

BULLET MARK

OPERATION and SERVICE INFORMATION

SEGA

Sega of America

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THE SYMBOL FOR QUALITY ORIENTED ARCADE GAMES

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10. Trouble Shooting Guide

INTRODUCTION

The Sega Bullet Mark consists of a gun cabinet, T.V. Cabinet, connecting rail, T.V. monitor, printed circuit boards, inner-connected wiring and various circuit components. The T.V. monitor is a Motorola type XM701-10A. T.V. circuit problems can be solved by using standard T.V. trouble-shooting techniques. The Bullet Mark, because of its advanced solid state circuitry, will require very little maintenance other than cleaning, lubricating and T.V. monitor adjustment.

DESCRIPTION:

Four series of targets appear sequentially on a TV screen....balloons, tanks, pirates and jet aircraft. The easiest of the targets to hit are the balloons which are assigned a 7 point rating, followed by the tanks at 15 points, the pirates at 30 points and the jet aircraft at 45 points. For each hit, these points are recorded on a digital read out; for each miss, 1 to 3 points (depending upon the target series) is subtracted from the player's score. Perfect score is 979. When played as a two-player game, a score of 800 (can be adjusted to 600) by either player automatically extends game into an additional balloon series.

Machine guns can be fired in single shot or burst, complete with the recoil effect of the actual gun. Each player has his own set of bullet marks.

SPECIFICATIONS

Power Requirements — 120 volts — 60 hertz
 stand by — 170 watts — 2 amps
 maximum — 250 watts — 3 amps

Dimensions — gun cabinet — 40" wide x 48 " high
 t.v. cabinet — 33" wide x 41 " high
 set up — 40 " wide x 10 ' deep

Net Weight — gun cabinet — 250 lbs.
 t.v. cabinet — 100 lbs.
 connecting rail — 50 lbs.

Number of Players — 1 or 2 @ 25 cents per player

Game Time — Pre-set at approximately 65 seconds; can be adjusted to a maximum of 140 seconds (see page 8 for adjustment).

Fuses — 110 V line — 5 amp
 t.v. monitor — 1.5 amp
 5 volt — 5 amp
 6 volt — 1 amp
 13 volt — 5 amp
 audio — 2 amp

Lamps — No. 0.084A — 14 Volt
 No. 55 — 6 Volt

GENERAL SYSTEM DESCRIPTION

The Sega Bullet Mark consists of the following components.

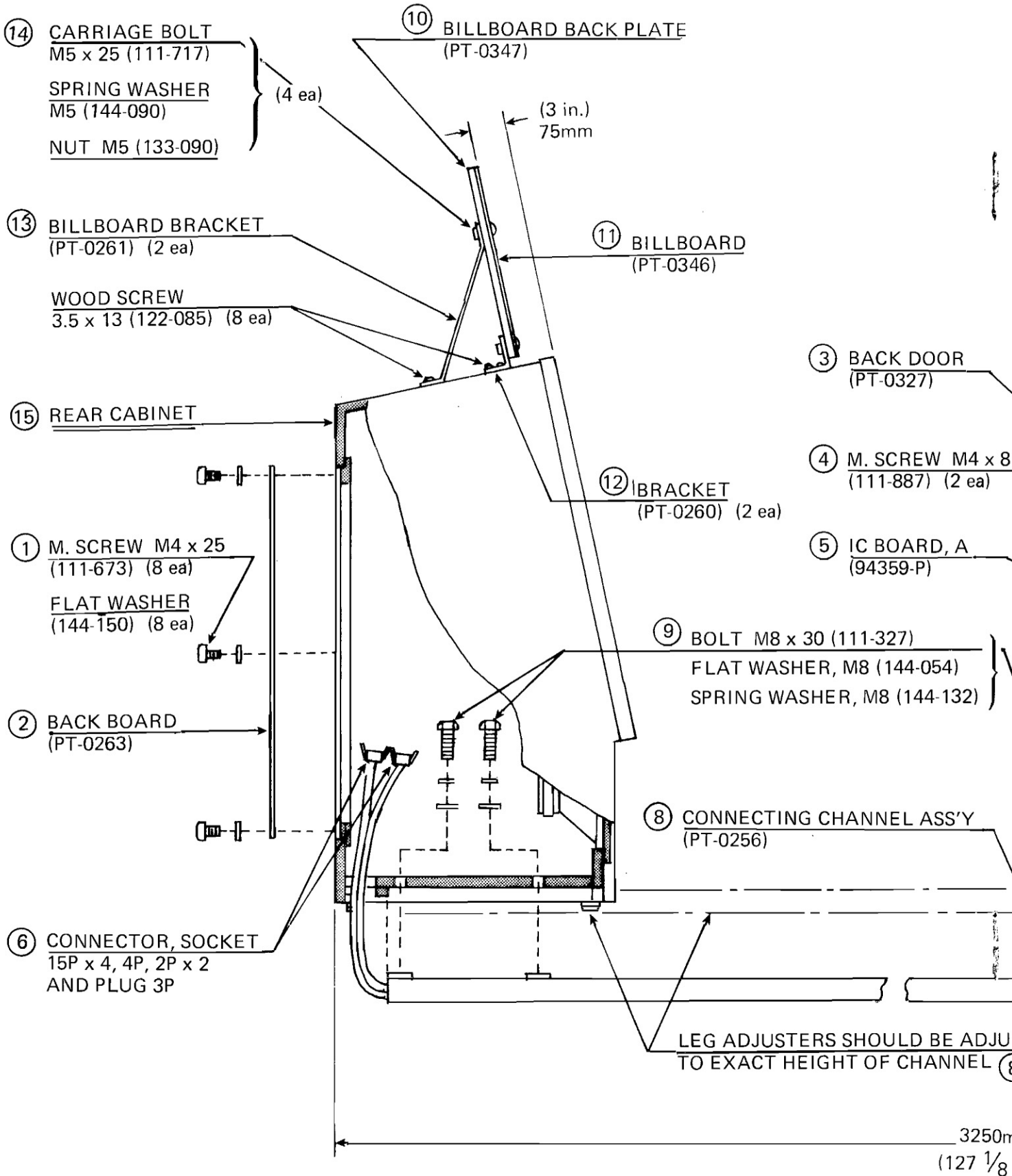
<u>Part Number</u>	<u>Quantity</u>	<u>Description</u>
PT-0321	1	Motor Drive Circuit PCB
PT-0295	1	Oscillator - PCB
PT-0286	2	Switch Unit - PCB
DB-4602	1	Power Amplifier PCB
94360X-P	1	A to D Converter PCB
PT-0298	1	Power Supply
94396X-P	1	Tone Generator PCB
94359X-P	1	Logic Board PCB
520001	1	Motorola TV Monitor Type XM 701-10A

INSTALLATION INSTRUCTIONS

1. Bullet Mark is contained in 3 cartons:
 - a. TV Cabinet
 - b. Gun Cabinet
 - c. Connecting Rail
2. Remove back door of gun cabinet. Keys are tied to guns. Remove coin box. All installation hardware, TV keys, and mounting feet are in this box.
3. Install 4 feet on gun cabinet and 4 feet on TV cabinet. Engage only three threads and adjust and lock as last item of installation.
4. Remove back door of TV cabinet and remove connecting cables. Doors are tacked with 4 screws. Extra screws are in coin box in gun cabinet. It is only necessary to tack back door with 4 screws, however, others are provided.
5. Set connecting rail in position in which game is to be located. Either end of rail can be used with each cabinet.
6. Push cable bundle through connecting rail from TV end. Cables are tied to help push bundle through. Do not thrust cable in channel.
7. Place TV Cabinet on end of rail and loosely inset one bolt into hole in rail, from inside of cabinet in bottom. Pull connectors through square holes in bottom and connect to matching colors in TV cabinet. Connect the short cable bundle to the TV Chassis.
8. Place gun cabinet on connecting rail and position with one bolt.
9. Pull cable through square hole in bottom of gun cabinet, cut cable ties on end, and connect to matching colors. There should be eight (8) cables to connect.
10. Install balance of bolts to connect both cabinets to rail and tighten.
11. Position power cord through TV cabinet square hole and out open end of rail.
12. Install both TV and gun cabinet doors.
13. Plug in and turn on power switch located at bottom left side of gun cabinet.
14. **IMPORTANT!!** A Serial number tag is affixed to the back of the TV cabinet. The same serial number is marked inside the gun cabinet on the shelf adjacent to the meter. It is best that the TV Cabinet and Gun Cabinet remain as matched sets.

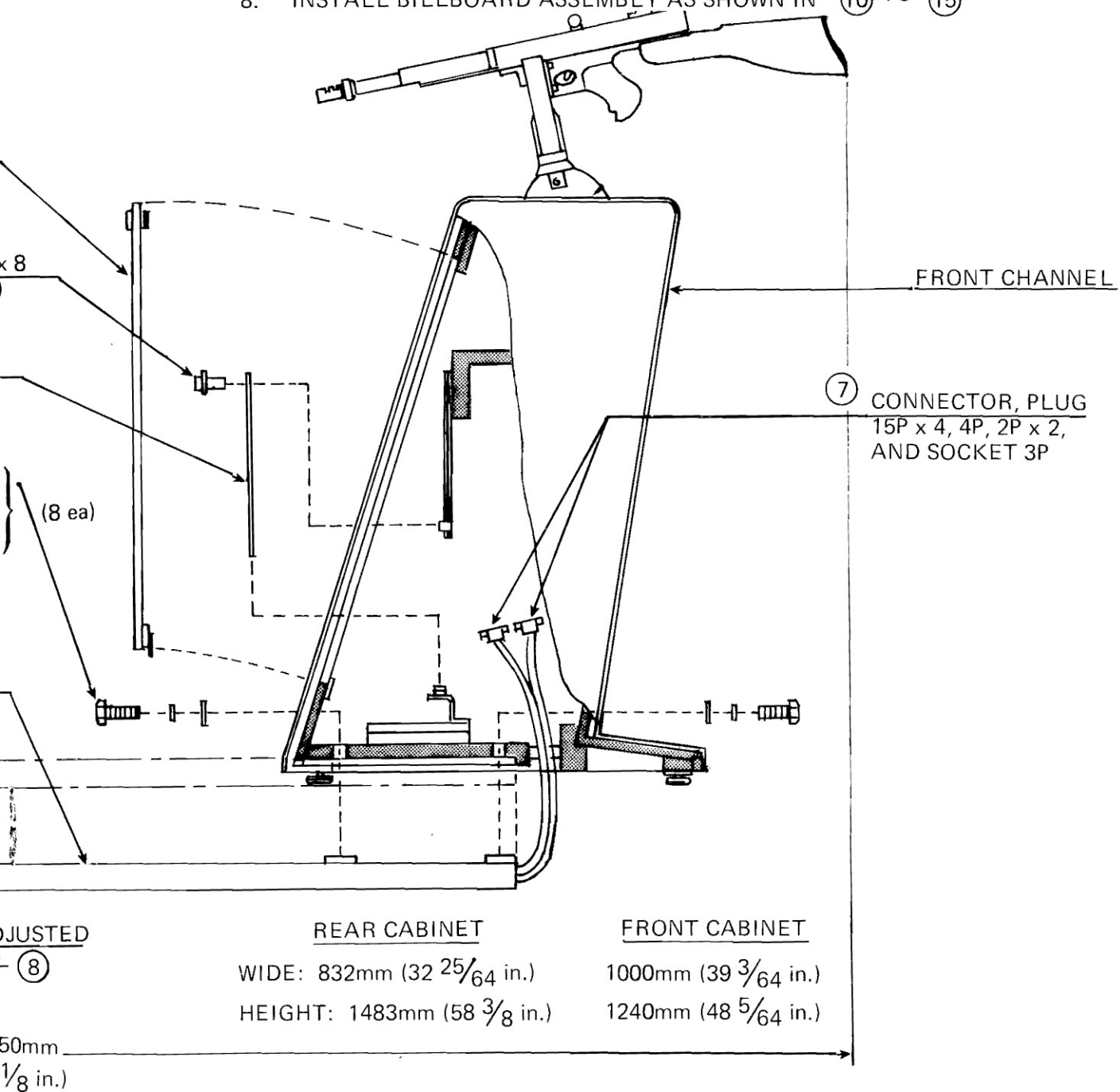
INST. NO.
276

INSTALLATION INSTRUCTIONS, FOR SEGA BULLET MARK
HOW TO ASSEMBLE THE BULLET MARK



ORDER OF ASSEMBLY

1. LOOSEN SCREW ① AND REMOVE BACK BOARD ②
2. REMOVE BACK DOOR
3. LOOSEN SCREW ④ AND REMOVE IC BOARD, A ⑤
4. INSERT WIRE CONNECTORS ⑥ AND ⑦ INTO THE FRONT AND REAR CABINET FROM CHANNEL ASSEMBLY ⑧
5. SECURE CHANNEL ASSEMBLY ⑧ WITH BOLT ⑨
6. CONNECT CONNECTORS ⑥ AND ⑦ TO CONNECTORS IN THE CABINET OF THE SAME COLOR
7. RE-INSTALL ⑤, ③ AND ②
8. INSTALL BILLBOARD ASSEMBLY AS SHOWN IN ⑩ ~ ⑮



PRINTED CIRCUIT BOARD

Basic Functions and Location

Looking through rear door of gun cabinet:

PT-0321	—	Drives gun motors - upper left side under guns
94396-P	—	Generates tones for hits of targets - lower left side rear
DB-4602	—	Audio power amplifier also supplies power to PT-0295 - lower left side front
PT-0295	—	Generates tones for gunshots and controls sound output - lower left side rear
94360	—	A to D converter, controls signal from gun pots to logic board, upper right side under gun
94359-P	—	Logic Board - largest board centered
Power Supply Board	—	Supplies voltage to all circuits except audio - lower right side
PT-0286	—	Drives scoring segment, target value lights and player up - lower left and right side of television cabinet

HOW TO ADJUST THE BULLET MARK

Adjustment of Gun No. 1

(1) Set Test Switch (Mounted on IC Board, A PT No. 94359-P) to TEST position. Bullet Mark will appear on the screen.

(2) Adjusting the gun sight to the bullet mark.

- Set toggle switch located in bottom of gun cabinet to horizontal position.

Horizontal direction — Adjust VR 5 so the right and left bullet marks are at the extreme. Align bullet marks to the gun sight by means of Control VR 1. (Make adjustment near the center of the screen.)

When proper adjustments cannot be made with VR1 and VR 5, loosen set screw (3) and adjust Horizontal Control (1).

- Set toggle switch in vertical position.
Vertical direction — Adjust VR 6 so the top and bottom bullet marks are the extreme edges. Align bullet marks to the gun sight by means of Control VR 2. (Adjust near center of Screen.)
When proper adjustments cannot be made with VR 2 and VR 6, loosen set screw (4) and adjust Vertical Control (2).

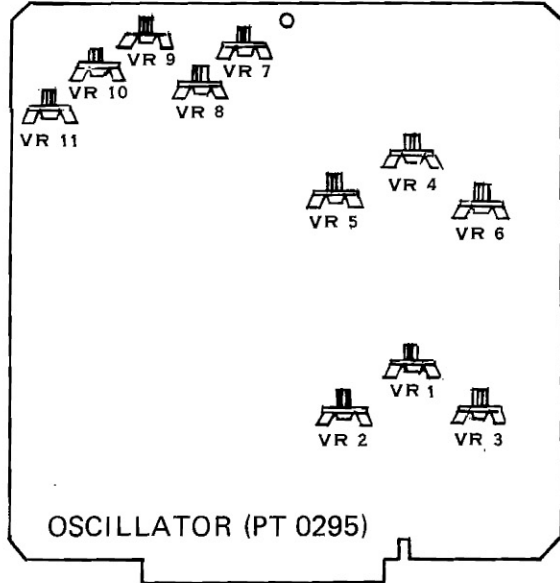
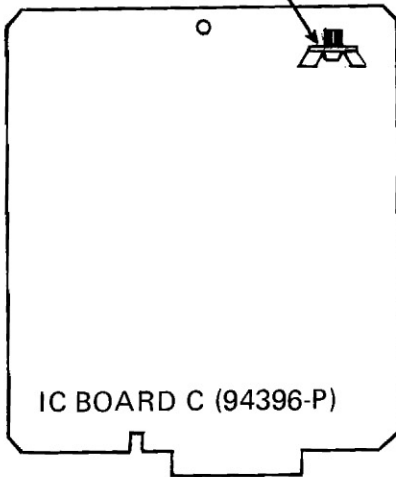
- Adjustment of Gun No. 2

Carry out adjustments in the same sequence as Gun No. 1 but adjust VR 3 and VR 7 for the horizontal bullet marks and VR 4 and VR 8 for the vertical. (3) Return Test Switch to PLAY position.

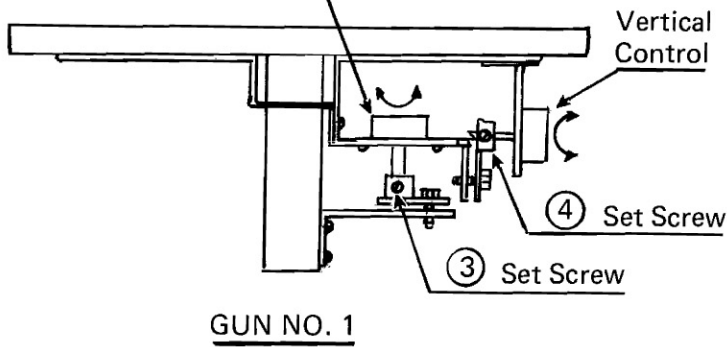
ADJUSTMENT OF VOLUME AND TONE

VR 1	VR 2	VR 3	No. 1 Player Shot Sound Tone
VR 4	VR 5	VR 6	No. 2 Player Shot Sound Tone
VR 7			No. 1, No. 2, Player Shot Sound Volume
VR 8			Balloon Hit Sound Volume
VR 9			Tank (Puma) Hit Sound Volume
VR 10			Pirate Hit Sound Volume
VR 11			Jets (Shark) Hit Sound Volume

HIT SOUND TONE

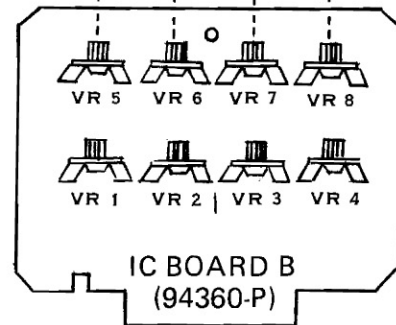


Horizontal Control



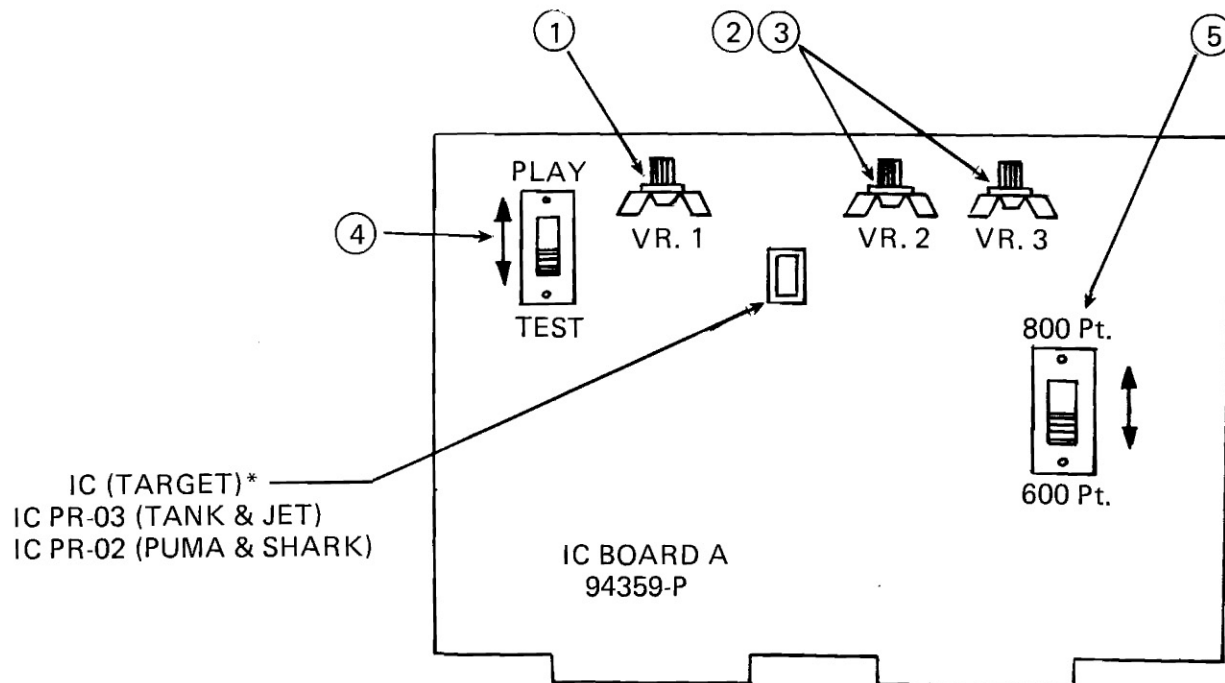
GUN NO. 1 GUN NO. 2

— Hrz Vrt Hrz Vrt



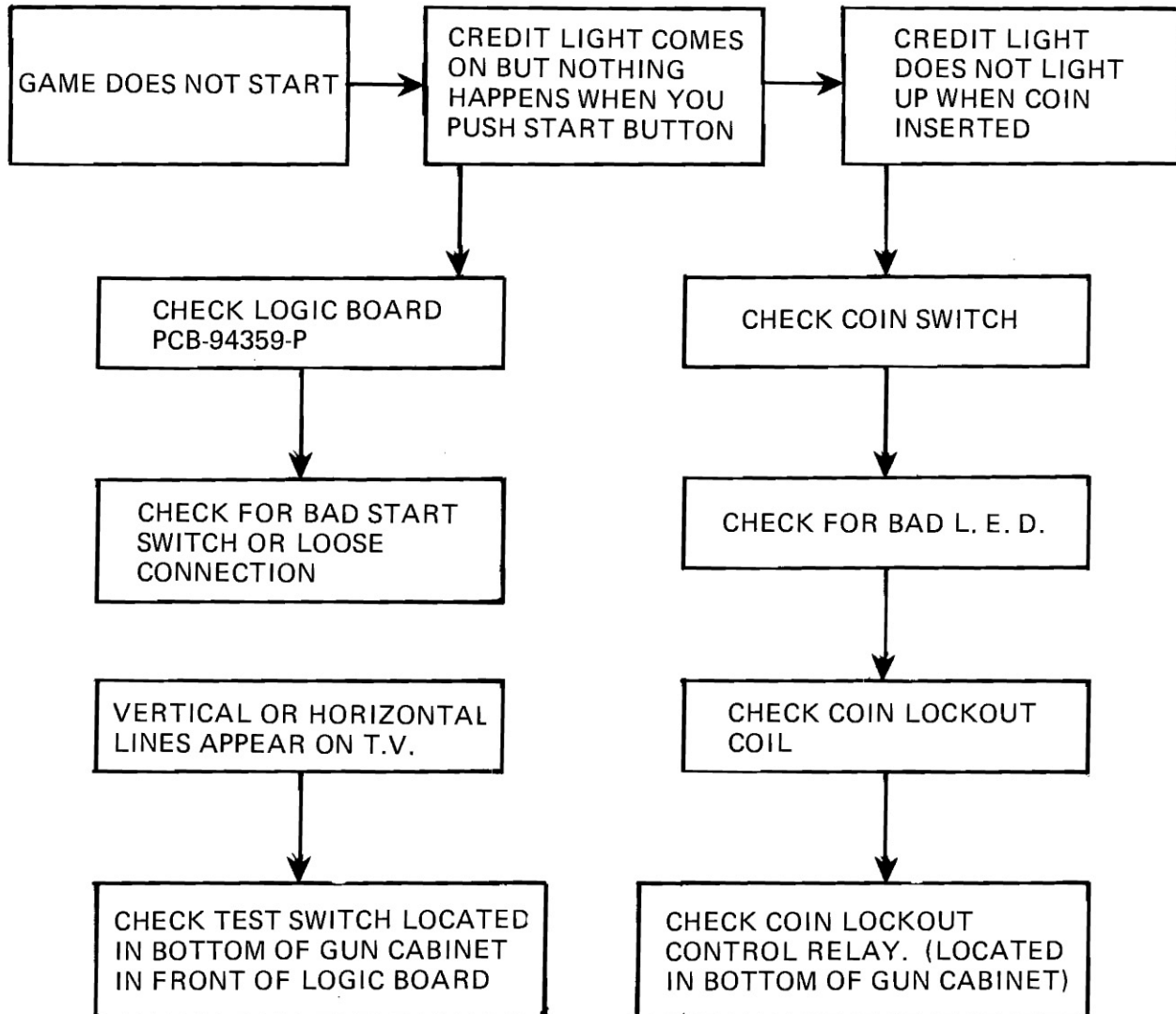
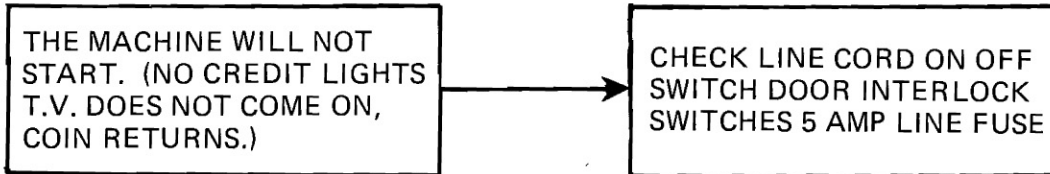
ADJUSTMENTS FOR IC BOARD

1. Control VR. 1 is to adjust the time each target appears on the screen. The range of adjustment is from 15 to 35 seconds with the standard setting being 16 seconds. Game time is approximately 100 seconds (16 sec. x 4 types of targets).
2. Controls VR. 2 and VR. 3 are to adjust the target reversing time.
3. Control VR. 3 is to adjust both the target reset time and the black/white, white/black target color change over time. As VR. 2 and VR. 3 are inter-related, adjusting one will also change the other.
4. This switch is for adjusting bullet marks which will appear when set to TEST. Always set a PLAY when not adjusting.
5. This is the 600 and 800 point change over switch.



* This IV is equipped with a socket to enable change over from Tank and Jet targets to the optional puma and shark targets.

TROUBLE SHOOTING GUIDE



TROUBLE SHOOTING GUIDE

