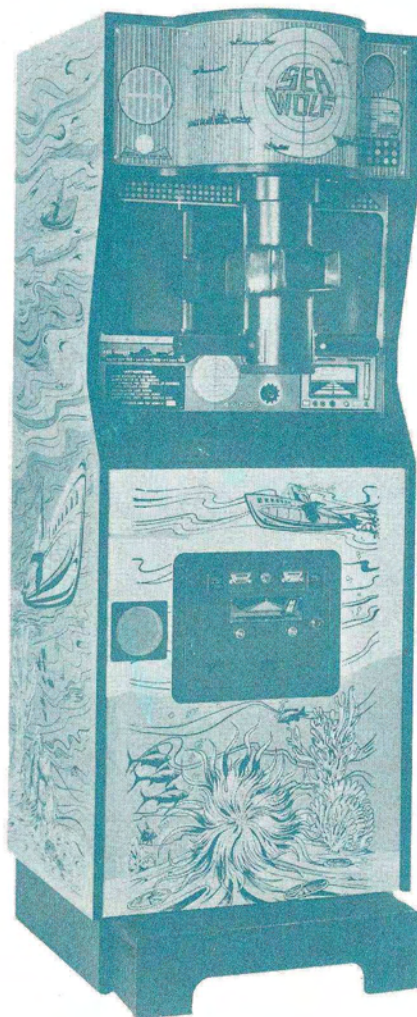


Midway's

GAME NO. 596
MARCH, 1976

SEA WOLF

PARTS CATALOG



MIDWAY MFG. CO.
10750 WEST GRAND AVENUE
FRANKLIN PARK, ILLINOIS, 60131, U. S. A.

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CABLE ADDRESS: MIDCO

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GENERAL INSTRUCTIONS FOR "SEA WOLF"

INSTALLATION:

- A. Attach and adjust 6 provided leg levelers to bottom of Cabinet. (4 to Cabinet, 2 to Step.)
- B. Remove shipping cleats (located on bottom of cabinet) pull step out and secure in place with provided bolt.
- C. Remove (Red) shipping bracket (located in back box area) from Periscope Assembly.
- D. The power is controlled by a switch located on top of the Cabinet. Plug into A.C. only, 115 volt, 60 cycles. In low line areas (105 volts or less) a boost in the output voltage of the transformer may be achieved by removing the wire from the 115 volt tap of the transformer, and rewiring to the 105 volt position.
- E. In event the game is tilted, or the line cord is removed, any credits accumulated will reset to zero.

VOLTAGE CONTROL POT:

Located on Power Supply Board (PC 80-904) and is preset at the factory. This pot should not be tampered with unless the factory Service Department is contacted.

TIME, COIN, HIGH SCORE AND EXTENDED PLAY ADJUSTMENT SWITCHES:

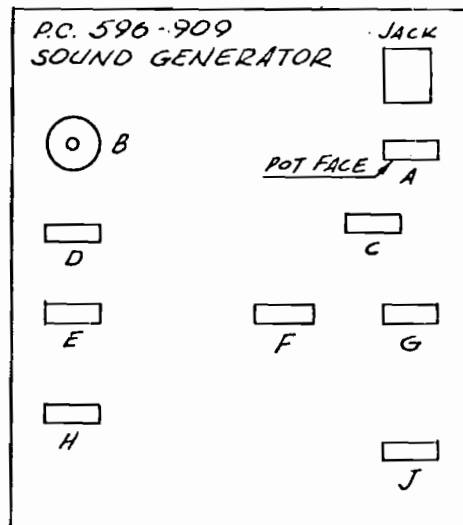
Located on Game Logic Board (PC 596-904) and may be adjusted as indicated on separate instructions located in back box area.

SOUND VOLUME AND TONE CONTROL POTS:

Located on Sound Generator (PC 596-909) and may be adjusted by rotating pots as indicated on separate instruction sheet in back box area.

HIGH SCORE RESET BUTTON:

Located on cabinet face. (upper left) High Score may be reset by depressing button when a game is not in progress if switch #5 on Game Logic Board (PC 596-904) is properly conditioned.



NOTE: CW and CCW are defined as viewed from pot face.

- A. Sonar Volume Control: To increase volume, rotate pot CCW.
- B. Master Volume Control: To increase all volumes, rotate pot CW.
- C. Sonar Rate Control: To increase pulse rate, rotate pot CCW.
- D. Torpedo Volume Control: To increase volume, rotate pot CW.
- E. Dive Sound Volume Control: To increase volume, rotate pot CW.
- F. Sonar Tone Control: To raise sonar pitch, rotate pot CCW.
- G. Ship Hit Explosion Volume: To increase volume, rotate pot CCW.
- H. Dive Tone Control: To vary tone, rotate pot as desired.
- J. Mine Explosion Volume Control: To increase volume, rotate pot CCW.

ADJUSTMENT SWITCH INSTRUCTIONS

Adjustment Switch: Located on game logic board (PC 596-904)

	<u>TIME</u>			<u>COIN - PLAY</u>	
	<u>Switch #1</u>	<u>Switch #2</u>		<u>Switch #3</u>	<u>Switch #4</u>
60	ON	ON	1 Coin, 1 Play	ON	ON
70	OFF	ON	1 Coin, 2 Plays	ON	OFF
80	ON	OFF	2 Coins, 1 Play	OFF	ON
90	OFF	OFF	2 Coins, 3 Plays	OFF	OFF

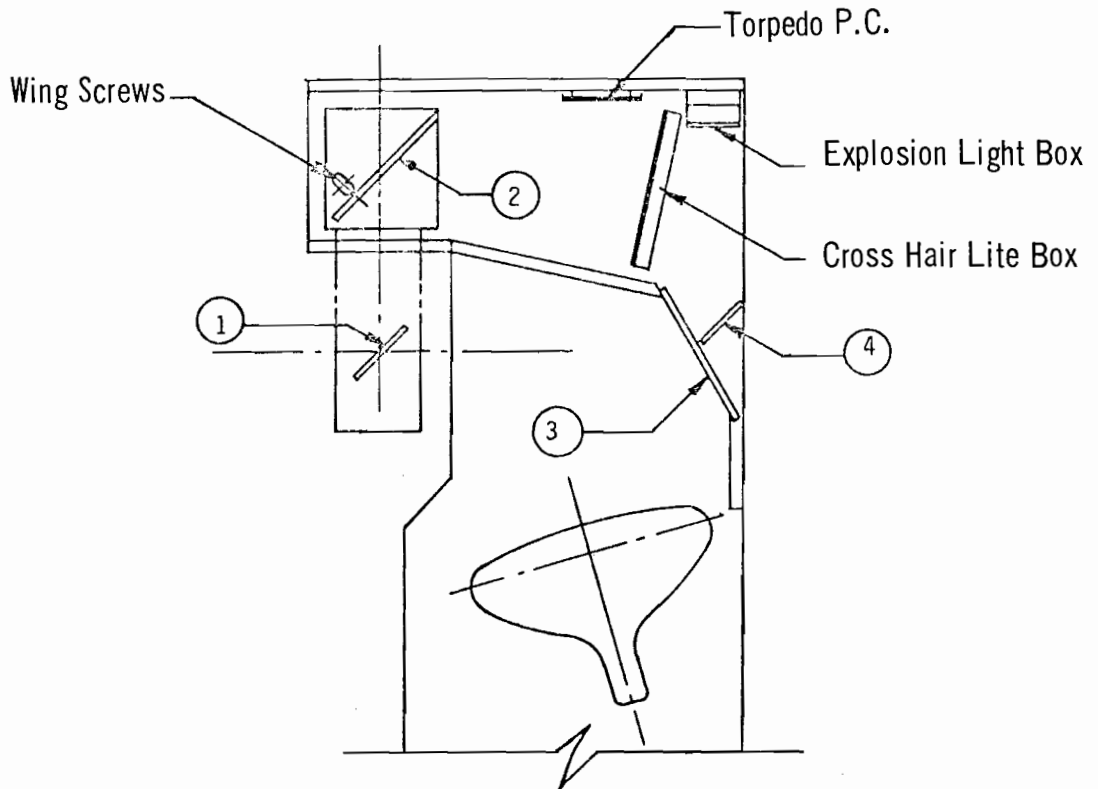
High Score Reset Button: Located on upper left cabinet front. With Switch #5 in "ON" position, high score may be reset by depressing button when a game is not in progress. With Switch #5 in "OFF" position, the high score may not be reset.

Extended Play:

<u>Score</u>	<u>Switch #6</u>	<u>Switch #7</u>	<u>Switch #8</u>
2000	OFF	ON	ON
3000	ON	OFF	ON
4000	OFF	OFF	ON
5000	ON	ON	OFF
6000	OFF	ON	OFF
7000	ON	OFF	OFF
8000	OFF	OFF	OFF

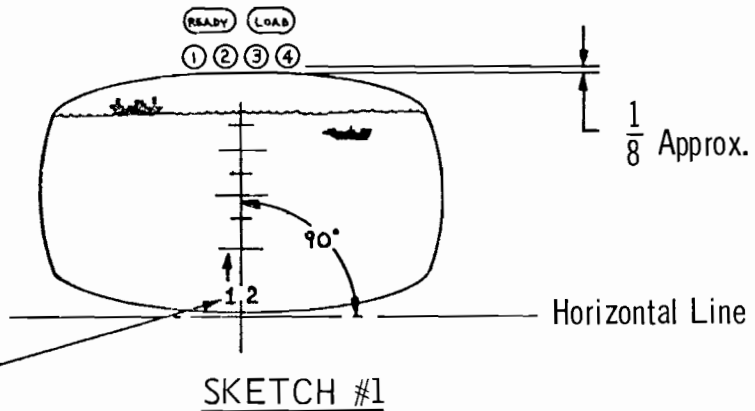
NOTE: Witch Switches #6, #7, and #8 in "ON" position, no extended play will be awarded.

SEA WOLF – VISUAL ADJUSTMENTS



NOTE: MIRRORS 1, 2 & 3 MUST HAVE MIRRORED SURFACE ON ARROW SIDE.

MIRROR NO.	MIRROR TYPE	ADJUSTABLE	PROCEDURE
1	SEE THRU	NO	
2	FRONT SURFACE	YES	ADJUST AT WING SCREW UNTIL YOU HAVE PICTURE IN SKETCH NO. 1
3	SEE THRU	NO	
4	REG. REAR SURFACE	YES	ADJUST UNTIL EXPLOSION ART WORK LINES UP WITH SHIP PATHS. USE TEST CONNECTOR.



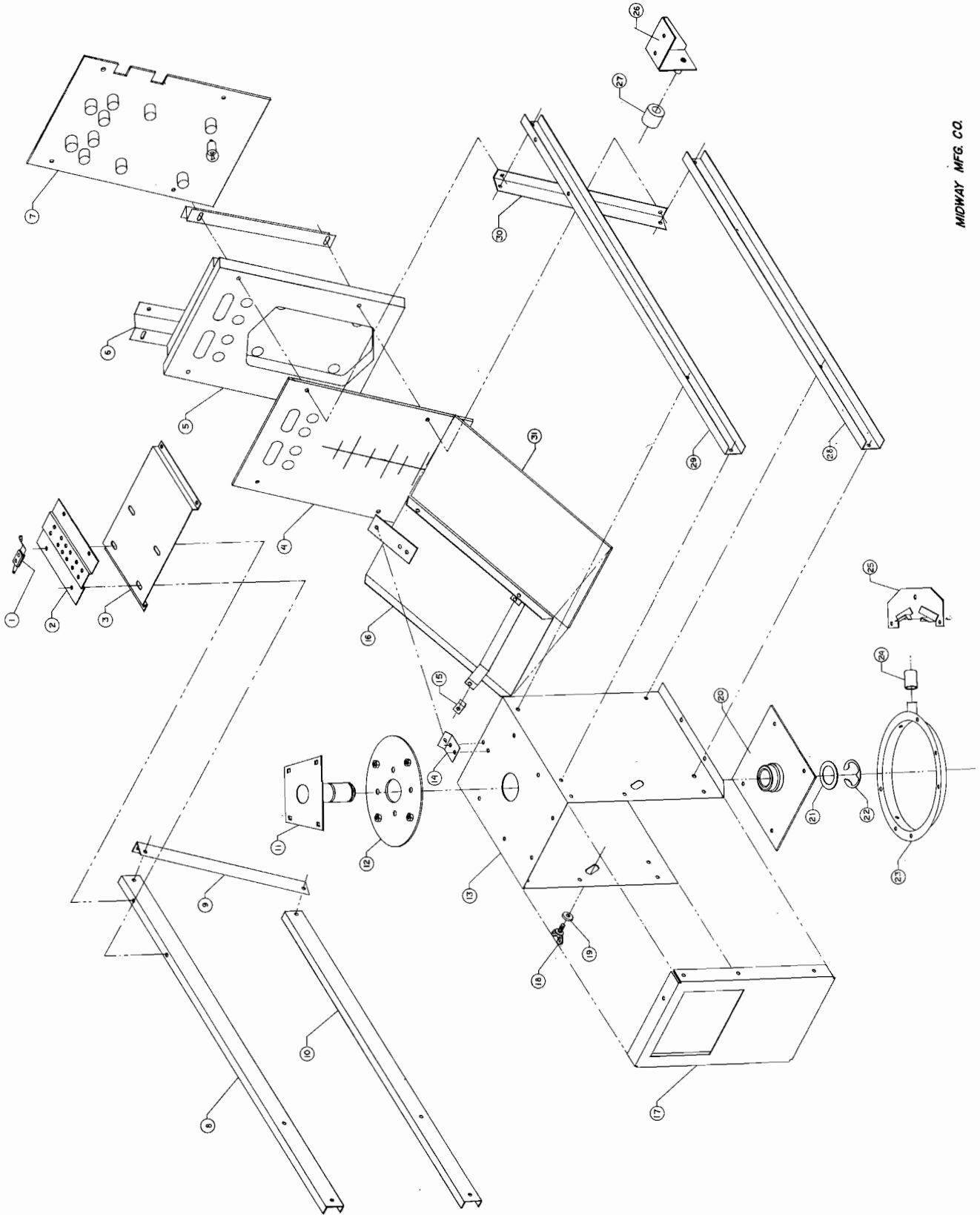
To adjust TORPEDO P.C., line up cross hair on Game time number and adjust P.C. Horizontally until Torpedo shoots from number. There is no center Torpedo path.

EXPLOSION LITE ADJUSTMENT PROCEDURE

- A. Turn-on game and turn-up Monitor brightness.
- B. Adjust Vertical size of raster till top and bottom raster lines just touch the edges of the CRT.
- C. Adjust Horizontal size of raster till the extreme left and right torpedo paths are (at the widest CRT point) $\frac{1}{2}$ " from the scenery edges.
- D. Turn down Monitor brightness, turn-off the game.
- E. Plug in BLACK Explosion lights testjack, turn on the game.
- F. Adjust mirror #4 till the Explosion lights line up with both ship paths.
- G. Adjust Explosion lights (left-right) till torpedoes fired through either "TIME" digit (see sketch #1) pass just to the left or right of the center explosion lights.
- H. Turn off game, and plug in regular WHITE Explosion lights jack.
- I. Turn on game. Adjust commutator (left-right) till the corss hair lines up with torpedoes fired through either "TIME" digit (see sketch #1).

NOTE: There is no center torpedo path.

PERISCOPE MIRROR & LITE BOX ASSY.



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NO. 596 SEA WOLF - PERISCOPE MIRROR & LITE BOX ASSEMBLY

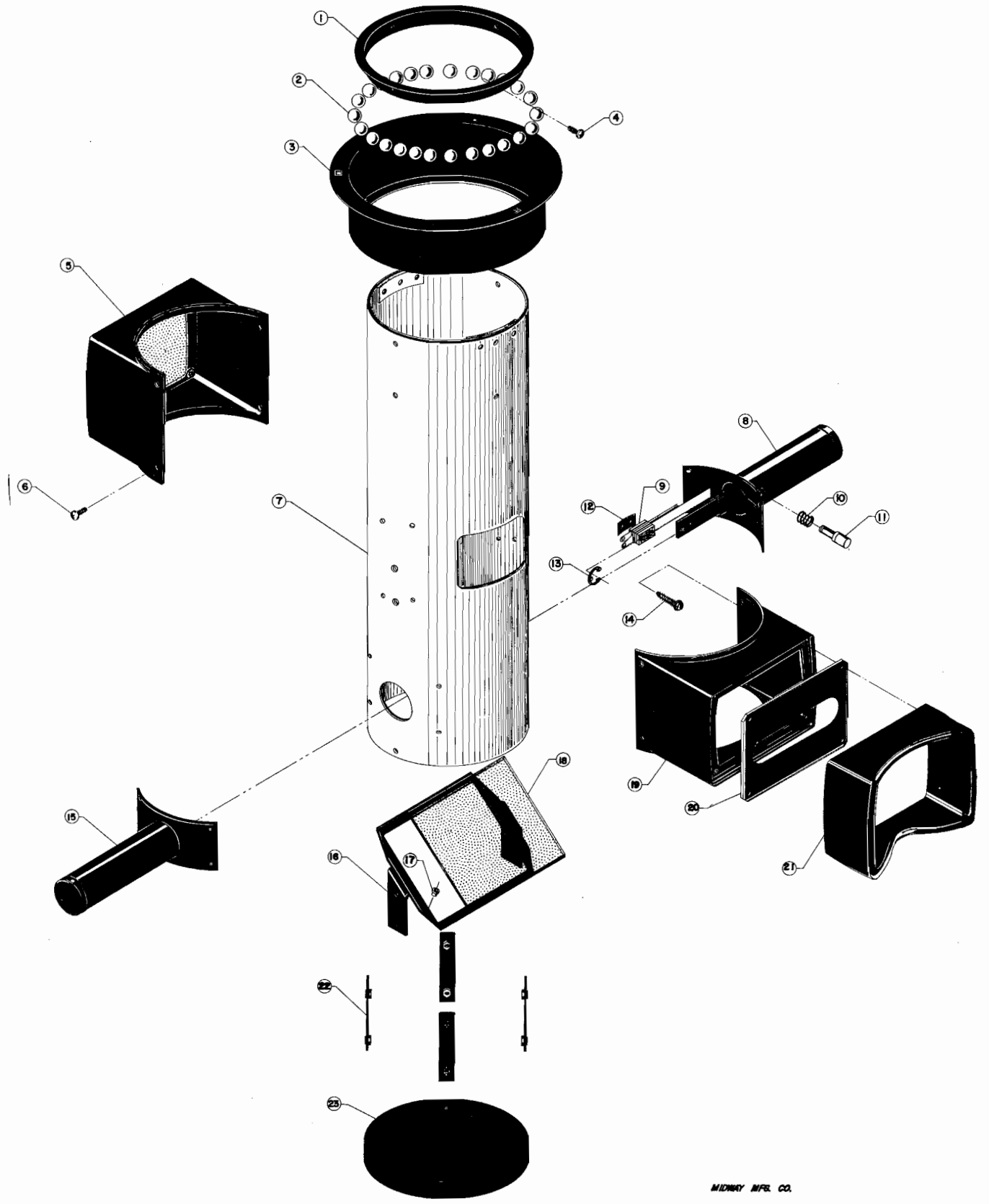
PRICE LIST

ORDER BY PART NUMBER ONLY

ITEM	PART NO	DESCRIPTION	PRICE
1.	0596-00014	CONTACT BLADE ASSY.	.80 EA.
2.	0596-00123	SWITCH BRACKET	2.00 EA.
3.	0596-00122	MOUNTING PLATE	1.30 EA.
4.	0596-00903	LITE BOX ART WORK	8.40 EA.
5.	0596-00502	CROSS HAIR LIGHT BOX (WOOD ONLY)	5.60 EA.
6.	0596-00126	LITE BOX MTG. BRACKET	.80 EA.
7.	0596-00908-8800	LAMP SOCKET & P.C. ASSY.	22.00 EA.
8.	0596-00121-0100	SUPPORT CHANNEL 19½"	1.50 EA.
9.	0596-00127	MOUNTING FLANGE	.70 EA.
10.	0596-00121-0200	SUPPORT CHANNEL 21 1/8"	1.70 EA.
11.	0596-00006	PIVOT SHAFT ASSY.	4.10 EA.
12.	0596-00020	NUT RETAINER ASSY.	2.10 EA.
13.	0596-00109	MIRROR HOUSING	5.00 EA.
14.	0596-00111	MIRROR ADJUSTING BRACKET	.60 EA.
15.	0596-00115	MIRROR MTG. CLIP	.20 EA.
16.	0596-00005	MIRROR MTG. PLATE ASSY.	5.20 EA.
17.	0596-00112	BACK PLATE	1.60 EA.
18.	0017-00101-0740	WING SCREW M.S. 8 - 32 x 3/8	.20 EA.
19.	0017-00104-0030	FLAT WASHER	.20 EA.
20.	0596-00007	BEARING PLATE ASSY.	4.20 EA.
21.	0017-00104-0056	FLAT WASHER 1" I.D. x 1½ x 1/16	.20 EA.
22.	0017-00100-0107	"E" RING 1" DIA.	.20 EA.
23.	0596-00004	FLANGE TUBE & STOP PIN ASSY.	7.30 EA.
24.	0596-00921	RUBBER STOP	.40 EA.
25.	0596-00019	STOP BRKT & MTG. PLATE	2.20 EA.
26.	0596-00017	STOP BRACKET	3.10 EA.
27.	0100-00902	RUBBER	.20 EA.
28.	0596-00121-0200	SUPPORT CHANNEL 21 1/8"	1.70 EA.
29.	0596-00121-0100	SUPPORT & CHANNEL 19½"	1.50 EA.
30.	0596-00127	MOUNTING FLANGE	.70 EA.
31.	0596-00911	TOP PERISCOPE MIRROR	10.50 EA.
32.	0596-00013	PERISCOPE MIRROR & LITE BOX ASSY. (COMPLETE)	106.00 EA.

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PERISCOPE TUBE ASSY.



MIDWAY MFG. CO.

NO. 596 SEA WOLF - PERISCOPE TUBE ASSEMBLY

PRICE LIST

ORDER BY PART NUMBER ONLY

ITEM	PART N ^o	DESCRIPTION	PRICE
1.	0596-00107	BALL RETAINER FLANGE	4.30 EA.
2.	0017-0006-0052	STEEL BALL - ½" DIA. (37)	.20 EA.
3.	0596-00100	BEARING SUPPORT	5.70 EA.
4.	0017-00101-0658	PHIL. HD. M.S. 10-32 x 5/8 LG	.20 EA.
5.	0596-00021	FRONT EYE PIECE ASSY.	7.80 EA.
6.	0017-00101-0734	PHIL. PAN HD. TYPE 25 #8 x ½" LG.	.20 EA.
7.	0596-00018	PERISCOPE TUBE, TUBE & PLATE ASSY.	16.00 EA.
8.	0545-00033	HANDLE & SW. BRKT. ASSY.	19.50 EA.
9.	0545-00028	TRIGGER SWITCH	1.00 EA.
10.	0010-00200	SPRING	.20 EA.
11.	0545-00034	PUSH BUTTON ASSY.	1.40 EA.
12.	0020-00202	SPRING PLATE	.20 EA.
13.	0017-00100-0025	"E" RING	.20 EA.
14.	0017-00101-0027	HEX. HD. W/W SMS #8 x ¾" LG.	.20 EA.
15.	0543-00008	HANDLE ASSY.	15.50 EA.
16.	0596-00002	MIRROR BRKT. ASSY.	4.00 EA.
17.	0017-00042-0115	SHOULDER WASHER	.20 EA.
18.	0596-00900	PERISCOPE TUBE MIRROR	13.00 EA.
19.	0545-00904	EYE PIECE BASE	6.20 EA.
20.	0545-00100-0100	SCREENED FRONT GLASS	3.20 EA.
21.	0545-00903	EYE PIECE	6.00 EA.
22.	0596-00022	BACK UP PLATE ASSY. (4)	.70 EA.
23.	0545-00110-0200	PERISCOPE CAP	4.10 EA.

NO. 596 SEA WOLF - ADDITIONAL PARTS LIST

PRICE LIST

ORDER BY PART NUMBER ONLY

PART NO	DESCRIPTION	PRICE
0017-00003-0140	23" T.V. MONITOR	390.00 EA.
0596-00503	INSERT (EXPLOSION) (WOOD ONLY)	5.60 EA.
0596-00907-8800	EXPLOSION P.C. ASSY.	27.00 EA.
0017-00050-0046	BACK DOOR LOCK	3.40 EA.
0017-00005-0051	LOCK PLATE	.40 EA.
0017-00005-0042	CAM	.40 EA.
0161-00009	DAG SPRING BRKT. & ASSY.	2.70 EA.
0597-00012-0100	P.C. SUPPORT BRACKET ASSY. R.H. (GAME BOARD)	3.10 EA.
0597-00012-0200	P.C. SUPPORT BRACKET ASSY. L.H. (GAME BOARD)	3.10 EA.
0017-00009-0158	PUSH BUTTON	2.00 EA.
0586-00107	BUTTON SW. MTG. BRKT.	.40 EA.
0586-00036	SWITCH	.80 EA.
0596-00131	WRAP AROUND	10.00 EA.
0596-00016	EXPLOSION MIRROR ASSY.	9.50 EA.
0596-00910	SIDE CARDBOARD INTERIOR SCENERY	18.00 EA.
0596-00912	INTERIOR SCENERY (CARDBOARD FACE BEZEL)	12.50 EA.
0596-00913	BLUE ACETATE	1.70 EA.
0017-00009-0008	TURN BUTTON	.40 EA.
0596-00141	STOOL PROTECTIVE TRIM	1.80 EA.
0566-00120	CASH BOX	6.00 EA.
0566-00121	CASH BOX COVER	2.20 EA.
17-093-102-48	LEG LEVELERS	.50 EA.
17-103-26	LEG LEVELER NUTS	.20 EA.
0572-00103	VENT GRILL	1.20 EA.
0596-00130	GLASS LOCK BRACKETS	1.20 EA.
0567-00106-0100	SWITCH MTG. PLATE	.60 EA.
0596-00101	T.V. SUPPORT BRACKET	2.90 EA.
0017-00101-0637	8 - 32 x 1" LG. CARRIAGE BOLT (FOR MTG. T.V. SUPPORT BRKT. & CHASSIS)	.20 EA.

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PRICES SUBJECT TO CHANGE WITHOUT NOTICE

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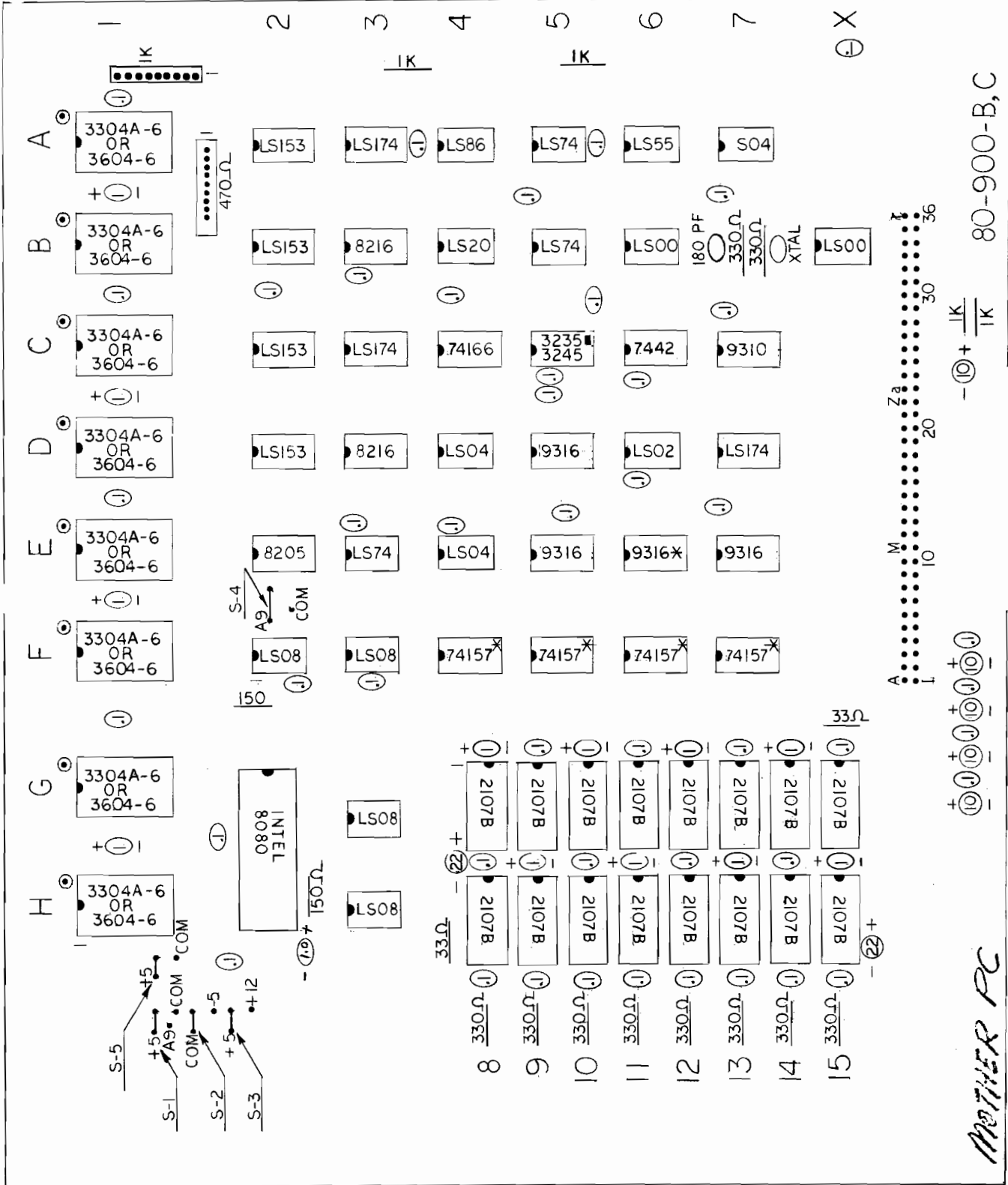
NO. 596 SEA WOLF – ADDITIONAL PARTS LIST

PRICE LIST

ORDER BY PART NUMBER ONLY

PART NO	DESCRIPTION	PRICE
0596-00919	EXPLOSION MIRROR	2.90 EA.
0161-00100	T.V. MTG. WASHER	.20 EA.
0596-00902	DECORATIVE WRAP AROUND	20.50 EA.
0596-00915	STEP STOOL RUBBER MAT	10.40 EA.
0596-00901	DISPLAY GLASS	38.00 EA.
0596-00916	REG. MIRROR PANE	34.50 EA.
0596-00010	REFLECTOR ASSY. (W/O BULB)	18.00 EA.
0017-00003-0095	18" BLACK LITE	7.60 EA.
0596-00012	COMPLETE PERISCOPE TUBE ASSY.	125.00 EA.
0596-00013	COMPLETE PERISCOPE MIRROR & LITE BOX ASSY.	105.00 EA.
0596-00017	SECONDARY STOP BRACKET ASSY.	3.00 EA.
0596-00906	PERISCOPE COMMUTATOR P.C. BOARD	8.10 EA.
0596-00133	WRAP AROUND BRACKET	.60 EA.
0596-00130	GLASS LOCKING BAR	1.20 EA.
0596-00015	P.C. BRD. MNTG. ASSY. (10")	1.20 EA.
0596-00003-0100	P.C. BRD. MTG. ASSY. (LONG)	1.60 EA.
0591-00017	P.C. BRD. ASSY. (SHORT)	.80 EA.
0567-00003	P.C. MTG. ASSY. (12")	1.60 EA.
0592-00104-0100	CHASSIS MTG. BRKT.	.60 EA.
0595-00104-0200	CHASSIS MTG. BRKT.	.60 EA.
0017-00003-0065	LINE CORD	3.00 EA.
Mt - 00052	TRANSFORMER	29.00 EA.
0080-00900-8800	MOTHER BRD.	850.00 EA.
0596-00904-8800	GAME BRD.	200.00 EA.
0596-00909-8800	SOUND GENERATOR BRD.	100.00 EA.
0080-00904-8800	POWER SUPPLY BRD.	90.00 EA.

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MOTHER PC

80-900-B,C

NOTE: WHEN 3304A-6 OR 3604-6 ARE USED DRILL HOLES BETWEEN ALL PINS #24 IF AT LOCATION C-5 INTEL #3235 IS USED, POWER SUPPLY 80 901 MUST HAVE +15V.

* 74157 MUST BE FAIRCHILD DEVICE IF 8205 IS UNAVAILABLE 3205 MAY BE USED.

PC.596-904A LOGIC BOARD

150Ω R115
1N914 CR102

T1P 32 Q115

A14 CR101

560Ω R117
560Ω R118

560Ω BLOCK
R116

R111 330Ω
R112 330Ω
R110 330Ω
R113 330Ω
R109 330Ω
R114 330Ω
R108 330Ω
R105 330Ω
R107 330Ω
R106 330Ω

(A) Q111
(A) Q112
(A) Q110
(A) Q113
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(A) Q114
(A) Q108
(A) Q105
(A) Q107
(A) Q106

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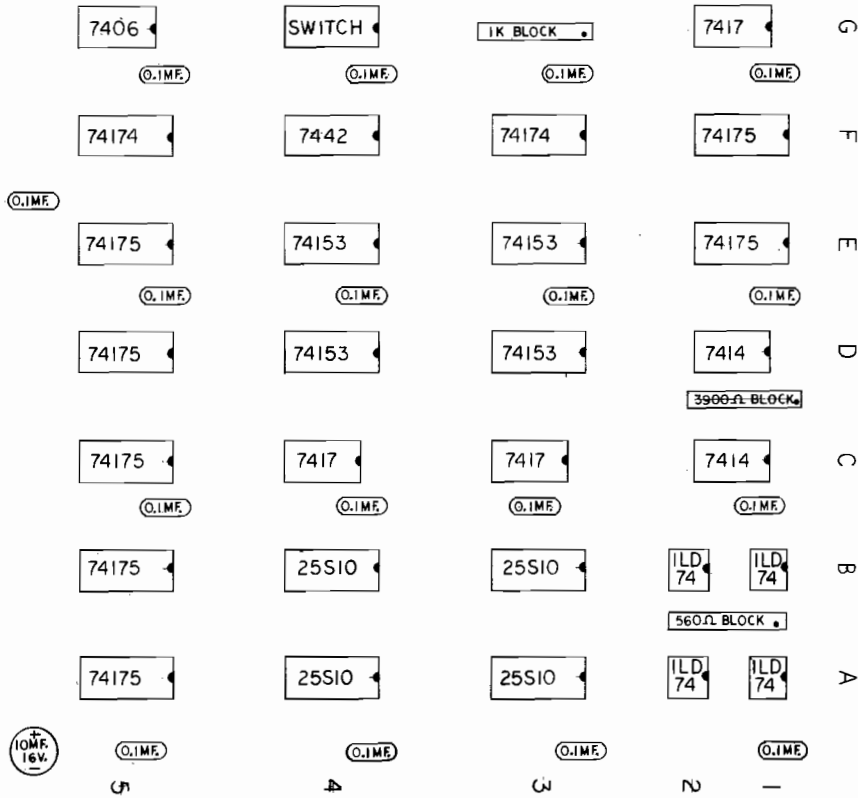
560Ω R119

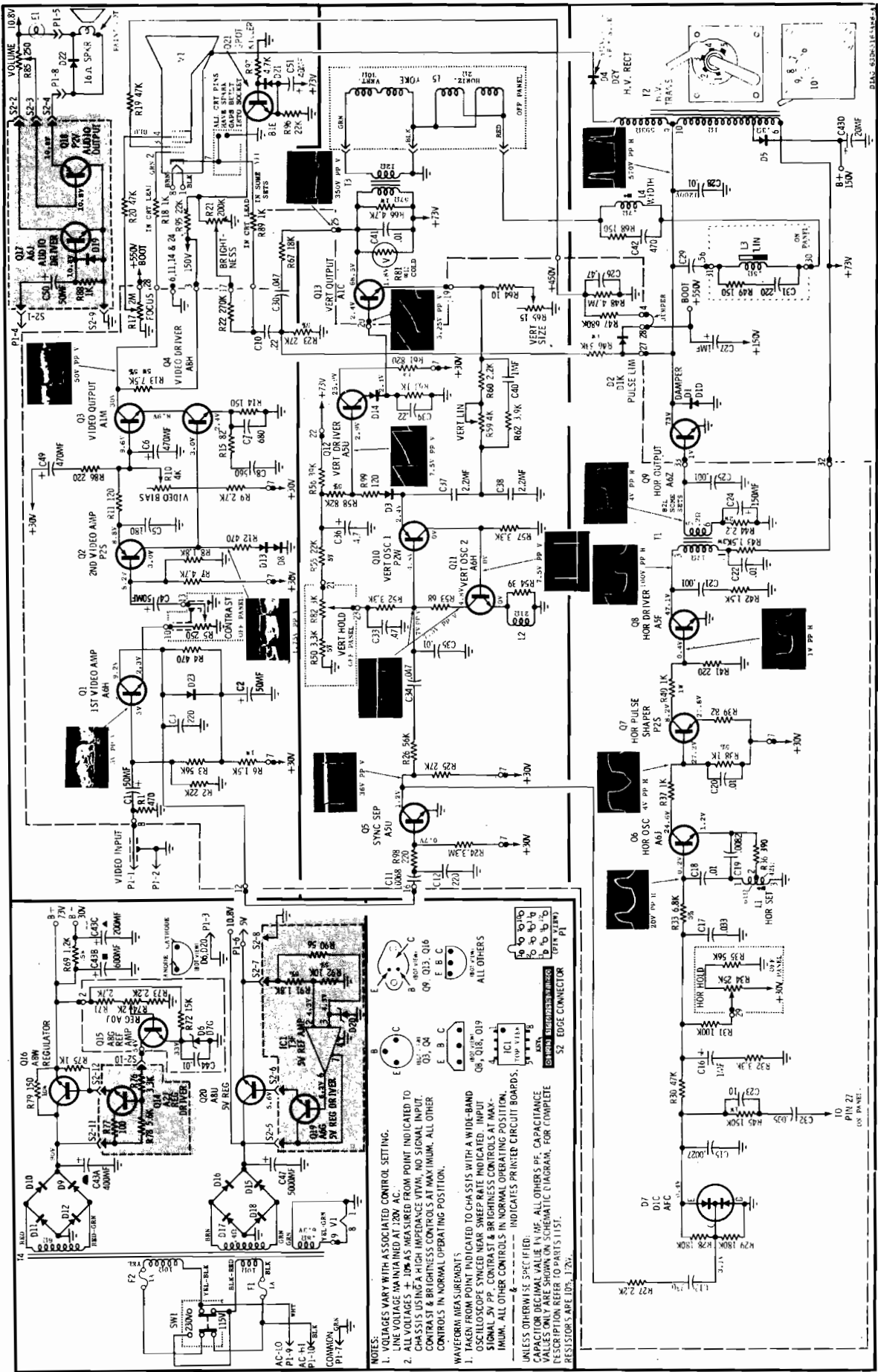
3900 R120

R104 3900
R103 3900
R102 3900
R101 3900

(B) Q104
(B) Q103
(B) Q102
(B) Q101

A = 2N4401 TRANSISTOR
B = 2N4403 TRANSISTOR





NOTES:

- VOLTAGES VARY WITH ASSOCIATED CONTROL SETTING.
- LINE VOLTAGE MAINTAINED AT 120V AC.
- ALL VOLTAGES +10% AS MEASURED FROM POINT INDICATED TO CHASSIS USING A HIGH IMPEDANCE VTVM, NO SIGNAL INPUT.
- CONTRAST & BRIGHTNESS CONTROLS AT MAXIMUM. ALL OTHER CONTROLS IN NORMAL OPERATING POSITION.
- WAVEFORM MEASUREMENTS:
 - TAKEN FROM POINT INDICATED TO CHASSIS WITH A WIDE-BAND OSCILLOSCOPE SYNCED NEAR SWEEP RATE INDICATED. INPUT SIGNAL 5V P.P. CONTRAST & BRIGHTNESS CONTROLS AT MAXIMUM. ALL OTHER CONTROLS IN NORMAL OPERATING POSITION.
 - INDICATES PRINTED CIRCUIT BOARDS.
- UNLESS OTHERWISE SPECIFIED, CAPACITOR DECIMAL VALUE IN MF. ALL OTHERS PF. CAPACITANCE VALUES ONLY ARE SHOWN ON SCHEMATIC DIAGRAM. FOR COMPLETE DESCRIPTION REFER TO PARTS 1115T.
- RESISTORS ARE 10% TYP.

Schematic Diagram