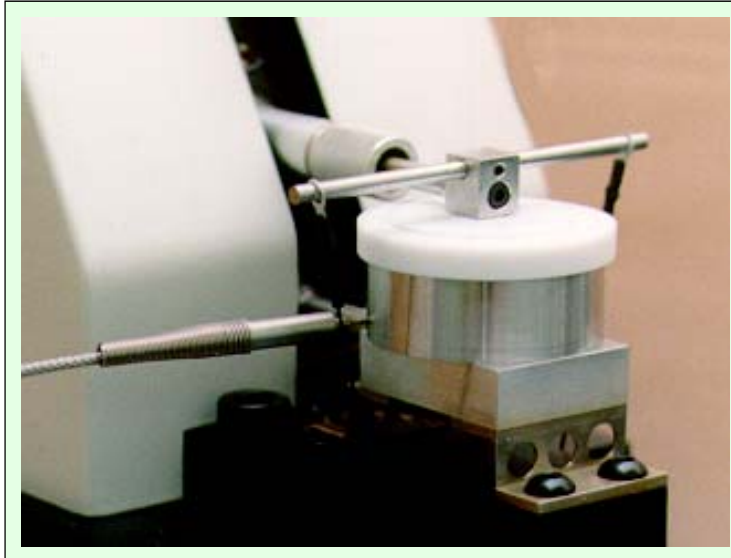


# The HFRR Gasoline Conversion Kit



Above - The HFRR with the gasoline conversion, testing gasoline

Recent developments in gasoline technology have led to an interest in using the HFRR for gasoline lubricity assessment. Because of the high volatility of gasoline, special precautions must be taken to prevent excessive evaporation during the test.

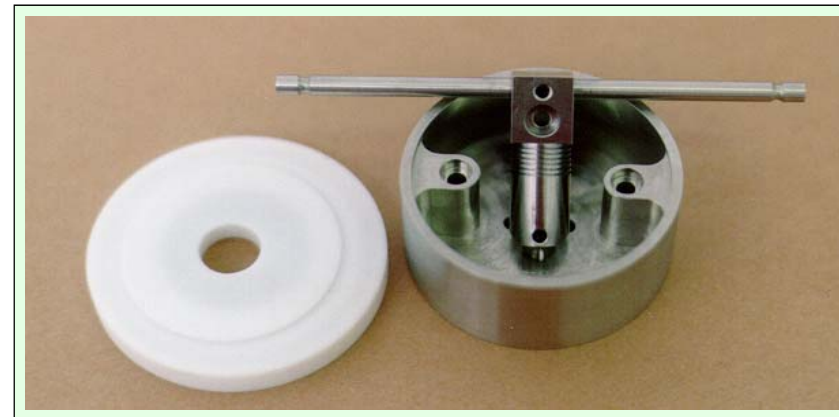
Research at Imperial College, London has also shown that an increase in sample volume improves repeatability with gasolines.

The gasoline lower test specimen holder (the gasoline bath) has been designed to hold up to 15ml of test fuel. To accommodate the increase in size of the gasoline bath the HFRR electromagnetic oscillator has been raised by inserting two blocks under the oscillator supports.

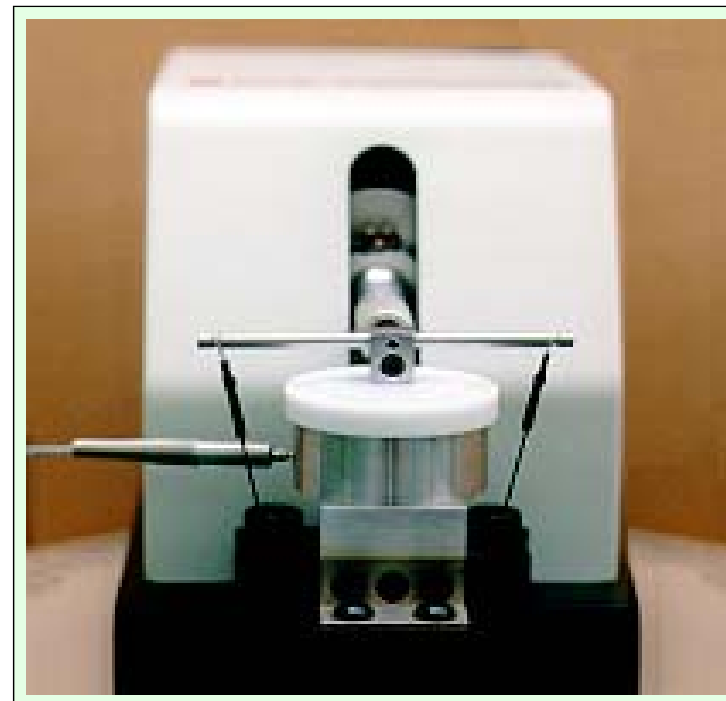
The upper specimen holder has been redesigned to accommodate a PTFE sliding seal which reduces evaporation to a minimum.

Tests on the sealed bath show a loss of 0.5g or less of gasoline in a 75 minute test at 25°C. This compares with 3.3g loss if the seal is absent.

The Gasoline Conversion Kit has been developed to allow for safer and more repeatable lubricity testing of gasolines. The high volatility of gasoline means that even at room temperature a significant fraction of the gasoline will evaporate from an open specimen holder, changing additive concentration in the remainder and posing an explosion hazard.



Above - The upper and lower specimen holder with PTFE seal



Above - The HFRR with the gasoline conversion, testing die-

Converting an existing HFRR to test gasoline is simple and should take approximately 30 minutes. With the use of the aluminium heater block extension, normal HFRR diesel lubricity testing can continue using the standard specimen holders after a quick calibration.

The most innovative part of the design is the use of a two-piece PTFE sliding seal. The larger outer ring clips securely around the outside of the gasoline bath. The upper specimen holder is inserted through the hole in the smaller inner part of the seal which forms the upper part of the sliding seal.

The PTFE sliding seal has many benefits:

- PTFE is very resistant to solvents and most other chemicals and so will not affect the composition of the gasoline.
- It can be cleaned in the same solvents and at the same time as the test specimens.
- The sliding friction from the seal is insignificant compared to the friction between the test specimens. There is therefore no impact on the test results.