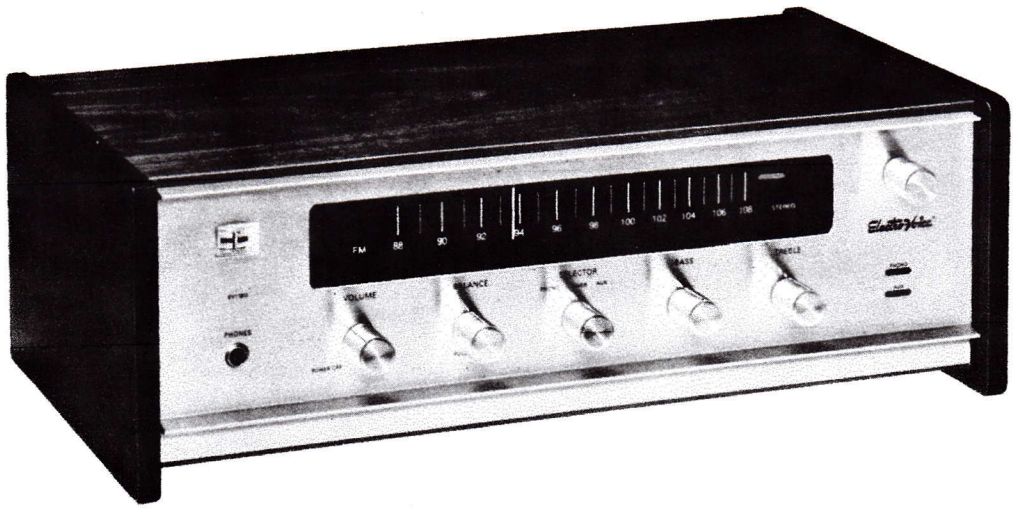
Electro-Voice®

ELECTRONICS SERVICE MANUAL



THIS SERVICE MANUAL COVERS ELECTRO-VOICE MODELS:

FM STEREO RECEIVER E-V 1180

FM STEREO TUNER E-V 1159

STEREO AMPLIFIER E-V 1122

ELECTRO-VOICE, INC.

A Subsidiary of Gulton Industries, Inc.

600 Cecil St., Buchanan, Michigan 49107

Form No. 1406

Litho in U. S. A.

INTRODUCTION

This service manual was designed with the technician in mind. It has been kept as brief as possible without over-simplification. All procedures are presented in a clear step-by-step manner. Although we have tried to anticipate all of your problems and questions, in special instances you may need additional guidance. Address any such inquiries to our Technical Service Department.

The sheets are punched to fit a three-ring binder so that any production changes and additional service tips can be easily added. This will keep your Electro-Voice Service Data as up-to-date as possible.

SPECIFICATIONS

AMPLIFIER SECTION (E-V 1180 & E-V 1122)

Power Output,	
IHF Music Power:	30 watts
Continuous Sine Wave:	10 watts per channel into 8 ohms
Frequency Response:	±1.5 dB, 20–20,000 Hz at rated output
Hum and Noise,	
Auxiliary Input:	Better than 65 dB below rated output
Magnetic Phono Input:	Better than 50 dB below rated output
Channel Separation:	40 dB at 1,000 Hz
Inputs:	Mag Phono–Auxiliary
Input Sensitivity,	
Phono:	4 mv
Aux (E-V 1180):	250 mv
Aux (E-V 1122):	100 mv
Controls (rotary),	
Volume	with on/off switch
Balance	with pull/mono switch
Selector	Phono–Tuner–Auxiliary
Bass	Total variation of 22 dB at 50 Hz
Treble	Total variation of 22 dB at 10 kHz
Outputs,	
Speakers	4–16 ohms per channel
Stereo Tape Recorder	
Stereo Headphones	on front panel

TUNER SECTION (E-V 1180 & E-V 1159)

Sensitivity:	3 uv, IHF
Frequency Response:	±1 dB, 30–15,000 Hz (limit of IHF specs. Actual response greatly exceed this figure.)
Hum and Noise:	Better than 55 dB below 100% modulation for full quieting
Tuning Range:	88 to 108 megahertz
Tuning Indicator:	Zero center meter
Drift:	Less than .02%
Harmonic Distortion:	Less than 1% at 100% modulation
Capture Ratio:	2.5 dB
Channel Separation:	22 dB at 1 kHz
SCA Rejection:	40 dB
Audio Output (E-V 1159):	.5 volt per channel at 100% modulation and full quieting
Stereo/Mono Switching:	All electronic and automatic
Stereo Indicator:	Panel light indicates presence of stereo broadcast regardless of pull/mono switch
Antenna Input:	Terminals for 300 ohm FM antenna

GENERAL

Power Requirements:	110-120 volts, 50–60 Hz AC
Dimensions,	
E-V 1180:	5" h., 15¾" w., 8½" d.
E-V 1159:	4¼" h., 15¾" w., 8½" d.
E-V 1122:	4½" h., 15¾" w., 8½" d.

SERVICING PROCEDURE

TEST EQUIPMENT

1. FM signal generator, tuning 88–108 MHz modulated ± 75 kHz. Attenuator accurate down to 1 μV.
2. FM Multiplex generator (98 MHZ carrier or equivalent with calibrated RF level and modulation).
3. Audio VTVM
4. DC VTVM
5. Oscilloscope
6. Harmonic Distortion Analyzer

POWER OUTPUT AND HARMONIC DISTORTION (E-V 1122 & E-V 1180)

STANDARD TEST CONDITIONS:

TONE CONTROLS . . . . . FLAT
BALANCE . . . . . CENTERED
INPUT SELECTOR . . . . . AUX
SPEAKER LOAD . . . . . 8 OHMS

1. Terminate both amplifier output channels into 8-ohm non-inductive load resistors, 12 watt minimum rating.
2. Simultaneously perform the following for both channels. In parallel with each load resistor, connect the input leads of an accurately calibrated audio VTVM and a H.D. analyzer.
3. Connect a low-distortion audio generator to the "AUX" input jacks. Set generator output level to 250 mV± 1 dB @ 1000 Hz.
4. Apply AC power to the receiver and carefully advance VOLUME control clockwise for full power output 9 volts (10 watts).
5. TOTAL HARMONIC DISTORTION should measure 1.3% or less.

The E-V 1122 and E-V 1180 may be checked to the additional specifications given at the front of this manual.

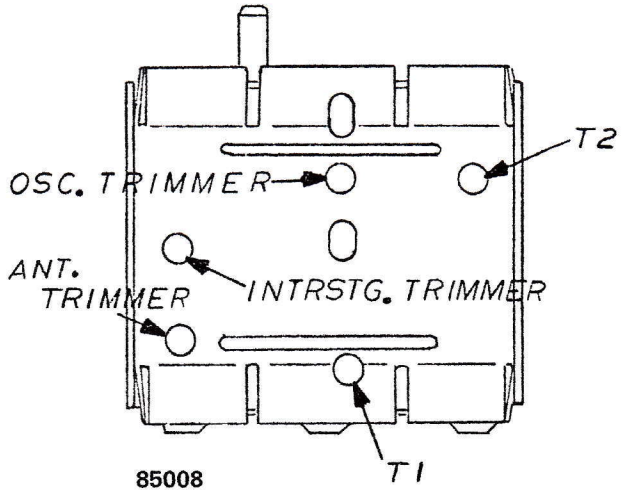
FM ALIGNMENT (E-V 1159 & E-V 1180)

1. Defeat the permanent AFC action by grounding point "D" on the I.F. pcb assembly.
2. Tune the receiver to the low end of FM band with no signal input. Adjust the AGC voltage at point "A" on I.F. pcb assembly with respect to chassis ground, for +10.5 volts DC. Adjust with 100 kΩ pot (1).
3. Adjust the top slug of ratio detector transformer for center tuner-meter reading on noise.
4. Connect FM signal generator to the antenna terminals. Set generator at 90 MHz, 3 μV R.F. 400 Hz modulation ±75 kHz deviation.
5. Connect an audio VTVM and oscilloscope to the E-V 1159 output or E-V 1180 tape output.
6. Tune in the signal generator on receiver at 90 MHz for center meter reading. NOTE: If the unit is completely out of alignment, additional signal level may be required to obtain a good output level. Signal level may be reduced as receiver sensitivity is improved.
7. Adjust the bottom slug of the ratio detector transformer for maximum output.
8. Adjust the top, then bottom slugs of I.F. transformers on the I.F. pcb assembly including slugs of transformer T2 (located in FM tuning unit) for maximum output consistent with a well-balanced signal on oscilloscope.
9. Adjust the antenna coil T1 in the FM tuning unit for maximum output. Dial pointer should be setting at 90 MHz.
10. Tune the signal generator and FM tuner to 106 MHz. Adjust the antenna, interstage and oscillator TR trimmers in the FM tuning unit for maximum output. Dial pointer should be setting at 106 MHz.
11. Repeat steps 9 & 10 for proper tracking and best results.
12. Remove AFC ground!

MULTIPLEX ALIGNMENT

Check and perform "FM Alignment" if necessary. Improper FM alignment will make proper MPX alignment impossible.

1. On the MPX pcb assembly, connect a 67 kHz (SCA) generator to the junction of the 18 kΩ resistor (20) and the 5 μF capacitor (3) at the input of the multiplex circuit. Connect an audio VTVM to the base of Q1. (Mode switch in STEREO on E-V 1180.)
2. Adjust SCA coil L1 for a minimum output on VTVM.
3. Remove test equipment connected in Step 1. Connect a multiplex generator to the FM antenna terminals. Set generator level to 100 μV at 98 MHz.
4. Connect an oscilloscope and audio VTVM to the right channel output. Apply LEFT channel modulation (100%) from the multiplex generator and adjust coils T1 and T2 on the MPX pcb assembly for minimum output.
5. Modulate RIGHT channel and check minimum output on left channel. Separation should be 25 dB or greater. Repeat Steps 4 & 5 until no further improvement is obtained.



85008

GENERAL PARTS

PARTS LIST

PART NO.	DESCRIPTION
GENERAL PARTS	
19040	Dial Spring
3215	Meter—Tuning
43071	Lamp (No. 49 Stereo)
4329	Lamp (No. 47 Dial)
77163	Flywheel
77162	Shaft—Flywheel shaft
76477-TV	Bearing—Dial Shaft (Rear)
76229	Bushing—Dial Shaft (Front)
77161-PK	Lens—Red
77161-ND	Lens—Blue
77161-PJ	Lens—Amber
20676	Fuse 1A 3AG (Slo-Blo)
20519	Fuse 1½A 3AG (Output)
20109	Strain Relief (Heyco)
17137	Phono Socket (Connector)
17138	Insulator—Phono Socket
20915	Fuse Block
27083	Terminal Strip—Screw (4T)
2782	Terminal Strip—Screw (3T)
77110	Clamp—Capacitor
17161	Phone Jack
77603	FM Antenna
20928	Pushnut
20827-AP	Nut—Knurled Brass

PART No.	DESCRIPTION
E-V 1180 RECEIVER	
15226	Transformer—Power
16511	Cord—Power
A77164	Dial Pointer
77728-AM	Knob—Tuning
77660-AM	Knob—Control
A77179-ED	Front Panel
77211-HV	Side Panel
A85072	Cabinet Assembly
A77174	Dial Lens
27194	Terminal Strip—Miniature
2781	Terminal Strip (5T)
85393	Dial Drum Assembly
85010	Dial Bracket, Socket & Pulley Assy.
85011	Lampholder & Bracket (1)
69021	Spacer—Transformer
20926	Lampholder & Clip (2)
79008	Meter Support
E-V 1122 AMPLIFIER	
15203	Transformer—Power
16511	Cord—Power
77660-AM	Knob—Control
A77180-ED	Front Panel

PART NO.	DESCRIPTION
77212-HU	Side Panel
A85073	Cabinet Assy.
27050	Terminal Strip (3T)
27036	Terminal Strip (5T)
77178	Insulator—Fishpaper (8½")
20919	Lampholder

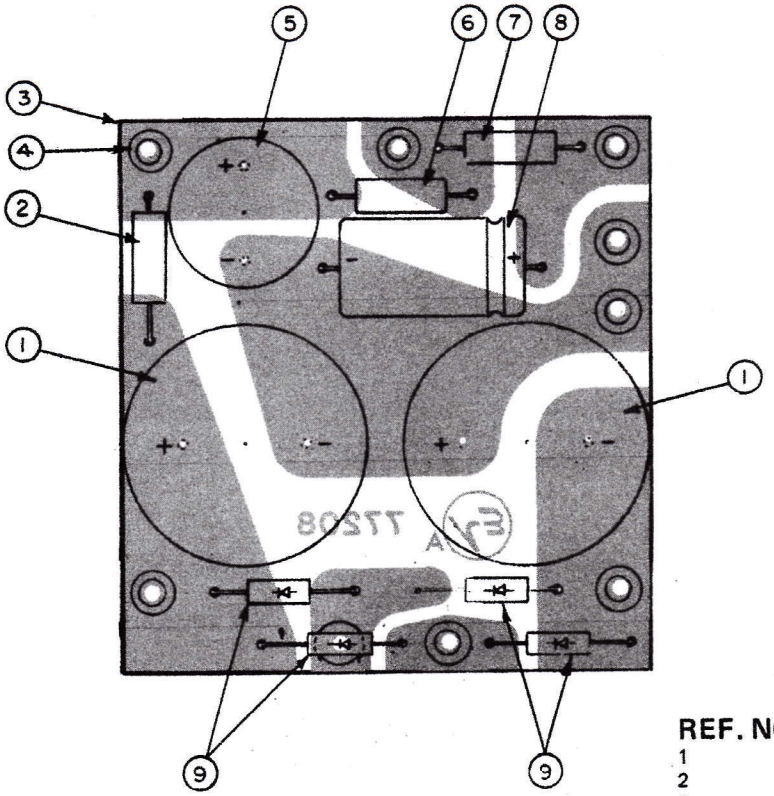
E-V 1159 TUNER

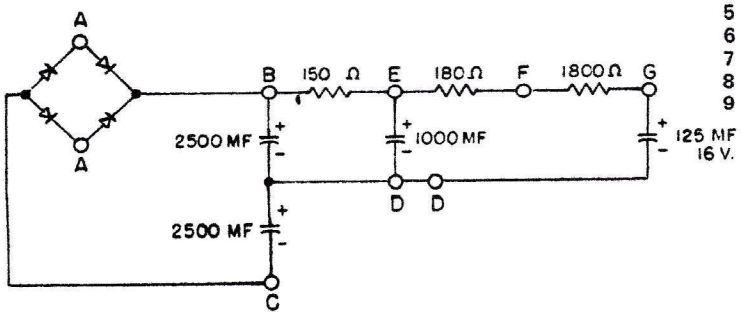
15211	Transformer—Power
A77241	Dial Pointer
16412	AC Line Cord
77210-AM	Knob — Tuning
77270-AM	Knob — Selector
A77234-ED	Front Panel
85101	Cabinet Assembly
77212-HV	Side Panel

PART No.	DESCRIPTION
A77235	Dial Lens
20889	Fuse 1/10A (Slo-Blo)
20933	Lampholder Socket
56089	Switch—Power
27050	Terminal Strip (3T)
20797	Strain Relief (Heyco)
85132	Dial Bracket, Socket & Pulley Assy.
20920	Dial Drum Assy.
77265	Spacer—Panel

PACKING PARTS

96755	Carton (E-V 1180)
96754	Carton (E-V 1159 & E-V 1122)
533400	Instruction Sheet (E-V 1180)
533644	Instruction Sheet (E-V 1159)
533399	Instruction Sheet (E-V 1122)





PARTS LIST

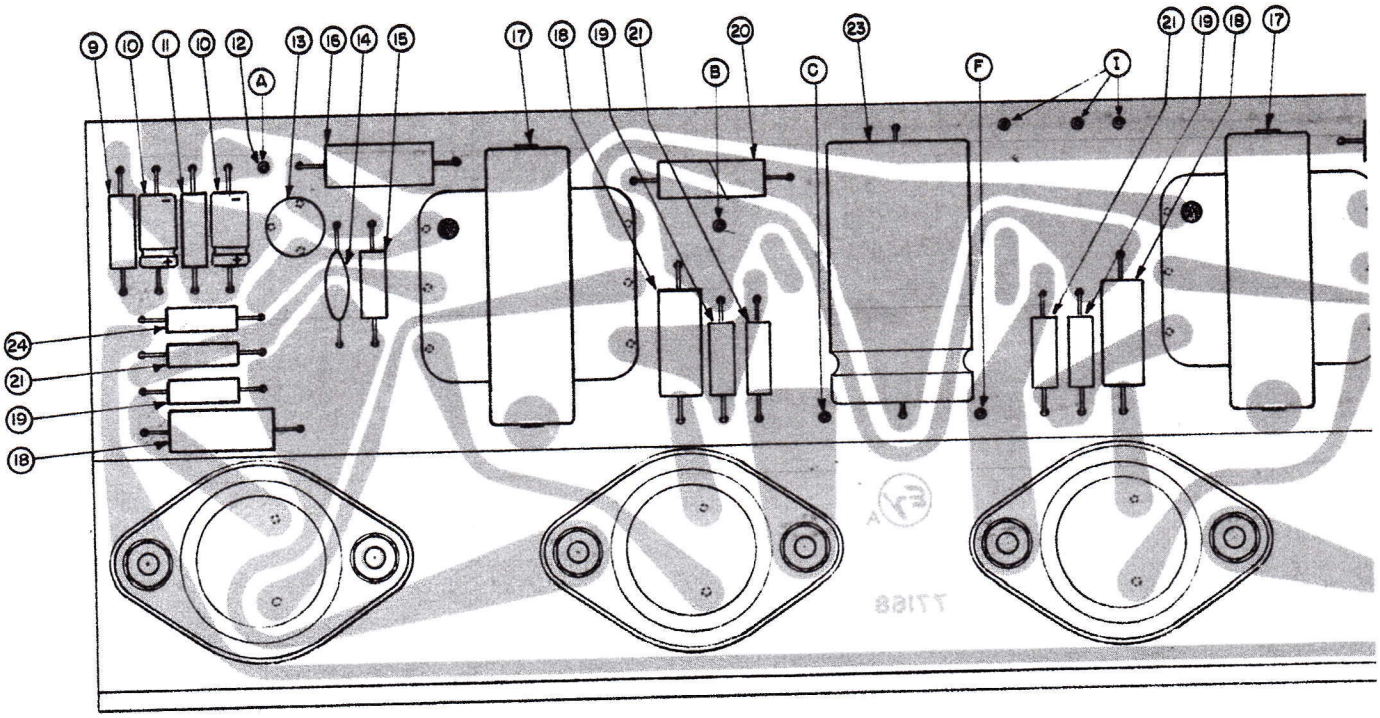
REF. NO.	PART NO.	DESCRIPTION
1	42407	Capacitor—Electrolytic 2500 μF/25V
2	46149	Resistor—150 Ω½W (10%)
3	85004	Power Supply Assy.—Complete
4	20862-AP	Eyelet
5	42405	Capacitor—Electrolytic 1000 μF/15V
6	4667	Resistor—180 Ω½W (10%)
7	4677	Resistor—1800 Ω½W (10%)
8	42443	Capacitor—Electrolytic 125 μF/16V
9	43067	Diode (SD-1)

E-V 1122 & E-V 1180

POWER SUPPLY PC BOARD ASSEMBLY

AMPLIFIER PC BOARD ASSEMBLY

E-V 1122 & E-V 1180



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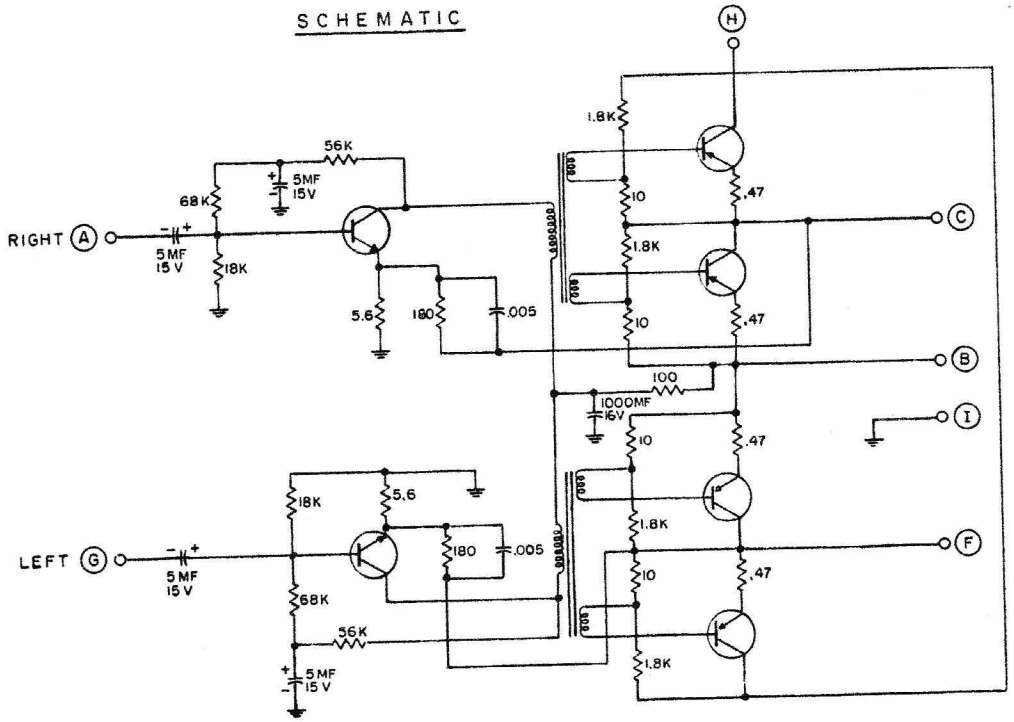
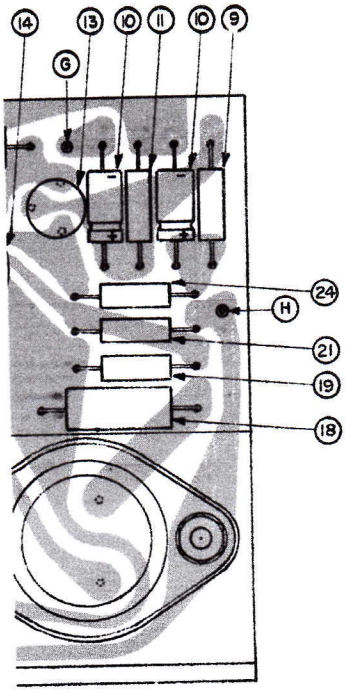
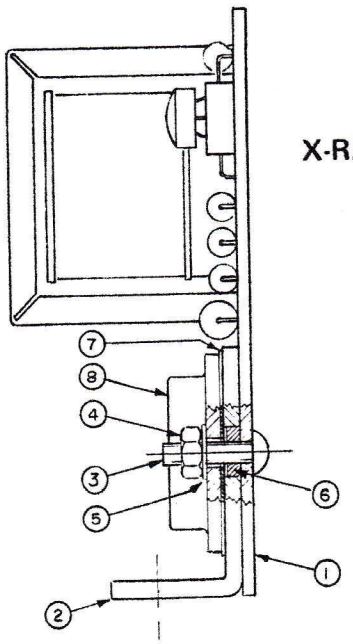


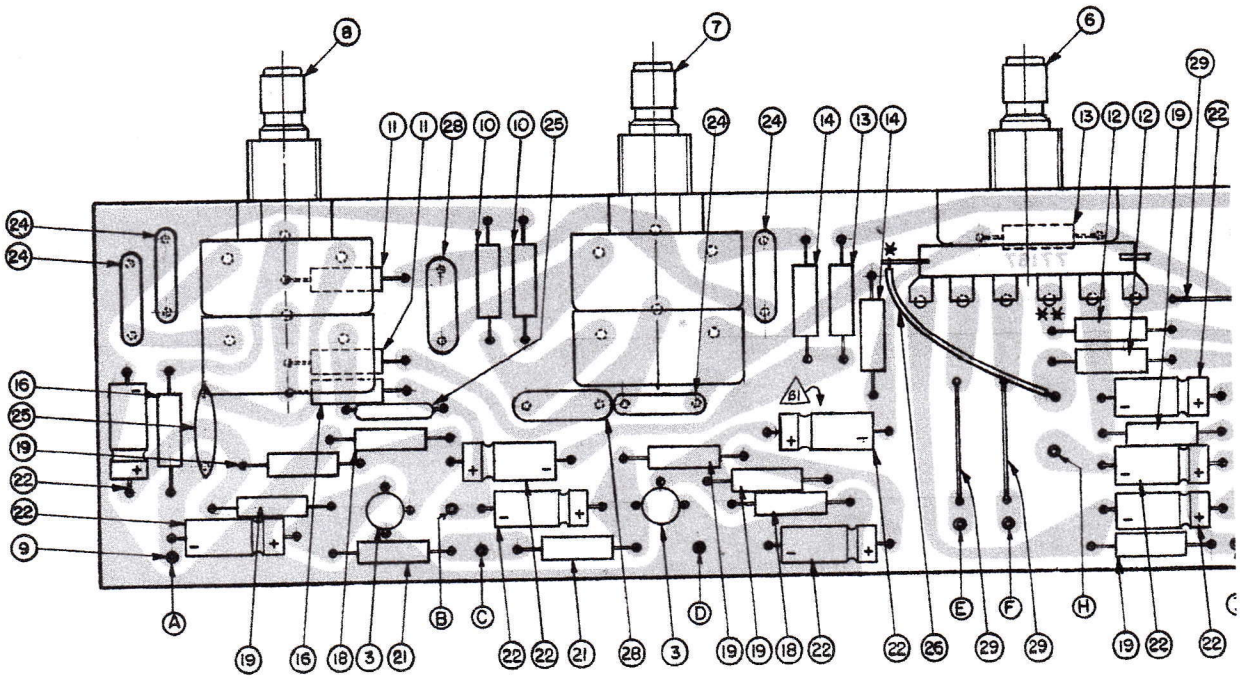




X-RAY VIEW – COMPONENT SIDE

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
1	85007	Power Amp Assy.–Complete
2	77221	Heat Sink
3	L60328–BP	Screw (¼-40 x ½)
4	20261-AD	Nut (4-40 Hex)
5	3843-AD	Lockwasher (No. 4)
6	38415	Fiber Washer
7	20747	Mica Insulator
8	43070	Transistor–Power
9	46019	Resistor–68 kΩ½W (10%)
10	42365	Capacitor–Electrolytic 5 μF/15V
11	46029	Resistor–18 kΩ½W (10%)
12	27259	Terminal (Malco)
13	43044	Transistor–Driver (SE6002)
14	42437	Capacitor–Ceramic .0047 μF/125V
15	4667	Resistor–180 Ω½W (10%)
16	46289	Resistor–5.6 Ω2W (10%)
17	15195	Transformer–Driver
18	46329	Resistor–0.47 Ω2W (10%)
19	46138	Resistor–10 Ω½W (10%)
20	46140	Resistor–100 Ω½W (10%)
21	4677	Resistor–1.8 kΩ½W (10%)
23	42393	Capacitor–Electrolytic 1000 μF/16V
24	4652	Resistor–56 kΩ½W (10%)



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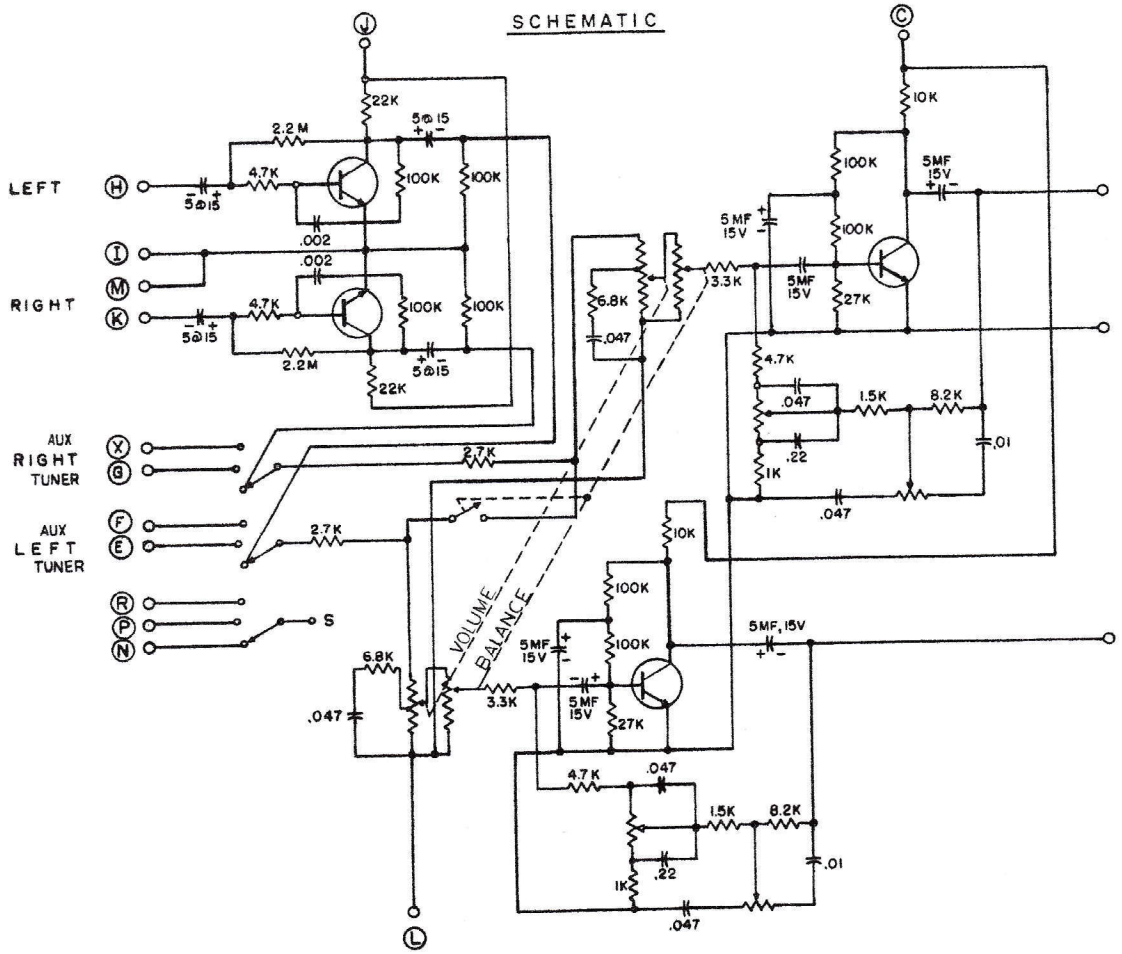
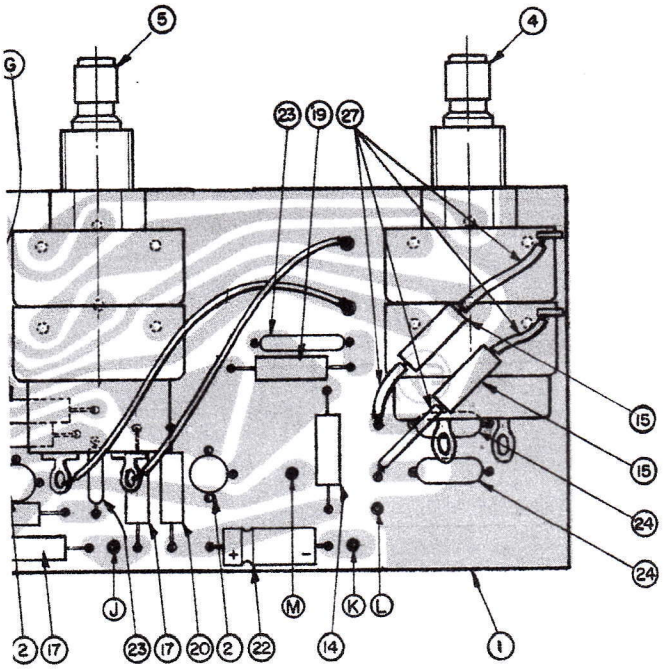

LEFT
RIGHT
AUX RIGHT TUNER
AUX LEFT TUNER
VOLUME
BALANCE
22K
2.2M
4.7K
100K
.002
5@15
10K
5MF 15V
27K
6.8K
3.3K
.047
1.5K
8.2K
.22
1K
2.7K

PREAMPLIFIER PC BOARD ASSEMBLY

E-V 1122 & E-V 1180



X-RAY VIEW — COMPONENT SIDE

4T OUT

T OUT

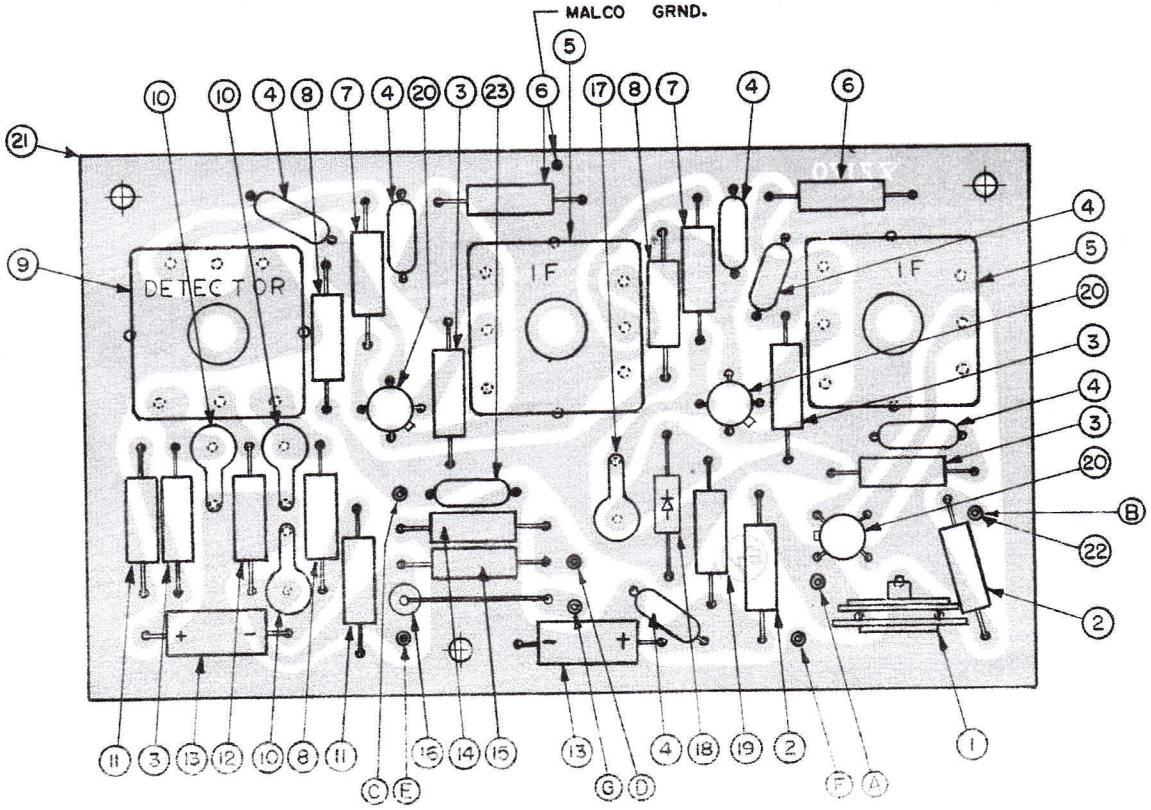
PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
1	85006	Preamp Assy.—Complete
2	43054	Transistor (S-1878 or GE 2N3900)
3	43045	Transistor (SE4002)
4	46412	Control—25 kΩVolume
5	46411	Control—25 kΩBalance
6	56084	Switch—Selector
7	46413	Control—100 kΩBass
8	46418	Control—50 kΩTreble
9	27259	Terminal (Malco)
10	4693	Resistor—1 kΩ½W (10%)
11	46046	Resistor—1.5 kΩ½W (10%)
12	46036	Resistor—2.7 kΩ½W (10%)
13	46017	Resistor—3.3 kΩ½W (10%)
14	4675	Resistor—4.7 kΩ½W (10%)
15	4650	Resistor—6.8 kΩ½W (10%)
16	46031	Resistor—8.2 kΩ½W (10%)
17	4678	Resistor—22 kΩ½W (10%)
18	4651	Resistor—27 kΩ½W (10%)
19	4695	Resistor—100 kΩ½W (10%)
20	46025	Resistor—2.2 MegΩ½W (10%)
21	4691	Resistor—10 kΩ½W (10%)
22	46365	Capacitor—Electrolytic 5 μF/15V
23	42368	Capacitor—2200 pF
24	42371	Capacitor—.047 μF
25	42367	Capacitor—Flat Foil .01 μF
27	6606	Tubing
28	42442	Capacitor—Mylar .22 μF

IF PC BOARD ASSEMBLY

E-V 1159 & E-V 1180

X-RAY VIEW – COMP(



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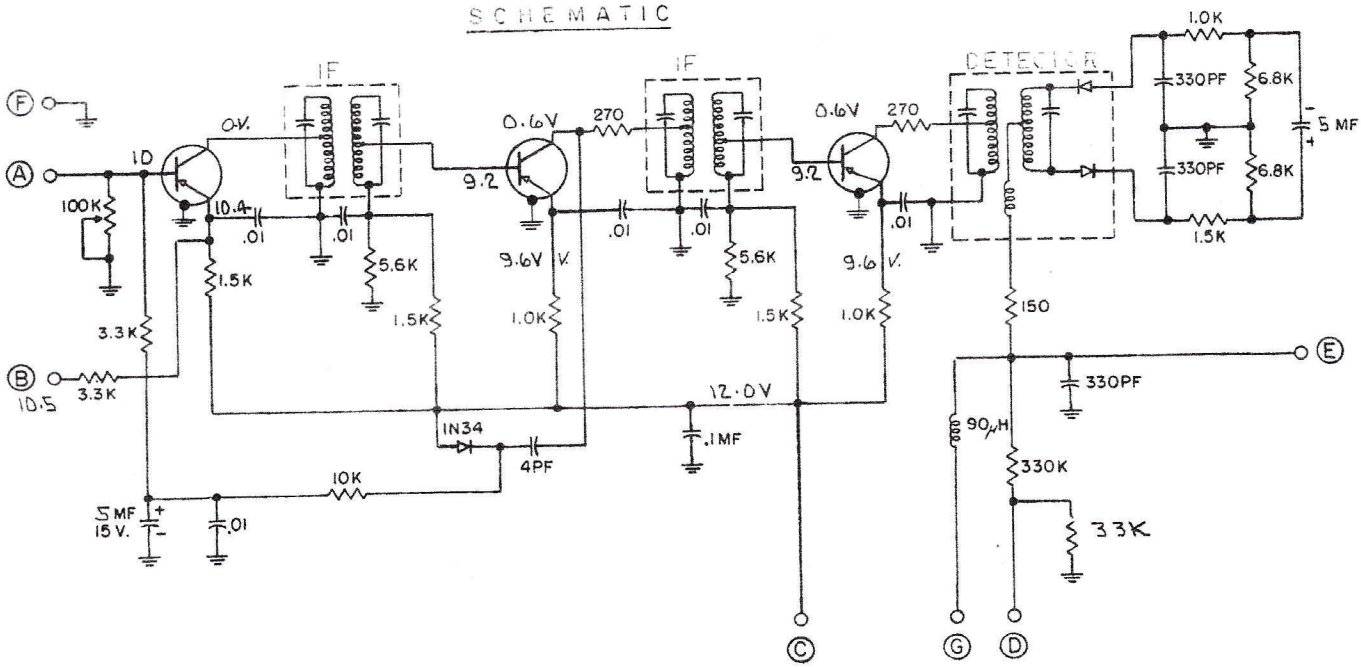


FM TUNER ASSEMBLY

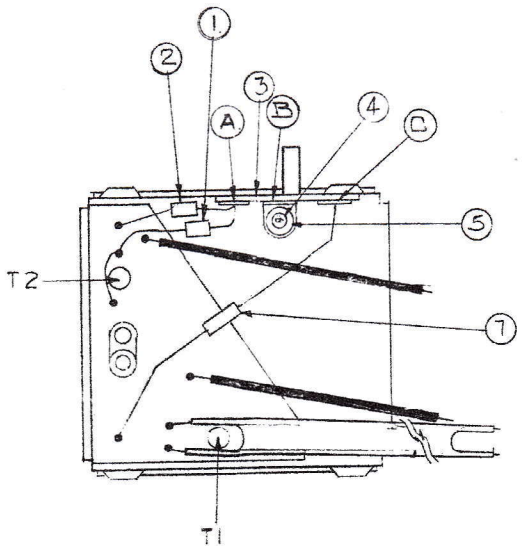
E-V 1159 & E-V 1180

T SIDE

FRONT END TUNER ASSEMBLY (85008)

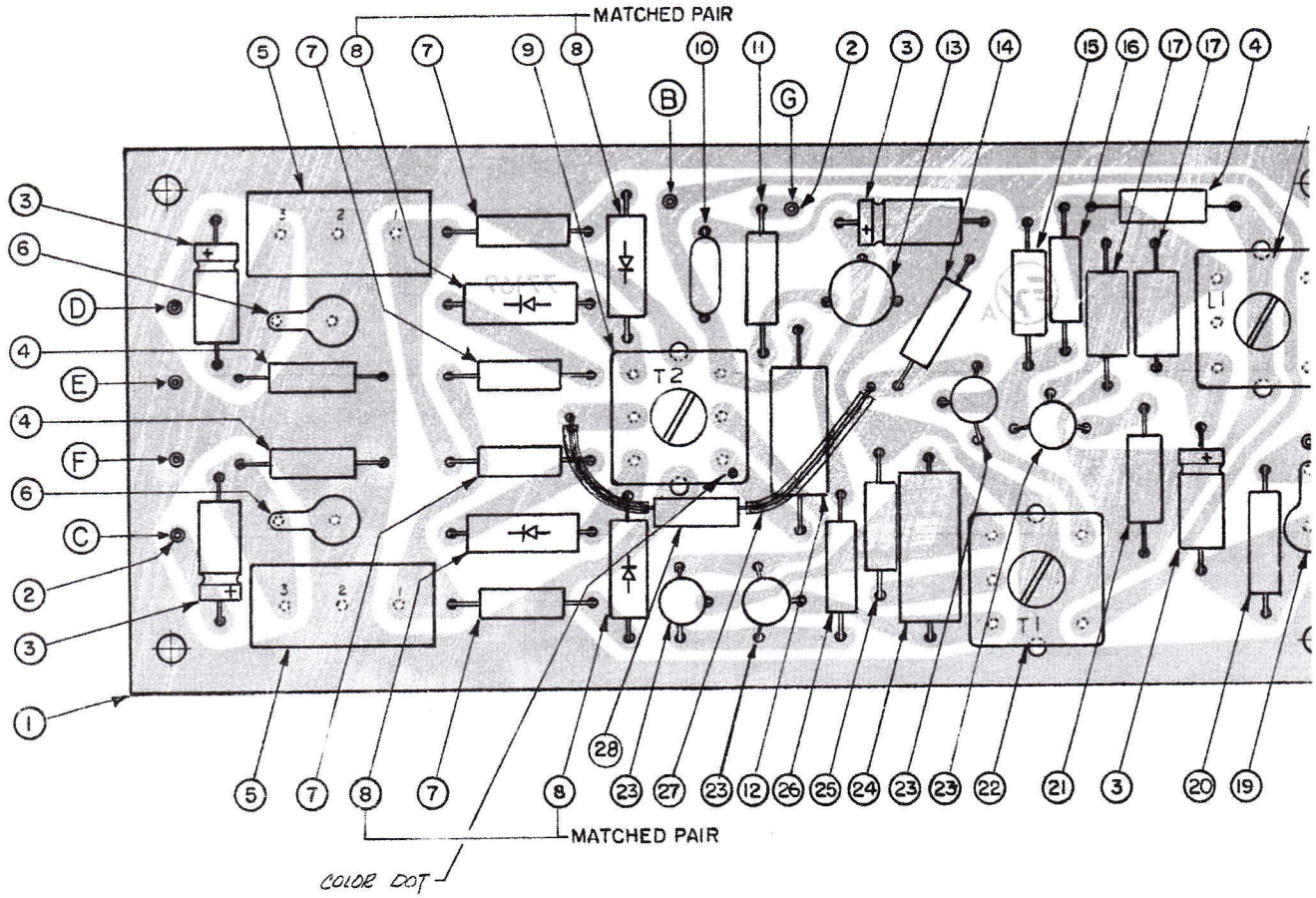
REF. NO.	PART NO.	DESCRIPTION
1	42398	Capacitor—470 pF
2	42399	Capacitor—150 pF
3	27050	Terminal Strip (3T)
4	L60324	Screw (4-40 x ¼ Pan Hd.)
5	3843	Lockwasher (No. 4)
7	4634	Resistor—33 Ω½W (10%)

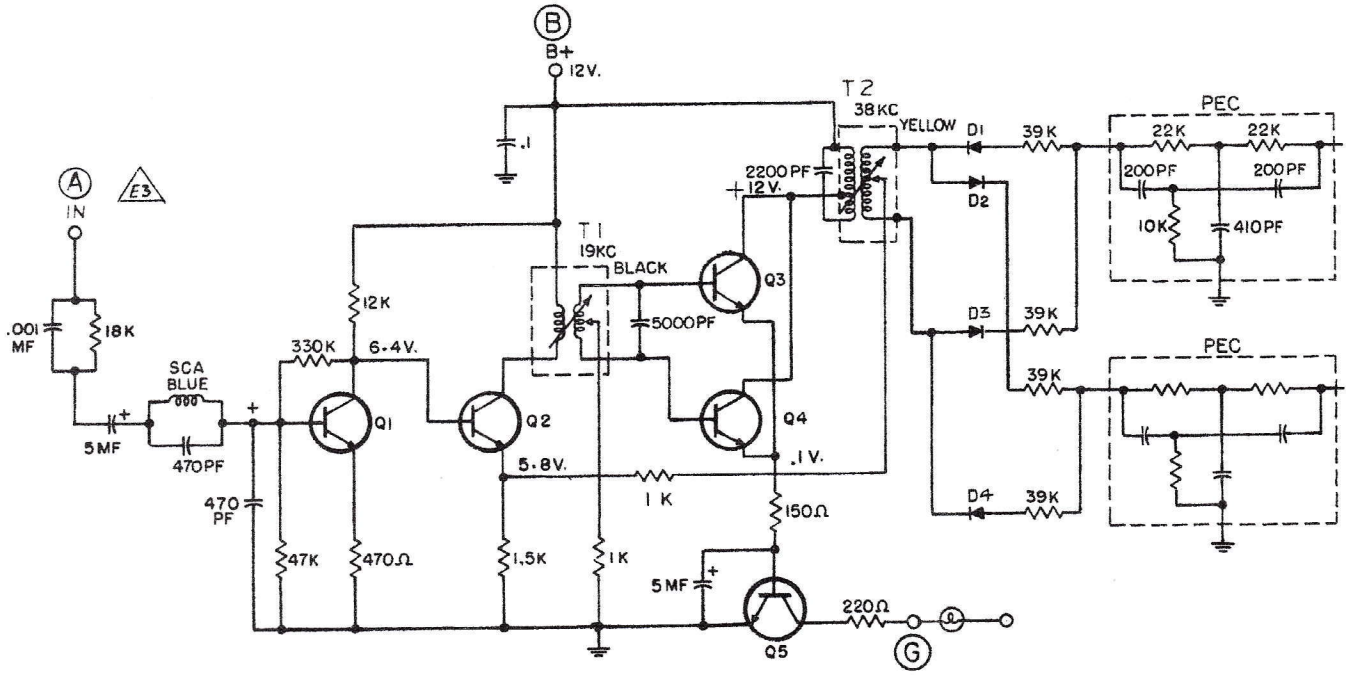
A IF Output
B Ground
C B+



PARTS LIST
IF PCB ASSEMBLY

REF. NO.	PART NO.	DESCRIPTION
1	46383	Potentiometer—100 kΩ(30%)
2	46017	Resistor—3.3 kΩ½W (10%)
3	46046	Resistor—1.5 kΩ½W (10%)
4	42367	Capacitor—.01 μF
5	15204	Transformer—IF
6	46054	Resistor—5.6 kΩ½W (10%)
7	46034	Resistor—270 Ω½W (10%)
8	4693	Resistor—1 kΩ½W (10%)
9	15188	Transformer—Ratio Detector
10	42396	Capacitor—Ceramic 330 pF
11	46050	Resistor—6.8 kΩ½W (10%)
12	46149	Resistor—150 Ω½W (10%)
13	42365	Capacitor—Electrolytic 5 μF/15V
14	4665	Resistor—33 kΩ½W (10%)
15	4685	Resistor—330 kΩ½W (10%)
16	15208	Choke—90 μH
17	42397	Capacitor—Ceramic 4 pF
18	43057	Diode (1N34)
19	4691	Resistor—10 kΩ½W (10%)
20	46056	Transistor (2N3588)
21	85005	I.F. Assembly—Complete
22	27259	Terminal (Malco)
23	42363	Capacitor—Flat Foil .1 μF

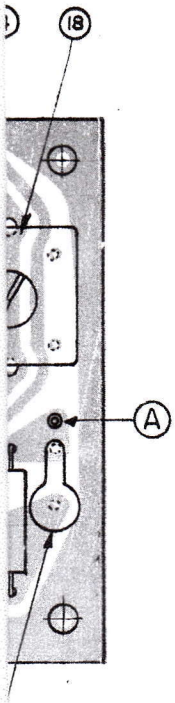

MATCHED PAIR
T2
T1
L1
MATCHED PAIR
COLOR DOT


B
B+
12V.
T2
38KC
YELLOW
D1
D2
D3
D4
39K
PEC
22K
200PF
10K
410PF
A
IN
E3
.001 MF
18K
SCA BLUE
5MF
470PF
470 PF
330K
6-4V.
12K
T1
19KC
BLACK
5000PF
Q1
Q2
Q3
Q4
Q5
2200PF
12V.
.1
5.8V.
.1V.
1K
150Ω
47K
470Ω
1.5K
220Ω
G

SCHEMATIC

MULTIPLEX PC BOARD ASSEMBLY

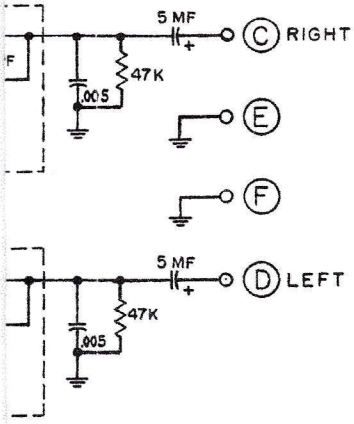
E-V 1159 & E-V 1180



X-RAY VIEW – COMPONENT SIDE

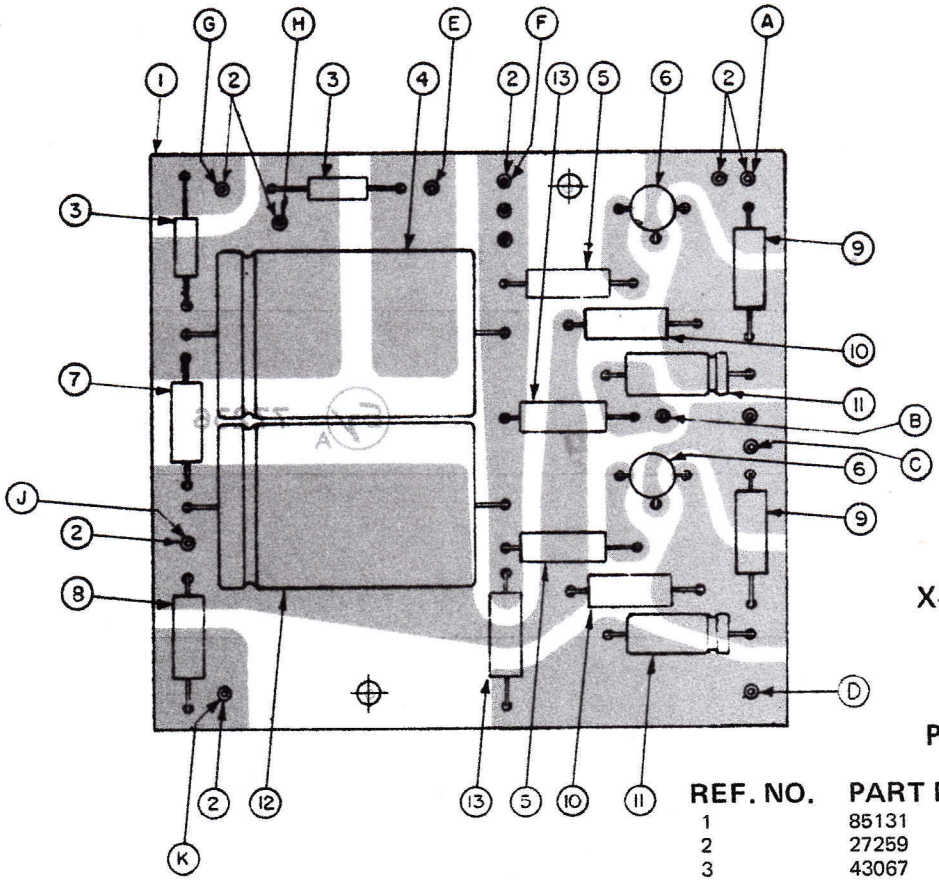
PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
1	85009	Multiplex Assy.–Complete
2	27259	Terminal (Malco)
3	42365	Capacitor–Electrolytic 5 μF/15V
4	4668	Resistor–47 kΩ½W (10%)
5	15194	Filter–38 kHz (PEC)
6	42437	Capacitor–Ceramic 4700 pf/125V
7	4697	Resistor–39 kΩ½W (10%)
8	43069	Diode (1N542 Matched Pair)
9	15207	Transformer (38 kHz)
10	42363	Capacitor–Flat Foil .1 μF
11	4664	Resistor–220 Ω½W (10%)
12	42551	Capacitor–Polystyrene 2200 pF
13	43044	Transistor (SE6002)
14	46046	Resistor–1.5 kΩ½W (10%)
15	4649	Resistor–12 kΩ½W (10%)
16	4685	Resistor–330 kΩ½W (10%)
17	42398	Capacitor–470 pF (±5%)
18	15206	Coil (SCA)
19	42402	Capacitor–Ceramic 1000 pF
20	46029	Resistor–18 kΩ½W (10%)
21	4654	Resistor–470 Ω½W (10%)
22	15205	Coil (19 kHz)
23	43045	Transistor (SE4002)
24	42440	Capacitor–Polystyrene 5000 pF (5%)
25	4693	Resistor–1 kΩ½W (10%)
26	46149	Resistor–150 Ω½W (10%)
27	6606	Tubing
28	4693	Resistor–1 kΩ½W (10%)



OUTPUT PC BOARD ASSEMBLY

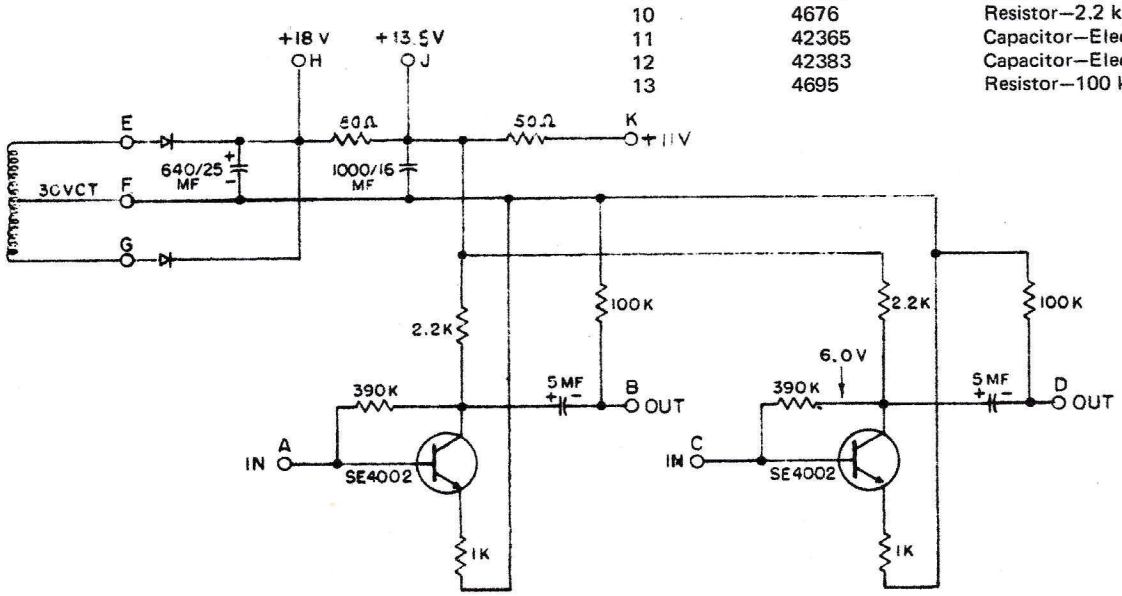
(E-V 1159 ONLY)



X-RAY VIEW – COMPONENT SIDE

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
1	85131	Output Driver Assembly—Complete
2	27259	Terminal (Malco)
3	43067	Diode—Power
4	42391	Capacitor—Electrolytic 640 μF/25V
5	4693	Resistor—1 kΩ½W (10%)
6	43045	Transistor (SE4002)
7	4667	Resistor—180 Ω½W (10%)
8	46149	Resistor—150 Ω½W (10%)
9	46028	Resistor—390 kΩ½W (10%)
10	4676	Resistor—2.2 kΩ½W (10%)
11	42365	Capacitor—Electrolytic 5 μF/10V
12	42383	Capacitor—Electrolytic 1000 μF/16V
13	4695	Resistor—100 kΩ½W (10%)



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