

# Resistivity Meter Calibration Check Instruction Sheet

1. Before checking the calibration of the instrument, clean the probe using the supplied probe cleaning fluid. Saturate a pipe cleaner with the cleaning fluid and scrub the inside of the cell. After cleaning, wash with clear water. Dry with a clean pipe cleaner.

## CAUTION

PROBE CLEANING SOLUTION AND STANDARD SOLUTIONS ARE MILDLY CORROSIVE. HANDLE WITH CARE.

2. Fill cell with the standard resistance solution 0.1N KCl (0.79 ohm meters at 75°F.)
3. Attach cell to instrument and measure resistivity according to standard procedure. Record indicated resistivity reading.
4. Compare the recorded reading with the Resistivity Table shown in Fig. 1. A meter reading within the allowable tolerances indicates that the instrument is functioning properly. For meters of part #65300, use the column KCL 0.1N under Model 653. For meters of part #31763, use the column KCL 0.1 N under Model 88C.
5. If the recorded reading is outside the allowable values shown on the table, proceed to step 6.
6. Soak the cell bore with the cleaning solution for two hours, scrub with a pipe cleaner, rinse with distilled H<sub>2</sub>O, and dry with a clean pipe cleaner.
7. Repeat steps 2 - 4.
8. If the meter continues to perform unsatisfactorily, it should be returned to the manufacturer for repair and calibration.

**TABLE 1**

| RESISTIVITY TABLE |      |                        |           |            |                 |           |            |             |           |            |
|-------------------|------|------------------------|-----------|------------|-----------------|-----------|------------|-------------|-----------|------------|
| TEMP              |      | RESISTIVITY OHM-METERS |           |            | ALLOWABLE RANGE |           |            |             |           |            |
| C°                | F°   | KCL 1.0 N              | KCL 0.1 N | KCL 0.01 N | MODEL 653       |           |            | MODEL 88C   |           |            |
|                   |      |                        |           |            | KCL 1.0 N       | KCL 0.1 N | KCL 0.01 N | KCL 1.0 N   | KCL 0.1 N | KCL 0.01 N |
| 15                | 59   | .110                   | .95       | 8.7        | .10 - .12       | .93 - .97 | 7.5 - 9.0  | .105 - .115 | .94 - .96 | 8.5 - 8.7  |
| 16                | 61   | .106                   | .93       | 8.5        | .09 - .11       | .91 - .95 | 7.5 - 9.0  | .100 - .110 | .92 - .94 | 8.3 - 8.7  |
| 17                | 62.5 | .104                   | .91       | 8.3        | .09 - .11       | .89 - .93 | 7.3 - 9.0  | .100 - .110 | .90 - .92 | 8.1 - 8.5  |
| 18                | 64.5 | .102                   | .89       | 8.2        | .09 - .11       | .87 - .91 | 7.2 - 9.0  | .095 - .105 | .88 - .90 | 8.0 - 8.4  |
| 19                | 66   | .100                   | .87       | 8.0        | .09 - .11       | .85 - .89 | 7.0 - 9.0  | .095 - .105 | .86 - .88 | 7.8 - 8.2  |
| 20                | 68   | .098                   | .85       | 7.8        | .09 - .11       | .83 - .87 | 7.0 - 8.5  | .092 - .105 | .84 - .86 | 7.6 - 8.0  |
| 21                | 70   | .096                   | .84       | 7.7        | .09 - .11       | .82 - .86 | 7.0 - 8.5  | .090 - .100 | .83 - .85 | 7.5 - 7.9  |
| 22                | 71.5 | .094                   | .82       | 7.5        | .08 - .10       | .80 - .84 | 7.0 - 8.0  | .089 - .100 | .81 - .83 | 7.3 - 7.7  |
| 23                | 73.5 | .093                   | .81       | 7.4        | .08 - .10       | .79 - .83 | 7.0 - 8.0  | .085 - .098 | .80 - .82 | 7.2 - 7.6  |
| 24                | 75   | .091                   | .79       | 7.2        | .08 - .10       | .77 - .81 | 6.5 - 8.0  | .085 - .096 | .78 - .80 | 7.0 - 7.4  |
| 25                | 77   | .089                   | .77       | 7.1        | .08 - .10       | .75 - .79 | 6.5 - 7.5  | .084 - .094 | .76 - .78 | 6.9 - 7.3  |
| 26                | 79   | .088                   | .76       |            | .08 - .10       | .74 - .78 |            | .083 - .093 | .75 - .77 |            |
| 27                | 80.5 | .086                   | .75       |            | .08 - .10       | .73 - .77 |            | .081 - .091 | .74 - .76 |            |
| 28                | 82.5 |                        | .73       |            |                 | .71 - .75 |            |             | .72 - .74 |            |
| 29                | 84   |                        | .72       |            |                 | .70 - .74 |            |             | .71 - .73 |            |
| 30                | 86   |                        | .71       |            |                 | .69 - .73 |            |             | .70 - .72 |            |

By substituting an accurate resistance in place of the Resistivity Cell, the Model 653 Resistivity Meter can be checked to an accuracy of  $\pm 4\%$  of the reading from 0.3 to 10 Ohm-Meters. Below 0.2 Ohm-Meters, the accuracy declines so that at 0.01 Ohm-Meters (low end of scale) it is  $\pm 100\%$ . This assumes that the resistances that are substituted for the Cell are accurate to  $\pm 0.5\%$  and that intimate contact between the resistance and the posts of the meter is maintained. The formula to find the required resistance for a given meter reading is:

$$O = (4750) (\text{Desired Ohm-Meter Reading}) \text{ for the 653.}$$

The Model 88C can be checked to an accuracy of  $\pm 1\%$  of reading in the range of .9 - 199 Ohm-Meters. The accuracy declines at lower values so that at .01 (low end of scale) it is  $\pm 50\%$ .

$$O = (5000) (\text{Desired Ohm-Meter Reading}) \text{ for the 88C .}$$

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