



Digital Soil Compaction Tester / Digital Dial Penetrometer - PN-COMP-DIG-S

Instructions



The NEW Digital Soil Compaction Tester is a digital version of the Dial Penetrometer for testing hard pans in the soil. It uses an electronic force sensor that eliminates changing tip size for different soil types. The LCD display reads in PSI or kPa shows compaction severity with green/yellow/red color code. It is rugged and meets [ASABE S313.3](#) Soil Compaction Standard.

By pushing the Digital Soil Compaction Tester into the soil with steady downward pressure and watching the digital read out, you can visually see any hard pans in the soil profile up to 24 inches deep (60 cm). It also reads the maximum or "Peak" PSI reading after each reading.

Soil compaction can occur in any type of soil. Years of traffic, tillage, Aerification and settling can cause soil particles to group together and fill in air spaces in the soil creating a "plow pan" or "hard pan" below the root zone. When this happens, a hard layer is formed making it difficult for moisture and roots to penetrate the soil. Some soil types are more susceptible to compaction than others; but once a compaction layer is formed, and moisture and traffic continues, the compaction layer will continue to get denser and thicker.

Digital Soil Compaction Tester / Digital Dial Penetrometer is a simple tool that uses downward pressure to determine soil compaction at different depths in the soil profile. With this easy to use tool you can test down to 24 inches deep (60 cm).



Why Test Soil Compaction?

Turfgrass Areas

- Increase the effectiveness of your irrigation system
- Applications of fertilizers, pesticides and herbicides will penetrate the soil better
- Increase soil water retention and infiltration
- Insure Aerification techniques are reaching desired depths
- Maintain consistency from one green, fairway, tee to another for firmness and playability
- Maintain firmness and playability from one athletic field to another.

Farming

- Increase yield by increasing root and plant development
- Reduce time and fuel cost by reducing power needed to till a field
- Increase the effectiveness of fertilizers, pesticides and herbicides
- Increase soil water retention and infiltration

To read the Digital Soil Compaction Tester / Digital Dial Penetrometer simply look at progress bar on digital read out for color comparison and digital display for PSI or kPa numeric value

Green (0 - 200 psi)

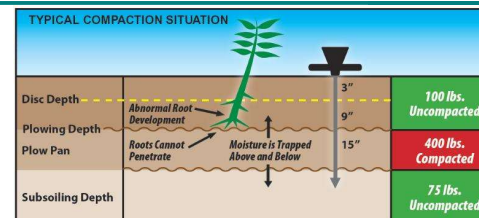
Good Growing Conditions

Yellow (200 - 300 psi)

Fair Growing Conditions

Red (300 psi and above)

Poor Growing Conditions



1.0 Safety Info



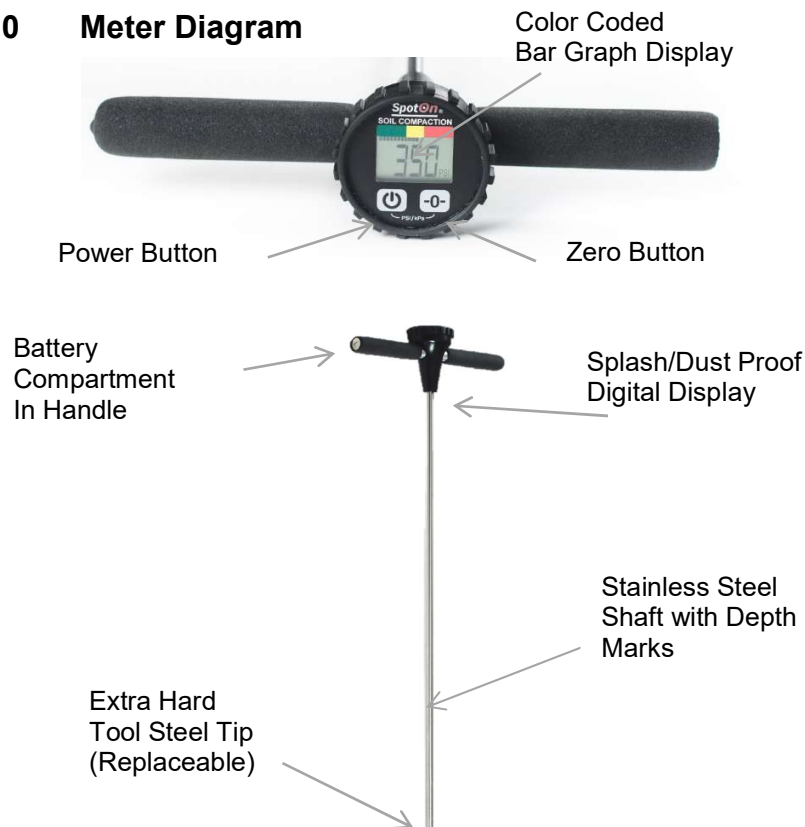
Use caution when probing into soil to avoid hitting buried electrical wires or other utilities.



Use caution when handling and transporting this meter since its sharp metal tip could cause damage to packaging, containers, or personal.

Always use the included tip cover when transporting the meter. (See section 5.5 for more info)

2.0 Meter Diagram



3.0 Features

- Meets ASABE S313.3 Soil Compaction Standard
- Automatically displays maximum compaction value when probe is extracted from the soil.
- Color coded display for easy compaction reference
Green 0-200 PSI (0-1400 kPa)
Yellow 200-300 PSI (1400-2070 kPa)
Red 300+ PSI (2070+ kPa)
- The high resolution of the electronic force sensor assures accurate compaction values in soft soils with 1/2in.(12mm) cone Measurements can be displayed in PSI or kPa
- Rugged design & rubber protector for repeated field use
- Stainless steel shaft with depth marking every 4in.(10cm)
- Ultra-hard tool steel cone for years of service
- Made in USA

Color Coded
Bar Graph Display

4.0 Specifications

Usable Probe length: 30in. (76cm)

Range: 0 to 825 PSI (0 to 5690 kPa)

Resolution: 1 PSI (7 kPa)

Accuracy: +/- 15 PSI (100 kPa)

Waterproof: IP64 rating (Dust Tight/Splash Resistant)

Meter Size: 35in.(89cm) x 11in.(28cm) x 3in.(7.6cm)

Shipping Box Size: 37in.(94cm) x 13in.(33cm) x 5in.(13cm)

Battery: Two (2) AA (LR6) Size Alkaline Batteries (1 year battery life)

Weight: 1.9 lbs. (.6 kg) weight

Environmental: Use: 32-120°F (0-49°C) / 0-100% RH
Storage: 0-130°F (-18-55°C) / 5-90% RH

Construction: Solid Machined Plastic Body, Aluminum Handle, Stainless Steel Shaft, Hardened Tool Steel Tip

Cone Size: 0.505in.(12.8mm) Diameter / 30° Included Angle

Country of Origin: USA

Stainless Steel
Shaft with Depth
Marks

5.0 General Operation

5.1 Installing the Batteries



Remove the metal end cap on the meter's handle with a straight screw driver. Install two (2) new alkaline AA or LR6 size batteries with the plus (+) side of both batteries facing into the tube. Replace the metal end cap with the spring contacting the negative (-) of the last battery. When it is **time** to replace the batteries a low battery symbol will show on the unit's display.

5.2 Zero Calibration



With the meter powered on, hold the meter above the ground with the shaft facing down. Press the **ZERO** button and continue holding the meter steady and above the ground until the zero function completes and the LCD displays a "0" value.

The compaction meter should show a zero value when suspended in air prior to taking a probing with the meter. Temperature changes, battery voltage changes, and rough handling can cause shifts in the meter's zero point. All the above variations are easily and quickly accounted for when the zero function is complete.

Note: When the meter tip is placed on the ground the display may show a value of 5-8 PSI (34 kPa) but will show 0 PSI/kPa when suspended about the ground. This is correct and due to the weight of the meter's head applying force to the shaft.

5.3 Changing Display Units

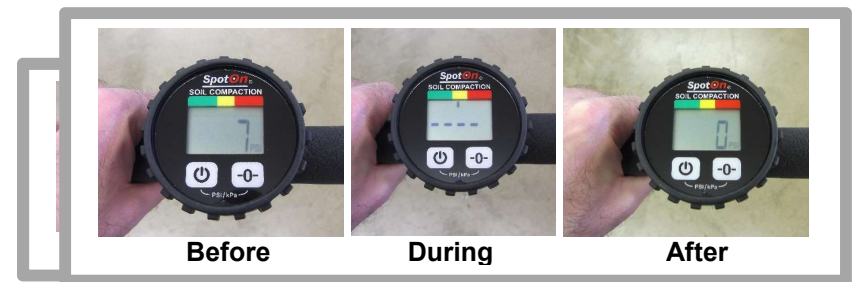
Pressing both buttons (**POWER & ZERO**) at the same time while the meter is on will change the displayed units. This change will be saved when the meter is turned off.

5.4 Taking a Reading

Power on the meter by pressing the **POWER** button. Zero the meter if necessary with the **ZERO** button. Slowly press the meter into the soil with a firm and steady pressure. Do not stop or reverse force on the meter until the desired depth has been reached. Keeping the meter vertical during the entire penetration sequence assures readings are true cone pressures and not a result of side loading on the shaft.

Penetration Rate: ASABE Engineering Practice EP542 recommends a Penetration Rate of **1.2 in./second (30mm/sec)** for best accuracy.

Maximum Reading Display: The maximum compaction reading attained during the penetration will automatically display as the probe is withdrawn from the soil. The display will show "-HI-" followed by the maximum compaction reading. This reading will show for a few seconds before the meter reverts back to its normal operation mode.

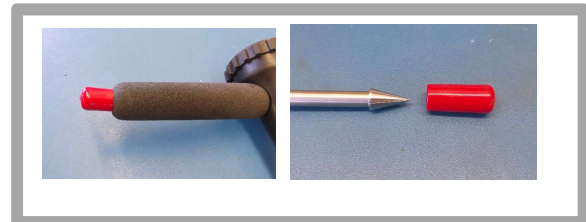


Over Force: If excessive force is applied to the meter the display will flash "9999" until the force is reduced below the meter's upper limit.

Note: Meter will automatically shut off after 15 minutes of non-use if not turned off by the user to conserve battery power.

5.5 Probe Tip Cover

The meter ships with a re-usable probe tip cap. This cap can be stored in the meter's handle while the meter is in use. The use of this probe tip cap is recommended for protecting the probe tip, personal, and vehicles during transport.



5.6 Probe Tip Replacement

The probe tip is replaceable. It can be unscrewed from the shaft by using pliers to grip the shaft and cone respectively. The cone is attached with removable type thread locker, so some force may be required to loosen it. The probe tip should be replaced when the diameter of the cone's base measures less than 0.490in.(12.45mm) diameter.



6.0 Troubleshooting & Maintenance

Errors: If an error message (**Err2** or **Err3**) is displayed during the zero process, then retry the zero button and assure the meter's shaft and tip are hanging vertically below the meter and not touching anything. If the error message continues to show after repeated zeroing attempts, then the meter must be serviced.

Cleaning: Clean meter head and probe shaft with a damp cloth when required. Store unit clean.

7.0 Warranty

One Year Warranty

Turf-Tec warrants this product to be free from defects in materials and workmanship under normal use and service for a period of one (1) year from date of purchase. This warranty extends only to the original purchaser and shall not apply to any product which, in Turf-Tec sole opinion, has been subject to misuse, alteration, abuse, or abnormal conditions of operation or handling. Turf-Tec obligation under this warranty is limited to repair or replacement of the product which is returned to Turf-Tec. Turf-Tec accepts no liability for whatever damages may be caused by a malfunctioning product.

