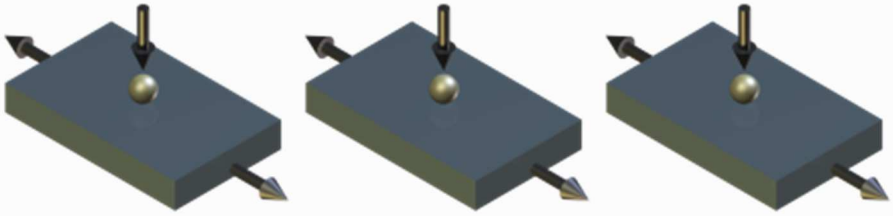
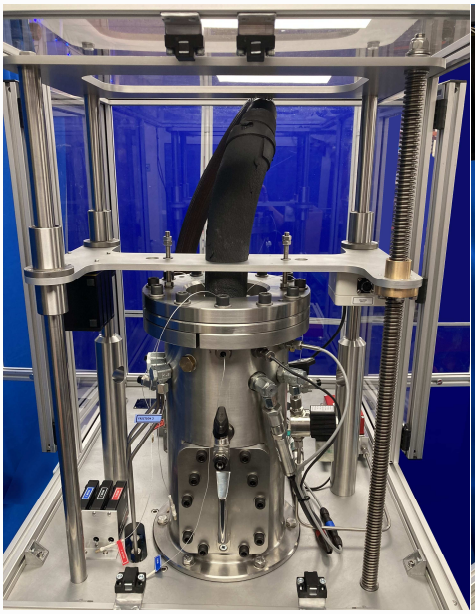
TE 60 HIGH PRESSURE HYDROGEN RECIPROCATING TRIBOMETER

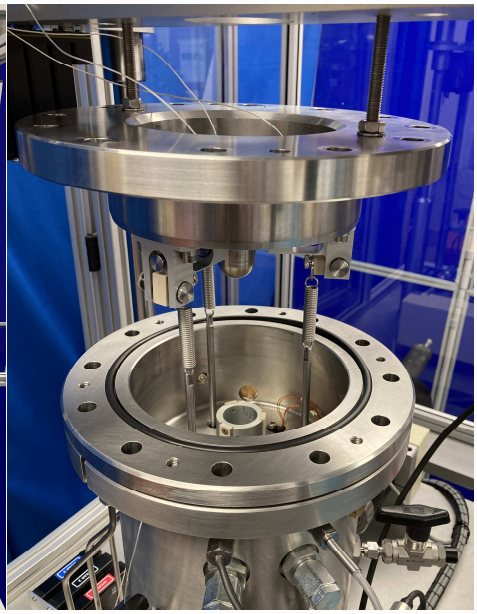


Description

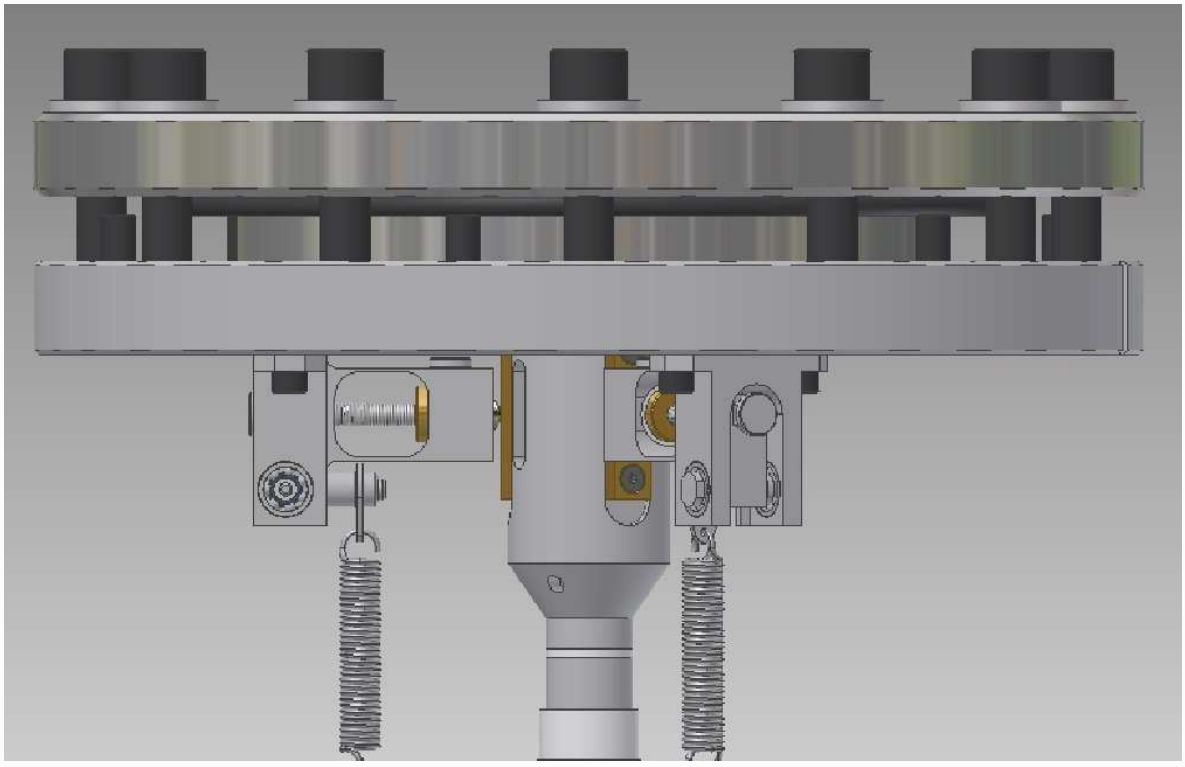
TE 60 is a three-station reciprocating tribometer, designed around a high pressure chamber, for experiments under hydrogen and other gases. It includes a vacuum pump for purging the chamber before charging with a chosen gas, so can also be used for tests under medium vacuum. Facilities are provided for running tests with plate specimen temperatures from -55°C to +150°C.

Chamber





The test assembly, comprising three ball specimen carrier assemblies, is mounted on the underside of the pressure vessel lid. A manually rotated lead-screw assembly is provided for raising and lowering the vessel lid.



Reciprocating motion is generated by a manually adjusted, variable stroke, crank mechanism, driven via a magnetic coupling, by an externally mounted, geared servo motor.

Evacuating, Purging, Charging and Venting

The chamber is supplied fitted with the necessary ports and valves and pressure/vacuum sensors to allow charging of the system. External gas handling and venting systems are not included, but must be installed by the user, in accordance with local standards and safety requirements. It is recommended that all gas connections are hard plumbed in industry standard stainless steel tubing. It is essential that potentially explosive and asphyxiating gases are safely discharged, outside the laboratory, in accordance with local safety regulations.

The normal procedure for charging is to start by evacuating the chamber, to remove as much air as possible. The chamber is then purged, then pressurised, with nitrogen or inert gas. The purge gas is then vented and evacuated. The chamber is then slowly charged with hydrogen (or other test gas) and the specimens soaked for the required number of hours, before the test is started. At the end of the test, hydrogen is slowly vented from the chamber, if necessary, diluted with nitrogen or inert gas.

Peripheral Systems

A cartridge heater and temperature controller are provided for heated tests and a laboratory refrigeration unit with refrigerant probe for cooled tests.

Control and Data Acquisition

Control and data acquisition facilities are provided by a PC in conjunction with a Serial Link Interface Module, High Speed Data Acquisition Card and COMPEND control and data acquisition software.

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Technical Specifications

Number of Test Stations:	Three
Test Configuration:	Ball on flat
Gases:	Hydrogen, Argon, CO2
Working Pressure:	0.1 mbar to 120 bar
Proof Pressure:	150 bar
Stroke Range:	0 to 20 mm Continuously Adjustable
Frequency:	0 to 5 Hz
Motion:	Sinusoidal
Loading System:	Tension Spring
Load Range:	5 to 50 N
Friction Range:	0 to 50 N
Deflection Sensor:	NC-DVRT
Pressure Rating:	200 bar
Temperature Rating:	-55°C to 150°C
Wear Range:	0 to 100 microns
Displacement Sensor:	NC-DVRT
Pressure Rating:	200 bar
Temperature Rating:	-55°C to 150°C
Refrigerant Probe:	
Action:	Contact cooling of plate specimen
Temperature Range:	Ambient to - 50°C
Heating Probe:	
Action:	Contact heating of plate specimen
Temperature Range:	Ambient to 150°C
Electrical Feedthroughs:	PT100 x 2 & Four-wire CONAX x 3
Rotary Feedthough:	BMD-300 Magnetic Coupling
Motor:	NX-210 a.c. Servo Motor

Automatically Controlled Parameters
Frequency
Plate specimen temperature
Test duration

Manually Controlled Parameters
Load
Stroke
Chamber pressure (external service)

Measured Parameters
Friction
Wear
Plate specimen temperature
Chamber temperature
Chamber pressure
Number of cycles

Derived Parameters
Friction coefficient