

ElectroForce® 9400 Multiaxial Peripheral Stent Test Instrument

Advanced Performance to Simulate In Vivo Conditions

TA has developed a multiaxial peripheral stent (MAPS) test instrument to simulate the multi-mode biomechanical conditions found in the peripheral arteries. This programmable instrument simulates the complex loading that stents experience in the peripheral arteries. These include the renal arteries, the carotid arteries, and the femoral-popliteal arteries.

Many medical studies have shown that peripheral arteries have greater bending, twisting, and stretching motions than coronary arteries, so stents placed in peripheral arteries will undergo greater stresses and strains.

This instrument is capable of simulating the multiple axes of displacements to replicate in vivo conditions. This system is capable of combining dynamic bending, rotation, extension/compression, and pulsatile distention on multiple stents under controlled conditions. The instrument is capable of testing an accelerated 10 year simulated life, or performing fatigue to fracture studies.

The ElectroForce® multiaxial peripheral stent test instrument is designed for the demanding displacements required to test stents and stented grafts for the superficial femoral artery (SFA). It is also capable of being programmed for carotid artery stenting and renal artery stenting. The MAPS test instrument may also be used to test overlapped stents under these conditions.



Multiaxial Peripheral Stent Test Instrument



Versatile, User Friendly and Easy to Configure



Optional Fixture to Replicate *in vivo* Pinch Points



Pulsatile and Axial Distention Synchronized with Rotation and Bending (Proprietary multiaxial loading capability)

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Operating Frequency Specifications

	Pulsatile Distension	Bending	Extension	Rotation
Parameter for Frequency Specifications	5% ***	0 to 90 degrees	0 to 20% strain	0 to 60 degrees
Maximum Pulsatile Frequency Demonstrated by Users	60 Hz**	1.5 Hz equivalent*	1.5 Hz equivalent*	1.5 Hz equivalent*

* When combined with bending, extension and rotation such that the combined 'equivalent' waveform is completed at 1 Hz.

** Actual attained frequency and pulsatile distension are dependent on test conditions, specimen geometry/compliance, and mock vessel diameter/ wall thickness.

*** The ElectroForce® 9400 Test Instrument is configured to test mock vessels with inner diameter of 3-8 mm.

Example Peripheral Artery Motions

Loading Condition (Location)	Superficial Femoral Artery (SFA) (Leg - Hip to Knee)	Carotid Artery (Neck)	Renal Artery (Below Diaphragm)
Pulsatile Distension (Heart Beating)	1.2 Hz (72 bpm) (40,000,000 cycles/year)	1.2 Hz (72 bpm) (40,000,000 cycles/year)	1.2 Hz (72 bpm) (40,000,000 cycles/year)
Activity Causing Multi-Axis Loading:	Walking	Neck Movement	Breathing
Bend	(1,000,000 cycles/year)	(1,000,000 cycles/year)	(6,000,000 cycles/year)
Twist	(1,000,000 cycles/year)	(1,000,000 cycles/year)	(6,000,000 cycles/year)
Stretch	(1,000,000 cycles/year)	(1,000,000 cycles/year)	(6,000,000 cycles/year)

Number of Cycles Needed for a 10 Year Durability Test

Pulsatile Distention	400 million	400 million	400 million
Multi-Axis Loading	10 million	10 million	70 million
Approximate Days / Test	90-120	90-120	135-180

ElectroForce Peripheral Stent Fatigue System Facility Footprint

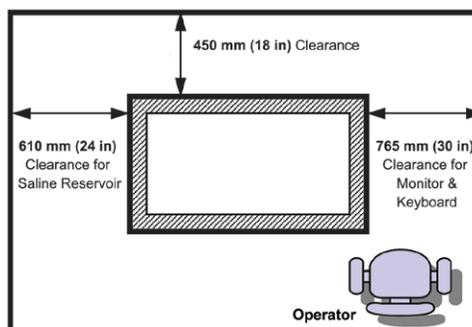
Width: 1220 mm (48 in)

Depth: 864 mm (34 in)

Height: 1930 mm (76 in)

Weight: 1100 lbs
~ 500 kg

Power: 208/230 VAC
50-60 Hz
20 Amp Service



Specifications are subject to change

TA Instruments – ElectroForce Systems Group
Email: electroforce@tainstruments.com – Website: electroforce.tainstruments.com
Phone: 952-278-3070 – Fax: 952-278-3071

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 **ElectroForce®**