COASTAL

TOY SOLDIER

(MODEL WMH-288B)

OPERATING MANUAL

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WMH-188B/288B SERIAL INDEX

WMH-188B/288B GENERAL DESCRIPTION

1. Function:

In general, this model consists of two sections, the Software and the Hardware. Follow below its applications:

Software: It edited in the INTEL MCS-51 assembly, main CPU is 8052.

Hardware: It consists of 6 sections listed below. (Pls. refer to the Hardware Provision Drawing.)

A. **Display: It mainly displays the number of coin insertion and the operation data of machine.**

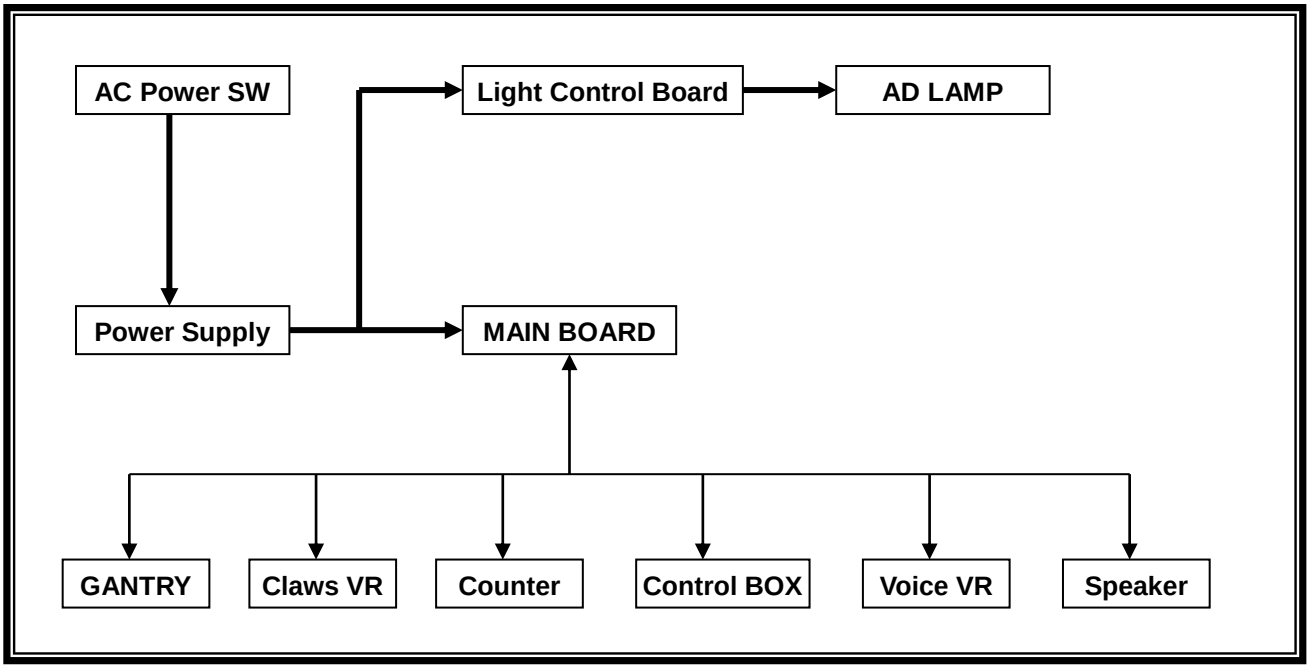
B. **Gantry: It includes 3 drive motors, claw coil and scout SW. It employs a joystick or controlling SW to control the movement of seizing objects.**

C. **Operation: It employs a joystick or controlling SW to control the movement of Gantry.**

D. **Music: It employs 8052 to coordinate high quality music IC AP8942A and 8910 to produce beautiful music sound.**

E. **Voice: The coordination of 8052 to AP8910A produces voice sound reporting the state of machine.**

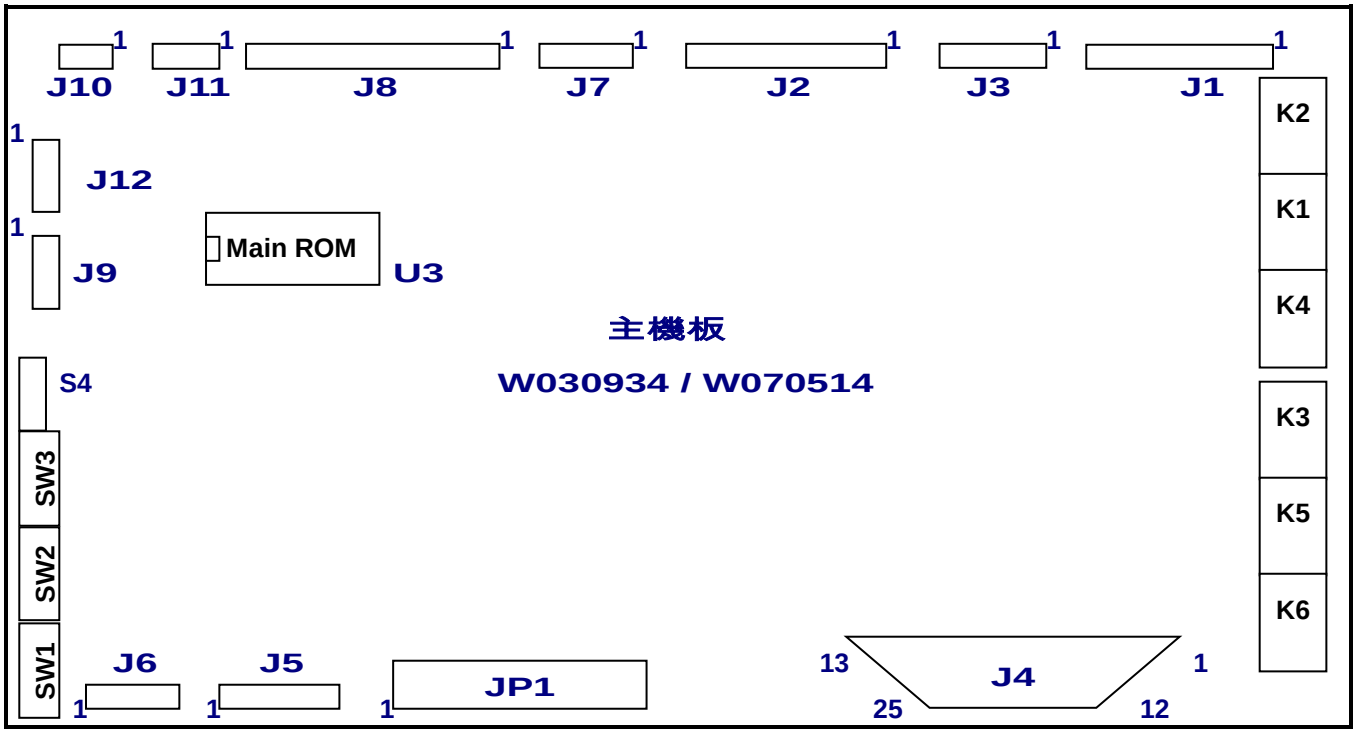
~ Hardware Provision Drawing ~



2. How to play:

1. **Insert coins/tokens into coin slot, the display shows credits and the coin counter takes record of coin in.**
2. **Press【RUNNING】button to move turning disc and mix objects. It may roll up your selected objects to the top for easier catching. (Invalid if the machine is set for 'candy crane' function / program.)**
3. **Joystick operation: Use joystick to move claws above your selected object.**
   Push button operation: Use【Right】and【Front】buttons to move claws to above your selected object.
4. **Joystick operation: At pressing【DESCEND】button or time's up (game's playing time is adjustable), the gantry drives motor to lower down claws and then catch object. If 'Catch in air' function is available, press【DESCEND】button again and the claws can catch item in the air.**
   Push button operation: At pressing any buttons right after releasing【Right】and【Front】buttons or time's up (game's playing time is adjustable), the gantry drives motor to lower down claws and then catch object. If 'Catch in air' function is available, press any button again and the claws can catch item in the air.
5. **After movement of catching (claws closes), the claws rise up till it touches Stop-Up SW. Then the claws move to exit area and releases.**

WMH-188B/288B Serial Main PCB Wiring Diagram



J1	Color	Connection
1	Black	GND
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	GND
9	Gray	Descend button lamp
10	White	

J3	Color	Connection
1	Black	Reserve.
2	Green	
3	Yellow	
4	Orange	
5	Red	
6	Brown	
7		
8	Blue	

J2	Connected to Display Board

J7	Color	Connection
1	RD / WE	+12V output
2	OE / WE	COIN1 Meter
3	YW / GN	COIN2 Meter
4	GN / WE	OUTPUT Meter
5	BE / WE	TICKET Meter

J8	Color	Connection
1	Brown	TILT SW (N.O.)
2	Purple	TEST SW (N.O.)
3	Black	GND
4	Black	Coin Selector 1-- GND
5	WE / GN	Coin Selector 1 -- Coin Signal
6	Red	Coin Selector 1 -- +12V
7	Red	Coin Selector 2 -- +12V
8	WE / BE	Coin Selector 2 – Coin Signal
9	Black	Coin Selector 2 -- GND
10	Black	Ticket dispenser -- GND
11	GN / WE	Ticket dispenser-- OUT
12	White	Ticket dispenser -- IN
13	Red	Ticket dispenser -- +12V
14	Red	+12V
15	Grey	Turn Disk SSR
16	Black	GND
17		
18	Green	Coin Inhibit input –

J11	Color	Connection
1		Reserve.
2		
3		
4		
5		

J10	Color	Connection
1	Blue	Output Sensor -- GND
2	Gray	Output Sensor -- signal
3	Brown	Output Sensor -- +12V

JP4	Reserve.

J12	Color	Connection
1		Reserve.
2		
3		
4		
5		

J13	Color	Connection
1		Reserve.
2		

J6	Color	Connection
1	White	Volume VR -- PIN1
2	Red	Volume VR -- PIN2
3	Black	Volume VR -- PIN3
4	Black	Speaker –
5	Purple	Speaker +

J5	Color	Connection
1	Red	VR1 Signal
2	Orange	VR1 COM.
3	Yellow	VR2 Signal
4	Green	VR2 COM.
5	Pink	Voltmeter +
6	Black	Voltmeter –

JP1	Color	Connection
1	Black	GND
2	Black	GND
3	Black	GND
4	Yellow	+5V Input
5	Yellow	+5V Input
6	Red	+12V Input
7	Red	+12V Input
8	Orange	+24V Input
9	Orange	+24V Input
10	Purple	+48V Input

J4	Color	Connection
1	BN / WE	Front / Back Motor +
2	RD / WE	Left / Right Motor –
3	OE / WE	Up / Down motor –
4	White	Claws Coil
5	GN / WE	
6	BE / WE	Stop-Front / Back SW (N.O.)
7	WE / BN	
8	PE / WE	Stop-Left / Right SW (N.O.)
9	Pink	Stop-UP SW (N.C.)
10	Black	Stop-Down SW (N.O.)
11	WE / BE	
12	GY / BK	
13	WE/GN	+12V Output
14	Brown	Back / Front Motor –
15	Red	Left / Right Motor +
16	Orange	Up / Down Motor +
17	Yellow	Claws Coil
18	Green	
19	Blue	Stop-Front / Back SW COM.
20	Purple	Stop-Left / Right SW COM.
21	Gray	Stop-Up / Down SW COM.
22	WE / PE	GND
23	PK / BE	
24	RD / YW	
25	YW / GN	

DIP SW INSTRUCTIONS

Program no.: UM288BC3 (T Soldier) Main Board: W030934 / 070514

DIP SW1		1	2	3	4	5	6	7	8
When the DIP SW PIN #6 is setup on "Play till you win", the claw strength voltage	VR1 Adj. of Power	ON							
	+48V	OFF							
Position where claws open at the exit	Claws lower down then release object		ON						
	Claws release object at the top position		OFF						
Coin 1 & Coin 2 Linked Together	Yes			ON					
	No			OFF					
Demo music	With				ON				
	Without				OFF				
Speech / Noise for Shaking machine	NO					ON			
	YES					OFF			
Claw moving to playfield when game begins	YES						ON		
	NO						OFF		
Demo Game when nobody is playing	With	*Claws play automatically every 5 minutes. (But claws do not close.)*						ON	
	Without							OFF	
At the moment the program sends strong strength on the basis of the setup winning percentage, the system will keep sending strongest strength to the claw until a prize is caught.	With	*Output Sensor must be included.*							ON
	Without								OFF

※ When Coin 1 and Coin 2 adjust to Linked Together, the credit value will follow Coin 1 (DIP SW pin 1 & 2)

DIP SW2		1	2	3	4	5	6	7	8
Coin1 of method (Coin Selector of Coin Pulse vs. Play)	8 : 1	ON	ON						
	6 : 1	OFF	ON						
	4 : 1	ON	OFF						
	2 : 1	OFF	OFF						
Coin2 of method (Bill Acceptor of Coin Pulse vs. Play)	4 : 1			ON	ON				
	3 : 1			OFF	ON				
	2 : 1			ON	OFF				
	1 : 1			OFF	OFF				
Operation mode	Button					ON			
	Joystick					OFF			
Play till you win function (Output Sensor must be included.)	With	*Will deduct 1 credit when win.*					ON		
	Without	*Will deduct 1 credit for each game.*					OFF		
Ability to change the Inner-Values	Yes							ON	
	No							OFF	
Machine conditions	Auto demo								ON
	Normal play								OFF

※ *Program will keep the credits even after powering off.*

DIP SW3		1	2	3	4	5	6	7	8
Adjustment of Credit Value	Inner Value	ON							
	DIP SW	OFF							
NOT USED	FIXED		OFF	OFF	OFF	OFF	OFF	OFF	OFF

※ *Adjustment of Credit Value :*

- Inner Value: The setup for 1 credit = N coins is adjusted based on the item 3~6 of the inner value only。
- DIP SW : The setup for 1 credit = N coins is adjusted based on the DIP SW 2 pin #1~4 on。

CLAWS STRENGTH INSTRUCTIONS

VR1: The first stage of grabbing power for claws. This is when the claws is descended to grab objects. The stronger the grabbing power is, the easier and higher opportunity to grab objects and vise versa.

VR2: The second stage of grabbing power for claws. This is when the claws holds the grabbed object then rises up and moves towards the exit. The stronger the grabbing power is, the tougher the grabbed object slips off from the claws and vise versa.

The adjustment of grabbing power is related to the object's size and weight. It is recommended to test grabbing power with its grabbing objects before operation. The lighter and bigger the object is, the tougher (lesser) the opportunity for the object to slip off from the claws and vise versa.

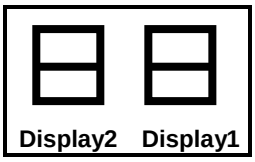
※ Adjustment procedures:

1. Adjust COIN1 to N.C. then power on, the displays will show〔C0〕. Adjust COIN1 back to N.O.
2. Pull joystick to【Back】: to adjust VR1, the displays will show C1.
3. Pull joystick to【Right】: to adjust VR2, the displays will show C2.
4. Pull joystick to【Front】: to check the strongest power of claws, the displays will show C3.

Inner-Value Set Up Instructions

Adjust the 7th pin of DIP SW2 to ON and turn power on. A voice "Good Luck" is heard after the displays run a self-testing. Adjust the coin mechs back to N.O. and the displays will blink『00』. This means ready to proceed with setting ups.

～ displays ～



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§SW operations:

1. **Move Joystick【Front】or press Button2 : to adjust for Display1.**
2. **Move Joystick【Right】or press Button1 : to adjust for Display2.**
3. **Press【DESCEND】button : to confirm set up values.**

Item	Set up contents	Inside Value	Notes
00	Ready to proceed with set ups	-	7th pin of DIP-SW2 has to be adjusted back to OFF.
01	COIN1 – quantity of pay-out tickets after inserting coins (coin selector 1)	0	
02	COIN2 – quantity of pay-out tickets after inserting coins (coin selector 2)	0	
03	COIN1 - quantity of Inserted coins (coin selector 1)	1	Coins quantity to get Credit. If adjusted to 0, automatically will modify to 1.
04	COIN1 - quantity of game's credits (coin selector 1)	1	Game's credits. If adjusted to 0, automatically will modify to 1.
05	COIN2 - quantity of Inserted coins (coin selector 2)	1	Coins quantity to get Credit. If adjusted to 0, automatically will modify to 1.
06	COIN2 - quantity of game's credits (coin selector 2)	1	Game's credits. If adjusted to 0, automatically will modify to 1.
07	Quantity of pay-out tickets won	0	
08	Quantity of pay-out tickets without winning	0	
09	Number of times for claws' strong power given as bonus	10	If adjusted to 0, automatically will modify to 256 times
10	Game's play time（unit: second）	50	Set up value＜5 will automatically adjust to 5 seconds.

TESTING INSTRUCTION

1. Systems testing:

Adjust COIN1 & COIN2 to N.C. then power on, the display will show [CC]. Adjust DIP SW2 to proceed with the testing in each item (function). Press【DESCEND】button to scroll thru each item, but make sure that all switches are properly adjusted per your requirement. (a special purpose for QC Engineer)

DIP SW2	Description	Notes
1	Display	
2	DIP SW	1. 1ST : a row, 2ND : b row, …, 7TH : g row, 8TH : blink. 2. ON : Light, OFF : Dark. 3. DIP SW1 shown in Display 1. 4. DIP SW2 shown in Display 2.
3	-	
4	3567	Press any buttons to switch around songs.
5	API8001	Press any buttons to switch around voice sound.
6	8910	Press any buttons to switch around music sound.
7	Clear record	1. Displays show〔CL〕. 2. Clear all record back to 0 then re-enter set up value into the memory chip.
8	Enter set up value	1. Displays blink〔Ld〕. 2. Set up value is saved when displays stop blinking.

2. Claws strength:

Adjust COIN1 to N.C. then power on. Displays will show [C0].

Joystick operation	Testing items	Displays showing
Pull joystick to【Back】	VR1	C1
Pull joystick to【Right】	VR2	C2
Pull joystick to【Front】	Check strongest power of claws	C3

3. Gantry:

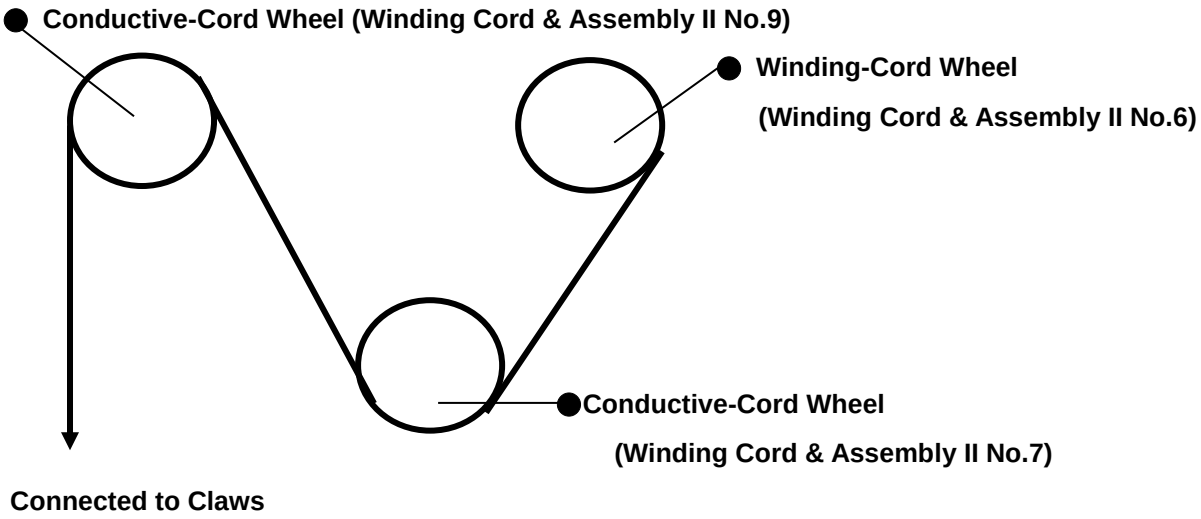
Adjust COIN2 to N.C. /or press switch【TEST】then power on. Displays will show〔a0〕.

Joystick/Button operation	Case	Displays showing
【Back】	Claws lower down	a3
【Front】	Claws rises up	a4
【Descend】+【Right】	Motor moves to right	b1
【Descend】+【Left】	Motor moves to left	b2
【Descend】+【Back】	Motor moves backward	b3
【Descend】+【Front】	Motor moves forward	b4

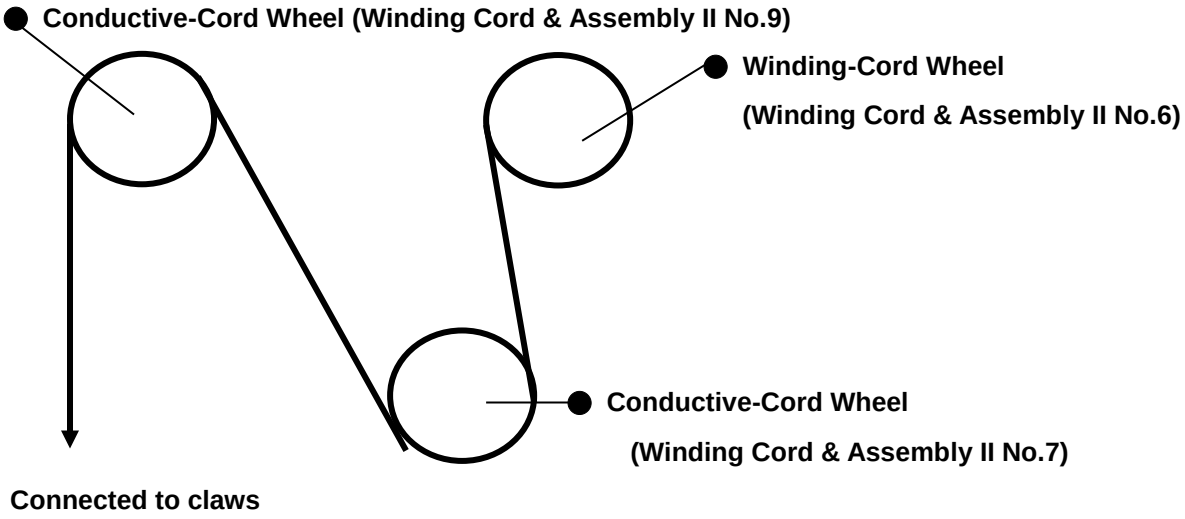
4. Error code description:

Error code	Description	Error code	Description
E0	CPU Bit breakdown	E6	Flap door motor and/or control board breakdown
E1	Stop-up SW breakdown	E9	Counter meter not properly connected
		Ee	Output sensor breakdown

WINDING CORD INSTRUCTIONS



【Correct winding method】



【Improper winding method】

⊙ When displays show『d』blinking at power on and after displays run a testing, this means the cord is incorrectly wound. Turn power off and adjust COIN2 to N.C. then power on again. This time the displays will show『a0』. Hold joystick【forward】the motor will lower down claws and the displays will show『a4』. Adjust COIN2 back to N.O., the claws is now properly wound and the machine is back to correct and normal operation.

Note: The program will automatically adjust to operate under normal condition although the claws is improperly wound up as above drawing, but it will reduce the life span of the cord.

TROUBLESHOOTING

1. **Take caution with the positive and negative poles of the DC power (+5V, +12V, +24V, +48V) in this machine when repairing it. Connect the poles correctly in order to avoid burning the PCB and/or operation under abnormal condition.**

2. **Coins/tokens can not be inserted into coin slot:**
   - **(1) Check if anything is stuck in the coin slot**
   - **(2) Check if coin slot is dis-formed or intentionally damaged**
   - **(3) Check if the coin selector is of correct specification**

3. **Coins/tokens are returned after coin in:**
   - **(1) Check if coins/tokens are of correct specification**
   - **(2) Check if connecting pin is properly connected (only in electronic coin selector)**
   - **(3) Check if coin selector is of correct specification**

4. **No credit after coin in:**
   - **(1) Check if sliding end of coin selector is properly matched the Y-type funnel**
   - **(2) Check if coin SW is properly positioned to end of Y-type funnel**
   - **(3) Check if coins/tokens properly touch the coin SW after coin in**

5. **Claws does not lower down:**
   - **(1) The winding cord is improperly wound up. Hold stop-up SW (Gantry & Assembly II No. 29) and power off then power on again. The winding cord should be properly wound up now.**
   - **(2) Check if winding cord is out of the track. If so, wind the cord properly back to track and power on. The claws should go back to its normal function.**
     Note: unscrew and dissemble the top and front covers of gantry motor to check the winding cord.
   - **(3) Shaking the machine beyond the normal limits during playing could cause to this mal-functioning.**

6. **When displays show『C0』blinking, coin selector is at improper position N.C. (normal position is N.O.), possible conditions could be:**
   - **(1) If『C0』keeps blinking after holding coin SW and re-power on, it is then at condition for adjusting claws strength. Pls. refer to Claws 'Strength Instructions'.**
   - **(2) 『C0』will also blink during the operation when coin SW is stuck or out of position causing it unable to detect whether it is or it's not already coin in. Adjust the coin SW back to its proper position.**

(3) 『C0』will also blink during the operation when players try to damage and/or cheat the machine with improper method to touch coin SW. Power off and on again, the machine should return back to its normal operation.

(4) At using coin selector with sensor device to count coin ins, 『C0』will blink when sensor device is out of function or blocked.

7. Gantry does not return to its home position:

(1) If power off and on again the gantry still does not return to its home position, then check if stop-back SW (Gantry & Assembly I No. 23) or stop-left SW (Gantry & Assembly I No. 21) are in proper position. Also check if their connecting wires are properly connected.

(2) P.C.B. is out of function.

8. Gantry does not move either forward and/or backward by joystick operation:

(1) Check if forward and backward SW wires of joystick are properly connected or if SW are out of function.

(2) Check if J1 connecting pin of P.C.B. is properly connected.

(3) Check if stop-front SW (Gantry & Assembly I No. 22) or back-stop SW (Gantry & Assembly I No. 23) are in proper position. Also check if their connecting wires are properly connected.

(4) Check if Front/Back motor is out of function or if its wires are properly connected. Also check if its shaft pinion is properly positioned.

(5) Check if J4 connecting pin of P.C.B. is properly connected.

(6) Check if all connecting pins of gantry are properly connected to the machine.

9. Gantry does not move to left and/or right:

(1) Check if left and/or right SW are out of function or if their wires are properly connected.

(2) Check if J1 connecting pin of P.C.B. is properly connected.

(3) Check if stop-left SW (Gantry & Assembly I No. 21) is in proper position.

(4) Check if Left/Right motor is out of function or if its wires are properly connected. Also check if its shaft pinion is properly positioned.

(5) Check if J4 connecting pin of P.C.B. is properly connected.

(6) Check if all connecting pins of gantry are properly connected.

10. Claws does not lower down by【Descend】button operation, but only until time's up:

(1) Check if【Descend】button is functioning properly.

(2) Check if connecting wires of【Descend】button are properly connected.

(3) Check if J1 connecting pin of P.C.B. is properly connected.

11. Claws does not lower down, but the【Descend】button is in normal condition:

(1) Check if Up/Down motor is out of function of if its wires are properly connected. Also check if its shaft pinion is in proper position.

(2) Check if winding cord is properly wound up.

(3) Check if J4 connecting pin of P.C.B. is properly connected.

12. Claws does not lower down or only down a bit and close up in the air then it returns to its home position:

(1) Check if winding cord is stuck.

(2) Check if stop-down SW is functioning properly.

13. Claws does not fully lower down:

(1) Check if winding cord is of proper length.

(2) Follow same procedures in point 12 above.

14. Claws does not open when reached to exit door after seizing:

(1) Check if stop-back or stop-left SW are out of function or if their wires are properly connected.

(2) Check if the gantry wire connecting to J4 connecting pin of P.C.B. is properly connected.

15. Claws does not rise up after seizing and is returned back to its home position:

(1) Check if stop-up SW is in proper position and in normal function.

16. Claws does not rise up and gantry does not move at all:

(1) Check if Up/Down motor is out of function of if its wires are properly connected. Also check if its shaft pinion is in proper position.

17. Claws does not close up and is returned to its home position:

(1) Check if fuse of power supply is burnt. If not, then the P.C.B. is out of function.

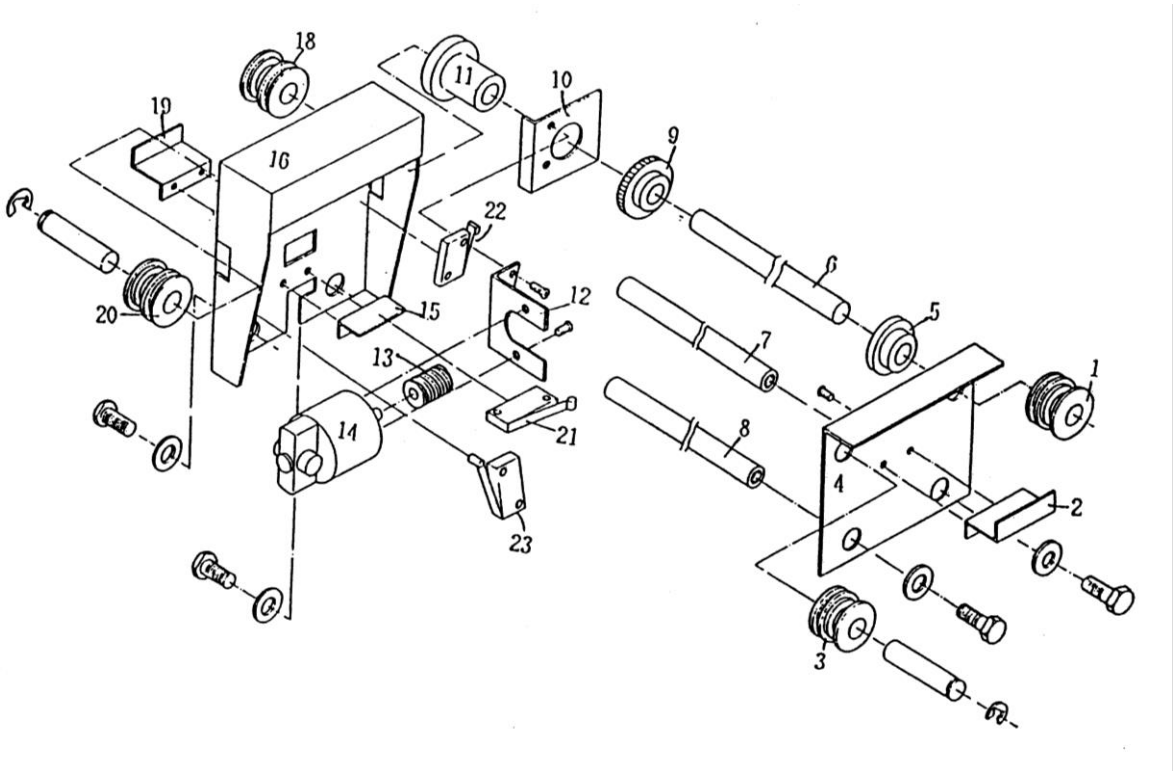
(2) If fuse is burnt down then replace it. If it burns again after the replacement, then replace the claws coil.

(3) If claws still does not close up after replacing the claws coil, then the P.C.B. is out of function.

(4) Check if VR1 and VR2 are functioning properly.

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