MODEL NO. : WMH-156SRN

NAME : MINI CRANE

MANUAL

PROGRAM : X156S-05

VERSION : Ver. 0 (2020/01/15)

PAOKAI ELECTRONIC ENTERPRISE CO., LTD
http://www.wmh.com.tw

Please read the manual before lunching the machine, and preserve the manual properly for reference.

INDEX

CHAPTER 1 OPERATION

SECTION 1 How to Play

1. **Insert coins/tokens into coin slot, the display shows credits and the crane plays game music.**
2. **Use joystick to move claws above your selected object. When you move the joystick, the game time is countdown, and【DESCEND】button light is flashing.**
3. **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.**
4. **If 'Catch in air' function is available, press【DESCEND】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.**

SECTION 2 Game Rules

ITEM 1 DEMO

Play Demo music for 2 minute in every 3 minutes.

ITEM 2 Coin In

1. **Coins vs. plays: by DIP SW setting.**
2. **If COIN pulse speed was lower than 20msec, the machine doest not recognize the signal.**
3. **If coin speed is over 200msec, the machine shows error code.**

ITEM 3 Shocking Machine

1. **When a tilt is mounted at machines, and players shock the machines, it plays "Don't Shock the Machine".**
2. **When the claw is closing and someone shocks the machines, the claw will open Immediately and move back to the home position.**

ITEM 4 TEST Switch

1. **When no one play, press 【TEST】 switch for free games. The number at "Score" display flashes and the prize meter won't work when prize won。**
2. **Coin mech inhibit under free game status。**

SECTION 3 DIP SW Setting

DIP SW1		1	2	3	4	5	6	7	8
DEMO Music	NO	ON							
	YES	OFF							
Vending model	Seconds		ON						
	Times of Play		OFF						
Super power frequency	Random			ON					
	Fixed			OFF					
Catching on the air	With				ON				
	Without				OFF				
Reserved						OFF	OFF	OFF	
Operation Mode	FREE GAME								ON
	Normal								OFF
Default setting		ON	OFF	ON	OFF	OFF	OFF	OFF	OFF

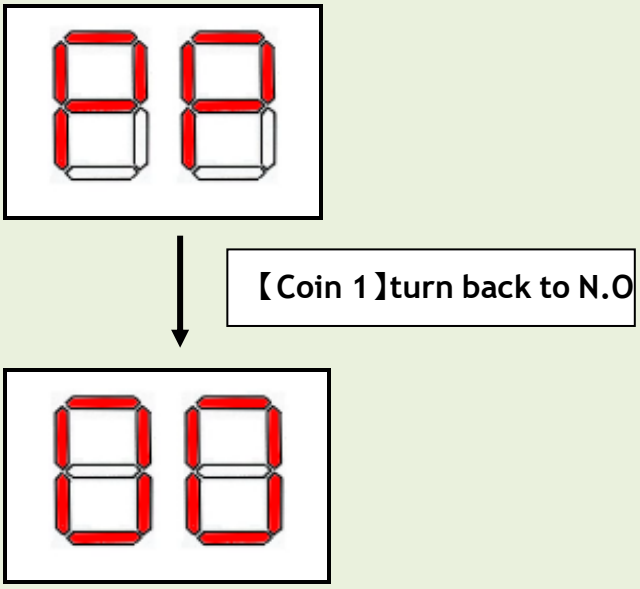
DIP SW2		1	2	3	4	5	6	7	8
Reserved		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Default setting		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

CHAPTER 2 MAINTENANCE

SECTION 1 TEST MODE

How to enter in the TEST mode：

Hold【Coin 1】to N.C. and turn the power on. The DISPLAY will show『PP』. Turn back 【Coin 1】 to N.O., the DISPLAY will show『00』flashing meaning you are now in the TEST mode. Move the joystick to select the test item. Press【DROP】button for enter. The test items are shown as the following table. You must re-start Power, to quit test mode.



CLAW POWER ADJUSTMENT

Adjust COIN1 to N.C. then power on the game: Choose 01, then press【DROP】button to adjustment, the display show c0, move joy stick could have (c1) ~ (c4) options.

1. Choose (c1), press Drop button to adjust, now when the claw is closing, the display show 20 voltage, move joy stick to right/left could adjust voltage, range 5-25
2. Choose (c2), press Drop button to adjust, now when the claw is closing, the display show 8 voltage, move joy stick to right/left could adjust voltage, range 5-25.
3. Choose (c3), press Drop button to adjust, now when the claw is closing, the display show 9 voltage, move joy stick to right/left could adjust voltage, range 5-25.
4. Choose (c4), press Drop button to adjust, now when the claw is closing, the display show 25 voltage, move joy stick to right/left could adjust voltage, range 5-25.

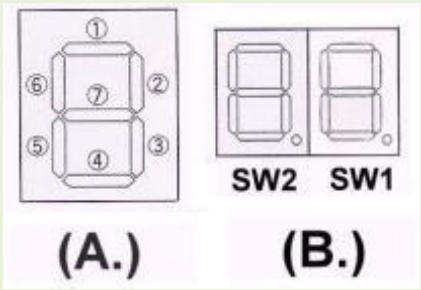
MOTOR SPEED ADJUSTMENT

Select (11), then press drop button to adjust, display shows L0, move joystick could have (L0) (F0) (U0) options.

1. **Choose L0, press drop button to adjust, now display shows "0" in flashing, move joystick up/down to adjust 0-4 class, 0 is fast speed, 4 is slow speed, then press drop button again to confirm.**
2. **Choose F0, press drop button to adjust, now display shows "0" in flashing, move joystick up/down to adjust 0-4 class, 0 is fast speed, 4 is slow speed, then press drop button again to confirm.**
3. **Choose U0, press drop button to adjust, now display shows "0" in flashing, move joystick up/down to adjust 0-4 class, 0 is fast speed, 4 is slow speed, then press drop button again to confirm.**

P.S: Joystick moves to right, automatically test one time(c1-c2-c3), move left automatically test one time(c4), in the meantime display will show voltage.,

- **Test items list:**

Item	Description	Instruction
00	EXIT	Press【DROP】button to quit test mode.
01	Claw strength adjustment	Same as previous section "Claw Power Adjustment"
02	Gantry test	Display shows『aO』 ➢ Joystick operate【Front】, display showing『aF』, gantry moves to forward. ➢ Joystick operate【Back】display showing『ab』, gantry moves to back. ➢ Joystick operate【Right】display showing『ar』, gantry moves to right. ➢ Joystick operate【Left】display showing『aL』, gantry moves to left. ➢ Press【DROP】+ Joystick operate 【Front】· display shows 『bU』, Claw rises up. ➢ Press【DROP】+ Joystick operate【Back】, display shows 『bd』, Claw lowers down.
03	Display test	7 steps display is flashing step by step
04	DIP SW	1.) Adjust PCB' Dip SW to match the display like (A.) · when switch Pins to ON, the light turn on, when Pin 8 switch to ON, the display blink. 2.) Display digit for DIP SW1and 10 digits for DIP 

		SW2 (see B.)
05	Music	
06	Gantry auto test	Gantry auto test
07	COIN1: Credits	Range: 10 digits is for 1~9 coins 0 digits is for 1~9 play Default： 1 : 1
08	COIN2: Credits	Range: 10 digits is for 1~9 coins 0 digits is for 1~9 play Default： 1 : 1
09	Plays to give Super power	Range：1~999(plays) Default：10 Plays
10	Game time	Range：10~90(seconds) Default：60 seconds
11	Right-left up-down Motor speed adjust	L(right-left speed) F(front-back speed) U(up-down speed), setting from 0, could adjust 0(quick)~4(slow)
12	RESERVED	No USE
13	Operation Mode for NORMAL	0 (Mode 0) 1 (Mode 1) 2 (Mode 2) 3 (Mode 3) Default：0
14	Reset times for Mode 2	Range：0~90 Seconds 0= No reset. Default：90
15	RESERVED	No USE
16	RESERVED	No USE
17	RESERVED	No USE
18	Rope Length adjustment	Range:1~99 Default:20
19	RESERVED	No USE
20	RESERVED	No USE
21	RESERVED	No USE

13.Operation Mode for NORMAL：

MODE 0：**Only can play when coin in enough to the game rate set. No reduce the credit and keep give super power until prize won.**

MODE 1：**Play times will be accumulated But credit will be reduced , when arrive to game rate set, if still not win, need to insert more coin to continue play, and keep give super power until prize won**

MODE 2：**Play times will be accumulated But credit will be reduced , when arrive to game rate set, if still not win, then won't reduce the credit and keep give super power until prize won.**

MODE 3：**When play times arrive to game rate set, give 1 super power, if no win, will give super power again until win.**

14. **Reset times for Mode 2: If Set 90 Seconds as default value, then player need to**

insert coins before 90 seconds count to "0" so can be accumulated. We may call Mode 2 is " Sell Mode". Insert enough coins in time, then will get super power and play until win.

SECTION 2 ERROR CODE

Error Code	Description	Checking timing	Trouble shooting
Er 01	CPU Error	When switch on the machine	1. Change U1 CPU 2. PCB broken
Er 02	Error while up the winding cord	1. When turn power on. 2. When play the game 3. Auto Demo	1. Check if the up-stop SW is loose ? 2. Check if up-stop SW is out of work ? 3. Check if the air-plug of the gantry connects well? 4. Is the main board failed?
Er 03	Error while down the winding cord	When auto demo	1. Check if the string at the winding wheel is smooth? 2. Check if up-stop SW is out of work ? 3. Check if the air-plug of the gantry connects well? 4. Is the main board failed?
Er 04	Sensor Error		1. Check if J5 sensor wire is loose? 2. Sensor broken. 3. PCB board broken.
Er 05	Stop-Forward SW or Stop-back SW Error	1. When switch on the machine 2. When play the game 3. Auto Demo	1. Check if the stop-forward SW or stop-back SW is out of work ? 2. Check if the air-plug of the gantry connects well ? 3. Is the main board failed?
Er 06	Stop-Left SW Error	1. When turn the machine on 2. When play the game 3. Auto Demo	1. Check if the stop-forward SW or stop-back SW is out of work ? 2. Check if the air-plug of the gantry connects well ? 3. Is the main board failed?
Er 07	Coin1 Meter disconnection	When needed	1. Check if the J5 PIN connect well ? 2. Check if the Meter is out of work? Check if the Pin

Er 09	Prize Mater disconnection		connect well ? 3. Is the main board failed?

Error Code	Description	Check Timing	Trouble shooting
Er 0b/0c	Coin1/2 insert coins over time	When insert coins	1. Coin selector is out of service 2. The player is cheating.
Er 14	Memory 93C66 Error	When switch on the machine	Change memory 93C66 on main board

SECTION 3 TROUBLE SHOOTING

Items	Description	Check and Maintenance
Coin In	No credit after coin in	1. Check if the Coins v.s. Plays is correct. 2. If Coins v.s. Plays can't be adjusted, it is possible main board problem. Please send the main board back for repair.
	Coins/tokens can not be inserted into coin slot	Comparative Coin Mesh : 1. Check the sample coin at the coin mech. 2. Loose the coin mesh sensitivity. 3. Check if DC12V input to coin mech. 4. Coin mesh breakdown. Multi-Coin Mesh : 1. Adjust the coin mesh data based on manual. Check if DC12V input to coin mech. 2. Check if DC12V input to coin mech.

Claw Power	Claw open after hitting upper-stop switch	1. VR2 is too low. Adjust VR2 higher according to objects dimension and weight.
	Claw is close after power on	1. Claw coil burned. 2. Claw power board breakdown.
	Claw doesn't close	1. Check if the CW at the fuse board burned ? 2. Check if the black wire on claw coil connects well 3. Claw power board or main board breakdown.

Items	Description	Check and Maintenance
Gantry	Don't return to its home position	1. After 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. Check if the air-plug of the gantry connects well?

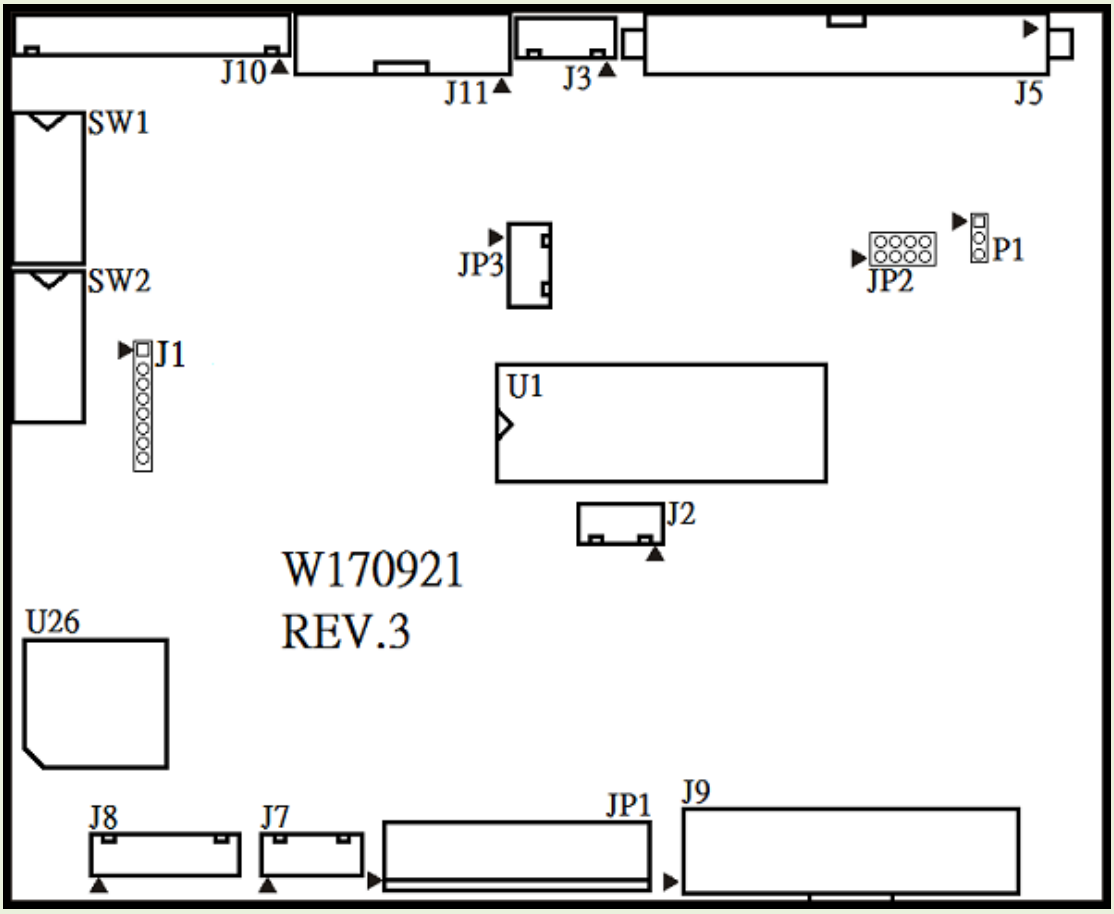
		3. Main board breaks down.
	Don't move either forward and/or backward by joystick operation	**1. Check if the forward/back motor fuse (FB) at the fuse board is burned?** **2. Check if forward and backward SW wires of joystick are properly connected or if SW is out of function.** **3. Check if J1 connecting pin of P.C.B. is properly connected.** **4. 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.** **5. 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.** **6. Check if J4 connecting pin of P.C.B. is properly connected.** **7. Check if all connecting pins of gantry are properly connected to the machine.**
	does not move to left and/or right by joystick operation	**1. Check if the left/right motor fuse (LR) at the fuse board is burned?** **2. Check if left and/or right SW is out of function or if their wires are properly connected.** **3. Check if J1 connecting pin of P.C.B. is properly connected.** **4. Check if stop-left SW (Gantry & Assembly I No. 21) is in proper position.** **5. 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.** **6. Check if J4 connecting pin of P.C.B. is properly connected.** **7. Check if all connecting pins of gantry are properly connected to the machine.**

Items	Description	Check and Maintenance
Claw Descending	Don't 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.
	Don't lower down, but the 【Descend】button is in normal condition	1. Check if the up/down motor fuse (UD) at the fuse board is burned? 2. Check if Up/Down motor wires are properly connected. 3. Check if Up/Down motor is out of function. Also check if its shaft pinion is in proper position. 4. Check if winding cord is properly wound up. 5. Check if J4 connecting pin of P.C.B. is properly connected. 1. Main board break down
	Don't 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. 3. Check if stop-down SW is functioning properly
	Don't fully lower down	1. Check if winding cord is of proper length? 2. Check if winding cord is stuck. 3. Check if stop-down SW is functioning properly
Claw Grabbing	Don't 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.
	Don't rise up after seizing and is returned back to its home position	1. Check if stop-up sw is hit by something. 2. Check if stop-up SW is in proper position and in normal function. 3. Main board break down.
	Don't close up and not be returned to its home position, either	1. Check if the up/down motor are out of function or if their wires are properly connected. 2. Check if stop-up SW is functioning properly. 2. Main board break down.

CHAPTER 3 WIRING DIAGRAM

SECTION 1 Main board W170921

- **Main board CONNECTOR position**



JP1 3.96mm		
1	GND	Power supply PIN
2	GND	
3	GND	
4	+5V	
5	+5V	
6	+12V	
7	+12V	
8	+24V	
9	+24V	
10	+48V	

J1 2.54mm		
1	+3.3V	CPLD (U18) Software burn
2	TOI	
3	TDI	
4	X	
5	X	
6	TMS	
7	GND	
8	TCK	

J2 2.5mm		
1	+5V	CPU (U1) Software burn
2	RXD	
3	TXD	
4	GND	

J3 2.5mm		
1	+12V	reserve
2	SDI	
3	LE	
4	CK	
5	GND	

J8 2.5mm		
1	VR11	meter
2	VR12	
3	VR13	
4	VR21	
5	VR22	
6	VR23	
7	MV+	
8	MV-	

J7 2.5mm		
1	+5V	speaker
2	VIN	
3	GND	
4	ISP+	
5	ISP-	

J10 2.5mm		
1	GND	LCM display
2	+5V	
3	VO	
4	LCM-RES	

J2		
1	+5V	CPU(U1) STC12C2052 Software burn
2	P30	
3	P31	
4	GND	

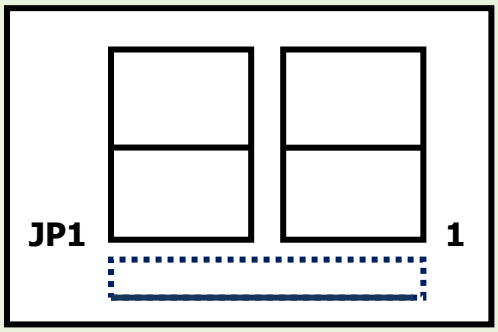
5	GND	
6	LCM-E	
7	A	
8	B	
9	C	
10	D	
11	E	
12	F	
13	G	
14	H	
15	+5V	
16	GND	

J9 4.2mm					
1	CW+	claw+	2	X	X
3	GND	claw-	4	X	X
5	+12V		6	SD	Down stop SW
7	+12V		8	SU	Up stop SW
9	TP-SW		10	SL	Stop-left/right SW
11	GND		12	SB	Forward/Back SW
13	GND		14	GND	
15	GND		16	GND	
17	GND		18	M-RL+	Left/right motor +
19	LAMP7		20	M-RL-	Left/right motor -
21	M-FB-	Forward/back motor -	22	M-UD+	Up/down motor -
23	M-FB+	Forward/back motor +	24	M-UD-	Up/down motor +

J5 34PIN					
1	DPA	W991907 JP1 PIN1	2	DPB	W991907 JP1 PIN2
3	DPC	W991907 JP1 PIN3	4	DPD	W991907 JP1 PIN4
5	DPE	W991907 JP1 PIN5	6	DPF	W991907 JP1 PIN6
7	DPG	W991907 JP1 PIN7	8	COM1	W991907 JP1 PIN10
9	COM0	W991907 JP1 PIN9	10	GND	
11	IM4	Ball/test/mter	12	HP	Ball dispenser
13	IM3	Prize meter	14	HPSW	Ball disp. Sensor signal
15	IM2	COIN 2 meter	16	+12V	
17	IM1	COIN 1 meter	18	+12V	
19	+12V		20	COIN1	COIN1
21	+12V		22	COIN2	COIN2
23	LPD1	Descend button lamp+	24	GND	GND
25	MOVE	Shocking machine	26	SEN	SENSOR
27	TEST	test	28	+12V	
29	FRONT	Joystick	30	GND	
31	LEFT	Joystick	32	BACK	Joystick
33	DOWN	Descend button	34	RIGHT	Joystick

J11 20PIN RESERVE					
1	LAMP1		2	+12V	
3	LAMP2		4	+12V	
5	LAMP3		6	+12V	
7	OUT		8	INC1	
9	GND		10	INC2	
11	GND		12	INC3	
13	GND		14	X	
15	GND		16	LAMP4	
17	GND		18	X	
19	GND		20	X	

SECTION 2 DISPLAY W991907



J1	Color	2.54 Pin -- connect to Main board **W120206**	
1	Brown	A	Connect to Main Board J11 Pin 1
2	Red	B	Connect to Main Board J11 Pin 2
3	Orange	C	Connect to Main Board J11 Pin 3
4	Yellow	D	Connect to Main Board J11 Pin 4
5	Green	E	Connect to Main Board J11 Pin 5
6	Blue	F	Connect to Main Board J11 Pin 6
7	Purple	G	Connect to Main Board J11 Pin 7
8		DP	
9	White	COM4	Connect to Main Board J11 Pin 9
10	Pink	COM3	Connect to Main Board J11 Pin 8
11		COM2	
12		COM1	