

# Tension-Free™ Environmental Endurance Testing System Jig for Tension-Free™ U-shape Folding Test CL09-typeC01 ( DLD111L-M ) + DX-FSC90

\*Tension-Free™  
U-shape folding test  
for planar objects  
including Flexible  
Displays, OLED  
devices, Barrier Film,  
Flat Cables, Flexible  
Printed Circuits,  
Wearables &  
automobile  
applications

\*Holds the test  
sample between a  
moving clamp and a  
fixed clamp. As the  
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approaches the fixed  
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Tension-Free™ and  
Friction-Free  
U-shape folding in a  
controlled  
environment.



FLEXI FSC90  
A W A R D

YUASA SYSTEM has been developing Tension-Free™ endurance testing systems since 2012. With our in-house expertise in mechanical, electrical, and software engineering, we have developed accurate testing methods for next generation devices, components, and materials. Tension-Free™ endurance testing reduces product design time by producing more consistent and reliable test data. Samples undergo the desired testing without being subjected to undesired tension introduced by the needs of the test equipment. As desired, our jigs also can operate with tension.

The motor unit (Linear Reciprocating Unit) drives test jigs for Tension-Free™ and Friction-Free U-shape folding of planar objects, and for bending planar objects with or without tension. The environmental test chamber allows tests to be performed in a constant temperature and humidity environment. The machine can be programmed for temperature, humidity, and the mechanical testing parameters. Fully automatic testing is possible because of the disconnection detector and preset counter.

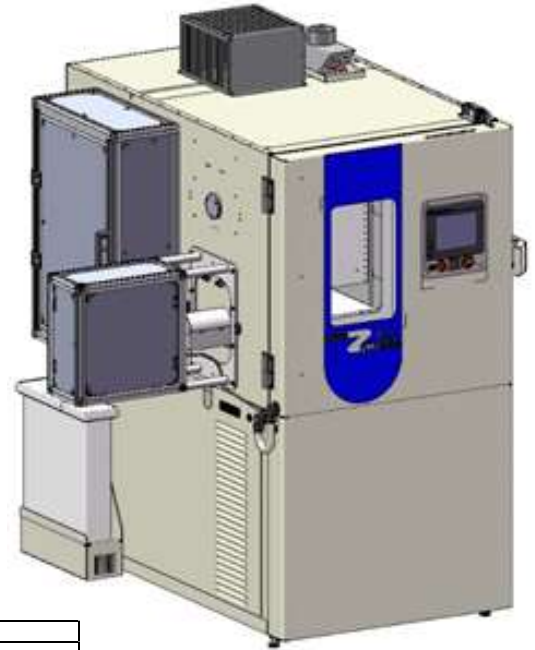
The Tension-Free™ and Friction-Free U-shape folding test jig enables folding tests without tension for planar objects. This machine can form ideal bending shapes by the elasticity of test pieces or by using the guide plates.

FSC90 in Chamber Video -- <https://www.youtube.com/watch?v=GAdE4TRTqZA>

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\*Tension-Free™ U-shape folding test for planar objects including Flexible Displays, OLED devices, Barrier Film, Flat Cables, Flexible Printed Circuits, Wearables & automobile applications

\*Holds the test sample between a moving clamp and a fixed clamp. As the moving clamp approaches the fixed clamp they rotate down and the test sample undergoes Tension-Free™ and Friction-Free U-shape folding in a controlled environment.



|   |  |
|---|--|
| <b>FSC90</b>                              |  |
| <b>Tension-Free™ U-shape Folding Test</b> |  |
| <b>Specifications - Jig</b>               |  |
| Jig Model Number                          | Tension-Free™ U-shape Test Folding Jig     |
| Jig Model Number                          | DX-FSC90                                   |
| Sample                                    | Sheet or Linear samples                    |
| Sample thickness                          | 3 mm (0.118") maximum                      |
| Sample width                              | 245 mm (9.65") maximum                     |
| Sample length                             | 46 mm (1.81") minimum (for clamping space) |
| Bending angle                             | 0 - 180°                                   |
| Bending radius                            | 0 - 50 mm (0 - 1.97")                      |
| Operating stroke                          | 0 to ±120 mm (0 to ±4.72")                 |
| Operating speed                           | 10 - 90 rpm                                |
| Weight - Jig                              | 12 kg (26.5 lb)                            |
| Dimensions (mm)                           | 550mm x 400mm x 210mm (WDH)                |
| Dimensions (inches)                       | 21.65" x 15.75" x 8.27" (WDH)              |
| <b>Specifications - Drive Unit</b>        |  |
| Endurance Test Machine                    | Linear Reciprocating Unit                  |
| Motor                                     | DLD111L-M                                  |
| Counter                                   | Induction gearmotor, 3 Phases, 90W         |
| Operating stroke                          | 8 digit display                            |
| Operating speed                           | 0 to ±120 mm (0 to ±4.72")                 |
| Installation Temp range                   | 10 - 90 rpm                                |
| Installation Humidity                     | +5 to +40°C (+41 to +104°F)                |
| Power supply                              | 15 - 85% RH (no condensation)              |
| Weight                                    | AC (100V-110V, 50Hz or 60 Hz, 1 Phase, 5A) |
| Dimensions (mm)                           | 33 kg (72.7 lb)                            |
| Dimensions (inches)                       | 450mm x 225mm x 450mm (WDH)                |
|   | 17.72" x 8.86" x 17.72" (WDH)              |
| <b>Specifications - Base Unit</b>         |  |
| Environmental Chamber                     | (Included DLD111L-M)                       |
| Counter                                   | CL09-typeC01                               |
| Power supply                              | 8 digit display                            |
| Installation Temp range                   | AC (200-208V, 3 Phase, 50Hz/60 Hz, 60A)    |
| Installation Humidity                     | +21.1 to +29.4°C (70-85°F)                 |
| Control Temperature                       | 15 - 85% RH (no condensation)              |
| Control Humidity                          | -40 to +150°C (-40 to +302°F)              |
| Weight                                    | 10 - 98% RH                                |
| Dimensions (mm)                           | 700 kg (1,540 lb)                          |
| Dimensions (inches)                       | 1700mm x 1575mm x 2077mm (WDH)             |
|   | 67" x 62" x 82" (WDH)                      |
| <b>Attached units</b>                     |  |
| System Model Number                       | CL09-typeD01-FSC90                         |
| Weight                                    | 712 kg (1,570 lb)                          |
| Dimensions (mm)                           | 1700mm x 1575mm x 2077mm (WDH)             |
| Dimensions (inches)                       | 67" x 62" x 82" (WDH)                      |

US SERVICES AVAILABLE

Online training

Technical support

Installation & set-up

Maintenance

Guaranteed Warranty

[www.yuasa-system.jp/en](http://www.yuasa-system.jp/en)

**YUASA** YUASA SYSTEM CO., LTD.

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