. As shown in red in the diagram, the length of the sample is too short against the movement track of the clamp. If one uses a rod, this becomes more apparent. This causes the unexpected breaks and disperse in the test results in actual tests.



### Test Pieces

• Planar Test Piece ...  
»Flexible Displays »Organic Electroluminescence Devices »Barrier Film »Flexible Printed Circuits »Flat Cables

### Notes

»CE Marking

### Web

Please check the latest specification on the web.

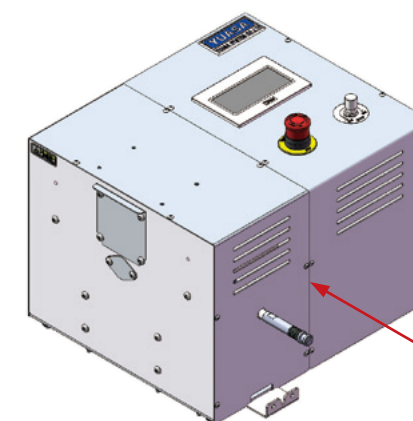
<https://www.yuasa-system.jp/en>

MODELS



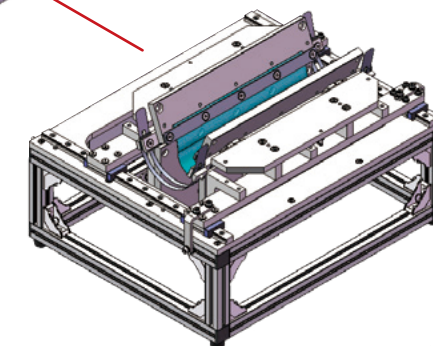
You can download the specification. If you have any question, please ask us.

## Composition

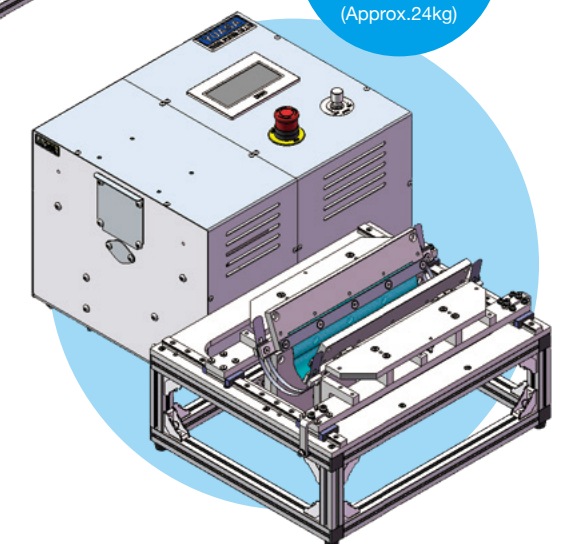


Desktop Model Endurance Test Machine  
DLDMLH-FS

Tension-Free U-shape Folding Test Jig  
DMX-FS



DLDMLH-FS  
Tension-Free  
U-shape Folding Test  
Drawing of  
Completed Assembly  
(Approx.24kg)



### Tension free test

It is possible to fold without tension for planar objects like films and FPCs.

### Ideal bending test

This machine can form ideal bending shapes by the elasticity of test pieces, or tiny one by guide plates. (patent pending)

A safety cover is available for the flexible area as an option.

\*Refer to p.25 regarding the driving specification.

BEND  
Bending Test

TWIST  
Torsion Test

FOLD  
Tension-Free U-shape Folding Test

ROLL-UP  
Rolling Test

PUSH  
Pushing / Pulling Test

Specifications of  
Base Unit

# FOLD



SMALL

DLDMLH-FU

Desktop Model Endurance Test Machine

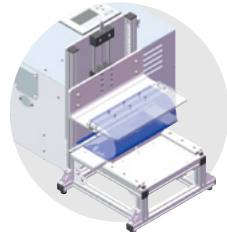
U-shape Sliding Plate Test

This machine realizes profitable tests for planar objects like flexible displays.

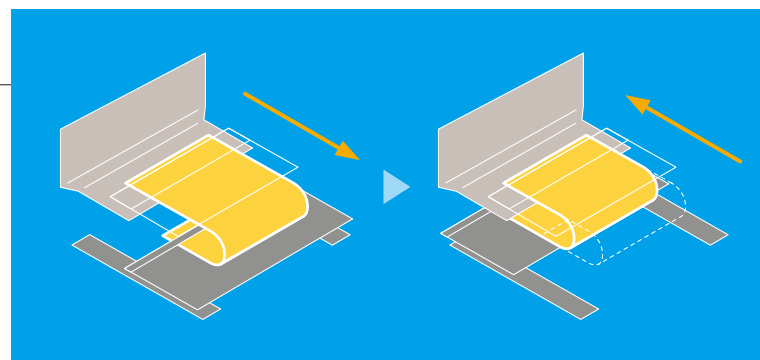
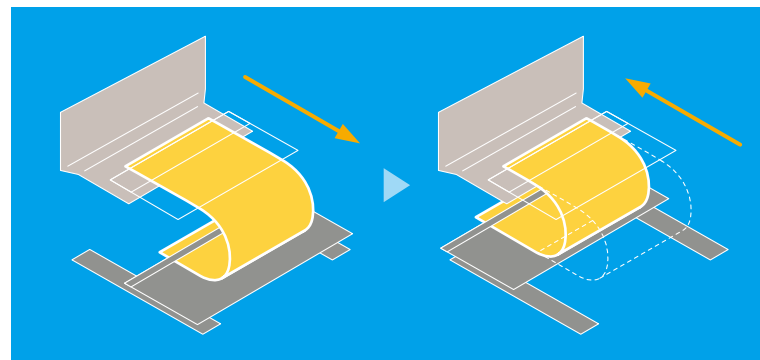
## Attachment (Test Jig)

### Single-lane Test Jig

Folding test pieces in U-shape to clamp, the output axis reciprocates the lower clamp back and forth.



Small bending radius



#### Test Pieces

• Planar Test Piece ...  
»Flexible Displays »Organic Electroluminescence Devices »Barrier Film »Flexible Printed Circuits »Flat Cables

#### Notes

»CE Marking

#### Web

Please check the latest specification on the web.

<https://www.yuasa-system.jp/en>

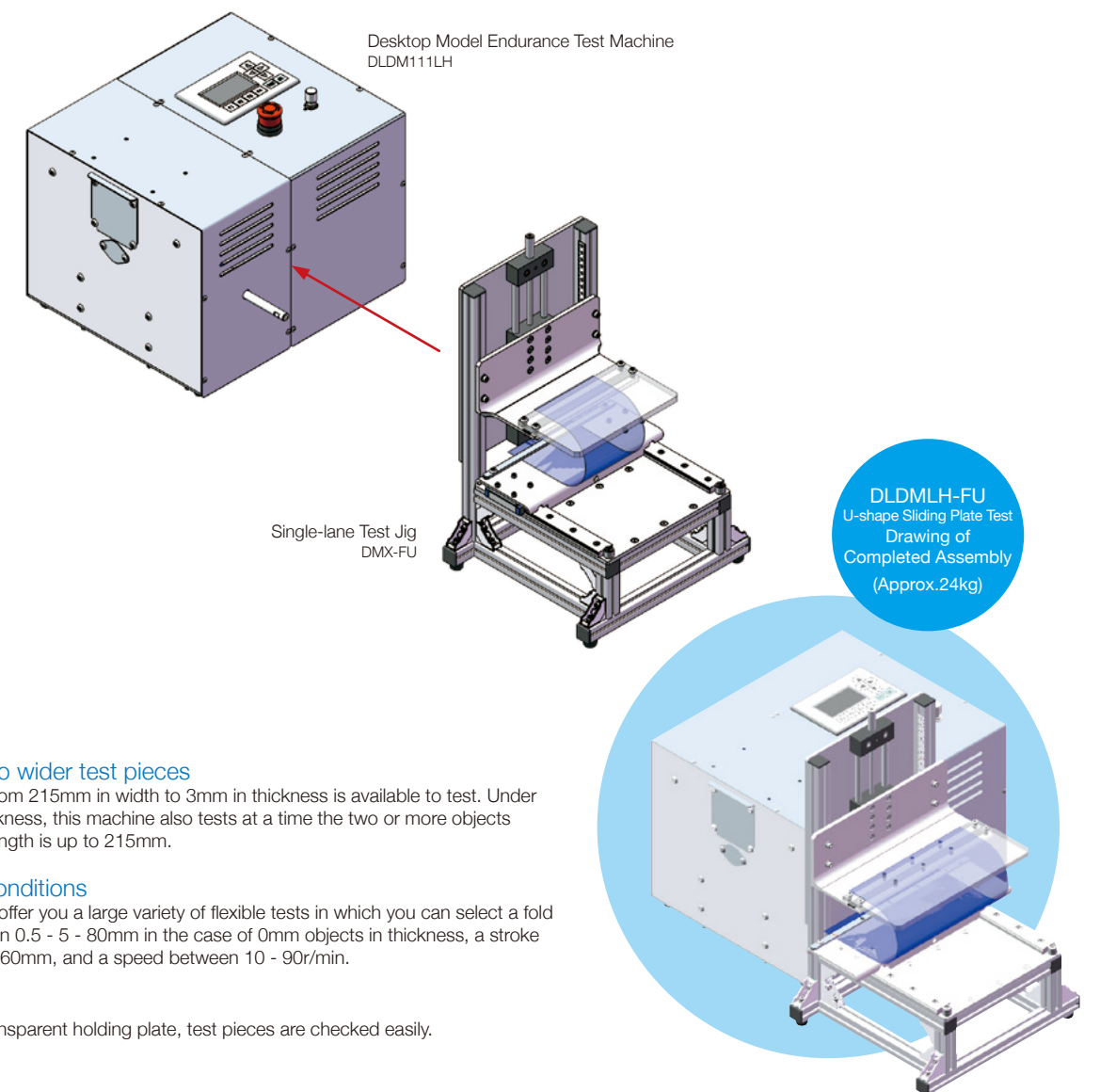
MODELS



You can download the specification. If you have any question, please ask us.



## Composition



### Clamping to wider test pieces

A test piece from 215mm in width to 3mm in thickness is available to test. Under the same thickness, this machine also tests at a time the two or more objects whose total length is up to 215mm.

### Free test conditions

This machine offer you a large variety of flexible tests in which you can select a fold radius between 0.5 - 5 - 80mm in the case of 0mm objects in thickness, a stroke between 0 -  $\pm 60$ mm, and a speed between 10 - 90r/min.

### Visible test

By using a transparent holding plate, test pieces are checked easily.

\*Refer to p.25 regarding the driving specification.

A safety cover is available for the flexible area as an option.



# FOLD



SMALL

DLDMLH-4U

Desktop Model Endurance Test Machine

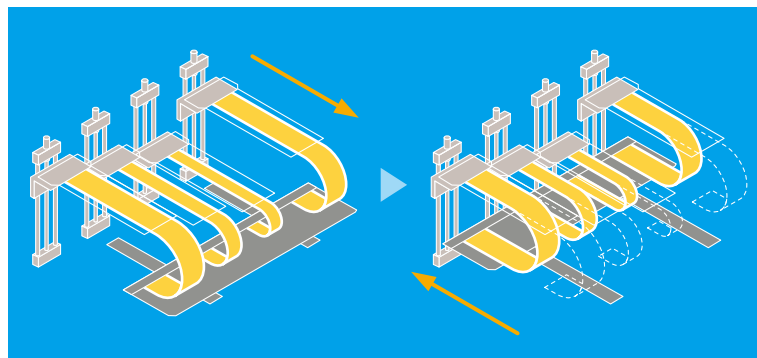
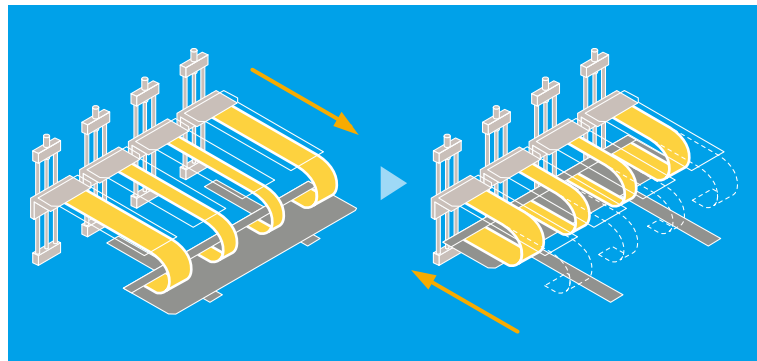
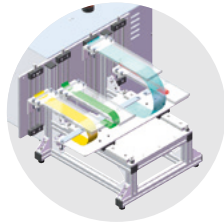
U-shape Sliding Plate Test (4-lane)

This machine offers profitable tests for linear objects like cables and fibers as well as planar ones such as flexible displays.

## Attachment (Test Jig)

### 4-lane Test Jig

Folding test pieces in U-shape to clamp, the output axis reciprocates the lower clamp back and forth.



#### Test Pieces

- Linear Test Piece ... »Cables (Electric Wires, Optical Fibers) »Harness »Cable Guides »Tubes »Wires »Fibers
- Planar Test Piece ... »Flexible Displays »Organic Electroluminescence Devices »Barrier Film »Flexible Printed Circuits »Flat Cables

#### Notes

»CE Marking

## Web

Please check the latest specification on the web.

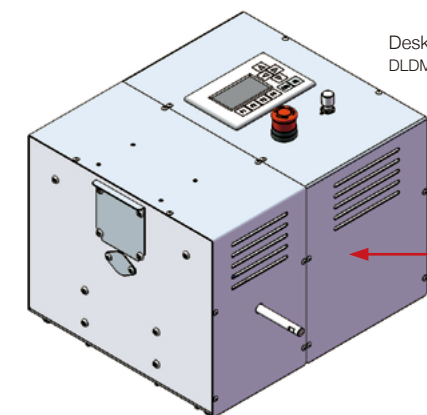
<https://www.yuasa-system.jp/en>

MODELS

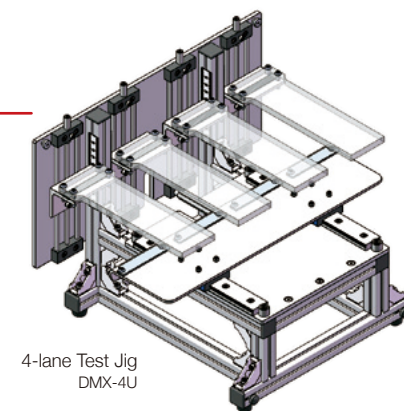


You can download the specification. If you have any question, please ask us.

## Composition

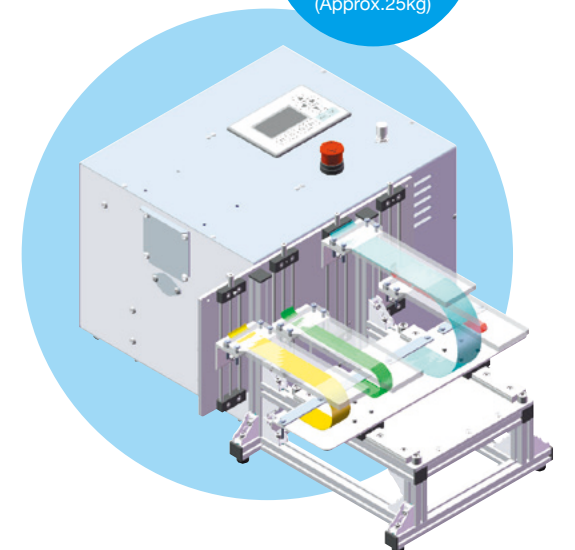


Desktop Model Endurance Test Machine  
DLDMLH-4U



4-lane Test Jig  
DMX-4U

DLDMLH-4U  
U-shape Sliding Plate Test  
(4-lane)  
Drawing of  
Completed Assembly  
(Approx.25kg)



A safety cover is available for the flexible area as an option.

### Four different test pieces for one trial

By using four lanes, you can conduct multiple tests as well as single test.

### Free fold radii

Going up and down at the upper clamping positions, each lane makes various radii that you specify freely. A comparative trial is available on the same test pieces in different radii.

\*Refer to p.25 regarding the driving specification.

BEND  
Bending Test

TWIST  
Torsion Test

FOLD  
U-shape Sliding Plate Test (4-lane)

ROLL-UP  
Rolling Test

PUSH  
Pushing / Pulling Test

Specifications of  
Base Unit

# ROLL-UP



SMALL

DLDMLH-FR

Desktop Model Endurance Test Machine

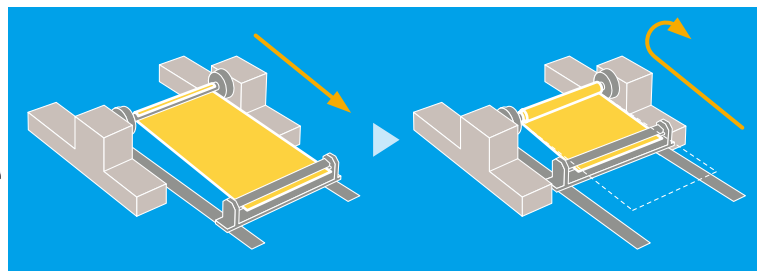
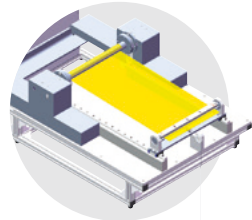
Rolling Test for Planar Object

Using an object such as flexible displays, as well as cables and fibers, your original "Roll to Roll (R2R)" tests can be conducted.

## Attachment (Test Jig)

### Rolling Test Jig for Planar Object

The rack and pinion actuator system repeatedly rolls up and unrolls a test piece by rotating and reversing a roller.



#### Test Pieces

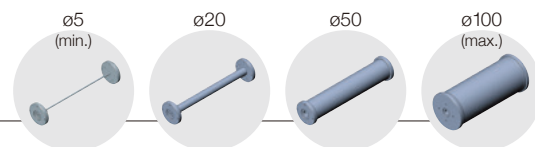
• Planar Test Piece ...

»Flexible Displays »Organic Electroluminescence Devices »Barrier Film »Flexible Printed Circuits »Flat Cables

#### Notes

»CE Marking

Specify roller sizes from  $\phi 5$  -  $\phi 100$ mm.

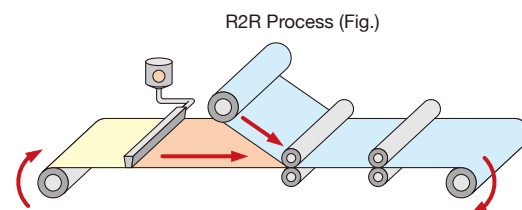


## The Needs of Rolling Test

Using a "R2R" manufacturing process, this machine provides evaluation tests as to a roll-up tension during rolling up and a friction between test pieces.

### R2R Process

R2R (Roll to Roll) is a manufacturing process of producing electronic devices such as liquid crystal panels and solar cells at high throughput and low costs. It prints organic EL elements or circuit patterns on a roll of flexible material like plastic substrate or film that is transferred one roller to one another.



#### Web

Please check the latest specification on the web.

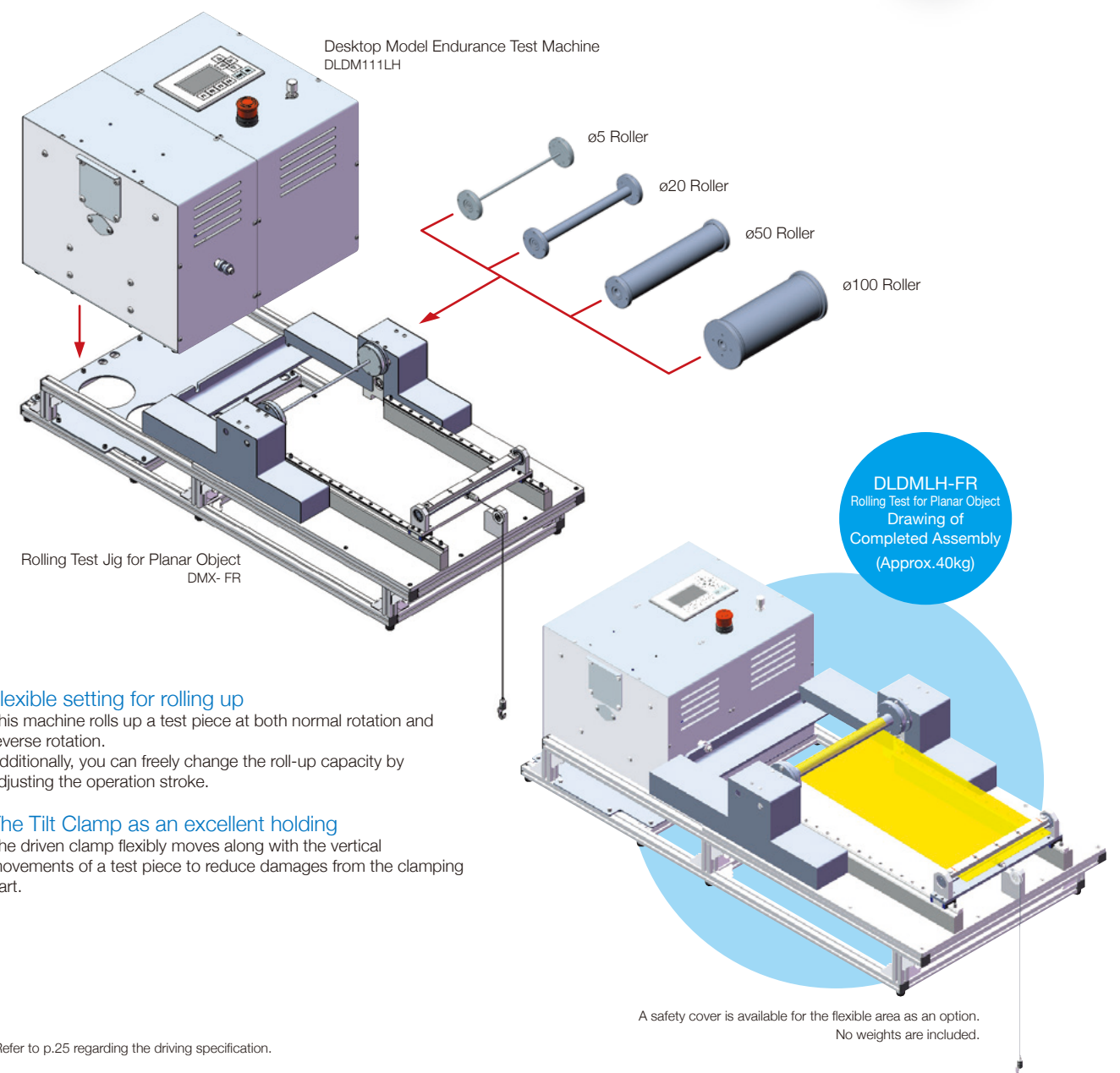
<https://www.yuasa-system.jp/en>

MODELS



You can download the specification. If you have any question, please ask us.

## Composition



### Flexible setting for rolling up

This machine rolls up a test piece at both normal rotation and reverse rotation. Additionally, you can freely change the roll-up capacity by adjusting the operation stroke.

### The Tilt Clamp as an excellent holding

The driven clamp flexibly moves along with the vertical movements of a test piece to reduce damages from the clamping part.

\*Refer to p.25 regarding the driving specification.

BEND  
Bending Test

TWIST  
Torsion Test

FOLD  
Folding Test

ROLL-UP  
Rolling Test for Planar Object

PUSH  
Pushing / Pulling Test

Specifications of  
Base Unit



# PUSH



SMALL

DLDMLH-PP

Desktop Model Endurance Test Machine

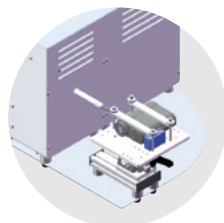
Pushing / Pulling Test

For switches, SD cards, and USB memories used in many industrial applications, this machine offers endurance tests of pushing and/or pulling.

## Attachment (Test Jig)

### Pushing / Pulling Test Jig

The output axis reciprocally pushes and pulls a test piece fixed on the XYZ table for testing its endurance. Please feel free to consult us about additional jigs attached to the output axis.



#### Test Pieces

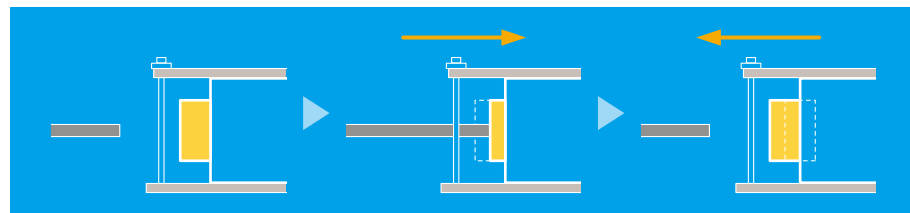
»Push-button Switch »Limit Switch »Connectors  
»USB Memory »SD Card »Card Reader

#### Notes

»CE Marking

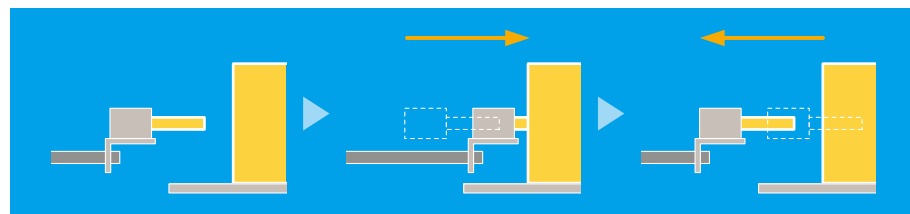
### Pushing Test for Push-button Switch

A proper jig is attached to the output axis to push a tested switch.



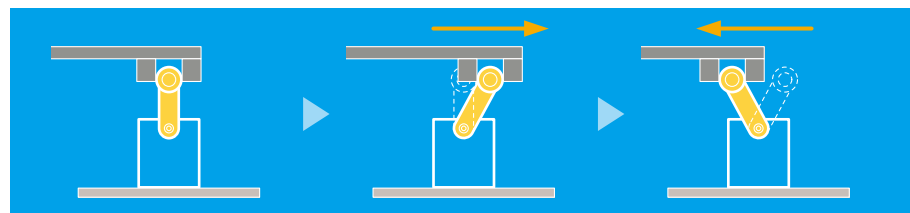
### Inserting and Ejecting Test for Storage Media

A proper jig is attached to the output axis to hold a tested media.



### Operating Test for Limit Switch

A proper jig is attached to the output axis to operate a tested switch.



Web

Please check the latest specification on the web.

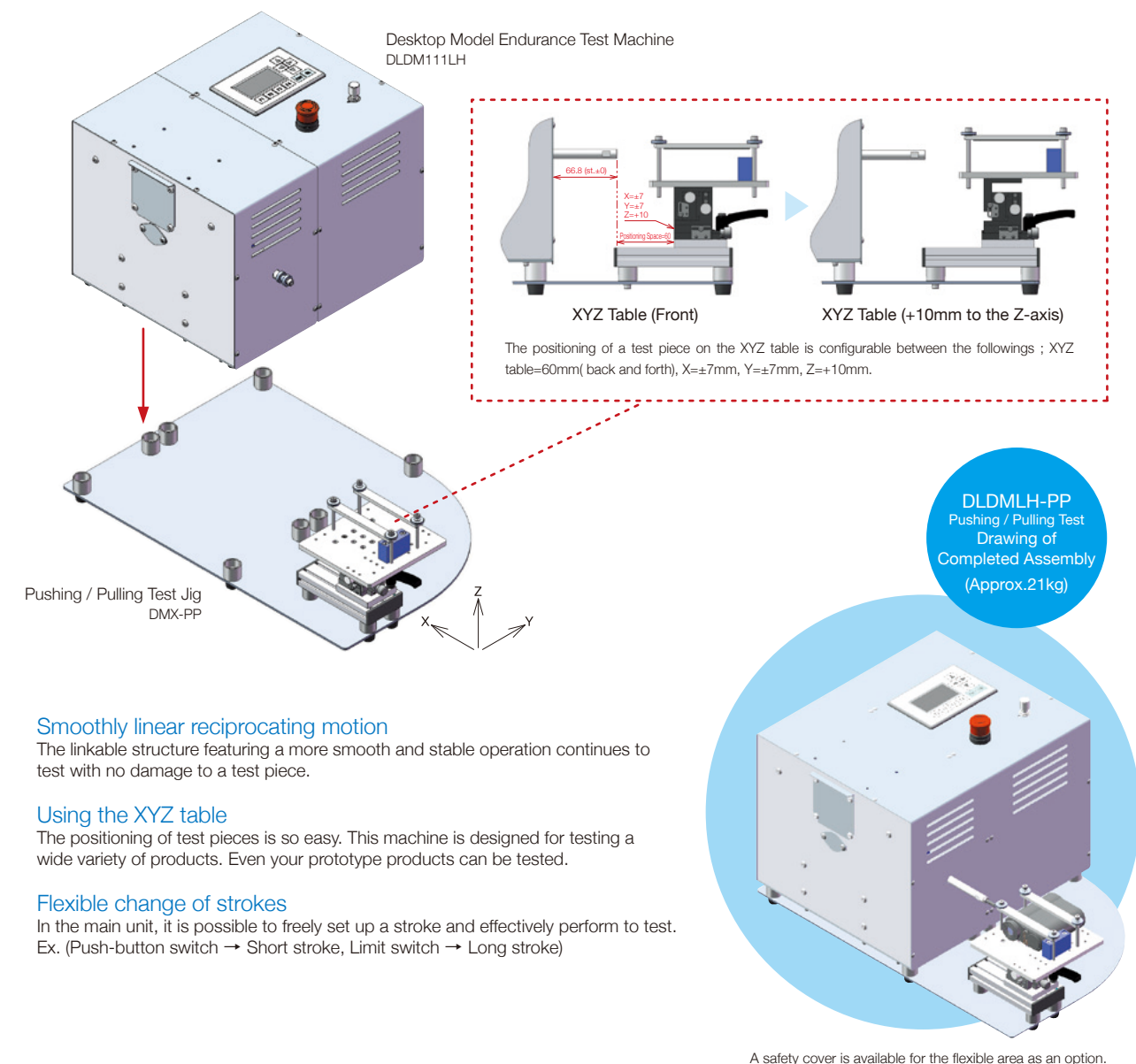
<https://www.yuasa-system.jp/en>

MODELS



You can download the specification. If you have any question, please ask us.

## Composition



### Smoothly linear reciprocating motion

The linkable structure featuring a more smooth and stable operation continues to test with no damage to a test piece.

### Using the XYZ table

The positioning of test pieces is so easy. This machine is designed for testing a wide variety of products. Even your prototype products can be tested.

### Flexible change of strokes

In the main unit, it is possible to freely set up a stroke and effectively perform to test. Ex. (Push-button switch → Short stroke, Limit switch → Long stroke)

\*Refer to p.25 regarding the driving specification.

BEND  
Bending Test

TWIST  
Torsion Test

FOLD  
Folding Test

ROLL-UP  
Rolling Test

PUSH  
Pushing / Pulling Test

Specifications of  
Base Unit

# Specifications of Base Unit

SMALL

TCDM111LH / DLDM111LH  
(Rotary Reciprocating Unit) (Linear Reciprocating Unit)

Desktop Model Endurance Test Machine

We have two types of base units that perform differently with the same basic design. These units are drive sources that reciprocate test pieces smoothly under the preset test conditions.

Notes

»CE Marking »KC Mark

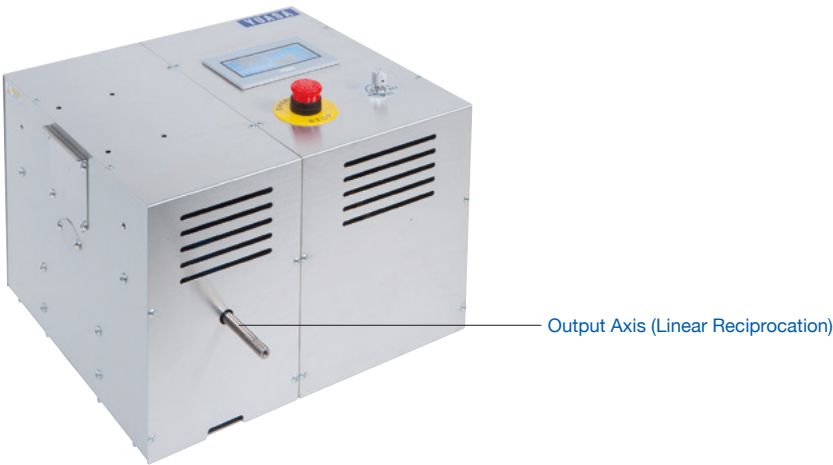
## TCDM111LH (Rotary Reciprocating Unit)

A base unit for endurance tests : bending and torsion.



## DLDM111LH (Linear Reciprocating Unit)

A base unit for endurance tests : folding, rolling, and pushing / pulling.



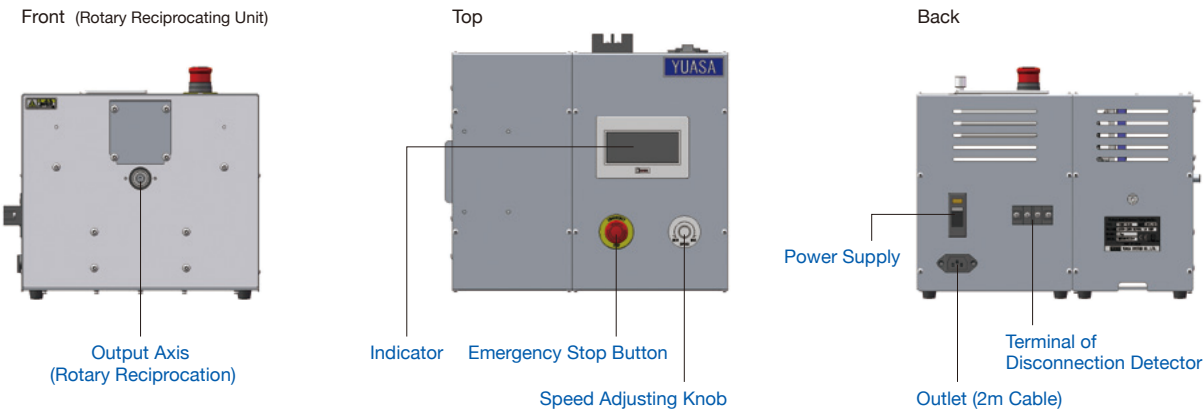
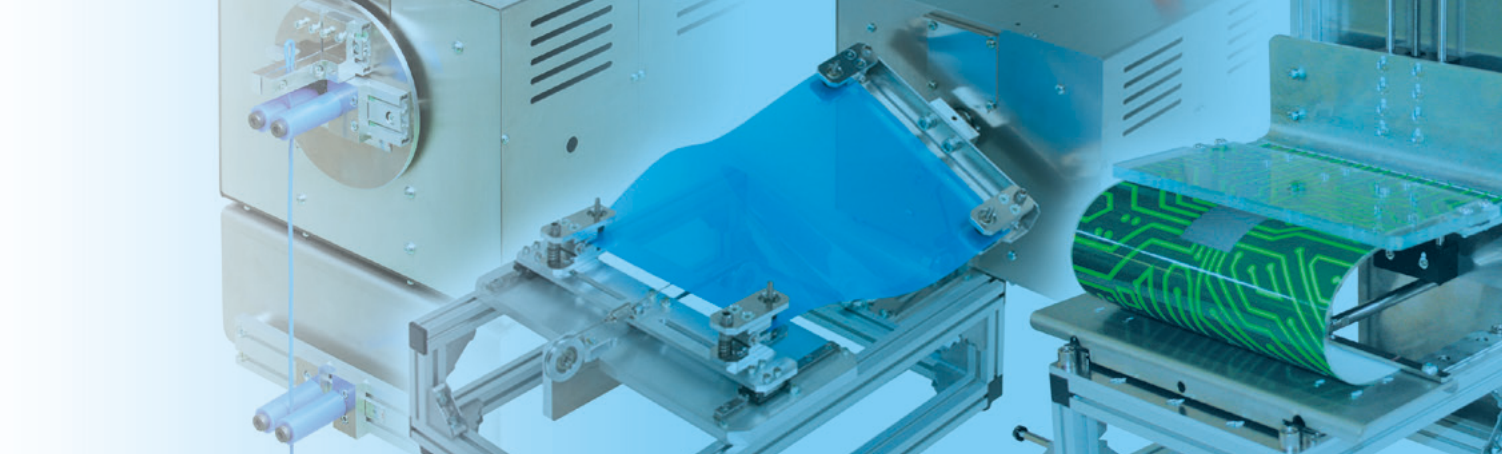
Web

Please check the latest specification on the web.

https://www.yuasa-system.jp/en

MODELS

You can download the specification. If you have any question, please ask us.



### Reliable endurance and quietness

Both mechanical linkage and plastic gears promote endurance and low noise.

### Flexible test conditions

TCDM111LH : up to  $\pm 270^\circ$  (Operating Angle)  
DLDM111LH : up to  $\pm 60\text{mm}$  (Stroke Capacity)  
Both units work at up to 120r/min in the range above.

### Fully automatic testing

A disconnection detector and preset counter are standard equipment.

### Basic Specifications

	Rotary Reciprocating Unit	Linear Reciprocating Unit
Type	TCDM111LH	DLDM111LH
Power Supply	AC100V - 240V 50Hz/60Hz 100W (Cable : 2m)	
Motor (Drive Source)	BLDC Motor (DC24V/3.5A/30W) Gear head (1/20)	
Operating Speed	10 - 120r/min (Free Setting)	
Operating Range	Angle : 0 - $\pm 270^\circ$ (Free Setting)	Stroke : 0 - $\pm 60\text{mm}$ (Free Setting)
Output Axis Capacity	$\pm 90^\circ \rightarrow 1.00\text{N}\cdot\text{m}$ $\pm 180^\circ \rightarrow 0.88\text{N}\cdot\text{m}$ $\pm 270^\circ \rightarrow 0.44\text{N}\cdot\text{m}$ (Mechanical Torque Capacity : 1.00N·m)	$\pm 20\text{mm} \rightarrow 90\text{N}$ $\pm 40\text{mm} \rightarrow 45\text{N}$ $\pm 60\text{mm} \rightarrow 30\text{N}$ (Mechanical Load Capacity : 400N)
Output Axis Spec	$\phi 10\text{mm}$ , 11mm (L)	M5-screw, 10mm (D)
Counter	Preset 8-digit display	
Disconnection Detection	One circuit (Criterion Value : 0 - 1 k $\Omega$ (Free Setting), Criterion Time : approx. 10mS (Fixed Value) )	
Auto Stop	When exceeding a preset number of tests, detecting disconnection, and occurring motor malfunction	
Emergency Stop	After pressing the button (Push-lock and turn-reset)	
System Requirements	Temperature : -10 - +40 $^\circ\text{C}$ Humidity : 15 - 85%RH (Non-condensing)	
Dimensions (Excluding projections)	296.4mm $\times$ 344mm $\times$ 255.2mm (W $\times$ D $\times$ H)	
Net Weight	17kg	

\*No test jigs are included for each unit.

BEND  
Bending Test

TWIST  
Torsion Test

FOLD  
Folding Test

ROLL-UP  
Rolling Test

PUSH  
Pushing / Pulling Test

Specifications of  
Base Unit



# Further Improve Reliability

## YUASA SYSTEM ENDURANCE TEST SYSTEM



**Bending**



**Torsion**



**Folding**



**Rolling**



**Tension**



## YUASA SYSTEM CO., LTD.

Our product information is also available on  
<https://www.yuasa-system.jp/en>



HEAD OFFICE	No.6 KUME, KITA-KU, OKAYAMA-CITY 701-0144 JAPAN
KIBITSU FACTORY	2292-1 KIBITSU, KITA-KU, OKAYAMA-CITY 701-1341 JAPAN PHONE : +81-86-287-9030 FAX : +81-86-287-2298
TOKYO OFFICE	SHINBASHI SN BLDG. 5-7-10 SHINBASHI, MINATO-KU, TOKYO 105-0004 JAPAN PHONE : +81-3-3578-8515 FAX : +81-3-3578-8516
OSAKA OFFICE	8F, NLC SHIN-OSAKA EARTH-BLDG. 5-1-3 MIYAHARA, YODOGAWA-KU, OSAKA-CITY 532-0003 JAPAN PHONE : +81-6-6394-8175 FAX : +81-6-6397-2632



**Safety Note** To ensure your safe and proper usage, please observe all the manuals before using these machines.