

**DURHAM GEO-ENTERPRISES INC.**

S –575 Pneumatic Tamper

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Version 1.0

# Operator's Manual

DURHAM GEO-ENTERPRISES INC.

# Operating Instructions

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## INTRODUCTION

*Thank you for purchasing a Durham Geo-Enterprises, Inc. S-575 Pneumatic Tamper. By following the setup, operating and maintenance procedures, you can enjoy a lifetime of use.*

It is designed to prepare remolded samples for triaxial and permeability testing. Numerous studies have shown that the physical properties of remolded clays are influenced by the compaction method. For example, lower permeabilities are usually achieved with kneaded, compacted clay rather than by using static or dynamic compaction methods.

The S-575 performs a kneading type compaction, much like a Harvard Miniature Compactor. Air pressure is used with the S-575 instead of springs (Harvard Miniature Compactor) to vary the compaction effort. The advantage of the S-575 is that the amount of compaction can easily be adjusted with the air pressure. Once the pressure is set, the force applied to the sample remains constant, even with different operators.

## UNPACKING

Upon receipt, please inspect the equipment for damage. If you note any problems, please notify the freight company that delivered the frame and call Durham Geo-Enterprises at 1-800-837-0864. ☎

The following items should be included in the box.

1. 1 Pneumatic Tamper assembly with nylon hose attached
2. 1 large round Teflon tamping foot #600060
3. 1 small round Teflon tamping foot #600060
4. 1 short extension #600050A
5. 1 long extension #600050B
6. 1 air tank with regulator

## SET UP

Setting up the S-575 Pneumatic Tamper is very simple.

1. Fill the supplied air tank with compressed air to a minimum of 60 psi (4.14 bar)
2. Set the regulator to the desired pressure by turning the knob on top. Turn clockwise for more pressure, and counterclockwise for less pressure. A more accurate reading will be obtained if the regulator pressure is always increased to the desired pressure, that is, always start below the desired pressure, and increase until the desired pressure is obtained.

**WARNING!! NEVER EXCEED THE MAXIMUM READING ON THE SUPPLIED REGULATOR PRESSURE GAUGE (60 PSI). DOING SO WILL DAMAGE THE GAUGE, AND POSSIBLY THE PNEUMATIC DIAPHRAGM IN THE TAMPER.**

3. Select the desired length extension shaft and thread on to the rod end of the tamper.
4. Select the desired foot size and thread onto the selected extension.
5. Connect the air hose to the fitting and the regulator.
6. Turn the valve between the regulator and the hose fitting to the “ON” position. The tamper rod may extend slightly when the valve is turned to “ON”.

## OPERATION

### USING THE S-575 PNEUMATIC TAMPER

Before using the S-575 on an actual sample, you may want to practice using the tamper on a hard, flat surface such as a tabletop. This will help you become familiar with the operation and “feel” of compacting samples. Grasp the tamper body in both hands. While holding the tamper in a vertical position, press downward on the table with the foot until the rod end of the tamper moves into the body of the tamper.

**WARNING!! DO NOT EXCEED .75 INCHES (20mm) OF MOVEMENT OR DAMAGE TO THE PNEUMATIC DIAPHRAGM MAY RESULT.**

Adjusting the regulator to either a higher or lower pressure can change the amount of downward pressure onto the table. When the regulator is set to a tamping pressure, it should be noted that the actual force exerted is the pressure plus the weight of the moving parts (about 3 pounds or 1.36 kilograms). This is your correction factor. For example, if you set the pressure regulator to 10 psi, approximately 13 pounds will be measured on a scale. If the regulator is set to 20 psi, approximately 23 pounds will be exerted on the scale. The amount of tamping effort applied to the sample will remain constant as long as you push hard enough to move the rod into the body of the tamper, but not move it so far as to bottom out the travel of the diaphragm. Ideally the end of the tamper should move no farther than .25 to .38 inches (7-10 mm). Once you have the “feel” of the tamper, you will be ready to compact a soil sample.

The soil sample can be remolded into either a split compaction mold such as our part number S-57528, or a rigid mold such as the Durham Geo 2.875 x 6-inch Compaction Mold (part #S-57729). The general procedure is to compact the soil within the mold in layers of uniform thickness, using the same number of tamps from the S-575. In general, the layer thickness should be no more than 1/6 of the mold height. The amount of air pressure on the S-575 will determine the density of the material. The correct psi required can be determined by making a graph of dry density of the soil vs. the psi applied to the S-575. An example is listed on the next page.

REMINDER: Recall that for a given compactive effort, the resulting dry density is dependent upon the water content. With this in mind, the user should keep the soil to be compacted in a covered container to maintain a constant water content.

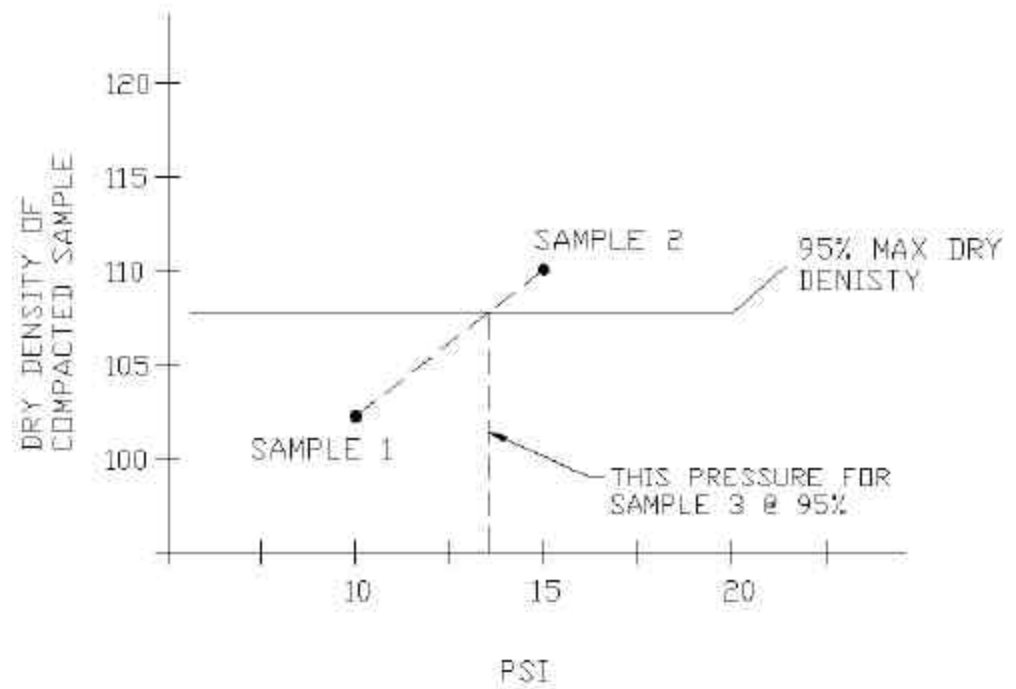


FIGURE 1: DRY DENSITY VS. PRESSURE