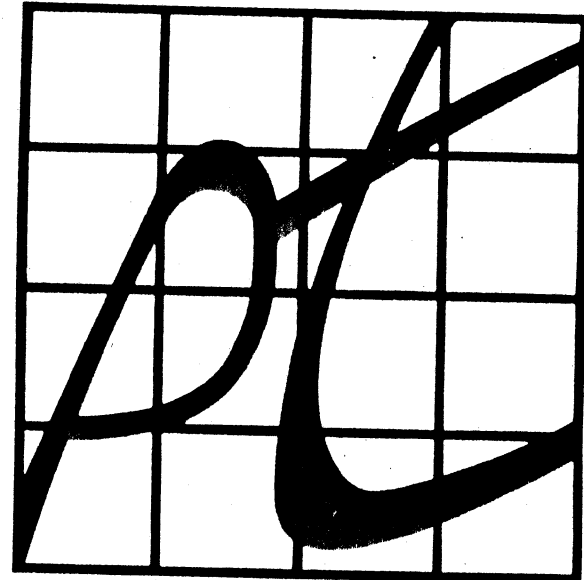


CONDUCTIVITY METER

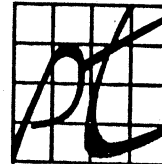
Model DP-04

PRESTO-TEK



CORPORATION

PRESTO-TEK



A Newport Electronics Company

2229 South Yale St.

Santa Ana, CA 92704-4426

Tel: (714) 540-5346

(800) 421-8660

Fax: (213) 725-3036

CONTENTS

	PAGE
DESCRIPTION	2
OPERATION	3
CONVERSION TABLE	4
SAMPLE DILUTION	4
TABLE I	5
CALIBRATION PROCEDURE	6
OUTLINE DRAWING	7
WARRANTY	8

LIMITED WARRANTY

All equipment is fully warranted for a period of one year, as to defects in material or workmanship. Equipment returned is prepaid to the factory. If in the opinion of factory, failure was due to material or workmanship, repair or replacement will be made without charge and returned at no charge. A normal service charge will be assessed for repairs made due to mistreatment, normal wear, or on equipment out of warranty.

DESCRIPTION

The Model DP-04 is a medium range conductivity instrument used to indicate the quantity of total dissolved solids in a water sample. It is temperature compensated from 55°F to 125°F. This is a portable battery powered instrument using a standard 9 volt transistor battery. A 2000 Hz oscillator and amplifier provides a balanced AC signal to the sensor. The sensor electrodes are mounted in a movable turret for maximum utility. The case and head are molded ABS plastics, and measures overall only 8" x 3" x 2½". It weighs a total of 10 ounces.

The scale is calibrated in both micromhos and parts per million. When solutions of NaCl or CaCO₃ are tested, a more accurate determination can be made by using Table I in this manual.

OUTLINE DRAWING

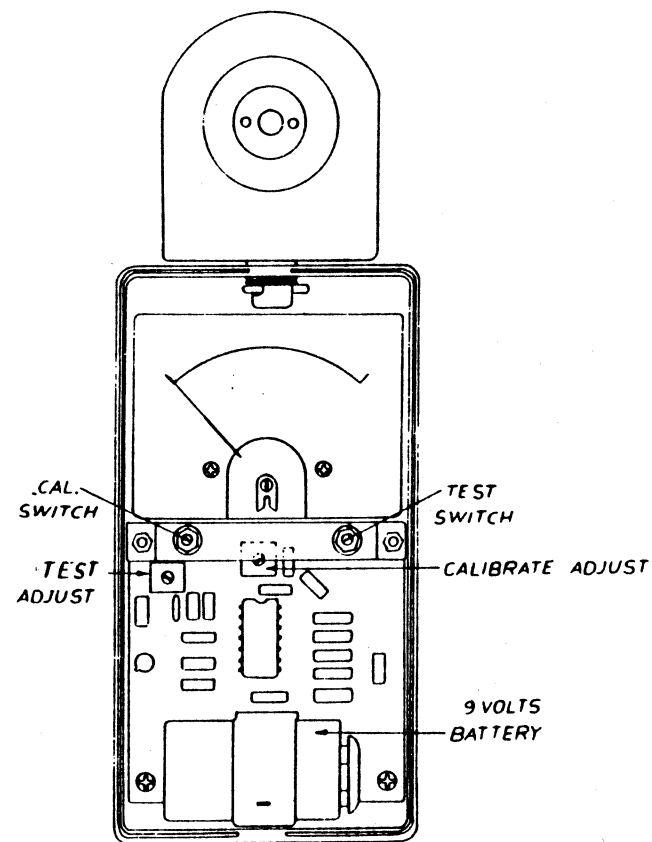


Fig. 1

CALIBRATION PROCEDURE

To calibrate the DP-04, a standard test solution of 750 or 1500 micromhos is required; or an accurate conductivity bridge should be available to prepare the test solutions. Since the electronics and the scale read out are both linear, a single point calibration should be adequate. For maximum accuracy, it is suggested that two or three points on the scale be tested.

Remove the four corner screws in the bottom of the case, then remove cover to provide access to the adjustment potentiometer.

Use a clean plastic cup or a beaker for each test solution. Dip the electrode as shown in mode two on the brochure. There is a potentiometer marked "Test Adjust" on figure 1. Push the test switch button only, and adjust for correct meter reading. If more than one test point is to be checked, repeat this procedure with the second test solution. Be sure to rinse with distilled water between tests.

The final step is the calibration adjustment. Functionally, the calibration test consists of switching a resistor in place of the electrodes. This resistor is equivalent to the resistance of a solution that would read mid-scale. By pressing both the "Test" and "Cal" buttons, the complete circuit is in operation using the calibrate resistor instead of a test solution. This provides a quick test of both battery voltage and of the electronics. The calibration adjustment, therefore, consists of pressing both buttons and setting the "Cal Adjust" potentiometer to provide a mid-scale reading on the meter. Replace cover, and the instrument is ready for service.

OPERATION

The following procedure is recommended when performing conductivity measurements with the DP series conductivity meters:

1. Check battery by simultaneously depressing both the test and calibrate buttons. Meter pointer should read at mid-scale in black band area. If pointer reads low, remove the four corner screws in back, lift cover and replace battery. If pointer reads high or low with new battery, see instruction manual for instrument calibration or return to Presto-Tek.
2. Rinse probe in distilled or deionized water.
3. Pour solution to be tested into cup. There should be no air bubbles in the cup, and the solution should be within $\frac{1}{8}$ inch of the top of the cup. When using the remote probe, place the probe into the solution, being sure the solution covers the bottom $1\frac{1}{2}$ inches of the probe. Stir to remove all air bubbles from the probe. Do not place the probe tip on the bottom of the sample container or against the side of the container when making a measurement.
4. Press the test button and wait eight to 10 seconds for temperature stabilization or until a constant reading is attained. When using the multi-range meters, read results on the lowest scale without pegging out.
5. After each test, rinse the probe in distilled or deionized water. If this is not done, the electrode surfaces may become coated with deposits left from dried test samples, resulting in inaccurate test results.
6. To clean probes which have become coated, rinse in distilled or deionized water and rub the electrodes with a "Q" tip. If this does not remove the deposits, clean in 10% hydrochloric (HCl) acid for one minute and rinse again with distilled or deionized water using a "Q" tip. Repeat until probe surfaces are shiny bright.

CONVERSION TABLE

TDS instruments that are used for the determination of dissolved solids in water are basically water conductivity measuring instruments. The fact that the quantity of dissolved solids in parts per million by weight is directly proportional to conductivity in micromhos per unit volume, makes possible the use of a conductivity measurement to indicate the amount of dissolved solids in a water sample. Table I shows the relationship of sodium chloride and calcium carbonate in parts per million vs. conductivity in micromhos. The average drinking water contains other dissolved solids as well as sodium chloride. These have a higher weight per ion and, therefore, are higher in parts per million for a given conductivity value. TDS meters are calibrated to more closely approximate municipal water characteristics. Table I shows the TDS calibration vs. micromhos, which is the accepted calibration used for conductivity instruments.

SAMPLE DILUTION

If the TDS exceeds the range of the instrument, the sample may be diluted with distilled or deionized water. To reduce the conductivity by a factor of ten, add 1 part of sample solution to 9 parts of distilled water. Test the combined solution and multiply reading by ten.

Example:

1 oz of 3000 u ppm solution
9 oz. of distilled water

10 oz. Total

TDS of combination = 300
300 X 10 = 3000 ppm

TABLE I

TDS PPM	u mmhos.	NaCl PPM	CaCO ₃ PPM
10,000	15,000	8,400	7,250
6,660	10,000	5,500	4,700
5,000	7,500	4,000	3,450
4,000	6,000	3,200	2,700
3,000	4,500	2,350	2,000
2,000	3,000	1,550	1,300
1,000	1,500	750	640
750	1,125	560	475
666	1,000	490	420
500	750	365	315
400	600	285	250
250	375	175	150
100	150	71	60
66	100	47	40
50	75	35	30
40	60	28	24
25	37.5	17.5	15
6.6	10	4.7	4