# Burroughs Class 78 Bookkeeping Machine 

Operating Instructions

# Burroughs Adding Machine Company <br> Detroit, Michigan 

ADDING - CALCULATING - BILLING AND ACCOUNIING MACHINES - FORMS
WRITING MACHINES - CASF REGISTERS - CORRECT-POSTURE CHAIRS

## Burroughs Class 78 Bookkeeping Machine



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## General

The Burroughs Class 78 Bookkeeping Machine consists of two machines-a writing machine combined with an electrically operated adding and subtracting machine -assembled on one base. The writing machine may be operated independently of the adding and subtracting machine or vice versa.

This machine, like all Burroughs Accounting and Listing Machines, has result keys for the printing of balances and totals-they are not copied from dials. When an amount is entered in the machine in ordinary ledger posting, the carriage is automatically tabulated to the proper position in the next column without the use of special tabulating keys. Proof figures are automatically accumulated as the postings are made.

The purpose of this book of instructions is to give the operator an understanding of the key functions and the general principles of operation of the standard bookkeeping machine. The instructions may not apply to machines specially designed for specific purposes.

Due to the great flexibility of the Burroughs Class 78 Bookkeeping Machine and the many features which may be incorporated for special purposes, it is possible to give operating instructions here for only the most common applications. When instructions not covered in this book are required, or when it is desired to accomplish additional results with the machine, a Burroughs representative should be called. He will be glad to give any additional instruction and to show how the machine can be adapted to other work.

Various methods of posting and proving can be used to suit a variety of conditions, but no attempt is made in this book to give instructions for any but the simplest operation.

## Operating Control

## The Keyboard



1. Ribbon Shift Lock-This locks the Ribbon Shift key when depressed to bring the red portion of the ribbon into printing position.
2. Margin Release-Depression of this key releases the Releasable Margin Block and permits the carriage to return farther to the right until stopped by the Margin Block.
3. Ribbon Shift-Depressing this key shifts the ribbon when it is desired to print in red.
4. Margin Key Lock-The Margin Release key, when depressed, remains down until released by depression of the Margin Key Lock.
5. Carriage Shift Lock-Depression of this key shifts and locks the carriage so that the upper characters on the typewriter keys will print. It also prevents printing from the calculating mechanism.

This key remains depressed until released by depression of the Carriage Shift-Non-print key.
6. Carriage Shift-Non-print-Holding down this key causes the carriage to shift as mentioned in the preceding paragraph. Depressing this key releases the Carriage Shift Lock.
7. Balance-Depressing this key prints the balance, clears the Crossfooter, transfers the amount to the active Register, and tabulates the carriage to the next position. If the balance is a negative total (credit balance), this key cannot be depressed.
8. Credit Balance-Depressing this key (when the Balance key is locked) prints the credit balance in red and clears the Crossfooter, and subtracts the amount from the active Register. It also tabulates the carriage to the next position.
9. Register Total-Prints the total of, and clears, the active Register.
10. Tabulate-Tabulates the carriage to the next column without operating the calculating mechanism.
11. Add Crossfooter-Causes amounts to add in the Crossfooter.
12. Sub-Total Index-Depressing this key before depressing the balance, credit balance or register total key prevents the result, which is printed with these keys, from clearing.

In case it is desired to obtain a sub-credit balance, so that other items may be added to or subtracted from it, the following keys are depressed: Non-add key, Sub-total Index key, CR balance key; Non-add key, Crossfooter Subtract key, Non-print key (hold down), Balance key.
13. Space Motor Bar-Operates the machine and spaces the paper vertically but does not tabulate the carriage.
14. Motor Bar (Non-space and Non-tabulate)-Operates the machine but does not tabulate the carriage nor space the paper.
15. Adding Keys-Amounts to be entered in the machine are set up on these keys.
16. Crossfooter Subtract-Subtracts an amount set up on the keyboard (amount adds in active register), or subtracts a register total from the amount in the Crossfooter, or changes a debit balance to a negative amount.
17. Register Subtract-Subtracts an amount set up on the keyboard from the amount in the Register (does not affect Crossfooter).
18. Non-add-When depressed, this key permits a number to be printed but not added; prevents the transfer of an amount from the Crossfooter to a Register when the Balance key is depressed; also prevents an amount from adding in the Register while it is being subtracted in the Crossfooter.
19. Non-subtract-Depressing this key prevents subtraction in the positions in which the machine normally subtracts automatically. When this key is depressed an amount will add unless prevented by the non-add key or some other control.
20. Error-Restores depressed keys and eliminates amounts set up on the adding keys if it is used before the Motor Bar is operated.
21. Tabulate Motor Bar-Operates the machine and causes the carriage to tabulate to the next position.
22. Crossfooter and Register Subtract-When depressed before the motor bar is operated, causes the amount written on the keyboard to subtract in both the Crossfooter and in the Register. (Should not be used under Add Crossfooter Control.)
23. Typewriter Space Bar-The Space Bar is used for moving the carriage one space to the left.
24. Carriage Return-Depressing this key returns the carriage to the right and spaces the paper.
25. Date-Ordinarily the date is printed automatically in the appropriate position when posting but it may be printed at any time with this key.
26. Typewriter Keyboard-Standard billing type.
27. Back Spacer-Depressing this key causes the carriage to move one space to the right.
28. Register Indicator-Indicates the Register which is in active position.
29. Register Trip-Pressing and then releasing this key causes the registers to shift, bringing the next Register, 2 or 3, into active position, provided the carriage is far enough to the left to permit shifting the registers.

## The Carriage



1. Margin Block-Is used to stop the return of the carriage at the left-hand margin. It may be set at any point on the control bar, but it cannot be adjusted so that the carriage will pass it. When returned, the carriage stops at the position indicated at the left-hand edge of the margin block.
2. Releasable Margin Block-Can be used to stop the return of the carriage at the lefthand margin. It stops four places to the left of the position indicated at the right-hand edge of the Releasable Margin Block. Depressing the Margin Release key permits the carriage to pass this block until stopped by the Margin Block (1). The Releasable Margin Block does not function when the small lever at the front of it is depressed and locked in position.
3. Date Control Roller-When the date control block (not illustrated) is over this control roller, the date prints automatically on operation of the machine.
4. Addition Control Roller-See 8, 9 and 10.
5. Subtract Control Roller-See 6.
6. Subtract Control-When this control is under the Subtract Control Roller, amounts, or register totals will automatically subtract from the Crossfooter; balances will change to negative amounts. Amounts or balances will add in the active register unless a non-add register control is in the same position. Subtraction may be prevented by use of the Non-subtract key, in which case amounts will add the same as when there is no subtract control unless addition controls, the Non-add key or the Add Crossfooter key is used. The Subtract Control is similar to the addition controls except that it is forward of the addition controls.
7. Register Trip Pawl-See Register Tripping Blocks (14).
8. Add Crossfooter Control-When the highest of the three addition controls is under the roller, amounts entered on the keyboard and crossfooter totals printed with the Balance key will add in the Crossfooter only, even though the lever at the side of the machine, described on page 10, is placed at "add in Register." They may be prevented from adding in the Crossfooter, however, by the use of the Non-add key.
9. Non-add Control-When this control is under the roller, amounts will not add in the Crossfooter nor in the Register. However, by using the Add Crossfooter key, amounts may be added in the Crossfooter. Subtraction in the Crossfooter is not affected by the Non-add Control.
10. Add Register Control-When the lowest control is under the roller, amounts will add in the Register only, unless the Add Crossfooter key is used. Subtraction in the Crossfooter is not affected by this control. Amounts may be prevented from adding in the Register by the usc of the Non-add key.

Note-In most cases the addition controls are numbered instead of being lettered as shown in the illustration on the preceding page. The controls may be of different shapes to provide for various combinations, but the heights in the active positions are as shown above.
11. Tabulator Stops-These can be set to cause the carriage to stop at any desired point when it is tabulated with the Manual Tabulate Bar or Tabulate Motor Bar. The carriage stops so that the typewriter type will print at the position indicated at the right-hand edge of the Tabulator Stop. The right-hand digit of the computing mechanism prints two places to the left of that point. Tabulator stops which are not in use should be placed at the left end of the carriage.
12. Adding Machine Space Control-This regulates the number of spaces the platen will turn when the Space Motor Bar is operated. If the Control is pushed in, the platen turns up one space; when it is pulled out the platen turns up two spaces.
13. Variable Line Spacer--This is used to turn the platen a fraction of a regular line space.
14. Register Tripping Blocks-When one of the Register Tripping Blocks strikes the Register Trip Pawl (7), as the carriage tabulates from right to left, the next Register (Second or Third, etc.,) is automatically brought into active position.
15. Journal Bands-These bands hold the proof journal in place around the platen when the "throat" is opened for inserting or removing other forms.
16. Form Heading Holder-Holds form headings. When used in conjunction with Position Pointers, the writing position on the form can be easily determined.
17. Position Pointers-The right-hand pointer indicates the position at which a typed character will print; the left-hand pointer indicates the position of the right-hand digit of an amount printed by the computing mechanism.
18. Collating Table-This is a flat plate, or table, upon which forms to be posted are inserted into the carriage.

Most Burroughs Class 78 Accounting Machines are equipped with the Collating Table which is especially designed for work where it is desired to write several related forms at the same time. The most common application of this is the posting of the Ledger and Statement, and a Proof sheet at one operation. The Proof sheet is also known as Proof Journal, Sales Journal, Cash Journal, Audit Sheet, or Register Sheet, depending upon the kind of items posted and the use to be made of the sheet.
19. Front Scale-This scale indicates printing positions. It corresponds to a scale under the platen and to the scale on the bar on which the tabulator stops are mounted.
20. Paper Guides on Collating Table-Forms to be posted are inscrted from the front, and the two guides, fastened on the collating table, guide the forms to the proper position in the carriage. When these guides are adjusted closely to the width of the forms they hold the forms in line and thus insure proper alignment. There are similar guides on the carriage back plate (not illustrated).
21. Carriage Handle-This is used for raising or lowering the carriage. The carriage must be raised to permit the insertion or removal of forms. The handle should be pulled slightly forward, then upward to raise the carriage.
22. Carriage Release Lever-When held down, permits free movement of the carriage, by hand, either to the right or left.
23. Paper Release Levers-Depression of these levers open the "throat" of the carriage so that forms to be posted may be inserted or withdrawn. The front lever locks down when depressed alone; the rear one releases it. The front lever is depressed while the carriage is being raised to remove and insert forms. After forms are inserted, the rear lever is slightly depressed and then released to close the "throat," before the carriage is lowercd.

## Methods of Form Alignment

The distance that forms to be posted are inserted into the carriage is gauged by aligning the writing line with the guide lines on the collating table. In most cases the last writing line is seen through an opening in the aligning table by means of mirrors at the right side of the machine.

In some cases it is necessary to determine the last writing line from the back of the form as it lies face'down on the aligning table. Two methods for indicating the line on the backs of the forms to be posted are in general use. These are known as the number method and the period method.

For the number method, line numbers are printed in the margins of the ledger and statement forms. The writing line, as indicated by the line number in the right margin opposite the last balance, is noted. The form is then inserted into the carriage the proper distance by aligning the corresponding number on the back of the form between the two white lines on the collating table.

For the period method, the machine is equipped with a special periods type key on the typewriter which is struck immediately before the balance is printed. This key causes periods to print which may be made to show on the backs of the forms by having a carbonized strip on the proof sheet or on the back of the carbon sheet which is around the platen. In many cases, no carbon strip is used, the marking of the writing line being accomplished by the periods indenting sufficiently to be visible on the backs of the forms.

## Inserting and Removing Forms

The proof journal furnishes a carbon copy record of all postings made on the ledger or on the ledger and statement. It may be designed with vertical columns to the right of the balance column so that a distribution of items may be made as a continuation of the posting operation. It is inserted around the platen, between the platen and the journal bands, where it remains until filled or until the posting run is completed, being undisturbed when other forms are inserted or removed. A sheet of carbon paper may be inserted around the platen with the proof sheet, making it unnecessary to insert a piece of carbon paper between the ledger and the proof sheet with each posting.

When both ledger and statement are to be posted, they may be separately inserted and aligned as follows:

The carriage is raised and at the same time the front paper release lever is depressed to open the "throat." The statement is inserted and aligned, either by means of the aligning mirror or by means of line numbers or periods on the back of the form. A piece of carbon paper is placed in front of the ledger sheet and both are then inserted and the line numbers or periods on the back of the ledger is aligned with the white line on the collating table. The rear paper release lever is slightly depressed and then released to close the "throat," after which the carriage is lowered.

- Or, the ledger and statement may be collated first, then inserted and aligned. When designed for pre-collating, the statement has a flap folded under at the left-hand side. The line number oppositc the last balance on the ledger is collated with the last balance on the statement by placing the ledger sheet in the fold formed by the flap and sliding it until the posting line of the two forms are collated. With the forms held lightly at the left-hand edge, a piece of carbon is placed between them. They are then inserted and aligned in the collating table, the two forms being held firmly together with both hands at the sides.

When the posting is finished, the front paper release lever is depressed and the ledger, statement and carbon sheets are removed.

To facilitate aligning for writing the headings on ledger and statement sheets, most forms are printed with a short line at the margin which is aligned with the inner white line on the collating table.

## Other Controls

Spacing Pawl

Carriage Return
Spacing Cam

Ribbon Adjustment

Simultaneous Addition Lever


1. Spacing Pawl-See paragraph 2.
2. Carriage Return Spacing Cams-When the carriage returns by the depression of the Carriage Return key, the paper automatically spaces up. This is caused by the pawl (1) passing over the spacing cams. Double spacing is obtained when both spacing cams are turned up. If only single spacing is required, one cam is turned down, as in the illustration.

In order to space automatically, it is necessary for the carriage to return far enough to permit the pawl (1) to pass the spacing cams.
3. Ribbon Adjustment-After a portion of the ribbon becomes worn, it may be shifted to an unused portion. Thus the entire width of the ribbon may be utilized.
4. Simultaneous Addition Lever-When set to "Add in Reg. and CF," an amount set up on the adding keys adds in the Crossfooter and also in the active Register at the same time. When set to "Add in Reg." the amount adds in the active Register only.

# Preparing the Machine for Operation 

## Carriage Back Plate

Remove the back plate by releasing the hooks at each end and lifting it upward. This permits access to the control rail and tabulator stop bar.

## Tabulation

To remove a tabulator stop, tilt it forward slightly and pull upward. To replace it in any desired position, tilt it forward and push firmly into place. The point on the scale that corresponds to the desired printing position should be on the right side of the tabulator stop. The printing position of the typewriter is the same as the point on the scale to the right of the tabulator stop, but the printing position of the adding machine is two spaces to the left. For instance, if the tabulator stop is set at 30, the typewriter will print at 30 , but the right-hand digit of the figures printed by the computing mechanism will print at 28 .

## Spacing

If the paper is to be spaced up when the carriage is returned by use of the Carriage Return key, it is important to make certain that the spacing pawl will pass over the carriage return spacing cam (see paragraphs 1 and 2, page 9). If the spacing pawl will not pass over the carriage return spacing cam when the carriage is returned, it is necessary to obtain spacing by using the Space Motor Bar.

## Tripping Registers

To set a tripping block, tabulate to the desired position and place the tripping block about three spaces to the left of the register trip pawl. The tripping block causes the registers to trip automatically when the block strikes the register trip pawl as the carriage tabulates. The register tripping block is merely clamped on the control bar in the position desired.

## Controlling Addition

If simultaneous addition in both the crossfooter and register is desired at any point in the operation, it is necessary to set the lever at the side of the machine to "Add in Reg. and CF." If simultaneous addition is not desired, the lever should be placed to "Add in Reg."

To set an addition control, clamp it on the control rail so that the center of the control is over the scale number corresponding with the desired tabulating stop position. Care should be taken to see that the correct control is selected, depending upon whether addition in the Crossfooter or addition in a Register is desired. If figures in a certain carriage position are to be printed but not added in either register or crossfooter, a non-add control should be used. When no control is in position, simultaneous addition in the Crossfooter and Register is obtained when the lever is set to "Add in Reg. and CF."

## Paper Guides

Paper guides should be adjusted to fit closely the width of the form so as to allow no freedom of movement, but not so closely as to bend or bind the form.

## Clearing the Machine



Before starting to use the machine, be sure that it is clear. The steps for clearing all sections of the machine are as follows:

1. Move the carriage to the extreme left and raise it out of printing position. Return the Register Indicator to No. 1 position.
2. Depress the Balance key. This clears the Crossfooter. If the Balance key is locked, depress the Credit Balance key.
3. Depress the Register Total key. This clears Register No. 1.
4. Trip the Register Indicator to Register No. 2, depress the Register Total key. (This clears Register No. 2.) Repeat this operation for Register No. 3.
5. After clearing in the above manner with the carriage raised or with the Non-print key depressed, the clearing operations are repeated with the proof of clearance (ciphers in each position) printed on the journal.

## Operating Instructions

## Duplex Addition

Clear the machine; insert roll paper in the carriage; and position the carriage so that the machine will print on the paper. If it is desired to use a sheet of paper instead of roll paper, turn the paper back after each three problems, then move the carriage about ten spaces with the typewriter space bar or by using the carriage release lever. Raise the small lever located directly under the right-hand ribbon spool so that the carriage will not tabulate when totals are printed. Set the simultaneous addition lever (4, page 9) to "Add in Reg. and CF."

Set up the first amount on the adding keys and depress the Space Motor Bar. This causes the amount to print and to add in the Register and Crossfooter, and spaces up the paper. Repeat these operations for each amount in the first group of figures, then depress the Space Motor Bar to space up the paper and operate the Register Total key to print the total.

List and total the second group of figures in the same manner as the first.
To print the grand total, accumulated in the Crossfooter, depress the Nonadd key and the Balance key. This clears the Crossfooter and prints the amount. The Non-add key is used to prevent the total being transferred to the Register where it would affect the next computation.
$(1)$
73.48
57.28
552.64
89.76
4.72
777.88
56.25
59.46
76.43
574.83
735.46
$1,502.43$
$2,280.31$
(6)

| 756.28 | 9.68 |
| ---: | ---: |
| 573.62 | 75.45 |
| 572.86 | 18.25 |
| 64.82 | 150.00 |
| 48.23 | 3.75 |
| $2,015.81$ | 257.13 |
| 46.28 | 172.55 |
| 26.45 | 66.66 |
| 48.92 | 48.88 |
| 653.24 | 15.00 |
| 835.24 | 7.50 |
| $1,610.13$ | 310.59 |
| $3,625.94$ | 567.72 |

## (3)

357.97
6.75
87.50
864.25
286.75
$1,603.22$
975.65
6.74
14.25
65.28
753.45
$1,815.37$
$3,418.59$
(8)
165.32 17.85

$$
468.25
$$

$$
37.50
$$

$$
16.53
$$

705.45
653.20
733.20
444.65
235.78 76.43

2,143.26
2,848.71
(4)

| 352.81 | 372.41 |
| ---: | ---: |
| 57.24 | 59.32 |
| 57.32 | 56.20 |
| 67.28 | 39.10 |
| 7.28 | 100.00 |
| 541.93 | 627.03 |
| 37.28 | 59.32 |
| 5.97 | 56.23 |
| 47.26 | 19.30 |
| 85.52 | 5.88 |
| 100.00 | 13.26 |
| 276.03 | 153.99 |
| 817.96 | 781.02 |

(10)
372.64 35.12 39.20

$$
563.24
$$

1,352.64
2,362.84
372.41
95.20
847.32

1,536.27
45.36

2,896.56
5,259.40

## Addition Controls <br> Manual Controls Only

Make the releasable margin stop inoperative by depressing the Margin Release key on the typewriter keyboard. Place the margin stop with the right-hand edge at 30 . Place tabulator stops at 45, 60,75 and 90 . Tabulate to 60 and place a register tripping block three spaces to the left of the register trip pawl. Thus when the carriage is tabulated, Register No. 2 will automatically trip into active position to receive a separate set of figures. In the same manner set a registcr tripping block so Register No. 3 will be active at 90 . Set the simultaneous addition lever to "Add in Reg. and CF." Clear the machine and then depress the Carriage Return key.

EXAMPLE
Simultaneous Addition Lever at Add in Reg. and CF


Enter the first amount of the first column on the adding keys and depress the Tabulate Motor Bar. This adds the amount in the Crossfooter and Register 1 and tabulates the carriage to the second column.

Enter the first amount in the second column on the adding keys. Depress the Add Crossfooter key and the Tabulate Motor Bar. This causes the amount to add in the Crossfooter and tabulates the carriage to the next column. The amount does not add in the Register.

Enter the first amount of the third column on the adding keys and depress the Tabulate Motor Bar. This adds the amount in the Crossfooter and Register 2 and tabulates the carriage to the next column.

Enter the first amount of the fourth column on the adding keys, depress the Non-Add key and the Tabulate Motor Bar. The amount is printed, but not added, and the carriage is tabulated to the next column.

Depress the Balance key. This clears the Crossfooter and transfers the result to Register 3. The amount should be the total of the amounts in the first three columns.

Depress the Carriage Return key to return the carriage and space up to the next line. Continue as explained above for the remaining items.

After the last amount has been entered in the above manner, return the carriage and space up an additional line by depressing the Space Motor Bar. Then print the totals of Registers 1, 2 and 3 by depressing the Register Total key in the first, third and fifth columns respectively. There were no register accumulations in the second and fourth columns.

| 572.64 | 837.24 | 619.00 | 5.42 | $2,028.88$ |
| ---: | ---: | ---: | ---: | ---: |
| 4.36 | 328.44 | 712.00 | 39.48 | $1,044.80$ |
| 65.38 | 672.84 | 411.00 | 2.84 | $1,149.22$ |
| 48.62 | 956.20 | 10.20 | 37.56 | $1,015.02$ |
| 29.48 | 384.95 | 659.46 | 13.08 | $1,073.89$ |
| 849.26 | 895.62 | 628.49 | 8.00 | $2,373.37$ |
| 928.74 | 618.04 | 893.64 | 1.40 | $2,440.42$ |
| $2,498.48$ |  | $3,933.79$ |  | $11,125.60$ |
| 95.52 | 64.40 |  |  |  |
| 53.19 | 16.37 | 95.76 | 3.48 | 255.68 |
| 64.80 | 242.13 | 4.25 | 54.49 | 73.81 |
| 62.00 | 56.31 | 24.48 | 54.72 | 331.41 |
| 73.15 | 5.72 | 22.18 | 66.07 | 140.49 |
| 321.94 | 61.44 | 20.89 | 5.79 | 99.76 |
| 28.30 | 4.68 | 31.20 | 13.87 | 414.58 |
| 698.90 |  | 57.84 | 41.75 | 90.82 |
|  |  | 256.60 |  | $1,406.55$ |

## Automatic Controls of Addition

Place addition control blocks on the control bar as follows:
Place an Add Crossfooter control on the control bar so it will be under the control roller when the carriage is in position for the second column. This will cause items entered in that column to add in the Crossfooter only.

Place an Add Register control so that it will be under the roller when the carriage is in position for the third column. This will cause items entered in the third column to add in Register 2 only.

Place a Non-add control so it will be under the roller when the carriage is in position for the fourth column. This will prevent addition in cither the Crossfooter or Register.

EXAMPLE
Simultaneous Addition Lever at Add in Reg. and CF


Enter each item in Columns 1 to 4 on the adding keys and depress the Tabulate Motor Bar. Use the Balance key for the last column.

Observe that the result printed with the Balance key in the last column is the total of the items in Columns 1 and 2. Amounts in Columns 1, 3 and 5 are added in Registers 1, 2 and 3 respectively. Print the totals of these by depressing the Register Total key in each of these columns. Items entered in Column 4 are non-added.

| 17.60 | 25.47 | 13.29 | 11.65 | 43.07 |
| ---: | ---: | ---: | ---: | ---: |
| 60.48 | 5.35 | 79.35 | 63.49 | 65.83 |
| 22.77 | 97.75 | 35.89 | 48.13 | 120.52 |
| 5.39 | 72.02 | 88.01 | 96.46 | 77.41 |
| 31.30 | 5.41 | 40.17 | 86.00 | 36.71 |
| 95.23 | 84.08 | 66.12 | 8.24 | 179.31 |
| 70.71 | 72.31 | 41.77 | 84.58 | 143.02 |
| 303.48 |  | 364.60 |  |  |
|  |  |  |  | 665.87 |


| 59.13 | 30.26 | 7.00 | 27.82 | 89.39 |
| ---: | ---: | ---: | ---: | ---: |
| 24.69 | 52.50 | 60.14 | 38.19 | 77.19 |
| 14.56 | 1.61 | 2.53 | 80.68 | 16.17 |
| 80.37 | 7.36 | 32.36 | 44.41 | 87.73 |
| 68.38 | 9.58 | 72.07 | 75.93 | 77.96 |
| 2.76 | 1.47 | 83.48 | 68.64 | 4.23 |
| 6.26 | 51.49 | 41.09 | 16.20 | 57.75 |
|  |  | 298.67 |  | 410.42 |

## Subtraction

## Manual Control

Remove the Add Crossfooter control that was set at 45. Tabulate to 45 and place a Register Tripping Block three spaces to the left of the Register Trip Pawl. Leave in place the Register Tripping Block which is to the left of the Register Trip Pawl after the carriage is tabulated to 60. Thus Register 1 will be active in the first column, Register 2 in the second and Register 3 in the third.

Enter on the adding keys the first amount
 in the first column and depress the Tabulate Motor Bar. The amount adds in the Crossfooter and Register 1.

Enter on the adding keys the first amount in the second column, depress the Crossfooter Subtract key and operate the Tabulate Motor Bar. The amount subtracts in the Crossfooter and adds in Register 2.
Depress the Balance key in the third column. The difference between the two amounts is printed and transferred to Register 3. If the subtracted amount is greater than the added amount, the Balance key cannot be depressed. In such a case, depress the Credit Balance key. The Credit Balance key prints the difference in red and subtracts it in Register 3.

Depress the Carriage Return key and repeat the above steps for all other amounts. Print the total in each column with the Register Total key.

| 245.65 | $127.36-$ | 118.29 |
| ---: | ---: | ---: |
| 352.64 | $219.36-$ | 133.28 |
| 637.48 | $39.24-$ | 598.24 |
| 327.46 | $38.23-$ | 289.23 |
|  |  |  |
| 1563.23 | $424.19-$ | 1139.04 |
|  |  |  |
|  |  |  |
| 635.21 | $93.82-$ | 541.39 |
| 526.47 | $343.01-$ | 183.46 |
| 33.72 | $199.28-$ | 14.44 |
| 32.95 | $172.63-$ | 139.68 CR |
|  |  |  |
| 1228.35 | $628.74-$ | 599.61 |

## Automatic Controls

Place a Subtract control on the control bar so it will be under the control roller when the carriage is in position for the second column (45). Repeat the above problems in the same manner, except do not use the Subtract key; also, when printing the column totals, depress the Non-subtract key before operating the Register Total key in the second column. (If the Non-subtract key is not depressed, the register total will be subtracted in the crossfooter.)

## Bookkeeping

## Common Bookkeeping Terms

An understanding of the terms commonly used in machine bookkeeping is desirable before proceeding with the instructions on ledger posting. Some of these terms are explained below.

Ledgers-In most systems of bookkeeping there are three ledgers in which the various business transactions are recorded. These are: (1) Accounts Receivable, in which are recorded the amounts owed to the business; (2) Accounts Payable, in which are recorded the amounts the business owes outsiders; and (3) General, or Private Ledger. These ledgers may be in separate binders or trays, or they may all be in the same binder or tray with index tabs to divide them.

Posting Media-Posting media are the records of business transactions, which are used for posting to the accounts affected by the transactions. The information usually required in posting includes the name of the account affected, the date, the amount and the description of the transaction.

Debit-A debit, or charge, usually represents value received by the account affected and, in machine bookkeeping, the amount is added. When merchandise is sold to a customer, the value of the merchandise is added (debited, or charged) to the customer's account. When a check is sent to a vendor for payment of a bill, the amount of the check is debited to the vendor's account.

Credit-A credit usually represents value received from the account affected and, in machine bookkeeping the amount is subtracted. When payment is made by a customer, the amount received is subtracted (credited) from the previous balance on the customer's account. When merchandise is received from a vendor, the amount of the merchandise is credited to the vendor's account.

Balance-The balance of an account is the difference between the debit and credit entries to that account. If the debits exceed the credits, the balance is called a debit balance. If the credits exceed the debits, the balance is called a credit balance.

Old Balance-The old balance on an account is the balance just preceding the current posting and is entered in the machine so that the debit or credit which is to be posted may be added to or subtracted from it to establish a new balance.

New Balance-The new balance is the balance created by the current posting.
The primary difference between pen-and-ink and Burroughs machine bookkeeping is that with the latter, the correct balance of each account is established at the time of each posting, whereas in pen-and-ink systems the balance is usually available only once a month, or less frequently, after considerable figuring.

Proof of Posting-If it is important to maintain records of business transactions at all, it is important that those records be accurate. For this reason, the accuracy of posting is determined after each posting run in mechanical bookkeeping. There are, however, various methods of proof, two of which will be discussed in this book.

Offsetting Accounts-Offsetting an account means setting it to the right or left (usually right) of the normal position in the binder or tray. This is usually done after it has been posted to assist in locating the accounts which have been active, in order to facilitate proving or checking in case of an error. It is sometimes done before posting, and the posting media placed in front of each account to save time during the posting.

Predetermined Total-This is a total, obtained before posting, of items to be posted, or of the old balances of the accounts affected. It is used to prove that each item has been posted correctly and that none has been omitted nor posted twice, and that old balances were picked up correctly.

Control Account-The Control Account is a summary to which are posted the totals of all entries to the individual accounts, thus the Accounts Receivable Control Account represents the total due from all customers. The posting of the total of the items to the Control Account is done in exactly the same manner as the posting of a single item to an individual account.

## Machine Set-up for Posting

Insert the ledger sheet in the machine as explained on page 8 and read the positions of the columns on the platen scale. Set the right side of the Margin Block at the scale reading for the old balance column.

Set tabulator stops for the description, charges, credits and new balance columns, and an extra tabulator stop to the right of the new Balance column. Tabulator stops for typing positions should be at the position at which it is desired to start typing. Those for the computing mechanism printing should be two places to the right of the units of cents position.

Set a Register Tripping Block to trip Register No. 2 into active position at the new balance column. Set the Simultaneous Addition lever to "Add in Reg. and CF."
Place a subtract control so that it will be active in the credit column.
Place an "Add Crossfooter" control so that it will be under the control roller when in the old balance column. This is a special control that is clamped on the control bar so as to extend behind the Margin Block.

This set-up will cause the machine to accumulate debit or credit items in Register No. 1, and new balances in Register No. 2, for proof purposes.

Place a date control so that it will cause the date to automatically print in the Date column.

## Debit Postings

Clear the Machine-Always make sure that the machine is clear before starting to use it. Instructions for clearing the machine are given on page 10. After clearing the machine, depress the Carriage Return key to return the carriage to the first position.

For practice purposes, post each of the items in the list at the right as a debit to the same account sheet as instructed below.

## FIRST LINE

Insert and Align the Form-(It is assumed that the machine is equipped with the collating table.) Raise the carriage and open the throat by gripping the carriage handle, pulling slightly forward and lifting, and at the same time depressing the front paper release lever (see page 7). Observe the line number on the ledger sheet (in this case it is 1 ), then insert the ledger sheet face down and bottom first between the paper guides on the collating table until the proper line number (1) on the back of the form is between the two white aligning lines on the collating table. With the left hand depress the rear paper release lever to close the throat, then lower the carriage to printing position.

## Items for Practice

| 3.62 | 6.25 |
| ---: | ---: |
| 2.64 | 2.84 |
| 58.72 | 57.26 |
| 26.48 | 48.27 |
| 84.93 | 45.68 |
| 61.52 | 95.64 |
| 75.68 | 17.24 |
| .94 | 57.82 |
| 37.24 | 74.46 |
| 5.64 | 5.46 |
| 3.27 | 62.34 |
| 37.43 | 27.27 |
|  | 12.65 |



Date-Depress the Tabulate Motor Bar to tabulate to the description column. (The date will print automatically.)

Description-Type the description. For the purpose of this preliminary practice, the typing of description may be omitted, if desired. Tabulate to the charge column with the manual Tabulator.

Debit-Enter the amount of the debit (3.62) on the adding keys and depress the Tabulate Motor Bar. This adds the amount in the Crossfooter and tabulates the carriage to the credit column. The amount automatically accumulates in Register No. 1. Depress the manual Tabulator to tabulate to the balance column.

Balance-Depress the Balance key. This clears the Crossfooter and transfers the balance to Register No. 2.

Remove the Form-Depress the paper release lever and with the right hand withdraw the form. Then return the carriage by depressing the Carriage Return key.

## SECOND LINE

Old Balance-Hold the ledger sheet in the left hand and enter the last balance on it (3.62) on the adding keys. Observe the posting line (2), then insert and align the form as before.

The rest of the operation is the same as that described for the first line. If all of the remaining postings are made correctly, the final balance will be 911.29.

## Credit Postings

|  | Items for | Practice |
| :--- | ---: | ---: |
|  | 42.64 | 5.38 |
|  | 12.74 | 9.24 |
| For practice purposes, post each of the items | 69.45 | 13.48 |
| in the list at the right to the same ledger account | 28.34 | 65.63 |
| sheet, carrying forward the balance of 911.29 | 72.46 | 9.70 |
| resulting from the debit postings just completed. | 8.46 | 53.72 |
| If all postings are correctly made, the final bal- | 76.42 | 7.50 |
| ance will be 25.91. | 52.48 | 5.39 |
|  | 8.46 | 42.56 |
|  | 59.24 | 17.24 |
|  | 68.52 | 7.38 |
|  | 36.79 | 59.32 |
|  |  | 52.84 |



Old Balance and Date-Pick up the last balance on the account (911.29) in the same manner as before, close the carriage and depress the Tabulate Motor Bar.

Description-Type the description, or omit it if desired, for practice purposes. Tabulate to the credit column.

Credit-Enter the amount of the credit (42.64) on the adding keys and depress the Tabulate Motor Bar. The amount of the credit automatically subtracts in the Crossfooter.

Balance-Depress the Balance key. Depress the paper relcase lever, withdraw the ledger sheet, then depress the Carriage Return key.

## Credit Balances

When a credit is posted to an account with an old debit balance that is less than the amount of the credit item, the new balance will be a credit balance. Credits posted to credit balances increase the amount of the credit balance.

For practice, post the list of items at the right as credits. If posted correctly, the final balance will be 717.57 Cr .

## Credit Items

| 62.75 | 5.62 | 71.30 | 7.26 |
| ---: | ---: | ---: | ---: |
| 37.61 | 3.28 | 58.74 | 59.46 |
| 19.32 | 37.00 | 7.46 | 8.26 |
| 5.64 | 3.52 | 29.48 | 64.52 |
| 38.20 | 19.32 | 4.76 | 32.67 |
| 29.34 | 8.75 | 37.48 | 54.18 |
|  |  |  | 37.56 |



## FIRST LINE

Old Balance, Date and Description-Pick up the old balance (25.91) and print the date and description in the same manner as before.

Credit-Enter the credit item in the same manner as previously.
Balance-When a credit balance is created, the Balance key will be locked. Merely depress the Credit Balance key. (The Credit Balance key is locked when there is a debit balance.) This prints the credit balance in red, designating it as such. Remove the ledger sheet and return the carriage.

## SECOND LINE

Old Balance and Date-When the old balance is a credit balance, it must be subtracted in the Crossfooter. Holding the ledger sheet in the left hand, enter the old credit balance (36.84) on the adding keys, and depress the Crossfooter Subtract key. Observe the line

## Debit Items

| 45.28 | 35.26 |
| ---: | ---: |
| 69.44 | 5.74 |
| 2.58 | 35.28 |
| 47.76 | 47.62 |
| 49.26 | 33.33 |
| 8.46 | 9.66 |
| 64.82 | 58.64 |
| 19.44 | 6.67 |
| 7.62 | 35.64 |
| 6.82 | 66.77 |
| 5.38 | 6.73 |
| 6.48 | 3.65 |
|  | 39.24 |

number (12) and insert and align the form. Lower the carriage and depress the Tabulate Motor Bar.

## Additional Preliminary Practice

For additional practice, post the list of items shown at the left as debits, carrying forward the credit balance of 717.57 Cr . resulting from the credit posting just completed. The operation in each column will be the same as previously described. If all postings are made correctly, the final balance will be zero. This provides practice in subtracting old credit balances, which is the same as subtracting credit items, adding debits and printing new credit balances.

At the completion of this practice one hundred items will have been posted, fifty as debits and fifty as credits. Half of the balances will have been debit balances and half credit balances.

## Summary of Posting Operations

1. Debit old balances, debit items and credit items are entered by merely setting up the amounts on the adding keys and operating the Tabulate Motor Bar in the appropriate columns.
2. Credit old balances are entered by setting up the amounts on the adding keys, depressing the Crossfooter Subtract key and operating the Tabulate Motor Bar.
3. The new balance is printed by depressing either the Balance key or the Credit Balance key, whichever can be depressed.

## Methods of Proof

In pen-and-ink ledger posting, it is the general practice to post items currently but not to extend the balances until the end of a certain period. Errors are usually not detected until the end of the period and it is, therefore, necessary to check all the postings for the entire period in order to locate errors.

In mechanical ledger posting, balances are usually extended as the postings are made so that the account balances arc up to date at all times. Since all postings should be proved, it is desirable to prove each posting run separately so as to localize crrors to a small group of accounts.

There are four things to be proved in ledger posting:

1. That the old balances were picked up correctly.
2. That all items were posted correctly and that none were omitted nor posted twicc.
3. That the new balances are correct.
4. That items are posted to correct account.

All methods of proving posting operations arc based on repetition. If the results agrec, it is assumed that the work has been performed correctly. This applies both to pen-and-ink and mechanical posting.

To prove that the old balances were picked up correctly in making the posting, they are usually handled a second time, either while posting or before or after the posting run.

To prove that all items werc posted correctly and that none were omitted nor posted twice, the items are usually automatically accumulated in the machine as they are posted. If the total of this accumulation agrees with a total of the items obtained at some other time, usually before the posting run, it is assumed that the correct amounts were posted. Since the proof of the accuracy of the items is obtained in the same way in all methods of posting, it will not be further discussed.

To obtain correct new balances it is nccessary, in addition to posting correct items and old balances, to add those which should be added and subtract those which should be subtracted. Therefore, all of these operations must be proved in order to prove the accuracy of the new balances. This proof is obtained by comparing the predetermined total of the items with the difference between the total of the old balances and the total of the new balances. Methods of accomplishing this are explained on the following pages.

By making a carbon copy of the postings on a proof sheet through the use of the Collating table, checking for errors is greatly facilitated.

## Trial Balance

A "trial balance" consists of listing on an adding machine tape or on a blank shect of paper all the balances in a ledger. The debit balances are added and the credit balances are subtracted. The total should agree with the balance on the control account. If the total does not agree with the control account balance, the postings should be checked to find the error.

Some other method of proving the accuracy of postings daily is usually used, but a trial balance should be taken at least once a month. If possible, it should be obtained as a by-product of some other operation, such as transferring balances to new monthly statements or listing balances for credit information.

## The Recap Method of Proof

The net total of new balances is automatically accumulated while posting. A total of the old balances is obtained at a separate operation, either before or after the posting run, preferably before. The ledger may be "stuffed" before posting; that is, the posting media are placed in front of the accounts to be posted and at the same time these accounts are offset slightly to the right. This provides a ready reference to the accounts which are to be posted. After the active accounts are offset, their balances may be added to obtain a total before posting. When it is undesirable to offset or stuff accounts before posting, they may be offset as they are returned to the binder or tray after each is posted.

When the ledger is not suffed or the active accounts not offset at the time the pre-list of the old balances is made, it is necessary to again locate the accounts when posting. This requires a little extra time but provides a good proof of posting to the correct accounts.


The procedure for posting when the recap method of posting is used, is as follows:

1. Offset the accounts to be posted and make a pre-list of the old balances. The debit old balances are added and the credit balances are subtracted. The total is printed with the balance key.
2. Place a proof journal, with carbon paper, in the machine as explained on page 8. Clear the machine and print proof of clearance.
3. Turn the journal sheet back and make a pre-list of the items to be posted, printing the total with the Balance key. This may be done in a column to the right of the new balance column.
4. Turn the journal sheet back and post the accounts, replacing the accounts in their normal position as they are posted.
5. After the posting is completed, clear Registers 1 and 2 with the Register Total key. The total of the items posted should agree with the predetermined total of the items. If it does not, it indicates that an item was posted incorrectly or that an error was made in the pre-list. To locate the error, check the pre-list of the items against the amounts posted to the ledger accounts.
The net total of new balances should agree with the predetermined total of old balances plus the total of the debit items, or minus the total of the credit items posted. If it does not, it indicates an error in picking up an old balance or in pre-listing the old balances. To locate the error, check the pre-list of the old balances against the old balances picked up while posting to the ledger accounts.

## The Multiple Register Method of Proof

The Multiple Register method is the same as the Recap method, except that the separate listing of the old balances is accumulated while posting, instead of being added at a separate operation. (The new balances are accumulated in the same manner as in the Recap method.) A journal sheet is usually required.

After printing the new balance, the forms arc removed and the old balance is picked up a second time. It is added in a separate register. This is done on the journal either to the right or the left of the ledger sheet. It is shown at the right of the ledger sheet below.


To set up the machine for this method of proof, a tabulator stop is placed to the right of the new balance position for a second pick-up of the old balances, and an add register control is placed in this position. An add crossfooter control is placed in the old balance position. Register 1 is made active in the item column; Register 2 in the new balance column; Register 3 in the second old balance pick-up column. Unless the last tabulator stop is near the end of the carriage, an additional stop is placed to the right of it to shorten the carriage travel after the last operation.

The posting operations are as follows:

1. Insert a proof journal, clear the machine and make a pre-list of the items.
2. Post the accounts in the usual manner.
3. After the new balance is printed, remove the ledger sheet, and again set up the old balance on the adding keys.
(a) If the old balance is a debit balance, depress the Non-space and Non-tabulate Motor Bar and then the carriage return key.
(b) If the old balance is a credit balance, depress the Register Subtract key and the Non-space and Non-tabulate Motor Bar, and then the Carriage Return key. If the machine is not equipped with the Register Subtract key, depress the Crossfooter Subtract key, the Non-add key and the Non-space Non-tabulate Motor Bar, then depress the Credit Balance key.

## Printing Register Accumulations

To print the register accumulations first tabulate the carriage to the debit position and depress the add crossfooter and register total keys; in the credit position, depress the register total key; in the new balance position, depress the crossfooter subtract and register total keys; in the second old balance position, depress the add crossfooter and register total keys. This should be followed by the depression of the Non-add and Balance keys. If the result is zero, it indicates the old balances have been picked up correctly. The items total should be checked with the pre-list total to see whether they agree.

## Correction of Errors in Posting

The error key permits the correction of most operating errors before printing and calculating, and consequently mistakes in posting are reduced to the minimum. There are several methods of correcting errors and when one is familiar with the machine there are many short cuts. The following, although it does not take full advantage of possible short cuts, may be used as a standard procedure.

When an error is detected, remove the ledger sheet, then:
1A. If detected before the new balance is printed, return the carriage and depress the balance key. Note on the journal that the posting was in error.

1B. If detected after the new balance is printed, proceed as follows: With the carriage set to print in the second pick-up column, add the amount of the new balance of the incorrect posting; return the carriage and note on the journal that the posting was in error. (By adding the same amount to the second pick-up of old balances that was added to the new balance accumulation, the difference between these accumulations is not affected by the incorrect posting, as the two amounts offset each other.)
2. If the charge or credit has been posted, tabulate to the charge or credit column, enter the amount as in the incorrect posting, depress the register subtract key* and the motor bar. Then return the carriage.
3. Neatly rule out the incorrect posting; then repost the account in the normal manner.
*If the machine does not have a register subtract key, enter the amount of the charge or credit in the old balance column, depress the subtract key and the tabulate motor bar; tabulate to the charge or credit column and depress the credit balance key. Then return the carriage.

If the second pick-up of old balance has been correctly printed before the error is detected, follow the above instructions but do not again enter the second pick-up of the old balance when the account is reposted. If an error is made in the second pick-up of the old balance, subtract the incorrect amount from the register in the same manner as an incorrect charge or credit is subtracted (step 2). Then enter the correct amount.

In the proof journal illustrated on the opposite page, seven errors were made:

1. Error in old balance; detected immediately.
2. Error in old balance; detected after charge is printed.
3. Error in old balance; detected after new balance is printed.
4. Error in old balance; detected when disclosed by the proof operation after all postings are completed. (The amount printed with the balance key after the register accumulations are printed represents errors in the pick-up of old balances. After errors are corrected and the registers again totaled as before, the balance key will print a clear signal, indicating that errors were properly corrected.) This error would have been corrected in the same manner had it been detected while posting.
5. Error in charge; detected immediately.
6. Error in charge; detected when disclosed by the proof operation after all postings are completed. (Failure of the total in the charge or credit column to agree with a pre-list total indicates an error in items posted. After correction of all errors, the registers are totaled as before and the total in this column is added to the previous total to obtain an amount that should agree with the pre-list total.)

This error would have been corrected in the same manner had it been detected while posting.
7. Error in second pick-up of old balance; detected immediately.

Note-Since the journal is usually removed to permit checking for errors some prefer to use a separate sheet, a blank ledger or statement sheet being satisfactory, for making the adjustments for errors and printing the register accumulations.


## Practice Material

A set of practice material for school use may be obtained from any branch office of the Burroughs Adding Machine Company at a nominal price.

