



Dynamic Cone Penetrometer Complete

INTRODUCTION

Thank you for choosing AMS, Inc.

The late Prof. George Sowers developed one of the more popular devices in 1959 for field exploration and the evaluation of lightly loaded shallow spread footings during the construction phase. The senior author developed a lightweight portable Dynamic Cone Penetrometer (DCP) in 1959 to be used in field exploration and for verifying individual footing foundations during construction. The device, as with most field tools used in foundation evaluation, should never be used as the sole means for determining foundation conditions. It must be used in conjunction with previously established field and laboratory data: standard split-barrel penetration resistance, density, shear strength, and consolidation data.

APPLICATION

Widely accepted method for evaluating strength and density of soil, in situ.

DESCRIPTION

The DCP was developed primarily as a verification or control penetrometer to check individual foundations during construction where a subsurface investigation has been made utilizing standard split spoon penetration methods, and laboratory shear strength and consolidation tests and analyses have been performed on undisturbed samples. A secondary use is the field investigation of subsurface conditions for lightly loaded structures where local experience from previous field investigations and laboratory analysis have established narrow limits of the strength parameters and consistencies; here again it is a verification tool to be used for an economical foundation analysis.

The device is a portable DCP utilizing a 15 lb. steel ring weight falling 20 in. on an E-rod slide drive to strike an anvil to penetrate a 45 degree cone with a 1.5 in. (3.8 cm) diameter (Fig. 1). The cone point is enlarged to minimize shaft resistance during testing. The blows required to drive the embedded cone to a depth of 1-3/4" are correlated to N values derived from the Standard Penetration Test (SPT). The penetration test is made through an augered hole from 3 to 6 in. in diameter using the auger cuttings to identify the soil. This is essential because the interpretation varies with the soil type. The cone can be replaced with a drive tube assembly to collect 3 in. X 10 in. (7.6 cm X 25.4 cm) samples from pre-augered holes.



KIT INCLUDES

- #59004 - (1) Dynamic Cone Penetrometer Drive Hammer Assembly
- #59006 - (4) 2-1/2' External Dynamic Cone Penetrometer Extension Rod
- #59001 - (1) 1' Dynamic Cone Penetrometer Drive Adapter w/ Heat-Treated Drive Cone Complete

REPLACEMENT PARTS

- #59003 - (1) Dynamic Cone Penetrometer Replacement Drive Cone w/ Roll Pin
- #59002 - (1) 1/4" X 1-1/4" Dynamic Cone Penetrometer Spiral Pin
- #59005 - (1) 1' Dynamic Cone Penetrometer Drill Rod Point Holder
- #59007 - (1) 5' External Dynamic Cone Penetrometer Extension Rod

SKU: 59000
KIT WEIGHT: 60 lbs

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Groundwater

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OPERATING INSTRUCTIONS

1. The penetration test is performed in the bottom of a hand augered borehole generally 3 to 6 in. diameter.
2. Auger to the desired test depth taking care to remove as much of the bottom cuttings as practical. Use the auger cuttings as practical. Use the auger cuttings to identify and visually classify the soil.
3. The borehole can be created by using a Borehole Preparation Kit (BPK).
4. The bottom of the borehole can be cleared using a planer auger, included in the BPK.

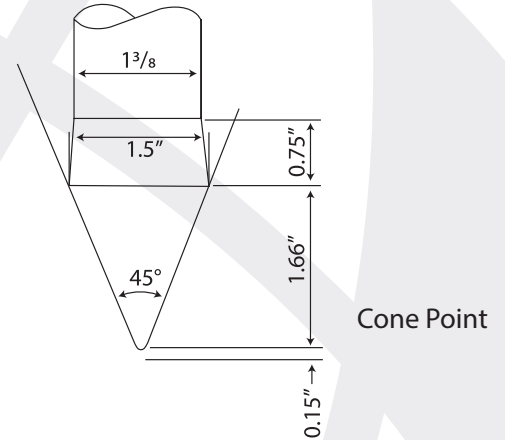
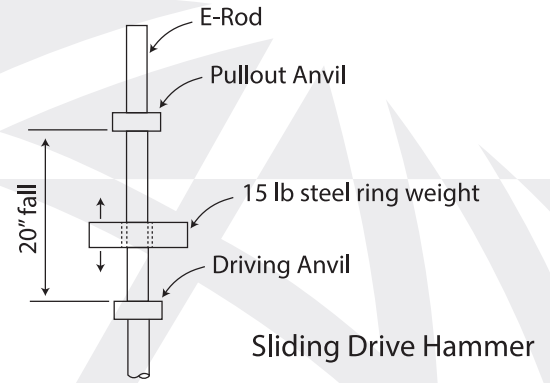
Warning: Handle the DCP with care. Do not grasp the E-rod between the pullout anvil and the driving anvil as the 15 lb. sliding weight moves easily along this part of the rod.

5. Gently lower the sliding drive hammer, extension rods and drive point to the bottom of the borehole.
6. Make sure the assembly is plumb set the cone 2 in. into the undisturbed bottom of the hole such that the cone is completely embedded.

Note: Laying a flat straight edge such as a survey stake across the borehole and marking the beginning reference point will expedite measurements.

7. Maintaining the assembly in a plumb position, drive the cone point 1-3/4 in. (44 mm) using the ring weight and allowing it to free fall 20 in. (bringing the ring weight to the uppermost position against the pullout anvil will assure a 10 in. drop). Count and record the number of blows.
8. If desired, perform a second and third penetration test by driving the cone additional 1-3/4 in. (44 mm) increments. Beyond three increments the effect of shaft friction may become apparent.
9. Remove the DCP assembly from the borehole taking care not to place hands between the anvil and keeping clear of the sliding weight.
10. Auger to the next location and repeat Steps 1 through 7.

Experience has shown that the DCP can be effectively used in augered boreholes to depths of 15 to 20 ft. Beyond these depths it becomes cumbersome to handle the string of rods by hand. Also, correlations have not been verified for deeper depths where energy losses from thread joints and rod inertia have not been considered.



Borehole Preparation Kit

SKU: 400.78 KIT WEIGHT: 7 lbs

KIT INCLUDES

- #400.08 - (1) 2-1/4" Regular Auger, 5/8" Thread
- #400.53 - (1) 2-1/4" Planer Auger, 5/8" Thread
- #408.02 - (1) 3' Extension, 5/8" Thread
- #408.03 - (1) 4' Extension, 5/8" Thread
- #406.04 - (1) 18" Rubber Coated Cross Handle, 5/8" Thread
- #430.32 - (1) 4' Signature Series Poly-Canvas Case (Black)