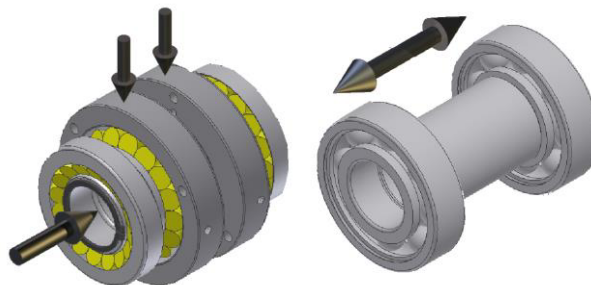


RCF 4 ROLLING CONTACT FATIGUE & BEARING FRICTION RIG



Description

RCF 4 Rolling Contact Fatigue & Bearing Friction Rig may be used for both endurance testing and precision bearing frictional loss measurement. Two test assemblies are available:

- combined radial and axial loading
- bi-directional axial loading

Load is applied by means of servo controlled pneumatic bellows with force transducer feedback.

An in-line torque transducer is provided for friction measurement, with a maximum permissible speed of 10,000 rpm.

Bearing outer race temperatures are measured with thermocouples and a vibration sensor with adjustable level trigger circuit is provided for stopping the machine at the on-set of rolling contact fatigue.

An integral lubricant service module is fitted as standard incorporating a sump tank with immersion heater, delivery pump, scavenge pump, oil to water heat exchangers for cooling and change-over filters.

RCF 4/1 Combined radial and axial loading assembly

The test assembly for combined radial and axial loading uses four identical bearings mounted in a back-to-back configuration. Taper roller, spherical roller, cylindrical roller, angular contact and deep groove ball bearings can be accommodated, with shaft sizes from 40 mm to 65 mm and a maximum bearing outside diameter 140 mm. The maximum axial load is 16 kN and the maximum radial load per bearing is 40 kN.

RCF 4/2 Bi-directional axial loading assembly

The test assembly for bi-directional axial loading allows two deep groove ball bearings to be mounted, loaded against each other, with a maximum axial load of +/-4 kN. Shaft sizes from 20 mm to 40 mm and a maximum bearing outside diameter 90 mm can be accommodated. Uni-directional loading of angular contact bearings is also possible.

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.

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Technical Specifications

Motor:	4 kW a.c. vector motor and drive with encoder feedback
Maximum Motor Speed:	3,000 rpm
High Speed Drive:	Flat belt
Ratio:	6.7:1
Low Speed Drive:	Timing belt
Ratio:	1:2 & 2:1
Maximum Spindle Speed:	10,000 rpm
Torque Transducer Range:	50 Nm
Maximum Lubricant Supply Rate:	6.8 l/min
Maximum Lubricant Supply Temperature:	Ambient to 150°C
Change-over Filters:	3 micron
Interface:	Serial Link Interface Module
Software:	COMPEND 2000

Controlled Parameters

Motor speed
Applied loads
Test fluid temperature
Test duration

Recorded Parameters

Motor speed
Applied load
Total bearing friction
Lubricant inlet temperature
Bearing outer race temperatures
Vibration sensor output

RCF 4/1 Combined Radial and Axial Loading

Configuration:	Four bearing back-to-back
Bearing Types:	Taper, spherical, cylindrical roller, angular contact, deep groove ball
Shaft Diameters:	40 mm to 65 mm

Maximum Bearing Outside Diameter:	140 mm
Maximum Axial Load per Bearing:	16 kN
Maximum Radial Load per Bearing:	40 kN
Maximum Axial Load:	16 kN
Maximum Radial Load:	80 kN

RCF 4/2 Test Assembly - Bi-directional Axial Loading

Configuration:	Two deep groove ball bearings back-to-back
Bearing Types:	Deep groove and angular contact (uni-directional loading)
Shaft Diameters:	20 mm to 40 mm
Maximum Bearing Outside Diameter:	90 mm
Maximum Axial Load Per Bearing:	4 kN
Maximum Axial Load:	4 kN

Services

Electricity:	415 V, three phase, 50/60 Hz, 7.5 kW
Clean, dry air:	4 cfm at 8 bar (120 psi)
Mains water and drain:	10 l/min (typical)