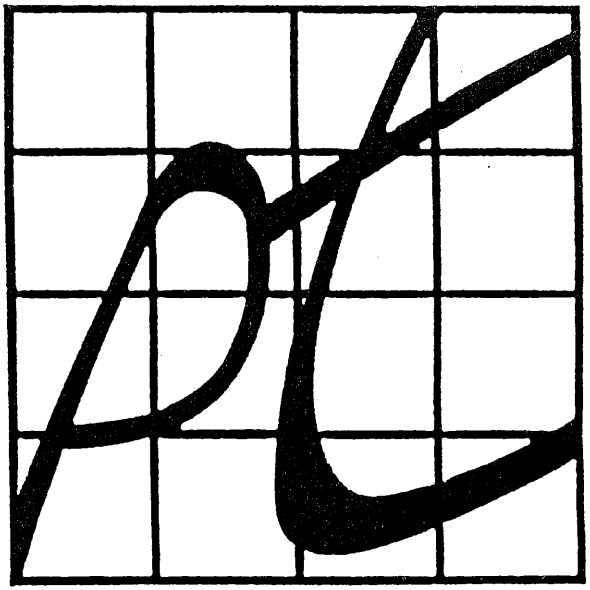
CONDUCTIVITY METER

Model DP-03

PRESTO-TEK



CORPORATION

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DESCRIPTION

The Model DP-03 is a three-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 inches. It weighs a total of 10 ounces.

The scale is calibrated in both micromhos and parts per million. When solutions of NaCl or $CaCO_3$ are tested, a more accurate determination can be made using Table 1 in this manual.

Reading Conductivity beyond the Range of this Meter

If your instrument pegs out, you are beyond the range of the meter. To double the range, mix ½ sample with ½ distilled or deionized water. Then multiply your reading by two. To triple, or quadruple the range, cut your sample with ⅔ or ¾ distilled water. Then multiply your reading by 3 or 4, respectively.

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 midscale 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 the Calibration Procedure section of this manual 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 ⅛ 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 1½ 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 inacurate 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 shiney bright.

CALIBRATION PROCEDURE

To calibrate the DP-03, three standard solutions — 45, 450, and 4500 micromho values — are needed.

When both the test and calibration are depressed, if the needle goes into the black area at mid-scale on the dial, the electronics are functioning properly, and the battery is adequate. However, this does not indicate that the probes are clean and in calibration. For this reason, it is necessary to check the calibration of the meter periodically — every 2—3 weeks with heavy usage, 2—3 months with intermittant use.

NOTE

It is important that the electrode surfaces remain clean and bright — Do Not allow test solutions to dry on the electrodes — rinse clean with distilled or deionized water after use.

To check calibration, proceed as follows:

1. Clean electrodes with distilled water; use a "Q" tip if necessary. Make sure electrode surfaces are bright and shiney. If scaled, rinse with 10% Hydrochloric acid fol-

lowed by distilled water.

2. Open case and refer to outline drawing on page 5. Fill sample cut or dip probe in 45-micromho solution and with test button depressed, rotate left-hand adjust "50 full scale adjust" with a small screw driver until meter reads 45 micromhos.
3. Clean electrodes with distilled water.
4. Using the 450-micromho solution, rotate right-hand adjust "500 full scale adjust" to 450 micromho reading.
5. Clean electrodes with distilled water.
6. Using the 4500-micromho solution, rotate adjust second from right "5000 full scale adjust" to 4500 micromho reading.
7. Clean electrodes with distilled water.
8. Repeat check on first adjust [item (2) above]. If unit does not read 45 micromhos, repeat procedure.
9. Finally, press both test and calibrate buttons simultaneously and if needle does not go to the black area at mid-scale, replace battery.

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 1 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 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 conductivity 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 30,000 μMho solution
9 oz of distilled water

10 oz Total

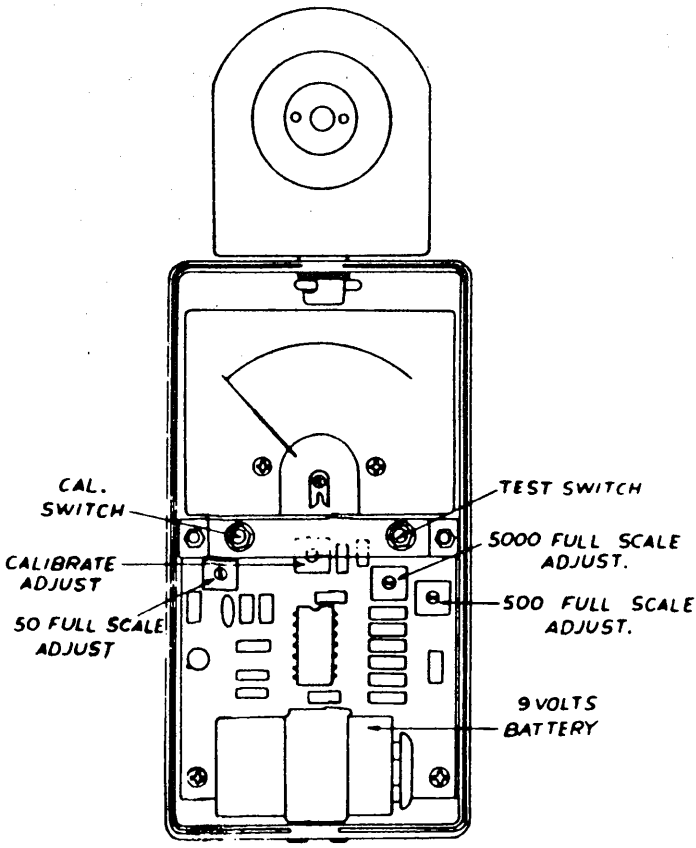
Conductivity of combination = 3,000

3,000 x 10 = 30,000 μmhos

TABLE I

TDS PPM	μMhos	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

OUTLINE DRAWING



MODELS AVAILABLE

Models:

DP-04 – 0–1200 ppm & 0–1800 micromhos

DP-05 – 0–5000 ppm & 0–7500 micromhos

DP-10 – 0–10 ppm & 0–15 micromhos

DP-03 – Three Range – 0–50, 500, 5000 ppm &
0–75, 750, 7500 micromhos

LIMITED WARRANTY

The Model DP-03 meter 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 the 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 made for repairs made due to mistreatment, normal wear, or made on equipment out of warranty.