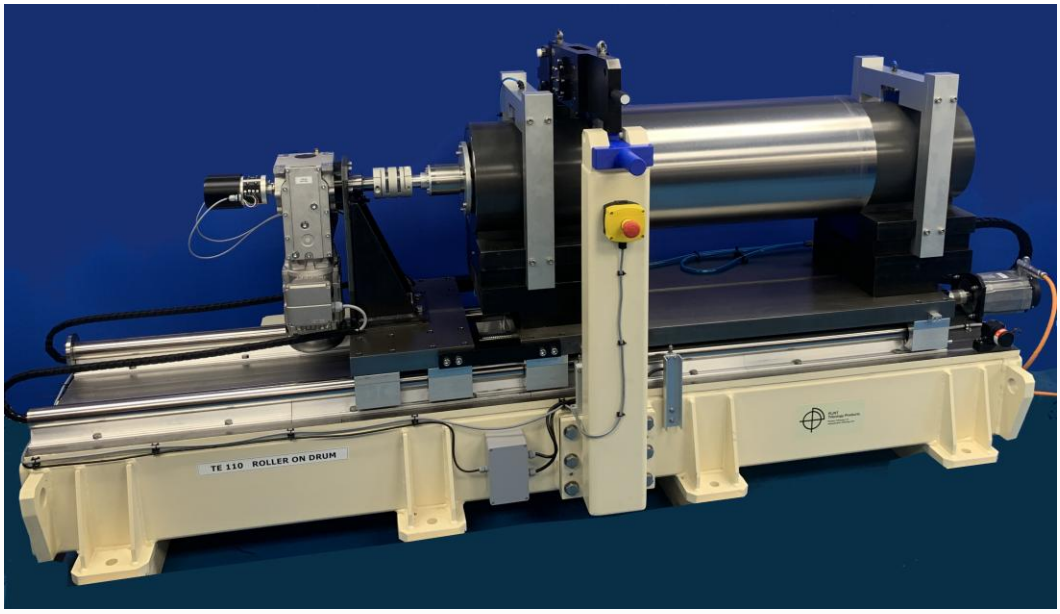
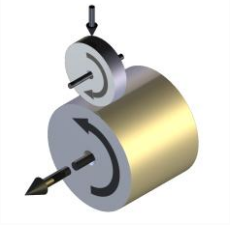
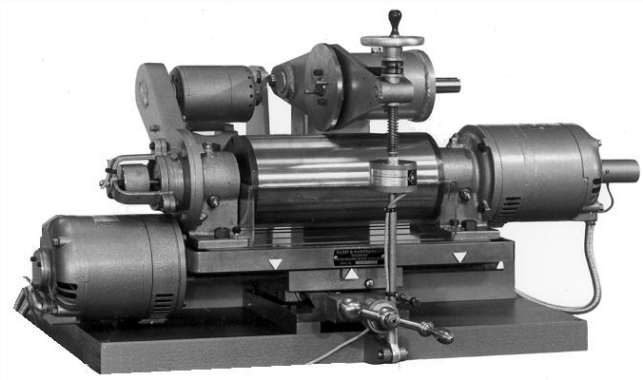
TE 110 INDEXING ROLLER ON DRUM RIG



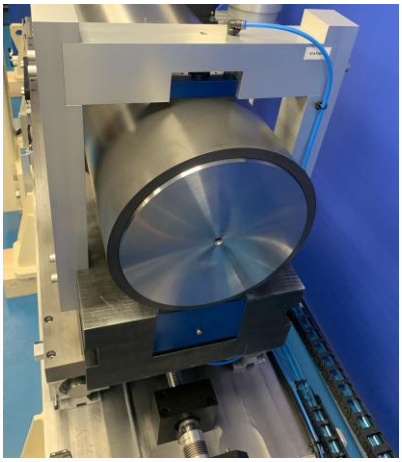
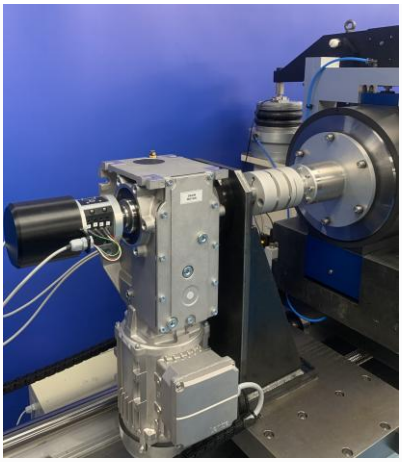


Description

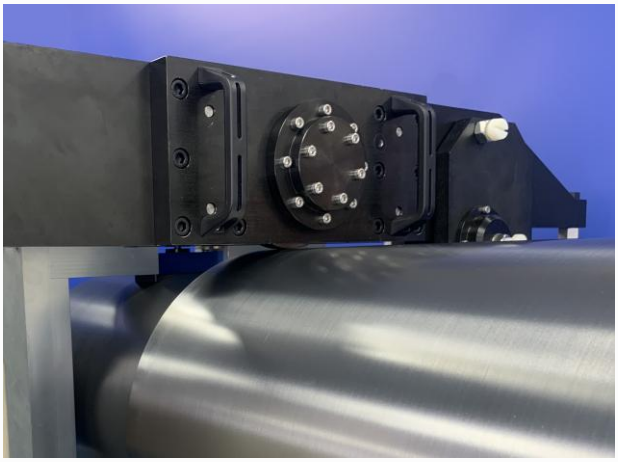
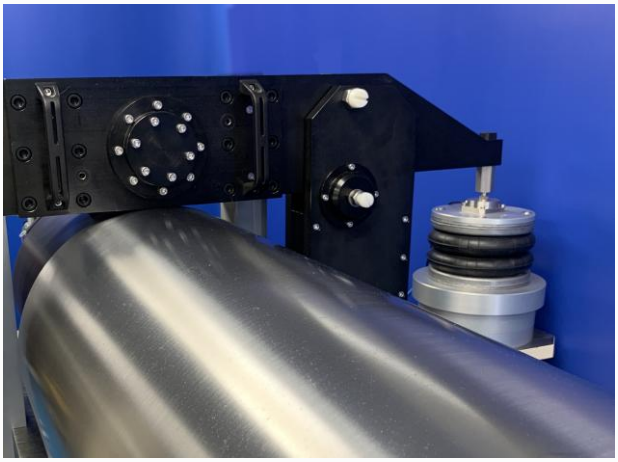
The TE 110 Indexing Roller on Drum Rig is an updated version of a rig originally designed, by Plint and Partners Ltd, some fifty years ago, for British Rail Research.



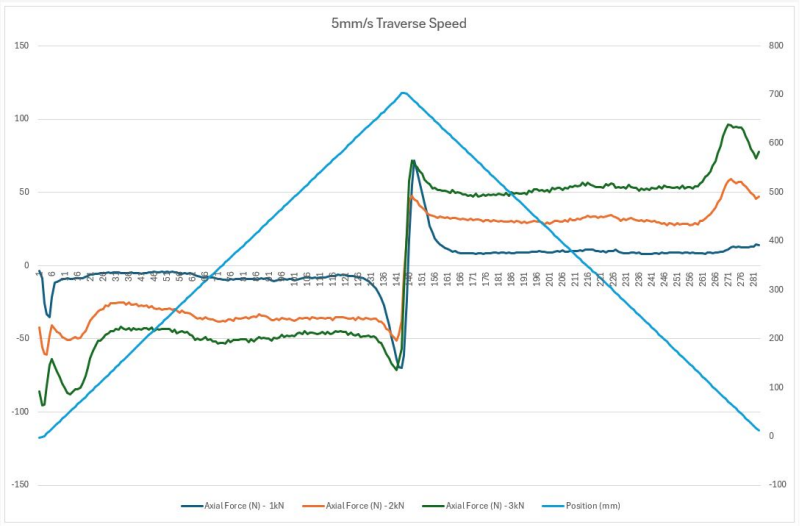
A disc of wheel material rolls freely, without driving traction, on a drum of rail material. The drum is indexed under the disc, introducing a small amount of skew between disc and drum, with the disc following a spiral track on the drum. The skew generates both a small friction torque and a small axial force. The disc or "wheel" is subjected to more wear and rolling contact fatigue cycles than a given circumference location on the drum or "rail".

The drum is supported on air bearings and is driven by a gear-motor. Rotational torque and axial force are measured with a combined in-line axial force and radial torque transducer. The complete drum assembly is mounted on a servomotor driven linear slide, which provides the indexing motion.

The disc is mounted on a pivoted arm, with load applied by means of a servo pneumatic bellows with a force transducer, for load force feedback to the servo control system.



Axial force trace at three different loads and 5 mms^{-1} traverse speed

Control and Data Acquisition

The machine is floor standing with separate control unit incorporating a Phoenix Tribology USB Serial Link Interface Module. This is connected to a PC with COMPEND 2000 sequence control and data acquisition software installed. The system provides sequence control of load, rotational speed and indexing motion.

Re-dressing the Drum

The disc arm can be removed and replaced with grinding head to allow the drum to be re-dressed in situ.

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Technical Specifications

Specimen Configuration:	Disc on Drum
Disc Diameter:	150 mm
Crowned Radius:	150 mm (typical)
Drum Diameter:	350 mm
Drum Length:	1410 mm
Maximum Roller Skew Angle:	+/-1 degree
Maximum Axial Traverse Length:	700 mm
Maximum Load:	10 kN
Maximum Rotational Speed:	500 rpm
Drive Motor:	0.75 kW
Maximum Indexing Speed:	10 mms^{-1}
Indexing Motor:	2.2 kW
Interface:	USB Serial Link Interface Module
Software:	COMPEND 2000

Controlled Parameters

Load
Rotational Speed
Indexing Speed
Indexing Direction

Measured Parameters

Load
Rotational Speed
Indexing Speed
Indexing Position
Axial Force
Rotational Torque

Services

Electricity:	230 Vac 1PH 50/60Hz, 6kW
Compressed Air:	20 NLPM Dry Air