

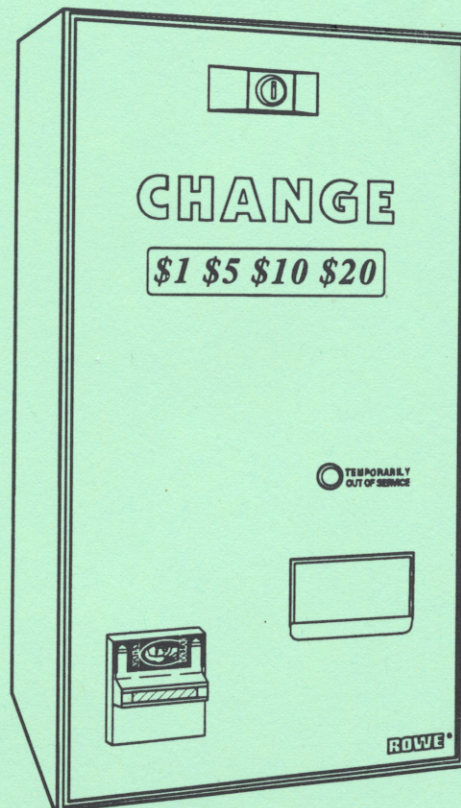
# Century Series

C-2, C-4, C-6

Bill Changers

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## Field Service Manual and Parts Catalog



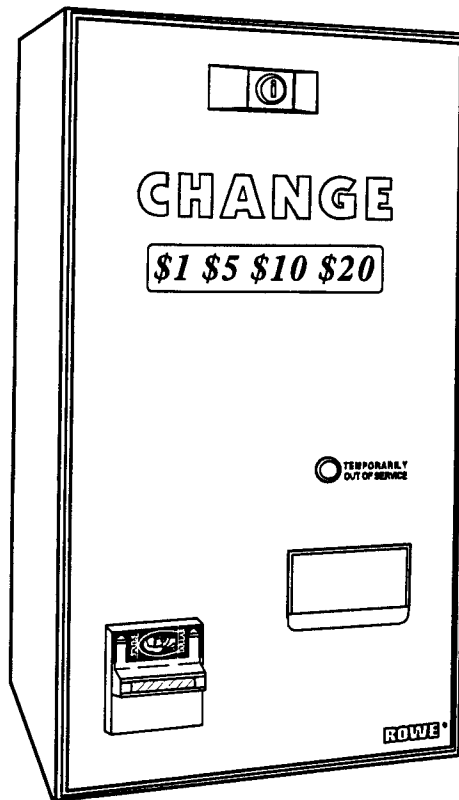
Part No. 25553601  
Second Edition

# Century Series

C-2, C-4, C-6  
Bill Changer

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## Field Service Manual and Parts Catalog



Rowe International, Inc.

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# 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-2, C-4, C-6, 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 Bill Changer System Schematic Diagram, as well as 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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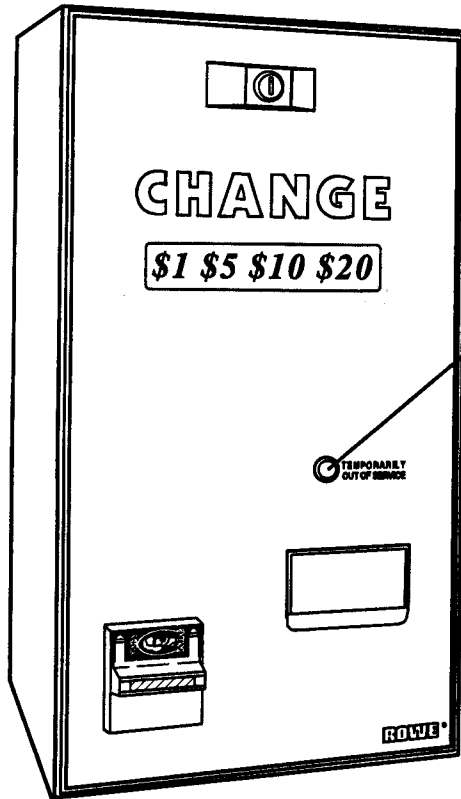
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Century Series  
Bill Changer  
Major Components  
(Sheet 1)

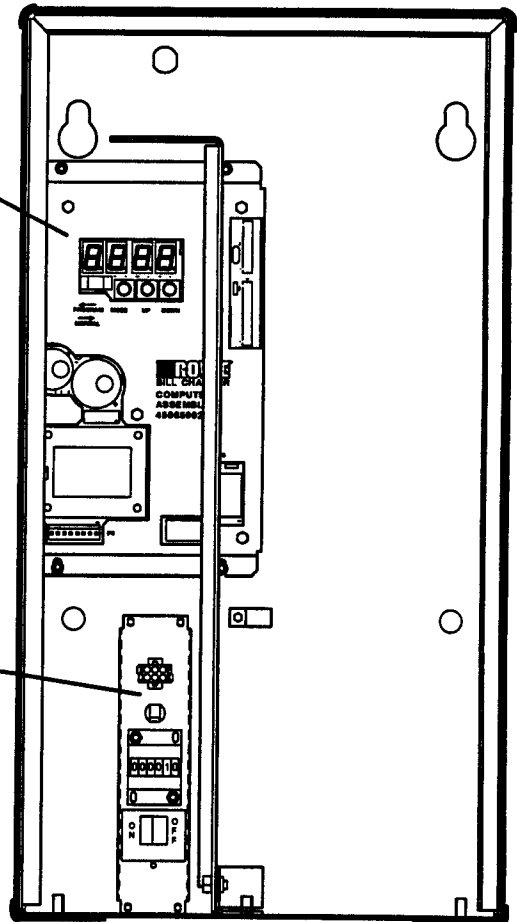


*Temporarily Out of Service  
Lamp*

**C-2/4**

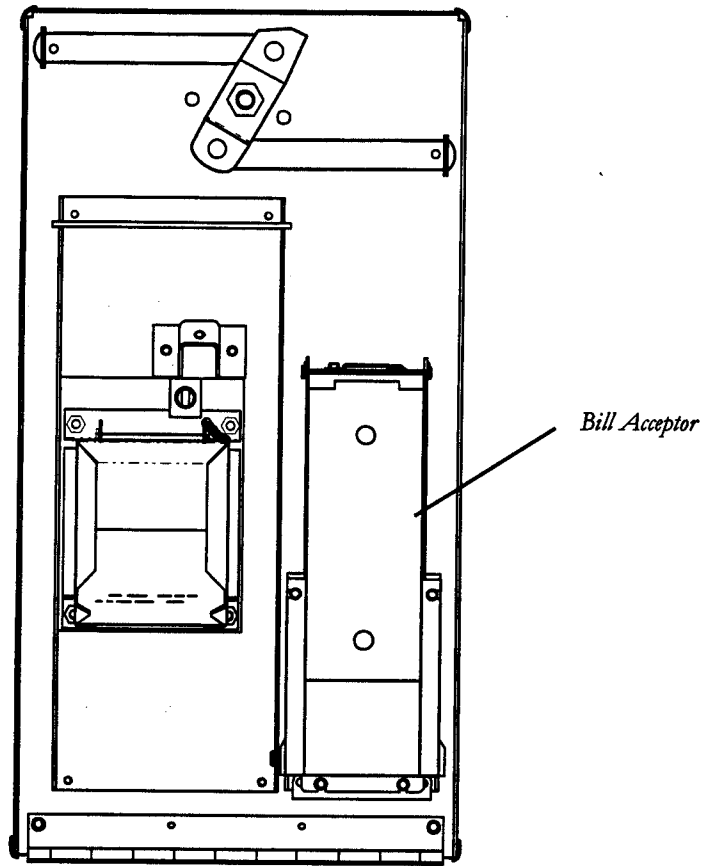
*Changer Control  
Computer  
(CCC)*

*Electrical Box*

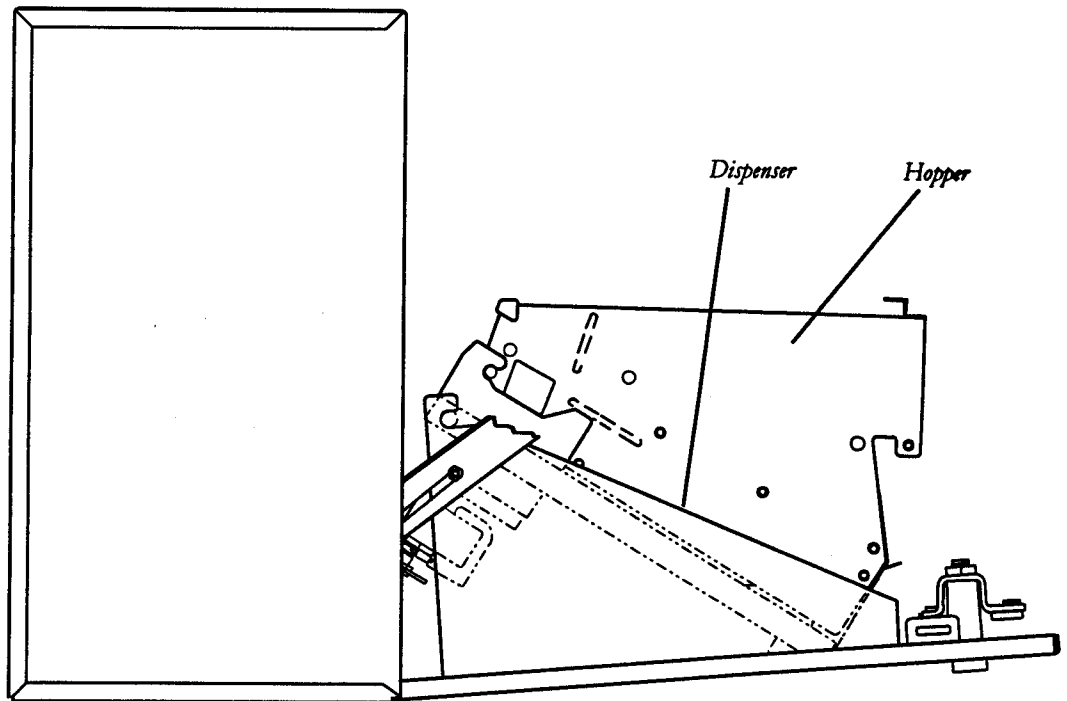


**C-2/4 CABINET**

**Figure 1-1**  
Century Series  
Bill Changer  
Major Components  
(Sheet 2)



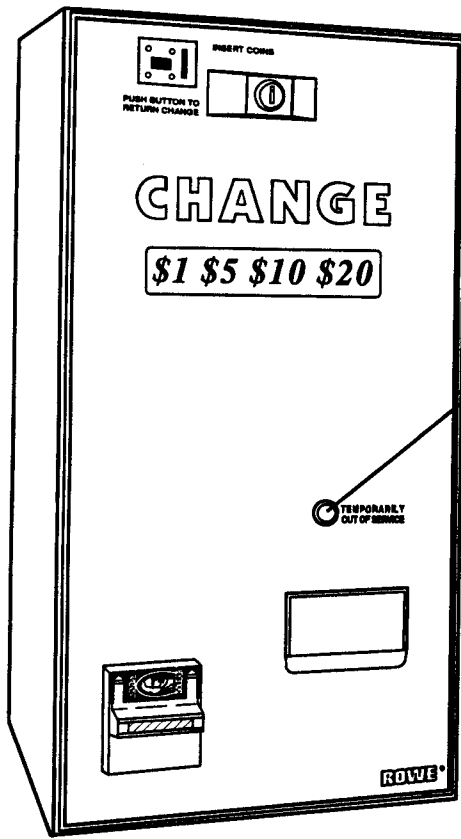
**C-2/4 BACK OF DOOR**  
(Hopper & Dispenser Removed)



**C-2/4 SIDE VIEW, DOOR OPEN**



Figure 1-1  
Century Series  
Bill Changer  
Major Components  
(Sheet 3)



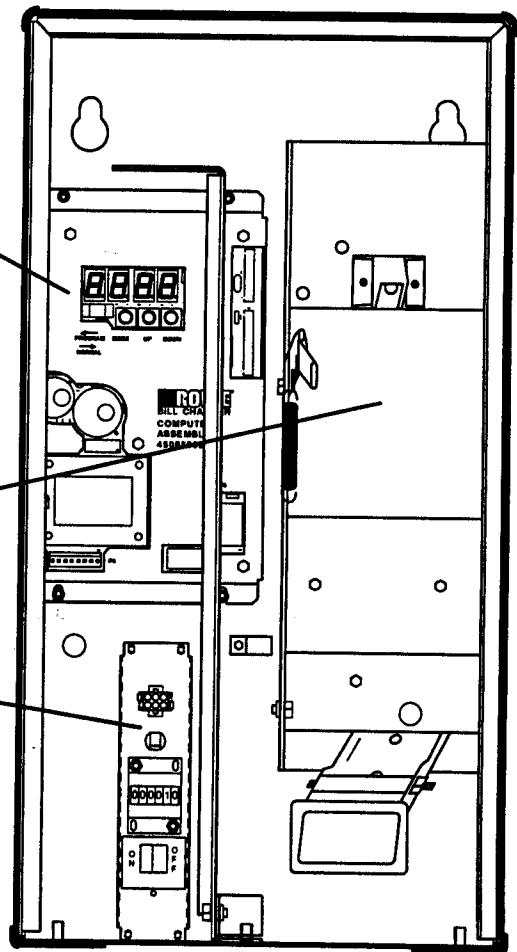
Temporarily Out of Service  
Lamp

C-6

Changer Control  
Computer  
(CCC)

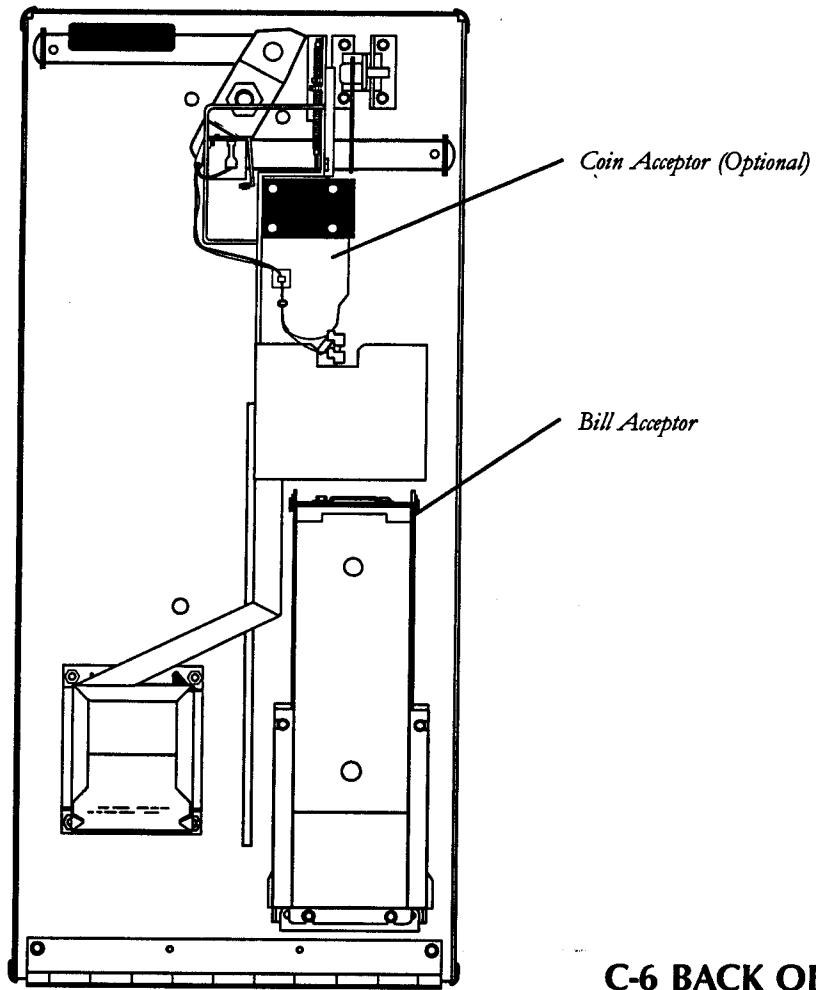
Dispenser

Electrical Box



C-6 CABINET  
(Hopper Removed)

**Figure 1-1**  
Century Series  
Bill Changer  
Major Components  
(Sheet 2)



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# SECTION 1:

## SYSTEM DESCRIPTION

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### INTRODUCTION

---

**NOTE:**

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

---

The Rowe® Century Series C-2 Bill Changer will accept 1 dollar (\$1) and 5 dollar (\$5) bills and the C-4 and C-6 Bill 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 programmed by the operator to accept any or all of the bills. Figure 1-1 illustrates the major components of the Bill.

The Bill Changer can dispense one type of coin or token at a time. The number of coins dispensed for each bill denomination accepted is programmable.

### 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 hopper permits rapid bulk loading of coins.

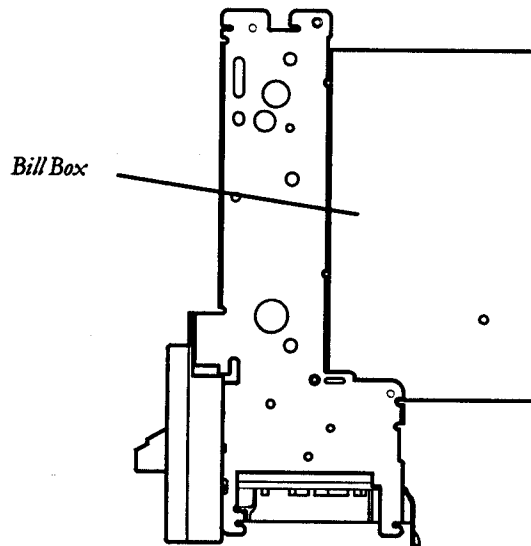
## GENERAL OPERATION

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



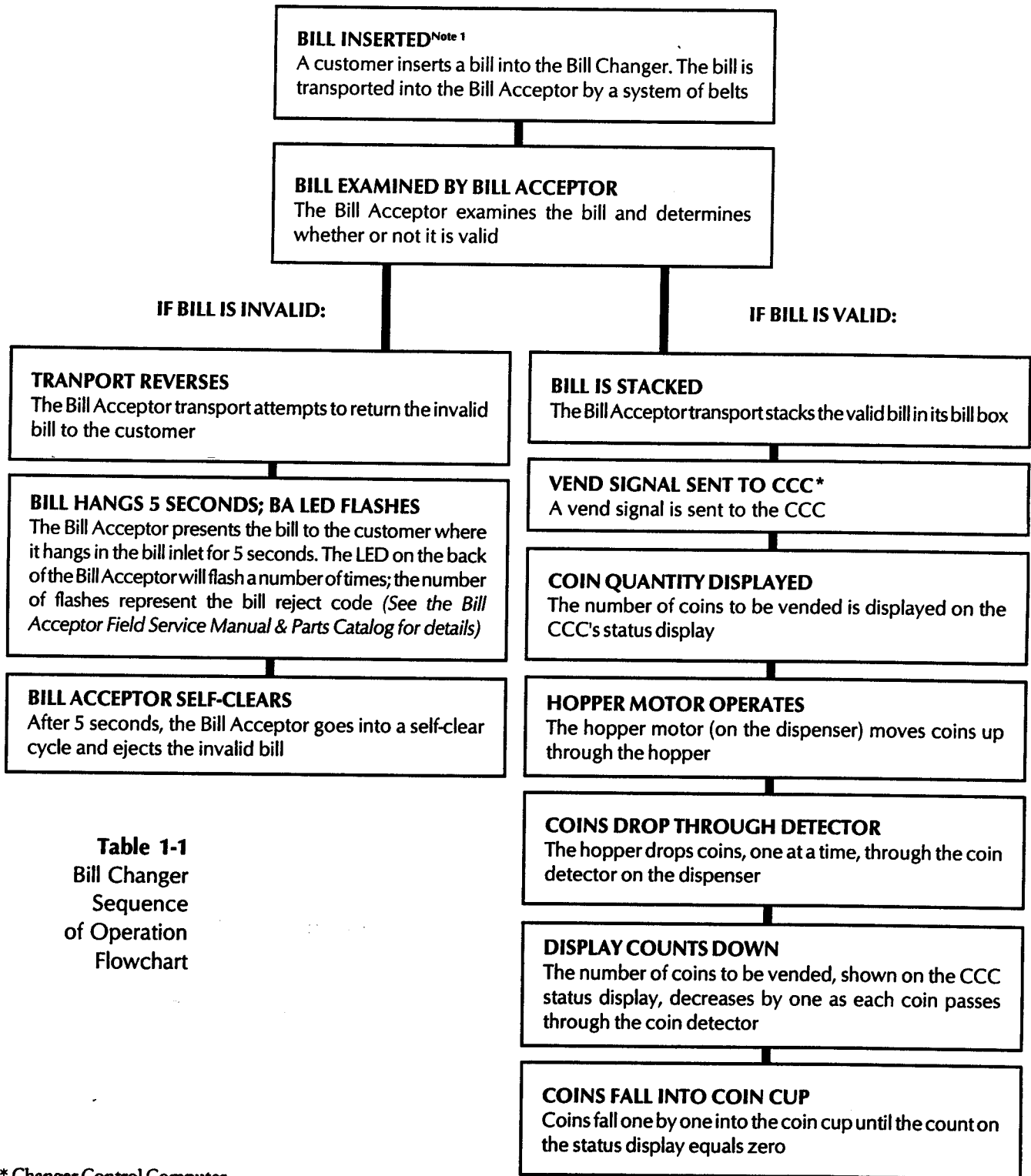
### BILL ACCEPTOR\*

The bill acceptor accepts and validates \$1 and \$5 or \$1 thru \$100 bills depending on the bill acceptor. 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



**Table 1-1**  
Bill Changer  
Sequence  
of Operation  
Flowchart

\* Changer Control Computer

<sup>Note 1</sup> 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 motor. On the C-2/4 the dispenser mounts on a bracket on the back of the Bill Changer door. On the C-6 the dispenser mounts on a bracket in the cabinet.

The coin detector system 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 motor engages a sprocket that drives the hopper. This 110 VAC motor is controlled by the CCC.

Figure 1-3  
Dispenser

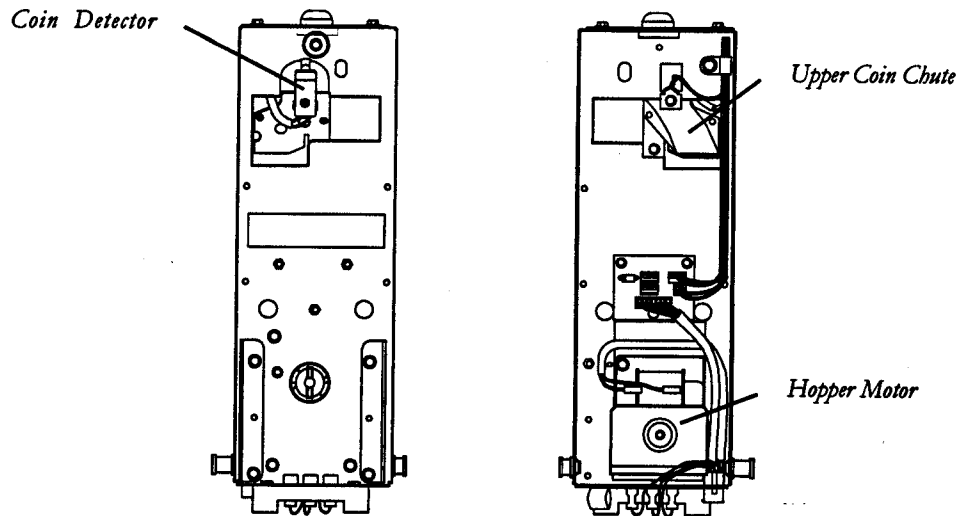
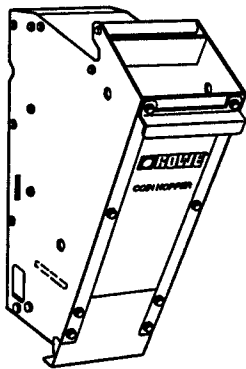


Figure 1-4  
Hopper



## HOPPER

The Bill Changer contains one hopper (*Figure 1-4*), which mounts on the front surface of the dispenser assembly and pivots out for easy removal.

The hopper transports coins to the coin detector and 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 the hopper falls below a certain level.

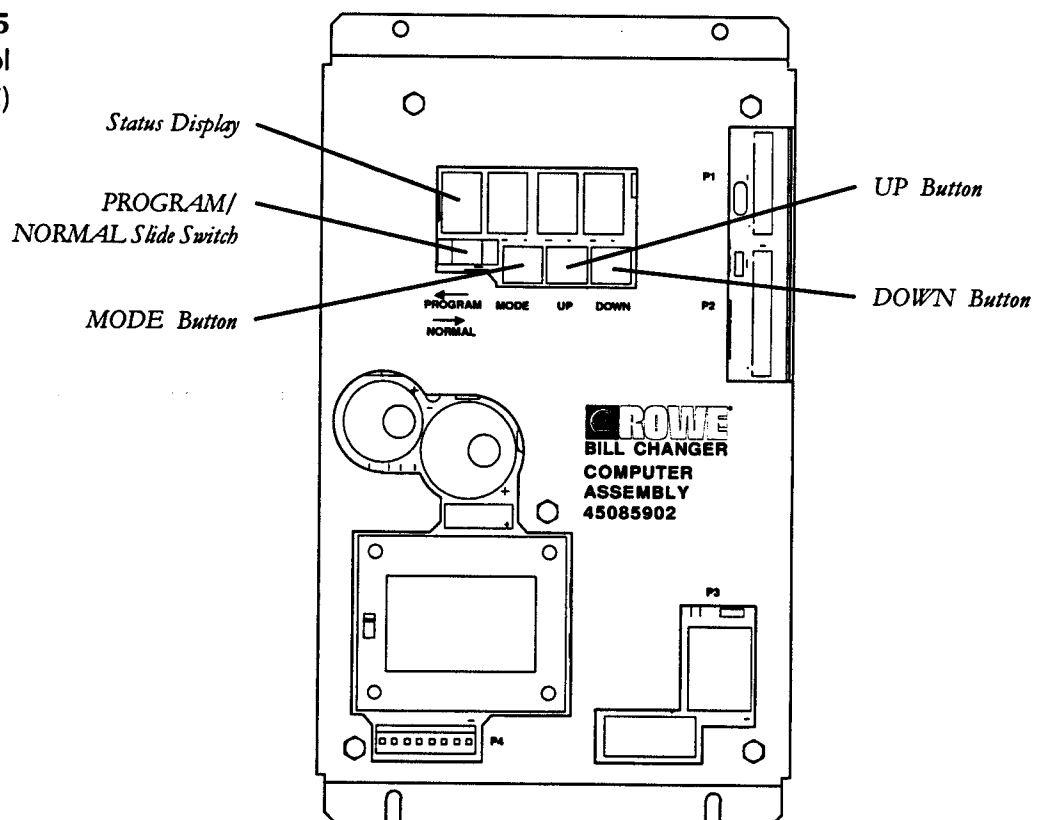
The Bill Changer uses the low coin sensing system which simplifies the day to day operation. With this system, the operator does not have to program the computer with the number of coins that have been added to the hopper. When the hopper is loaded, the sensing circuit will automatically signal the computer 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.

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 *Pr o S*.

---

## 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 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 hopper is low, or out of change, or the changer has shutdown due to 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 across 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:

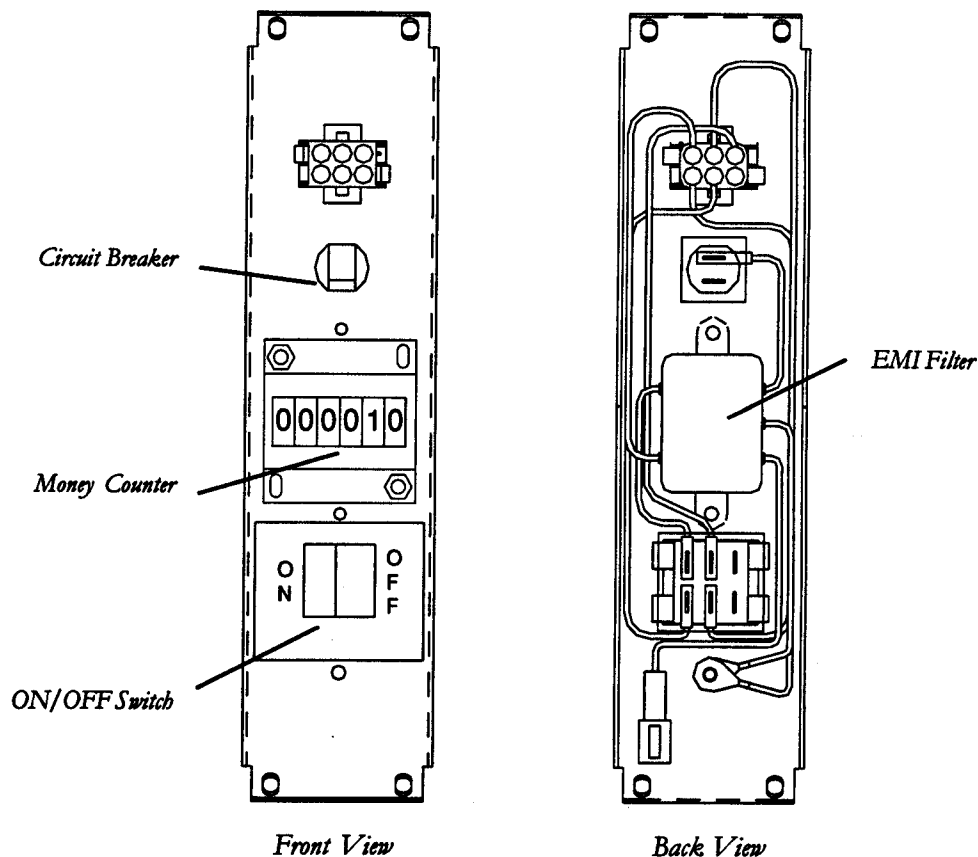
The **ON/OFF switch** controls all power to the machine.

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



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# SECTION 2:

## INSTALLATION

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### INTRODUCTION

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**NOTE:**

*For both safety and security reasons, Rowe® strongly recommends that the Bill Changer be securely anchored to a wall or sturdy countertop. Please follow the mounting instructions provided in this manual.*

---

This section provides instructions for installing the Century Series Bill Changers. To prevent theft, or the possibility of damage or injury should the Bill Changer fall, Rowe® strongly recommends that the Bill Changer be securely anchored to a wall or a sturdy countertop<sup>1</sup>. The instructions that follow provide directions for a secure installation.

Before you begin any installation, be sure that a power source is available and that the changer can be mounted level. Choose a location that is easily accessible to customers, with enough room to open the Bill Changer door for convenient service.

Be sure that you read and understand the warnings and instructions in *Power Connection*, page 2-6, before making any electrical connections to the Bill Changer.

### BILL CHANGER MOUNTING & SPECIFICATIONS

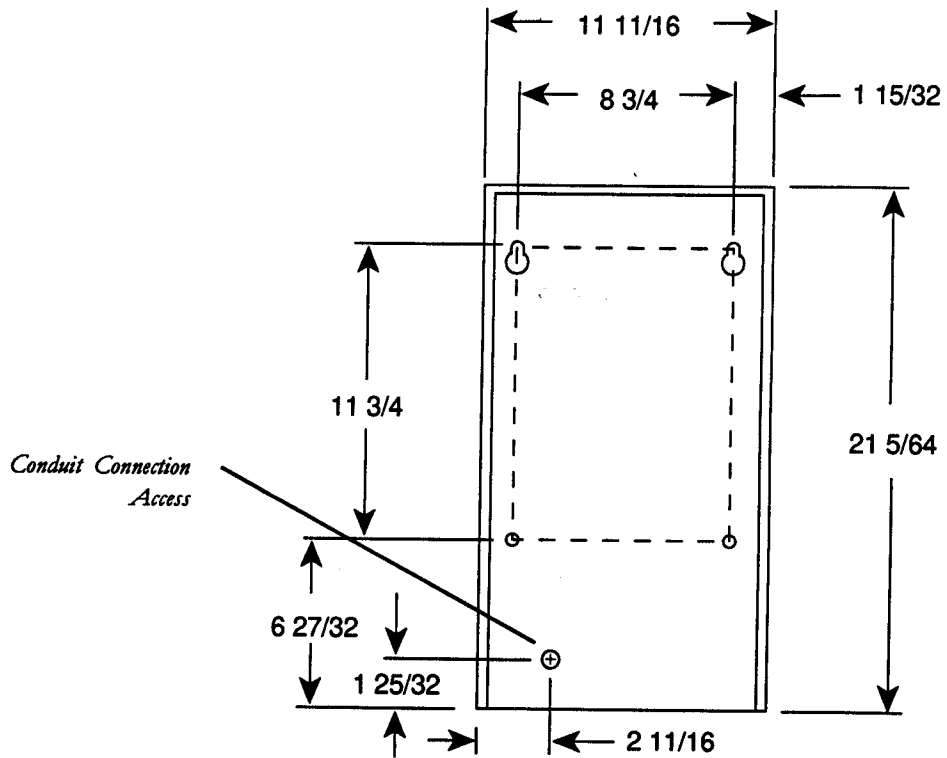
Figures 2-1 thru 2-2 illustrate the Bill Changer mounting requirements and specifications, and provides dimensions for drilling.

To mount the Bill Changer, use four 3/8" minimum diameter lag screws (with flat washers) that are long enough to penetrate the counter or supporting surface of the wall at least 2 inches. For wood frame mounting, screw directly into the wall studs. For mounting to concrete or masonry walls, use lag screws with lead anchors.

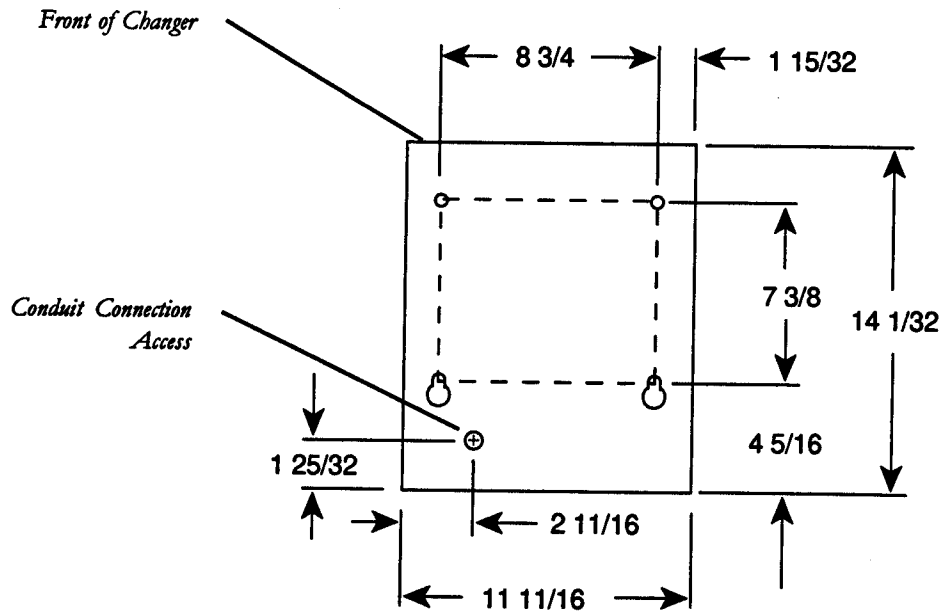
If the mounting surface is not even, you may need to add spacer washers between the mounting surface and the Bill Changer until the Bill Changer is level.

<sup>1</sup> Rowe® also offers two different mounting bases as options. See the Accessory Kits section for details.

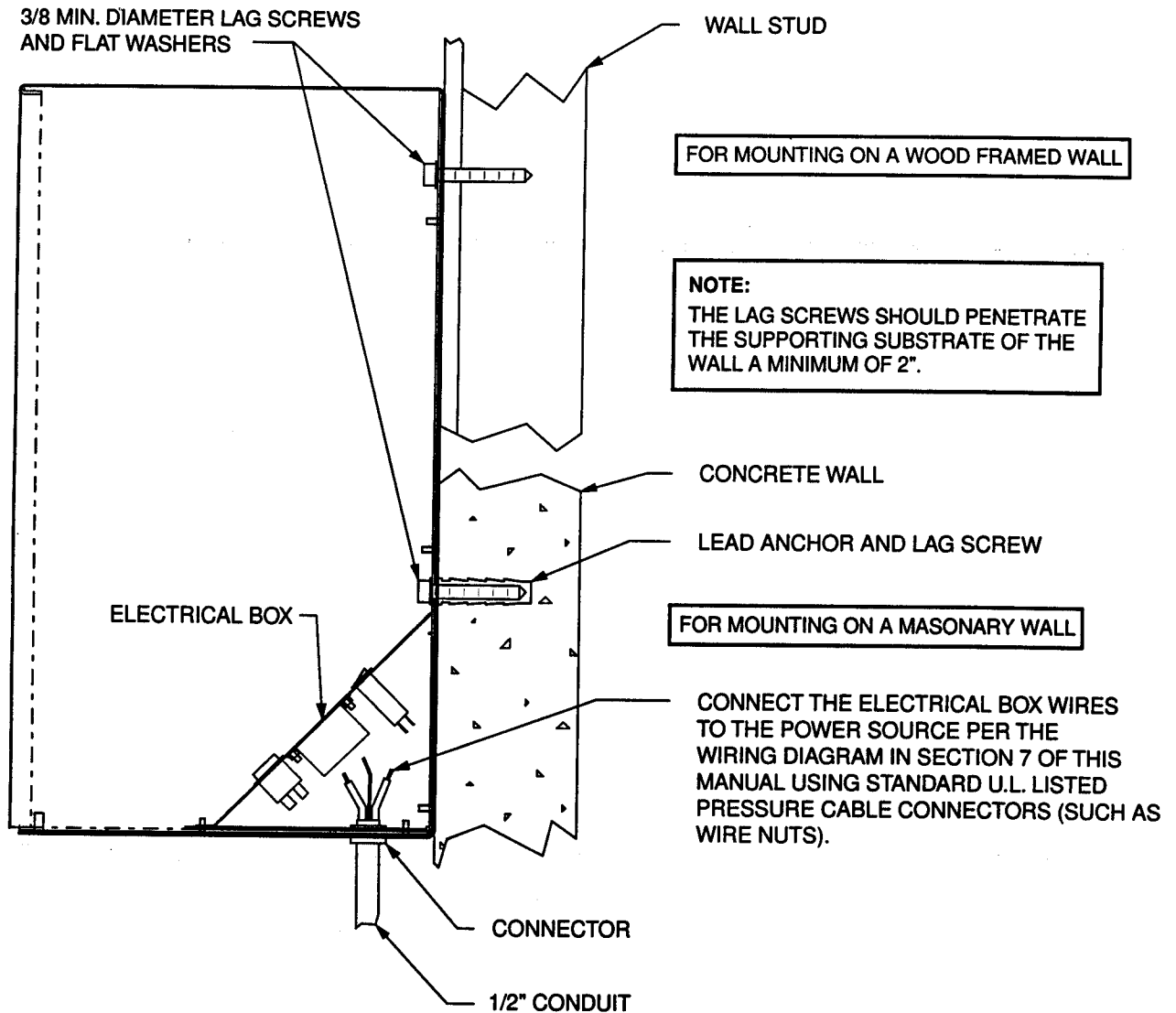
**Figure 2-1**  
C-2/4 Mounting  
Diagram



**FRONT VIEW**  
**C-2/4 Wall Mounting Dimensions**



**BOTTOM VIEW**  
**C-2/4 Table or Countertop Mounting Dimensions**

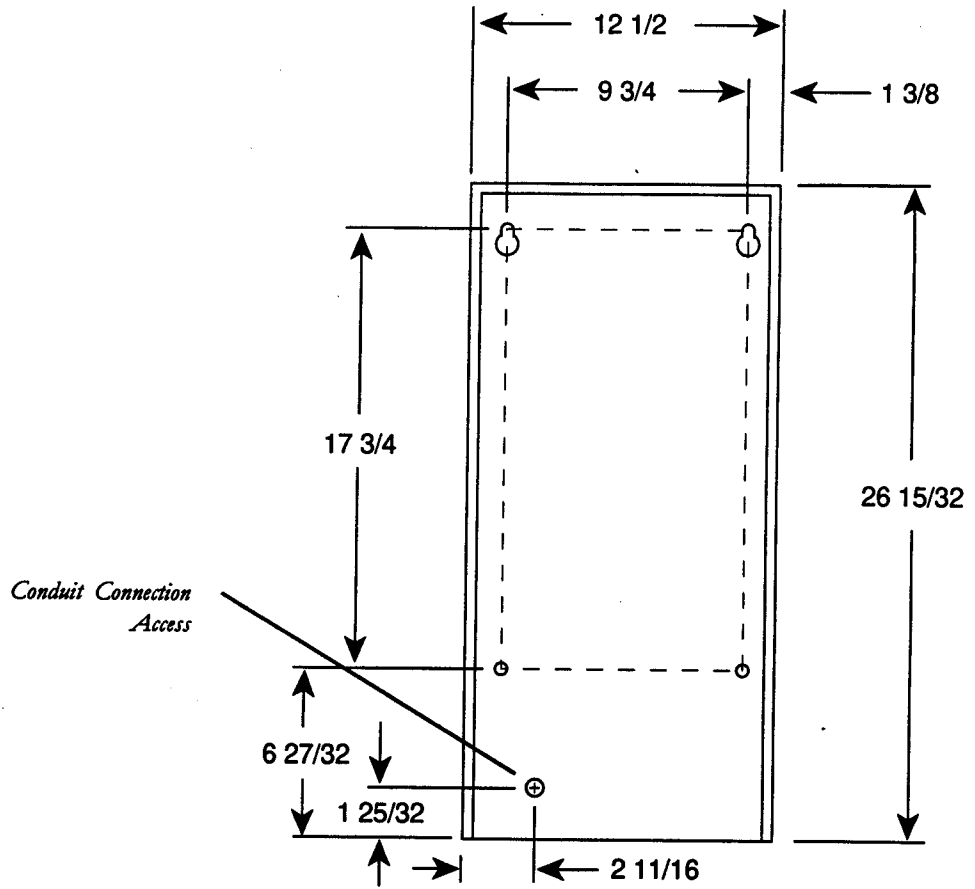


**WARNING:**  
 BE SURE THAT YOU READ AND UNDERSTAND THE WARNINGS AND INSTRUCTIONS IN THIS SECTION OF THE MANUAL BEFORE MAKING ANY ELECTRICAL CONNECTIONS.

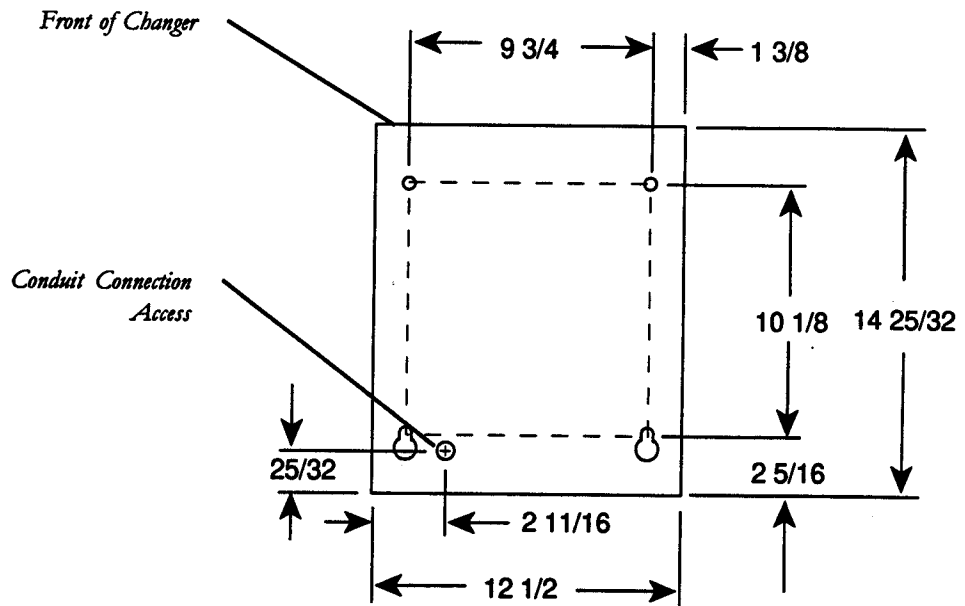
THE CONDUIT CAN BE INSTALLED THROUGH THE BOTTOM OR THROUGH THE BACK BY REVERSING THE ELECTRICAL PLATES. THE POSITION OF THE POWER CORD CAN BE CHANGED IN THE SAME MANNER.

C-2/4 POWER REQUIREMENTS: 120 VAC (MIN. 105 VAC), 60 Hz  
 SHIPPING WEIGHT: 78 lbs. (220 or 240 VAC, 50 HZ optional)

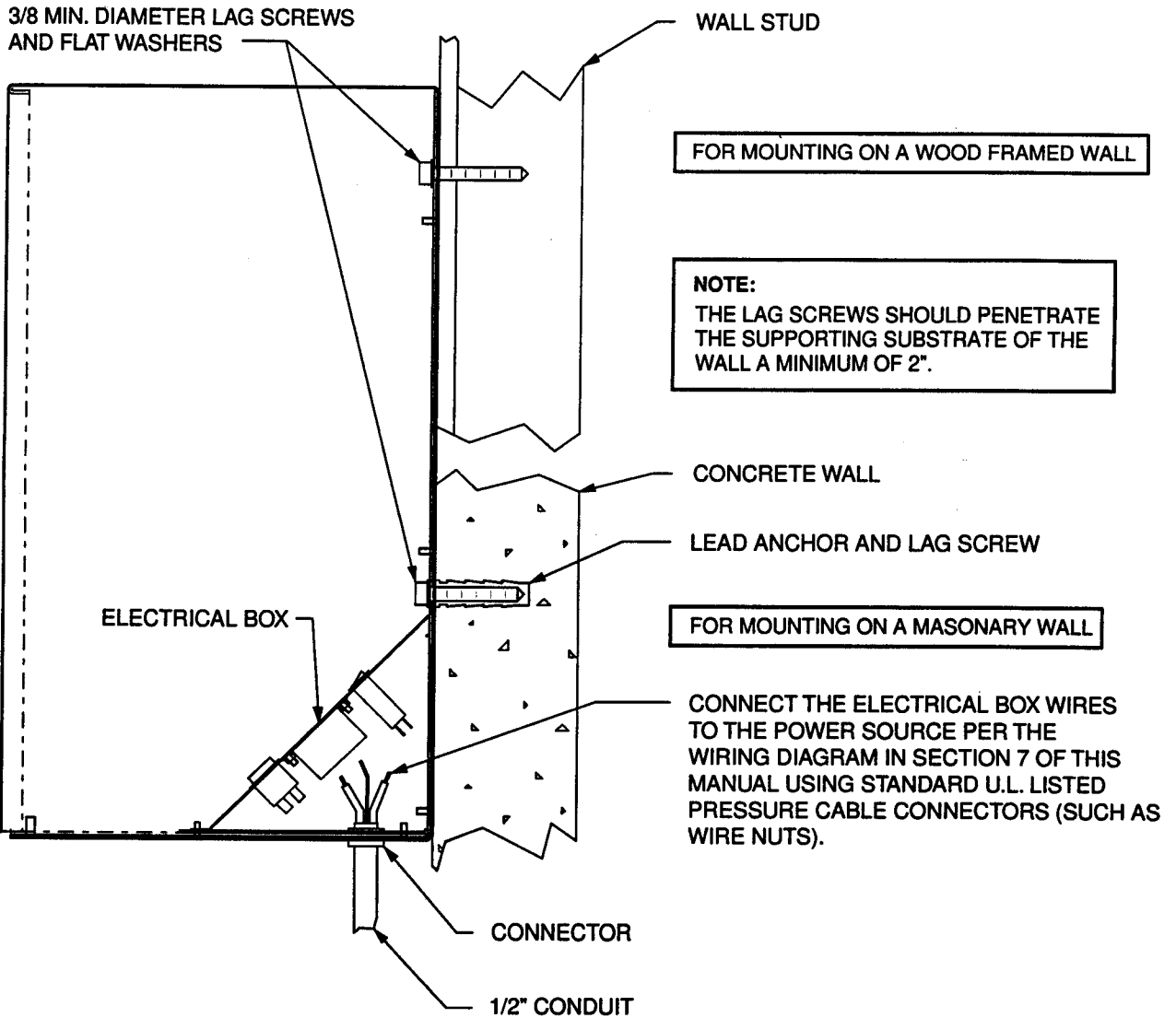
**Figure 2-2**  
C-6 Mounting  
Diagram



**FRONT VIEW**  
**C-6 Wall Mounting Dimensions**



**BOTTOM VIEW**  
**C-6 Table or Countertop Mounting Dimensions**



**WARNING:**  
BE SURE THAT YOU READ AND UNDERSTAND THE WARNINGS AND INSTRUCTIONS IN THIS SECTION OF THE MANUAL BEFORE MAKING ANY ELECTRICAL CONNECTIONS.

THE CONDUIT CAN BE INSTALLED THROUGH THE BOTTOM OR THROUGH THE BACK BY REVERSING THE ELECTRICAL PLATES. THE POSITION OF THE POWER CORD CAN BE CHANGED IN THE SAME MANNER.

C-6 POWER REQUIREMENTS: 120 VAC (MIN. 105 VAC), 60 Hz  
SHIPPING WEIGHT: 99 lbs. (220 or 240 VAC, 50 HZ optional)



## POWER CONNECTION

*Always obey local codes and ordinances when making Power connection.*

### LINE CORD

On 120 VAC models, the Bill Changer power cord can be plugged into any standard three-hole 120 VAC outlet. Do not connect your Bill Changer using a two-pronged grounding adaptor. For 220V/240 VAC operation, install an appropriate connecting plug for your location, follow local safety codes and regulations, and make an earth connection to the case if allowed. To avoid possible voltage spikes that might effect the Bill Changer, do not operate any other high-wattage equipment on the same circuit with the Bill Changer.

The line cord comes factory installed through the back of the changer. Some installations require that the position of the cord be changed to run through the bottom of the changer. This can be done by removing the screws that hold the electrical box in place and reversing the electrical plates underneath (*Figure 2-1, 2-2*).

---

#### CAUTION:

*To avoid the hazard of serious electrical shock and/or damage to the Bill Changer, direct wiring to the Bill Changer should only be attempted by a person familiar with proper electrical wiring procedures.*

---

### CONDUIT

If the changer is rigidly mounted to a wall, U.L. requirements specify that a direct power connection be made to the changer through a rigid, 1/2 inch conduit.

If a conduit is required for your installation, remove the nuts that hold the electrical box in place, and disconnect the standard line cord and strain relief. The conduit connector will run through the 7/8" diameter round hole in the electrical plate. Position the electrical plates so that the conduit will run either out the bottom or the back of the changer — whichever suits your installation — while blocking off the unused hole.

To install the conduit, cut the connectors of the line cord leaving three inches of wire on each connector. Connect these electrical box wires to the power source per the wiring diagram in Section 7 of this manual using standard U.L. listed pressure cable connectors (such as wire nuts).

---

#### CAUTION:

*To avoid serious electrical shock, disconnect power at the source before making any electrical connections.*

---