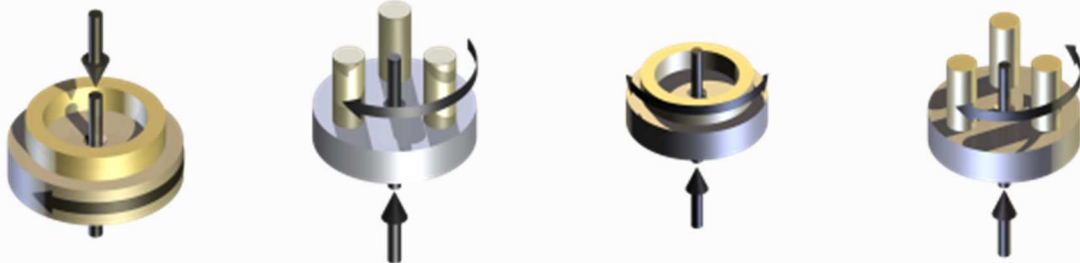
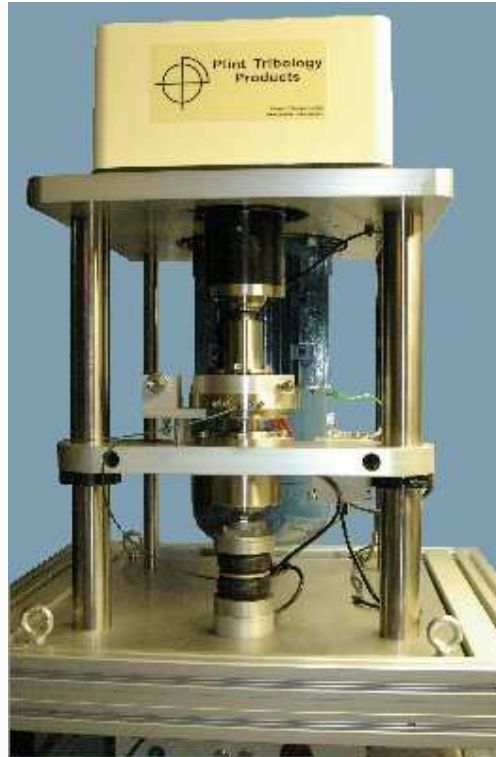


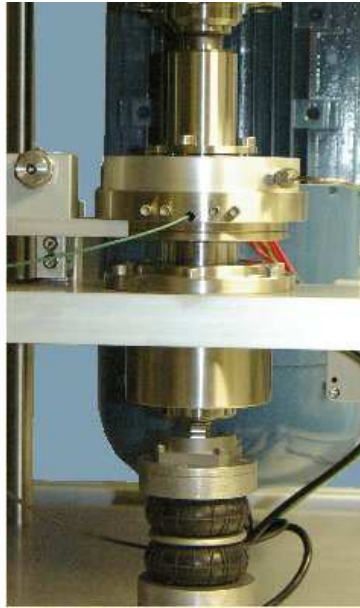
# TE 93 PRECISION ROTARY TRIBOMETER

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## Description

TE 93 Precision Rotary Tribometer provides a lower load range than the standard TE 92 Rotary Tribometer, on which it is based. The incorporation of a linear air bushing in the loading and friction torque assembly allows precise control of the load in the range 1 to 1,000 N and corresponding precision in the measurement of friction torque. Load is applied by means of servo controlled pneumatic bellows with force transducer feedback. The unit is specifically designed to run tests in the thrust washer and three pin on disc test configurations, with on-line measurement of friction, wear displacement (by capacitance probe) and sample temperature.



Test may be run in accordance with the guidelines laid out in ASTM G99 Wear Testing with a Pin-on-Disc Apparatus and ASTM D3702 Standard Test Method for Wear Rate of Materials in Self-Lubricated Rubbing Contact Using a Thrust Washer Testing Machine. In addition to continuous rotation, a crank mechanism is included to allow oscillating motion to be generated.

## Electro-chemical Cell and Potentiostat Option

The optional electro-chemical test cell allows tests to be run with three rotating ball on disc/pin on disc configurations. It includes a Faraday cage, temperature controlled fluid circulator and precision shaft slip-rings. A silver/Silver Chloride reference electrode and a platinum mesh counter electrode are included.

The potentiostat, which is triggered by COMPEND, is a Gamry Instruments Reference 600 Potentiostat/Galvanostat/ZRA and is supplied with licenses for DC105 DC Corrosion, CPT110 Critical Pitting Temperature, EN120 Electrochemical Noise Experiment, EFM140 Electrochemical Frequency Modulation, PHE200 Physical Electrochemistry, PV220 Pulse Voltammetry, EIS300 Electrochemical Impedance, ESA410 Electrochemical Signal Analyzer, VFP600 Virtual Front Panel, PWR800 Electrochemical Energy software.

## Control and Data Acquisition

Control and data acquisition are implemented via host PC running COMPEND 2020 Windows compatible software, in conjunction with a Phoenix Tribology USB micro-controller interface.

Automatic control is implemented via user programmable test sequences. Manual control is implemented using on screen toggles. Data is stored to hard disc in either .csv or .tsv file formats.

# TE 93 PRECISION ROTARY TRIBOMETER

## Technical Specifications

Thrust Washer:	According to ASTM D 3702
Pin Track Radius:	10 to 35 mm
Pin Size:	8 mm diameter x 15 mm long
Disc Diameter:	75 mm maximum
Rotational Speed:	30 to 3,000 rpm
Oscillating Motion:	+/-10 degrees at 25 Hz +/-15 degrees at 20 Hz +/-20 degrees at 18 Hz +/-25 degrees at 15 Hz +/-35 degrees at 10 Hz +/-45 degrees at 8 Hz
Load Range:	1 to 1,000 N
Maximum Temperature:	200°C
Wear Resolution:	0.2 microns
Motor:	2.2 kW a.c. vector motor
Interface:	Phoenix Tribology USB micro-controller interface
Software:	COMPEND 2020

## Controlled Parameters

Rotational Speed  
Load  
Temperature  
Test Duration

## Measured Parameters

Rotational Speed  
Wear  
Friction Force  
Temperature  
Number of Revolutions

Test Duration  
Sliding Speed  
Friction Coefficient  
Sliding Distance

## **Services**

Electricity:

220/240V, single phase, 50 Hz, 7.5 kW  
110/120 V, single phase, 60 Hz, 7.5 kW

Clean, dry air:

4 cfm at 8 bar (120 psi)