

Four Ball Wear & EP Tester



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- Conforms to ASTM D2266, D2596, D2783, D4172, D5183; IP239 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 included

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 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 Digital Microscope with 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.

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.

Specifications

Conforms to the Specifications of:

ASTM D2266, D2596, D2783, D4172, D5183; IP 239

Rotational Speed: 100 to 3000 rpm

Max Axial Load: 10,000 N

Ball of Specified diameter approx.: 12.7mm

Power supply:

220V 60Hz

380 - 415V 50 Hz

Included Accessories

AISI E 52100, 12.7 mm Test Ball, Grade 25 EP Extra
Polish - HRC 64-66 (200)

Set of Weights Ball Pot (2)

Collets Collets Master

Set of Hand Tools Torque Wrench

Electronic Controller Rack for Storage of Accessories

Connecting Cables Data Acquisition Software

Operating and Maintenance Manual

Calibration and Test Reports

Ordering Information

Catalog No.

K93100	Four Ball Wear and EP Tester, 220V 60Hz, 3 Phase
K93190	Four Ball Wear and EP Tester, 380-415V 50Hz, 3 Phase
K93100-PN	Four Ball Tester with Pneumatic Loading, 220V 60Hz, 3 Phase
K93190-PN	Four Ball Tester with Pneumatic Loading 380-415V 50Hz, 3 Phase
K93113	High Resolution Digital Microscope with CCD Camera
K93105	12.7 mm Steel Balls (package of 100)
ASTMStandard	ASTM Standard Test Method