



KK01/02/03

Scratch Tester

The KK01 Scratch Tester and the KK02, KK03 Scratch Tester for low loads use a rigid pin to scratch such targets as film, plastic, automotive interior and exterior material, and coating material to evaluate the target's scratch resistance (scratch characteristics).

Standardized increased load scratch testing can be conducted in accordance with ASTM and ISO* guidelines. This testing allows for the utilization of coating material research and flaw occurrence mechanism analysis, enabling quantitative assessment of scratch characteristics.

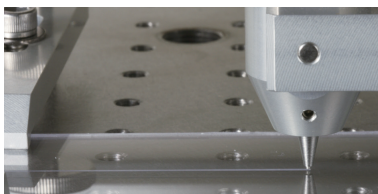


KK01 : Configurable load 1 to 200N



KK02 : Configurable load 1 to 50N

KK03 : Configurable load 0.1 to 5N



FEATURES

● Calculation of scratch coefficient of friction

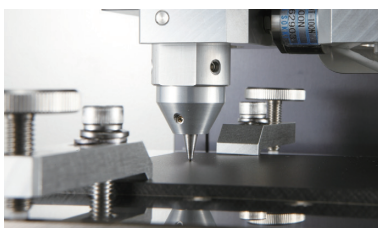
This device is capable of calculating scratch frictional coefficient, a physical quantity directly related to surface damage, which facilitates clarifying the structure of a scratch.

● Teaching function

This feature can be used to perform initial configured testing and ultimate load indentation testing. Performing these tests prior to actual testing allows the load range to be set quickly.

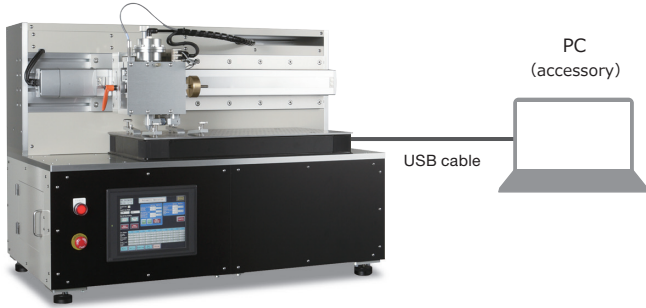
● Suspension function

Even for samples with an uneven surface that make scratch evaluation difficult, such as textured surfaces, this feature makes testing possible without compromising linear load increase capabilities.



SYSTEM CONFIGURATION DIAGRAM / MEASUREMENT DATA

e.g. KK01



*Same for KK02/03

Sample Measurement Software Screens

hour:min	mm/day	year
12	2	2012

Condition No.	Horizontal Home Velocity	Horizontal Home Position	Scratch Velocity	Scratch Length
1	70.00	29.95	70.00	100.00

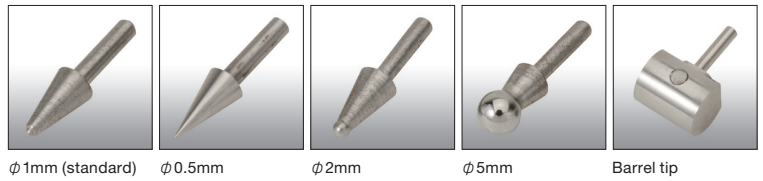
Normal Teaching Velocity	Initial Normal Load	End Normal Load	Initial Normal Velocity	Scratch Velocity	Initial Normal Position	End Normal Position
0.0100	0.100	5.000	0.0500	2.5410	0.3250	2.8700

Code	Scratch Distance (mm)	Horizontal Load (N)	Horizontal Load (g)	Scratch Velocity (mm/sec)	Tip
12	1	0.000	0.000	0.000	Micro
14	3	0.000	0.001	0.005	0.011
15	3	0.000	0.001	0.005	0.050
16	4	0.000	0.001	0.005	0.010
17	4	0.000	0.001	0.005	0.011
18	4	0.000	0.001	0.005	0.011
19	7	0.000	0.001	0.005	0.010
20	8	0.000	0.001	0.005	0.010
21	8	0.000	0.001	0.005	0.010
22	10	0.000	0.001	0.005	0.010
23	11	0.000	0.001	0.005	0.010
24	13	0.004	0.000	0.100	0.000
25	13	0.004	0.001	0.100	0.000
26	14	0.004	0.001	0.100	0.000
27	14	0.004	0.001	0.100	0.000
28	15	0.008	0.001	0.100	0.000
29	15	0.008	0.001	0.100	0.000
30	17	0.013	0.000	0.140	0.014
31	17	0.016	0.000	0.160	0.013
32	19	0.018	0.000	0.180	0.015
33	21	0.020	0.000	0.180	0.020
34	23	0.024	0.000	0.174	0.020
35	23	0.024	0.000	0.174	0.020
36	24	0.026	0.000	0.181	0.020
37	25	0.028	0.000	0.181	0.020
38	26	0.024	0.000	0.180	0.020
39	27	0.040	0.004	0.200	0.040
40	28	0.040	0.005	0.200	0.040
41	28	0.048	0.011	0.210	0.040
42	29	0.048	0.010	0.210	0.040
43	31	0.050	0.010	0.210	0.040
44	32	0.054	0.010	0.200	0.040
45	32	0.060	0.011	0.210	0.040
46	34	0.064	0.010	0.200	0.040
47	35	0.060	0.010	0.200	0.040
48	37	0.071	0.010	0.210	0.040
49	37	0.078	0.014	0.190	0.040
50	38	0.050	0.100	0.140	0.050
51	39	0.044	0.100	0.140	0.050
52	40	0.020	0.000	0.100	0.020

TIP LINEUP

To handle a wide variety of evaluations with varying types of damage (gloss scratches, scaly scratches, cutting damage, etc.), We offer a variety of tips in addition to the standard ϕ 1 mm tip. We also offer tip customization to meet customer testing requirements.

*Only ϕ 1 mm tips are ASTM- and ISO-compliant.



KK01/02/03 Scratch Tester

Dimensions/Weight (approx.)	KK01 : W965 × D530 × H690 (mm) / 150 kg KK02/03 : W545 × D455 × H680 (mm) / 65 kg
Power source	100 VAC, power consumption: 60W Max.
Measurement environment temperature and humidity	10 to 40°C / 30 to 70% RH (No condensation.) *The instrument should be located to minimize influence from wind or vibrations.
Measurement operation	Measuring method: Increased load type Scratch direction: From left to right
Scratch load detection	Detector: Load cell Vertical load: (KK01) 1 to 200 N (KK02) 1 to 50 N (KK03) 0.1 to 5 N Horizontal load (max.): (KK01) 200 N (KK02) 50 N (KK03) 5 N Accuracy (full scale): ± 0.5 or less

Scratch distance detection	Detector: Linear encode Distance (max.): (KK01) 400mm (KK02/03) 200mm
Scratch rate	(KK01) 1 mm/sec to 400mm/sec (KK02/03) 1 mm/sec to 200mm/sec
Depth detection	Detector: Laser displacement meter
Data communication	Data transfer: USB No. of measurement result points: Approx. 1000
Sample size	(KK01) Dimensions: 200 × 420 mm, Thickness: 5 mm (max.) (KK02/03) Dimensions: 60 × 220 mm, Thickness: 5 mm (max.)

*ASTM: D7027-05 / ISO: 19252
This device is manufactured and sold under license by Kato Tech Co., Ltd., from U.S. Surface Machine Systems, LLC. (Patent No. 7302831).

⚠ Caution For safety use, please read the operation manual / the instruction carefully and thoroughly before using the tester.

Specification details recorded here are subject to change without notice. We appreciate your understanding.