

Components identified by shading have special characteristics important to safety and should be replaced only with identical types.

Self-Test Procedure Part 1 **Operator Information Display**

Instruction

switches.*

6. Activate SLAM

The information below is displayed on the screen if you set the self-test switch to on during the attract mode. Look at the displayed numbers for SECONDS ON and SECONDS PLAYED. If these numbers run together vertically, make adjustments to the X-BIP and Y-BIP potentiometers on the game PCB.

To go to Self-Test Part 2, rotate the control knob until the message PRESS FIRE AND ZAP FOR SELF-TEST appears on the video display. Then press both FIRE and SUPERZAP. To end the operator information display, set self-test switch to off.

To erase High Score Table: 1. Turn control knob until top line reads PRESS FIRE AND

START 2 TO ZERO HIGH SCORES. 2. Press both FIRE and START 2.

3. The word *ERASING* appears and blinks on the screen until the entire table is erased. Wait until the word ERASING disappears before continuing with other tests.

To erase Game Times: 1. Turn control knob until top line reads PRESS FIRE AND

START 1 TO ZERO TIMES. Press both FIRE and START 1

3. The word ERASING appears and blinks on the screen until the entire table is erased. Wait until the word ERASING disappears before continuing with other tests.

Self-Test Procedure Part 2

1. Set self-test switch to on (see Figure 5). Press RE- SET on the PCB, or turn power off and on again.	After about 5 seconds, the monitor displays the picture below. No sounds are produced.	RAM FAILURE is indicated by a sequence of 1 to 12 tones half of screen. You will hear a short low tone and see a should pushbutton for each good RAM chip, and a long high tone pulse on the start pushbutton for a failing RAM chip. The tending RAM. To restart the sequence, press RESET on the Potent to on again. Identify the bad RAM chip with the table blow tones followed by a long high tone indicates failure of	ort flash on the LED star be accompanied by a long est stops with the first fail CB, or power game to off below. Example: four shor
		Bad RAM Chip Location	
		Long High Tone	on Analog Vector-Ge

	Bad RAM Chip Location	
Long High Tone		on Analog Vector-Genera PCB
1st	R2	
2nd	P2	
3rd	R4	
4th	P4	
5th	M3	
6th	M4	
7th	L3	
8th	L4	
9th	K3	
10th	K4	
11th	J3	
12th	J4	

Test Fails

ROM FAILURE is indicated by a vertical pair of hexadecimal numbers on the top of the screen. The top number indicates the location of the failing ROM(s). Ignore the bottom hexadecimal number in the pair. Identify the bad ROM with the table immediately

Displayed No.	Bad ROM Chip Location	PCB Location
В	R1	
A	P1	
9	M/N1	
8	L/M1	Analog Vector-
7	K1	Generator PCB
6	J1	
5	H1	
4	F1	
3	E1	
2	D1	
1	R3	
0	N/P3 *	

EAROM, Audio and Math Box Failure are indicated by a single letter in the center of the display. Identify the failure with the table below.

E	EAROM	C3 (Aux. PCB)
P	Audio 1	B/C2 (Aux. PCE
Q	Audio 2	C/D2 (Aux. PCI
R	RAM	See RAM test ab
M	Math Box * *	

PCB Location

*If this ROM is bad, you will hear a continuous low tone, and the program may be unable to display a screen image.

* * Math-box failure is explained in TM-195, Tempest Troubleshooting Guide.

2. Activate start, As switch activates, You will not hear a beep and 0 will remain on the screen for the defective switch. you'll near a beep and 0 changes to 1 on the

Displayed Letter

3. Rotate encoder The right hexadecimal Incorrect progression of numbers indicates encoder wheel harness wires were conwheel clockwise and number on the screen nected incorrectly. No number change indicates encoder wheel is bad or harness counterclockwise. will increase with wires are loose. counter clockwise motion, and decrease with clockwise mo-

4. Observe the Each frame corner Consult TempestTM Drawing Package to adjust video pots. white frame around should be within the outside of the ½-inch of each moniscreen.

tor bezel corner. 5. Activate SLAM A white cross hatch If display is not centered and symmetrical on the monitor, adjust video pots (see Tempest Drawing Package) on the main PCB. If character set is incorrect, check Vecpattern appears. A character set appears tor ROMs (see Troubleshooting Guide).

at the bottom of the screen.

> Horizontal and vertical Lines not crossing indicates video pot on main PCB needs adjusting (see Drawing lines cross in the cen- Package for procedure). No sound indicates failure of an audio amplifier and/or the ter of the screen displaying a large "plus"

four tones. Activate SLAM Tests purple, cyan, Use this pattern for tracking adjustments (see the Color X-Y Monitor Manual). yellow, white, green,

and intensity. Displays seven groups of vertical lines, each with right line the brightest and left line the dim-

8. Activate SLAM A checkerboard pat-Use this pattern for purity and convergence adjustments (see Color X-Y Monitor tern touches the sides Manual). and corners of the monitor. Rotate the

9. Activate SLAM A white frame is dis-Perform math-box signature analysis (see Troubleshooting Guide). played on the screen. switch.

10. When satisfied with test, set selftest switch to off position.

*Activate coin switches by inserting at least one coin in each coin slot. You will not trip the coin counters as long as you are in self-test.

sign. Audio I/O 1 and 2 alternate to produce

blue, and red for color

control knob to change color.

Self-Test Screens



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Sheet 1, Side A

DP-193-01 1st printing

Drawing Package Supplement

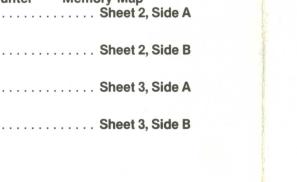
Tempest™/Cocktail

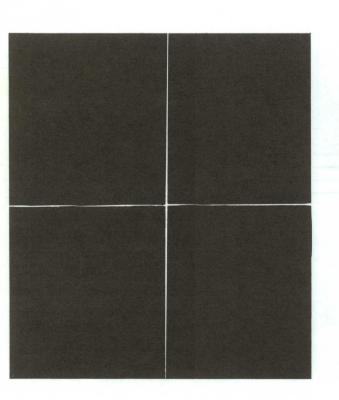
Operation, Maintenance, and Service Manual

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Contents of this Drawing Package

Self-Test Screens Self-Test Procedure 19-In. Wells-Gardner Color X-Y Monitor Sheet 1, Side A	
Color X-Y Power Supply Regulator/Audio II PCB Tempest Upright Wiring Diagram Coin Door	
Microprocessor Address Decoder Power Input Clock IRQ Counter Memory Map Power Reset and Watchdog Counter ROM Memory RAM MemorySheet 2, Side A	
X-Y Outputs Coin Counter and Video Invert Outputs Coin Door and Option Switch Inputs Color Outputs	
Vector Generator: Program Counter RAM ROM Data Shifter Data Buffer Address Selector Vector Timer State Machine State Machine State Machine	
Auxiliary PCB: Power Inputs Address Decoder Math Box High Score Memory Player Inputs and Audio Output	





Screen #4

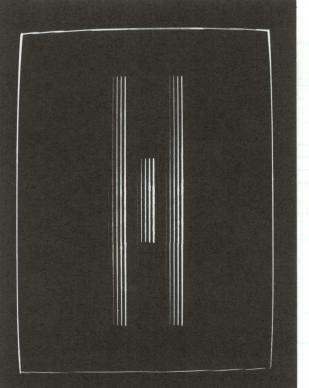
PRESS FIRE AND ZAP FOR SELF TEST

XIII BONUS ADDER (

AAA MEDIUM

€ MCMLXXX ATARI BONUS EVERY 2000 TS | COIN | PLAY

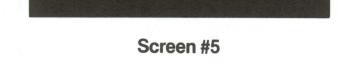
Screen #1

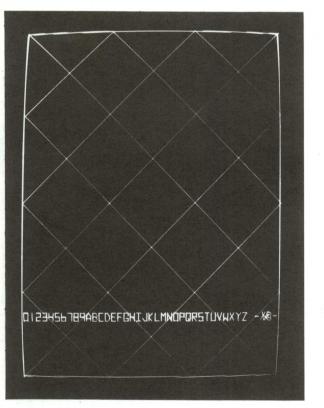


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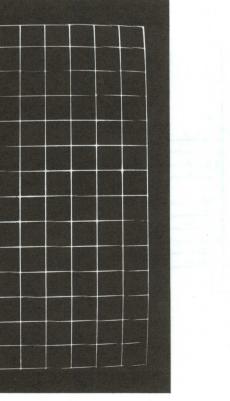
Screen #2





Screen #3

Screen #6





A Warner Communications Company

Screen #7