

# Four Ball Wear and EP

## test method

A ball of specified diameter (12.7 mm) rotates at a particular velocity comes in contact with three similar stationary steel balls immersed in the lubricant. As per ASTM standards, the upper ball is rotated up to 2000 RPM and the lubricant can be heated up to 200°C. An axial force up to 1000 kg is applied through servo pneumatic close loop loading mechanisms. Friction force between the rotating ball and the three stationary balls is measured through a digital load cell mounted in precise location for better resolution, and all the process variables like lubricant temperature, normal load, frictional force, coefficient of friction, and rpm are measured and acquired through online data acquisition software through an integrated PC.

## four ball wear and EP tester

- Integrated 15 inch multi-touch control panel.
- Predefined standard test protocol and user defined test customization options.
- Accurate speed control through AC servo motor.
- Built-in pneumatic moisture control unit.
- Integrated pneumatic loading system up to 1000 kg (optional low range from 0 to 50 kg  $\pm 0.2$  kg)
- Dynamic load control system – Constant load test, incremental/decremental loading, step wise loading.
- Integrated temperature control module.
- Safety for speed, temperature, load, friction force.
- USB 3.0 port for data transfer.

The K93170 Four Ball Wear and EP Tester is designed as per ASTM standards to conduct tests to determine the coefficient of friction of lubricants, wear preventative (WP) and extreme pressure (EP) property of lubricating oils under a variety of test conditions. This instrument can also be used to determine load carrying properties by the load wear index and the weld point method. The test load is directly controlled through a software based close loop servo pneumatic drive, which enables precise control over the load application. The user can choose between different loading sequences, such as constant load test, progressive loading in increment or decrement, and also step wise loading in increment or decrement. This dynamic load control system with speed control can also be used for understanding the Stribeck curve phenomena, which is not possible with the conventional dead weight loading technique.

## specifications

Conforms to the specifications of:

ASTM D2266, D4172, D5183, D2596, D2783;  
CEC L-45-A-99; IP 239, IP 300; DIN 51350-1,  
DIN 51350-2, DIN 51350-4, DIN 51350-6

Dimensions l x w x h (cm)

24.6x20x35.4" (62.5x50x90)



K93170-PN Four Ball Wear and EP Tester

## ordering information

catalog no.	description
K93170-PN	Four Ball Wear and EP Tester with Pneumatic Loading, 440V 50/60Hz
K93179-PN	Four Ball Wear and EP Tester with Pneumatic Loading, 220V 50/60Hz

### accessories

K93170-1	Low Temp Ball pot up to -40°C
K93170-2	Low temp ball pot chiller unit
K93170-3	KRL Test System
K93170-4	KRL Cooler Unit
K93170-5	Rolling fatigue test attachment as per IP 300 with peristaltic pump unit
K93170-6	Digital Scar Measuring Microscope and Measuring Software
K93170-7	KRL Shear Stability Test Bearings, set of 6
K93105	Test Balls 12.7mm, pack of 100