



Theory of Machines

TE98

Hertzian Contact Apparatus

Self-contained unit that allows practical examination of Hertz's theories of contact between materials



- Helps engineers to study and predict contact shapes between common machined surfaces and materials
- Compact, self-contained unit
- No electricity or external services needed
- Uses flexible material to produce magnified and easily viewed results
- Controllable hydraulic pressure system for repeatable results
- Easy to use, simple design
- Range of experiments

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Hertzian Contact Apparatus

Description

The Hertzian Contact Apparatus is a self-contained and easy-to-use unit that shows the nature of contact between two surfaces. It compares experiment results with predictions based on Hertz's original theories. This helps engineers to predict contact areas between common machined surfaces and materials, for example different types of bearings.

The apparatus has two pads with curved contact surfaces. The upper pad (made of a transparent plastic material) has a compound radii. The lower pad (made of an opaque flexible material) has a simple radius. A hand operated hydraulic pump and cylinder force the two pads together. Students may rotate the lower pad, a pointer shows the angle of rotation. This allows a study of the effect of different relative curvatures.

A contact shape (or 'zone') forms between the pads. The contact zone may be circular or elliptical, depending on the relative angular position of the two pads. Supplied is a transparent scale to measure the contact shape and angle. The hydraulic system includes a pressure relief valve to prevent damage to the equipment.

Standard Features

- Supplied with comprehensive user guide
- Five-year warranty
- Manufactured in accordance with the latest European Union directives

Experiments

- The effect of varied pressure with constant angle.
- The effect of varied angle (different relative curvature) with constant pressure.

Essential Services

Bench space needed:
800 mm x 400 mm

Operating Conditions

Operating environment:
Laboratory

Storage temperature range:
-25°C to +55°C (when packed for transport)

Operating temperature range:
+5°C to +40°C

Operating relative humidity range:
80% at temperatures < 31°C decreasing linearly to 50% at 40°C

Sound Levels

Less than 70 dB(A)

Specifications

Nett dimensions:
Length 700 mm x width 360 mm x height 270 mm

Packed dimensions:
0.14 m³

Nett weight:
13 kg

Packed weight:
20 kg

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