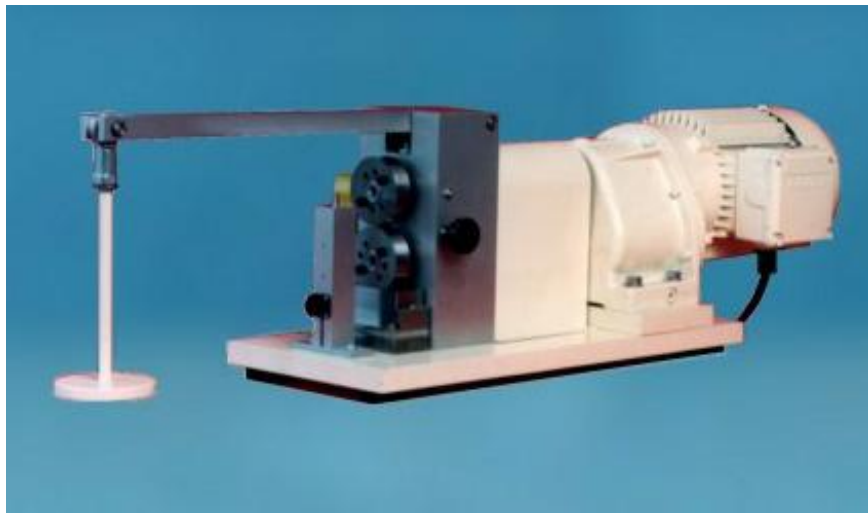
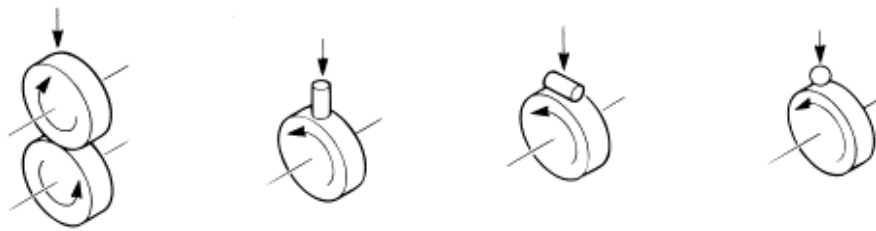


## TE 53SLIM MULTI-PURPOSE FRICTION AND WEAR TESTER



### **Background:**

The TE 53SLIM Multi-Purpose Friction and Wear Tester is a versatile machine offering uni-directional sliding tests in block on ring configuration and combined rolling/sliding tests in two roller configuration. The machine was developed under a licence from the United Kingdom National Centre of Tribology. The control unit includes the SLIM 2000 Serial Link Interface Module and [COMPEND 2000](#) Windows Based control and data acquisition software. Tests may be run according to procedures described under ASTM G 77 and ISO/DIS 7148-2.

### **Description:**

A bearing housing carries two parallel shafts. The lower shaft carries a flat profile ring or roller and is connected to an ac geared motor with frequency inverter variable speed drive.

In block on ring configuration the upper shaft carries a holder for the fixed specimen and is restrained from rotating. The specimen may be a ball (ball on cylinder test), a block (block on ring test ) or a cylinder (crossed cylinder test). A holder for blocks described in ASTM G 77 test may also be provided.

In two roller configuration the upper shaft carries a crowned profile roller and is driven from the lower shaft through a pair of gears. Seven fixed amounts of percentage slip are provided.

The upper shaft is carried in a spherical bearing at one end that permits rotation about the gear contact line and has a floating bearing at the other end. This allow the shaft to pivot freely in the vertical and horizontal axes. Load is applied by dead weights through a 5:1 lever and acts on the front end of the shaft by pressing on the outer race of the floating bearing.

Horizontal movement in the direction perpendicular to the upper shaft axis and is resisted by a strain gauge transducer. This gives measurements of the tangential forces in the contact which are displayed as friction force on the control unit.

In block on ring configuration an LVDT transducer is provided to measure the movement of the upper shaft as the specimen wears away. This displacement measurement is used to determine steady-state wear and wear transitions. It should always be compared with weight loss or dimensional changes for accurate wear assessment due to the effects of thermal expansion in the contact.

Lubricant can be introduced by drip feed or by running the lower roller in a small temperature controlled reservoir.

Roller and block specimens can be manufactured easily from a variety of materials including metals, plastics, elastomers and ceramics.

### **Control and Data Acquisition:**

The TE 53SLIM has PC based sequence programmable control and data acquisition. This is provided by an integrated Serial Link Interface Module and [COMPEND 2000](#) software running on a host PC, operating under Windows. Data is stored to hard disc in standard spread sheet compatible file formats (.csv or .tsv).

Tests are defined by a sequence of steps, each step containing set-point, data recording rates and alarm level information. Set-points may be adjusted by step change or ramp. The test sequence is followed unless interrupted by the operator or an alarm. Set-points may also be adjusted manually using on screen toggles.

## Technical Specifications:

Contact Geometry:	Crossed Cylinder Ball on Cylinder Block on Ring Two Roller
Speed Range:	30 to 850 rpm
Equivalent Velocity:	up to 4 m/s
Slip Rate Gears:	1.79%, 5.13%, 8.70%, 10.53%, 13.33%, 18.18%, 22.22%
Friction Range:	130 N
Wear Transducer:	+/- 2 mm (5µm resolution)
Load Range:	50 to 750 N
Bath Temperature:	ambient to 150°C
Heater Power:	150 W
Temperature Sensor:	k-type thermocouple
Roller Size:	60 mm diameter
Sliding Specimen:	12.7 mm ball, roller or block
Interface:	SLIM 2000 Serial Link Interface Module
Software:	COMPEND 2000
Motor:	0.25 kW ac geared motor

## Controlled Parameters

Rotational Speed  
Reservoir Temperature  
Test Duration

## Recorded 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, 1.2 kW  
110/120 V, single phase, 60 Hz, 1.2 kW

## Installation:

Bench-mounting machine: 1,000 mm x 200 mm x 250 mm high, 40 kg  
Bench-mounting cabinet: 530 mm x 520 mm x 400 mm high, 25 kg  
Packing Specification: 0.48 m<sup>3</sup>, GW 145 kg, NW 97 kg

**Order As:**

TE 53SLIM Multi-Purpose Friction and Wear Tester

**Consumables:**

TE 53/FTwo Standard Flat Test Rollers

TE 53/CTwo Standard Crowned Test Rollers

TE 53/S Set of Sliding Test Specimens, comprising:

20 annealed gauge plate blocks (12.7 mm)

50 bearing balls (12.7 mm)

50 bearing rollers (12.7 mm)

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