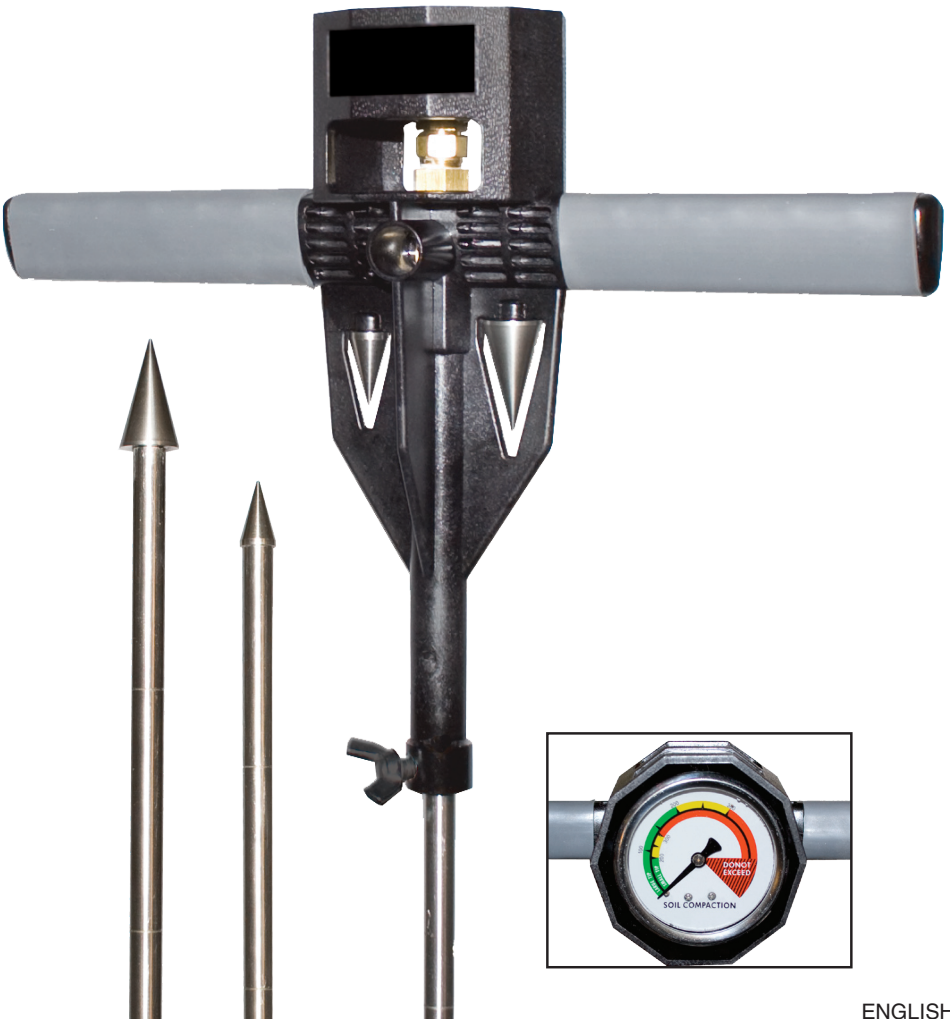


# Soil Compaction Tester

## PRODUCT MANUAL

Item # 6120



# Introduction

THANK YOU for purchasing the Soil Compaction Tester.

READ THIS MANUAL carefully to learn how to operate and service your Soil Compaction Tester correctly. Failure to do so could result in personal injury or equipment damage.

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your Soil Compaction Tester and remain with the Soil Compaction Tester when you sell it.

## WARRANTY

This product is warranted to be free from defects in material or workmanship for one year from the date of purchase. During the warranty period Spectrum will, at its option, either repair or replace products that prove to be defective. This warranty does not cover damage due to improper installation or use, lightning, negligence, accident, or unauthorized modifications, or to incidental or consequential damages beyond the Spectrum product. Before returning a failed unit, you must obtain a Returned Materials Authorization (RMA) from Spectrum. Spectrum is not responsible for any package that is returned without a valid RMA number or for the loss of the package by any shipping company.

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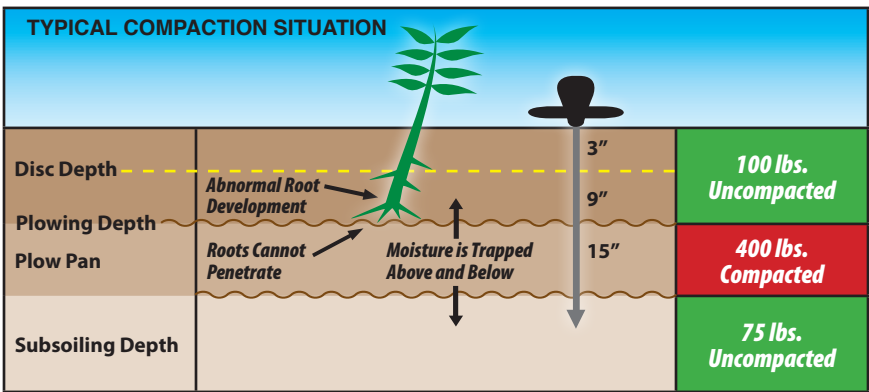
***CAUTION: The Soil Compaction Tester may cause harm if used improperly. Please use the pointed tips with care.***

# Operation

## WHAT IS SOIL COMPACTION?

Soil compaction can occur in any type of soil. Years of traffic and tillage can cause soil particles to group together and fill in air spaces in the soil creating a “plow pan” below the tillage area. 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.



## WHAT ARE THE IMPACTS OF A SOIL COMPACTION PROBLEM?

1. Compacted soil is much harder to work. This will cause you to use more power and take longer to till, wasting fuel, time and money.
2. You may already be aware of soil compaction but not have the tools to determine if it is a problem. For example, unnecessarily trying to correct soil compaction by tilling to a deeper depth can be a waste of time and money.
3. Your crop yield can be reduced by as much as 50% because of poor root and plant development.

# Operation

4. Compacted soil can prevent water from penetrating deeper into the soil. This can reduce plant development and yield especially during dry periods with no rain. Compaction can also lead to surface water retention making the field more difficult to work in the spring and fall seasons.
5. In compacted soil, fertilizers, pesticides and herbicides can more easily be washed away and not absorbed or even become more concentrated causing plant damage. This can result in reduced crop yield.

## WHAT TO DO ABOUT A SOIL COMPACTION PROBLEM?

If you have determined that you have a soil compaction problem and at what depth the compaction exists, your solution could be as easy as one of the following:

- Reducing traffic in the affected areas of the field.
- Seeding cover crops that will improve water management.
- Choosing a tillage tool that will penetrate the compacted area of the field.

Your local agricultural extension office is a good source of information to help you determine what can be done to help correct and prevent soil compaction problems.

## WHAT IS A SOIL COMPACTION TESTER?

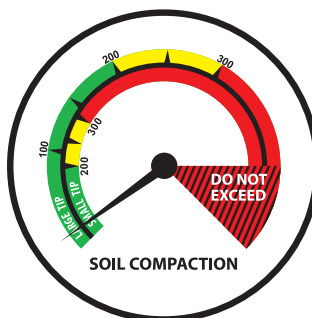
Your Soil Compaction Tester is a penetrometer which measures the compaction of soil and is based on the ASAE S313.3 standard. The Tester is supplied with two tips: a small tip (1/2" diameter) for use in firm soil and a large tip (3/4" diameter) for use in soft soil. The dial has two scales (one for each tip) that are calibrated in pounds per square inch of the base area of the cone shaped tip.

## THE DIAL IS COLOR-CODED FOR REFERENCE:

Green (0 - 200 psi)  
Good Growing Conditions

Yellow (200 - 300 psi)  
Fair Growing Conditions

Red (300 psi and above)  
Poor Growing Conditions



**NOTE:** The gauge is engineered to have a positive load, thus the needle does not always contact the pin on the low end of the green scale. This will not affect the readings for either index scale.

# Operation

## **BEST TIME TO USE THE SOIL COMPACTION TESTER**

The best time to use the Tester is in early spring before you till the soil. The soil should have a good moisture content because the moisture content and soil texture will affect the readings of the Soil Compaction Tester.

It is best to compare the readings of the same soil type and moisture content. Check a fence row and then check the field area for comparison. Several tests should be made in an area to get a more accurate reading.

The Soil Compaction Tester will help you determine if you have a compaction layer and, if so, the depth of the layer. After tilling, the Tester will determine how deep you actually worked the soil and if your tillage operation solved the problem.

## **UNPACKING THE SOIL COMPACTION TESTER**

Remove the Soil Compaction Tester from the box. An adjustable shock collar is installed on the shaft of the Soil Compaction Tester next to the plastic housing. This collar is used during shipping and storage to protect the dial from damage should an impact on the shaft occur.

Loosen the wing nut on the shock collar and slide it down at least an inch away from the plastic housing. Visually inspect the Tester for damage and check that the gauge indicator is pointing to "0". If it is not, pull on the shaft or gently tap the glass on the gauge. If it does not return to "0" contact the Spectrum customer service department.

The gauge is filled with nontoxic, non-flammable silicone oil. You may notice a small air bubble in the dial face which is perfectly normal. The silicone oil is used to dampen the shock to the gauge in case the Tester is dropped. If the silicone oil is leaking from the dial contact the Spectrum customer service department.

Your Soil Compaction Tester has a built in hanger hole in the back. Using the supplied nail, the Tester can be conveniently hung and stored on a wooden beam, wall or even above a work bench.

Storage of the Tester by hanging prevents damage during times when it is not in use.

# Operation

## USING THE SOIL COMPACTION TESTER

1. Loosen the wing nut on the shock collar and slide the collar down the shaft at least 1" away from the plastic housing.
2. Your Tester includes 2 tips (large and a small) that are stored in the Tester housing. The tips can be removed by simply unthreading them from the housing. (***The tips are threaded on to the housing not snapped on.***)

Choose the tip that best suites the type of soil you have. The small tip is used for firm soil and the larger tip is used for loose soil.

*\*It is recommended that you start with the small tip and obtain some readings. If you feel the readings are very low or the soil is very loose then change to the larger tip.*

Once you have chosen a tip, thread the tip on to the end of the Soil Compaction Tester's shaft.

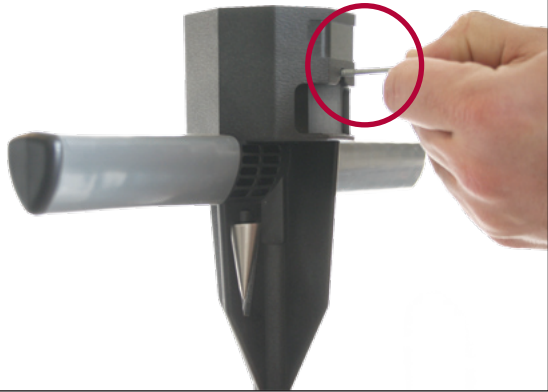
Note: No valid readings can be obtained from the Tester if a tip is not attached to the end of the shaft.

3. Position the tip of the Tester on the ground in the area you wish to test. Apply even downward pressure on both handles of the Tester to keep the shaft and tip penetrating the soil at a slow even pace.
4. The Tester shaft is marked at three inch intervals for easy depth measurement. As the Tester's shaft penetrates the soil, the gauge readings at the 3", 6", 9" 12", 15" and 18" depths should be recorded. (Be sure to use the correct scale for the size tip that you are using on the shaft as indicated on the dial face)
5. A compacted layer can be determined by the gauge indicator increasing upward into the red range and then moving back down into the yellow or green after passing through the compacted layer. The depth of the beginning of the compacted layer and depth of leaving the compacted layer should be noted.

Note: multiple readings must be taken from each area of the field. To get an accurate determination of whether or not you have a soil compaction problem and at what depth the problem exists. The same procedure should be repeated in other areas of the field as well. One area may not represent the condition of the whole field.

6. When the Tester is not in use, loosen the shock collar's wing nut and slide the shock collar up the shaft until it comes in contact with the plastic housing and tighten the wing nut. This will help prevent damage to your Soil Compaction Tester.

## HANGER HOLE NAIL



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