

**ST-110  
Coin Wizard  
Electronic Totalizer**

**Users Manual**

**BELLATRIX  
SYSTEMS**

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# General information:

The Coin Wizard is simple to use and easy to maintain. Installation can usually be accomplished in a matter of minutes. Price changes are made on a daily basis with a key switch. Major price changes are made electronically, are much less costly and time consuming than with mechanical coin devices and can be done without removing the mech from the rack.

## Features:

- **Coin Totalizing:** The Coin Wizard will handle any combination of coins inserted (except for pennies) in any sequence.
- **Three Price Tiers:** Three price tiers are available with the keyswitch model wizard. (Wizards may also be purchased with keyless entry optical datalinks which have four tier pricing capabilities.)
- **Edition and price changes and Automatic Door Unlocking:** A keyed electronic switch is used to make regular price changes. The keyswitch looks like the changeover keyway from the exterior of the box. During installation of the Wizard, the old changeover keyway and linkage is removed and the key switch is installed in its place. The keyswitch cable is then connected to the wizard. Price changes are made by switching the keyswitch to 1 of 3 positions. Each time the key is turned the Wizard will unlock the rack door. This feature can be used in place of slugs to open the rack for servicing.
  - **Note:** The driver inserts the changeover key and turns the lock. This changes the price and opens the door. If the driver is not changing the price, the keyswitch must be returned to its original position before removing the key.
- **Automatic Coin Path Clearing:** The ST-110 Wizard is designed so that each time the coin return button is pushed, the body of the mechanism opens to assist in clearing coin jams.
- **Slug and Foreign Coin Rejection:** The Wizard may be purchased with ferrous coin and slug rejection capability.
- **Permanent Electronic Price Changes:** Plugging in an electronic wand and pressing a button changes prices. This can be done without removing the mechanism from the rack.
- **Upgrading to Full Data Collection:** The Wizard can be upgraded to data collection capability. This is compatible with the Single-Trak Data Acquisition and Management

system for Single Copy Sales. Newspaper personnel can upgrade the mechanism without removing it from the rack.

# Installation of the ST-110

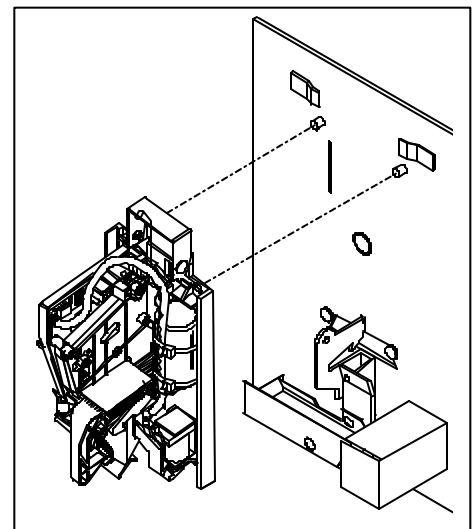
The ST-110 electronic coin mechanism is designed for easy retrofit into newsracks. Model ST-110 is specifically designed to replace the mechanical stacker style coin devices.

## Tools Required

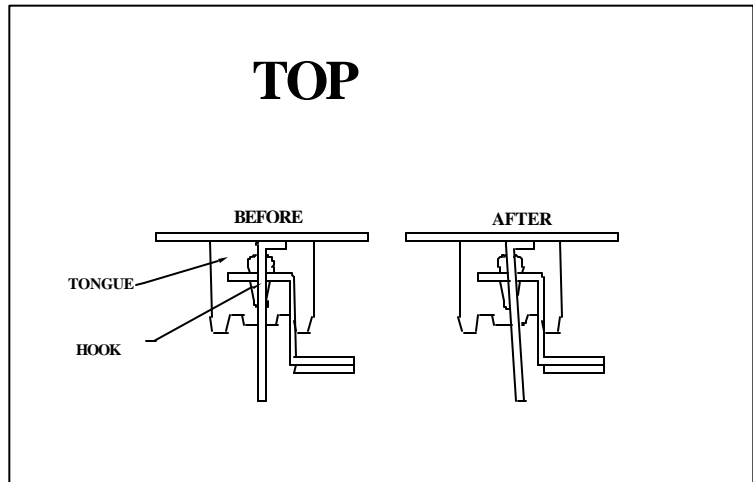
- Medium size pliers
- Phillips screwdriver
- Flat blade screwdriver
- Nut driver
- Snap ring pliers

## Installation Procedure

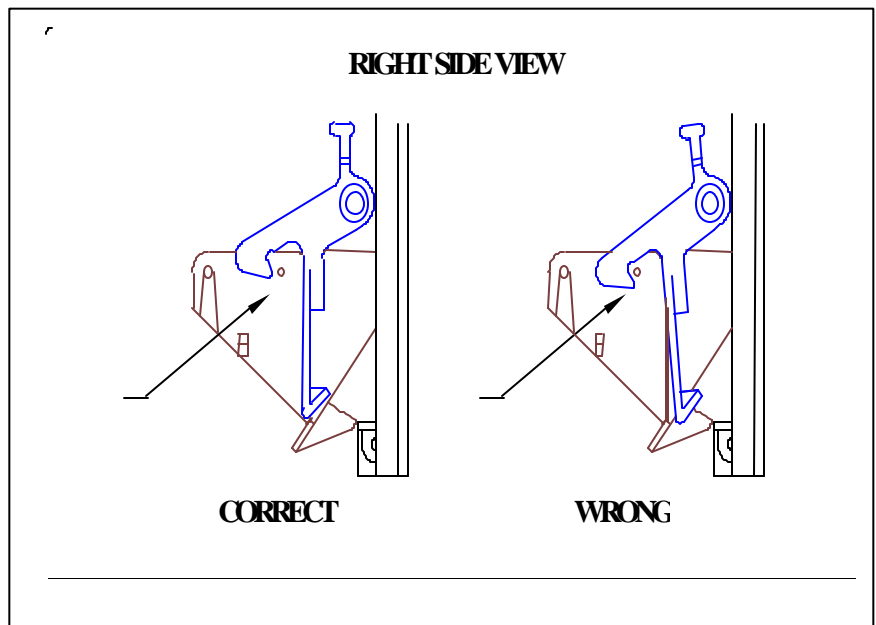
- Open the head of the newsrack. **Note:** Always **open** the rack door for ST-110 installation and **close** for removal from rack.
- Remove the existing mechanical coin device. Check to make sure that the face of the rack head is straight. If the backplate of the mech isn't flat against the inside of the head, the door tongue will be difficult to adjust.
- Remove the quick changeover linkage and keylock, saving the spring clip that held the lock in place. Insert the keyswitch into the hole from the outside. Use the spring clip to fasten the keyswitch in place from the inside. Move the keyswitch cable out of the way for mechanism installation. (If you are replacing an ST-110 with another, you won't usually need to remove the keyswitch from the rack.)
- Remove the nylon tab from the coin path of the ST-110. This is located on the right side of the housing. It is placed there to prevent the damper from moving during shipment. (Constant damper movement can cause the battery to discharge faster than normal.) This tab may be saved and reused if mechs need to be shipped back for repair.



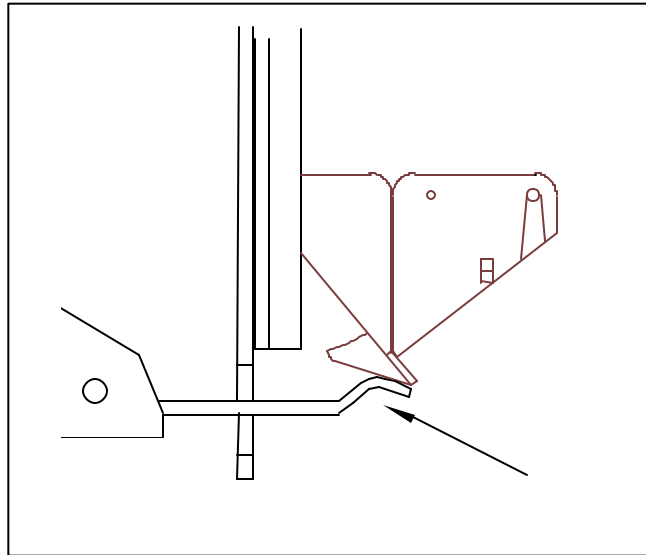
- Install the mechanism into the rack head by lining up the two notches on the bottom of the mech with the bottom studs and the two holes in the top of the backplate with the top studs. Secure by locking the Lock-In Bracket handle into the slots and bending the Lock-In Wireform over the top of the bracket.
- Verify that nothing obstructs either coin door, the coin deflector or interferes with any other mechanical function of the mechanism.
- The front of the coin return slide should fit between the lower projections of the coin deflector. If it does not fit correctly, bend the slide edge to position it properly. Make sure the stationary latch does not rub on the plastic coin doors. Bend the latch if necessary.



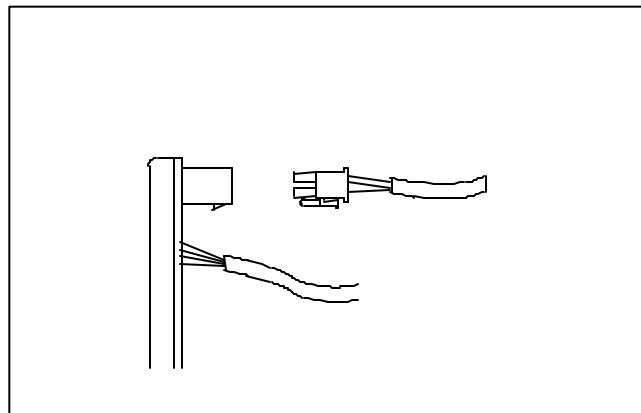
- Check the coin return button to make sure there is a small amount of play before it contacts the coin return lever on the mechanism. Make sure that the return catch does not contact the return door pin when it is in the up position before the coin return button is pushed. If it touches, inspect the coin return linkage.



- Open and close the rack door to check the interface with the door tongue. Make sure that the right side of the tongue holds the coin retain door closed. Be sure that the tongue doesn't interfere with the coin deflector at the bottom of the mechanism.



- Plug the keyswitch connector into the circuit board on the mechanism.



- Close the newsrack head and test the mechanism.

- Test the coin reader by inserting coins into the mech. The mech should open on coins equal to or greater than the price of a paper but not less. The coin sensing mechanism in the mech requires that the rack be sitting relatively level.
- Test to verify that the mech changes prices when the keyswitch is turned. Check to see that **each** keyswitch **position** opens the rack on the correct amount of money. Remember that turning the keyswitch also unlocks the door so open and close the door to reset the lock before testing with coins.
- Check that the coin return is functioning properly. Insert coins into the mech that equal **less** than the newspaper price. The solenoid on the mech should not fire but the coin return button should return the coins through the coin return slot. When the coins inserted are equal to or greater than the price of the paper, you should hear the solenoid fire and the coin return will be inoperative.
- If coins or the keyswitch do not unlock the newsrack door or the coin return button does not work refer to the troubleshooting section.
- Change the rack faceplate so customers will know that they can use any combination of coins to purchase a newspaper.

*Note: Bellatrix provides a temporary faceplate sticker to cover the dime slot and announce that the rack will take any coin combination.*

**NOTE: UNPLUGGING THE BATTERY WILL CAUSE THE WIZARD TO LOSE ITS PRICE MEMORY. IF THE BATTERY IS UNPLUGGED, REFER TO THE **WIZARD WAND USER MANUAL** TO RESET THE MECH.**

# Troubleshooting the ST-110

## Problem 1: Key will not open the newsrack.

### Solution:

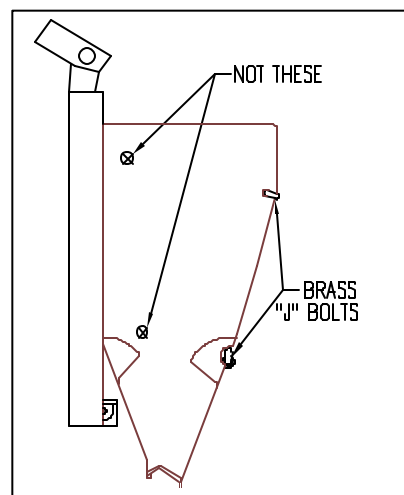
- If the keyswitch will not open the rack, open the rack head to make sure the keyswitch cable is properly connected to the circuit board. Turn the keyswitch and observe whether the solenoid fires. If it does, verify that the trip lever falls freely and falls all of the way down. It shouldn't hang up on the door tongue. The tongue must be positioned to allow the trip lever to fall freely into the down position when the solenoid is fired. If the trip lever does not hang straight down, it will not hold the door tongue down to open the rack door.
- Look at the coin accept door to make sure that it is closed completely by the door tongue when the rack door is shut. If the coin door isn't closed all of the way, the tongue may require adjustment.
- Check that the coin return door is completely closed. If the coin return lever does not slide freely, the door may not close and allow proper communication. Check the rack for physical damage that could be causing the door to operate incorrectly.
- If the solenoid does **not** fire, replace the keyswitch and run the above test. If the solenoid doesn't fire after the keyswitch has been replaced, test the battery with a battery load tester or replace with a known good battery. If the battery checks out OK, but the solenoid still doesn't fire, return the mech for repair.



## Problem 2: Rack will not open with coins.

### Solution:

- Open the rack head and look for jammed coins around the coin doors.
- Make sure that the tongue is not pushed up against the coin deflector. This could cause the coin doors to jam.
- Put a coin in the coin slot. If the coin doesn't fall through to the coin box, push the coin return button to try to clear the coin path.
- If the coin still doesn't fall through, check for foreign material in the coin slot and path. Most of the time the foreign material can be shaken out. There are also three access holes along the coin path to help clear obstructions. Don't use sharp objects like screwdrivers to clear the coin path. This creates scratches and in turn can cause more coins or objects to hang up.
- If still unable to clear the coin path, remove the nuts on the two brass J hooks that hold the front and back housing together. Inspect and clear the coin path. Make sure that the damper is positioned correctly and moves freely. The damper has a peg on either side that fits into a hole on the front and back housings.

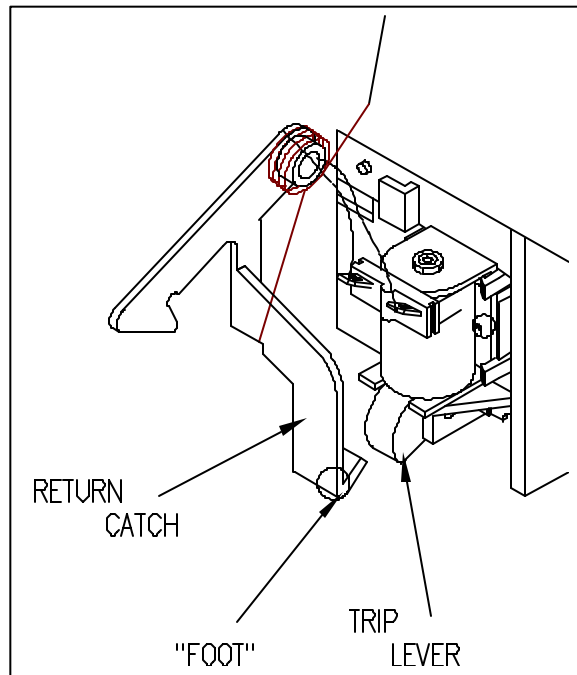


- If the rack has a gum stopper, bend it down to prevent interference with the coin door, and to allow coins to slide off. Inspect the rack for other signs of damage and ensure that the lock bar is not interfering with the coin return lever.
- After clearing any obstructions, with the trip lever in the raised position, drop coins through the coin slot and verify that the solenoid fires and the trip lever falls. If it does not, follow the keyswitch and battery tests in Problem 1.

### **Problem 3: Rack won't open because the return catch prevents trip lever from falling.**

#### **Solutions:**

- The return catch has been designed to touch the trip lever when the trip lever is in the raised position. If the return lever does not return all the way forward, the return catch remains down and the foot can bind against the trip lever. Look for conditions that may bind the trip lever. Examples are rough edges, loose pushpin, and dirt or sticky substances on the coin return button.



### **Problem 4: Coin return button does not release the coin door.**

#### **Solutions:**

- The rack face may be bent. If so, it will need to be straightened for proper interface.
- Replace short coin return button with a longer one if the button isn't pushing the return lever all of the way in.
- The stationary latch may be preventing the coin return door from opening. Bend the stationary latch about 10 degrees from the rack.

# Maintenance

Mechanical and electromechanical devices are subject to interference from the buildup of dirt, sand, grime, etc. The ST-110 mechanisms have very few moving parts, but still require some maintenance.

## Preventative maintenance

Occasional cleaning of the coin path and door assemblies will prevent most problems. In normal circumstances, cleaning with compressed air once or twice a year should be adequate. In very dusty, salty or windy climates, cleaning will be required more often.

## Clean the coin path of the assembly

Dirt buildup can cause additional friction as the coin slides through the coin path. In extreme cases this may cause coins to jam, or move too slowly through the coin path to be read correctly. To clean, open the coin path and wipe away dirt with a clean towel or cloth.

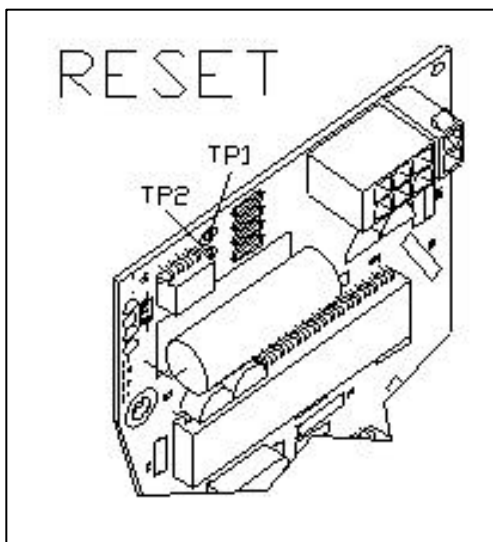
## Check the coin box assembly

The doors of the coin box assembly should open freely when pressed down. These may have damaged due to vandalism. Replace with new doors if needed.

***NOTE:** Do Not use any oils, lubricants or solvents when cleaning the mechanism, as they can cause damage. Many kinds of aerosol type cleaners, such as WD-40 or TV tuner cleaners, will leave residue that attracts dust and dirt build up and cause malfunctions. These should always be avoided. Use Windex™ or a similar type of cleaner, and a paper towel to clean the coin path.*

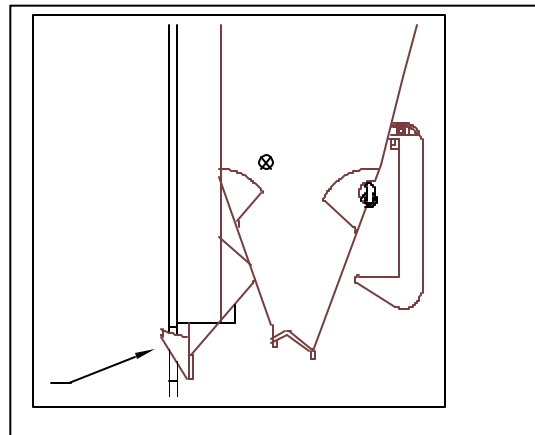
# Resetting the ST-110

- Resetting is most often performed to set up a new mech or to change a price in the mech.
- With the mechanism in a rack and the rack door closed, use a flat or forked tip screwdriver or similar tool to short across the solder pads labeled TP1 and TP2. These are located above the large capacitor C10 on the circuit board. Be careful not to short any other points together. On some mechanisms there is a 5 Volt trace above the pads. If this trace is shorted, the battery can be damaged.
- When TP1 and TP2 are shorted, the solenoid will fire. This procedure also erases the memory in the mech and will need to have the price reprogrammed into it. To reprogram prices, see the instruction manual for the Wizard Price Set Wand.



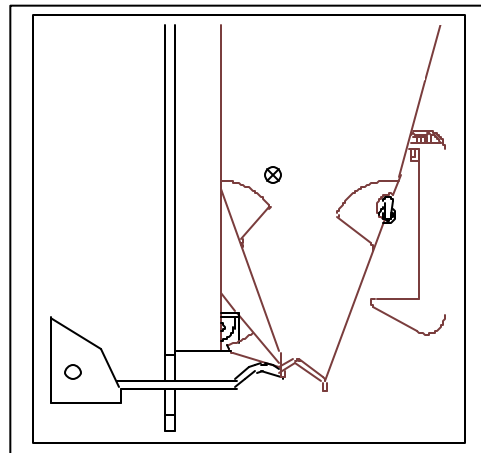
# Removal of ST-110 from Newsrack

- With the rack door open, the coin retain door hangs straight down. The ramp area hangs through the tongue slot in the mounting area of the rack. If the mechanism is pulled up during removal, the ramp can get caught on the metal slot and broken off.

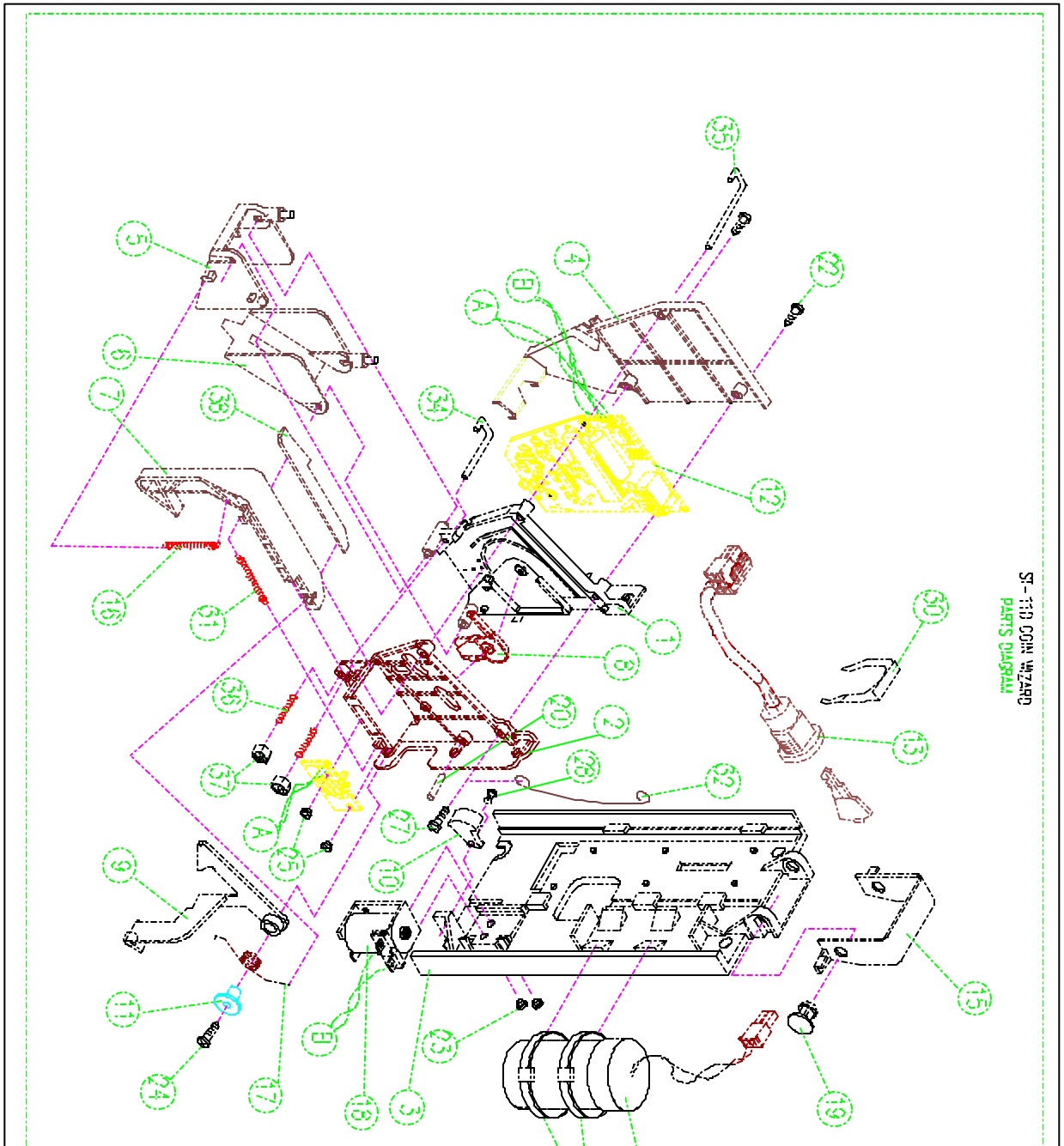


- The drawing shows the ST-110 rack section with rack door open. The coin door hangs down and triangular ramp can catch in slot in head.

- The ST-110 rack section with the rack door closed. Note that the door tongue pushes the coin door closed.



# Parts Diagram



SI-110 COM WZARD  
PARTS DIAGRAM

# Parts List