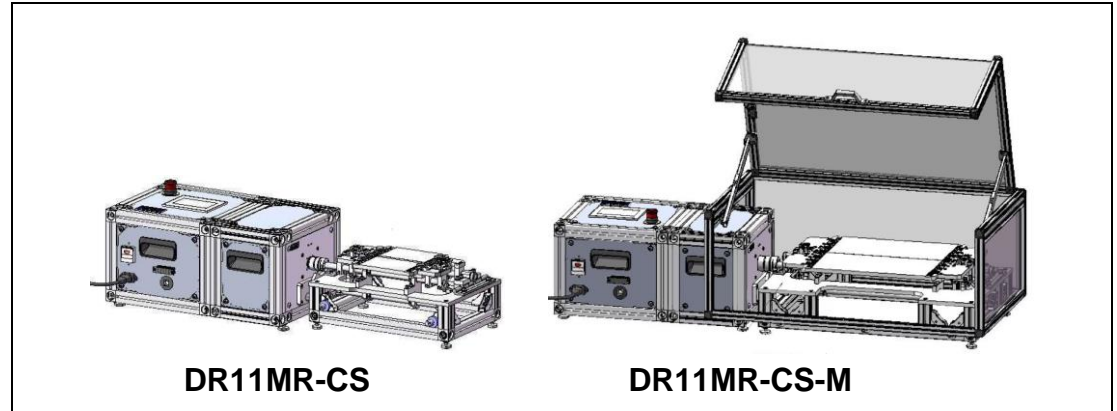


# Tension-Free™ Modular Desktop Endurance Testing System v4 Jig for Tension-Free™ Clamshell-type Flexing CS & CS-M

Tension-Free™ Clamshell-type flexing test for planar objects including Flexible Displays, OLED devices, Barrier Film, Flat Cables, Flexible Printed Circuits, Wearables & automobile applications, and for linear objects including Cables (Electric Wires, Optical Fibers), Harnesses, Cable Guides, Tubes, Wires, Fibers, Wearables & automobile applications

The Tension-Free™ Double Jointed Clamshell structure can flex samples with a 0.5 mm radius without putting tensile stress on the sample. Samples will change naturally.

The sample can be mounted on a cartridge and then loaded onto the test jig.



## CS & CS-M

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.

The DR11MR stepping motor unit (Rotary Reciprocating Unit) drives the test jig for Tension-Free™ Clamshell-type flexing of linear and planar objects. The stepping motor provides greater accuracy. Fully automatic testing is possible because of the disconnection detector and preset counter.

The Tension-Free™ Clamshell-type flexing test jig enables flexing tests without tension for linear and planar objects. The cartridge with the mounted sample can be removed from the test jig for microscopic examination. The sample can be inspected without removing it from the cartridge. Testing can resume by simply placing the cartridge back on the jig. The Clamshell jig can be placed in an environment chamber for testing.

The DR11MR-CS uses the same cartridge as the DMLHP-CS with a stronger motor unit, it allows the CS to operate at twice the speed, up to 60 reciprocations per minute. The DR11MR-CS-M has a larger cartridge than the DR11MR-CS that allows testing of larger samples.

# Jig for Tension-Free™ Clamshell-type Flexing CS & CS-M

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Tension-Free™ Clamshell-type Flexing Test		
	DR11MR-CS	DR11MR-CS-M
<b>Specifications - Jig</b>		
Jig Model Number	CS	CS-M
Sample	Sheet or Linear samples	
Sample thickness	1 mm (0.039") maximum	
Sample width	130 mm (5.12") maximum	300 mm (11.81") maximum
Sample length minimum	π R plus clamping space	
Sample length maximum	190 mm (7.48")	330 mm (13.0") maximum
Optional Cartridge	N/A	320mm x 330mm (sample W x L)
Flexing angle	0 - 180°	
Flexing radius	0.5 - 5.0 mm (0.020 - 0.197")	
Flexing force	0.7 Nm (0.52 foot pounds) maximum	
Permissible Torque	6.5 Nm (4.8 ft lb)	6.5 Nm (4.8 ft lb)
Flexing speed	about 5 ~ 60 rec/min (30 ~ 360 deg/sec)	
Weight - Jig	about 9.0 kg (19.85 lb)	about 22 kg (48.5 lb) (includes cover)
Weight - Cover	about 3.0 kg (6.6 lb)	about 3.3 kg (7.3 lb) (only door)
Dimensions (mm)	400mm x 260mm x 180mm (WDH)	570mm x 360mm x 180mm (WDH)
Dimensions (inches)	15.75" x 10.2" x 7.1" (WDH)	22.4" x 14.2" x 7.1" (WDH)
<b>Specifications - Cartridge</b>		
Weight - Cartridge (1 set)	about 1.0 kg (2.2 lb)	about 3.0 kg (6.6 lb)
Dimensions (mm)	188mm x 190mm x 19mm (WDH)	358mm x 330mm x 19mm (WDH)
Dimensions (inches)	7.40" x 7.48" x 0.748 (WDH)	14.09" x 12.99" x 0.748" (WDH)
Shims to set flexing radius	0.05 - 5.0 mm (0.002 to 0.2 ")	
<b>Specifications - Base Unit</b>		
Rotary Reciprocating Unit		
Machine Model Number	DR11MR	DR11MR4
Power supply	AC (100V-240V, 50Hz/60 Hz, 500VA)	
Motor	Stepping Motor Type	
Motor power	DC 48V, 3.55A, 100W	
Gear box	1/15	
Reciprocating angle	7 ~ ±3600 deg	
Rotation speed	1 ~ 1200 deg/sec	
Positioning accuracy	0.05 deg	
Permissible torque	6.5 Nm (4.8 ft lb)	
Permissible Moment of Inertia	2.0 x 10 <sup>-3</sup> kg/m <sup>2</sup>	
Output Shaft Static Rated Moment	1.5 Nm	
Counter	8 digit display	
Installation Temp range	+5 to +40°C (+41 to +104°F)	
Installation Humidity	15 - 85% RH (no condensation)	
Weight	about 20 kg (44.1 lb)	
Dimensions (mm)	500mm x 300mm x 288mm (WDH)	600mm x 300mm x 288mm (WDH)
Dimensions (inches)	19.69" x 11.8" x 11.34" (WDH)	23.62" x 11.81" x 11.34" (WDH)
<b>Attached units with Cover</b>		
System Model Number	DR11MR-CS	DR11MR4-CS-M
Weight	about 33 kg (72.7 lb)	about 51.3 kg (113 lb)
Dimensions (mm)	952mm x 459mm x 312mm	1134mm x 460mm x 334mm (WDH)
Dimensions (inches)	37.5" x 18.1" x 12.3" (WDH)	44.65" x 18.1" x 13.1" (WDH)

## US SERVICES AVAILABLE

- Online training
- Technical support
- Installation & set-up
- Maintenance
- Guaranteed Warranty

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

