

# S K I L L C R A N E

## Operating Instructions

### Features

"SKILL CRANE" by UAI is a true state-of-the-art, solid state merchandising unit offering features not found on many of the other Crane-type products found in the marketplace. Skill Control, two coin acceptors as well as a full complement of exciting lights and sounds are just a few of the added features which make this unique product stand apart from the crowd. Thru DIP Switch selections, various game combinations can be offered to the player. These will be explained more fully in a later section of this manual.

SECURITY was an important consideration when designing "SKILL CRANE". Special "Anti-Stringing" coin-timing-sensors continually monitor the coin-in switch to prevent unauthorized game play. In addition, special prize chute security devices have been installed to prevent unauthorized intrusion into the internals of the Crane. If either of these devices detect a violation, an alarm will sound and the Award Beacon will light.

BATTERY BACK-UP devices allow retention of accumulated credits for up to one hour following any power failure.

"SKILL CRANE" has been designed to accept both popular types of player controls, joystick and buttons. Switching between the two different types of controls can be accomplished at any time by the Operator with minimal effort.

"SKILL CRANE" will easily accept the followi optional enhancements:

Dollar Bill Acceptor  
Ticket Dispenser

In addition, the Printed Circuit Board has been designed to allow for additional inputs and outputs, thereby guaranteeing that the the entire system will be open to future options and enhancements as they become available.

## GAME OPERATION

Upon insertion of coin(s), the FORWARD or PRESS JOYSTICK TO START GAME button will blink. In addition, the credit / timer will display the number of game credits accumulated.

The game is started by pushing the FORWARD play button or, if the Joystick is installed, the "DROP CLAW" button (the button on top of the joystick).

### BUTTON OPERATION:

This selection retains all of the features of the original "push button" game while optionally allowing the Operator to run the game until the TIMER has expired. The game starts when the FORWARD button is depressed. At that time, the 'operation' sound begins and the TIMER begins it's countdown. Crane movement can start by pressing either the FORWARD or RIGHT button. When both buttons have been pressed, the claw will lower and attempt to pick up a prize. The claw will then be returned to the HOME (front left) position automatically.

### JOYSTICK CONTROL:

This option enhances "SKILL CRANE" by allowing the player to have complete control over the movement of the crane. In this mode, the crane motors are slowed down to inhibit excessive swaying motion of the claw assembly. Four playing modes are possible. These are determined by DIP switch settings. One mode allows the player to lower the claw once by pressing the top button on the joystick while a different mode allows the player to lower the claw gradually while depressing the same button. Both modes can be set to run on either a One-Time-Drop basis or until the TIMER expires.

In the joystick mode, the player depresses the joystick button to begin the game. There is a brief pause while the opening theme is played and the crane is positioned in the center of the playfield. The 'operation' sound signifies the beginning of the TIMER countdown.

After attempting to pick up a prize, the crane will return to the HOME position and open the claw. IF the appropriate DIP switches are set, the player will then be allowed to continue play until the TIMER counts down to 0.

When the TIMER expires, the crane motion will cycle and allow for one more pick-up attempt UNLESS the crane was over the home position at which time game play will cease.

Upon Power-up, the crane will reset to the HOME position. If, on power-up, the coin-in switch is held down, the crane will go into a TEST MODE. SEE TEST FEATURES FOR DETAILS.

## COINS

DIP Switch positions 4 and 5 control the number of games per coin and the denomination.

## CRANE MOVEMENT

DIP Switch position 3 controls whether the game continues to play until the TIMER has expired or whether the game ends after one pick-up attempt.

## GAME SELECT

DIP Switch positions 1 and 2 select the game configuration mode.

## TEST FEATURES

NOTE: TEST FEATURES CAN ONLY BE USED WHEN IN JOYSTICK MODE  
When in button mode, you may use the Forward button to step thru to Test #4 and then use the Lateral button to change the status of the Claw: Open or Closed.

To enter the TEST FUNCTIONS, power-up "SKILL CRANE" while holding down the coin-in switch. The TIMER display will then show "88" to indicate that the TEST MODE is activated.

Advance through the test functions by pressing the button on top of the joystick. At the end of the test functions, the game will resume normal operation.

## TEST FUNCTIONS

1. Bulb Test: This test lights all the lights in the crane that are under p.c.b. control.
2. Crane Movement 1: The Joystick will control the operation of the crane's left, right, forward and backward motion.
3. Crane Movement 2: The Joystick will control the operation of the crane's up and down motion.
4. Claw Position: The Joystick will control the opening and closing of the claw mechanism.
5. Ticket Dispenser: The Joystick will control the operation of the ticket dispenser.



## TO REPLACE JOYSTICK WITH BUTTONS

1. Remove the four (4) screws which hold the joystick to the panel.
2. Insert Lateral Button, round wooden spacer, and Large square washer in hole. Orient lateral button so that the arrow faces the right hand side of the cabinet. Tighten nut.
3. Unsolder the long black wire with the four (4) fast-ons that goes to the commons of the joystick from the forward lamp.
4. Remove the white & white/orange wires from the "fire button" switch of the joystick and connect the white & white/orange wires to the forward switch on the Normally Open and Common terminals.
5. Remove the Red/white and White/red wires from the joystick. Insolate them and tie them back.
6. Remove the White/blue and the Blue/white wires from the joystick and convert them to the Normally Open and the Common of the lateral switch.
7. Convert the Yellow and White/Brown wires that were tied back to the lateral lamp connection.
8. Change switch on the crane controller board to A-C for 2 button operation. Set DIP switches as needed.
9. Install the Arrow legend in the Forward button.

Conversion Complete



## VOLUME CONTROL

Beside the DIP Switch on the Skill Crane PCB is a small adjustment control. The control in the R-14 position of the board is used to adjust the volume of the machine.

## JOYSTICK INSTALLATION

The Joystick installation is accomplished by removing the Lateral Button from the panel and mounting the Joystick in this hole. You will need to drill out the hole in order for the Joystick to fit. Remove the two (2) wires going to the Lateral Lamp (yellow & white/brown). Insulate each wire and tie them back into the harness. Next, take the two (2) connectors that were wired to the Lateral Switch (blue/white & white/blue) and the two (2) wires that are tied back in the harness (red/white & white/red) and connect them to the four (4) Normally Open connectors on the Joystick switches (white/red, red/white, blue/white, and white/blue). These are the direction controls. Once the Skill Crane is powered up, these can be checked for proper location relative to the Crane carriage's direction of movement.

NOTE: Provided with the Joystick is a harness connecting all the Common positions together. This harness has a free end which is tinned and stripped. This wire will have to be soldered to the lamp that is installed in what was the Forward Movement button position. On this lamp you will find connected two (2) wires, a white/black wire and a white/orange wire, soldered to the socket. Here, on the junction between the above two (2) wires, is where this Common wire from the switches is to be connected. Here, also, you will remove two (2) connectors from the Forward Switch and move these to the push button switch on the Joystick. The white wire goes to the Common and the other white/orange wire goes to the Normally Open point on the switch. The white/orange wire that was connected to the Common of the Forward switch can also be used for the other Joystick switch Common connections.

IMPORTANT: WHEN INSTALLING JOYSTICK, MAKE SURE THAT YOU MOVE THE BUTTON/JOYSTICK SWITCH TO THE A-B POSITION ON THE CRANE CONTROLLER PCB.





## ADJUSTING THE CRANE MECHANISM FOR OPTIMAL PLAY

Adjustments may be made to help control the ability of the claw to pick up a prize by adjusting the following controls:

### 1. CLAW CAM

The "Claw Cam" can be adjusted to allow for picking up "Large" or "Small" prizes. To adjust the cam, loosen the screw underneath the claw, rotate the cam to the desired position and then tighten the screw. With the cam in the "small" setting the claw is restricted from opening all the way, thus allowing the claw to better pick up small objects like jewelry, watches and many 'out of case' objects.

### 2. TOP COLLAR RING

The top collar ring on the crane claw mechanism can be adjusted up or down to increase/decrease the tension put on the claw once the prize has been picked up. This also helps to stabilize the motion of the claw upon returning to the home position with the prize.

By raising the collar you increase the possibility of the prize's weight spreading the claw apart and allowing the prize to fall once picked up.

### 3. LOWER COLLAR RING

The lower collar ring on the crane claw mechanism can be adjusted up or down to determine how much the finger tips of the claw are allowed to close when attempting to snare a prize.

Lowering the collar allows the tips to close more.

Raising the collar restricts the tips from closing all the way.

### 4. CLAW COIL

The claw coil determines how much of a grip the claw puts on a prize when it closes.

There are two different claw coils available from SMS Mfg. The standard coil is an 1000 milliamp (1 amp) coil and is considered the stronger of the two.

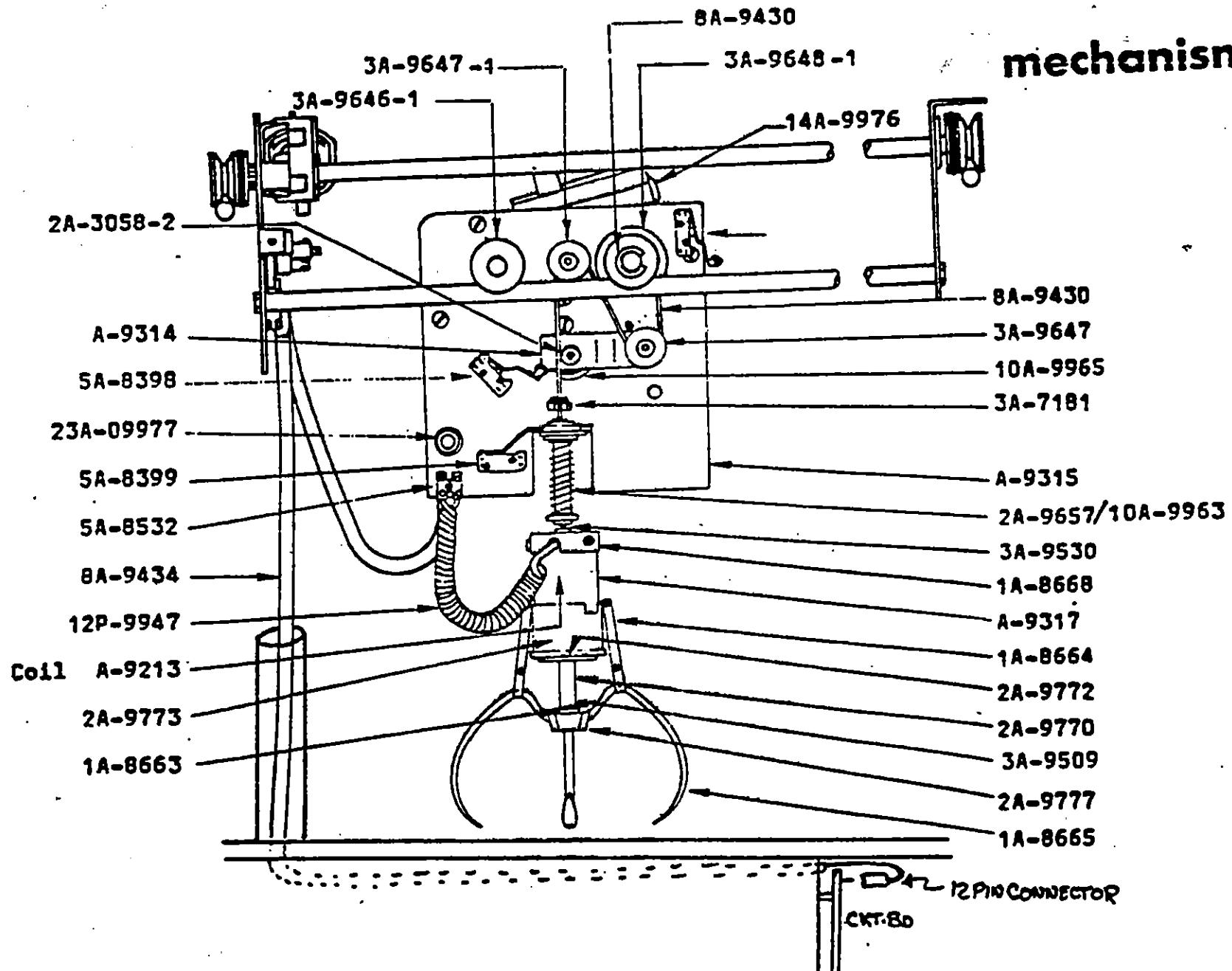
You may order a different coil (820 milliamps) which does not allow for as much grip. Contact your distributor or SMS direct.

### 5. ADJUSTING THE POT AT R-27 ON THE CRANE P.C. BOARD

Adjusts the gain of the transistor to determine proper claw adjustment. THIS DOES NOT ADJUST CLAW GRIP. To properly adjust the transistor gain, put crane into test mode / test #4 and adjust pot until claw closes.



# mechanism





## Skill Crane....Troubleshooting Guide

**IMPORTANT:** There is a jumper on the crane controller PCB next to U-19. This should be set as follows for the appropriate configurations.

0--0 0

C A B

Buttons

0 0--0

C A B

Joystick

Check the operations manual for correct DIP switch settings to conform to either buttons or joystick.

PROBLEM	POSSIBLE CAUSE	CORRECTION
" 00 " on digital display	:Crane mech cable was connected to controller board incorrectly. : :	:Replace fuse (8 amp 250 volt) in F1 pos. and connect cable to circuit board correctly.
Claw mech does NOT close	:a. R-27 adjustment on PCB :b. Bad crimp on gray wire on crane mech cable connector. :c. Bad solder jump on PCB : :	:a.Adjust R-27 on controller board :b.Apply new crimp to gray wire and insert into connector. : Call 1-800-221-0138 for instructions.
Prize detector & Alarm sound goes off continuously.	:Detector frame out of alignment. : : :	:Realign detector frame & increase bulb intensity by replacing the 180 ohm 3 watt resistor (on detector PCB) with a jumper wire.
Coin Error	:a. Coin Chute not properly aligned : : :b. SW-4 switch on crane mech. :c. Defective prize detector : : :	:a. Make sure wires are not between coin drop & chute and that the chute is directly below coin drop. :b. Refer to crane mech diagram and call for instructions. :c. Disconnect the prize detector to confirm. :Then: Replace prize detector prize detector PCB; or main controller PCB.
Claw hits bottom but won't return	:Bad microswitch :	:Check microswitches SW3 and SW4-Replace

**PROBLEM****POSSIBLE CAUSE****CORRECTION**

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Claw does not make it all the way back to toys and goes into coin error

:bad pully motor  
:  
:

:Replace pully motor  
:  
:

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claw constantly pulls up and does not go to home position

:String not wound properly  
:

:check SW4  
:see if string is wound counterclock wise'

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Crane will go down only an inch or so and returns to home position

: tie  
:  
:

:Tie .01 cap accross  
:SWS 3 white wire and other  
:black and white wire

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BLUE/WHITE FROM LATERAL SWITCH.

WHITE/BLUE FROM

LATERAL SW.

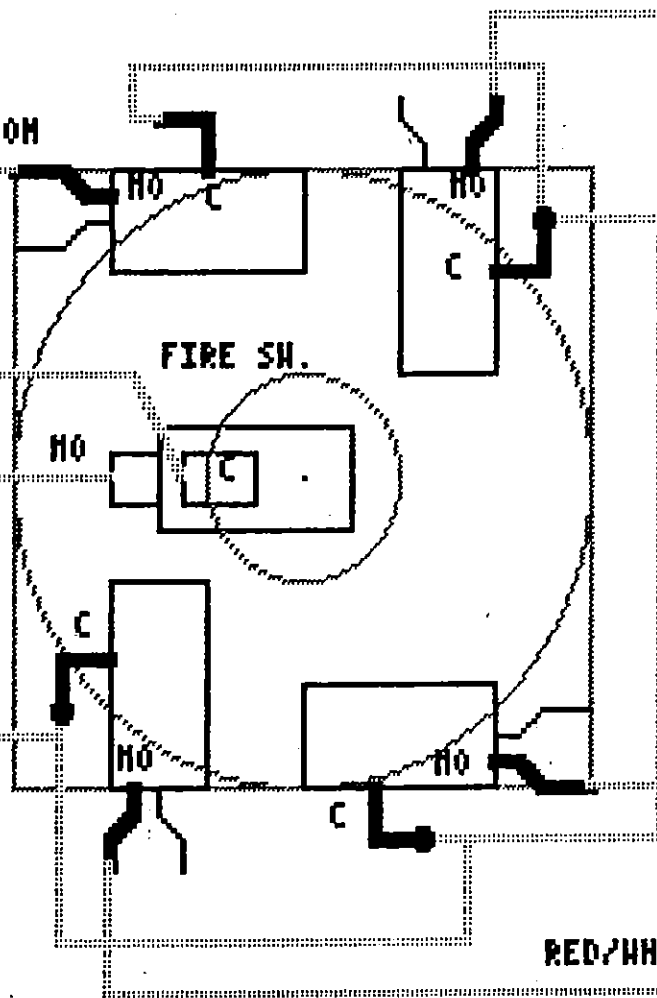
WHITE/RED

FROM FORWARD  
SWITCH

WHITE

WHITE/BLACK

TO FORWARD  
LAMP.

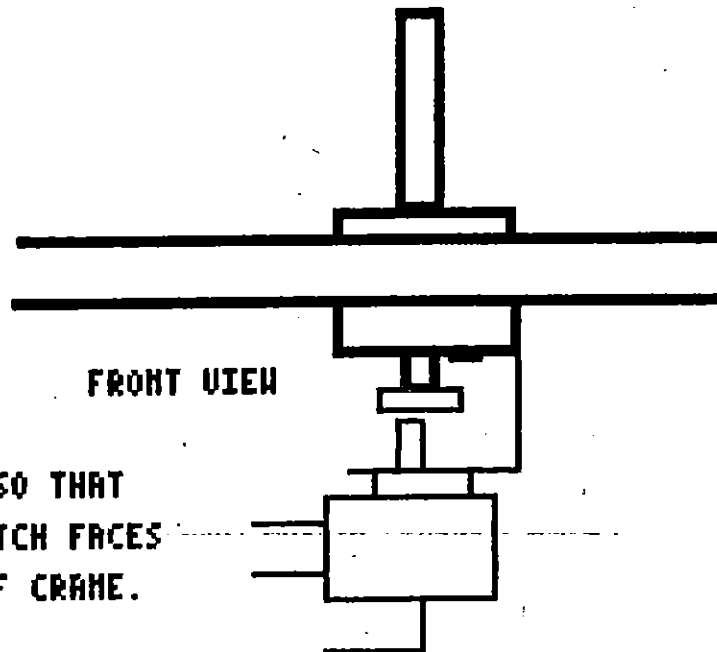


**JOYSTICK**

VIEW FROM BOTTOM  
ALL CONNECTIONS  
TO H.O. OR COM.

WHITE/RED FROM LATERAL SW.

RED/WHITE FROM LATERAL SW.



MOUNT JOYSTICK SO THAT  
FIRE CONTROL SWITCH FACES  
THE LEFT SIDE OF CRANE.

