

## **TROUBLESHOOTING**

In the event that a malfunction occurs, following is a guide for systematic diagnosis and correction. Included also are schematics, warranty information and a guide for obtaining further assistance.

Described first is a set of self diagnostic codes which appears when the computer has detected a malfunction.

When a fault is detected, the computer automatically shuts the machine down. The reset button is tripped and the entire machine is disabled. The green LED on the controller will begin flashing a certain sequence indicating the appropriate error code.

Following the list of diagnostic codes is a guide outlining steps to be taken to isolate a malfunction.

## DIAGNOSTIC CODES

The controller will identify the status of the machines from the LED indicator. The lamp will remain illuminated if everything is "OK" on the machine and the microprocessor is running. If the lamp is not illuminated then the hardware has failed and the processor security has taken control. The coin and bill inputs will then be disabled and the outputs will be forced to the inactive state.

The controller will monitor the machine at all times and will shut down the machine if an error occurs. At such time the controller will remain running and the corresponding error code will be flashed on the LED lamp indicating the source of the problem. The code will be given number of flashes revealing the problem. This will be followed by the number of flashes corresponding to the hopper number or input from which the error occurred. A long delay will follow the code and the code will repeat continuously.

The error codes and diagnostic descriptions are as follows:

- |                                    |   |
|------------------------------------|---|
| 1 FLASH                            | - Hopper empty  |
| 2 FLASHES, followed by "N" flashes | - Hopper "N" jammed<br>N = 1 (Third Hopper)<br>N = 2 (Secondary Hopper)<br>N = 3 (Main Quarter Hopper)            |
| 3 FLASHES, followed by "N" flashes | - Input switch "N" stuck ON<br>N = 1 (Nickel)<br>N = 2 (Dime)<br>N = 3 (Quarter)<br>N = 4 (1\$)<br>N = 5 (5\$)    |
| 4 FLASHES, followed by "N" flashes | - Hopper "N" coin drop stuck<br>N = 1 (Third Hopper)<br>N = 2 (Secondary Hopper)<br>N = 3 (Main Quarter Hopper)   |
| 5 FLASHES, followed by "N" flashes | - Unexpected hopper payout "N"<br>N = 1 (Third Hopper)<br>N = 2 (Secondary Hopper)<br>N = 3 (Main Quarter Hopper) |
| 6 FLASHES                          | - Stacker timed-out   |

## **COIN DROP STUCK**

Basically, this message means that the counting switch on the quarter hopper is stuck, leaving the computer unable to observe the quantity of coins exiting the hopper. The switch itself may be broken or stuck, or the hopper may have jammed at the moment a coin was under the switch. Or, as the counting circuit is a Normally Closed configuration and opens only as a coin passes, it could indicate an open connection elsewhere.

## **HOPPER JAMMED**

When this message is displayed, it means that the computer has not seen any kind of count signal from the hopper, that the counting circuit has remained closed. The computer allows a specified amount of time to recognize a payout. When the computer hasn't seen a payout, it "times-out". It could mean that the payout switch is out of adjustment or, again, that switch is broken or the hopper jammed. Also, the hopper may have been unable to "pick up" coins.

The above (2) errors can only occur when the hopper is required to vend change.

## **INPUT STUCK**

The Input Stuck message refers to each input type as being continuous. A normal input is of only brief duration. This message points on the dollar inputs to a malfunction in the validator. On the quarter inputs, it points to a fault of either coin acceptor.

## **STACKER BUSY TIMEOUT**

The bill stacker has a circuit enclosed which signals the computer that it is in mid-cycle. The computer acknowledges this by keeping the machine disabled until the cycle is complete. A normal stacker cycle lasts only a couple of seconds. If this cycle lasts too long (the stacker being jammed up for example) the computer shuts down. Another possibility is an open connection in the "stacker busy" circuit.

## **UNEXPECTED HOPPER PAYOUT**

This message will appear when a coin payout signal has been recognized by the computer, although the hopper has not been "authorized" to run. Accidentally bumping the payout switch when filling the coin hopper will bring up this message. This feature protects against accidental running of the hopper due to voltage leakage.

## **RESETTING**

**Changer Reset** — The changer reset button (RED) is located on the end of the controller. This reset functions as a circuit breaker for all outputs from the controller. Power remains constant to the computer in order for it to retain the error code.

**Computer Reset** — The computer reset (WHITE) is located on the front of the controller. The function of this reset is to clear the computer after a malfunction has been detected and corrected.

To return the changer to operation; first push the computer reset and then the changer reset.

# TROUBLESHOOTING GUIDE

PROBLEM	PROBABLE CAUSE	CORRECTION
Controller lamp off, No manual hopper run, No LED on validator	A. Main power may be off B. Circuit breaker on power box may be tripped	A. Switch on main power B. Reset breaker
Controller lamp off, Hopper runs manually LED lit on validator	A. Controller defective	A. Contact nearest FASC or factory for assistance
Controller lamp flashing	SEE DIAGNOSTIC SECTION	A. Correct malfunction reset controller
Neither coin mech or validator working	A. Broken connection B. Controller defective C. Controller inhibited	A. Locate & repair connection B. Contact nearest FASC or factory for assistance C. Enable computer
Validator dead - validator LED off	A. No power to changer B. Broken connection C. Error detected	A. Supply 120V-AC power B. Locate & repair connection C. Reset machine, see changer self-diagnostics
Validator dead - validator LED on	A. Dirty or blocked sensor B. Bill jammed in validator	A. Clean sensors with swab & alcohol B. Clean bill channel
Validator runs without inserting bill	A. Blocked bill path B. Dirty or blocked sensor	A. Clean bill channel B. Clean sensors with swab & alcohol
Validator rejection too high	A. Dirty sensor or magnetic heads B. Validator in need of maintenance	A. Clean sensors with swab & alcohol B. See validator manual or contact nearest FASC or factory for assistance
Validator accepts but vends no change	A. Validator relay loose in socket B. Defective changer C. Validator logic defective	A. Reset relays B. Contact nearest FASC or factory for assistance C. Change printed Circuit Board

**Under payment of change**

- A. Coin lodged in hopper**
- B. Coin lodged in chute to Coin cup**
- C. Changer controller defective**

- A. Remove coin; see hopper adjustment in manual**
- B. Same as "A" above**
- C. contact nearest FASC or factory for assistance**

**Over payment of change**

- A. Changer controller defective**

- A. Contact nearest FASC or factory for assistance**

**Hopper fails to run or runs slowly**

- A. Hopper jammed**
- B. Hopper motor defective**
- C. Changer controller defective**

- A. Remove cause of jam, Clean out debris, see Hopper adjustment for correct settings**
- B. Replace hopper motor**
- C. Contact nearest FASC or factory for assistance**

**Coin validator rejection rate too high**

- A. Coin validator defective**

- A. Contact nearest FASC or factory for assistance**

**Coin mech does not accept, bill validator working**

- A. Broken connection**
- B. Coin jamming**
- C. Coin acceptor defective**
- D. Interface defective**
- E. Controller defective**

- A. Locate and repair connection**
- B. Clean coin channel**
- C. Contact nearest FASC**
- D. Contact nearest FASC**
- E. Contact nearest FASC**

**Coin validator accepts coin but vends no change**

- A. Coin validator defective**
- B. Controller defective**
- C. Broken connection**
- D. Interface defective**
- E. Coin jamming**

- A. Contact nearest FASC**
- B. Contact nearest FASC**
- C. Locate and repair**
- D. Contact nearest FASC**
- E. Clean coin channel**

**If any further assistance is necessary, contact your Hamilton Distributor or your nearest Hamilton Factory Authorized Service Center. Assistance is also available at the Toledo factory.**

**If any part of component must be shipped to the Distributor, Factory or Service Center for replacement or repair, the following procedure is used: (Call before shipping, be ready with machine serial number and component serial number)**

**If shipping components, place in a paper or plastic bag before surrounding with good packing material.**

**SHIP VIA UNITED PARCEL SERVICE (UPS) IF AT ALL POSSIBLE**

**If shipped by U.S. Postal Service (Parcel Post), send by SPECIAL HANDLING.**

**Adequately insure shipments; if uncertain about value, call for information.**

**INCLUDE A NOTE IN SHIPMENT DESCRIBING NATURE OF PROBLEM, ALONG WITH FULL RETURN ADDRESS. WE CANNOT RETURN SHIPMENTS TO POST OFFICE BOXES.**

**Please include your NAME and a TELEPHONE NUMBER where you can be reached.**

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

HAMILTON MANUFACTURING CORP. warrants to the original owner all new equipment sold by it be free from defective material and factory workmanship. We will repair or replace (at our option) any part of the equipment which proves to be defective in material or factory workmanship within a period twelve (12) months from the original shipping date.

All warranty repair service will be performed by a factory authorized center or:

HAMILTON MFG. CORP.  
3350 Secor Rd.  
Toledo, Ohio 43606  
(419) 535-7667  
(800) 837-5561

### **CONDITIONS**

Conditions applying to this warranty are as follows:

1. This warranty will not apply to any equipment which has been, in our opinion, subject to: accident, abuse, misuse, neglect, improper maintenance or repair.
2. We will not be responsible for any expense incurred by the purchaser incidental to the repair or replacement of equipment covered by this warranty.
3. Any and all freight charges will be the responsibility of the purchaser.
4. There is no warranty on expendable parts.
5. This warranty is valid only when the warranty registration card is on file with HAMILTON MANUFACTURING CORP.
6. If the equipment is for use with a currency other than the currency of the United States of America, we make no warranty.
7. We make no warranty that counterfeit currency will not activate the equipment.
8. We make no warranty and provide no coverage for losses due to bill manipulation or for theft or loss of cash under any circumstances.
9. No person is authorized or permitted to make any other warranty on our behalf, or to obligate us to any liability not strictly in accordance with this warranty.

THE WARRANTY SET FORTH HEREIN IS IN LIEU OF ANY AND ALL OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS. THE PURCHASER ACKNOWLEDGES THAT NO OTHER REPRESENTATIONS WERE MADE TO OR RELIED UPON BY THE PURCHASER WITH RESPECT TO THE QUALITY AND FUNCTION OF THE GOODS HEREIN SOLD.

Hamilton Manufacturing Corp., 3350 Secor Road, Toledo, Ohio 43606