

Four Ball Lubricant Tester

Extreme Pressure Oils and Greases, Shear Stability of Lubricating Oils

ASTM D2266; ASTM D4172; ASTM D2596; ASTM D2783; BS EN ISO 20623;
BS ISO 26422; CEC L-45-A-99; DIN 51 350; IP 239

- Applied loads range up to 800 kgF
- Drive speed from 1200 to 1760 rpm
- Digital timer and display with selectable range 0.1s to 9999 hr
- Digital displays and microprocessor control of Applied Load and Torque
- Automatic Torque limiting and cut-off
- Interlocked guards for maximum safety
- Optional heating pad and controller
- Unique test ball loading/removal tool



• Lubricating Oils •

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Four Ball

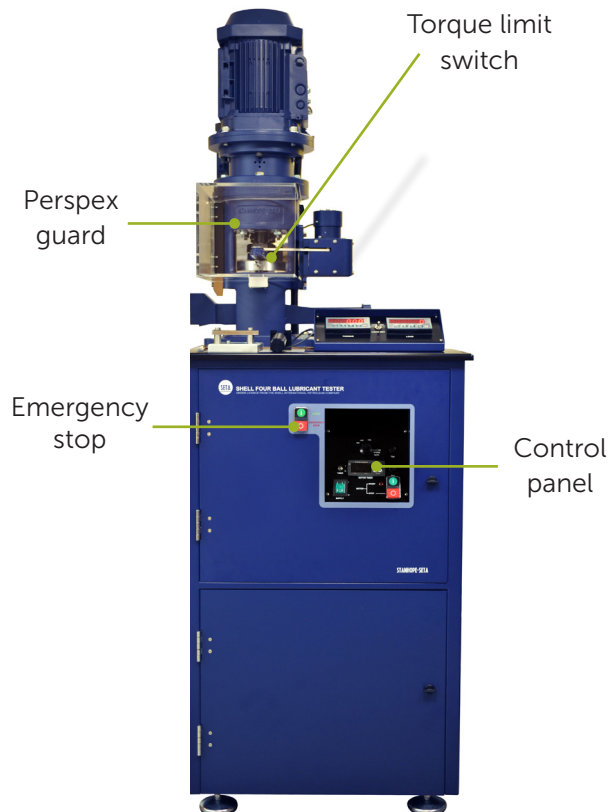
The Seta-Shell 4 Ball Lubricant Tester determines the friction and wear properties of extreme pressure oils and greases. Used in tribology research laboratories and in the routine quality control of finished lubrication products. Also for the determination of shear stability of lubricating oils using a tapered roller bearing.

Test Method

A ball, mounted in a chuck, is rotated against three stationary balls in a pot containing the sample lubricant. The digital speed controller has three factory pre-programmed settings. A load, adjustable in the range of 40 to 800 kgF, is applied to the balls via a balance beam and electric jack. The applied load is displayed on a digital readout. The torque transferred between the rotating and stationary balls is measured and displayed.

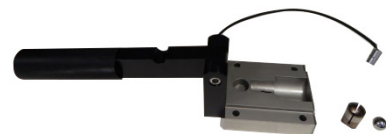
Wear Loading Kit (19940-0)

The optional Wear Loading Kit converts the auto-load 4 Ball Tester to a manual system (19800-7) allowing low loading/greater sensitivity as required by ASTM D2266 and ASTM D4172.



Ball Loading/Release Device (19815-0)

The unique test ball loading/release device included with the 4 Ball Tester allows test balls to be easily inserted and removed into the drive chuck.



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Technical Specifications

	19900-4 (Autoload)	19800-7 (Manual)
Speed range	1200 to 1760 rpm	1200 to 1760 rpm
Load range	6 to 800 kgF	0 to 800 kgF
Timing	0.1 s to 9999 hr	0.1 s to 9999 hr
Voltage	220/240V, 50/60Hz, 32 A (single phase)	220/240V, 50/60Hz, 32 A (single phase)
Power	2.6 kW	2.6 kW
Size (H x W x D)	165 x 82 x 62 cm	169 x 82 x 62 cm
Weight	180 kg	161 kg

Optional Accessories

Part Number	Description
19750-3	CCD digital microscope For x/y linear measurement and viewing of ball scar, complete with 1.3MP camera and software, and 19870-0 rack.
19755-0	CCD digital camera for 4 ball scar measurement For conversion of earlier Mitutoyo microscopes (19750-0 and 19750-2) to digital imaging, complete with 1.3MP camera and software. Note: this is not required with 19750-3.
19820-3	Shear stability head Accessory for CEC L-45-T-93 test method, comprising tapered roller bearing and jacket.
19830-5	Seta temperature control system For use with 19820-3. With digital indicator. Comprises a circulating water bath with fittings for heating and cooling.
19870-0	Seta 4 ball rack To hold 120 used balls prior to wear scar examination. Note: a 3-way ball holder, for use with 19750-3 digital microscope, is supplied with the instrument.
19892-0	Torque arm with removable cup Allows the sample cup to be detached from the torque arm so balls can be left in position for scar measurement. Can be used with 19855-2 heating pad and controller.
19895-0	Test balls For ASTM D2266, D2596, D2783, D4172. Pack of 500.
19930-0	Chart recorder Digital display