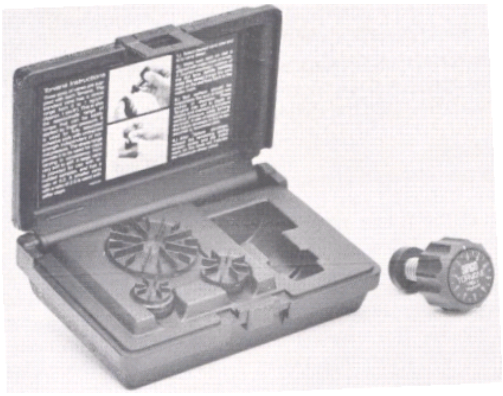


- **Rapid Shear Strength Determination**
- **3 Vanes Provided for Varying Soil Consistency**
- **Easy to Use in Field or Laboratory**
- **Sample Trimming Eliminated**

The Slope Indicator Torvane is a soil testing instrument for the rapid determination of shear strength of cohesive soils either in the field or laboratory. Applications for evaluation of shear strength include sides of test pits, ends of Shelby tube samples, standard penetration samples, split spoon samples chunk samples from test pits and backhoe excavations, and triaxial or consolidation tests in the laboratory on undisturbed thin-wall tube samples.

The Torvane consists of a disc (vane) with blades on the lower surface which is pressed into the soil to be tested. When the upper knob, which is attached to the disc through a precision helical spring, is rotated with finger pressure, a torque is applied to the disc. The torque is resisted by shear stresses in the clay or soil across the lower face and around the circumferential area of the blades. The calibrated dial converts torque directly into shear stress in kilograms per square centimeter (kg/cm^2). The maximum reading on the dial is the shear strength of the soil.

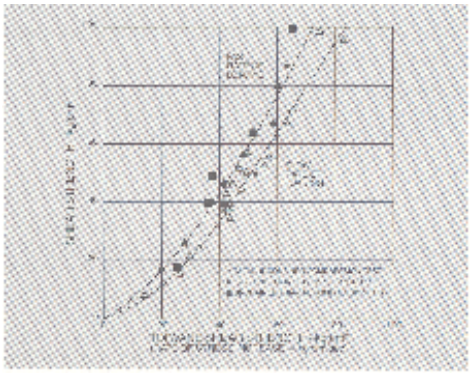
RAPID SHEAR STRENGTH DETERMINATION

The Torvane permits the rapid determination of a large number of strength values with different orientation of failure planes. It does not specifically indicate exact shear strength characteristics, but rather identifies strength variations with depth and zones of weakness in the subsoil. Because instrument operation and site preparations are simple, many tests can be accomplished quickly. The 51600200 Torvane is a complete redesign of a proven, accepted soil testing instrument using high strength thermoplastics. Thermoplastics not only make it lightweight and economical, but the new design also allows rapid changing of vanes as soil types vary. The compact plastic case makes it convenient for field use and for storing the complete unit.

3 VANES PROVIDED FOR VARYING SOIL CONSISTENCY

Three sizes of vanes are supplied with each Slope Indicator Torvane. The standard vane has a stress range from 0 to 1 kg/cm^2. This is also the approximate range of torque that can be easily applied by finger pressure. It is used for fully saturated cohesive soils with undrained strength independent of normal pressure. The stress range permits it to be used for clays varying in consistency from very soft to stiff. A large vane is provided for use with remolded samples, and has a ratio of 0.2. Asmaller vane with a ratio of 2.5 is used with stiffer clays.

EASY TO USE IN THE FIELD OR LABORATORY



All that is required is a reasonably flat test surface two inches in diameter. The Torvane is carefully pressed into the cohesive soil to the depth of the blades. Maintaining a constant vertical load by finger pressure, the knob is slowly turned at a constant rate to provide torque on the vane. A rate of ratation such that failure develops in five to ten seconds is recommended.

SAMPLE TRIMMING ELIMINATED

Because of the simplicity of the instrument and the samll test surface required, many tests can be performed rapidly and no sample trimming is necessary. In the laboratory, the or more Torvane tests can be performed in the same length of time as one unconfined compression test. Suggested applications of undisturbed thin-wall tube samples include:

1) Slitting the sample lengthwise using a wire saw, and perfoming a Torvane test at intervals of one to six inches. This quickly provides a more detailed strength profile than is possible by conventional methods.
2) Cutting the sample into segments ½ inch longer than the desired length for a triaxial or consolidation test, and performing a Torvane test on each end. The material disturbed by the Torvane can then be trimmed from the sample.
3) Using the Torvane as a control test to determine the shear strength prior to other testing.
4) Performing a Torvane test for consolidation strength after the specimen has been consolidated under a desired normal stress and the upper stone has been removed.

ACCURACY

The shear strength of a cohesive soil is dependent on many factors, including rate of loading, progressive failure, orientatio of the failure plane, and pore water migration during testing. The Torvane does not eliminate the effects of these variables; however, it does give repeatable values in a homogeneous clay, and extensive laboratory testing indicates excellent agreemnt between the unconfined compression test and the Torvane. The smallest division on the dial is in units of 0.05 kg/cm^2, permitting visual interpolation to the nearest 0.01 kg/cm^2.

SPECIFICATIONS:

	Standard Vane	**Large Vane**	**Small Vane**
Range:	0-1.0 kg/cm^2	0-0.2 kg/cm^2	0-2.5 kg/cm^2
Diameter:	1.0 inch (25.4 mm)	1.8 inch (45.7 mm)	0.7 inch (17.8 mm)
Vane Driver w/Dial:	1.6 inches (40.6 mm) diameter		
	3.2 inches (81.3 mm) length w/vane attached		
Case:			
Dimensions:	4 x 6 x 2 inches (102 x 152 x 51 mm)		
Weight:	10.5 ounces (300 grams) w/vanes & vane driver		

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