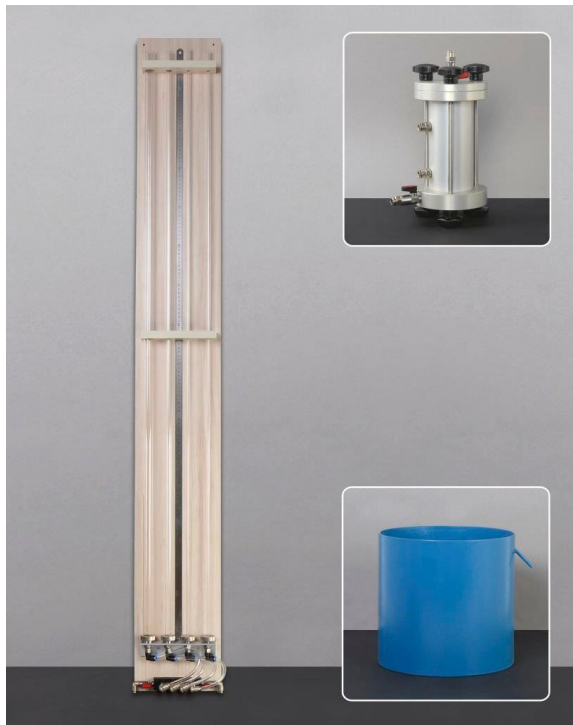




## UTS-1320





### FALLING HEAD PERMEABILITY SET



**USER MANUAL**

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This manual contains important information on the safe usage and maintenance of UTS-1320 and of its related components. Please read through the manual carefully before operating the device for the first time and keep it for the future reference.

Symbol	Description
	<p><b>WARNING:</b> In conjunction with one of the signal words this symbol indicates a hazard which will or could result in death or serious injury.</p>
	<p><b>ELECTRIC HAZARD:</b> In conjunction with one of the signal words this symbol indicates a hazard involving electrical voltage and identifies information about protection against electrical voltage.</p>
	<p><b>HIGH TEMPERATURE WARNING:</b> This icon indicates a hot surface warning. Protective gear must be worn at all times while working with or close to the sections marked with this warning icon.</p>
	<p><b>NOTE:</b> Recommendations and important information on how to handle the product.</p>

UTEST General Terms and Conditions of Sales and Delivery apply in all cases. Warranty and liability claims arising from personal injury and damage to property cannot be upheld if they are due to one or more of the following causes:

- ✓ Unauthorized modifications to the device and its components.
- ✓ Failure to use the instrument in accordance with its designated use and purpose which is described in this manual.
- ✓ Failure to adhere to the sections of the manual dealing with the performance check, operation and maintenance of the instrument and its components.
- ✓ Incorrect performance checks for operation and maintenance of the instrument and its components.
- ✓ Damage resulting from the effects of foreign bodies, accidents, vandalism and force majeure.

The instrument is only to be used for its designated purpose as describe herein. Replace faulty components only with original replacement parts from UTEST. Accessories should only be installed or connected to the instrument if they are expressly authorized by UTEST. If other accessories are installed or connected to the instrument, then UTEST will accept no liability and the product guarantee is forfeit.

This part contains important safety instructions that the user must follow for operation and storage of UTS-1320.

- ✓ Device should be seated on a steady base.
- ✓ Always follow basic safety precautions when using this product to reduce risk of injury from any dangerous situations.
- ✓ Read and understand all instructions in the documentation that comes with UTS-1320.
- ✓ Observe all warnings and instructions marked on the product.
- ✓ Avoid contact with these materials if any organic or inorganic chemicals are used in the test to be performed with the equipment. Wear safety glasses, gloves and a lab coat before starting the test.
- ✓ Do not lean the cabinet to the wall at zero distance.
- ✓ While the test is in operation do not remove any covers or attempt to adjust any part of the apparatus.



**WARNING:** *The equipment is not allowed to be operated by children or anyone under the influence of alcohol, drugs or pharmaceutical preparations. Anyone who is not familiar with this manual must be supervised when using the equipment. Carry out the stipulated maintenance properly and at the correct time. Following completion of the maintenance tasks, perform a functional check.*

Parts of UTS-1320 are sensitive components. Please handle them carefully.

- ✓ Do not place any heavy objects on the device.
- ✓ Avoid any impact or rough handling that might damage the device.
- ✓ Do not disassemble UTS-1320.

The UTS-1320 Falling Head Permeability Set is used to study the behaviour of soil, particularly finegrained soils such as clay-like or silty soils, with respect to water flow.

The UTS-1322 Falling Head Permeability Cell is manufactured from plated steel with an inside diameter of 100 mm.

The UTS-1324 Wooden Stand is fitted with 4 glass Manometer Tubes of each 1500 mm long with inside diameters of about 21 mm, 12 mm, 5 mm and 3.5 mm. All tubes have connection valves.

The UTS-1326 Soaking Reservoir Tank is manufactured from plated steel with an over-flow tube and is used for containing the permeability cell during the test.

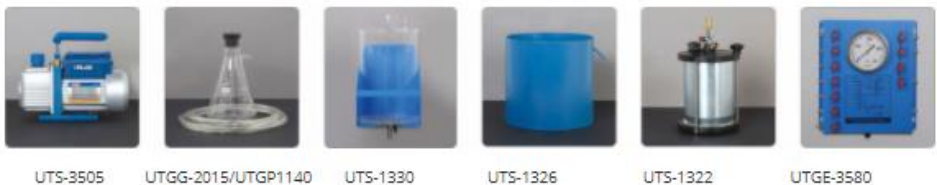


Figure 1: Parts of the System

Make sure that the device is placed in a clean and dry environment. Direct contact of the device with sunlight should be avoided. For example, an air-conditioned room will meet the above conditions and result in the best operational performance and measurement results. The device must be well accessible for testing and maintenance.

In order to avoid incorrect test results, the ground must be firm enough to minimize vibrations or shocks. If there is another test equipment or source that creates vibrations on the ground, the device should be placed as long as possible to this source. The surface of the floor should be smooth, without changing the horizontal and vertical alignment of the device.



**NOTE:** *If remote assistance will be required from the UTEST Technical Service Department, the room should have an internet access.*

Open the wooden case without damaging the contents and remove all packaging materials. Check for completeness and damages if exist. Report any irregularities directly to the supplier. Take necessary precautions and carefully transport and place the device to its place.



Make the connections as described in the Figure 2.

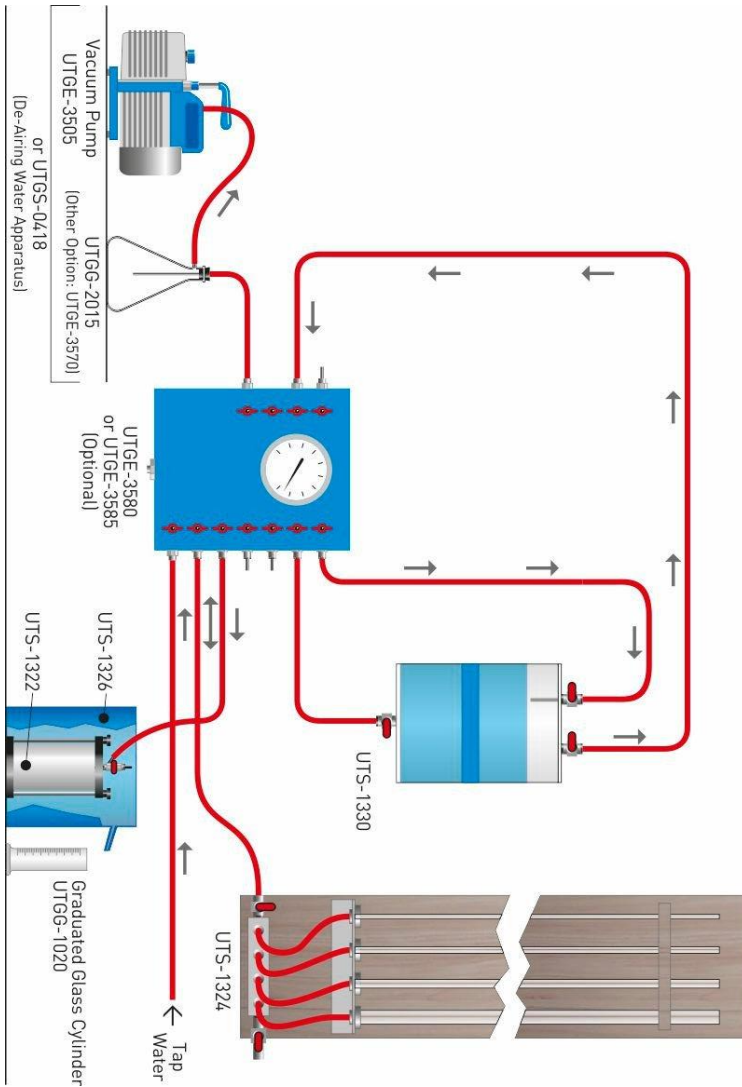


Figure 2: Connection of the System

Before starting the measurements, the soil sample should be saturated and the vertical pipes should be filled with de-aerated water to a certain level. The test then begins by allowing water to flow through the sample until the water in the standpipe reaches a certain lower limit. The time required for the water in the standpipe to fall from top to bottom is recorder. Usually, the standpipe is refilled and the test is repeated several times.

1. Dry specimens are prepared as for the constant head test. Wet specimens may be trimmed and fitted into the permeameter mould.
2. Measure the specimen height, diameter and dry weight. Determine the standpipe internal diameter by measuring the volume of water contained in a standpipe section of given height.
3. Saturate the specimen by immersing it in water for several days. The specimen must be fully saturated, otherwise the test will give erroneous results.
4. Fill the standpipe with de-aired water, well above the discharge level of the permeameter cell. Should the water level fall slowly and the test lasts a few days, a few drops of oil may be added on the water surface in the standpipe to prevent water from evaporating.
5. To begin the open the inlet valve, simultaneously starting the timer. As water flows through the specimen, measure the water elevation above the datum and the water temperature at various times  $t$ .

All safety devices should always be functional. Damaged protective covers or devices should be replaced as soon as possible. When changing safety components, protective devices must be properly installed and tested. We recommend that the device is cleaned from particles and dust in the scattered sample after testing to prevent crushing that can damage paintwork.

As with all equipment, the machine should be used properly and maintenance and inspection should be carried out at regular intervals. Such measures will guarantee the safe and efficient operation of the equipment.

Maintenance of the equipment belongs to the buyer and should be done as specified in this section. Failure to perform recommended maintenance or unauthorized maintenance could void the warranty.



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