

## INSTALLATION TOOL INSTRUCTIONS

# IRROMETER®

For IRROMETER, SSAT or WATERMARK Sensors

**All installations are easiest when soil is moist. If possible perform the following procedures after an irrigation or rain event.**



### #1012 Slide Hammer Installing Tool

Position pointed tip on ground surface at desired sensor location and set to angle required to make hole to place sensor at the desired depth. Hold tool with one hand below the strike plate and drive the slide hammer with other hand until tool is inserted to appropriate depth. Tool shaft is calibrated with serrated markings every 12 inches (30 cm) as a depth guide. Tool has a capacity of 48 inches (120 cm). If deeper holes are necessary, dig a pilot hole as necessary and then use tool to drive the next 48 inches (120 cm). Once tool has been driven to the desired depth, use the slide hammer to drive it straight back out of the hole, so the hole does not become enlarged. Usually after a few strikes, the tool will break loose and can be pulled the rest of the way out of the borehole. Clean and wipe with an oily cloth after use to keep the metal from corroding while in storage. Tighten securing nuts on top of shaft occasionally to keep them from vibrating loose, to keep slide hammer in place.

Once the hole has been made to the desired depth, the sensor can be inserted. Be sure the sensor is seated in the bottom of the hole and backfilled so the fill soil is compacted similarly to the surrounding area, as a false reading could be obtained if surface water wicks down through uncompacted soil.



### #1013

### Soil Coring Tool



Assemble the coring tip onto the extension sections and the handle by screwing pieces together. Use as many extensions as necessary to make the tool the appropriate depth to position the sensor. Push the coring tool into the soil at the desired sensor location no more than one foot (30 cm) at a time to get to the desired depth. After each insertion of the tool, pull it back out and remove the soil core that has accumulated in the tip. Never rotate the tool counter-clockwise while it is inserted in the ground as the pieces can become unscrewed. Often it can be easier to push on the handle with your waist or knee to improve leverage. Footjacks and “backsaver” handles are available as options that can make installation easier.

Once the hole has been made to the desired depth, the sensor can be inserted. Be sure the sensor is firmly seated in the bottom of the hole and backfilled making sure the fill soil is compacted similarly to the surrounding area, as a false reading could be obtained if surface water wicks down through uncompacted soil.



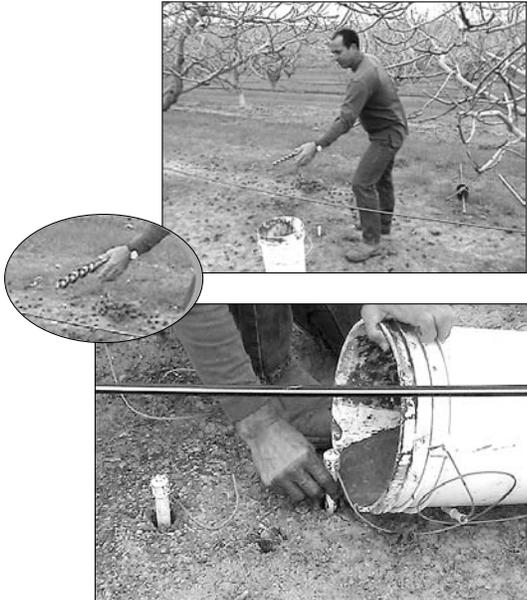
**#1014**



**Soil Auger Kit**

Assemble the auger tip onto the extension sections and the handle by screwing the pieces together. Use as many extensions as necessary to make the tool the appropriate depth to position the sensor. Screw the auger tool clockwise into the soil at the desired sensor location no more than one foot (30 cm) at a time to get to the desired depth. After each insertion of the tool, pull it back out and remove the soil that has accumulated in the auger. Never rotate the tool counter-clockwise while it is inserted into the ground as the pieces can come unscrewed.

Augering makes a hole larger than the sensor, so the sensor must be "grouted in" to ensure good soil contact. Take some of the auger cuttings and mix them with a little water to make a thick slurry. Pour this slurry down the hole deep enough to cover the sensor. Then insert the sensor down into the mud. Backfill the remainder of the hole making sure the fill soil is compacted similarly to the surrounding area, as a false reading could be obtained if surface water wicks down through uncompacted soil.



**#1015**



**Extension Rod**

Extension Rod is available to extend the 1013 or 1014 tools.

**#1016**

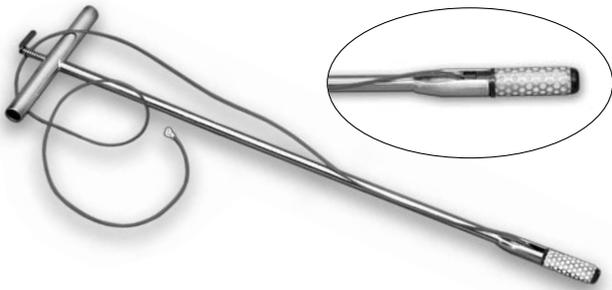


**Turf Coring Tool**

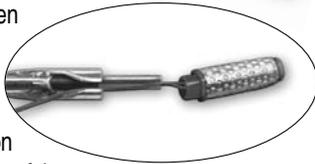
(Applies to shallow WATERMARK sensor installations in turf.) Dig small "V" trench and remove the plug of sod exposing the roots in the area desired to be measured. Push the turf coring tool into the soil at a downward angle of about 45° at the desired sensor location to the desired depth in the root mass. After insertion, pull it back out and remove the soil core that has accumulated in the tip. Often it can be easier to push on the handle with your knee to improve leverage.

Once the hole has been made to the desired depth, the sensor can be inserted. Be sure the sensor is firmly seated in the bottom of the hole and backfilled making sure the fill soil is compacted similarly to the surrounding area, as a false reading could be obtained if surface water wicks down through uncompacted soil. Run the wires in a trench to the desired point of connection and replace the sod plug to cover the sensor.

## #1017 WATERMARK Insertion Tool



After the sensor has been conditioned for installation (**always install a wet sensor**), place the WATERMARK sensor into the tip end of the insertion tool and run the wires up the side of the shaft and over the handle. Hold the wires snugly by placing your thumb on them. This will keep the sensor from falling off the end of the tool. Push the sensor down to the bottom of the access hole. Once it has been seated snugly in the bottom of the hole, release the wire and push on the spring loaded plunger while pulling up on the tool handle. This pushes the sensor off the end and makes sure it doesn't come part way back up the hole. Carefully backfill the hole making sure the fill soil is compacted similarly to the surrounding area, as a false reading could be obtained if surface water wicks down through uncompacted soil.



**Refer to IRROMETER or WATERMARK instructions for information on sensor preparation and installation.**

**WARRANTY:** The IRROMETER COMPANY warrants its products against defective workmanship or materials under normal use for one year from date of purchase. Defective parts will be replaced at no charge for either labor or parts if returned to the manufacturer during the warranty period. The seller's or manufacturer's only obligation shall be to replace the defective part and neither seller nor manufacturer shall be liable for any injury, loss or damage, direct or consequential, arising out of the use of or inability to use the product. This warranty does not protect against abuse, shipping damage, neglect, tampering or vandalism, freezing or other damage whether intentionally or inadvertently caused by the user.

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