

# ANTI-BUCKLING

## Composites Compression Test Fixtures

The anti-buckling fixture was originally designed for the compression testing of rigid plastics per ASTM D 695 and the shear testing of reinforced plastics per ASTM D 3846. Boeing then adapted the fixture for use with high strength composites, introducing an L-shaped base support to ensure accurate and consistent alignment of the fixture and specimen.

The SACMA standard followed the Boeing design with an added alternative support fixture with a cutout, allowing bonded strain gages to be used at the center of the specimen for precise strain measurement.

### PRINCIPLE OF OPERATION

The fixtures incorporate ribbed guides to provide lateral support for the specimen whilst minimizing the contact area (Note: the rib detail in SACMA SRM-1 is different from that in ASTM D695). The fixtures are bolted together supporting the specimen. Both wing nuts and hex nuts are provided – the hex nuts allow the use of a torque wrench to set the exact bolt torques.

The specimen and fixtures are located between a pair of compression platens. ASTM D695 describes placing the specimen and Anti-Buckling fixtures directly between the platens but the composites testing standards all require the use of an L-shaped base support.

It is very important that the platens are well aligned, because the load is applied to the specimen through the end face. For this reason it is recommended that one of the platens incorporates a lockable spherical seat to ensure parallelism.

ASTM D695 describes the use of untabbed specimens for the determination of both modulus and ultimate strength. Compression tests on high strength composite materials require different specimen designs for modulus and ultimate strength. Modulus is determined using a rectangular flat specimen but the determination of ultimate strength requires a tabbed specimen with a short unsupported gauge section.

When determining modulus strain measurement is required. Strain can be measured using a pair of strain gauges one on each side of the specimen (versions of the guide plates incorporating cut-outs to provide clearance for the gauges and wires are available). It is also possible to use clip-on or automatic extensometers.



Anti-buckling fixture with base support end loaded between compression platens. The upper compression platen has a lockable spherical seat

### APPLICATION RANGE

- Type of test: End Loading, Compression and Shear
- Specimen material: Rigid Plastics, Reinforced Plastics and Composites
- Specimen shapes: Flat specimens as per standards

### FEATURES

- Versions available to meet the following standards:
  - ASTM D695 / ASTM D3846
  - Boeing BSS 7260
  - SACMA SRM-1
  - prEN 2850
- Anti-buckling plates with cut-outs for bonded strain gauges available
- Wide temperature range
- Stainless steel construction for easy

## SPECIFICATIONS

		S4931A	CP108932	CP114221	CP114215	CP115010	CP115011
Test Standard		ASTM D695 and D3846		SACMA SRM1		prEN 2850	
With Strain Gauge Cutout		No	Yes	No	Yes	No	Yes
Maximum Load	kN	100		100		100	
Temperature Range	°C	100 to +350		100 to +350		100 to +350	
	°F	148 to +662		148 to +662		148 to +662	
Specimen Thickness (including tabs)	mm	1.0 to 12.7		1.0 to 12.7		1.0 to 12.7	
	in	0.04 to 0.5		0.04 to 0.5		0.04 to 0.5	
Specimen Length	mm	79.4		80.0		75.0 to 80.0	
	in	3.13		3.15		2.95 to 3.15	
Mass (approximate)	kg	0.3		0.3		0.3	
	lb	0.66		0.66		0.66	
Upper and Lower Interface <sup>1</sup>		Platen of minimum diameter 100 mm (4 in.)		Platen of minimum diameter 100 mm (4 in.)		Platen of minimum diameter 100 mm (4 in.)	
Effective Length (A)	mm	73.0		73.0		70.0	
	in	2.87		2.87		2.75	
Overall Width (B)	mm	36.5		38.1		36.5	
	in	1.44		1.50		1.44	
Depth (C)	mm	19.1		28.6		25.0	
	in	0.75		1.13		0.98	

Note:

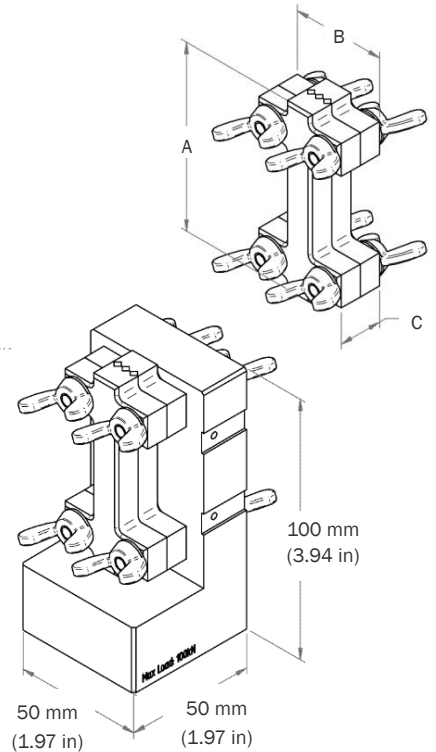
1. It is recommended that the upper platen incorporates a lockable spherical seat

## ACCESSORIES

CP114249	Base Support for for AntiBuckling Support Jigs/Plates to Boeing BSS 7260 (ASTM D695 modified) / SACMA SRM1 / prEN 2850
2210-892 / 2210-891	Electrical Adapters for 350/120 ohm strain gauges
Strain Gauge Extensometer	Contact Instron

## CONFIGURATION TABLE

Category	Catalog Number	ASTM D695	ASTM D3846	Boeing BSS 7260	SACMA SRM-1	prEN 2850
Antibuckling Jigs	S4931A or CP108932	●	●	●		
	CP114221 or CP114215				●	
	CP115010 or CP115011					●
Base Support	CP114249	○	○	●	●	●



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