Four Ball Wear and EP

tribology (friction and wear) testing of lubricants friction and wear test equipment

Koehler Instrument Company is pleased to offer advanced equipment for a variety of friction and wear tests. Several of the standard instruments that we offer are listed here. Please contact us to discuss your requirements for these as well as custom-designed units for tribology analysis methods. Our applications personnel will consult with you on your requirements and work with our design staff to provide solutions for your tribology testing needs.

test method

Determines the Wear Preventative (WP) and Extreme Pressure (EP) characteristics of lubricating oils and greases in sliding steel-on-steel applications. The test consists of rotating a steel ball under load against three stationary steel balls coated with lubricant. Measurements are taken at the rotating speeds, temperatures, and duration as specified by published standards. The load-wear index can be calculated from the weld point in EP tests, and lubricant comparisons can be made based upon scar diameters incurred from wear tests.

four ball wear and EP tester

- Conforms to ASTM D2266, D2596, IP 239, and related specifications
- Performs Wear Preventative (WP) and Extreme Pressure (EP) tests
- Displays and records normal load, frictional torque, time, and temperature
- Test speeds and temperatures are electronically controlled
- Data Acquisition Software and Card are included
- Custom configurations are available
- Precise variable loading capability*

Four Ball Tester performs both Wear Preventative (WP) and Extreme Pressure (EP) analyses for measuring the wear and frictional properties of lubricants under sliding steel-on-steel test conditions. Tests are performed in accordance to the latest ASTM and IP published methods. Normal load on the ball assembly and frictional torque are measured through load cells. Data is processed and stored utilizing TriboDATA, an advanced data acquisition and processing software package. Test results can be plotted and compared, as well as exported to other programs. Wear scars on the steel balls are measured and recorded with a High Resolution Digital Microscope available as recommended accessory for the Four Ball Tester.

High Resolution Digital Microscope

Koehler's Four Ball Microscope is a versatile device for measuring the wear scar diameter on a steel test ball. This apparatus consists of the "Dinolite" Microscope with "DinoCapture" Software mounted at an angle on an aluminum base. The device is designed to measure the wear scar without removing the test balls from the ball pot allowing for a safer measurement procedure. The wear scar can be viewed through an external PC. The software measures the wear scar using a diameter and line tool. The images can be saved at varied resolutions on a PC.

Included Accessories

Set of Weights	Ball Chucks	Ball Pot
Ball Chuck Remover	Ball Rack	Ball Clamp Ring
Ball Holder Base Disc	Set of Hand Tools	Torque Wrench
Electrical Controller	Connecting Cables	
TriboDATA Software	Calibration and Test Reports	

K93100 Four Ball Tester

specifications

Conforms to the specifications of: ASTM D2266, D2596, D2783, D4172, D5183*, IP 239; CEC-L-45-T-93

Electrical Requirements:

220V, 60Hz, 3 phase 440V, 50Hz, 3 phase

Drive Motor: 1.5 kW

Test Speeds: 1200, 1440, 1760 rpm

Optional Test Speeds (min/max): 1000/3000, 300/3000 rpm

Maximum Axial Load: 10000 N at 3000 rpm or 12000 N at 1800 rpm

Test Duration (min/max): 1/9999 min

Test Ball diameter: 12.7 mm

Shipping Information

Shipping Weight: 1360 lbs (620 kg)

Dimensions: 45 Cu. ft.

**Pneumatic option required*

IP300 or CEC-L-45-A-99 units available.

Please contact Koehler Customer Service for additional information.

ordering information

catalog no.	description	qty
K93100	Four Ball Tester, 220V 60Hz	1
K93100-PN	Four Ball Tester with pneumatic loading, 220V 60Hz	
K93190	Four Ball Tester, 380V 50Hz	1
K93190-PN	Four Ball Tester with pneumatic loading, 380V 50Hz	

accessories

K93105	Test Balls, Pack of 100
K93111	High Resolution Digital Microscope
K931-KRL	KRL Attachment for Four Ball Tester

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