

# Dynamic Cone Penetrometer Field Kit

## Operating Manual

Civil Engineering Test Equipment

### Intended use

Field instrument for in-place assessment of soil and pavement layer strength by recording the penetration of a cone driven by a dropped hammer.

### Intended users

Trained geotechnical, pavement and construction quality control personnel; students under supervision.

Read this manual completely before first use and keep it with the product. This document provides general operating, care and safety guidance. Where the product is supplied with manufacturer labeling or instructions, those take precedence. For questions, a replacement copy, or a digital copy of this manual, email [sales@scimedstore.com](mailto:sales@scimedstore.com).

## 1. Safety

### Safety warnings and cautions

- Wear safety boots, gloves, eye protection and hearing protection during testing.
- Keep hands and fingers away from the space between the hammer and the anvil.
- Lift the hammer only to the top stop; do not let it strike the upper handle hard.
- Check for buried services (cables, pipes) before testing and follow site permit procedures.
- Use correct lifting technique; the kit and hammer are heavy.
- Work in a safe area protected from traffic, with suitable site barriers and high-visibility clothing.
- Inspect all threaded joints before each test; loose joints can cause sudden movement or damage.

## 2. Package contents

- Drop hammer
- Anvil
- Drive rod (1 m)
- Cone tip
- Base plate
- Wooden carrying box
- Instruction manual

Check contents on receipt. Report missing or damaged items to [sales@scimedstore.com](mailto:sales@scimedstore.com) within 48 hours of delivery.

## 3. Specifications

|                            |                                                                 |
|----------------------------|-----------------------------------------------------------------|
| Drop hammer mass           | 8 kg                                                            |
| Drop height                | 575 mm                                                          |
| Cone tip                   | 60-degree apex, 20 mm base diameter, replaceable hardened steel |
| Drive rod                  | 1 m, graduated in mm and inches                                 |
| Depth range                | 0-1 m standard; up to 2 m with optional extension rod           |
| Data                       | Manual blow count and penetration depth (mm per blow)           |
| Kit weight                 | Approx. 15-20 kg in wooden box                                  |
| Test methods (per listing) | ASTM D6951, ASTM D7380                                          |

## 4. Unpacking and setup

- 1 Remove the components from the box and inspect the cone tip, rods and hammer for damage.
- 2 Screw the cone tip firmly onto the drive rod.
- 3 Assemble the anvil, upper rod and hammer according to the instructions and tighten all threaded joints.
- 4 Select a level test point and clear loose material from the surface.
- 5 Place the base plate if needed and stand the instrument vertically on the test point.

- 6 Record the starting reading on the graduated rod.

## 5. Operation

### Running a test

- 1 One operator holds the instrument vertical by the handle; a second operator records readings.
- 2 Seat the cone with light blows until the widest part of the cone is just below the surface, as required by your test method. Record the seating reading.
- 3 Lift the hammer to the top stop and release it to fall freely onto the anvil.
- 4 Record the depth reading after each blow, or after a set number of blows in soft material, as your test method requires.
- 5 Continue until the target depth is reached or penetration stops according to your test method.
- 6 Keep the instrument vertical throughout; stop and restart at a new point if it tilts significantly.
- 7 Calculate penetration per blow for each layer and interpret the results using the correlations in your test standard.

### Extracting the instrument

- 1 Remove the instrument by pulling it straight up, or by using an extraction method approved by your organization.
- 2 Do not lever the rod sideways, as this can bend it.
- 3 Check the cone tip for wear after each test.

## 6. Cleaning and disinfection

- Wipe soil and moisture off all parts after use.
- Clean threads with a brush to remove grit.
- Dry all parts and apply a light film of oil to steel parts and threads before packing.

## 7. Maintenance and storage

- Store disassembled in the wooden box in a dry place.
- Check the drive rod for straightness and the graduations for legibility.
- Replace the cone tip when worn below the dimensions required by your test standard.
- Check the hammer mass and drop height periodically against your test standard.

## 8. Troubleshooting

| Problem                         | Likely cause                                      | What to do                                                     |
|---------------------------------|---------------------------------------------------|----------------------------------------------------------------|
| Instrument tilts during driving | Obstruction such as a stone, or not held vertical | Stop, move to a new test point and keep the rod vertical.      |
| No penetration after many blows | Very dense layer or rock reached                  | End the test according to your test method and record refusal. |
| Joints loosen during test       | Threads not tightened                             | Retighten all joints before continuing.                        |
| Rod is bent                     | Side loading during extraction or driving         | Replace the rod; extract the instrument straight up.           |
| Readings inconsistent           | Hammer not released from full drop height         | Lift to the top stop every blow and release freely.            |

## 9. Disposal

- Dispose of worn cone tips and metal parts as scrap metal in accordance with local regulations.

## 10. Warranty and support

Products are covered by SciMed's standard warranty (12 months from purchase unless a different period is stated on your invoice). Warranty terms: [scimedstore.com/pages/warranty](https://scimedstore.com/pages/warranty).

Support, spare parts and additional copies of this manual: [sales@scimedstore.com](mailto:sales@scimedstore.com). Please include your order number and a photo of the product or issue.

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