ANGRY BIRDS

Service Manual

Innovative Concepts in Entertainment
10123 Main Street
Clarence, New York 14031

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Rev G 4/28/2017

SAFETY AND WARNINGS BEFORE YOU BEGIN

WARNING: WHEN INSTALLING THIS GAME, A GROUNDED A.C. RECEPTACLE MUST BE USED. FAILURE TO DO SO COULD RESULT IN INJURY TO YOURSELF OR OTHERS. FAILURE TO USE A GROUNDED RECEPTACLE COULD ALSO CAUSE IMPROPER GAME OPERATION, OR DAMAGE TO THE ELECTRONICS.

NOTE: THIS GAME IS INTENDED FOR INDOOR USE ONLY.

DO NOT DEFEAT OR REMOVE THE GROUNDING PRONG ON THE POWER CORD FOR THE SAME REASON AS GIVEN ABOVE. USING AN IMPROPERLY GROUNDED GAME COULD VOID YOUR WARRANTY.

HAVE A QUALIFIED ELECTRICIAN CHECK YOUR A.C. RECEPTACLE TO BE SURE THE GROUND IS FUNCTIONING PROPERLY.

THIS GAME IS DESIGNED TO DISSIPATE STATIC ELECTRICITY THROUGH THE GROUNDING PLANE OF THE GAME. IF THE A.C. GROUND DOES NOT WORK, THE GAME COULD DISCHARGE STATIC ELECTRICITY THROUGH THE GAME CIRCUITRY, WHICH COULD CAUSE DAMAGE.

THE POWER SUPPLY IS NOT VOLTAGE ADJUSTABLE. TO OPERATE THE GAME AT VOLTAGES OTHER THAN THOSE IT WAS DESIGNED FOR. PLEASE CONTACT OUR SERVICE DEPARTMENT FOR VOLTAGE CONVERSION INFORMATION.

WARNING

DO NOT remove any of the components on the main board (e.g. compact flash and eproms) while the game is powered on. This may cause permanent damage to the parts and the main board. Removing any main board component part while powered on will void the warranty.

ALWAYS REMOVE POWER TO THE GAME, BEFORE ATTEMPTING ANY SERVICE,

UNLESS NEEDED FOR SPECIFIC TESTING. FAILURE TO OBSERVE THIS PRECAUTION

COULD RESULT IN SERIOUS INJURY TO YOURSELF OR OTHERS.

THIS GAME IS NOT SUITABLE FOR INSTALLATION IN AN AREA WHERE A WATER JET COULD BE USED.

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

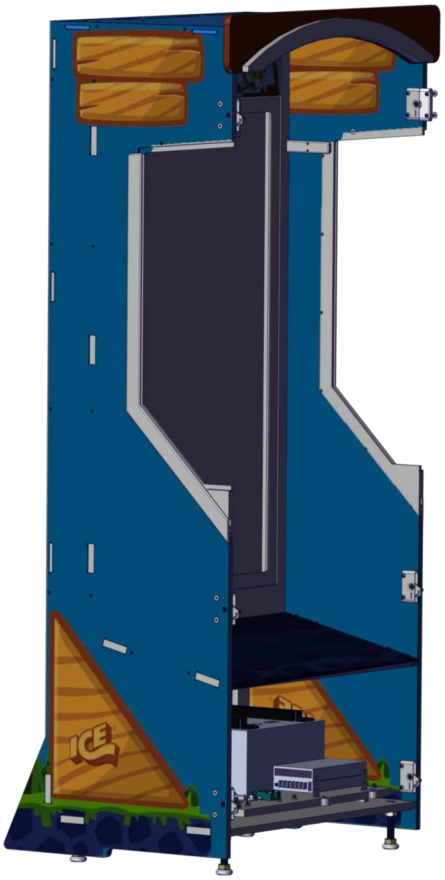
AC Power Information

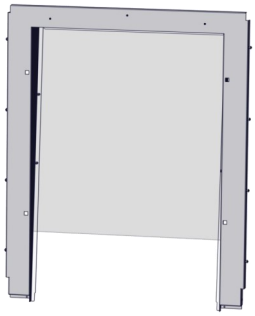
The games main fuse is accessed through the back of the game at the power mod. Above the power cord is a small panel that contains the main fuse.

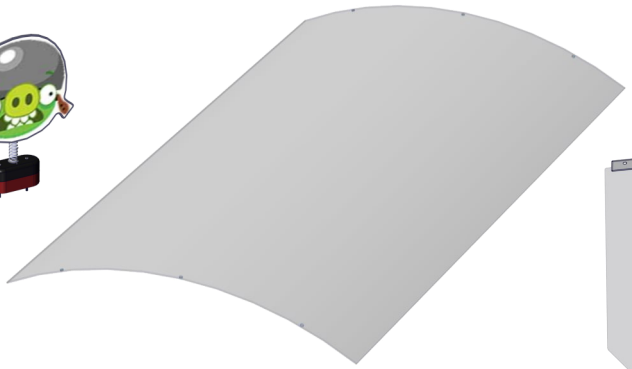
The value of the fuse for 120 volt users is 6 AMPS at 250Volt type slow blow.

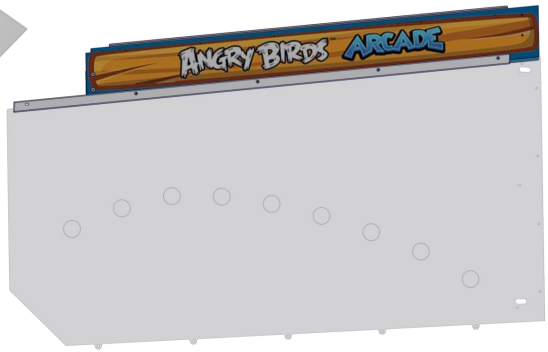
The value of the fuse for 230 users is 4 AMPS at 250Volt type slow blow.

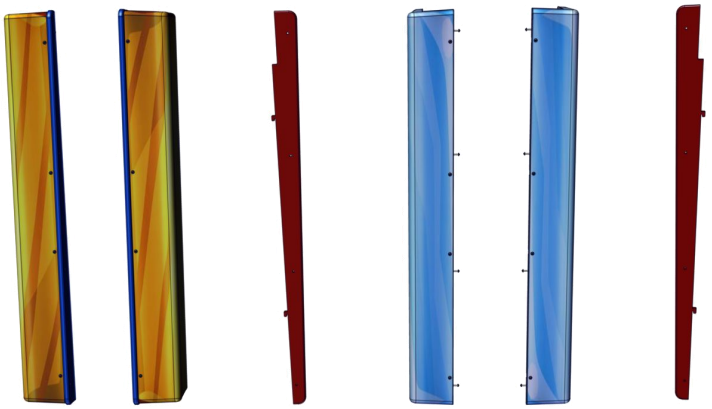
See below for parts included to assembly your game. Before discarding any packaging be sure to check for all the below items. Some items might already be installed onto your game.

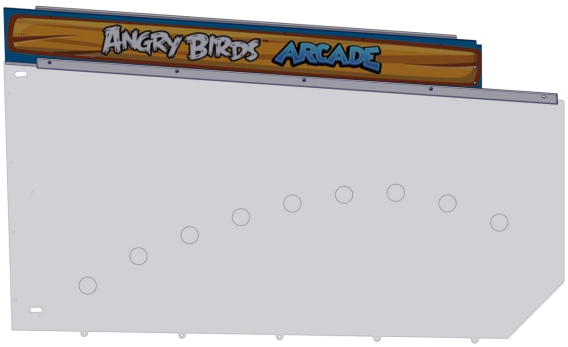






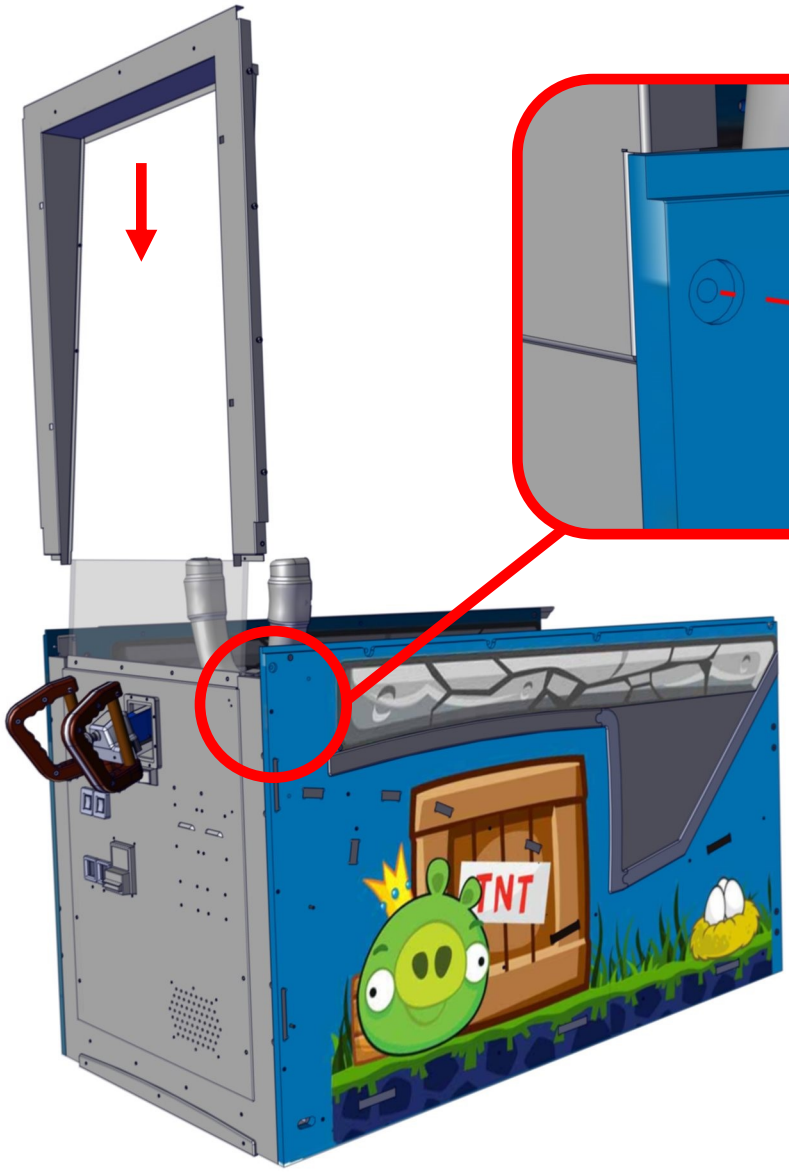






If any parts are missing please contact ICE Service at (716) 759-0360 Mon-Fri 9am to 6pm Eastern Standard.

Your game might already be partially together and only the marquee and atrium needs to be installed. Skip ahead to the steps required to install the marquee and atrium.



Step 1

Slide the front panel assembly onto the bottom cabinet. Be sure the drawer can still open (Front glass must be on the outside).

Attach on both sides with AA6048 and AA6075 silver washer.

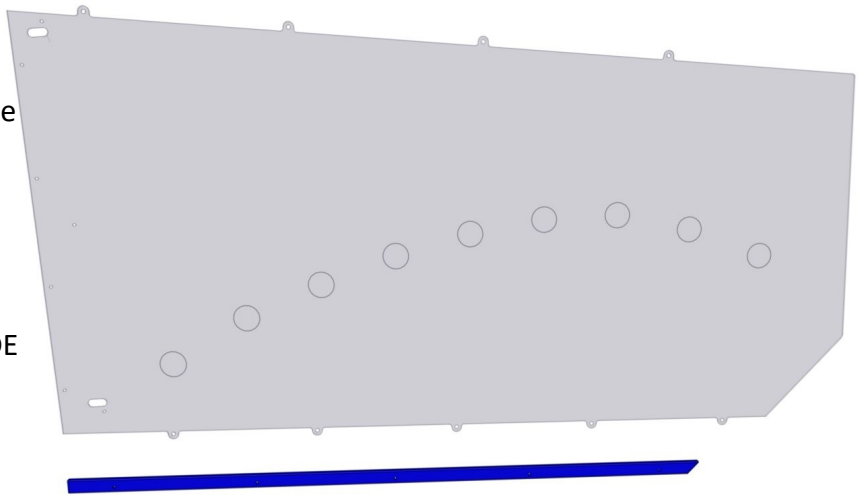
DO NOT TIGHTEN YET.

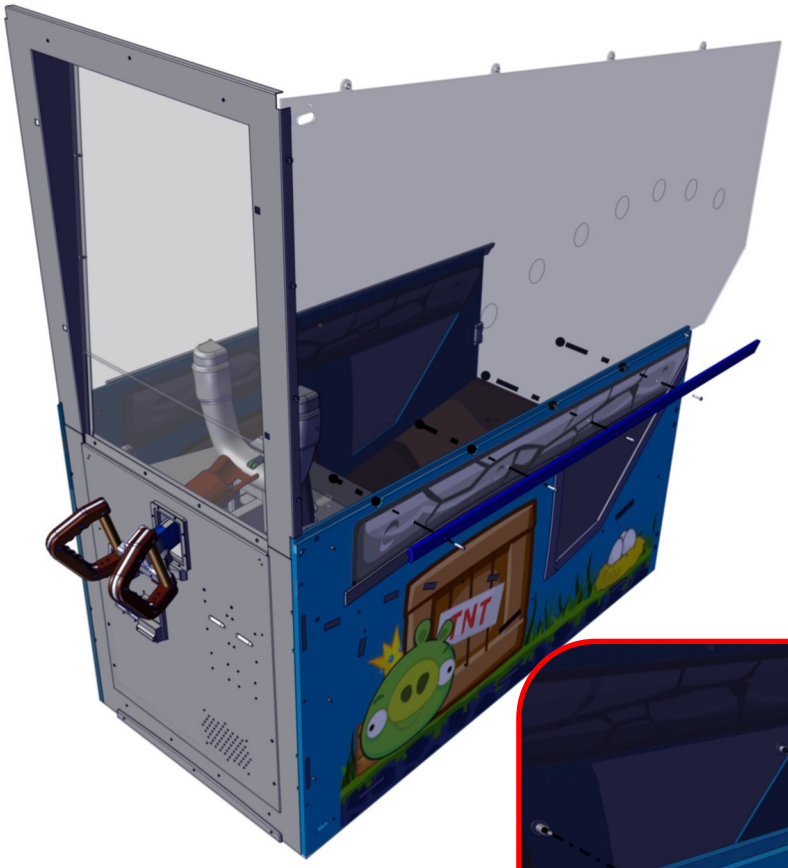
Step 2

Locate the right side panel. The cut for the circles should be on the inside of game.

Warning

DO NOT INSTALL THE CUT TO THE OUTSIDE OF THE CABINET. This can injury players.





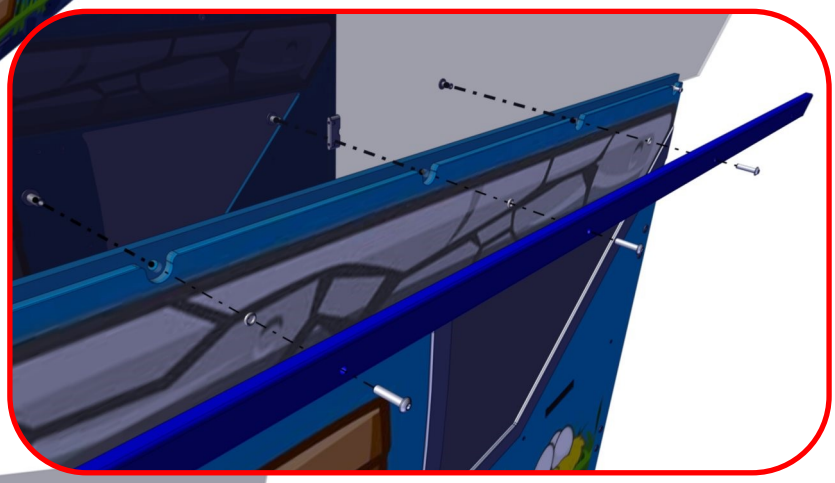
Step 3

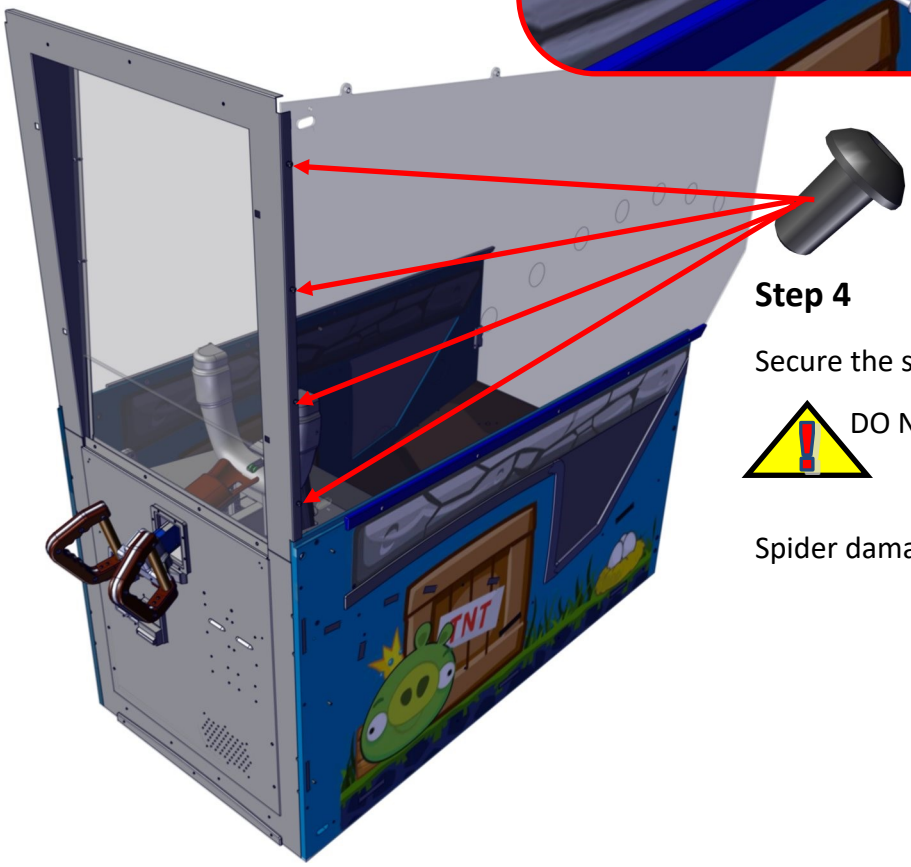
Attach the lower half of the panel using AA6799 1/4-20 Allen bolts on the outside. To keep the bolts in place, attach AB4202 rubber rings behind the blue plastic strip.

On the inside secure the bolt with AA6444 hat nut.

DO NOT OVER TIGHTEN THE BOLT!

Damage will occur to the mounting holes on the side plastic.



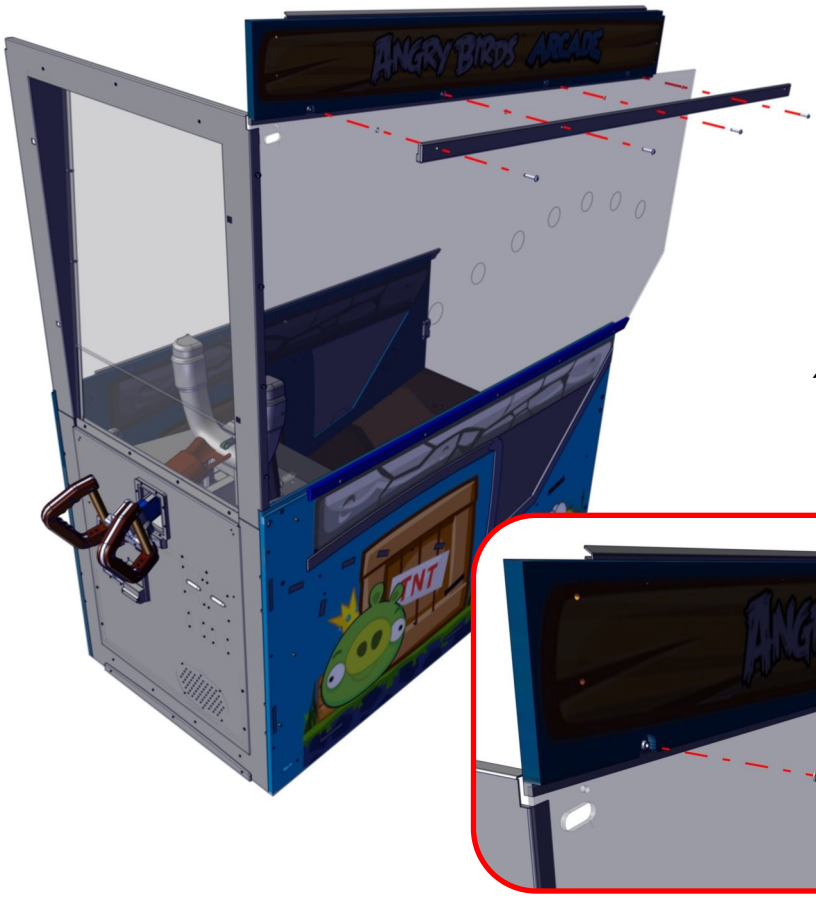


Step 4

Secure the side using four AA6800 1/4-20 bolts.

DO NOT OVER TIGHTEN THE BOLT!

Spider damage can occur to the side plastic.



Step 5

Attach the upper support to the top of the panel using AA6799 1/4-20 Allen bolts on the outside. To keep the bolts in place, attach AB4202 rubber rings behind the upper blue plastic strip.

On the inside secure the bolt with AA6444 hat nut.

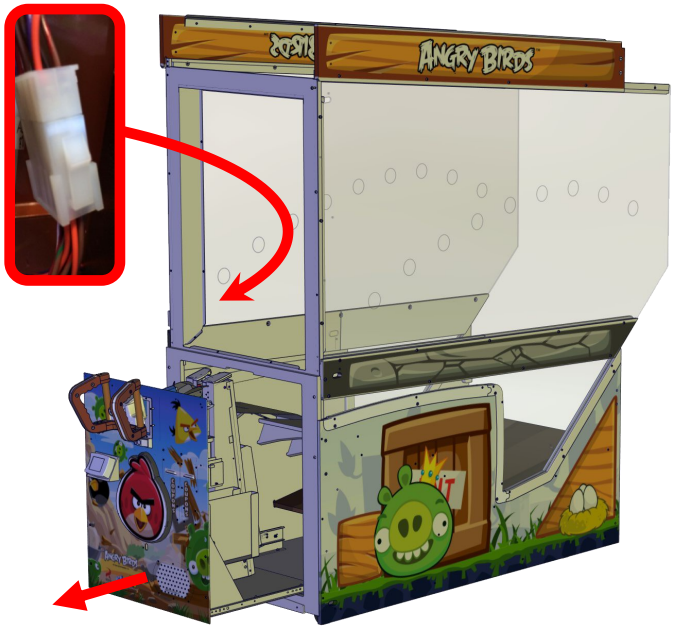
DO NOT OVER TIGHTEN THE BOLT!

Damage will occur to the mounting holes on the side plastic.

REPEAT FOR THE LEFT SIDE BEFORE CONTINUING

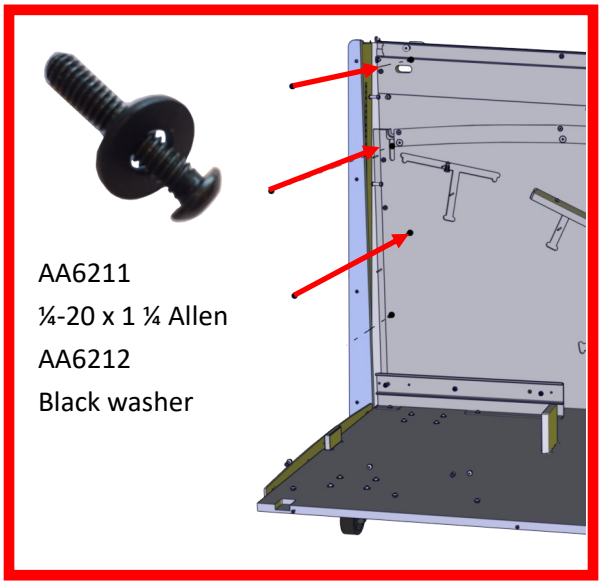
Step 6

Connect the four pin harness located on the left side. This powers the LED's for the upper marquee.



Step 7

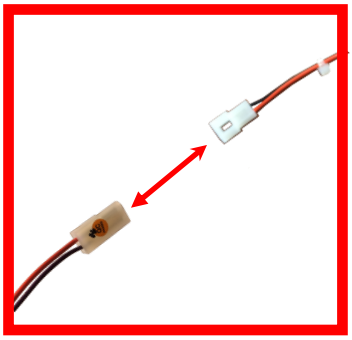
Open the shooter drawer, locate the lower side corners and attach using three AA6211 ¼-20 x 1 ¼ Allen's and AA6212 black washer. Then plug the bottom LED harnesses in.



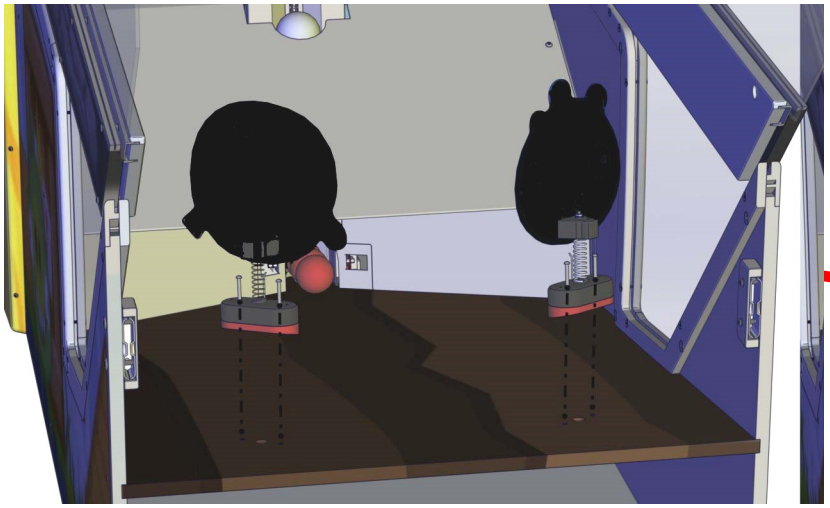
Step 8

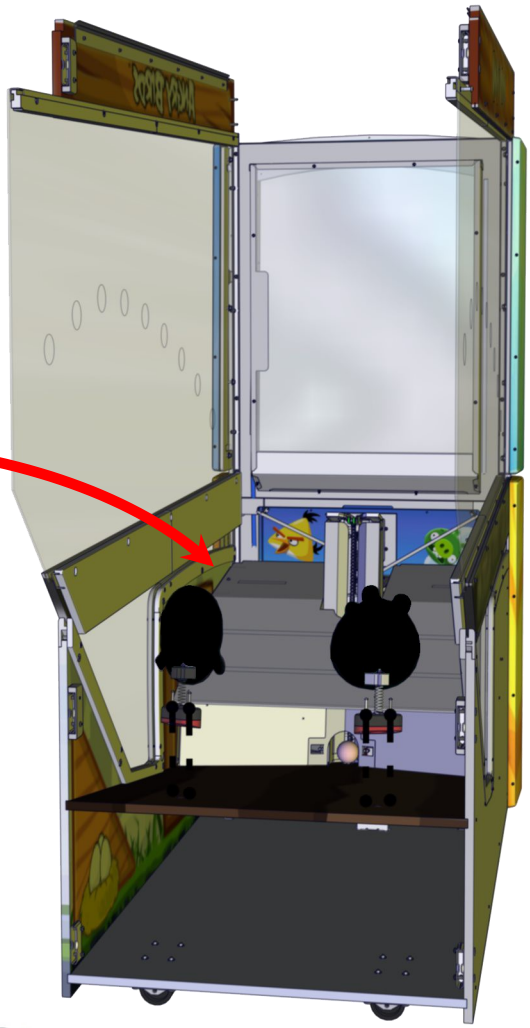
Attach the upper side corners to the cabinet using three AA6211 1/4-20 x 1 1/4 Allen and AA6212 black washers.

NOTE: The plastic spacers are double tapped to the corners, it might be necessary to adjust them in order for the bolt holes to be clear.



Step 9





AA6770

From front of game:

Black eyed pig goes to the left.

Helmet Head goes to the right.

Spring faces toward back of game.

Connect Harnesses.

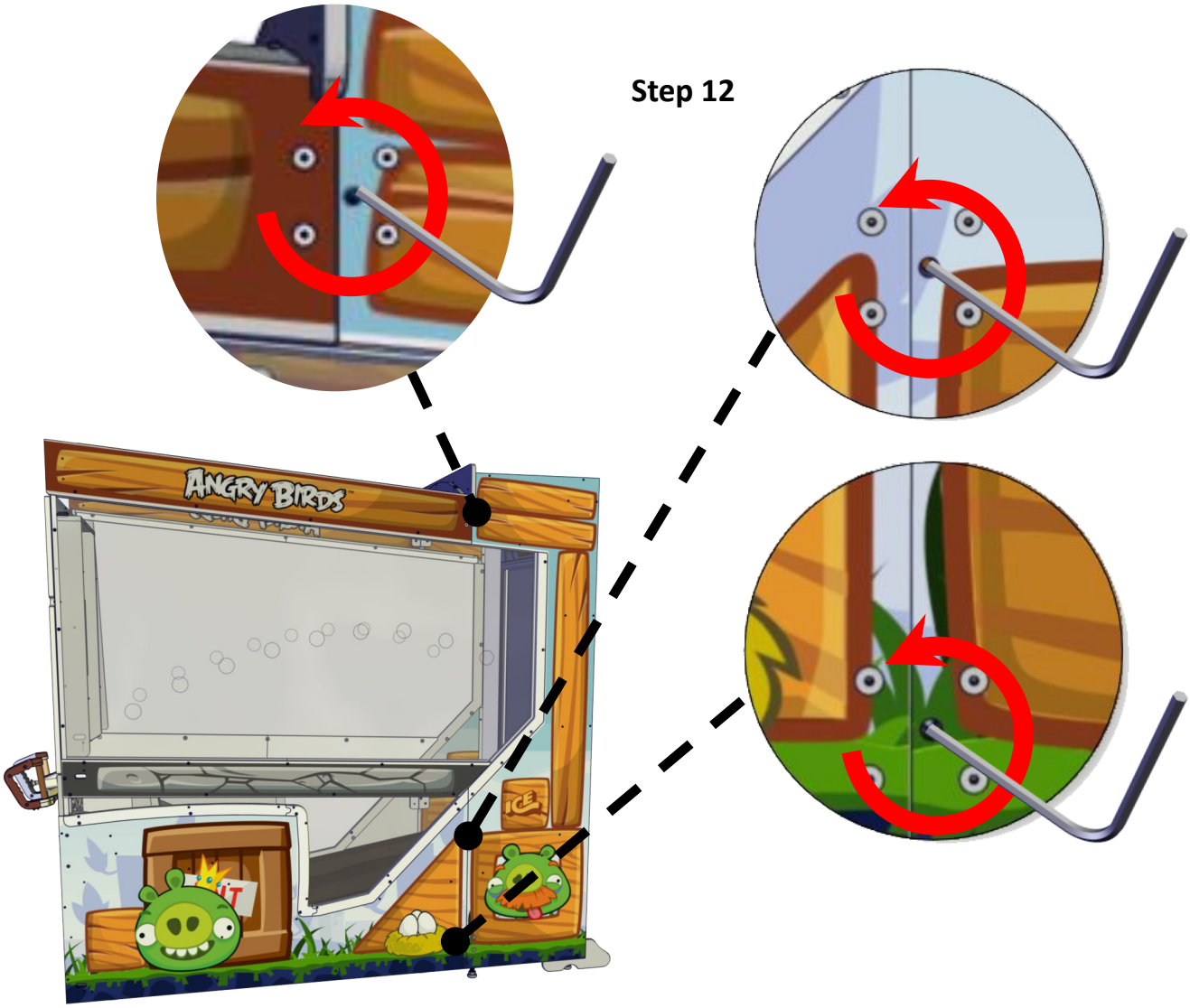
Step 10

Step 11

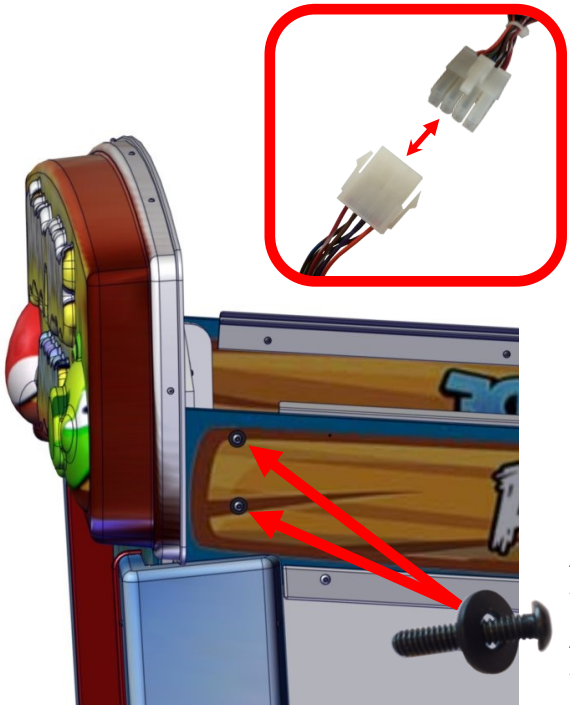
AA6211
¼-20 x 1 ¼ Allen
AA6212
Black washer

Both Sides

Step 12



Step 13



AA6270
¼-20 x 1¾ Allen
AA6212
¼ x ¾ Black washers

Both Sides

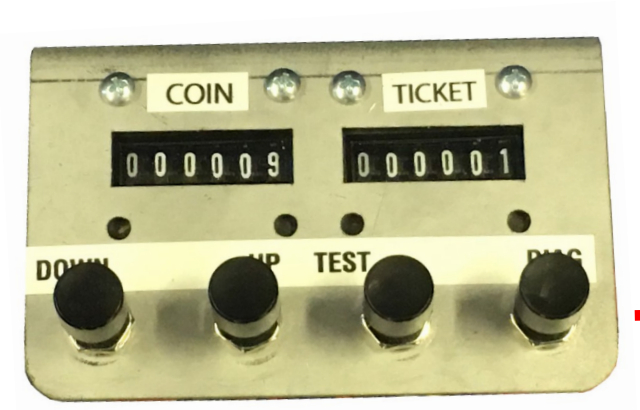
Step 14

Game controls and Meters

Unlock and open the front drawer to access the games' operator control panel. Press the "DIAG" button to enter program mode. Then navigate the menus by pressing the "Up" and "Down" buttons. Press the "DIAG" button again to select or change an option. Press the "TEST" button to exit out of a menu.

Pressing the "TEST" button when in game mode will give a credit.

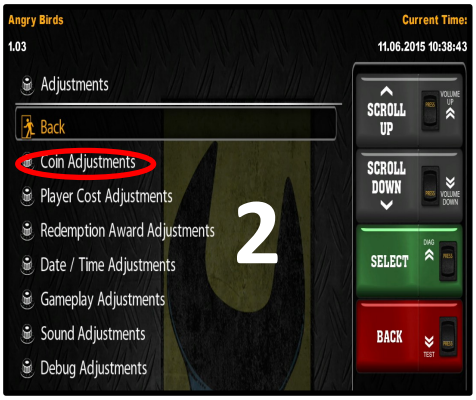
Pressing the "UP" and "DOWN" buttons will also change the volume level when not in programming.

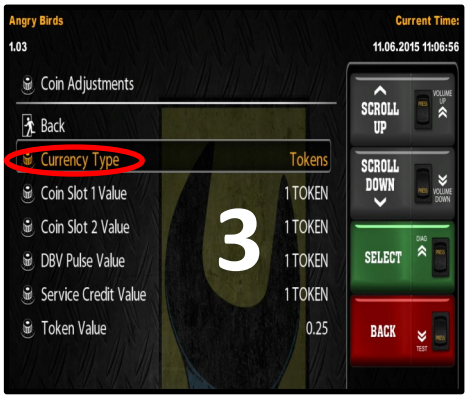


Angry Birds Programming:

There are a few options that need to be configured before you can operate your Angry Bird game.

The first option you need to configure is what type of currency you will be accepting. The currency can be US Dollars, foreign currency (select your country), coins, tokens, or swipes. For each of these you need to configure what each pulse is worth. From the main menu navigate to the menu “Adjustments”[1], and then select “Coin Adjustments”[2]. Now select “Currency Type” [3] and pick which type of currency you will accept.

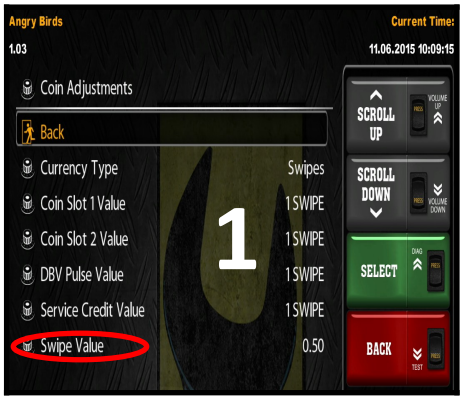


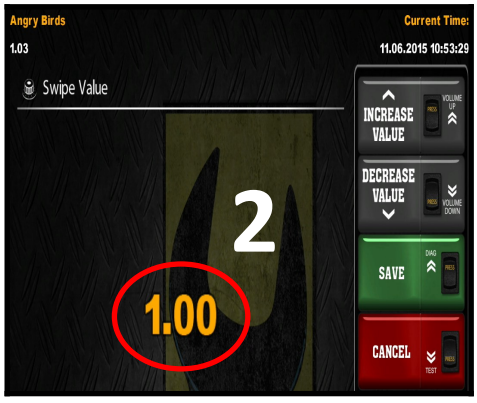


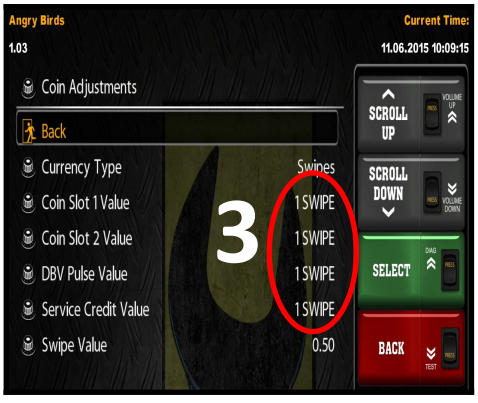
Now that you have selected the currency type you must define what it is worth to the game and how much each coin line is worth. This menu changes depending on what type of currency you have selected.

If you had selected “Swipe” as your currency, then you would select “Swipe Value” [1] and then define what each swipe is worth [2]. You would set each coin line equal to 1 Swipe [3]. So each time the game sees a pulse on any coin line, it will consider this as 1 swipe and credit the game 1.00.

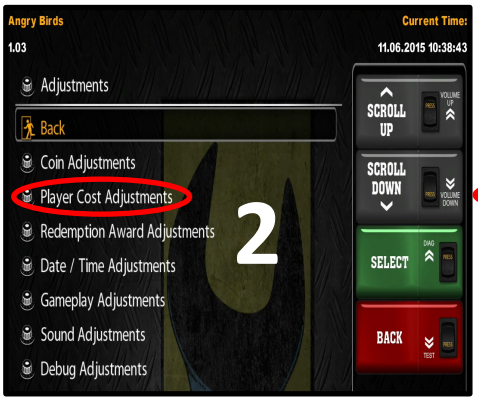
This doesn’t set the cost of play! “Player Cost Adjustments” determines the cost of play!

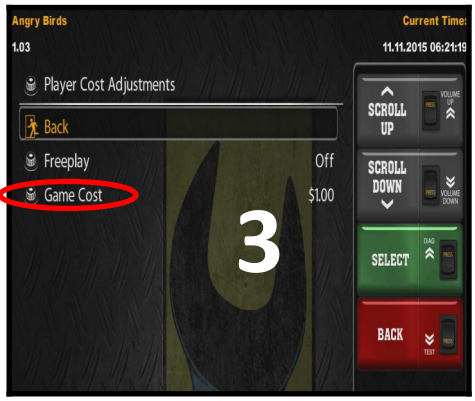




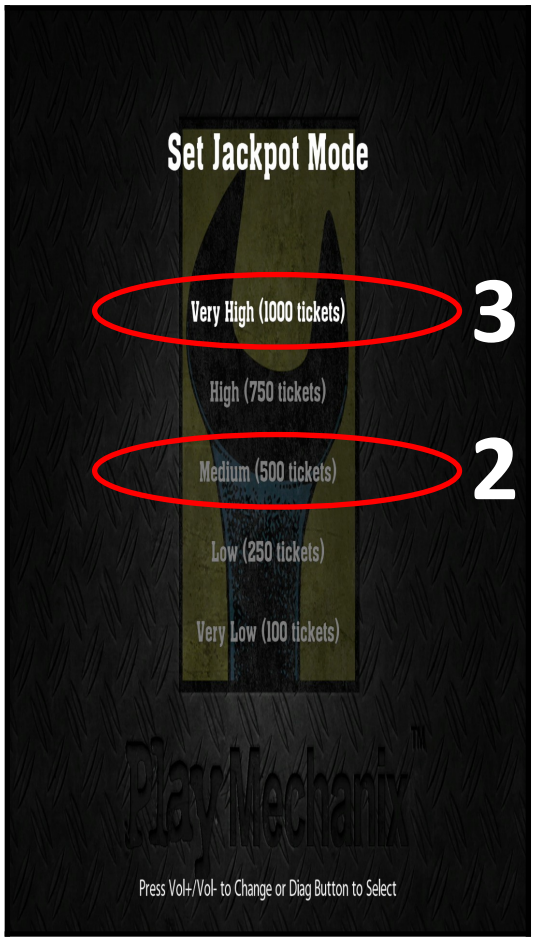


The next option is to determine the cost of play. Under the main menu, select “Adjustments” [1], then “Player Cost Adjustments” [2], and then “Game Cost” [3]. If you set the previous options under “Coin Adjustments” to 1 swipe per coin line and 1.00 per swipe, the game will credit each time a player swipes their card if you set Game Cost to 1.00. If you wish to charge more per play, increase the value of the swipe and then adjust the game cost to equal so that one swipe will always start a game.

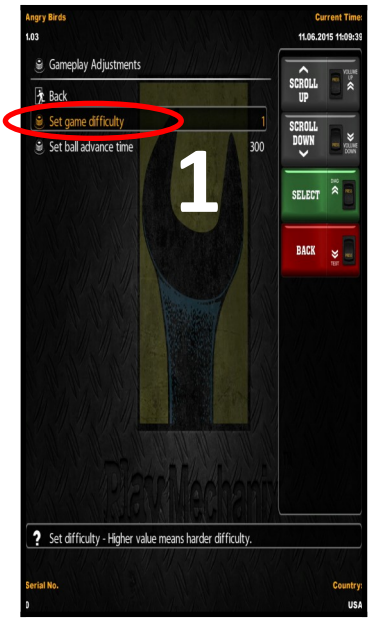


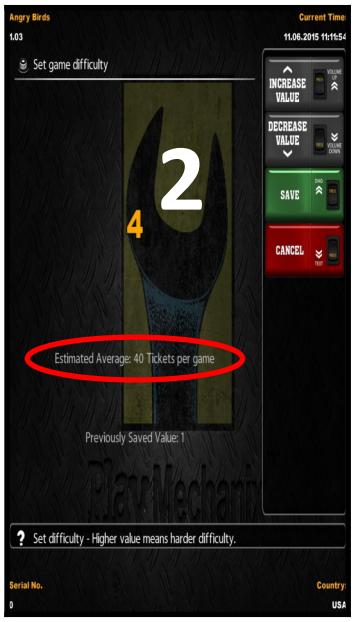


The next option is to select which Jack pot you want to use. Depending on your cost of game these values can change. Select “Set Jackpot Mode” [1]. Then select your Jackpot amount. It is recommended to use 500 tickets if charging $1.00 per game [2] and 1000 tickets if charging $2.00 a game [3].



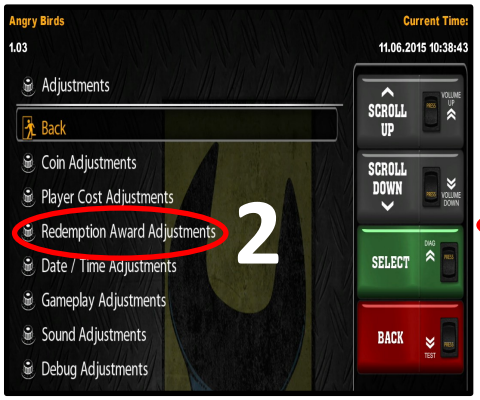
The next option to set is the game's difficulty level. There are 10 different difficulty levels to choose from. The higher the difficulty number the more difficult the game becomes. Each difficulty level shows the average amount of tickets won on this setting. The higher the difficulty setting, the less average amount of tickets are won.

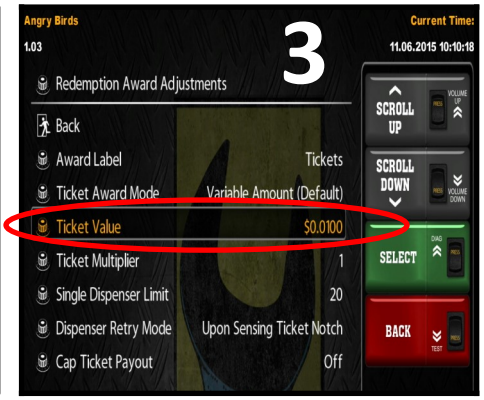




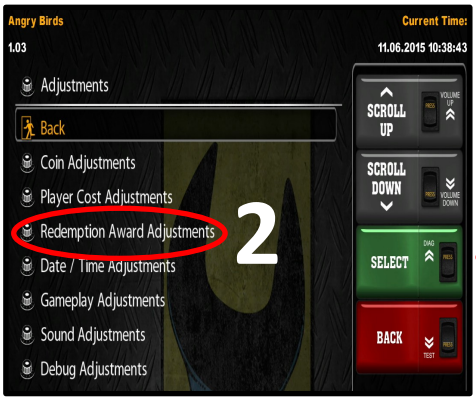
ADVANCE SETUP

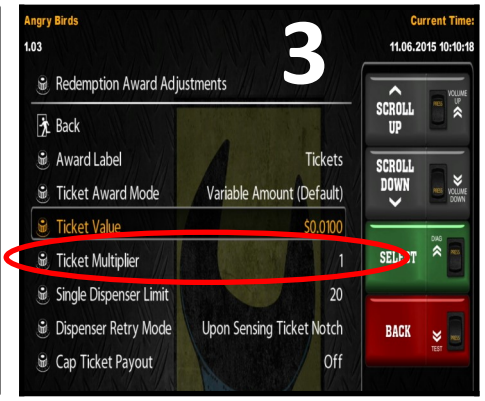
In some cases you might have a different value ticket. By default the game uses a ticket value as .01 cent. If your tickets are a different value, select "Adjustments" [1], then select "Redemption Award Adjustments" [2],





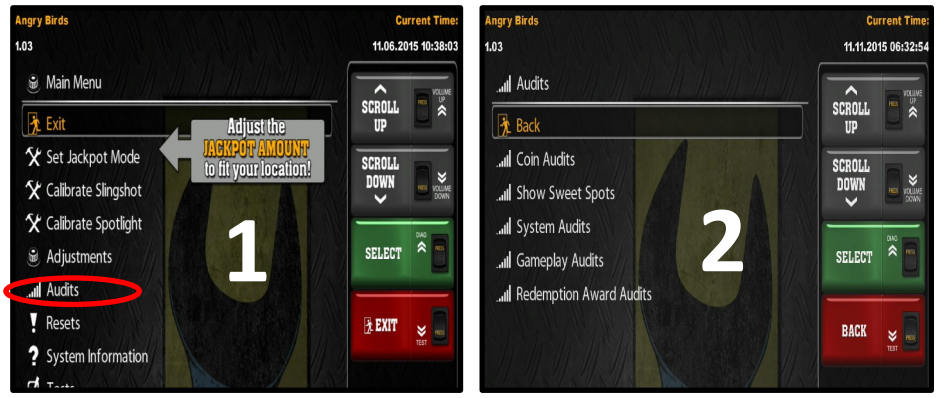
Another option you might want to change is if you are using 2 point tickets or in other words tickets that are worth two tickets. In this case, select "Adjustments" [1], "Redemption Award Adjustments", and then you





Audits

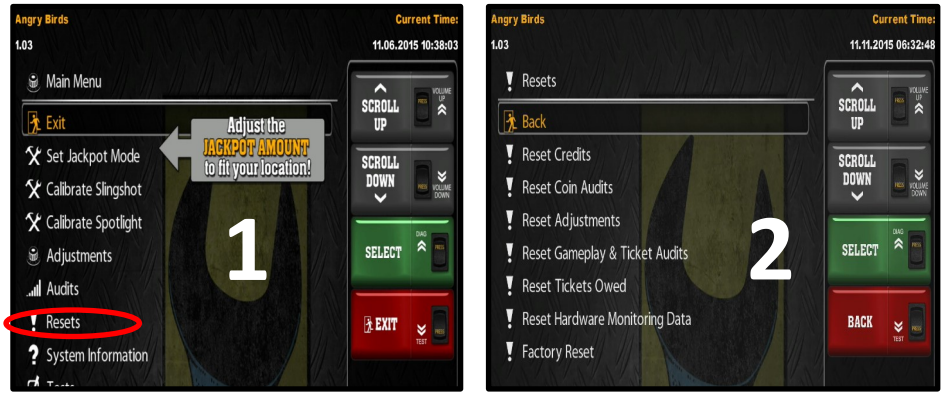
The game keeps records of money in, system info, gameplay, and tickets. This information is accessed from the main menu by selecting “Audits” [1]. The next menu shows the available audits to view [2].



Reset

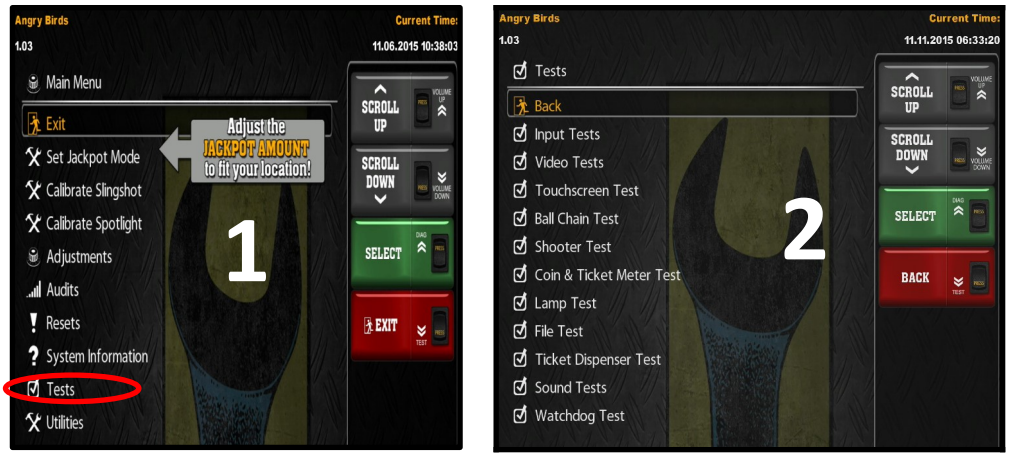
The reset menu allows you to reset coin audits, zero out any credits, ticket plus game audits, any tickets owed, hardware monitoring audits, and other adjustments. It also allows you to do a factory reset.

The reset menu is accessed from the main menu by selecting “Resets” [1]. The next menu shows the available resets options [2].



Tests

The game has many diagnostic tests to help in trouble shooting your game. The test menu is accessed from the main menu by selecting “Tests” [1]. The next menu shows the available tests you can run [2].

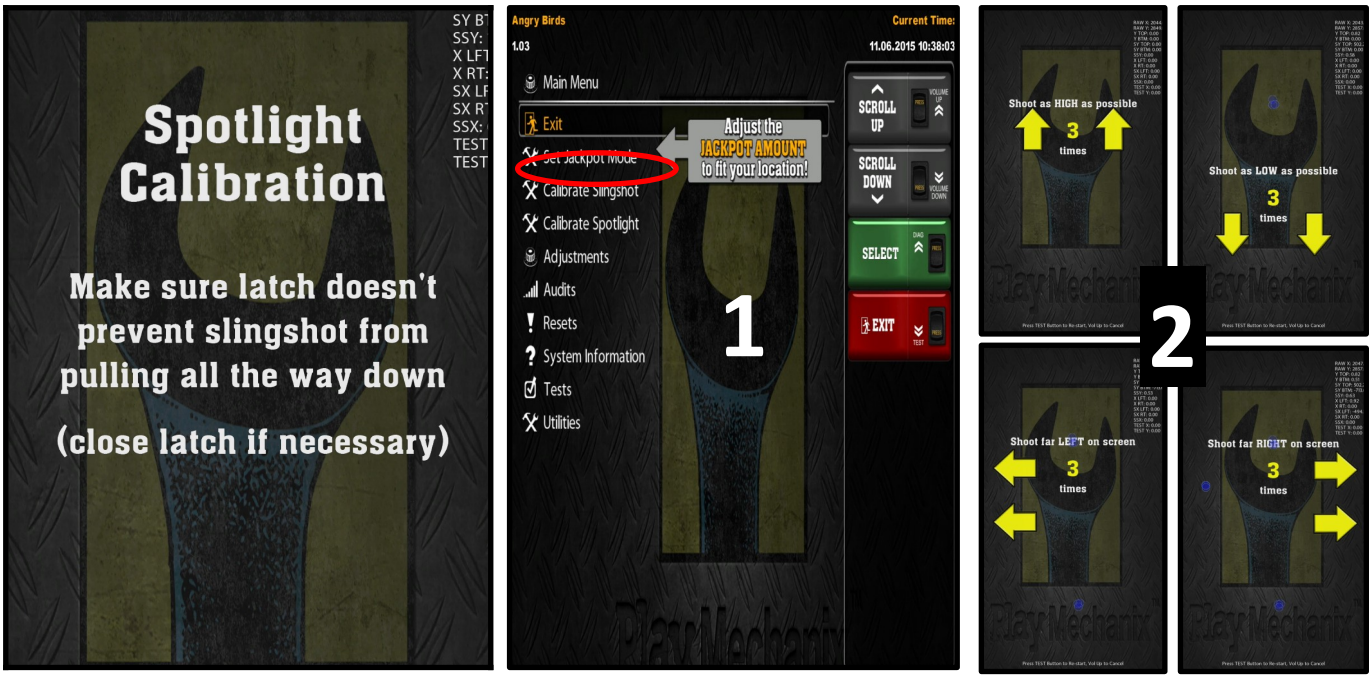


Calibrations

The game has two different calibrations which both need to be preformed if any work has been preformed on the slingshot assembly, if the software was reloaded or updated, or balls are replaced.. Failure to do so will cause poor game play and overall a terrible experience for the player. The slingshot will not function correctly.

The two different calibrations are the “Spot Light” and “Slingshot”. The spot light calibration keeps the game play centered while the slingshot calibration aligns the minimum and maximum heights the game can use.

To preform the “**Spot Light Calibration**”, from the main menu select “Calibration Spotlight” [1]. Shoot balls 3 times at the top, bottom, left and right of the screen per instructions [2]. Once finished, test the spot light function [3]. The balls should shoot where the spot light is shown.



** When changing the game’s balls, they must be changed in pairs, never mix old with new.

** Anytime balls are changed you MUST do a spotlight calibration.

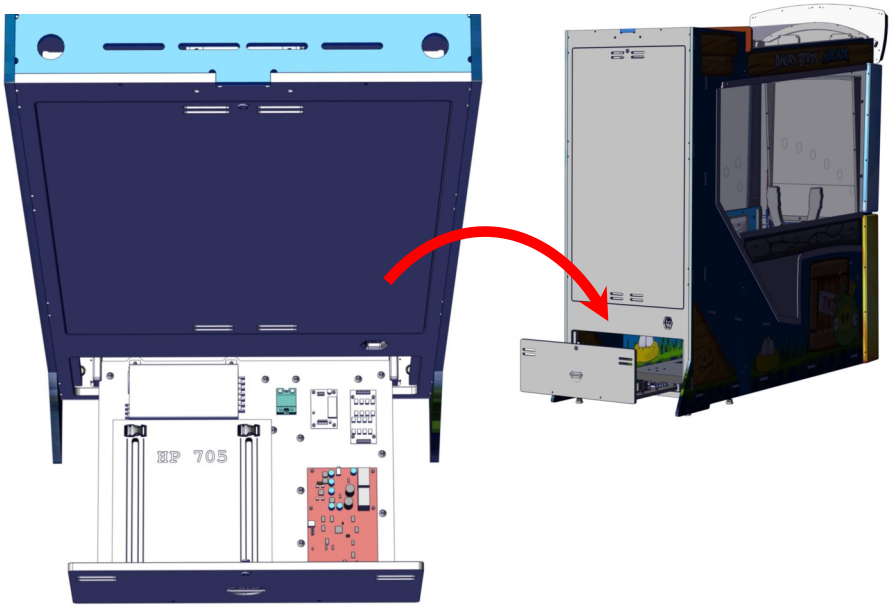
** When shots are weak check hardness of balls and replace if needed.

To preform the “**Slingshot Calibration**”, from the main menu select “Calibration Slingshot” [1]. Move the sling shot assembly to the upper left corner and press “DIAG” button [2]. Now aim the sling shot assembly to the lower corner of the screen and press “DIAG” button [3].

Again, make sure the latch for the lock prevent the slingshot from puling all the way down.

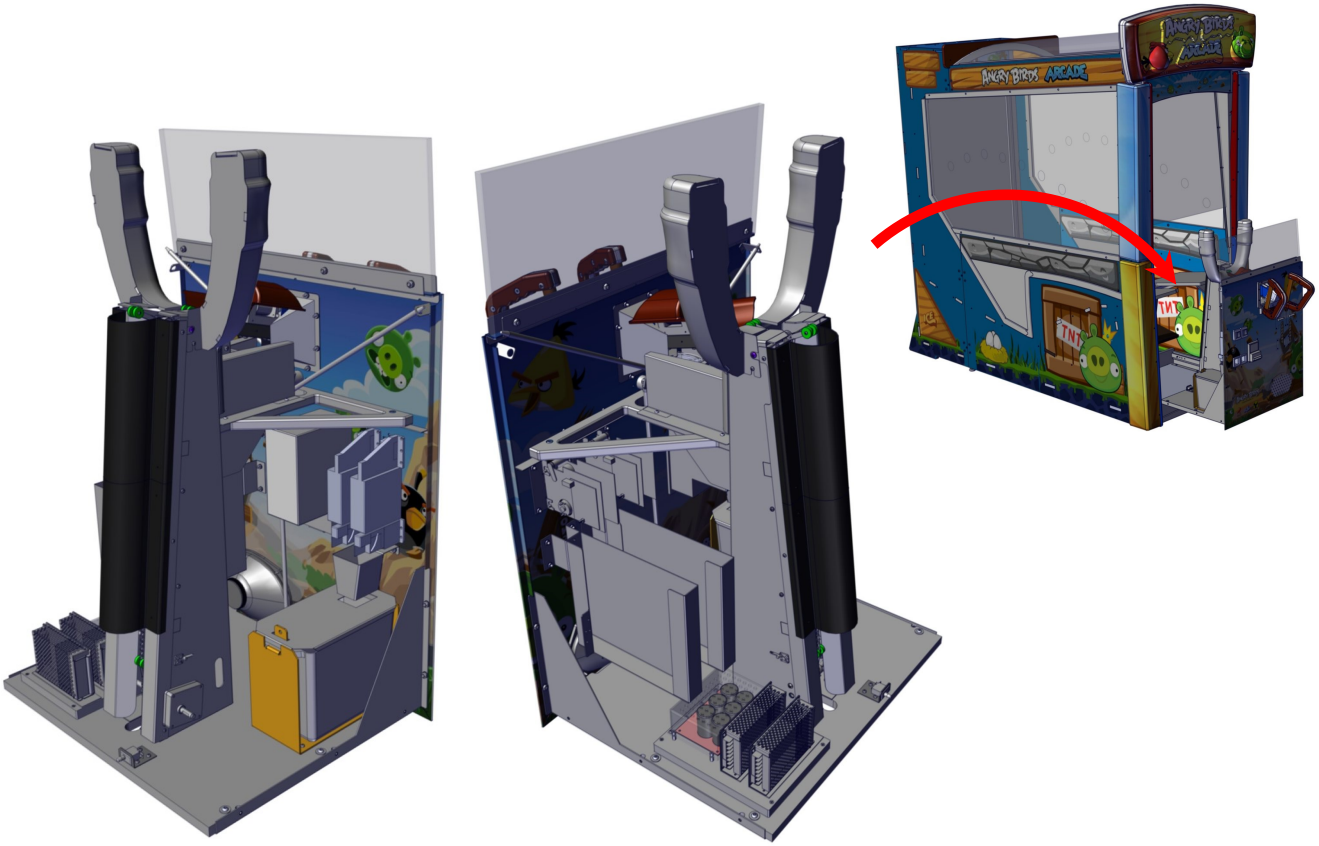
Back Drawer Layout

Located at the back of the cabinet is the computer, I/O board, Solid state relay, +5 regulator board, +12 VDC fuse protection block and game monitor power supply (+24 VDC).



Front Drawer Layout

Located in the front drawer is the elevator assembly, shooter assembly, power supplies, operator control panel with meters, ticket dispensers, DBV (optional) coin mechanisms, and cashbox.

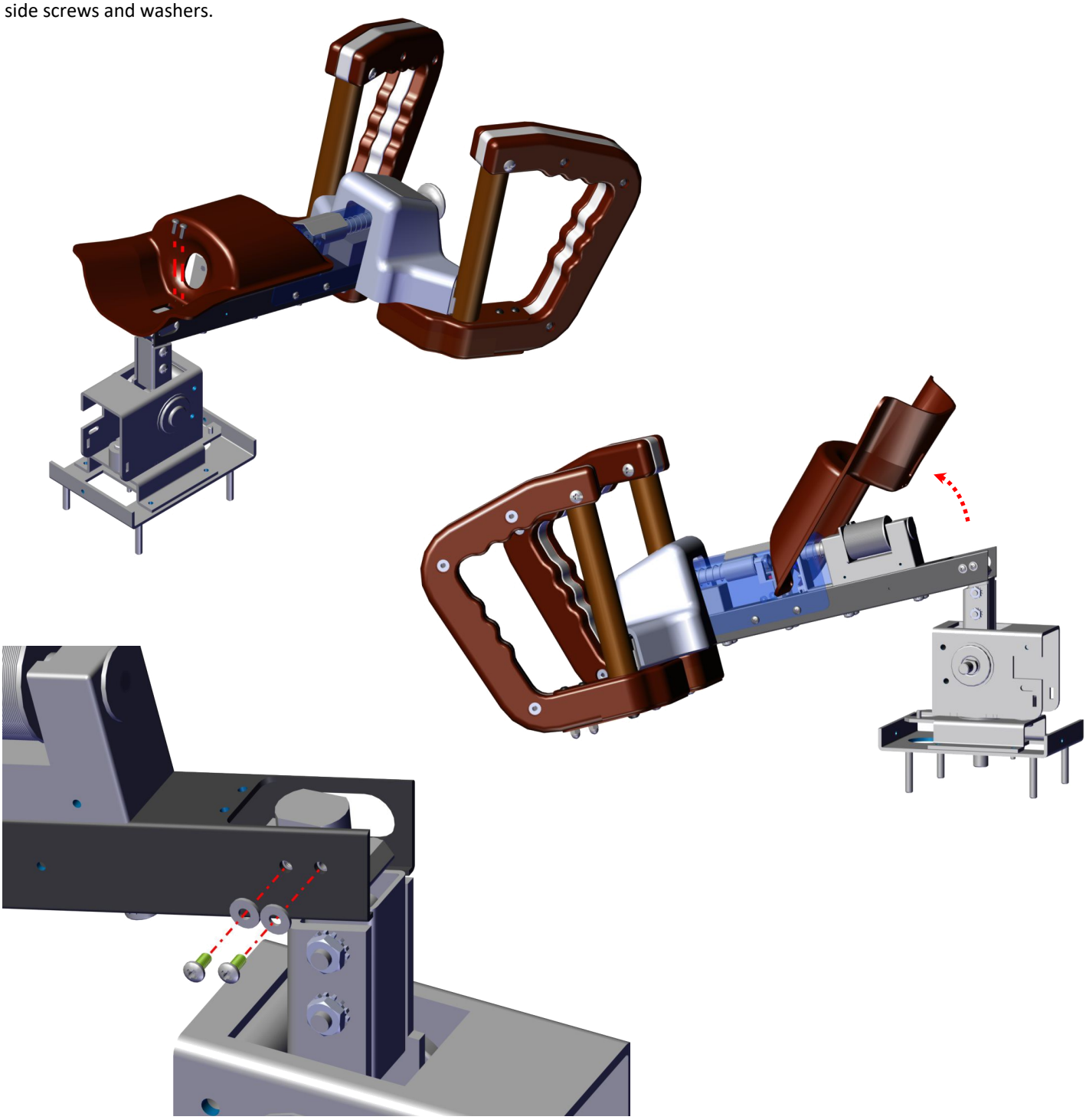


Ball “Tray” Switch : Theory and Trouble shooting

Located at the front of the shooter assembly and at the top of the elevator is a small optic sensor which when blocked tells the game a ball has been loaded into the ball tray. If the sensor is dirty or defective the ball elevator will continuously run until it times out and displays an error.

Normally the sensor will have +5VDC present on the grey wire. When the sensor is blocked the grey wire will have 0 VDC.. To test the function of the switch attach your red probe to the grey wire and the black probe to the black wire. You can also attach the red probe to pin 2 of P8 on the main board. Then connect the black probe on either pins 4,5,9, or 10. Set the meter to Voltage DC. The display should show +5 volts. When the sensor is blocked the display should go to 0 volts.

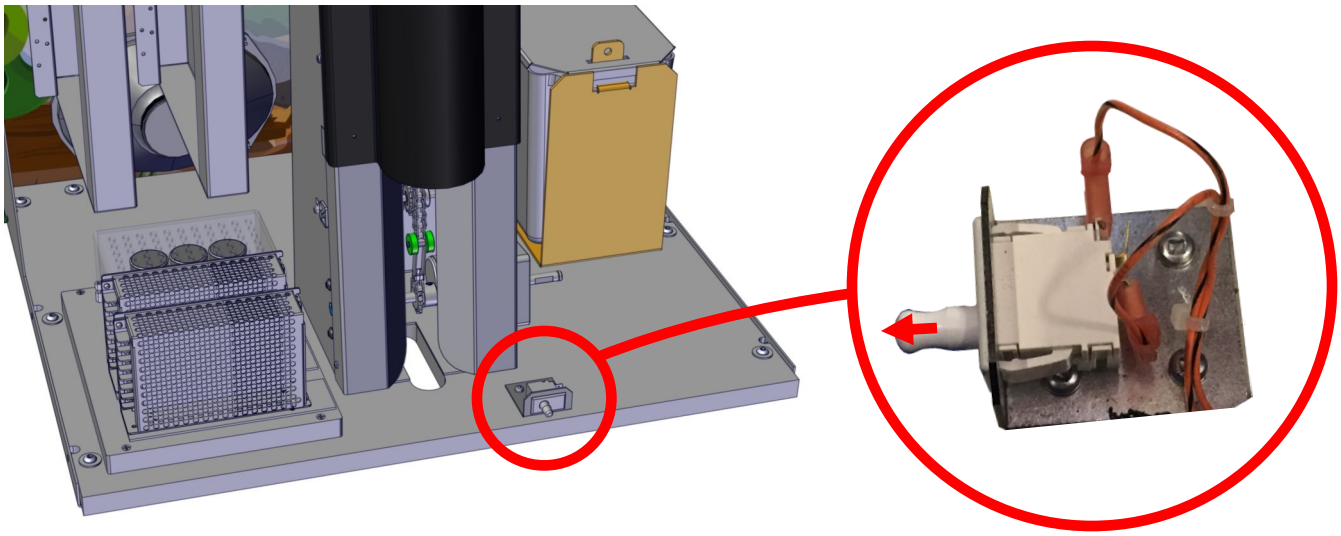
To remove the sensor remove the back plastic ball cup. It is held down with two #1 Phillips screws. Be very careful not to strip the heads when removing or reinstalling. You do not need to cut the tie-wrap at the back. Lift up the ball cup. Then remove the two side screws and washers.



Drawer “Safety” Switch

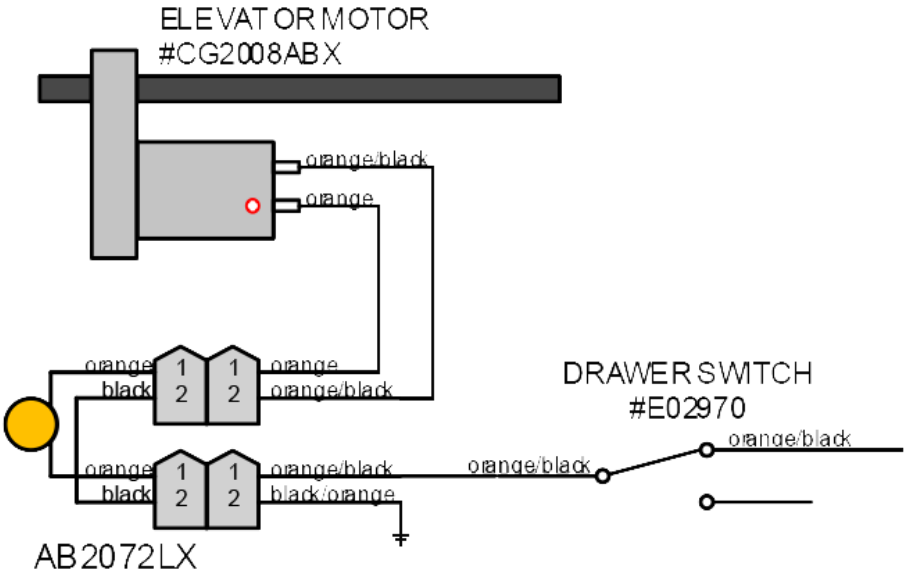
Located at the back of the front drawer assembly is the safety switch. When the door is in the closed position the switch allows the 12 volts of DC to power the elevator. When the drawer is in the open position the switch will disable the 12 volts to the elevator.

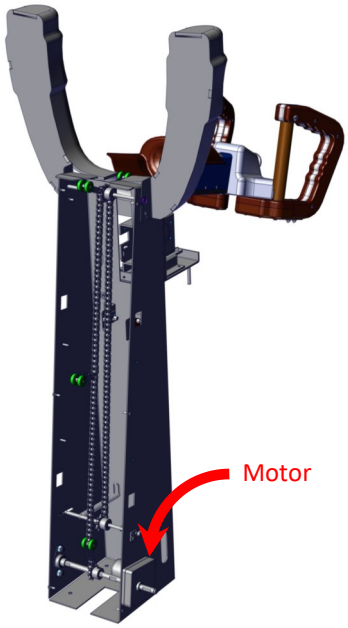
To service the elevator you will need to temporary disable the safety switch. Open the drawer and pull the tab out of the switch.



Elevator

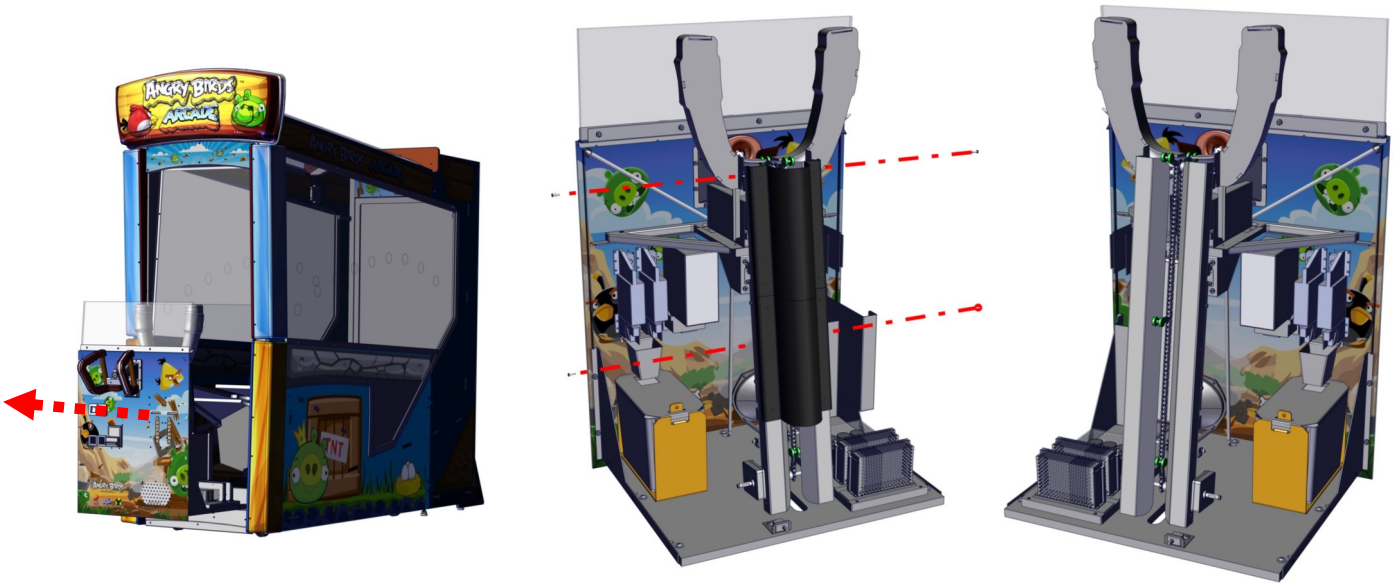
The elevator will activate when no ball has been detected in the ball tray. The motor which drives the elevator is powered through a poly-fuse. This is a resettable fuse which will reset when cooled down if tripped. To test the poly-fuse, you can either measure the voltage or measure the resistance of the poly-fuse with the power off. The preferred test is voltage. Insert your red probe into one side of the two pin connector, pin 1 of the poly-fuse. Then insert your black probe into the same side but in pin2. Now pull the safety tab switch out as shown above. Set the meter to DC voltage and note the voltage. Note the voltage. Now move the red probe to the other connector, pin 1. 12 volts should be present on both pins. If one side is missing the 12 volts of DC then you have confirmed the poly-fuse might have tripped. Leaving the red probe on the side with no voltage, unplug the elevator motor and wait two minutes leaving the probes attached. If the 12 volts of DC doesn’t return then you have confirmed the poly fuse is defective. If the voltage returns, then either the elevator is jammed or there is a fault with the motor. If not voltage is found, check the safety switch.



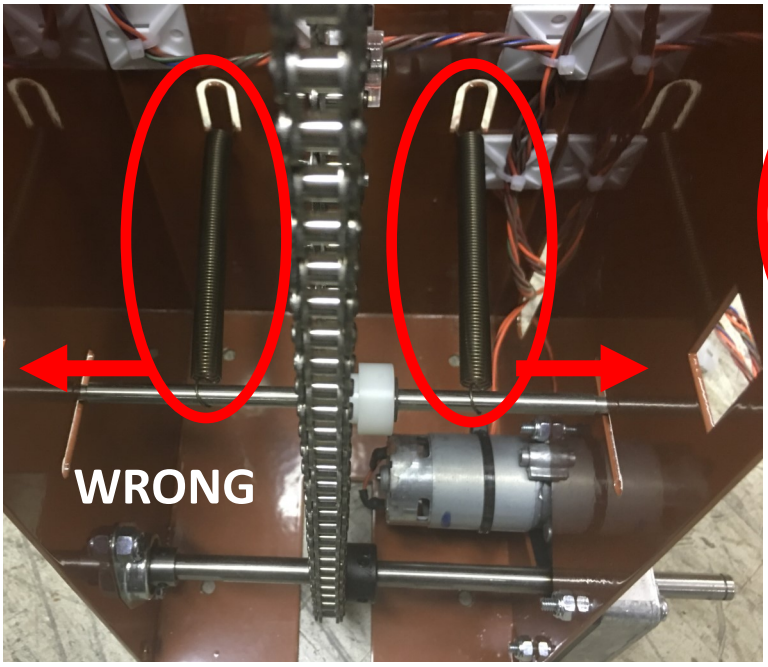


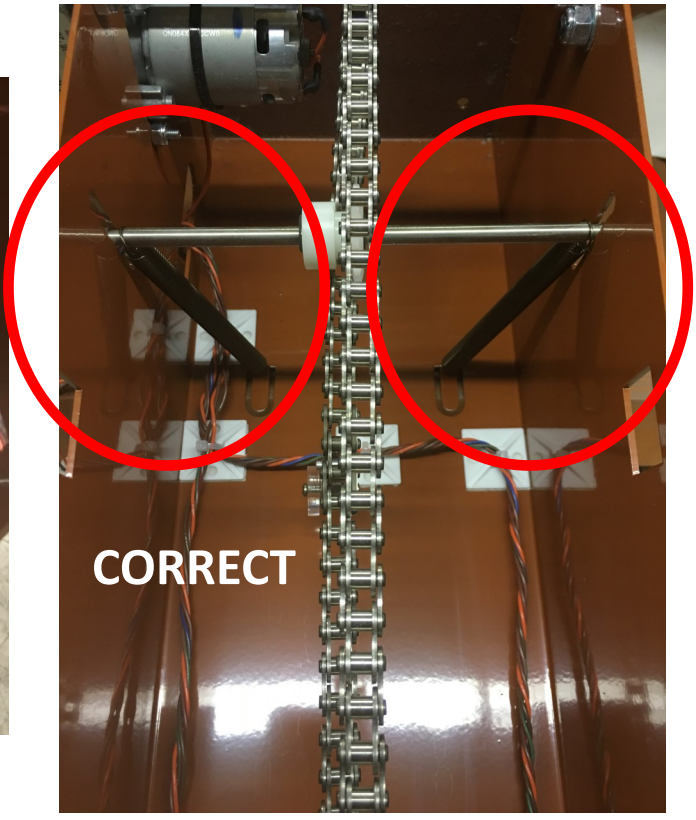
Elevator Tension Check

Unlock latch and open the drawer. Then remove the four mounting screws that hold the ball elevator cover.



Observe how the springs are attached. The springs should be attached firmly to the outer most part of the shaft and securely sitting in the outer groove.

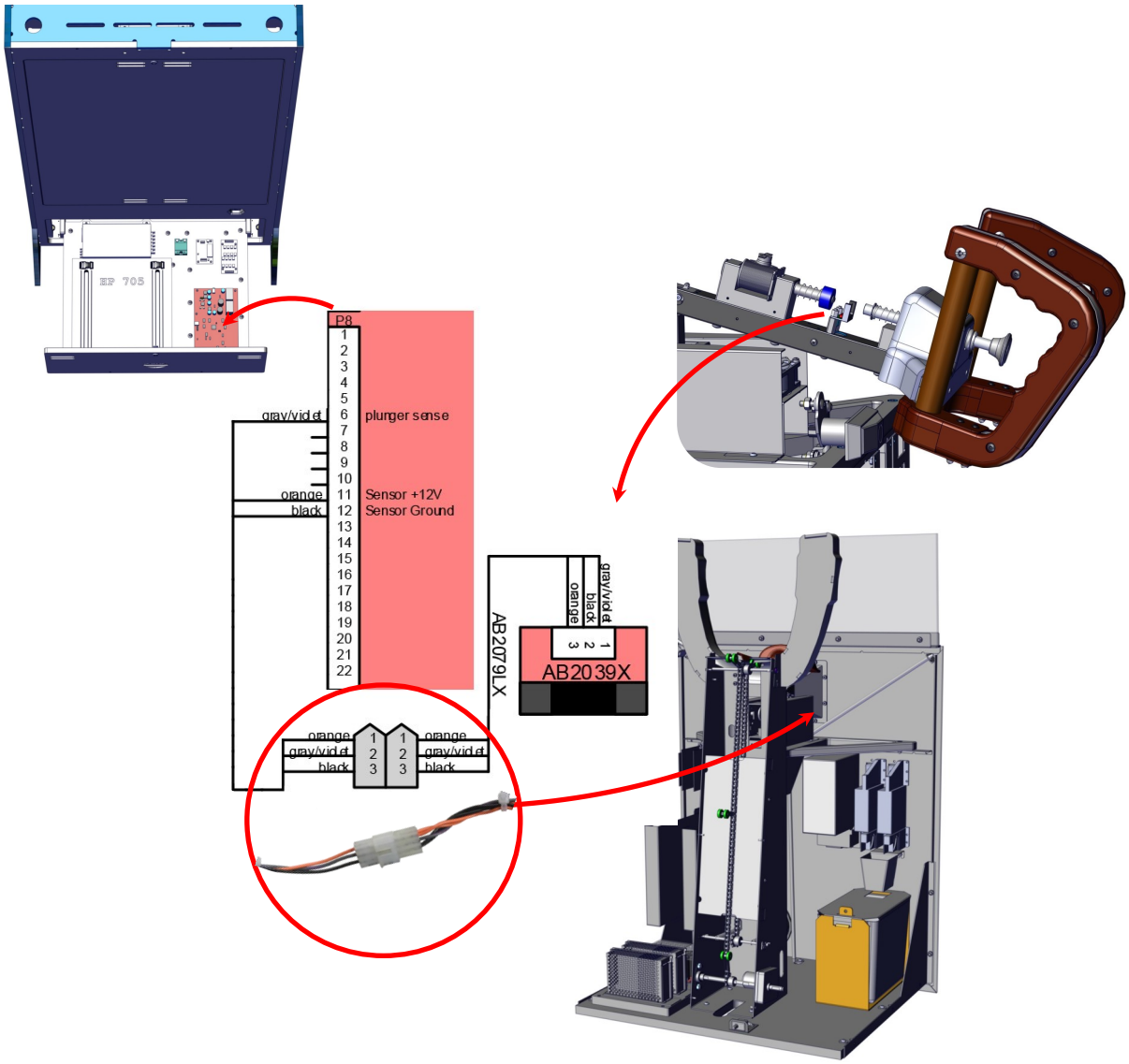




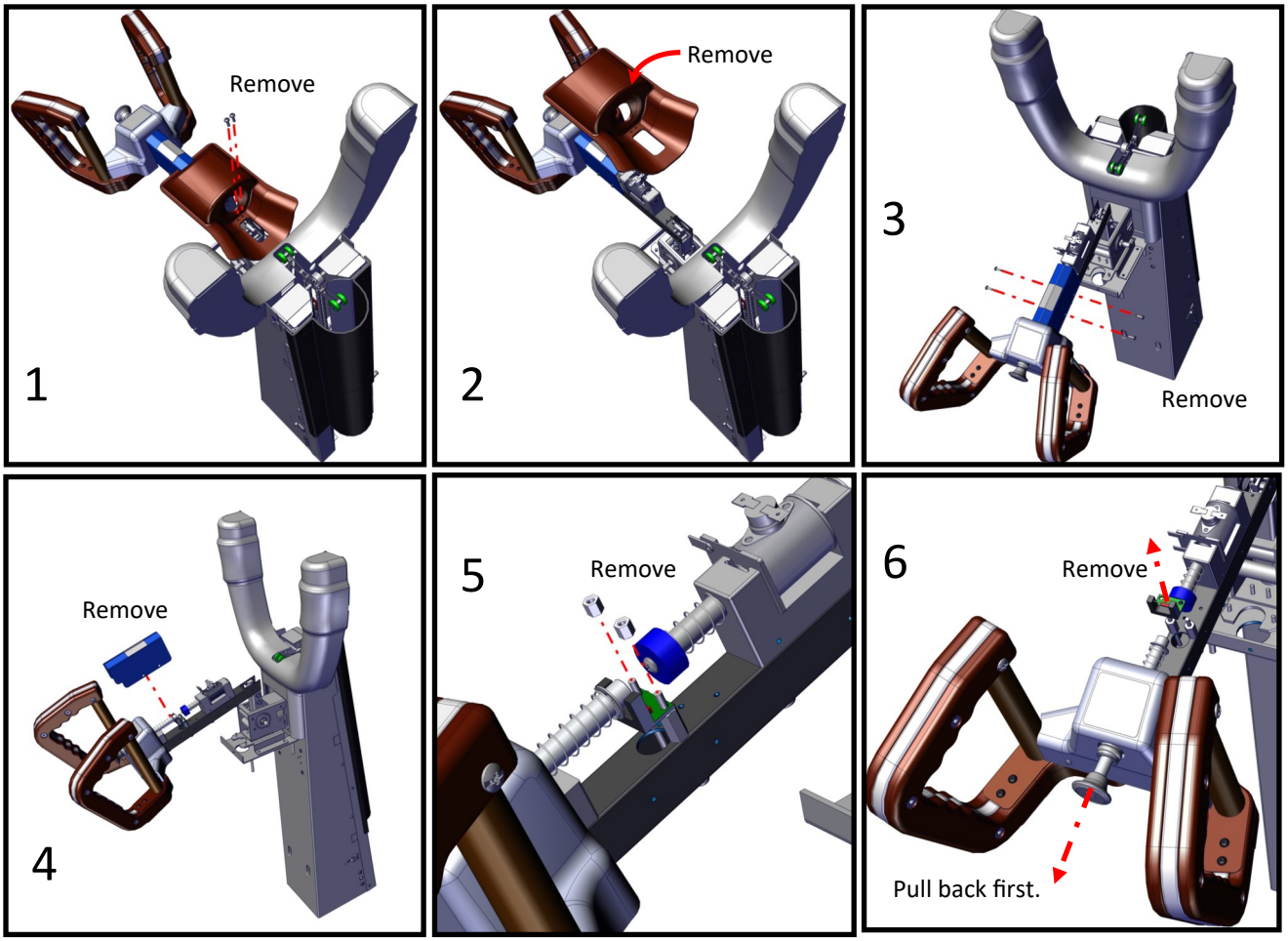
Ball Shooter: Theory and Operation

The ball shooter will launch a ball when the plunger is pulled back and once the plunger returns to its rest position a ball will be launched. A small photo sensor is used to determine the position of the plunger. When this sensor is blocked by the plunger the sensor will output 5 Volts DC on its sense line back to the I/O board. When the plunger is pulled away from the sensor the output of the sense line will change from 5 volts DC to 0 volts. Then when the plunger returns to block the sensor the sense line will return to 5 volts DC. This will signal the game to launch the ball by outputting 90 volts of DC to the solenoid launching the ball.

To test the status of the Ball Shooter sensor locate the three pin harness with orange, grey, and black wires. This is located under the T-handle lock assembly. Insert the red probe of your meter into the grey wire of the harness. Then insert the black probe of your meter into the Black wire of the harness. With your meter set to DC voltage you should read 5 volts of DC. Now pull back the plunger and the voltage should go to 0 volts. If no voltage is found, move the red probe of your meter to the orange wire of the harness. If 12 volts of DC is not found, move the red probe to pin 11 of P8. If there is voltage now you have a bad positive connection to the sensor. If still missing, move the black probe to the wire harness. If 12 volts of DC is present you have bad ground connection to the sensor. If no voltage is found move the black probe to pin 12 of P8. If no voltage is found at the I/O board, check incoming 12 volts at P1, pins 1,2,6, or 7. If 12 volts of DC is present replace the I/O board.

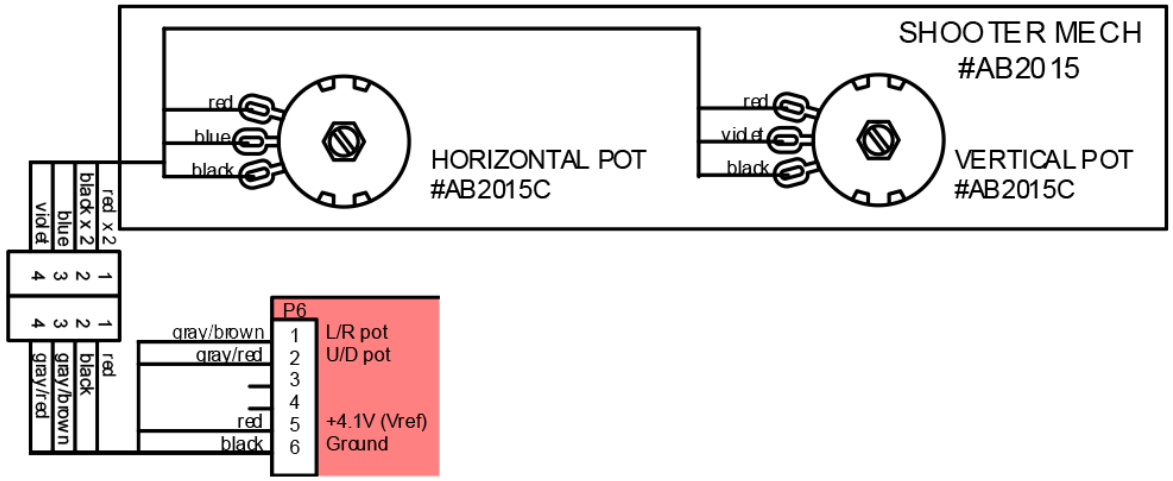


Ball Shooter: Sensor Replacement



Horizontal and Vertical Position: Theory and Operation

The ball shooter's horizontal and vertical position is determined by the position of the two 5K potentiometer. As the shooter is moved around, the voltage on the center pins of the potentiometers will change in value between 0 volts of DC to 4.1 volts of DC. Using your volt meter attach the red probe to either pin 1 for left/right or pin 2 for up/down of P6 on the I/O board. Now attach the black probe to pin 6 of P6 on the I/O board. Have someone move the shooter around and observe the voltages. You should see changes as you move the shooter around. If no voltage is found check the output of the I/O board by moving the red probe to pin 5 of P6 on the I/O board. If the voltage is missing, replace the I/O board.



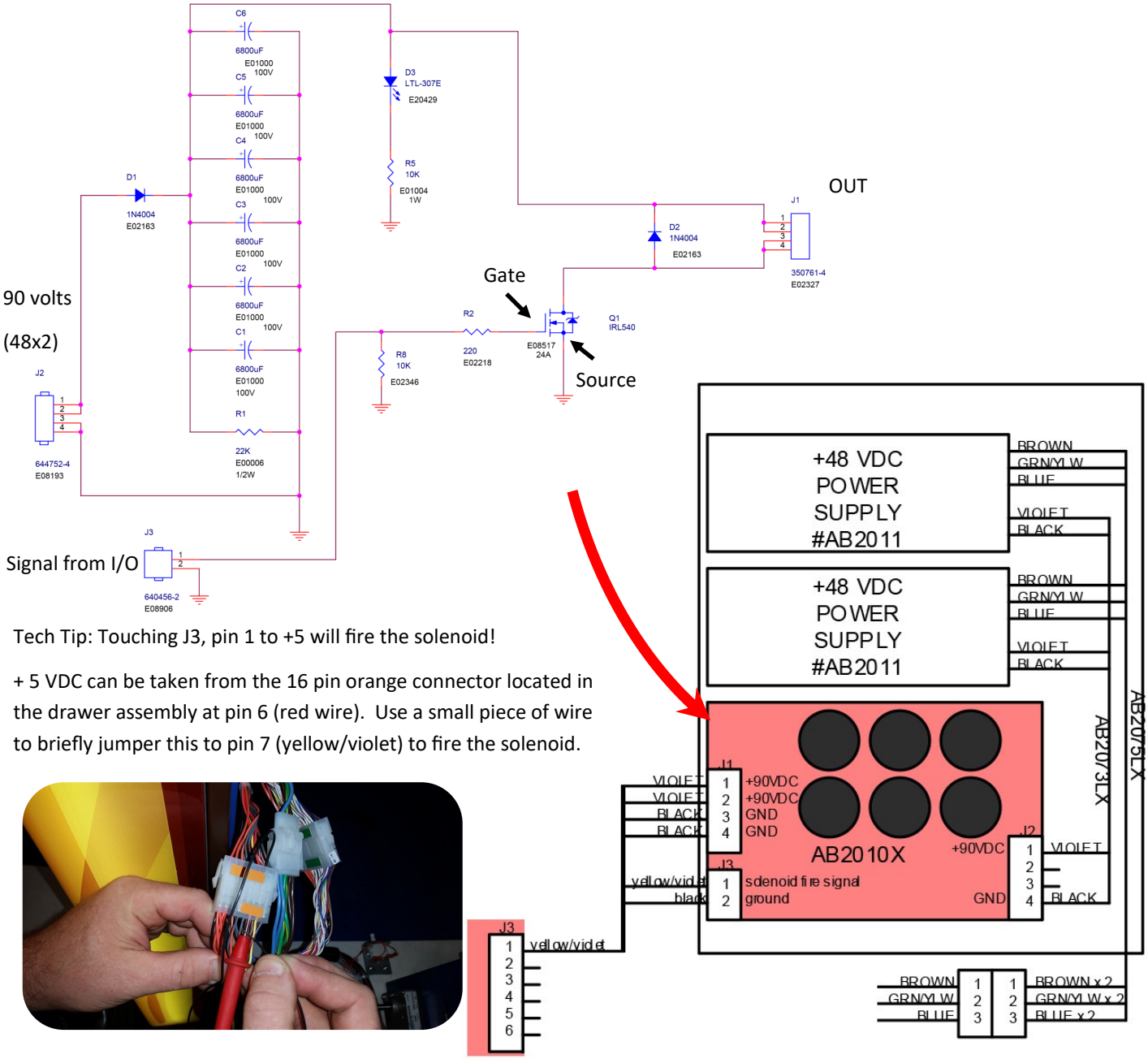
Solenoid Power ** WARNING ** HIGH VOLTAGE

When the plunger is activated a signal from the I/O board signals the solenoid power supply to release 90 volts of DC to the solenoid. The 90 volts of DC is generated by two 48 volt power supplies.

If the solenoid doesn't fire and you have checked the sensor for proper operation then using your voltage meter, insert the red probe into pin 1 of J1 on the 90 volt power supply. Then insert the black probe into pin 4 of J1 on the 90 volt power supply. You should see 90 VDC. If only half of 90 volts are found, check the two 48 volt DC power supplies to ensure both are outputting 45 volts. If 90 volts is present check Q1 on the 90 volt power supply. This should be down with the power off. Be sure no voltages are present on J1 before testing! With your multi meter set to diode check, the multi meter should indicate low resistance between the gate (R2) and source with one polarity and very high resistance between gate and source with meter polarity reversed.

J2 should have 0V between pint 1 and 4.

Last check the signal on J3 when the plunger is pulled. Pin 1 of J3 should have +5 volts of DC when the solenoid is activated.



Tech Tip: Touching J3, pin 1 to +5 will fire the solenoid!

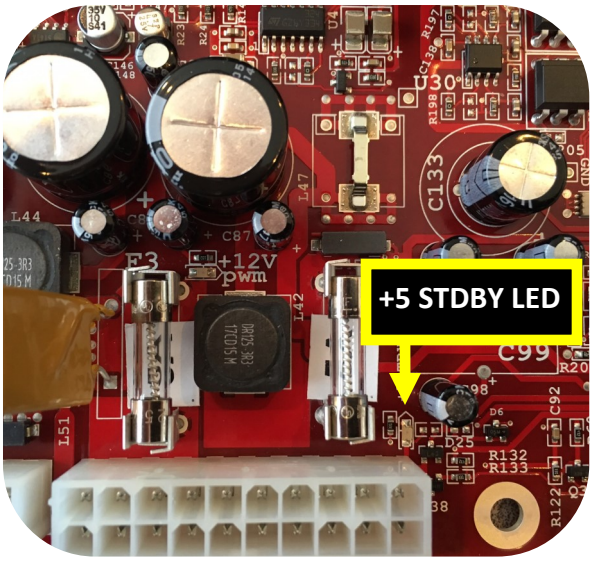
+ 5 VDC can be taken from the 16 pin orange connector located in the drawer assembly at pin 6 (red wire). Use a small piece of wire to briefly jumper this to pin 7 (yellow/violet) to fire the solenoid.

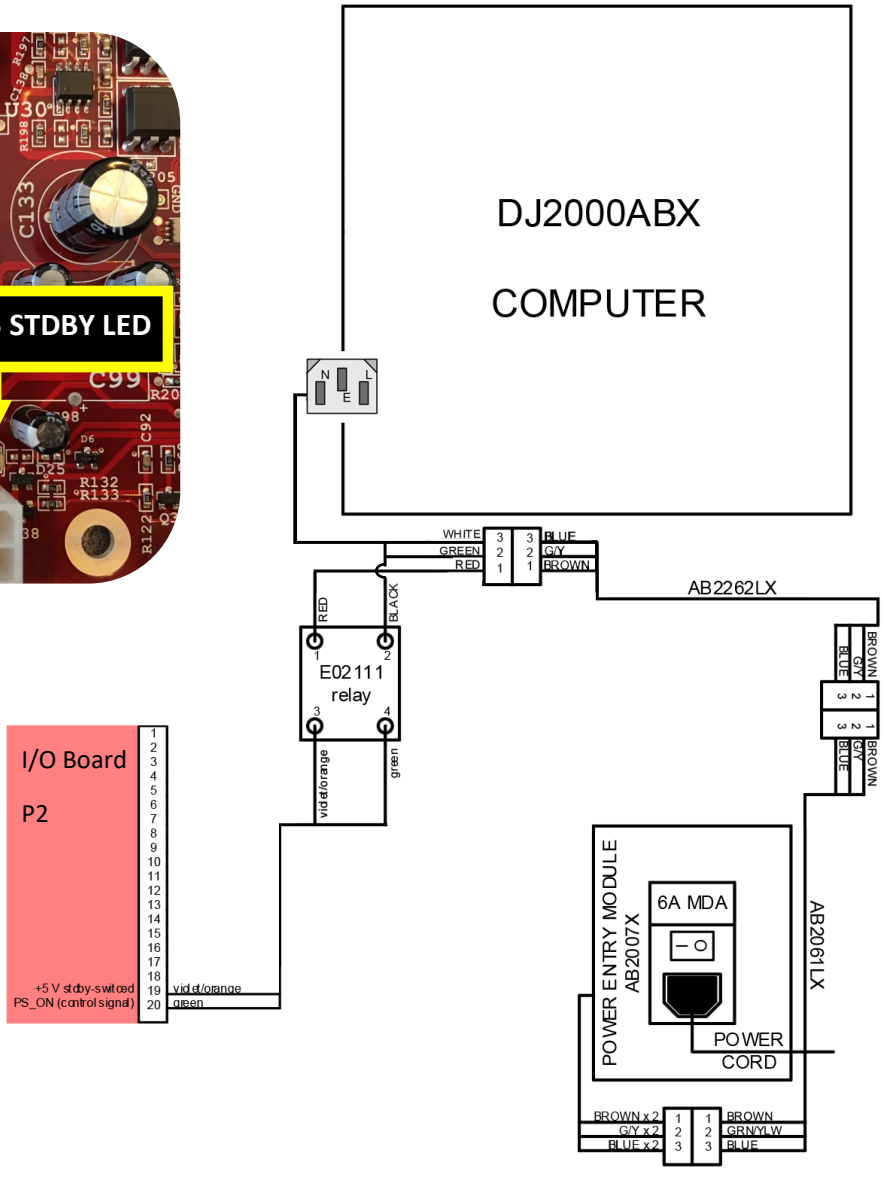
Computer Power On ** WARNING ** HIGH VOLTAGE

When power is applied to the game, the I/O board will power up and after a brief period switch the computer on. This allows time for the I/O to run it's internal firmware before the computer boots up. This is accomplished by interrupting the AC power to the computer. Note that the computer's BIOS must be set to "power on" or "restore AC" from power loss or it will not turn on.

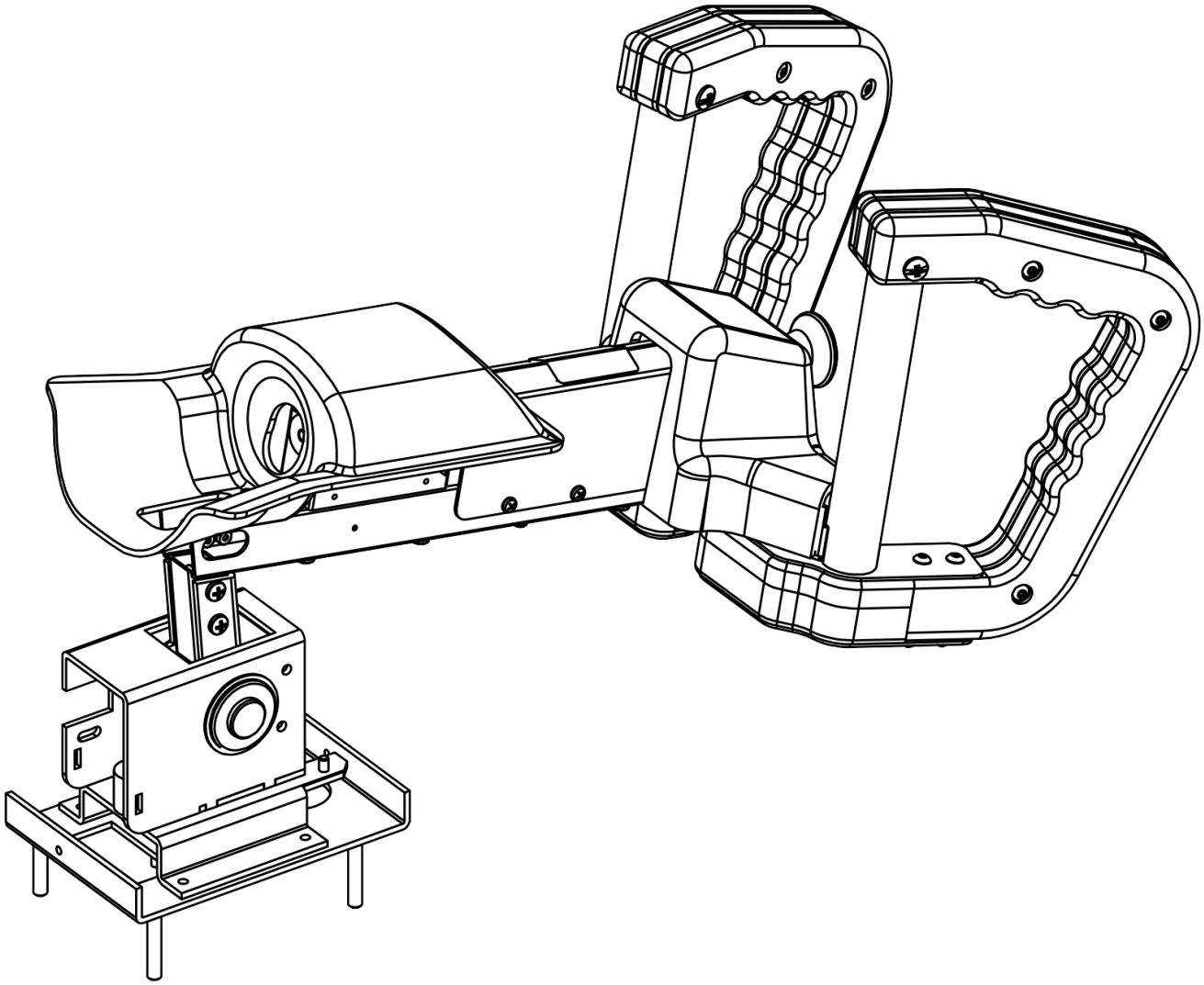
The Violet/Orange wire contains +5 volts of DC from P2, pin 19 of the I/O board and connects to one leg of the solid state relay. When the I/O board is ready for the computer to turn on it will ground pin 20 on connector P2 of the I/O board through the green wire and to the other leg of the solid state relay. This will activate the relay and connect the other side's two wires together. The red and black wires will connect completing the AC "HOT" power to the computer. The earth ground and neutral lines are already connected.

Confirm the I/O board has power by observing +5stby LED on the I/O board. Attach the black probe onto the green wire of the solid state relay. Attach the red probe on the violet/orange wire. When the I/O board activates the relay you should have +5 volts of DC. If missing replace the I/O board. If present, move the red probe to the red wire of the relay and move the black probe to the white wire coming from the AC plug of the computer. Switch the meter to AC voltage and you should read 110/220 depending on your incoming AC voltage. If no AC voltage is present but you have +5 volts of DC at the relay's input, replace the relay. If AC voltage is present then replace the computer.

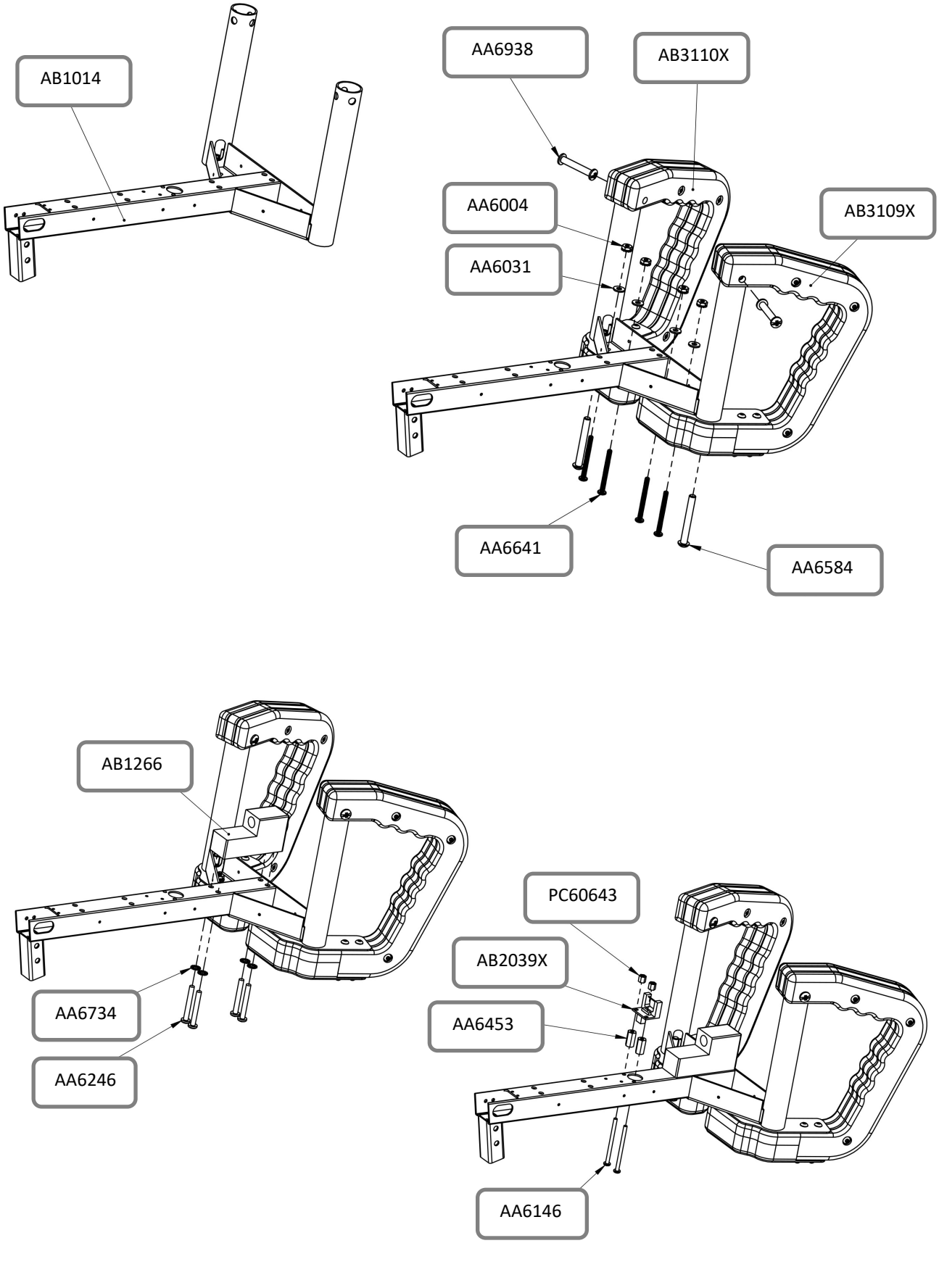


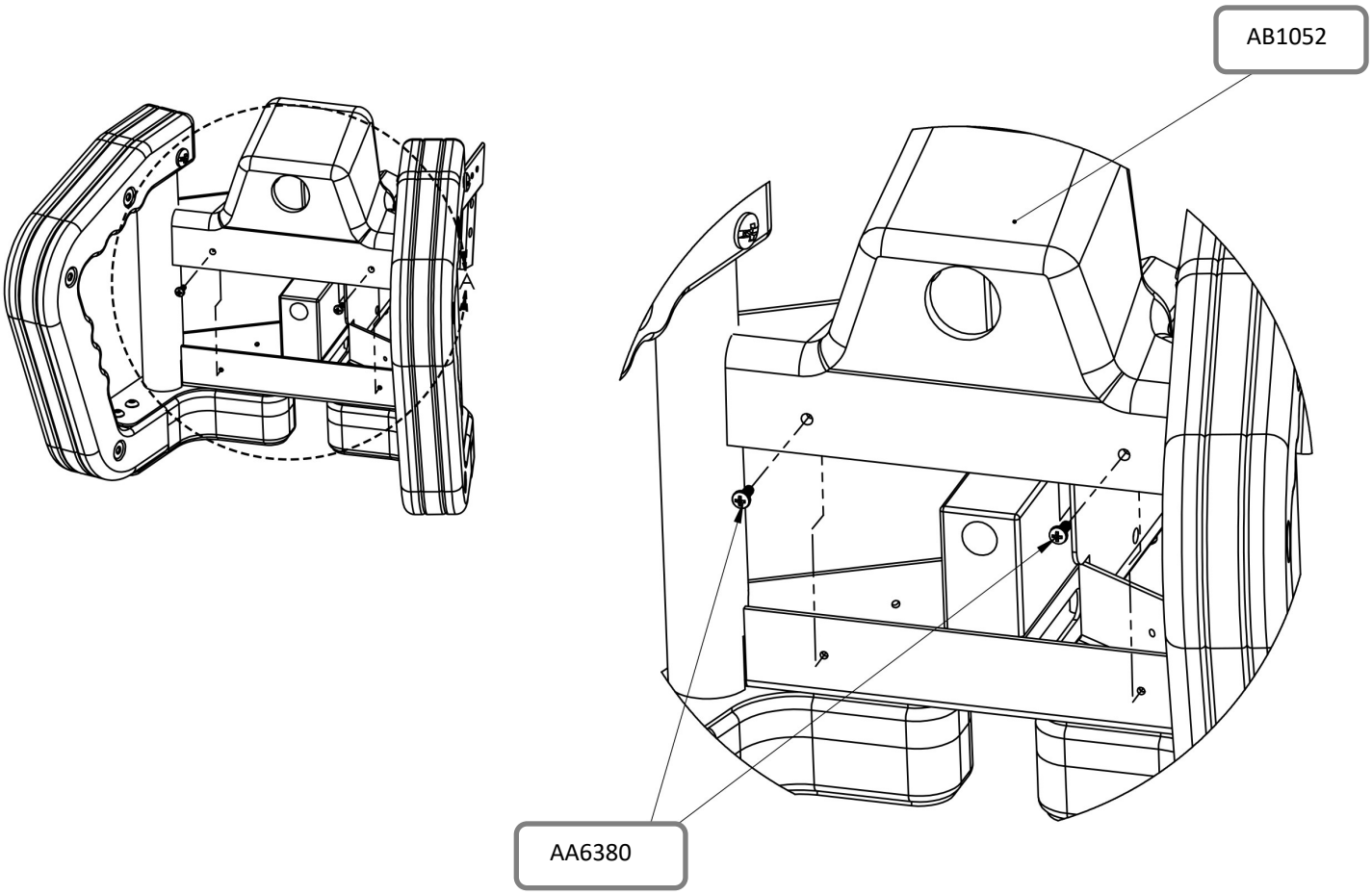


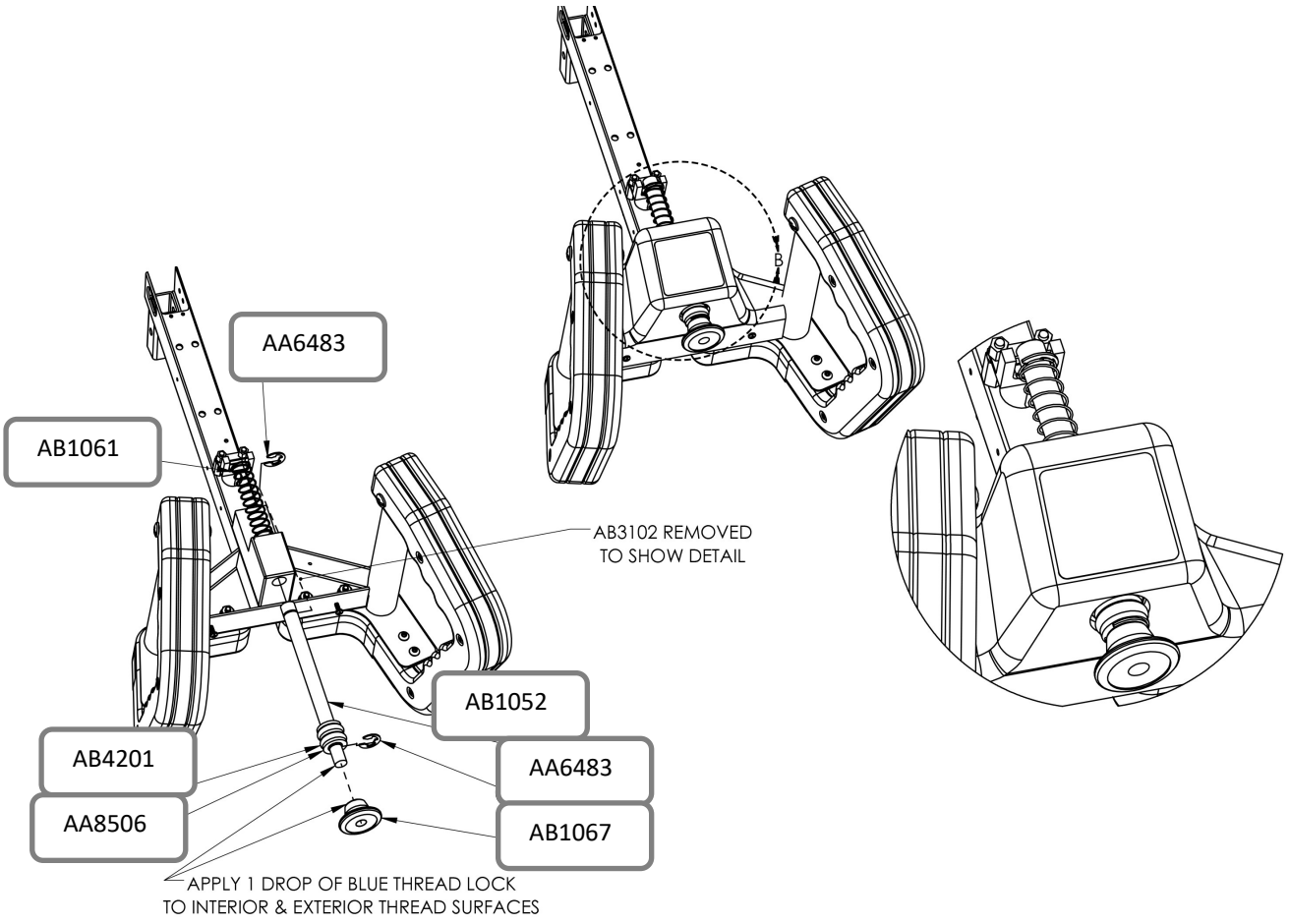
Sling Shot Assembly

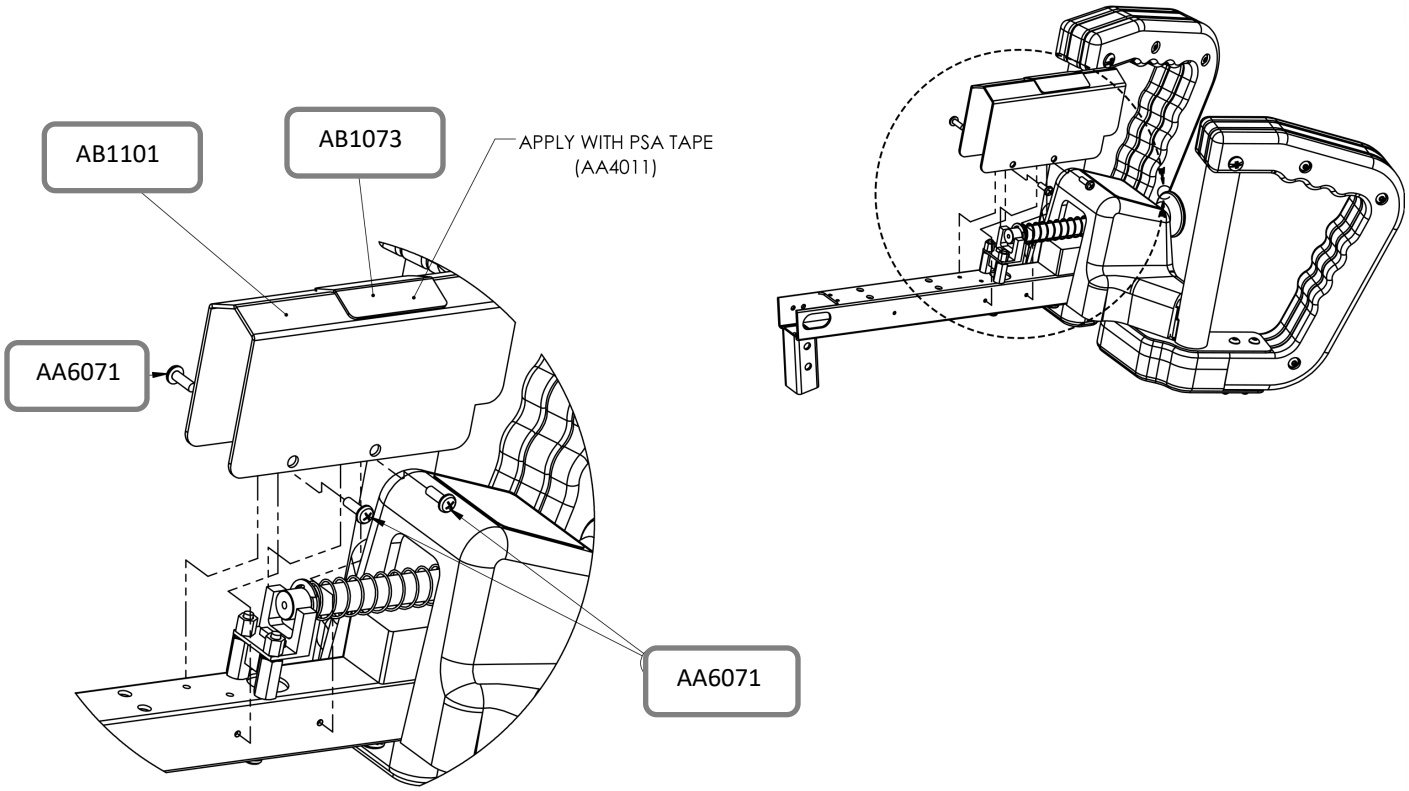


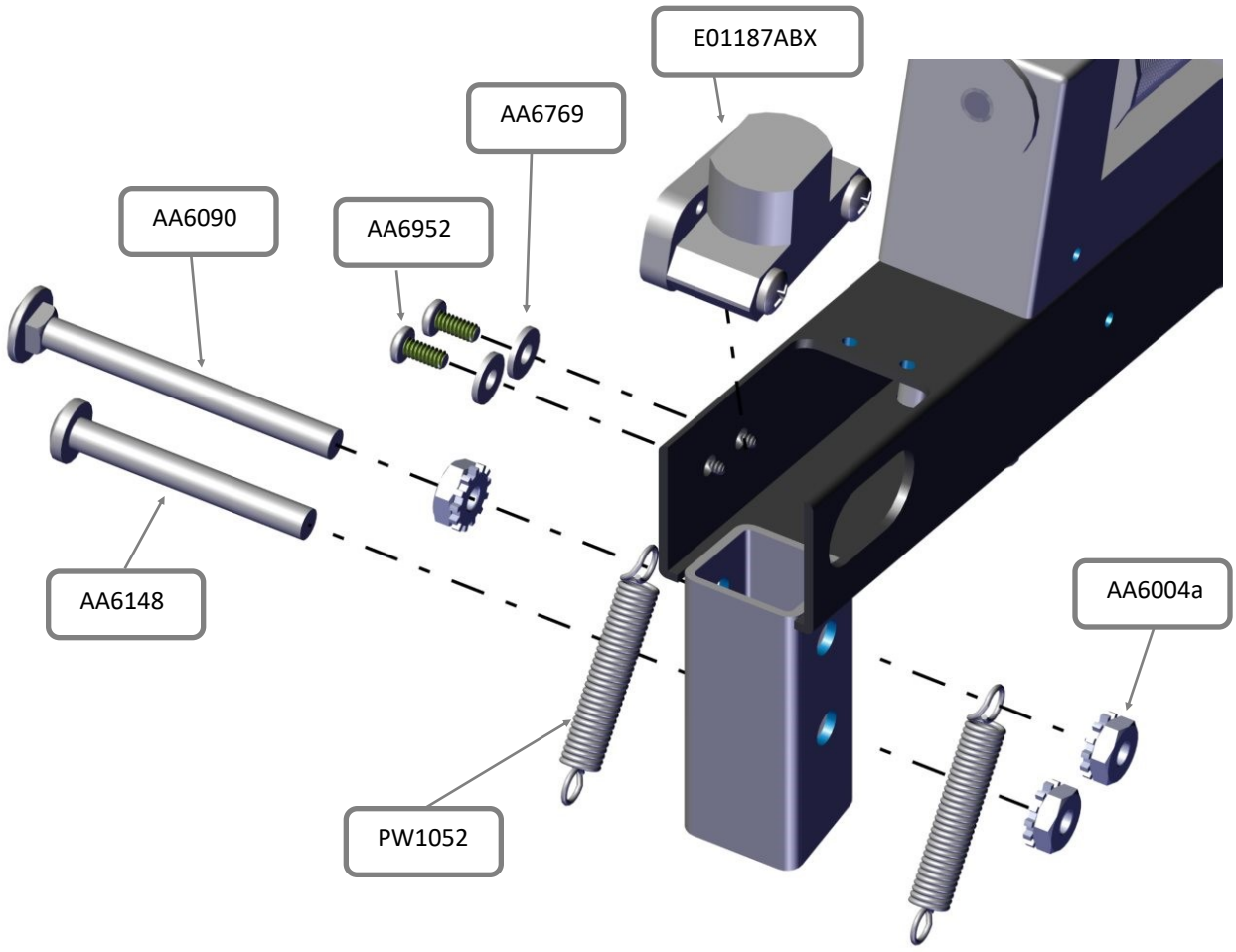
Parts


AB1014
AA6938
AB3110X
AA6004
AB3109X
AA6031
AA6641
AA6584
AB1266
AA6734
AA6246
PC60643
AB2039X
AA6453
AA6146


AB1052
AA6380


AA6483
AB1061
AB3102 REMOVED
TO SHOW DETAIL
AB1052
AB4201
AA6483
AA8506
AB1067
APPLY 1 DROP OF BLUE THREAD LOCK
TO INTERIOR & EXTERIOR THREAD SURFACES


AB1101
AB1073
APPLY WITH PSA TAPE
(AA4011)
AA6071
AA6071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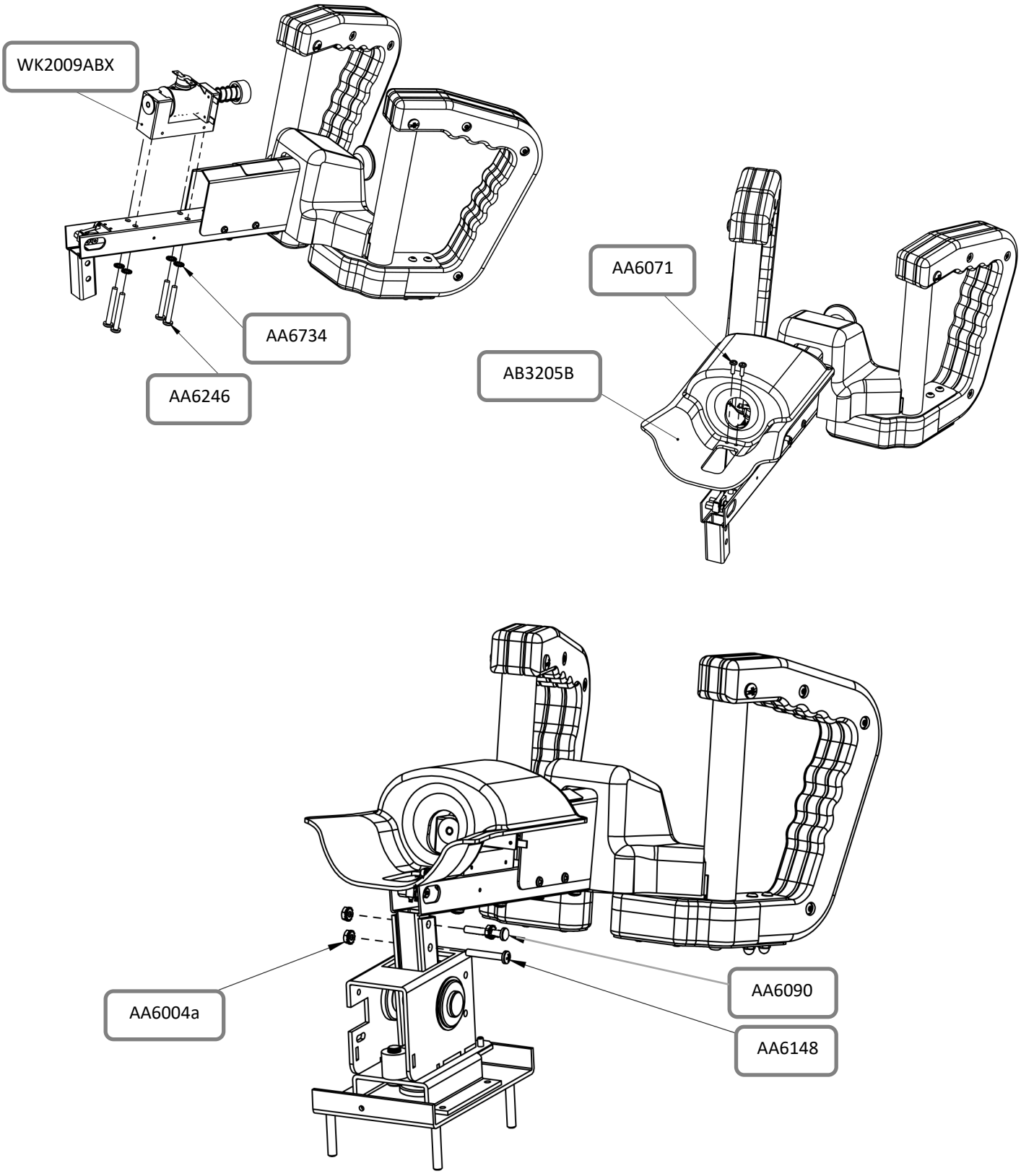
AA6769
AA6090
AA6952
AA6148
AA6004a
PW1052


WK2009ABX
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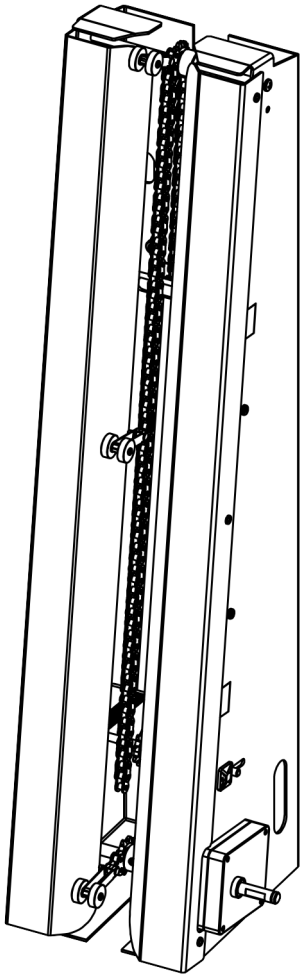
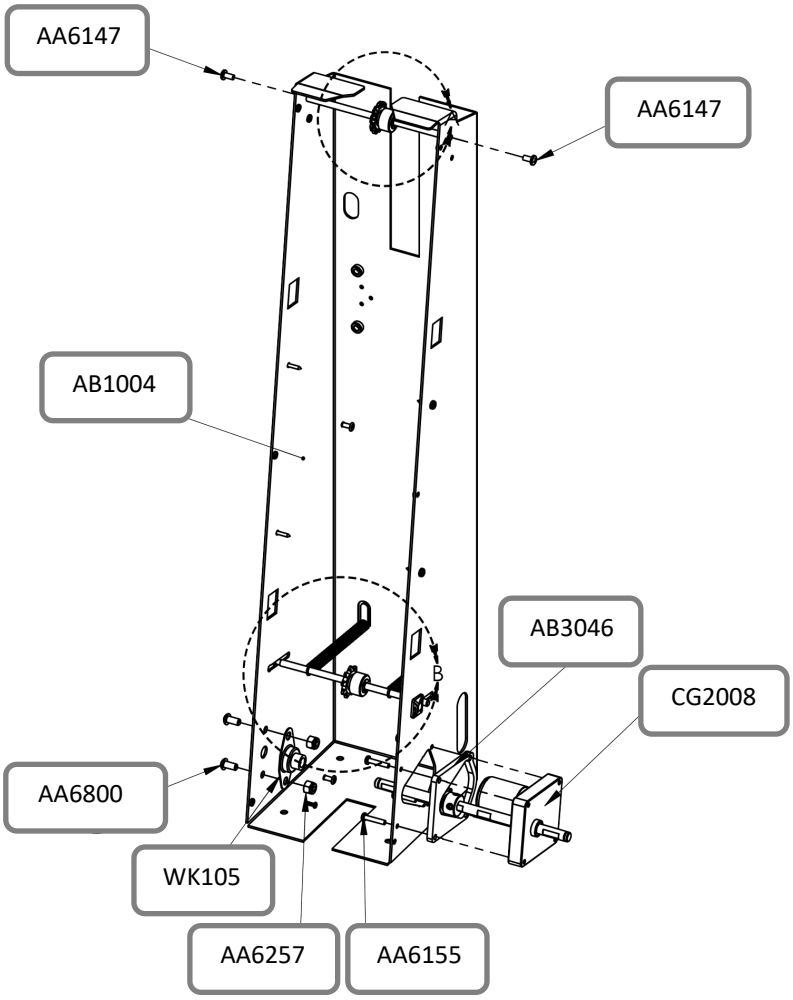
AA6246
AA6071
AB3205B
AA6004a
AA6090
AA6148

Elevator Assembly



Parts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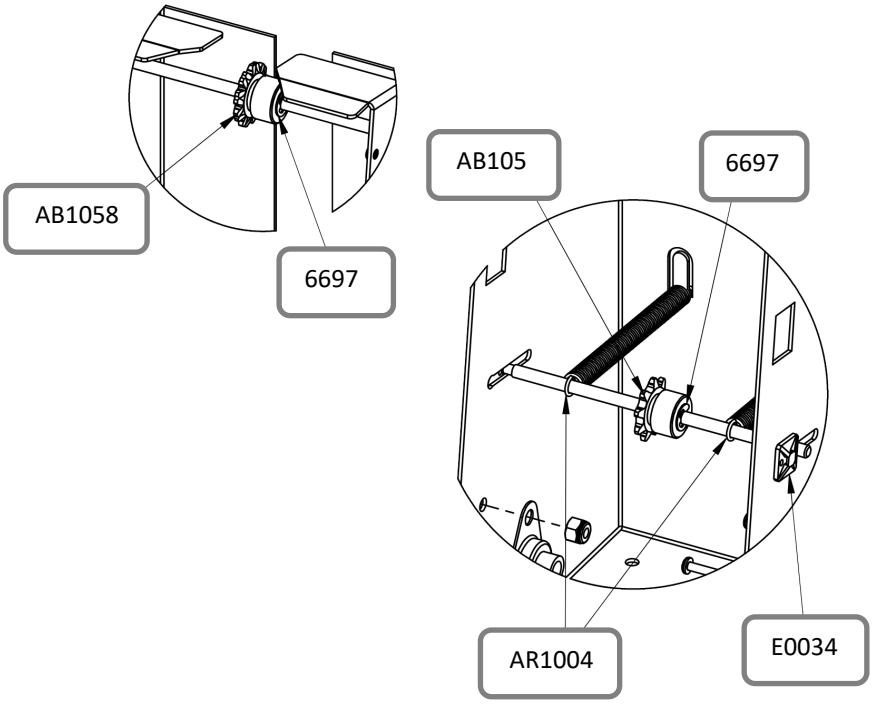
AB1004
AB3046
CG2008
AA6800
WK105
AA6257
AA6155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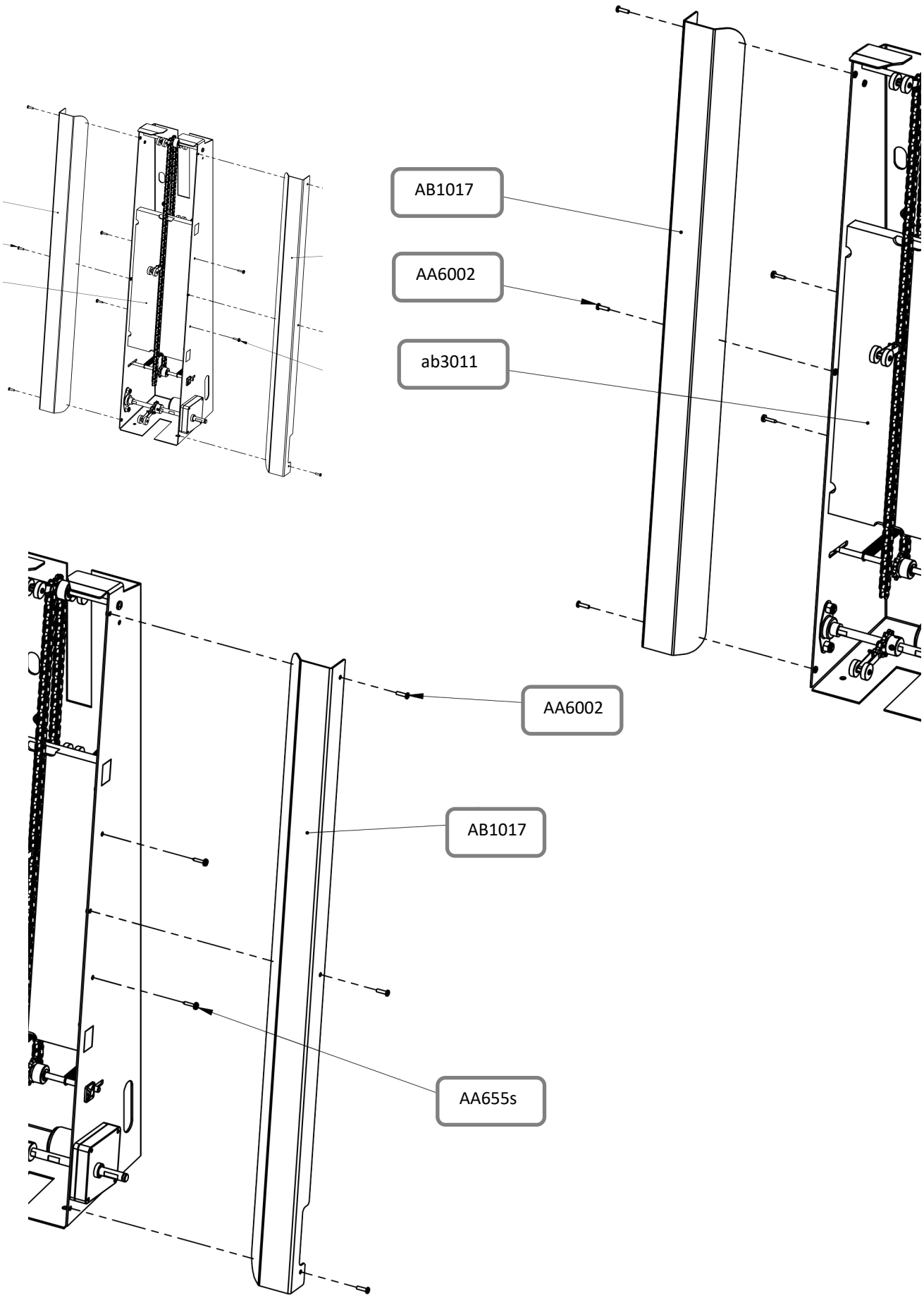
6697
AB105
6697
AR1004
E0034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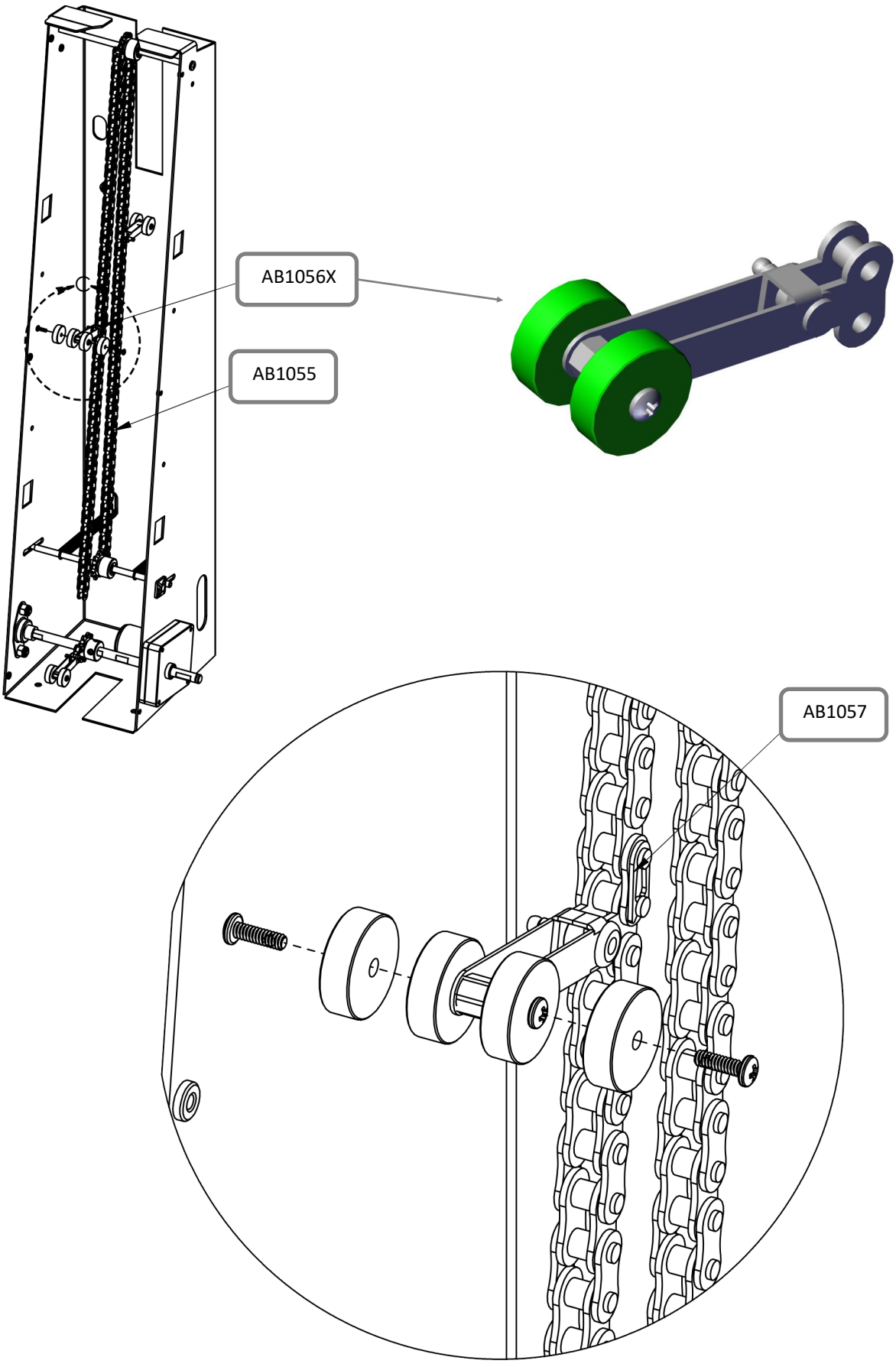
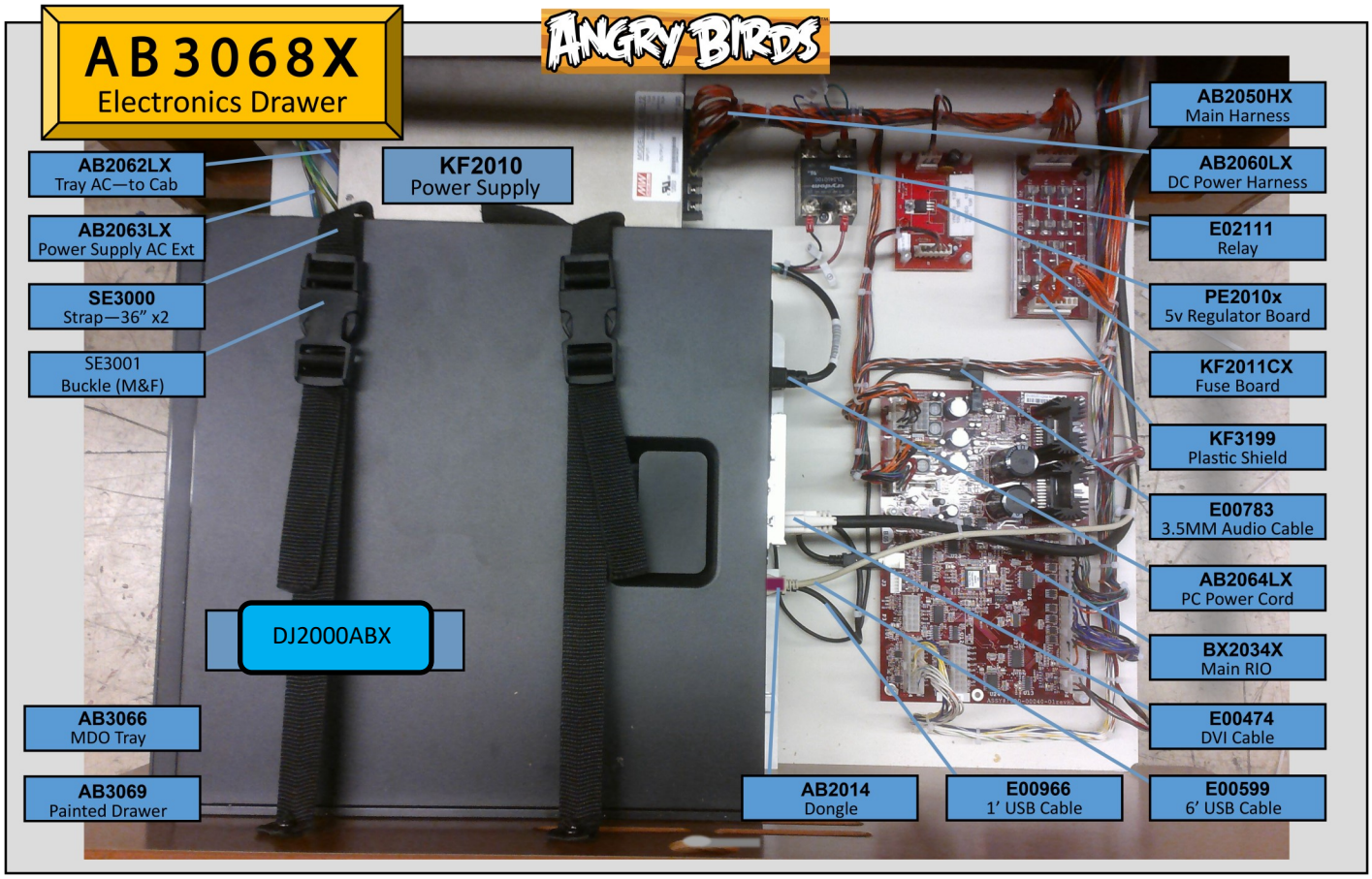
AA6002
ab3011
AA6002
AB1017
AA655s


AB1056X
AB1055
AB1057


AB3068X
Electronics Drawer
ANGRY BIRDS
AB2062LX
Tray AC—to Cab
AB2063LX
Power Supply AC Ext
SE3000
Strap—36" x2
SE3001
Buckle (M&F)
KF2010
Power Supply
DJ2000ABX
AB3066
MDO Tray
AB3069
Painted Drawer
AB2050HX
Main Harness
AB2060LX
DC Power Harness
E02111
Relay
PE2010x
5v Regulator Board
KF2011CX
Fuse Board
KF3199
Plastic Shield
E00783
3.5MM Audio Cable
AB2064LX
PC Power Cord
BX2034X
Main RIO
E00474
DVI Cable
E00599
6' USB Cable
AB2014
Dongle
E00966
1' USB Cable

Graphic Spares

Electronics Spares

AB2007X	6A Power Mod
AB2039X	Ball Shooter activator sensor.
AB2015C	Horizontal and Vertical pot.
AB2011	48 VDC power supply
AB2010X	90 Power Supply
AB2072LX	Poly-Fuse for elevator motor
AR2007	Speaker
BX2034X	I/O PCB board
CG2008ABX	Elevator Motor
DJ2000ABX	Computer w/AB software installed
E00724ABHX	RGB Strip
E00724ABGX	RGB LED Strip
E00724ABJX	RGB LED Strip
E00724ABIX	RGB LED Strip
E00788ABFX	White LED Strip
E00788ABBX	White LED Strip
E02111	Solid state relay
E02970	Drawer safety Switch
E08422ABX	Ball loaded switch
GF2010	12 VDC power supply
HH5005	Ticket dispenser
KF2011X	+12vDC protection Fuse board. 5 Amp fuses installed.
IA2364X	Fan
MON55EST	55” LCD monitor
PE2010X	+5 VDC regulator board
WK2009ABX	Solenoid assembly

WARRANTY POLICY

I.C.E. Inc warrants all components in new machines to be free of defects in materials and workmanship for the period listed below:

- 180 days on Main PCB's, Computers & Motors
- 1 year on all LCD monitor panels
- 90 days on all other electronic and mechanical components
- 30 days on all I.C.E. repairs and parts purchases

I.C.E. Inc shall not be obligated to furnish a warranty request under the following conditions:

- Equipment or parts have failed through normal wear and tear
- Equipment has been subjected to unwarranted stress, abuse or neglect
- Equipment has been damaged as a result of arbitrary repair/modification

Products will only be covered under warranty by obtaining an I.C.E. authorized RMA #. To obtain an RMA # please provide I.C.E. tech support with the game serial # or original I.C.E. invoice # and a detailed description of the failure or fault symptoms.

I.C.E. Inc will assume no liability whatsoever for costs associated with labor or travel time to replace defective parts. All defective warranty covered components will be replaced with new or factory refurbished components equal to OEM specifications.

I.C.E. Inc will cover domestic UPS ground, or comparable shipping costs during the warranty period. International or expedited shipments are available for an additional charge. To obtain credit defective parts must be returned to I.C.E. Inc, at the customer's expense, within 30 days. After 30 days a 15% re-stocking fee will apply to all returns.

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