### Manual No. 6508

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SERVICE DEPARTMENT/ MAGNAVOX CONSUMER ELECTRONICS COMPANY FORT WAYNE, INDIANA 46804

BH7511 ODYSSEY

Scanned by Sly DC (2018)



### **GENERAL INFORMATION**

The BH7511 Odyssey is powered by an AC to DC, 9 volt, 100 ma adaptor. It's features include a selection of eight games that allows the operator to choose from Hockey, Soccer, Gridball, Basketball Practice, Basketball, Smash, Smash Practice, or Tennis. For an extra challenge, the BH7511 has a three position Skill Switch that enables the operator to change the player size by switching to the "Amateur", the "Professional", or the "Handicap" position. In the "Handicap" position, the right contestant will be handicapped with a player of smaller size than the left contestant.

Other features include automatic on-screen scoring (0 to 15), full color picture (when used with a color TV), and separate Hand Control units incorporating a joystick for random movement of the players on the screen. Each Hand Control Unit is not directly attached to the main unit, but is connected through a cable, which lets the operator hold his Hand Control and gives him more freedom of movement. The speed of the ball can be controlled by placing the Ball Speed Switch in either the "Fast" or the "Slow" position.

Connect the 300 ohm twin lead from the Antenna/Game Switch Box to the 300 ohm VHF antenna terminals of a properly adjusted and operating television receiver. Connect the Game Cord Cable from the Odyssey unit to the Antenna/ Game Switch Box and place the Game/TV Switch in the Game position.

Set the Odyssey Channel Select Switch (located on the RF Modulator Box) to either Channel 3 or 4 and turn the television VHF Channel Selector to the same channel. Plug the AC Adaptor into the adaptor socket located on the back of the Odyssey main unit and apply power by moving the Reset/On/Off Switch to the "On" position (fine tune the television if necessary). Slide the eight position Game Switch to the "Tennis" position and a tennis court should When the Ball Speed Switch is in the "Fast" position, the ball will speed up on the seventh hit by a player (or players) after each point. In the "Slow" position, the ball will stay slow at all times.

The BH7511 also incorporates sound and angle deflection of the ball. During play a separate audio tone is heard each time the ball hits a player, a barrier, or a point is scored. The angle at which the ball is deflected is determined by the point at which the ball hits a player. A ball passing through a player from the rear will also be deflected at an angle depending upon the point of entry through the player. When the ball hits a wall (barrier), the angle at which it deflects is determined by the angle at which it hits.

Any game may be stopped and started over at any time on the BH7511 by moving the Reset/On/Off Switch to the "Reset" position. The unit also incorporates manual serve which is triggered by depressing one or both of the Hand Control Action Buttons (depending on the game being played).

### **TYPICAL OPERATION (TENNIS)**

appear on the television screen. If viewed on a color set the background for Tennis should be a light green (specific colors may vary depending upon the setting of the color, tint, contrast, and brightness controls of the television receiver). Adjust the player size by setting the Skill Switch to the desired level (Professional, Handicap, or Amateur). The speed of the ball can be set by placing the Ball Speed Switch in the "Fast" or the "Slow" position. In the "Slow" position the ball moves at a moderate speed throughout the game. However, when the Ball Speed Switch is placed in the "Fast" position, the ball will speed up on the seventh hit by a player (or players) after each point is made.

When the Odyssey is first turned on, the score on the display may not show a 0-0 score. To begin the game

#### 6508-2

(or to start over at any time during a game) with a score of 0-0, slide the Reset/On/Off Switch to the "Reset" position. This position is spring-loaded so that the switch will return to the "On" position after the game display has been reset.

The score is now set to zero and the game is ready to begin. The contestant whose court the ball appears in serves. To serve, the contestant must push the Action button located in the upper left hand corner of his Hand Control. (Note: The buttons are colored red for the left player and blue for the right player). In "Tennis" a contestant gets five serves before passing service to his opponent. When the Action button is pushed, the ball is served and the game begins. Located on each Hand Control is a joystick which allows the operator full control of his player's movement. The player will move on the screen in the same direction as the operator moves the joystick, providing the Hand Control is held with the colored Action button in the upper left hand corner. During play, a separate audio sound is heard each time the ball hits a player, a barrier, or a point is scored. After five serves by one player, service is passed to the opponent and the ball automatically appears on his side of the court (at court's edge). Each time the ball leaves the playing area, the Automatic Scoring will award a point to the appropriate player. After either player has scored 15 points, the ball cannot be served until the Reset/On/Off Switch is moved to "Reset" to begin a new game.

Level Control (R5) and adjust the video signal for a

Note: The Hue Control adjustment should be made only

after the 3.58 MHz Clock and Video Level adjustments

1. Before adjusting the Hue Control, tune the television to a

2. Connect the Odyssey to the television and slide the

eight position Game Switch to the "Tennis" position.

3. Adjust the Hue Control (R4) to obtain a green back-

4. Cycle through the remaining seven games and check for

the existence of color on each game. There should be

ground color with yellow to orange field lines.

four distinct background colors as follows:

**Basketball Practice & Smash Practice** 

local station and adjust the controls for a good color

nominal voltage of .8V P-P.

**Hue Control Adjustment** 

have been made.

picture.

Game

A.

Β.

C.

**Tennis & Soccer** 

Hockey & Gridball

#### SERVICE ADJUSTMENTS

#### 3.58 MHz Clock Adjustment

1. Connect a high impedance frequency counter to pin 6 of IC2. Adjust C10 (trimmer capacitor) for a clock frequency of 3,579,545 Hz ±50 cycles. (Note: When a frequency counter is connected to pin 6, distortion on the television screen may result. However, pin 6 is a buffered output and the reading on the counter will be unaffected).

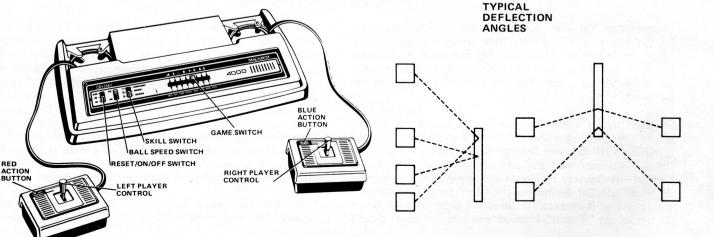
### Channel 3 & 4 RF Oscillator Adjustment

- 1. Connect the Odyssey to an operating TV and defeat the television AFT.
- 2. Turn the TV Channel Selector to Channel 3 and set the Odyssey Channel Select Switch (located on the RF Modulator Assembly) to Channel 3 also.
- 3. While observing the game display, adjust L3 for optimum response.
- 4. Switch the TV and the Odyssey to Channel 4.
- 5. While observing the game display, adjust trimmer capacitor C5 for optimum response on the TV screen.
- 6. Repeat steps 2 through 5 until Channel 3 and 4 game displays are equal in quality.

#### Video Level Adjustment

(Note: The colors may vary depending upon the control 1. Connect an oscilloscope to the wiper arm of the Video settings of the television receiver). **TOP VIEW OF BH7511** TYPICAL DEFLECTION ANGLES

D. Basketball and Smash

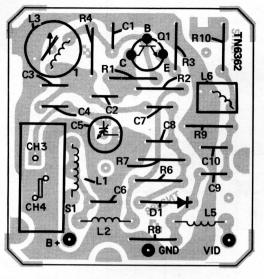


Background Color

Green Blue Cyan

Magenta

## RF MODULATOR P.C. BOARD (VIEWED FROM COMPONENT SIDE)



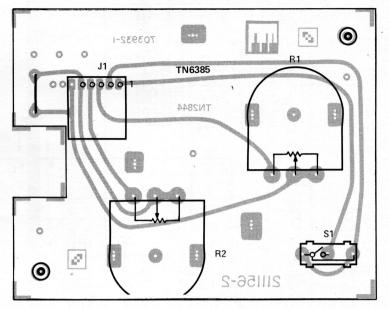
NOTE:

Although not screened - C11 is connected in series with R10.

## **RF MODULATOR REPLACEMENT PARTS LIST**

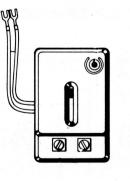
REF.	DESCRIPTION	PART NO.
	COILS	
L1 L2 L3 L5 L6	12 uhy Coil 12 uhy Coil Osc. Coil 12 uhy Coil Coil	361425-120 361425-120 361398-21 361425-120 361558-4
	CAPACITORS Values, tolerances & voltage ratings for capacitors not listed are shown on the schematic, or are 5%, 500V.	
C3 C4 C5 C7 C8 C9 C10 C11	Ceramic, 10 pf.,5%,500V,NPO Ceramic,10 pf.,5%,500V,NPO Trimmer, 2-22 pf.,100V Ceramic,2.2 pf., ± .25 pf.,500V,NPO Ceramic, 10 pf.,5%,500V,NPO Ceramic, 33 pf.,5%,500V,NPO Ceramic, 62 pf.,5%,500V,NPO	250546-1005 250546-1005 260220-5 250546-2297 250546-1005 250546-3305 250666-6205 250546-1005
	SWITCHES	
S1	Slide Switch (Channel Select)	160556-2
D1 Q1	Silicon Diode NPN Silicon Transistor	530181-1001 610139-2
	MISCELLANEOUS	
J4 FB1	3 Pin Molex Connector Ferrite Bead RF Modulator (Top Cover-Copper Bd. Side) RF Modulator (Bottom Cover- Channel Switch Side)	181252-3 364005-1 733293-1 733293-4
	RF Output Jack	181095-4

# HAND CONTROL P.C. BOARD (VIEWED FROM COMPONENT SIDE)



### HAND CONTROL REPLACEMENT PARTS LIST

REF.	DESCRIPTION	PART NO.	
R1 R2 S1 J1	Horizontal, 150K, 20% Vertical, 500K, 20% Momentary Switch-Leaf Contact Momentary Switch-Post Contact 5 Pin Connector (Board Mounted) Tension Clip f/Crank (2 used) Pushnut Fastener f/Action Button Case Bottom Case Top Slide, Black Slide, Beige Nylon Crank f/R1 & R2 Joy Stick Retainer Action Button, Red	220311-16 220311-15 160599-2 160599-1 181253-5 102393-92 103126-12 143968-2 143973-2 143973-1 143974-3 143974-3 143976-2	
	Action Button, Blue Joystick Knob Joystick Spring f/Action Button	143976-1 143977-2 733300-3 733305-1	

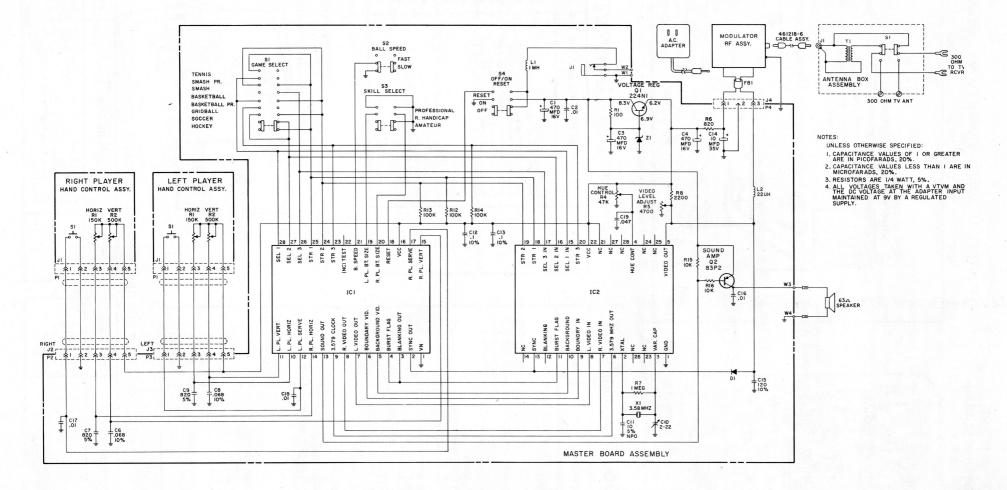




# ANTENNA SWITCH BOX REPLACEMENT PARTS LIST

REF.	DESCRIPTION	PART NO.	REF.	DESCRIPTION	PART NO.
Т1	Antenna Balun	361108-2		Case, Bottom	143674-1
S1	Slide Switch (Antenna/Game)	160499-3		Case, Top	143676-1
J1 .	RF Input Socket	180902-4		Plastic Hook	143719-1
	Screw Terminal (2 used)	200495-1	10 C	Complete Antenna/Game Switch	
	Solderless Terminal (2 used)	200517-1		Assembly	701702-5

## **BH7511 SCHEMATIC DIAGRAM**



IC1, IC2 BASING



**Q1 BASING** 



**Q2 BASING** 

EBC

6508-4

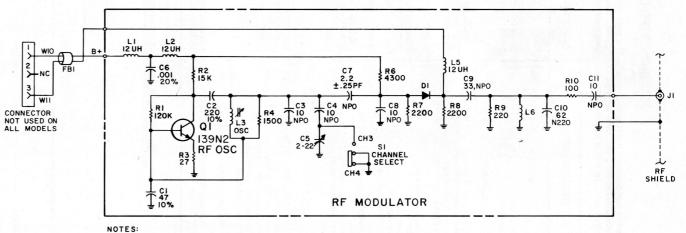
IC1 VOLTAGE CHART					
PIN	VOLTAGE	NOTE	PIN	VOLTAGE	NOTE
1	Ground	·····,	15	1.7V - 4.7V	6
2	5.7V		16	6.2V	
3	5.3V		17	6.2V	7
4	5.3V		18	6.2V	8
5	1.6V		19	6.2V	9
6	5.9V		20	6.2V	10
7	6.1V		21	6.2V	11
8	6.1V		22	NC	
9	1.3V		23	6.1V	
10	6.1V	1	24	6.1V	
11	1.7V - 4.7V	2	25	6.1V	
12	6.2V	3	26	6.2V	
13	Sound Out	4	27	6.2V	
14	6.1V	5	28	6.2V	

IC2 VOLTAGE CHART					
PIN	VOLTAGE	NOTE	PIN	VOLTAGE	NOTE
1	Ground		15	6.1V	
2	1.5V		16	6.1V	
3	VAR. CAP		17	6.1V	
4	0V - 6.2V	12	18	6.1V	
5	1.3V ·	13	19	6.1V	
6	1.3V		20	6.1V	
7	6.1V 6.1V		21	6.2V	
8			22 6.2V		22 6.2V
9 .	5.9V		23	NC	
10	1.6V	14	24	NC	
11	5.3V		25	NC	
12	6.3V		26	NC	
13	5.7V		27	NC	
14	NC		28	NC	

#### NOTES:

- 1. Varies slightly as left Player is moved horizontally.
- 2. Varies as Left Player is moved vertically.
- 3. Goes to OV when Left Player Serves.
- 4. Pulse of DC when ball hits a Player, a Wall, or a Score is made.
- 5. Varies slightly as Right Player is moved horizontally.
- Varies as Right Player is moved vertically. 6.
- 7. Goes to OV when Right Player Serves.
- 8. Goes to 0V when S4 is in "Reset" position.
- 9. Goes to OV when S3 is in Professional Position.
- Goes to OV when S3 is in "Handicap" or "Professional" position. 10.
- 11. Goes to 0V when S2 is in "Slow" position.
- Will vary as R4 is varied. 12.
- 13. Will vary as R5 is varied.
- 14. Will vary slightly as Background is changed from game to game.

# **RF MODULATOR SCHEMATIC**



- UNLESS OTHERWISE SPECIFIED:
- I. CAPACITANCE VALUES OF ONE OR GREATER ARE IN PICOFARADS, 5%.
- 2. CAPACITANCE VALUES LESS THAN ONE ARE IN MICROFARADS, 5%.
- 3. RESISTORS ARE 1/4 WATT, 5% TOLERANCE.

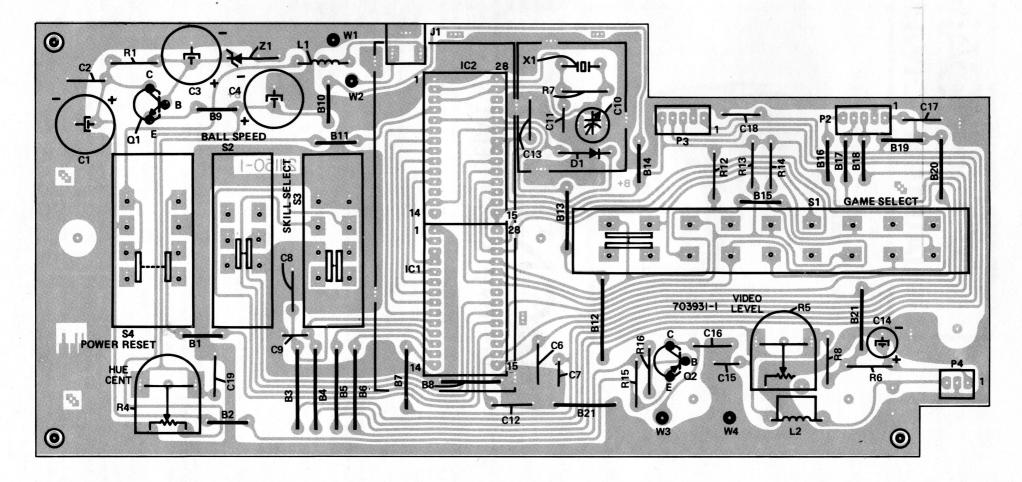
# **BH7511 REPLACEMENT PARTS LIST**

Note: When ordering replacement parts please specify the part number as shown in this list including Description, Chassis, and Model Number. Complete information will help expedite the order. Replacement parts may occasionally differ in part number or value from the Factory installed part. In either event the replacement part has been chosen to provide equal or improved performance.

REF.	DESCRIPTION	PART NO.	REF.	DESCRIPTION	PART NO.
	COILS		Q1	NPN Silicon Transistor	610224-1
			Q2	PNP Silicon Transistor	610083-2
L1	1 mhy Coil	361444-1029	IC1	Master Game IC	612146-1
L2	22 uhy Coil	361425-220	IC2	Color Converter IC	612156-1
	CAPACITORS			MISCELLANEOUS	•
C1 .	Electrolytic, 470 mfd., 16V	270144-5215	J1	Adapter Jack	181139-4
C3	Electrolytic, 470 mfd., 16V	270144-5215	P2	5 Pin Connector (Board Mounted)	181253-5
C4	Electrolytic, 470 mfd., 16V	270144-5215	P3	5 Pin Connector (Board Mounted)	181253-5
C6	Metalized Polyester, .068 mfd.,10%,		P4	3 Pin Connector (Board Mounted)	181253-3
	250V	250655-6839	X1	3.58 MHz Crystal	560404-2
C8	Metalized Polyester, .068 mfd.,10%,			IC Shield (Top Cover)	733393-1
	250V	250655-6839		Crystal Circuitry Shield (Top Cover)	733392-1
C10	Trimmer, 2-22 pf.,100V	260220-5		Shield (Bottom Cover)	733394-1
C11	Ceramic, 10 pf.,5%,500V,NPO	250546-1005		RF Modulator Assembly	703938-1
C12	Metalized Polyester, 0.1 mfd., 10%,			Antenna Switch Box Assembly	701702-5
	100V	250654-1049		Solderless Terminal (2 used-Speaker	1. 1. 1. 1. 1. 1.
C13	Metalized Polyester, 0.1 mfd., 10%,			Wires)	102487-30
	100V	250654-1049		Speaker Clip (2 used-Speaker Mtg.)	102393-90
C14	Electrolytic, 10 mfd., 35V	270109-1135		"O" Ring Retainer f/Stud	103082-4
C19	Metalized Polyester, .047 mfd.,20%,		The second second	Speaker, 2¼", 63 ohm	580108-2
	250V	250655-4730		Ground Strap-RF Modulator (2 used)	200401-20
				Game Select Knob	143982-1
	CONTROLS & SWITCHES			Spring Lock Nut f/Stud	103235-1
				Foot (Black-4 used)	141737-3
R4	Hue Control, 47K, 30%	220300-4733		Case Bottom	143669-7
R5	Video Level, 4.7K, 30%	220300-4723	and the state	Case Top	143962-1
S1	8 Position Slide Switch (Game Select)	160592-1		Inlay	151603-1
S2 S3	Slide Switch (Ball Speed)	160546-3		RF Cable Assembly	461218-6
53 54	Slide Switch (Skill Select)	160546-7	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	Coax Plug (RF Cable)	181235-9
54	Slide Switch (On/Off/Reset)	160546-5		Cable Assembly-Hand Control	
	SEMICONDUCTORS			(Includes Connectors)	702597-1
	SEMICONDUCTORS	이 이 나는 것 같아?		5 Pin Molex Connector (Hand Control	
D1	Commention Directo		1	Cable)	181252-5
Z1	Germanium Diode	530065-1002		Stud, Cover Holding	732953-2
21	Zener Diode	530073-1039		AC Adaptor	AG9004-BK0

SERVICE NOTES

# MAIN P.C. BOARD (VIEWED FROM COMPONENT SIDE)



## NOTES:

1. In early production units pins 3 and 4 of IC1 were not connected by a copper pattern and must be connected by a solder bridge. 2. B19 jumper is not connected although screened on the unit.

