

# HFRR



The PCS HFRR is the industry leading instrument for analysing diesel fuel lubricity. PCS are the original manufacturers of the HFRR instrument and are the only instrument supplier specified on the following test methods:

**ISO 12156, ASTM D6079, ASTM D7688**

With over 30 years of development experience and continual design, quality, and user experience improvements, we remain at the forefront of the market.

This next-generation HFRR comes with a host of refinements, including active environmental control replacing less accurate passive methods and removing the need to use salt solutions for humidity control. This allows for quicker attainment of ambient humidity and temperature targets to even tighter tolerances. Further features include updated software which allows tracking of individual users and provides access control over calibration, while the HFRR's compact size conserves valuable bench space without compromising performance. An optional QR code scanner simplifies reference fluid and specimen batch data entry.

### Specifications:

Load	0.1 to 1.0 kg with supplied weights
Contact Pressures	Up to 1.4 GPa
Frequency	10 to 200 Hz
Stroke Length	20 µm to 2.0 mm
Temperature Range	Ambient to 150 °C
Test Sample Volume	2 ml

### Applications

- = Diesel fuel lubricity testing.
- = Gasoline testing.
- = Grease behaviour research.
- = Evaluation of marine engine lubricants.
- = Investigation into fretting.



Additional quality-of-life features include a wipe-clean stainless-steel interior for easy cleaning, visual and audio cues to indicate test completion, and a unique self-diagnostic function that identifies potential machine malfunctions, enhancing maintenance efficiency and reducing downtime.

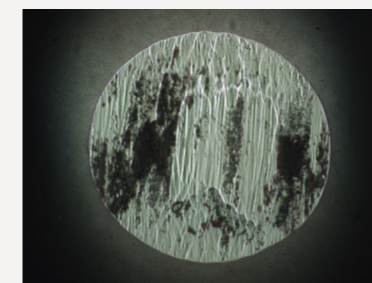
The HFRR is also fully compatible with HFRR microscopes, wear scar cameras, and existing accessories, alongside the ability to perform gasoline testing. Compliant with both ISO and ASTM standards, the HFRR continues PCS Instruments' legacy of excellence in fuels and lubricants testing.

### Principle

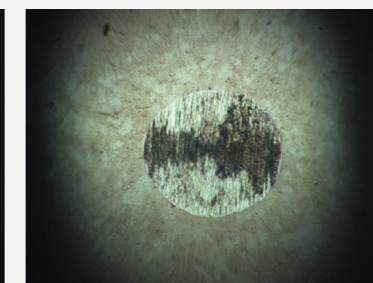
The ball and plate specimens are fitted to the upper and lower sample holders, which are then attached to the instrument and the sample fluid added. The test load is applied using a suspended weight, and the test conditions are set in the PC software either automatically, if running a standard test, or by the user for bespoke tests.

During a test, the ball is rubbed against the plate and the friction force is measured using a piezo force transducer and recorded by the software. At the end of the test, the wear scar on the ball is measured to determine the lubricity of the sample.

### Wear Scar Images



▲ Low lubricity



▲ High lubricity

### Contact Area Schematic

