

# **Hamilton Manufacturing Corp.**

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1026 Hamilton Dr., Holland, OH 43528 • Phone: 419-867-4858 / 800-837-5561 • Fax: 419-867-4857 • [www.hamiltonmfg.com](http://www.hamiltonmfg.com)

## **Operational Manual for the E770/E385 Changer**

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# ABOUT THIS MANUAL

This manual will provide the operator with important information about installing and maintaining the E770/E385 Changer. It will enable the operator to detect error codes and perform basic troubleshooting procedures. General information is provided for the Hopper, Validator, and Controller. However, if additional information is needed for these components, please refer to the appropriate manuals. To obtain assistance from the manufacturer, please call (800) 837-5561 or (419) 867-4858.

When calling for assistance, it is very important to have serial numbers readily available. Please take the time to record these numbers in the spaces provided.

E770/E385 Serial # \_\_\_\_\_

Hopper Serial # \_\_\_\_\_

Validator Serial # \_\_\_\_\_

Controller Serial # \_\_\_\_\_

Key / Lock # \_\_\_\_\_

Please complete the warranty card, which was included with your changer, and return it to the manufacturer.

# I. INSTALLATION

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## ***MOUNTING***

Cabinets are pre-drilled for wall mounting or mounting on an optional base. Bases are pre-drilled for securing to the floor. Do not use leveling screws when fastening to the floor. Changers mounted on bases should be securely fastened to both the floor and wall. Fasteners to be used should be recommended by your engineer as to strength and suitability for floor and wall composition. **Hamilton will not be responsible for injury due to improper installation.**

For mounting in wall, cabinet size is 22-3/8" H x 12" W x 15-1/4" D.

For mounting the header, remove the (2) 10-24x 3/8 screws & (2) #10 flat washers on top of machine. Align header and replace hardware.

## ***ELECTRICAL***

This currency changer is operated on 120VAC, 60 Hz. Unit may be hard-wired with conduit if desired.

**A GROUND FAULT INTERRUPTER IS REQUIRED.** The recommended Ground Fault Interrupter is sometimes referred to as an ELCI (Equipment Leakage Circuit Interrupter) and should have the following specifications:

- 120VAC
- 15 AMP
- 6-10mA trip level
- Should **NOT** trip when power is removed from circuit

## **II. MAINTENANCE**

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***CAUTION!*** Do not use oil, grease or solvents on any part of this changer except as clearly specified in this manual, the Hopper Manual or in the Validator Manual.

### ***HOPPER***

The Universal Hopper Model MK4 can dispense coins with a thickness of 1mm-3.5 mm, and a diameter 21 mm-30 mm for standard configuration or 16 mm-21 mm for a small coin configuration. Hoppers are equipped to detect a coin shortage by displaying a Hopper Empty error whenever the coins fall below the sensor in the hopper bowl.

**(When the hopper is low there may not be enough coins to complete a \$20 payout.)**

To simplify the filling and cleaning of Hoppers, they are removable.

#### **TO FILL HOPPER OR REMOVE COINS:**

1. Disconnect all power.
2. Slide the Hopper forward until it stops and lift upwards.
3. Tilt the Hopper carefully *clockwise* (as viewed when opening the door) to remove coins.
4. **DO NOT TILT COUNTER-CLOCKWISE; COINS MAY BECOME STUCK AND INACCESSIBLE.**

**Any lubrication in the hopper can result in a faulty payout. Empty coins from the hopper and vacuum once a month. Use a soft brush to loosen dirt.**

**Do not place objects in the hopper when the power is on.**

### ***VALIDATOR***

Refer to the Validator Manual provided for lubrication instructions and all other maintenance information.

**The Validator should be serviced annually to maintain maximum performance.**

## **CONTROLLER**

The microprocessor based Hamilton UCvX.XXC Controller (*where “X.XX” indicates software version and “C” indicates that this program is for a Bill Changer*) monitors the systems of the E770/E385 bill changer. If a problem is detected, the Controller will shut down and display the appropriate error code (see page 8).

The twelve DIP switches located near the Computer Reset Button select the payback of coins on multi-Hopper change units. There is no need to change the switch settings on a typical E770/E385 Bill-To-Quarter Changer, as they are set to the payout arranged when the order was placed with Hamilton. Included in Appendix A are sheets listing the switch settings of most typical payout arrangements for your particular model changer. Please remember that the Coin Hoppers may not be configured properly if changing the coin type you are vending. These switches are to remain in the positions set at the factory unless you are not satisfied with the current payout setting. If none of the included standard settings meet your wishes, contact Hamilton for assistance. **YOU MUST HAVE THE CONTROLLER MODEL NUMBER READY.**

# **III. TROUBLESHOOTING**

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## ***LED***

The green LED located on the face of the Controller near the Computer Reset Button indicates the status of the bill changer. When the LED is lit constantly, it is indicating that everything is normal and the Controller is running. When a fault is detected, the Controller automatically shuts the machine down. The green LED will begin a sequence of flashes, which indicate the appropriate error code. To read the error code, watch the flashing LED. Note that there is a series of flashes, a short pause, another series of flashes, then a long pause. After the long pause, count the number of flashes, wait for the short pause, then count the next series of flashes. The sequence will continue until the Computer Reset Button is pressed.

**Watch the flashing sequence several times to ensure the message is interpreted properly.**

**Always note the error code before attempting any service or before contacting the manufacturer.**

## ***RESETTING***

The white Computer Reset Button is located on the face of the Controller. After an error code has been noted, depress the Computer Reset Button once to restart the computer. The LED will go out for a few seconds while the computer resets, then return to normal operation.

## ERROR CODES

<b>1 FLASH, PAUSE, 2 FLASHES</b>	<b>HOPPER 2 EMPTY</b>
<b>1 FLASH, PAUSE, 3 FLASHES</b>	<b>HOPPER 3 EMPTY</b>
<b>1 FLASH, PAUSE, 4 FLASHES</b>	<b>ALL ALTERNATING HOPPERS EMPTY</b>
<b>2 FLASHES, PAUSE, 2 FLASHES</b>	<b>HOPPER 2 JAMMED</b>
<b>2 FLASHES, PAUSE, 3 FLASHES</b>	<b>HOPPER 3 JAMMED</b>
<b>3 FLASHES, PAUSE, 3 FLASHES</b>	<b>INPUT SWITCH STUCK, COIN</b>
<b>3 FLASHES, PAUSE, 4 FLASHES</b>	<b>INPUT SWITCH STUCK, DOLLAR</b>
<b>3 FLASHES, PAUSE, 5 FLASHES</b>	<b>INPUT SWITCH STUCK, FIVE</b>
<b>4 FLASHES, PAUSE, 2 FLASHES</b>	<b>HOPPER 2 COIN DROP STUCK</b>
<b>4 FLASHES, PAUSE, 3 FLASHES</b>	<b>HOPPER 3 COIN DROP STUCK</b>
<b>5 FLASHES, PAUSE, 2 FLASHES</b>	<b>HOPPER 2 UNEXPECTED COIN DROP</b>
<b>5 FLASHES, PAUSE, 3 FLASHES</b>	<b>HOPPER 3 UNEXPECTED COIN DROP</b>
<b>6 FLASHES, PAUSE, 2 FLASHES</b>	<b>INVALID VEND ID</b>
<b>6 FLASHES, PAUSE, 5 FLASHES</b>	<b>VALIDATOR SHUT DOWN ERROR</b>
<b>7 FLASHES, PAUSE, 1 FLASH</b>	<b>POWER LOSS DURING VALIDATE</b>
<b>7 FLASHES, PAUSE, 2 FLASHES</b>	<b>POWER LOSS DURING VEND</b>
<b>7 FLASHES, PAUSE, 3 FLASHES</b>	<b>INVALID VALIDATOR PAY PULSE</b>



# ***ERROR CODE DEFINITIONS***

## **COIN DROP STUCK**

When the Hopper is dispensing, the coins are counted by passing them through an optical switch. If the switch remains blocked for too long, the Controller shuts the changer down because it cannot count the coins accurately. This message means that the count switch is blocked, broken or there is a broken connection elsewhere in the circuit. *This error will not be detected until the machine tries to vend.*

## **HOPPER EMPTY**

The level of coins in the Hopper has dropped below the sensor.

It is important to note that when the hopper is low there may not be enough coins to complete a \$20 payout.

## **HOPPER JAMMED**

The Controller does not detect a coin drop in a specified time. This could mean the Optical Count Switch is broken or the Hopper is unable to dispense coins. *This error will not be detected until the machine tries to vend.*

## **INPUT STUCK**

Indicates a malfunction in the Validator or Coin Mech in which it puts out a continuous signal instead of a pulse.

## **INVALID VEND ID**

Occurs when the DIP switches on the Controller are incorrectly set.

## **POWER LOSS**

If the Controller detects several voltage drops during a payout, the Controller considers the power source unusable and shuts the changer down. If this occurs repeatedly, consult an electrician or the Power Company.

## **UNEXPECTED COIN DROP**

This error will occur if the Controller detects a payout signal when the Hopper was not intended to run.

# IV. PARTS

PARTS LIST		
PART #	PART DESCRIPTION	QTY
03-0007	UNIVERSAL HOPPER ASSY BASE	1
46-0209	CONLUX VALIDATOR	1
46-0167	COINCO MAG50B VALIDATOR (BOTTLER MASK)	1
47-0080	OUT OF SERVICE LAMP	1
47-0217	LINE CORD (LONG)	1
47-2062A	TRANSFORMER ASSEMBLY, E770	1
48-2023	WIRING HARNESS, E770	1
48-2026	COINCO VALIDATOR E770/CDV ADAPTOR	1
48-2028	CONLUX VALIDATOR E770/CDV ADAPTOR	1
49-2006A	CONTROLLER COMPLETE, E770	1
50-0580A	*UNIVERSAL HOPPER	1 - 2
60-0039	E385 COIN CUP	1
60-0307	E770 COIN CUP BRACKET	1
60-0313	E770 COIN CUP COVER	1
61-0540A	CABINET ASSEMBLY, E770	1
61-0540C	CABINET ASSEMBLY, E385	1
65-0026	LOCK INSERTS, V2	1
90-0222	SPACER	4

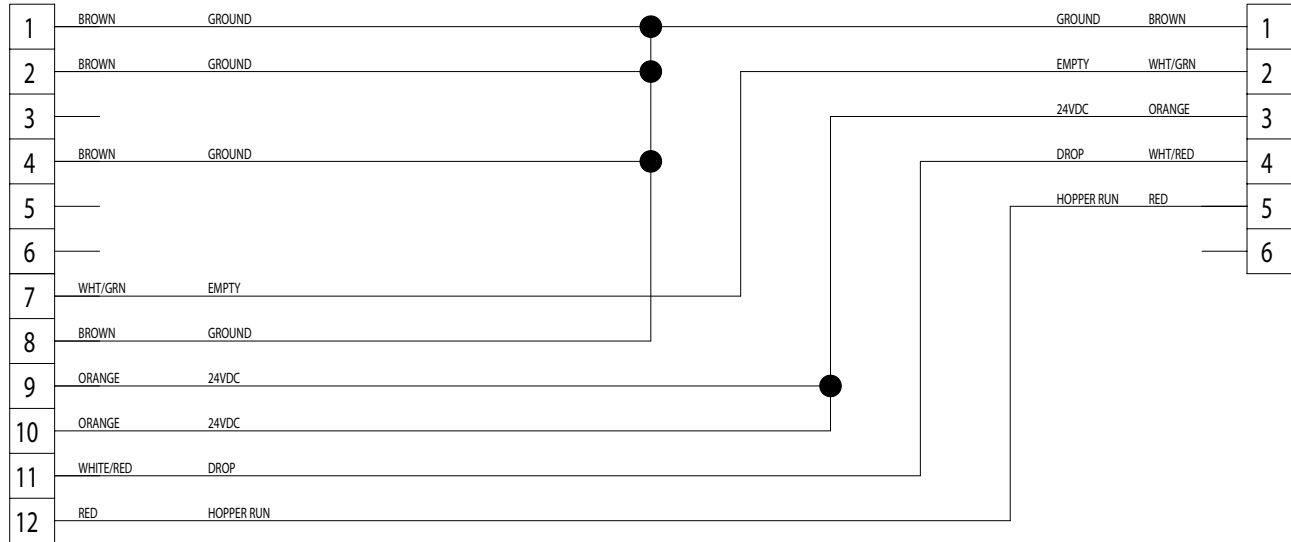
\* Specify coin type

# APPENDIX A

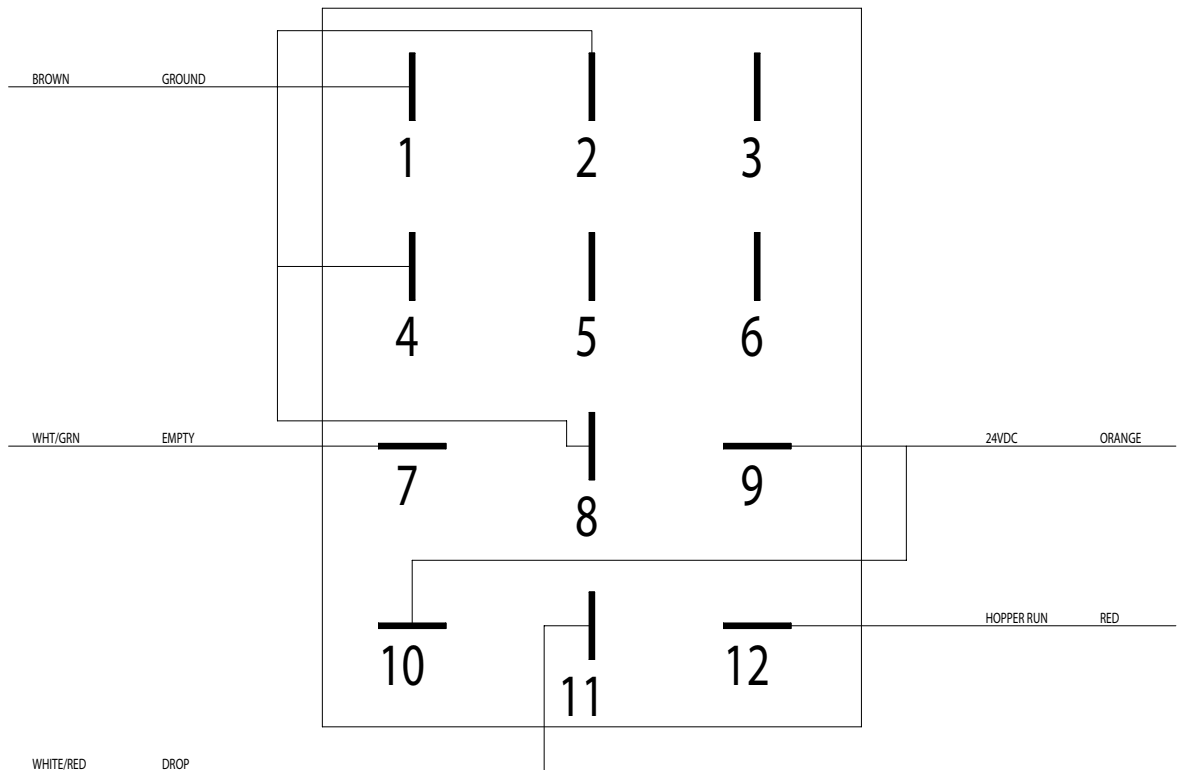
## UNIVERSAL HOPPER BASE PLATE WIRING

UNIVERSAL BASE PLATE  
TERMINALS

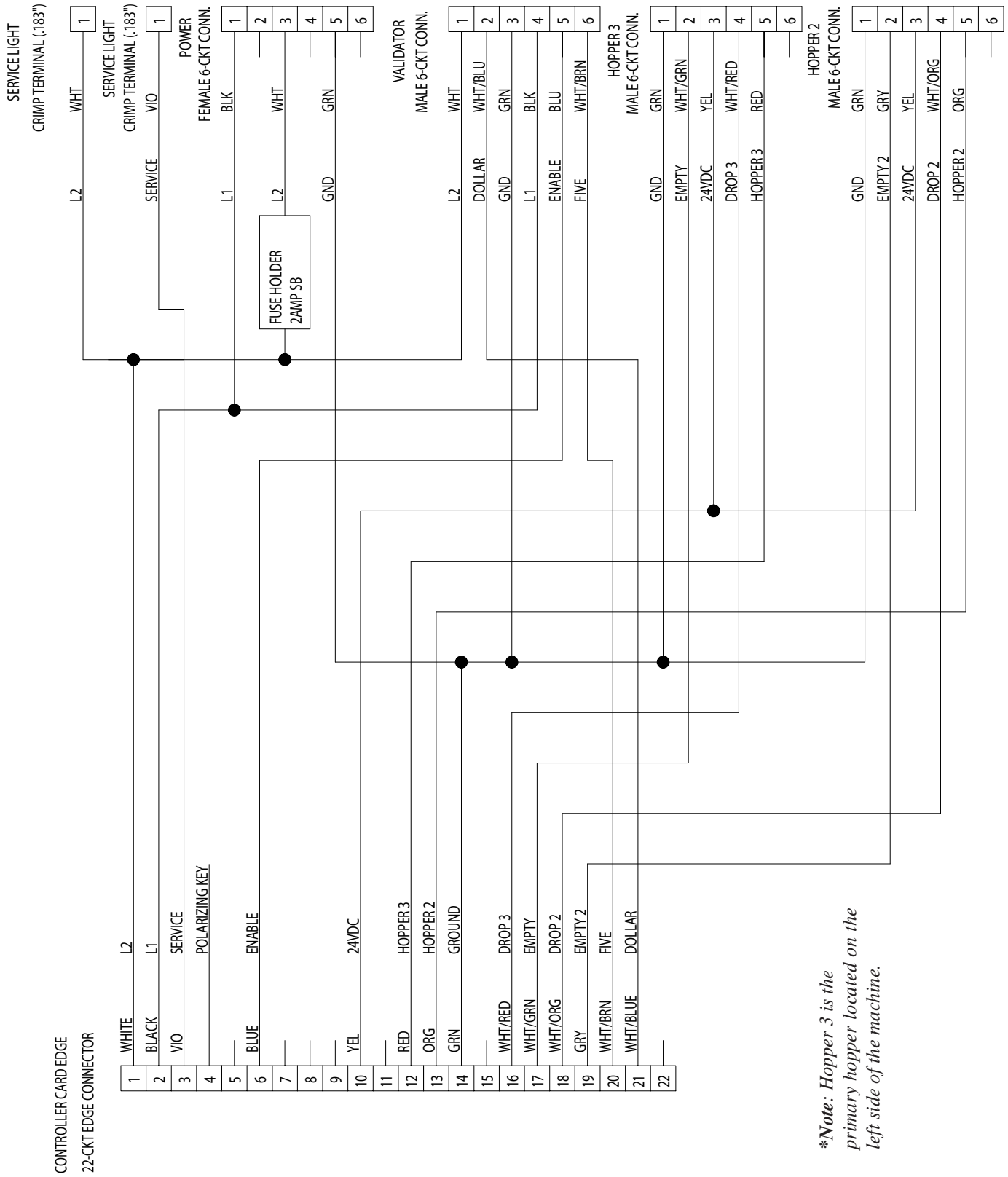
6 PIN FEMALE MOLEX  
P.N. 46-0008  
PIN # 46-1065



UNIVERSAL BASE PLATE  
TERMINALS

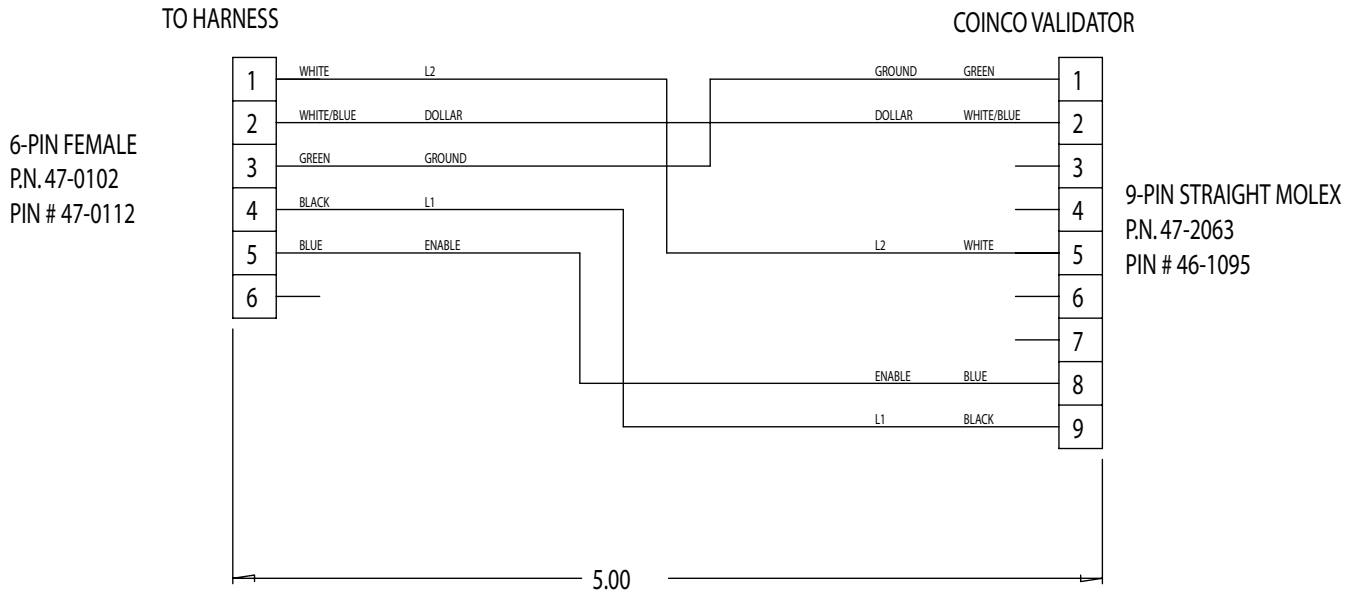


# E770 / E385 HARNESS PART #48-2023

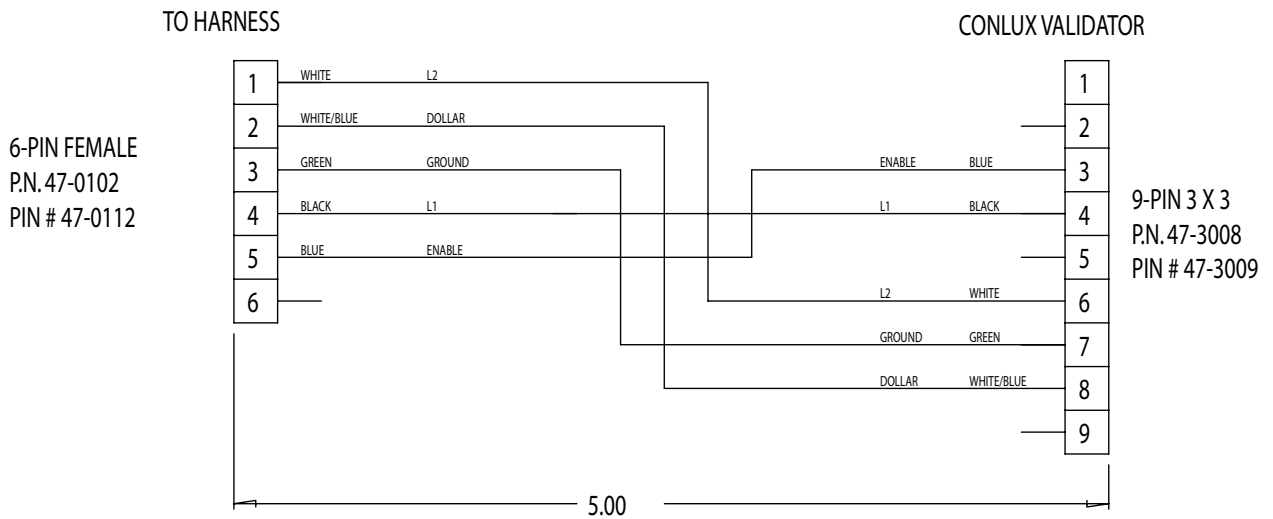


*\*Note: Hopper 3 is the primary hopper located on the left side of the machine.*

# COINCO VALIDATOR E770 / CDV ADAPTOR PART #48-2026

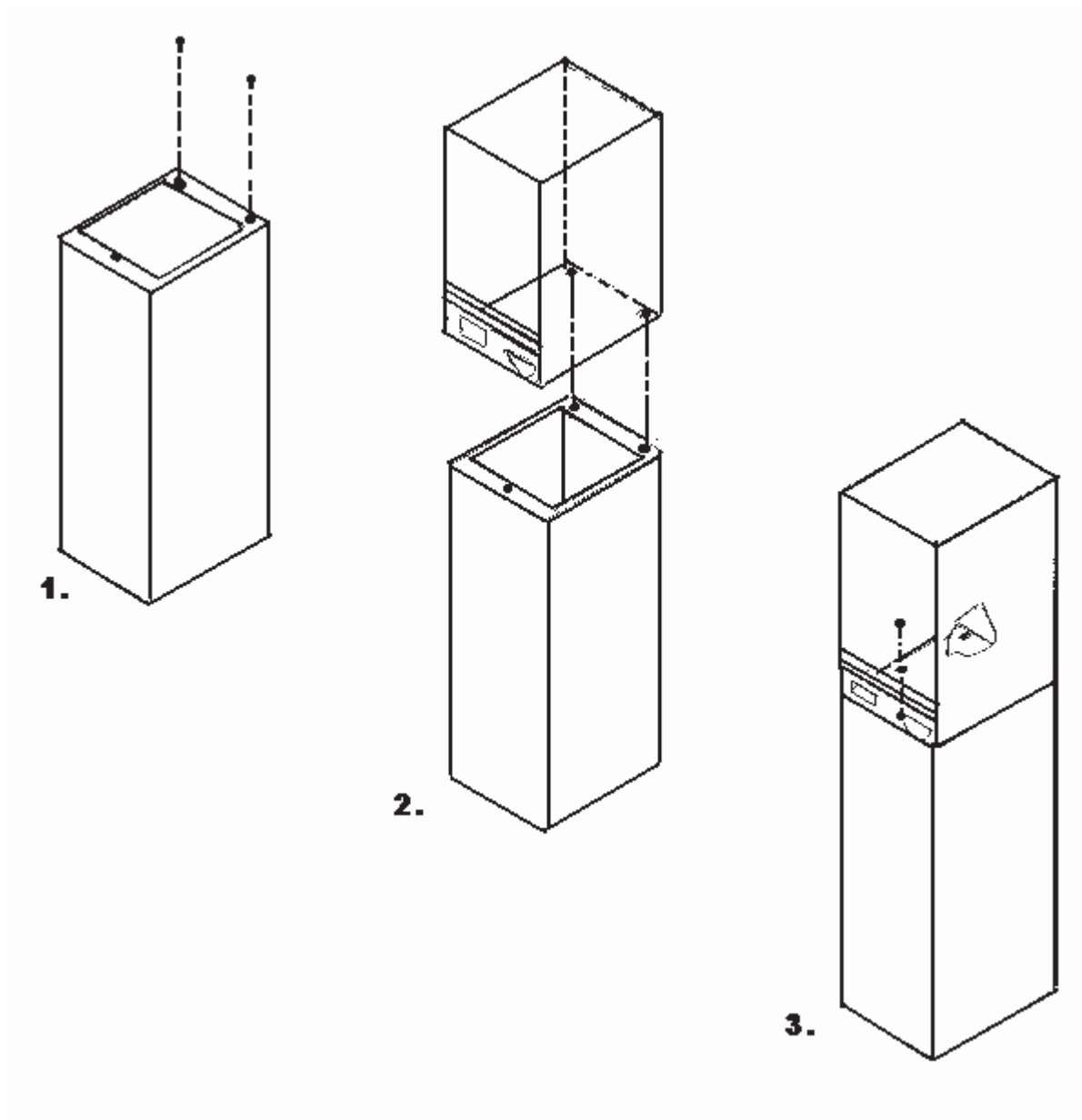


# CONLUX VALIDATOR E770 / CDV ADAPTOR PART #48-2028



## **APPENDIX B**

### **E-SERIES BASE MOUNTING INSTRUCTIONS**



- 1. Insert two machine screws each through a washer and spacer and insert, from the top, into the rear holes on the base. Tighten to secure.**
- 2. Place the cabinet on the base so that the washer and screw come up through the holes in the rear of the cabinet. Push back about 1/4" to position.**
- 3. From the top, insert a machine screw and washer through the top center hole of both the cabinet and the base. Tighten to secure.**









**SWITCHSETTINGS  
1AND2HOPPERMODE**

SWITCH SETTING		MODE OF OPERATION / PAYOUT OPTIONS
OFF	■ ■ ■ ■ ■ ■	2 HOPPERS - QUARTERS, SBA
ON	■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■	
119	A B C D E F G H I J K L	
		$1s = 4q$ $10\$ = 8q+8s$ $1\$ = 4q$ $20\$ = 16q+16s$ $5\$ = 4q+4s$
OFF	■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■	2 HOPPERS - QUARTERS, NICKELS
ON	■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■	
130	A B C D E F G H I J K L	
		$1q = 5n$ $10\$ = 40q$ $1\$ = 3q+5n$ $20\$ = 80q$ $5\$ = 20q$

## **LIMITED WARRANTY AGREEMENT OF HAMILTON MANUFACTURING CORP.**

Hamilton Manufacturing Corp., an Ohio Corporation, (“Seller”) warrants to Purchaser that all new equipment shall be free from defects in material and factory workmanship for a period of one (1) year from the original shipping date. Hamilton Manufacturing Corp. further warrants if any part of said new equipment in Seller’s sole opinion, requires replacement or repair due to a defect in material or factory workmanship during said period, Seller will repair or replace said new equipment. Purchaser’s remedies and the liabilities and obligations of Seller herein shall be limited to repair or replacement of the equipment as Seller may choose, and Seller’s obligation to remedy such defects shall not exceed the Purchaser’s original cost for the equipment. Purchaser EXPRESSLY AGREES this is the EXCLUSIVE REMEDY under this warranty. There are no other express or implied warranties which extend beyond the face hereof. All warranty repair service must be performed by either a Factory Trained Service Representative or **HAMILTON MANUFACTURING CORP., 1026 Hamilton Drive, Holland, Ohio 43528 PHONE (419) 867-4858 or (800) 837-5561, FAX (419) 867-4867.**

The limited warranty for new equipment is conditioned upon the following:

1. The subject equipment has not, in the Seller’s sole opinion, been subjected to: accident, abuse, misuse, vandalism, civil disobedience, riots, acts of God, natural disaster, acts of war or terrorism.
2. The Seller shall not be liable for any expense incurred by Purchaser incidental to the repair or replacement of equipment and Purchaser shall assume full responsibility for any freight or shipping charges.
3. The coverage of this warranty shall not extend to expendable parts.
4. Purchaser shall have a warranty registration card on file with Seller prior to any claim in order for warranty protection to apply.
5. No warranty coverage is applicable to any equipment used for currency other than that specified at the time of the purchase.
6. Seller expressly disclaims any warranty that counterfeit currency will not activate said equipment.
7. Seller expressly disclaims any warranty for any losses due to bill manipulation or theft or loss of cash under any circumstances.
8. Use of the equipment for anything other than its intended and designed use will void the Limited Warranty Agreement. Use of equipment for anything other than its intended and designed use includes, but is not limited to, downloading software/applications not certified by Seller such as e-mail, spyware, screen savers, viruses, worms, third party software, web search engines, cookies, spam, desktop applications, games, web surfing, etc.

Seller further warrants all repair or service work performed by a factory trained representative or Hamilton Manufacturing Corp. for a period of ninety (90) days from the date the repair or service work was performed. Purchaser’s remedies and the liabilities and obligations of Seller herein shall be limited to repair or replacement of equipment as Seller may choose, and Seller’s obligation to remedy such defects shall not exceed the Purchaser’s depreciated value of the equipment. Purchaser EXPRESSLY AGREES this is an EXCLUSIVE REMEDY under this warranty. There are no other express or implied warranties on repair or

service work performed by a factory trained representative or Hamilton Manufacturing Corp. which extend beyond the face hereof.

The limited warranty for repair and service work is conditioned upon the following:

1. The subject equipment has not, in the Seller's sole opinion, been subjected to: accident, abuse, misuse, vandalism, civil disobedience, riots, acts of God, natural disaster, acts of war or terrorism.
2. The Seller shall not be liable for any expense incurred by Purchaser incidental to the repair or replacement of equipment and Purchaser shall assume full responsibility for any freight or shipping charges.
3. The coverage of this warranty shall not extend to expendable parts.
4. Purchaser shall have a warranty registration card on file with Seller prior to any claim in order for warranty protection to apply.
5. No warranty coverage is applicable to any equipment used for currency other than that specified at the time of the purchase.
6. Seller expressly disclaims any warranty that counterfeit currency will not activate said equipment.
7. Seller expressly disclaims any warranty for any losses due to bill manipulation or theft or loss of cash under any circumstances.
8. No person or entity other than a factory trained representative or Hamilton Manufacturing Corp. has performed or attempted to perform the subject repair or service.
9. Using equipment which has been serviced or repaired for anything other than its intended or designed use such as downloading software applications not certified by Seller will void the Limited Warranty Agreement. This includes software/applications such as e-mail, spyware, screen savers, viruses, worms, third party software, web search engines, cookies, spam, desktop applications, games, web surfing, etc.

THIS AGREEMENT IS MADE WITH THE EXPRESS UNDERSTANDING THAT THERE ARE NO IMPLIED WARRANTIES THAT THE EQUIPMENT SHALL BE MERCHANTABLE, OR THAT THE GOODS SHALL BE FIT FOR ANY PARTICULAR PURPOSE. PURCHASER HEREBY ACKNOWLEDGES THAT IT IS NOT RELYING ON THE SELLER'S SKILL OR JUDGMENT TO SELECT OR FURNISH EQUIPMENT SUITABLE FOR ANY PARTICULAR PURPOSE AND THAT THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THAT WHICH IS DESCRIBED HEREIN.

The Purchaser agrees that in no event will the Seller be liable for direct, indirect, or consequential damages or for injury resulting from any defective or non-conforming new, repaired or serviced equipment, or for any loss, damage or expense of any kind, including loss of profits, business interruption, loss of business information or other pecuniary loss arising in connection with this Limited Warranty Agreement, or with the use of, or inability to use the subject equipment regardless of Seller's knowledge of the possibility of the same.



# **Hamilton Manufacturing Corp.**

1026 Hamilton Drive  
Holland, OH 43528

**Sales Phone:** (888) 723-4858 **Sales Fax:** (419) 867-4850

**Customer Service Phone:** (800) 837-5561 **Customer Service Fax:** (419) 867-4857

**Parts Phone:** (866) 835-1721 **Parts Fax:** (419) 867-4867

**Website:** <http://www.hamiltonmfg.com>

**Email Addresses:**

[service@hamiltonmfg.com](mailto:service@hamiltonmfg.com)

[sales@hamiltonmfg.com](mailto:sales@hamiltonmfg.com)

[parts@hamiltonmfg.com](mailto:parts@hamiltonmfg.com)

[info@hamiltonmfg.com](mailto:info@hamiltonmfg.com)