HOLLAND COMPUTERS, INC.

Crane Kit Manual

Installation, Configuration, Calibration, and Troubleshooting

Part Number RA-CRANE-KIT v3 (2023)
English Edition

Revision note: This edition merges the 2023 base manual with the translated claw-strength and sensor-board instructions. This is a best effort translation from the original Chinese manual and may not be complete.

Contents

1. Introduction and Safety

Description

This kit has been manufactured as a replacement gantry and electronics package for existing machines using a 28-inch-wide gantry, or for new installations in a custom cabinet.

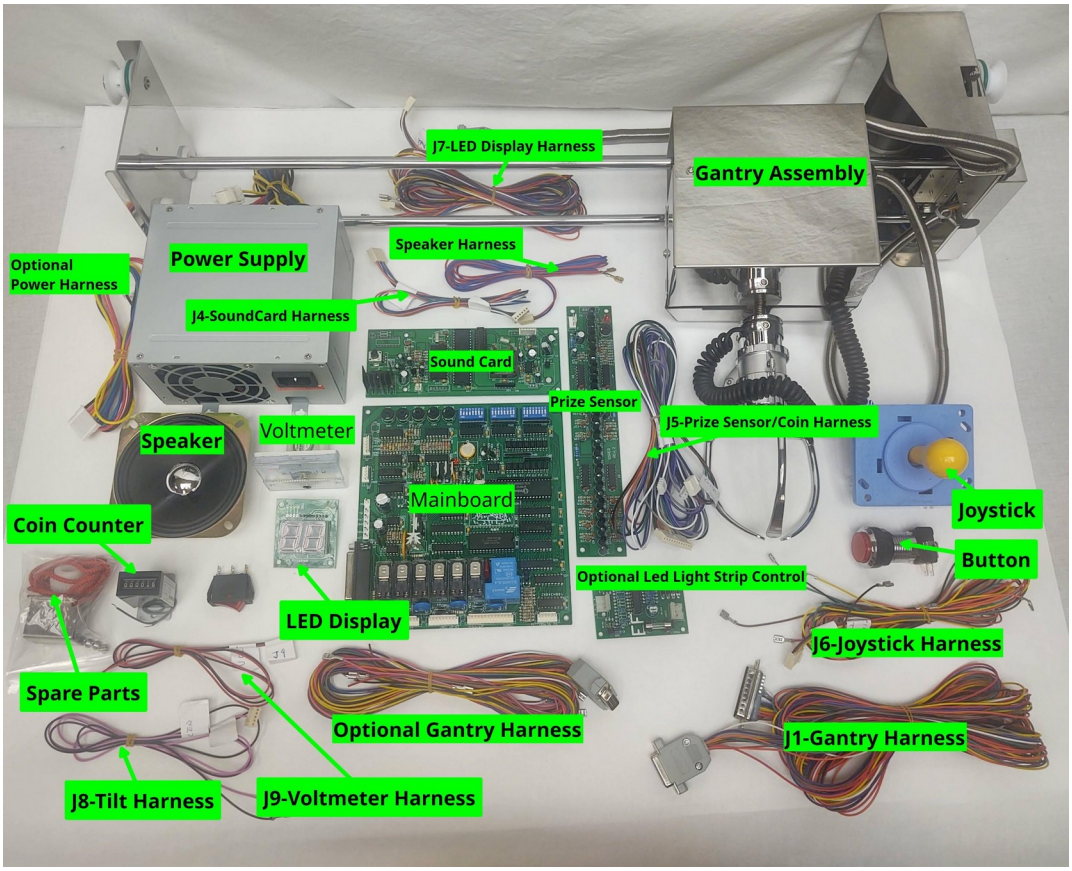
Warnings and Disclaimers

- This kit is designed for professional installation only.

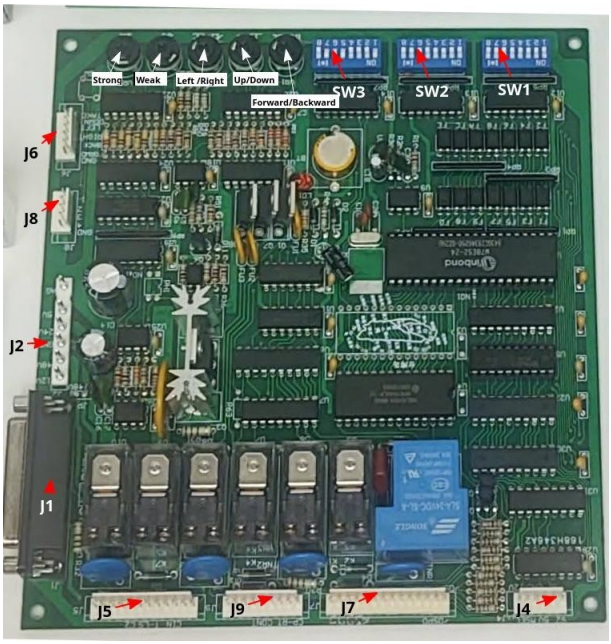
DANGER: EXPOSED HIGH-VOLTAGE EQUIPMENT. USE EXTREME CARE. NEVER TOUCH ANY COMPONENT WITHOUT UNPLUGGING THE POWER CORD. FAILURE TO FOLLOW THIS WARNING MAY RESULT IN INJURY OR DEATH.

- Due to varied manufacturing methods and multiple suppliers, some parts may not look exactly as pictured.
- Wiring colors are not specified because manufacturers may use different colors. Use connector labels and the pin-assignment sections to trace connections.

2. Kit Contents



3. Main Board and Connector Identification



Connector	Function
J1	Crane gantry
J2	Power supply input
J4	Sound card
J5	Prize sensor / coin selector
J6	Joystick / fire button
J7	LED display
J8	Tilt switch
J9	Voltmeter

4. Main Board Switch Configuration

Switch bank	Positions	Primary function
SW1	1-8	Claw weak-power timer
SW2	1-2	Coins per play
SW2	3-4	Claw-down timer
SW2	5-8	Claw strong-power timer
SW3	1-5	Machine controls and claw adjustment
SW3	6-7	Play-to-win options
SW3	8	Coins-per-prize configuration mode

In the following tables, a blank cell means OFF. A cell marked ON means the switch is ON.

5. SW1 Weak-Power Timer Settings

SW1-1 through SW1-8 control how long the claw operates at weak power.

SW1 weak-power timer: 1-16 seconds

Seconds	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6	SW1-7	SW1-8
1								
2	ON							
3		ON						
4	ON	ON						
5			ON					
6	ON		ON					
7		ON	ON					
8	ON	ON	ON					
9				ON				
10	ON			ON				
11		ON		ON				
12	ON	ON		ON				
13			ON	ON				
14	ON		ON	ON				
15		ON	ON	ON				
16	ON	ON	ON	ON				

5. SW1 Weak-Power Timer Settings

SW1-1 through SW1-8 control how long the claw operates at weak power.

SW1 weak-power timer: 17-32 seconds

Seconds	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6	SW1-7	SW1-8
17					ON			
18	ON				ON			
19		ON			ON			
20	ON	ON			ON			
21			ON		ON			
22	ON		ON		ON			
23		ON	ON		ON			
24	ON	ON	ON		ON			
25				ON	ON			
26	ON			ON	ON			
27		ON		ON	ON			
28	ON	ON		ON	ON			
29			ON	ON	ON			
30	ON		ON	ON	ON			
31		ON	ON	ON	ON			
32	ON	ON	ON	ON	ON			

5. SW1 Weak-Power Timer Settings

SW1-1 through SW1-8 control how long the claw operates at weak power.

SW1 weak-power timer: 33-48 seconds

Seconds	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6	SW1-7	SW1-8
33						ON		
34	ON					ON		
35		ON				ON		
36	ON	ON				ON		
37			ON			ON		
38	ON		ON			ON		
39		ON	ON			ON		
40	ON	ON	ON			ON		
41				ON		ON		
42	ON			ON		ON		
43		ON		ON		ON		
44	ON	ON		ON		ON		
45			ON	ON		ON		
46	ON		ON	ON		ON		
47		ON	ON	ON		ON		
48	ON	ON	ON	ON		ON		

5. SW1 Weak-Power Timer Settings

SW1-1 through SW1-8 control how long the claw operates at weak power.

SW1 weak-power timer: 49-64 seconds

Seconds	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6	SW1-7	SW1-8
49					ON	ON		
50	ON				ON	ON		
51		ON			ON	ON		
52	ON	ON			ON	ON		
53			ON		ON	ON		
54	ON		ON		ON	ON		
55		ON	ON		ON	ON		
56	ON	ON	ON		ON	ON		
57				ON	ON	ON		
58	ON			ON	ON	ON		
59		ON		ON	ON	ON		
60	ON	ON		ON	ON	ON		
61			ON	ON	ON	ON		
62	ON		ON	ON	ON	ON		
63		ON	ON	ON	ON	ON		
64	ON	ON	ON	ON	ON	ON		

5. SW1 Weak-Power Timer Settings

SW1-1 through SW1-8 control how long the claw operates at weak power.

SW1 weak-power timer: 65-80 seconds

Seconds	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6	SW1-7	SW1-8
65							ON	
66	ON						ON	
67		ON					ON	
68	ON	ON					ON	
69			ON				ON	
70	ON		ON				ON	
71		ON	ON				ON	
72	ON	ON	ON				ON	
73				ON			ON	
74	ON			ON			ON	
75		ON		ON			ON	
76	ON	ON		ON			ON	
77			ON	ON			ON	
78	ON		ON	ON			ON	
79		ON	ON	ON			ON	
80	ON	ON	ON	ON			ON	

5. SW1 Weak-Power Timer Settings

SW1-1 through SW1-8 control how long the claw operates at weak power.

SW1 weak-power timer: 81-96 seconds

Seconds	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6	SW1-7	SW1-8
81					ON		ON	
82	ON				ON		ON	
83		ON			ON		ON	
84	ON	ON			ON		ON	
85			ON		ON		ON	
86	ON		ON		ON		ON	
87		ON	ON		ON		ON	
88	ON	ON	ON		ON		ON	
89				ON	ON		ON	
90	ON			ON	ON		ON	
91		ON		ON	ON		ON	
92	ON	ON		ON	ON		ON	
93			ON	ON	ON		ON	
94	ON		ON	ON	ON		ON	
95		ON	ON	ON	ON		ON	
96	ON	ON	ON	ON	ON		ON	

5. SW1 Weak-Power Timer Settings

SW1-1 through SW1-8 control how long the claw operates at weak power.

SW1 weak-power timer: 97-112 seconds

Seconds	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6	SW1-7	SW1-8
97						ON	ON	
98	ON					ON	ON	
99		ON				ON	ON	
100	ON	ON				ON	ON	
101			ON			ON	ON	
102	ON		ON			ON	ON	
103		ON	ON			ON	ON	
104	ON	ON	ON			ON	ON	
105				ON		ON	ON	
106	ON			ON		ON	ON	
107		ON		ON		ON	ON	
108	ON	ON		ON		ON	ON	
109			ON	ON		ON	ON	
110	ON		ON	ON		ON	ON	
111		ON	ON	ON		ON	ON	
112	ON	ON	ON	ON		ON	ON	

5. SW1 Weak-Power Timer Settings

SW1-1 through SW1-8 control how long the claw operates at weak power.

SW1 weak-power timer: 113-128 seconds

Seconds	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6	SW1-7	SW1-8
113					ON	ON	ON	
114	ON				ON	ON	ON	
115		ON			ON	ON	ON	
116	ON	ON			ON	ON	ON	
117			ON		ON	ON	ON	
118	ON		ON		ON	ON	ON	
119		ON	ON		ON	ON	ON	
120	ON	ON	ON		ON	ON	ON	
121				ON	ON	ON	ON	
122	ON			ON	ON	ON	ON	
123		ON		ON	ON	ON	ON	
124	ON	ON		ON	ON	ON	ON	
125			ON	ON	ON	ON	ON	
126	ON		ON	ON	ON	ON	ON	
127		ON	ON	ON	ON	ON	ON	
128	ON	ON	ON	ON	ON	ON	ON	

Note: SW1-8 adds 128 seconds and is not normally used. The all-ON setting is reserved for a special purpose.

6. SW2 Coin and Claw-Timer Settings

Coins Per Play (SW2-1 through SW2-2)

Function	Setting	1	2	3	4	5	6	7	8
Coins per play	1 coin / 1 play								
Coins per play	1 coin / 2 plays	ON							
Coins per play	2 coins / 1 play		ON						
Coins per play	5 coins / 6 plays	ON	ON						

UNUSED – Claw Down Timer (SW2-3 through SW2-4)

This has been hard coded to 15 seconds in the latest revision.

Claw Strong-Power Timer (SW2-5 through SW2-8)

Seconds	SW2-5	SW2-6	SW2-7	SW2-8
1				
2	ON			
3		ON		
4	ON	ON		
5			ON	
6	ON		ON	
7		ON	ON	
8	ON	ON	ON	
9				ON
10	ON			ON
11		ON		ON
12	ON	ON		ON
13			ON	ON
14	ON		ON	ON
15		ON	ON	ON
16	ON	ON	ON	ON

7. SW3 Functions and Play-to-Win Settings

SW3-1 through SW3-5 Functions

Switch	OFF	ON
SW3-1	Single-player unit or right side of a two-player unit	Left side of a two-player unit
SW3-2	Direction controlled by buttons	Direction controlled by joystick
SW3-3	Prize pickup and outlet are in different locations	Prize pickup and outlet are in the same location
SW3-4	Disabled / normal operation	Claw-opening adjustment mode
SW3-5	Not specified	Use joystick when SW2-2 is ON; lowering and pickup use the same button

SW3-6 and SW3-7 Play-to-Win Settings

Mode	SW3-6	SW3-7	Display / operation
Play to win disabled			Credits displayed; timed claw drop after movement
Play to win disabled	ON		Credits displayed; timed claw drop after movement
Play to win enabled		ON	Display flashes plays credited toward play to win
Play to win enabled	ON	ON	Display shows plays credited toward play to win

SW3-8 Configure Coins per Prize

1. Turn the power off.
2. Set SW3-7 to ON
3. Set and SW3-8 to ON.
4. Turn the power on.
5. Move the joystick forward to increase the coin count by 1.
6. Move the joystick rearward to increase the coin count by 10.
7. Press the fire button to reset the value to 1.
8. Set SW3-8 to OFF.
9. If the display flashes 5, the coins-per-prize value is not set.
10. Turn the power off.
11. Set SW3-7 to ON

Note: Coins per prize only applies whe play to win is disabled. Count resets after a the prize sensor registers a prize. If the prize sensor is not triggered, claw voltage will remain high until it is.

8. Gantry Speed Adjustments

Can be adjusted with power on.

1. VR1 – Forward / Backward Speed
2. VR2 – Left / Right Speed
3. VR3 – Up / Down Speed

9. Claw-Strength Calibration

Use SW3-4 to enter claw-opening adjustment mode. All other switches must be off. This setting does not affect the strong and weak timers.

1. Turn the power OFF. Set SW3-4 to ON and set all other SW1, SW2, and SW3 switches to OFF.
2. Turn VR4 fully counterclockwise. Do not force it past its stop.
3. Turn VR5 fully counterclockwise. Do not force it past its stop.
4. Turn the power on. The crane will return to its home position.
5. The main-board LED flashes every 5 seconds. When the LED is on, the voltmeter will read the stong-claw voltage; when the LED is off, it will show the weak-claw voltage.
   VR5 is affected by VR4.
   Example: If VR4 is set to 0 Volts and VR5 is set to 30 volts, Increasing VR4 to 10 volts will result in an 10 volt increase on VR5 netting 40 volts.
6. Turn VR4 to set the desired weak-claw voltage.
7. Turn VR5 to set the desired stong-claw voltage.
8. Turn the power off and return SW3-4 to OFF. Leaving calibration mode active for an extended time may damage the claw. Restore the desired switch settings, then turn the power back on.

10. Prize Sensor Installation and Adjustment

Installation

1. Mount the infrared sensor board as high as practical on top of the panel and secure it with screws. Orient it so the LED is at the lower right. The prize should be able to fall below prize sensor after it has been dropped. This causes a full cycle of the prize sensor and registers the prize.
2. Keep the collection opening and surrounding area black to prevent reflected light from interfering with the infrared beam.
3. Connect the sensor wires to the main circuit board according to the applicable wiring diagram.

Testing and Adjustment

1. Turn on the power.
2. Turn VR1 fully clockwise. Place one hand in the soft-toy discharge chute and adjust VR1 until the LED switches off. If the LED does not switch off, continue with Step 5.
3. Turn VR1 counterclockwise slightly, then remove your hand.
4. If the LED remains off, turn VR1 slightly farther counterclockwise. Adjustment is complete.
5. Drop a soft toy through the discharge opening. Before the toy passes the sensor, the LED should be on.
6. Turn VR1 clockwise to increase sensing distance, or counterclockwise to decrease it.
7. When testing is complete, cycle the power off and back on.

11. Troubleshooting

Code	Meaning
1	Claw did not return home within the specified time
2	Counter is faulty or not installed
4	Prize sensor is blocked or out of order
5	Coins per prize is not set
23	Gantry could not return home

12. Connectors, Wiring, and Power Supply

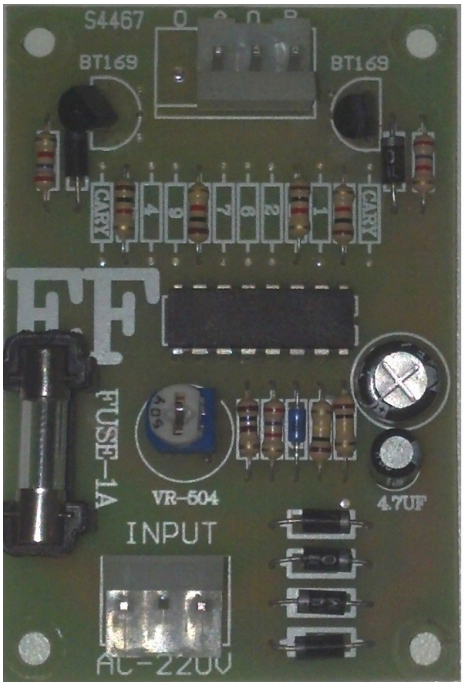
Refer to the main-board and kit images. Connectors and cables are labeled with matching identifiers.

- The five-wire pigtail plugs into J2 on the main board.
- The two-wire pigtails are unused by the main board and provide 12 V power for lighting or other accessories.

Alternate-board connection	Pins	Qty.
Forward motor	1, 2	1
Left/right motor	3, 4	1
Up/down motor	5, 6	1
Claw power supply	7, 8	1
Front limit switch	9, 10	1
Home limit switch	11, 12	1
Left limit switch	13, 14	1
Top limit switch	15, 16	1

13. Included Optional Equipment

EF Light Control Board



- Input: AC 110 V or 220 V.
- Output: DC 12 V.

WARNING: THIS UNIT DOES NOT CONNECT TO THE MAIN BOARD. ATTEMPTING TO CONNECT IT TO THE MAIN BOARD WILL VOID ALL WARRANTIES FOR THIS KIT.

- LED light strips are not included.

Other Included Options

- Voltmeter: Used to check output voltage while setting claw strength. It may be permanently mounted or used only during setup and then removed.
- Coin counter: Provides a persistent running total of coins. Omitting it does not affect machine operation.
- Power switch: Unplug the machine from AC power before installation. The switch is installed between AC power and the power supply and should be installed only by a professional electrician.

Notes

Timers an other functions are dependent on different modes of operation. Because there are many ways to configure this board, it may be necessary to use a trial and error method to accomplish you goals for your installation.

14. Support and Distribution

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Before servicing the machine, disconnect AC power.