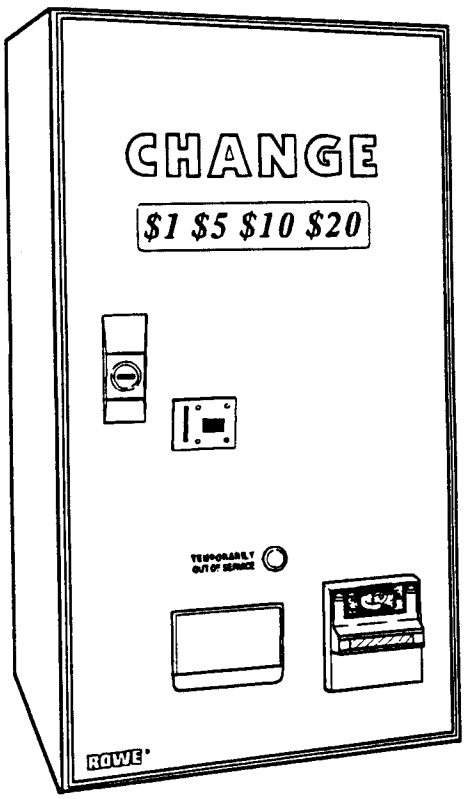
ROWE

Century Series

C-8 and C-10
Bill and Coin Changers

Field Service Manual
and
Parts Catalog



PART NO. 25554501

Preface

The Century Series is an all new model bill changer. This manual has been designed and organized to provide you with an easy-to-use source of service information.

This service manual is divided into eight sections:

- **Section 1: SYSTEM DESCRIPTION** — Introduces you to the C-8, C-10, their features, and their major components. A Sequence of Operation Flowchart details Bill Changer operation.

- **Section 2: INSTALLATION** — Provides you with the information that you need to install your Bill Changer safely and securely.

- **Section 3: LOADING & AUDITING** — Outlines instructions for loading and unloading the Bill Changer coin hopper, as well as a basic auditing procedure to guard against loss of money from theft or malfunction.

- **Section 4: PROGRAMMING** — Gives instructions for changing Bill Changer default (factory) programming.

- **Section 5: MAINTENANCE & ADJUSTMENTS** — Provides instructions for removing Bill Changer components for service, and details mechanical maintenance procedures.

- **Section 6: TROUBLESHOOTING & SELF-DIAGNOSTICS** — Describes the meaning of Bill Changer fault codes, as well as remedies for each. This section also describes miscellaneous problems that can occur but may not cause a fault code to be displayed, as well as checking procedures used to verify that the Bill Changer is functioning properly.

- **Section 7: TECHNICAL INFORMATION** — Contains the board layout and components list for the Control Computer.

- **Section 8: PARTS CATALOG** — Lists and illustrates all replaceable modules in the Bill Changer.

This manual is intended for owners, route operators, and technicians. This manual provides all field and shop related service and maintenance material. Accessories and their installation and service are discussed in the corresponding accessory instructions (or manuals).

Specific Bill Acceptor information is discussed in the *Bill Acceptor Field Service Manual and Parts Catalog* included with your Bill Changer.

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SECTION 1:
SYSTEM DESCRIPTION

INTRODUCTION

NOTE:

Throughout this manual, the word "coin" is used to refer to either coins or tokens, interchangeably.

The Rowe® Century Series C-8 and C-10 Bill and Coin Changers can accept $1 thru $100 bills of United States currency. Using the appropriate bill acceptor, up to 7 denominations of any non-U.S. currency can be accepted. The unit can be programed by the operator to accept any or all of the bills. Figure 1-1 illustrates the major components of the Bill.

In addition, with the optional coin acceptor installed, up to 8 denominations of coins can be accepted.

The Bill Changer can dispense two different types of coins or tokens at a time. The number of coins dispensed for each bill and coin denomination accepted is programmable.

The C-8 and C-10 differ in height and coin hopper capacity. The C-8 is 32" high and can hold up to 4,200 U.S. Quarters. The C-10 is 33-7/8" high and can hold up to 6,800 U.S. quarters.

FEATURES

- A microcomputer inside the Bill Changer monitors system status, accepts credit inputs from the bill acceptor or coin acceptor (when used), and controls the change dispensing functions.
- Modular assemblies are featured for fast field substitution.
- Setup and programming options are easily changed using the MODE, UP and DOWN pushbutton switches.
- The removable coin hoppers permit rapid bulk loading of coins.

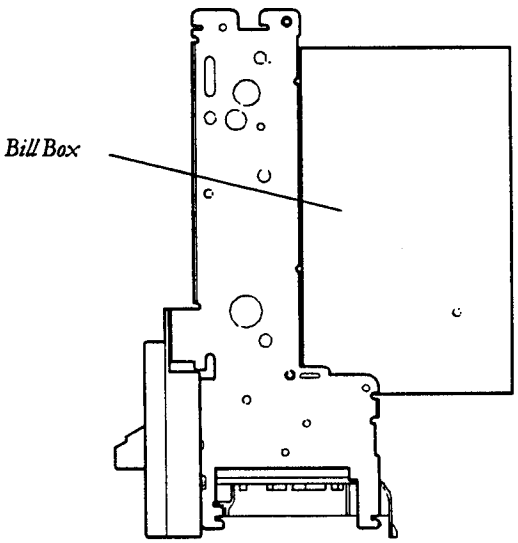
GENERAL OPERATION

The Bill Changer Sequence of Operation Flowchart *(Table 1-1, opposite)* gives an overview of the Bill Changer sequence of operation, from the time that a bill is inserted into the changer until coins fall into the Coin Cup. For detailed information regarding the location and function of individual Bill Changer components, refer to *System Components*, which follows.

SYSTEM COMPONENTS

Refer to Figure 1-1 for placement of each of the following Bill Changer components:

Figure 1-2
Bill Acceptor



BILL ACCEPTOR*

The bill acceptor accepts and validates various denominations of bills depending on the bill acceptor and its setup. It stacks valid bills in a bill box that opens for easy bill removal. The bill acceptor mounts on the back of the Bill Changer door.

For specific bill acceptor information refer to the bill acceptor field service manual and parts catalog included with the Bill Changer.

* Rowe® Bill Acceptor pictured. Your changer may be equipped with an Acceptor from another manufacturer.

Bill Changer Sequence of Operation Flowchart

BILL INSERTED[Note 1]
A customer inserts a bill into the Bill Changer. The bill is transported into the Bill Acceptor by a system of belts

BILL EXAMINED BY BILL ACCEPTOR
The Bill Acceptor examines the bill and determines whether or not it is valid

IF BILL IS INVALID:

TRANPORT REVERSES
The Bill Acceptor transport attempts to return the invalid bill to the customer

BILL HANGS 5 SECONDS; BA LED FLASHES
The Bill Acceptor presents the bill to the customer where it hangs in the bill inlet for 5 seconds. The LED on the back of the Bill Acceptor will flash a number of times; the number of flashes represent the bill reject code *(See the Bill Acceptor Field Service Manual & Parts Catalog for details)*

BILL ACCEPTOR SELF-CLEARS
After 5 seconds, the Bill Acceptor goes into a self-clear cycle and ejects the invalid bill

IF BILL IS VALID:

BILL IS STACKED
The Bill Acceptor stacks the valid bill in its bill box

VEND SIGNAL SENT TO CCC*
A vend signal is sent to the CCC

COIN QUANTITY DISPLAYED
The number of coins to be vended is displayed on the CCC's status display. The left two digits represent the count to be paid from the left hopper, and the right two digits represent the count to be paid from the right hopper.

HOPPER MOTOR(S) OPERATES
The hopper motors (on the dispenser) move coins up through the hoppers

COINS DROP THROUGH DETECTORS
The hoppers drop coins through the coin detectors on the dispenser

DISPLAY COUNTS DOWN
The number of coins to be vended for each hopper is shown on the CCC status display. Each two-digit number decreases by one as each coin passes through its respective coin detector.

COINS FALL INTO COIN CUP
Coins fall into the coin cup until the counts on the status display both equal zero

Table 1-1
Bill Changer Sequence of Operation Flowchart

* Changer Control Computer

Note 1 The Bill Acceptor Operation described here is applicable when a Rowe® Bill Acceptor is used. Bill Acceptors from other manufacturers may operate differently.

DISPENSER

The Bill Changer coin dispenser *(Figure 1-3)* contains the coin detector system and the hopper motors. The dispenser mounts on brackets on either side of the cabinet.

The coin detector system – one for each hopper – consists of an LED and a photo-transistor, which "count" the coins as they exit the hopper and fall through the upper coin chute into the coin cup.

The hopper motors engage sprockets that drive the hopper. The 110 VAC motors are controlled by the CCC.

Figure 1-3
Dispenser

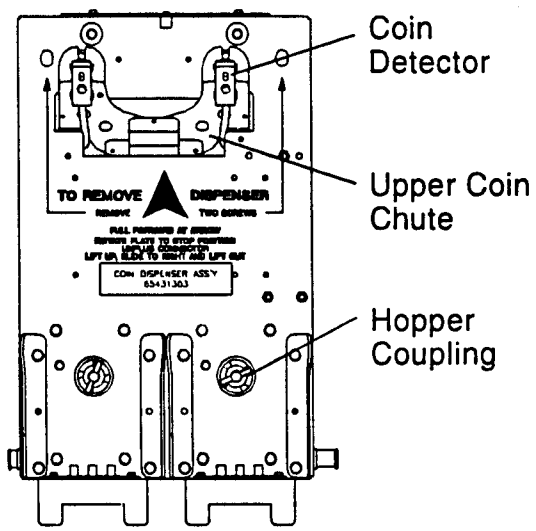
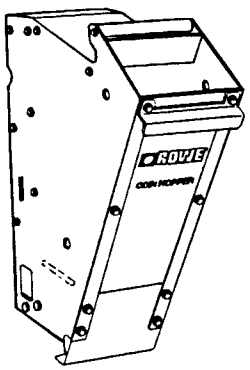


Figure 1-4
Hopper



HOPPER

The Bill Changer contains two hoppers *(Figure 1-4)*, which mount on the front surface of the dispenser assembly and pivot out for easy removal.

The hoppers transport coins to their respective coin detector and then the upper coin chute by means of a chain conveyor driven from below by a sprocket. The chain picks up coins from the bottom of the hopper and carries them up to the top, where they fall through the upper chain guide ring and through the coin detector system.

The hopper chain follows a serpentine path that causes excess coins to fall back into the hopper. This ensures that only one coin per pin enters the coin counting area.

An agitator, which is mounted on the drive shaft inside the hopper, agitates the coin load to minimize coin jams in the hopper and to ensure efficient coin pick up. The hopper also contains the low coin sensor antenna and circuit board.

NOTE:

The low coin sensor alerts the computer when the number of coins in a hopper falls below a certain level.

The Bill Changer uses a low coin sensing system to detect when either hopper is low on coins. With this system, the operator does not have to program the computer with the number of coins that have been added to the hopper. When the hopper is loaded, the sensing circuit will automatically signal the computer that coins are present. As the hopper is emptied via the normal changemaking process, eventually the level of coins will fall below the threshold required by the low coin sensing circuit. This circuit will then signal the computer that the low level has been reached.

Each hopper has its own sensing circuit. The sensing circuit is mounted on the front surface of the coin hopper with electrical connections made through high pressure contact springs on the dispenser assembly. Because there are no elements inside the hopper to contact the coins, there is absolutely no impact on hopper operation and no degradation of the sensor due to contamination deposited by the coins themselves.

CHANGER CONTROL COMPUTER (CCC)

The Changer Control Computer (CCC, *Figure 1-5)* mounts on the back wall inside the changer cabinet. The CCC contains a microcomputer that controls and/or monitors all of the major functions of the Bill Changer, including communication with the Bill Acceptor and change dispensing functions. It also contains the following controls and displays:

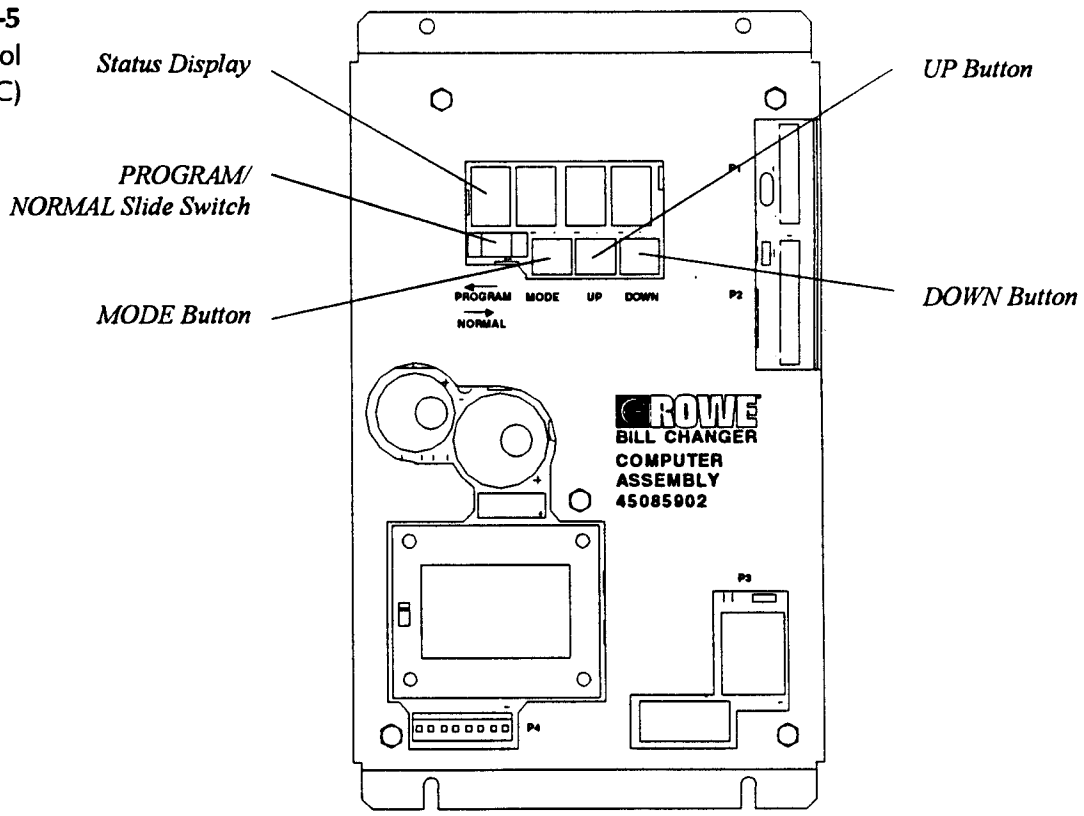


Figure 1-5
Changer Control Computer (CCC)

NOTE:

When the CCC is initially switched from the NORMAL to PROGRAM position, the status display will show Pro9.

Status Display

The four character LED status display window displays the many Bill Changer programming and self-diagnostic features described in this manual. *See Section 4 for detailed programming information; see Section 6 for error code meanings.*

Service and Control Switches

The Bill Changer's service features and programming options are controlled by three push button switches and one slide switch. The descriptions that follow are introductory. *Refer to the detailed procedures and instructions in Section 4 for specific programming information.*

PROGRAM/NORMAL Slide Switch

Selects either the NORMAL operating position or the PROGRAM position:

PROGRAM Position - Allows you to inspect and/or change Bill Changer setup information. This information is displayed on the status display and is selected and changed by using the MODE, UP and DOWN buttons.

NORMAL Position - Places the changer in a standby condition waiting to give change for a valid bill or coin while the CCC monitors all systems. While in standby, a dash moves from left to right across the 4-character status display.

MODE BUTTON

The MODE button is used to step through the setup options.

UP BUTTON

Increases the displayed value.

DOWN BUTTON

Decreases the displayed value.

TEMPORARILY OUT OF SERVICE LAMP

The temporarily out of service lamp *(Figure 1-1)* is located on the Bill Changer door above the coin cup. It lights when the changer is low or out of change, or if the CCC has detected a malfunction.

Reset the Bill Changer by pushing the UP and DOWN buttons simultaneously on the CCC while the PROGRAM/NORMAL switch is in the NORMAL position. If the error has been corrected, the out of service lamp will go out and a dash will move from left to right accross the 4-character status display. *See Section 6 for detailed troubleshooting information.*

ELECTRICAL BOX

The Electrical Box *(Figure 1-6)*, located inside the Bill Changer cabinet, houses the following electrical components:

The ON/OFF switch controls all power to the machine.

A 5 amp circuit breaker protects the power line to the bill changer.

An EMI filter (ElectroMagnetic Interference filter) removes undesirable electrical noise from the incoming power line.

The Money Counter is non-resettable, and indicates the amount of money handled by the changer.

Figure 1-6
Electrical Box