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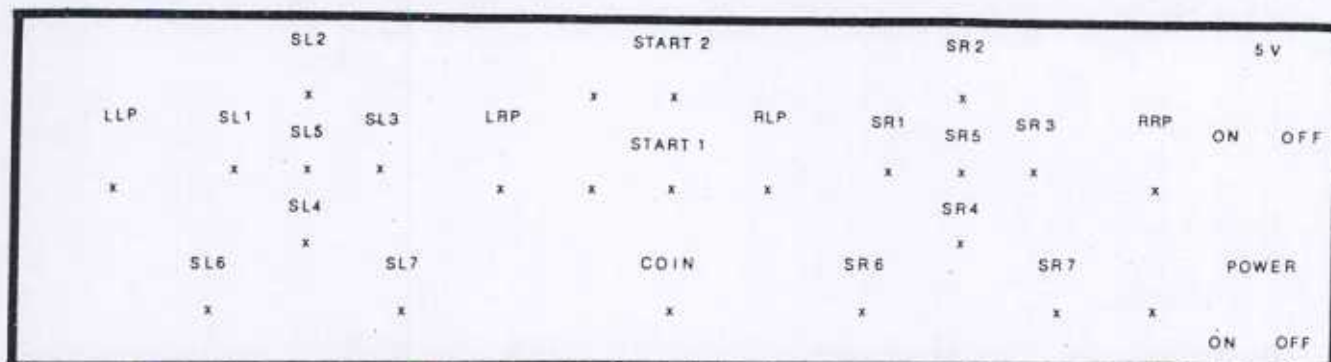
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Telephone (513) 296-0330

Operating Instructions For Model _____ 180 A, B _____

AVENGER

Electra

1. Insert 180 A card into program "A" connector, number side up.

2. Insert 180 B card into program "B" connector, number side up.

3. Connect remote 22 pin connector from 180 B card to sound module with orange dot facing up. Also connect a speaker across two red wires located on 22 pin connector. (Computer board will not operate with sound module disconnected.)

4. Insert computer board into TEST FIXTURE.

5. Push POWER switch to ON.

6. Push 5 VOLT switch to ON.

7. Push COIN switch once.

8. Push START 1 switch once.

9. RRP is plane movement control, R (right) and L (left) DRIFT controls are on 180 A program card.

10. AFTERBURNER control is SR6, down for FAST.

11. GUN BUTTON is SR5.

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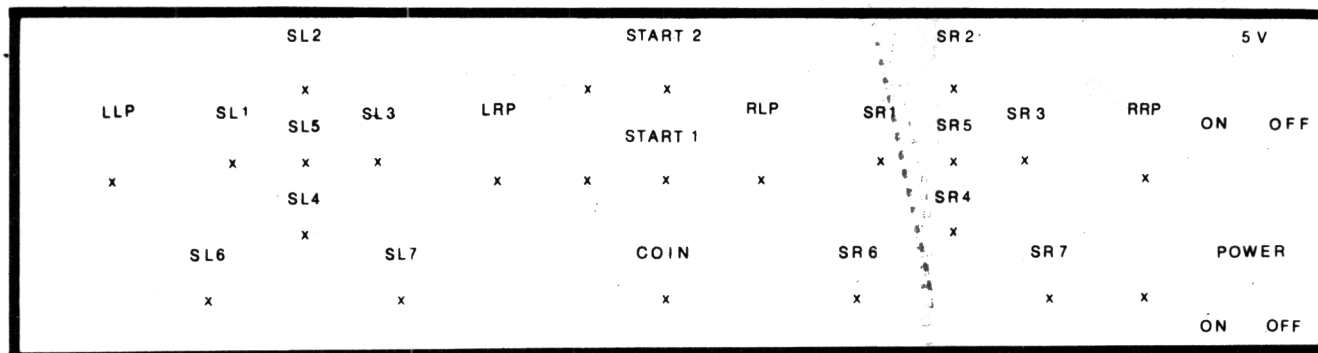2876 Culver Ave.
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Operating Instructions
For Model ___ 181 A, B

JAWS

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                 SR5 SR3
       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 181A card into program "A" connector, number side up.

2.   Insert 181B card into program "B" connector, number side up.

3.   Insert game board into test fixture using 22 pin orientation.

4.   Connect 8 ohm speaker to 181A card RED and BLACK wires.

5.   Push POWER switch to ON.

6.   Push COIN switch once, CREDIT LED will indicate on 181A card.

7.   Push START 1 switch once.

8.   SR1 is DIVER LEFT
      SR3 is DIVER RIGHT
      SR2 is DIVER UP
      SR4 is DIVER DOWN
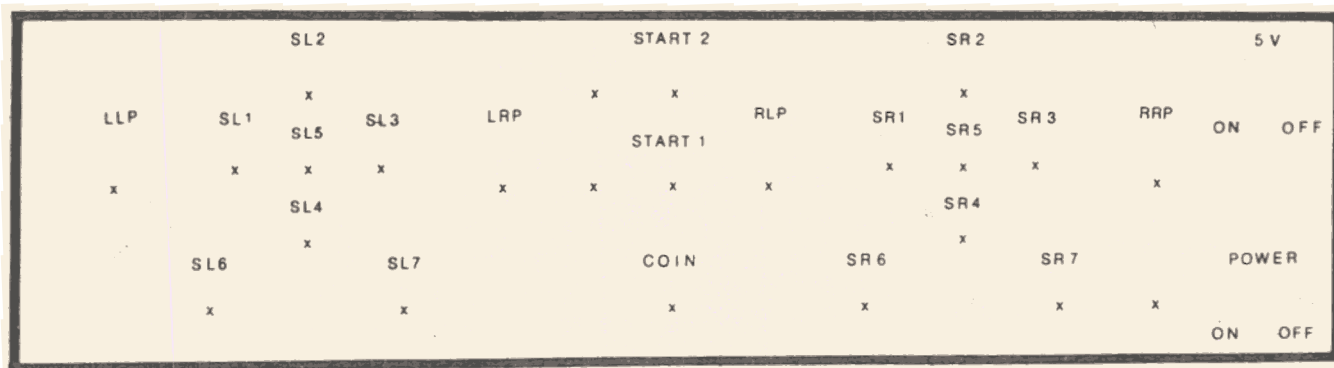
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Operating Instructions

For Model ___ 182 A, B, C

DEMOLITION DERBY & DEATH RACE

Chicago Coin

	SL2			START 2		SR 2		5 V
	x				x			
LLP	SL1	SL5 SL3	LRP	x x RLP	SR1 SR5	SR 3	RRP	ON OFF
				START 1				
x	x x x		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 182A card into program "A" connector, number side up.

2. Insert 182B card into program "B" connector, number side up.

3. Insert 182 C card into Test Fixture with number side up.

4. Insert Computer Board into 182C card 22 pin connector.

5. Connect 6 pin molex connector to computer board with red dot up.

6. Connect a 8 OHM speaker across A1 pair of wires and also across the A2 pair.

7. Push POWER switch to ON.

8. Push 5 VOLT switch to ON.

9. Push COIN switch once for 1 player, twice for 2 players.

   Push START 1 switch once.

   SR5 is car turn right
   SL5 is car turn left
   Switch on 182B card selects which car can be turned. Car 1 is left side and Car 2 is right side.

   SL6 is GAS for CAR 1 (Slow Speed).   SR6 is GAS for CAR 2 (Slow Speed).
   SL7 is GAS for CAR 1 (Fast Speed).   SR7 is GAS for CAR 2 (Fast Speed).

13. SL4 is REVERSE car 1.
    SR4 is REVERSE car 2.
    GAS must be pushed simultaneously with REVERSE switch to put car in motion.

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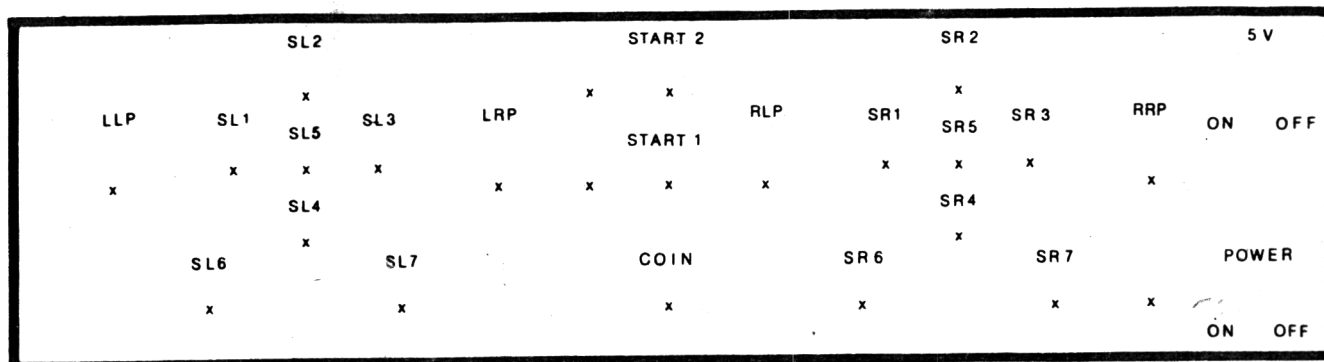Electronics Division
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Operating Instructions
For Model 182 *(see below)
DEMOLITION DERBY, DESTRUCTION DERBY, DEATH RACE

CHICAGO COIN/Exidy

```
              SL2                         START 2                    SR 2                        5 V
               x                        x       x                     x
  LLP    SL1       SL3        LRP                        RLP    SR1       SR 3       RRP     ON    OFF
         SL5                                                    SR5
                                        START 1
               x     x    x                                     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 182A card into program "A" connector, number side up.

2. Insert 182B card into program "B" connector, number side up.

3. Insert 182C card into test fixture with number side up, for DEMOLITION DERBY.
    Use 191C card for DESTRUCTION DERBY AND DEATH RACE 1st production run.
        If mirror image on edgeboard connector of 2nd production run
        of DEATH RACE, use 182D card with extender cable twisted 180°
        to get correct orientation. (RED DOT up on 22 pin connector)

4. Insert game board into appropriate adapter board.

5. Connect 6 pin molex connector to DEMOLITION DERBY. Use 191D adapter board
    plugged into molex connector for DESTRUCTION DERBY AND DEATH RACE.

6. Connect a 8 OHM speaker across A1 pair of wires and also across the A2 pair.

7. Push POWER switch to ON.   *Death Race -098 uses 182A, 182B, 182D
                                      *Demolition Derby uses 182A, 182B, 182C
8. Push 5 VOLT switch to ON.   *Destruction Derby uses 182A, 182B, 191C, 191D

9. Push COIN switch once for 1 player, twice for 2 players.

10. Push START 1 switch once.

11. SR5 is car turn right.
     SL5 is car turn left
     Switch on 182B card selects which car can be turned. Car 1 is left side and
     Car 2 is right side.

12. SL6 is GAS for CAR 1 (Slow Speed).   SR6 is GAS for CAR 2 (Slow Speed).
     SL7 is GAS for CAR 1 (Fast Speed).   SR7 is GAS for CAR 2 (Fast Speed).

13. SL4 is REVERSE car 1.   GAS must be pushed simultaneously with REVERSE
     SR4 is REVERSE car 2.   switch to put car in motion.

PG.   OF

182 A, B, C

DEMOLITION DERBY

Chicago Dynamics

SERVICE BULLETIN

Program Card No. 182 for Demolition Derby is also used for:

Exidy's   Destruction Derby   (old number)   191

Exidy's   Death Race 098   (old number)   212

Operating Instructions For Model 185 A, B, C

GUN FIGHTER

Midway

```
        SL2                    START 2                      SR2                    5 V

              x                       x      x                     x
LLP      SL1      SL3          LRP                   RLP      SR1      SR3      RRP
        SL5                          START 1              SR5                        ON    OFF

    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
```
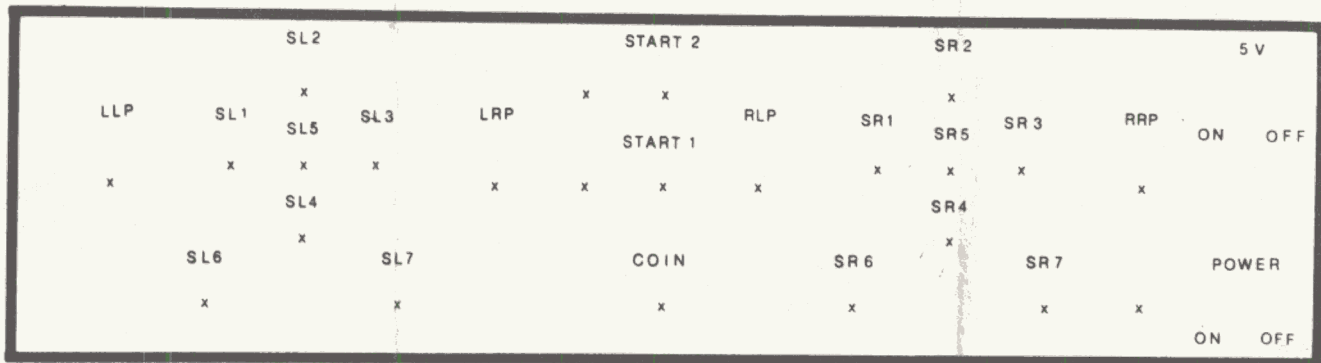
1. Insert 185 A card into program "A" connector, number side up.

2. Insert 185 B card into program "B" connector, number side up.

3. Insert 185 C card into test fixture with number side up.

4. Insert computer board into 185 C card connector.

5. Connect a speaker to each red wire and black wire (common ground) on 185 A program card.

6. Push POWER switch to ON.

7. Push 5 VOLT switch to ON.

8. Push COIN switch once.

9. Push START 1 switch once.

10. Start 2 switch is TILT.

11.

SL 1	Left man left	SR 1	Right man left
SL 2	Left man up	SR 2	Right man up
SL 3	Left man right	SR 3	Right man right
SL 4	Left man down	SR 4	Right man down
SL 5	Gun Trigger	SR 5	Gun Trigger
SL 6	Left man arm down	SR 6	Right man arm down
SL 7	Left man arm up	SR 7	Right man arm up

RIGHT GUN - Connect to ground pins 11 and 15, on vertical mounted

control board, then push SR6. Right gun and bullet

will be in sync.

LEFT GUN - Connect to ground pins 12 and 16, on vertical mounted

control board, then push SL6. Left gun and bullet will
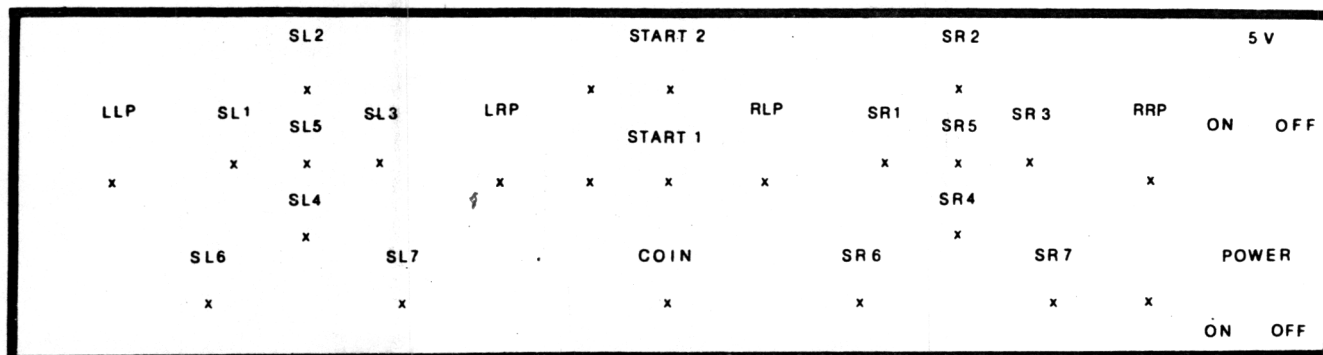
be in sync.

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```
            SL2              START 2              SR 2              5 V
             x                                     x
LLP    SL1        SL3    LRP     x    x      RLP  SR1      SR 3    RRP
             SL5                                  SR5                   ON    OFF
                             START 1
       x    x    x                          x    x    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 186B program card into "B" connector, number side up.

2. Insert 186A program card into "A" connector, number side up.

3. Connect 94360-P GUN BOARD to remote connector on 186A program card.

4. **Insert 186C EXTENDER board into TEST FIXTURE.**

5. Connect GAME BOARD into 186C 72 pin connector.

6. Connect 186D card to 56 pin connector on GAME BOARD. Connect RED (+5 VOLTS)
    and BLACK (GND) wires to LOOPS ON 186C card.

7. Push 5 VOLT switch to ON.

8. Push POWER switch to ON.

9. Push COIN switch once for 1 player, 1 LED will illuminate on 186C card. Push
    twice for 2 player, 2 LED will illuminate.

10. Push START 1 switch once.

11. #1 Player controls are: (#1 BULLET MARK IS ✗)

     LLP is horizontal gun movement.   (Centering pots on 94360-P card)
     LRP is vertical gun movement.
     SL5 is gun trigger button.
     INDICATORS on 186D card are: MI LED is motor control circuit working
                                    HIT LED will illuminate when BULLET MARK hits
                                    any target. If any of the 4 types of targets
                                    are hit and HIT LED does not light that par-
                                    ticular part of the circuit is at fault.

     #1 PLAYER scoring is on 186D card.

12. #2 PLAYER controls are: (#2 BULLET MARK IS ─⊕─)

    RRP is vertical gun movement. (Centering pots on 94360-P card)
    RLP is horizontal gun movement.
    SR5 is gun trigger button.
    INDICATORS on 186D card are: M2 LED is motor control circuit working.
                                      HIT LED will illuminate when BULLET MARK hits
                                      any target. If any of the 4 types of targets
                                      are hit and HIT LED does not illuminate that
                                      particular part of the circuit is at fault.

    #2 PLAYER scoring is on 186D card

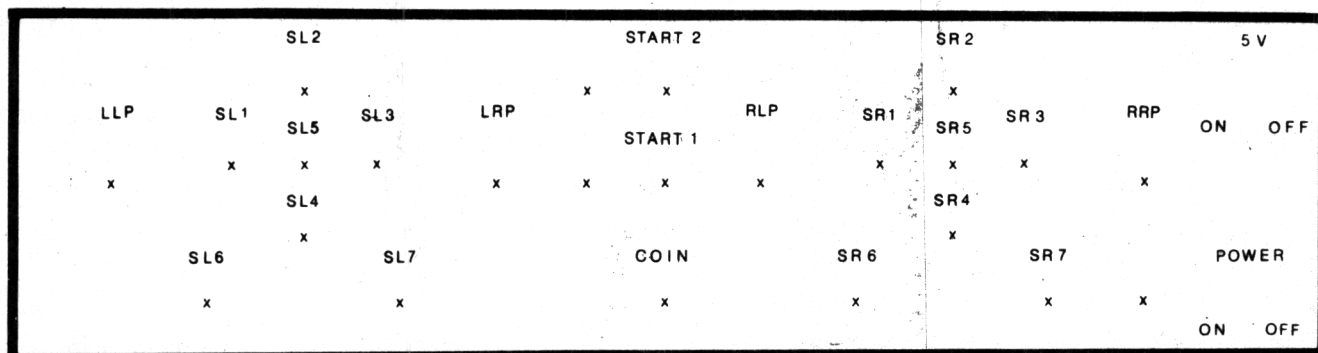13. START 2 is TILT switch.

Operating Instructions
For Model _____

187 A & 187 B

FIREPOWER

ALLIED

		SL2			START 2				SR 2			5 V
		x			x	x			x			
LLP	SL1	SL5	SL3	LRP			RLP	SR1	SR5	SR 3	RRP	ON OFF
	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 187 A card into program "A" connector, number side up.

2. Insert 187 B card into program "B" connector, number side up.

3. Insert audio module into 18 pin remote connector with red dot facing up.

4. Insert computer board into test fixture.

5. Connect speaker across red leads on 18 pin remote connector. (DO NOT CONNECT SPEAKER TO GND).

6. Push power switch to on.

7. Push 5 volt internal switch to on.

8. Push COIN switch once.

9. Push START 1 switch once.

10. Speed control is SR6, SLOW & FAST conditions for test purposes only. (Game has variable speed control).

11. Gun button is SR5

12. Tank movement (DRIFT) is RRP. Left (L) and right (R) trimmer adjustments are on 187 A program card.

Operating Instructions

For Model ___189 A___

___FLIM-FLAM   4 Ply___

___Meadows___

		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
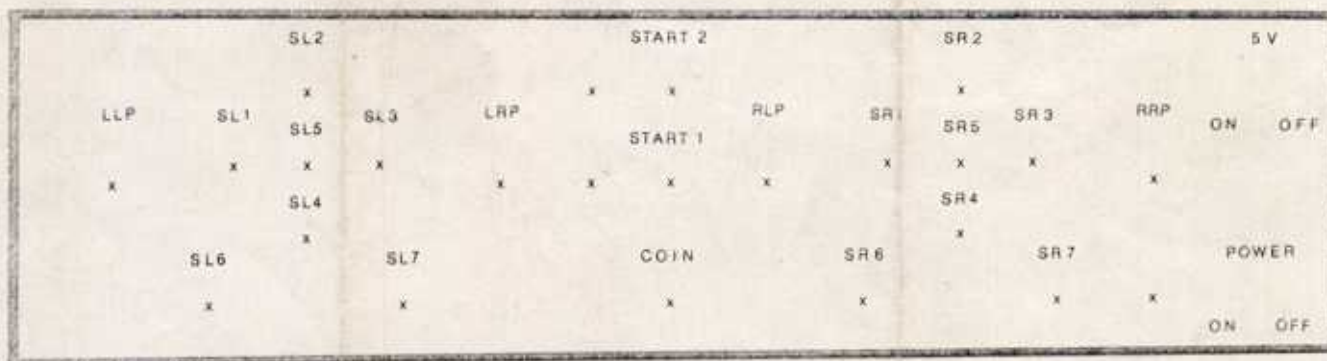
1. Insert 189 A card into program "A" connector, number side up.

2. Insert computer board into test fixture using 22 pin orientation.
   (CAUTION: Line up fingers with connector properly).

3. Push POWER switch to on.

4. Push 5 VOLT internal switch to on.

5. Push COIN switch once for 2 PLY, twice for 4 PLY.

6. START game and select paddle size by pushing:
   SR1 - NOVICE   — OR GAME SELECT
   SR2 - EXPERT
   SR3 - PRO

7. RRP is right paddle vertical motion.
   RLP is right paddle horizontal motion.
   LRP is left paddle horizontal motion.
   LLP is left paddle vertical motion.

8. SR5 is right player ball speed switch.
   SL5 is left player ball speed switch.

9. To check 4 PLY circuits completely, switch paddles in right and left
   lower quadrants to upper quadrants by moving switches to 4 PLY on
   189 A program card.

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```
         SL2                        START 2                    SR 2                          5 V
          x                      x      x                       x
  LLP    SL1    SL3        LRP                   RLP      SR1   SR5   SR 3      RRP      ON    OFF
         SL5                          START 1                  SR3
                 x      x                                       x
   x            x     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
```
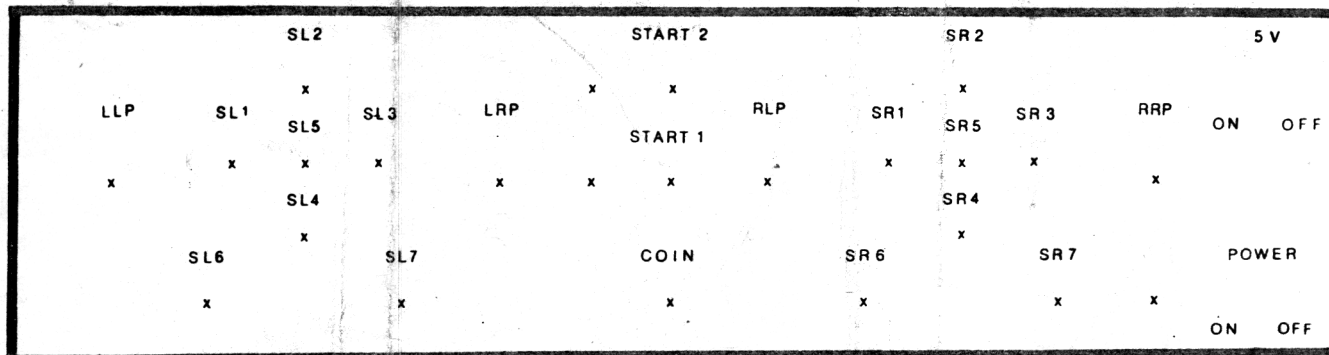
1. Insert 192A card into program "A" connector, number side up.

2. Insert 185B card into program "B" connector, number side up.

3. Insert 185C extender card into test fixture, number side up.

4. Insert computer board into 185C extender card.

5. Connect 12 pin and 22 pin molex edgeboard connectors to vertical computer board with orange dot facing on component side.

6. Connect rectangular 12 pin AMP connector to sound board. (Game will operate without sound board.) Connect a speaker across two RED wires.

7. Push 5 VOLT switch to ON.

8. Push POWER switch to ON.

9. Push START 2 once for COMPUTER RESET.

10. Push COIN once.

11. Push START 1 once.

12. SR1 thru SR5 will exercise all opto-isolator inputs which control torpedo firing locations. Any combinations of SR1 thru SR5 will give different firing locations.

13. To fire torpedos, SR1 thru SR5 must be held down before pushing firing switch SR6.
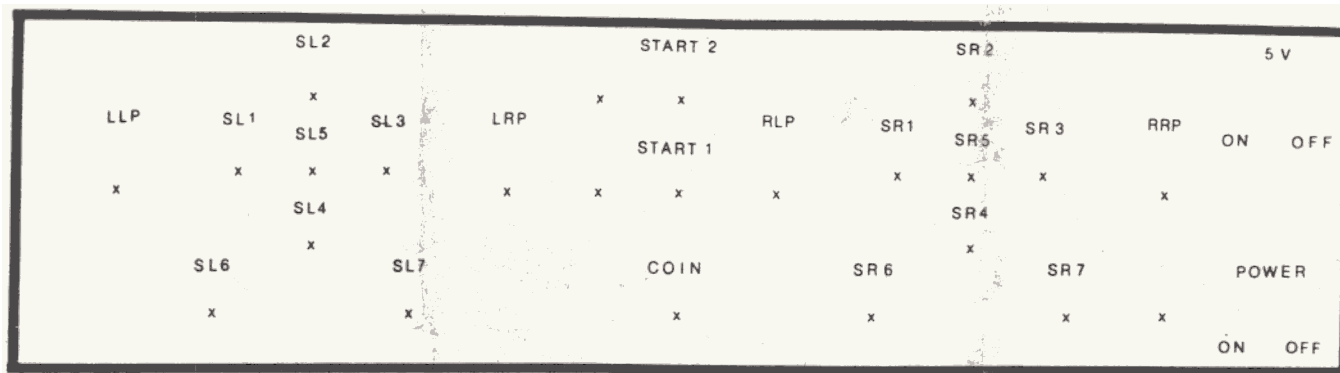
14. To ERASE high score push SR7.

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Operating Instructions
For Model ___193 A, B and C___
ROWE/AMI
___Credit Computer (R-80 & R 80S)___

1. Insert 193 A card into program "A" connector, number side up.

2. Insert 193 B card into program "B" connector, number side up.

3. Insert 193 C card with cables into test fixture with number side up.

4. Connect R-80 or R-80S using ribbon cable (R-80) or plaited cable (R-80S). CAUTION: ONLY ONE AT A TIME.

5. Turn 5V switch on fixture to "ON".

6. Turn Power to "ON".

7. Press start "1" to clear counters.

8. SR-1   5¢
   SR-2   10¢
   SR-3   25¢
   SR-4   50¢
   SR-5 $1.00

9. SR-7 is standard/premium cancel.

10. Hold SR-6 down then pulse SR-7 for premium credit cancel (601-66666
                                                                601-07593).

11. Hold SL-7 down then pulse SR-7 for premium credit cancel (601-07674)

12. SC LED = Standard credit lamp
    ASC LED = Standard credit (R-80-S)
     PC LED = Premium credit lamp
    APC LED = Premium credit (R-80-S)

13. Credit LEDS 1, 2, 4, 8, 16 and 32 are read by adding values of LEDS on
    X 5¢:   5d   10d   20d   40d   80d

	1	2	4	8	16	32		
	●	O	O	O	O	O	=	5¢
	O	●	O	O	O	O	=	10¢
	●	O	●	O	O	O	=	25¢
	O	●	O	●	O	O	=	50¢
	O	O	●	O	●	O	=	$1.00

NOTE: Start 1 clears counters but <u>does not</u> clear computer.
        To clear computer turn power to off, wait about five
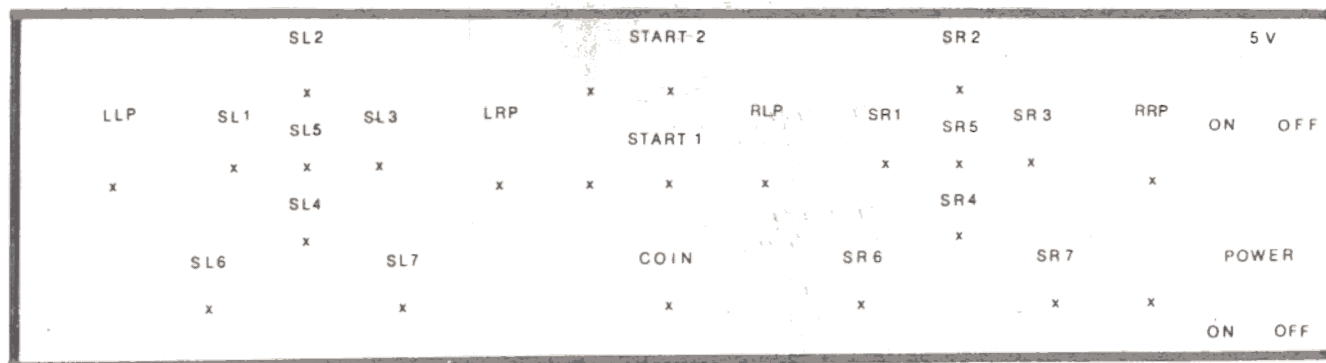   seconds then turn POWER back on.

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Operating Instructions
For Model ___195 A___

CKIDZO

Meadows

		SL2			START 2			SR2			5 V
		x		x	x			x			
LLP	SL1	SL3	LRP			RLP	SR1	SR3	RRP	ON	OFF
		SL5			START 1			SR5			
	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 195 A card into program "A" connector, number side up.

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

3. Push POWER switch to ON.

4. Push 5 VOLT switch to ON.

5. Push COIN switch once for 2 players, twice for 4 players.

6. SR 1 is NOVICE start.
   SR 2 is EXPERT start.
   SR 3 is PRO start.

7. RRP is WHITE vertical paddle.
   RLP is WHITE horizontal paddle.
   LRP is BLACK horizontal paddle.
   LLP is BLACK vertical paddle.

   NOTE: When in 4 player mode we can exercise the other
   two paddles by switching to 4 PLY on 195 A program
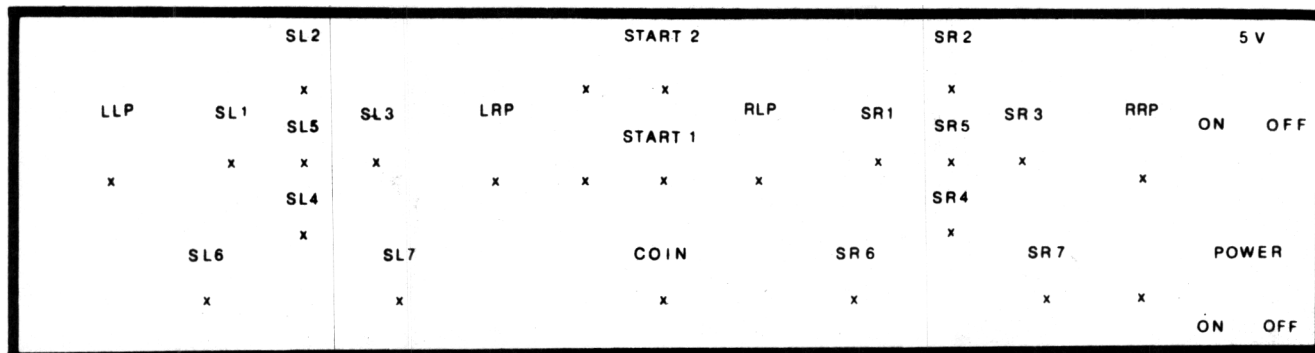   card.

8. SR 5 is WHITE speed.
   SL 5 is BLACK speed.

Operating Instructions
For Model ___ 196 A, C

STUNT CYCLE

ATARI

	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		x	
x		SL4								SR4				
		x								x				
	SL6		SL7			COIN		SR6			SR7			POWER
	x		x			x		x			x	x		
														ON OFF

1. Insert 196A card in "A" program connector, number side up.

Insert 196C extender card in game board connector, number side up.

Insert game board into 196C extender card.

4. Connect speaker to red and black wire coming off 196A card.

Turn power switch to "ON".

6. Push coin once or twice for one or two player

7   Push start 1 or 2 depending on which LED is lighted.

RLP is throttle.

NOTE: If hum bars are evident connect grounds from game
       board to monitor - disconnect shield from fixture
       to monitor. Check DC voltage across 8000 MFD capacitor
       on game board. If less than 7.8 volts the line voltage
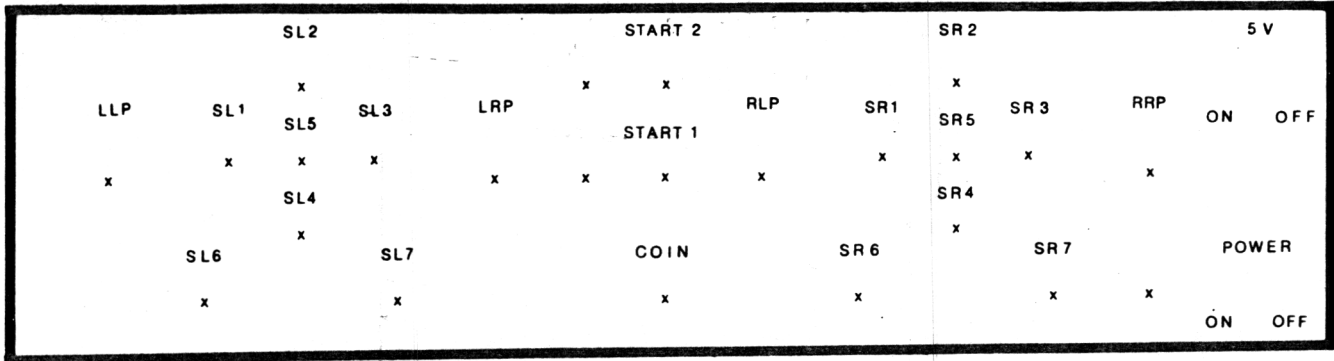   is low.

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Operating Instructions

For Model 197 A

BOMBS AWAY

Meadows

```
    SL2              START 2          SR 2              5 V
     x            x     x              x
LLP    SL1   SL3    LRP        RLP   SR1  SR3   RRP   ON   OFF
        SL5                         SR5
            x   x   x    START 1        x   x   x        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 197 A card into program "A" connector, number side up.

2. Connect speaker across two red wires on 197 A card.

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

4. Push POWER switch to ON.

5. Push 5 VOLT switch to ON.

6. Push COIN switch once.

7. Push START 1 switch once.

8. SR 5 is BOMP DROP.

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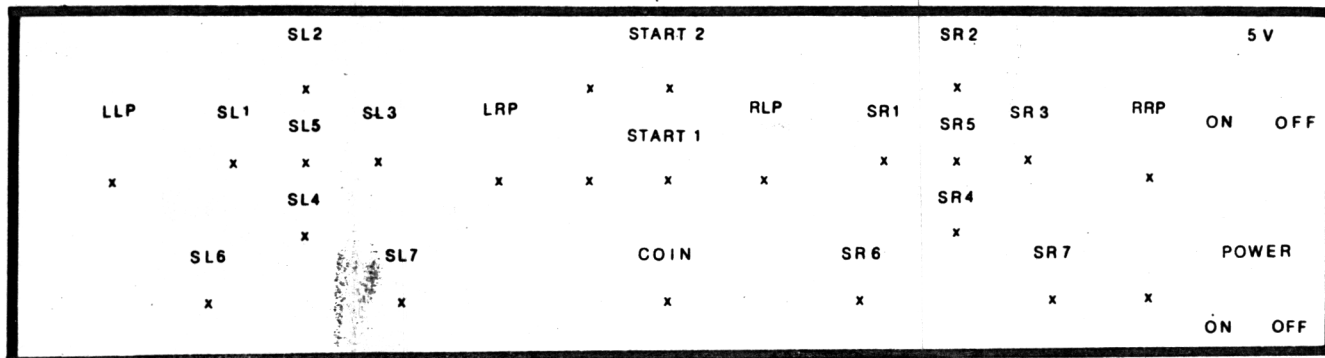2876 Culver Ave.
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```
        SL2                      START 2              SR2                    5 V
         x                    x      x                 x
LLP      SL1    SL3     LRP                   RLP  SR1  SR5  SR3      RRP   ON   OFF
         SL5                         START 1           
 x        x      x      x                         x    x    x
                               x     x     x    x              x
        SL4                                            SR4
         x                                             x
   SL6        SL7                 COIN        SR6          SR7        POWER
    x          x                   x           x           x    x
                                                                  ON   OFF
```

1. Insert 198 A card into program "A" connector, number side up.

2. Connect OUTLAW or QUAK gun to 198 B card, then insert card into program "B" connector, number side up.

3. Insert game board into 25 pin connector using 22 pin orientation.

4. Connect 8 ohm speaker to RED and BLACK wires on 198 B card.

5. Push COIN switch once, CDT (credit) LED will come on 198 B card.

6. Push START 1 switch once.

7. Push SR6 for MEDIUM DIFFICULTY, MD LED.
   Push SR7 for HARD DIFFICULTY, HD LED.

8. GUN OPTICS LENS must be touching GUN LED for BAD GUY to come out after COIN and START.

9. SR5 is GUN TRIGGER. (POINT GUN AT BAD GUY)
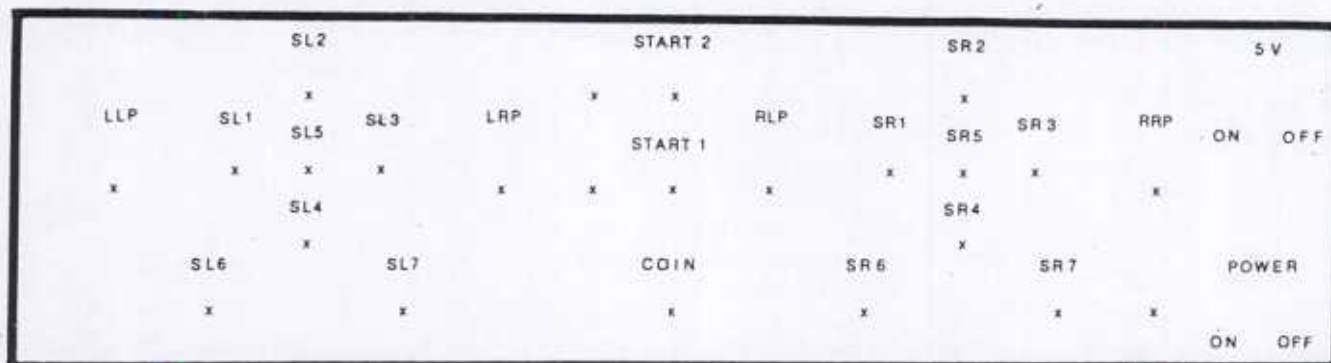
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Operating Instructions
For Model ___ 199 A, B

PRINCESS

PMC

```
        SL2                    START 2              SR2                        5 V
         x                       x                   x
LLP   SL1    SL3      LRP    x    x      RLP    SR1  SR5   SR3      RRP   ON    OFF
      SL5                       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 199 A card into program "A" connector, number side up.

2. Insert 199 B card into program "B" connector, number side up.

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

4. Push POWER switch to ON.

5. Push 5 VOLT switch to ON.

6. Push COIN once for 2 players, twice for 4 players.

7. Push START 1 once.

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

9. Game select switch is on 199 A program card.
    H is HOCKEY
    T is TENNIS