

## INTRODUCTION

This manual contains operating, maintenance and storage instructions for Tinker & Razor's Model SC-4 AgAg/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)
- 1 - Brass Weight (Sea)
- 1 - 4 oz. Solution (Both)
- 1 - Waterproof Adapter w/lead (Sea)
- 2 - Instruction Manuals (Both)
- 1 - Carrying Case w/inserts

## SEE PARTS LIST DRAWING

### Accessories

- 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 & Razor Model CPV-4 Digital Voltmeter.

## 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			
Temperature	10° C	25° C	35° C
CuCuSO <sup>4</sup> / CuCuSO Satd.*	330 mV	316 mV	303 mV
Ag/AgCl / KCl 1.0 M **	298 mV	288 mV	278 mV
Ag/AgCl / KCl 3.5 M ***	231 mV	222 mV	216 mV
Ag/AgCl / KCl Satd. ***	215 mV	205 mV	197 mV
Ag/AgCl / KCl 0.1 M *	214 mV	199 mV	189 mV

\* Treseder, NACE Corr. Eng. Ref., 60, (1980)

\*\* Dean, Lange's Hand. Chem., 11<sup>th</sup>, 5-69 (1974)

\*\*\* Bates, Determination of pH, 175 (1973)

## 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° C)	0-194° F
Shipping Weight	( 1.9 kg)	3.5 lbs.

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**TINKER & RASOR**  
INSTRUCTION MANUAL

**MODEL SC-4**

SILVER / SILVER CHLORIDE  
REFERENCE ELECTRODE

**LAND**