

Introducing the Electroforce™ MSF16 Multi-Specimen Fatigue Instrument

Innovative solutions from TA Instruments have taken the world's most advanced multi-specimen fatigue testing instrument to a new level. The new MSF16 provides unmatched capacity of 16 specimens with independent precision adjustments. The optimized design provides greater sample access and visibility for simplified sample loading and viewing. Coupled with industry leading Electroforce™ linear motor technology, getting the most precise results has never been so fast and easy.

- 16 Specimens of simultaneous axial fatigue
- Unparalleled durability and dynamic performance with the patented ElectroForce™ linear motor technology
- Accelerated testing frequencies up to 100 Hz with unparalleled displacement amplitudes
- Independent force measurement for each specimen for real-time independent specimen failure detection
- Individual precision adjustment and locking mechanisms for each specimen
- Auto-fill fluid bath for convenience and stable temperature control from Ambient to 45 °C
- Integrated overtravel stop for reliable specimen protection
- Complete visibility of all 16 specimen for easy optical measurements



TA Instrument's MSF16 Multi-Specimen Fatigue Instrument is designed to accelerate fatigue studies for a variety of materials, subcomponents and complete devices. With the capability of simultaneously testing 16 specimens at up to 100 Hz, users can generate S/N curves faster and with higher statistical confidence levels than ever before. In this system, proven and refined technologies come together to quickly and confidently deliver results.

Specification	3330 MSF16 with 40 N Sensors	3330 MSF16 with 100 N Sensors
Number of Samples	16	16
Force Range (per sample)	0.2 - 40 N	0.5 - 100 N
Displacement Range	0.005 - 25 mm	0.005 - 25 mm
Frequency Range	0.00001 to 100 Hz	0.00001 to 100 Hz
Fluid Bath Temperature Range	Ambient to 45 °C	Ambient to 45 °C
Instrument Dimensions (HxWxD)	1283 x 686 x 555 mm (50.5 x 27 x 22 in)	1283 x 686 x 555 mm (50.5 x 27 x 22 in)
Instrument Weight	190 kg (419 lbs)	190 kg (419 lbs)

Features & Benefits

Accessible 16-Specimen Capacity

The advanced design incorporates a 16-specimen capacity with each sample positioned free of obstructions from the test frame columns, facilitating quick and easy test setup and sample viewing or optical monitoring.

High Performance Frictionless Linear Motor

The ElectroForce™ linear motor offers industry-leading dynamic performance and delivers the most precise controlled motion to all 16 specimens. The frictionless moving magnet design is perfectly suited for the millions to billions of test cycles of demanding accelerated fatigue test programs: reliability backed by the industry's only 10-year motor warranty.

Uniform Deformation

A 16-capacity spider plate, connected to specimens from below, effectively translates dynamic motion uniformly to all specimens from the motor above. The system provides up to 100 mm test space with 38 mm specimen-to-specimen spacing.

Independent Force Measurements

Sixteen individual force sensors are connected above each specimen and monitored by the WinTest test control and acquisition software, which records the cycle count of each specimen failure.

Precision Specimen Preload Adjustments

Mean position specimen adjustments are easily made via a thumbscrew at the top of the sample. With 20 mm of travel, precise guidance, and fine threads, users can accurately position each specimen to apply specific mean preloads prior to dynamic testing.

Tool-less Specimen Preload Clamping

The novel clamping mechanism requires no tooling, minimizes both vertical and lateral motion during locking, and enables simple and secure preload clamping.

Mechanical Overtravel Stop

With a mechanical overtravel stop mechanism that physically prevents motion beyond desired levels within the full 25 mm travel range, users have peace-of-mind as unintentional specimen overloading is eliminated.

Temperature-Controlled Fluid Bath with Convenient Auto-fill

A temperature-controlled fluid bath enables immersion testing up to 45 °C. The convenient auto-fill function eliminates temperature variations caused by periodic manual refilling during long-term fatigue tests. Upon fluid loss, a float valve sensor releases fluid into the rear auxiliary bath, which is slowly gravity fed into the main bath.

3300 Series III Load Frame

The MSF16 configuration is built upon the industry-leading 3300 Series III instrument and load frame. MSF16 users enjoy multiple user conveniences such as electric lifts, tool-free locks and system status indicator lights. When desired, the MSF16 accessory can be removed to leverage the single-specimen test capabilities of the stand-alone 3,000 N and 25 mm ElectroForce 3330 instrument.

