

HOLLROCK ENGINEERING, INC.

Ball Bin (Models B10 & B18)

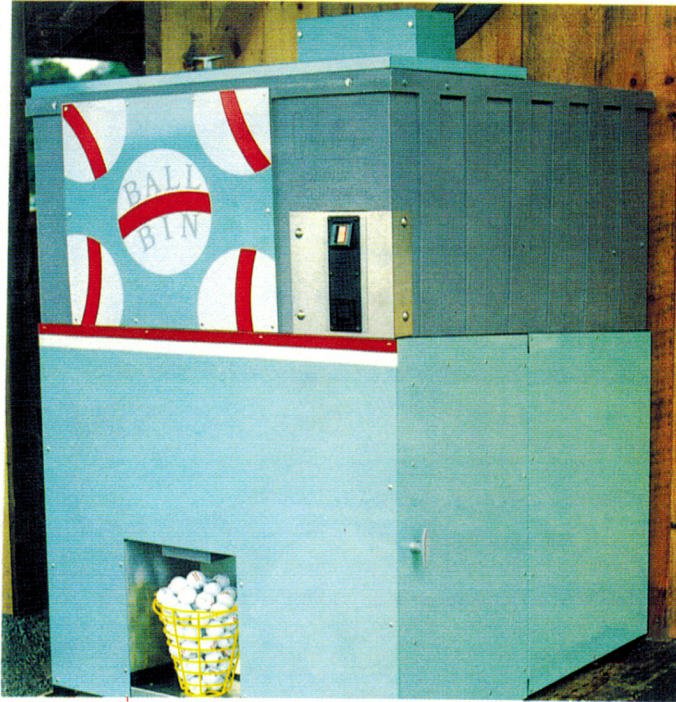


Figure 1 Ball Bin (Model B10)

Parts List

Your Ball Bin comes almost completely assembled. Packaged separately in the crate, in a parts box, are the token mechanism (wrapped in foam) and an allen wrench. Taped to the handle of the allen wrench is a snake eye drive bit. Also in the parts box are twelve (12) foam strips that you can use to control the ball flow, and two door latches with two keys. Your Ball Bin comes with 200 tokens.

Tools

Other than the tools that come with the Ball Bin, you will need only a 2 x 6 board to firmly pack the foam strips, if you decide to change the ball flow.

Assembly

Step 1: Remove the foam block

Step 2: Make sure that the bin is resting on level ground in a relatively dry location.

NOTE: Although the machine can withstand well most weather conditions, severe wet weather can affect the electrical operation. If possible, install the machine in a covered area.

Step 3: Install the token mechanism

- Locate the snake eye drive bit (taped to the handle of the allen wrench)
 1. Remove the token mechanism from the parts box.
 2. Remove the foam from around the token mechanism.
 3. With the snake eye drive bit, remove the four button-headed snake eye bolts from the front and side of the token mechanism opening in the bin.
 4. Locate the token mechanism wires in the opening (look for a black cable with three (3) colored wires: black, green and white).
 5. Hook the black and white wires to the token mechanism switch.
 6. Hook the green wire to the green grounding wire on the face plate of the token mechanism.
 7. Place the token mechanism into its opening on the bin.
 8. Replace the bolts, using the snake eye driver bit.

Step 4: Plug in the machine.

Step 5: Install the door latches (one on the upper lid, and one on the side door).

- Locate the package that contains the door latches and parts.
 1. Open one of the doors.
 2. Push a handle through the previously drilled hole at the center edge of the door.
 3. Secure the handle with a lock washer and nut.
 4. Attach the latch swing arm to the shank with a lock washer and nut on each side of the arm. NOTE: The side with "#2" printed on it should be facing away from the inside of the door panel.
 5. Adjust the arm distance to achieve the best locking position.
 6. Repeat the procedure for the remaining door.

Step 6: Regulate the ball flow (Optional)

Foam is used to control the rate of ball flow. Without adding foam, your machine should dispense approximately 70 balls per token (expect a \pm 1 or 2 ball count per bucket). If that flow is sufficient, skip this step.

Install foam:

1. Open the top of the bin (for the B18 model: remove the front panel of the bin)
2. Remove the metal boards that cover the drum (look for the hole in the first board, and use the hole to pull the board off). You see the drum.
3. Insert strips of foam into the ball slots. IT IS CRUCIAL THAT THE FOAM BE INSTALLED AT EQUAL LEVELS IN EACH BALL SLOT. FOAM MUST BE PUSHED ALL THE WAY TO THE BOTTOM OF EACH SLOT FOR CONSISTENT OPERATION. A SUGGESTED METHOD IS TO USE A 2 X 6 BOARD TO PACK THE FOAM.

NOTE: If you use less than a complete strip of foam, cut the end at an angle and insert the foam with the angle up (away from the center of the drum) to avoid the risk of balls jamming the drum.

Adjust the ball count:

1. With the drum exposed, load a minimal number of balls (approximately 200) into the machine. Dump to the rear of the machine.
2. Push in a token.
3. Stick in a bucket.
4. Dispense at least five (5) buckets of balls.
5. Count the number of balls per bucket.
6. Add or remove foam, and repeat the dispensing process, until you reach the desired ball count.

Close the machine:

1. Replace the metal boards.
2. Close the bin.
3. Load the balls.

Step 7: Hook up the power supply for the debit card mechanism (Optional)

1. Open the box for the Ball Bin power supply.
2. Remove the power supply.
3. Locate the gray wire with the fork connector on one end, and a white four-prong connector on the other end.
4. Hook the forked connectors to the screw terminals on the power supply.
5. Plug the white connector into the connector on the debit card mechanism.

Step 8: Hook up the Dollar Bill Acceptor (Optional)

1. Locate the 9-pin plug on the pulse accumulator
2. Locate the 9-pin connector on the dollar bill acceptor
3. Plug them together

Your pulse accumulator, which regulates the dollar bill count, is factory-set to your specifications. If you want to reset it, you need to reset the dip switches in the pulse accumulator. See the enclosed insert for dip switch settings.

Step 9: Reset the counter (Optional)

The counter can be reset at will. To make the counter count continuously, you must cut the green wire.

1. Remove the motor cover.
2. Unplug the wire that goes from the relay to the counter.
3. Snip the green wire (in the cable wire). This disables the reset mechanism. Leave the black and brown wires intact.
4. Reconnect the wire that goes from the relay to the counter.
5. Reinstall the motor cover.

Routine Maintenance

Your ball bin is designed to rest on level ground in a relatively dry location. It is also intended to be used with relatively clean balls. With routine maintenance, your ball bin should operate efficiently for an extended machine life.

Perform routine maintenance according to the following schedule:

Frequency	Task
Daily	Check inside of bin: remove dirt, twigs, and other foreign objects

Troubleshooting

Before you read about potential problems, it might be helpful for you to think about the internal operation of the machine. What follows is a description of the cycle of operation. Figure 2 shows the normal movement of balls from the ramp to the slots, and the correct position of the ramp and ball slots.

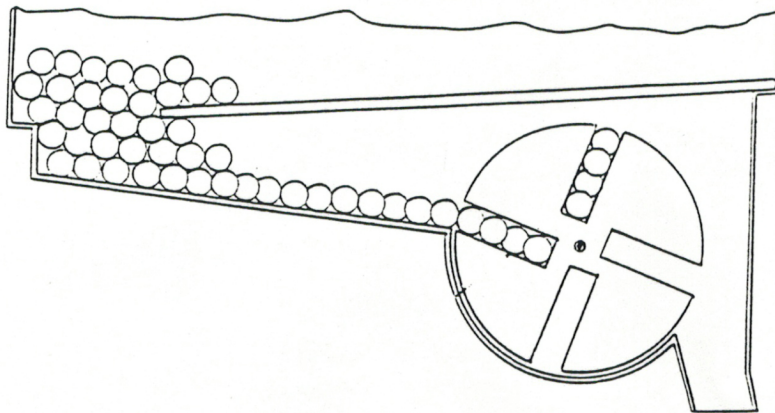


Figure 2 Schematic of slotted drum loaded with balls (side view)

Cycle of Operation

When a token is inserted into the token mechanism it trips a microswitch that sends a signal to the timing relay. The timing relay starts, and runs the motor for 1.4 seconds; this is enough time for the stop switch to be released from one of the four drum stopper blocks that are located on the side of the drum; this causes the drum to begin rotating (Figure 3) and the machine to dispense balls (Figure 4). When the stop switch is off the stopper block, it supplies power directly to the motor. The motor continues to run until the stop switch encounters the next stopper block and stops.

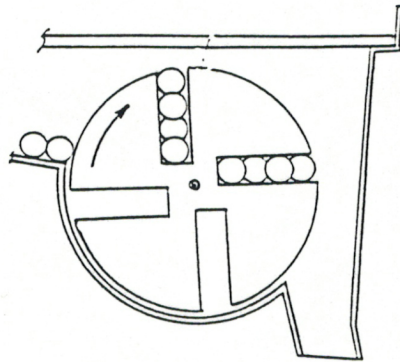


Figure 3 Schematic of drum rotation after a token (or money) is inserted (side view)

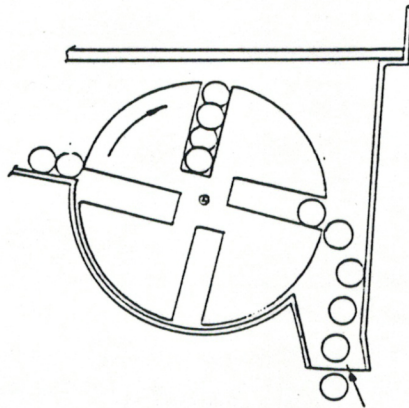


Figure 4 Schematic of drum rotation upon dispensing of balls (side view)

With routine maintenance, your ball bin should operate efficiently. Occasionally, however, you may encounter a problem. Listed below are some common problems and recommended solutions.

Problem	Reason	Solution
The motor will not run	<ul style="list-style-type: none"> • The machine has no power • The microswitch has been damaged • The timing relay is malfunctioning • The token mechanism switch is not making the proper connection • Drum does not turn because there is debris blocking the drum • The power switch is malfunctioning 	<ul style="list-style-type: none"> • Check the power supply • Replace or readjust the microswitch • Check the timing relay; replace if necessary (see directions below) • Check the connections; call the company if the problem persists • Remove the debris • Check the operation of the switch; call the company if this problem persists
The motor runs but gives an inconsistent number of balls in each bucket	<ul style="list-style-type: none"> • The foam inserts are not properly seated in the drum slots, or are cut incorrectly • A set screw is loose; check the motor shaft coupler screw, the drum shaft coupler screw, and the drum-to-shaft screw • The stop switch is positioned incorrectly • The timing relay is set improperly • The motor gears are worn 	<ul style="list-style-type: none"> • Push the foam inserts all the way to the bottoms of the slots (use a 2' length of 2x4 board and press firmly); recut the inserts so that they are at the proper angle • Tighten or readjust the set screw(s) (see directions below) • Adjust the stop switch (see directions below) • Reset the timing relay to the following settings: <ul style="list-style-type: none"> • Time select: 140 • Range select: 9.99S • Function select: one shot • Replace the motor

The motor runs but gives an inconsistent number of balls in each bucket (continued)	<ul style="list-style-type: none"> • The boards are installed incorrectly • The boards are worn or warped • The machine is not level • Debris is blocking the balls 	<ul style="list-style-type: none"> • Reinstall the boards • Replace the boards • Level the machine • Remove the debris
Tokens jam or fall into the coin box	<ul style="list-style-type: none"> • The machine is not level 	<ul style="list-style-type: none"> • Level the machine
The machine runs when power is <u>first</u> applied, dispensing balls without a token (or money)	<ul style="list-style-type: none"> • The token mechanism wires are incorrectly connected to the microswitch (this happens only if the token mechanism has been replaced) • The token mechanism cable has shorted out 	<ul style="list-style-type: none"> • Reconnect the token mechanism wires (see directions below) • Call the company
The machine runs continuously	<ul style="list-style-type: none"> • The stop switch is not adjusted correctly • A set screw (or screws) is loose • The timing relay is damp or defective • The timing relay is set improperly • The coupling insert is loose, broken or missing 	<ul style="list-style-type: none"> • Adjust the stop switch (see directions below) • Adjust the drum (see directions below); tighten set screws (see directions below) • Dry the timing relay; replace the relay (see directions below) • Reset the timing relay to the following settings: <ul style="list-style-type: none"> • Time select: 140 • Range select: 9.99S • Function select: one shot • Readjust or replace the coupling insert (see directions below)
The machine dispenses balls on its own	<ul style="list-style-type: none"> • The timing relay is damp • The timing relay has been damaged by a voltage surge 	<ul style="list-style-type: none"> • Dry the timing relay • Replace the timing relay (see directions below); Obtain a surge protector and plug the machine into it

The dispenser counter is not counting	The counter connections are not functioning properly	Check the connections to the counter, and to the cable
The dispenser counter is not displaying a count	The display is not working	Replace the counter

Directions for adjusting the drum on the shaft

NOTE: Your drum is factory set. Normally, no adjustment is necessary. Sometimes, during shipping, some movement occurs. Other conditions, as described in the Troubleshooting grid, can cause some shifting in the drum.

First, locate the T-handled hex wrench that comes with the machine. You will use this to adjust the drum-to-shaft set screw.

1. Open the top of the bin.
2. Remove the front boards. You can now look down at the drum on the shaft (see Figure 5).

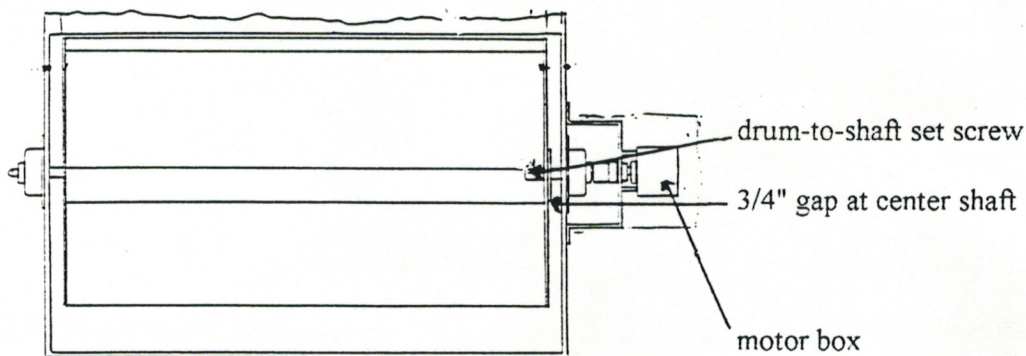


Figure 5 Schematic of drum (top view, looking down at drum and showing drum-to-shaft set screw location)

3. Measure the distance between the motor end of the bin, and the drum. There should be approximately a 3/4" gap between the drum and the motor end of the bin (see Figure 4). If the drum has shifted, you must adjust it. If not, no further adjustment is necessary. Proceed to step 8.

4. One of the four drum slots has an opening that allows access to the drum-to-shaft set screw (see Figure 4). Use tokens to rotate the drum until you can see the opening.
 5. With the hex wrench, loosen the set screw one-half ($1/2$) turn (see Figure 6).
- Caution: Do not over loosen the set screw.**

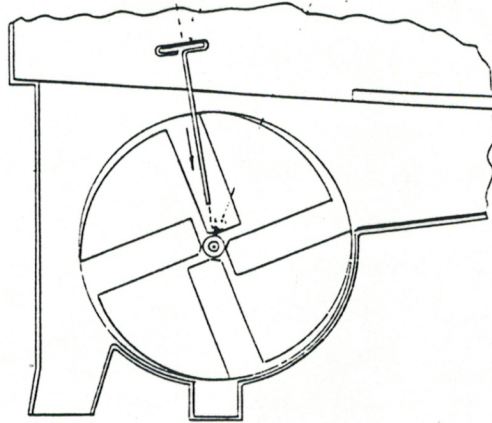


Figure 6 Schematic of set screw adjustment with hex wrench (side view)

6. Slide the drum either to the left or right until the gap between the motor end of the bin and the drum is approximately $3/4$ ".
7. Use the hex wrench to retighten the set screw.
8. Replace the boards.
9. Close the cover of the bin.

Directions for replacing the timing relay

1. Using a $7/16$ " wrench, remove the four $1/4$ " bolts that hold the aluminum motor cover to the motor base plate.
2. Gently remove the cover and unplug the counter connecting wire.
3. Snip the plastic tie that holds the white relay in place (used for shipping purposes); discard it.
4. Pull out the relay.
5. Set the new relay to the following settings:
Time select: 140
Range select: 9.99S
Function select: one shot
6. Install the new relay into the base. There is no need to hold it down with a new plastic tie.
7. Reconnect the counter
8. Reinstall the aluminum motor cover.

Directions for adjusting the drum stop switch

If the drum is stopping too high, or too low, so that the balls are not loading, or are not loading properly, you can adjust the drum stop switch.. This is a matter of trial and error, and may take some time.

Balls should load with the bottom lip of a ball slot exactly even, or slightly below, the ramp (see Figure 7).

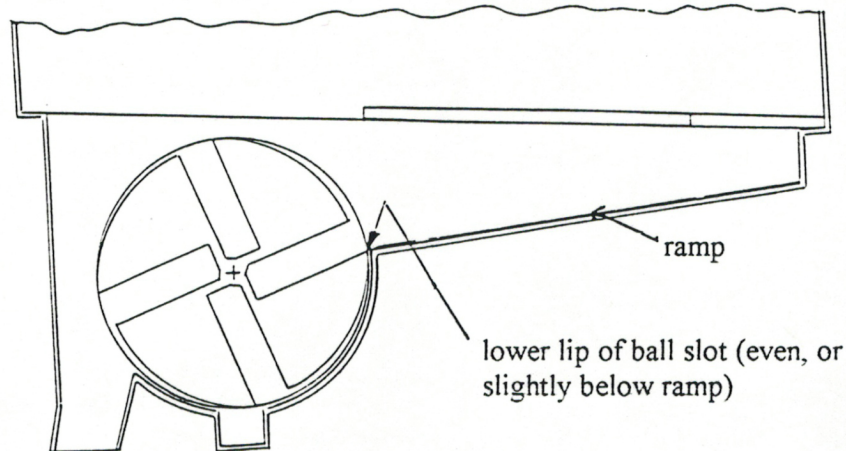


Figure 7 Schematic of drum showing alignment with ramp (side view)

The drum stop switch is located on the bracket to the right of the motor box (see Figure 8). You need a 9/64" Allen wrench and an 11/32" open-end or socket wrench.

The stop switch is attached with an Allen-head screw and nut. You will need to loosen the screw and nut to adjust the switch.

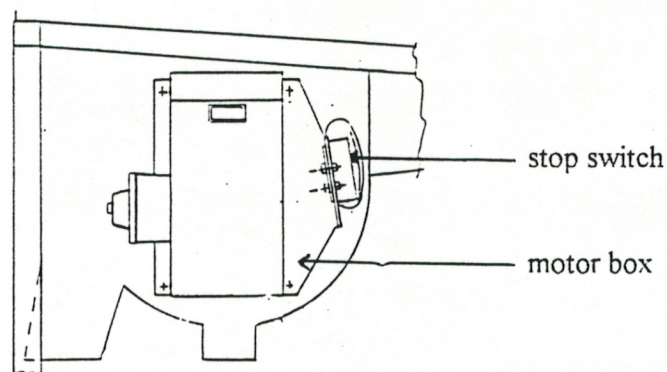


Figure 8 Schematic of motor box showing position of stop switch (side view)

1. Open the cover of the bin.
2. Remove the front boards.
3. Measure the amount of "play" in the drum (you will need a ruler). The drum is designed to have a small amount of play (between 3/8" and 1/2") in its movement.
IMPORTANT: YOU MUST DO THIS STEP BEFORE CONTINUING.
 - Gently rock the drum to the left as far as it will go.
 - Place a ruler against one of the blocks, with an inch marker on the edge of the block. You will use this marker as a benchmark.
 - Holding the ruler in place, gently move the drum to the right until you cannot move it.
 - Measure the distance from your benchmark on the ruler, to the new drum position. There should be no more than 1/2" of movement.
 - If there is more than 1/2" of play in the drum, you must first tighten the coupler set screws before continuing. Refer to the directions for tightening the coupler set screws, which follow this section, and then return to Step 4. Also check for worn gears in the drive motor before continuing with Step 4.
4. Look at the drum slot position. Note whether the drum needs to be raised or lowered.
5. Insert a token into the machine.
6. In the middle of a drop cycle, turn off the machine using the on-off switch.
7. Locate the stop switch on the side of the motor box.
8. With the Allen wrench and the open-end wrench, loosen the nut on the side of the stop switch (see Figure 9).

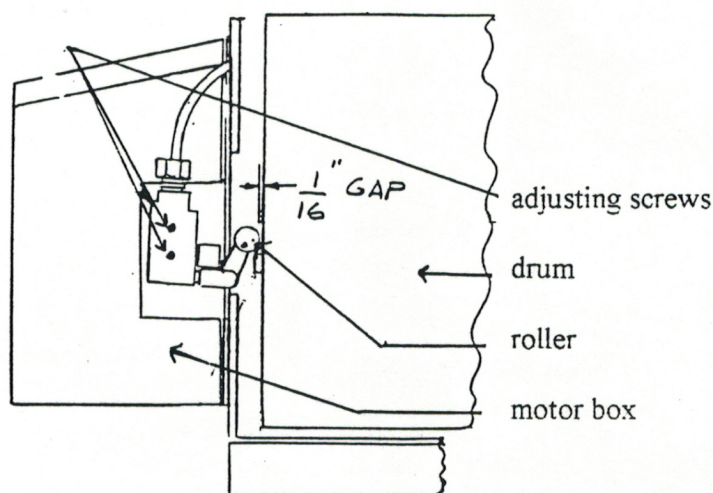


Figure 9 Schematic of stop switch, screws and nut (side view)

NOTE: The drum is designed to stop at the switch position. Lowering the switch will cause the drum to stop lower; raising the switch will cause the drum to stop higher.

9. Slide the switch up or down to the desired position. Be sure that the switch roller is approximately 1/16" away from the side of the drum (see Figure 9).
10. Tighten the screws snugly.
11. Turn the machine on. The drum will cycle and stop in the set position.
12. Test the ball slot alignment by inserting tokens and checking the ball flow operation. Repeat the stop switch adjustment if necessary.
13. Before closing the cover, be sure that all screws are tightened snugly.
14. Replace the front boards.
15. Close the cover of the bin.

Directions for tightening the coupling set screws

1. Unplug the machine.
2. Disconnect the token mechanism wires.
3. Using a 7/16" wrench, remove the four (4) 1/4" bolts that hold the entire motor drive assembly to the inner plastic tank wall.
4. Lift away the motor drive assembly. You will see the set screws on the motor coupler and the drum shaft coupler.
NOTE: Take care that you do not lose (or drop) the six-pronged bronze coupler insert that is between the two couplers.
5. Using a 5/32" Allen wrench, tighten the set screws. (You may use Loctite® or a generic thread locker to lock the set screws.)
NOTE: Be sure that the six-pronged bronze coupler insert is between the two couplers before you tighten the screws completely.
6. Reinstall the motor box assembly.
7. Reconnect the token mechanism wires.
8. Plug in the machine.

Directions for replacing the coupler insert

1. Unplug the machine.
2. Disconnect the token mechanism wires.
3. Using a 7/16" wrench, remove the four (4) 1/4" bolts that hold the entire motor drive assembly to the inner plastic tank wall.
4. Lift away the motor drive assembly. You will see the motor coupler and drum shaft coupler.
5. Remove the damaged coupler insert.
6. Install the new insert.
7. Replace the motor drive assembly.
8. Reconnect the token mechanism wires.
9. Plug in the machine.

Directions for reconnecting the token mechanism wires

1. Unplug the dispensing machine.
2. Remove the token mechanism face plate.
3. Note the position of the wires. The two wires that go to the token mechanism switch should be connected to the two switch connectors that are closest to the sliding handle. The third switch connector (at the back) should be vacant.
4. If a wire is connected to the last switch connector, disconnect it and attach it to the remaining switch connector. (If the wires are connected correctly, call the company for further instructions.) Having the two wires reversed is not a problem.
5. Replace the token mechanism face plate.

Contacts

If you have any questions regarding your Ball Bin, please contact:

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