



TELEPHONE

SINGLE TOY CRANE

MA188F1

OPERATION MANUAL



WMH-188/288 SERIAL INDEX

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GENERAL DESCRIPTION

Overview:

Your Telephone consists of two main systems the hardware and the firmware.

The firmware is located in U3 a 27C512 EPROM and is processed by U1 a (78C32C-40) 8-BIT micro controller. The voice sound bytes are stored on U8 (API8108A). The games music is controlled by the processor and is generated by U4 (JFC95101) and U5 (YM2413) stores music files. The games main logic board will retain credits accumulated even after power is removed.

The hardware consists of the crane gantry, the control panel, the coin mechanism (and/or bill acceptor), payout sensors and Lighting systems.

The gantry consists of a sturdy metal frame, which rides steel rails built into the cabinet and is driven by the front/back motor located in the left side of the gantry structure when you are facing the machine. The up/down and left/right motors are contained in the carriage that rides the gantry's rails.

The control panel consists of either a joystick and drop button, or control buttons, and the digital display. Joystick control is intuitive, and the button-equipped models are clearly labeled. The display shows at various times, accumulated credits, game time remaining, and diagnostic information.

The coin door can either support two (coin comparator type) coin mechanisms, or one comparator and a bill acceptor. The crane harness has wiring provided to install a bill acceptor, and a plate to neatly cover the area where the coin comparator was removed.

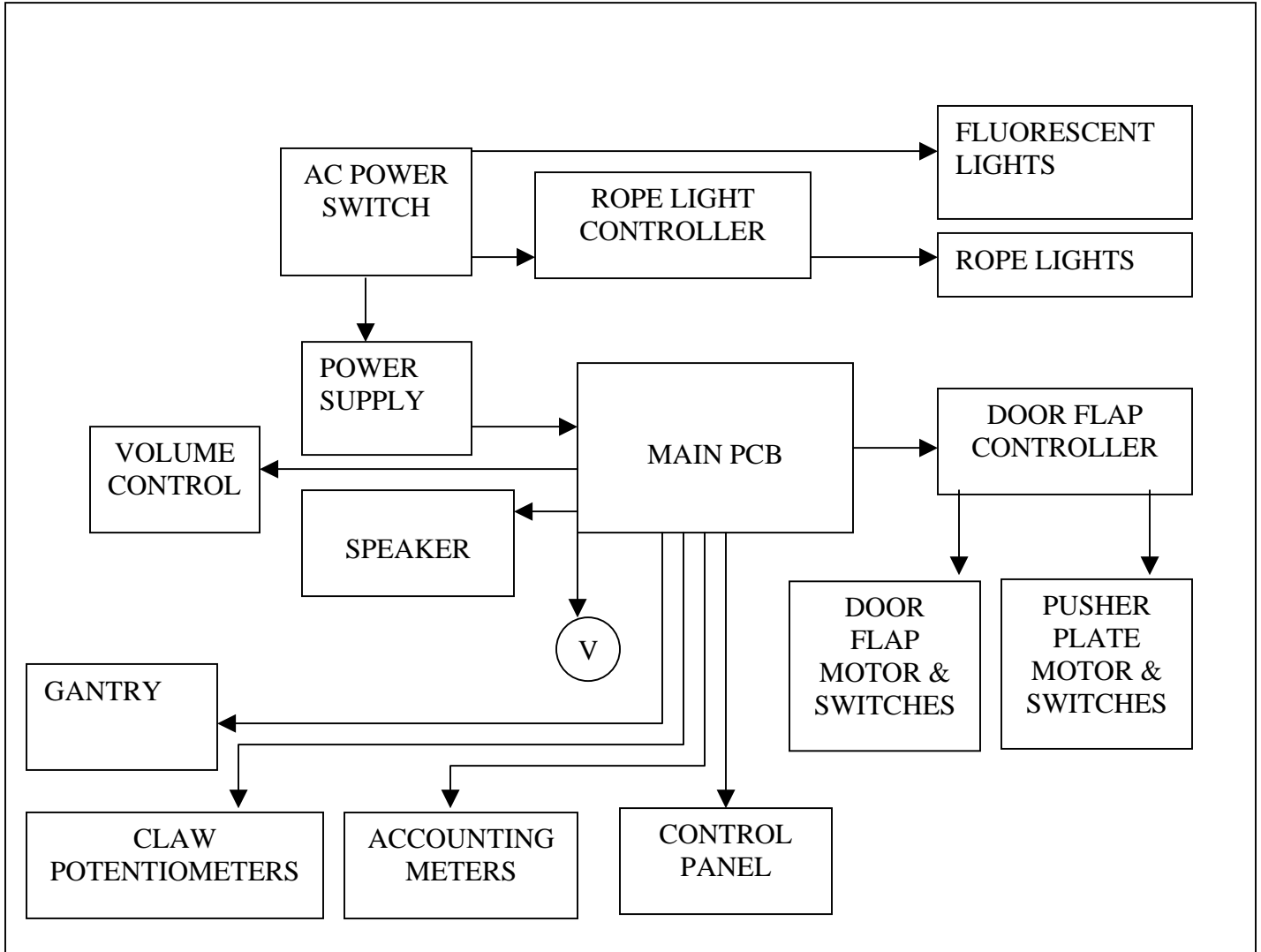
The prize chute is equipped with photoelectric sensors and reflectors to keep a tally of the number of prizes dispensed.

A fluorescent light fixture in the ceiling of the unit provides lighting for the prize floor, and the marquee. Rope lights flash down the two forward corners also drawing the attention of passers by.

Behind the coin door you will find on the left the speaker, a voltmeter, and three adjustment knobs, VR1 VR2 and VOLUME. On the right a brass pendulum senses if the machine is shaken or moved suddenly, causing the main board to give the warning, "***Don't Shake The Machine!***"

These components combine to give you a reliable, sturdy, and fun addition to your redemption enterprise, the Telephone.

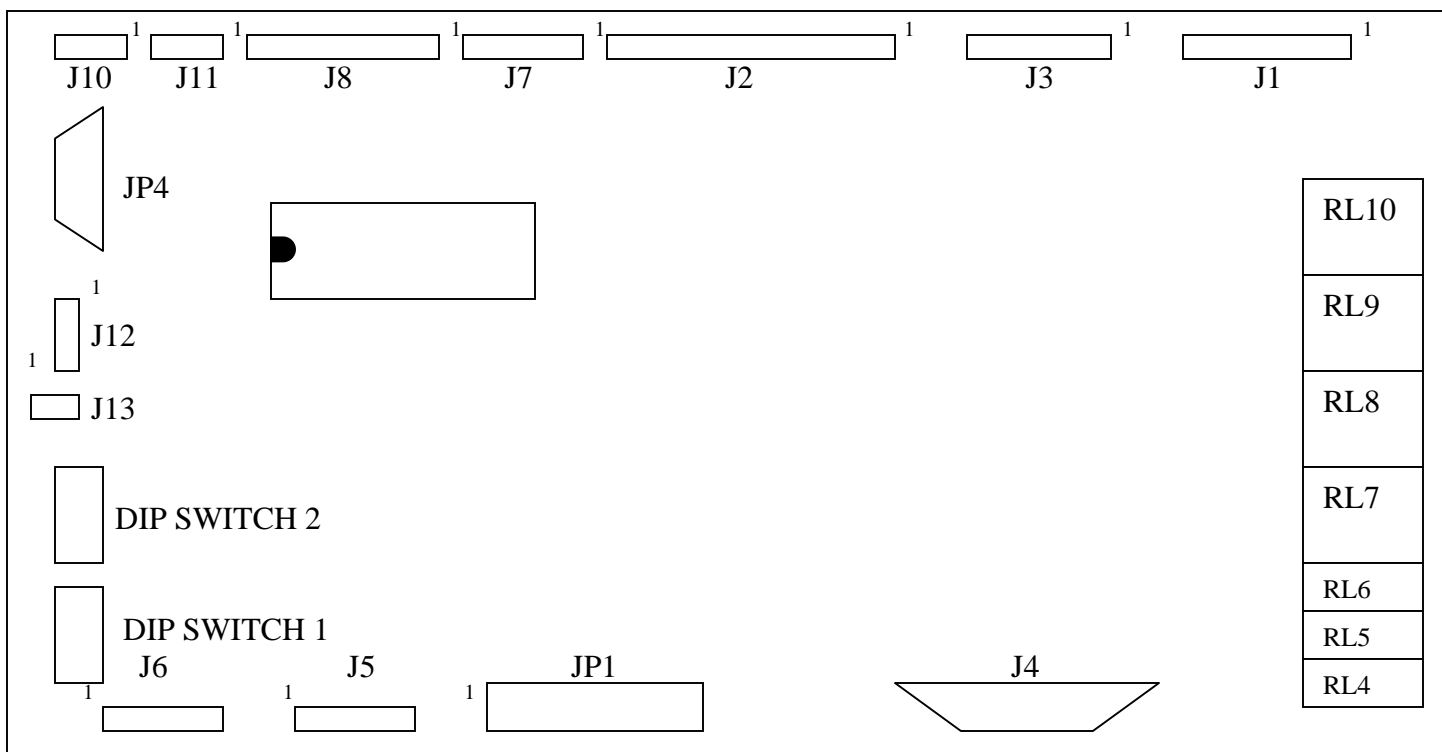
Block Diagram of Major Components



PLAY INSTRUCTIONS:

1. Open the coin door, on the top of the coin comparator you will see a black plastic module with a blue sticker on the side held by a retaining spring. You have to insert a sample of the coin/token that you are going to use in the slot of this module. After inserting the coin/ token the comparator will accept this type of coin/token.
2. Once the comparator is set up, insert coins, each coin makes the machine give the voice prompt “*way to go* “ and advances the coin 1 meter one increment. After the proper number of credits is reached (default setting is 2 coins/tokens per play.) The game will enter play mode with the voice prompt “*good luck.*” The display will show the credits accumulated.
3. The joystick is intuitive, moving the crane gantry and carriage in the direction that it is pushed, once the claw is positioned the drop button allows the claw to lower, the drop button is inactive until the joystick has been used to move the gantry or carriage. If the machine is equipped with buttons they are used as follows: **BACK** button moves the gantry backward and the **RIGHT** button moves the carriage to the right for positioning the claw, pushing either button a second time causes the claw to lower or it will lower when game time expires.
4. Once the limit switches in the carriage detect that the claw has reached the bottom of its descent the claw will automatically close and wind up. During this phase the claw strength is determined by the main PCB and the setting of VR1.
5. When the claw returns to the carriage, the second stage of claw power is engaged which is controlled by VR2 and the main PCB. The gantry and carriage then return to the “home” position and release any prize that has been won.
6. If a prize been won, the optical sensors will be triggered, a voice says “*congratulations*” and the prize meter will register the win. The prize can then be retrieved through the flap door.

WMH-188/288 series Main PCB Wiring diagram



J1	COLOR	CONNECTION
1	Black	Ground
2	Brown	Joystick Front SW (N.O.)
3	Red	Joystick Back SW (N.O.)
4	Orange	Joystick Right SW (N.O.)
5	Yellow	Joystick Left SW (N.O.)
6	Green	Descend SW (N.O.)
7	Blue	Running SW (N.O.)
8	Black	Ground
9	Grey	Descend (<i>RIGHT</i>) Button Light
10	White	Running (<i>FRONT</i>) Button Light

J3	COLOR	CONNECTION
1	Black	Super Card Connections
2	Green	
3	Yellow	
4	Orange	
5	Red	
6	Brown	
7		
8	Blue	

J7	COLOR	CONNECTION
1	Rd/Wht	+12 VDC
2	Or/Wht	Coin 1 meter
3	Ye/Grn	Coin 2 Meter
4	Grn/Wht	Prize Meter
5	Blu/Wht	Ticket Meter

J8	COLOR	CONNECTION
1	Brown	Tilt Sw (N.O.)
2	Purple	Pusher Sw (N.O.)
3	Black	Ground
4	Black	Coin Sw. 1 Gnd.
5	Wht/Grn	Coin Sw. 1 Sig.
6	Red	Coin Sw. 1 +12V
7	Red	Coin Sw. 2 +12V
8	Wht/Blu	Coin Sw. 2 Sig.
9	Black	Coin Sw. 2 Gnd.
10	Black	Test Coin Sw Com.
11	Grn/Wht	Test Coin Sw. (N.O.)
12	White	NOT USED
13	Red	NOT USED
14	Red	+12 VDC Pusher Motor
15	Grn/Wht	Bill Acceptor Inhibit
16	Black	Ground
17		Coin Inhibit Output Pos.
18	Green	Coin Inhibit Output Neg.

J11	COLOR	CONNECTION	JP 3 W9833 Board
1	Black to Orange	IN 2	
2	Brown to Red	IN4	
3	Red to Brown	EO 4	
4			
5	Orange to Black	EO 5	

J10	COLOR	CONNECTION
1	Blue	Prize Sensor Ground
2	Grey	Prize Sensor Signal
3	Brown	Prize Sensor +12VDC

JP4	RESERVED
-----	-----------------

J12	COLOR	CONNECTION
1	RESERVED	
2		
3		OUT
4		GROUND
5		IN
6		GROUND
7		OUT
8		

J13	COLOR	CONNECTION
1	RESERVED	CLOCK
2		GROUND

J6	COLOR	CONNECTION
1	White	Volume Control Pin 1
2	Red	Volume Control Pin 2
3	Black	Volume Control Pin 3
4	Black	Speaker (-)
5	Violet	Speaker (+)

J5	COLOR	CONNECTION
1	Red	Pot. VR1 Signal
2	Orange	Pot. VR1 Common
3	Yellow	Pot. VR2 Signal
4	Green	Pot. VR2 Common
5	Pink	Claw Voltmeter (+)
6	Black	Claw Voltmeter (-)

JP1	COLOR	CONNECTION
1	Black	Ground
2	Black	Ground
3	Black	Ground
4	Yellow	+5 VDC In
5	Yellow	+5 VDC In
6	Red	+12 VDC In
7	Red	+12 VDC In
8	Orange	+24 VDC In
9	Orange	+24 VDC In
10	Violet	+48 VDC In

J4	COLOR	CONNECTION
1	Brn/Org	Front/Back Motor +
2	Rd/Blk	Left Right Motor -
3	Org/Blk	Up Down Motor -
4	White	Claw Coil
5		
6	Blu/Org	Front/back limit sw.
7		
8	Vio/Yell	Left/Right limit sw.
9	Pink	Claw up limit sw.
10	Black	Claw Down limit sw.
11		
12		
13		
14	Brown	Front/Back Motor -
15	Red	Left Right Motor +
16	Orange	Up Down Motor +
17	Yellow	Claw Coil
18		
19	Blue	Front/back limit sw. Common
20	Violet	Left/Right limit sw. Common
21	Grey	Claw Up/Dn. Limit sw.'s Common
22		
23		
24		
25		

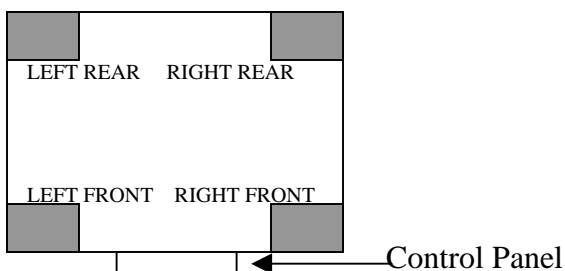
DIP SWITCH SETTINGS

DIP SW 1		1	2	3	4	5	6	7	8
NOT USED		OFF							
Claw Drop Position	Lower, Then release		ON						
	Release at top		OFF						
Super Card	Installed								
	Not Installed			OFF					
Catch in Air	On				ON				
	Off				OFF				
Prize Chute Position Front to Rear	Opposite of Home					ON			
	Same as Home					OFF			
Highest Power to Claw	RANDOM						ON		
	FIXED						OFF		
Attract Mode Demo Game	ON	Plays every 5min. (claw doesn't close)						ON	
	OFF							OFF	
Motorized Exit Door Function	Installed								ON
	Not Installed								OFF

DIP SW 2		1	2	3	4	5	6	7	8
Coins/Tokens Per Play	6	ON	ON						
	4	OFF	ON						
	2	ON	OFF						
	1	OFF	OFF						
Bill Acceptor Pulses per Play	4			ON	ON				
	3			OFF	ON				
	2			ON	OFF				
	1			OFF	OFF				
Attract Mode Music	ON					ON			
	OFF					OFF			
Play Until Win Function	ON	Credit deduction on win*					ON		
	OFF	Credit deduction every game					OFF		
Editable Menu Settings	YES							ON	
	NO							OFF	
Control Panel Type	Button								ON
	Joystick								OFF

* In order for the play until win function to operate the crane must be equipped with a prize sensor.

Note: HOME and EXIT Positions



SETTING CLAW STRENGTH – The voltage level going to the claw coil can be adjusted with two potentiometers VR1 & VR2. VR1 controls the power going to the claw during the time that the claw is being retracted to the carriage. VR2 controls the power going to the claw as the gantry returns the claw to the “Home” position. Specific claw strength settings are very dependent on the prizes that are stocked in the crane. It is recommended that the claws lifting ability be tested with a variety of the prizes being used.

The Voltage levels being sent to the claw can be easily adjusted using the following procedure:

- 1 Adjust the switch on the rear of either coin comparator to the NORMALLY CLOSED position. (During normal operation the switch is set to NORMALLY OPEN.) Then power up the crane. The Digital display should show **(CO)**. Reset the switch on the rear of the coin comparator to the NORMALLY OPEN position.
- 2 Push the joystick BACK and HOLD, the voltmeter above VR1 & VR2 will show the voltage that VR1 is currently set to. Turn VR1 potentiometer until the desired voltage is displayed on the voltmeter. The display shows **(C1)**
- 3 Move the joystick to the RIGHT and HOLD, the voltmeter above VR1 & VR2 will show the voltage that VR2 is currently set to. Turn VR2 potentiometer until the desired voltage is displayed on the voltmeter. The display shows **(C2)**
- 4 Pull the joystick FRONT and HOLD, the voltmeter above VR1 & VR2 will show the maximum voltage that can be sent to the claw. The display shows **(C3)** *
- 5 Turn the machine off and then back on to reenter normal operation.

* The Voltmeter supplied in the crane is for reference purposes only, please use calibrated test equipment for troubleshooting.

Board Selectable Values Options

With the machine off, switch pole 7 of DIP switch 2 to the ON position. Power up the unit and the displays should show a blinking (00). You are now ready to proceed with set up. Momentarily moving the joystick to the BACK or LEFT increases the right (one's) digit by one increment (1,2,3...), moving it momentarily to the RIGHT or FRONT increases the left (ten's) digit one increment (10,20,30...). When the display matches the option number that you wish to modify press the DESCEND button, the display will stop flashing and show the value that the selected option is presently set to. You may use the joystick as described above to modify the value of the selected option. When you have modified the option to your desired value press DESCEND again, you will hear a double "beep" and the display will return to its flashing mode. You can either modify additional options or shut down the machine and return DIP switch 2 pole 7 to OFF and power up again to return to normal operation.

ITEM*	SECTION	DEFAULT VALUE	NOTES
00	Welcome to set up	-	
01	Tickets awarded for coin insertion	0	
02	Tickets awarded for bill insertion	0	
07	Tickets awarded if prize is won	0	
08	Mercy Tickets	0	
09	The number of games that the machine will treat as a "group" for claw strength award purposes.	10	Setting a value of "0" sets the "group" size to 256
10	Game Play time (Seconds)	50	Inputting a value less than 5 will give 5 seconds.

* Values other than those shown in this table may be selectable from the set up menu; changing values for items not shown may affect machine reliability and operation.

†If a number less than 11 is set for item 15 the following values will result:

Input Value	Actual Value
0	100
1	110
2	120
3	130
4	140
5	150
6	160
7	170
8	180
9	190
10	200

Test Modes

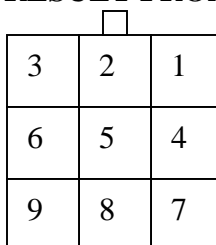
AUTOPLAY- This will put the gantry through its paces assuring the operation of all gantry motors and limit switches. Either push the joystick to the BACK & RIGHT Position or press the BACK & RIGHT buttons and then turn machine on. The crane will automatically proceed through the following steps and repeat the sequence after completion.

DISPLAY	ACTION
9	Gantry goes to home position*
2	Gantry Carriage runs to RIGHT limit
3	Gantry Carriage runs to BACK limit
4	Gantry Carriage runs to LEFT limit
5	Gantry Carriage runs to FRONT limit
6	Gantry Centers and Drops Claw,
8	Claw Closes and Lifts

*While at the home position the claw will close momentarily.

SYSTEM CHECKS- To perform the following tests first turn the unit off, then set one of the coin comparator switches to normally closed, and the bill acceptor credit signal line must be jumped to ground. **CAUTION MUST BE USED COMPLETING THIS STEP, BE SURE THAT THE MACHINE IS UNPLUGGED, PINS 6 AND 4 OF THE BILL ACCEPTOR INTERFACE CONNECTOR CARRY 120VAC, DAMAGE OR INJURY CAN RESULT FROM CONTACT WITH THESE CONNECTIONS.**

- 1) Acceptor Inhibit
- 2) Ground
- 3) Empty
- 4) AC Neutral
- 5) +12 VDC



- 6) AC Hot
- 7) Credit Signal
- 8) Ground
- 9) Ground

(Looking into plug)

The credit signal line (White/Blue) is pin 7 on the bill acceptor interface connector. Pins 2,8,and 9 are ground. Jump pin 7 to pin 2,8, or 9. After the coin comparator switch is set to normally closed and the jumper has been properly set, plug the unit in and turn the power on. After the machine initializes the display will show (CC) to show that it is in test mode. The coin comparator switch can now be returned to normally open and the jumper **CAREFULLY** removed from the bill acceptor interface harness.

The tests are selected with DIP switch 2 the values covered by the test can be scrolled through with the DESCEND button. After testing is completed be sure to return all switch poles to their operating settings.

DIP SW 2	ITEM	Description
1	Display	Both display digits light single segments in step followed by each digit blinking all segments, one's digit first, then ten's digit.
2	DIP switches	Each pole on each DIP switches light a segment of the digital display, with the eighth pole causing all segments of the display to blink. Dip switch 1 is displayed on the right digit and DIP switch 2 on the left digit.
3	NOT USED	NOT USED
4	YM2413	Pressing any button steps through the music files.
5	API8108A	Pressing any button steps through the voice files
6	JFC95101	Pressing any button steps through the music and sound effects files
7	CLEAR RECORD	Digital display shows (CL) pressing any button clears the record of values stored on the board to be reset to zero.
8	ENTER VALUES	Digital display shows (Ld) flashing, when the flashing stops values on the board are stored in memory.

CLAW STRENGTH

With the unit off set one of the switches on the rear of either coin comparator to normally closed and then power up the unit. The digital display will show (CO). The comparator switch can be returned to normally open. Follow the table below to check voltages going to the claw.

JOYSTICK POSITION	ITEM TESTED	DIGITAL DISPLAY
PUSH BACK	VR1	C1
PUSH RIGHT	VR2	C2
PULL FRONT	CLAW Voltage (MAX)	C3

GANTRY

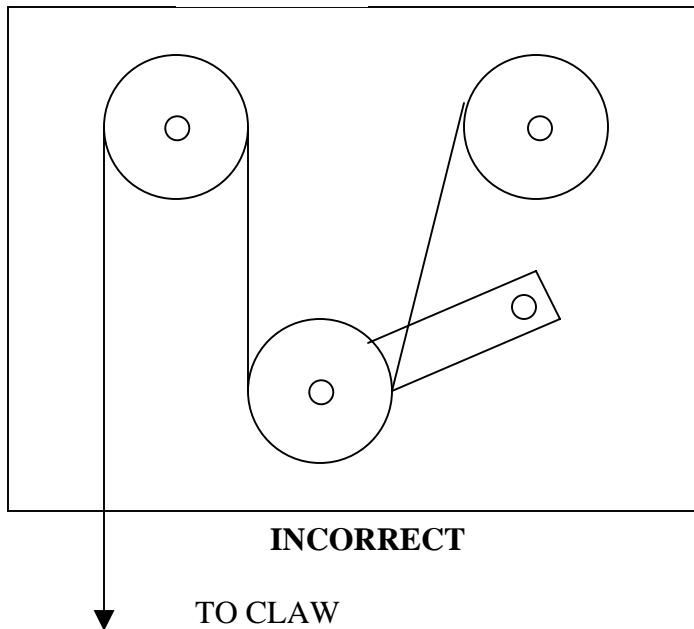
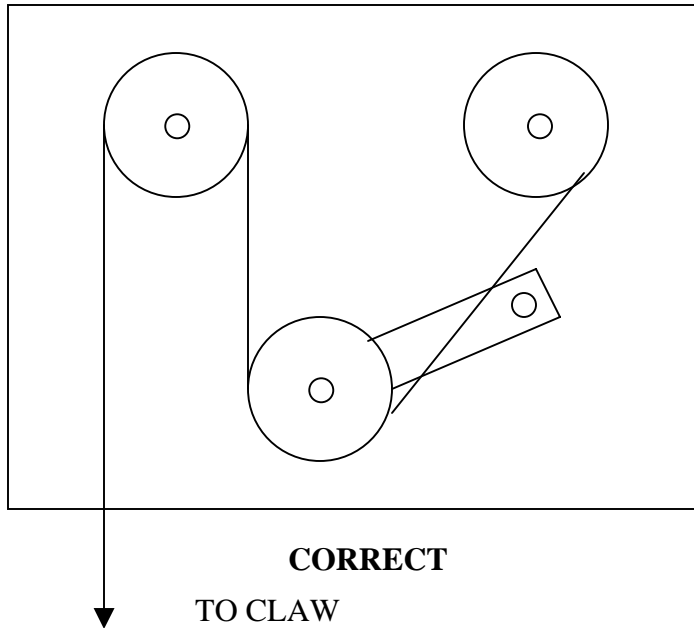
The bill acceptor credit signal line must be jumped to ground. **CAUTION MUST BE USED COMPLETING THIS STEP, BE SURE THAT THE MACHINE IS UNPLUGGED, PINS 6 AND 4 OF THE BILL ACCEPTOR INTERFACE CONNECTOR CARRY 120VAC, DAMAGE OR INJURY CAN RESULT FROM CONTACT WITH THESE CONNECTIONS.** The credit signal line (White/Blue) is pin 7 on the bill acceptor interface connector. Pins 2,8,and 9 are ground. Jump pin 7 to pin 2,8, or 9.

JOYSTICK POSITION	ACTION	DIGITAL DISPLAY
PULL FRONT	Claw Lowers	a3
PUSH BACK	Claw Raises	a4
DESCEND BUTTON + JOYSTICK RIGHT	Carriage moves right	b1
DESCEND BUTTON + JOYSTICK LEFT	Carriage moves left	b2
DESCEND BUTTON + JOYSTICK BACK	Gantry moves back	b3
DESCEND BUTTON + JOYSTICK FRONT	Gantry moves forward	b4

ERROR CODES

ERROR CODE	EXPLANATION
E0	CPU bit checksum error
E1	Gantry not connected or stop up switch not operational.
E6	Flap door motor or control board malfunction
E9	Accounting meter malfunction.

CLAW CORD WINDING INSTRUCTIONS



When the display shows **(d)** after power up and display test, the claw cord is wound incorrectly. Turn the unit off and jump the bill acceptor credit line to ground pin 7 on the bill acceptor interface harness to either pin 2,8,or 9. **CAUTION MUST BE USED COMPLETING THIS STEP, BE SURE THAT THE MACHINE IS UNPLUGGED, PINS 6 AND 4 OF THE BILL ACCEPTOR INTERFACE CONNECTOR CARRY 120VAC, DAMAGE OR INJURY CAN RESULT FROM CONTACT WITH THESE CONNECTIONS** Then restore power to the machine the display will now show **(a0)**. Push the joystick back the display will show **(a4)** and the claw will lower. Lower the claw until all the cord has unwound from the wheel. Return the bill acceptor interface to normal, turn the machine off, and then power up. The cord should wind correctly. *NOTE: The cranes software will adjust to allow an incorrectly wound cord to function however this will greatly reduce the lifespan of the claw cord.*

TELEPHONE CRANE TROUBLE SHOOTING

1. *Upon receipt of your crane all packing materials should be carefully removed. Care should be taken to ensure that ALL ties securing the claw and gantry are removed BEFORE operation is attempted. The unit should be placed on a smooth level surface and the wheel locks engaged to prevent accidental movement or “tilting” during game play.*
2. *This unit is designed FOR INDOOR USE ONLY exposure to the elements **will** cause premature failure.*
3. Any repairs or maintenance that your Telephone Crane may require should only be carried out by **FULLY QUALIFIED PERSONNEL** failing to do so may result in unnecessary damage to the machine or injury. Please feel free to contact Coastal Amusements with any concerns that you may have. We may be contacted at:

By Phone: (732)-905-6662

By Fax: (732)-905-6815

Via Email: service@coastalamusements.com

Our Mailing address: Coastal Amusements
1935 Swarthmore Ave.
Lakewood NJ 08701 U.S.A.

4. *Caution should be taken to observe power supply polarity when repairing this machine, damage to components can occur from improper connections. Precautions should be taken when handling integrated circuits (chips) to avoid static discharge; machine should always be powered off before changing any components.*
5. Coin Comparator will not accept coins/tokens.- If coins cannot be inserted into slot check slot for debris or damage. Check that a comparison coin has been inserted in the correct slot in the coin comparator. Ensure that coin comparator is compatible with coin/ tokens being used.
6. Coins/ Tokens are returned after insertion or no credit is given after coin insertion.
 - a. Check that coins/tokens are not malformed or damaged.
 - b. Check that wiring harness is correctly connected to coin comparator.
 - c. Check that “comparison” coin is of correct type and that it is inserted correctly (not cocked) in slot.
 - d. Check that comparator model is compatible with coins/tokens being used
7. No credit after coin/token insertion-
 - a. Ensure that coin path is clear and aligned from coin comparator to cash box.
 - b. Check that J8 is connected properly to main logic board.

8. Crane Claw does not "drop"-
 - a. Cord is improperly wound. Hold "stop- down" switch located on gantry (Item 28 Gantry & Assembly II), cycle power taking care that hands and fingers are not in a position to be pinched or otherwise injured, the cord should wind correctly.
 - b. Check that claw cord is not "out of track" if it is, hand wind cord correctly (see cord winding instructions pg. 12 of manual) normal operation should be restored. *Note: Front and Top gantry covers must be unscrewed and removed in order to access claw cord.*
 - c. Activation of "tilt" due to excess shaking play can cause this error code to appear.

9. If display shows **C0** blinking-
 - a. Coin comparator switch is in wrong (normally closed) position; restoring switch to normally open and cycling power should restore normal operation.
 - b. Attempts to "fool" the coin comparator can also cause the display to blink **C0**. A shorted or blocked coin comparator can also cause this condition.

10. Gantry does not "home" properly-
 - a. Cycling power should restore normal operation, If it does not then check back or front depending on home position and left stop switches (Gantry & Assembly I items #23, #22 and #21 respectively).
 - b. The main logic board has developed a fault.

11. Gantry does not move front or back with joystick operation-
 - a. Ensure that the front back switches of the joystick are connected and operating properly.
 - b. Check that J1 is properly connected to main logic board.
 - c. Check front and back stop switches (Gantry assembly I #'s 22 & 23 respectively) for correct operation and harness connection.
 - d. Check front/back motor for proper operation and correct connection to harness.
 - e. Check front/back fuse.
 - f. Ensure that shaft pinion (Gantry assembly I # 13) is properly positioned.
 - g. Check that J4 is properly connected to main logic board and that no pins are damaged or missing.
 - h. Check all connections along gantry harness.

12. Gantry does not move left or right-
 - a. Ensure that the left right switches of the joystick are connected and operating properly.
 - b. Check that J1 is properly connected to main logic board.
 - c. Check that left stop switch is connected and operating properly.
 - d. Check left/right motor for proper operation and correct connection to harness.
 - e. Check left/right fuse.
 - f. Ensure that shaft pinion (Gantry assembly II # 24) is properly positioned.
 - g. Check that J4 is properly connected to main logic board and that no pins are damaged or missing.
 - h. Check all connections along gantry harness.

13. Claw does not descend upon pushing "drop" button, only when game times out-
 - a. Check "drop" button for proper operation and connection to harness.
 - b. Check that J1 is properly connected to main logic board.

14. Claw does not drop down at all-

- a. Check up/down motor for proper operation and correct connection to harness.
- b. Check up/ down fuse.
- c. Ensure that shaft pinion (Gantry assembly II # 19) is properly positioned.
- d. Check that J4 is properly connected to main logic board and that no pins are damaged or missing.

15. Claw does not drop or does not travel a to game floor before stopping-

- a. Check for stuck, knotted, or otherwise obstructed claw cord.
- b. Check stop up (Gantry assembly II # 29) switch for proper function and connections. * *Stop up switch is normally closed as opposed to the other stop switches.*
- c. Ensure that claw cord is of proper length.

16. Claw does not release prizes upon returning to “home” position-

- a. Depending on home position check either front or back and left stop switch for proper function and connection. (Gantry & Assembly I items #23, #22 and #21 respectively)
- b. Check that J4 is properly connected to main logic board and that no pins are damaged or missing.

17. Claw does not return to up position, gantry moves to “home” position.

- a. Check stop down switch for proper operation and connections.

18. Claw does not return to up position, no gantry movement-

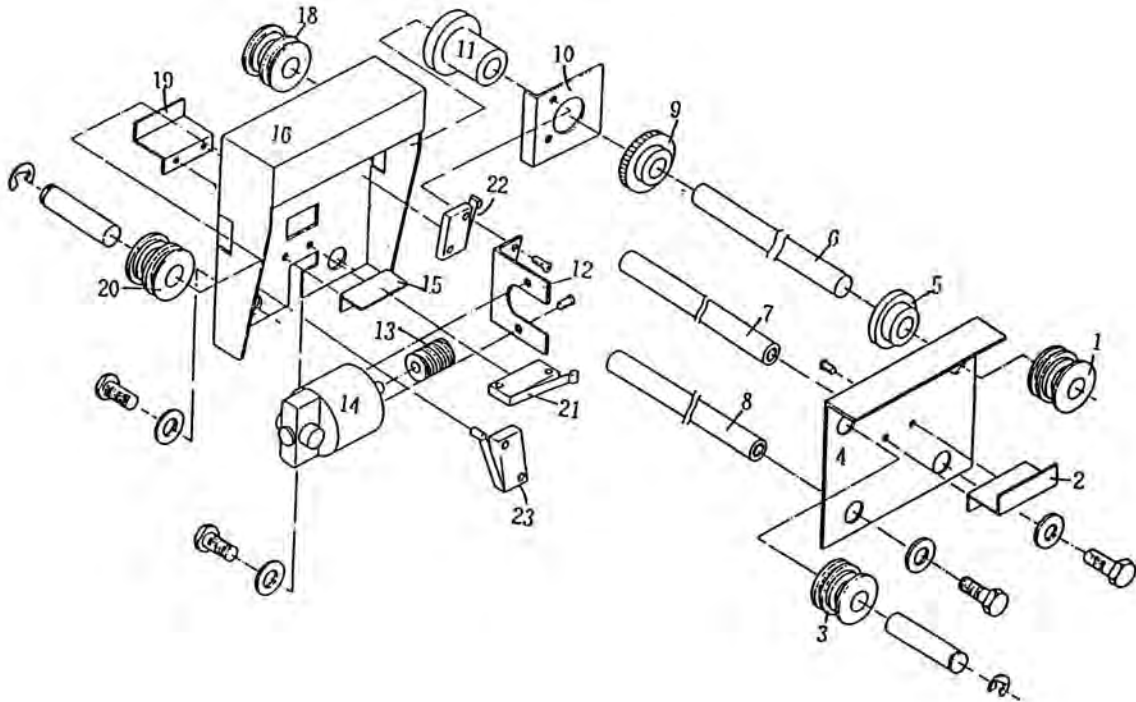
- a. Check up down motor for proper function and connections.
- b. Check up/ down fuse.
- c. Ensure that shaft pinion (Gantry assembly II # 19) is properly positioned.

19. Claw does not close, gantry returns to home position-

- a. Check 48V on power supply.
- b. Check claw fuse.
- c. Check coil continuity and connections.
- d. Ensure VR1 & VR2 are set correctly.

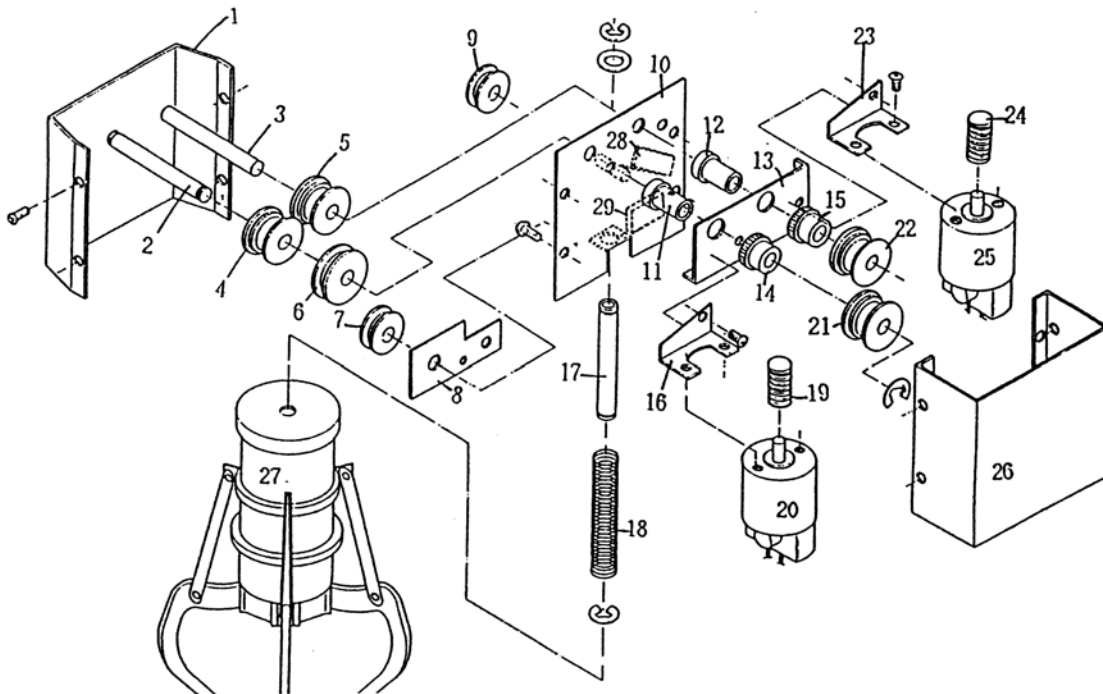
GANTRY ASSEMBLY DRAWINGS I

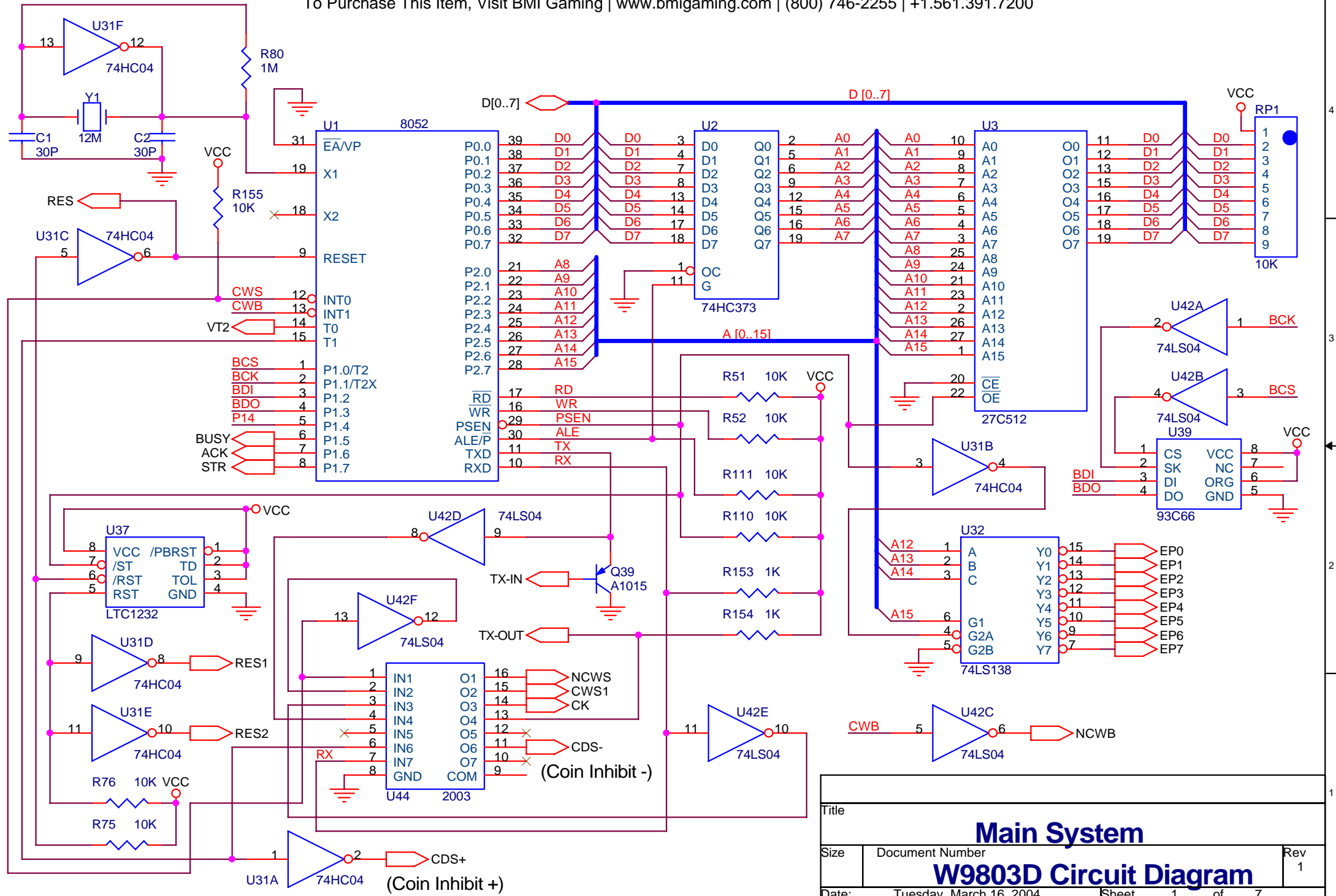
ITEM #	DESCRIPTION	COASTAL PART #	WU-MAR PART #
1,3,18,20	Front/Back Wheel	PE-WHL-FB-002	S002
2,19	Crane Fixing Plate		P008
4	Right Plate		P015
5	Fixed Bearing		S004
6	Rotating Shaft		S014
7,8	Fixed Shaft		S013
9	Black Cog	PE-GEA-SHT-001	S007
10	Bearing mounting Plate		P007
11	Bearing	PE-BEA-GAN-S001	S001
12	Motor Mounting Bracket		P006
13	Motor Shaft Pinion	PE-SHT-PIN-S016	S016
14	Front/Back Motor	PE-MTR-F/B	SE5475M-21145-30Y
15	Stop Left Switch Bracket		P004
16	Left Cover Plate		P014
21	Stop Left switch	PE-SWI-GA-PL	
22	Stop Front switch		
23	Stop Back switch		



GANTRY ASSEMBLY DRAWINGS II

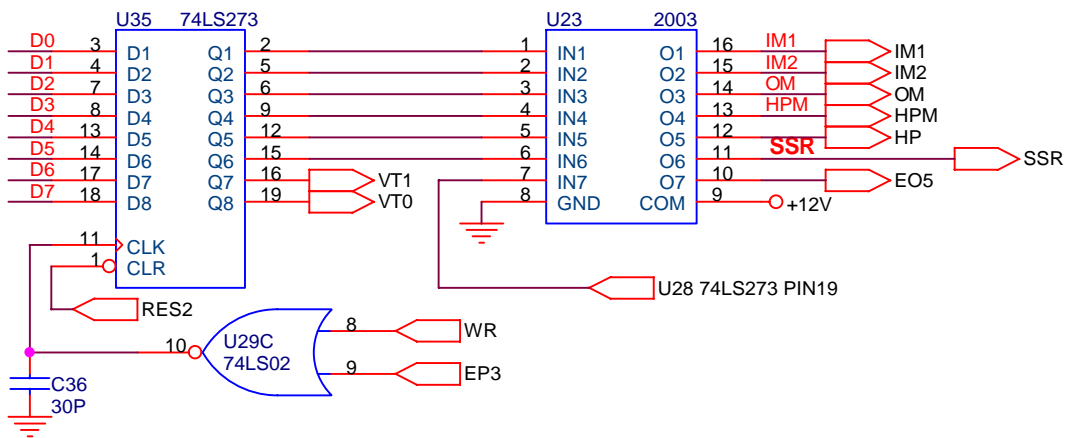
ITEM #	DESCRIPTION	COASTAL PART #	WU-MAR PART #
1	Carriage Rear Cover		P013
2	Rotating Shaft		S008
3	Rotating Shaft		S009
4,5,21,22	Left/Right Wheel	PE-WHL-L/R-006	S006
6	Claw Cord Wheel	PE-WOW-S003	S003
7,9	Claw Cord Pulley	PE-WHL-GAN-3005	S005
8	Claw Pulley Mounting Arm		P009
10	Steel Motor mounting Plate		P001
11,12	Bearing	PE-BEA-GAN-S001	S001
13	Middle Bearing Bracket		P003
14,15	Black Cog	PE-GEA-SHT-007	S007
16,23	Motor Mounting Bracket		P006
17	Conduit		S015
18	Up/Down Spring		L002
19,24	Motor Shaft Pinion	PE-SHT-PIN-S016	S016
20	Up/Down Motor	PE-MTR-U/D	SE5075M-27095-30Y
25	Left/Right Motor	PE-MTR-L/R	SE5475M-21145-30Y
26	Carriage Front Cover		P012
27	3- Claw Kit (coil included)		
28	Stop Down Switch	PE-SWI-GA-PL	
29	Stop Up Switch	PE-SWI-PC-OP29	



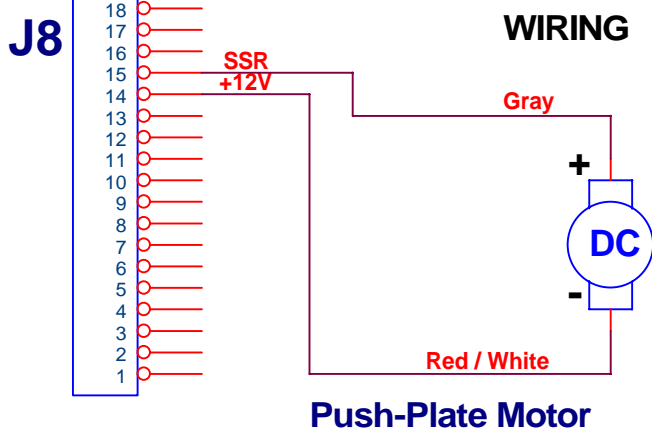


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Size	Document Number	Rev 1
W9803D Circuit Diagram		
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CIRCUIT DIAGRAM

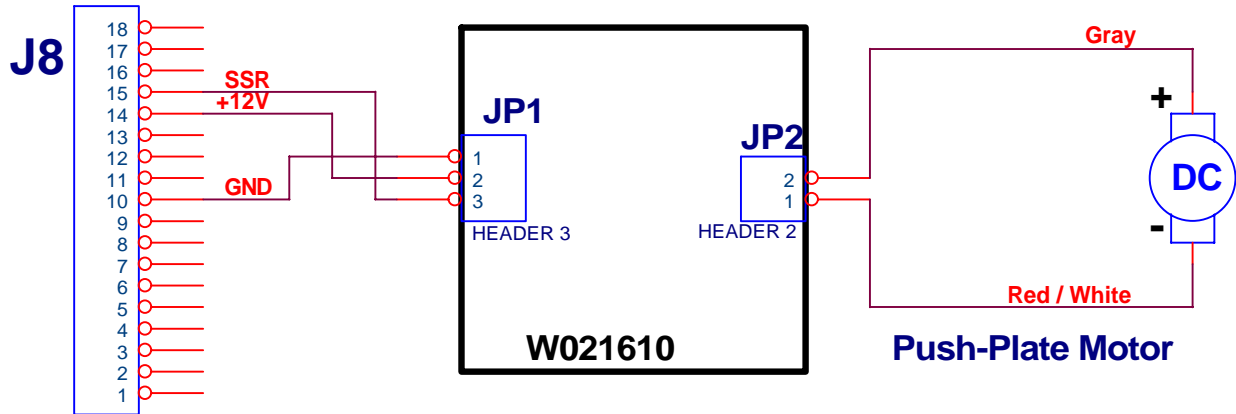
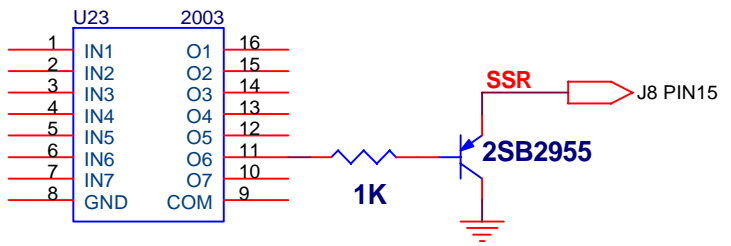


ORIGINAL



Push-Plate Motor

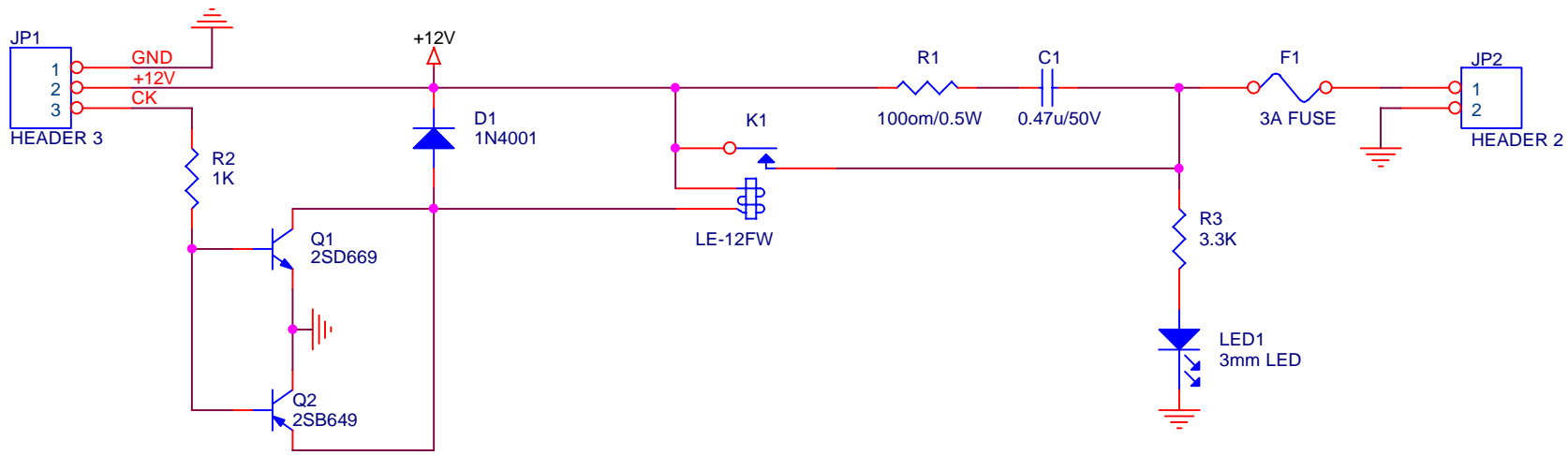
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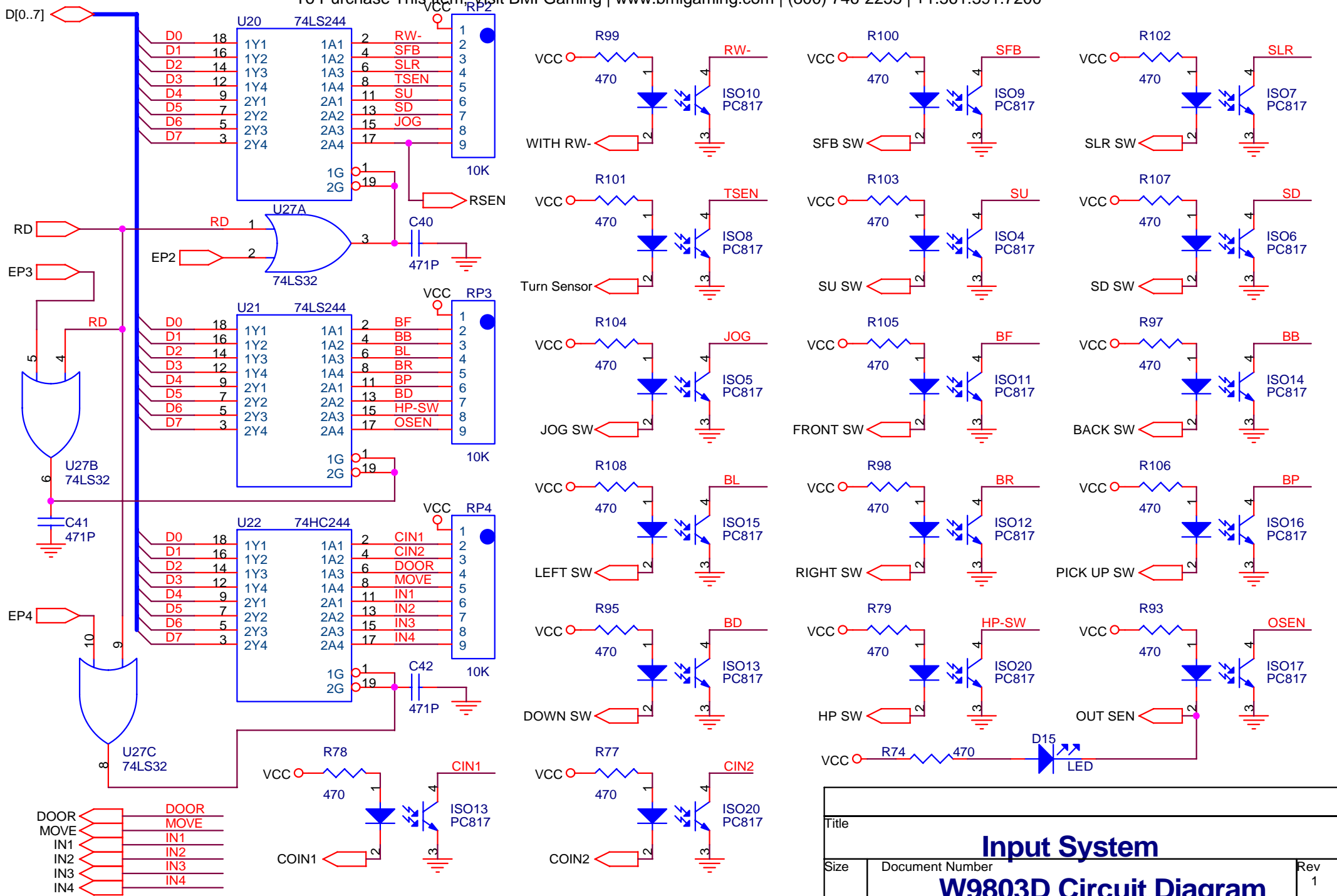
Push-Plate Motor

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Push-Plate Control		
Size	Document Number	Rev
	WMH-188C Wiring Diagram	1
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W021610 CIRCUIT DIAGRAM

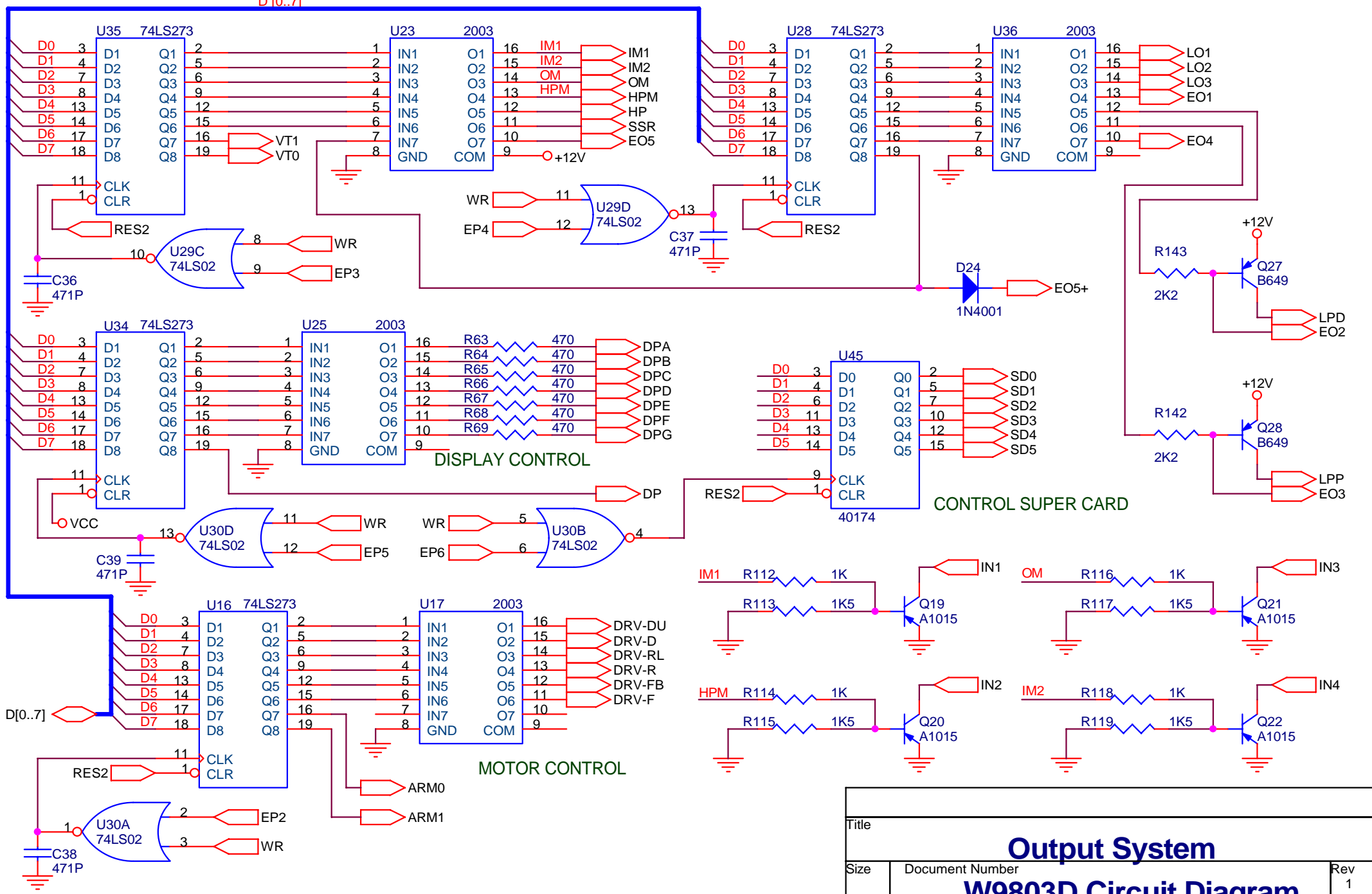


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Size A	Document Number W021610	Rev 1
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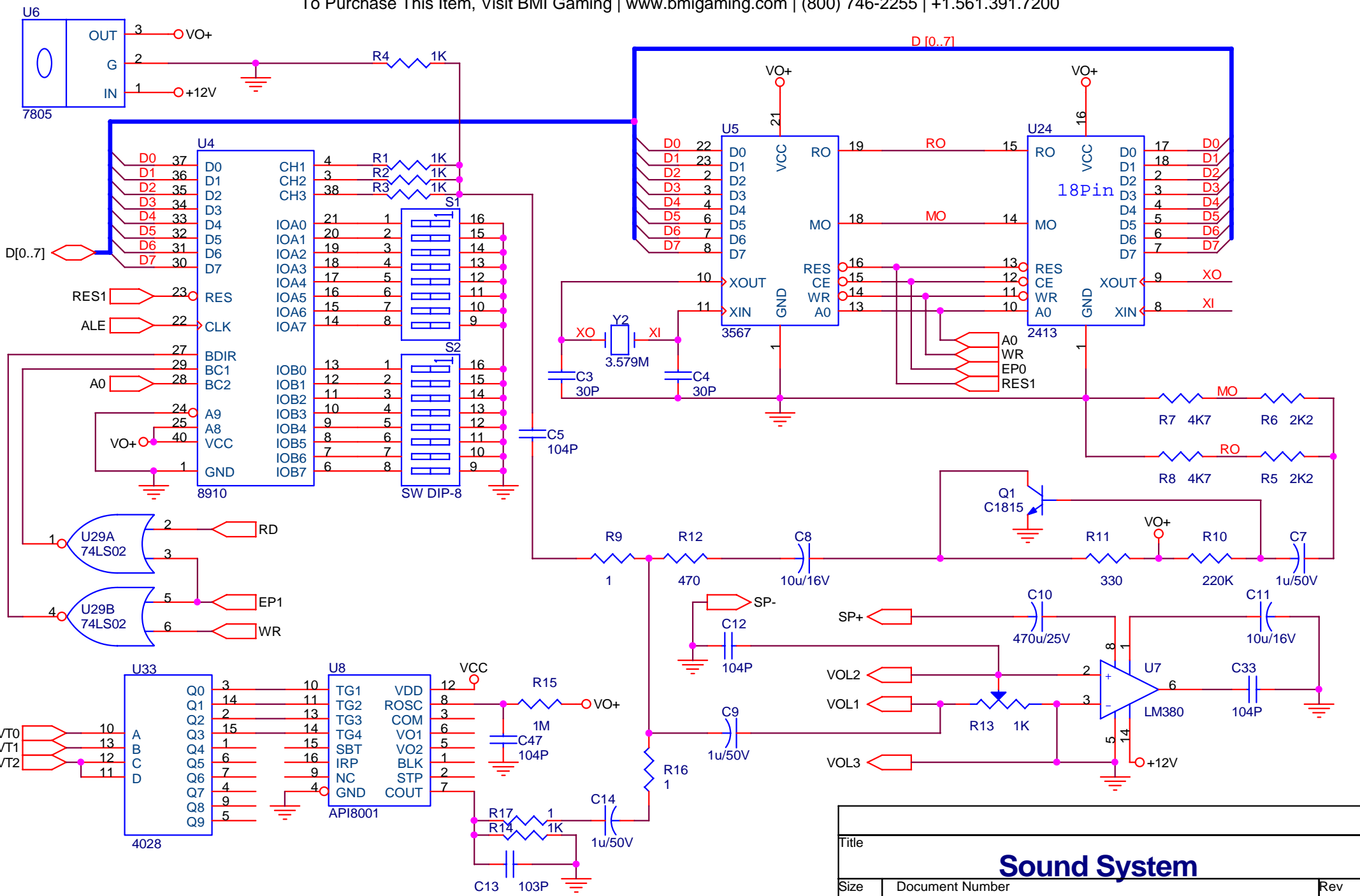


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Input System		
Size	Document Number	Rev 1
W9803D Circuit Diagram		
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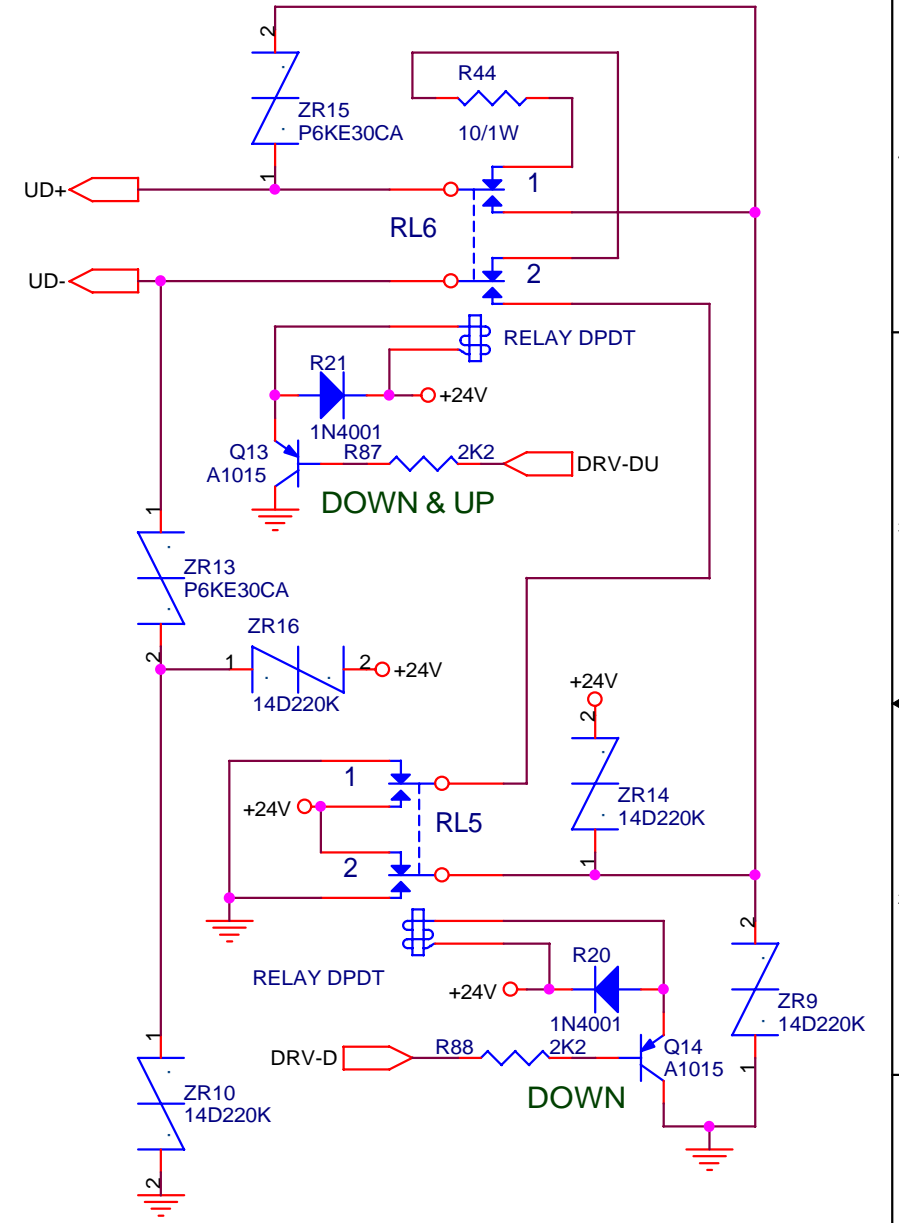
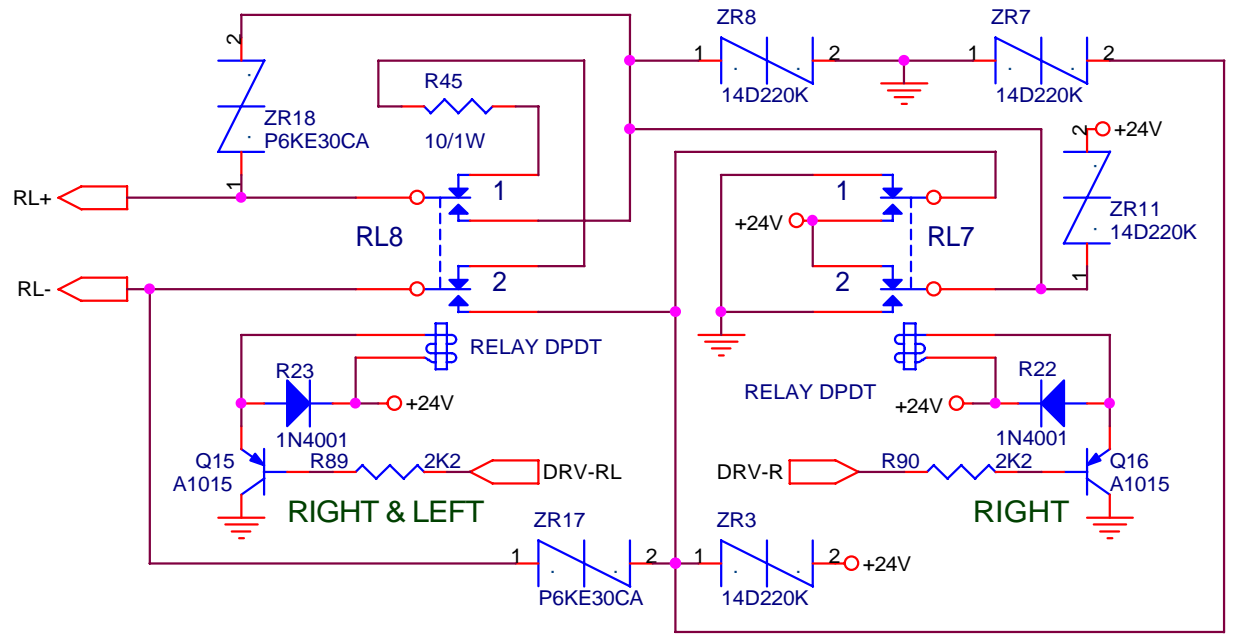
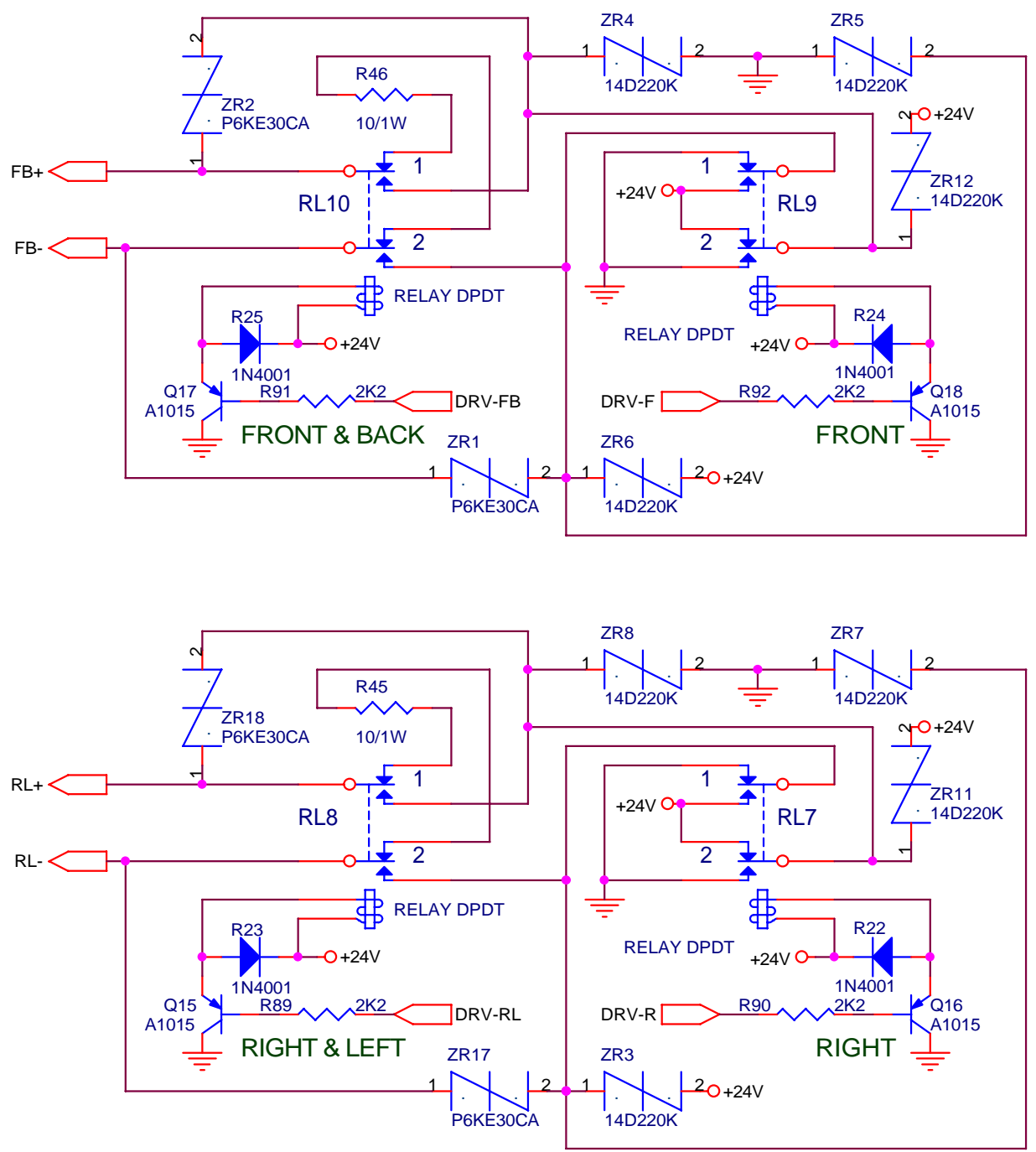
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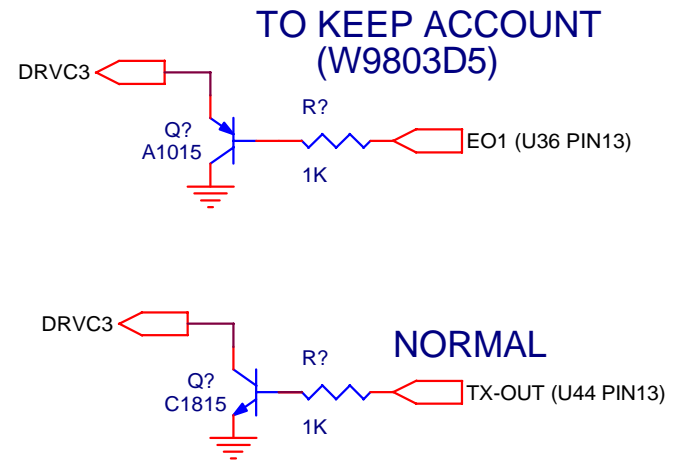
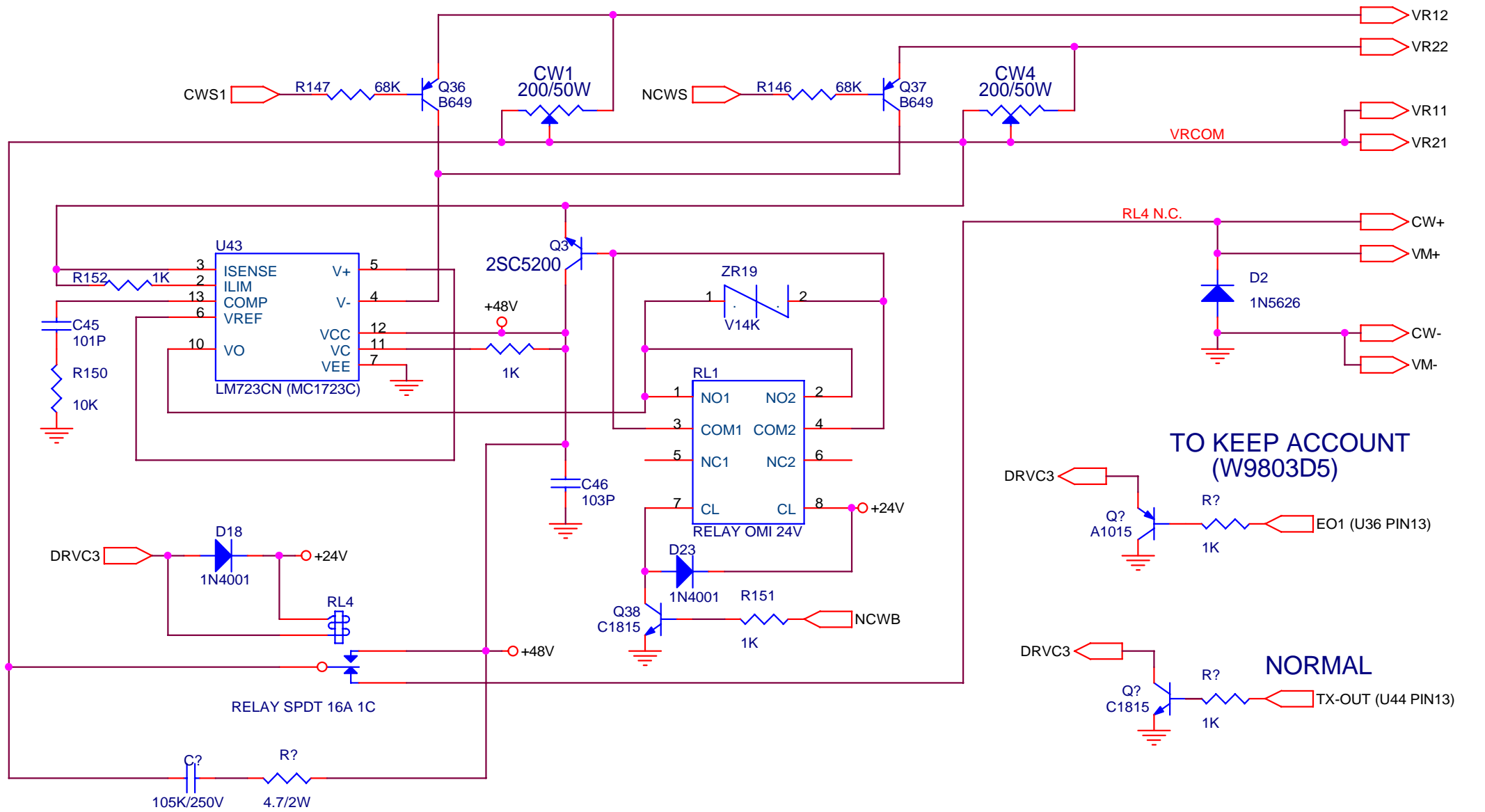
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Output System		
Size	Document Number	Rev
W9803D Circuit Diagram		1
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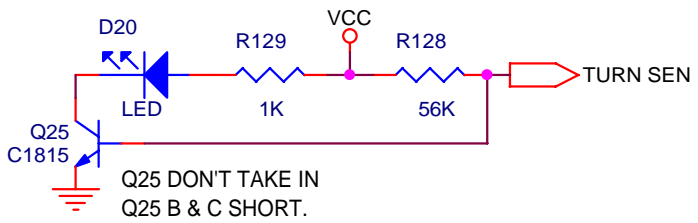
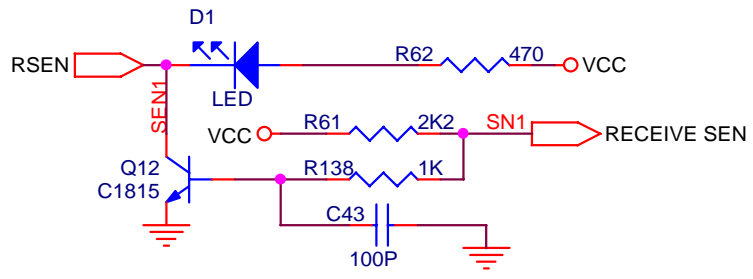
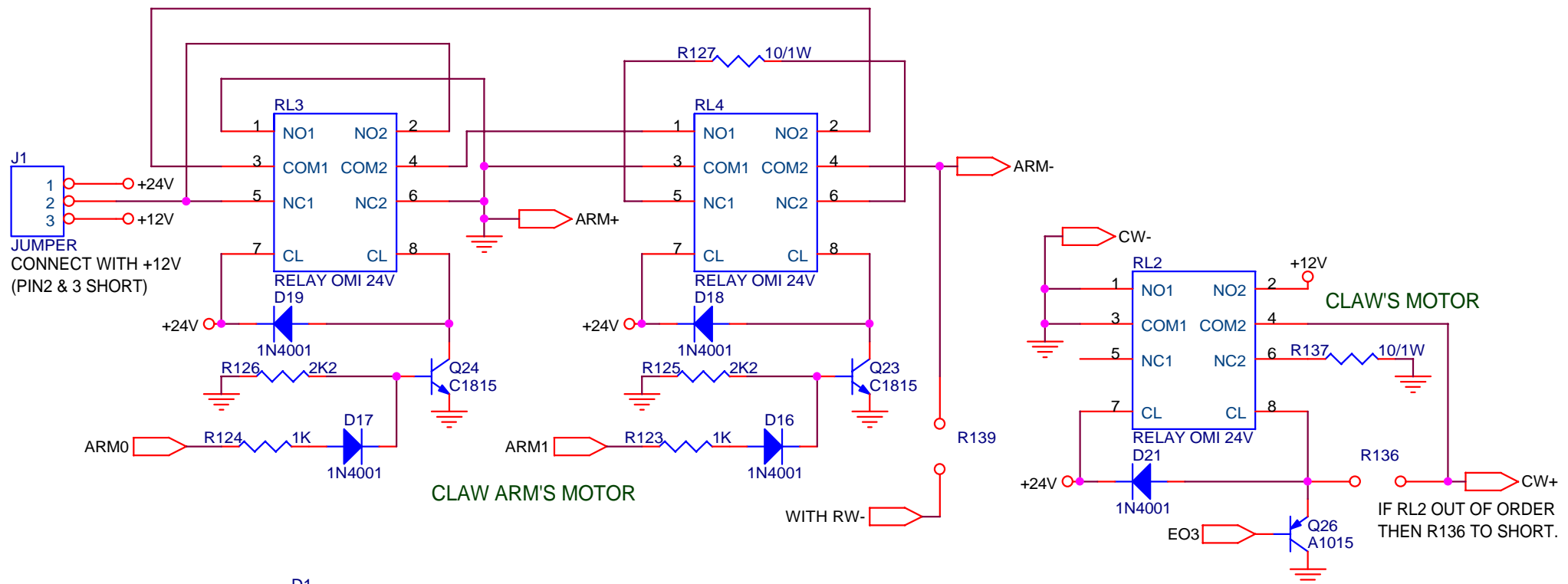
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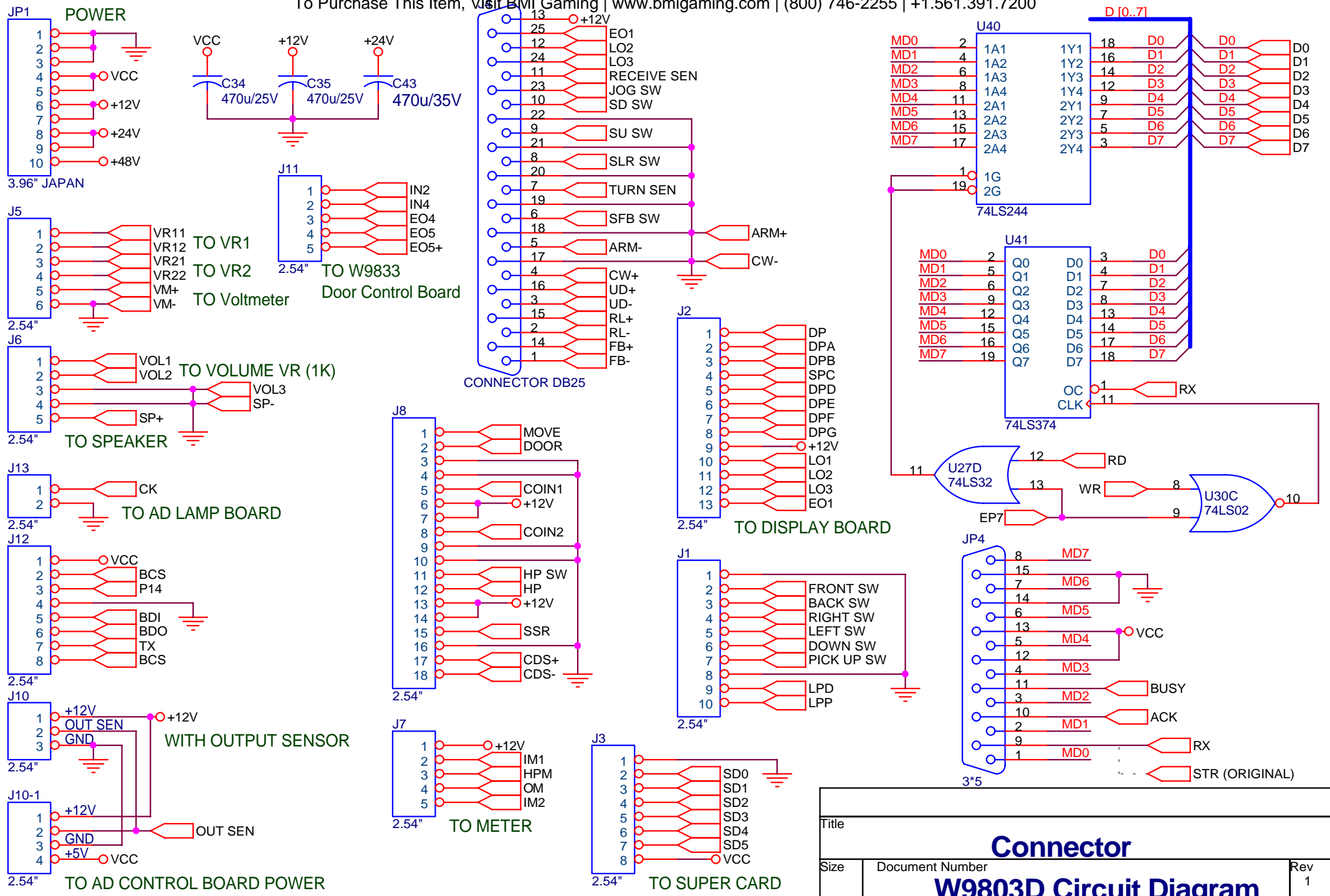
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Title		
3-Claws Control		
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2-Claws Control		
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Connector		
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