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ACME CRANE COMPANY



**PLEASE READ FIRST BEFORE
PLUGGING IN MACHINE**

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70 MAN-C

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Congratulations!

You are now operating the most innovative, reliable, and revenue-generating crane available. Here are some of the highlights of this patented machine:

- **“Never Empty”** illusion created by self-adjusting floor height
- Holds **more merchandise** than much-larger cranes
- **“Ultimate Tease” air claw** lets players feel they almost won every time
- **Auto Fluff** feature keeps merchandise from packing
- **Rotating Claw** allows players more control over play
- **Attract mode** with digging and lights
- **All ball bearing** construction
- **Best warranty** in the business

Introduction-Must Read

The Acme Crane that you have purchased is very different from any other model crane that you may be familiar with. Please be aware of the differences so that you can take advantage of the unique features.

Claw

The claw is operated using an air cylinder that is activated by an air pump and valve. There is a valve used to control claw strength for payout adjustment. Unlike traditional solenoid operated claws, there is no need for wires at the claw.

Crane Mechanism Motors and Limit Switches

All motors in the Acme Crane are stepper motors. The crane always knows where the claw is, and therefore there are no limit switches for left to right or front to back travel in the crane mechanism. An opto style sensor is used for sensing when the claw has reached the push on down travel.

Special Features

Plushing

The Acme Crane will “Plush” the merchandise while in attract mode to keep plush loose and avoid packing. The claw travels out to the playfield and lifts plush slightly before releasing it and returning home. This is repeated in different positions on the playfield at a programmable frequency.

Plush Elevator

The crane senses the level of the plush using the distance that the claw descends in attract mode. As the merchandise is won and the level gets low, the floor raises to compensate. This keeps the merchandise at a constant level despite the number of wins.

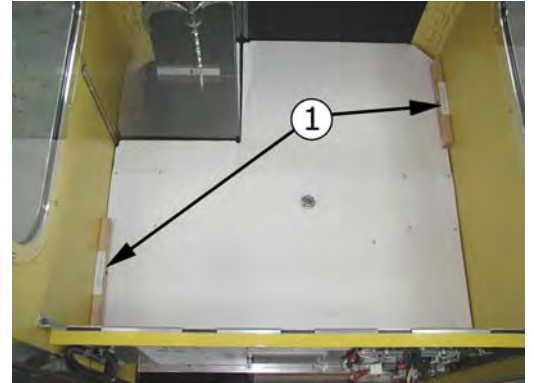
Rotate Claw

The control panel contains a rotate claw dial. The player can rotate the claw, giving them additional control over game play.

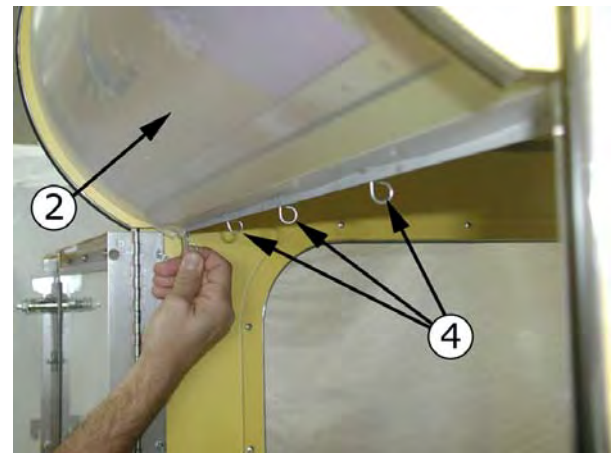
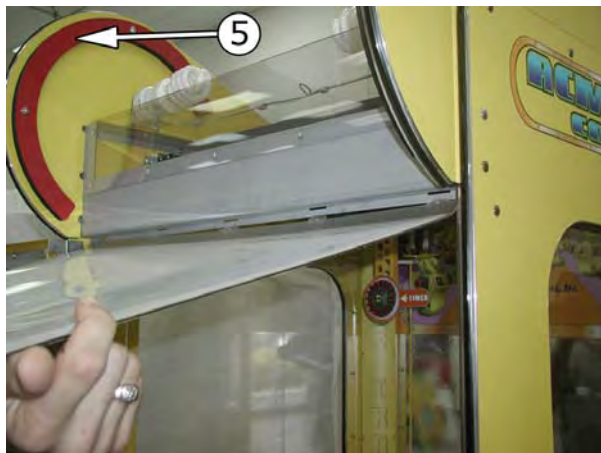
Game Set Up

Note: X-treme model cranes are shipped with Marquee and Control Panel installed. When the game must pass through a narrow door or opening, it may be necessary to remove the Marquee and the Control Panel. If it is necessary to remove the Control Panel, disconnect the Control Panel harness from the main harness, remove the 8 screws securing the control panel in the front door, and remove control panel. If it is necessary to remove the Marquee, follow the instructions under “Changing the Marquee Light Bulbs” in the Maintenance section. Proceed with set up:

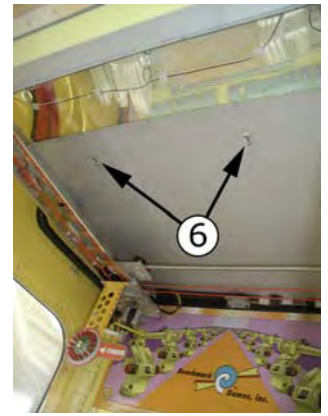
1. Remove playfield support blocks① installed for shipping (skip this step for extreme models).



2. Install Marquee (skip this step for extreme models)
 - Remove marquee sides① from boxes and marquee plastic② from back of game.
 - Fasten marquee sides① to side of game by removing mount bolt, sliding into position and reinstalling (1) mount bolt③ for each side
 - Fasten front of marquee plastic② in place by inserting tabs on the marquee plastic into slots in sheet metal top. Use supplied cotter pins④ to fasten inside the front of the game.

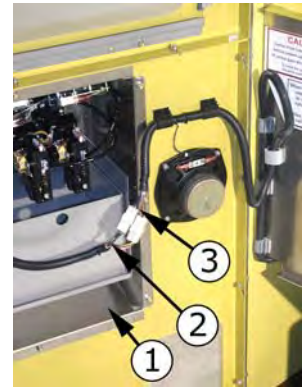


- Roll the marquee plastic② back over the top of the Form Blocks⑤ and insert attaching studs and nuts through the keyholes⑥ located in the top of the game, capturing artwork behind the marquee plastic②.
- Tighten nuts in keyholes⑥.



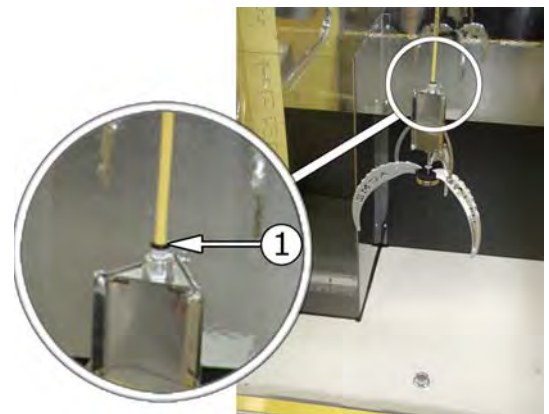
3. Install Control Panel (skip this step for extreme models)

- Unpack control panel① from the inside of the crane and mount to the front door from the inside using supplied nuts.
- Connect the control panel harness② to the control panel connector③ on the main harness.
- Use supplied stick on cable clamps④ to position control panel harness as shown



4. Install Claw

- Remove claw from box. Attach claw to air line hose by pushing the hose over the fitting and rolling the o-ring① over the connection.



5. Free Crane Mechanism

- Cut cable tie used to secure crane mechanism during shipping
- Verify crane mechanism is free to move by sliding from side to side and from front to back with your hand



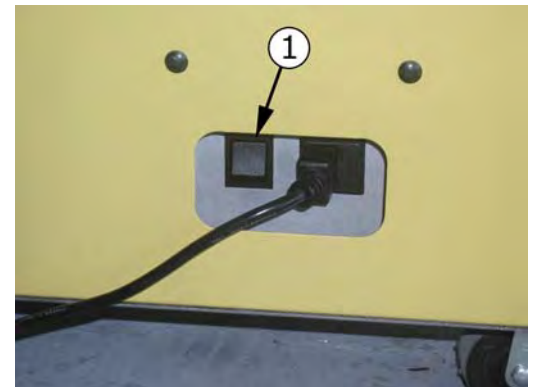
6. Install coin in comparator (skip this step if using a non comparator style coin mech)

- If using a coin comparator style coin mechanism, install the coin that will be used in the mechanism in the comparator slot on the mechanism.



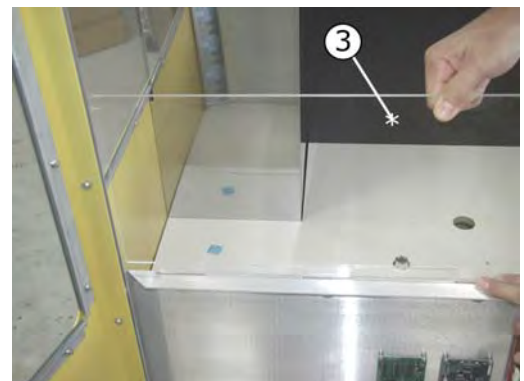
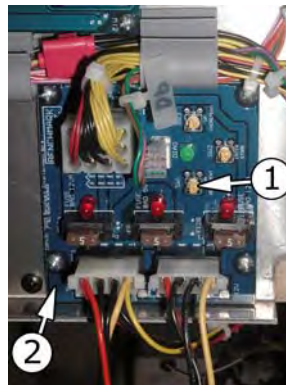
7. Power the game on.

- Attach power cord to the AC input and toggle the power switch① to the on position



8. Load Merchandise

- Lower the playfield floor by pressing the SW1① on the power distribution circuit board②.
- Install the merchandise containment plate③ inserting tabs into slots in front panel. On the Extreme model, locate the support ears④ on



the merchandise side to keep the containment plate from falling over.

- Load the game with merchandise.

Adjust game volume, claw pressure, and programmable options as necessary. See Game Adjustments section.

Note: Do not remove the casters. The game requires the additional height in order to properly operate with full playfield floor travel.

Adjustments and Settings

Setting Claw Strength

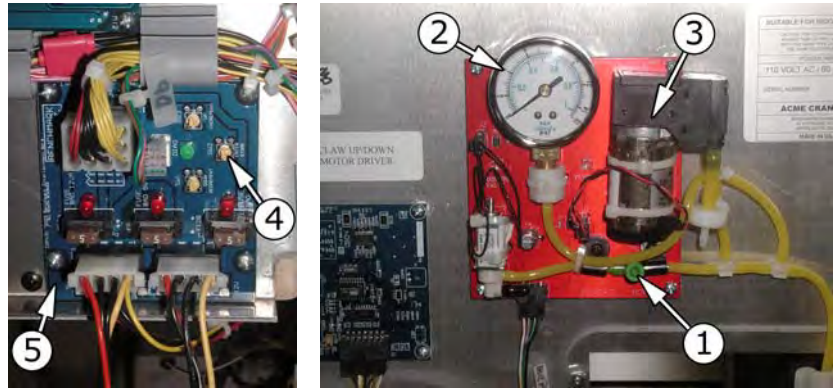
The claw strength is set by adjusting the needle valve① which sets the nominal air pressure. The air pressure is indicated on the air pressure gage② when the pump③ is running.

To adjust the claw strength:

1. Put the game into adjustment mode by holding the crop claw button on the control panel and the SW2 button④ on the power distribution pcb⑤ simultaneously. This will run the pump for 60 seconds.
2. Turn the needle valve① to set the pressure. The pump will shut off on its own after 60 seconds.

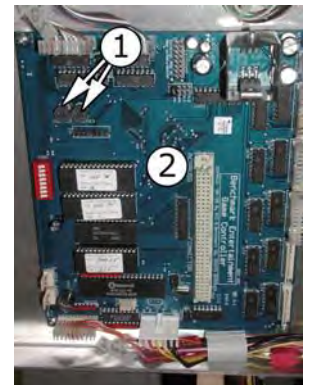
NOTE:

We recommend starting with 4 psi as a starting point. After a week, check the payout percentage and adjust if necessary. Set the pressure higher to increase payout, reduce pressure to decrease payout.



Setting the Sound Volume

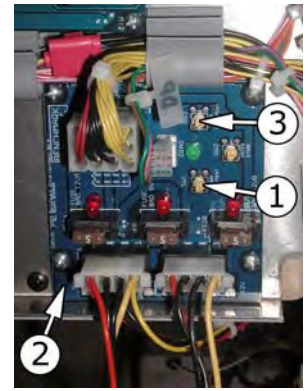
There are two volume control knobs① on the controller board② used to adjust volume. Turn to adjust to desired level.



Playfield Floor Height Adjustment

The playfield floor automatically adjusts as product is won. If you are not using this feature, the floor can be manually adjusted.

- Press the SW1 button① on the power distribution pcb② in order to lower the floor. When this button is pressed, the floor will be lowered to its lower limit.
- Press the SW3 button③ to raise the floor height. Each time the SW3 button④ is pressed, the floor will raise 4 inches.



Dip Switch Settings

Switch the game off before adjusting the dip switches①. The dip switches① are located on the controller board②.

Not Used

Dip 1	Dip 2
-	-
-	-
-	-
-	-

Dollar Value Setting. This switch setting is used to match the coin to dollar value based on pulses output by the dollar bill validator. The factory setting is 1 (Off/Off). This creates a 4:1 coin to dollar value when the DBV is set to 4 pulses per dollar. If your dollar bill validator is set up to output 1 pulse per dollar, you will need to set the switches to 4 (On/On) in order to get a 4:1 coin to dollar value.

Dip 3	Dip 4	Value
Off	Off	1
On	Off	2
Off	On	3
On	On	4

Custom coin: dollar values used for adjusting to different currencies can be set using this formula:

$$\text{Plays per Dollar} = \frac{\text{Dollar Value (Dip Setting)} \times \text{Pulses per Dollar (DBV)}}{\text{Plays per Coin (programmable option \#1)}}$$

Auto Plushing

Auto Plushing “fluffs” the push during attract mode to keep the merchandise from packing.

Dip 5

On	Disabled
Off	Enabled

Attract Sounds

Attract sounds play approximately every 5 minutes when the game is not being played when enabled.

Dip 6

On	Disabled
Off	Enabled

Attract Movement

The claw moves from the home position over the playfield, drops into the merchandise, raises, and returns home (simulated game play) approximately every 5 minutes when enabled.

Dip 7 Disabled
 On Enabled
 Off

Auto Playfield Floor Adjustment

The crane automatically adjusts the floor height to maintain full look when enabled.

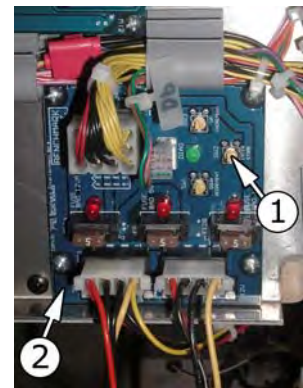
Dip 8
 On Disabled
 Off Enabled

Programming Options

Option #	Description
0	Reset Defaults. Set to 2 and exit. Resets factory default program settings and resets credits to 0
1	Coins Per Play. This adjustment sets the number of coins required for one play.
2	Game Play Timer. This adjustment controls the game countdown speed. Range is 60-99. Default setting is 72. (min time is 22 seconds)
3	Free Play Mode. Sets the number of minutes the game can be played for free. After the programmed time has elapsed, the game returns to normal play mode.
4	Attempts per credit. Sets the maximum number of attempts per credit that a player has to win a prize. The game ends when a player wins a prize or when the set value of attempts has expired. Range is 1-99.
5	Auto Plushing. Sets ratio of plushing routines per attract cycles. Default setting is 3, meaning the claw will plush once every three attract cycles. Range is 1-23.
6	Plushing Pull Height. Sets how many inches the claw will lift the plush before releasing during a plushing routine. Range is 1-10. Default is 4.
7	Default Reset. Set this value to 2 and exit to reset default programming values.
8	Exit.

Changing the program settings

1. To enter the programming mode, press the SW2 button① on the power distribution pcb②. The 2 digit credit display③ on the control panel will read A9.
2. Bump the joystick④ up or down to rotate through the programming option numbers
3. Bump the joystick to the right to view the option value. The decimal will light up indicating that the option value is being displayed and not the programming option number. Continue to bump the joystick to the right in order to change the value.



4. Press the Drop Claw button⑤ to enter the new value. The 2 digit credit display③ will show **04**, or **OK**.
5. Bump the joystick④ up or down in order to scroll to another option that you would like to adjust, or go to option 10 (credit display will flash **EH 17**, or **EXIT**) and press the Drop Claw button⑤ to exit and save changes.



Example:

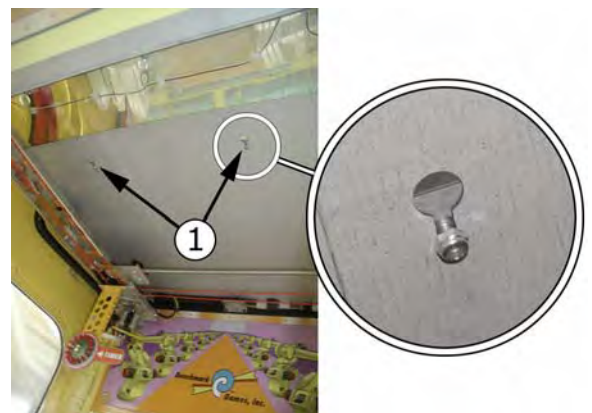
Change the Auto Plushing value from 3 to 5.

1. Press the SW2 button① on the power distribution pcb②. The 2 digit credit display③ will read A9.
2. Bump the joystick up to option #7 (Auto Plushing)
3. Bump the joystick to the right until the 2 display credit display③ shows **05**
4. Press the Drop Claw button⑤ (display will show **04**, or **OK**)
5. Bump the joystick up until the credit display flashes **EH 17**, or **EXIT**.
6. Press the Drop Claw button⑤ to exit and save changes.

Repair and Maintenance

Changing the Marquee Light Bulbs (Standard Model)

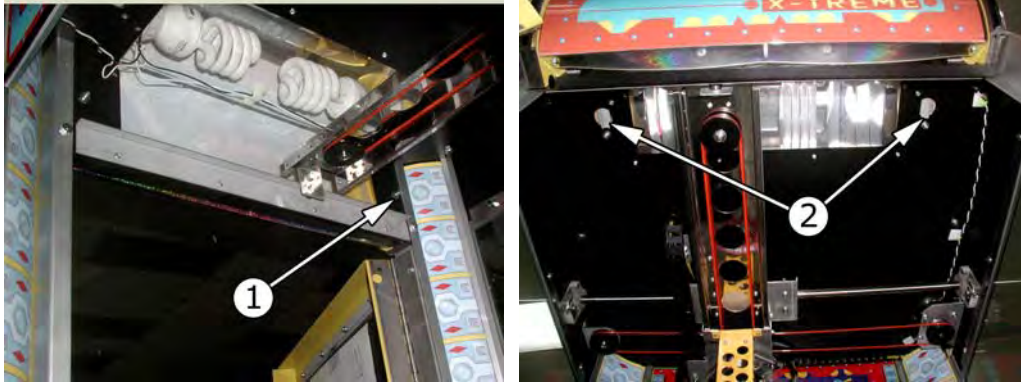
1. Open Front Door.
2. Loosen (2) marquee fastening nuts① located in key slots.
3. Remove marquee fastening nuts① from key slots and lift marquee cover toward the front of the game.
4. Replace light bulbs and reassemble marquee.



Changing the Marquee Light Bulbs (X-treme Model)

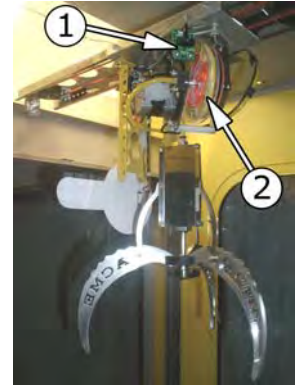
1. Open the front door.

2. Remove (2) marquee fastening nuts① located on the inside, upper part of the crane behind the marquee.
3. Pull the marquee forward and up releasing the marquee from the keyway slots② in the top of the cabinet.
4. Change the bulb(s) and replace marquee.



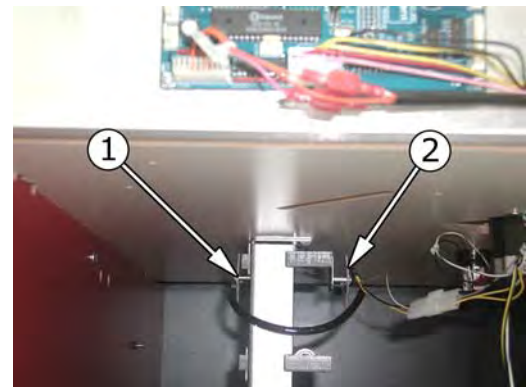
Clean the Drop Return Claw Opto

Spray Drop Claw Opto①, located behind the claw lift pulley②, with pressurized air. Clean about once every six months.



Clean the Floor Lift Optos

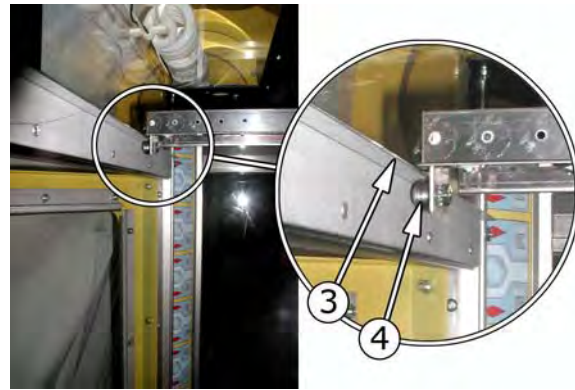
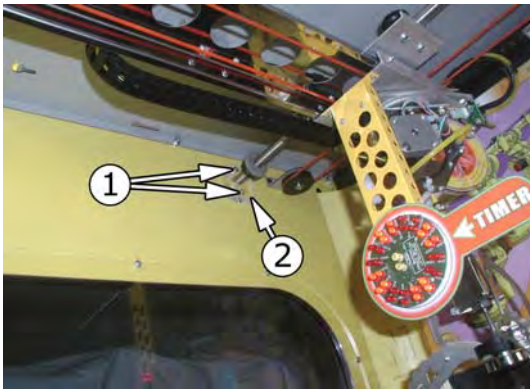
Spray floor lift opto transmitter① and receiver② with pressurized air.
Clean about once every six months



Replace Crane Mechanism

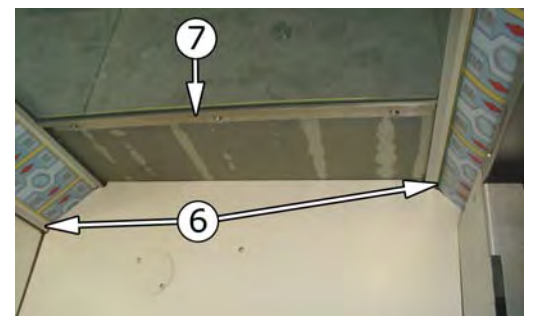
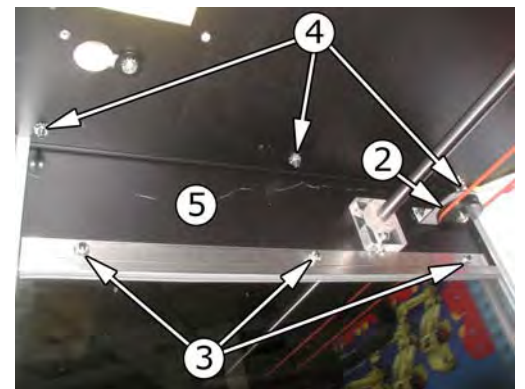
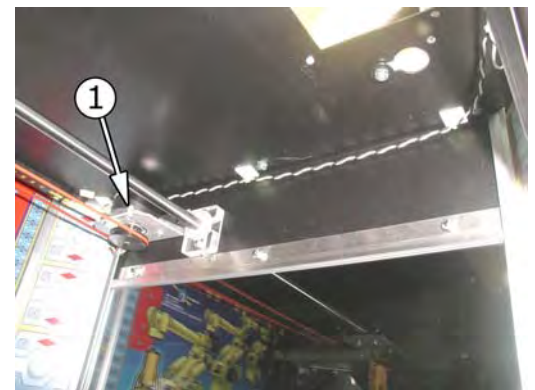
1. Disconnect AC power from machine.
2. Disconnect crane mechanism harness.
3. Loosen Rod Mount Containment Screws①
4. Lift Crane Mechanism Rod off of Rod Mounts②.

- Reinstall crane mechanism with front Mech Mount Bracket③ located between the Front Rollers④.



Replace Side Glass (Extreme Model)

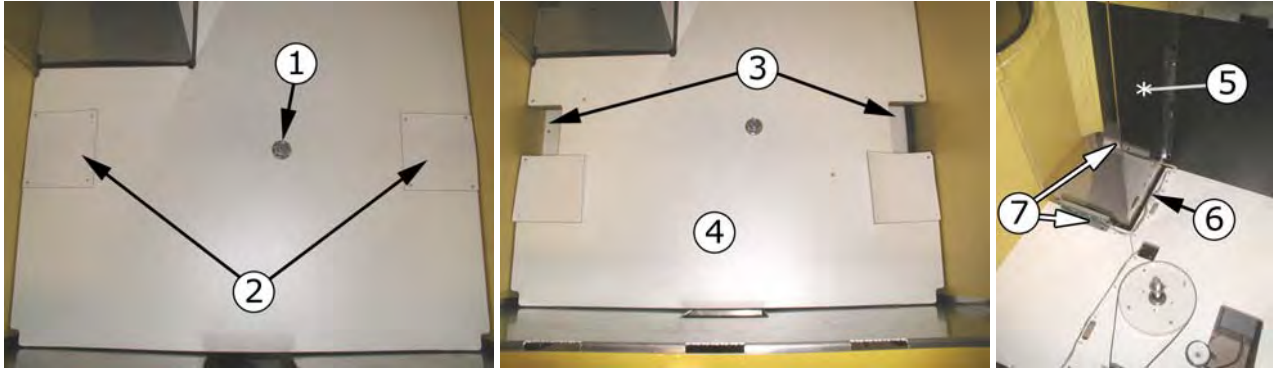
- Disconnect AC power from machine
- Disconnect wire harness to the crane mechanism
- Disconnect wire harness to the crane mechanism side to X-axis Motor Assembly① (if replacing right side glass)
- Remove crane mechanism.
- Remove X-axis Motor Assembly① if replacing right side glass or remove Pulley Assembly② if removing left side glass.
- Loosen, but do not remove (6) Glass Capture Bracket Nuts③.
- Remove Upper Side Panel Securing Nuts④.
- Remove Upper Side Panel⑤ by lifting straight up off of the top of the cabinet.
- With proper ceiling height, slide side glass up and out of Corner Extrusions⑥.
- Fit rubber edging along top and bottom edge of replacement glass.
- Slide replacement glass down into corner pieces until the lower edge seats into Glass Capture Bracket⑦.
- Tighten lower glass secure bracket nuts taking care that rubber edging is properly seated.
- Replace Upper Side Panel⑤, tighten upper Glass Capture Bracket⑦, reinstall X-axis Motor Assembly①, and reconnect harness.



Replace Prize Sensor (Standard Model)

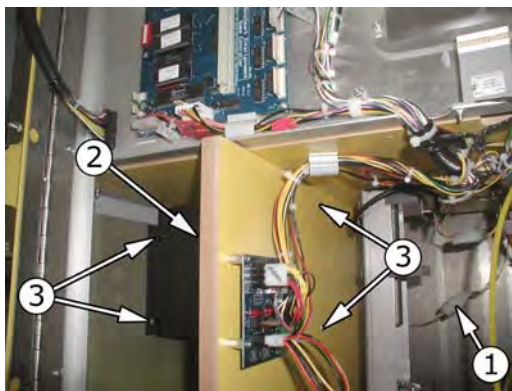
- Disconnect AC power from the machine.
- Open the front door
- Remove all merchandise from machine.
- Remove prize floor hex nut①.

5. Remove (3) screws from each hole cover② and swivel hole covers so that the prize floor holes③ are exposed.
6. Lift prize floor④ out of game using prize floor holes③ as handles.
7. Remove prize chute⑤ by removing _ screws attaching the chute to the left side and the back panels.
8. Disconnect Prize Sensor Harness⑥ from the main harness.
9. Remove prize sensor screws securing prize sensor brackets⑦ in the game.
10. Replace prize sensors, prize chute, prize floor, and hole covers.



Replace Prize Sensor (X-treme Model)

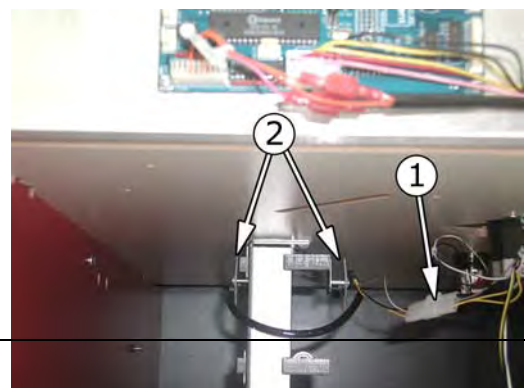
1. Disconnect AC power from the machine.
2. Open the front door
3. Disconnect Prize Sensor Harness① from the main harness.
4. Remove Security Plate② by removing (2) mounting nuts and (2) screws③ to gain easier access to the sensors.
5. Remove mounting screws and nuts securing the Prize Sensors④ to the inside of the prize chute.
6. Replace sensors, reconnect harness, and replace Security Plate.



This view is with front door open, looking into Prize Dispense area.

Replace Floor Lift Sensors

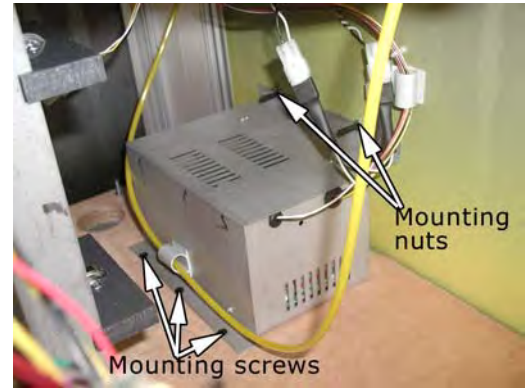
1. Disconnect AC power from the machine.
2. Disconnect Floor Lift Sensor Harness① from main harness.



3. Remove mounting screws securing Floor Lift Sensors②.
4. Replace sensors, and reconnect harness.

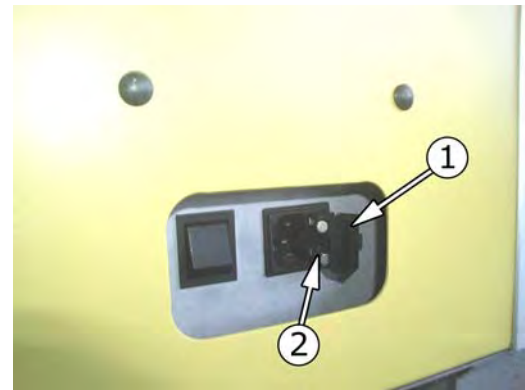
Replace Power Supply

1. Disconnect AC power from the machine.
2. Disconnect harness to power supply.
3. Remove (2) nuts attaching power supply to cabinet side and (3) screws that attach power supply to game bottom.
4. Replace power supply.



Replace Power Input Fuses

1. With a small flat head screwdriver, pull the fuse holder① out. Fuse holder is located next to the power input plug.
2. Tilt the fuse holder cover to the side to access fuses②
3. Replace fuses (5 Amp) and push fuse holder back into position.



Troubleshooting Guide

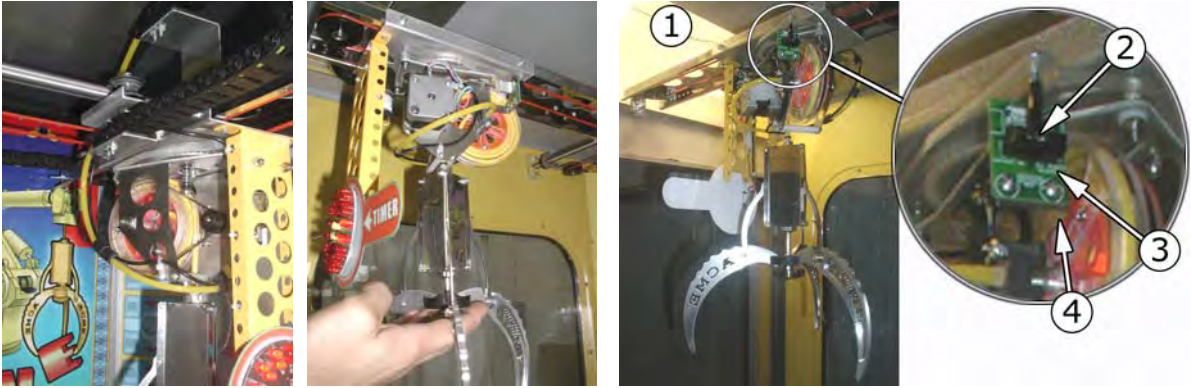
Coin Mechanism will not take coins

- No coin installed or coin improperly installed in coin comparator slot (if using comparator style mechanism).
 - See Game Setup section to see how to install coin properly
- No 12V to coin mechanism (if using comparator style mechanism).

Claw falls over in plush during play before returning.

- Claw weight spring needs adjustment.
 - Turn adjusting nut① clockwise for more sensitivity. Sensitivity should be adjusted so that the claw falls over about 45 degrees before stopping the down travel and returning home.
- Sensor out of alignment

- Check to be sure that the sensor tab① interrupts the opto. When the claw is pushed up toward the top of the cabinet, a LED② on the opto sensor board③ should light up. If it does not, either the sensor tab① is out of adjustment or the opto sensor board③ is bad. To adjust the tab alignment, carefully bend the sensor bracket④ into position.



Claw has little power and air pressure reads low and cannot be adjusted

- There is likely an air leak. Put game into claw adjust mode (see ‘Setting Claw Strength’ in the Adjustment and Settings section) so that the air pump is running constantly. Turn the green adjustment valve clockwise until it closes to pump the maximum air pressure into the system. Check all air line connections.

Claw will not move from front to back or from left to right.

- There is seldom a problem with the stepper motors used to drive the mechanism. The problem is almost certainly a mechanical bind or an electrical connection to the motor(s).
 - Check to see if there is a mechanical bind by moving the claw by hand with the game powered off. The mechanism should move easily. If the mechanism is hard to move, find the mechanical problem.
 - If there is no mechanical bind, check the continuity of wires and connections to the corresponding motors.

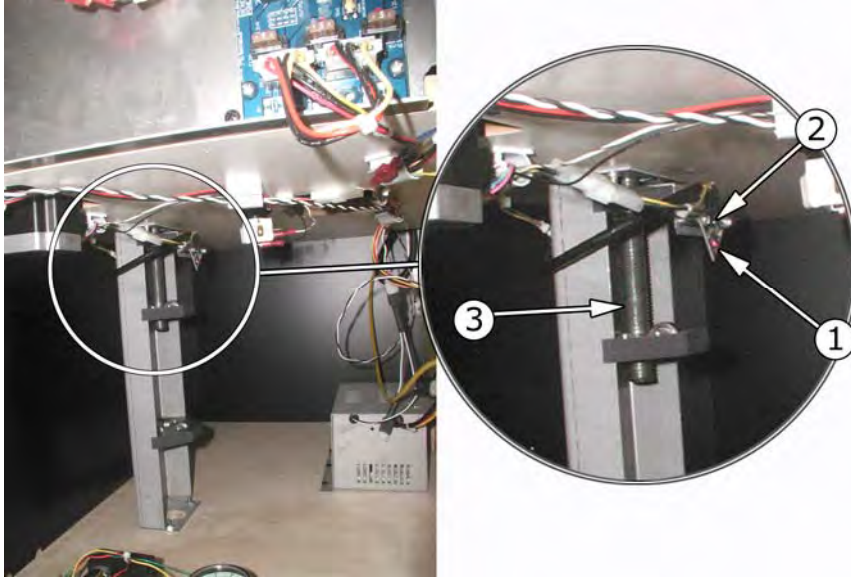
Elevator lifts product too high

- Check programmable adjustment
- Check claw weight spring adjustment. The crane checks the product level by lowering the claw to the playfield in attract mode. If the claw weight spring adjustment is not set properly or if the claw weight opto sensor is not working, the crane thinks the product is too low and will continue to raise the floor.

Elevator lifts the product properly, but keeps running when the floor is all the way up.

- The Elevator upper limit sensor is not working.
 - Clean the opto transmitter and receiver lens (see ‘Clean the Floor Lift Optos’ in the ‘Maintenance’ section).

- The LED① on the sensor board② should be on until the elevator lift rod③ raises to its upper limit. The sensor LED① should then turn off when the elevator lift rod③ lifts up beyond the sensor. The output of the sensor board② should then transition high (+5V). If the LED indicators do not illuminate, or the output does not transition high when the elevator rod lifts beyond the sensor, check the power and connections to the sensor boards. If OK, you may have a bad sensor.



Elevator does not lift

- Check to see that the dip switch setting for Auto Playfield Floor Adjustment is enabled.
- Check connections and continuity to elevator lift motor

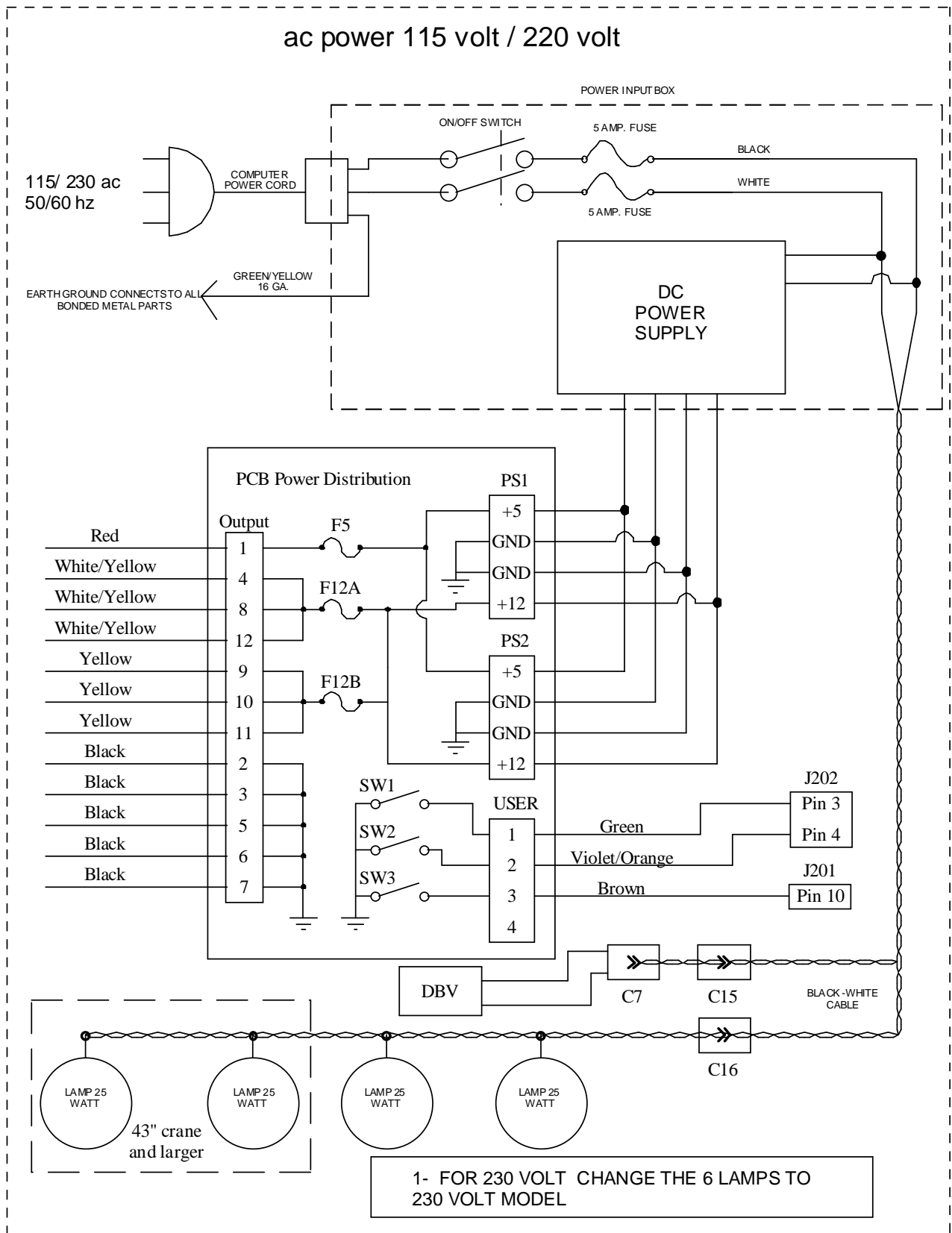
Game will not enter Program Mode

- The game has partial credit on it. Insert more coins until you reach full credit and try again.

No Power Inside Game

- Bad power cord
 - Try another power cord
- Blown power input fuse(s)
 - Follow instructions for 'Replacing Power Input Fuses' in Repair and Maintenance section of this manual

Schematics



Crane Mechanism

