

Advanced Game Engineering

Candy Crane (AGE)

MANUAL

Advance Games AGE T Series Cranes no Reset or Program Buttons

NOTE: The utmost care has been taken to insure that your new machines operate perfectly, however some problems may occur during transit. If any problems exist, turn the power OFF and call our service department at 1(314)773-5181

GENERAL MAINTENANCE

- NOTES -

*** PREVENTION ***

Most problems can be prevented by a periodic inspection and adjustment of mechanical parts, namely the various limit switches. Make sure all limit switches are working properly. If not, adjustment is necessary. See the CRANE CAR and FORWARD DRIVE TRAIN diagrams.

*** MOTORS ***

You have three Motors in your machine. One to go back and forth, one for left and right and one for up and down. They are all mounted identically with two 10-32 x 3/8 inch #2 philips pan head screws.

First remove the string or rubber belt before going to the next step. For each Motor, begin by removing the Hex Set Screw in the Pulley by turning counter clockwise with a 1/16" Hex Wrench. Loosen the screw about two turns or until you can remove the Pulley.

Now remove the two screws holding the Motor by turning them counter clockwise until they are out. There are two wires and a capacitor on the back of the Motor. It is important to put them back on the same post when replacing the Motor. If the Motor operates backwards simply switch the wires around.

*** SWITCHES ***

In checking a switch, remember that the basic function of a switch is to "connect and disconnect" two or more wires by using an internally spring loaded paddle which toggles back and forth between connections. When a switch goes bad it is usually because the spring loaded toggle inside has broken or become stuck. In such a case, the switch can be tested by simply pressing down on the lever and listening for a distinct "CLICKING" sound, or using a continuity meter to check electrically for a connection. If a switch is determined to be defective, replacement is necessary.

*** CONNECTIONS ***

Other things to look at are the various connectors on the motors, switches, circuit boards etc. These items may be loosened by rough handling, vibration, misuse, or shipping. Also check the fuses on the board.

*** CHECK UP ***

Every 30,000 plays, general inspection and maintenance should be performed by going through the enclosed checklist. This will insure many years of profit from your game and a limited amount of down time.

Buy a can of spray adhesive and perform the procedure listed under TROUBLESHOOTING SYMPTOM #14 every six months.

*** HANGING BY A THREAD ***

To restring the claw use 50# test braided cord. You also can use monofilament fishing line, however this should only be used until you can obtain the proper cord. It is very important to use 48-52 inches of cord. Follow directions under TROUBLESHOOTING SYMPTOM #12.

GENERAL MAINTENANCE

- CHECKLIST -

UPPER CABINET

1. Drive shaft lubrication at points #3, 4, 8, 35, 55.
Use a white lithium or wheel bearing grease inside bushing areas. (See Troubleshooting Pulleys #14)
2. Make sure lateral track, located in the top of the machine which the mechanism moves on, is aligned and not bent.
3. Forward (Y drive) limit switch operative #32.
4. Lateral (X drive) limit switch operative #33.
5. Vertical limit switch operative #13.
6. Vertical stop switch operative #14.
7. Spring tension O.K. #7.
(See troubleshooting #11)
8. String condition O.K.:
Not frayed around claw solenoid cap or string guide.
Replace with braided nylon cord (50 lb. test is best).
9. Claw operates smoothly:
So that there is no binding when jaws open and close.
If binding occurs, realignment of metal tabs of claw may be required.
10. Crane harness clear of motor switches and track:
Such that it does not interfere with claw or mechanism movement.
11. Wheels and pulleys tight on shaft #1, 2, 41:
(See troubleshooting #14)
12. Mechanism retainer bushings adjusted properly #6:
(See troubleshooting #15)
13. Belts in good condition:
(See troubleshooting #14)

LOWER CABINET

1. All electronics mounting secure:
Nylon press clips and steel threaded standoffs are used to mount circuit boards in the cabinet. The nylon type has a small wing which spreads out in one direction upon installation and must be compressed using pliers or finger tips so wing retracts back into nylon standoff to remove board. The steel standoffs are longer (2") and require a 5/16" ratchet to remove the nylon locknuts holding the larger main board under the trap door in the machine.
2. All connections tight and clean:
Loose wires can cause intermittent problems that are hard to find. A periodic check of all harness connections assuring that harness connections are not loose or weak is highly suggested.
3. All fuses in good condition:
A blown or melted fuse is a WARNING that something in that circuit is drawing too much power and must be checked. Usually this means an electrical short in the circuit board or wiring harness assembly. Normally, when a fuse blows, one can tell by looking through the glass fuse tube to see if the small wire inside has melted. Sometimes it melts close to one end under the metal cap.
4. Speaker wires connected:
The speaker is mounted below the cash box drawer. Two wires are soldered to the speaker directly at one end, and about 8" from the speaker, where an in-line disconnect (#P9 on lower wiring harness) is located.

COIN MECHANISM

1. Wire connections tight and clean.
2. Lights on coin mechanism operative.
3. Coin slots clear of foreign objects.
4. Metal coin wire not dragging in slot.

Note: If you remove the coin mechanism for cleaning purposes remember to clean it only with warm soapy water or rubbing alcohol and let air dry. (NEVER OIL YOUR COIN MECHANISM)

TROUBLESHOOTING

SYMPTOM #1

Premature claw dropping:

Check Claw Switch #51 on Rod Assembly that it is contacting the Rod Stop Collet (#36) and "CLICKS" when switch arm rides up on the Rod Stop Collet. Also, check Compression Springs (#55) that they push Rod Stop Collet (#54) completely forward. (See Rod Assembly diagram)

Check Vertical Stop Switch (#14). If switch arm does not have clearance within the gap of the String Guide, switch #14 may need adjusting so that there is.

Check Lateral Limit Switch (#33). If switch arm is bent back or not contacting Crane Car when returning home, switch #33 may need to be rebent in a concave shape using needle nosed pliers so that Crane Car fully depresses switch when returning home.

SYMPTOM #2

Game accepts quarters but game routine does not begin:

Check to be sure the game is plugged in. Check that Vertical Limit Switch (#13) on Crane Car is not in contact with Armature (#7) when Claw has rewound back up into position.

Check that all the wires to the Coin Mechanism are connected.

Check that the String is fed through the pulley assembly as per Crane Car diagram. The machine will not begin a cycle if the string is not on properly.

SYMPTOM #3

Chronic fuse blowing:

There are four fuses on the circuit board. One fuse for the Main A.C. power. One fuse to protect the Claw Solenoid. One fuse to protect the Motors. And one fuse to protect the Joystick circuitry. If a new fuse continually blows there is a possibility that a Motor or some other part is defective. A short may also be present. If this happens, please call a service technician for further assistance.

SYMPTOM #4

Inadequate Claw tension:

Claw tension can be increased by adjusting "R1" on the Main circuit board.

Slow closing of the Claw can be caused by a weakened

core spring or friction from binding of the metal parts. Painted metal parts of the Claw should be arranged as closely as possible so that there is no excess play between parts, yet not so close as to cause binding while Claw opens and closes.

Poor plunger action can also be caused due to overheating and warping of inner core guide of Solenoid. In this case, Solenoid must be replaced. If String breaks, and Claw is left on in a closed position, Solenoid can overheat.

SYMPTOM #5

Claw does not rewind:

Check Vertical Stop Switch (#14). Be sure paddle is not against either upper or lower limits of travel. The switch can be readjusted by using needle-nosed pliers to straighten the paddle on the switch.

SYMPTOM #6

Claw drags home:

Check Vertical Stop Switch (#14). If Mechanism drives home before Claw retracts, the front part of Switch (#14) is stuck open and needs realignment. A pair of needle-nosed pliers can be used to straighten paddle on switch.

SYMPTOM #7

Claw Mechanism is stuck in left field:

Check Claw switch #31. If game plays all directions, but upon returning left, it stops and claw opens before going home, Claw Switch #31 needs adjustment.

SYMPTOM #8

Crane Car stuck out in left field:

Check (Y-) Motor Drive Switch #32. If game plays only three directions, and Crane Car is stuck in left field, Switch #32 is stuck on and needs adjustment.

SYMPTOM #9

Claw remains closed at home position:

Check Claw Switch #31. If game plays all directions but claw remains closed at home, Switch #31 is stuck "ON" and needs adjustment.

SYMPTOM #10

Motor continues to run at home position:

Check (Y-) Motor Drive Switch (#32). If Motor continues trying to drive Mechanism towards home and doesn't turn off, Switch (#32) arm is not contacting Rod Stop Collet and needs adjustment.

SYMPTOM #11

String keeps coming off pulleys:

Check Vertical Limit Switch (#13). Make sure Switch (#13) is being actuated by String Tension Armature (#7). Check string positioning through and around pulleys with CRANE CAR diagram.

The Spring Tension Armature (#7) is spring loaded. A circular spring is mounted behind the armature to keep pressure against the arm in a downward direction. If binding occurs, see Section #11 on the checklist for relubrication instructions. Be sure the string is fed through the pulleys correctly. (See CRANE CAR diagram)

SYMPTOM #12

String repeatedly breaks:

Check Vertical Stop switch (#14). If Claw closes but string rewind Motor continues to run, check that paddle on Switch (#14) to make sure paddle is not bent out of alignment. A pair of needle-nosed pliers can be used to straighten it out.

Replacing string:

Replace with 50# test braided nylon string (48-52"). Simply follow the CRANE CAR diagram. Remove cap off of Claw Solenoid (#17) using a 1/16" Hex Wrench. Tie a large knot on one end of the string under the cap and replace on Solenoid. Then feed the String up through the String Guide (#15). Follow the path shown on Crane Car diagram as string feeds counter clockwise over pulley (#8) then clockwise and up under pulley (#9). Then feed it through the String Pulley (#1) from the inside through side hole out and finally, tying another large String Knot (#20).

SYMPTOM #13

Counter not working:

Check wire connections to and from counter. A two pin disconnect is located about six inches from the Counter, make sure connection is tight. A 12 volt bulb can be put

in place of the Counter. The bulb should light when you put a coin in the machine. If it lights you have a bad Counter and will need to replace it. If not, a more thorough check of the wiring is required.

Note: You can use the bulb from the coin lights for this test.

SYMPTOM #14

Claw stays closed in home position and motors run:

The spring loaded Rod Assembly (#53) has a Rod Stop Collet (#54) on the end which causes two switches to activate when it moves across them (See FORWARD DRIVE TRAIN diagram). Make sure the springs are not intertwined together and that the Rod Stop Collet (#54) is tightened on the shaft such that about 1/4" of the Rod protrudes from the rear hole (See Rod Assembly diagram), yet not touching the rear switch (#52). The Rod should move freely. Also, periodically place some spray adhesive on the top half only of the four rods the Mechanism travels on (two from left to right, two from front to back). This is so the Pulley wheels which travel on the rods get good traction. First spray adhesive on a rag, then wipe it across the tops of the rods only.

Check the three Drive Belts:

Belts should be on Pulleys and in good condition (ie. not chaffed, cracked, or worn). Two belt sizes are used on this game. The large (3.2") belt is used on the upper left of the Mechanism driving it forward and back in the Y+ and Y- directions (#44). The small (2.6") belts are in two locations, on the right to left drive Pulley, X+ and X- directions (#5), and the Idler Drive on the upper right side of the machine.

Check the Pulleys:

Some Pulleys are IDLER PULLEYS and spin freely on their shafts. By removing the "C-clip" fastener which retains a Pulley and regreasing the shaft, the responsivity and life expectancy of a bushing will improve greatly.

Other Pulleys are DRIVE PULLEYS. These have set screws holding them on to their shafts. A 3/32" Hex Allen wrench (supplied) is used to loose or tighten set screw located in center groove in each Pulley.

SYMPTOM #15

Crane Car binds as it moves from left to right:

Adjust the Crane Car cover plate so that a slight gap (.050") can be seen between the trolley rails and Nylon Retainer Bushings. If binding occurs, loosen bolt (#6)

rotate it to provide space between rail and Retainer Bushing, then lock it with the nut on the rear of bolt.

ADJUSTMENTS

TIMER ADJUSTMENT: Using a small flat blade screwdriver turn the switches at positions U12 and U13 on printed circuit board to obtain the maximum length of time you want each play to last. Switch U12 adjusts the tens and switch U13 the ones.

CLAW STRENGTH ADJUSTMENT: Using a small flat blade screwdriver turn potentiometer located at position R69 on the circuit board. Counterclockwise to increase strength of claw.

CREDIT/PLAY* ADJUSTMENT: Adjusting credits per play from \$.25 to \$2 is accomplished by sliding switches 1-8 at position U26. Only one switch should be set "ON" at a time the rest "OFF".

- 1 "ON" - \$.25/PLAY
- 2 "ON" - \$.50/PLAY
- "
- "
- "
- 8 "ON" - \$2.00/PLAY

For any problems not covered in this manual please call # 314 773-5181 for assistance.