

Product Information

Test device for intervertebral disc prosthesis to ASTM F 2077



Shear test device with intervertebral disc prosthesis



intervertebral disc prosthesis from the company ulrich medical®

Range of application

ASTM F 2077 describes a number of different quasi-static and oscillating tests to provide a mechanical comparison of intervertebral disc prosthesis. These include shear, compression and torsion tests, which provide a simplified in-vivo simulation of the loads imposed on such components.

The intervertebral disc prosthesis is loaded between two plastic (oscillating test) or metal (quasi-static test) blocks matched to the outside contour of the vertebra. Zwick's basic package includes the required devices as per ASTM F 2077 plus the corresponding interfaces. If required, Zwick can produce the individual blocks for the customer on provision of the relevant data.

All tests can optionally be performed under physiological (in-vivo) conditions using a temperature-controlled bath at 37 °C \pm 2 °C. Zwick temperature-controlled baths are made of durable Duran glass, making them suitable for almost all biological and chemical testing media, such as blood, saline solutions, serum etc.

Advantages

- completely satisfies the requirements of Standard ASTM F 2077 'Characterization and fatigue of intervertebral body fusion device assemblies', while featuring extremely simple operation
- tests can be implemented under physiological environmental conditions (for example in a temperature-controlled saline solution), using a Zwick temperature-controlled bath
- head and foot flange mounting for simple, fatigue-resistant assembly, while allowing the necessary freedom of movement for the test
- test device is also suitable for subsidence tests to ASTM F 2267
- corrosion-resistant container, suitable for disinfection in autoclaves (up to 120 °C)

Product Information

Test device for intervertebral disc prosthesis to ASTM F 2077

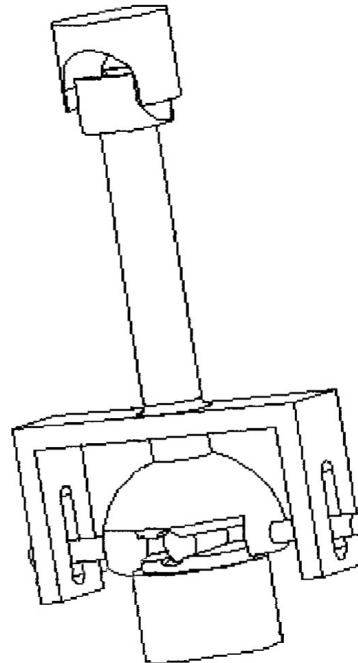
Technical data

Test device for intervertebral disc prosthesis

Description	Item no.
Shear and compression test device for static and oscillating tests to ASTM F 2077	• 038875
Test device for torsion static and oscillating tests to ASTM F 2077 (combined compression/torsion fixture), for HCT	• 935732
Bath tank for test devices	• 038874
Temperature control device (20 to 120 °C) for bath tank	• 038873

Statistical analysis of fatigue tests

Description	Item no.
SAFD analysis program, German	• 924311
SAFD analysis program, English	• 924232



Test device for torsion tests to ASTM F 2007 (935732)

Test definition	Quasi-static test			Fatigue test (determination of the S-N curve)		
	Compression test	Shear test	Torsion test	Compression test	Shear test	Torsion test
Signal form	Ramp	Ramp	Ramp	Sine	Sine	Sine
Control type	Travel	Travel	Angle	Force	Force	Moment
Max. test speed	25 mm/min	25 mm/min	60°/min	10 Hz	10 Hz	10 Hz
Ultimate number of cycles	–	–	–	5 million	5 million	5 million
R-ratio	–	–	–	0.1	0.1	-1
Physiological preload	–	–	100 / 300 / 500 N	–	–	100 / 300 / 500 N
Test blocks	Steel ¹⁾	Steel ¹⁾	Steel ¹⁾	Polyacetal ²⁾	Polyacetal ²⁾	Polyacetal ²⁾
Intradiscal height	4 / 6 / 10 mm	4 / 6 / 10 mm	4 / 6 / 10 mm	4 / 6 / 10 mm	4 / 6 / 10 mm	4 / 6 / 10 mm
Number of specimens	min. 5	min. 5	–	–	–	–

¹⁾ Tensile strength min. 1310 MPa

²⁾ Tensile strength min. 61 MPa