

HFRR



OVERVIEW

A ball-on-plate reciprocating friction and wear test system for assessing the performance of both fuels and lubricants under boundary conditions.

PCS Instruments is the only specified supplier of the HFRR in the following standard test methods:

ISO 12156

Diesel fuel – Assessment of lubricity using the high-frequency reciprocating rig (HFRR).

ASTM D6079

Standard Test Method for Evaluating Lubricity of Diesel Fuels by the High-Frequency Reciprocating Rig (HFRR).

ASTM D7688

Standard Test Method for Evaluating Lubricity of Diesel Fuels by the High-Frequency Reciprocating Rig (HFRR) by Visual Observation.

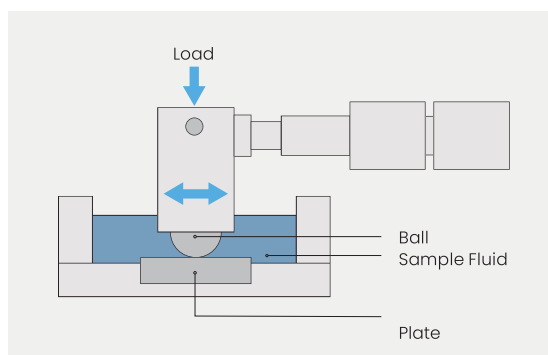
+ Conforms to **CECF-06-A**, **EN 590**, **JPI-5S-50** and **IP 450**.

APPLICATIONS

- > Evaluating the lubricity of diesel fuels and gasolines.
- > Characterising the performance of boundary lubrication additives – E.g. antiwear additives, extreme pressure additives and friction modifiers.
- > Evaluating marine engine lubricants.
- > Studying fretting phenomena.

PRINCIPLE

1. The ball and plate specimens are fitted to the upper and lower sample holders, which are then secured to the instrument.
2. The test sample is added, and a load is applied using a suspended weight.
3. Test parameters are configured via the PC software, either automatically for standard tests or by the user for custom tests.



Captured using the optional HFRR microscope and wear scar camera



High lubricity wear scar

Low lubricity wear scar

OPERATING CONDITIONS

Frequency	10 to 200 Hz
Stroke length	20 µm to 2 mm
Load	0.1 to 1 kg
Contact pressure	Up to 1.4 GPa
Test sample volume	2 ml
Temperature range	Ambient to 150 °C

ENVIRONMENTAL CONTROL

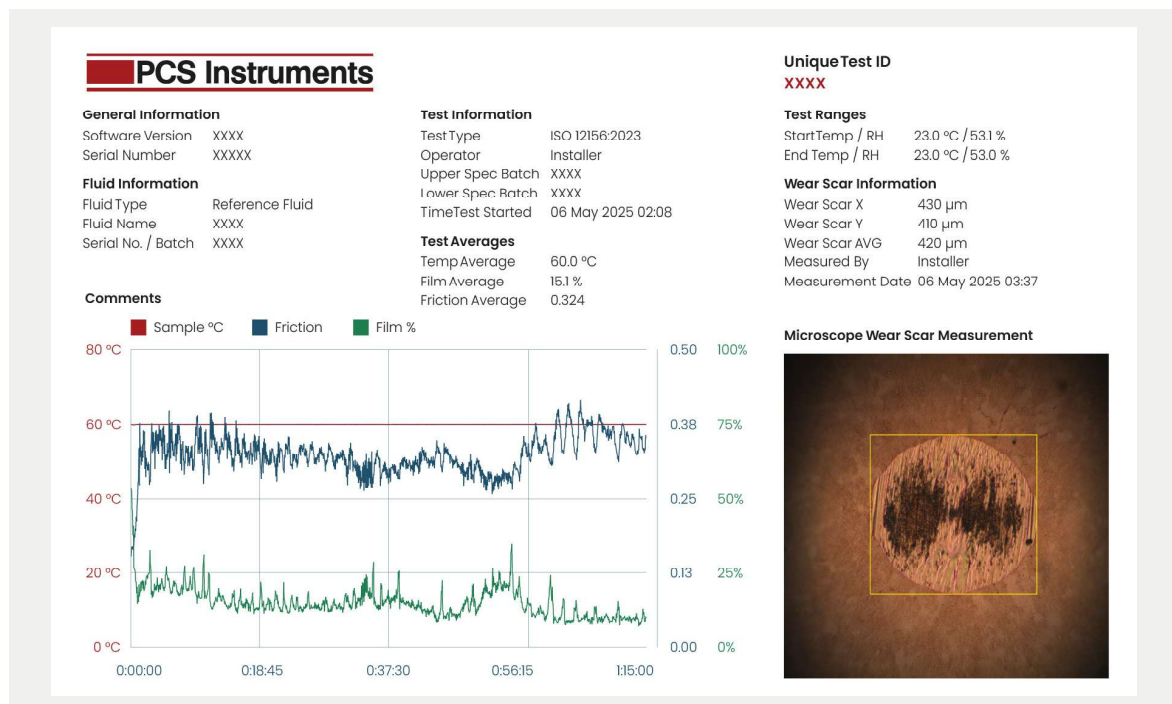
Chamber Temperature	20 to 26 °C
Chamber Humidity	25 – 75 %RH

The ISO 12156 standard specifies a humidity range of 48 to 58 %RH. The environmental chamber can control humidity to within ± 1 % of a 53 %RH target.

FEATURES & BENEFITS

- > **Active Environmental Conditioning:**
Ensures precise control of temperature and humidity.
- > **Intuitive Touchscreen Interface:**
Features an easy-to-use, integrated display for seamless operation.
- > **Configurable Workflows:**
Customisable test reports and automation options for simplified LIMS integration.
- > **Configurable User Profiles:**
Enhances testing and calibration traceability with easy profile setup.

EXAMPLE RESULTS



Example Test Report