

# High Frequency Reciprocating Rig

## test method

For evaluation of the lubricity of diesel fuels using a high-frequency reciprocating rig (HFRR). A 2-mL test specimen of fuel is placed in the test reservoir and maintained at 25 or 60°C. When the temperature has stabilized, a vibrator arm holding a non-rotating steel ball and loaded with a 200-g mass is lowered until it contacts a test disk completely submerged in the fuel. The ball is caused to rub against the disk with a 1-mm stroke at a frequency of 50 Hz for 75 min. The ball is removed from the vibrator arm and cleaned. The dimensions of the major and minor axes of the wear scar are measured under magnification and recorded.

## high frequency reciprocating rig

- Conforms to ASTM D6079 and related specifications
- Wear scar measurement through digital microscope and software
- Programmed test sequence for automated testing
- Proven repeatability and reproducibility
- Rigidly built dedicated table top rig

The specimen holder is mounted on a flexure which is stiff in the vertical (loading) direction, but offers limited resistance to horizontal force movement to the horizontal direction. The Piezoelectric Force Transducer converts mechanical quantities, such as force directly to an electric charge and is proportional to the force acting on the quartz crystal in the sensor is specified in PC. A precision LVDT measures the real-time displacement, A closed loop PID controller controls the displacement.

## ordering information

### catalog no. description

|               |                                                    |
|---------------|----------------------------------------------------|
| <b>K93405</b> | High Frequency Reciprocating Rig, 115V 60Hz 1Ph    |
| <b>K93495</b> | High Frequency Reciprocating Rig, 230V 50/60Hz 1Ph |

### accessories

|                 |                                                                                                                 |
|-----------------|-----------------------------------------------------------------------------------------------------------------|
| <b>K93450-1</b> | Test Plates and Test Balls (100 Pieces / Ea)                                                                    |
| <b>K93460-2</b> | Digital Microscope for Wear Scar Measurement<br><i>External PC required for wear scar measuring and capture</i> |
| <b>K93495-1</b> | ECR - Electrical Contact Resistance                                                                             |
| <b>K93495-2</b> | Ball Holder                                                                                                     |
| <b>K93495-3</b> | Calibrated Weight, 200 g                                                                                        |
| <b>K93495-4</b> | Humidity and Temperature Probe                                                                                  |
| <b>K93495-5</b> | Thermocouple                                                                                                    |
| <b>K93495-6</b> | Humidity Controlled Cabinet – Custom built to fit the HFRR                                                      |



K93495 High Frequency Reciprocating Rig

## specifications

Conforms to the Specifications of:

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

Contact

Geometry: Ball on Disc

Stroke: 20  $\mu$ m to 2.0 mm

Frequency: 10 to 200+ Hz

Test Load: 0 to 1.0 kg (dead weight)

Frictional Force: up to 20 N (Max)

Temperature

Range: Ambient to 150 °C

Drive: Electromagnetic Shaker

Test Disc Size: 10 mm dia. x 3 mm thick

Test Ball Size: 6 mm diameter

Power supply: 100 to 240 VAC 50/60 Hz 1 Ph

**Dimensions** wxdxh, in.(cm)

20 x 16 x 22 (50x40x55)

Net Weight: 143.3 lb (65 kg)