tribology industry

Koehler Instrument Company's line of analyzers and testers for the tribology industry can be used to test for various tribology characteristics on fuels and lubricants. Please inquire with your Koehler sales representative to learn more about our instruments and how they can provide a solution for your specific application. Or visit our website at www.koehlerinstrument.com to find detailed specifications on each of the products you see listed here.

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K93495
high frequency reciprocating rig (HFRR)

ASTM D6079, D7688; ISO 12156; IP 450; EN 590; CEC F-06-A

The High Frequency Reciprocating Rig is a versatile computer-controlled apparatus for evaluation of the coefficient of friction and wear properties of materials under dry and lubricated conditions. Reciprocation motion occurs between the fixed stationery counter surface material mounted on a small lubricant bath and reciprocating specimen (ball) frequency, displacement, normal load are selected according to test requirement. Frictional force and coefficient of friction are measured with an electric sensor and data will be acquired, compared and analyzed through Data Acquisition Software. The oscillating motion is generated by a voice coil actuator. Frequency and displacement are controlled with an electronic closed loop system. Displacement frequency can set and read through a PC with software.

K93170-PN and K93179-PN
benchtop four ball tester with pneumatic loading

ASTM D2266, D4172, D5183, D2596, D2783; CEC L-45-A-00; IP 239, IP 300; DIN 51350-1, DIN 51350-2, DIN 51350-4, DIN 51350-6

The 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) properties 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.

K92000-PN & K92090-PN
timken tester with pneumatic loading

ASTM D2509 and D2782

The Koehler Timken test rig is used to measure the extreme pressure properties of lubricating grease and lubricating fluids. The Timken test rig is operated with a steel cup rotating at 800 rpm pressed against a steel test block. The sample under test is carried by the cup into sliding contact. The test load at the contact is progressively increased and score value and OK load value are determined.

K94190
automatic ball on cylinder lubricity (BOCLE) tester

ASTM D5001

This method covers the assessment of the wear aspects of the boundary lubrication properties of aviation turbine fuels on rubbing steel surfaces. The instrument consists of a rotating test ring against which a fixed test ball is pressed with the required force. After the test, the wear scar on the test ball is studied and the scar diameters of the wear scar (major and minor axis) are measured. Data Acquisition Test parameters such as speed, test duration, fuel temperature, air temperature and humidity are acquired, displayed and recorded. The acquired data can be viewed in graphs. The data acquisition system provides the users with the facility to superimpose up to four test graphs for comparative viewing.

K93500 and K93590
pin on disc tester

ASTM G99

The Koehler Pin on Disc Tester is primarily intended for determining the tribological characteristics of a wide range of materials under various conditions of normal loads and temperatures. A stationary pin mounted on a holder is brought in contact against a rotating disc at a specified speed. As the pin is sliding, the resulting frictional force acting between the pin and disc is measured. Both normal load and speed can be set as desired.

K95790, K95701 and K95791
shear stability tester

ASTM D6278 & ASTM D7109

The apparatus consists of a fluid reservoir, a double-plunger pump with an electric motor drive, an atomization chamber with a diesel injector spray nozzle, and a fluid cooling vessel, installed in an area with an ambient temperature of 20 to 250C. Fluid reservoir is open on the top, has approximately a 250mL capacity, has a 45-mm inner diameter, and is calibrated in units of volume. It is fitted with an internal fluid distributor. A 40-mm diameter watch glass with serrated edges is an acceptable distributor plate. The distributor reduces the tendency of fluid channeling. Temperature is measured by a thermometer suspended in the center of the fluid reservoir. The bottom of the thermometer bulb shall be 10 to 15mm above the entrance to the drain tube opening. Other temperature measuring equipment positioned at the same location may also be used. The outlet is equipped with a three-way stopcock. The three-way stopcock is of a cone type with a non-exchangeable solid plug with an 8-mm nominal bore size. Transparent, plastic tubing, is used to connect the three-way stopcock to the pump inlet.

K93700
air jet erosion tester

ASTM G76

The Air Jet Erosion Test Rig has been developed to evaluate the erosion resistance of variety of materials and conforms to the specifications of ASTM G76 standard. The principle of operation consists of subjecting the test sample to a jet of air carrying the erodent, through a tungsten carbide nozzle of a known diameter. The impingement of the erodent particles on the test sample surface causes erosion and this is quantified by weight loss method. The particle velocity is controlled by varying the flow rate of air and the erodent feed rate is varied by changing the speed of the conveyor system which delivers the erodent to the jet of air. The particle velocity is measured with a well-established method – the Double Disc arrangement. The test sample temperature can be varied from ambient to 4000°C and test sample inclination is infinitely variable 0-900 with respect to the jet of erodent particles.

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For a complete list of Koehler products to suit your Tribology testing requirements, please contact your Koehler Sales Representative or visit us at **www.koehlerinstrument.com/product-packages/tribology**

K95800
Reichert Tester

This test rig consists of rigidly mounted test roller (cylinder) pressed against a friction wheel which is in cross-cylinder contact configuration. The friction wheel is partially submerged in the lubricant bath under test. In this test, rig loading is applied through dead weights. Normal load and frictional force are measured through dual measurement load cell. A contact type acoustic emission detector is incorporated for scratching noise from the contact. The lubricant chamber contains a heater and controls lubricant temperature from ambient to set value. Online data acquisition software acquires the normal load, frictional force, coefficient of friction, sound level, temperature of the oil bath, and sliding distance and analyzes & compares the test. In addition, Koehler will provide an optical microscope with CCD camera-based image acquisition system software to measure wear scar area, which is done by measuring the major axis and minor axis of the scar for calculation of scar diameter.

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