

Dyna-SPA®

Highest Dynamic Speed with Longest Stroke for Simulation of:

- Universal Abrasion
- Universal Scratch
- Universal Punch
- and many more

Basic Function

Damage to a surface due to abrasion, scratch and punch is one of the main reasons for the disturbance of a product's quality. In many real applications, deep scratch or severe abrasion occurs during a fast and high dynamic motion, e.g. a deep long scratch by a key on the exterior paint of a car, and this high dynamic scratch occurs at a high speed up to 100 cm/s.

Dyna -SPA[®], is the only machine which can simulate the fastest and dynamic scratch, punch and abrasion tests within one machine with freely programmable speed (up to 100 cm/s) and stroke (up to 120mm). It complies with over 30 international standards (ASTM/DIN/ISO) for the following applications:

SCRATCH:

- Universal Scratch Test
- Nail Scratch Test
- Pencil Test
- Key Scratch Test
- Cross-cut Test

PUNCH:

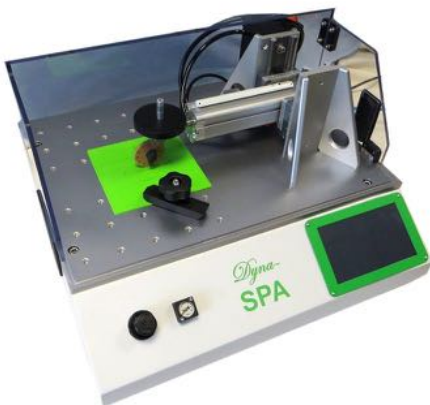
- Universal Punch Test
- Fingertip Punch Test

ABRASION:

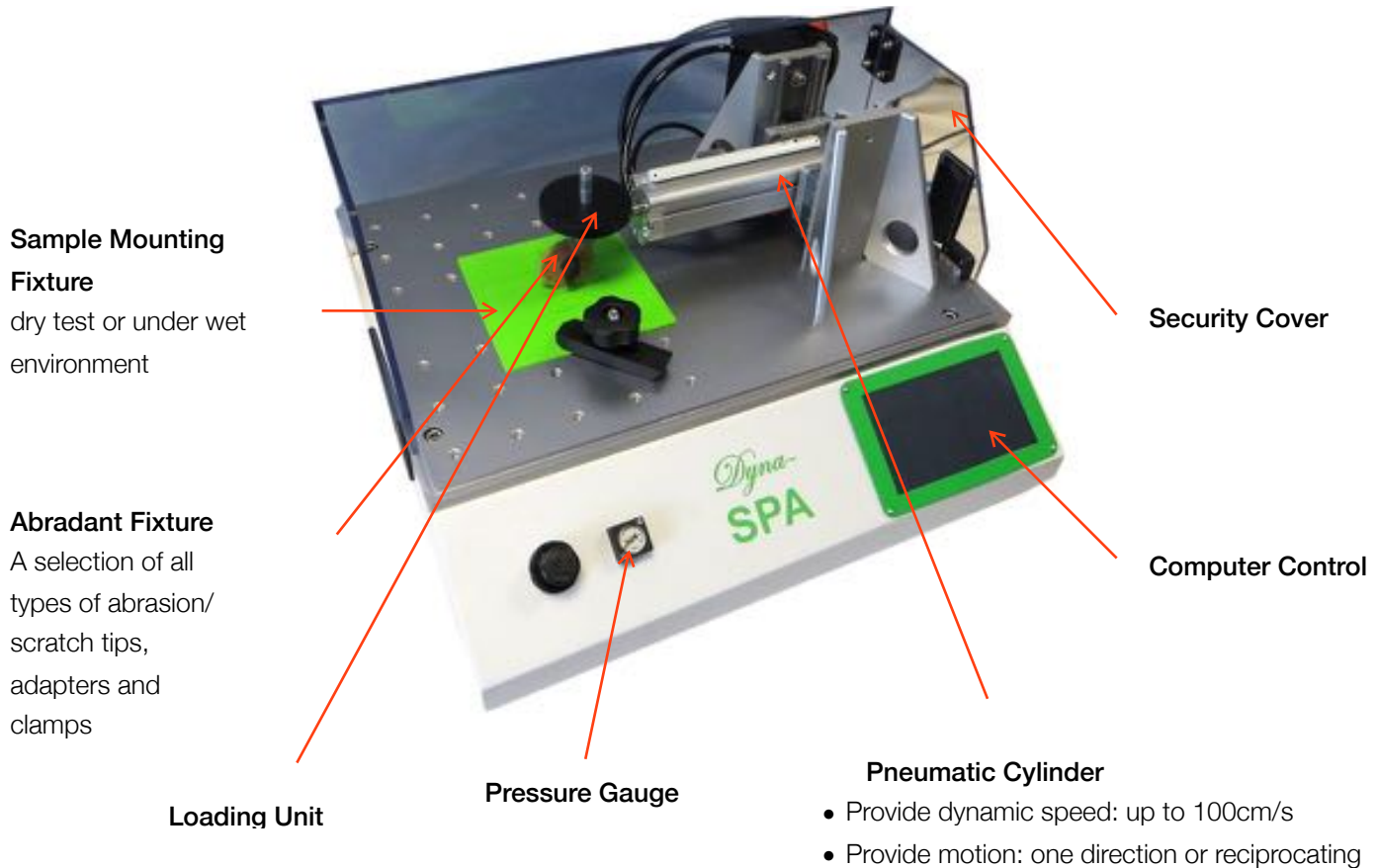
- Universal Abrasion Test
- Shoe Sole Test
- Crockmeter Test
- Wire/Cable Abrasion Test
- Film/Packaging Material Abrasion Test
- Magnetic Stripe Abrasion Test
- Cleaning/Scouring Pad Abrasion Test
- Tooth Abrasion Test
- Scuffing Abrasion Test

Highlights

- Fastest system for performing scratch/abrasion/punch tests
- High dynamic linear motion up to 100 cm/s
- One machine for all tests
- Compliance with over 30 standards:ASTM/ISO/DIN/EN
- Real industrial application simulation of abrasion, punch and scratch
- Universal functionality due to modular design
- Reproducible results due to standardized test standards



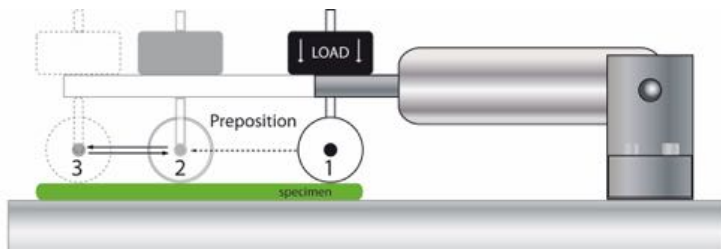
Dyna -SPA® Configuration



Dyna -SPA® tester is used to test the resistance property of material and surface against scratch, abrasion and punch. The samples can be lab samples or finished products either flat or with curvature. *Dyna* -SPA® is widely used as a standard for many industries:

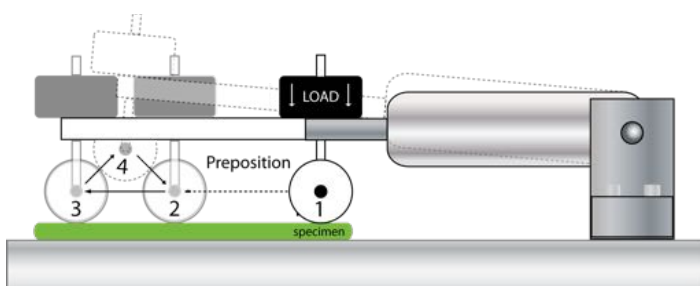
- automotive components
- painted/coated parts
- printed graphics/images
- optical products
- leather
- textile
- medical products
- packaging materials
- flexible films
- wires and cables
- magnetic stripes
- electronics
- rubber
- home appliance
- floor
- ceramics
- furniture
- coating and color

Dyna-SPA® Test Principle



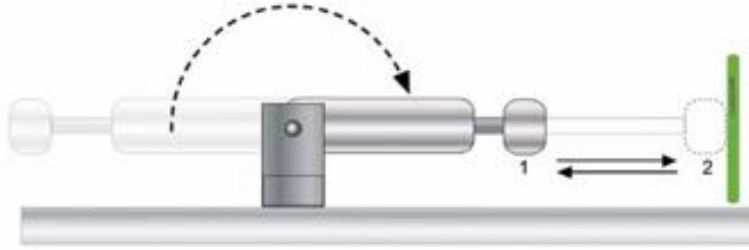
Reciprocating Mode

- Pneumatic system drives the tip wheel to the prepositioning point “2” to ensure the right velocity for the test;
- Then the tip is moving back and forth between point “2” and “3” at pre-defined speed, the inward and outward speeds can be different.



One-Direction Mode

- Pneumatic system drives the tip wheel to the prepositioning point “2” to ensure the right velocity for the test;
- Then the tip is moving from point “2” with a certain stroke to point “3” at pre-defined speed;
- A pushup rod will lift the pneumatic cylinder to position “4” and reside back at the position “2” for the next cyclic linear motion.



Punch Test Mode

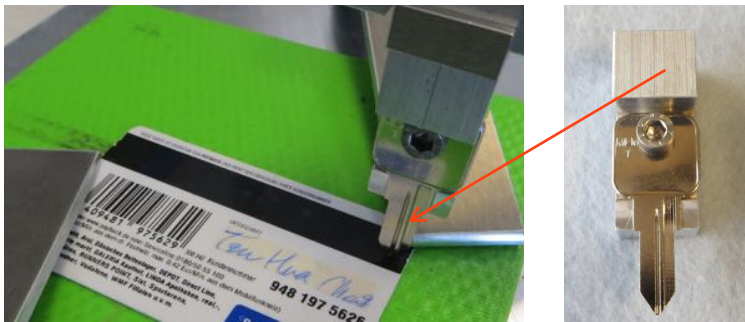
- Pneumatic cylinder is flipped 180°;
- Then the punch tip is hitting the sample back and forth between point “1” and “2” at pre-defined speed.

Technical Specification

Model	<i>Dyna-SPA</i> ®		
Static Load	1-30 N		
Stroke Length	max. 120 mm (programmable)		
Linear speed	up to 100 cm/s (higher speed upon request)		
Cycles	1-10,000,000		
Features	Scratch	Abrasion	Punch
Measurement delay (s)	programmable		
Speed in & out	programmable		
Power supply	230V / 50 Hz ; 110V / 60 Hz		
Compressed air	6 bar, external, oil free, water free		
Accessories included with the base unit	<p>3 different loads; 2 scratch tips; 1 punch tip (metal)</p> <p>1 universal clamp for abrasion test</p> <p>1 set of sample holding plate</p> <p>* All the above accessories will be packed in one box; the base unit will be packed in a wooden box acc. to international shipment.</p>		

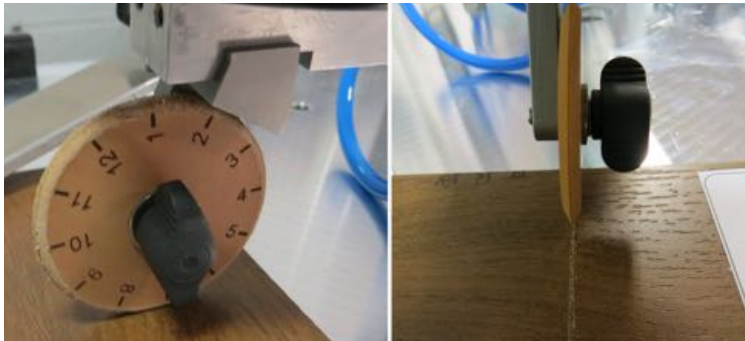
Adapters

There is a variety of adapters within the *Dyna-SPA*[®], for example, key scratch, cross cut scratch, crockmeter abrasion, and so on.



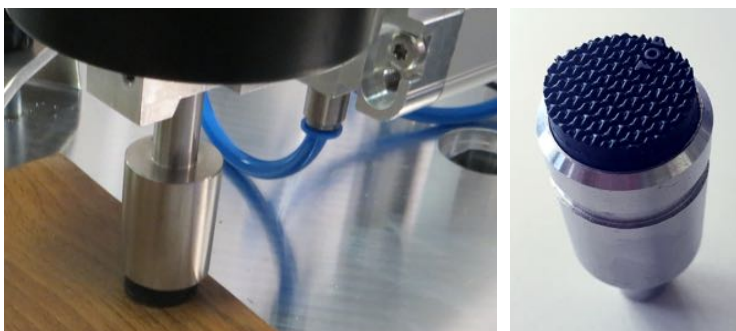
Key Scratch Adapter

- Standardised key scratch tip;
- Can be used for simulation of scratch/abrasion resistance of the magnetic stripe of the credit card.



Shoe Sole Scratch Adapter

- Standardised shoe sole tip;
- Leather or SBR material:
 - Shore-hardness (95 ± 3) Shore A
 - Spec. weight (1.23 ± 0.20) g/cm³
 - Tensile strength ≥ 10 N/mm²
 - Elongation ≥ 250 %
 - Abrasion ≤ 250 mm³ acc. to DIN ISO 4649



Shoe Sole Abrasion Adapter

- Standardised shoe sole tip;
- Specified shore hardness
- 20mm diameter
- for testing the floor abrasion resistance, car interior carpet abrasion resistance and many more

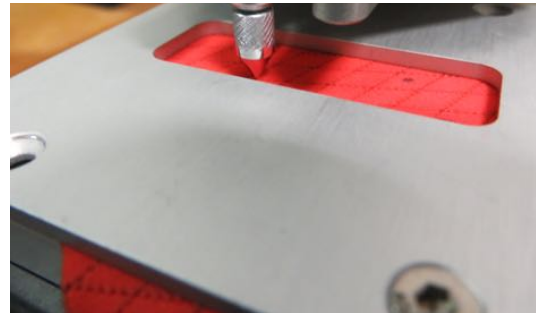
Tip Options

A great choice of tips are available to run various tests within the *Dyna* -SPA®, a detailed tip choice is described in details upon request.

Sample Clamp Options



Universal Sample Clamp for flat and curved samples with various height



Clamp for testing specific area

Other clamp choice is available upon request.

Maintenance and Services

Dyna -SPA® should be inspected, maintained and calibrated minimum once a year. Some of the spare parts such as abrasants are required to be replaced frequently.