

**xTS**

Universal Test System for X-ray Tomography

The xTS design naturally evolved from Psylotech's under microscope compatible μ TS, where limiting out-of-plane motion is critical due to the optical low depth of field. The same mechanical design elements enable low run out in a rotating load train X-ray tomography compatible universal load frame. Instead of simply incorporating rotation stages into a traditional frame, the direct drive linear actuator cleanly integrates rotation. Depending on load capacity, bearing run out is ± 1.25 to $\pm 2 \mu\text{m}$. A radiograph correction software is available for sub-micron resolution. Additionally, Psylotech's high resolution load cell simplifies alignment and enhances reliability, since there is no rotating electrical connector.

High Resolution Load Cell

Simplifies alignment & enables testing at forces 100x smaller vs. the strain gauge alternative

Rotating Specimen

Enables close source placement, maximizes spatial resolution & simplifies specimen mounting

Axisymmetric Universal Grip Interface

Compatible with collet, pin & wedge tension, compression, and bending

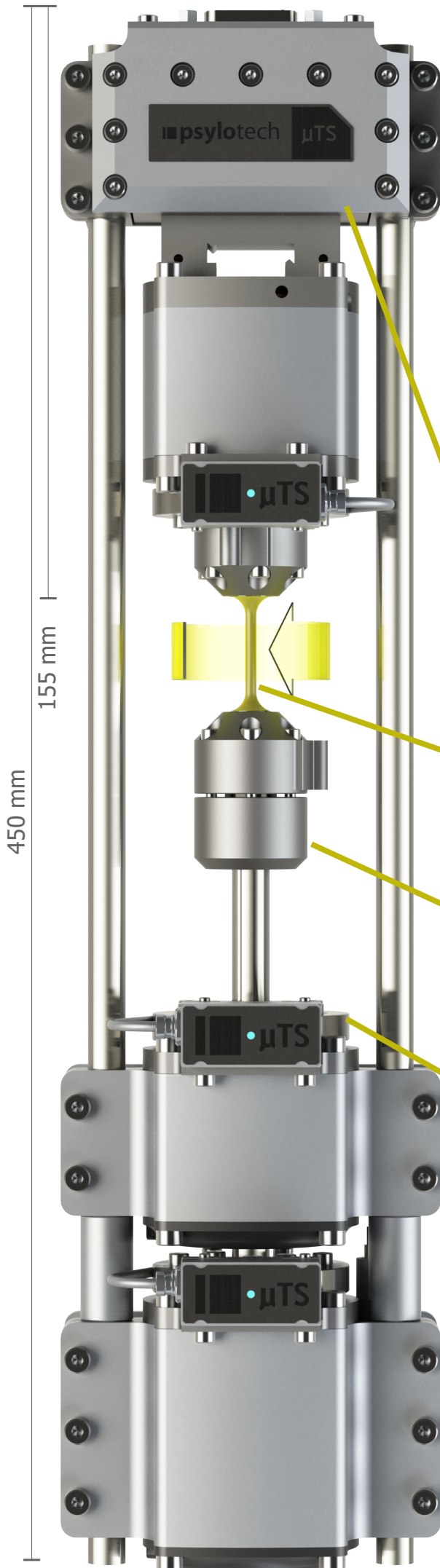
Low Runout

Unique direct-drive triple actuator design minimizes radial runout, improving spatial resolution

Rotating load train system for Digital Volume Correlation

1.6 kN xTS

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Low Runout

Three design elements limit runout and wobble: 1/loading symmetry, 2/precision machined reference surfaces & 3/direct drive.

Sub-micron Runout Correction

In collaboration with Oregon State University Prof. Brian Bay, Psylotech offers a software pre-processor, correcting radiographs before reconstruction.

Integration

Psylotech's control software can TTL trigger radiographs or initiate scans over most electronic protocols.

High-Resolution Load Cell

Psylotech's proprietary high-resolution force transducers enable a broader range of specimen sizes without the need for system re-alignment. They also eliminate the need for a rotating electrical connector, improving reliability.

Rotating Load Train

Rotating the sample within the frame has three principal advantages. First, the source can be placed close to the sample, maximizing spatial resolution on microCT and reducing scan time in nanoCT. Second, the support structure does not block any X-rays. Third is easy specimen access.

Portability

The lightweight xTS can readily be moved between CT scanners or shipped to beamlines.

Available Options

Torque, temperature (-65 to 1,600°C), and a 4-axis high resolution load cell are available. Actuators can be tuned for fatigue. The 1.6 and 4.5 kN systems can be vacuum rated for soft X-ray beamlines. The 10 and 25 kN systems include space for an auxiliary rotating fluid or electrical connector.

Specifications

force capacity (kN)	1.6	4.5	10	18.9	45
force resolution (mN)	3	10	20	40	5000
stroke (mm)*	40	24	25	25	100
max. speed (mm/s)**	145	36	175	90	2
system height (mm)***	450		236		850
angular resolution	26-bit (0.0000056°)				
bearing runout (µm)	2.5		4		8
nominal mass (kg)	6		24		65

*standard value, longer strokes available

**higher speeds available

***minimum value, system height easily modified

