LLOYD'S

ACCUMATIC ™ 20

MICROELECTRONIC

HANDHELD CALCULATOR

WITH MEMORY

EH-8822-2

INTRODUCTION

Congratulations on the purchase of your new LLOYD'S Accumatic™ 20 Electronic Calculator. You can be assured of years of enjoyable, trouble-free service if you use it as outlined in these pages. This calculator is one of a wide ranging line of **personal** electronic products that LLOYD'S has to offer; **personal**, because all LLOYD'S products are designed to meet **your** needs for high quality performance and dependability at a reasonable price. If you already own a LLOYD's Stereo, Cassette Recorder, Portable Radio or Digital Clock Radio, you know what we maen. LLOYD'S enjoys an excellent reputation as the manufacturer of a variety of Home Entertainment Systems.

Now that you have purchased one of the LLOYD'S line of calculators, you may be interested in knowing that all LLOYD'S calculators employ the most advanced microelectronic technology available to date. Modern technology has made it possible to miniaturize most of the electronic circuitry in your calculator so that it fits on a chip of silicon which can pass through the eye of a needle! No wonder we can make a calculator which fits in a pocket!

Why not take a few minutes to read this manual for the full story on the far-reaching capabilities of your new microelectronic calculator.

BEFORE OPERATION OF YOUR CALCULATOR

Your calculator operates from four AA penlight batteries, either Carbon-Zinc, Alkaline or Nickel Cadmium. Although they have a higher initial cost, Alkaline batteries and Rechargeable batteries will give you the best overall value.

The calculator can also be operated using LLOYD'S AC Adaptor Model YA-7247 (120V/60Hz) or Model YA-7585 (220V/50 Hz).

CAUTION: The batteries supplied with this unit are not rechargeable. To avoid possible damage to unit, these batteries should be removed when using LLOYD'S AC Adaptor YA-7247 (120V/60Hz) or YA-7585 (220V/50Hz).

HOW TO CHANGE BATTERIES

To change the batteries, make sure the power switch is in the 'OFF' position. Remove the battery access cover from the back of the calculator by sliding it toward the bottom of the machine. Remove and discard the old batteries. When inserting new batteries, observe the battery polarity. The (+) pole of each battery must correspond with the (+) indication in the battery compartment. Damage to the calculator can be caused by incorrect placement of the batteries.
A dimly lighted display is an indication that the battery voltage is low. This is the time to replace the batteries with fresh ones (if rechargeables are being used, recharging is required). If the batteries become too low, the calculator will not operate.

HOW TO USE AN AC ADAPTOR

Your calculator may also be operated from AC with the use of LLOYD'S AC Adaptor Model YA-7247 (120V/60Hz) or Model YA-7585 (220V/50Hz). Batteries may be left in the calculator when using it on AC. However, if the calculator is being used on AC only over long periods of time, the batteries should be removed to prevent possible damage from battery leakage. The AC Adaptor will also charge Rechargeable Alkaline and Nickel-Cadmium (Nicad) batteries.

CAUTION: To avoid damage, use only LLOYD'S Model YA-7247 (120V/60Hz) or Model YA-7585 (220V/50Hz) AC Adaptors with your calculator.
To connect the adaptor, follow these four steps in the order outlined:
1. Make sure that the power switch is in the 'OFF' position.
2. Connect the adaptor plug into the calculator socket.
3. Plug the adaptor into the power outlet.
4. Move the calculator power switch to the 'ON' position.

NOTE: When the AC Adaptor is used only to recharge Nicad or Rechargeable Alkaline batteries, it is not necessary to move the calculator switch to the 'ON' position.

CAUTION: When the calculator is not in use, disconnect the AC Adaptor from the AC outlet AND from the calculator. Leaving the AC Adaptor plugged into the calculator without it also being plugged into an AC outlet will drain the batteries.

KEYBOARD ORGANIZATION

The following is a brief explanation of the function of each key and indicator found on the keyboard of the Accumatic™ 20.

DIGIT ENTRY KEYS

[0] Through [9]: Pressing one of these keys will enter that digit into the rightmost display position. Previously entered digits will be shifted one position to the left.

DECIMAL POINT ENTRY KEY

[.]: Depression of this key will correctly position the decimal point in your entries.

ARITHMETIC FUNCTION KEYS

[+], [−], [×], [÷]: Depression of any one of these keys tells the calculator what operation to perform with the next number entered. During calculations, intermediate results are also displayed when these keys are depressed.

EQUAL KEY

[=]: when the [=] key is depressed, the answer will appear on the display.

PERCENT KEY

[%]: Depression of this key causes the number on the display to be expressed as a percentage.

CHANGE SIGN KEY

[+/−]:Depression of this key changes the sign of the displayed number. To enter a negative number, enter the number first, then depress this key.

REGISTER EXCHANGE KEY

[EX]:Depression of this key exchanges the contents of the display (x) register and the constant (y) register.

CLEAR AND CLEAR ENTRY KEY

[C]: Depression of this key performs the following functions:
1. Resets error or overflow indicator. This does not clear the display or memory. Press [C] ONCE.
2. Clears the display register (wrong entry). Previous entries and the arithmetic mode set are not affected. Press [C] ONCE.
3. Two successive depressions of the clear [C] key will clear all registeres EXCEPT the memory register.

MEMORY OPERATION

Depression of the following keys perform the various memory operations.
1. [M+] : Adds the contents of the display (X) register to the contents of the memory. The display (X) resister and all previous operations are unaffected by this operation.
2. [M−] : Subtracts the contents of the (X) resister from the contents of memory. The (X) resister and all previous operation are unaffected by this operation.
3. [MC] : Clears the memory (sets memory contents to zero) without disturbing other calculator modes or resisters.
4. [MR] : Recalls the contents of memory to the display without clearing the memory.

MEMORY INDICATOR

This indicator is a dot which will light in the leftmost display position whenever memory contents are non-zero.

NEGATIVE NUMBER INDICATOR

This indicator is located in the leftmost display position and lights whenver negative numbers or credit balances are displayed.

OVERFLOW (ERROR) INDICATOR

This indicator is located in the leftmost display position. Any answer or subtotal exceeding eight digits to the left of the decimal point, overflow indicator "[" lights and eight most significant digits are displayed. The position of the decimal point in the overflowed display tells you how many digits are overflowed.
For example, if the overflowed display reads [1234.5678, the decimal point indicates four overflowed (counting from the left). The actual answer is 123456780000.

Two successive depression of the clear ⓒ key will reset the calculator and only a zero, in the rightmost position, will appear on the display.

MACHINE CAPACITY

1. The Capacity of the machine is 0.0000001 to 99,999,999 (10^x to 10^x -1).
2. The calculator displays whole numbers up to eight digits.
3. The calculator displays decimal numbers up to eight digits. For decimal answers exceeding eight digits, the least significant decimal digits are automatically suppressed to prevent overflow.
4. The calculator displays numbers less than 1 up to seven digits. A zero always appears to the left of the decimal point if the number is less than one.

EXAMPLE PROBLEMS

The following example problems show you how easy it is to use the Accumatic™ 20 Calculator.
The calculator should be turned on using the On-Off switch located at the top edge of the calculator. When the calculator is 'On', a zero will appear in the rightmost display position. You are now ready to begin.

ADDITION

Example: 5 + 3 = 8

ENTRY	DISPLAY	COMMENTS
5	5	
⊞	5	Sets Add Mode
3	3	
⊟	8	

SUBTRACTION

Example: 6 - 2 = 4

ENTRY	DISPLAY	COMMENTS
6	6	
⊟	6	Sets Subtract Mode
2	2	
⊟	4	

NEGATIVE BALANCE

Example: 4 - 9 = -5

4	4	
⊟	4	Sets Subtract Mode
9	9	
⊟	-5	Negative Indicator Lights

MIXED ADDITION, SUBTRACTION

Example: 3 - 7 + 8 = 4

3	3	
⊟	3	Sets Subtract Mode
7	7	
⊞	-4	Result 3-7 Negative Indicator Lights
8	8	Negative Indicator Goes Out
⊟	4	

MULTIPLICATION

Example: 5.2 x 6.3 = 32.76

5.2	5.2	
⊠	5.2	Sets Multiply Mode
6.3	6.3	
⊟	32.76	Multiply Mode is still set for Auto-Constant

DIVISION

Example: 12.4 ÷ 0 4 = 31

ENTRY	DISPLAY	COMMENTS
12.4	12.4	
÷	12.4	Sets Divide Mode
.4	0.4	No Need to Key-In Leading Zero
=	31	

MIXED MULTIPLICATION, DIVISION

Example: 8 x 6 ÷ 12 = 4

8	8	
×	8	Sets Multiply Mode
6	6	
÷	48	Result 8 x 6
12	12	
=	4	

PERCENTAGE

Example: 5% of 30= 1.5

5	5	
%	0.05	Converts 5 to Percentage Format.
×	0.05	Sets Multiply Mode
30	30	
=	1.5	

AUTOMATIC MARK—UP

Example: A $47.25 Purchase Plus 4% Tax

47.25	47.25	
+	47.25	
4	4	
%	1.89	4% of 47.25
=	49.14	

AUTOMATIC DISCOUNT

Example: A $15.25 Item Discounted 20%

ENTRY	DISPLAY	COMMENTS
15.25	15.25	
−	15.25	
20	20	
%	3.05	20% of 15.25
=	12.20	

COMBINED MARK-UP, DISCOUNT

Example: A $31.25 Item Discounted 20% Plus 5% Tax

31.25	31.25	
−	31.25	
20	20	
%	6.25	20% of 31.25
+	25.00	Discounted Price
5	5	
%	1.25	5% of 25.00
=	26.25	

POWERS

Example: $2^4 = 16$

2	2	
×	2	Sets Multiply Mode
=	4	2^2
=	8	2^3
=	16	2^4

RECIPROCAL

Example: 1/4 = 0.25

ENTRY	DISPLAY	COMMENTS
4	4	
⊞	4	
⊟	1	
⊟	0.25	

REPEATED OPERATIONS

ADDITION

Example: 20 + 4 + 4 + 4 = 32

20	20	
⊞	20	Sets Add Mode
4	4	
⊞	24	20 + 4
⊞	28	20 + 4 + 4
⊟	32	20 + 4 + 4 + 4

SUBTRACTION

Example: 18 − 3 − 3 − 3 = 9

18	18	
⊟	18	Sets Subtract Mode
3	3	
⊟	15	18 − 3
⊟	12	18 − 3 − 3
⊟	9	18 − 3 − 3 − 3

MULTIPLICATION

Example: 4 x 4 x 4 x 4 = 256

ENTRY	DISPLAY	COMMENTS
4	4	
⊠	4	Sets Multiply Mode
⊠	16	4 x 4
⊠	64	4 x 4 x 4
⊟	256	4 x 4 x 4 x 4

DIVISION

Example: 2 ÷ 2 ÷ 2 ÷ 2 = 0.25

2	2	
⊟	2	Sets Divide Mode
⊟	1	2 ÷ 2
⊟	0.5	2 ÷ 2 ÷ 2
⊟	0.25	2 ÷ 2 ÷ 2 ÷ 2

CONSTANT OPERATIONS

MULTIPLICATION

Example: 4 x 3 = 12, 4 x 5 = 20

4	4	
⊠	4	Sets Multiply Mode
3	3	
⊟	12	Sets Auto-Constant
5	5	
⊟	20	

DIVISION

Example: $6 \div 2 = 3, 8 \div 2 = 4$

ENTRY	DISPLAY	COMMENTS
6	6	
÷	6	Sets Divide Mode
2	2	
=	3	Sets Auto-Constant
8	8	
=	4	

CHAIN OPERATIONS

Example: $\dfrac{(6+4)\,2-8}{5} = 2.4$

ENTRY	DISPLAY	
6	6	
+	6	
4	4	
×	10	6 + 4
2	2	
−	20	(6 +4) 2
8	8	
÷	12	(6+ 4) 2 − 8
5	5	
=	2.4	Result

REGISTER EXCHANGE

Example: $\dfrac{15}{2+3} = 3$

ENTRY	DISPLAY	
2	2	
+	2	
3	3	
÷	5	2 + 3
15	15	
⊠	5	Exchanges X and Y Registers
=	3	

CHANGE SIGN

Example: $\dfrac{5^2\,(-3)}{15} = -5$

ENTRY	DISPLAY	COMMENTS
5	5	
×	5	Sets Multiply Mode
×	25	5^2
3	3	
+/−	−3	
÷	−75	5^2 x (−3)
15	15	Negative Indicator Goes Out
=	−5	Negative Indicator Lights

MEMORY OPERATION

This example is used to illustrate the various memory features. You buy 5 of Item A for $0.25 each and 6 of Item B for $0.75 each. You return for credit 2 of Item C at $0.15 each.

ENTRY	DISPLAY	COMMENTS
5	5	
⊠	5	
.25	0.25	
=	1.25	Cost of Item A
M+	1.25	Memory Indicator lights
6	6	
⊠	6	
.75	0.75	
=	4.5	Cost of Item B
M+	4.5	Adds Cost of Item B to Item A in Memory

ENTRY	DISPLAY	COMMENTS
2	2	
⊠	2	
.15	0.15	
⊟	0.3	Credit for Item C
M⊟	0.3	Subtracts Item C from A & B in Memory
MR	5.45	Total Scale
MC	5.45	Clears Memory
C	0	

ENTRY CORRECTION

Example: 5 + 3 = 8

5	5	
+	5	
4	4	Should Have Been 3.
C	0	
3	3	
⊟	8	

RECOVERY TECHNIQUES

Occasionally during claculations, an undesired arithmetic function key may be depressed. Utilizing these simple recovery techniques makes it unnecessary to begin the calculations again.

For example, if the ⊞ or ⊟ keys are inadvertently depressed, simply enter a 0, depress the intended arithmetic function and continue with the calculation. If the ⊠ or ⊡ keys are inadvertently depressed, simply enter a 1, depress the intended function key and continue with the calculation.

OVERFLOW AND ERROR INDICATIONS

Whenever the capacity of the machine is exceeded or an impossible calculation is attempted the error indicator in the leftmost display position will light.

The error conditions relevant are:

1. Depressing ⊞, ⊟, ⊠, ⊡ where the magnitude of the result is greater than 99,999,999.
2. Depressing M⊞ or M⊟ where the magnitude of the result in memory is greater than 99,999,999.
3. Division by zero.

PRODUCT WARRANTY

LLOYD'S Electronics warrants its products to be free from defects in materials and workmanship under normal use and service for the following period:

PARTS 1 YEAR   LABOR 90 DAYS

This warranty begins with the date of purchase and applies to the original owner only. Within the specified period LLOYD'S will repair or replace any part(s) which we deem defective through normal use, at no charge except for a factory processing fee of $1.75.

All products must be returned to the appropriate LLOYD'S Factory Service Department for Warranty Service.

IMPORTANT: To obtain Warranty Service on any product, you must present a copy of the Bill of Sale as proof of valid guarantee. If the merchandise is to be mailed to us, be certain to include the Bill of Sale along with your check or money order for the processing fee.

Any alterations, abuse, misuse, battery corrosion or accidental damage voids this guarantee.

Any repairs made by other than a LLOYD'S Factory Service Center are not covered by our warranty.

This guarantee is in lieu of all other guarantees, either expressed or implied and is valid only in the Continental U.S., Alaska, Hawaii and Canada.

Beyond the warranty period service may be obtained at the Factory Service Centers at reasonable rates.

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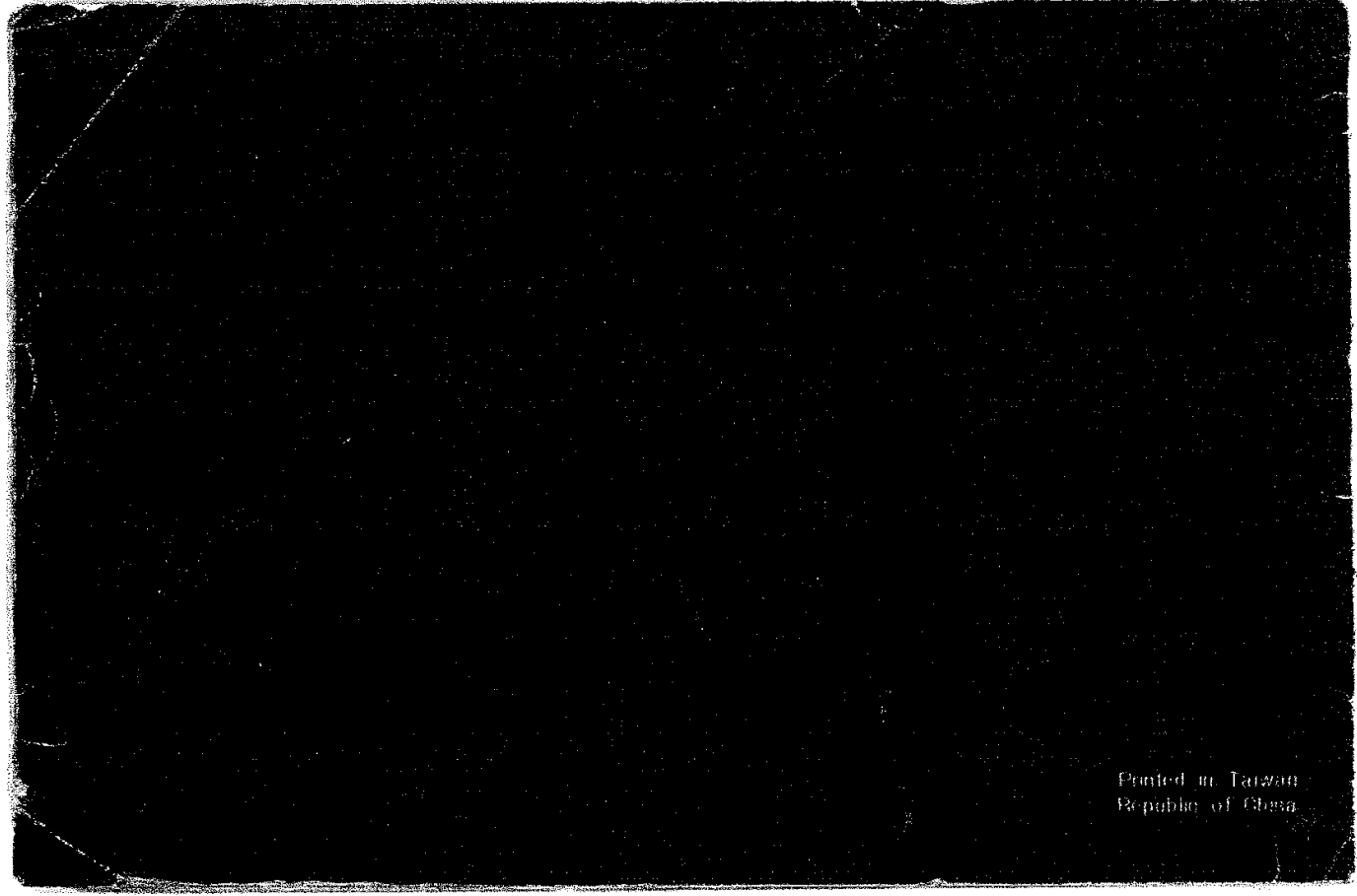857 Yorkmills Road
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