13 INSTALLATION OF THE PROBE

Make sure that the time & date is set on the probe before installing it. It is also recommended to remove obsolete data from the probe first. This can be done by using the RF Utility toolkit or by using the logger.

As a general rule it is strongly advisable to test the probe for integrity before installation. This can be done by first letting the probe log in open air for two hours after which it can be lowered into water up to the lower end of the connector assembly also for two hours. Air readings must be in the order of 2-4% and water readings in the order 94-98%. The probe can be reset by the hand-held logger or by using the RF Utility Toolkit.

It is important to note that the fit between the probe (or access tube in the case of the MobiCheck) and surrounding soil is of critical importance in obtaining accurate and representative soil moisture readings. Various techniques to obtain a good fit are used depending on soil type, crop type and application. A customized installation auger is available on request and can be used for all soil types. It must be noted that in extreme sandy soils a customized “hollow” tube auger usually gives better results.

13.1 Installation in sandy soils

For very sandy soils the best installation result or fit is obtained by first thoroughly wetting the profile or site. The standard hand-held auger or a specialized aluminum hollow auger is used to create a tight fit access hole. If the aluminum auger is used, it is banged or hammered into the wet sandy profile and extracted several times.

Figure 6: Drilling a hole with the hand-held auger

On each extraction, the auger is emptied into a bucket. When the desired depth is reached, the probe can be lowered into the hole to test if the appropriate depth has been achieved.

Figure 7: Collecting sand from the augured hole

Figure 8: A good fitting access tube

Figure 9: Wetting the profile

If the profile has been wetted sufficiently, the wall of the hole should remain in tacked and allow for easy access. With some installations and after the probe has been lowered into the hole, there might be a thin cavity between the probe shaft and hole wall. In this case a little bit of sand is "washed" into the cavities together with water in order to ensure a tight fit.

13.2 Using the "Slurry Technique"

The use of the slurry technique is recommended for most soil types. In extreme clayey soils and specifically for installations in centre pivots, it is however important to consider the impact of the subsequent "wetting front" when determining the readily available soil water limits.

The slurry technique for installation in most soils is recommended due to the sensitivity of capacitance based probes in general for air gaps between the access tube and soil. When the slurry method is used in the correct way, there is very little chance for air gaps forming between the access tube and soil.

Figure 10: Pouring slurry from the augured hole back into the hole

A slightly oversized hole is drilled to the desired depth using the supplied auger. It is important to keep the auger as straight as possible. Try not to “ream” the access hole. The maximum space between the access tube and augured hole wall should not be more than 2 mm.

Figure 11: Increasing the viscosity of the slurry

The excess soil from the hole is poured into a bucket and mixed with the desired amount of water to make a good slurry mix. After the hole has been drilled to the desired depth, the slurry mix is poured back into the hole. Sometime it is also beneficial if the auger is used to “enhance” the viscosity of the slurry by moving the auger several times up and down the slurry filled access hole.

Figure 12: An installed MobiCheck access tube

The probe is inserted into the hole and as the probe is pushed down to the correct depth, the excess slurry will be forced upward and eventually be pushed out. Remove the excess slurry from the service as it may influence penetration of irrigation and rain water directly next to the probe.

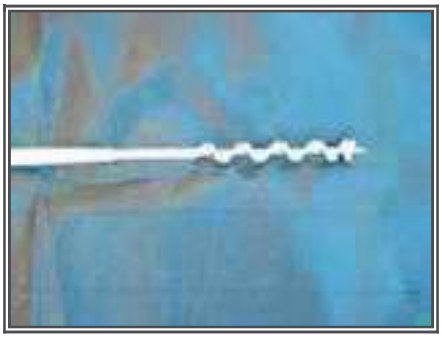

Figure 13: A typical hand-auger bit

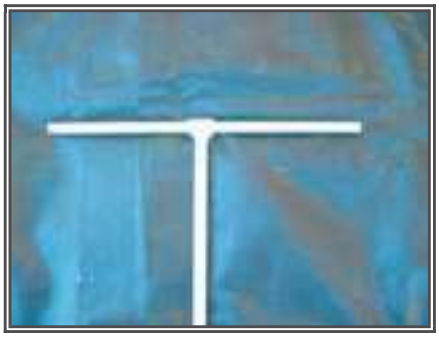

Figure 14: A typical hand-auger T-handle bar

Installation video: