



# TINKER & RASOR

## PRODUCT INSTRUCTIONS

### Model SC-4 Land / Sea Configurations

This manual contains operating, maintenance and storage instructions for Tinker & Rasor's Model SC-4 Ag/Ag/Cl Reference Electrode "Land" use.

#### **This kit includes:**

- 1 - Ag/Cl Element with end cap
- 1 - Ceramic Tip Assembly (Land)
- 1 - Tube Body with holes (Sea)
- 1 - Tube Body w/o holes (Land)
- 1 - End Plug (Storage)
- 2 - Brass Weights (Sea)
- 1 - 4 oz. Solution (Land & Storage)
- 1 - Waterproof Adapter w/lead (Sea)
- 2 - Instruction Manuals (Land & Sea)
- 1 - Carrying Case w/inserts

#### **SEE PARTS LIST DRAWING**

#### **Accessories**

Tinker & Rasor Models

- CPV-2 Voltmeter Analog
- CPV-4 Voltmeter Digital

#### **REQUIREMENTS**

1. Voltmeter - any high input resistance 20 Megaohm or greater - see "Accessories".
2. Test Lead - 18 Ga. stranded wire (8 ft supplied) longer test lead available upon request.
3. Electrolyte 4 oz. "Ocean Water" supplied - Potassium Chloride 35:1 mix is okay for storage - see "Maintenance".

#### **PREPARATION & ASSEMBLY**

1. Clean Ag/Cl element per instruction under "Maintenance" section.
2. Screw end cap with Ag/Cl into solid tube (part #118-061) and tighten.
3. Fill tube with "Ocean Water" (part #049-016).
4. Screw ceramic tip assembly into tube and tighten - check "O" rings for leaks.
5. Attach 18 Ga. test lead to top of electrode using knurled nut supplied.
6. Attach test lead to voltmeter.\*

#### **Note:**

A. Ceramic tip assembly should soak in electrolyte (Ocean Water) until thoroughly saturated.

B. Ag/Cl element must be cleaned, then soaked in electrolyte at least 15 minutes prior to first use.

\*Any quality high resistance meter - 20 megaohm or greater such as Tinker & Rasor Model CPV-4 Digital Voltmeter.



## **PRODUCT INSTRUCTIONS**

### **OPERATIONS**

1. Press the electrodes' ceramic tip into the soil.
2. Submerge the tip or the entire electrode into electrolyte.
3. Place a sponge soaked in electrolyte under the ceramic tip for dry soil conditions.
4. The ceramic tip assembly must be soaked in electrolyte until thoroughly saturated.

### **MAINTENANCE & STORAGE**

#### **Before Use:**

1. The Ag/Cl element must be cleaned in distilled water or mild detergent and rinsed in distilled water prior to use.
2. **Do not** touch Ag/Cl element after cleaning.
3. The Ag/Cl element should soak in electrolyte for at least 15 minutes before use to stabilize readings.

#### **After Use:**

1. To ensure proper readings we recommend the Ag/Cl element and the ceramic tip assembly be kept moist during storage. A solid body tube and protective cover are enclosed for this period as well as for use in soil readings.
2. For long term storage disassemble or for use after element and ceramic tip have been allowed to dry follow instructions above "Before Use".

### **STANDARD POTENTIALS to HYDROGEN**

#### **SPECIFICATIONS - LAND**

Length	(125.48 mm)	4.94 In.
Diameter (Max.)	( 33.27 mm)	1.31 In.
Ceramic	( 28.49 mm)	1.12 In.
Threads	1/4-20	
Temperature Range	(0-90 <sup>0</sup> C)	0-194 <sup>0</sup> F
Shipping Weight	(1.9 kg)	3.5 lbs.



## **PRODUCT INSTRUCTIONS**

### **INTRODUCTION**

This manual contains operating, maintenance and storage instructions for Tinker & Rasor's Model SC-4 AgAg/Cl Reference Electrode "Sea" use.

#### **This kit includes**

- 1 - Ag/Cl Element w/end cap
- 1 - Ceramic Tip Assembly ( Land)
- 1 - Tube Body with holes (Sea)
- 1 - Tube Body w/o holes (Land & Storage)
- 1 - End Plug (Storage)
- 1 - Brass Weights (Sea)
- 1 - 4 oz. Solution (Land & Storage)
- 1 - Waterproof Adapter w/lead (Sea)
- 2 - Instruction Manuals (Land & Storage)
- 1 - Carrying Case w/inserts

#### **SEE PARTS LIST DRAWING**

#### **Accessories:**

Tinker & Rasor Models

- CPV-2 Voltmeter Analog
- CPV-4 Voltmeter Digital

#### **REQUIREMENTS**

1. Voltmeter - any high input resistance 20 Megaohm or greater - see "Accessories".
2. Test Lead - 18 Ga. stranded wire (8 ft. supplied) longer test lead available upon request.
3. Electrolyte 4 oz. "Ocean Water" supplied - Potassium Chloride 35:1 mix is okay for storage - see "Maintenance".

#### **PREPARATION & ASSEMBLY**

1. Clean Ag/Cl element per instruction under "Maintenance" section.
2. Screw end cap with Ag/Cl element into tube with holes (part #118-060) and tighten.
3. Screw one or both brass weights into tube and tighten.
4. Attach 18 Ga. test lead into waterproof adapter (part #009-010) - see W-7 instructions.
5. Remove knurled nut from top end cap and save.
6. Screw top of electrode into W-7 Waterproof Adapter and tighten.
7. Attach test lead wire to voltmeter.
8. Lower entire electrode into electrolyte and allow to soak for 15 minutes to stabilize readings.

#### **OPERATIONS**

1. Submerge the tip or the entire electrode into electrolyte.



# TINKER & RASOR

## PRODUCT INSTRUCTIONS

### Note:

Readings should be taken as close to the structure as possible to minimize I.R. drop. Avoid surface contaminates.

### MAINTENANCE & STORAGE

#### Before Use:

1. The Ag/Cl element must be cleaned in distilled water or mild detergent and rinsed in distilled water prior to use.
2. **Do not** touch Ag/Cl element after cleaning.
3. The Ag/Cl element should soak in electrolyte for at least 15 minutes before use to stabilize readings.

#### After Use:

1. To ensure proper readings we recommend the Ag/Cl element and the ceramic tip assembly be kept moist during storage. A solid body tube and end plug are included for this period as well as for use in soil readings.
2. For long term storage disassemble or for use after element and ceramic tip have been allowed to dry follow instructions above "Before Use".
- 3.

### SPECIFICATIONS - SEA

Length	(125.48 mm)	4.94 In.
Diameter (Max.)	( 33.27 mm)	1.31 In.
Ceramic	( 28.49 mm)	1.12 In.
Threads	1/4-20	
Temperature Range	(0-90 <sup>0</sup> C)	0-194 <sup>0</sup> F
Shipping Weight	( 1.9 kg)	3.5 lbs.



## **PRODUCT INSTRUCTIONS**

### **W-7 WATERPROOF ADAPTER**

1. Observe the drawing supplied with each Half-Cell and screw the adapter onto the Half-Cell electrode leaving approximately 1/2 turn before compressing the large "O" ring to seal.
2. Strip 1/4" of insulation from end of #18 Ga. stranded test lead wire and insert stripped end into the brass hex fitting, making sure small "O" ring is in place over the insulated part of test lead. Push test lead into the brass fitting as far as possible. Tighten hex nut firmly.
3. After hex nut is secured, hand tighten adapter to Half Cell firmly seal the "O" ring between adapter and electrode.
4. Test lead wire insulation should have no discontinuities in the portion that will be submerged and the Half Cell should be filled completely so pressure will not force water into the electrode and contaminate the copper sulfate solution.
5. The Model W-7 can be used with most reference electrodes utilizing 1/4-20 threads.