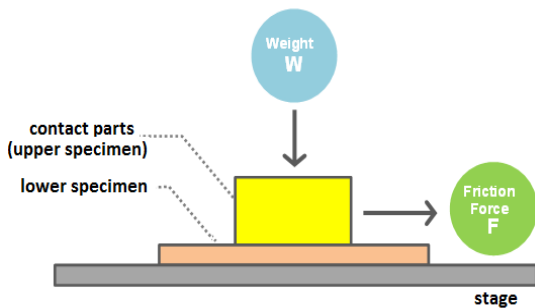


OSC 92LJ113 Triboster (Automatic Friction Abrasion Analyzer)

Principle

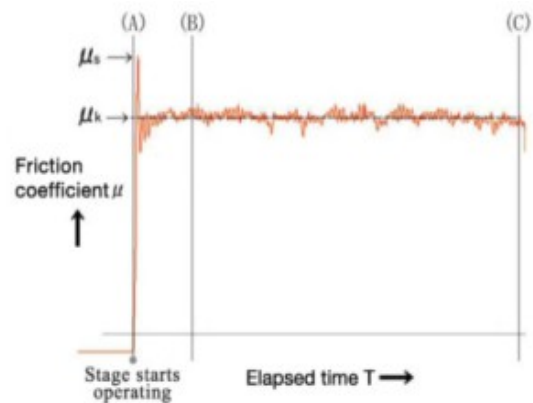
Coefficient of Friction (COF)

Friction force F is generated in the interface between the two materials, while the upper specimen (Contact parts) with weight moves over the lower one. Then, COF is calculated by the equation $\mu = F/W$.

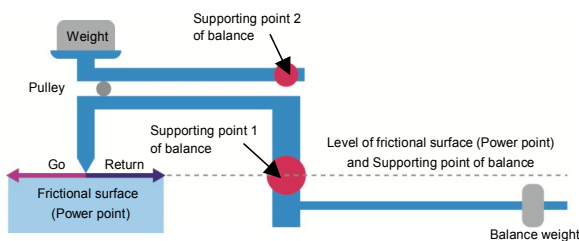


Analysis Method

The figure below indicates COF over time. Static COF μ_s is obtained in the initial period as the peak value in between (A) and (B), also Kinetic COF μ_k is determined by the average of values in between (B) and (C).



New concepts

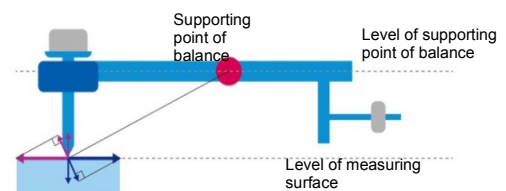


Advantage One: Biaxial Balance

Isolate inertia force and external force from load cell

One side of pair balance serves as a supporting arm for a load by weight and a transmitting arm for a friction force to load cell. Biaxial Balance carries out each functions individually so that inertia force and external forces on sliding motion could be eliminated properly.

Conventional type



Advantage Two: Crank shaped Balance

Highly reliable data not affected by moving direction

Measuring surface (powerpoint) and the supporting point of balance are leveled. Therefore vertical weight loaded on the measuring surface is same in both direction of going and returning, and the force gotten by the load cell (load center) should be same despite direction of movement.

OSC 92LJ113 Triboster (Automatic Friction Abrasion Analyzer)

Applications

Objects	Examples of evaluation
Lubrication oil	Friction and sorbability / Dependency on temperature
Cosmetics	Peel of manicure / Smoothness of hair after hairdressing treatment
Powders	Lubricity of powders
Papers	Conditions of paper-feed in copying/printing machines / Slippage of packing materials or prints on them
Rubbers, plastics	Friction and wear of tire against road surfaces / Stick slip between wiper and windshield / Rubbing and wear of toys
Textiles	Smoothness depended on weave texture / Efficacy of softening agent / Slippage of liner
Paints, Coating, Printing	Strength of coating against scratching, continuous rubbing, etc. / Characterization of coated surface / Friction and wear of coated surfaces each other / Characterization of drive devices of printing machines
Medical	Materials of artificial joints, valves of artificial hearts, and implant, etc.
Automobile	Efficacy of polishing or waxing on the body / Rubbing condition of seatbelt against clothes / Materials of interior to see feeling of touch

Automatic friction abrasion analyzer of software controlled system.

Variety models as follows are available for flexibly applicable to any requirements on the fields of tribology:

Versatile models TSf-503/303

Specialty models TSf-503D for disk applications

TSf-503R for cylindrical sample applications



Featured Functions

- 1 Biaxial balance is adopted. It can minimize inertia force and external forces generated by sliding motion.
- 2 Measurements in both ways: This mode obtains coefficient of friction data in both ways of stage travel. It can reduce time when measuring numbers of cycles.
- 3 Function of lifting contact part can be selected when measuring with one way mode. The contact part is lifted automatically in the return travel of stage.
- 4 Repetitive static friction measurements: This mode repeats move and stop of stage, and 12 data of coefficient of static friction are obtained in a stroke.
- 5 Standard repeat measurements: Both static and kinetic coefficients of frictions are measured repeatedly on same measuring area. (up to 12 cycles)
- 6 Change sample measurements: for comparison of data with different samples or different areas of a sample
- 7 Dependency on repeat: continuous reciprocating measurements to evaluate change of coefficient of friction with times. The data can show wear of surface in the view of friction. (Max. 10,000 times)
- 8 Dependency on weight: for study how coefficient of friction changes by change of vertical loading
- 9 Dependency on speed: for study how coefficient of friction changes by changing moving speed
- 10 Dependency on stop-time: This shows the coefficient of friction changes with elapsed time of surface. The stage repeats moving and stopping for a specified time interval.

OSC 92LJ113 Triboster (Automatic Friction Abrasion Analyzer)

Specifications

Model	OSC 92LJ 113A	OSC 92LJ 113B	OSC 92LJ 113C	OSC 92LJ 113D
Measuring method	Bowden method			
Display resolution	Coefficient of friction: 0.0001			
Frictional force range	Standard: 0 -1,000gf (9.8N) Option: 0 - 2,000gf (19.6N)			
Vertical load	100 -1,000g (in steps of 50g) [When using option: 200 - 2,000g (in steps of 100g)]			
Travel distance	1 - 80mm (in steps of 1mm)		—	
Travel speed	0.1 - 100.0mm/sec		1 - 600rpm	
Travel times	Max. 10,000 times	1 - 12 times	Max. 999,999 cycles	
Max. sample size	180(W)×100(D)×30(H)mm		φ150×10(H)mm	φ 10-100×300(L)mm
Stage size	180(W)×100(D)mm		φ150mm	Depends on sample size
Temperature control	available at options Jacket stage: 10 - 60°C Heater stage: room temp. - 180°C		at room temperature	
External dimensions	about 600(D)×310(W)×420(H)mm			About 600(D)×425(W)×420(H)mm
Weight	about 29kg		about 32kg	about 29kg
Power supply	AC100-240V, 50/60Hz			
Environment for use	Temp.: 15-30°C, Humidity: 30-80%RH (non condensing)			



Comparison of Functions

◎ standard ○ option

Model	OSC 92LJ 113-A	OSC 92LJ 113-B	OSC 92LJ 113-C	OSC 92LJ 113-D
Biaxial balance	◎	◎	◎	◎
Automatic lifting balance	◎	◎	◎	◎
Measurements in both ways	◎	◎	Choice of rotate direction	
Standard repeat Measurements	◎	◎		
Constant rotation measurements			◎	◎
Change sample measurements	◎		◎	◎
Repeat dependency measurements	◎			
Load dependency measurements	◎		◎	◎
Speed dependency measurements	◎		◎	◎
Repetitive static friction measurements	◎			
Stop-time dependency measurements	◎			
Temperature control	○	○		

OSC 92LJ113 Triboster (Automatic Friction Abrasion Analyzer)

Specialty Models

<p>OSC 92LJ 113-C</p>  <p>It measures coefficient of friction with constant rotation of f150mm round stage. Pin-on-disk, Ball- on-disk measurement can be carried out. Speed range: 1 – 600rpm Cycle: Max. one million</p>	<p>OSC 92LJ 113-D</p>  <p>It measures coefficient of friction with constant rotation of cylindrical sample. The sample holders are customized with demands. Speed range: 1 – 600rpm Cycle: Max. one million</p>
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Optional Accessories

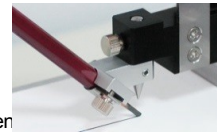
Curved faceLineFlatBallSapphire



Contact parts
Every model includes the 3mm ball contact.



ASTM sled
Sled (contact parts) of standard size stipulated by ASTM D1894



Pen
A holder to use a pencil for contact part



Heater type stage system
Package of heater type stage for solid sample and temp controller
Temp range: room temp. - 180C
(for TSf-503/303)



Jacket type stage
Jacket type stage for solid sample
Hot/cold water circulator is required.
Temp range: +10 - 60C
(for TSf-503/303)



Hot/cold water circulator, 4VT
Water circulator bath to control temp of jacket type stage
Control range: -10 - 80C

* The specifications and designs are subject to change without notice.