THE REALLY BIG CRANE CO.

"Designed by Operators for Operators"

The Really Big Crane Company
800 Roosevelt Road
Building D Suite #103
Glen Ellyn, IL 60137
#(844) 802-7263 http://bigcranes.com

SAFETY PRECAUTIONS

Disregarding this text could result in serious injury and damage.

BE SURE TO READ THE FOLLOWING

WARNING

Always turn OFF Main AC power and unplug the game before servicing, opening or replacing any parts.

The power cord must not be exposed on the surface (floor, ground, etc.) avoid trip hazards.

Always connect the Game Cabinet to a grounded electrical outlet.

Always use a Digital Multi-meter, logic tester or oscilloscope for testing integrated circuits or logic PC boards.

Be Sure the fuses you are replacing ARE THE CORRECT specified rating.

Do Not place in the following areas:

    Do not block fire exits
    Extreme cold or wet conditions
    Areas of High humidity
    Next to sources of heat

BEFORE POWERING ON

Be sure the machine is installed on level ground and is stable
Be sure no connections are loose or disconnected from transit

The Really Big Crane Company

800 Roosevelt Road
Building D Suite #103
Glen Ellyn, IL 60137
(844) 802-7263

http://bigcranes.com

sales@bigcranes.com
service@bigcranes.com

Operating Manual for the Following RBCC Games

RBCC
SOFTWARE v1.7USLR

Table of Contents

A)   Operator Menu

How to enter the operator menu:

The machine must not have any credits when the machine is powered on.

Hold the Service button 5 seconds to enter the operator menu:

Move joystick up or down to navigate the various sub-menus and tests while in operator menu

Press drop button to return to the previous screen. This is for all items apart from II. Basic Setup and the Operator Menu as a whole, these two sub-menus have a listed input to return (back and exit).

While in sub-menus, move the joystick left or right to navigate the various items.

While an item is highlighted on the LCM, move the joystick to up or down to adjust the set value of an item.

Press the drop button to return to the previous screen.

Operator Menu Contents

I. Audits	V. Auto Test
II. Basic Setup	VI. Date & Time
III. I/O Test	VII. Factory Reset
IV. Trolley Test	VIII. Exit.

I.   Audit

There are two ways to check the audits:

1.1 Soft audit mode shows Coin 1; the tally from coin mech 1, Coin 2; the tally from coin mech 2, Totals; sum of Coin 1 and Coin 2, and Prizes; tally of total prizes paid out.

1.2 Reset the soft audits by moving the joystick to the right, and press the drop button to confirm; move joystick to the left to cancel clearing soft audits.

Push up on the joystick to switch to hard audit page.

1.3 Hard audit mode shows; COIN 1; tally from coin mech 1, non-resettable, COIN 2; tally from coin mech 2, TOTALS; sum of COIN 1 and COIN 2, non-resettable PRIZES; total prizes paid out, non-resettable

1.4 To leave the audit menu, press the drop button, this will prompt you to either clear the soft audit data by scrolling to yes and confirming input with drop button, if you do not wish to clear data, press the drop button twice from either audit screen.

** Factory reset will clear out the "hard" audit as well as the soft; there is also a physical meter that tracks coins and prizes in the coin door.

Copyright© 2021 The Really Big Crane Company. All rights reserved.
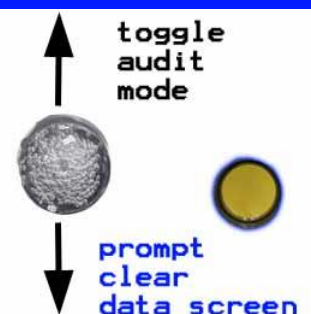
II.   Basic Setup

1. Credit setup

No.	Contents	Value	Default	Remarks
1	__ coin __ play	1~99	2 coins / 1 play	Coins per play
2	__ coins __ free PL	✓, X 1~99, 1~99	✓ 10 coins 1free PL	Coin Reward to be paid out or not: free play bonus for continuous coins in.
3	Retain Coins	✓, X	X	Keep credit after power off; hold credits on power down
4	Free Play	✓, X	X	Free Play Mode on or off
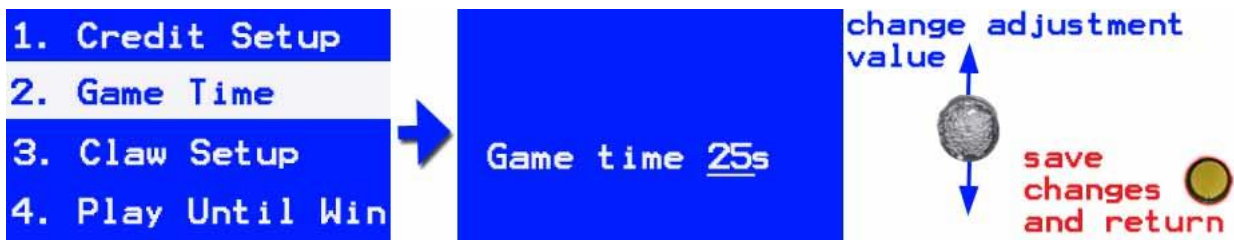
2. Game Time

No.	Contents	Value	Default	Remarks
1	Game time__ s	5~95	30	Time in seconds for duration of one play
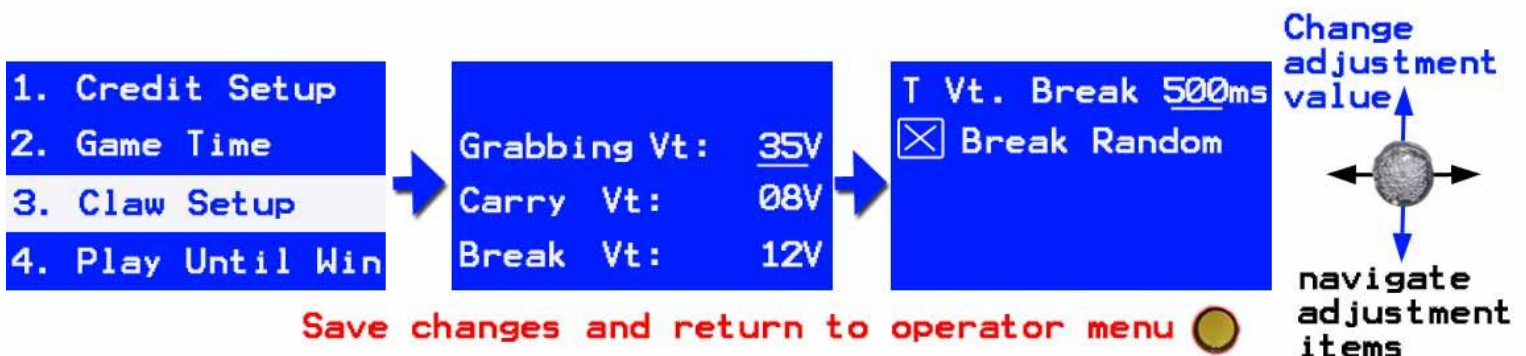
3. Claw Setup*

No.	Contents	Value	Default	Remarks
1	Grabbing Vt: __V.	0 ~ 46	35	Voltage when grabbing the prize
2	Break Vt: __V	0 ~ 46	08	Breaking Voltage

Operator Menu

3	Carry Vt: __V	0 ~ 46	12	Voltage when trolley is moving to chute
4	T. Voltage Break	0-500 ms	150ms	Time duration of the Break Voltage in ms
5	Break Random	✓, X	X	Where the Break Voltage happens: ✓ Random: anywhere, or X: At the top, when the top stop switch is active.

*In depth explanation found in section F) **on pg. 25**

4. Play Until Win

No.	Contents	Value	Default	Remarks
1	Keeps starting a new game until prize sensor detects a prize out	✓, X	X	This adjustment can lead to free games if prize sensor is not working properly

5. Drop Distance

No.	Contents	Value	Default	Remarks
1	Claw to playfield distance	100-400	130	This adjustment sets the distance the crane will travel before retracting crane back to trolley.
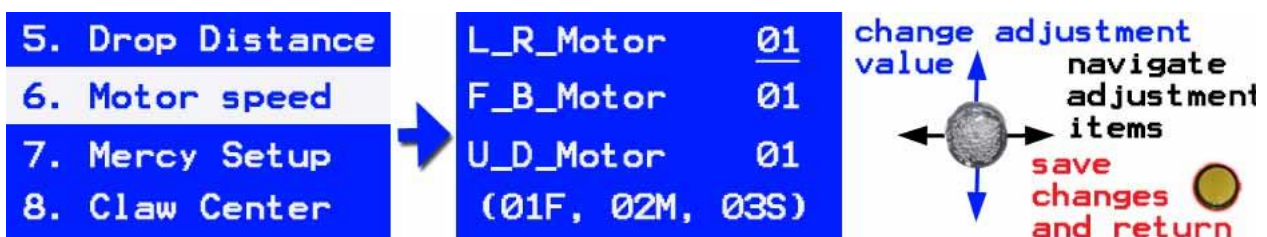
6. Motor Speed

No.	Contents	Value	Default	Remarks
1	L-R- Motor	01,02,03	01	The speed of Left-Right Motor
2	F-B-Motor	01,02,03	01	The speed of Front-Rear/back Motor
3	U-D-Motor	01,02,03	01	The speed of Up-Down Motor

Motor Speed:
01F means Fast
02M means Medium
03S means Slow

7. Mercy Setup

No.	Contents	Value	Default	Remarks
1	Mercy Ticket	✓, X	X	Mercy Ticket to be paid or not
2	_ play _ Mercy	1-99	05, 01	Every 5 plays send out 1 Mercy ticket

8. Claw Center

No.	Contents	Value	Default	Remarks
1	Claw moves to the play field when game starts	✓, X	✓	Claw centering

Operator Menu

9. Password

No.	Contents	Value	Default	Remarks
1	Password	✓, X	X	Activate password
2	New pwd	01-10	00	New password
3	again	01-10	00	Re-enter password from previous item

10. Sound Setup

No.	Contents	Value	Default	Remarks
1	Demo Music	✓, X	✓	The demo music is played or not
2	Interval Minutes	1-5	1	How many minutes between two demo music plays

Volume can be adjusted outside the operator menu by holding the volume button while moving the joystick up or down to change the volume level to desired level.

There is a mini-USB port on the Main board to customize the audio

ADD procedure to update the audio files on board from MACROWN

11. Home Position

No.	Contents	Value	Default	Remarks
1	Trolley Home Position	Front Left Front Right	Front Left	Prize Chute location

12. Grab on Drop

No.	Contents	Value	Default	Remarks
1	Grab on Drop	✓, X	✓	Gives players the opportunity to close the claw at their discretion, by pressing the drop button again, rather than the claw closing when resistance from plush is met.

13. LED Game

No.	Contents	Value	Default	Remarks
1	LED Game	✓, X	X	Refers to the Super Card, which is included with all FAK units but is also compatible with all RBCC crane machines.
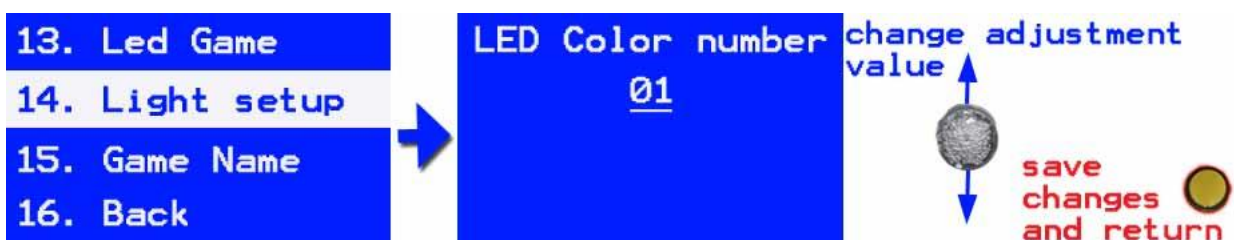
14. Light Setup

No.	Contents	Value	Default	Remarks
1	LED Color number	1-6	1	Sets the LED drive board to 1 of 6 possible standard light shows.

Page 10

15.   Game Name

No.	Contents	Value	Default	Remarks
1	FAK	✓, X	✓	Find a Key
2	BAW	✓, X	X	Buzz and Win
3	RBM	✓, X	X	Really Big Machine

16.   Back

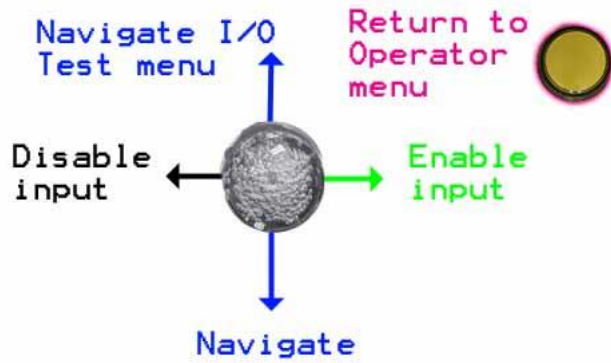When selected, press the button to return to the Main Manu.

III.   I/O Test

Display	Part needs to test	Operation	Description
1. Button light	Drop button light	Pull joystick to the left	Drop button Light Off
		Push joystick to the right	Drop Button light on
2. Win LED	Win light feature light, (red light on FAK, or custom feature)	Pull joystick to the left	Win LED feature turns on
		Push joystick to the right	Win LED feature turns off
3.Red LED	RGB strip connected to JP4	Pull joystick to the left	Red LED turns on
		Push joystick to the right	Red LED turns off
4. Green LED	RGB strip connected to JP4	Pull joystick to the left	Green LED turns on
		Push joystick to the right	Green LED turns off
5. Blue LED	RGB strip connected to JP4	Pull joystick to the left	Blue LED turns on
		Push joystick to the right	Blue LED turns off
6.Mercy Ticket	Ticket dispenser	Pull joystick left	
		Push joystick right	
7.Coin Mech.	Coin input	Insert coin	Count the coins and the credits

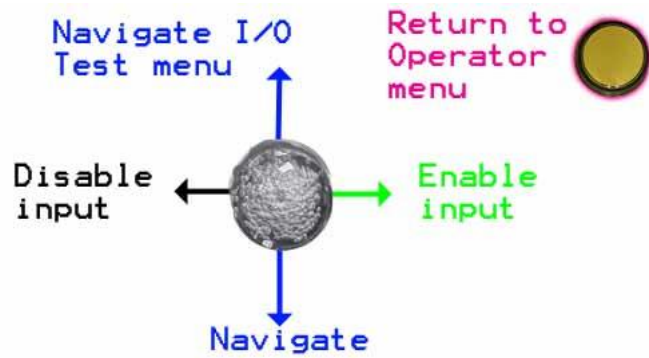| 8.Prize Sensor	Prize out sensor	Drop the prize though the sensor	Activate Prize sensor, the Prize meter doesn't count
9.Volume Button	Volume Button	Press the Volume button	Activate the Volume Button

** Some versions will not be compatible with the RGB lighting test, which require RGB strips to be connected via the JP4 connector instead of the LED driving board.
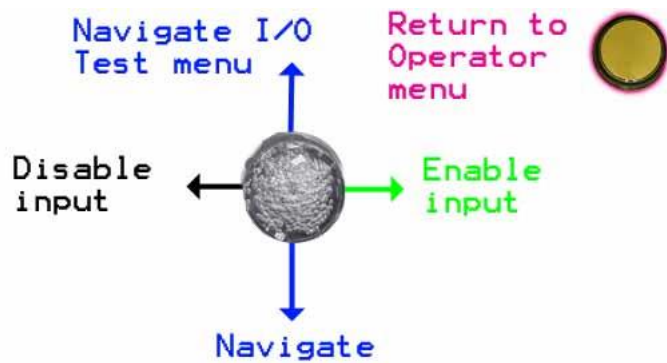
5. Blue LED
6. Mercy Ticket
7. Coin Mech 00
8. Prize Sensor ○

Navigate I/O Test menu

Return to Operator menu

Disable input ← → Enable input

Navigate

---

5. Blue LED
6. Mercy Ticket
7. Coin Mech 00
8. Prize Sensor ○

Navigate I/O Test menu

Return to Operator menu

PLACEHOLDER

Disable input ← → Enable input

Navigate

---

5. Blue LED
6. Mercy Ticket
7. Coin Mech 00
8. Prize Sensor ○

Navigate I/O Test menu

Return to Operator menu
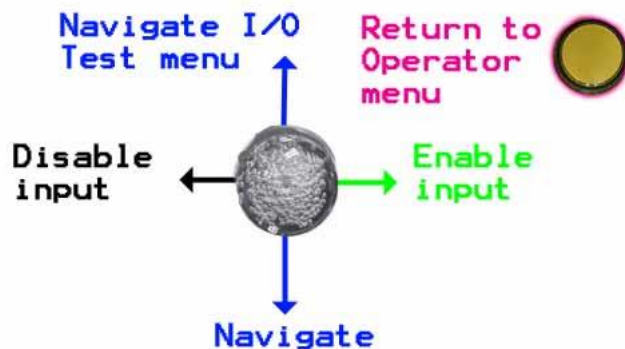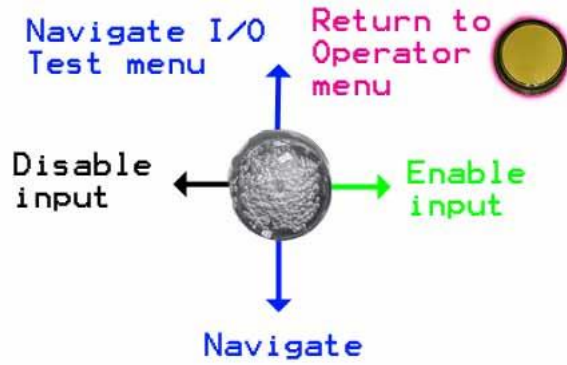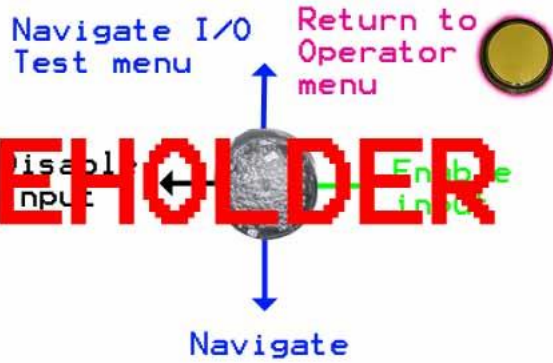
add credit to machine, this will increment the coin mech test, these credits will not be saved in the coinbox.

Navigate

---

5. Blue LED
6. Mercy Ticket
7. Coin Mech 00
8. Prize Sensor ○

Navigate I/O Test menu

Return to Operator menu
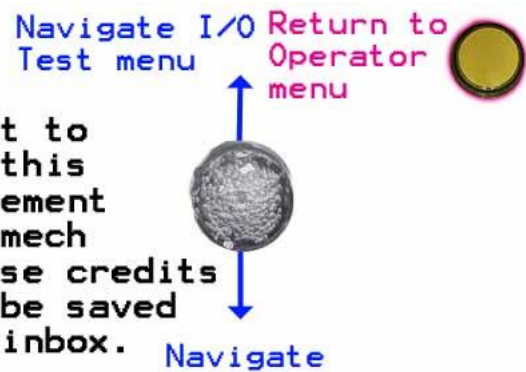
Trip the prize sensor, this should fill the circle blue, indicating prize sensor is working properly

Navigate
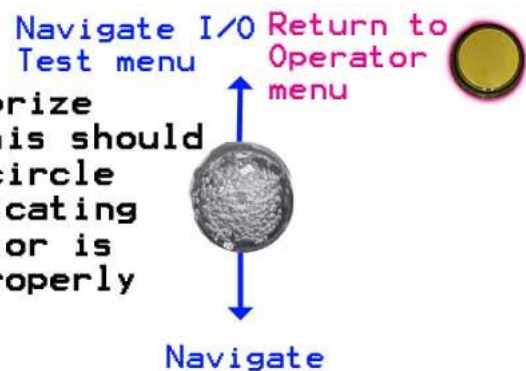
IV. Trolley Test

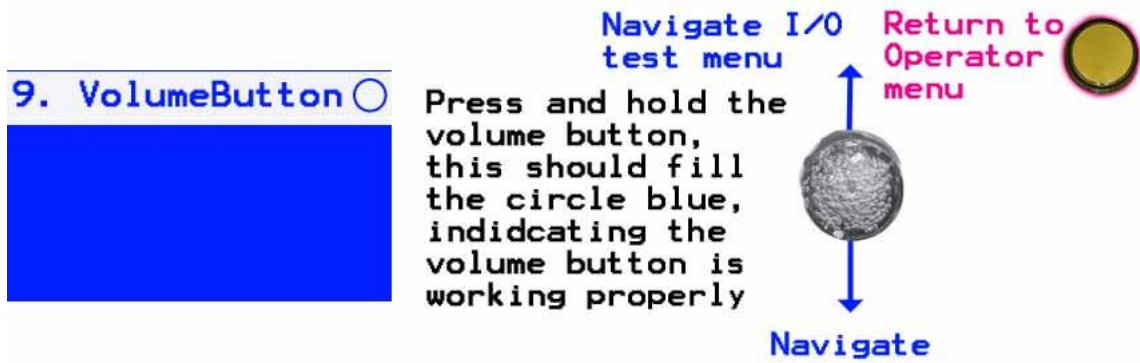| Display	Part needs to test	Operation	Description
L	Left –Right Motor, Left stop switch, Right stop switch.	Move the trolley to the left	Activate the left stop switch
R		Move the trolley to the right	Activate the right stop switch (Not Included on RBM)
F	Front-Back Motor, F: Front stop switch, B: Back stop switch.	Move the trolley to the front	Activate the front stop switch
B		Move the trolley to the back	Activate the back stop switch
U	Up-Down Motor, U: Up stop switch, D: Down stop switch.	**Press the Service button** to shift to the U-D Test, move the joystick front back to test the up down motor movement.	Activate the up stop switch and the down stop switch
D			

While a stop switch is active, the respective circle will fill, upon entering the test, the software will always default to front, back, right, and left test, to switch modes, press the service button inside the coin door.

V. Auto Test: Trolley Auto Test

Upon entering this Test, the trolley will move front-back, left-right, up-down itself to test the function.
Press the button to end the Trolley Auto Test.

VI. Date and Time (Feature not currently working)

Set up the date and the time and save the data.

VII. Factory Reset

Factory Reset: All data is reset back to the factory settings

VIII. Exit

Exit the setup mode and return to the game mode.

**Page** 14

B) Trouble Shooting

I. Error List

Ref. #	Error	Solution
1	Error: Up-Down Motor or switch	Check the motor, the micro switch, the power, the connection
2	Error: Left-Right Motor or switch	Check the motor, the micro switch, the power, the connection.
3	Error: Front-Back Motor or switch	Check the motor, the micro switch, the power, the connection.
4	Error: Coin Mechanism	Check the Coin Mech and NO/NC switch setting on the Coin Mech.
5	DON'T SHAKE ME!	The machine is not level, someone is tilting/shaking the machine. Check the tilt plumb bob
6	Error: Sensor (Prize Sensor)	Check to see if the prize sensor is blocked, adjust the sensitivity of the sensor, see section E
7	Claw will not close	Check the claw coil for voltage Check the fuse on the main board.
8	"Pls Fill MeTic!" (Please fill mercy tickets)	Check to see if e-ticket system is set up properly. This is not a fatal software error, but will be displayed at the bottom of the LCM while still allowing players to play.

**The software is unable to tell the difference between a motor that is not working correctly and a stop sensor that is not working correctly. It is much more likely to experience some sort of sensor failure rather than motor, so it is prudent to troubleshoot the sensors and switches before moving on to the motors.

**Up/down motor/sensor error is the most common of the three motor errors, as this can be caused by a few different things. Be sure to always check the cord tension, as this can sometimes spool up improperly and lockup the up-down motor from running. Additionally, cords that break will also cause an up/down error. If physical issues are not to blame, circle back to the previous note, and check sensors before motor.

II. Find A Key and Buzz and Win Gantry removal

In the event that you need to service a trolley, the entire gantry can be pulled out of the cabinet to allow better access to the trolley assembly. You will not be able to remove the trolley from the gantry while it is still in the cabinet.
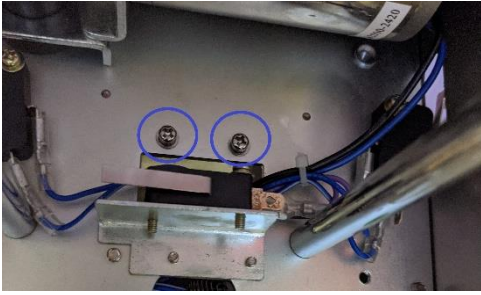
Left gantry motor & stop switch housing
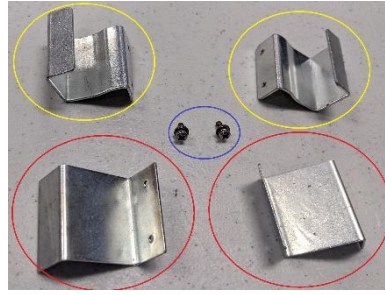
gantry to cabinet lock brackets

right gantry axel housing

1. Remove the Phillips head screws from either end of the gantry. Screws circled in blue.
2. These screws secure a locking bracket that stops the gantry from being removed from its tracks in the cabinet. The bracket circled in yellow will be found in Buzz and Win and Find a Key Deluxe, and the brackets circled in red are found in Find a Key
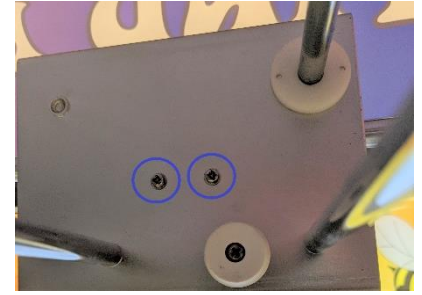3. Once the brackets are removed from both sides of the gantry ends, disconnect the gantry harness connection in the upper left-hand corner of the cabinet.

III.   Really Big Machine Trolley Removal from Gantry

The trolley assembly in Really Big Machine can be removed from the gantry while still in the cabinet.

1. Remove the claw collar from the coil; this is done by loosening the tension screws, circled in blue, holding the claw to the coil. Use 2mm Allen wrench.
2. Press service to start a game, and press drop, once the coil is dropped a few inches, cut power to the machine. After pressing drop, immediately cut power to the machine from inside the coin door.
3. Disconnect the trolley harness cable from the overhead track cable manager, seem circled in blue in the center picture below, and disconnect the tract from the trolley by removing the two Phillips head screws, shown circled in red. There is less than a foot of clearance between the top of the trolley and the top of the cabinet, so a short driver will be needed. Tracks can also be separated where each individual tract meets the next tract.
4. Swing coil through gantry tracks and lift trolley up and over the gantry
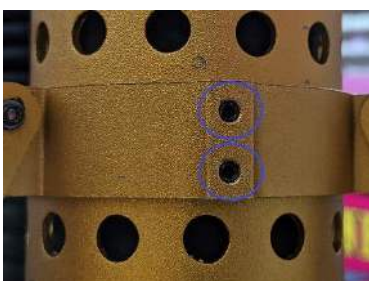
side view of coil and tension screws
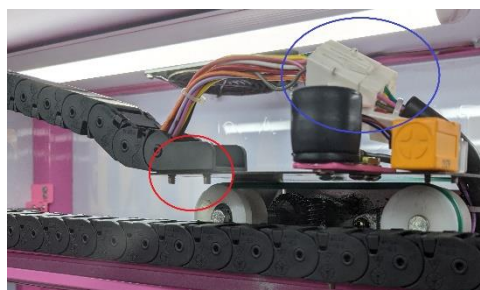
side view of the top of trolley
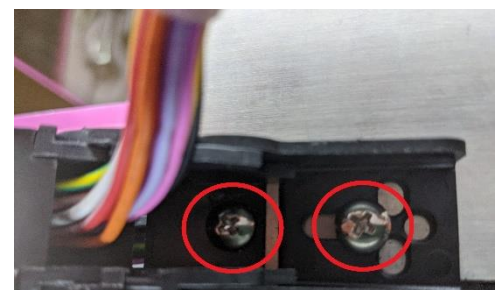
top view of trolley

C) Mainboard diagram / Connector pinouts

I. Main board Jack Position
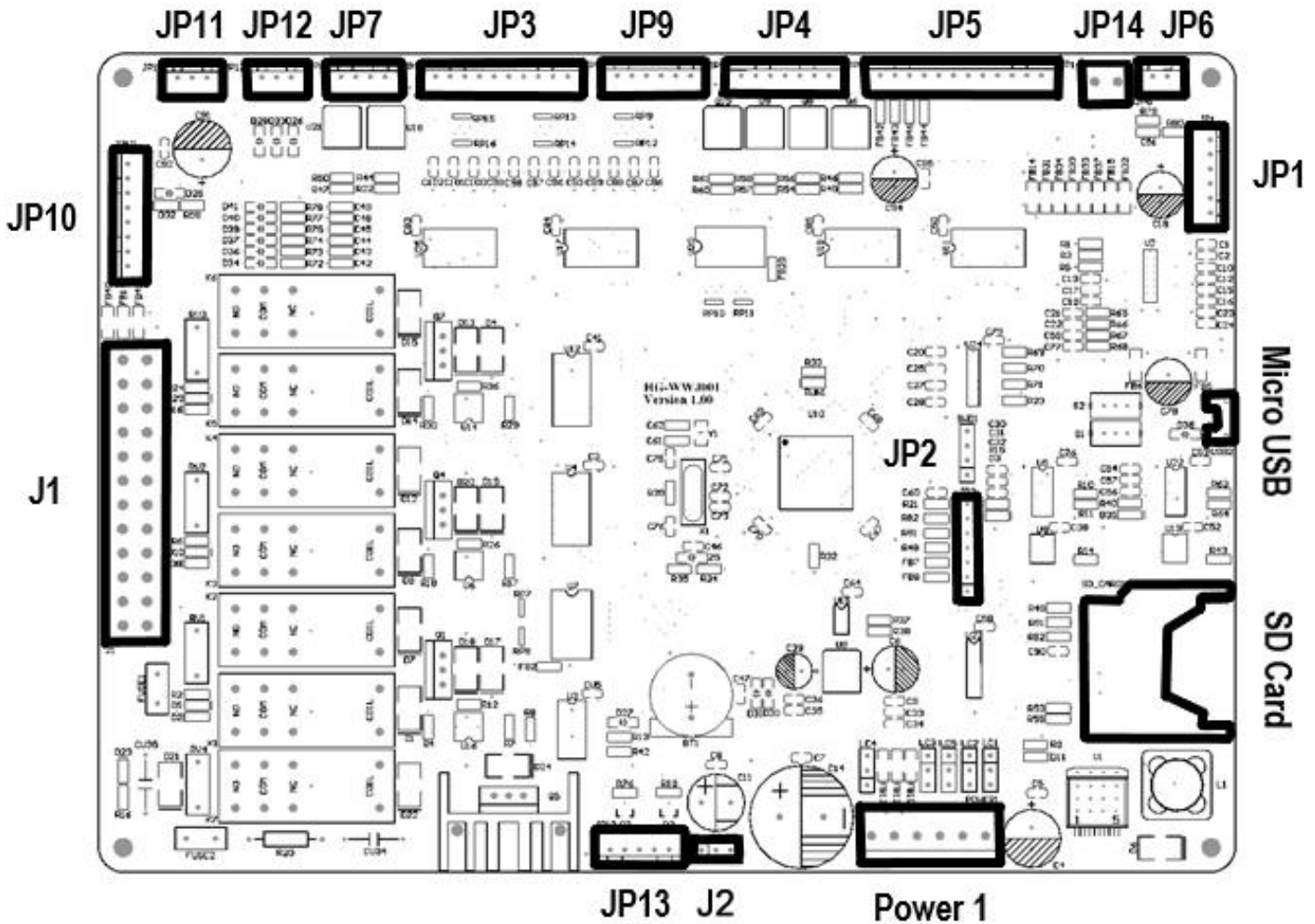
J2 is the unlabeled header, found between Power 1 and JP13, this needs a header jumper in order to send voltage to the motors and claw. Header outlined in red is the correct setup for FAK and B&W machines. The header outlined in blue is the correct setup for RBM. See diagram.

MOTOR VOLTAGE FEED

FAK
B&W

RBM

24 volts   48 volts

II.   Wire connection

Power 1 – Power Jack

Pin No.	Wire color	Function	Connection	Remark
1	Black	GND	12V power supply -	
2	N/A			
3	Orange	24V	Power supply +24V	✓ if main board does not have power.
4	Purple	48V	Power supply +48V	
5	Black	C-	24/48V power supply -	
6	Yellow	12V	Power supply +12V	

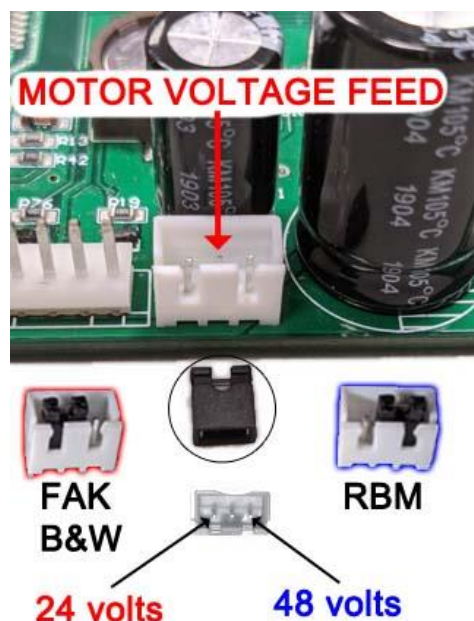### JP 1 – CraneConnect

Pin No.	Wire color	Function	Connection	Remark
1	Black	GND	GND	
2	White	RS232-RX2	RS232-RX2	
3	Grey	RS232-TX2	RS232-TX2	Not populated
4	N/A	RS232-RX5	RS232-RX5	
5	N/A	RS232-TX5	RS232-TX5	
6	Red	12V	12V power supply	

JP 6 – Speaker signal lines

Pin No.	Wire color	Function	Connection	Remark
1	Grey	SP -	Speaker wire (-)	✓ if speakers are not working
2	Purple	SP +	Speaker wire (+)	

JP14 – Volume button

Pin No.	Wire color	Function	Connection	Remark
1	White	VOLUME	Volume adjustment Pin	✓ if unable to adjust volume
2	Black	GND	Volume adjustment Pin	

JP5 – Liquid Crystal Display

Pin No.	Wire color	Function	Connection	Remark
1	Brown	DATA0	Signal Pin on LCM	
2	Orange	DATA1	Signal Pin on LCM	
3	Green	DATA2	Signal Pin on LCM	
4	White	DATA3	Signal Pin on LCM	
5	Purple	DATA4	Signal Pin on LCM	
6	Light Blue	DATA5	Signal Pin on LCM	
7	Red	DATA6	Signal Pin on LCM	✓ if no display on LCM
8	Pink	DATA7	Signal Pin on LCM	
9	Blue	LCD-RS	Signal Pin on LCM	
10	Grey	LCD-CS	Signal Pin on LCM	
11	Black	GND	Signal Pin on LCM	
12	Yellow	VCC	Signal Pin on LCM	

Page 18

JP3 – Control panel

Pin No.	Wire color	Function	Connection	Remark
1	Green	KEY_LIGHT	Drop Button Light	
2	N/A	N/A	N/A	
3	Orange	LEFT	Joystick Left	
4	Yellow	RIGHT	Joystick Right	
5	Red	FRONT	Joystick Front	✓ if unable to navigate the trolley or operator menu.
6	Brown	BACK	Joystick Back	
7	Green/White	KEY	Drop Button	
8	Blue	BUY_KEY	Buy Button	
9	Yellow	12V	12V	
10	Black	GND	GND	

1. JP7 – Mercy ticket dispenser (Not Included)

Pin No.	Wire color	Function	Connection	Remark
1		GND	Ticket dispenser -	
2		OUT	Ticket dispenser Drive IN	✓ if e-ticket setup, this is not included with purchase.
3		IN	Ticket dispenser Notch OUT	
4		12V	Ticket dispenser +	

2. JP11 & JP12 – Coin Mech

Pin No.	Wire color	Function	Connection	Remark
1	Yellow	12V	Coin mech 2 12V	
2	White	COIN	Coin mech 2 Signal	✓ if error 4
3	Black	GND	Coin mech 2 GND	

III.   Variable Wire Connections

1. JP9 – Meters (Variable)

Pin No.	Wire color	Function	Connection	Machine	Remark
1	Green	PRIZE-COUNTER	Win meter	Universal	
2	Blue	COIN-TOTAL	Coin meter	Only on RBM	✓ if physical meters in coin door are not incrementing
3	Blue	COIN 2-COUNTER	DBA meter	Only on BAW & FAK	
4	Brown	COIN 1- COUNTER	Coin meter	Only on BAW & FAK	
5	Yellow	12V	12V	Universal	
6	Yellow	12V	12V	Universal	

2. JP10 – Prize Sensor & Service Button (Variable)

Pin No.	Wire color	Function	Connection	Machine	Remark
1	Green	Sensor	Sensor toggle	Only on BAW	
2	Yellow	12V	Sensor board 12V	Universal	
3	Brown	Sensor	Sensor board prize Signal	Universal	
4	Black	GND	Sensor board GND	Universal	
5	Black	GND	Tilt	N/A on RBM	✓ if error 6
6	Blue	TILT	Tilt	N/A on RBM	
7	Grey	GND	Service Mode Button	Universal	
8	Purple	MODE	Service Mode Button	Universal	

3. J1 – Trolley Harness (Variable)

Pin No.	Wire color	Function	Connection	Machine	Remark
1	Brown/White	M-FRONT	Motor F/B +	Universal	✓ if motor/sensor error and sensors are known to work
2	Red/White	M-LEFT	Motor Left Right +	Universal	
3	Orange/White	M-UP	Motor Up down +	Universal	
4	Black	CLAW +	Claw coil +	Not on RBM	✓ if coil has no voltage for BAW and FAK
5	Green	GND	Back stop SW GND	Not on RBM	✓ if motor/ sensor errors on BAW and FAK
6	Blue	GND	Front stop SW GND	Not on RBM	
7	Purple	GND	Left stop SW GND	Not on RBM	
8	Grey	GND	Up/Down stop SW GND (BAW & FAK)	All stop SW GND on RBM	✓ if motor/sensor error on RBM
9	N/A				
10	N/A				
11	N/A				
12	N/A				
13	Brown	M-BACK	Motor F/B -	Universal	✓ if motor/sensor error and sensors are known to work
14	Red	M-RIGHT	Motor R/L -	Universal	
15	Orange	M-DOWN	Motor U/D -	Universal	
16	Yellow	CLAW -	Claw coil -	Not on RBM	✓ if coil has no voltage for BAW and FAK
17	Green/White	BACK-SW	Back stop signal	Universal	✓ if front/back motor/sensor error
18	Blue/White	FRONT-SW	Front stop signal	Universal	
19	N/A				
20	Purple/White	LEFT-SW	Left stop signal	Universal	✓ if left/right motor/ sensor error
21	Pink	UP-SW	Up stop signal	Universal	✓ if up/down motor/sensor error
22	Black/White	DOWN-SW	Down stop signal	Universal	
23	N/A				
24	N/A				

4. J2 – Motor Voltage Feed (Variable)

Pin No.	Wire color	Function	Connection	Remark
1	N/A	24V	24 V	B&W and FAK jumper should connect pins 1 and 2
2	N/A	COIN	Motor voltage feed	Feeds motor voltage, 24V or 48V
3	N/A	GND	48 V	RBM, jumper should connect pins 3 and 2

Page 20

IV. Crane-Specific Wire Connections

I. Find a Key and Find a Key Deluxe

JP2 – LED GAME BOARD (SUPER CARD)

Pin No.	Wire color	Function	Connection	Remark
1	Red	VCC	Led game board VCC	✓ if no power to Super Card board
2	N/A			
3	Black	GND	Led game board GND	✓ if no power to Super Card board
4	N/A			
5	Grey	RX1	Led game board TX	
6	White	TX1	Led game board RX	✓ if super card feature is not working
7	N/A			

JP4 – Congratulating Light & RGB Functionality

Pin No.	Wire color	Function	Connection	Remark
1	Red	RED	Led stripe R	Red LED out to marquee
2	Green	GREED	Led stripe G	Green LED out to marquee
3	Blue	BLUE	Led Stripe B	Blue LED out to marquee
4	Black	PRIZE LAMP	Congratulating light	Prize/Win Light signal out
5	Yellow	12V	12V	
6	Yellow	12V	12V	✓ if marquee & prize/win light is not working
7	Yellow	12V	12V	

II. The Really Big Machine

JP13 – Specific to Really Big Machine (to JP1 on claw coil P/S board)

Pin No.	Wire color	Function	Connection	Remark
1	Yellow	24V		
2	Green	RELAY		
3	Blue	12V	To JP1 on capacity board	Check if error 7,
4	Purple			
5	Grey	PWM		

III. Really Big Machine Capacitance Board

JP1 – Claw Coil Capacitance Board

Pin No.	Wire color	Function	Connection	Remark
1	Yellow	24V	From JP13 on the main board	Check if error 7, claw will not close, and coil
2	Green	RELAY		

3	Blue	12V	From JP13 on the main board	Check if error 7, claw will not close, and coil
4	Purple			
5	Grey	PWM		

JP2 of Claw Coil Capacitance Board

Pin No.	Wire color	Function	Connection	Remark
1	Red	18V	Transformer 18 VAC	Check if claw has no power and J13 to J1 PWR and relay cable has already been checked
2	Black	0V	Transformer 0V	
3	Red	18V	Transformer 18 VAC	

JP3 of Claw Coil Capacitance Board

Pin No.	Wire color	Function	Connection	Remark
1	Yellow	COIL	Coil	Check if JP2 has been checked
2	Black	V MTR-	Volt Meter -	
3	Red	V MTR+	Volt Meter +	
4	White	COIL	Coil	

JP4 of Claw Coil Capacitance Board

Pin No.	Wire color	Function	Connection	Remark
1	Blue	60V	Transformer 60 VAC	Check if error 7
2	Blue	60V	Transformer 60 VAC	

IV. Really Big Machine Security System

J2 – Prize Sensor passthrough (to mainboard)

Pin No.	Wire color	Function	Connection	Remark
1	Black	GND	JP10 – pin 4	✓ error 6
2	Brown	Signal	JP10 – pin 3	
3	Yellow	12VDC	JP10 – pin 2	
4	Green	Toggle	JP10 – pin 1	

J11 – Prize Sensor (to sensors)

Pin No.	Wire color	Function	Connection	Remark
1	Black	GND	Prize sensor GND	Check if error 6
2	Green		Prize sensor signal	
3	Yellow	12VDC	Prize sensor +12V	
4	N/A			

J9 – Power inlet

Pin No.	Wire color	Function	Connection	Remark
1	Black	GND	GND on MH-120-12V	Check if Control board has no power
2	Yellow	12VDC	+12V on MH-120-12V	

J7 – Optical Switches

Pin No.	Wire color	Function	Connection	Remark
1	Black	GND	Opto switches GND	Check if Opto switches are not working
2	Yellow	12VDC	Opto switches +12V	
3	Brown	Signal	Hatch Open Signal	Check if Hatch is not working
4	Green	Signal	Hatch Closed Signal	Check if Hatch is not working
5	Blue	Signal	Door Closed Signal	Check if Axle not locking
6	N/A			
7	N/A			

J6 – Optical Sensors & Diagnostic buttons

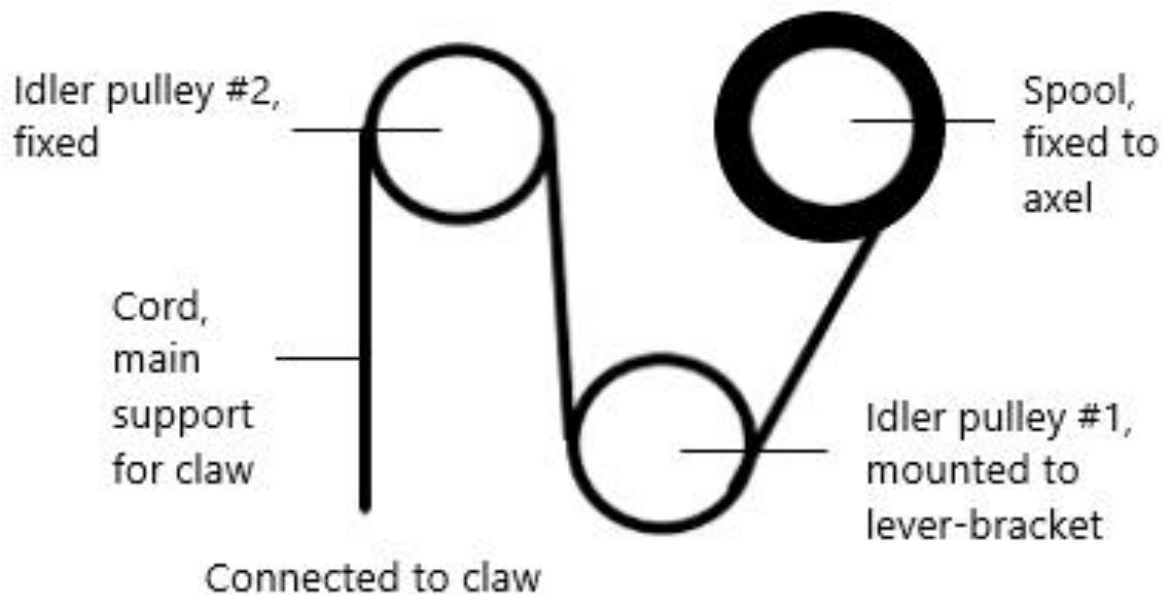| Pin No.	Wire color	Function	Connection	Remark
1	Black	GND	Diagnostic buttons GND	Check if test buttons not working
2	N/A			
3	N/A			
4	N/A			
5	N/A			
6	Green	Signal	Open button signal	Check if test buttons not working
7	Blue	Signal	Close button signal	Check if test buttons not working
8	Purple	Signal	Locked position signal	Check if Axle mechanism is not working
9	Grey	Signal	Unlocked position signal	

J8 – Motor Outputs

Pin No.	Wire color	Function	Connection	Remark
1	Yellow	12VDC	Axle motor 12VDC	Check if Motors wont drive
2	Black	GND	Axle motor GND	
3	Yellow/White	12VDC	Hatch motor 12VDC	
4	Black/Grey	GND	Hatch motor GND	

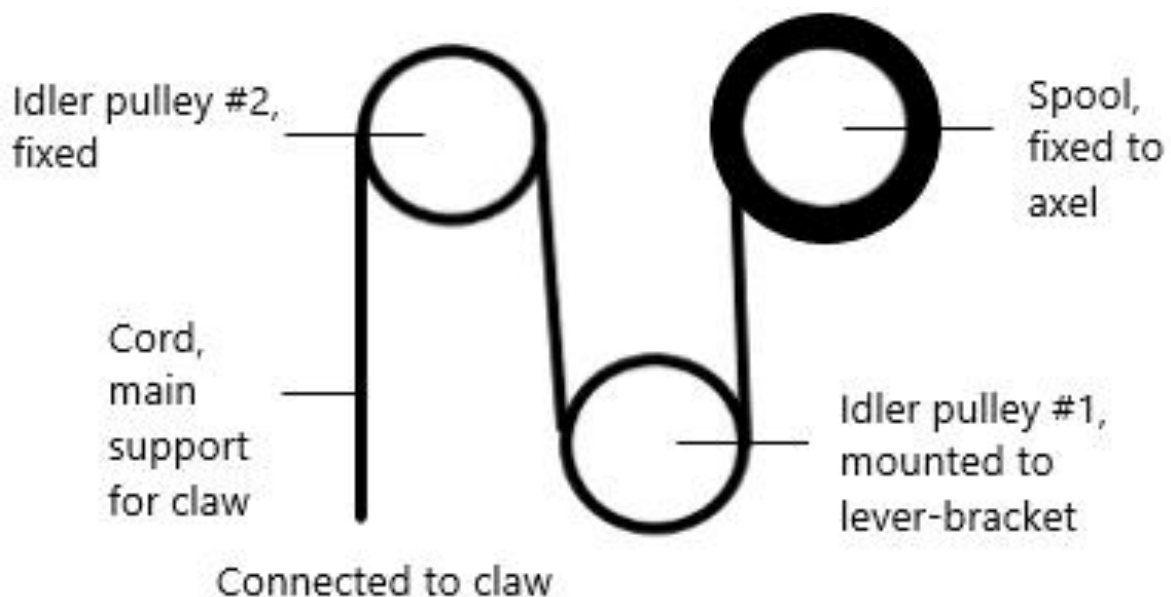# D)   Cord Winding Procedure

A properly winded spool has the potential to unwind and re-wind incorrectly; this happens when the U/D stop switch is not closed during an up/down cycle. This will cause the machine to seize up and call for an Up/ Down motor or sensor error.

Improperly winding the spool will also lead to the outcome stated above. Check the winding whenever error 1 is called (Up/ Down Motor or Sensor Error on display)

Correct Method

Idler pulley #2, fixed

Spool, fixed to axel

Cord, main support for claw

Idler pulley #1, mounted to lever-bracket

Connected to claw

Incorrect Method

Idler pulley #2, fixed

Spool, fixed to axel

Cord, main support for claw

Idler pulley #1, mounted to lever-bracket

Connected to claw

E)   Prize Sensor Sensitivity Adjustment

The sensitivity of the prize sensor can be adjusted by turning the small potentiometer on the sensor board. The sensor board is mounted directly across from the black background in all RBCC crane games. The potentiometer can be accessed from the prize chute in both Find a Key and Really Big Machine, however to adjust Buzz and Win, open the coin door and access potentiometer from the main cabinet rather than the prize chute.

- To make adjustments, enter the operator menu (hold service button) and navigate to III. I/O Tests, scroll down to 8. Prize Sensor.

- During the test there is an indicator on the LCM display that will show active when the beam is broke in addition to a red LED on the sensor board itself.

- Turn the potentiometer during test using a flat blade adjustment tool until the red LED on the board comes on.

- Turn the potentiometer back 1/8 of a turn until the red LED goes out.

- The Prize Meter will not advance during this test and is active ONLY during game play.

*Buzz & Win Note
During idle game mode, the LED will always be on until game play is activated; at which time, the LED will turn off until the infrared beam has been broken by a prize.
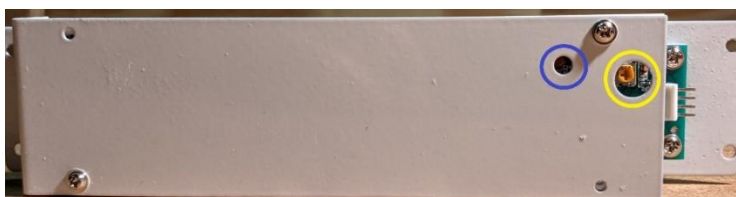
Buzz and Win prize sensor

Find a Key prize sensor

Really Big Machine & Find a Key Deluxe prize sensor

Circled in blue on each of the pictures is the LED indicator light for each sensor board w/ each prize sensor board in its mounting bracket.

Circled in yellow is the potentiometer, this is how the sensitivity of the prize sensor board is adjusted.

F)   Claw Voltage Adjustment

The Claw Process (Drop to Home Position reset)

(1) Claw is over the desired plush/redemption object

(2) Drop button sends the claw into the drop cycle, IF **Grab on Drop** is set to ✓   then the Grabbing voltage will be enabled upon a second button press. If no second button press occurs before tension switch is tripped, or **Grab on Drop** is X, then **Grabbing Vt.** will enable automatically when tension switch is tripped.

(3) Once the claw closes with **Grabbing Vt.** enabled, the claw will begin its up cycle.

(4) If **Break Random** is ✓   then before the top limit switch is tripped, **Break Vt.** will be enabled for **T Vt. Break (ms)** while the trolley is still retracting the claw.

(4) If **Break Random** is X then **Break Vt.** will be enabled upon the top limit switch being tripped and will be enabled for **T Vt. Break (ms)** before transitioning to **Carry Vt.**

(5) Once **T Vt. Break (ms)** has ended, the coil will transition to **Carry Vt.** strength and return to Home Position

(6) Upon reaching **Home Position**, the claw will drive down slightly, cut power to coil, and then drive up until top limit switch is tripped again.

(7) Trolley has completed **Home Position** reset.

RBCC cranes use skill-based software, meaning the voltages will not vary from one play to next like they would with some other crane machines. This means that your voltage adjustments will need to be carefully dialed in for each set of redemptions products in the machine. These are the **Grabbing Vt.**, **Break Vt.**, and **Carry Vt.** To achieve this, operators can go into *3. Claw Setup*, found in the operator menu, under *II. Basic Setup*. While in *3. Claw Setup*, adjust voltages to desired amounts and press **service**, this will auto run a trolley cycle into the play field, drop the claw, and attempt to carry the plush to the prize chute. Place Plush on the RBCC sticker found on the play field, this indicates where the trolley will go and drop its claw during this test. This should be done anytime the redemption products are changed out for a new set of products.

Recommended Setup Process

(1) While in 3. Claw Setup, place product on setup sticker, this should be where the claw will drop and grab when running in Claw Setup.

(2) Set Break Random to X so that the break happens consistently at up stop-switch

(3) Set T. Voltage Break to 250ms for a good center of range starting point.

(4) Set the remaining voltages to 30V

(5) Press Service and ensure the Grabbing Vt. is strong enough to lift the product to the top every time, if this is not the case, increase the voltage until true.

(6) Now begin to decrease the Break Vt. until the product is dropped each time. Remember that if Break Random is X then the Break Vt. will kick in once the up stop-switch is triggered. Be sure that the claw is making full use of its ferromagnetic stroke, this ensures the claw properly fits the product and is the ideal form of pickup when setting up a product.

(7) Adjust the Break Vt. up 1, and take the median of your Break Vt. and Grabbing Vt. (add both and divide by 2) this will be your Carry Vt.

(8) Now place products all around the target product so that they are weighing it down, run the test. Grabbing Vt. should be strong enough to overcome this extra weight, bring the voltage up until that is true.

(9) Watch machine payout audits, if payout is too high, then increase the T Vt. Break, the higher this value, the more influential the Break Vt. becomes.

Adjust Grabbing Voltage (Grabbing Vt:)

This is the initial coil strength in the sequence and the remaining voltages should be based off of this initial strength. The voltage should be great enough that redemption objects are lifted off the ground, even in less-than-ideal situations where the claw is not properly lines up. This will help build suspense for the player. It might also be strong enough to lift two objects off the ground the same time, this is a good starting

measure for the grabbing voltage. Keep in mind that the Break Vt. should cause the claw to drop these non-perfect grabs.

Adjust Break Voltage (Break Vt:)

This is the weak voltage, and when adjusting this value, understand that it implements the following two adjustments, T. Voltage Break and Break Random, these three adjustments work hand in hand with each other. E.g. included for clarity. This value can be about 35-40%, on the low end, of initial grabbing voltage. This value should also be greater than 5V, if this is not the case, the coil and redemption products are not compatible together.

E.g. 15V

T Vt. Break (10ms-500ms)

This adjustment changes the duration that the break voltage is active before transitioning to the carry voltage. The longer the coil has this weaker voltage active, the more likelihood that the plush will be dropped by the claw during the break voltage. If your Break Vt. is less than half the initial Grabbing Vt. then this should be set somewhere in the middle of the range.

E.g. 250ms

Break Random [✓, X]

For the best consumer experience, this should be set to ✓, this adjustment will enact the break voltage, for the amount of time set in T Vt. Break (ms), at a random point while the claw is being retracted. Setting this adjustment to X will result in the break voltage occurring at the same point in time with every play, which is when the up-stop switch is tripped. While setting up the machine for new products, its best to turn this off for consistency, however as mention above, for the best consumer experience, this should be set to ✓.

E.g. ✓

E.g. Break voltage will kick in randomly during the up cycle for a duration of 250ms at 15V

Adjust Carry Voltage (Carry Vt:)

This is the voltage the kicks in after the Break Voltage, and while the trolley is attempting to bring the prize above the prize chute so that it can be dropped for the customers redemption. This voltage should be higher than break voltage, but less than the grabbing voltage.

Things to consider during setup

When setting up a new product, the biggest factor is the redemption object itself; the dimensions of the product, the rigidity or lack of, the finish, and finally the weight.

An ideal setup should result in a win percentage somewhere in the range of 25%-40%, As with ever redemption machine, the best advertisement is watching other customers win. This just needs to be balanced with the input price, or price of redemption product and the start price for the machine.
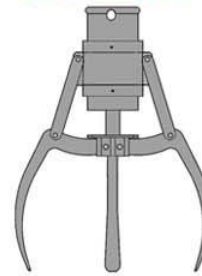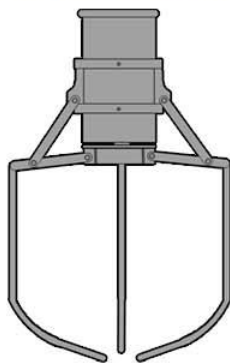
CLAW DETAILS SHEET

Find a Key

Recommended;
Prize Weight Range:
.7 oz & 1.75 oz
20 grams & 50 grams
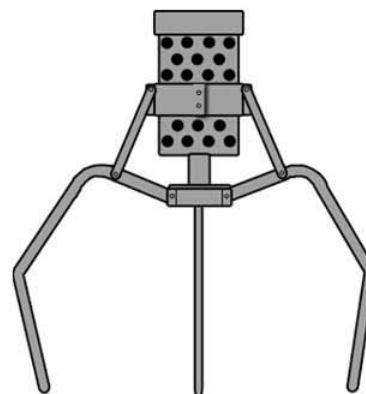Prize Size:
± 2.5 in
± 6 cm

Buzz & Win

Recommended;
Prize Weight Range:
2 oz & 7 oz
60 grams & 200 grams
Prize Size:
± 7 in
± 18 cm

Find a Key Deluxe

Recommended;
Prize Weight Range:
9 oz & 18 oz
250 grams & 500 grams
Prize Size:
± 12 in
± 30 cm

Really Big Machine

Recommended;
Prize Weight Range:
10.5 oz & 35 oz
300 grams & 1000 grams
Prize Size:
± 16 in
± 40 cm

G)   Really Big Machine Gantry Sensor Adjustments

Really Big Machine uses an inductive proximity sensor setup, which comprises the proximity sensor itself, and a proximity sensor target. There are four sensors and four targets. This can be a common cause of fatal errors if not set up correctly. As an inductive proximity sensor, the proximity sensor target must have inductive properties i.e. target must be some form of metallic.

Key points for smooth operation

- Ensure your Fotek proximity sensor face is parallel with the face of the proximity sensor target.

- When the sensor is tripped by the sensor target, the LED indicator will light up red, this indicator remains on while the sensor is tripped.

- The spacing tolerance for the sensor to report is about 1/8", any distance greater than that will likely result in a fatal motor/sensor error.

- To adjust the spacing between the proximity sensor target and proximity sensor face using the mounting slot adjustment holes shown in the adjacent diagram.

- The proximity sensor target can also be adjusted so that the stop limit is more or less, to do this loosen the set screw securing the sensor target. Once loose, the bracket can be slid along either the gantry track or trolley track depending on which sensor target you adjusting.

- Once you are happy with the position of both the proximity sensor and proximity sensor target, be sure that both pieces are securely fastened in place. The sensor uses two #2 Phillips head screws and the sensor target can be tightened using a 2mm Allen wrench.
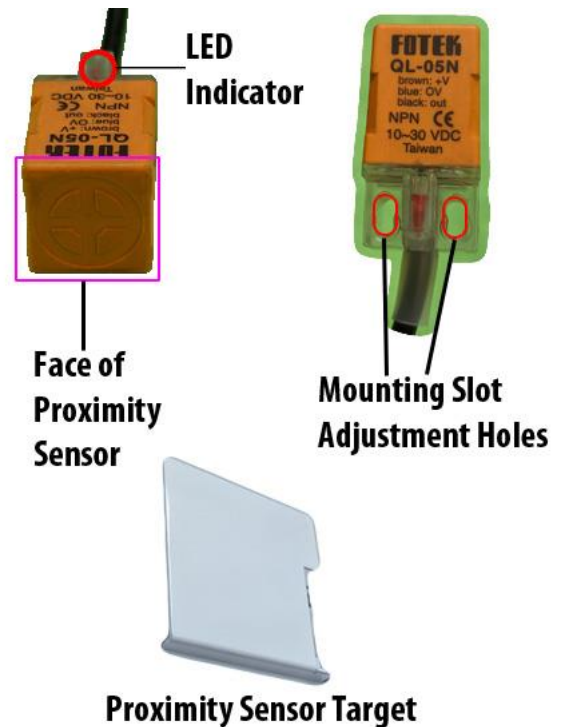
H)   Really Big Machine Prize Compartment Security

We understand that large cranes with large prize compartments should be associated with some additional concerns compared to a more modestly sized crane. To that end we have implemented an auxiliary control board to secure the prize compartment from improper access.

(1) The prize compartment security system is housed in the left coin door of the cabinet.

(2) The system will run the prize chute hatch into the open position at the beginning of a game loop and will automatically run to the closed position when the game loop completes.

(3) The prize compartment mechanism will remain in the locked position during the game loop, if the prize sensor is triggered, found in the prize compartment, then the compartment locking plate will be driven into the unlocked position.

(4) The prize compartment locking procedure has a twofold signal, additionally, an optical sensor positioned on the door frame must be tipped by the flag attached to the prize compartment door. These two logic circuits translate to the prize compartment being empty and the prize compartment door being in the closed position and thus ready to be locked.

(5) The system has a test mode implemented, however, it's a stand-alone system that is controlled using the buttons found in the left coin door. To enter test mode, press both buttons simultaneously. The test mode allows operators to test the systems open and close features by holding the associated button. The system will automatically leave test mode after 5 seconds of not receiving a signal once in test mode.

(6) While in operator menu, the security system will automatically drive open and remain open until the machine exits operator menu. Once operator menu is exited, they system will drive closed, provided the prize sensor and frame optical sensor are both reporting the proper signal to drive the prize compartment axle to the locked position.

I) Really Big Machine Prize Compartment Hinge Adjustments

The proper operation of the prize compartment safety system depends on the axle and bottom of door having the correct clearance when in the unlocked position. On the other hand, when the axle is in the locked position, the coverage on the backside of the door should be significant enough that the door cannot bend and slip over the locking plate when forced inward.
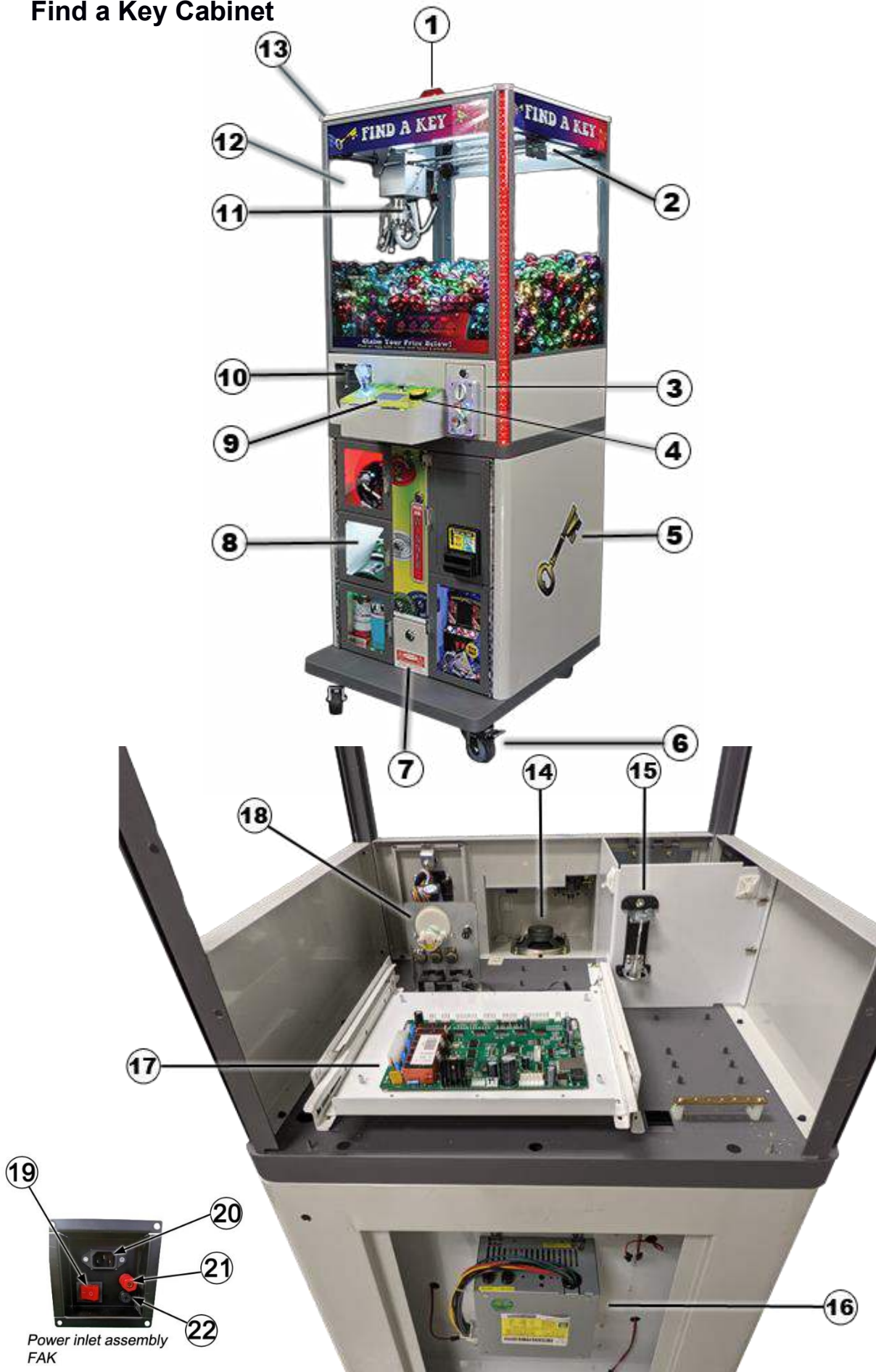
Prize Compartment Calibration

(1) First, enter the operator menu; this will drive both mechanisms into the unlocked/open position. Now test that the prize compartment door can clear the axle housing when in the unlocked position.

(2) Small amount of interference shouldn't adversely affect the operation of the system. Adjustments should be made if there is so much interference that the initial opening force doesn't overcome the axle housing. *See hinge adjustment*

(3) Finally, ensure that the optical sensor mounted on the inside face the door frame is able to receive the flag connected to the prize compartment door, this is the secondary signal that will drive the mechanism to the locked position.

   a. If the flag does not align with the optical sensor, bend the flag to proper alignment using needle nose pliers.

   b. Some flags might need to be extended slightly to create a reliable trigger for the optical sensor. This can be done by adding some gaffe tape or electrical folded around the flag extending its overall reach.

Hinge Adjustment

(1) With the locking plate axle in the unlocked position, loosed the carriage bolts securing the hinge and prize compartment door. Now align the door so that it's resting on the axle housing.

(2) Place a shim between the housing and bottom of the door and re-tighten the carriage bolts. For shimming the door, we recommend these common items;

   a. RFID Player/Operator card

   b. Standard playing card

   c. Folded flyer or paper stock
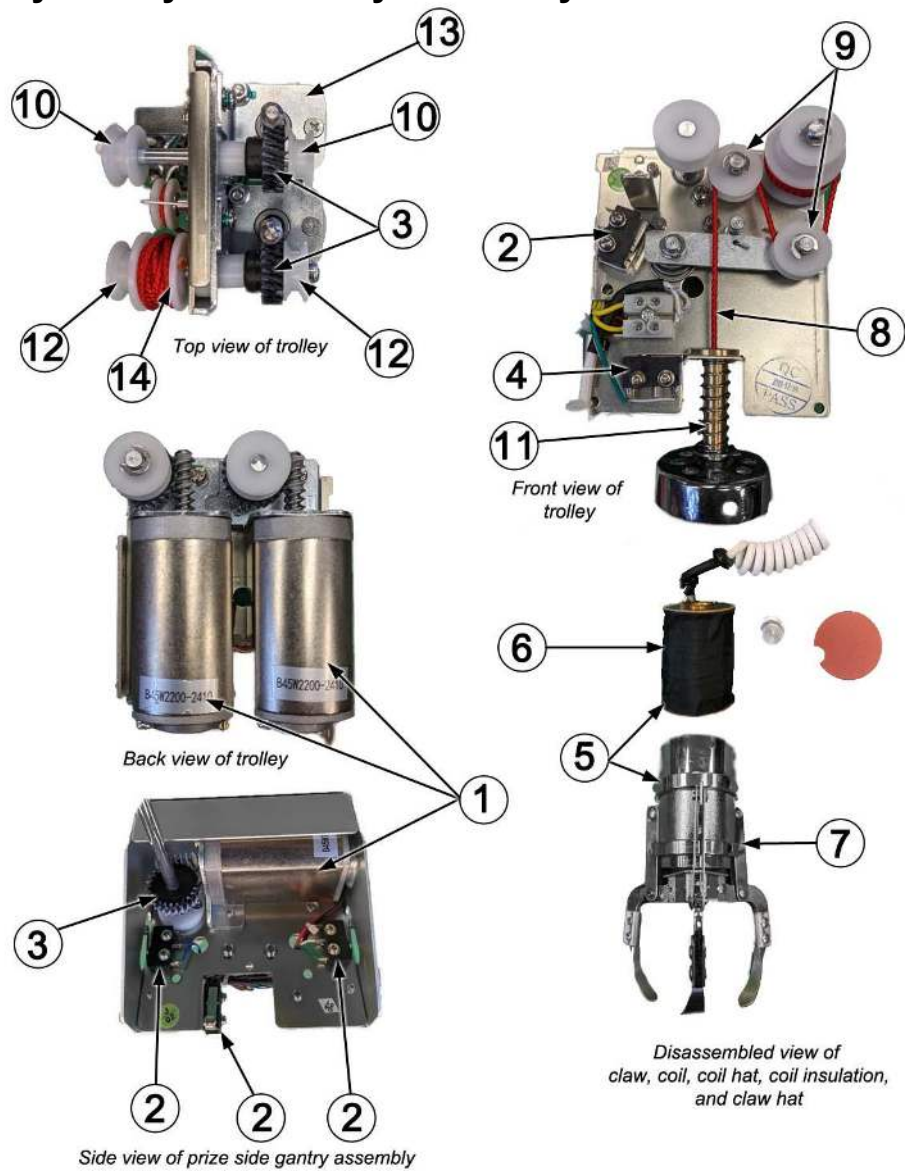
J)   Parts List

I.   Find a Key Cabinet

Power inlet assembly
FAK

Copyright© 2021 The Really Big Crane Company. All rights reserved.

II.   Find a Key Cabinet Parts

No.	Part Number	Description
1	RBC-500-00008-01	Upper Light
2	RBC-500-00005-01	Upper LED Light Tube
3	RBC-800-00003-01	Coin Comparator TW389
4	RBC-702-00001-01 RBC-401-00001-01 RBC-410-00001-01	Button Assembly
5	RBC-606-00002-01	Side Decal
6	RBC-710-00014-01	Cabinet Wheel
7	Contact Parts Department	Lock Sets
8	RBC-500-00001-01 RBC-500-00002-01 RBC-500-00003-01 RBC-500-00004-01	LED Strips (Blue, Red, White, GM)
9	RBC-550-00006-01	PCB: Display Board with LCM
10	RBC-800-00002-01	Joystick Assembly
11	RBC-604-00005-01	Crane Trolley Assembly
12	RBC-600-00001-01 RBC-600-00002-01	Tempered Glass Pane
13	RBC-608-00009-01	Find a Key Metal Cabinet
14	RBC-807-00001-01	Speaker 8Ω 5W
15	RBC-608-00013-01	Tilt Rod
16	RBC-500-00009-01	Power Supply: Weiya P2040
17	RBC-550-00008-01	PCB: Main Board
18		Voltage Adjustment Set
19	RBC-410-00001-01	On/Off Switch
20	RBC-408-00001-01	Line filter: 6A CW1-D-6A-T
21	RBC-409-00001-01	Pole for electrical grounding
22	RBC-407-00001-01	Fuse Holder: 10A
*	RBC-810-00003-01	Wiring Harness Set
*	RBC-406-00001-01	Fuse: φ5*20 5A Fast-blow
*	RBC-550-00001-01	PCB: Sensor Board

* Part not pictured
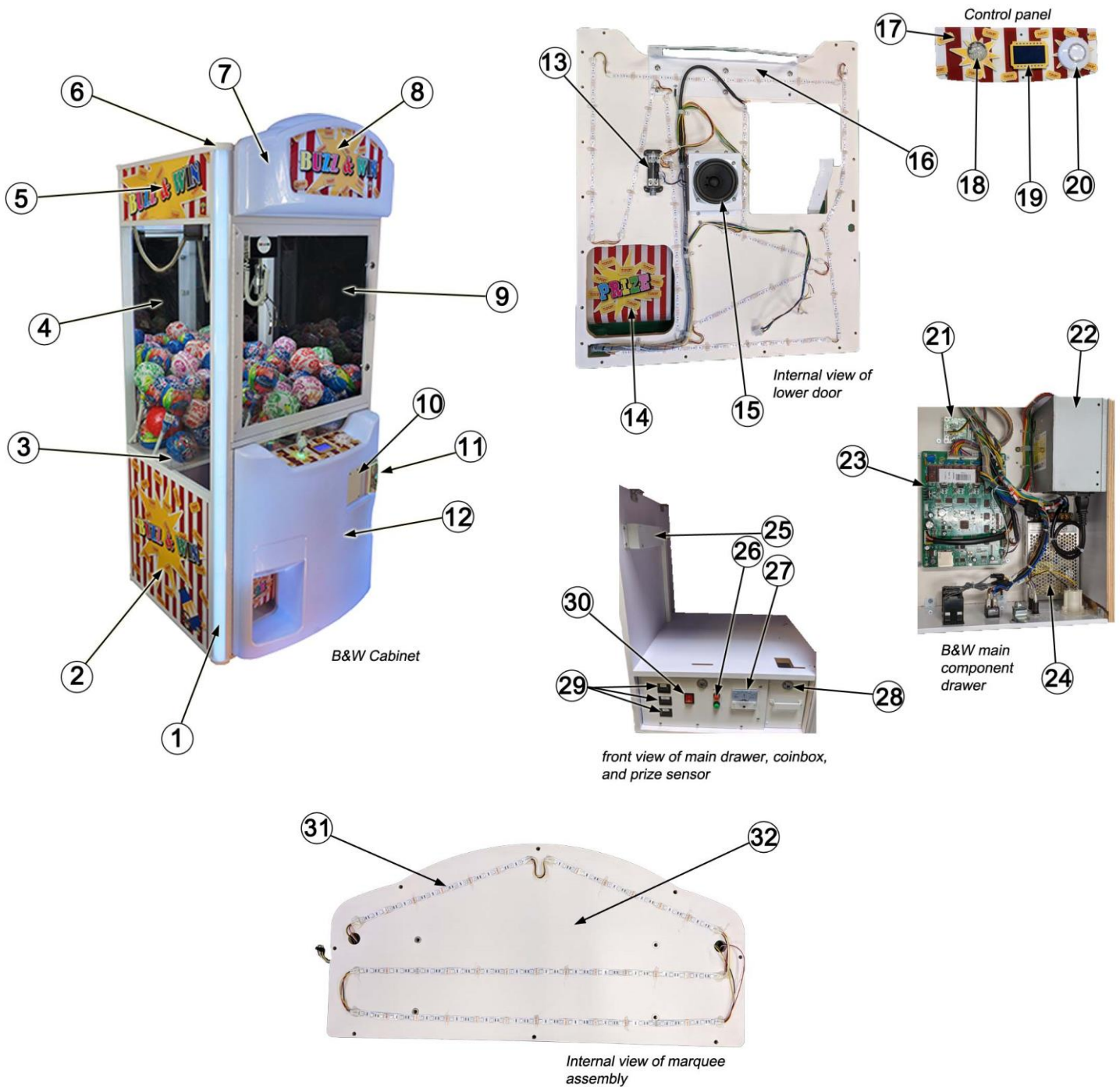
III.   Find a Key Gantry and Trolley Assembly

Top view of trolley

Front view of trolley

Back view of trolley

Disassembled view of
claw, coil, coil hat, coil insulation,
and claw hat

Side view of prize side gantry assembly

IV.   Find a Key Gantry and Trolley Assemblies Parts

No.	Part Number	Description
1	RBC-404-00001-01	Motor with integrated worm gear
2	RBC-410-00006-01	Microswitch (3 terminal) with lever and wheel
3	Not seen on website	(.225" diameter drive gear)
4	RBC-410-00007-01	Microswitch (3 terminal) with lever
5	RBC-604-00004-01	FAK mini claw and coil
6	RBC-412-00003-01	FAK mini claw coil
7	RBC-604-00001-01	FAK mini claw without coil
8	RBC-715-00001-01	FAK red string
9	Part not listed	5mm inner diameter pulley wheel
10	Part not listed	8mm inner diameter L/R fixed driving wheels
11	Part not listed	Up/Down stop switch actuator assembly

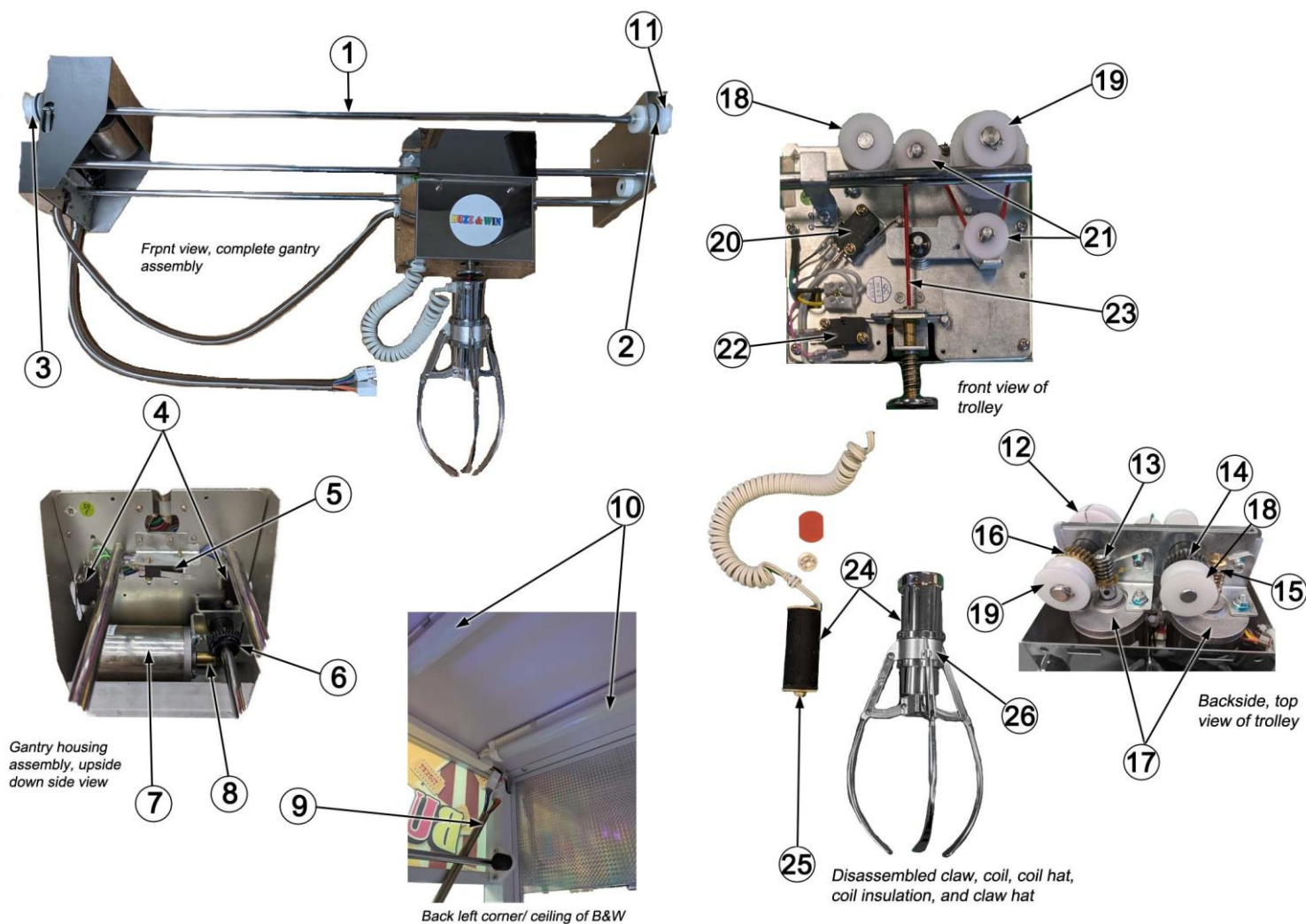| 12	Part not listed	8mm inner diameter Up/Down axel, not fixed
13	Part not listed	Trolley motor mounting bracket (x2)
14	Part not listed	Main winding spool, fixed to up/down the axle

V.   Buzz and Win Cabinet

B&W Cabinet

Control panel

Internal view of lower door

B&W main component drawer

front view of main drawer, coinbox, and prize sensor

Internal view of marquee assembly

Page 34

VI.   Buzz & Win Cabinet Parts

No.	Part Number	Description
1	RBC-600-00010-01	LED cover, for front left and right corner LED strips
2	Part not listed	Bottom side panels, with art
3	RBC-603-00012-01	L-shaped acrylic prize chute barrier
4	Part not listed	Side glass panel
5	RBC-606-00015-01	Top side panel with art
6	RBC-600-00005-01	B&W: Top and Bottom Corners caps
7	Part not listed	B&W top ABS marquee
8	Part not listed	B&W marquee + plastic cover
9	Part not listed	Front door, glass
10	RBC-608-00025-01	B&W: Metal frame for the coin mech area
11	RBC-800-00003-01	Coin Comparator TW389
12	RBC-603-00017-01	B&W: Lower ABS plastic door
13	RBC-608-00013-01	Tilt Rod
14	RBC-606-00012-01	New acrylic prize door
15	RBC-807-00001-01	Speaker 8Ω 5W
16	Part not listed	Control panel bracket
17	RBC-606-00012-01	Control panel
18	RBC-800-00001-01	Joystick assembly
19	RBC-550-00006-01	PCB: Display Board with LCM
20	RBC-702-00002-01	Button Assembly
21	RBC-550-00005-01	PCB: LED driver board
22	RBC-500-00009-01	Weiya P2040 series (110V/220V)
23	RBC-570-00003-01	B&W Mainboard 1.7 UCLS
24	RBC-500-00012-01	B&W LED power supply
25	RBC-550-00009-01	B&W Prize sensor board
26	RBC-402-00002-01	Red and Green buttons (service & volume)
27	RBC-411-00001-01	Voltage meter 0-50V
28	Part not listed	X-Lock
29	RBC-411-00002-01	Counter/meter, 6 digits
30	RBC-402-00001-01	On/Off power switch
31	Part not listed	24" RGB LED strip x2 + 12.5" RGB LED strip x2
32	Part not listed	Marquee bracket assembly
*	RBC-710-00014-01	Cabinet Wheel

VII. Buzz & Win Gantry and Trolley Assemblies

Frpnt view, complete gantry assembly

front view of trolley

Gantry housing assembly, upside down side view

Back left corner/ ceiling of B&W

Disassembled claw, coil, coil hat, coil insulation, and claw hat

Backside, top view of trolley

VIII. Buzz & Win Gantry and Trolley Assemblies parts

No.	Part Number	Description
1	RBC-570-00003-01	Gantry and trolley assembly
2	RBC-708-00003-01	O-Ring drive belt
3	RBC-710-00016-01	Gantry drive wheel, front/back
4	RBC-410-00004-01	Three-pin microswitch w/ lever roller
5	RBC-410-00005-01	Three-pin microswitch w/ lever
6	RBC	Gantry drive gear, metal
7	RBC-404-00002-01	Gantry motor, 30 watts
8	RBC-608-00016-01	Gantry worm gear, brass
9	Part not listed	Gantry wire harness, from the corner, break away connector
10	RBC-500-00007-01	Overhead cabinet lights
11	RBC-710-00017-01	Gantry subsidiary wheel, front/back
12	Part not listed	Spool (for up/down axel)

Parts List

13	RBC-608-00014-01	B&W: Worm gear: Steel (for motor)
14	Part not listed	B&W: Gear, steel (for trolley)
15	RBC-608-00016-01	B&W: Worm gear: Brass (for motor)
16	RBC-608-00015-01	B&W: Gear: Brass (for trolley)
17	RBC-404-00003-01	Trolley motor, 20 watts (24V)
18	Part not listed	Drive wheel (front/back axle)
19	Part not listed	Subsidiary wheel (up/down axle)
20	RBC-410-00004-01	B&W microswitch 3 pins with wheel
21	RBC-710-00015-01	B&W pulley
22	RBC-410-00005-01	B&W microswitch 3 pins with plate
23	RBC-715-00002-01	B&W red string
24	RBC-604-00002-01	B&W complete claw assembly
25	Part not listed	B&W claw coil and wire, no claw
26	Part not listed	B&W claw housing, no coil or wire

IX.   Really Big Machine Cabinet

X.   Really Big Machine Cabinet Parts

No.	Part Number	Description
1	Part not listed	RBM top sign
2	Part not listed	RBM top sign brackets
3	RBC-600-00005-01	RBM/B&W top and bottom corner caps
4	Part not listed	RBM roof assembly
5	Part not listed	RBM back panel
6	Part not listed	RBM side panel (L & R)
7	Part not listed Part not listed	RBM blue corner covers small RBM blue corner covers large
8	RBC-702-00005-01	RBM Dash: drop button
9	RBC-600-00010-01	RBM front corner LED diffuser
10	RBC-710-00014-01	Cabinet wheel
11	Part not listed	RBM large coin door
12	Part not listed	RBM small coin door
13	RBC-800-00003-01	Coin Comparator TW389
14	Part not listed	RBM Acrylic prize door
15	Part not listed	Dashboard assembly
16	RBC-800-00001-01	Joystick assembly
17	Part not listed	Prize chute barrier
18	Part not listed	RBM front panel
19	RBC-710-00029-01	RBM Claw housing
*	RBC-406-00001-01	Fuse: OD 5mm x 20mm 5A
*	RBC-407-00001-01	Fuse seater/holder: 10A
*	RBC-408-00001-01	EMI filter: 6A CW1D-6A-T
*	RBC-500-00015-01	Switch: AK-4N-16A (power switch)
*	RBC-570-00003-01	Mainboard PCB
*	RBC-550-00013-01	RBM capacitance board
*	RBC-570-00005-01	Display PCB
*	RBC-704-00025-01	Key: Barrel key for lock-02
*	RBC-704-00017-01	Key: Cross key
*	RBC-705-00023-01	Lock-02 (Barrel lock)
*	RBC-705-00016-01	Lock M2020 (Cross lock)
*	RBC-410-00001-01	Microswitch (two terminal) for drop button

XI. Really Big Machine Gantry and Trolley Assemblies
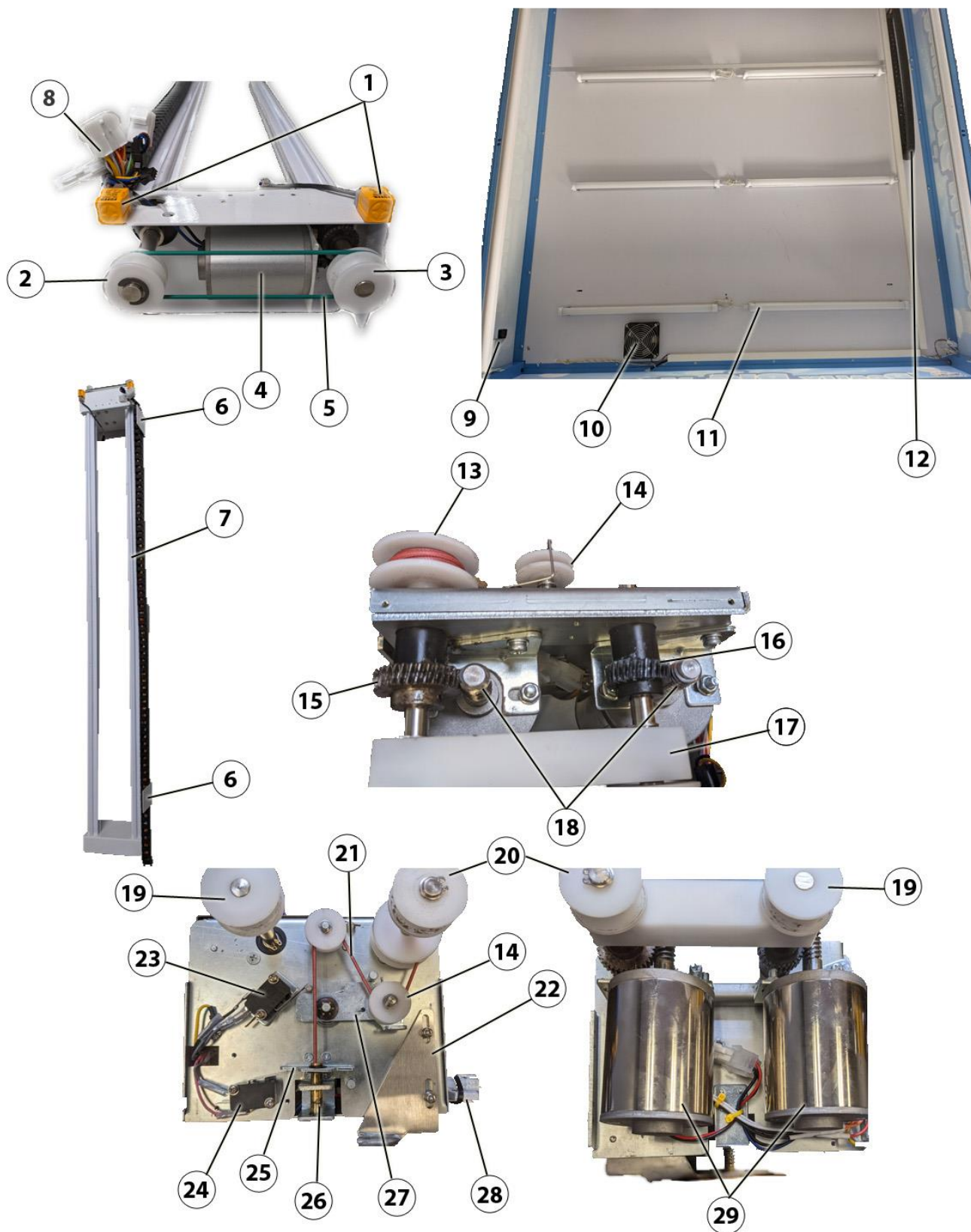
XII. Really Big Machine Gantry and Trolley Assemblies Parts

No.	Part Number	Description
1	RBC-413-00001-01	FOTEK Proximity sensor
2	RBC-710-00005-01	Subsidiary Gantry wheel
3	RBC-710-00005-01	Primary Gantry wheel (w/hole)
4	RBC-404-00012-01	RBM Gantry motor
5	RBC-708-00001-01	RBM Gantry green rubber drive belt
6	Part not listed	RBM Proximity flag
7	Part not listed	RBM Gantry assembly
8	Part not listed	Gantry cable harness assembly
9	RBC-711-00005-01	End of gantry motion bumper
10	Part not listed	Small fan
11	RBC-500-00005-01	Ceiling Light tube (LED)
12	RBC-600-00008-01	RBM: Gantry cable management track
13	RBC-710-00008-01	Trolley spool
14	RBC-710-00007-01	Trolley pulley
15	Part not listed	U/D Drive gear
16	RBC-608-00038-01	L/R Drive gear (small)
*	RBC-709-00001-01	F/B (Gantry) Drive gear
17	Part not listed	Trolley bearing block
18	RBC-608-00037-01	Trolley worm gear
19	RBC-710-00006-01	Trolley drive wheel (w/hole)
20	RBC-710-00006-01	Trolley subsidiary wheel (w/o hole)
21	RBC-715-00003-01	Trolley string
22	Part not listed	RBM Claw: Anti-sway stop bracket
23	RBC-410-00002-01	Three terminal microswitches w/ lever & wheel
24	RBC-410-00005-01	Three terminal microswitches w/ lever
25	Part not listed	Actuator plate for U/D microswitch
26	Part not listed	RBM trolley throat assembly
27	Part not listed	RBM trolley dynamic pulley assembly
28	Part not listed	RBM Claw quick disconnect bracket
29	RBC-404-00007-01 RBC-404-00012-01	RBM Trolley U/D motor RBM Trolley L/R motor
*	Part not listed	Trolley axle retention clip (snap ring)
*	Part not listed	Trolley pulley axle retention clip (E style)

*	Part not listed	Gantry axle retention clip (E style)
*	Part not listed	Coil for RBM claw
*	RBC-604-00008-01	RBM Trolley assembly (no claw or coil)
*	RBC-604-00009-01	RBM Trolley & Claw assembly (w/coil)

XIII. Really Big Machine Coin Doors & Prize Compartment Parts

No.	Part Number	Description
*	RBC-500-00014-01	Power supply for security system
*	Part not listed	Control Board for security system
*	RBC-413-00003-01	Optical switches (stop sensors)
*	Part not listed	Prize door flag (bracket)
*	Part not listed	Timing belt (for hatch mechanism)
*	Part not listed	Prize Sensor PCB
*	RBC-404-00011-01	Hatch mechanism motor
*	Part not listed	Hatch
*	Part not listed	Axle lever locking plate
*	RBC-404-00010-01	Motor for lever locking plate
*	Part not listed	Hatch Assembly
*	Part not listed	Lever locking plate

Page 44