olivetti | Elettrosumma 22



Instruction book for

olivetti

Elettrosumma 22



Contents

Introduction									
Numeral Keys									11
Clearing the Machine						•			11
Setting a Number									11
Capacity of the Machine									11
Information for the $O_{ m I}$	be	rai	t 01						
Column Indicator									15
Credit Balance Signal									15
Corrections									15
Insertion of Paper Roll .									16
Platen Knob									16
Paper Release Lever									17
Changing the Ribbon									17
Electric Motor									17
Care of the Machine									18
Touch Method Operation									18
Elementary Operations	s								
Addition									23
Subtraction									
The Sub-total									
Repeat Lever									
Credit Balance - Total .									
Credit Balance - Sub-total									26

Identification Numbers and Symbols							27
Non-add or Reference Numbers							27
Non-print							27
Date Key							28
Multiplication							29
Commercial Applications Short out Multiplication Two Evamples							22
Short cut Multiplication - Two Examples							
Discounts – Three Examples					•		34
Percent Increase and Increased Amount - T	hr	ee	Ex	am	ple	es	36
Inventory							37
Total Debits, Credits and Balance							38
Addition followed by Multiplication							38
Negative Multiplication - Two Examples							39

Introduction

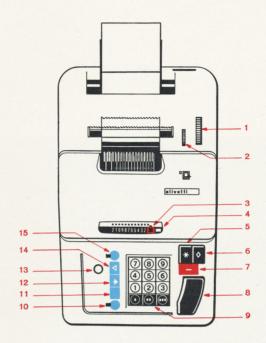


The Elettrosumma 22

is an electric adding listing machine. It adds, subtracts and gives credit balance. Multiplication by successive addition is practical and fast on the Elettrosumma 22 because of its high speed (220 cycles per minute). It also speeds up entry of numbers in the keyboard with the use of double and triple cipher keys. The Elettrosumma 22 permits the number set in the keyboard to be maintained as a constant during an operation, and also after a sub-total or total has been printed. The machine also features an automatic date key. All figures are printed clearly on tape and are identified by appropriate symbols. However, it is possible to obtain results without printing the intermediate factors with the use of a special non-print key, which is automatically released when total or sub-total key is depressed. The Column Indicator shows the actual number of digits set on the keyboard, permitting the operator to tell at a glance whether the correct number of digits was entered.

Years of experience in manufacturing and marketing printing calculators has made possible the production of the Elettrosumma 22, a truly remarkable contribution in the field of adding

machines.



- 1. Platen Knob
- 2. Paper Release
- 3. Column Indicator
- 4. Credit Balance Indicator
- 5. Total Key
- 6. Sub-total Key
- 7. Subtract Key
- 8. Add Bar
- 9. Zero Keys
- 10. Repeat Lever
- 11. Keyboard Clearing Key
- 12. Back-space Key
- 13. Date Key
- 14. Non-add Key
- 15. Non-print Key

NUMERAL KEYS

The Elettrosumma 22 is equipped with nine white keys to set digits from 1 to 9, and with three black keys to set single, double and triple zeros. The double and triple zero keys speed figure entry.

CLEARING THE MACHINE

Before starting an operation, clear the machine by depressing the Total Key * The red symbol * on the tape indicates that the machine is clear.

SETTING A NUMBER

To set a number on the keyboard read the digits of the number from left to right, depressing the corresponding numeral keys.

CAPACITY OF THE MACHINE

Twelve columns may be listed: 9,999,999,999.99 and a thirteen-column total obtained: 99,999,999,999.99.

(7) (8) (9)

4 5 6

1 2 3

000

99999999999 +

999999999999 *



Information for the Operator



COLUMN INDICATOR

When any number is set on the keyboard, a red marker appears in the little window above the keyboard. This marker moves from right to left and indicates the digit capacity of the number set. If, therefore, an operator is uncertain of the exact digit capacity of the number set on the keyboard they can check the setting at a glance. The marker returns to its original position after any function key is depressed, provided the Repeat Lever is not in the ON position.

CREDIT BALANCE SIGNAL

Whenever the machine contains a negative (credit) balance a white signal appears to the right of the Column Indicator. If the total is zero (or if the machine is clear) the signal may or may not appear, depending upon whether the preceding total was positive or negative.

CORRECTIONS

When the operator is aware of having set an incorrect number, the keyboard can be cleared with the electric Clearing Key

Corrections in the final digit or digits of a keyboard entry may be made, without cancelling the entire entry, by using the Backspace Key

To correct a wrong number

21098765432



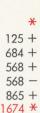
which has been already added (or subtracted) without clearing the registers, reenter the wrong number and subtract (or add) it. In the example, the addition of the number 568 has been cancelled by subtracting the same number. The operation is then continued, adding the correct number, 865.

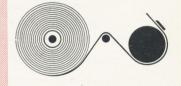
INSERTION OF PAPER ROLL

Insert the paper roll between the two holders so that the tape feeds from underneath, and rides smoothly over the bar on which the holders slide. Feed the tape under the platen and then under the transparent paper cutter by rotating the platen knob, located at the right on the top of the machine. The tape can be centered properly with the Paper Release Lever, located to the right of the paper cutter. A 3½" roll of tape is recommended, but other widths may be used, provided the capacity of the calculations does not exceed the width of the tape.

PLATEN KNOB

The Platen Knob is used for manual line spacing and for advancing or retracting the printing tape. It is located on the right hand side of the platen. To advance the tape, roll the Platen Knob from front to back.





PAPER RELEASE LEVER

When the Paper Release Lever (at the right of the Paper Cutter) is depressed it enables precise finger-tip adjustment of the tape when changing the paper roll.

CHANGING THE RIBBON

Remove the cover. Move the ribbon reverse levers away from the spools as illustrated. Remove spools. Unwind the ribbon completely from one spool. Fasten the end of the new ribbon to the empty spool and wind it a few turns. Replace the spools, making sure that the black part of the ribbon is up, inserting the ribbon between the guides. Rotate each spool until the spool engages with the drive gear. (Restore the reverse levers). It is recommended that only genuine Olivetti Ribbons be used.

ELECTRIC MOTOR

An electric motor especially designed and planned to give the Elettrosumma 22 its remarkably high speed is protected against shock and impact. Its accessibility is simple. To obtain the maximum efficiency for any current, the Elettrosumma 22 is equipped with a Universal Motor suitable for 110-220 Volt AC or 110 Volt DC. The machines



are regulated at the factory for a velocity of 220 cycles a minute. This speed combined with double and triple zero key gives the Elettrosumma 22 one of the highest speeds yet achieved by any adding machine.

CARE OF THE MACHINE

The Olivetti Elettrosumma 22 is a high precision machine built to perform accurately for many years. Like any precision machine, however, it requires proper care. The machine should be protected by its dust cover when not in use. Repairs should never be entrusted to any but a qualified mechanic. The Olivetti organization, through its branches and dealers, is able to furnish qualified mechanics specially trained in the service of the Elettrosumma 22.

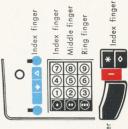
TOUCH METHOD OPERATION

The 4 5 6 Keys are slightly concave, to enable the operator to position the hand for touch method operation. Therefore, the operator must, first of all, get into the habit of assuming the most convenient position in relation to the machine. Experience has shown that just three fingers, the index, the middle and ring fingers, should be used and that each finger should always operate the same vertical group of keys.

Therefore:

(7) (4) (1) and () should be set with the *index* finger. (8) (5) (2) and () should be set with the *middle* finger. (9) (6) (3) and () should be set with the *ring* finger.

The Back-space Key, the Clear Key and the Non-add Key are set with the index finger. The Add Bar can be depressed with the side of the hand or the little finger, while the other three keys on the right of the keyboard should be set with the ring finger.



Little finger



Elementary Operations



ADDITION

Example:

$$\frac{123}{+42}$$
 $=165$

Depress in succession the numeral keys (1) (2) (3)

Then depress the Add Bar.

Depress the 4 and 2 numeral keys.

Again depress the Add Bar.

Depress the Total Key *

The figures and the total (in red) are printed on the tape with their appropriate symbols.

The asterisk printed on the tape identifies the total and indicates that the machine is clear.

SUBTRACTION

Example:

$$\frac{343}{-23}$$

Set ③ ④ ③ on the keyboard. Depress the Add Bar.

Set ② ③ on the keyboard. Depress the Subtract Key — Depress the Total Key *

THE SUB-TOTAL

Example:

$$\begin{array}{r}
26,000 \\
+ 7,000 \\
= 33,000 \\
- 2,500 \\
+ 300 \\
= 30,800
\end{array}$$







Set (2) (6) . Depress the Add Bar.
Set (7) . Depress the Add Bar. Depress the Sub-total Key

The Sub-total, $33,\overline{000}$, is printed with the symbol \diamond to indicate that the sum is retained by the machine.

Set (2) (5) . Depress the Subtract Key ____ Set (3) . Depress the Add Bar.

Depress the Total Key * to print the total 30,800 and clear the machine.

REPEAT LEVER

From the preceding examples it will be noted that the number set on the keyboard is automatically cleared after a function key is depressed. However, it is possible to lock the number on the keyboard (if for example the same number has to be added several times in succession) by shifting the Repeat Lever to the left \bigcirc . The Repeat Lever can be shifted before or after setting the number to be repeated.

Example:

 $\begin{array}{r}
125 \\
+ 700 \\
+ 185 \\
+ 185 \\
+ 185 \\
\hline
= 1,380
\end{array}$

Set ① ② ⑤. Depress the Add Bar.

Set (1) (8) (5). Move the Repeat Lever to the left \circ - to the Repeat position.

Hold down the Add Bar for three cycles.

26000 + 7000 + 33000 ❖ 2500 -300 + 30800 ★

125 +

700 + 185 +

185 +

185 +

1380 ×

Depress the Total Key * The machine prints the total 1,380 and clears the register. The Repeat Lever returns automatically to the OFF position • when either total or sub-total controls are depressed.

On the Elettrosumma 22, it is possible to retain the number set on the keyboard as a constant while obtaining a total or sub-total. To do this, hold the Repeat Lever to the left — while depressing the total or sub-total key. If other figures are to be added or subtracted after a sequence of repeat operations requiring the use of the Repeat Lever, depress the keyboard Clearing Key (See information for the operator) and shift the Repeat Lever into the OFF position —.

Example:

 $\begin{array}{r}
1,200 \\
+ & 150 \\
+ & 300 \\
+ & 300 \\
+ & 550 \\
\hline
= 2,500
\end{array}$

Set 1 2 . Depress the Add Bar.

Set 1 5 • Depress the Add Bar.

Set 3 • Move Repeat Lever to the left o-.

Depress and hold Add Bar for two cycles. Move Repeat Lever to the OFF position -O. Depress keyboard Clearing Key

Set 5 5 • Depress the Add Bar. Depress the Total Key *

Tape shows 2,500, sum of the addition.

1200 + 150 + 300 + 300 + 550 +

CREDIT BALANCE - TOTAL

Note: Credit balance is a negative total or sub-total.

Example:

 $\begin{array}{r} 30,000 \\ -75,000 \\ \hline = 45,000 \end{array}$

Set 3 • Depress Add Bar.

Set (7) (5) . Depress Subtract Key. Depress Total Key *

Tape shows negative sum 45,000. The negative is printed in red with the symbol \pm . A white signal appears to the right of the column indicator, indicating a negative balance in the machine.

CREDIT BALANCE - SUB-TOTAL

A credit balance can also be obtained by depressing the Sub-total Key.

Example:

 $\begin{array}{r}
-23,500 \\
+1,452 \\
=22,048 \\
+2,073 \\
=19,975
\end{array}$

Set 2 3 5 . Depress the Subtract Key.

Set (1) (4) (5) (2). Depress the Add Bar. Depress the Sub-total Key (5)

The credit balance (as a sub-total) is printed in red with the symbol $\stackrel{\diamond}{\sim}$.

Set 2 • 7 3. Depress the Add Bar. Depress the Total Key *

Tape shows 19,975 credit balance again with symbol \pm .

*

30000 + 75000 - 45000 *

*

23500 -1452 +

22048 **♦** 2073 +

19975 ±

IDENTIFICATION NUMBERS AND SYMBOLS

From the previous examples it will be noted that – Amounts added or subtracted are printed in *blue*.

Totals and sub-totals, positive or negative, obtained either with or without zeros, are printed in *red*.

All plus amounts have a + sign, all minus amounts have a - sign.

NON-ADD OR REFERENCE NUMBERS

Any reference number (e.g. employee number) can be printed with the Non-add Key

Example: Employee number 23.

Set ② ③. Depress the Non-add Key ব The number is printed with the symbol < indicating that the number has not been entered into the register of the machine, and therefore, will not affect the calculation.

NON-PRINT

It has been noted that any number, whether it is added or subtracted, appears on the tape with its appropriate symbol. However, when desired, it is possible to obtain the result of an operation without printing the various factors of the calculation.

23 <

To do this, shift the Non-print Lever to the left \circ .

Depressing either the Total or Sub-total Key returns the Non-print Lever to its normal (OFF) position and the result is printed on the tape.

This feature is of particular advantage in checking results where the intermediate figures are not required.

Example:

$$\frac{147}{+13}$$
 $= 160$

Move the Non-print Lever to the left \bigcirc . Set \bigcirc (4) \bigcirc (7). Depress the Add Bar.

Set (1) (3). Depress the Add Bar.

Note there is no printing on the tape. Depress the Total Key *

The machine prints the total, 160, while the Non-print Lever returns automatically to the OFF position -○.

Note: When the Non-print Lever is in the ON position the tape does not move.

DATE KEY

The Elettrosumma 22 has a special Date Key which permits the operator to print the date automatically and simultaneously with any function key.

The Date is set each day by positioning the four special print wheels with a stylus or pencil.

160 ×

For example, having set the special print wheels for the date 9/25, depressing the Date Key and subsequently the Non-add Key causes the machine to print the date 9/25.

Any other function key may be depressed to obtain the date.

Example:

 $\begin{array}{r}
1,250 \\
+ 430 \\
+ 4,320 \\
\hline
= 6,000
\end{array}$

Perform the addition. Before depressing the Total Key, depress the Date Key assuming it has been set for 9/25, then depress the Total Key.

The Date will be printed on the left side of the tape, simultaneously with the total.

Note: The Date wheels may be used as a constant reference number, which could indicate, for example, the operator of the machine, or the machine itself, when more than one is in use.

MULTIPLICATION

To multiply one number by another, for example $1,230 \times 124$.

Set ① ② ③ • . Move the Repeat Lever to ON position.

Hold down Add Bar for as many cycles as the last digit in the multiplier (in this case: 4). Depress the single • Key, then hold down the Add Bar as many cycles as the digit next to the last number in the multi-

-9.25.

-9.25.

1250 + 430 + 4320 + 6000 * plier (in this case: 2). Proceed in this manner, always remembering to depress the • Key between each digit. When the Total Key is depressed the result is printed on the tape.

Example:

1,230 × 124 = 152.520

Step 1 − Set (1) (2) (3) . Move Repeat Lever to left to ON position. Hold Add Bar down for 4 cycles.

Step 2 - Depress • Key. Hold Add Bar down for 2 cycles.

Step 3 - Depress Key. Depress Add Bar once. Depress Total Key. Tape shows 152,520 final result.

1230 +

1230 +1230 +1230 +

12300 +12300 +123000 +152520 *

Commercial Applications



SHORT CUT MULTIPLICATION

In a previous example the method of multiplication has been described, namely, move Repeat Lever to ON position. Depress Add Bar a number of times equal to the last digit of the multiplier. Depress «0» key, and follow the same procedure for each digit of the multiplier. Then depress the Total Key for the final answer. This method suggests that if any digit of the multiplier were 9 or 8 or any other figure higher than 5, the Add Bar would be depressed for that number. It is possible to use a shorter method for digits higher than 5 thus reducing the number of machine cycles. The illustration of this short cut method is the fact that:

multiplying by 9 is the same as multiplying by 10 minus 1 or 10 - 1 = 9; multiplying by 8 is the same as multiplying by 10 minus 2 or 10 - 2 = 8.

Example 1:

$$\begin{array}{r}
 123 \\
 \times 29 \\
 = 3,567
 \end{array}$$

Step 1 – Set 123. Move Repeat Lever to ON position \bigcirc .

Step 3 – Depress the Add Bar once. The number 123 has now been multiplied by 9.

123 -1230 + 1230 + 1230 + 3567 * Step 4 – Depress Add Bar twice Depress Total Key. Tape shows result 3,567.

Example 2:

 $\begin{array}{r}
 78,500 \\
 \times 829 \\
 = 65,076,500
\end{array}$

Step 1 – Set 78,500. Move Repeat Lever to ON position ○. Depress Subtract Key once.

once.

Step 2 – Set • Key. Depress Add Bar once.

Multiplication by 9 has now taken place.

Step 3 – Depress Add Bar twice. Depress

• Key. Depress Subtract Key twice.

Step 4 – Depress • Key. Depress Add

Bar once. Depress Total Key. Tape shows result 65,076,500.

DISCOUNTS

Example 1:

Finding Net Amount. Rate less than 10 %

Gross Amount
Net Amount

\$1,435 \$1,391.95

Rate of Discount 3 %

Step 1 – Set 1435. Move Repeat Lever to ON position ○. Depress Subtract Key 3 times.

Step 2 – Set •• Key. Depress Add Bar once. Depress Total Key. Tape shows 1,391.95 net amount.

78500 -785000 + 785000 + 785000 -7850000 -7850000 -78500000 + 65076500 *

1435 -

1435 — 1435 —

143500 +

139195 *

Example 2:

Finding Net Amount. Rate greater than 10 %

Gross Amount	\$1,435
Net Amount	\$1,248.45
Rate of Discount 13 %	

Step 1 – Set 1435. Move Repeat Lever to ON position ○. Depress Subtract Key 3 times.

Step 2 – Set • Key. Depress Subtract Key once.

Step 3 – Set • Key. Depress Add Bar once. Depress Total Key. Tape shows 1,248.45 net amount.

Note: When rate is less than 10% use Double Zero Key; when greater than 10% use Single Zero Key.

Example 3:

Finding Discount and Net Amount

Gross Amount	\$1,435
Discount 3%	43.05
Net Amount	\$1,391.95

Step 1 – Set 1435. Move Repeat Lever to ON position ○. Depress Subtract Key 3 times.

Step 2 – Hold Repeat Lever to left. Depress Sub-total Key. Tape shows 43.05 amount of discount.

Step 3 – Set • Key. Depress Add Bar once. Depress Total Key. Tape shows 1,391.95 net amount.

	*
1435	-
1435	_
1435	_
14350	_
43500	+
24845	*

PERCENT INCREASE AND INCREASED AMOUNT

Example 1:

Finding	Increased	Amount.	Rate	less	than	10%
ringing	IIICI CUSCU	AIIIOUIII.	Kuic	1033	1110111	10 /0

Amount	\$ 1,743.00
Rate 5 %	
Increased Amount	\$1,830.15

Step 1 – Set 1743. Move Repeat Lever to ON position ○. Depress Add Bar 5 times. Step 2 – Set •• Key. Depress Add Bar once. Depress Total Key. Tape shows 1,830.15 increased amount.

Example 2:

Finding Increased Amount. Rate greater than 10 %

Amount	\$ 1,235.00
Rate 24 %	
Increased Amount	\$1,531.40

Step 1 – Set 1235. Move Repeat Lever to ON position ○-. Depress Add Bar 4 times. Step 2 – Set • Key. Depress Add Bar twice. Set • Key. Depress Add Bar once. Depress Total Key. Tape shows 1,531.40 increased amount.

Example 3:

Finding Amount of Increase and Increased Amount

Amount	\$1,743.00
Rate 5 %	
Amount of Increase	87.15
Increased Amount	\$1,830.15

Step 1 – Set 1743. Move Repeat Lever to ON position \bigcirc . Depress Add Bar 5 times.

	*
1743	+
1743	+
1743	+
1743	+
1743	+
174300	+

183015 *

	×
1235	+
1235	+

1235 +

1235	+
12350	+
12350	+
123500	+
153140	*

		×
1	743	+
7	740	-

1743	+
1743	+
1743	+
1710	

1743	+
8715	
174300	+
183015	*

Step 2 – Hold Repeat Lever at left. Depress Sub-total Key. Tape shows 87.15 amount of increase.

Step 3 – Set • Key. Depress Add Bar once. Depress Total Key. Tape shows 1,830.15 increased amount.

INVENTORY - TOTAL QUANTITY INDIVIDUAL WEIGHT - TOTAL WEIGHT

Example:

Туре	Quanti	ity		nit eight		Total Weig	
A B C	34	X	70	lbs.	=	1,275 2,380 4,608	lbs.
Grand Tota	al 97					8,263	lbs.

Step 1-Set 85 (lbs. Unit for Type A) plus two zeros and 1 or 85001. Multiply by 15. Depress Total Key. Tape shows 1,275 015 or total weight for type A and 15, proof of quantity.

Step 2-Set 70001. Multiply by 34. Depress Total Key. Tape shows 2,380 and 34, total weight and quantity for type B.

Step 3 – Set 96001. Multiply by 48. Depress Sub-total Key. Tape shows 4,608 and 48, total weight and quantity for type C which is retained in the machine.

Step 4 – Set 1275015. Depress Add Bar. Set 2380034. Depress Add Bar. Depress Total Key. Tape shows 8,263 grand total inventory and 97 grand total quantity.

	"
85001	+
85001	+
85001	+
85001	+
85001	+
850010	+
1275015	X
70001	+
70001	+
70001	+
70001	+
700010	+
700010	+
700010	+
2380034	×
96001	+
96001	+
96001	+
96001	+
96001	+
96001	+
96001	+
96001	+
960010	+
960010	+
960010	+
960010	+
4608048	
1275015	+
2380034	+
8263097	×

TOTAL DEBITS, CREDITS AND BALANCE

Example:

	DR.	CR.	Balance
	\$271.40	\$47.20	
	39.50	53.75	
	28.79	14.82	
	16.50	25.00	
Total	\$356.19	\$140.77	\$215.42

Step 1 – With the Add Key add all debit items. Depress Sub-total Key. Tape shows 356.19 total debits which is retained in the machine.

Step 2 – With the Subtract Key enter all credit items. Depress Sub-total Key. Tape shows 215.42 which is the balance and which is also retained in the machine.

Step 3 – To find and print total credits set the first Sub-total 356.19. Depress Subtract Key. Depress Total Key. Tape shows 140.77 total credits.

Column Indicator shows white signal for negative balance.

ADDITION FOLLOWED BY MULTIPLICATION

Example:

$$\begin{array}{c}
26 \\
56 \\
89 \\
\hline
171 \times \$.15 = \$25.65
\end{array}$$

Step 1 – With Add Bar add 26, 56 and 89. Depress Sub-total Key. Tape shows 171 which is retained in the machine.

	*
27140	+
3950	+
2879	+
1650	+
35619	
4720	-
5375	-
1482	-
2500	-
21542	
35619	_
14077	*

26 +

56 +

89 +

171 💠

171 +

171 + 171 +

171 +

1710 +

2565 *

Step 2 – Since 171 is already in the machine multiply by 14. Depress Total Key. Tape shows 25.65 extensions – proof of multiplier is obtained because 171 is shown 5 times in unit and once in tens column.

NEGATIVE MULTIPLICATION

The Repeat Lever when ON allows the operator to use the Subtract Key for negative multiplication as you would use the Add Bar for positive multiplication. Two examples for illustration follow:

Example 1:

Net Amount only

$$(13 \times 12) - (9 \times 4) = 120$$

Step 1 – Move Repeat Lever to ON position. Set 13. Multiply by 12 using Add Bar. Depress Keyboard Clearing Key. Step 2 – Set 9. Multiply with Subtract Key by 4. Depress Total Key. Tape shows 120 net amount.

Example 2:

Positive, Negative and Net Products

$$(25 \times 13) - (17 \times 15) = 70$$

$$325 - 255 = 70$$

Step 1 - Move Repeat Lever to ON position. Set 25. Multiply with Add Bar by 13.

	8
Depress Sub-total Key. Tape shows 325	*
	*
(first product) which is retained in the	25 +
machine.	25 +
Step 2 – Move Repeat Lever to ON po-	25 +
sition. Set 17. Multiply with Subtract Key	250 +
sition. Set 17. Multiply with Subtract Rey	325 ♦
by 15. Depress Sub-total Key. Tape shows	17 —
70 /	
70 (net product).	17 —
Step 3 – Set 325 (first product) from tape.	17 —
	17 —
Depress Subtract Key. Depress Total Key.	17 —
Tape shows 255 (second product).	170 —
	70 ♦
Column Indicator shows white signal for	/U ¥
nometive total	325 —
negative total.	255 ★

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