



STM 603

SLIP RESISTANCE MACHINE

SATRA TEST ENGINEERING

STM 603

SLIP RESISTANCE

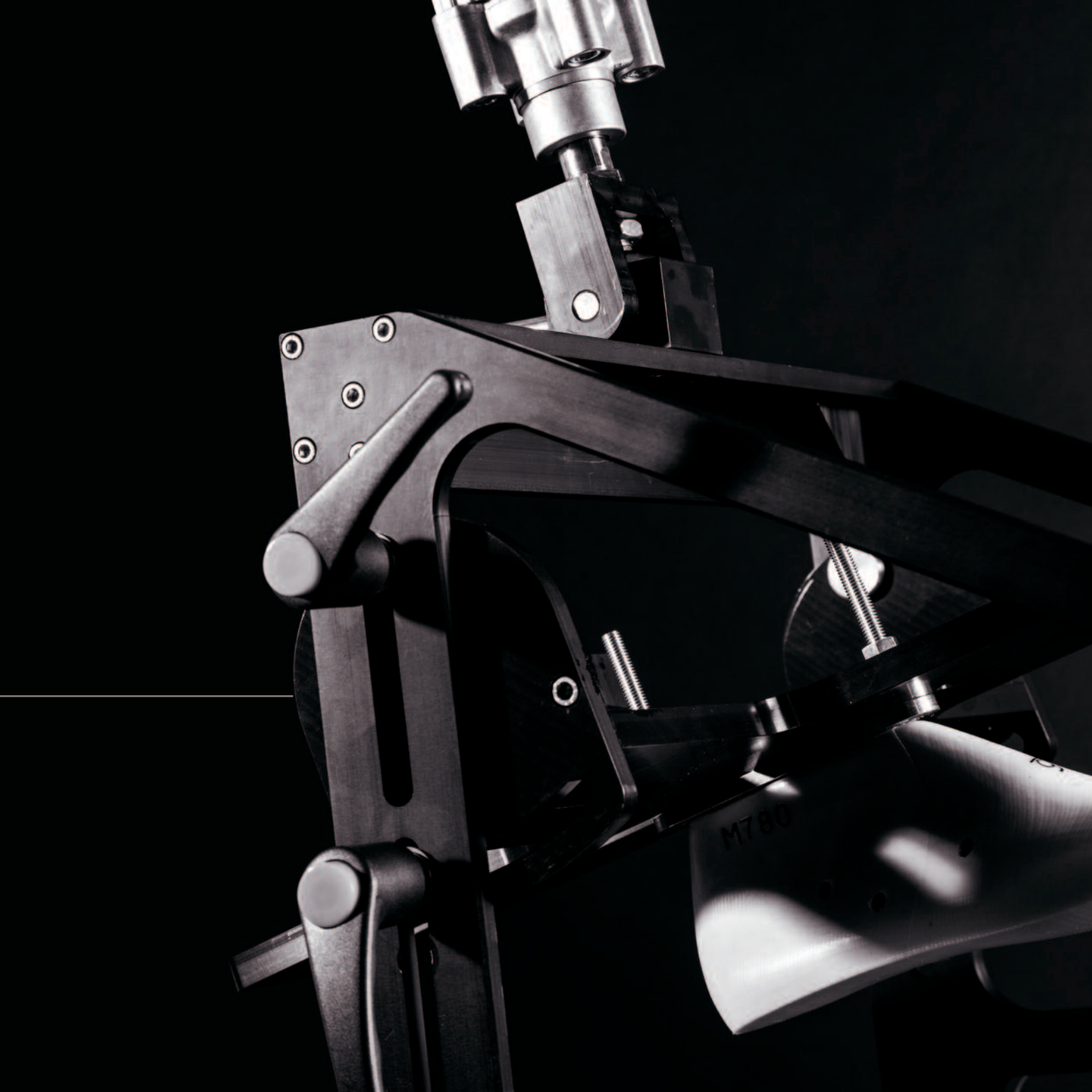
SATRA's initial investigations into slip can be traced back to the first half of the last century when we conducted studies using ramps and other simple test devices. Our biomechanical research on the slip resistance of footwear began in 1974 when we took a fundamental look at the mechanism of slip during walking. At the time, SATRA technicians wearing safety harnesses would walk across a low friction surface and record where slip occurred. A force plate was used to measure the forces between shoe and surface, and slipping was analysed by multiple image photography.

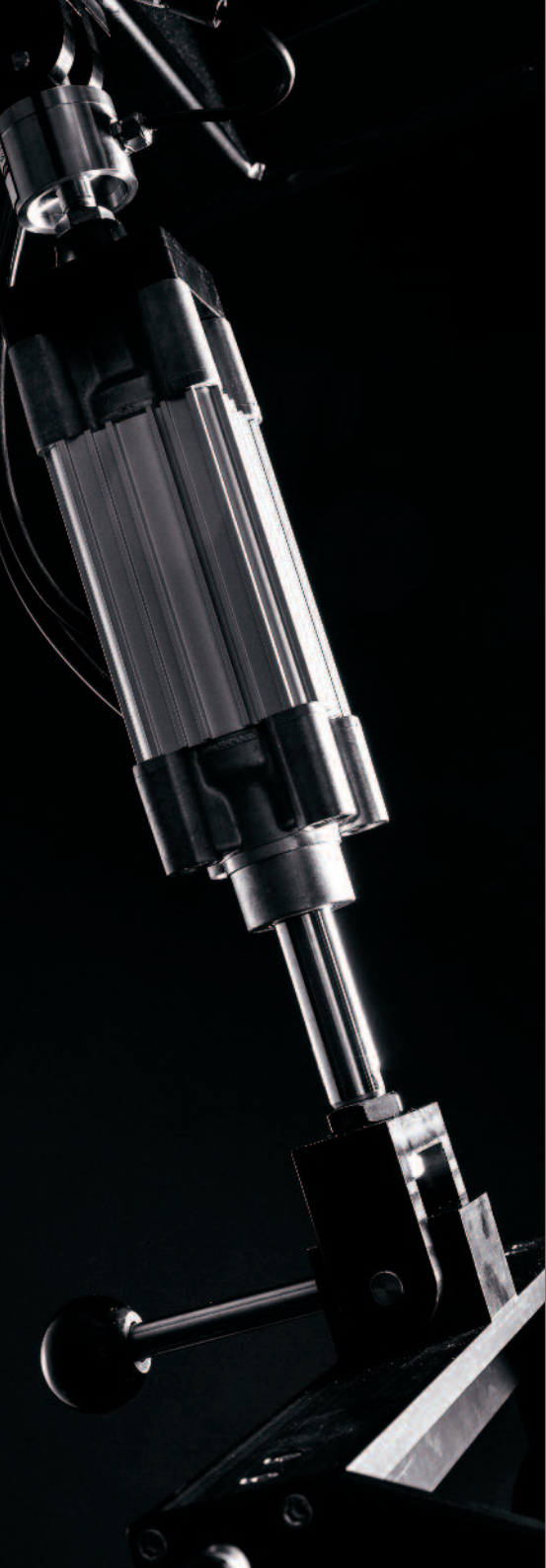
In the 1980s, SATRA started working with the European Committee for Standardisation (CEN), the International Standards Organisation (ISO), and also independently with footwear manufacturers to develop a test standard for routine slip resistance testing. During this period the

forerunner to the modern SATRA STM 603 slip test machine was designed, the first prototype having been built in the 1970s. The SATRA friction test for footwear and floorings, as it is known, produced fast, accurate and consistent results and soon took the place of the slower, less reliable wear tests.

The SATRA TM144 test method was first published in 1992 (most recent update 2011) and established a test protocol for slip testing widely accepted in the footwear industry throughout the world. It formed the basis of EN ISO 13287 and more recently the US standard ASTM F2913-11.

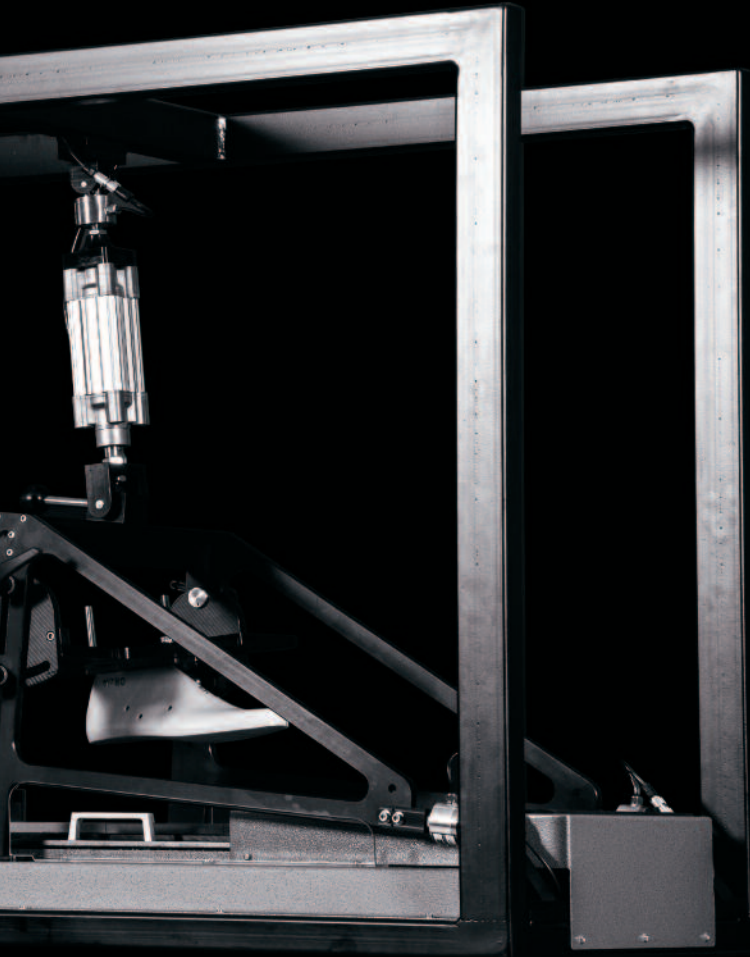
Today, SATRA TM144 and SATRA STM 603 are recognised in global supply chains as the most authoritative method and machine for the slip resistance testing of footwear.





STM 603

SLIP RESISTANCE



Technical Specifications

Dimensions (cm)	102(H) 70(D) 190(L)
Weight (kg)	250
Max Vertical Load (N)	1000
Max Horizontal Load (N)	1000
Max Test Surface Speed (mm/s)	500
Min Test Surface Speed (mm/s)	100
Size of Test Surface (cm)	28(D) 59(L)
Shipping Weight (kg)	362
Shipping Dimensions (cm)	126(H) 87(D) 211(L)

Standards

EN ISO 13287

ASTM F2913-11

CSA Z195-09 – Protective footwear

SATRA TM144

SATRA STM 603 enables the testing of footwear to the main European and international standards. The machine accepts a wide range of ground surfaces against which footwear can be tested. To simulate cold weather conditions, optional SATRA equipment allows a temperature-controlled block of ice to be produced for use with SATRA STM 603.

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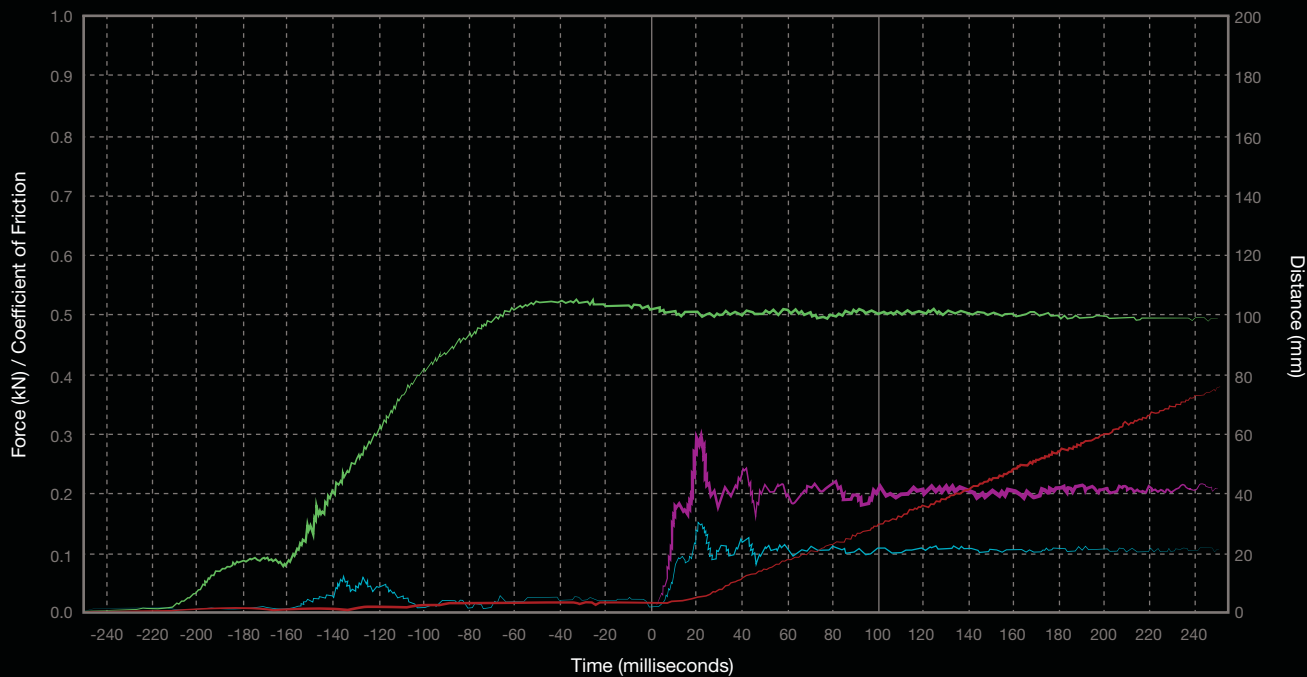
SLIP RESISTANCE

SATRA STM 603 reproduces the underfoot dynamics at the moments during a step when slip is most likely to occur. Dynamic coefficient of friction is measured at a moderate speed, indicating the resistance to slip acceleration which might lead to a fall in real life. Unlike some other methods, it is usual with STM 603 to carry out both dry and wet tests, which enables a more complete evaluation of tread efficiency. Heel and forepart are assessed separately. Samples are mounted on shoemaking lasts or, for material plaques and top-pieces, onto a metal block. Important features of the SATRA STM 603 slip resistance machine include:

- based on the biomechanics of normal walking
- does not require subjects to wear samples, so no variable human element
- the sole is presented to the surface as in normal level gait (angled heel strike and forefoot only)
- short contact time before sliding commences
- realistic loading
- dynamic nature of test does not allow high static friction to falsely hide a low sliding resistance
- flexibility to modify test conditions as required for special purposes (for example load, speed and other parameters)
- the sole can also be tested in flat contact or sideways-on
- suitable for finished shoes of any size and gender, whole or half pairs, sole units and top-pieces as components, materials as test plaques
- load adjustment for small and large sizes
- range of floor coverings and surface conditions available for use.

SATRA STM 603 test results are managed by SATRA's slipMASTER software, which represents a new dimension in slip testing control. It is easy to set up and use producing an on-screen graph with a zoom capability to allow for closer interrogation of results. Every single test can be stored for recall, each with its own trace and automatic encryption to prevent unauthorised changes. Individual users can be identified to further distinguish all stored test results. Test standard parameters can be built in where appropriate.

slipMASTER



— Vertical Force (kN) — Horizontal Force (kN) — Coefficient of Friction — Distance (mm)

The SATRA STM 603 machine can be purchased separately or as part of a **SATRA LabPlus** package.
For further information or to arrange a demonstration, please contact:

test.equipment@satra.com

All SATRA test machines benefit from world-renowned
technical expertise from start to finish.



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