

TM25**Journal Bearing Demonstration**

Shows the pressures around a journal bearing at different speeds



- Acrylic bearing allows clear observation of the oil film at all times.
- Pressure profiles, along and around the bearing, continuously monitored on large manometer panel
- Theoretical pressure profiles (Sommerfeld Analysis) may be tested and compared with practical results
- Exaggerated clearance makes oil wedge clearly visible
- Shaft/bearing eccentricity easily visible and can be determined by experiment
- Provides striking demonstration of self-excited vibrations (half-speed whirl)
- Fully adjustable speed, direction and loads
- Ideal for group studies and demonstrations

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- An ISO 9001 certified company

TM25

Journal Bearing Demonstration

Description

This floor-standing apparatus allows students to study the performance of a journal bearing during different test conditions.

It is a plain steel shaft encased in a clear acrylic shell and directly driven by an electric motor. The bearing is freely supported on the motor shaft and sealed with a rubber diaphragm. The clearance is especially large to clearly show the oil in the bearing. Supplied with the equipment is a container of suitable oil.

A control unit adjusts the motor speed, which can run in both directions. A display shows the motor speed.

An adjustable reservoir supplies oil to a low pressure region at both ends of the bearing.

The bearing contains 12 equi-spaced pressure tapings around its circumference and four additional ones along its topside and on a vertical radial plane. All are connected by light and flexible plastic tubes to the rear manometer panel, to clearly show the pressure head of oil at all 16 points at all times.

Students load the bearing by attaching weights (included) to arms connected to the bearing.

A strong steel frame with a worktop holds the bearing, the motor, the manometer panel and the control unit.

Standard Features

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

Recommended Ancillaries

- Stroboscope (ST1)

Demonstrations and Experiments

Simple demonstrations:

- Observation of oil wedge (film thickness) and hence eccentricity variations for different speeds and loads
- Observation of the pressure profiles at these conditions
- Observation of the critical bearing whirl

Experiments:

- Measuring pressure profiles for chosen conditions and plotting the cartesian and polar pressure curves
- Measuring pressure profiles for chosen conditions and plotting the theoretical Sommerfeld curve
- Measurement of shaft speed and journal speed at the critical whirl

All tests may be conducted for either direction of rotation of the shaft.

Essential Services

Space needed:

Floor area of 1 m x 1 m (plus space for students to work)

Electrical supply:

Single-phase 230 VAC 50 Hz or 110 VAC 60 Hz

(Specify on order)

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

Specifications

Nett dimensions and weight:

990 mm wide x 970 mm front to back x 2850 mm high and 68 kg

Gross dimensions and weight:

2.83 m³ and 250 kg (approx – packed for export)

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