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 and stroke. **Any linear Scratch or Abrasion test with a speed up to 100cm/s and a stroke up to 120mm.** It complies with over 30 international standards (ASTM/DIN/ISO) for the following applications:

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

SCRATCH:

- Universal Scratch Test
- Nail Scratch Test
- Pencil Test
- Key Scratch Test

PUNCH:

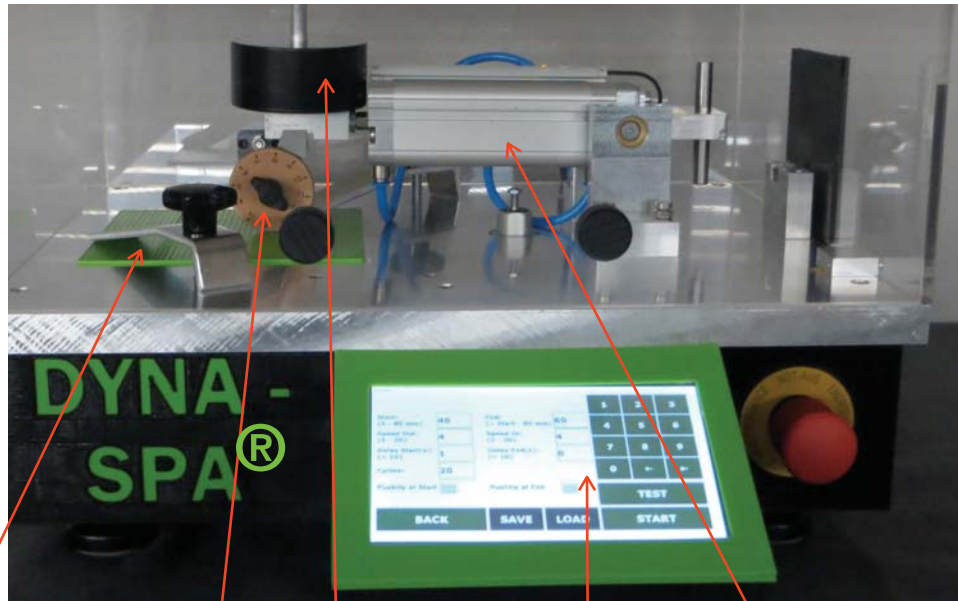- Universal Punch Test
- Fingertip Punch Test

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

Dyna-SPA® Configuration

Sample Mounting Fixture
- dry test or under
  wet environment

Loading System

Computer Control

Abradant Fixture
- A selection of all types
  of abrasion/scratch tips

Pneumatic Cylinder
- Provide dynamic speed: up to 100cm/s
- Provide motion: one direction or recip-
  rocating

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
- telecommunication

- rubber
- white goods
- floor
- ceramics
- furniture
- coating and color

$\mathcal{Dyna}$-SPA® Test Principle
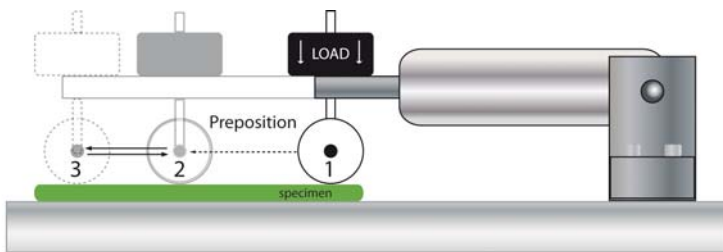
Reciprocating Mode

- 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.
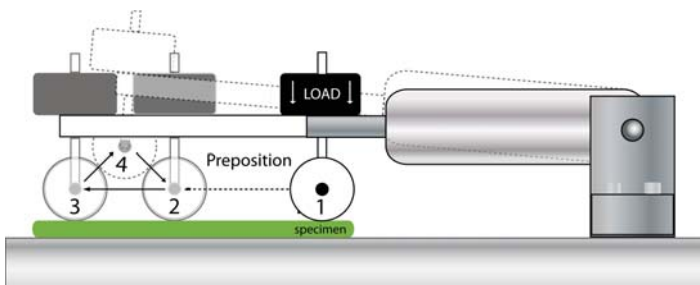
One-Direction Mode

- 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.

Technical Specification

Model	*Dyna*-SPA®		
Static Load	1-30 N		
Stroke Length	max. 120 mm (programmable)		
Linear speed	max. 100 cm/s		
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	3 different loads; 2 scratch tips 1 punch tip (metal) 1 universal clamp for abrasion test 1 set of sample holding plate * All the above accessories will be packed in one box; the base unit will be packed in a wooden box acc. to international shipment.		

Maintenance and Services

Dyna-SPA® should be inspected, maintained and calibrated minimum once a year.

Some of the spareparts such as abradants are required to be replaced frequently.