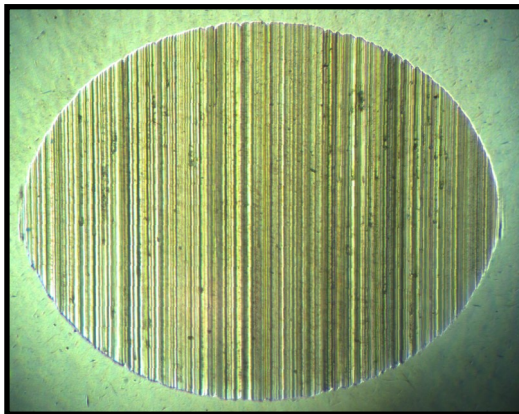


ABS

Automated Ball-on-Cylinder System



The ABS is a fully automated microprocessor-controlled Ball-on-Cylinder wear test system which provides a fast, repeatable assessment of the performance of aviation fuels. It fully conforms to the requirements of ASTM D-5001-10.

Fast and repeatable testing

PCS Instruments is the world leader in fuel lubricity test equipment, manufacturing both the High Frequency Reciprocating Rig (HFRR) and the Automated Ball-on-Cylinder System (ABS). The HFRR is used for measuring the lubricity of low-sulphur diesel fuel whilst the ABS is an automated jet fuel lubricity tester which performs the ASTM D-5001 test method for "Measurement of Lubricity of Aviation Turbine Fuels by the Ball-on-Cylinder Lubricity Evaluator".

Components

The ABS comprises a single, compact, bench top mounted unit. The only external services required are zero grade compressed air as specified in ASTM D-5001 and 100-230 V mains power. The internal de-ionised water reservoir requires refilling after approximately 1000 tests. An Air cleaner/dryer is available which can clean and de-humidify normal laboratory or shop air to meet the requirements of the ASTM standard (<0.1 ppm hydrocarbons and <50ppm water).



ABS mechanical unit

Test Setup

The standard test uses a $\frac{1}{2}$ " diameter ball on a rotating ring test geometry. The method calls for the precise control of the humidity and temperature of a conditioned air stream used to pre-condition the fuel sample to be tested. The ABS incorporates a microprocessor controller that controls all aspects of the test. The operator simply has to fit the cleaned specimens in the instrument, add the fuel sample to be tested and then press the "Start" button. The remainder of the test sequence, including humidity and temperature control, pre-conditioning of the fuel, load application and test timing are all carried out without further intervention. All specified test parameters are monitored and controlled during the test. Several internal system checks are also made, alerting the user to conditions such as low air pressure or low water level.



ABS Schematic

Microscope and wear scar camera package

An optional x100 microscope is available with an adaptor to accept the ABS ball holder. The microscope camera and software is an optional accessory for the ABS software which allows the user to capture calibrated images of a wear scar and measure the wear scar on the PC screen. The wear scar image and measurements are saved with the test data file and can be printed on the test report. The camera functionality is an integral part of the HFRR software, which allows test data files to be exchanged between labs and the measurements to be viewed and, if required, remeasured with full traceability. The package includes the camera and adaptor, all cables, and upgrade to the ABS software and a certified calibration target.



Microscope and wear scar camera attachment

Features and Options

The fully automated instrument is included in ASTM D5001 test method “Standard Test Method for Measurement of Lubricity of Aviation Turbine Fuels by the Ball-on-Cylinder Lubricity Evaluator (BOCLE).” An optional PC based data logging application allows the test data to be recorded during a test. An upgrade kit is also available to enable the instrument to perform the ASTM scuffing load test for diesel lubricity (ASTM D6078). For further information, please contact PCS Instruments or your local dealer.



ABS test rings (BOCLE Ring left and

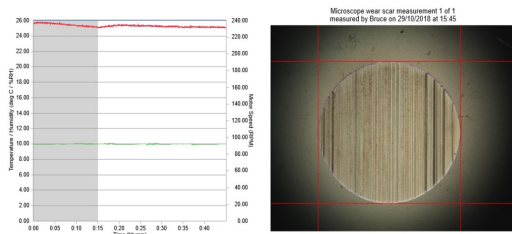
ABS Main Features

- Simple to use interface - microprocessor control of all instrument functions
- Standard ASTM D-5001 test sequence pre-loaded into ABS microprocessor controller - operator fits specimens, adds fuel sample and presses the “Start Test” button
- Automatic control of test sequence - no operator-induced variability in test results.
- Automatic flow controllers for moist and dry air - no operator input required to control the humidity and flow rate of the conditioned air
- Optional PC-based data logging software - allows test data to be recorded as a permanent record (available for both D5001 and D6078).
- Interchangeable humidity and temperature probes - humidity and temperature measurement does not need to be re-calibrated - simply replace the combined relative humidity and temperature probe with an exchange pre-calibrated unit
- PCS supplied specimens leading to tighter quality control

TEST - ABS390 FUEL B FUEL - Reference B

UNIQUE TEST ID
201810291442

Fuel Information		Test Information		Wear Scar Information	
Fuel Type	Low lubricity reference fuel	Test Rings	Temp 25.34degC	Humidity 10%RH	Speed 2400RPM
Fuel Name	Reference B	Operator Name	Bruce	Ball batch number	63115208-10
Fuel SN	26527-B	Ring batch number	1848-9-1206-E	Ring batch number	29 October 2018 14:42
		Time Test Started			



ABS Software screenshot

Software Option

An optional PC based data logging application allows all pre-programmed test data (motor speed, test duration, fuel temperature, air temperature and humidity) to be recorded during the test and a summary printed out confirming that all parameters were within the specified limits

Calibration and Maintenance

The ABS is supplied with a full set of calibration parts and operation manuals.

The ABS mechanical unit has few moving parts and requires little maintenance. Care should be taken to avoid contamination with test fluids or solvents.

Spares, accessories, test specimens and reference fuels are available from PCS Instruments or your local dealer.



ABS Standard Accessories Kit

Technical Specification

Operating Conditions

Ambient Temperature	15 to 35°C
Ambient Humidity	20-80% (non-condensing)

Electrical

Mains power	Universal (100—230 V) 750 VA
Temperature Control	Solid state thermoelectric heater/cooler

Weight and Dimensions

Mechanical Unit	20 kg
Dimensions	500 x 560 x 375 mm



Optional Accessories

- Microscope - with certified micrometer and holder for upper specimen
- Software - An optional PC based data logging application allows all test data to be recorded during the test and a summary printed out confirming that all parameters are within the specified limits
- Wear Scar Camera Package
- Compressor and Dryer
- Zero AIR Generator (removes trace hydrocarbons)
- Air flow and humidity check kits

For further information contact PCS Instruments or your local dealer/distributor.



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