

Building industry leading test platforms to automate sensing and improve measurements by reducing human errors.



MTT 2.0

Modular Traction Tribometer

(Rolling-Sliding Stribeck, Traction, Wear)

Modular Traction Tribometer (**MTT**) is a ball on disc instrument used for measuring friction and wear properties of lubricated and dry contacts under rolling-sliding conditions.

MTT is based on the UniTest (UT-150), which is a powerful, yet compact and modular test platform suited for a variety of mechanical and tribology tests including surface inspection such as 2D optical imaging and 3D profilometry. The UT-150 is a fully automated desktop instrument that can perform standardized tests like the ASTM and ISO but can also comfortably execute fully custom test procedures.

Features

- UT-150 robotic platform with precision X, Y and Z drives for accurate positioning, scanning and mechanical testing when coupled with force sensors and motion modules.
- Automated loading with constant, step, ramp and custom load profiles. Interchangeable force sensors, MicroForce and Decaforce covering load range from mN to N
- Rolling-sliding motion with independently controlled high precision drives to achieve accurate control of slide to roll ratio
- Programmable speed profiles with constant, step, ramp and custom speed profiles. Instant Traction/Stribeck plot generation
- Spill-resistant lubricant cup and unique grease scoop to prevent starvation at high entrainment speeds for accurate friction measurement
- Grease tackiness testing module for adhesion force measurement and synchronized digital imaging to capture thread formation
- Additional sensors such as electrical contact resistance, acoustic emission, etc for capturing contact interactions
- Interchangeable linear drive for fretting and linear reciprocation testing and analysis software for static/dynamic friction evaluation
- Modular upper mounting adapter, switch between tribology testing and 3D profilometry

MTT

Technical Specifications



Linear reciprocation module



3D profilometry module

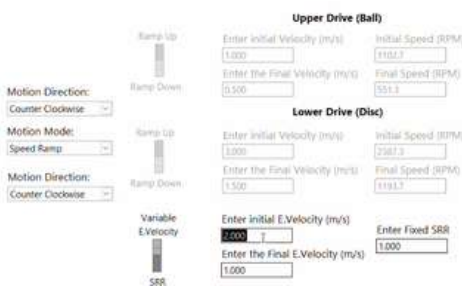
- Load: 2 to 200 N, 0.02 to 2 N (*optional*)
- Speed: 0.1 to 2000 rpm (traction), 0.1 to 3000 rpm (rotary)
- Entrainment speed: upto 2 m/sec
- Slip: 0 to 100%
- Wear track diameter: variable (multiple tests on disc)
- Lubricant temperature: upto 150 °C
- Sample Volume: ~ 75 ml
- Linear reciprocation: 0.01 to 5 Hz, 0.05 to 20 mm (*optional*)
- Additional sensors, modules (grease scoop, tackiness, 3D profilometry, ECR, etc)

Options – Surface Imaging

- 2D optical imaging
- 3D non-contact profilometry

Consumables – Traction Module

- Test balls (chrome alloy steel made from AISI 52100, with a diameter 20 mm, HRC between 63 to 65)
- Test disc (EN 31 Steel, Hardness HRC 58 to 62, lapped surface finish < 0.05 µm)



The screenshot shows the MTT software interface with the following sections:

- Motion Direction:** Counter Clockwise (dropdown)
- Motion Mode:** Speed Ramp (dropdown)
- Motion Direction:** Counter Clockwise (dropdown)
- Upper Drive (Ball):**
 - Ramp Up: Enter initial Velocity (m/s) 1.000, Initial Speed (RPM) 1102.3
 - Ramp Down: Enter the Final Velocity (m/s) 0.500, Final Speed (RPM) 551.3
- Lower Drive (Disc):**
 - Ramp Up: Enter initial Velocity (m/s) 1.000, Initial Speed (RPM) 2204.3
 - Ramp Down: Enter the Final Velocity (m/s) 1.500, Final Speed (RPM) 1102.3
- Variable E.Velocity:** Enter initial E.Velocity (m/s) 0.000, Enter the Final E.Velocity (m/s) 1.000
- Enter Fixed SRR:** 1.000

Quick plots for Traction/Stribeck as function of slide-roll-ratio and entrainment velocity

Power

- 110 to 230 V, 50/60Hz €€

Weight & Dimensions

- Net Dimensions: 650 x 620 x 780 mm
- Net Weight: 100 Kg

Continuing R&D may result in specifications, appearance changes

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