



## Model 379 Battery Tester OPERATOR'S MANUAL



### **About this Manual**

To the best of our knowledge and at the time written, the information contained in this document is technically correct and the procedures accurate and adequate to operate this instrument in compliance with its original advertised specifications.

### **Notes and Safety Information**

This Operator's Manual contains warning symbols which alert the user to check for hazardous conditions. These appear throughout this manual where applicable, and are defined below. To ensure the safety of operating performance of this instrument, these instructions must be adhered to.



Warning, refer to accompanying documents.



Caution, risk of electric shock.



This instrument is designed to prevent accidental shock to the operator when properly used. However, no engineering design can render safe an instrument which is used carelessly. Therefore, this manual must be read carefully and completely before making any measurements. Failure to follow directions can result in a serious or fatal accident.

### **Technical Assistance**

SIMPSON ELECTRIC COMPANY offers assistance Monday through Friday 7:30 am to 5:00 pm Central Time. To receive assistance contact Technical Support or Customer Service at (847) 697-2260.

Internet: <http://www.simpsonelectric.com>

### **Warranty and Returns**

SIMPSON ELECTRIC COMPANY warrants each instrument and other articles manufactured by it to be free from defects in material and workmanship under normal use and service, its obligation under this warranty being limited to making good at its factory or other article of equipment which shall within one (1) year after delivery of such instrument or other article of equipment to the original purchaser be returned intact to it, or to one of its authorized service centers, with transportation charges prepaid, and which its examination shall disclose to its satisfaction to have been thus defective; this warranty being expressly in lieu of all other warranties expressed or implied and of all other obligations or liabilities on its part, and SIMPSON ELECTRIC COMPANY neither assumes nor authorizes any other persons to assume for it any other liability in connection with the sales of its products.

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## 1. GENERAL DESCRIPTION

The Simpson Battery Tester, Model 379 provides twelve ranges for batteries with voltage ratings from 1.5 to 90 volts. Each range is loaded to conform to average conditions as recommended by battery manufacturers. The meter dial has three English Reading Scales, each divided into three sections - Good, Weak and Bad. The top colored scale is used for radio A batteries, flashlight cells, etc. The center scale is used for hearing aid A batteries and the lower scale for transistor B and C batteries. In addition to these, a fourth scale which is calibrated in terms of "Percent of Selector Voltage" (0-110 percent) is provided for use in determining the actual battery voltage. The following table shows the load resistance, load current and voltage for the various ranges.

Voltage	Load Resistance	Load Current
.5 V (Hearing Aid)	140.6 $\Omega$	.011 A
1.5 V	5.1 $\Omega$	.30 A
4.5 V	78 $\Omega$	.06 A
6.0 V	105 $\Omega$	.06 A
7.5 V	132 $\Omega$	.06 A
9.0 V	746 $\Omega$	.012A
15 V	15,000 $\Omega$	.001 A
22.5 V	22,500 $\Omega$	.001 A
30 V	30,000 $\Omega$	.001 A
45 V	4,580 $\Omega$	.010 A
67.5 V	6,750 $\Omega$	.010 A
90 V	9,010 $\Omega$	.010 A

The above resistance should be within  $\pm 5\%$ .

**NOTE:** The load current is the current through the load resistance plus the current through the meter.

## 2. OPERATION

To determine the condition of a battery it is necessary to know the rated voltage of the battery, the type of battery (A or B) and its application (radio, hearing aid, flashlight, etc.) When these factors have been determined, rotate the voltage selector switch to the position which corresponds to the voltage rating of the battery. Two positions are provided for 1.5 V batteries. One is marked "1.5 V Hearing Aid" and is used for testing light duty units such as Hearing Aid "A" batteries, penlight cells and mercury cells.\* The other is marked 1.5V and is used for testing heavier units such as Radio "A" batteries, flashlight cells and ignition cells. Plug the black elbow connector into the jack marked - (negative) and the red elbow connector into the jack marked + (positive). Connect the black needle point prod to the negative terminal of the battery and the red prod to the positive terminal. Read the condition of the battery on the scale of

the meter which corresponds to the type of battery being tested.

The actual voltage of the battery may be determined by the use of the Percentage Scale if such information is required. This scale is calibrated from zero to 110 percent. 100 percent on the scale corresponds to the voltage indicated by the position of the selector knob. Thus if the selector knob is placed at the 30 V position and a 30 V potential connected across the test leads the meter will indicate 100%, but if the applied potential is 24 V the meter will read  $24/30 \times 100 = 80\%$ . 80% of 30 V is 24 V.

\* Since the voltage versus time characteristic curve of a mercury cell is essentially flat for most of its life, the test reading will only indicate the cell condition at the time of the test and cannot be used as an indication of life expectancy of the cell.

The actual voltage of the battery can therefore be determined by multiplying the selector setting by the indicated percentage.

The voltage ranges of the Model 379 were selected to accommodate the voltages most commonly used in Radio, Hearing Aid and Industrial service. Occasionally, it may be necessary to test batteries with a rated voltage other than those included on the Voltage Selector. The following chart was developed as a quick reference for testing odd values of batteries from 1.5 V to 99 V in steps of 1.5 V in addition to the 1.34 V mercury cell showing both nominal (100%) and "end of life" (70% of nominal) points.

Battery Volts	Tester Range	Nominal	Good Above
1.34 (Mercury)	1.5 H.A.	89	84
1.5	1.5	100	70
3.	4.5	67	47
4.5	4.5	100	70
6.	6.	100	70
7.5	100		70
9.	9.	100	70
10.5	15.	70	49
12.	15.	80	56
13.5	15.	90	63
15.	15.	100	70
16.5	15.	110	77
18.	22.5	80	56
19.5	22.5	87	61
21.	22.5	93	65
22.5	22.5	100	70
24.	22.5	107	75
25.5	30.	85	60
27.	30.	90	63
28.5	30.	95	67
30.	30.	100	70



Battery Volts	Tester Range	Nominal	Good Above
31.5	30.	105	73
33.	30.	110	77
34.5	45.	77	54
36.	45.	80	56
37.5	45.	83	58
39.	45.	87	61
40.5	45.	90	63
42.	45.	93	65
43.5	45.	97	68
45.	45.	100	70
46.5	45.	103	72
48.	45.	107	75
49.5	45.	110	77
51.	67.5	76	53
52.5	67.5	78	54
54.	67.5	80	56
55.5	67.5	82	58
57.	67.5	84	59
58.5	67.5	87	61
60.	67.5	89	62
61.5	67.5	91	64
63	67.5	93	65
64.5	67.5	96	67
66.	67.5	98	68
67.5	67.5	100	70
69.	67.5	102	72
70.5	67.5	104	73
72.5	67.5	107	75
73.5	67.5	109	76
75.	90.	83	58
76.5	90.	85	59
78.	90.	87	61
79.5	90.	88	62
81.	90.	90	63
82.5	90.	92	64
84.	90.	93	65
85.5	90.	95	67
87.	90.	97	68
88.5	90.	98	69
90.	90.	100	70
91.5	90.	102	71
93.	90.	103	72
94.5	90.	105	73
96.	90.	107	75
97.5	90.	108	76
99.	90.	110	77

The "value" of K for various types of batteries is given below:

Hearing Aid batteries	K = 65
All B batteries, Flashlight cells	K = 70
Radio A batteries, Ignition cells	K = 75
Mercury cells	K = 80

**Example:**

A battery consisting of 25 penlight (Hearing Aid "A") cells of 1.5 V each would have a nominal voltage of 37.5 V. The lowest range on which this battery could be tested would be the 45 V range. The nominal percent reading would be

$(37.5/45) \times 100 = 83\%$  and the "end of life" reading would be

$(37.5/45) \times 65 = 54.2\%$ . That is, any reading above 54.2% would be considered a good battery.

## 2. PARTS LIST

Description	Part No.
Function Switch	1-112750
Resistor, 3 KV, 61%, 1/2W	1-113287
Resistor, 15 KV, 61%, 1/2W	1-113347
Resistor, 7.5 KV, 61%, 1/2W	1-113370
Resistor, 5.1 KV, 61%, 1/2W	1-118197
Resistor, 1.5 KV, 61%, 1/2W	1-113648
Resistor, 2.4 KV, 65%, 1/2W	5-119350
Resistor, 6 KV, 61%, 1/2W	1-113650
Resistor, 22.5 KV, 61%, 1/2W	1-113651
Resistor, 27 V, 65%, 1/2W	5-118552
Resistor, 5.1 V, 65%, 1/2W	1-118193
Resistor, 150 V, 65%, 1/2W	5-118591
Resistor, 75 V, 65%, 1/2W	1-114113
Resistor, 680 V, 65%, 1/2W	1-117244
Knob	3-260180

## 3. ACCESSORIES

Description	Catalog No.
Replacement Test Leads	08375
Carrying Case, nylon padded	00836

**NOTES:**

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Printed in U.S.A. Part No. 01-110456 Edition 6, 10/02  
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