

Augering Kits for **PR2**

Augering and access tube insertion for PR1 and PR2 Profile Probes

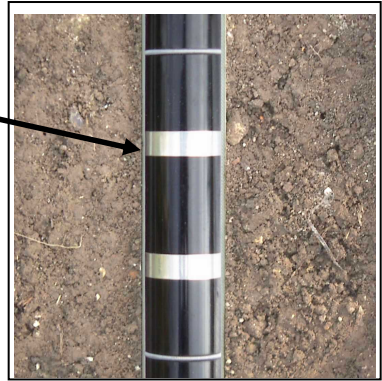
Quick Start Guide *Version 1.0*



Delta-T Devices Ltd

Profile Probes give accurate soil moisture readings when the access tubes are in close contact with the soil.

Good augering and insertion techniques are vital to ensure this is achieved.



Augering equipment

- Short access tubes can be installed in soft or cultivated soils using the **Short Starter Kit** only.
- The **Long Starter Kit** can be used to install long or short tubes into a range of cultivated or uncultivated soils*.
- The **Complete Kit** includes additional the carrying bag and additional accessories.

* Dry sandy soils may also need the spiral auger (PR-AUG2).



Preparation

- **Read the Health and Safety instructions** and check the safety equipment.
- Assemble and check over the augering equipment. Sharpen the auger blades carefully.

Check list for additional equipment that you are likely to need in the field:

- Access tubes **[1]**
- Collars **[2]**
- Black caps **[3]**, or red bungs for soil-surface insertions **[4]**
- Flexicanes and pen **[5]**
- Mist sprayer **[6]**
- Stiff brush **[7]**
- Cleaning cloths or paper towels **[8]**
- Plastic sheet and bucket **[9]**
- PR2 **[10]** and HH2 meter **[11]** for checking the readings after installation.



Stabilisation plate

- Choose a patch of ground that is as level and free of stones as possible.
- Assemble the stabilisation plate. Ensure it is stable before hammering the stakes in.
- Fit the white centring bush.



Pilot Auger

- Push the pilot auger straight down by ~100mm. **Don't allow the top of the auger to wobble about.** If there is strong resistance, insert by smaller steps. Rotate the auger through a half turn and pull out carefully.
- Clean the extracted soil from the auger onto the plastic sheet using the spatula.
- Continue in this way, taking great care to re-insert the auger following the same path, until the hole is deep enough.



Hints

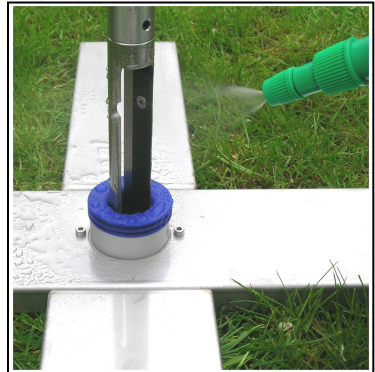
- If the soil is hard, you can hammer **gently** on the top of the pilot auger.
- If the soil is dry and sandy you may need to pre-wet the soil so that it sticks together, or use the spiral auger instead of the pilot auger.

	Insertion	Normal	Soil-surface
Short tubes		0.55m	0.60m
Long tubes		1.15m	1.20m

Finishing Auger

This process is not needed for short access tubes in soft soils

- Change to the blue centring bush.
- Begin inserting the auger, rotating clockwise all the time. Auger about 200mm at a time.
- Retract the auger while rotating anti-clockwise and clean out with the spatula (be very careful of the sharp edges).



Hints

- In sticky soils, minimise damage to the sides of the hole by applying a light spray of water to the sides of the auger as it is inserted. A second person with a mist sprayer will help considerably.

Insert access tube

- Fit the yellow centring bush, and start *pushing* the access tube into the soil using the insertion rod.
- As resistance increases you may need to start hammering, but minimise wobble. Continue until the top of the access tube is level with the top of the centring bush.
- Remove the stabilisation plate. If you are inserting access tubes level with the soil surface, continue inserting until just level.



Hints

- Spray a little water on the access tube walls to lubricate the insertion.
- In hard soil you may have to hammer vigorously. Extreme hammering indicates an undersize hole. Don't proceed – adjust the auger to a larger diameter (see Augering Manual) and then start a new hole.

Check readings

- Remove the stabilisation plate, taking care not to knock the tube.
- If necessary, clean out the inside of the access tube with the cleaning rod and a short length of paper towel or cloth.
- Insert the PR2 and take 3 readings, rotating the probe through 120° increments (see **PR2 Quick Start Guide**). Look for low readings – these may indicate air gaps or stones, and the need to re-install.

Finishing off

- Fit the collar and cap or bung.
- Label and insert the flexicane
- Brush any loose soil off the augers. Wash, dry and wipe them with an oily cloth or use water repellent spray.

Extraction

- Use the ladder jack. The extraction process is fairly complex - you need to refer to the Augering Manual for detailed instructions.

Preparation		Assemble and check the equipment
Stabilisation plate		Position and fix the stabilisation plate
Pilot auger		Auger a pilot hole to the required depth
Finish auger		Enlarge hole to final diameter (not required for short tubes in soft soils)
Insert access tube		Push or hammer access tube into the soil
Check readings		Take PR2 measurements to check the installation
Finishing off		Fit collar and cap or bung, insert flexicane
Extraction		Remove access tubes using extraction kit



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