

Service Manual



Innovative Concepts in Entertainment

10123 Main Street

Clarence, New York 14031

Table of Contents

Safety and Warnings	3
Before you Begin	4
Game Assembly	
Unbox and install the conveyor belt	5
Cabinet Assembly	6
Mega Marquee Setup	15
How to program	16
Program Options	17
Suggestive Ticket Settings	18
Error Codes & Solutions	19 - 27
Fast Access to the Sensors	28
Access to the playfield	29 - 30
Stir Stick Update	31 - 32
Spare Parts and Diagrams	33 - 39
Warranty	40

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.

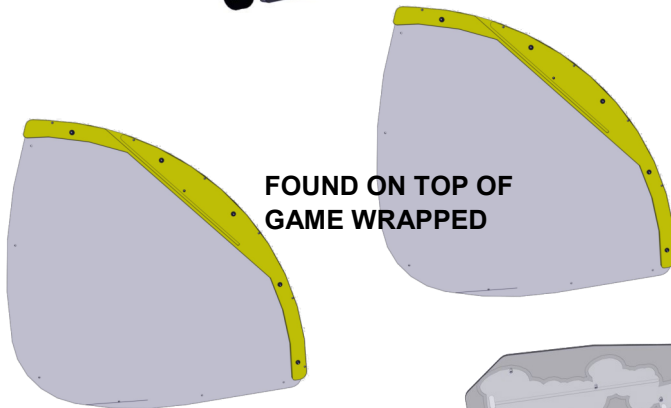
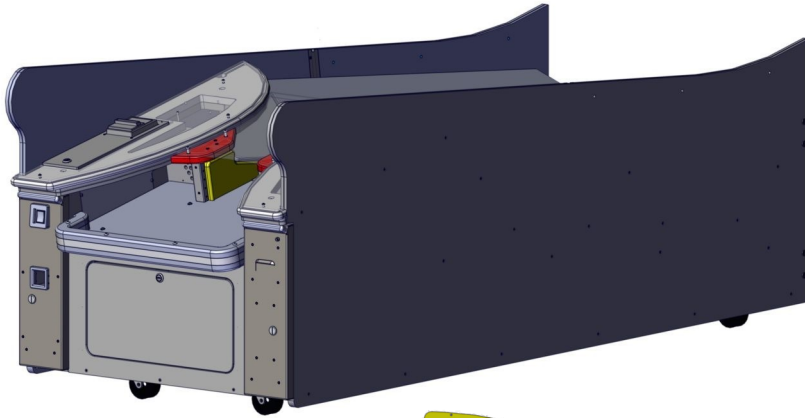
The game's foot print is 120" x 30" x 84".

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.



Components Included with your Game and Needed for Assembly. Note: Game might ship assembled.



FOUND ON TOP OF GAME WRAPPED



BEAN BAGS QTY 20

12 = GAME

8 = SPARE

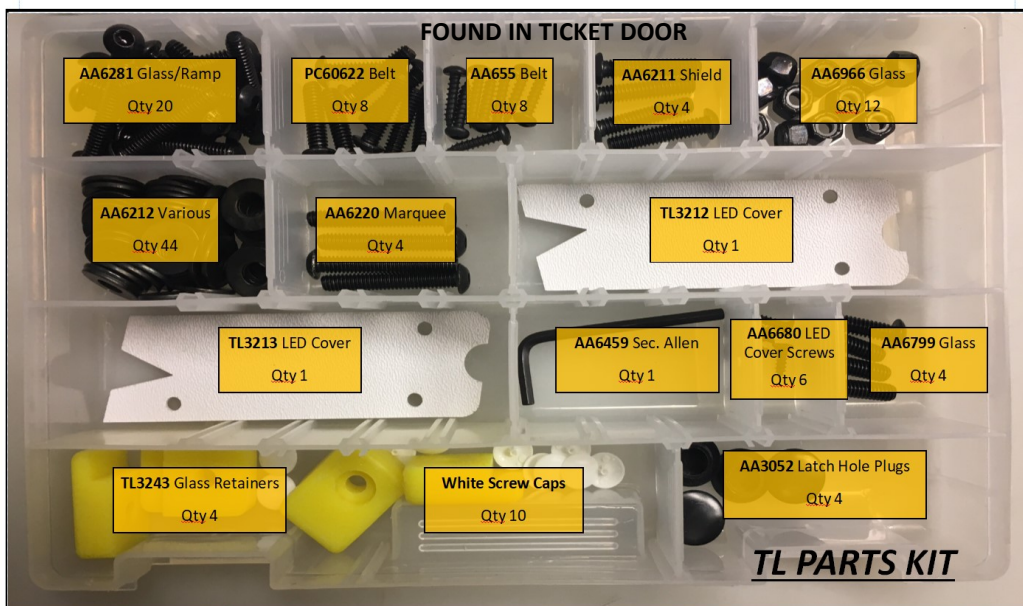
Found in a box inside the game.



FOUND IN BOX



FOUND ON TOP OF GAME WRAPPED



FOUND IN CASHBOX



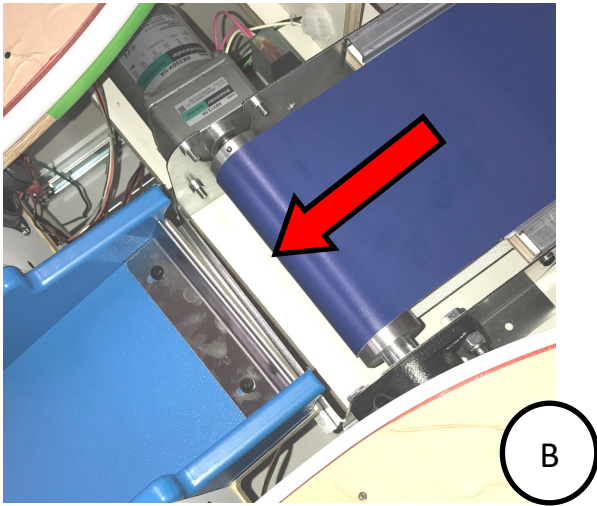
FOUND ATTACHED TO GAME



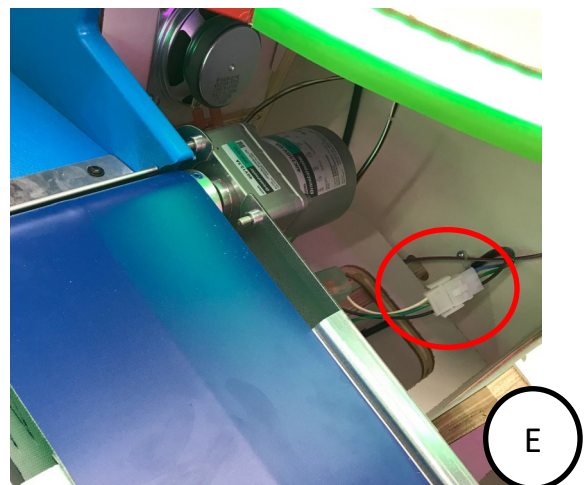
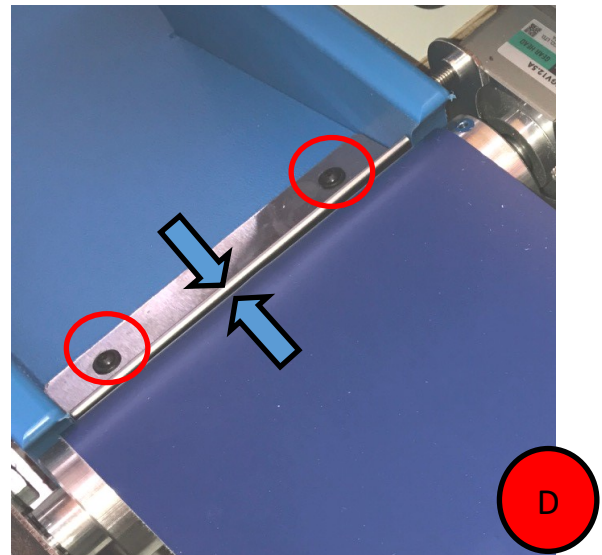


Unbox and INSTALL THE BELT

- A) Install the belt by tilting the motor under the front control panel.
- B) Push the Belt Assembly forward
- C) Secure the belt assembly with PC60622 bolts with washers in 8 places. Then add the AA655 in 4 places. (this will secure the metal frame to the wood cabinet.)
- D) Adjust the metal plate (if needed) the metal plate should be $1/32''$ away from the belt. (.8mm)
IMPORTANT: THE METAL PLATE SHOULD NOT TOUCH THE BELT but it should be as close as possible.)



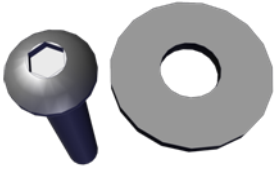
- E) Connect the harness.



Step 1:

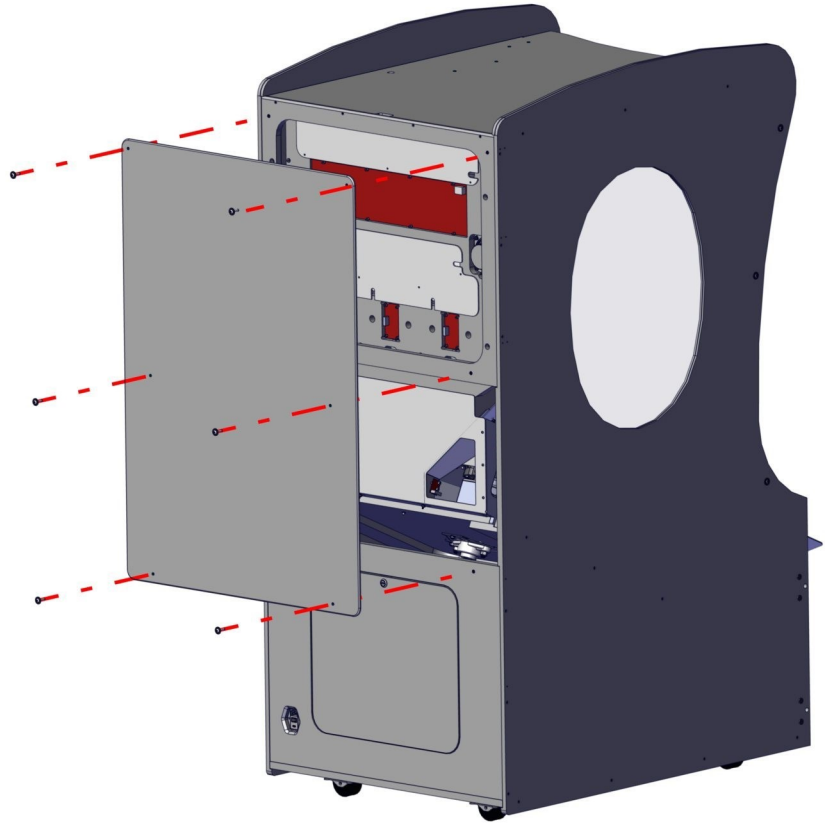
Remove both the back panel at the top and bottom of the back section of the cabinet.

Note: Wood panel version is shown.

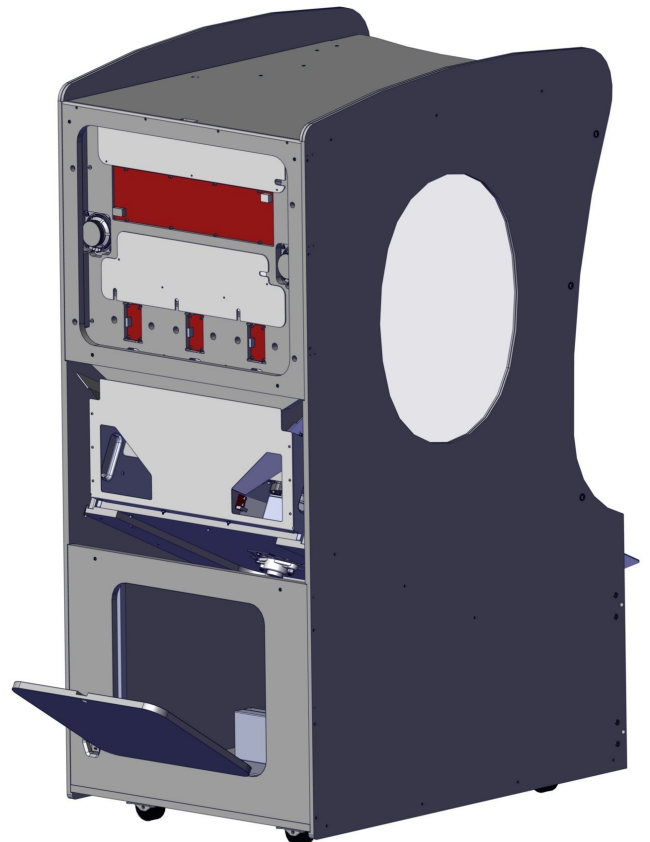


AA6281 + AA6212 = Wood

PC60622 + AA6212 = ABS Plastic

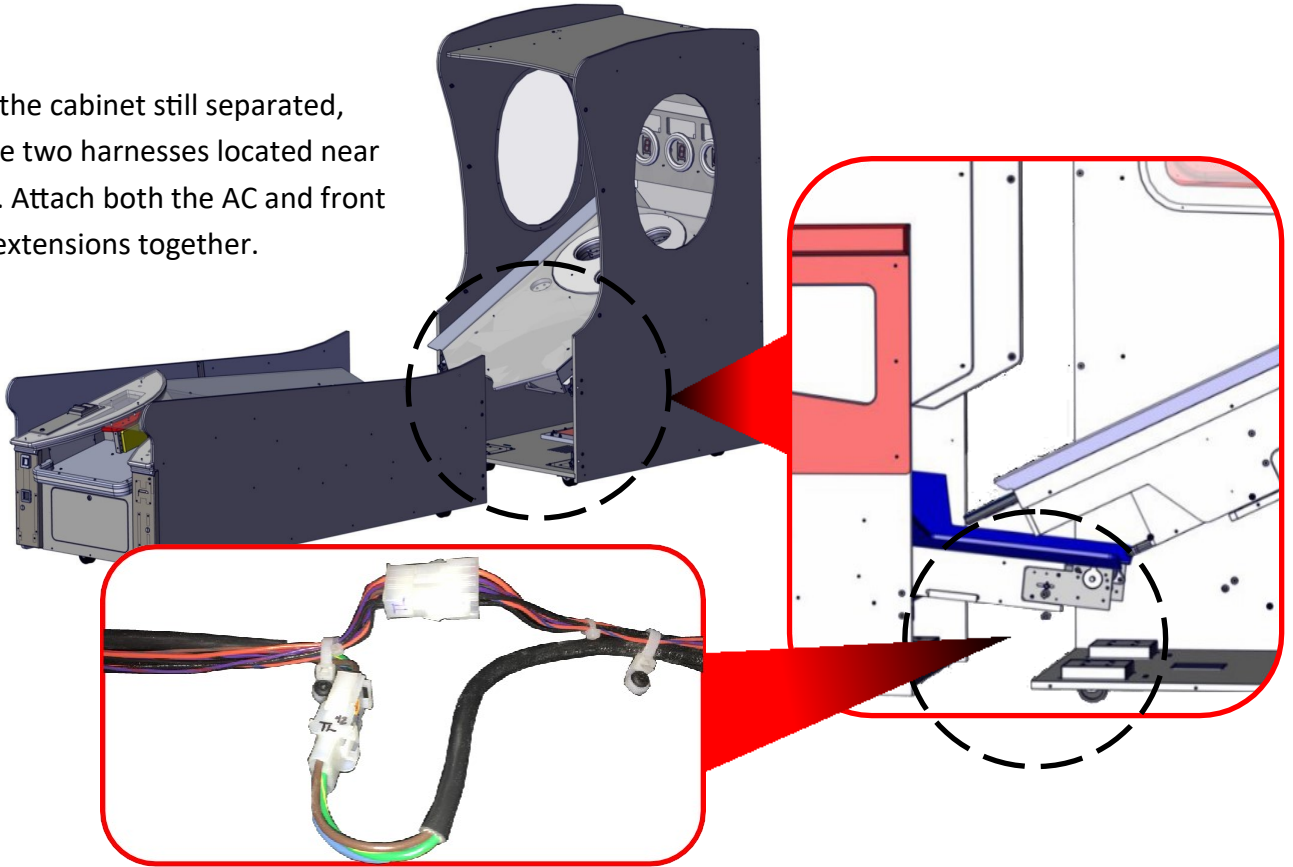


Unlock the lower panel



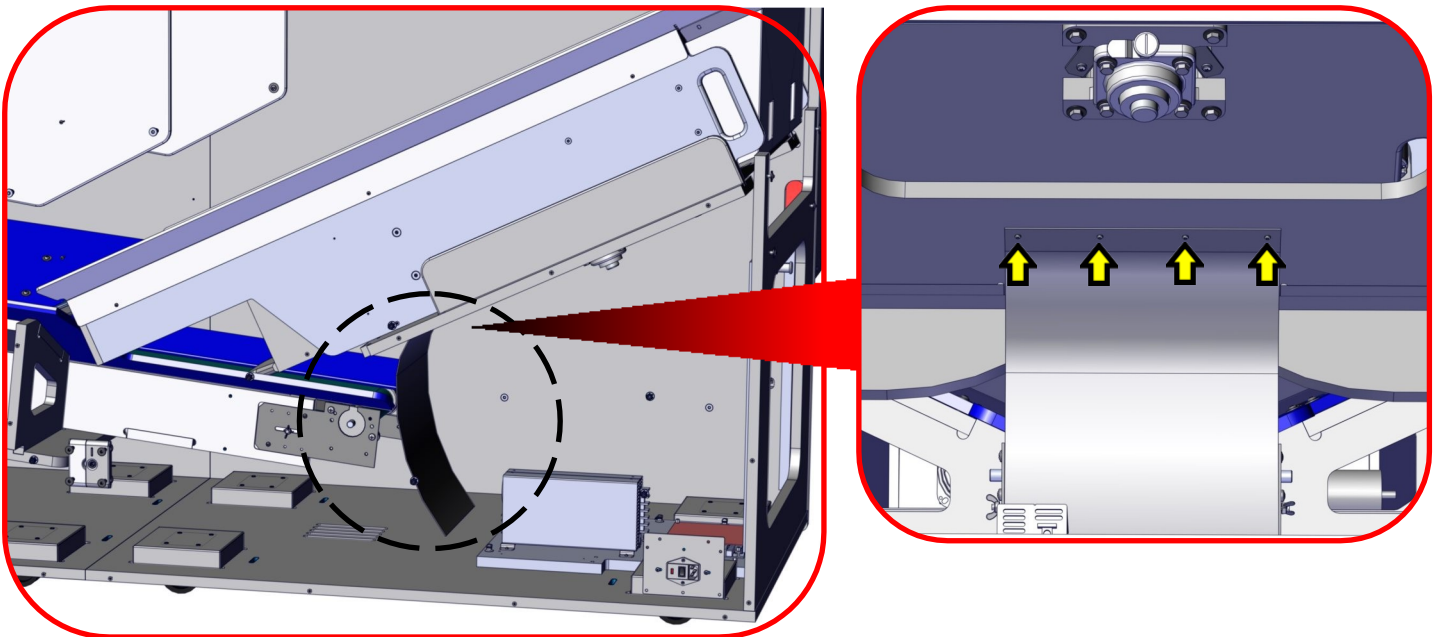
Step 2: Parts A + B + C + D. READ ALL PARTS BEFORE PROCEEDING!

(A) With the cabinet still separated, attach the two harnesses located near the floor. Attach both the AC and front harness extensions together.



**** WARNING ****

Pay attention to the conveyor and playfield assemblies when sliding the two cabinets together. Be careful not to break the splash guard at the back of the cabinet. You can remove the splash guard temporary but remember to reattach it when the cabinet halves are locked together.

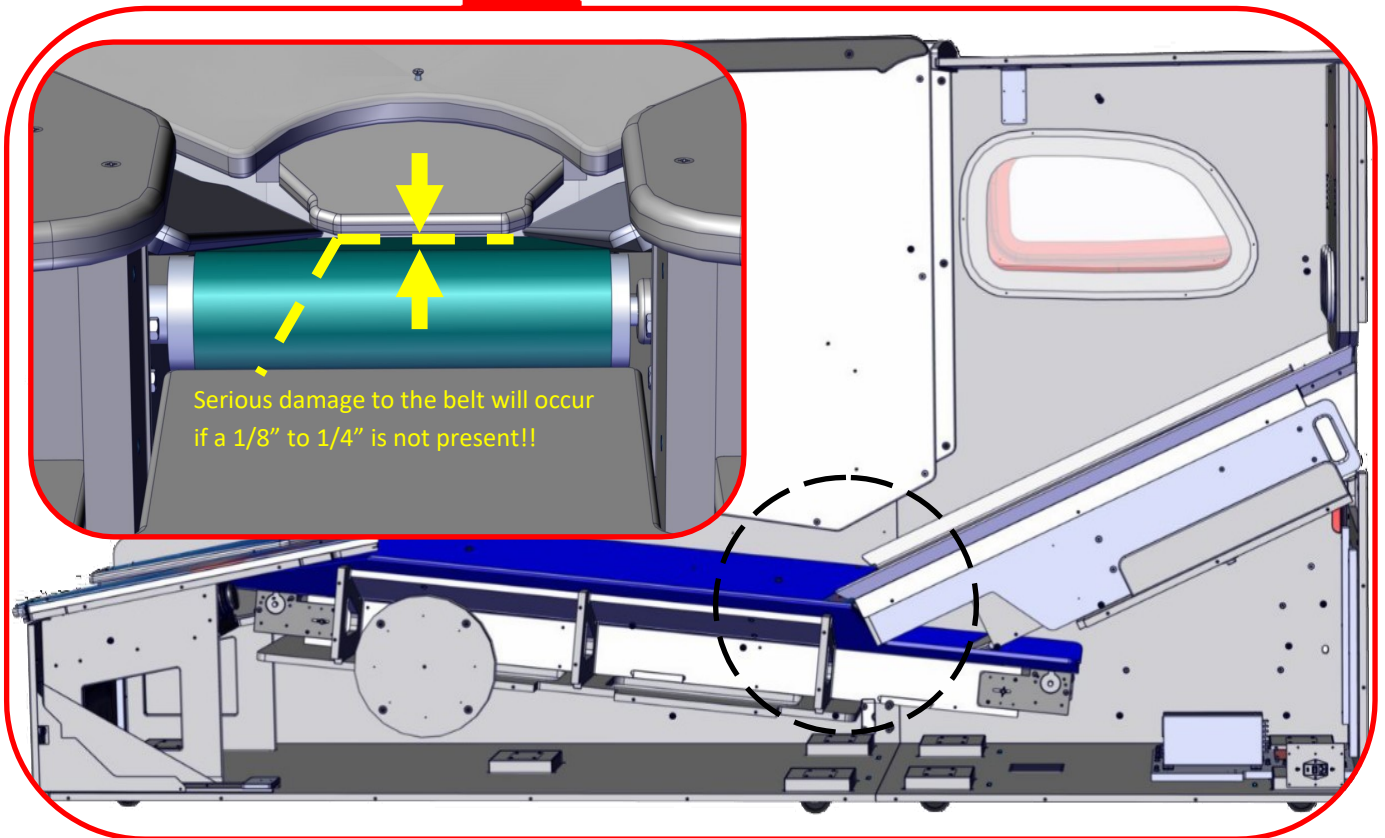
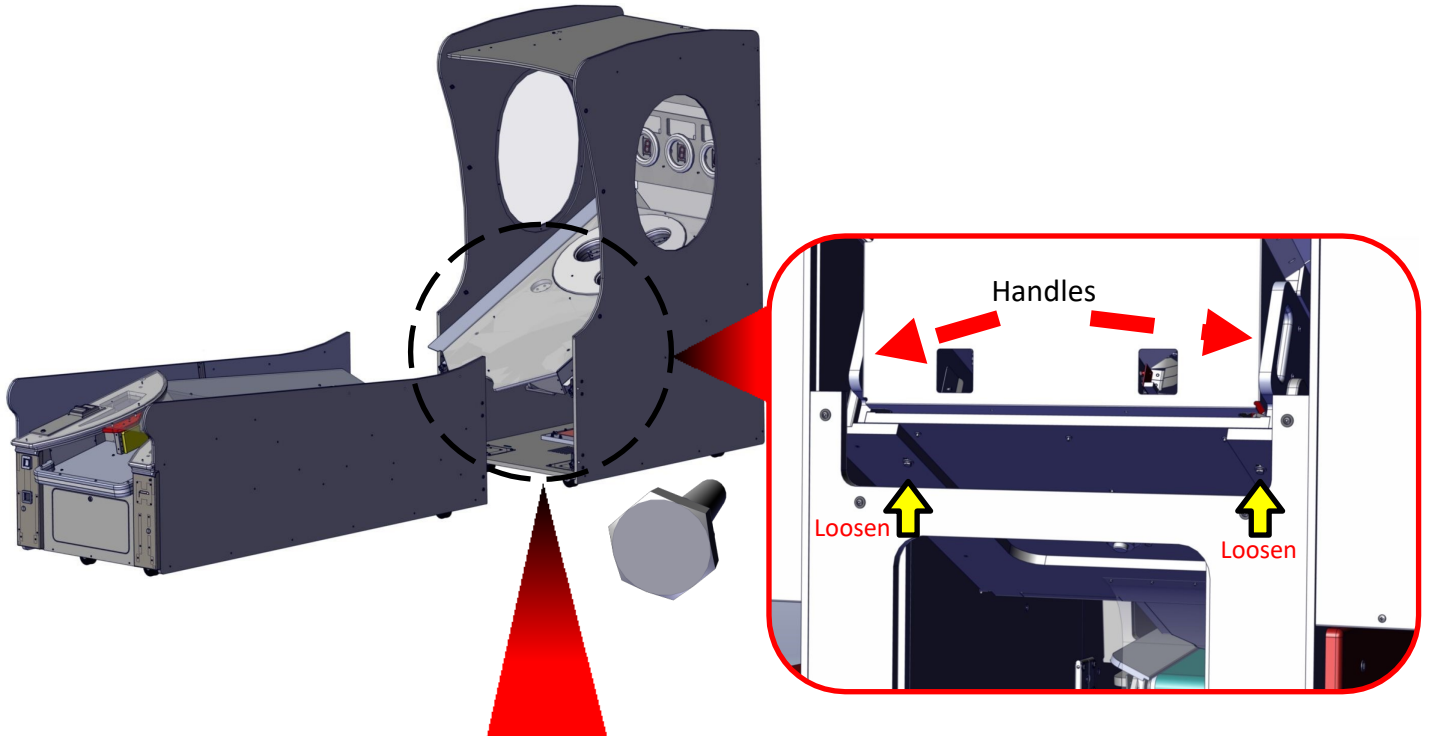


**** WARNING ****

(C) The cabinets must be equally leveled before sliding together!!

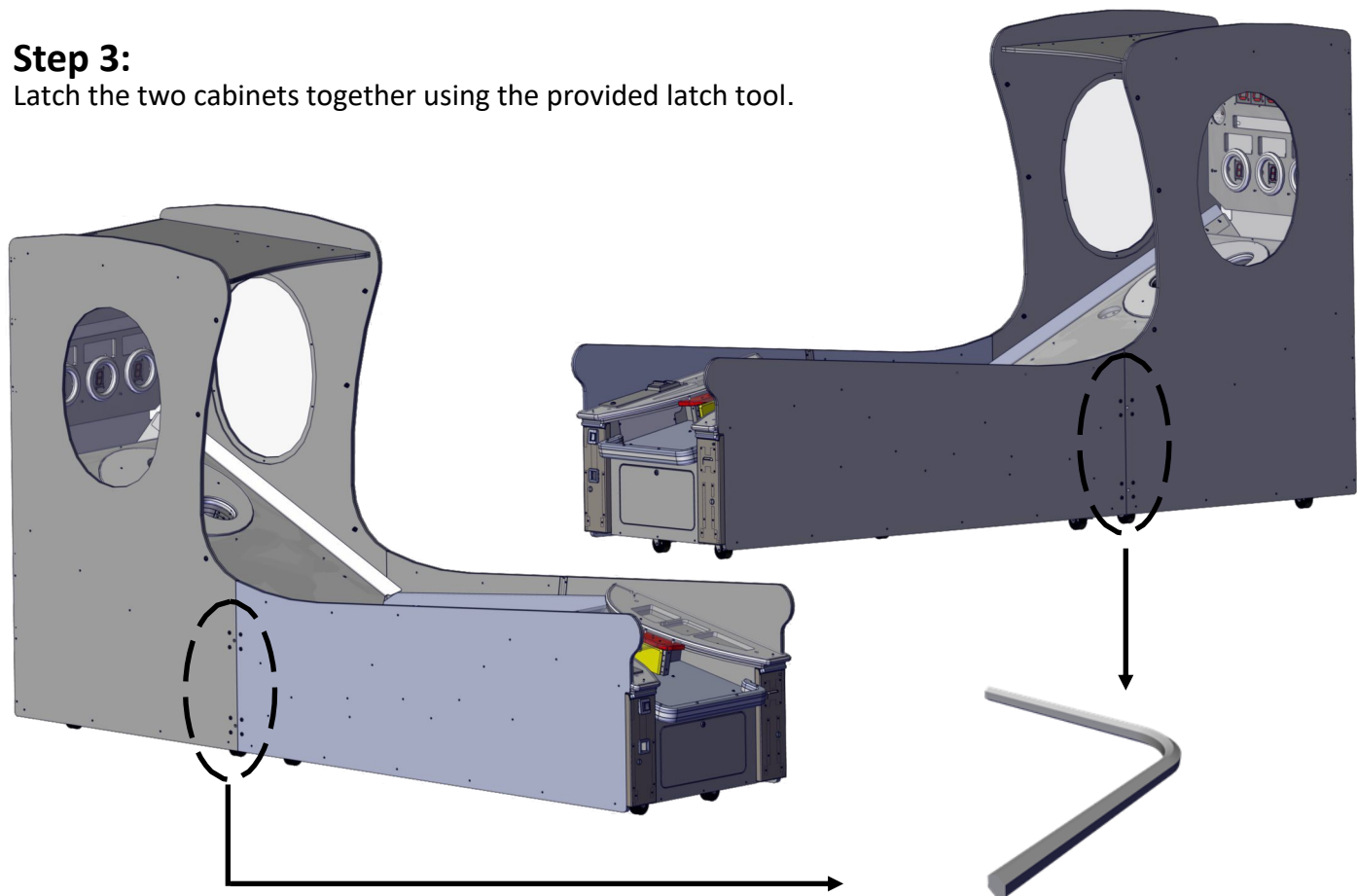
(D) The playfield cannot touch the conveyor belt when cabinets are flush. There must be a gap of 1/8 to 1/4 inch between the belt and playfield assembly. Serious damage to the belt will occur if touching.

To adjust the gap, loosen the two Hex bolts shown below, pull the playfield assembly slightly back until the desired gap is made. Tighten the Hex bolts.



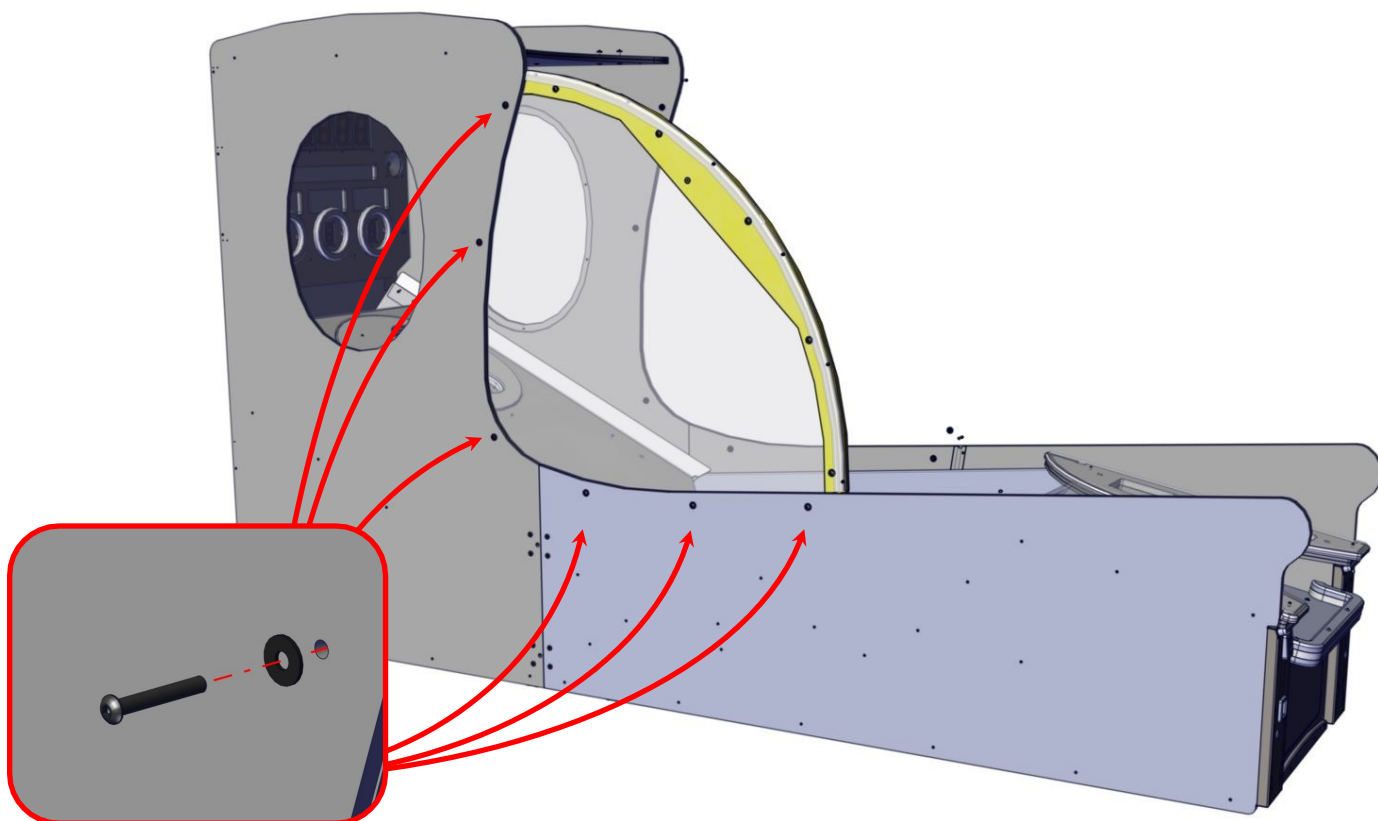
Step 3:

Latch the two cabinets together using the provided latch tool.



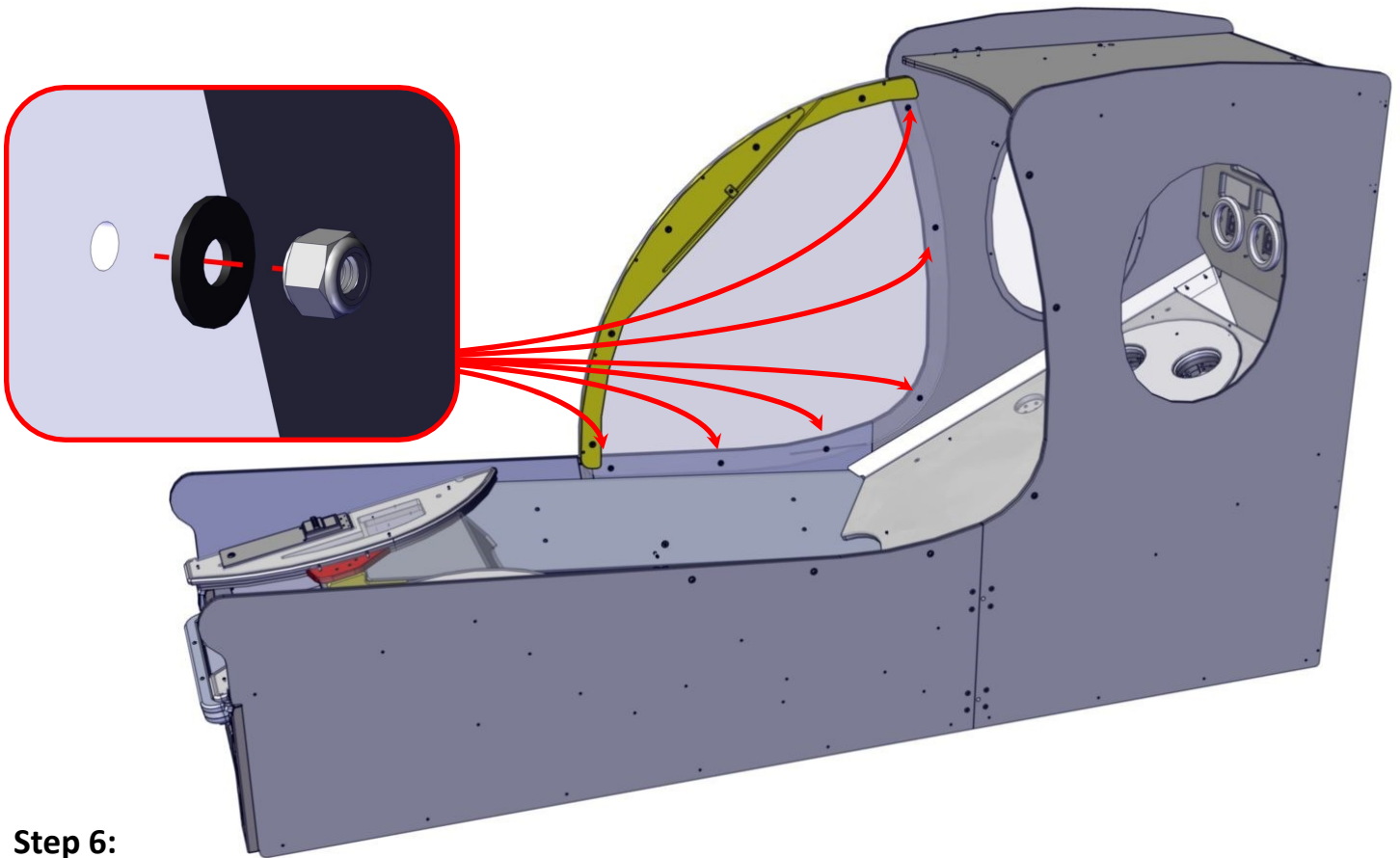
Step 4:

Attach the left playfield shield by inserting AA6281 bolts and AA6212 washers through the outside of the cabinet.



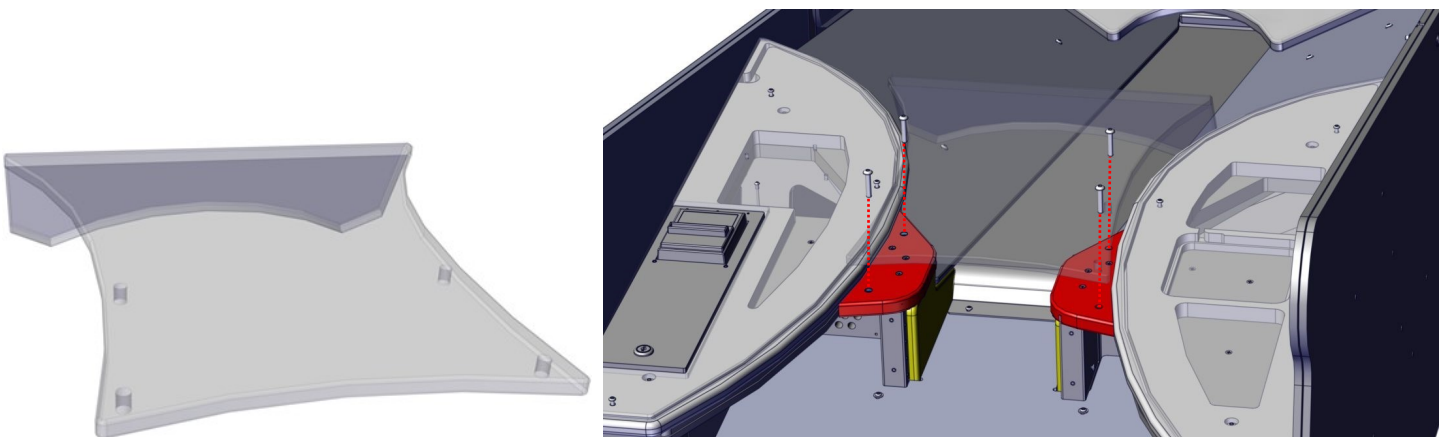
Step 5:

From the inside attach AA6212 washers and AA6966 nylon nuts but do not tighten now.



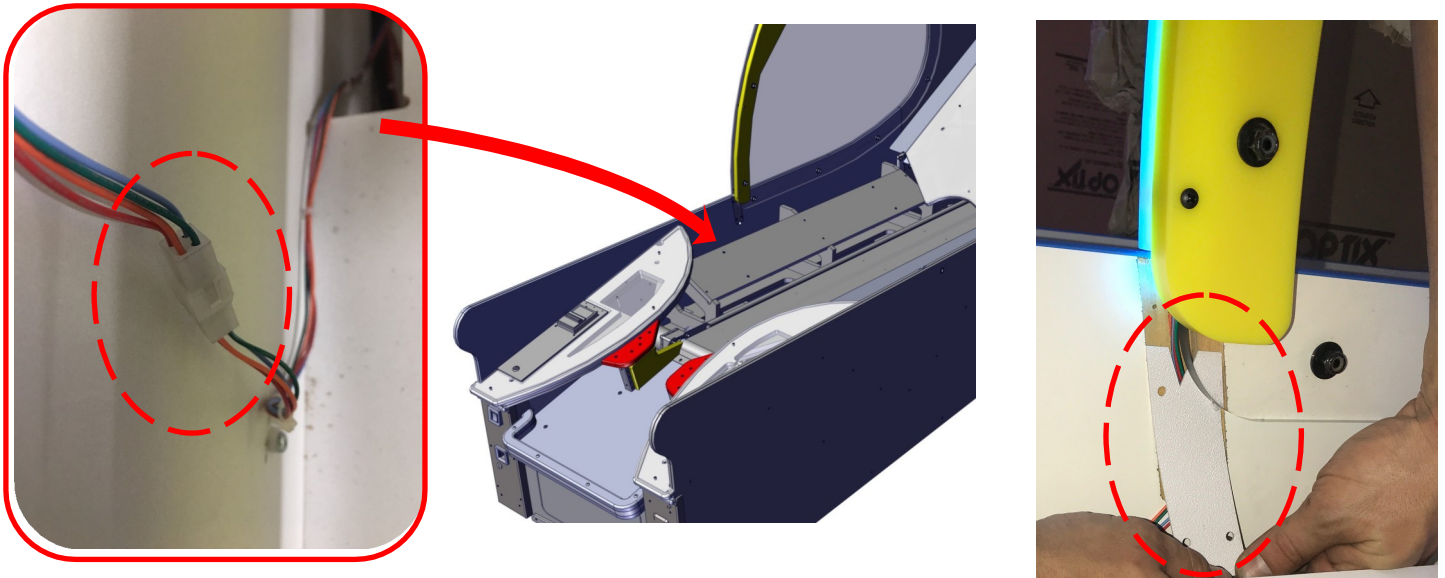
Step 6:

If installed, remove the conveyor finger shield and put aside. Four bolts secure the finger shield. If your unit is packaged with a finger shield removed, then you will install this after step 8.



Step 7:

Plug the RGB LED harness in and re-install cover. Do not reinstall the finger guard cover until both sides glass panels are installed. Slide the TL3213 LED cover on the left side and T3212 led cover on the right side.



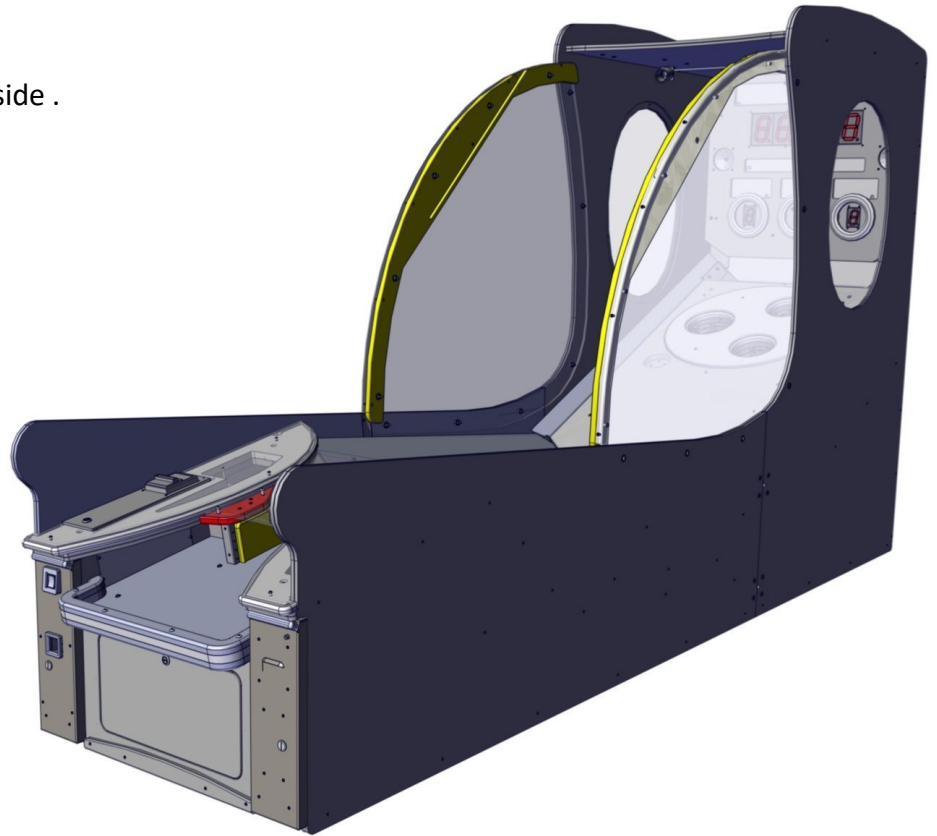
Step 8

Install the yellow side panels by sliding them under the playfield. Use the AA6281 with AA6212 washers. Once installed, you can attach the finger shield from Step 6.



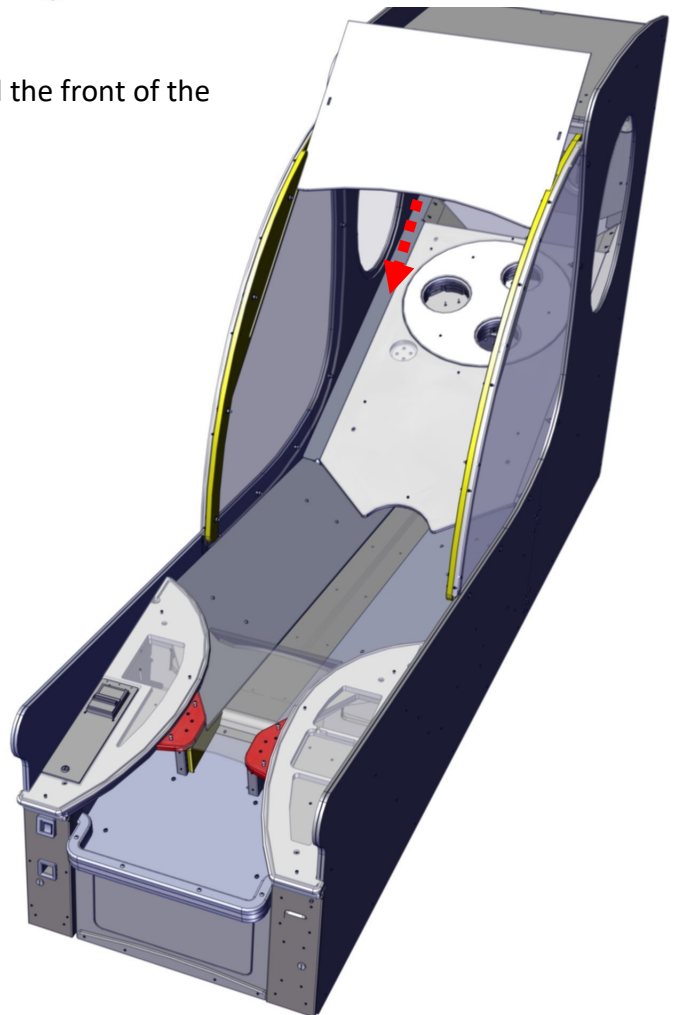
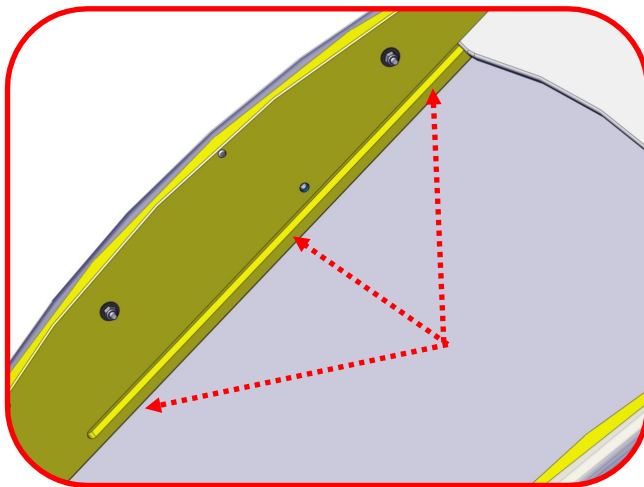
Step 9:

Repeat steps 4 through 7 for the right side .



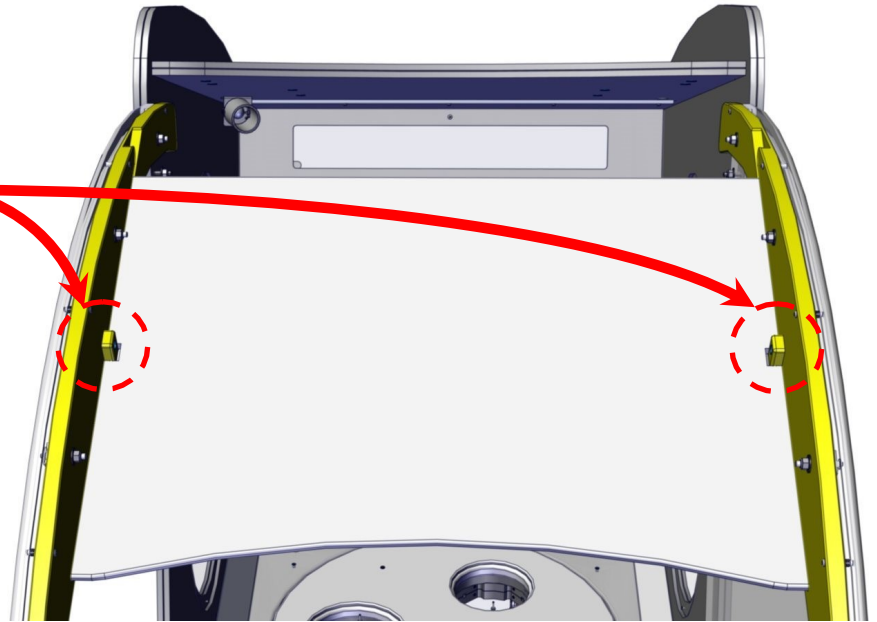
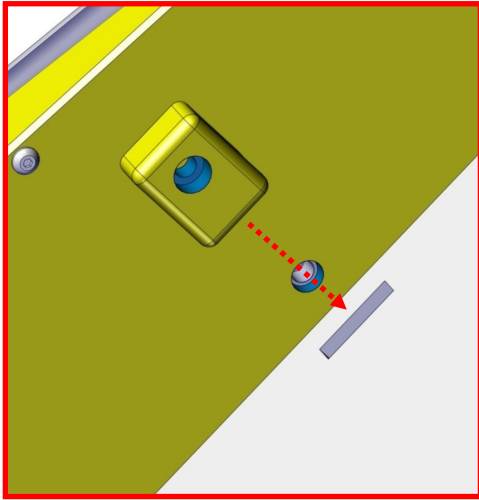
Step 10:

Slide the front playfield shield with the curved side toward the front of the cabinet.



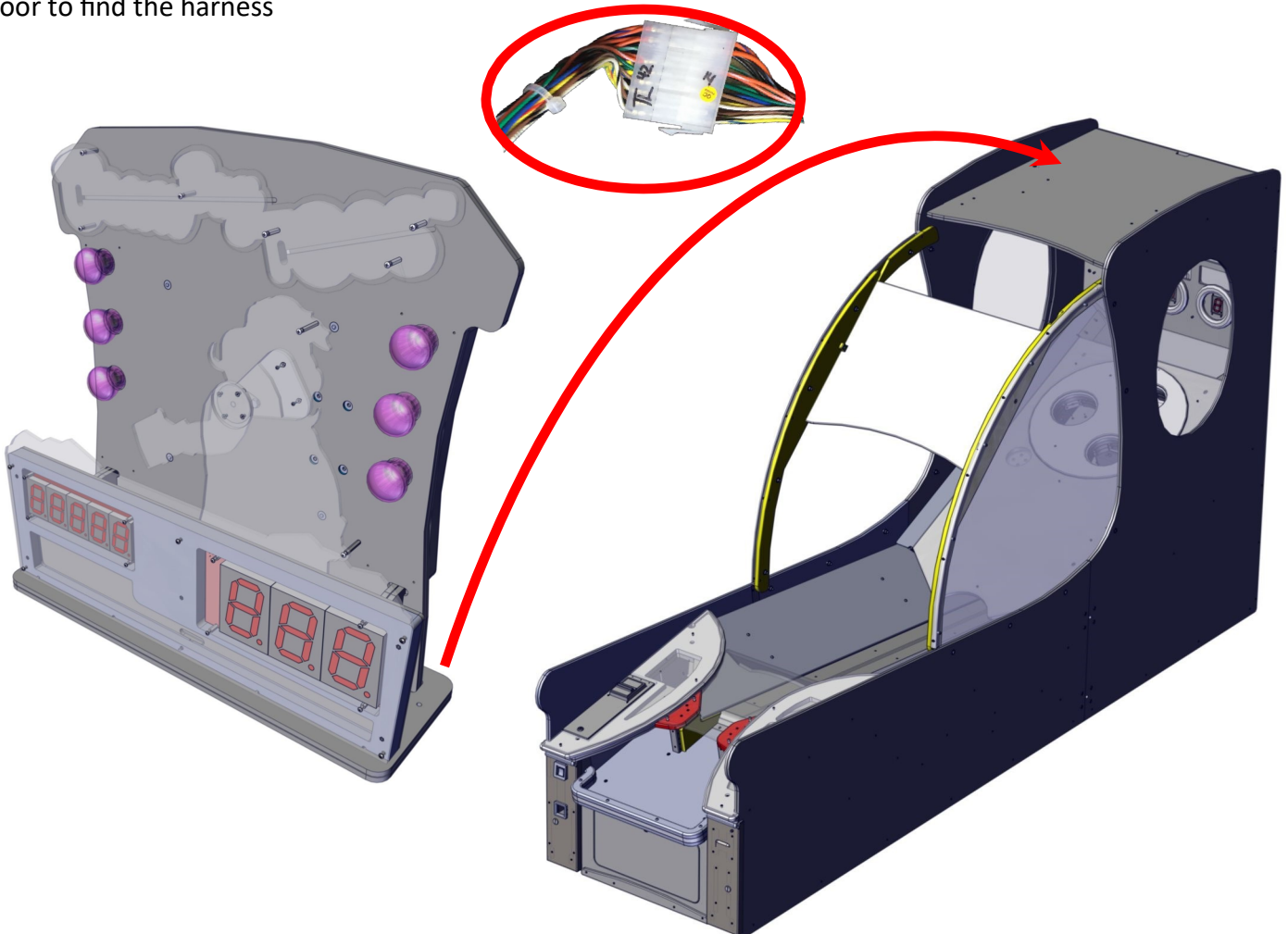
Step 11:

Secure the plastic by inserting a TL3243 into the top slot and use AA6210 hat nut outside and AA6211 on the inside. Some units will have two plastic locks per side for a total of four TL3243's holding the front shield.



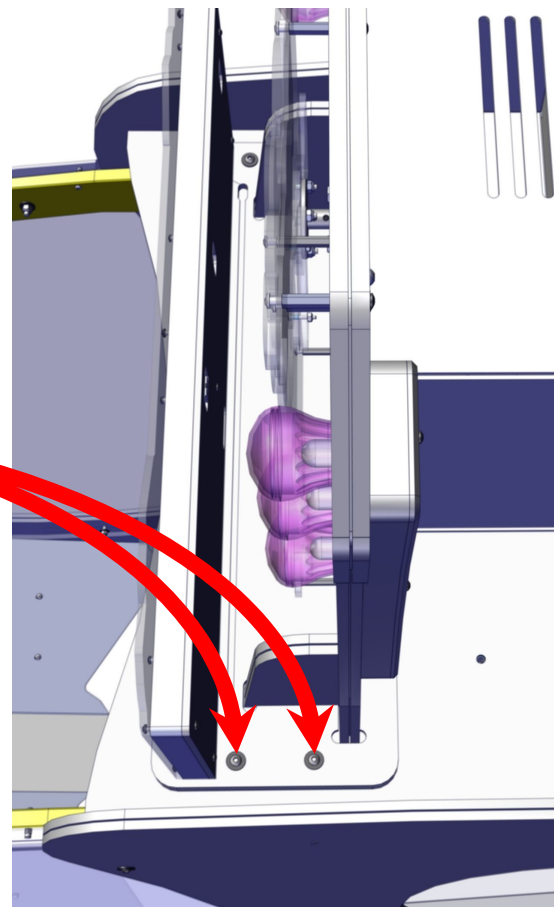
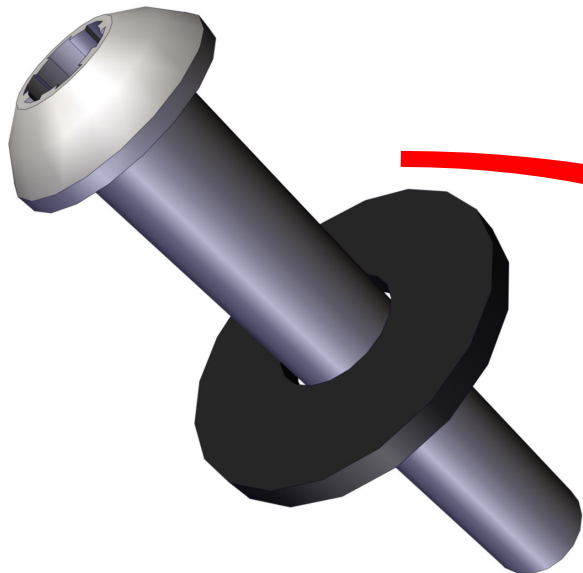
Step 12:

Lift the small marquee up onto the game. Plug in the back harness (it might be necessary to remove the back door to find the harness)



Step 13:

Secure the small marquee with four AA6281 and AA6212, two on each side.

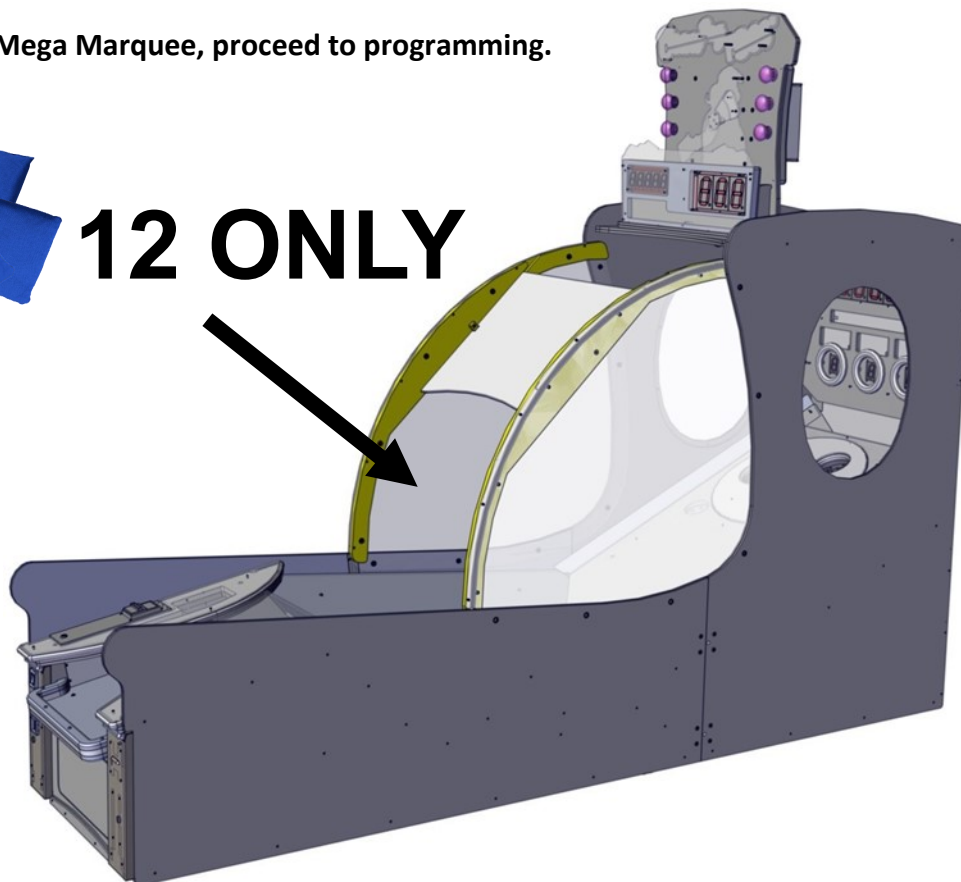


Put 12 bean bags ONLY into the game. Do not use more or less!!

If you don't have a Mega Marquee, proceed to programming.

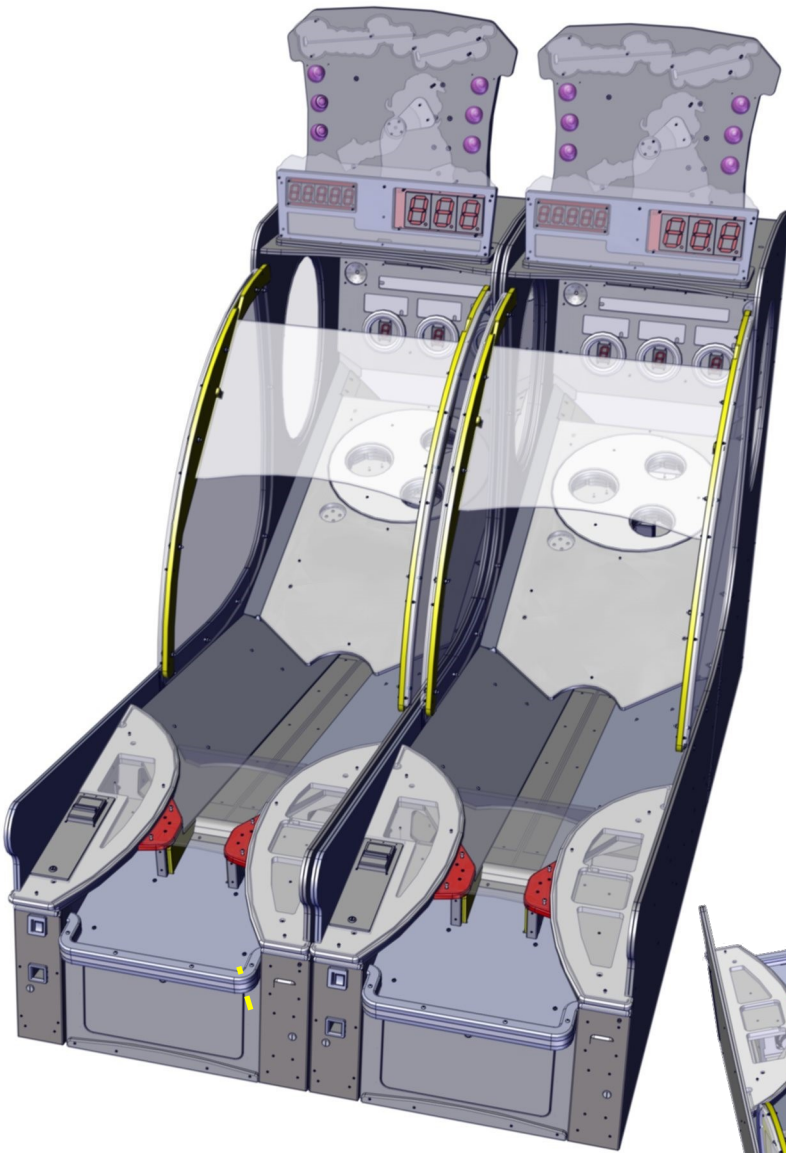


12 ONLY



Step 1: Mega Marquee Install

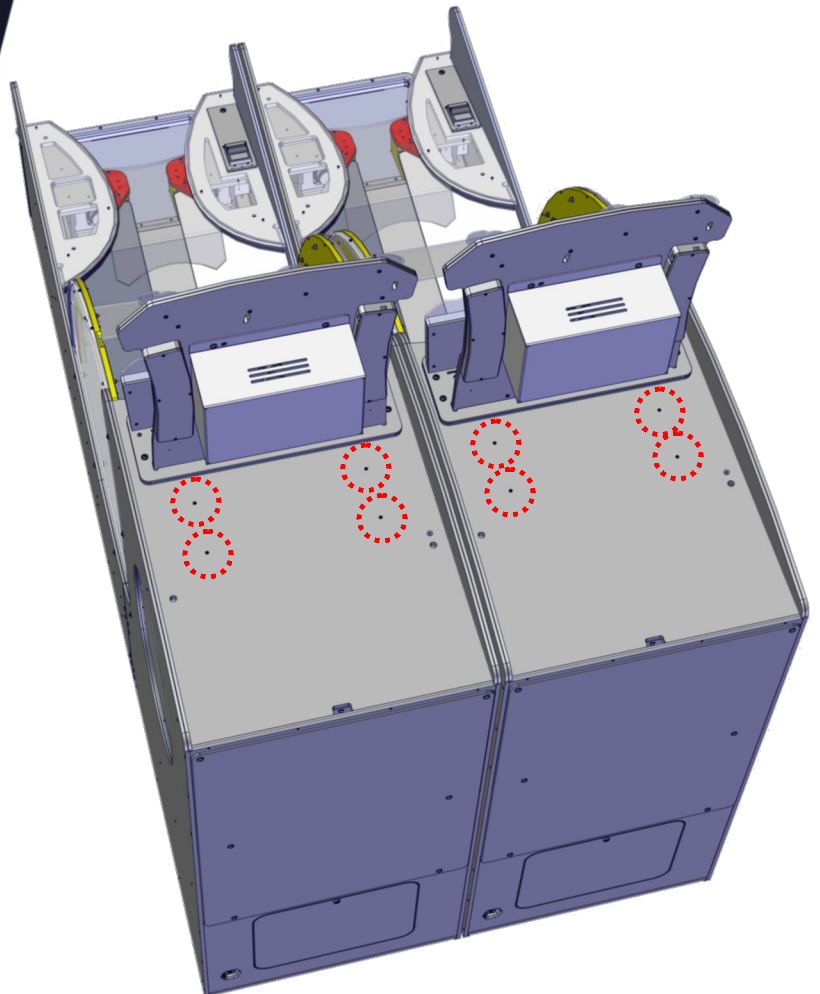
Position two games together as shown



Step 2:

Note the position of the indicated holes.

These will be used to mount the mega marquee.



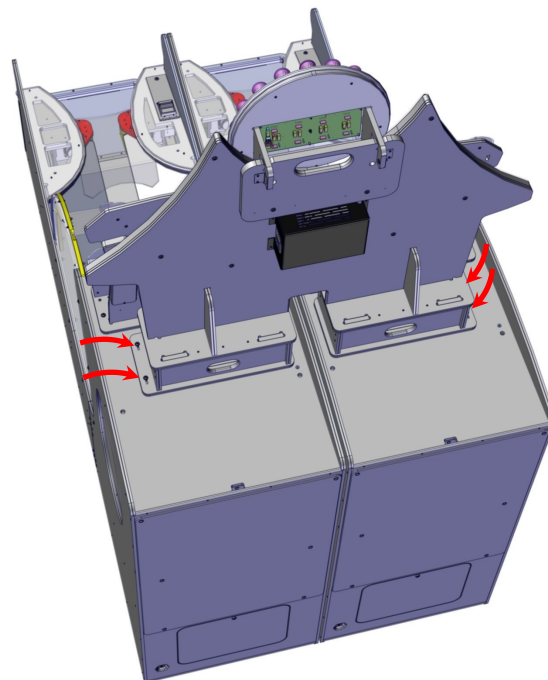
Step 3:

Lift the marquee up onto the game. Secure it using four AA6281 Allen bolts and four AA6212 washers.

Connect one of the games to the marquee sign using provided link cable. Plug AC power cord and make sure switch is set to the on position (I, not O).

DO NOT LINK TWO THE GAMES TOGETHER.

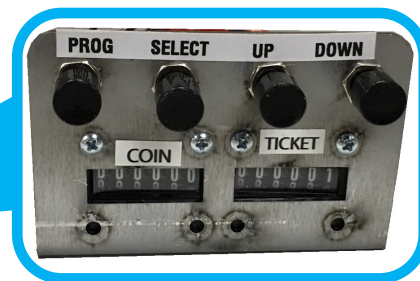
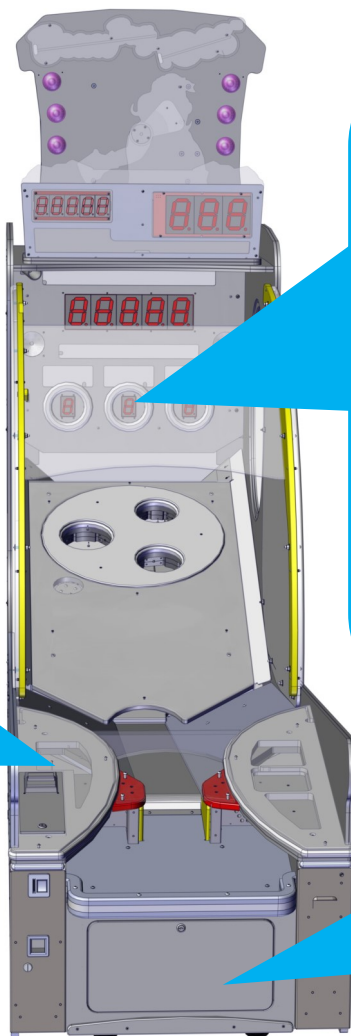
MAKE SURE THAT BOTH GAMES ARE SET THE SAME IN OPTIONS..



Game Controls and Meters

Located at the front of the game is the operators control panel. There you can quickly adjust the volume of the game by pressing the “UP” and “DOWN” push buttons. You can view how many coin pulses the game has seen and how many tickets it had paid out.

To adjust the game’s programming, press the “PROG” button to enter programming. The “SELECT” push button will cycle through the different options. This is shown on the “TIME LEFT” display. Pushing the “UP” push button will increase the options’ value while pressing the “DOWN” push button will decrease the options’ value. This is displayed on the back display labeled “YOUR SCORE”.



Programming Options for Tail Gate Toss Software Revision 2.06

<u>Option</u>		<u>Default</u>	<u>Min</u>	<u>Max</u>	<u>Inc</u>	
0	Game Volume	6	0	7	1	Game Volume.
1	Music Volume	5	0	7	1	Music Volume.
2	Coin 1	1	0	9	1	Cost of Game.
3	DBV	0	0	9	1	# of Coin 1 pulse's.
4	Discount	0	0	9	1	# of Games till Disc.
5	Games Per Credit	1	1	9	1	# of Games Added per Credit.
6	Game Time	22	15	30	1	Game in Seconds.
7	Attract Time	2	0	30	1	Attract time in minutes.
8	Attract Audio Time	1	0	100	1	Set in 30 second increments.
9	Fixed Tickets	0	0	250	1	0 use table/bonus, any # pays only that.
10	JFP	2	0	20	2	Just for Playing Tickets.
11	Games 2 Dec	1	0	30	1	Losses until the Target Score is Dropped.
12	Bonus Score Base	51000	500	99500	500	Score to beat for bonus start (Base score).
13	Ticket Bonus	500	0	975	25	Amount of Bonus Tickets, 0 = Free Game.
14	Ticket Cap	0	0	50	1	Max Tickets Given per game, 0 = off
15	Ticket Multiplier	1	0	2	1	0-JFF/Free, 1-Normal, 2-1/2 physical
16	Slot – 5000	5	1	10	1	Slot 1 Value; see chart for suggestions.
17	Slot – 10000	10	1	25	1	Slot 2 Value; see chart for suggestions.
18	Slot – 15000	20	1	50	1	Slot 3 Value; see chart for suggestions.
19	Slot - 20000	30	1	100	1	Slot 4 Value; see chart for suggestions.
20	Slot – 25000	40	2	100	1	Slot 5 Value; see chart for suggestions.
21	Slot – 30000	50	2	100	2	Slot 6 Value; see chart for suggestions.
22	Slot – 35000	60	See Note below			Slot 7 Value; see chart for suggestions.
23	Slot – 40000	70	See Note Below			Slot 8 Value; see chart for suggestions.
24	Slot – 45000	80	See Note Below			Slot 9 Value; see chart for suggestions.
25	Slot – 50000	90	See Note Below			Slot 10 Value; see chart for suggestions.
26	Slot Value 35k-50k	1	1	5	1	Multiplier Value

Understanding Options 22 through 26 notes:

Options 22 through 25 maximum value is determined by taking the value of option 26 and multiplying it by 250.

The minimum and increment values is the value of option 26.

Other notes:

Attract audio time counts in 30 second increments. 1 = 30 seconds, 2 = 60 seconds, etc. 0 = off.

Ticket Bonus = 0 will produce a free Game award and Blanks the Display.

Ticket Multiplier = 0 and Ticket Bonus = 0 will produce “Just for Fun Playing” or NO TICKETS

Ticket Multiplier = 0 and Ticket Bonus > 0 will result in Wins 1 Ticket for Bonus.

Bean Bag Toss Score Charts

50¢ Payout
TL7216

50¢ Payout	TL7216
2	
5	
10	
15	
20	
25	
30	
40	
50	
60	
250	

\$1 Payout
TL7217

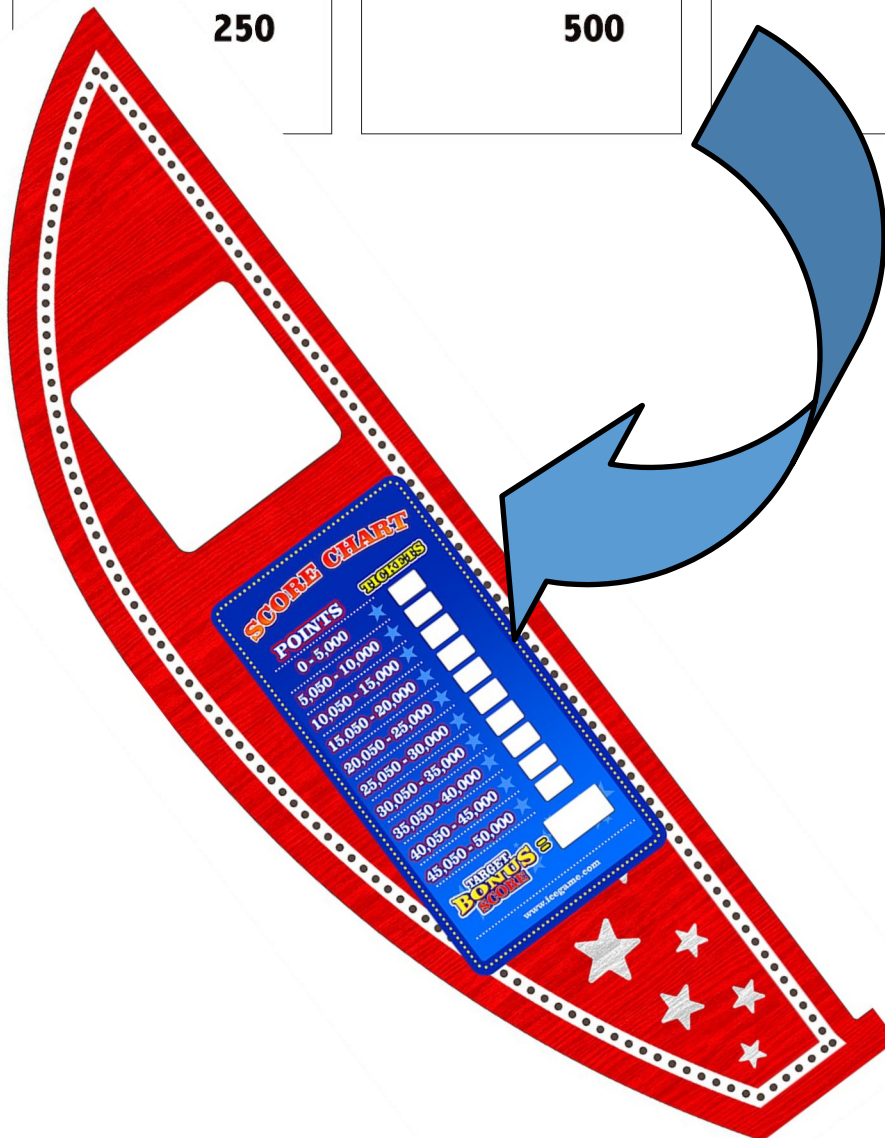
\$1 Payout	TL7217
5	
10	
20	
30	
40	
50	
60	
70	
80	
90	
500	

\$1.50 Payout
TL7218

\$1.50 Payout	TL7218
10	
20	
30	
40	
50	
60	
70	
80	
90	
100	
500	

\$2 Payout
TL7219

\$2 Payout	TL7219
20	
30	
40	
50	
60	
70	
80	
90	
100	
150	
500	



Step 1) Remove the plaque that is mounted to the game.

Step 2) Use clear tape to secure the desired Score Chart under the plastic panel.

Step 3) In the game software settings change options 16 through 25 to match the score chart you have chosen.

Step 4) Install the plaque back onto the game using the three AA6953 (8-32 x 1") screws.

NOTE: To print a Custom Score Chart please contact ICE technical support at (716) 759-0360 Monday through Friday 8:30am to 6:00pm Eastern Standard Time or at www.icegame.com.

The values used must be within the software's maximum and minimum limits.

ERROR CODES

When AC power is applied, some devices will do a self-test. The following error codes can be displayed:

Error 1	Compact Flash Error	Error 2	Wheel Blue Sensor Error on
Error 3	Wheel Green Sensor Error on	Error 4	Wheel Red Sensor Error on
Error 5	Wheel Blue Sensor Error off	Error 6	Wheel Green Sensor Error off
Error 7	Wheel Red Sensor Error off	Error 8	No Wheel Communication
Error 9	No Front Communication	Error 10	Over Back Sensor Error

Resolving Errors 8 and 9:

Errors 8 and 9 are generated when there is a loss of communication between either the Rotate I/O board (TL2035X) and Front I/O (TL2037X). Both I/O boards communicate to the main board by means of RS232 interface. This is accomplished by a ST3232 RS-232 Driver/Receiver IC on all boards (TL2034X, TL2035x, and TL2037X). On the main board (TL2034X) J17 connects through a TL2009 slip ring and then to J9 of the Rotate I/O board (TL2035X). J16 on the main board connects to J3 of the Front I/O board (TL2037X). Error 8 is caused by the Rotate I/O board and Error 9 is caused by the Front I/O.

Step by Step to resolve ERROR 8:

Step 1: Swap Connector J17 with J16 on the main board. Cycle power of the game.

Did the error change to error 9?

If yes, replace Rotate I/O board (TL2035X).

If no, continue.

Step 2: Swap connectors back but leave J17 unplugged at the main board.

Unplug the 5 pin harness under the playfield assembly at the back of the game.

First examine the pins both at both boards and at the slip ring.

Found bad pins?

If yes, repair/replace, reconnect all connectors and reboot game.

If no, continue.

Step 3: Use a voltage meter set to Ohms and measure the resistance on each wire in the harness.

All read 1 ohms or less?

If yes, continue.

If no, replace harness or repair the broken wire. Reboot game.

Step 4: First examine the pins both at both boards and at the slip ring.

Found bad pins?

If yes, repair/replace, reconnect all connectors and retest game.

If no, continue.

Step 5: Leave the harness unplugged and unplug J9 from the Rotate I/O board (TL2035X).

Measure the resistance of the wires going through the slip ring. Each wire has an equal out.

All read 1 ohms or less?

If yes, replace main board.

If no, repair or replace harness. Reboot game.

Step by Step to resolve ERROR 9:

Step 1: Swap Connector J17 with J16 on the main board. Cycle power of the game.

Did the error change to error 8?

If yes, replace Front I/O board (TL2037X).

If no, continue.

Step 2: Swap connectors back but leave J16 unplugged at the main board.

Unplug J3 on the Front I/O board.

First examine the pins on both end of the harness connectors.

Found bad pins?

If yes, repair/replace, reconnect all connectors and reboot game.

If no, continue.

Step 3: Use a voltage meter set to Ohms and measure the resistance on each wire in the harness.

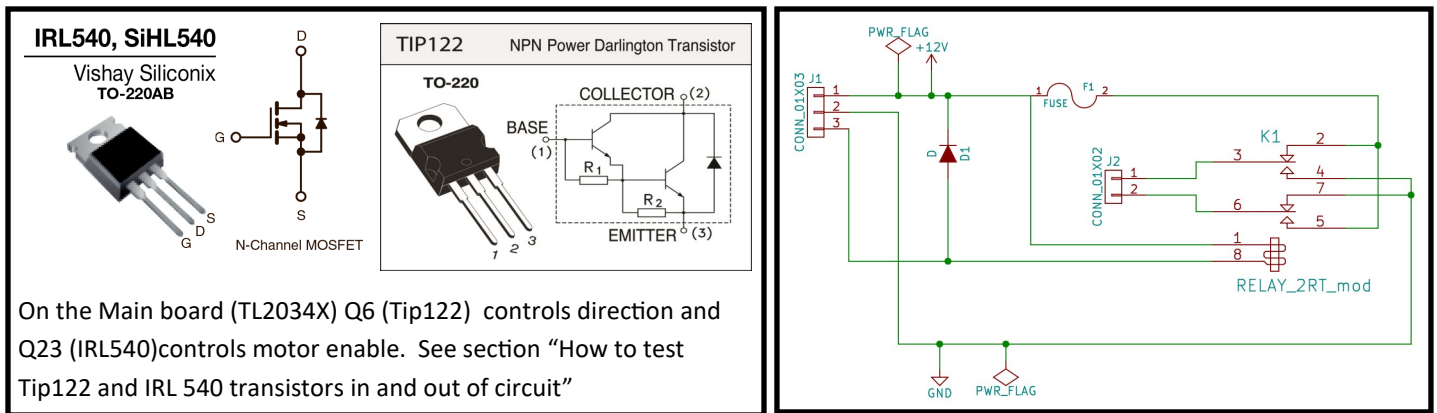
All read 1 ohms or less?

If yes, replace the main board (TL2034X).

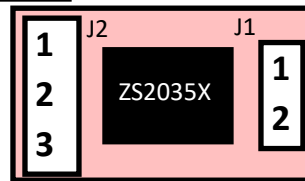
If no, replace the harness or repair the broken wire. Reboot game.

Playfield Movement (No error code will be generated at startup):

The Playfield motor is turned on through a relay and its direction of rotation is also controlled by the same relay. The motor is turned on by sending a ground signal from main board at J15, pin 2 to the relay J1 connector, at pin 2. Also on J1 at pin 1 is +15 volts of DC power that is used to power the coil of the relay and provide the out power for the playfield motor. The direction of rotation is controlled by the polarity of the voltage. This is controlled by connector J22, pin 2 of the main board. When this signal goes low the relay will energize and change state. The normally open and normally closed switches will flip, reversing polarity.



- From Power supply +15 VDC from BC2011 -> Pink
- From TL2034X J22, pin 2 (enable) -> Yellow/brown
- From TL2034X J15, pin 2 (direction)-> Violet/gray



- Orange <- Motor out 2 +/-
- Black <- Motor out 1 +/-

Step by Step to resolve Playfield Movement Issues:

No Movement:

Step 1: Use a voltage meter and measure between pin 1 of J1 on the relay board and ground on the either power supply. Is +15 VDC present at pin 1?

Yes, continue.

No, check the +15 VDC power supply for proper function, replace if necessary.

Step 2: Use a jumper wire and briefly connect pin 2 of J1 on the relay board to any ground on the power supply. Did the playfield spin a direction?

Yes, check the wire from Pin 2 of J1 to J15, pin 2 on the main board using the Ohm setting of your voltage meter. If reading less than a ohm, replace the main board (TL2034X). If open or high resistance, check the pins and repair if necessary. Other wise replace the harness.

No, check for 15 volts of DC on J2 of the relay board (the polarity doesn't matter).

If missing replace relay board (ZS2035X).

If present, measure harness to motor, check motor connection. Replace/repair as necessary. If voltage is present at motor and motor still doesn't rotate, re place motor.

Note: direction change occurs at 7, 14, and 21 seconds of the game as long as game time is at 22. Altering game time will also change how many times the game will change direction.

No Reverse Direction:

Step 1: Using a voltage meter measure the voltage present at pin 3 of J1 on the relay board. Use the power supply ground for your DC ground. Leave the probes on to monitor the voltage at pin 3 during a game. Voltage should be present while the playfield rotates in one direction and drop to 0v the other direction. This will occur depending on how many times the game changes direction. Voltage present one way and not the other?

Yes, but the playfield rotated in only one direction, replace ZS2035X relay board.

No, check wiring from J1, pin3 to J15, pin 2 of the main board. Measure the ohms.

If 1 Ohm or less and pins of the connectors are good, replace TL2034X main.

If open or more than a ohm, repair wiring or replace harness. Retest.

Resolving conveyor problems

The conveyor motor is powered with 110/230 volts of AC power. AC is provided to the motor when the solid state relay activates. The relay controls the “hot” line of AC to the motor while neutral is connected directly to the motor. The relay is turned on by the main board (TL2034X) by Q5 (Tip 122).

**** DANGER ** High voltage is present on the relay and the follow steps should only be preformed by a qualified technician.**

Step 1: Check AC voltage to relay. Use a voltage meter set to AC and measure Pin 1 (brown wire) of the solid state relay and any neutral wire from the power module (blue wire). If you get 0v, move your probe off pin 1 and move it to pin 2. Do you have 110/230 volts present?

Yes, continue.

No, Check all AC connections from power module including pins in the connector. Repair/replace as necessary. AC is also connected to the 15/12 volt supplies, check AC (game would have other issues!).

Step 2: Check DC voltage to relay. Use a voltage meter set to DC and measure pin 3 (orange wire) with your red probe and put the black probe on any ground from the power supply. Is +12 volts DC present?

Yes, continue.

No, move the red probe to J4, pin 1 of the main board (TL2034X). Is +12 VDC present?

Yes, fix trace connecting J14 pin 1 to J4 pin 1 (or run a +12 wire to relay).

Step 3: Use a jumper wire and connect one end to any DC ground from the power supply. Touch the other end to Pin 4 (violet/orange wire). Did the conveyor come on?

Yes, move the wire to the metal tab of Q5 (careful, a small spark will occur).

If the conveyor came on there is an issue with the CPU board turning Q5 on. Replace TL2034X board.

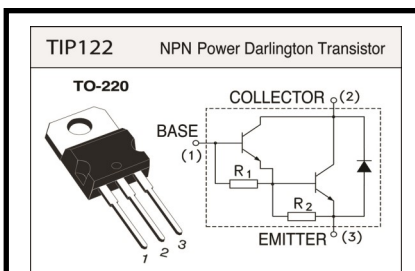
If the conveyor comes on with relay grounded but not when Q5’s tab is shorted to ground, check Q5 (see section “How to test Tip122 and IRL 540 transistors in and out of circuit” on how). Replace if necessary. Retest.

No (conveyor never came on), measure AC again. With the ground wire connected to pin 4 of the relay, put one probe on AC neutral and measure pin 1 then pin 2 on the relay. You should read 110 on both.

If not, replace relay and retest.

If present, check wire harness to motor and motor harness pins. Repair/replace as necessary.

If all tests fine, replace playfield motor (VERY RARE FAILURE).



On the Main board (TL2034X) Q5 (Tip122) enables the relay that turns on the conveyor. See section “How to test Tip122 and IRL 540 transistors in and out of circuit”

Maintenance Suggestions:

We recommend the use of “Pledge” Furniture Polish on both the conveyor belt and plastic ramp at least once a week.

Resolving errors 2 through 7.

There are three score holes which are colored red, green, and blue. In each of these holes are two sensors that detect when a bean bag has fallen into the hole. These sensors are enabled by two enable lines. When the game is powered on it will enable only one enable line for the score sensors. This activates sensors 1, 3, and 5. Each of these sensors are in a different win hole. The game tests the function of the sensor and generates an error code if bad. Then the game enables the second enable line and turns off the first. This activates sensors 2, 4, and 6. Again, the game tests the function of the sensors and generates an error code if bad. If all tests are good, the game goes into attract mode.

Before you work on resolving the next few errors, it might become necessary to follow the steps in "Accessing Playfield Sensors and the Rotate I/O board" first before trying some of these steps.

Resolving Error 2 or error 5.

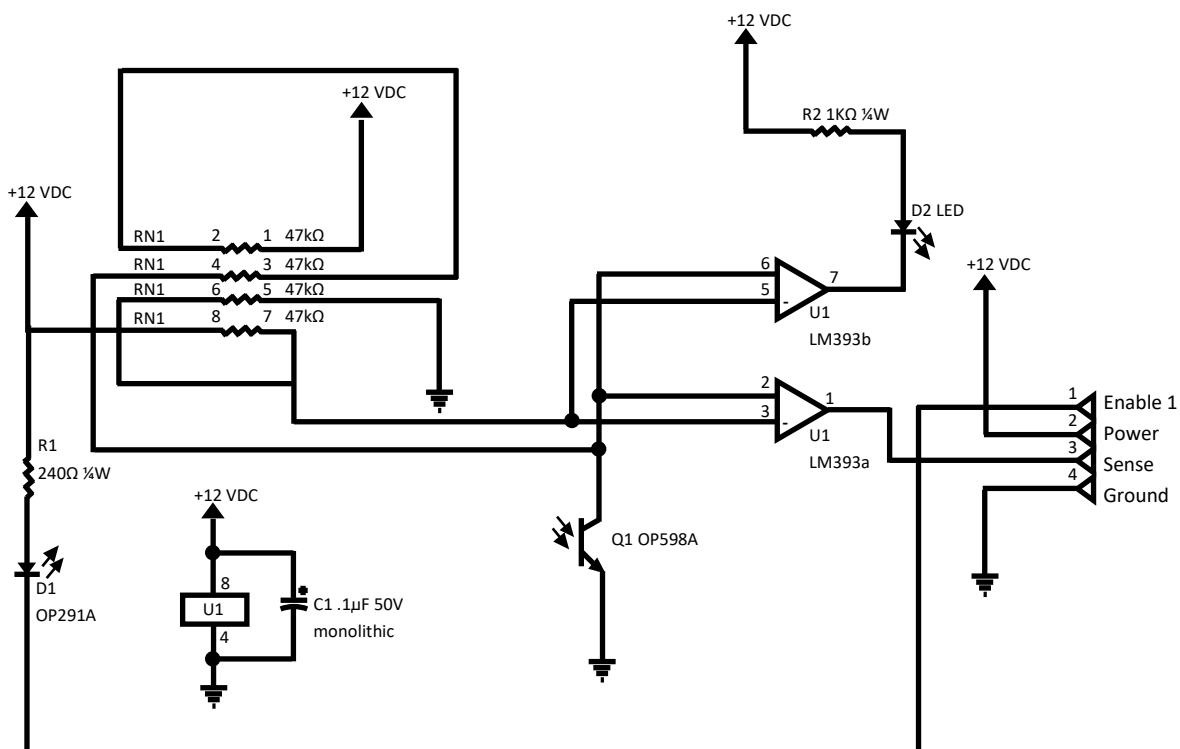
This error occurs when one of the two sensors in the blue win hole fails power on test. A small LED diode located on each sensor board indicates the status of sensor. If it is off and nothing is blocking the hole, then either the transmitter is not being seen or the sensor has no power. If the LED is always on, then the receiver circuit is at fault. You can see the LED through the top of the playfield.

Resolving Error 3 or error 6.

This error occurs when one of the two sensors in the green win hole fails power on test. A small LED diode located on each sensor board indicates the status of sensor. If it is off and nothing is blocking the hole, then either the transmitter is not being seen or the sensor has no power. If the LED is always on, then the receiver circuit is at fault. You can see the LED through the top of the playfield.

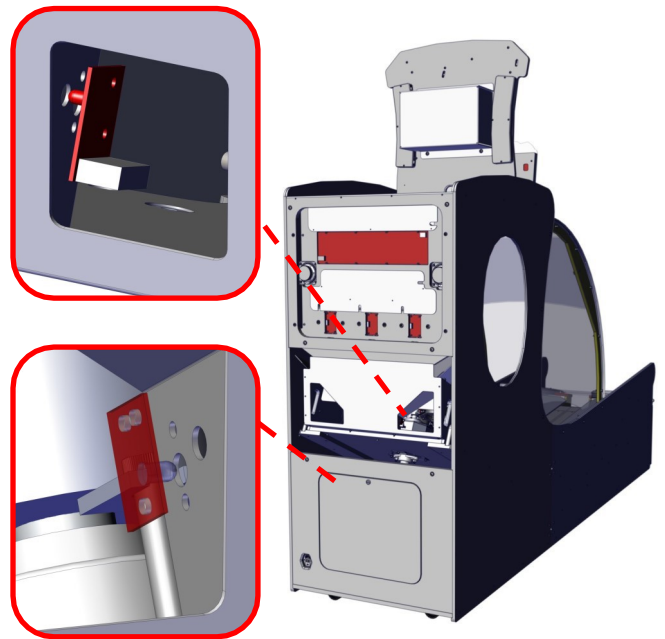
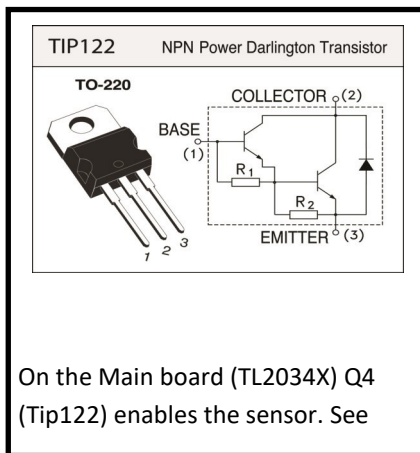
Resolving Error 4 or error 7.

This error occurs when one of the two sensors in the red win hole fails power on test. A small LED diode located on each sensor board indicates the status of sensor. If it is off and nothing is blocking the hole, then either the transmitter is not being seen or the sensor has no power. If the LED is always on, then the receiver circuit is at fault. You can see the LED through the top of the playfield.



Resolving Error 10.

Located at the back of the game is the miss sensor. This sensor is slightly different than the score hole sensors but function the same. When this sensor fails, it will generate error 10 when the game is powered on. A small LED diode located on the sensor board indicates the status of sensor. If it is off and nothing is blocking the hole, then either the transmitter is not being seen or the sensor has no power. If the LED is always on, then the receiver circuit is at fault. You can see the LED though the top of the play-field. See “Resolving errors 2 through 7” for schematics.



Resolving error 1.

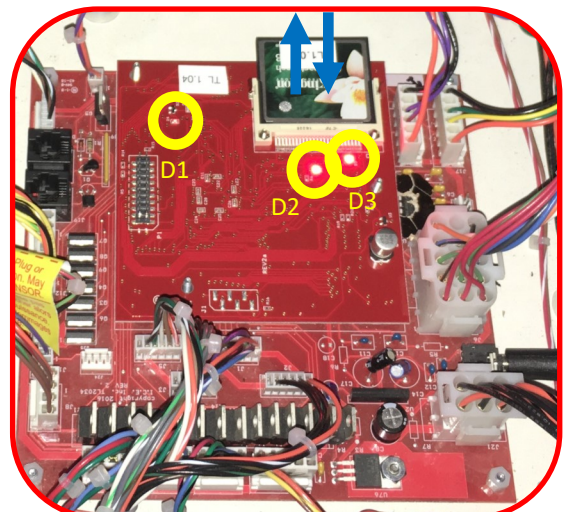
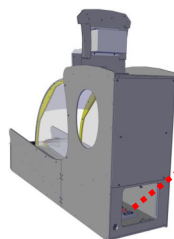
No Compact flash card was detected. This can be caused by either a corrupted compact flash card, failed compact flash card, or hardware failure on the CPU board. If another machine is available, swap the two compact flash cards between the two machines to see if the problem follows. If the problem follows, then the problem is the card. If you have only one game, try these steps:

Step 1: Reseat Compact Flash card — With the power off, pull out the compact flash card and then push it back in. Turn power back on.

Step 2: Look at D1 on the CPU board, is the LED light on constant or is it blinking? If it is blinking, then it is reading the compact flash card. If the light is constant, it cannot read the compact flash card. Replace the CF card.

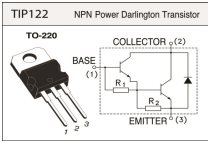
Step 3: Look at D3 and D2, are they on? If not, D3 is the +5 voltage which is used by the compact flash. D2 is the 3.3 voltage used by the IC's of the CPU board. Replace the CPU board if no power indicators are not on.

Step 4: In rare cases, the CPU board can have D2 and D3 on but still be bad.



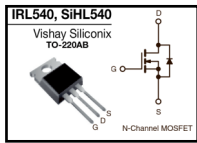
How to test Tip122 and IRL 540 transistors in and out of circuit.

For the most part, when these components fail, they will short. Although it is best to remove the component in question to do these tests it can be done in circuit and without removing them. Use a multi-meter set to diode test/check.



TESTS GOOD (Voltages will vary depending on meter)

TESTS BAD (Shorted)
If the component tests shorted in circuit remove from board to confirm if truly shorted.



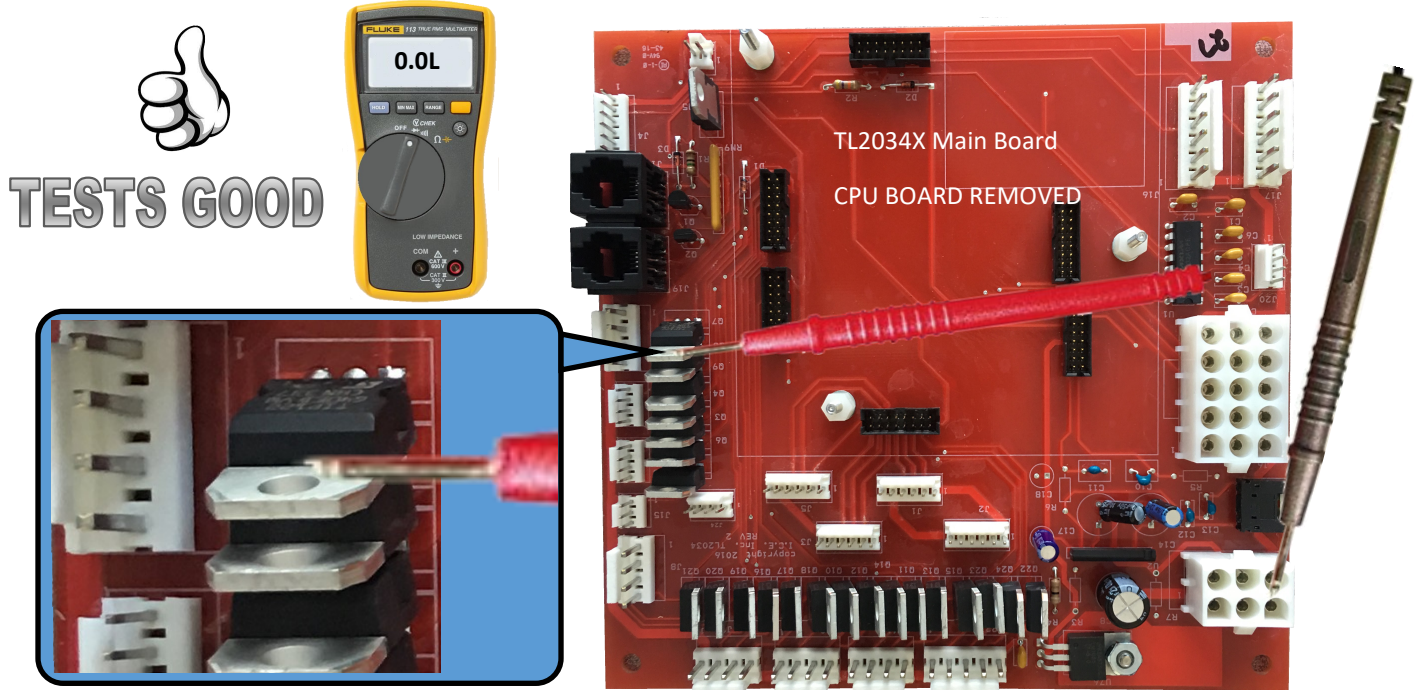
TESTS GOOD (Voltages will vary depending on meter)

TESTS BAD (Shorted)
If the component tests shorted in circuit remove from board to confirm if truly shorted.



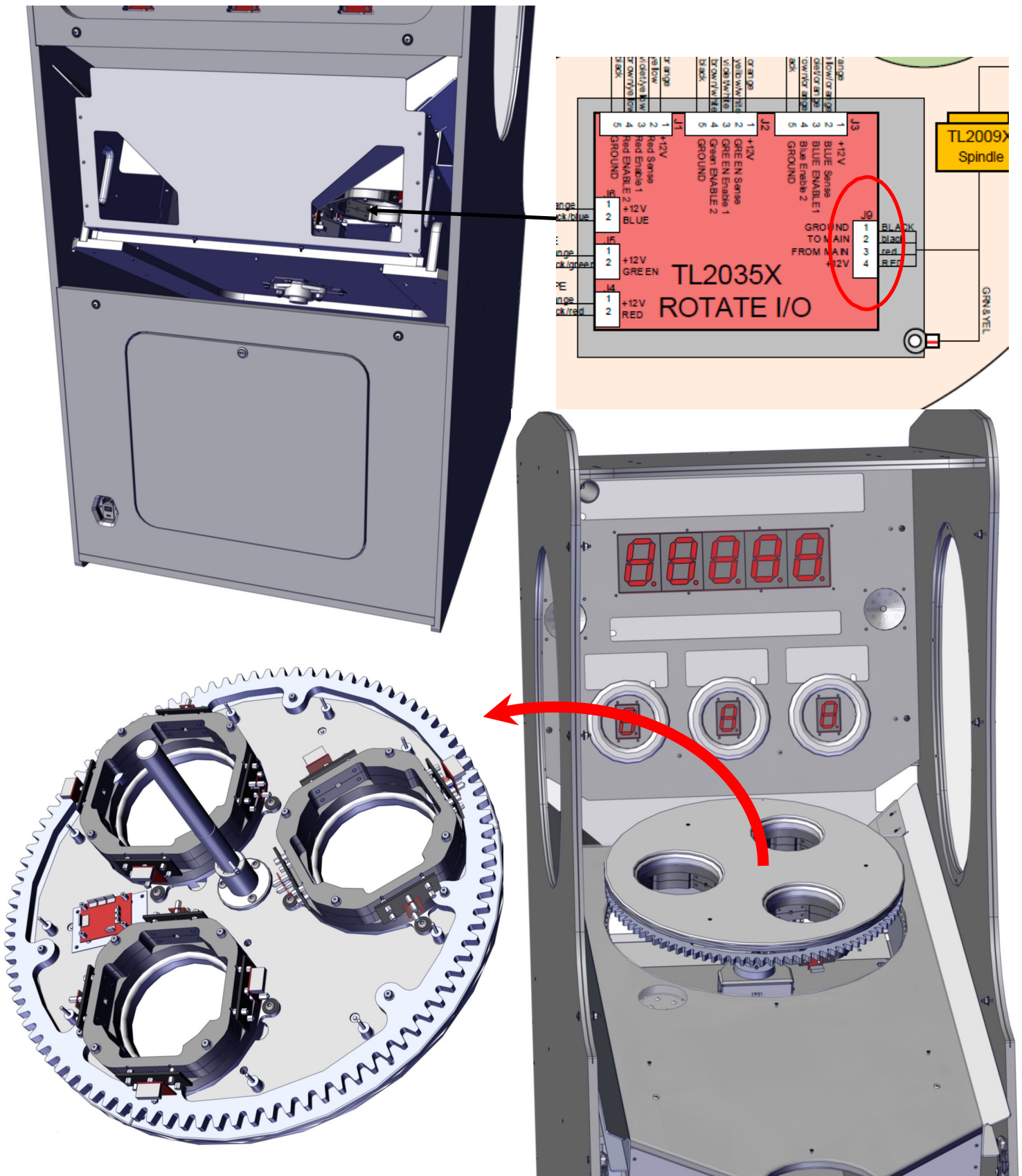
How to test Tip122 and IRL 540 transistors in and out of circuit.

This test is quick and simply. Using a multi-meter set to diode check, insert the black probe to J21, pin 6. Using the red probe, touch each transistor's (either a Tip 122 or IRL540) metal tab. The meter should show open. If you flip the two probes around and have the red probe on ground and touch each metal tab you will have .5 to .6 volts. If any of them show shorted (most meters will buzz too) then that transistor is bad.



Easy Access to Sensors:

Remove the back cover, and locate the Rotate I/O harness connectors shown below and unplug.

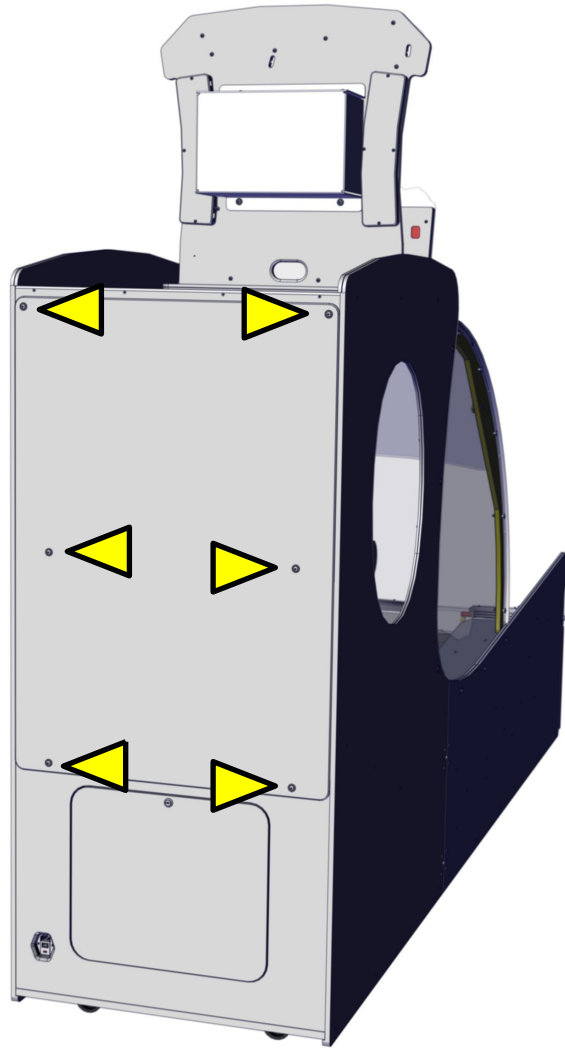
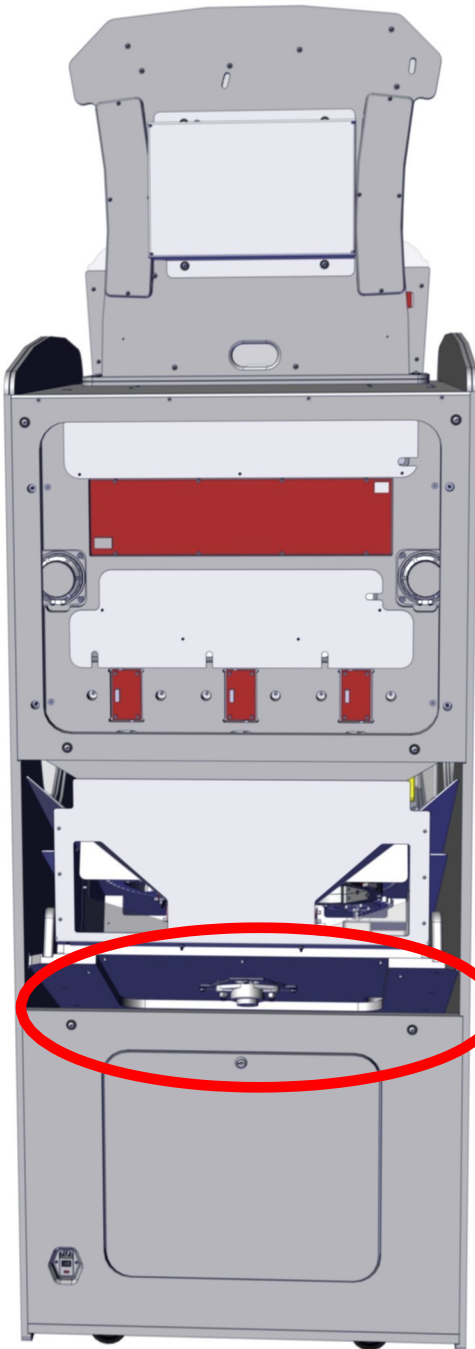


Accessing Playfield Sensors and the Rotate I/O board.

Remove the Upper Back Door

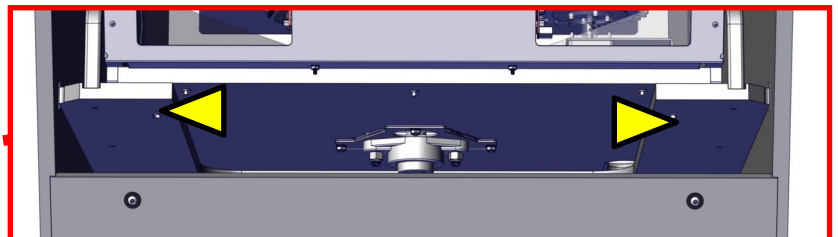
There are 6 Allen bolts and washers holding the upper back door assembly together.

Remove the hardware and put the back door aside.



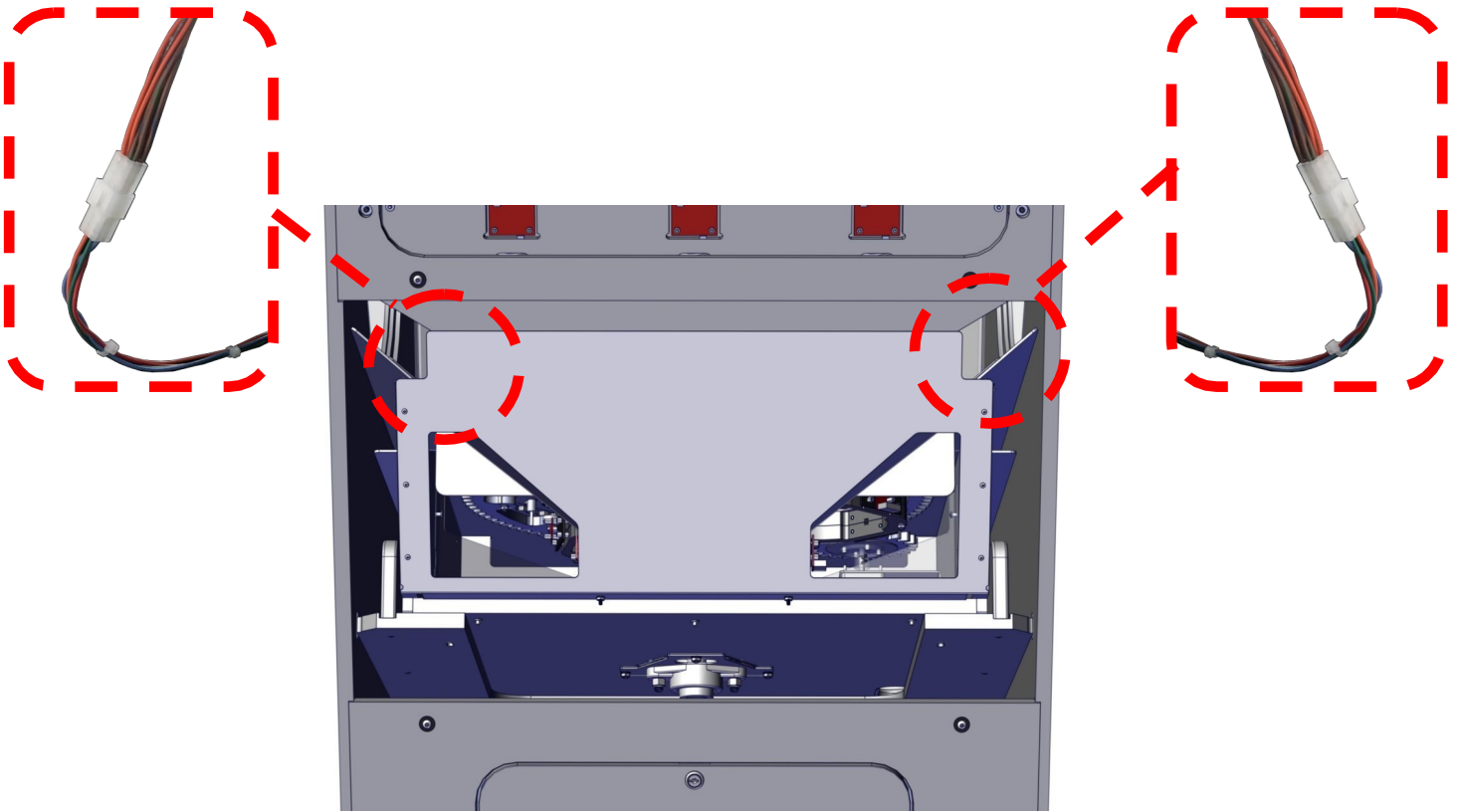
Release the Playfield Drawer

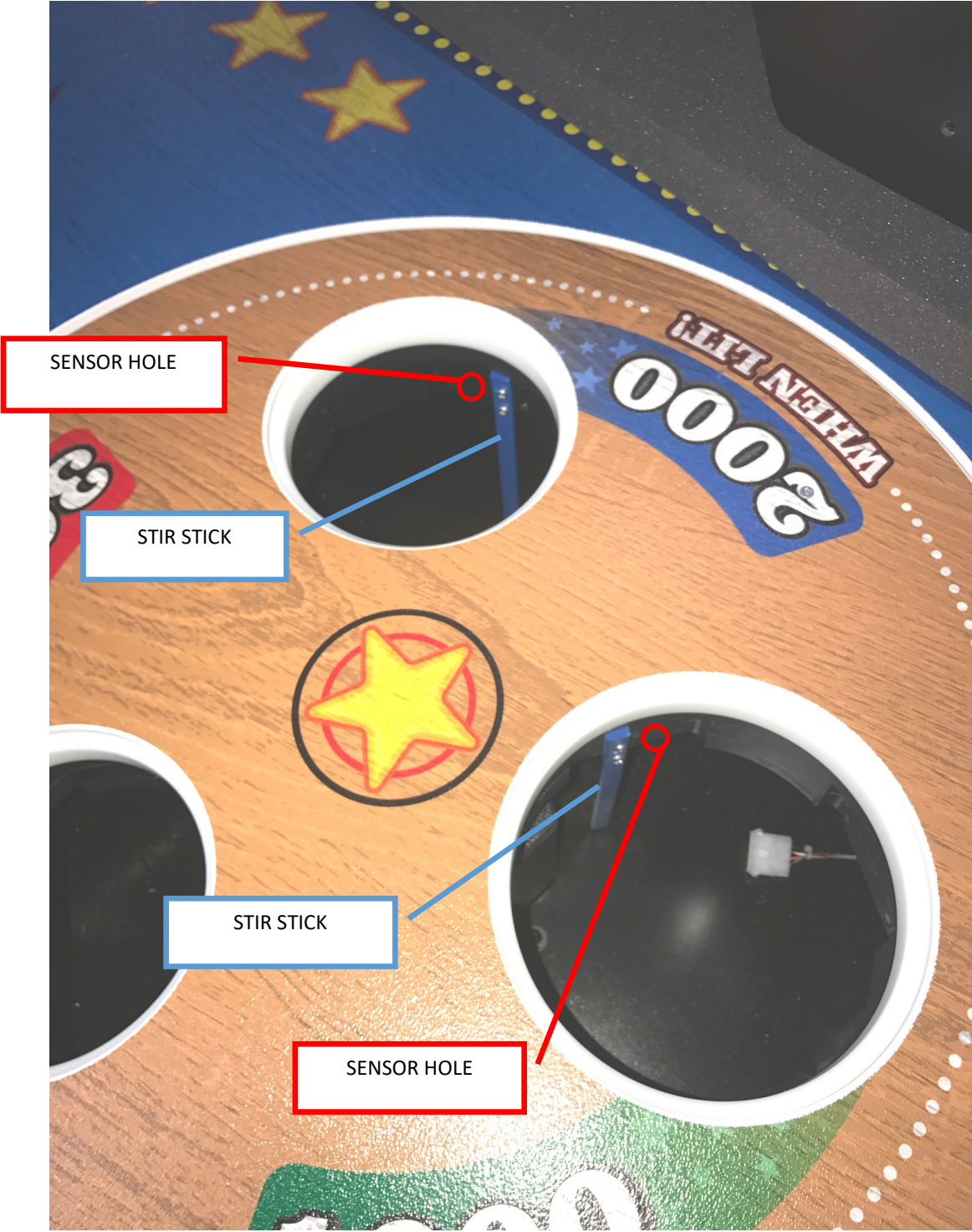
There are 2 Allen bolts and washers holding the playfield to the cabinet. Remove the hardware.



Unplug the LED harnesses

Disconnect the LED harnesses on each side. The playfield can now slide out.



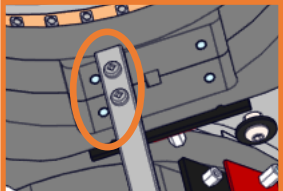
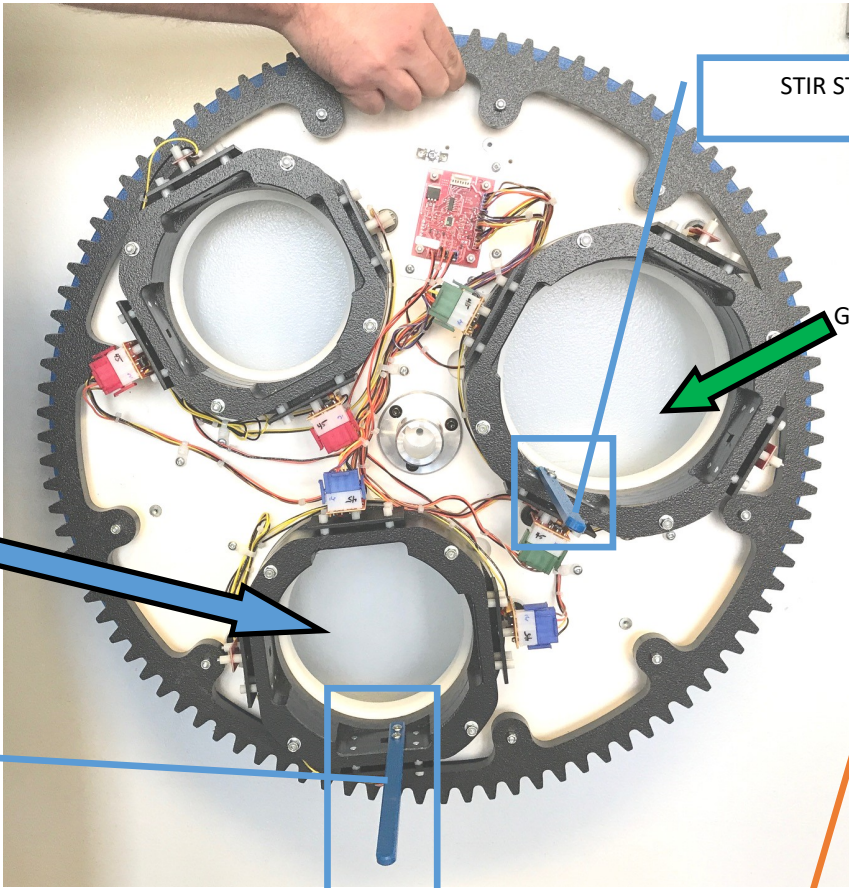


SENSOR HOLE

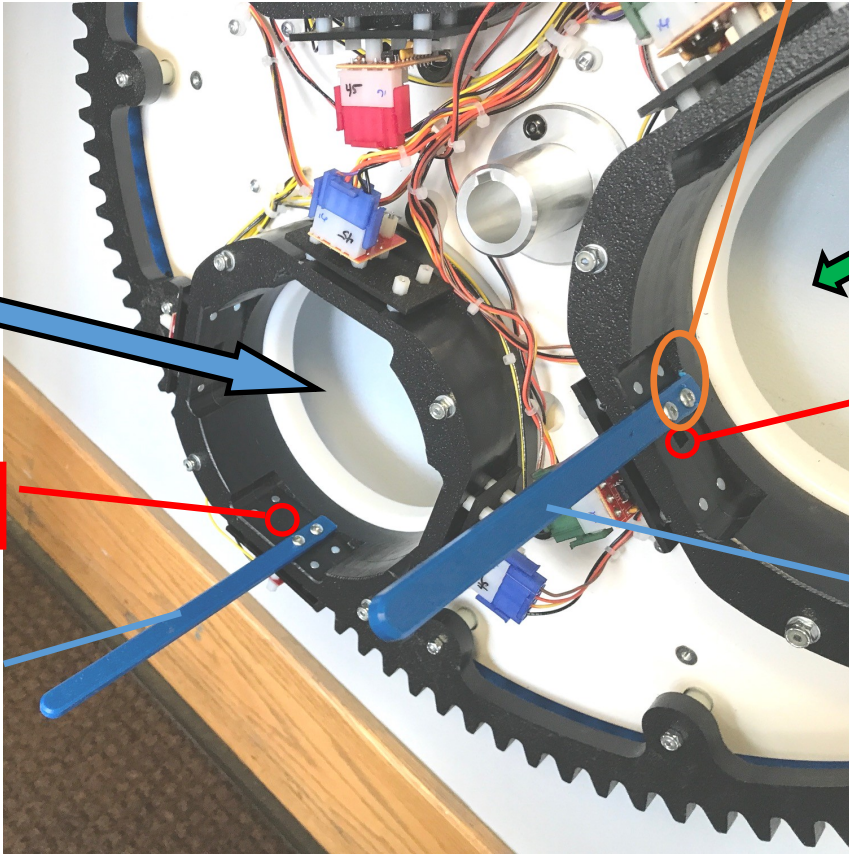
STIR STICK

STIR STICK

SENSOR HOLE

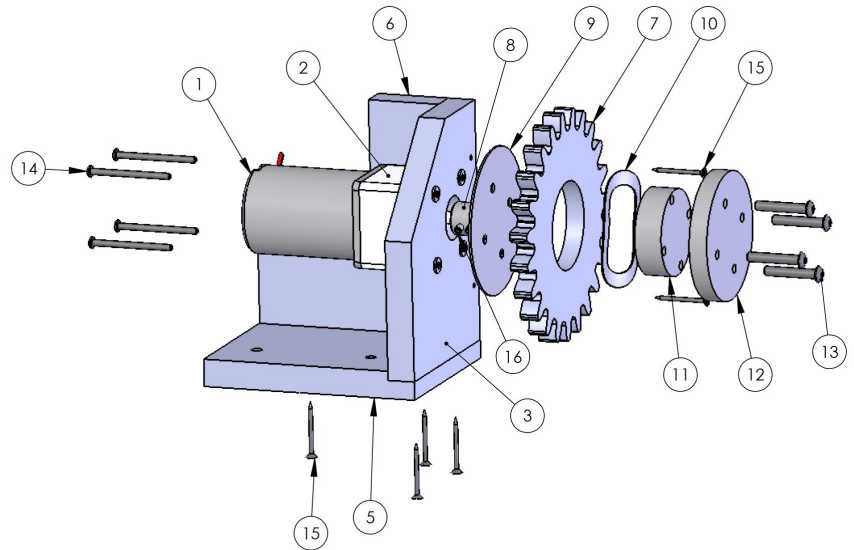


IMPORTANT:
 FLAT END OF THE STIR STICK SHOULD BUTT-FLUSH TO THE EDGE OF THE BLACK PLASTIC.
 ONCE IN PLACE, DRILL 1/8" PILOT HOLES AND THEN USE SCREWS.



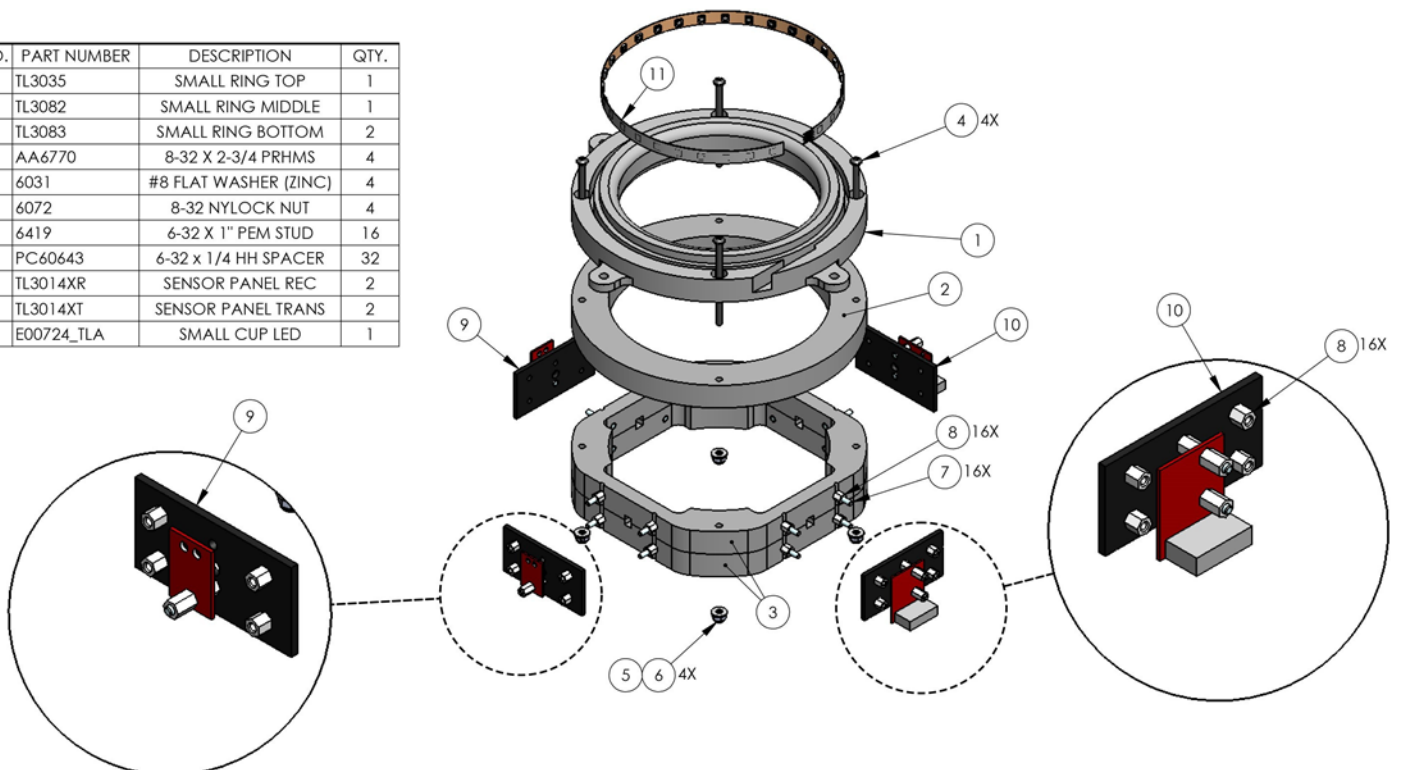
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GF2008	MOTOR 15W/12V (SD615-12A)	1
2	TL2008A	GEARBOX	1
3	TL3030	MOTOR TOP	1
4	6061	8-32 CAB INSERT (J-50111)	4
5	TL3031	MOTOR SIDE	1
6	TL3034	MOTOR FRONT	1
7	TL3016	MOTOR GEAR	1
8	GF1052	WHEEL HUB	1
9	TL1053	DRIVE GEAR PLATE	1
10	AA6964	WAVE WASHER 2.37 ID	1
11	TL3021	HUB SPACER	1
12	TL3020	SPRING HUB	1
13	AA6281	1/4-20 X 1-1/2 BSHCS (BLACK)	4
14	AA6703	8-32 X 2-1/4 PPHMS (SCREW)	4
15	AA6166	1-1/2 SCREW NUMBER 8 W/NIBS	6
16	6384	SET SCREW CUP SKT 0.19-32x0.5	2

TL3030X Assembly



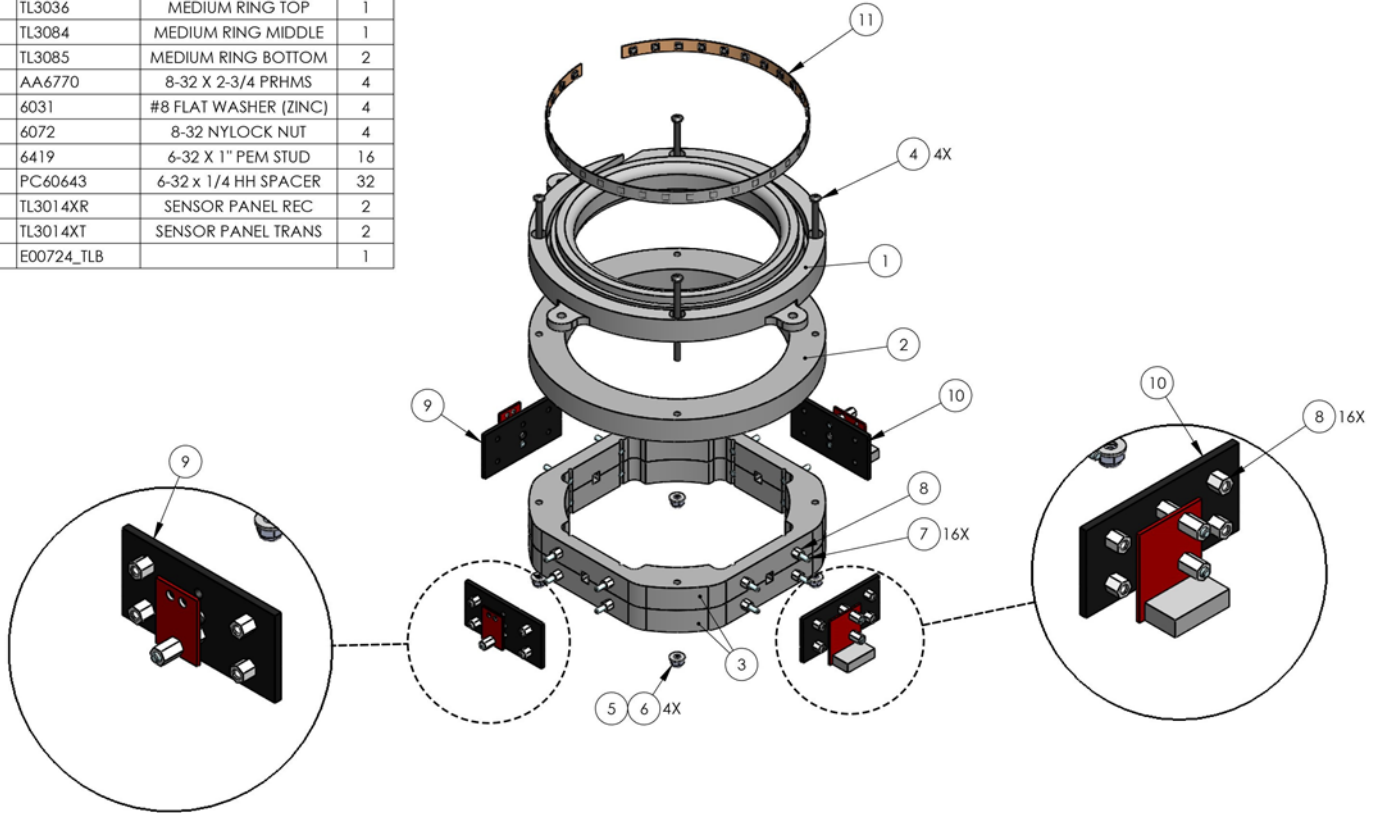
TL3035X Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	TL3035	SMALL RING TOP	1
2	TL3082	SMALL RING MIDDLE	1
3	TL3083	SMALL RING BOTTOM	2
4	AA6770	8-32 X 2-3/4 PRHMS	4
5	6031	#8 FLAT WASHER (ZINC)	4
6	6072	8-32 NYLOCK NUT	4
7	6419	6-32 X 1" PEM STUD	16
8	PC60643	6-32 x 1/4 HH SPACER	32
9	TL3014XR	SENSOR PANEL REC	2
10	TL3014XT	SENSOR PANEL TRANS	2
11	E00724_TLA	SMALL CUP LED	1



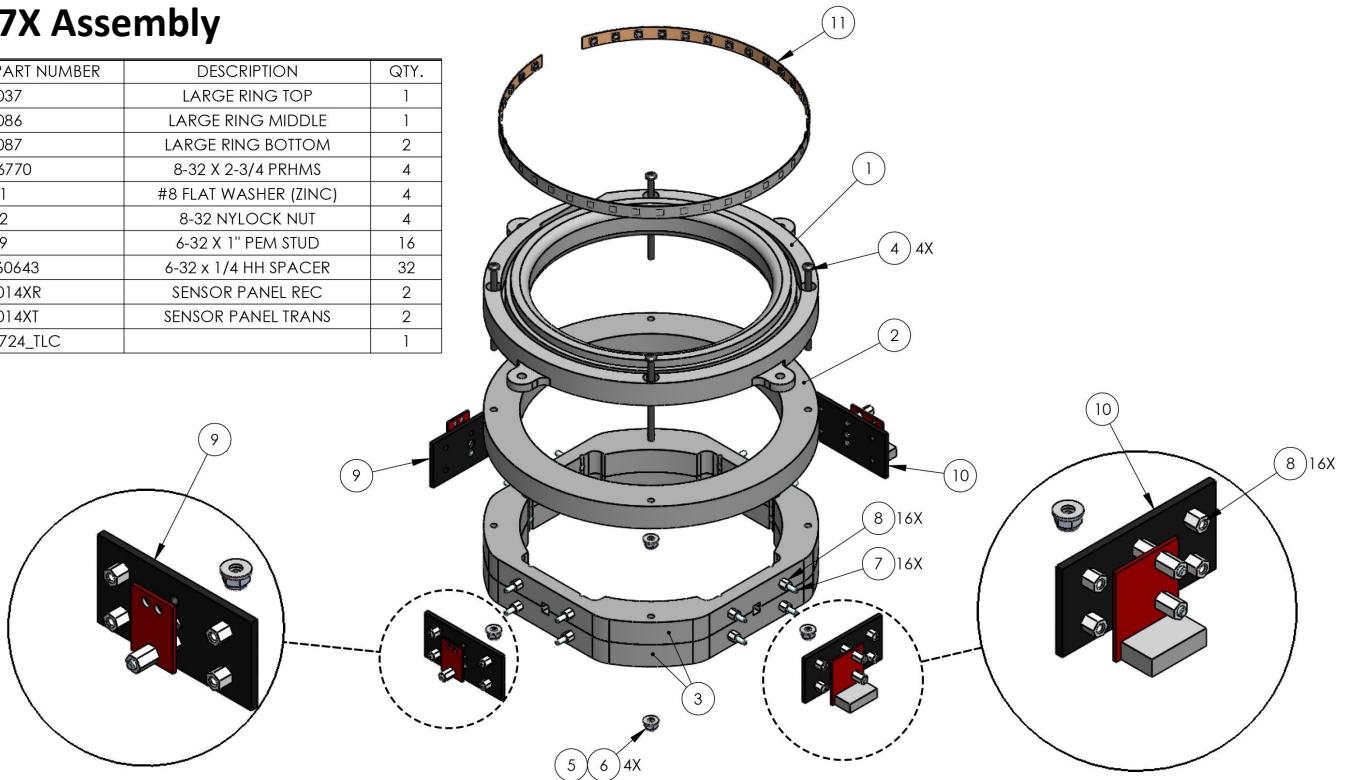
TL3036X Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	TL3036	MEDIUM RING TOP	1
2	TL3084	MEDIUM RING MIDDLE	1
3	TL3085	MEDIUM RING BOTTOM	2
4	AA6770	8-32 X 2-3/4 PRHMS	4
5	6031	#8 FLAT WASHER (ZINC)	4
6	6072	8-32 NYLOCK NUT	4
7	6419	6-32 X 1" PEM STUD	16
8	PC60643	6-32 X 1/4 HH SPACER	32
9	TL3014XR	SENSOR PANEL REC	2
10	TL3014XT	SENSOR PANEL TRANS	2
11	E00724_TLB		1



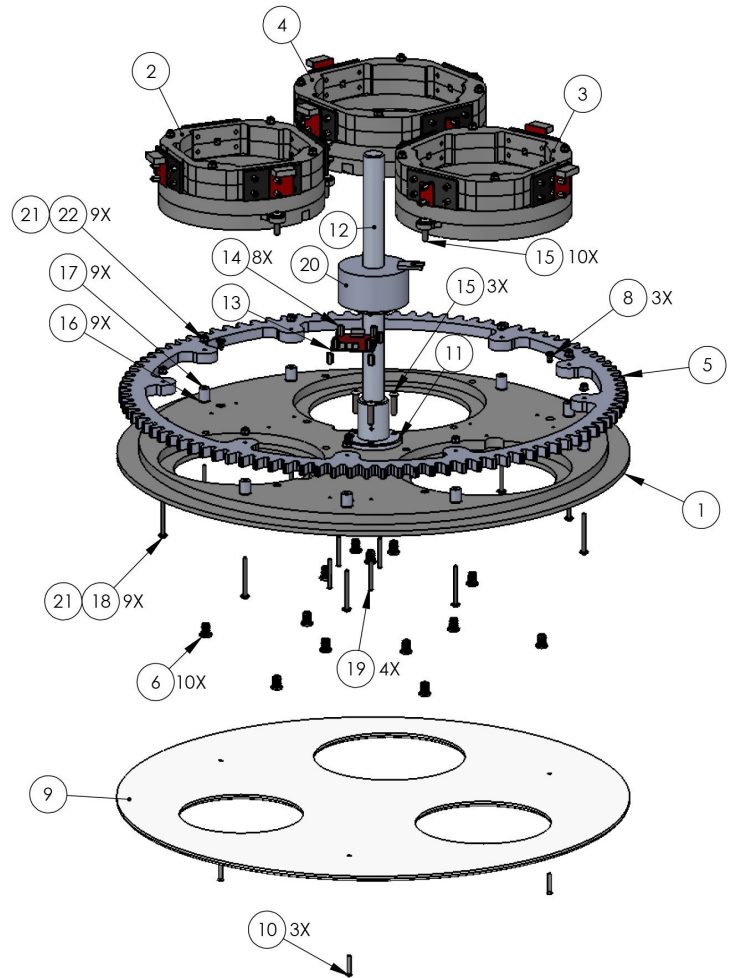
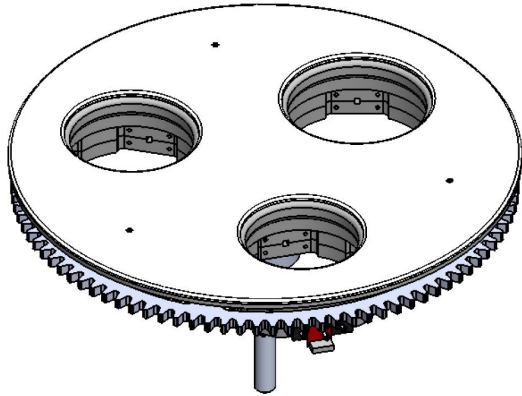
TL3037X Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	TL3037	LARGE RING TOP	1
2	TL3086	LARGE RING MIDDLE	1
3	TL3087	LARGE RING BOTTOM	2
4	AA6770	8-32 X 2-3/4 PRHMS	4
5	6031	#8 FLAT WASHER (ZINC)	4
6	6072	8-32 NYLOCK NUT	4
7	6419	6-32 X 1" PEM STUD	16
8	PC60643	6-32 X 1/4 HH SPACER	32
9	TL3014XR	SENSOR PANEL REC	2
10	TL3014XT	SENSOR PANEL TRANS	2
11	E00724_TLC		1



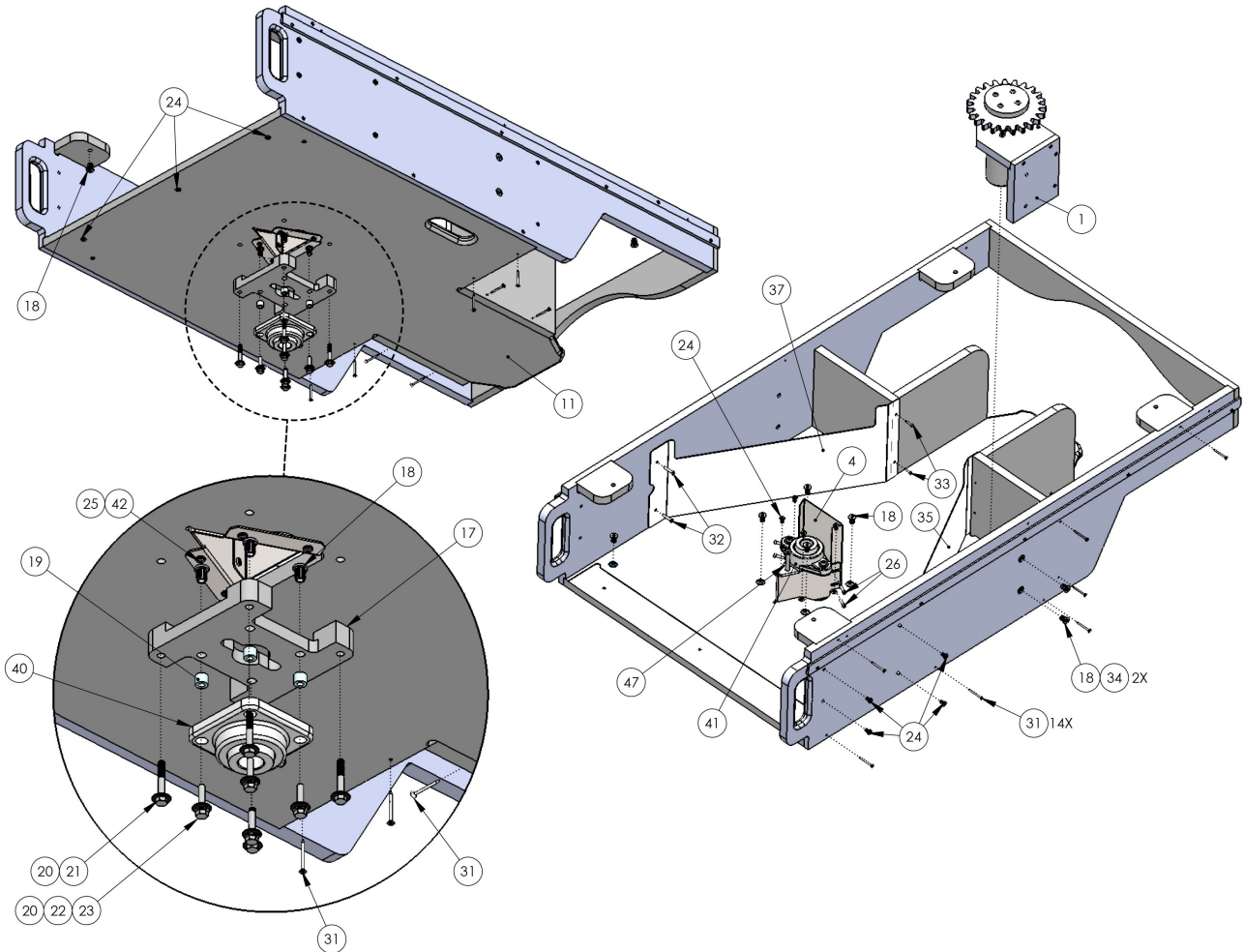
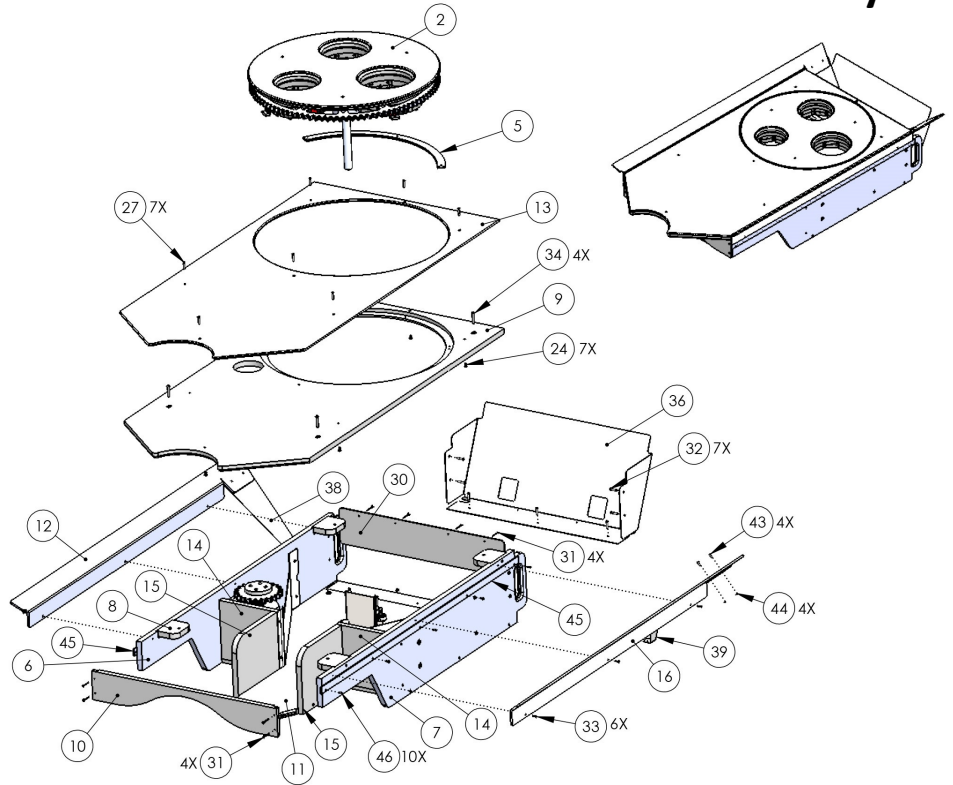
TL3081X Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	TL3038	WHEEL	1
2	TL3035X	SMALL TARGET AREA	1
3	TL3036X	MEDIUM TARGET AREA	1
4	TL3037X	LARGE TARGET AREA	1
5	TL3015	LARGE GEAR	1
6	PC60631	025-20 CABINET INSERT (J50115)	13
7	6212	1/4 x 3/4 FLAT WASHER BLACK (USS)	10
8	6061	8-32 CAB INSERT (J-50111)	3
9	TL7001M	PLAYFIELD CENTER	1
10	6589	8-32 x .625 PPHMS	3
11	TL1015	POLE HUB	1
12	TL1016	WHEEL POLE	1
13	TL2035	PLAYFIELD BOARD	1
14	6446	8-32 x 1/2 HH SPACER	8
15	PC60622	1/4-20 X 1 BHCS (BLACK)	13
16	6020	#10 FLAT WASHER USS (#12 SAE)	9
17	AA6965	8 X 5/8L X 1/2 OD NYLON SPACER	9
18	AA6078	8-32 X 2 PPHMS	9
19	AA6851	8-32 X 1-1/2 PEM STUD 93580A130 25PK	4
20	TL2009	SLIP RING	1
21	6031	#8 FLAT WASHER (ZINC)	18
22	6072	8-32 NYLOCK NUT	9

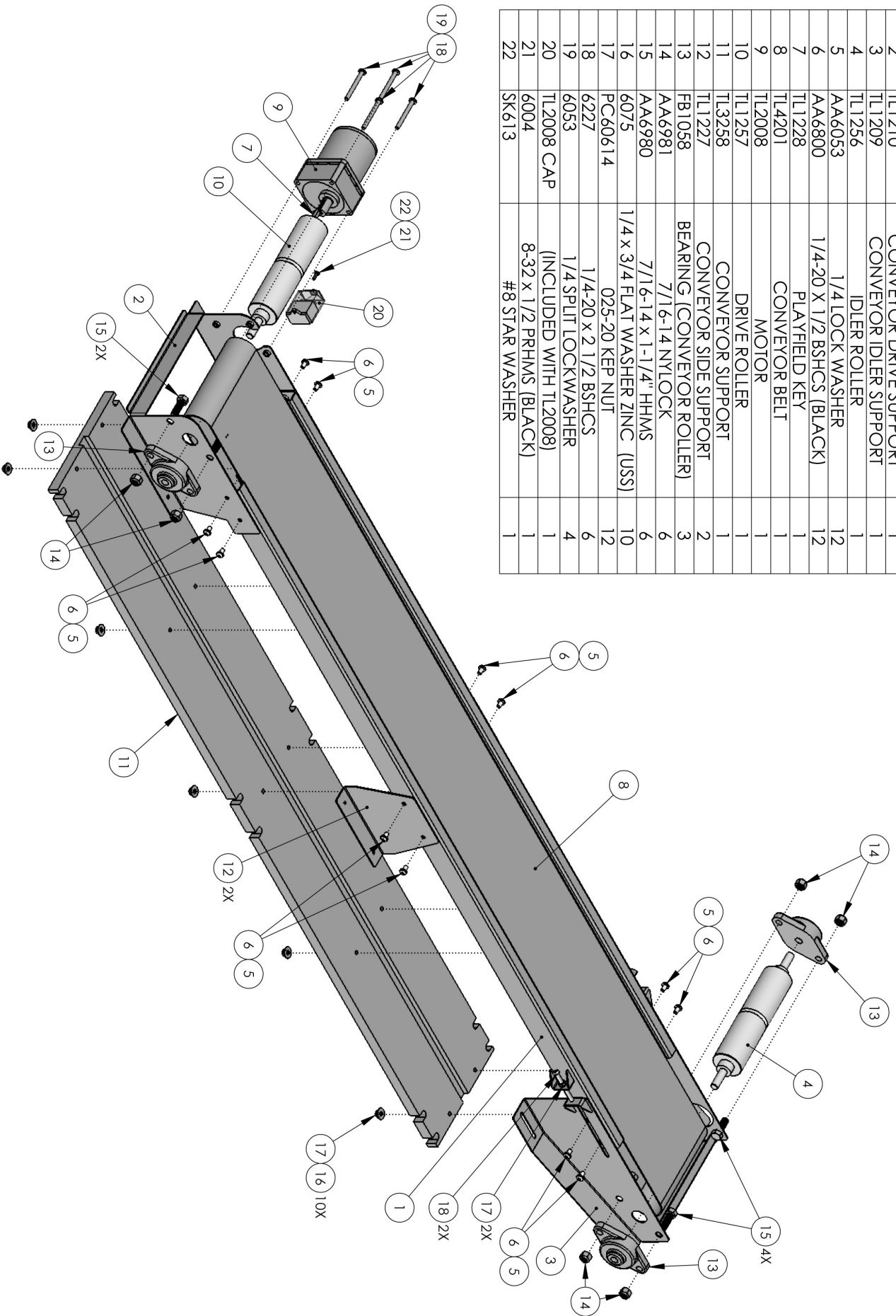


TL3090X Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	TL3030X	MOTOR ASSEMBLY	1
2	TL3081X	CENTER TARGET ASSEMBLY	1
3	TL1020	BAG DEFLECTOR	1
4	TL1041	HARNESS COVER	1
5	TL3025	PLAYFIELD TOP SPACER	1
6	TL3090	PLAYFIELD LEFT PANEL	1
7	TL3091	PLAYFIELD RIGHT PANEL	1
8	TL3092	PLAYFIELD SUPT	4
9	TL3026	PLAYFIELD PANEL	1
10	TL3040	PLAYFIELD FRONT	1
11	TL3041	PLAYFIELD BOTTOM	1
12	TL3032	L PLAYFIELD DEFLECTOR	1
13	TL7002M	PLAYFIELD OUTER	1
14	TL3093	PLAYFIELD INNER SUPT	2
15	TL3094	PLAYFIELD FRONT SUPT	2
16	TL3033	R PLAYFIELD DEFLECTOR	1
17	TL3096	MOTOR SUPPORT BRACKET	1
18	PC60631	025-20 CABINET INSERT (J50115)	18
19	AA6569	NYLON SPACER 1/2 OD X 5/16 LEN	4
20	6212	1/4 X 3/4 FLAT WASHER BLACK (USS)	10
21	AA6622	1/4-20 X 1-3/4 HHMB W/ LOCKTITE	4
22	AA6399	5/16" LOCK WASHER	4
23	6194	1/4-20 x 1-1/4" LG. HHMB	4
24	6061	8-32 CAB INSERT (J-50111)	22
25	6158	#6 FLAT WASHER	4
26	AA6250	8-32 X 3/4 SHCS BLACK	4
27	6589	8-32 x .625 PFHMS	7
28	RB2009BMJ	PCBB (RED) TRANSMITTER	1
29	FP2009B -MJ	PCBB (RED) TRANSMITTER (FR4. L	1
30	TL3088	PLAYFIELD BACK COVER	1
31	AA6166	1-1/2 SCREW NUMBER 8 W/NIBS	30
32	AA6177	8-32 X 1 PPHMS	11
33	AA6655	8 X 3/4 SQ.DRIVE (BLACK)	10
34	AA6281	1/4-20 X 1-1/2 BSHCS (BLACK)	6
35	TL1024	L BAG DEFLECTOR	1
36	TL1021	PLAYFIELD BAG CATCHER	1
37	TL1025	R BAG DEFLECTOR	1
38	TL1022	L MISS SENSOR BRACKET	1
39	TL1023	R MISS SENSOR BRACKET	1
40	TL1050	BEARING (BOTTOM)	1
41	TL1051	BEARING (TOP)	1
42	AA6831	8-32 X 3/4 PPHMS	4
43	AA6041	8-32 X 5/8 PEM STUD	4
44	6004a	8-32 KEP NUT	6
45	TL3139	LED CHANNEL PLAYFIELD	2
46	AA6568	6 X 5/8 SELF-TAP	10
47	AA6967	1/4-20 X 5/16 X 1-3/4 SHOULDER BOLT	1
48	AA6799	1/4-20 X 7/8 BSHCS (BLACK) SCREW	2
49	AA6004	8-32 X 1/2 PPHMS (BLACK)	2



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	TL1211	CONVEYOR BED	1
2	TL1210	CONVEYOR DRIVE SUPPORT	1
3	TL1209	CONVEYOR IDLER SUPPORT	1
4	TL1256	IDLER ROLLER	1
5	AA6053	1/4 LOCK WASHER	12
6	AA6800	1/4-20 X 1/2 BSHCS (BLACK)	12
7	TL1228	PLAYFIELD KEY	1
8	TL4201	CONVEYOR BELT	1
9	TL2008	MOTOR	1
10	TL1257	DRIVE ROLLER	1
11	TL3258	CONVEYOR SUPPORT	1
12	TL1227	CONVEYOR SIDE SUPPORT	1
13	FBI058	CONVEYOR BEARING (CONVEYOR ROLLER)	2
14	AA6981	7/16-14 NYLOCK	3
15	AA6980	7/16-14 X 1-1/4" HHMS	6
16	6075	1/4 X 3/4 FLAT WASHER ZINC (USS)	10
17	PC60614	025-20 KEP NUT	12
18	6227	1/4-20 X 2 1/2 BSHCS	6
19	6053	1/4 SPLIT LOCKWASHER	4
20	TL2008 CAP	(INCLUDED WITH TL2008)	1
21	6004	8-32 X 1/2 PRHMS (BLACK)	1
22	SK613	#8 STAR WASHER	1



TL1200X BEAN BAG TOSS GAME

Item number	Description	Item number	Description
		TL2037X	Front I/O
E00724TLAX	ASY (LED STRIP LARGE RGB 24 CUTS	TL2007X	ASY (POWER MOD 6 AMP)
E00724TLCX	ASY (LED STRIP LARGE RGB 26 CUTS	TL2032X	PCBA TIME
E00724TLGX	ASY (LED STRIP LARGE RGB 33 CUTS	TL2033X	PCBA HIGH SCORE
E00724TLHX	ASY (LED STRIP LARGE RGB 15 CUTS	TL2034X	PCBA MAIN
E00788TLCX	ASY (LED STRIP LARGE WHITE 27 CU	TL2035X	PCBA PLAYFIELD BOARD
E00788TLDX	ASY (LED STRIP LARGE WHITE 21 CU	TL2036X	PCBA STREAK
E00788TLGX	ASY (LED STRIP LARGE WHITE 9 CUT	TL2038X	PCBA (RECEIVER)
E00788TLHX	ASY (LED TAPE STRIP LARGE WHITE	TL2039X	PCBA (TRANSMITTER)
E00788TLIX	ASY (LED STRIP LARGE WHITE 12 CU	TL2250HX	HARNESS (MAIN)
E00788TLJX	ASY (LED TAPE STRIP LARGE WHITE	TL7004	DECAL (FOUL)
E00788TLMX	ASY (LED STRIP LARGE WHITE 48 CU	TL7200	DECAL (CABINET SIDE)
E00788TLNX	ASY (LED STRIP LARGE WHITE 53 CU	TL7201	CIRCLE TARGET (MAT/PRINT)
E00853TLAX	ASY (LED STRIP LARGE BLUE 12 CUT	TL7202	PLAYFIELD (MAT/PRINT)
E00853TLBX	ASY (LED STRIP LARGE BLUE 9 CUTS	TL7203	BACKBOARD (MAT/PRINT)
E00876TLAX	ASY (LED STRIP LARGE RED 11 CUTS	TL7204	DECAL (ICE LOGO)
E00876TLBX	ASY (LED STRIP LARGE RED 9 CUTS)	TL7205	DECAL (TICKET DOOR)
E00877TLAX	ASY (LED STRIP LARGE GREEN 13 CU	TL7206	DECAL (COIN DOOR)
E00877TLBX	ASY (LED STRIP LARGE GREEN 9 CUT	TL7207	DECAL (COIN DOOR COVER)
E08982TLX	ASY (PIR MOTION SENSOR + 5V)	TL7210	CONTROL PANEL LEFT (MAT/PRINT)
FP2007	SPEAKER (4/4 OHM ROUND) .18	TL7211	CONTROL PANEL RIGHT (MAT/PRINT)
GF2008X	ASY (MOTOR) 15W/12V Playfield	TL7213	DECAL (INSTRUCTIONS 3 BAG)
KF2010	POWER SUPPLY +12VDC 50A (ROHS)	TL7226	CARNEE ARM (MAT/PRINT)
KF2011TLX	PCBA FUSE BOARD 6 X 6 AMP	TL7227	MARQUEE CARNEE (MAT/PRINT)
PW2032X	PCBA (DISPLAY)	TL7228	DECAL (MQ BACKGROUND)
RB2009DX	PCBA (OPTO SENSE POINT ZERO) A	TL7229	SCORE PANEL (MAT/PRINT)
RB2009TLX	PCBA (OPTO SENSE PLAYFIELD, 23")	TL7230	MARQUEE (MAT/PRINT)
RB2032X	PCBA DISPLAY (5-DIGIT)	ZS2035X	PCBA (RELAY)
E00963	(6 Amp Fuses 0	E00052	(FUNLIGHT BULBS)

TL3250X ASY (REAR CABINET)

Item number	Description
AA0211	T MOLDING BLUE 25/32
AA0219	T MOLDING (3/4 BRIGHT GREEN)
MJ1332X	ASY (CHEAT SENSOR W/BRACKET
TL1224-P802	BRACKET (MOTOR)
TL2008B	GEARBOX
TL2009X	ASY (SLIP RING)
TL3015	TARGET GEAR
TL3016	MOTOR GEAR
TL3020	PLAYFIELD SHIELD
ZS2006	AUDIO AMP 2.1 CHANNEL

TL3260X ASY (FRONT CABINET)

Item number	Description
AA0211	T MOLDING BLUE 25/32
AA0219	T MOLDING (3/4 BRIGHT GREEN)
AR1406-P601TLX	COIN DOOR ASY
AR1408-P601TLX	TICKET DOOR ASY
TL2008	MOTOR (120 VAC) Conveyor 110VAC
TL2008CEX	Motor (220 VAC) Conveyor 220VAC
TL3126X	ASY (PCB BOARD)
TL3236	SIDE GLASS
TL4004B	BEAN BAG BLUE (ICE)
TL4201	CONVEYOR BELT
FB1058	(CONVEYOR BEARING)

TL3222X ASY (MARQUEE)

Item number	Description
AA0219	T MOLDING (3/4 BRIGHT GREEN)
BL1054X	ASY (BALL GATE BRACKET/ARM/
PW2006LB	TURQUOISE FUNLIGHT BULB ASY
PW2006LG	GREEN FUNLIGHT BULB ASY
PW2006R	RED FUNLIGHT BULB ASSY

More Mechanical:

- TL1051 (PLAYFIELD BEARING)
- WK1050 (PLAYFIELD BEARING)
- BL2008X (MARQUEE ARM MOTOR)



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.

ICE distributors are independent, privately owned and operated. In their judgment, they may sell parts and/or accessories other than those manufactured by I.C.E. Inc. We cannot be responsible for the quality, suitability or safety of any non-I.C.E. part or modification (including labor) that is performed by such a distributor.

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