Operating Instructions
For Model _____ 141 A & B

VIDEO ACTION II

Control Sales

	SL2					START 2				SR2				5 V
	x				x	x				x				
LLP	SL1	SL5	SL3	LRP			RLP	SR1		SR5	SR3	RRP	ON	OFF
						START 1								
x	x	x	x		x	x	x	x		x	x		x	
	SL4									SR4				
	x									x				
SL6		SL7				COIN		SR6			SR7		POWER	
x		x				x		x			x	x		
													ON	OFF

1. Insert 141 A program card into program "A" connector with number side up.

2. Insert 141 B program card into program "B" connector with number side up.

3. Insert computer board into test fixture.

4. Turn power switch on.

5. Push coin switch once for 2 player, twice for 4 player.

6. Push start 1 switch once.

7. RRP is right paddle.
    RLP is left right paddle.
    LRP is right left paddle.
    LLP is left paddle.

8. Switches on 141 A program card changes game. Push to "T" for tennis, "SS" for super soccer, and "H" for hockey.

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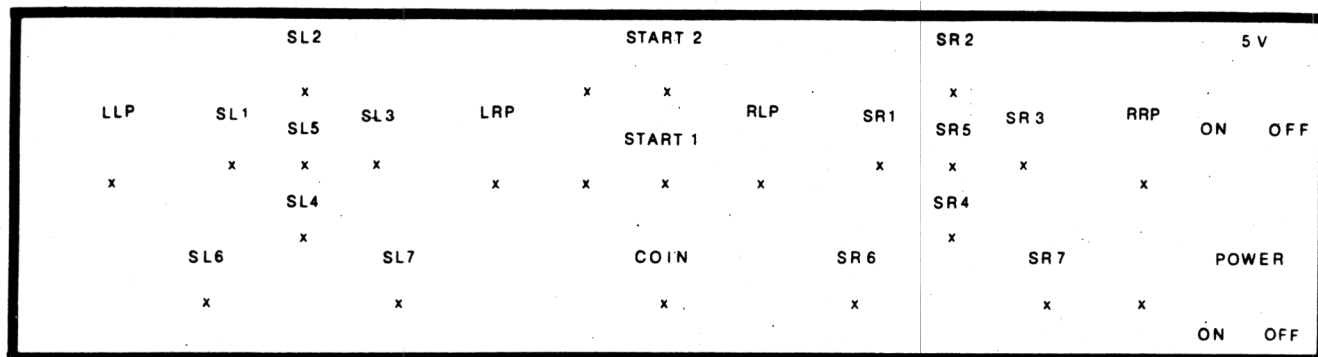
Electronics Division
Box 1246
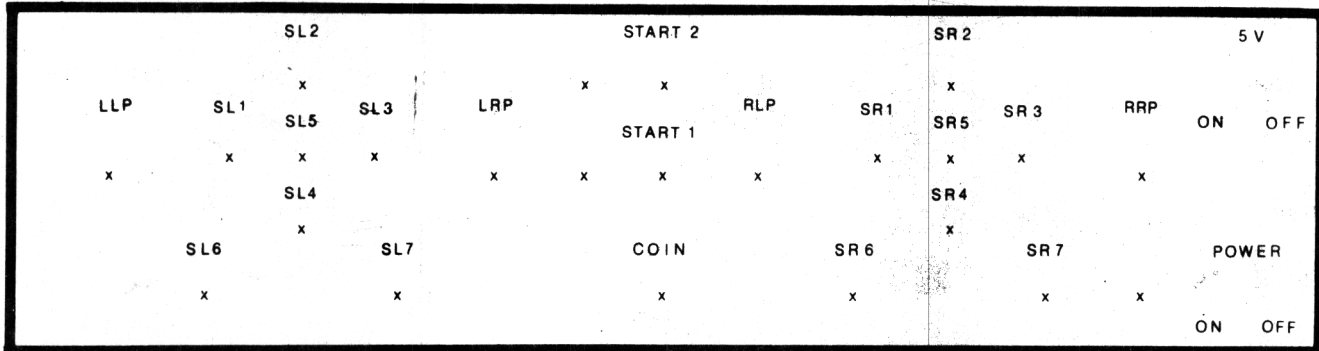2876 Culver Ave.
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Operating Instructions
For Model ___ 149 B

TV SUPER FLIPPER

Chicago Coin

		SL2			START 2			SR2			5 V
		x			x	x		x			
LLP	SL1	SL5	SL3	LRP			RLP	SR1	SR5	SR3	RRP	ON	OFF
					START 1						
x	x	x	x		x	x	x	x	x	x	x
		SL4						SR4			
		x						x			
	SL6		SL7		COIN		SR6		SR7		POWER
	x		x		x		x		x	x	
											ON OFF

1. Insert 149 B card into program "B" connector, number side up.

2. Insert 458-2504 credit counter assembly board into 24 pin and 6 pin connectors with orange dots up. (ONE CABLE)

3. Insert 149 C 24 pin extender card into test fixture with number side up.

4. Insert 458-2500 computer board into 149 C card connector and 6 pin remote connector with orange dot up.

5. Push POWER switch to on.

6. Push 5 VOLT switch to on.

7. Push COIN switch once if game is set up for single coin. Push COIN (coin 1) and SR6 (coin 2) if game is set up for 2 coin play.

8. Push START 1 switch once.

9. SHOOT BALL is SR7
    RIGHT FLIPPERS are SR 5
   LEFT FLIPPERS are SL5

he

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"C" CONNECTOR Game Board

1. Lo goes hi on coin 2 (SR-6)

2 Hi goes lo on coin 2 (SR-6)

   Hi goes lo on start (start 1)

4. Lo goes hi on coin 1 (coin)

5 Hi goes lo on coin 1 (coin)

6. Hi

7 Hi - pulse when coin then start pushed

8.   2nd

9 BCD   LSB

10.   3rd   Credit

11   MSB

12 Deadband

13. LO - Pulse when coin & start pushed

14 Deadband

15. Hi goes lo on shoot switch (SR-7)

16 LSB ball count

17 MSB ball count

18. Hi attract - lo game on

19. Hi pulse when coin & start pushed

20. Hi game over - lo game on

21 Lo for spots - high no spots

22. 2nd digit ball count

23 3rd digit ball count

24. Deadband (no probe lights

8.
9.
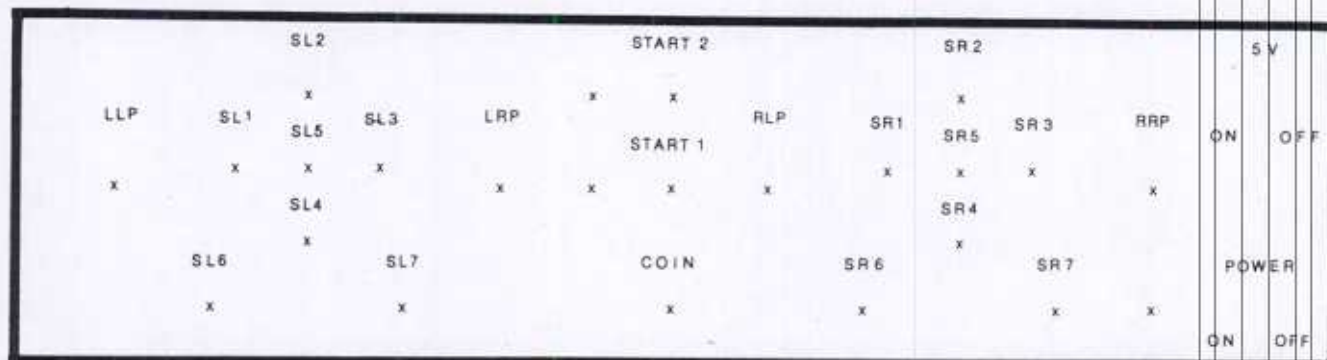10. MSB
11.
BCD for
Credits
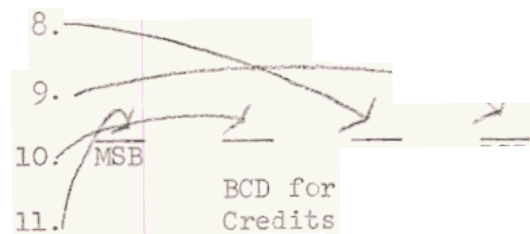
BCD Ballcount

MSB   LSB

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Operating Instructions
For Model ___ 150 A

___ PLAYTIME

___ Midway

		SL2			START 2			SR2				5 V	
		x						x					
LLP	SL1	SL5	SL3	LRP	x	x	RLP	SR1	SR5	SR3	RRP	ON	OFF
					START 1								
	x	x	x		x	x	x	x	x	x			
x		SL4			x	x			SR4		x		
		x							x				
SL6		SL7			COIN			SR6		SR7		POWER	
x		x			x			x		x	x		
												ON	OFF

1. Insert 150 A card into program "A" connector with number side up.

2. Insert computer board into test fixture using 24 pin orientation.

3. Push coin switch once, LED will light.

4. Push start 1 switch once.

5. RRP is right paddle vertical movement
   LLP is left paddle vertical movement
   RLP is right paddle horizontal movement
   LRP is left paddle horizontal movement
   NOTE: Paddle adjustment controls on computer board are very
         sensitive because of interaction.

6. SR6 is ball speed, up for normal speed, down for increased speed.

7. Tilt switch is SR5.

8. GO is game over LED on 150 A card.

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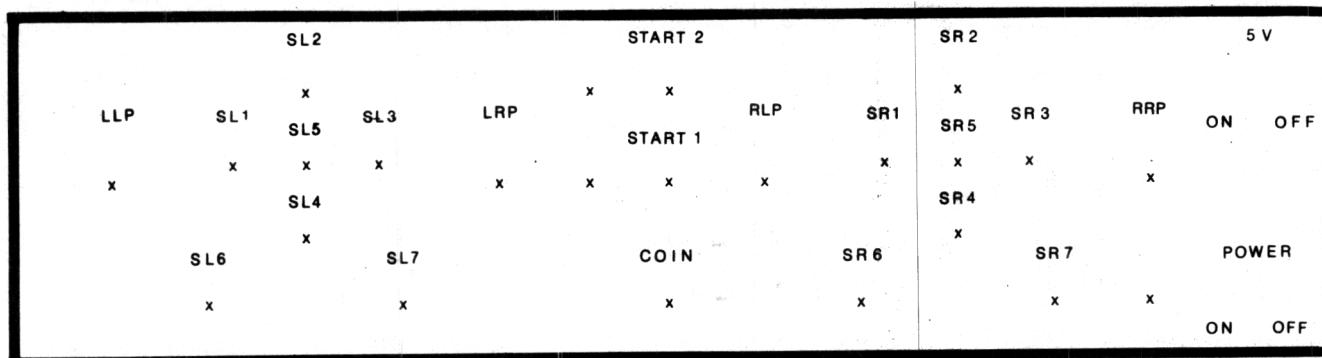2876 Culver Ave.
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Operating Instructions

For Model ___151 A & B___
___TV FLIPPER___

Midway

		SL2				START 2				SR 2			5 V
		x			x	x				x			
LLP	SL1	SL5	SL3	LRP			RLP	SR1	SR5	SR 3	RRP	ON	OFF
						START 1							
	x	x	x					x	x	x		x	
x		SL4		x	x	x	x		SR4				
		x							x				
	SL6		SL7			COIN		SR 6		SR 7		POWER	
	x		x			x		x		x	x		
												ON	OFF

1. Insert 151 A card into progr   "A" connector, number side up.

   Insert 151 B card into program "B" connector, number side up.

3. Insert computer board into test fixture using 24 pin orientation.

4. Jumper pins 1 and 6 together on 10 pin remote connector which is connected to computer board.

5. Turn power switch on.

6. Turn 5 volt internal switch on.

7 Push coin switch once for 1 player twice for 2 player.
   Credit lite will light.

8. Push start 1 switch once for 1 player, twice for 2 players.

9. RRP is paddle

10. SR6 is serve ball.

11. SR5 is tilt switch.

12. LED indicators on 151 A card
    1 PLY is one player lite
    2 PLY is two players lite
    1 UP is first player up lite
    2 UP is second player up lite
    GO is game over lite
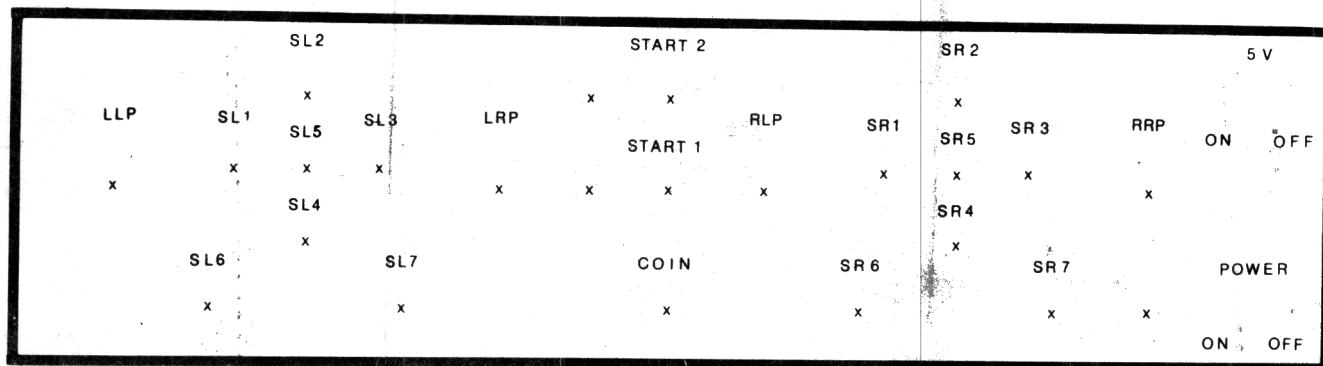
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Operating Instructions
For Model 161 A & B

HOCKEY

Ramtek

	SL2			START 2		SR2		5 V
	x		x x		x			
LLP	SL1	SL3	LRP		RLP	SR1	SR5 SR3	RRP	ON OFF
	SL5			START 1			x	
x	x x	x	x x x x			x	x x	x	ON OFF
	SL4					SR4		
	x					x		
SL6	SL7		COIN		SR6		SR7	POWER
x	x		x		x		x x	
								ON OFF

1. Insert 161 A card into program "A" connector with number side up.
    Insert 161 B card into program "B" connector with number side up.

2. Insert board to be tested into test fixture keeping edge connector
    all the way to the left, as you face connector.

3. Turn power switch on.

4. Push coin switch once.

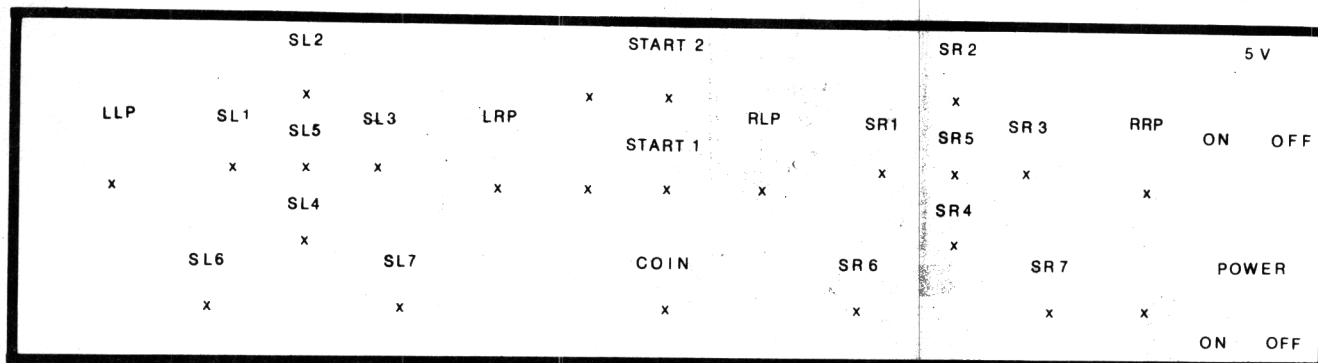5. LLP is left paddle.
    RRP is right paddle.

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Operating Instructions
For Model ___ 163 A   163 C

VOLLY

RAMTEK

```
        SL2                    START 2              SR 2                    5 V
         x                    x     x               x
LLP      SL1    SL3     LRP                  RLP    SR1    SR 3    RRP    ON    OFF
         SL5                                        SR5
              x   x   x            START 1          x
 x        x               x     x     x     x            x            x
         SL4                                        SR4
          x                                         x
    SL6          SL7               COIN        SR 6          SR 7          POWER
     x            x                 x           x            x    x
                                                                        ON    OFF
```

1. Insert program card 163 A into program "A" connector.

2. Attach color coded wires to 163 C card terminal strip.
    Usually blue video wire and white wire are twisted to-
    gether. The blue video wire attaches to point marked
    "V" blue. "A" blue is audio. Then insert 163 C card
    into test fixture.

3. Turn power switch on.

4. Push coin switch once.

5. RRP is right paddle control.

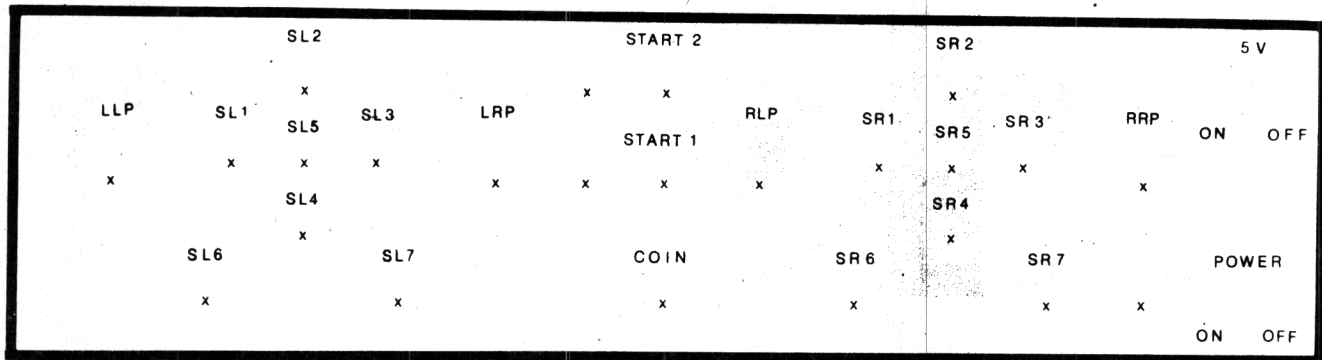6. LLP is left paddle control.

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Operating Instructions
For Model   166 A

DROP ZONE

Meadows

```
          SL2                    START 2              SR2                        5 V
                        x                  x      x                    x
    LLP        SL1            SL3    LRP                  RLP     SR1            RRP    ON     OFF
                        SL5                         START 1              SR5   SR3
                   x       x      x              x      x      x      x        x      x
    x                   SL4                                         SR4
                        x                                          x
          SL6                SL7                  COIN          SR6            SR7          POWER
          x                x                      x            x              x      x
                                                                                     ON     OFF
```

1. Insert 166 A card into program "A" connector, number side up.

2. Insert computer board into test fixture using 22 pin orientation.

3. Insert audio module into remote 22 pin connector with red dot facing up.

4. Connect speaker across red and black leads on remote 22 pin connector. (DO NOT GROUND SPEAKER LEADS).

5. Push power switch to on.

6. Push 5 volt internal switch to on.

7. Push COIN switch once.

8. Push START 1 once.

9. Bomb drop switch is SR5.

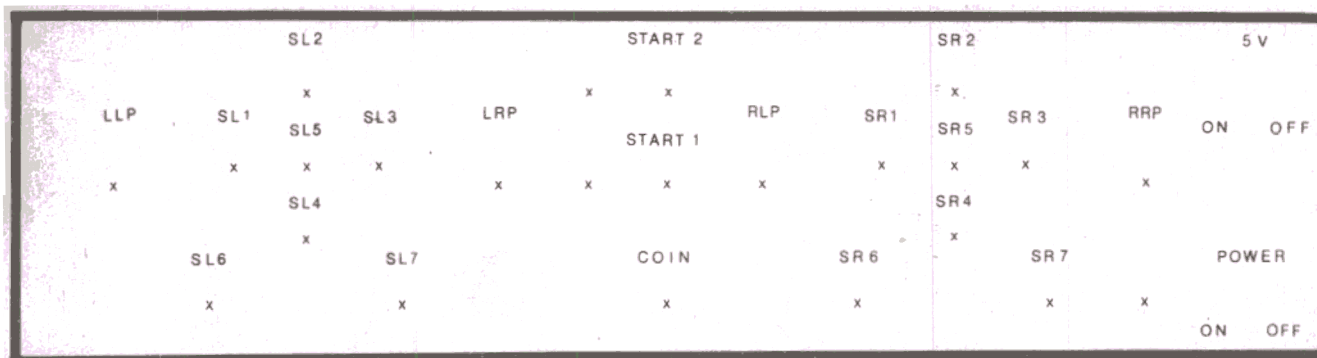# Operating Instructions
For Model ___ 167A, 167B, 167C
WHEELS II

Midway

```
        SL2                          START 2              SR2                    5 V

              x                    x        x                        x
LLP      SL1       SL3       LRP                  RLP      SR1   SR5   SR3   RRP
         SL5                            START 1                                ON    OFF
       x      x      x               x     x     x      x       x     x
  x                                                                     x
         SL4                                              SR4
       x                                                x
     SL6              SL7                 COIN         SR6           SR7         POWER
    x                  x                   x            x             x    x
                                                                              ON    OFF
```

Insert 167 A card into program "A" connector, number side up
Insert 167 B card into program "B" connector, number side up

2. Insert 167 C extender card into test fixture 25 pin connector
    with number side up. Connect red lead to +5 volt terminal.
    Connect GND strap to U shaped loop.
    Insert edge connector next to row A of IC's on board to be
    tested into 167 C extender connector.

3. Connect remote connector (orange dot up) to edge board connector
    near row R of IC's on B C. board

4. Connect a speaker from each red wire to black wire (common) on
    167 B card

    Turn power switch to on

6. Turn 5 V internal switch to on

    Push coin switch once for 1 player, game will start
    Push coin switch twice for 2 players, game will start

8. SR 6 switch is up for #1 lo shift, down for #1 hi shift
    RLP is #1 accelerator (ccw to run)
    RRP is #1 steering

9. SL 5 switch is up for #2 lo shift, down for #2 hi shift
    LLP is #2 accelerator (ccw to run)
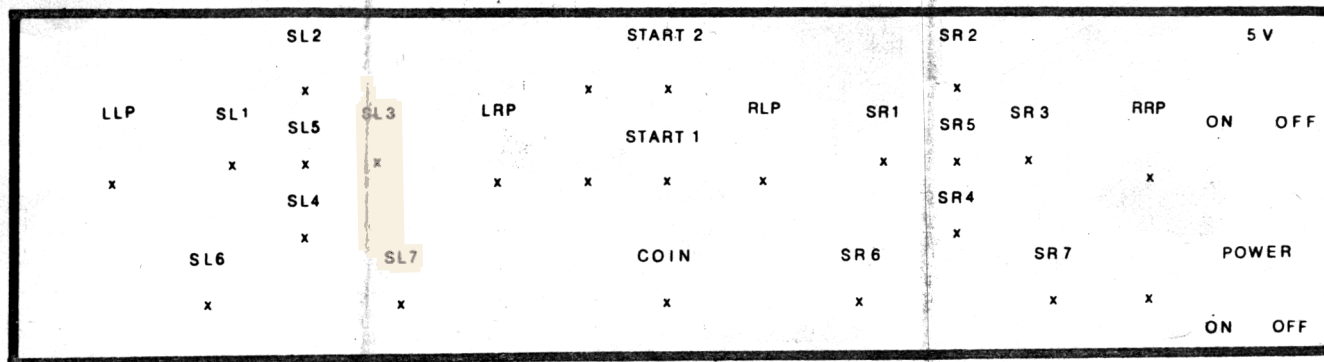   LRP is #2 steering

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Operating Instructions
For Model ___169, 169 A___

AIR HOCKEY

Brunswick

SL2		START 2			SR2			5 V
x		x	x		x			
LLP	SL1	LRP		RLP	SR1	SR5	SR3	RRP	ON OFF
SL5 SL3	START 1			SR5				
x x x	x	x x x x		x	x x		x	
SL4				SR4				
x				x				
SL6	SL7	COIN		SR6		SR7		POWER
x	x	x		x		x x		ON OFF

1. Insert 169A card into program "A" connector, number side up.

2. Connect 169 LED board to AIR HOCKEY control board connectors "B" and "C", orange dot up.

3. Connect 15 pin molex connector to AIR HOCKEY control board connector "D", with orange dot up.

4. Connect 12 pin molex connector to AIR HOCKEY control board connector "A", with orange dot up.

5. Push POWER switch to ON.

   Do Not Put 5v on.

6. Push COIN switch once. PS (Puck Solenoid) and BL (Blower). LED'S will be illuminated on 169A program card. (Both LED'S on program A card will be illuminated when testing TRIAC board. BL LED does not illuminate on RELAY type control board since remote relay is controlled by PUCK SOLENOID circuitry. On RELAY board only PS LED will illuminate).

7. SR1 is "C" score PUCK switch. Push SR1 slowly to count seven scores. All LED'S will be lit on 169 card, BL and PL will go out. Approximately 20 to 30 seconds after all LED on 169 card are lit they will extinquish.

8. Push COIN switch once more. SR3 is "B" score PUCK switch. Step through score the same as instruction 7.
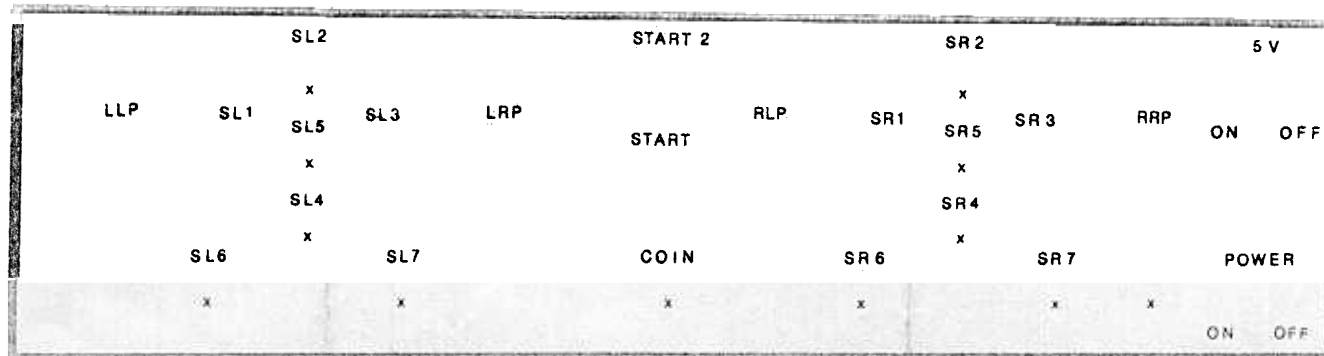
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Operating Instructions
For Model ___170 A, B & C___
CRASH 'N SCORE

Atari

		SL2			START 2			SR2			5 V
		x						x			
LLP	SL1	SL5	SL3	LRP		RLP	SR1	SR5	SR3	RRP	ON OFF
					START						
		x						x			
		SL4						SR4			
		x						x			
	SL6		SL7		COIN		SR6		SR7		POWER
x			x		x		x		x	x	ON OFF

1. Insert 170 A card into program "A" connector with number side up.

2. Insert 170 B card into program "B" connector with number side up.

3. Insert 170 C or 22 pin EXTENDER card into 25 pin connector on test fixture with number side up.

4. Insert computer board into extender or 170 C card connector.

5. Connect a speaker to red wires A1 and A2. Speaker commons to black wire (GND) on 170 A card.

6. Push POWER switch to ON.

7. Push COIN switch once for 1 player, twice for 2 player.
    LED next to START 1 will light for 1 player.
    LED next to START 2 will light for 2 player.

8. Push START 1 switch for 1 player or START 2 for 2 player.

9. Select barriers on every other play by moving 170 A card switch to position 2, no barriers position 1.

10. Cars can be turned one at a time only. Select car to be turned with switch labled car 1, car 2 on 170 A card.

11. SL5 turns car to left
    SR5 turns car to right
    SL6 is GAS for left car (white car).
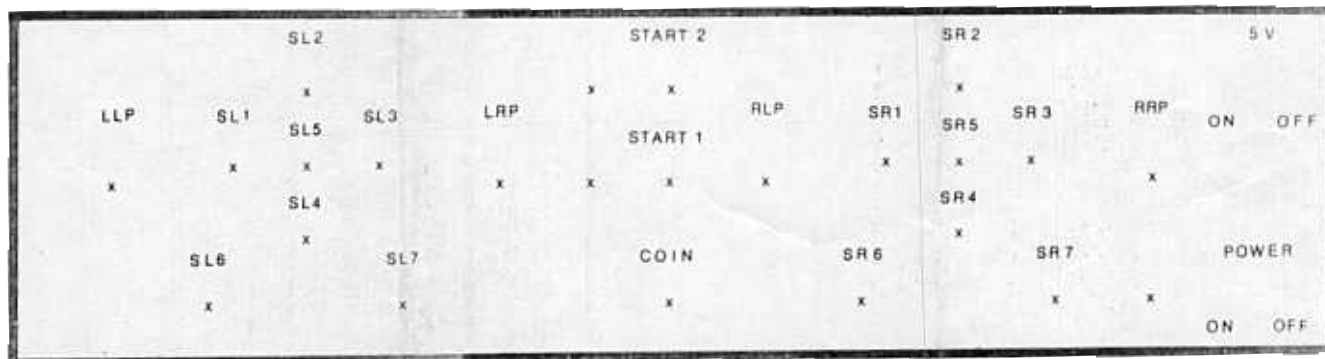   SR6 is GAS for right car (dark car).

Operating Instructions
For Model _____ 171 A & 171 B

JET FIGHTER

Atari

1. Insert 171 A card into program "A" connector, with number side up.

2. Insert 171 B card into program "B" connector, with number side up.

3. Insert 22 pin double readout extender card with red dot up into 25 pin connector on test fixture.

4. Insert computer board into extender card.

5. Connect a speaker to each red wire on 171 A card and the other end of speakers to black wire. (COMMON GND)

   Do not use 5V

6. Push COIN once for 1 player, twice for   player.

7. Push START 1 for 1 player, START 2 for 2 player.

8. WHITE JET CONTROLS ARE:
   SR1 is turn right
   SR3 is turn left.
   SR2 is slow
   SR4 is fast
   SR5 is fire cannon

9. Black Jet CONTROLS are

   SL1 is turn left
   SL3 is turn right
   SL2 is slow
   SL4 is fast
   SL5 is fire cannon

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Operating Instructions
For Model _179 A_

STEEPLECHASE

Atari

```
        SL2                    START 2              SR2                   5 V
              x              x    x                    x
 LLP    SL1        SL3    LRP           RLP    SR1    SR5   SR3    RRP   ON   OFF
            SL5             START 1                                    
  x           x   x   x         x    x    x       x    x   x       x
            SL4                                        SR4
                                                        x
       SL6        SL7            COIN          SR6          SR7         POWER
         x          x             x            x            x    x
                                                                      ON   OFF
```

1. Insert 179 A card into program "A" connector, number side up.

2. Insert 179 B card into program "B" connector, number side up.

3. Connect speaker to RED and BLACK wires on "B" program card.

4. Insert computer board into test fixture using 22 pin orientation.

5. Push POWER switch to ON.

6. Push COIN switch once for 2 players, twice for 4 players, three
    times for 6 players.
    LED 1-4 is for horses 1 and 4 - LED'S are on 179A card
    LED 2-5 is for horses 2 and 5
    LED 3-6 is for horses 3 and 6

7. Push START 1 switch once.

8. SR1 is JUMP switch 1   SR4 is JUMP switch 4
    SR2 is JUMP switch 2   SR5 is JUMP switch 5
    SR3 is JUMP switch 3   SR6 is JUMP switch 6