

# Operating Instructions

MODEL 901B

**BOWMAR**

 ON

K



D

CE

C

7

8

9

--

4

5

6

÷

1

2

3

X

0

•

+=

## **WARRANTY**

Bowmar/ALI, Inc. warrants to the purchaser of this new Bowmar Calculator that if the machine or any part thereof in the judgment of Bowmar is proven to be defective in material or workmanship within one year from date of original purchase, such defects will be repaired or replaced (at the Company's option) free of charge for parts and labor.

This warranty does not apply to any product which has been damaged by accident or which has been misused, abused, altered, or repaired by anyone other than Bowmar. Absence or defacement of the warranty seal on the unit shall be considered as evidence of unauthorized repairs and the warranty is thereby immediately void.

This warranty is in lieu of all other warranties expressed or implied, and no person is authorized to assume for Bowmar any other liability in connection with the sale of this product.

To obtain repairs, the Calculator should be delivered, prepaid, to Bowmar/ALI, Inc. at address shown below. In-warranty units will be returned postage prepaid.

Bowmar/ALI, Inc.,  
531 Main St., Acton, Massachusetts 01720.

## **INTRODUCTION**

**Your Bowmar 901B Electronic Calculator represents a significant engineering achievement resulting in full-size capability in a pocket-size package. Major advances in miniaturized computer circuits using single-chip LSI (Large Scale Integration), LED (Light Emitting Diode) display technology, and unique snap-action keyboard construction have provided a rugged and reliable unit, and the AC power supply and self-contained nickel-cadmium rechargeable batteries permit convenient use even when AC power is not available.**

**The Bowmar 901B will perform addition, subtraction, multiplication, and division functions, including chain or mixed multiplication and divisions, and utilization of a stored constant. Eight digits are provided for entry and read-out, with full-floating decimal point and positive or negative sign capability. Additional display indicators denote power on, low battery, overflow, error, and negative result (minus sign). A "time-out" feature**

**to extend battery operating time causes the display to blank out approximately 15 seconds after the last entry, without loss of stored information.**

**It is suggested that the following instructions for operation be read with the calculator at hand, and that all calculation examples be performed to increase your familiarity with the unit. A short outline of operating procedures is also printed on the back of the calculator for quick reference.**

## **OPERATION**

### **AC Operation:**

Connect the Charger unit to any standard 120 Volt electrical outlet and plug the 3-wire connector into the Calculator. (Note that the 3-wire connector is keyed and should not be forced into the socket the wrong way.) After the above connections, the power switch may be turned on and operation started. (While connected to AC, the internal batteries are automatically charged whether the power switch is "ON" or "OFF".)

### **Battery Operation:**

Disconnect the Charger cord and turn the power switch "ON". (An interlock switch in the Calculator socket will prevent battery

operation if the 3-wire plug remains connected.) With normal use, a full battery charge can be expected to supply about 5 hours of working time.

NOTE: When the low battery indicator (L) on the display is lighted, do not continue battery operation. This indicates need for a battery charge. Use of the Calculator can be continued during the charge cycle.

### **Battery Charging:**

Simply follow the same procedure as in AC operation. The Calculator may be used during the charge period if desired. In order to fully charge a battery which has been completely discharged, 14 hours is required. In most cases, an overnight charge should be adequate if the batteries have not been fully discharged.

NOTE: Although no damage will result from prolonged periods with the Charger connected, it is advisable to remove the Charger cord when the Calculator is not in use after a full recharge cycle.

## CONTROLS & INDICATORS

- "ON" Switch Turns Calculator "ON" & "OFF".
- 'K' Switch Slide switch with 2 positions; in the up position, the 'K' operation is in effect. Use of 'K' allows a number to be entered and retained as a "constant" for series multiplication or division.
- D** Key During battery operation, the display will automatically turn off about 15 seconds after the last operation. Pressing the **D** key recalls the contents of the display. Pressing *any* key also reactivates the display.
- C** Key Clears the Calculator and the display of all numbers.
- CE** Key Clears display of the previous keyboard entry.
- X** Key Enters a "multiply" command.
- ÷** Key Enters a "divide" command.
- + =** Key Adds the entered number, or carries out a previously entered "multiply" or "divide" command.
- =** Key Adds a minus sign to an entry. Subtracts the entered number or completes a previously entered "multiply" or "divide" command.



Key

Enters a decimal point.



Keys

Enter digits of a number (limit 8 digits).

Power-ON Indicator

Appears at the center of the Display when all other portions of the Display are off. Appears as



Overflow Indicator

Indicates a calculation result that contains more than eight digits. Appears as




Low Battery Indicator

Warns of need for battery charge during battery operation. Appears as



Minus Sign Indicator

Activated by the  key for operations with negative numbers.

Decimal Point Indicator

Automatically appears to the right of any number entered, unless inserted in another sequence by use of the Decimal key. With fractional numbers, it will be preceded by a zero.

Error Indicator

Indicates an entry of more than 8 digits. Appears as



# PRELIMINARY INSTRUCTIONS

## 1. To clear (erase)

- Touch the **C** key
- Cleared display will be:

0.

## 2. To enter (write a number)

Example: enter 123.45

- First, clear by touching **C**
- Then touch number and decimal keys for 123.45 one at a time. Always start with the left hand digit and progress from left to right.  
Display will then be:

123.45

## 3. To clear an incorrect entry

Example: 48+ 12 is your calculation

- You have already entered 48  
Display is:
- You now touch the **+ =** key  
Display will be:

48.

48.



- C. Then you enter *13* by mistake  
The display is:

**13.**

A mistake!

- D. To clear *13*, touch the **CE** key  
Display will be:

**0.**

- E. Then enter '12'  
Display will be:

**12.**

- F. Finally, touch the **+=** key for answer  
Display will be:

**60.**

Note: Use **CE** during, or immediately after entry of a number.

# CALCULATIONS

## 1. ADDITION

**Example #1: To calculate  $16.39 + 9.83 =$**

Do these steps

display will be

- |                           |       |
|---------------------------|-------|
| a. Touch <b>C</b>         | 0.    |
| b. Enter 16.39            | 16.39 |
| c. Touch <b>+=</b>        | 16.39 |
| d. Enter 9.83             | 9.83  |
| e. Touch <b>+=</b> Answer | 26.22 |

**Example #2:**

**To calculate  $16 + 9 + 8.3 + 4.1 =$**

Do these steps

display will be

- |                           |      |
|---------------------------|------|
| a. Touch <b>C</b>         | 0.   |
| b. Enter 16               | 16.  |
| c. Touch <b>+=</b>        | 16.  |
| d. Enter 9                | 9.   |
| e. Touch <b>+=</b>        | 25.  |
| f. Enter 8.3              | 8.3  |
| g. Touch <b>+=</b>        | 33.3 |
| h. Enter 4.1              | 4.1  |
| i. Touch <b>+=</b> Answer | 37.4 |

## 2. SUBTRACTION

**Example #1: To calculate  $12.81 - 3.6 =$**

Do these steps

display will be

- |                    |        |       |
|--------------------|--------|-------|
| a. Touch <b>C</b>  |        | 0.    |
| b. Enter 12.81     |        | 12.81 |
| c. Touch <b>+=</b> |        | 12.81 |
| d. Enter 3.6       |        | 3.6   |
| e. Touch <b>-=</b> | Answer | 9.21  |

**Example #2: To calculate  $23 - 6 + 2.1 - 5 =$**

Do these steps

display will be

- |                    |        |      |
|--------------------|--------|------|
| a. Touch <b>C</b>  |        | 0.   |
| b. Enter 23        |        | 23.  |
| c. Touch <b>+=</b> |        | 23.  |
| d. Enter 6         |        | 6.   |
| e. Touch <b>-=</b> |        | 17.  |
| f. Enter 2.1       |        | 2.1  |
| g. Touch <b>+=</b> |        | 19.1 |
| h. Enter 5         |        | 5.   |
| i. Touch <b>-=</b> | Answer | 14.1 |

### Example #3:

To calculate  $62 - 82 + 10 - 40 =$

Do these steps

display will be

- |                           |       |
|---------------------------|-------|
| a. Touch <b>C</b>         | 0.    |
| b. Enter 62               | 62.   |
| c. Touch <b>+=</b>        | 62.   |
| d. Enter 82               | 82.   |
| e. Touch <b>-=</b>        | — 20. |
| f. Enter 10               | 10.   |
| g. Touch <b>+=</b>        | — 10. |
| h. Enter 40               | 40.   |
| i. Touch <b>-=</b> Answer | — 50. |

### 3. MULTIPLICATION

Example #1: To calculate  $29.32 \times 56.5 =$

Do these steps

display will be

- |                           |         |
|---------------------------|---------|
| a. Touch <b>C</b>         | 0.      |
| b. Enter 29.32            | 29.32   |
| c. Touch <b>X</b>         | 29.32   |
| d. Enter 56.5             | 56.5    |
| e. Touch <b>+=</b> Answer | 1656.58 |

**Example #2: To calculate  $3 \times 21 \times 6.1 =$**

Do these steps

display will be

- |                            |       |
|----------------------------|-------|
| a. Touch <b>C</b>          | 0.    |
| b. Enter 3                 | 3.    |
| c. Touch <b>X</b>          | 3.    |
| d. Enter 21                | 21.   |
| e. Touch <b>X</b>          | 63.   |
| f. Enter 6.1               | 6.1   |
| g. Touch <b>+ =</b> Answer | 384.3 |

**Example #3: To calculate  $31 \times 6 =$**

**Use of 'K' Switch**

$31 \times 8.2 =$

$31 \times 7.6 =$

Do these steps

display will be

- |                                |      |
|--------------------------------|------|
| a. Touch <b>C</b>              | 0.   |
| b. Push 'K' on (up)            | 0.   |
| c. Enter 31                    | 31.  |
| d. Touch <b>X</b>              | 31.  |
| e. Enter 6                     | 6.   |
| f. Touch <b>+ =</b> 1st Answer | 186. |
| g. Enter 8.2                   | 8.2  |

h. Touch  $\div$  2nd Answer **254.2**

i. Enter 7.6 **7.6**

j. Touch  $\div$  3rd Answer **235.6**

k. Push 'K' off (down)

## 4. DIVISION

**Example #1: To calculate  $376 \div 53 =$**

Do these steps

display will be

a. Touch **C** **0.**

b. Enter 376 **376.**

c. Touch  $\div$  **376.**

d. Enter 53 **53.**

e. Touch  $\div$  Answer **7.0943396**

**Example #2: To calculate  $81 \div 3 \div 9 =$**

Do these steps

display will be

a. Touch **C** **0.**

b. Enter 81 **81.**

c. Touch  $\div$  **81.**

d. Enter 3 **3.**

e. Touch  $\div$  27.

f. Enter 9 9.

g. Touch  $+=$  Answer 3.

**Example #3: To calculate  $181 \div 15 =$   
Use of 'K' switch  $96 \div 15 =$   
 $117 \div 15 =$**

Do these steps

display will be

a. Touch  $C$  0.

b. Push 'K' on (up) 0.

c. Enter 181 181.

d. Touch  $\div$  181.

e. Enter 15 15.

f. Touch  $+=$  1st Answer 12.066666

g. Enter 96 96.

h. Touch  $+=$  2nd Answer 6.4

i. Enter 117 117.

j. Touch  $+=$  3rd Answer 7.8

k. Push 'K' off (down)

## 5. MIXED ARITHMETIC

**Example #1:** To calculate  $23 \times (-4) \div (-6) =$   
Do these steps display will be

- |                          |                  |
|--------------------------|------------------|
| a. Touch <b>C</b>        | <b>0.</b>        |
| b. Enter 23              | <b>23.</b>       |
| c. Touch <b>X</b>        | <b>23.</b>       |
| d. Enter 4               | <b>4.</b>        |
| e. Touch <b>=</b>        | <b>— 92.</b>     |
| f. Touch <b>÷</b>        | <b>— 92.</b>     |
| g. Enter 6               | <b>6.</b>        |
| h. Touch <b>=</b> Answer | <b>15.333333</b> |

**Example #2:**  
To calculate

$$\frac{(9 + 6 - 5) \times 8}{20} - 8 =$$

Do these steps

- |                   |             |
|-------------------|-------------|
| a. Touch <b>C</b> | <b>0.</b>   |
| b. Enter 9        | <b>9.</b>   |
| c. Touch <b>+</b> | <b>← 9.</b> |
| d. Enter 6        | <b>6.</b>   |
| e. Touch <b>+</b> | <b>15.</b>  |
| f. Enter 5        | <b>5.</b>   |

display will be



- g. Touch  $\text{--=}$  **10.**
- h. Touch  $\times$  **10.**
- i. Enter 8 **8.**
- j. Touch  $\div$  **80.**
- k. Enter 20 **20.**
- l. Touch  $\text{+=}$  **4.**
- m. Enter 8 **8.**
- n. Touch  $\text{--=}$  Answer **4.**

## 6. EXPONENTS

**Example #1: To calculate  $(3)^5 =$**

Do these steps

display will be

- a. Touch **C** **0.**
- b. Push 'K' on (up) **0.**
- c. Enter 3 **3.**
- d. Touch  $\times$  **3.**
- e. Enter 3 **3.**
- f. Touch  $\text{+=}$  **9.**
- g. Touch  $\text{+=}$  **27.**
- h. Touch  $\text{+=}$  **81.**

i. Touch **+=** Answer **243.**

j. Push 'K' off (down)

## 7. OVERFLOW INTERPRETATION

The overflow indicator "□" will appear when the display capacity of the Calculator is exceeded.

For example, multiplication of  
 $12345678 \times 345678$   
will give the following display

□ 42676.292

The "□" symbol indicates "overflow", or an answer of more than the 8 digits shown. To obtain the correct decimal location, simply record the displayed number and move the decimal point 8 places to the right. The real answer will then be:

、 4,267,629,200,000.  
└ 8 places ↑

This procedure applies to all operations, multiplication, division, addition and subtraction. Use the **C** key to clear the overflow.

## **BATTERY NOTES**

1. With normal use at room temperature, a full battery charge can be expected to supply about 5 hours of accumulated working time.
2. The Calculator may be used while its battery is charging.
3. Batteries that have been neither used nor charged for as long as 2 or 3 months will suffer substantial loss of operating time through a tendency to self-discharge. As a general rule, batteries lose about 1% charge per day due to self-discharge, at normal temperatures.
4. For optimum performance and long life:
  - a. Alternate frequently between Battery and AC power.
  - b. Operate at or near normal room temperatures.
  - c. Charge as soon as possible upon appearance of the Low-Battery indicator.
5. Recharge time is 14 hours for a fully discharged battery.
6. The Low-Battery indicator is designed to appear as soon as battery voltage drops to the lowest value that will support optimum performance of the Calculator. Should further discharge occur, through continued operations or self-discharge, the Low-Battery indicator may fail to appear. Do not continue to operate on batteries when this condition is noted, or a damaged battery may result.
7. As a general rule, if improper operation occurs, first try the Calculator with its charger connected. If operation is then normal, this indicates the batteries are low.
8. Do not store the unit in high temperature areas such as the top of radiators or the rear deck of automobiles exposed to the sun. The Calculator will operate satisfactorily over an ambient temperature range of 0 to 50C (32 to 122F) and relative humidity to 95%.

### OPERATING OUTLINE

\* (REFER TO INSTRUCTION MANUAL FOR COMPLETE DETAILS)

**START-UP** POWER SWITCH "ON"; PUSH  $\square$  KEY. CONSTANT ('K') SWITCH "OFF" UNLESS NEEDED.

**TIME-OUT** DURING PORTABLE USE, DISPLAY TURNS OFF 15 SEC. AFTER LAST OPERATION TO CONSERVE BATTERY. PUSH  $\square$  KEY TO RECALL, OR CONTINUE NEXT ENTRY.

**INDICATORS**

- ' - ' SHOWS "TIME-OUT" OPERATION.
- ' E ' WARNS INPUT MORE THAN 8 DIGITS.
- '  $\square$  ' WARNS ANSWER MORE THAN 8 DIGITS.
- ' L ' WARNS BATTERY CHARGING REQUIRED.

**CALCULATIONS** ALWAYS BEGIN BY PUSHING  $\square$ . IF MISTAKE IN ENTRY,  $\square$  KEY WILL CLEAR ENTRY BUT NOT MEMORY.

$A+B=X$ . ENTER A,  $\square$ ; ENTER B,  $\square$ ; READ X.

$A-B=X$ . ENTER A,  $\square$ ; ENTER B,  $\square$ ; READ X.

$A \times B=X$ . ENTER A,  $\square$ ; ENTER B,  $\square$ ; READ X.

$(-A) \times B=X$ . ENTER A,  $\square$ ; ENTER B,  $\square$ ; READ X.

$A \times (-B)=X$ . ENTER A,  $\square$ ; ENTER B,  $\square$ ; READ X.

$A \div B=X$ . ENTER A,  $\square$ ; ENTER B,  $\square$ ; READ X.

$A \div (-B)=X$ . ENTER A,  $\square$ ; ENTER B,  $\square$ ; READ X.

**CONSTANT (K)** 'K' SWITCH "ON".

$K \times A=X$ . ENTER K,  $\square$ ; ENTER A,  $\square$ ; READ X.

$K \times B=Y$ . ENTER B,  $\square$ ; READ Y.

$K \times C=Z$ . ENTER C,  $\square$ ; READ Z.

$A \div K=X$ . ENTER A,  $\square$ ; ENTER K,  $\square$ ; READ X.

$B \div K=Y$ . ENTER B,  $\square$ ; READ Y.

$C \div K=Z$ . ENTER C,  $\square$ ; READ Z.

**CHARGING** BATTERIES WILL FULLY CHARGE IN 14 HOURS WHEN CONNECTED TO AC OUTLET BY CHARGER CORD. CALCULATOR WILL ALSO OPERATE FROM AC POWER WHEN POWER SWITCH IS "ON".

**BOWMAR MODEL 901 B**

SER NO

**BOWMAR/ALI, INC. ACTON, MASS. 01720**

MADE IN U. S. A.

**REMOVAL VOIDS WARRANTY**