BLACK TIE TOYS

ADVANCED CRANE MACHINE
Operation Manual

Serial # _____

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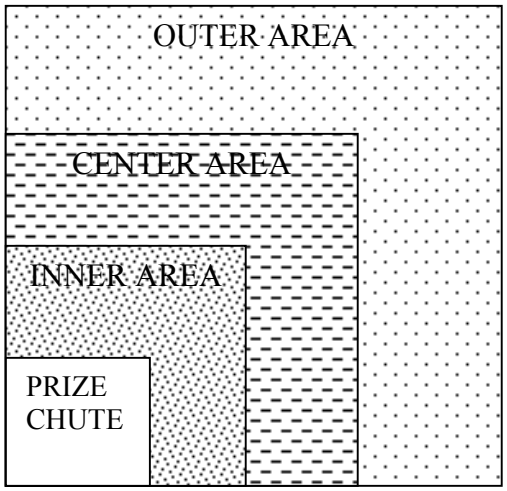
BLACK TIE FEATURES

Product Features:

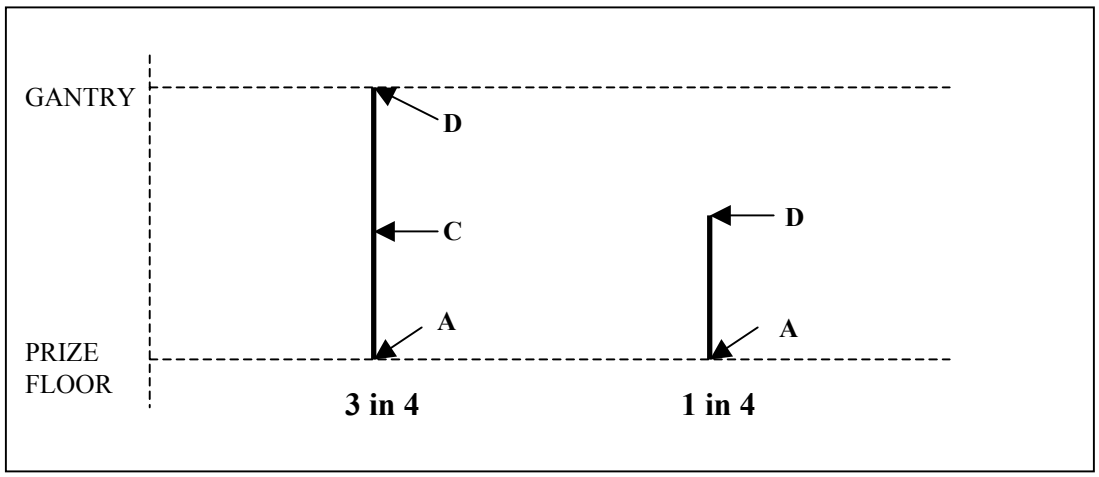
1) In the **Black Tie** crane's sophisticated circuitry and programming come together to create a new dimension in crane machines. The program adjusts itself intelligently, generating four levels of claw strength as the claw and gantry lift and return home, Phase (**A**) is equivalent to VR1 setting or full claw strength, phase (**B**) which is fixed to send 30 VDC to the claw, phase (**C**) fixed to send 25 VDC to the claw, and phase (**D**) equal to the VR2 setting.

The playfield is divided into three zones:

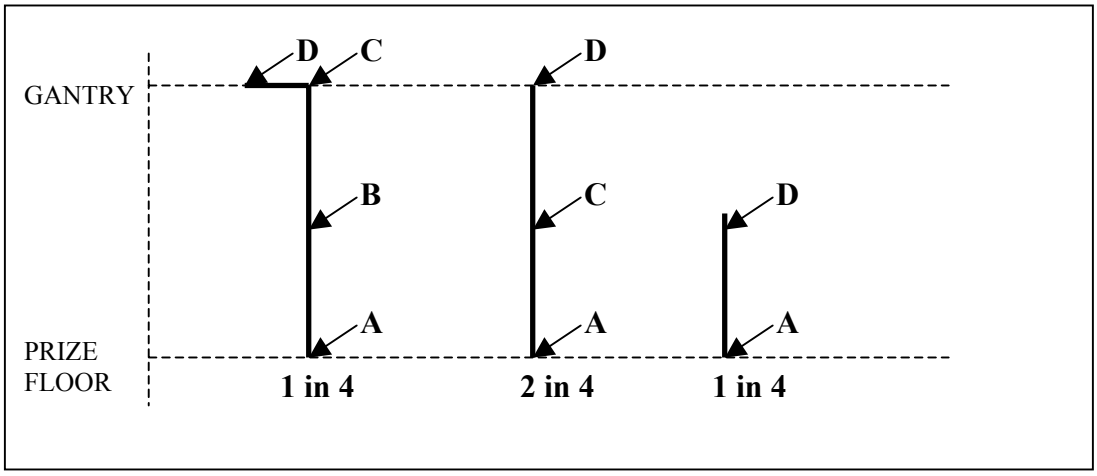


Claw strength switching varies according to the area in which the claw is dropped and the percentage settings:

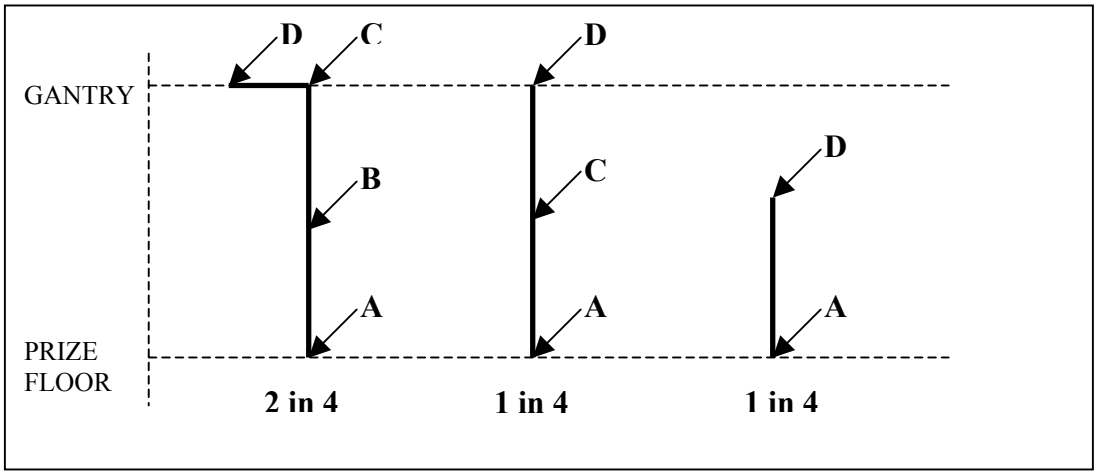
INNER AREA:



CENTER AREA:



OUTER AREA:



2) In addition to the dipswitch settings many options can be set on a LCM (liquid crystal matrix) interface. This will eliminate the need to change EPROM's to modify the machines program.
3) Games played are registered to enhance bookkeeping.
4) Managing profit is made easy, simply input the coin value, the average value of the merchandise, and the profit level. The machine will automatically calculate when to send full strength to the claw, games sent full strength will be randomly selected from a group making it difficult for players to "predict."
5) All accounting data is stored in memory in retained during power off.
6) When full power is sent to the claw the machine will continue to in this mode until a prize is won. This can either be set to either require additional credits to continue play or to "play until win" using dipswitch settings.

DIPSWITCH SETTINGS

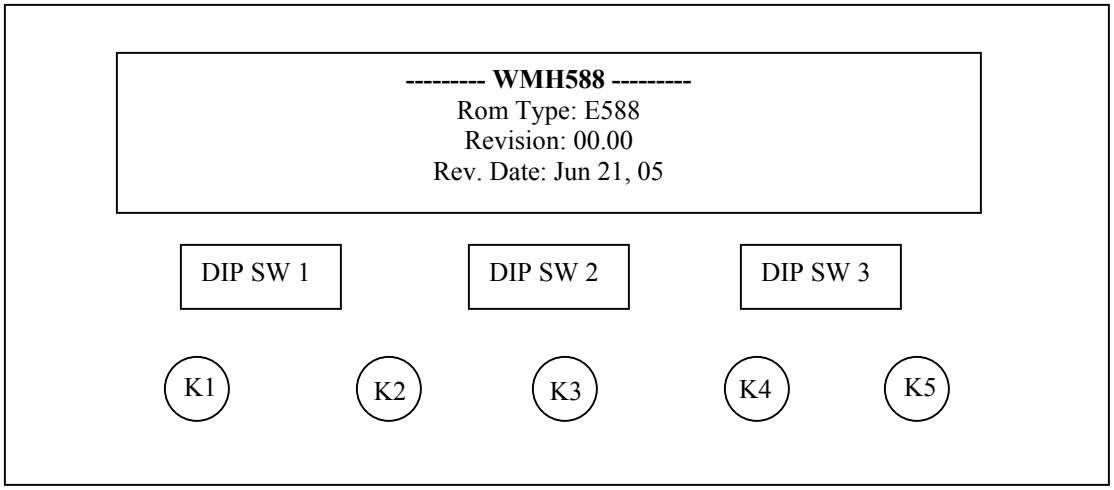
Dipswitches are located on the interface module just below the LCM screen, with dipswitch 1 being the leftmost and dipswitch 3 the rightmost.

DIPSWITCH 1 (left)		1	2	3	4	5	6	7	8
Attract Music	YES	ON							
	NO	OFF							
Claw position For prize drop	HIGH		ON						
	LOW		OFF						
Credit deducted at	DROP			ON					
	CLAW CLOSING			OFF					
Catch in air	YES				ON				
	NO				OFF				
Center Claw on playfield At game start	YES					ON			
	NO					OFF			
Retain credit with power off	YES						ON		
	NO						OFF		
Demo game at five minute intervals	YES	*The claw will remain open during demo games.						ON	
	NO							OFF	
Super Card Installed	YES								ON
	NO								OFF

Dipswitch 2 (center)		1	2	3	4	5	6	7	8
Play until win	NO	ON							
	YES	OFF							
Remaining poles reserved for future enhancements.									

Dipswitch 3 is reserved for future enhancements.

LCM (LIQUID CRYSTAL MATRIX) SETTING INSTRUCTIONS

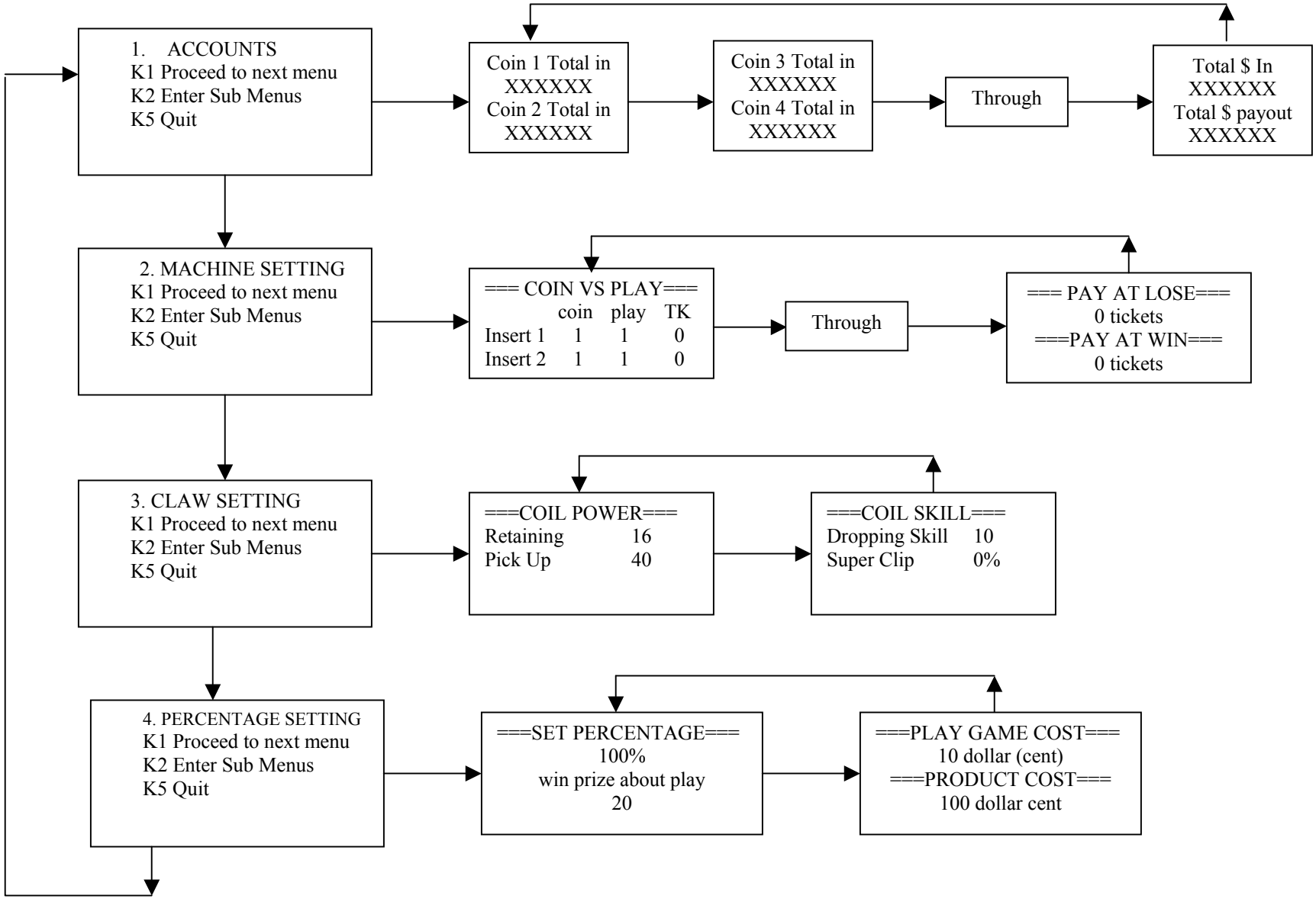


Explanation of display:
Rom Type: Program designation loaded into the read only memory.
Revision: The programs revision number.
Rev. Date: Date the program was revised.

Input Button Functions:
K1 Scroll through, Select, Main Menus
K2 Scroll through, Select, Sub Menus
K3 Increase selected parameter value
K4 Decrease selected parameter value
K5 Confirm, Save, and Quit.

1) Press **K1** to scroll through the four main menus:
   1. Accounting Records
   2. Game Setup
   3. Claw Strength Setup
   4. Percentage Setup
2) Press **K2** to enter the sub menus available for each main menu. (Pressing **K5** allows entry into the selected sub menu for item modification)
3) **K3** and **K4** are used to increase or decrease the value of a selected parameter.
4) Pressing **K5** saves the modifications that you have made to an item. (CAUTION! Pressing **K1** or **K2** without first pressing **K5** will cause any changes that you have made not to be saved.)
5) Any screen displayed that is not acted on within 50 seconds will revert to the next highest screen. IE: Selected value returns to sub menu screen, which returns to main menu screen, which returns to stand by screen, which returns to regular game play.

LCM Setup Flowchart:
Press K1 to enter main menus



LCM setup instructions: (cont)

Main menu□ **1**	Page	Sub menu displays…	EXPLANATION	
ACCOUNTS Operation records	1	Coin1 total in 0 Coin2 total in 0	Coin mech #1 total coins inserted Coin mech #2 total coins inserted	
	2	Coin3 total in 0 Coin4 total in 0	Coin mech #3 total coins inserted Coin mech #4 total coins inserted	NOT USED
	3	Total game 0 Total test 0	Total number of games played Total number of free games played (games for test)	
	4	Total catches out 0 Total tickets out 0	Total prizes out Total tickets out	
	5	Total capsules out 0 Total balls out 0	Total capsules out Total bouncing balls out	NOT USED
	6	Total dollar in 0 Total dollar payout 0	Total money($) in Total money($) out	These values are calculated based on the coins in setting

LCM setup instructions: (cont)

Main menu2	Page	Sub menu displays…	EXPLANATION
MACHINE SETTING Game setup	1	== COIN VS PLAY == coin play TK Insert1 1 1 0 Insert2 1 1 0	=== Coins setting === 1. coin:number of coins 1~9 2. play:number of plays 1~9 3. TK:number of tickets paid out upon coin insertion 0~9 4. Insert1:coin mech 1:Insert2:coin mech 2
	2	== COIN VS PLAY == coin play TK Insert3 1 1 0 Insert4 1 1 0	=== Coins setting === 1. coin:number of coins 1~9 2. play:number of plays 1~9 3. TK:number of tickets paid out upon coin insertion 0~9 4. When coin and play are both set to 0, the respective coin mech will be inhibited. 5. Insert3:coin mech 3:Insert4:coin mech 4
	3	=== GAME TIME === 50 seconds = TILT'S SENSITIVITY = 1	1. GAME TIME:unit: seconds 10~99. 0~9 not available. 2. TILT'S SENSITIVITY:smaller is the number, higher is the SENSITIVITY 1~10. 0 not available.
	4	= ATTRACT MUSIC = on 3 minute off 10 minute	=== Demo music time setting === 1. Based on DIP SW setup. If DIP SW is set to without attract music. This setting is invalid. 2. on stands for the music play time:1~20 minutes. 3. off stands for the break time between 2 attract music plays: 1~90 minutes. The setting example represents playing 3 minutes of attract music every 10 minutes.
	5	=== SUPER CARD == 8 (1 free play) 3 (2 free play) 1 (super power)	=== Super card setting === 1. Based on DIP SW setup, if DIP SW is set to without super card, this setting will not be displayed. Current display shows: 2. 1 free play: within a cycle of 100 plays there are 8 chances to get 1 free game. 3. 2 free plays: within a cycle of 100 plays there are 3 chances to get 2 free games. 4. super power:within a cycle of 100 plays there is 1 chance to get super claw strength. 5. The cycle of the super card is fixed at 100 plays. Therefore the setup range of these sub menu items are always between 0~50.
	6	== PAY AT LOSS == 0 tickets === PAY AT WIN === 0 tickets	=== Ticket payout === 1. PAY AT LOSS: tickets out upon loss 0~10 2. PAY AT WIN: tickets out upon winning 0~50

LCM setup instructions: (cont)

Main menu□3	Page	Sub menu displays…	EXPLANATION
CLAW SETTING Claw strength	1	== COIL POWER== retaining 16 pick up 40	=== Coil power:VR1 & VR2:setting === 1. retaining:VR2 power:12~20V 2. pick up:VR1 power:30~45V 3. The higher the input value the greater the power that will be sent to the claw
	2	=== COIL SKILL === dropping skill 10 super clip 0 %	=== Dropping skill & full power rate === 1. dropping skill: power break between VR1 & VR2:0~20. Set to 0 stands for no power break. The higher the input value the longer the break will be. 2. super clip: how often full power will be sent to the claw:0~ 50 %. If set to 0, VR1 is the only claw power during pick up.

Setting up Claw strength:

- **a.** Press **K1** until main menu #3**: "Claw Setting"** is selected. Press **K2** to enter the sub menu. The display will show the adjust claw strength screen. Press **K5** to set **VR1 and VR2.**
- **b.** **VR2** (retaining power): The cursor should now be on **VR2**. Pressing **K3** will increase the value and **K4** will decrease the value. Pressing the **DROP** button closes the claw. Changes in **VR2** voltage will interact with the "dropping skill" setting. Press **K5** to save the setting change or the **DROP** button to open the claw once more. After **K5** is pressed to save the setting the cursor will jump to the **VR1** setting.
- **c.** **VR1** (pick up power): From the previous step the cursor should now be on **VR1**. Once again pressing **K3** will increase the setting and **K4** will decrease it. Pressing the **DROP** button will close the claw. Changes in **VR1** voltage will interact with the "dropping skill" setting. Press **K5** to save the setting change or the **DROP** button to open the claw once more. After **K5** is pressed to save the setting the cursor will jump to the **VR2** setting.
- **d.** Press **K2** to enter the **DROPPING SKILL** sub menu.
- **e.** The cursor should be on "Dropping Skill." Pressing **K3** will increase the value and **K4** will decrease it. Pressing **DROP** will cause the claw to close. Pressing **K5** saves the setting. Pressing the **DROP** button again will open the claw. Again Dropping Skill and the voltage settings are interdependent changes in one parameter will effect the others.
- f. After saving and exiting from dropping skill the cursor should be on "**SUPER CLIP."** Again **K3** increases the value while **K4** decreases it. Super Clip is the percentage of games in which full power will be sent to the claw at initial closing. Pressing **K5** will save changes made to this setting.
- g. If the **DROP** button is pressed and forgotten during any of these steps the claw will automatically re-open after fifteen seconds.

LCM setup instructions: (cont.)

Main menu□4	Page	Sub menu displays…	EXPLANATION
PERCENTAGE SETTING	1	= SET PERCENTAGE = **100** % win prize about play **20** times	=== Profit percentage setting === 1. SET PERCENTAGE: profit rate:1~999 % 2. win prize about play: (one game out of X number of games should win) this can not be set up by the operator. It is calculated automatically by the system based on SET PERCENTAGE, PRODUCT COST and GAME COST.
	2	= PLAY GAME COST = **10** dollar (cent) = PRODUCT COST = **100** dollar (cent)	=== GAME & PRODUCT COST setting === 1. PLAY GAME COST: how much ($) does one game cost:1~2000 2. PRODUCT COST: PLAY GAME COST (the minimum can not be lower than the cost of a game)~9999.

Percentage Setting:

Example One:

A Play Game Cost = 10
B Product Cost = 150
C Set Percentage =50%
DWin prize about Play = X

B X (100%+C)/A = D, so 150 X (1.00 +0.50)/10 = 22.5 so full power will be sent to the claw within a group of 23 games. A random selection will be made at ± 5 games from the base number of 23. i.e.; between games 18 ~ 28. The same number will not selected again until all available numbers in the range have been used.

Example Two:

A Play Game Cost = 20 (2 coins per play with each coin being worth $10)
B Product Cost = 350
C Set Percentage =60%
DWin prize about Play = X

B X (100%+C)/A = D, so 350 X (1.00 +0.60)/20 = 28 so full power will be sent to the claw within a group of 28 games. A random selection will be made at ± 5 games from the base number of 28. ie; between games 23 ~ 33. The same number will not selected again until all available numbers in the range have been used.

a. If a prize is won before full power is sent to the claw, then full power will not be sent to the claw until the cycle being played is completed. Normal cycling will resume in the following group.

b. If the DIPSWITCH settings are not set to play to win and a prize is not won within the group cycle, then the additional games are counted as part of following cycle of games.

BLACK TIE Testing and trouble shooting

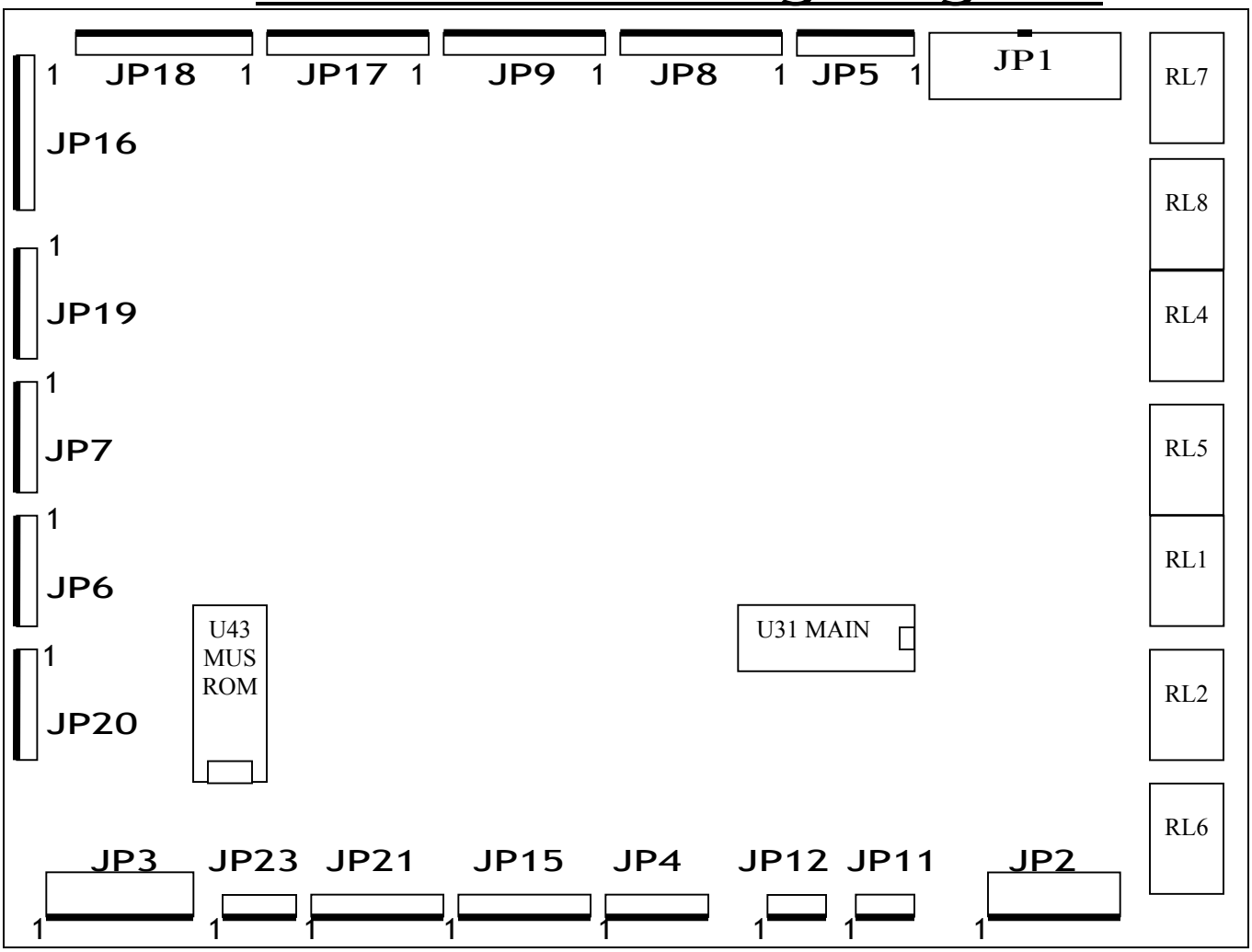
Set the switch on the rear of Coin Comparator #2 to Normally Closed before powering the game up. At Power up the credit display will show **a0.** Leave the machine on and return the switch on coin comparator 2 to the Normally Open the credit display will now show – showing that the machine is in Gantry Test Mode.

Gantry Test Functions		
Joystick or Pushbutton	Items Tested	Credit Display
Forward	Gantry Moves Forward	**-F**
Back	Gantry Moves Back	**-b**
Left	Gantry Moves Left	**L-**
Right	Gantry Moves Right	**r-**
Drop + Forward	Claw Raises	**U-**
Drop + Back	Claw Lowers	**d-**
Drop + Left	Claw Closes at **VR1** Voltage	**-1**
Drop + Right	Claw Closes at **VR2** Voltage	**-2**

ERROR CODES

CODE	ERROR Description	
01	Cannot Raise Claw	Check U/D motor, stop up switch
02	Machine is inclined	Be sure machine is level and that tilt bob is free.
03	Cannot lower Claw	Check U/D motor, Stop Down Switch
04	Up Down Motor Blocked for more than 3 seconds	Check U/D motor, stop up switch, and stop up switch actuator
05	Left Right Motor Blocked for more than 3 seconds	Check L/R Motor, Limit switches, and Gantry rails (Contamination)
06	Front/back Motor Blocked for more than 3 seconds	Check F/B Motor, Limit switches, and Cabinet rails (Contamination)
10	Sensor Malfunction	Be sure sensor is not blocked, check sensor wiring. JP11
71	Ticket Dispenser	Under Development
72	Capsule Dispenser	Under Development
73	Ball Dispenser	Under Development
91	Coin 1 Meter	Check Coin meter, harness, JP5
92	Coin 2 Meter	Check Coin meter, harness, JP5
93	Prize out Meter	Check Ticket out meter, harness, J5P
94	Ticket Out Meter	Under Development
95	Coin 3 or Ball Dispenser	Under Development JP7
96	Coin 4 or Ball Dispenser	Under Development JP7

BLACK TIE wiring diagram



JP2	color	Connector
1	black	GND
2		GND
3	Green	+24V input
4	Green	+24V input
5	grey	+48V input
6		+48V input

JP4	color	Connector
1		Connected to super card
2		
3		
4		
5		
6		
7		
8		

JP11	color	Connector
1		+5V
2		+12V
3		Prize sensor signal
4		GND

JP12	color	Connector
1		RESERVED
2		
3		
4		

JP15	color	Connector
1	Brown	Joystick – Forward SW
2	Red	Joystick – Backward SW
3	Yellow	Joystick – Left SW
4	Orange	Joystick – Right SW
5	Green	DROP SW
6		
7	Pink	TEST SW
8		
9	Blue	TILT
10	black	GND□SW & push button COM point
11	black	GND□TILT COM point
12	Black	GND□TEST SW COM point
13	purple	DROP button light
14		

JP21	color	Connector
1		RESERVED
2		
3		
4		
5		
6		
7		
8		
9		
10		

JP23	color	Connector
1	Purple	Speaker 1 +
2	Blue	Speaker 2 +
3	Black	Speaker 1, 2 -
4	Black	Volume VR3
5	Red	Volume VR2
6	white	Volume VR1

JP3	color	Connector
1	Yellow	+12V input
2		+12V input
3	Red	+5V input
4	Red	+5V input
5		+5V input
6	Black	GND
7	black	GND

JP20	color	Connector
1	Red	Connected to LCM □W041158□1 to 1
2	Orange	
3	Yellow	
4	Green	
5	Blue	
6	Purple	
7	Grey	
8	White	
9	Pink	
10	Brown-orange	
11	Red-black	
12	Orange-black	
13	Yellow-black	
14	Green-red	
15	Blue-orange	
16	Purple-yellow	

JP6	color	Connector
1	Black	GND
2	White	Coin mech1 COIN signal
3	Green	Coin mech1 inhibit signal
4		
5	Red	+12V
6	Red	+12V
7	White-black	Coin mech2 COIN signal
8	Green	Coin mech2 inhibit signal
9		
10	Black	GND

JP7	color	Connector	
1		GND	Reserved
2		Coin mech 3 COIN signal	
3		Coin mech3 inhibit signal	
4			
5		+12V	
6		+12V	
7		Coin mech4 COIN signal	
8		Coin mech4 inhibit signal	
9			
10		GND	

8		GND

JP19	color	Connector
1	Bn/Or	Connected to LCM□W041158□ 1 to 12
2	Rd/bk	
3	Or/bk	
4	Yw/bk	
5	Gn/rd	
6	Be/oe	
7	Pe/yw	
8	Gy/rd	
9	We/bk	
10	pk/be	
11	Black	
12	Brown	

JP16	color	Connector
1	Black	Connected to CREDIT display □W991907□
2	Brown	
3	Red	
4	Orange	
5	Yellow	
6	Green	
7	Blue	
8	Purple	
9		
10		
11		
12		
13	Rd/bk	
14	Oe/bk	

JP18	color	Connector
1		RESERVED
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		

JP17	color	Connector
1		RESERVED
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		

JP9	color	Connector
1		RESERVED
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

JP8	color	Connector
1		RESERVED
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

JP5	color	Connector
1	Rd/bk	+12V output
2	Oe/bk	COIN1 counter meter
3	Yw/bk	COIN2 counter meter
4	Gn/rd	Prize out meter
5		Ticket out meter□reserved□
6		
7		
8		

JP1	color	Connector
1	Bn/oe	Forw-backw motor +
2		
3	brown	Forw-backw motor –
4		
5	red	Left-right motor +
6		Left-right motor limit switch sensor
7	Rd/bk	Left-right motor –
8		F-B motor limit switch sensor
9	orange	Up-down motor +
10	be+pe	SW COM point
11	Oe/bk	Up-down motor –
12	grey	SW COM point
13	pk/we	Claw power + / voltmeter +
14	Black	Lower stop SW
15	Yw/bk	Claw power–/voltmeter –
16	pink	Upper stop SW
17		
18	Pe/yw	Left-right stop SW
19		
20	Be/oe	F-B stop SW
21		
22		+12V
23		
24		+12V