

## Water Resistance Checker (basic) Model GSK-944

This checker utilizes resistance to measure dissolved solids in water. The more resistance, the less conductive the water; as resistance levels lessens the materials that conduct electricity are elevated. Results are displayed by a series of (8) LED's.

### Technical Specifications

- Power source: 9 VDC
- LED resistance level indicators: 7
- LED on/off indicator: 1
- Level adjustment: 3 levels
- PCB dimensions: 2.78 x 1.79 in.

### Operating Principles

The more resistance in water the less dissolved solids, such as minerals, are present. Conversely, as resistance decreases the level of conductive material in the water increases. A series of (green, yellow, and red) LED's indicate the level of resistance (Green – higher through Red – lowest) the more LED's lit the less resistance. There are 3 switchable levels (see Figure 1 resistance table).

### Circuit Assembly

Please refer to Figures 1, 2, and 3 for aid in component placement. It is recommended to start with lower components i.e. diodes, resistors, electrolyte capacitors, and transistors. Be careful to check polarity before soldering. If a problem is detected it is best too use a desoldering pump or desoldering braids to remove component. This will minimize potential damage to the printed circuit board.

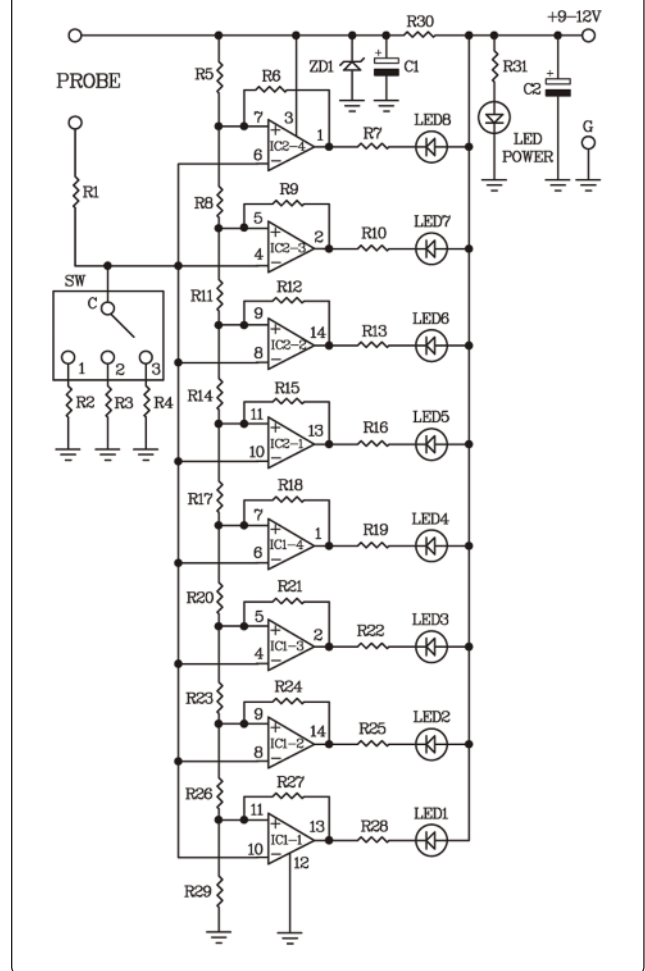
### Testing

Connect the battery to provide power to the circuit. The LED power light will come on. Slide switch "SW" to position "1." Insert probe into water source, LED 1 through LED 8 will display level of resistance in water source.

### Troubleshooting

The main cause of problems will come from misplaced components or faulty soldering. Utilize Figures 1, 2 and 3 to ensure proper placement, polarity and then check solder points for connectivity.

Figure 1 Water Checker Circuit



### Accessories

Use GSB-03 (sold separately) to house the PCB and batteries.

Figure 2 Connecting Circuits

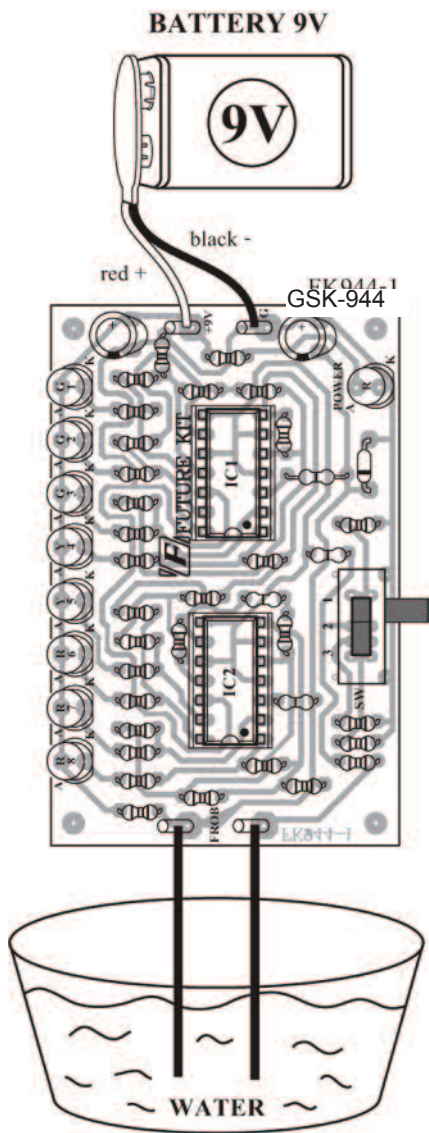
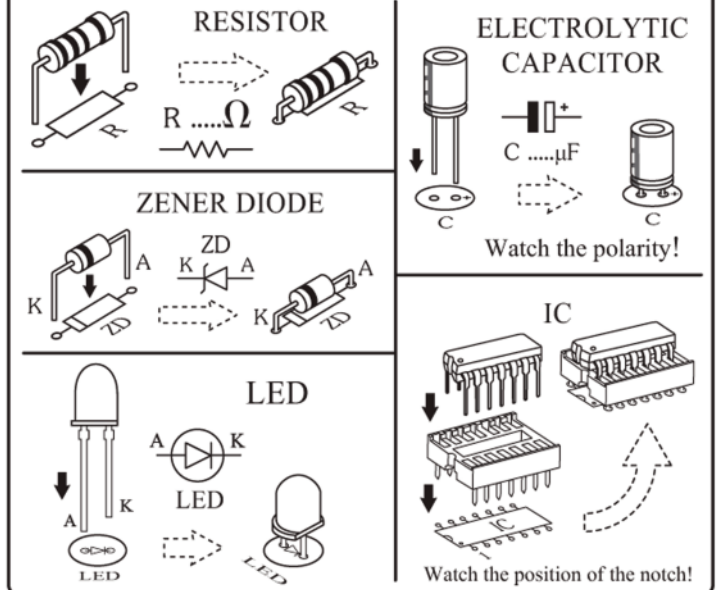


Figure 3 Installing components



Resistors

- R1, 30      1 kΩ      brown – black – red – gold
- R2, R8, R11, R14, R17, R20, R23, R26  
            10 kΩ      brown – black – orange – gold
- R3          100 kΩ      brown – black – orange – gold
- R4, R6, R9, R12, R15, R18, R21, R24, R27  
            1 MΩ      brown – black – green – gold
- R5, R28    20 kΩ      red – black – orange – gold
- R7, R19, R13, R16, R19, R22, R25, R28  
            5 kΩ      green – black – red – gold
- R31        3 kΩ      orange – black – red – gold

Electrolytic Capacitors

- C1, C2    33 μF

Diode

- ZD1       5.1 V

Integrated Circuits

- IC1, IC2   LM339

**Switch**

**Position 1**

LED	Water Resistance
8	0.98 kΩ
7	2.48 kΩ
6	4.41 kΩ
5	6.97 kΩ
4	10.57 kΩ
3	15.96 kΩ

**Position 2**

LED	Water Resistance
8	18.83 kΩ
7	33.80 kΩ
6	53.06 kΩ
5	78.74 kΩ
4	114.61 kΩ
3	168.61 kΩ
2	258.48 kΩ
1	438.22 kΩ

**Position 3**

LED	Water Resistance
8	197.26 kΩ
7	347.04 kΩ
6	539.62 kΩ
5	796.39 kΩ
4	1,155.86 kΩ
3	1,695.08 kΩ
2	2,593.77 kΩ
1	4,391.16 kΩ