

100 Series

Rotational Penetrometer

measure firmness and stability...anywhere



Rotational Penetrometer

The Rotational Penetrometer (RP) is a portable instrumented surface indenter designed for measuring the firmness and stability of ground and floor surfaces.

The new and improved 100 Series Rotational Penetrometer by Beneficial Designs has increased in resolution and accuracy by an order of magnitude beyond the original Rotational Penetrometer.



firmness and stability

The Americans with Disabilities Act Accessibility Guidelines (ADAAG) specify that **accessible routes as well as playground surfaces must have firm and stable ground and floor surfaces**. Surfaces that are not firm and stable limit accessibility for wheelchair, cane, crutch, and walker users, parents with strollers, and other individuals with mobility limitations.

objectivity

Objective surface measurements provide builders, architects, and site planners the specifications necessary to design and verify accessible indoor and outdoor surfaces. For trails, these measurements disclose the firmness and stability values of trail surfacing necessary in order to create Trail Access Information (TAI), which is required for trail signage.

how it works

Operation of the RP is quite simple. **Firmness** is measured by a precision spring which applies force to the penetrator while a caliper measures the amount of vertical displacement of the penetrator into the surface with a resolution of 0.001 inch ± 0.0005 . The penetrator is then rotated and the total displacement into the surface is measured, indicating **stability**.

multiple uses

The National Center on Accessibility, playground inspectors, and state and local agencies are all using the RP extensively to perform objective firmness and stability measurements. The RP can also be used alongside Beneficial Designs trail assessments, using the Universal Trail Assessment Process (UTAP) or the High Efficiency Trail Assessment Process (HETAP).

accuracy and reliability

The Rotational Penetrometer's effectiveness has been proven through research. An inter-laboratory study conducted according to ASTM E691 revealed that the RP produced repeatable and reproducible measurements correlating with the amount of work required to propel a wheelchair (as measured by ASTM F1951) and the amount of physiological energy required by persons—with or without disabilities—attempting to negotiate a surface.

A technical report (*Accessible Exterior Surfaces*, 1999) is available online from the US Access Board website at **www.access-board.gov**. For copies of the background research, please contact Beneficial Designs.

durability

Designed and intended for long-term outdoor use, the RP is constructed of stainless steel and aluminum along with surface reference plates made of finished ApplePly plywood.

flexibility

Capable of measuring all types of indoor and outdoor surfaces, from carpet to wood chips to sand, the Rotational Penetrometer is the perfect tool for measuring firmness and stability on trails, playgrounds, and other many other public surfaces.

assembly

A collapsible unit, the Rotational Penetrometer is easily folded down for storage and travel. The entire assembled unit consists of the frame, spring housing, and caster wheel assembly—which can be separated from the spring housing by a quick-release pin. Full assembly, tire warm-up, and calibration check should take **no more than 15 minutes**.

warranty

The 100 Series RP is a precision measurement instrument which comes with a 90-day parts and labor warranty and is delivered in a calibrated state, ready for immediate use. The RP calibration and pump gauge calibration are valid for one year. Cleaning and recalibration of the RP and pump gauge is a service available at our testing laboratory.

accredited

Beneficial Designs holds ISO/IEC 17025:2017 accreditation to calibrate Rotational Penetrometers.

product specs

fully assembled product:

weight	18 lb
base width	24 in
base depth	24 in
height	28¾ in

RP kit

Full kit includes:

- Rotational Penetrometer
- User manual
- Instructional video
- Data recording forms
- Clipboard
- Air pump with calibrated air gauge
- Temperature/humidity sensor
- Spare caliper battery
- Specialized carrying case
- Checklist

requirements

Operators must weigh at least 75 pounds and be able to stand over the 28¾ inch tall device, bend at the waist, and have strength to lift and release a 50 pound spring.

cost

The complete RP kit costs \$5,140.00 plus shipping and insurance.

purchase

To order today or learn more, visit us at www.beneficialdesigns.com
Or reach us at: 775 783 8822




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