

OPERATING INSTRUCTIONS
MODEL BT-20A
BATTERY TESTER

A. W. Sperry Instruments Inc.

5 MARCUS BLVD., HAUPPAUGE, NEW YORK 11788

800-645-5398 (N.Y. and Alaska call 516-231-7050)

Fax: 516-434-3128 Telex: 645104 SPERRYINC HAUP



A.W. SPERRY BATTERY TESTER BT-20A

Description

The **A.W. SPERRY** Battery Tester **BT-20A** is a rugged, compact, reliable, easy-to-operate instrument. It is used to determine the condition of all popular types of batteries. Usually, the remaining power of a battery is determined by checking the battery voltage using a voltmeter. In this case, however, it is difficult to judge if the battery will be able to work properly for certain equipment or not, because a battery's performance capability can be determined accurately only when the representative load has been connected across battery terminals. These particularly representative loads for each of various types of batteries are built into the circuit of **BT-20A**. Therefore, when your battery tester has been set to test position for the specific type of battery under test, the **BT-20A** meter will precisely indicate the exact condition of the battery.

GENERAL FEATURES

Front panel controls; Function selector switch and
Mechanical zero adjuster.

Functions ; 15 measuring positions

Movement ; Moving coil -90° Arc, $200\mu\text{A}$ F.S.

Operating position ; Horizontal or Vertical

Construction ; High impact ABS plastic case and



phenolic PC board

Size ; 4-1/8" x 2-1/2" x 1-1/4", fits in your pocket

Weight ; 4.1 oz.

SPECIFICATION

Battery	Total Load Ohm	Working Fine Current (mA)	Maximum Replace Volts	Maximum Good Volts
1.5V Button	750	2	1.05	1.65
1.5V "AAA" all chemistries*	75	20	1.05	1.65
1.5V "AA" all chemistries*	37.5	40	1.05	1.65
1.5V "C" all chemistries*	10	150	1.05	1.65
1.5V "D" all chemistries*	5	300	1.05	1.65
3V Lithium	3,000	1	2.1	3.3
22.5V	2,250	10	15.7	24.7
12V	60	200	8.4	13.2
9V	500	18	6.3	9.9
6V Lantern	15	400	4.2	6.6
5.6-6.0V	1,200	5	3.8	6.0
4.0-4.5V	900	5	2.86	4.5
2.7-3.0V	600	5	1.91	3.0
1.6-1.7V	1,500	1	1.08	1.7
1.35-1.4V	292	5	1.05	1.65

Where, 1. Working Fine Currents (mA) are based on nominal battery voltage.

2. Max. Replace Volts are 70% of nominal battery voltage.

3. Max. Good Volts are 110% of nominal battery voltage.

* NOTICE

1.5V AAA, AA all chemistries : General purpose
(carbon zinc)

1.5V C, all chemistries : Heavy duty
(zinc chloride)

1.5V D, all chemistries : Alkaline
(alkaline manganese)

APPLICATION

Switch Position	Description of Batteries to be tested		
	Shape	Chemical System	Main Application
1.5V Button	Round Button	Silver-Oxide, Alkaline, Zinc-air, etc.	Watches, Wireless Microphones, Elec. Toys, Calculators, Cameras, Hearing Aids
1.5V "AA", "AAA"	Cylindrical	Carbon-Zinc, Zinc-Chloride, Alkaline	Desk Clock, Flash Lights, Radios
1.5V "C"	Cylindrical		Radios, Cassette Tape recorders, Multimeters
1.5V "D"	Cylindrical		Toy Cars, Large Portable Radios, Tape Recorders
3V Lithium	Flat disk	Lithium	Cameras, Exposure Meters, Pocket Calculators
22.5V	Rectangular	Carbon-Zinc Zinc-Chloride	Measuring Instruments, Photo, Lanterns
12V	Rectangular	Carbon-Zinc, Zinc-Chloride, Alkaline	Pocket Receiver, Mike, Portable Radio Telephones, Photo
9V	Rectangular	Alkaline, Carbon Zinc, Zinc-Chloride,	Radios, Toys, Multimeters, Trans Receivers, Fire & Smoke Alarms, Garage Door Openers
6V	Rectangular	Carbon-Zinc, Zinc-Chloride, Alkaline Sealed Lead Acid	Lanterns
5.6 6.0V	Cylindrical	Mercury or Silver-Oxide	Hearing Aids, Photo Exposure Meters
4.0-4.5V	Cylindrical	Alkaline, Zinc-Chloride Carbon-Zinc,	Photo Instruments, Lanterns
2.7 3.0V	Cylindrical	Mercury, Silver-Oxide	Photo Instruments
1.35 1.4V Hearing Aid	Round Button	Mercury	Hearing Aids, Photo Instruments, Watches
1.6 1.7V Hearing Aid	Round Button	Silver-Oxide	Calculators

METER SCALE

There are two scales on the meter. The upper scale is divided into three regions: red (REPLACE), yellow (?) and green (GOOD) areas which are used to test all batteries except hearing aid batteries. On this scale you can also read the percentage of the battery voltage under test, from 60% up to 110% of the nominal voltage. When the hearing aid batteries are tested, use the lower scale with only two red (REPLACE) and green (GOOD) regions. Here, the green (GOOD) regions extends the full length of the scale when silver (silver-oxide) batteries are tested (nominal voltage 1.35V). It is marked SILVER and MERCURY accordingly.

The mercury scale is shorter because a voltage of these, even when it is new, is essentially lower than those of the equivalent silver batteries.

OPERATING PROCEDURE

NOTE

Prior to operating the tester, adjust mechanical adjuster on the meter movement to line up the extreme left end of scale if necessary.

CAUTION

To avoid damaging the battery or BT-20A, first set the selector switch to the proper position for checking the battery under test. Do not keep the leads connected to the battery for a longer time than is necessary to determine its condition.

Two test methods are available with BT-20A tester. You can use either the test leads by themselves or the (+) contact (metal contact post on front panel) along with black test lead.

A. Test Procedure using Test leads

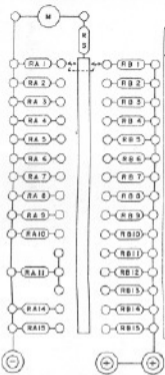
1. Set the selector switch to the position for testing the battery in question.
2. Remove the battery from the equipment in which it is used.
3. Connect red test lead to positive side of battery and black test lead to negative.
4. Note the reading on the meter scale, the pointer should indicate in the green area (or above) if the battery is in good condition. If the pointer indicates in the red area the battery must be replaced.
5. When the pointer indicates in yellow area, marked (?), between red and green area on the upper scale, the battery's condition is marginal. It is likely that the battery will not perform properly, and probably should be replaced soon.

B. Test Procedure using (+) contact

1. Follow steps 1 and 2 in "A" above.
2. Contact the positive terminal of the battery to (+) contact (A metal hexagon screw head located in lower left corner of the front panel) and black test lead to the negative terminal of the battery.
3. Follow steps 4 and 5 in "A" above.

C. If the pointer is deflected to the left the polarity of connection or the battery is reversed.

SCHEMATIC DIAGRAM



BATTERY	TOTAL LOAD OHM	WORKING FINE CURRENT (mA)	MAX REPLACE VOLTS	MAX GOOD VOLTS	RESISTOR (Ω)	
					RA	RB
1.5V BUTTON	750	2	1.05	1.60	500	295
1.5V AAA	75	20	1.05	1.60	458	295
1.5V AA	37.5	40	1.05	1.60	22.7	14.86
1.5V C	10	150	1.05	1.60	6.1	3.9
1.5V D	5	300	1.05	1.60	3.05	1.97
3V LITHIUM	8000	1	2.1	3.3	1111	2090
22.5V	2250	10	10.7	24.7	93	2160
12V	60	200	8.4	13.2	433	353
9V	500	18	6.3	9.9	51	450
6V LANTERN	15	400	4.2	6.4	2.27	12.73
5.6 - 6.0V	1200	5	3.8	6	208	1000
4.0 - 4.5V	900	5	2.85	4.5	208	700
2.7 - 3.0V	600	5	1.91	3.0	208	400
1.6 - 1.7V	1800	1	1.08	1.7	1064	623
1.35 - 1.4V	292	5	1.05	1.66	188	111

METER 200µA 12000
R 5 - 5000 Ω

