Sherwood

MODEL S-8800a ALL-SILICON SOLID-STATE FM STEREO RECEIVER SERVICE MANUAL

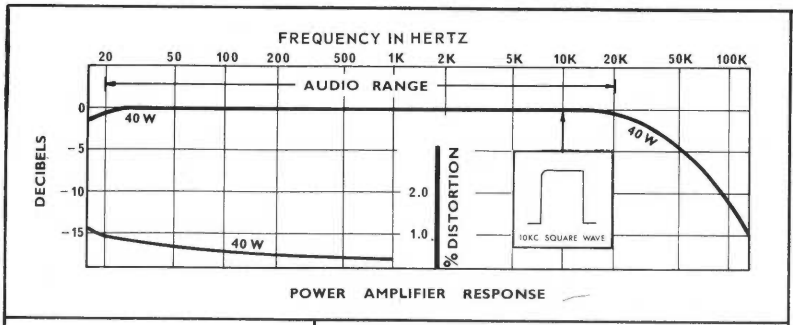
MODEL S-8800a 160 WATTS

Serial No. R8110018 & UP

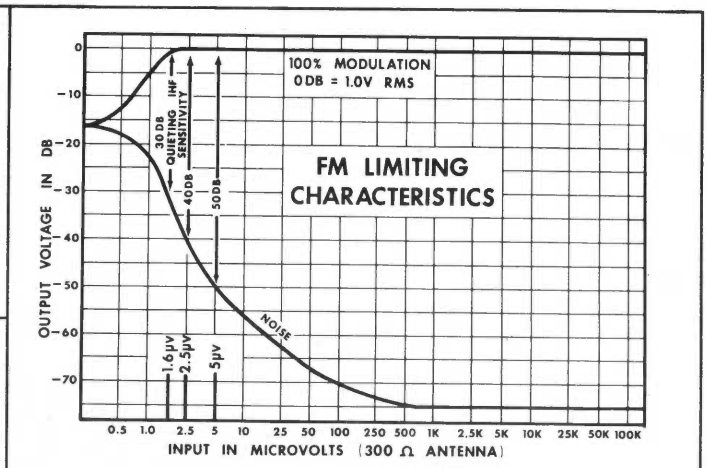
MODEL S-8800a STEREO RECEIVER SPECIFICATIONS

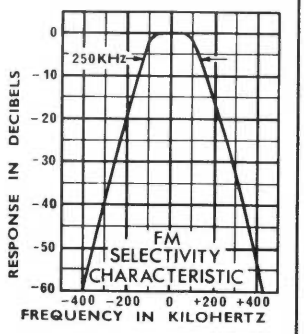
AMPLIFIER:
POWER OUTPUT (4 OHMS): music power 160 watts total, continuous power 50 watts X 2.
POWER OUTPUT (8 OHMS): music power 120 watts total, continuous power 40 watts X 2.
HARMONIC DISTORTION: 0.35%@8Ω rated output, 0.10%@2 watts & 5 watts.
INTERMODULATION DISTORTION: 0.6%@ 8Ω rated output, 0.15%@2 watts & 5 watts.
STEREO & MONO SPEAKER OUTPUT IMPEDANCE: 4, 8, or 16 ohms.
STEREO HEADPHONE OUTPUT: high or low impedance.
STEREO RECORDING OUTPUT: 500mv, 2K ohms.
POWER BANDWIDTH: 12-30KHz@1% Dist.
FREQUENCY RESPONSE: Aux. 20-20KHz ±1 db., Phono: RIAA Std. ±1.5db.
DAMPING FACTOR: 40:1@8 ohms.
BASS CONTROL: ±15 db@40 Hz.
TREBLE CONTROL: ±15 db@15 KHz.
HIGH FILTER: -23db.@ 20 KHz., -3 db.@ 5 KHz.
INPUT SENSITIVITY (for rated output): Phono, 1.6 mv, variable to 50mv., Aux. 200mv., Tape Monitor, 200mv.
INPUT CAPABILITY for 1% dist.: Phono, 250mv., Aux. 2.5 v.
HUM AND NOISE (IHF):
Phono-65db.
Aux. -80db.
Vol. Control Min. -90db.
CROSSTALK: -40 db@1 KHz.
SPECIAL FEATURES: Mono speaker output, transistorized instant overload protection, Tone control flat response ± 5 degrees, Front-panel tape dubbing jack.

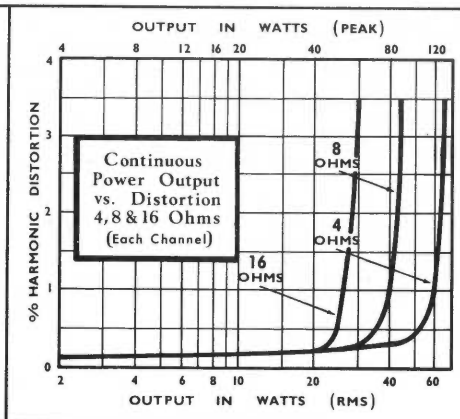
TUNER:
FM SENSITIVITY (IHF): 1.8μv (-30db noise & dist.)
SIGNAL-TO-NOISE RATIO: -70db.
CAPTURE RATIO: 2.0db.
SUPPRESSION OF AM: -50db.
TUNING RANGE: 87.5 to 108.5 KHz.
DISTORTION: 0.15%@100% mod.
CROSSMODULATION REJECTION: -95db.
STABILITY: ±10 KHz (± .01%).
IMAGE REJECTION: -80db.
IF REJECTION: -90db.
ALTERNATE-CHANNEL SELECTIVITY: 55db.
STEREO SEPARATION: 40db.@ 1 KHz.
FREQUENCY RESPONSE: Mono, 20-20 KHz ± 1 db., Stereo, 20-15 KHz ± 1 db.
ANTENNA: 300-ohm balanced or 75 ohm coax.
SPECIAL FEATURES: FET rf and mixer stages, Microcircuit IF & Synchrophase Limiter, Flywheel-assisted velvet tuning, Dial scale 7-3/4 inches long, 0.2MHz calibrations, Interchannel hush with front-panel level adjust, Zero-center tuning meter, Noise-protected automatic FM stereo/mono switching@8μv.
GENERAL:
POWER REQUIREMENTS: 115-125v, 60 Hz, 30 to 160 watts fused.
AC OUTLETS: (1) 300W. switched, (1)300W. unswitched.
DIMENSIONS: 16-1/4 L X 14 D X 4-1/4 H.
SHIPPING WEIGHT: 27 lbs.
OPTIONAL ACCESSORIES: Oiled Walnut Cabinet (W8) 17 L X 14 D X 5 H, Walnut-grained leatherette Case (Type D) 16-1/4 X 14 D X 4-1/2 H.

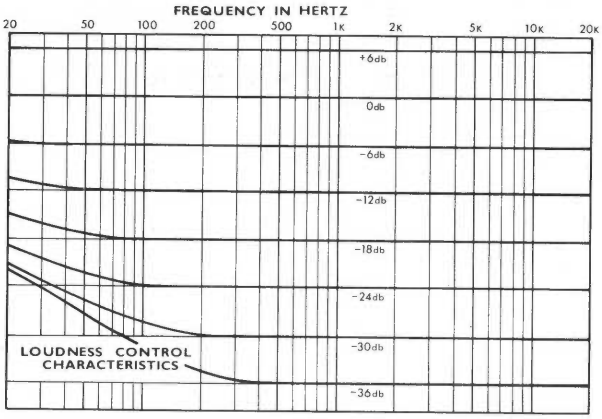


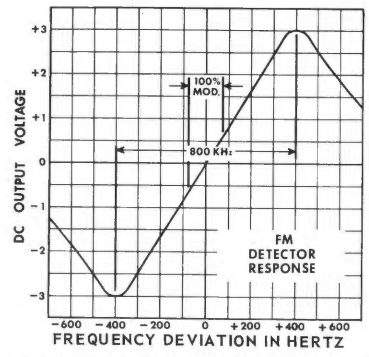
POWER AMPLIFIER RESPONSE

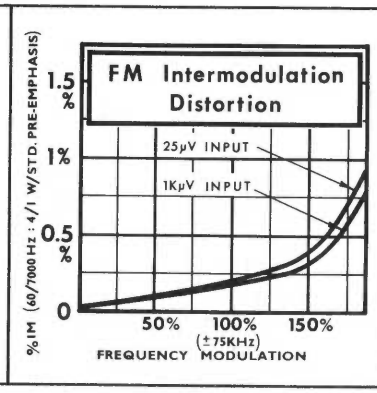


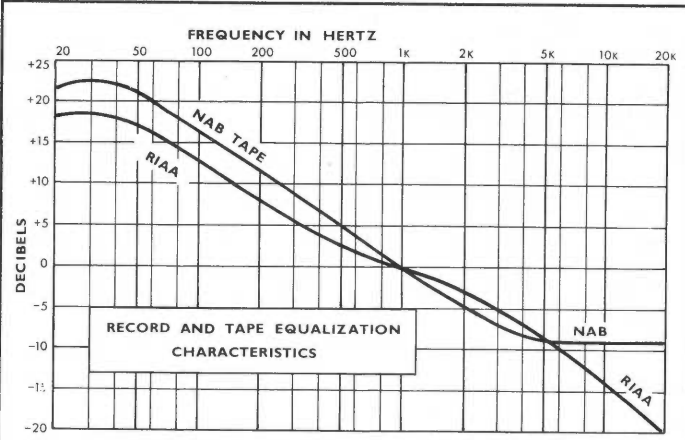


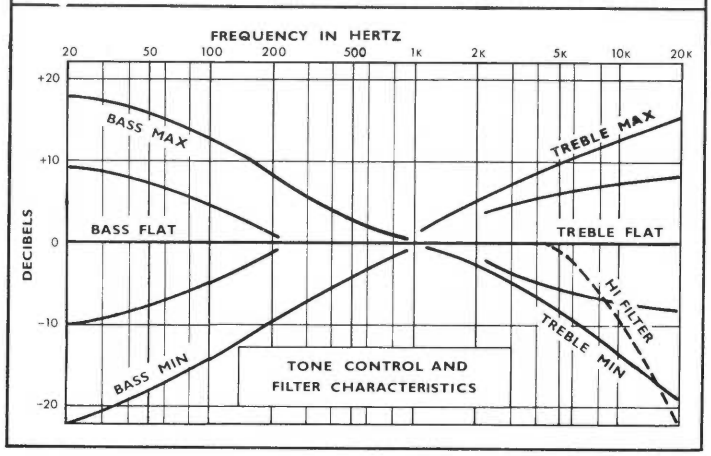












REALIGNMENT: To check alignment, refer to page 3. Do not attempt realignment unless adequate test equipment is available.

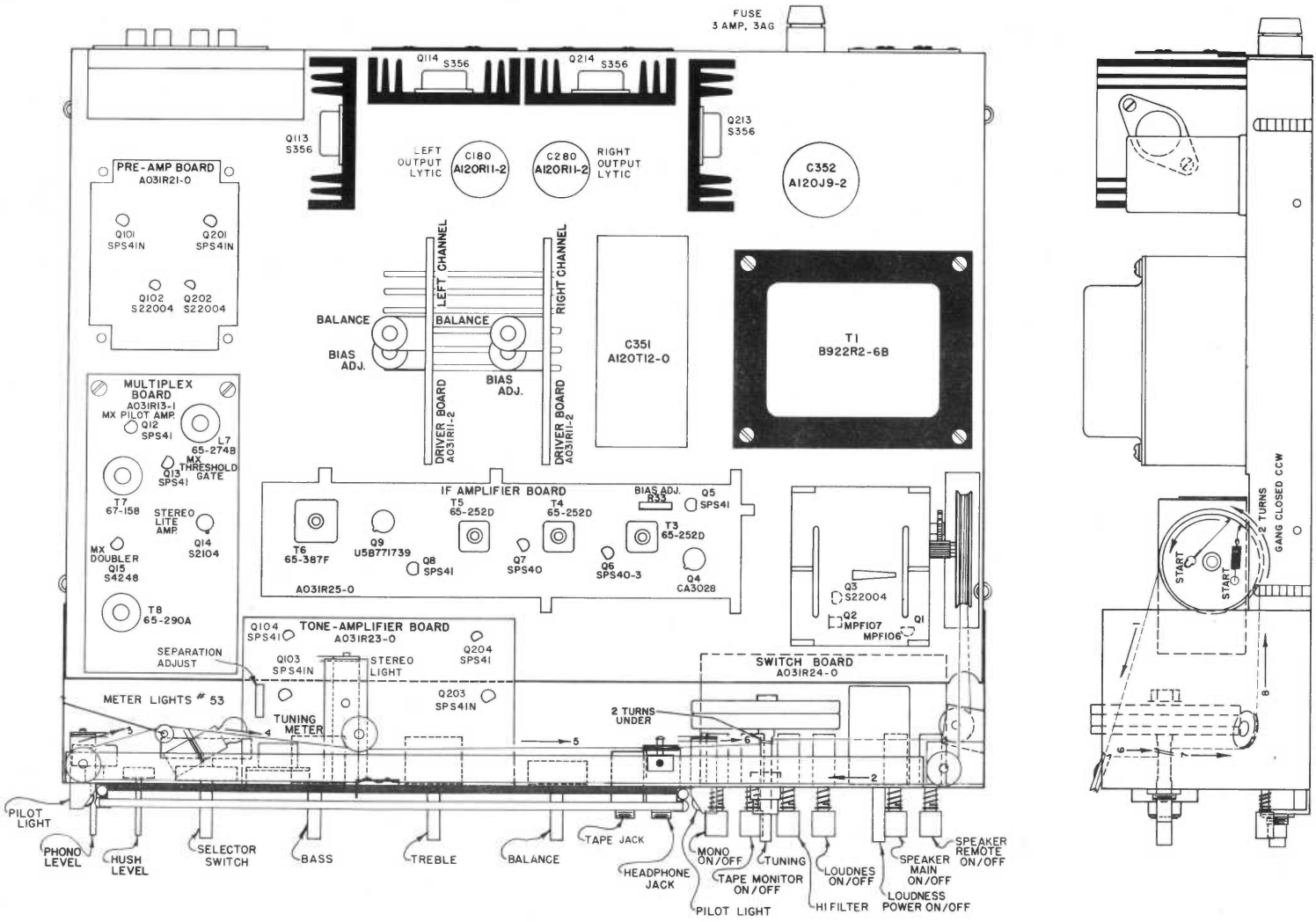
Optimum FM alignment, similar to the original factory alignment, consists of feeding a properly-terminated FM signal into the antenna terminals. To simulate a balanced 300-ohm input with the typical low-impedance single-ended generator, connect a 120-ohm carbon 1/2 watt resistor from each generator terminal to a receiver FM antenna input terminal. While observing the IF response curve with an oscilloscope through an RF PROBE, carefully adjust IF transformers, top and bottom, for the maximum symmetrical response. Check the bandpass for 150KHz flat top with 100% FM modulation. With this bandpass centered on the oscilloscope, repeat step 11 for a zero reading.

All Sherwood tuners are also adjusted and checked to see that they meet 1/3%IM distortion at 100% FM. To adjust, feed 60 Hz: 7KHz at 4:1 ratio into a low-distortion FM generator. With FM generator rf signal at 100% FM, feeding into antenna terminals, read IM distortion at FM detector output with receiver tuned for zero volts. Adjust primary of T6 for minimum distortion.

ALIGNMENT CHART

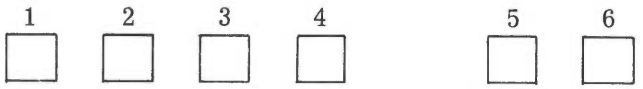
		switch position	signal generator input: coupling	signal generator input: freq.	signal generator input: modulation	dial setting	indicating instrument	adjust	indication
FM ALIGNMENT	1	Selector FM Mode: Mono	none	none	none	pt. of no interf.	DC-VTVM across R36 1KΩ	R33 bias adj	2.0 V-DC
	2	"	"	"	"	"	Probe at Q6 base, CRO: HORIZ. EXT. MODULATION (Audio in all steps).	Short T4 & T5 Pin 4 to Gnd. (Short jumper wire).	
		RF PROBE DETECTOR — USING HIGH FREQUENCY GERMANIUM DIODES X1 & X2 (Sherwood # A692M5-2): PROBE INPUT — 4.7pf — X2 — X1 — 470K — 220K — 220pf							
	3	"	300 Ant. Input	90MHz	400 or 60Hz ±300KHz FM	90MHz	"	L4, L2, L3, T2 & T3 top & bottom	IF response for max. deflection & symmetry about 10.7MHz marker.
		Inject 10.7MHz marker into feethru C9 on tuner chassis (see pictorial on Tuner schematic).							
	4	"	"	106MHz	"	106MHz	"	C19,C2,C6	"
	5	Repeat steps 3 & 4 until no further improvement.							
	6	"	"	96MHz	"	96MHz	Probe at Q7 base.	(Remove T4 jumper short) T4 Top & Bottom	" (±120KHz BW at -3db).
	7	"	"	"	"	"	Probe at Q9 Pin 1	(Remove T5 jumper short) T5 top & bottom	"
	8	Repeat step 1							
	9	"	"	"	400 or 60Hz ±75KHz FM. centered on IF	"	DC-VTVM across C55, 100pf.	T6 Top	0 V-DC
	10	"	"	"	400 or 60Hz ±300KHz FM	"	"	T6 bottom	FM detector response curve for maximum deflection & symmetry
	11	"	"	" 100uv input	400 or 60Hz ±75KHz FM. centered on IF	"	CRO at Audio Left (across R390)	T6 bottom	Fine adjust for linear lissajous* (recheck for the 0 VDC of step 9).
MX ALIGNMENT	1	Disconnect FM detector from Point A (Short Q13 emitter–base junction)							
	2	Selector FM Mode: Auto Stereo	10K source impedance	60MV RMS 19KHz into point A	none	point of no interf.	CRO &/or AC voltmeter base of Q15	T7 top & bottom	maximum deflection
	3	"	"	"	"	"	CRO &/or AC voltmeter T8 pin 1 to ground	T8 top & bottom	"
	4	"	"	1.0V RMS 67KHz into point A	"	"	"	L7	null
	5	"	"	feed composite MX sig. left CH modulation 1.7V p-p or 0.3V RMS 400Hz into point A		"	CRO &/or AC voltmeter across R390	none	Note: approx. 0.4V Audio at Left channel output
	6	"	"	"		"	CRO &/or AC voltmeter across R391	T7 top	null at unmodulated channel output (approx. -10db from left)
	7	"	"	switch off stereo gen. audio mod.		"	CRO &/or AC voltmeter across R390	none	residual 19KHz and 38KHz to be approx. -45db below 100% audio
	8	Reconnect FM detector to point A (Remove Q13 emitter–base short)							
	9	"	300 balanced input to FM ant. input	96MHz 100uv	±75KHz composite stereo sig. left CH modulation only	96MHz	CRO &/or AC voltmeter across R391	fine adjust T7 top	null at unmodulated channel output.
	10	"	"	"	"	"	CRO &/or AC–VTVM at record output (right channel)	Adjust separation R136	Adjust for null separation (to be more than -30db)

*If distortion analyzer is available, null T6 bottom for minimum distortion with 75KHz modulation.



B866R3 PUSH BUTTON SWITCH

REPAIR PROCEDURE



REMOVAL OF BROKEN PUSH BUTTON.

(a) depress and lock buttons 1, 2, 3, 5, & 6 (depress completely to lock)
(b) with thumb of left hand depress button #4 approx. 3/16" to 1/4" and hold in that position. With long nose pliers grasp flange of locking key. (located on right hand side of pushbutton #4) Pull key forward enough to clear tab on left side of switch and slide locking key as far to the right as it will go and release locking key from pliers. Then slide key to the left and slowly release the tension on push button #4.
(c) Each button may now be individually removed by depressing and then releasing the button slowly.

REINSERTION OF BUTTONS

(a) depress and lock buttons 1, 2, 3, 5, & 6.
(b) Slide locking key as far to the right as it will go. With thumb of right hand depress push button #4 approx. 1/4" to 3/8". With small screwdriver in left hand slide small tab (located just to left of push button #4) as far to the right as it will go.

Slowly release push button #4. It should return to its normal position and stop.
(c) With long nose pliers grasp locking key flange and pull it forward enough to clear small tab on left hand side of #4 push button. Then slide locking key to the left until small tab is visible through hole in locking key. Slowly allow locking key to return to a flush position against switch mounting plate, making sure small tab is encompassed by locking key.
(d) Using a pliers or screwdriver slide locking key flange gently to the right until lite snap is heard.
(e) All push buttons are now locked and may be returned to their normal position by depressing and releasing each button.
NOTE: If push button #4 binds, pin on right hand side of locking key has been caught by spring.

PARTS LIST

TRANSISTORS (All silicon)	PART NO.	PRICE
Audio, Low signal - No dot (High beta), (Q5, 8, 12, 13, 105, 205)	SPS41	$0.31
Audio, Low signal, No dot, (Q102, 108, 202, 208)	S22004	0.63
Audio, Low signal - Green dot (Low Noise), (Q101, 103, 201, 203)	SPS41N	0.91
Audio, Low signal - White dot, (Q106, 206)	S22004V	0.73
Audio, PNP (Q10, 15)	S4248	0.50
Pre-Driver, NPN (Q107, 207)	SPS4199	0.95
Pre-Driver, PNP (Q110, 210)	S437	3.16
Pre-Driver, NPN (Q14, 109, 209)	S2104	0.92
Driver, NPN (Q111, 112, 211, 212)	S409F	2.70
Output, NPN (Q113, 114, 213, 214)	S356	8.33
B Supply, NPN (Q11)	37649	1.80
RF Amp., FET (Q1)	MPF106	2.12
RF Mixer, FET (Q2)	MPF107	2.21
RF, IF, NPN (Q3, 6, 7) (Use same beta code 1, 2, 3)	SPS40	0.90
Microcircuit, (Q4)	CA3028	4.01
Microcircuit, (Q9)	U5B771739	5.40

You will note that all transistors used in the S-8800a are color-coded with a dot or mark of some color prominently located on the top of their case. (Some transistors have no mark, but this also is identification.) When ordering replacement transistors, it is imperative that you indicate not only its part no., but the color dot on the transistor body: red, yellow, none, (1, - 2, - or - 3). This is particularly important when replacing output transistors.

DESCRIPTION	PART NO.	PRICE
0.5μf, 50V,(C150, 171, 250, 271)	B120X3	$0.72
5μf, 20V, (C151, 152, 251, 252)	B120X6	0.59
1μf, 25V, (C90, 111, 211, 360)	B120X7	0.59
8μf, 40V, (C140, 142, 240, 242)	B120X8	0.45
20μf, 5V, (C160, 260)	B120X12	0.59
100μf, 3V, (C100, 102, 200, 202)	B120X24	0.45
1μf, 40V, (C163, 263)	B120X76	0.63
LYTICS - BYPASS		
0.5μf, 50V, (C20, 31, 34)	B120B3	0.59
8μf, 40V, (C374)	B120B8	0.45
10μf, 10V, (C161, 261)	B120B9	0.45
20μf, 50V, (C170, 270)	B120B14	0.45
500μf, 25V, (C353)	B120B31	0.99
250μf, 35V, (C340, 341, 343)	B120B33	0.86
125μf, 16V, (C18)	B120B26	0.46
250μf, 15V, (C342)	B120B74	0.59
50μf, 15V, (C25)	B120X36	0.90
Insulator, Mica (T0-3)	A021F1	0.05
Fuse, 3 Amp., 3AG	312003.	0.15
Dial Glass	B322R9-0	1.13
Knobs, Small, (w/indicator)	B467X1-2	1.98
Knobs, Mini.	A467X5-2	1.13
Knobs, Medium, (w/indicator)	B467X4-2	2.25
Tuning Meter	A550G3	6.30
Light Bulb, Pilot, #53	630B53	0.16
Light Bulb, Stereo, #1302	630B1302	0.64
Control, Bass, 100K, (R134A, B)	A670R20-0	1.67
Control, Treble, 100K, (R140A, B)	A670R20-0	1.67
Control, Balance, 100K, (R122)	A670R22-1	0.90
Control, Hush, 15K, (R35)	A670R18-2	0.95
Control, Ph. Level 1.5K, (R120A, B)	A670R19-2	2.12

DESCRIPTION	PART NO.	PRICE
Control, Loudness, Dual w/AC sw. 50K, (R121A, B)	A671R3-3	4.28
Pot., P.C., 500, (R183, 283)	A675T1-0A	0.45
Pot., P.C., 25K, (R136)	A675T8-0A	0.45
Pot., P.C., 250K, (R33)	A675T9-0A	0.72
Pot., P.C., 500K, (R174, 274)	A675T10-0A	0.63
Rectifier, Silicon, (X14)	A692T5	0.48
Diode, Silicon, (X2,4,6,7,8,9,10,17)	A692X13	1.22
Rectifier, Silicon, (X12, 13)	A692X16	1.71
Rectifier, Silicon, (X15, 16)	A692X17	0.62
Diode, Zener, Silicon, 13V, 5%, (Z1)	A694X1	1.21
Socket, Driver Transistor, T0-5	A790T4M	0.23
Socket, Output Transistor, T0-3	A790T7	0.18
Stereo Headphone Jack	A795R3	0.95
Stereo Tape Jack	A795R3	0.95
Fuse Post	A796X2	0.70
Selector Switch, 3 Position, (S1)	A860R9-1	5.04
Switch, Push Button Assembly	B866R3-3A	7.69
Transformer, Power, Domestic, (T1)	B922R2-6	20.97
Transformer, Export, Power, (T1)'	2B922R2X-6	27.95
Transformer, FM IF (T3, 4, 5)	65-252D	2.75
Transformer, FM Discrim., (T6)	65-387F	4.92
Transformer, FM Converter, (T2)	67-101	2.07
Transformer, 38KHz, (T8)	65-290A	1.52
Transformer, 19KHz, (T7)	67-158	2.43
Coil, 67KHz Null, (L7)	65-274B	0.96
Coil, Mixer (L3)	68-131	1.13
Coil, Balun, (L1)	67-288	0.86
Choke, RF, (L5, 6)	64-103	0.52

SERVICING

VOLTAGE CHECKS

Preliminary checks of the D. C. voltages present at various points in the S–8800a can prove useful in locating defective components. They are inconclusive, however, in determining if transistors are operating properly in all aspects. They can only indicate wheth -er the transistor is open, shorted or functioning, not how well the transistor is functioning.

IN GENERAL:

Correct voltages indicate a functioning transistor.

The same voltage at the collector and emitter indicates a shorted transistor.

Full supply voltage on the collector and no voltage on the emitter indicates an open transistor.

OUTPUT TRANSISTOR BIAS

Of all the specifications which require checking to ascertain correct performance of the S–8800a, proper output transistor operation is the most important and critical. Adjustment of the output transistor bias is necessary if output transistors are replaced*, or the amplifier exhibits one or more of the following symptoms:

1. Overheating of the output transistors under normal operating conditions.

2. Excessive low level Intermodulation Distortion- more than 0.5% at 2.0 volts across 8 ohms (0.8 watts, IM power).

Adjustment of output transistor bias should then proceed as follows:

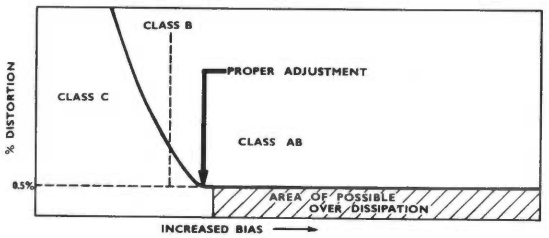


FIG. 1

1. Turn amplifier off.

2. Set output balance pots (left and right channels) to mechanical center and bias pots fully counter-clockwise.

3. Connect D. C. voltmeter of at least 3% known accuracy to transistor side of appropriate channel's output terminals.

4. Turn amp. on and adjust output balance pot for that channel so that approx. 1/2B+ voltage is on the output capacitor.

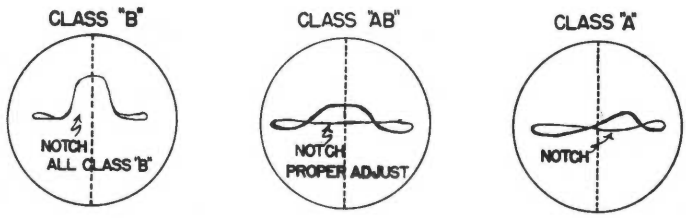
5. Connect an Intermodulation Distortion analyzer to to the amplifier TP. MON. (aux.) input, turn volumn control to maximum and adjust the analyzer output for an amplifier output of 2.0V across 8 ohms. (Because the output stages have been set into heavy class "B" operation by the "presetting" in Step 2, a class "B" notch in the distortion waveform will be obvious.) NOTE: When adjusting bias for class "AB", adjust until class "B" notch is almost eliminated. Class "A" begins beyond this point. Notch shifts to right.

6. Increase analyzer output until clipping can be observed. Fine adjust output balance pot. so that clipping is symmetrical.

IMPORTANT: Misadjustment of the bias pot can cause heavy class "A" operation of the output transistors, causing them to overheat.

The following performance indicates a properly operating output stage with 8 ohm load.

-Less than 0.5%IM distortion at 2.0V.
-Typically 0.6%IM distortion at 10 Volts.
-18 watts of power per channel at clipping.



1. PROTECTIVE CIRCUITRY (IOP) & SPEAKER SYSTEM CHECK: The Model S-8800a incorporates special protective circuitry, (Instamatic Overload Protection), which turns off the drive to the power amplifiers when danger to the receiver output circuitry exists. If the receiver turns itself off, check the speaker connections for shorted wires. Speaker line resistance should not measure below 3 ohms.

The overload protective circuit consists of a type of bi-stable multivibrator. Transistor Q105 samples the output transistors current. At approximately 5A peak output current, Q105 is triggered and clamps the base of Q106 to ground and locks in this state, preventing AC drive to the power amplifier and thereby protecting it.

*It is extremely important that the mica insulating washers used to separate the output transistors from their heat sinks be unbroken and installed properly with silicon grease liberally applied to all surfaces in contact with each other. Make certain the emitter and base pins of the output transistors do not contact any part of the heat sinks.

NOTE: Refer to speaker load connections on schematic, being careful to observe ground-connections.

The circuit can be returned to its original state by turning the receiver's LOUDNESS CONTROL to the power OFF position, waiting ten seconds and then turning the receiver on again. If the fault has been corrected, the receiver will perform properly. If the protective circuitry continues to turn off the receiver audio output, determine cause of Q105's base drive voltage, which initiates the triggering cycle or suspect Q105 itself.

2. AMPLIFIER/PREAMP STAGE ISOLATION: Evaluate whether both channels are inoperative. If thus, B+ supply should be suspected for malfunction. If one channel only, evaluate with test signal whether signal feeds properly through phono preamp, auxiliary high-level input, or into volume control at high side (this isolates power amplifier section from tone amplifier section).

3. FAULT ISOLATED TO POWER AMPLIFIER: With DC voltmeter, verify accuracy of all power supply voltages, collector, emitter, and base voltages of transistors on the driver-circuit boards and of output transistors in the faulty power amplifier channel. The voltages should be verified against those shown on the schematic for 120V power line and also against those in the 2nd channel (assumed to be operating correctly). Note that output electrolytic coupling capacitor DC voltage (on transistor feed side) should read approx. 1/2 of B+ supply voltage. Note in most cases of a defective driver or output transistor, the fuse will open and prevent the taking of a usable center-point voltage reading. Therefore, it is valuable to operate the amplifier with a variable voltage power line (Variac) equipped with a line wattmeter (or ammeter) to identify abnormal power consumption.

With the Variac, reduce the power line voltage to zero, replace fuse, and slowly increase power line voltage upward while observing wattmeter. (The power consumption should not exceed 10-15 watts as the voltage is increased up to rated 120 volts. If power consumption reading begins to exceed 15 watts, starting from zero voltage, do not increase power line voltage further.) Now verify center-point voltage for half-voltage reading.

If center-point voltage reads extremely low, suspect defective output or driver transistors (or phase-inverting pre-driver on S–8800a) on low side (schematic shows these as bottom devices in each channel). If center-point voltage reads extremely high, suspect defective high-side output or driver transistors.

Remove both driver transistors from their sockets. If power consumption drops considerably, then faulty driver transistors should be suspected. If power consumption remains unusually high, then faulty output transistors should be suspected. If not, suspect pre-driver or bias-regulator transistor or associated components.

If all above seems not to be at fault, then verify that output coupling electrolytic capacitor is not shorted, other capacitors are not shorted, circuit board contains no solder or etching shorts, open resistors, or poor solder connections. (Note: a small error voltage at pre-driver base and/or emitter will disrupt grossly the operation of the driver and output transistors.)

If center-point voltage reads approximately 1/2 voltage in accordance with above check, apply audio signal to channel being investigated and measure distortion as per service instruction manual. Distortion which exceeds amplifier ratings might be due to one of the following:

1. Output transistor not matched beta.
2. Output bias requires readjustment.
3. Driver transistor has low beta.

4. FAULT ISOLATED TO TONE CONTROL AMPLIFIER: Check DC voltages at transistor collector, emitter, and base on tone circuit board and compare with schematic and with good channel. Feed 1KC audio signal to input connection to tone circuit board. Compare output voltage to input voltage which should have a gain ratio of about 6db (2X).

Isolate inoperate stage by checking signal at input of treble control (Record Output jack on S-8800a). Compare this voltage to input voltage which should result in 1st stage gain - approximately 6db (2X).

Evaluate distortion in conjunction with power amplifier. Verify bass and treble frequency response with bass and treble boost and cut characteristic curves shown in service manual.

5. FAULT ISOLATED TO PREAMP: Check DC voltages at transistor collector, emitter, and base on preamp. circuit board and compare with schematic and with good channel. Feed 1KC audio signal to phono input jack. Compare output voltage at input of tone circuit board to input voltage. The resulting calculated gain ratio should be approximately 40db (100X) with preamp gain (phono level) control at maximum gain. Isolate the inoperative stage by checking signal voltage at collector of 1st stage. Verify frequency response with phono and tape equalization curves shown in service manual.

6. FAULT ISOLATED TO POWER SUPPLY: Check DC voltages at input, mid-point, and output filter capacitor sections and compare with those shown on schematic. If a voltage measures low, remove leads to amplifier or receiver loads to isolate possibility of leaky or shorted electrolytic capacitor section. Proper operation of zener diode regulating tuner section is-12 volts ±5%. Higher voltage indicates open zener diode.

TROUBLE SHOOTING HINTS

SYMPTOM	POSSIBLE CAUSES AND SOLUTIONS
NO SOUND & DIAL IS NOT LIGHTED.	The main fuse is blown. (Replace it with a 3AG 3-amp fuse - do not use a slo-blo type.)
NO SOUND BUT DIAL IS LIGHTED.	The SPKRS ON-OFF switch is in the OFF position. (Switch it ON.) The NORM-TP MONTR switch is in the TP MONTR position. (Switch it to the NORM position.)
ONE CHANNEL IS DEAD	Check all speaker connections for shorted wires. Turn the receiver's LOUDNESS CONTROL to the power OFF position, wait ten seconds, and then turn the receiver on again. If the fault has been corrected the receiver will perform properly.
RECEIVER OPERATES IN PHONO MODE ONLY. NO FM RECEPTION.	The Hush level control is improperly set. Reread the section titled FM INTERCHANNEL HUSH in the Operation section of the manual. The FM antenna has become disconnected. Reread the ELECTRICAL CONNECTIONS Section of the manual, and re-install the antenna.
DISTORTED SOUND ON FM	If changing the position of the antenna results in a change in the sound, a better antenna is called for. FM Multipath reception might be suspected. See your local dealer for suggestions.
HUM ON PHONO BUZZ ON PHONO	The phono cables are not connected properly. Check for loose shield connections or lack of phono chassis ground wire. Move the tone arm on its pivot. If the hum changes, the phono cartridge is not properly shielded, or should be moved farther away from the receiver power transformer.
THE DIAL GLASS SEEMS CROOKED	With the case off the receiver, the dial glass may easily be straightened.
THE DIAL POINTER DOES NOT ACCURATELY LOG THE STATIONS	The dial pointer may also be moved in either direction on its cable to correct for minor logging error.

DIAL DRIVE SLIPPAGE: If turning knob does not result in corresponding movement of the dial pointer, dial drive string slippage should be suspected. To remedy, remove the chassis from its cabinet. Ascertain that no oil has reached the drive shaft string notch. If this has occurred, it will be necessary to remove the dial string and clean the notch with carbon tetrachloride. Replace string as per chassis diagram. Adjust spring in drum notch to furnish sufficient tension to prevent slippage on the drive shaft.

If dial pulleys and shaft appear to be dry or "squeak", apply one small drop of LUBRIPLATE to their bearings, being careful that no lubricant reaches the dial shaft string notch. If the dial string shows evidence of oil, it will be necessary to replace the string.

CLEANING ESCUTCHEON FACE PLATE: The beige escutcheon on your Sherwood equipment has been finished with a durable baked enamel. To clean, wipe with a chamois or cloth dampened with a water solution of liquid detergent. Wipe with dry cloth. Do not use an abrasive scouring powder.

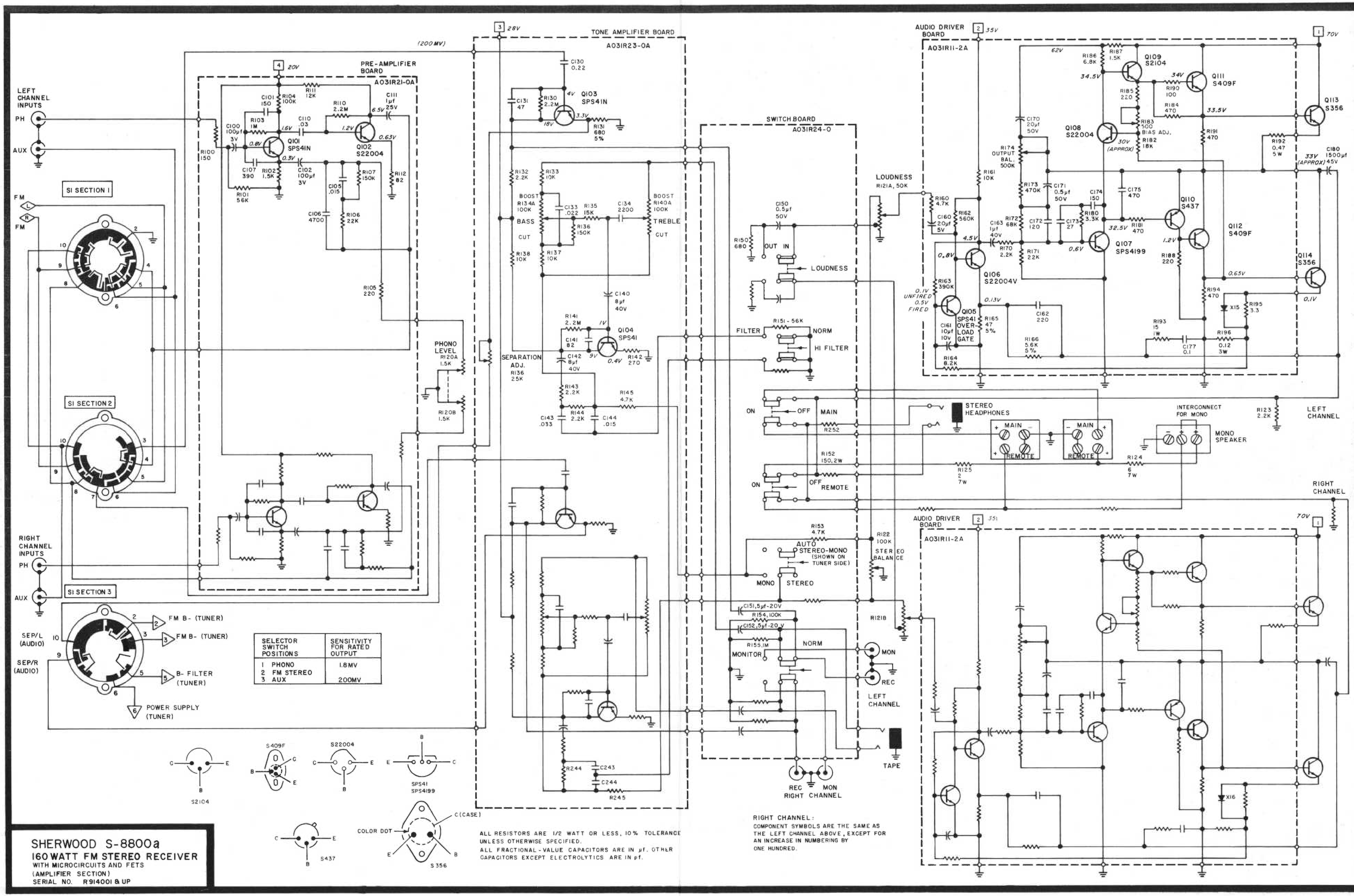
INDICATOR LIGHTS: To replace the indicator lights you must remove the receiver case and escutcheon. Push bulb in and twist counterclockwise.

FM DISTORTION: Your Sherwood receiver has been designed with the correct value of FM audio deemphasis feeding the audio system. Since this amount of deemphasis permits the overall FM audio response to be flat to 20,000 Hz, any distortion generated at the FM station will be heard without moderation by the receiver. With a good high-fidelity speaker system, your ear will be acutely aware of any distortion generated in the system. If you suspect distortion in your FM reception, check several other FM stations to ascertain the degree of distortion originating in the program. Your Sherwood FM receiver has been checked to have less than 1/3% intermodulation distortion before leaving the factory. Each FM program probably has not had a similar check.

Sherwood ELECTRONIC LABORATORIES, INC.

4300 NORTH CALIFORNIA AVENUE, CHICAGO, ILLINOIS 60618 IRVING 8-7300

LITHO 9-68



SELECTOR SWITCH POSITIONS	SENSITIVITY FOR RATED OUTPUT
1 PHONO	1.8MV
2 FM STEREO 3 AUX	200MV

ALL RESISTORS ARE 1/2 WATT OR LESS, 10% TOLERANCE UNLESS OTHERWISE SPECIFIED.
ALL FRACTIONAL-VALUE CAPACITORS ARE IN µf. OTHER CAPACITORS EXCEPT ELECTROLYTICS ARE IN pf.

RIGHT CHANNEL:
COMPONENT SYMBOLS ARE THE SAME AS THE LEFT CHANNEL ABOVE, EXCEPT FOR AN INCREASE IN NUMBERING BY ONE HUNDRED.

SHERWOOD S-8800a
160 WATT FM STEREO RECEIVER
WITH MICROCIRCUITS AND FETS
(AMPLIFIER SECTION)
SERIAL NO. R914001 & UP

SHERWOOD S-8800a
160 WATT FM STEREO RECEIVER
WITH MICROCIRCUITS AND FETS
(TUNER SECTION)
SERIAL NO. R914001 & UP

FET RF TUNER

FM ANTENNA

FM RF AMP Q1 MPF106

RF CONVERTER Q2 MPF107

RF OSC Q3 SP540 SL40

1ST FM IF Q4 CA3028

FM AGC AMP Q5 SPS41

2ND FM IF Q6 SPS40-3

3RD FM IF Q7 SPS40

FM LIMITER Q9 U5B771739

FM DETECTOR

10.7 MHZ IF AMPLIFIER A03IR25-0

HUSH AMP Q8 SPS41

HUSH ADJ. R35 15K

BIAS ADJ. R33 250K

TUNING METER 75-0-75μa

Q10 2N4248

A SECTION OF SWITCH BOARD A03IR24-0

MONO AUTO. STEREO

STEREO MULTIPLEX BOARD A03IR13-1

POINT A. SEE NOTE

MX DOUBLER Q15 S4248

MX PILOT AMP Q12 SPS41

MX THRESHOLD Q13 SPS41

STEREO LITE AMP Q14 S2104

AUDIO LEFT

AUDIO RIGHT

* MATCHED TO 2%

C11 --- WAS OFF FET RF TUNER
R55 --- WAS 56K
R91 --- WAS 390K
R93 --- WAS 4.7K
T3,4,5 -WERE 65-252D

U5B771739 SCHEMATIC

CA3028 DIAGRAM

ALTERNATE PRIMARY CIRCUITS FOR EXPORT MODELS

225-245 VAC 50-60 Hz — 1-1/2 AMP

112-125 VAC; 50-60 Hz — 3 AMP

115-125 VAC 60 Hz — F1-3 AMP — 120V 300W SW

NOTE:
ALL DC VOLTAGES ARE MEASURED WITHOUT SIGNAL, HUSH OFF. (EXCEPT DC VOLTAGES IN THE MULTIPLEX DECODER, WHICH ARE MEASURED WITH 100 MICROVOLTS INTO THE FM ANTENNA OR 50 MILLIVOLTS, 19KHz INTO POINT A.)

ALL DC VOLTAGES IN PARENTHESIS ARE MEASURED WITHOUT INPUT SIGNAL BUT WITH HUSH ON.

† USE .0018 MICROFARADS FOR EUROPEAN 50 MICROSECOND DE-EMPHASIS.

T7 67-158 — T8 65-290A — L6 65-274B

LOCATING BOSS — COLOR DOT

4627 2-28-89-JAY

SHERWOOD S-8800 FET
140 WATT FM STEREO RECEIVER

(AMPLIFIER SECTION)

SERIAL NO. R813001 & UP

LEFT CHANNEL INPUTS
PH
AUX
FM
FM
SI SECTION 1
SI SECTION2
RIGHT CHANNEL INPUTS
PH
AUX
SI SECTION 3
SEP/L (AUDIO)
SEP/R (AUDIO)

SELECTOR SWITCH POSITIONS	SENSITIVITY FOR RATED OUTPUT
1 PHONO	1.6 MV
2 FM STEREO	
3 AUX	157MV

PRE-AMPLIFIER BOARD A03IRI6-IA
TONE AMPLIFIER BOARD A03IR23-IA
AUDIO DRIVER BOARD A03IRII-2A
AUDIO DRIVER BOARD A03IRII-2A

LEFT CHANNEL REC MON S2A NORM MONITOR
RIGHT CHANNEL REC MON S2B NORM MONITOR
PHONO LEVEL R122A 1.5K R122B 1.5K
SEPARATION ADJ. R143 25K
LOUDNESS R151A 50K R151 680 C150 0.5µf 50V
LOUDNESS R151B 50K
HI FILTER S3A NORM FILTER R152 56K
HI FILTER S3B NORM FILTER
R154 100K STEREO BALANCE
S4 MONO STEREO
BOOST R134A 100K BASS CUT R141 10K R142 10K BOOST R140A 100K TREBLE CUT
R134B 100K BASS R140B 100K TREBLE
R99 6Ω 7W MAIN REMOTE R198 2 7W R197 150 2W S6A S6B S5B STEREO HEADPHONES
INTER-CONNECT FOR MONO

Q101 SPS4IN
Q102 S22004
Q103 SPS4IN
Q104 SPS41
Q105 OVERLOAD GATE
Q106 SPS4IV
Q107 SPS4199
Q108 SPS41
Q109 S2104
Q110 S437
Q111 S409F
Q112 S409F
Q113 S356
Q114 S356

ALL RESISTORS ARE 1/2 WATT OR LESS, 10% TOLERANCE UNLESS OTHERWISE SPECIFIED.
ALL FRACTIONAL-VALUE CAPACITORS ARE IN µf, OTHER CAPACITORS EXCEPT ELECTROLYTICS ARE IN pf.

RIGHT CHANNEL:
COMPONENT SYMBOLS ARE THE SAME AS THE LEFT CHANNEL, SHOWN ABOVE, EXCEPT FOR AN INCREASE IN THE PART NUMBERS BY ONE HUNDRED.

COLOR DOT C(CASE) E B — S356
E B C — S437
B E C — SPS41 SPS4199
C B E — S2104
C E B — S22004
C B E — S409F

2-13-69-JAY-3-20-69-JAY 4474

SHERWOOD S-8800 FET
140 WATT FM STEREO RECEIVER
(TUNER SECTION)

SERIAL NO. R813001 & UP

2-FET RF TUNER

10.7 MHz IF AMPLIFIER
A031R8-1A

STEREO MULTIPLEX
A031RI3-1

ALTERNATE PRIMARY CIRCUITS
FOR EXPORT MODELS

220-245V CIRCUIT

110-125V CIRCUIT

NOTE:
ALL RESISTORS ARE 1/2 WATT OR LESS, 10% TOLERANCE UNLESS OTHERWISE SPECIFIED. ALL FRACTIONAL-VALUE CAPACITORS ARE IN µf. OTHER CAPACITORS EXCEPT ELECTROLYTICS ARE IN pf.

* USE 1800pf FOR EUROPEAN 50 MICROSECOND DE-EMPHASIS.

NOTE:
ALL DC VOLTAGES ARE MEASURED WITHOUT SIGNAL, HUSH OFF. (EXCEPT DC VOLTAGES IN THE MULTIPLEX DECODER, WHICH ARE MEASURED WITH 100 MICROVOLT COMPOSITE MX SIGNAL (100% MOD.) INTO THE FM ANTENNA OR 50 MILLIVOLT 19KHz PILOT, EQUIVALENT TO 250 MV RMS COMPOSITE MX SIGNAL, INTO POINT A.)

ALL DC VOLTAGES IN PARENTHESIS ARE MEASURED WITHOUT INPUT SIGNAL BUT WITH HUSH ON.

* MATCHED TO 2%

3-7-69-JAT-3.0-69-PM 4474

SERVICING

VOLTAGE CHECKS

Preliminary checks of the D.C. voltages present at various points in the S–8800a can prove useful in locating defective components. They are inconclusive, however, in determining if transistors are operating properly in all aspects. They can only indicate wheth-er the transistor is open, shorted or functioning, not how well the transistor is functioning.

IN GENERAL:

Correct voltages indicate a functioning transistor.

The same voltage at the collector and emitter indicates a shorted transistor.

Full supply voltage on the collector and no voltage on the emitter indicates an open transistor.

OUTPUT TRANSISTOR BIAS

Of all the specifications which require checking to ascertain correct performance of the S–8800a, proper output transistor operation is the most important and critical. Adjustment of the output transistor bias is necessary if output transistors are replaced*, or the amplifier exhibits one or more of the following symptoms:

1. Overheating of the output transistors under normal operating conditions.

2. Excessive low level Intermodulation Distortion-more than 0.5% at 2.0 volts across 8 ohms (0.8 watts, IM power).

Adjustment of output transistor bias should then proceed as follows:

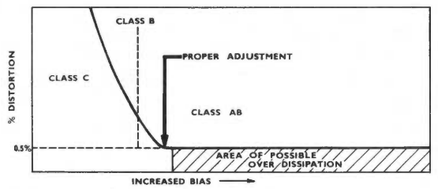


FIG. 1

1. Turn amplifier off.

2. Set output balance pots (left and right channels) to mechanical center and bias pots fully counter-clockwise.

3. Connect D.C. voltmeter of at least 3% known accuracy to transistor side of appropriate channel's output terminals.

4. Turn amp. on and adjust output balance pot for that channel so that approx. 1/2B+ voltage is on the output capacitor.

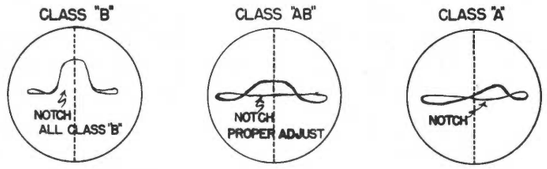
5. Connect an Intermodulation Distortion analyzer to to the amplifier TP. MON. (aux.) input, turn volumn control to maximum and adjust the analyzer output for an amplifier output of 2.0V across 8 ohms. (Because the output stages have been set into heavy class "B" operation by the "presetting" in Step 2, a class "B" notch in the distortion waveform will be obvious.) NOTE: When adjusting bias for class "AB", adjust until class "B" notch is almost eliminated. Class "A" begins beyond this point. Notch shifts to right.

6. Increase analyzer output until clipping can be observed. Fine adjust output balance pot. so that clipping is symmetrical.

IMPORTANT: Misadjustment of the bias pot can cause heavy class "A" operation of the output transistors, causing them to overheat.

The following performance indicates a properly operating output stage with 8 ohm load.

-Less than 0.5%IM distortion at 2.0V.
-Typically 0.6%IM distortion at 10 Volts.
-18 watts of power per channel at clipping.



1. PROTECTIVE CIRCUITRY (IOP) & SPEAKER SYSTEM CHECK: The Model S-8800a incorporates special protective circuitry, (Instamatic Overload Protection), which turns off the drive to the power amplifiers when danger to the receiver output circuitry exists. If the receiver turns itself off, check the speaker connections for shorted wires. Speaker line resistance should not measure below 3 ohms.

The overload protective circuit consists of a type of bi-stable multivibrator. Transistor Q105 samples the output transistors current. At approximately 5A peak output current, Q105 is triggered and clamps the base of Q106 to ground and locks in this state, preventing AC drive to the power amplifier and thereby protecting it.

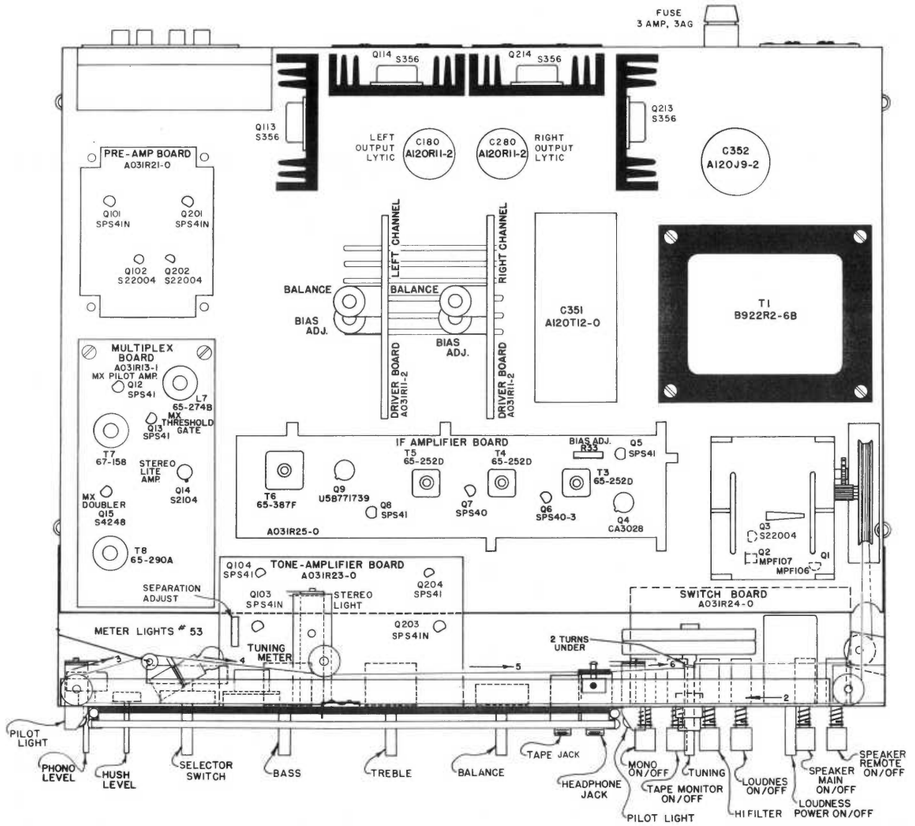
*It is extremely important that the mica insulating washers used to separate the output transistors from their heat sinks be unbroken and installed properly with silicon grease liberally applied to all surfaces in contact with each other. Make certain the emitter and base pins of the output transistors do not contact any part of the heat sinks.

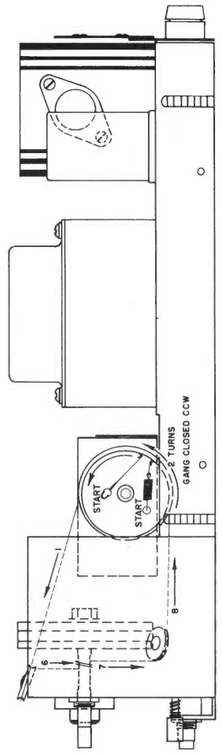
NOTE: Refer to speaker load connections on schematic, being careful to observe ground-connections.

ALIGNMENT CHART

		switch position	signal generator input: coupling	signal generator input: freq.	signal generator input: modulation	dial setting	indicating instrument	adjust	indication
FM ALIGNMENT	1	Selector FM Mode: Mono	none	none	none	pt. of no interf.	DC-VTVM across R36 1KΩ	R33 bias adj	2.0 V-DC
	2	"	"	"	"	"	Probe at Q6 base, CRO: HORIZ. EXT. MODULATION (Audio in all steps).	Short T4 & T5 Pin 4 to Gnd. (Short jumper wire).	
		RF PROBE DETECTOR — USING HIGH FREQUENCY GERMANIUM DIODES X1 & X2 (Sherwood# A692M5-2)							
	3	"	300 Ant. Input	90MHz	400 or 60Hz ±300KHz FM	90MHz	"	L4, L2, L3, T2 & T3 top & bottom	IF response for max. deflection & symmetry about 10.7MHz marker.
		Inject 10.7MHz marker into feethru C9 on tuner chassis (see pictorial on Tuner schematic).							
	4	"	"	106MHz	"	106MHz	"	C19,C2,C6	"
	5	Repeat steps 3 & 4 until no further improvement.							
	6	"	"	96MHz	"	96MHz	Probe at Q7 base.	(Remove T4 jumper short) T4 Top & Bottom	" (±120KHz BW at -3db).
	7	"	"	"	"	"	Probe at Q9 Pin 1	(Remove T5 jumper short) T5 top & bottom	"
	8	Repeat step 1							
	9	"	"	"	400 or 60Hz ±75KHz FM. centered on IF	"	DC-VTVM across C55, 100pf.	T6 Top	0 V-DC
	10	"	"	"	400 or 60Hz ±300KHz FM	"	"	T6 bottom	FM detector response curve for maximum deflection & symmetry
	11	"	"	" 100uv input	400 or 60Hz ±75KHz FM. centered on IF	"	CRO at Audio Left (across R390)	T6 bottom	Fine adjust for linear lissajous* (recheck for the 0 VDC of step 9).
MX ALIGNMENT	1	Disconnect FM detector from Point A (Short Q13 emitter–base junction)							
	2	Selector FM Mode: Auto Stereo	10K source impedance	60MV RMS 19KHz into point A	none	point of no interf.	CRO &/or AC voltmeter base of Q15	T7 top & bottom	maximum deflection
	3	"	"	"	"	"	CRO &/or AC voltmeter T8 pin 1 to ground	T8 top & bottom	"
	4	"	"	1.0V RMS 67KHz into point A	"	"	"	L7	null
	5	"	"	feed composite MX sig. left CH modulation 1.7V p-p or 0.3V RMS 400Hz into point A		"	CRO &/or AC voltmeter across R390	none	Note: approx. 0.4V Audio at Left channel output
	6	"	"	"		"	CRO &/or AC voltmeter across R391	T7 top	null at unmodulated channel output (approx. -10db from left)
	7	"	"	switch off stereo gen. audio mod.		"	CRO &/or AC voltmeter across R390	none	residual 19KHz and 38KHz to be approx. -45db below 100% audio
	8	Reconnect FM detector to point A (Remove Q13 emitter–base short)							
	9	"	300 balanced input to FM ant. input	96MHz 100uv	±75KHz composite stereo sig. left CH modulation only	96MHz	CRO &/or AC voltmeter across R391	fine adjust T7 top	null at unmodulated channel output.
	10	"	"	"	"	"	CRO &/or AC–VTVM at record output (right channel)	Adjust separation R136	Adjust for null separation (to be more than -30db)

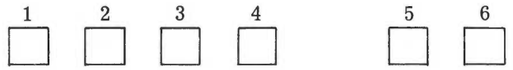
*If distortion analyzer is available, null T6 bottom for minimum distortion with 75KHz modulation.





B866R3 PUSH BUTTON SWITCH

REPAIR PROCEDURE



REMOVAL OF BROKEN PUSH BUTTON.

(a) depress and lock buttons 1, 2, 3, 5, & 6 (depress completely to lock)
(b) with thumb of left hand depress button #4 approx. 3/16" to 1/4" and hold in that position. With long nose pliers grasp flange of locking key. (located on right hand side of pushbutton #4) Pull key forward enough to clear tab on left side of switch and slide locking key as far to the right as it will go and release locking key from pliers. Then slide key to the left and slowly release the tension on push button #4.
(c) Each button may now be individually removed by depressing and then releasing the button slowly.

REINSERTION OF BUTTONS

(a) depress and lock buttons 1, 2, 3, 5, & 6.
(b) Slide locking key as far to the right as it will go. With thumb of right hand depress push button #4 approx. 1/4" to 3/8". With small screwdriver in left hand slide small tab (located just to left of push button #4) as far to the right as it will go.

Slowly release push button #4. It should return to its normal position and stop.
(c) With long nose pliers grasp locking key flange and pull it forward enough to clear small tab on left hand side of #4 push button. Then slide locking key to the left until small tab is visible through hole in locking key. Slowly allow locking key to return to a flush position against switch mounting plate, making sure small tab is encompassed by locking key.
(d) Using a pliers or screwdriver slide locking key flange gently to the right until lite snap is heard.
(e) All push buttons are now locked and may be returned to their normal position by depressing and releasing each button.
NOTE: If push button #4 binds, pin on right hand side of locking key has been caught by spring.

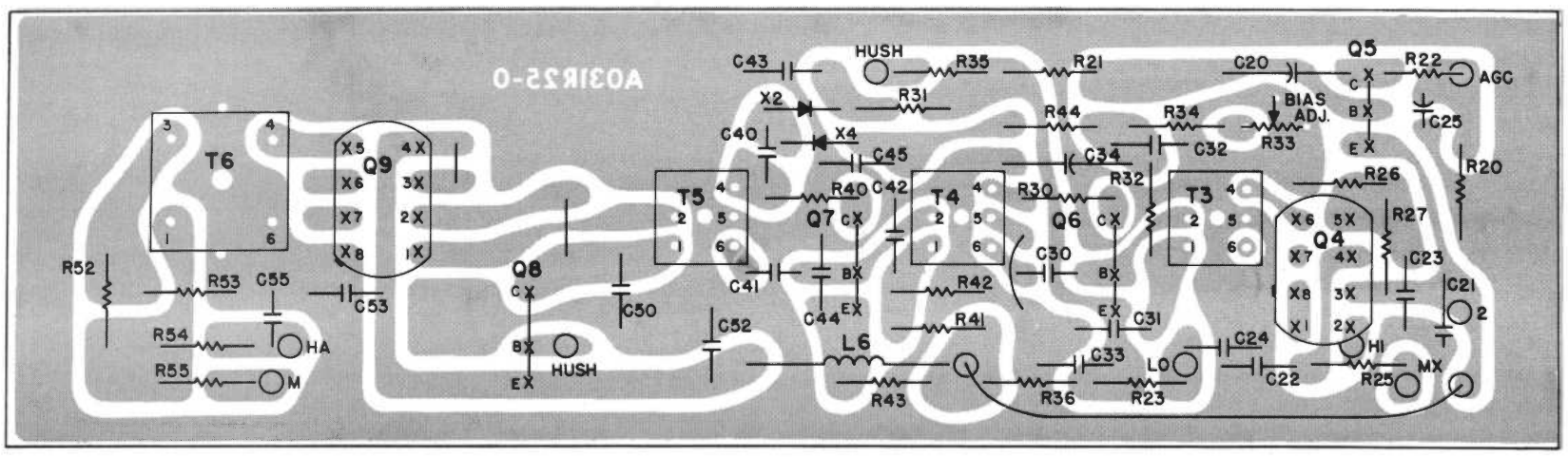
PARTS LIST

TRANSISTORS (All silicon)	PART NO.	PRICE
Audio, Low signal - No dot (High beta), (Q5, 8, 12, 13, 105, 205)	SPS41	$0.31
Audio, Low signal, No dot, (Q102, 108, 202, 208)	S22004	0.63
Audio, Low signal - Green dot (Low Noise), (Q101, 103, 201, 203)	SPS41N	0.91
Audio, Low signal - White dot, (Q106, 206)	S22004V	0.73
Audio, PNP (Q10, 15)	S4248	0.50
Pre-Driver, NPN (Q107, 207)	SPS4199	0.95
Pre-Driver, PNP (Q110, 210)	S437	3.16
Pre-Driver, NPN (Q14, 109, 209)	S2104	0.92
Driver, NPN (Q111, 112, 211, 212)	S409F	2.70
Output, NPN (Q113, 114, 213, 214)	S356	8.33
B Supply, NPN (Q11)	37649	1.80
RF Amp., FET (Q1)	MPF106	2.12
RF Mixer, FET (Q2)	MPF107	2.21
RF, IF, NPN (Q3, 6, 7) (Use same beta code 1, 2, 3)	SPS40	0.90
Microcircuit, (Q4)	CA3028	4.01
Microcircuit, (Q9)	U5B771739	5.40

You will note that all transistors used in the S-8800a are color-coded with a dot or mark of some color prominently located on the top of their case. (Some transistors have no mark, but this also is identification.) When ordering replacement transistors, it is imperative that you indicate not only its part no., but the color dot on the transistor body: red, yellow, none, (1, - 2, - or - 3). This is particularly important when replacing output transistors.

DESCRIPTION	PART NO.	PRICE
0.5μf, 50V, (C150, 171, 250, 271)	B120X3	$0.72
5μf, 20V, (C151, 152, 251, 252)	B120X6	0.59
1μf, 25V, (C90, 111, 211, 360)	B120X7	0.59
8μf, 40V, (C140, 142, 240, 242)	B120X8	0.45
20μf, 5V, (C160, 260)	B120X12	0.59
100μf, 3V, (C100, 102, 200, 202)	B120X24	0.45
1μf, 40V, (C163, 263)	B120X76	0.63
LYTICS - BYPASS		
0.5μf, 50V, (C20, 31, 34)	B120B3	0.59
8μf, 40V, (C374)	B120B8	0.45
10μf, 10V, (C161, 261)	B120B9	0.45
20μf, 50V, (C170, 270)	B120B14	0.45
500μf, 25V, (C353)	B120B31	0.99
250μf, 35V, (C340, 341, 343)	B120B33	0.86
125μf, 16V, (C18)	B120B26	0.46
250μf, 15V, (C342)	B120B74	0.59
50μf, 15V, (C25)	B120X36	0.90
Insulator, Mica (T0-3)	A021F1	0.05
Fuse, 3 Amp., 3AG	312003.	0.15
Dial Glass	B322R9-0	1.13
Knobs, Small, (w/indicator)	B467X1-2	1.98
Knobs, Mini.	A467X5-2	1.13
Knobs, Medium, (w/indicator)	B467X4-2	2.25
Tuning Meter	A550G3	6.30
Light Bulb, Pilot, #53	630B53	0.16
Light Bulb, Stereo, #1302	630B1302	0.64
Control, Bass, 100K, (R134A, B)	A670R20-0	1.67
Control, Treble, 100K, (R140A, B)	A670R20-0	1.67
Control, Balance, 100K, (R122)	A670R22-1	0.90
Control, Hush, 15K, (R35)	A670R18-2	0.95
Control, Ph. Level 1.5K, (R120A, B)	A670R19-2	2.12

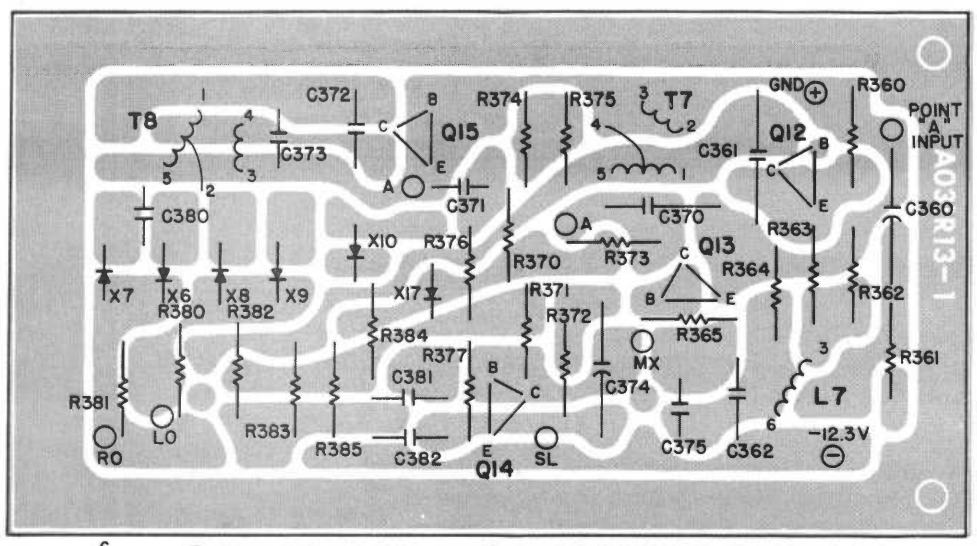
DESCRIPTION	PART NO.	PRICE
Control, Loudness, Dual w/AC sw. 50K, (R121A, B)	A671R3-3	4.28
Pot., P.C., 500, (R183, 283)	A675T1-0A	0.45
Pot., P.C., 25K, (R136)	A675T8-0A	0.45
Pot., P.C., 250K, (R33)	A675T9-0A	0.72
Pot., P.C., 500K, (R174, 274)	A675T10-0A	0.63
Rectifier, Silicon, (X14)	A692T5	0.48
Diode, Silicon, (X2,4,6,7,8,9,10,17)	A692X13	1.22
Rectifier, Silicon, (X12, 13)	A692X16	1.71
Rectifier, Silicon, (X15, 16)	A692X17	0.62
Diode, Zener, Silicon, 13V, 5%, (Z1)	A694X1	1.21
Socket, Driver Transistor, T0-5	A790T4M	0.23
Socket, Output Transistor, T0-3	A790T7	0.18
Stereo Headphone Jack	A795R3	0.95
Stereo Tape Jack	A795R3	0.95
Fuse Post	A796X2	0.70
Selector Switch, 3 Position, (S1)	A860R9-1	5.04
Switch, Push Button Assembly	B866R3-3A	7.69
Transformer, Power, Domestic, (T1)	B922R2-6	20.97
Transformer, Export, Power, (T1)'	2B922R2X-6	27.95
Transformer, FM IF (T3, 4, 5)	65-252D	2.75
Transformer, FM Discrim., (T6)	65-387F	4.92
Transformer, FM Converter, (T2)	67-101	2.07
Transformer, 38KHz, (T8)	65-290A	1.52
Transformer, 19KHz, (T7)	67-158	2.43
Coil, 67KHz Null, (L7)	65-274B	0.96
Coil, Mixer (L3)	68-131	1.13
Coil, Balun, (L1)	67-288	0.86
Choke, RF, (L5, 6)	64-103	0.52



C B E
X—X—X
TRANSISTOR

- ⊙ HA - HUSH AMP.
- ⊙ AGC - TO TUNER
- ⊙ HUSH - TO POT
- ⊙ HI - HI INPUT
- ⊙ M - TO TUNING METER
- ⊙ LO - LO INPUT
- ⊙ MX - TO MX BOARD
- ⊙ 2 - FM B- (TUNER)

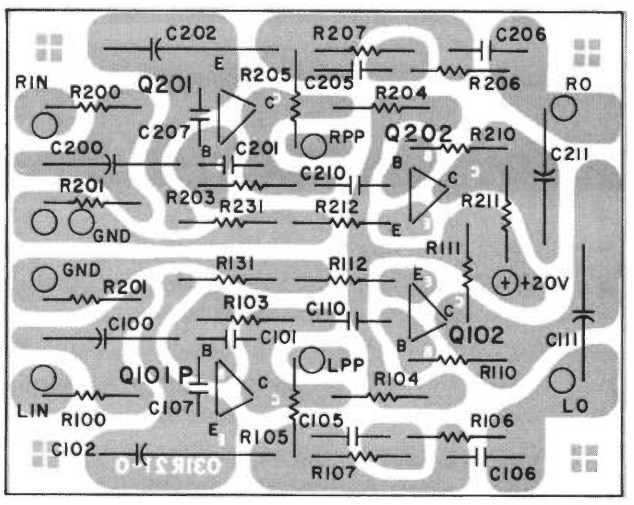
A031R25-0 I. F. AMP. BOARD



C
E B
TRANSISTORS

- ⊙ RO — RIGHT OUTPUT
- ⊙ LO — LEFT OUTPUT
- ⊙ SL — TO STEREO LIGHT
- ⊙ A — TO AUTOMATIC STEREO-MONO SW.
- ⊙ MX — MX GATE FROM I.F. BOARD

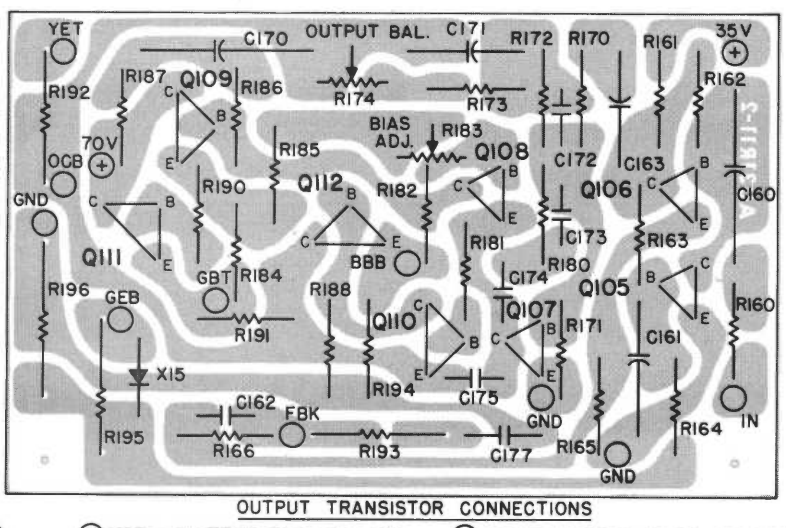
A031R13-1 MULTIPLEX BOARD



- ⊙ RIN-RIGHT INPUT
- ⊙ RPP-RIGHT PHONO LEVEL
- ⊙ RO-RIGHT OUTPUT
- ⊙ LIN-LEFT INPUT
- ⊙ LPO-LEFT PHONO LEVEL
- ⊙ LO-LEFT OUTPUT

TRANSISTOR

A031R21-0A PRE-AMP BOARD



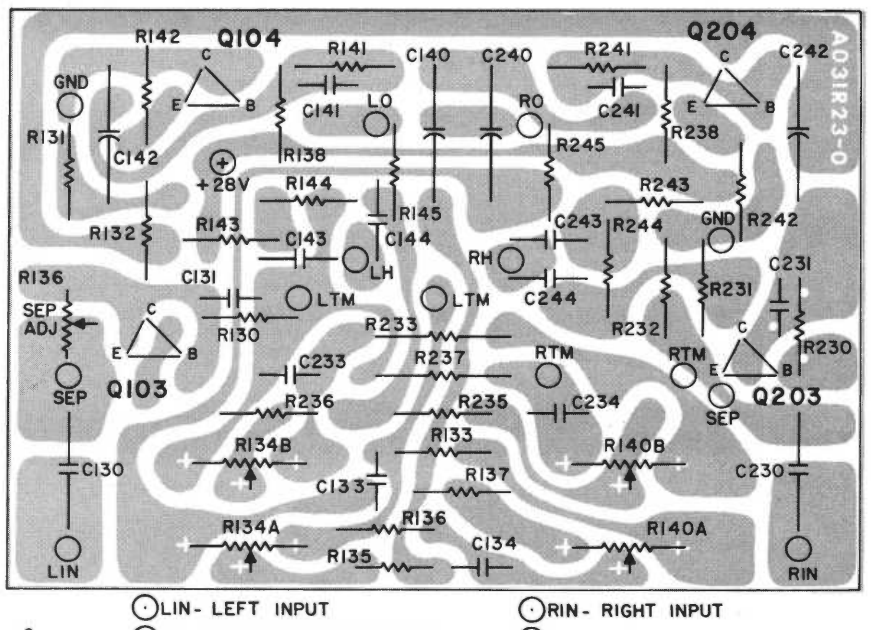
OUTPUT TRANSISTOR CONNECTIONS

B
C E
TRANSISTOR SOCKET

C
E B
TRANSISTOR

- ⊙ YET — EMITTER, TOP, (YELLOW)
- ⊙ GBT — BASE, TOP, (GREEN)
- ⊕ +70V — COLLECTOR, TOP, (RED)
- ⊙ GEB — EMITTER, BOTTOM, (GREY)
- ⊙ BBB — BASE, BOTTOM, (BROWN)
- ⊙ OCB — COLLECTOR, BOTTOM, (ORANGE)
- ⊙ IN — INPUT
- ⊙ FBK — FEED-BACK

A031R11-2 DRIVER BOARD

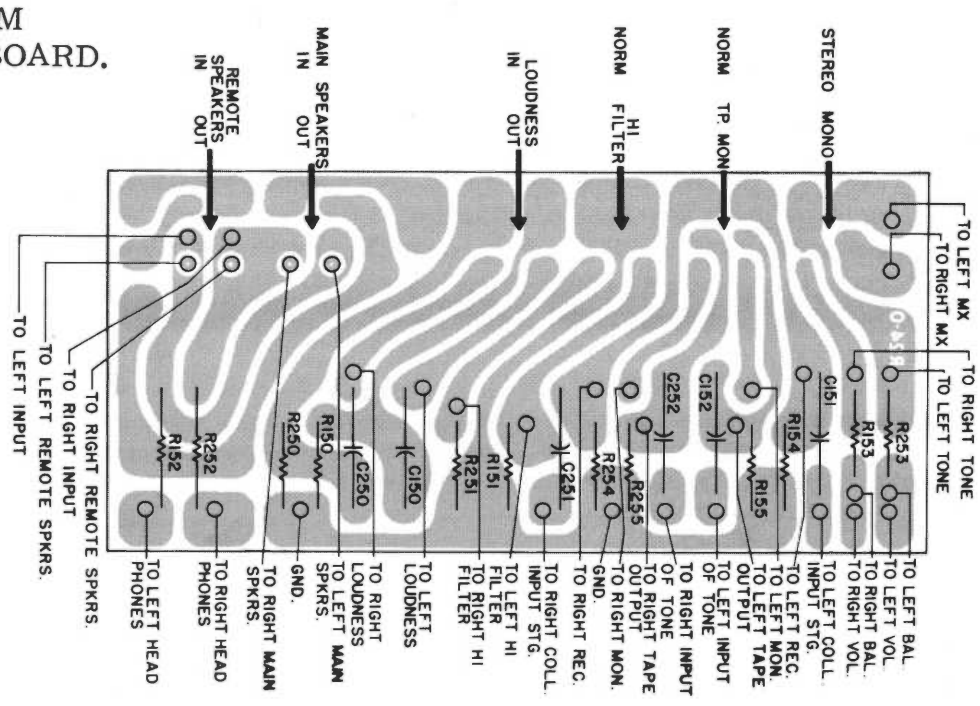


C
E B
TRANSISTOR

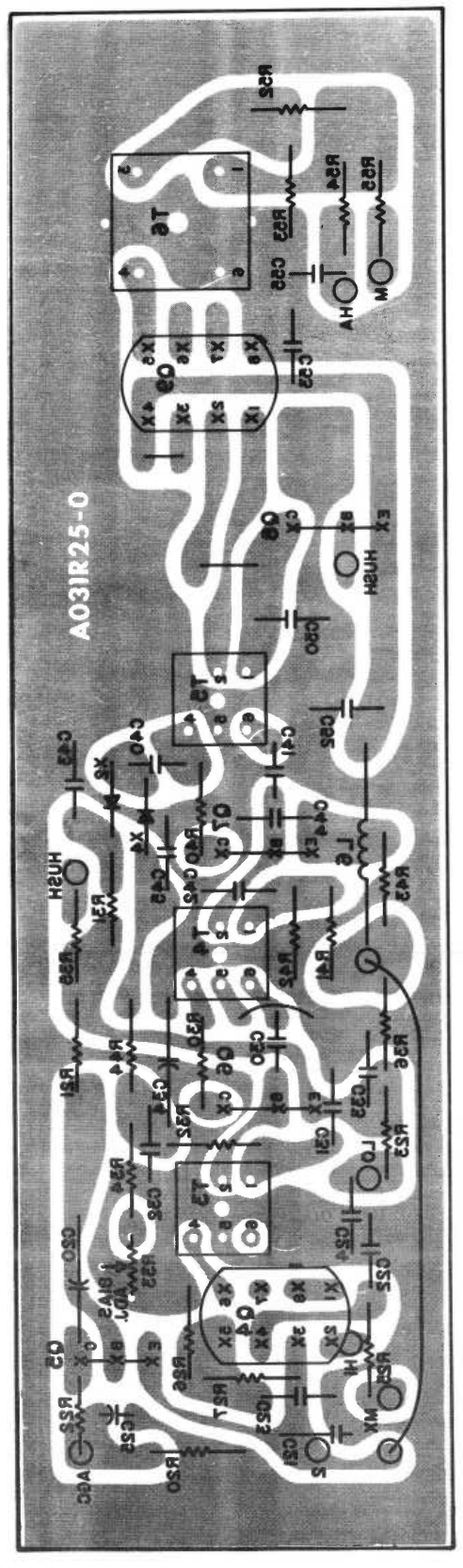
- ⊙ LIN - LEFT INPUT
- ⊙ LH - TO LEFT HI FILTER SWITCH
- ⊙ LTM - TO LEFT TAPE MONITOR SW.
- ⊙ LO - LEFT OUTPUT
- ⊙ SEP ADJ - SEPARATION ADJUSTMENT
- ⊙ RIN - RIGHT INPUT
- ⊙ RH - TO RIGHT HI FILTER SWITCH
- ⊙ RTM - TO RIGHT TAPE MONITOR SW.
- ⊙ RO - RIGHT OUTPUT
- ⊙ SEP - TO SELECTOR SWITCH

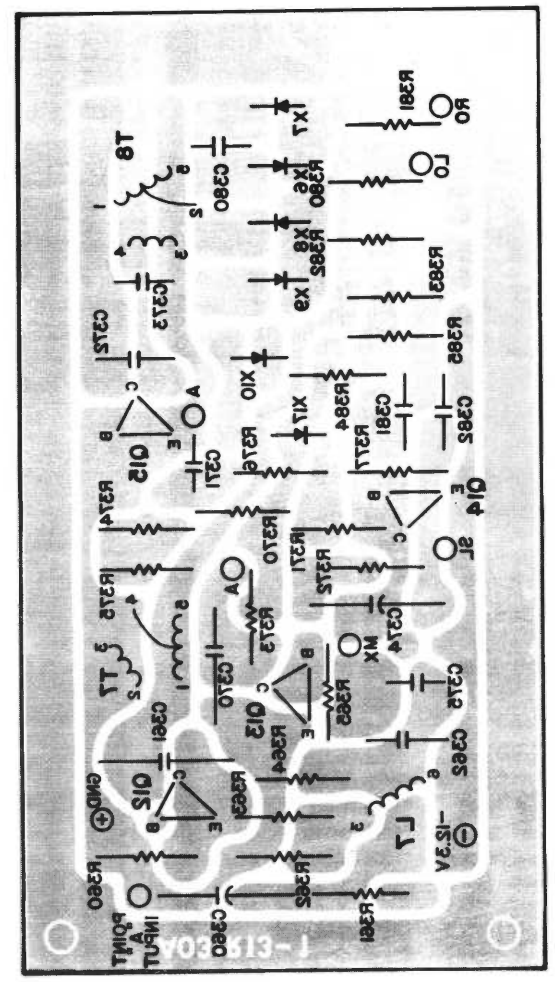
A031R23-0 TONE BOARD

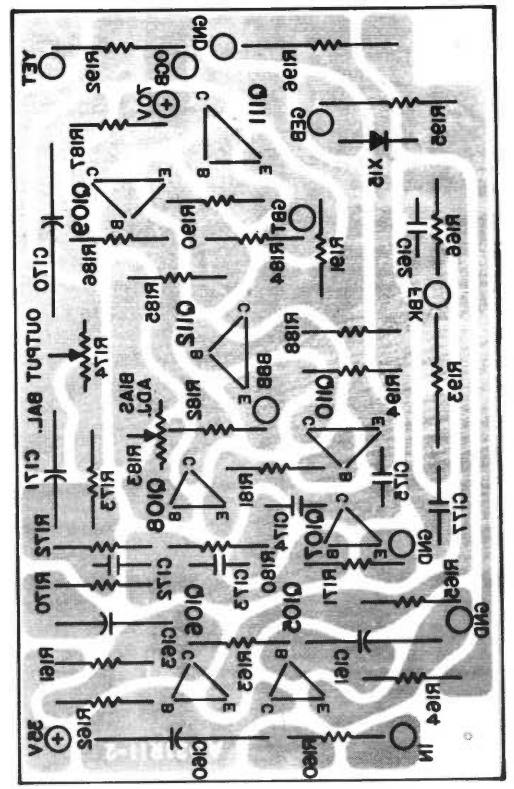
NOTE: AS VIEWED FROM COMPONENT SIDE OF BOARD.

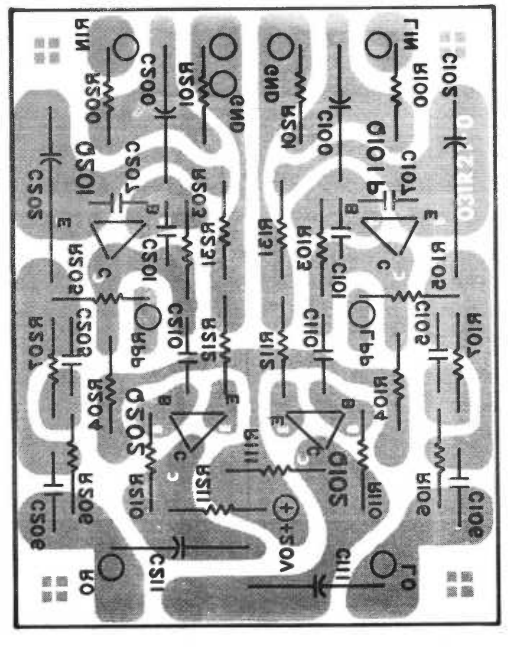


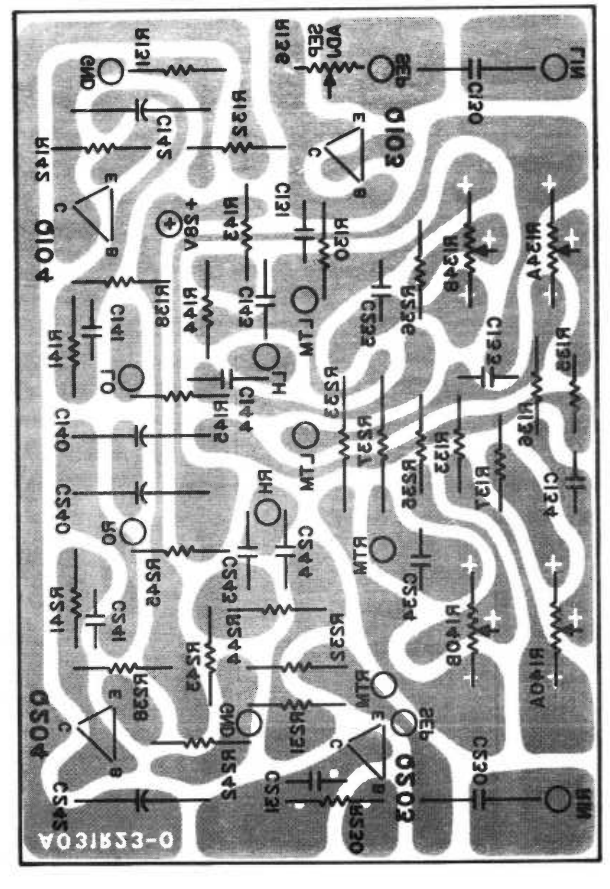
A031R24-0 SWITCH BOARD

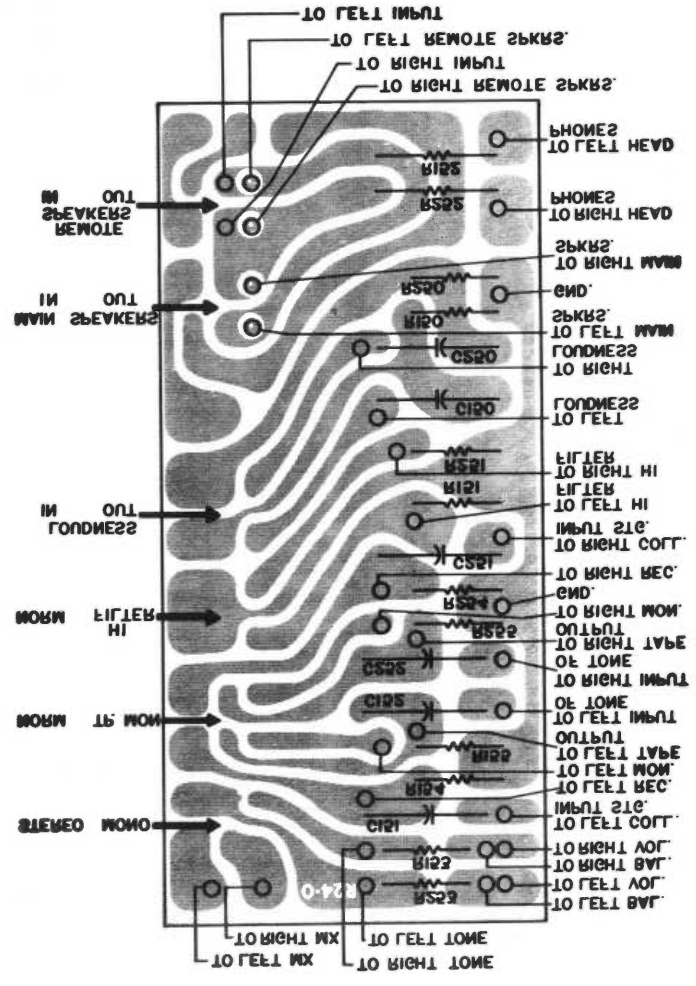

A031R25-0










TO LEFT INPUT
TO RIGHT REMOTE SPKRS.
TO RIGHT INPUT
TO LEFT REMOTE SPKRS.
PHONES TO LEFT HEAD
PHONES TO RIGHT HEAD
SPKRS. TO RIGHT MAIN
GND.
SPKRS. TO LEFT MAIN
LOUDNESS TO RIGHT
LOUDNESS TO LEFT
FILTER TO RIGHT HI
FILTER TO LEFT HI
INPUT SIG. TO RIGHT COLL.
TO RIGHT REC.
GND.
TO RIGHT MON.
OUTPUT TO RIGHT TAPE
TO TONE
TO RIGHT INPUT
TO TONE
TO LEFT INPUT
OUTPUT TO LEFT TAPE
TO LEFT MON.
TO LEFT REC.
INPUT SIG. TO LEFT COLL.
TO RIGHT VOL.
TO RIGHT BAL.
TO LEFT VOL.
TO LEFT BAL.
STEREO MONO
MONO TP
MONO FILTER IN
MONO LOUDNESS IN OUT
MAIN SPEAKERS IN OUT
REMOTE SPEAKERS IN OUT
TO RIGHT MX
TO LEFT TONE
TO RIGHT TONE
TO LEFT MX

PHONO PREAMPLIFIER
A031TI5

TONE-AMPLIFIER
A031TII

DRIVER
A031TI4

CH-1

CH-2

SWITCH POSITIONS
1 TAPE HD
2 PHONO
3 TUNER
4 AUX

SELECTOR SWITCH

FUNCTION SWITCH
1.REV (STEREO)
2.NORM (STEREO)
3.CH.1 (MONO)
4.CH.2 (MONO)
5.CH.1&2 (MONO)

BASS

TREBLE

BALANCE

LOUDNESS

HI-FILTER

LO-FILTER

SHERWOOD MODEL S-9000(a)

160 W SOLID-STATE AMPLIFIER

SERIAL NO. 951110 & UP

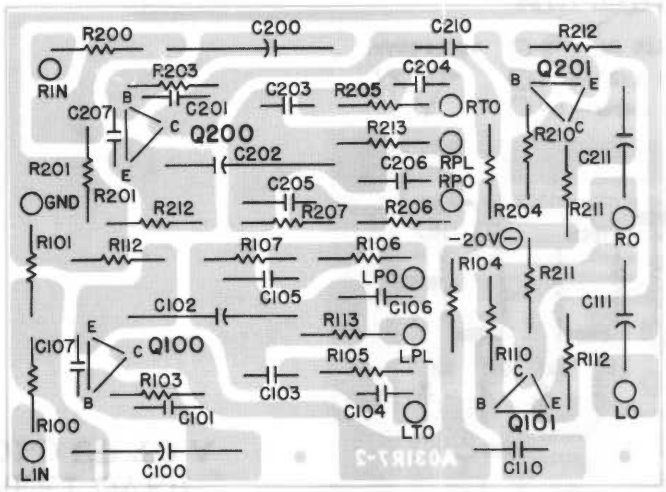
*NOTE ALL SWITCHES SHOWN IN POSITION ONE (CCW)

ALL RESISTORS ARE 1/2 WATT, ±10% TOL. UNLESS OTHERWISE SPECIFIED.

ALL FRACTION-VALUED CAPACITORS ARE IN μf.

OTHER CAPACITORS EXCEPT ELECTROLYTICS ARE IN pf.

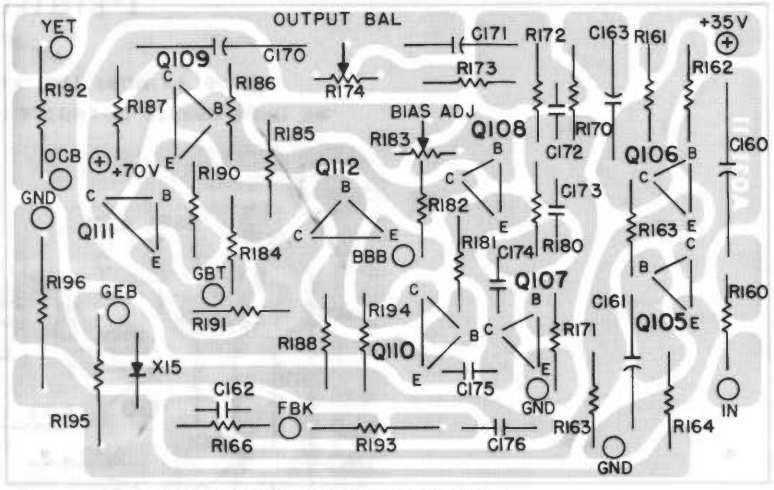
2-2-66



TRANSISTOR

- RIN – RIGHT INPUT
- RTO – RIGHT TAPE OUT
- RPO – RIGHT PHONO OUT
- RPL – PRE-AMP LEVEL
- RO – RIGHT OUTPUT
- LIN – LEFT INPUT
- LTO – LEFT TAPE OUT
- LPO – LEFT PHONO OUT
- LPL – PRE-AMP LEVEL POT
- LO – LEFT OUTPUT

PRE-AMP BOARD A031R7-2



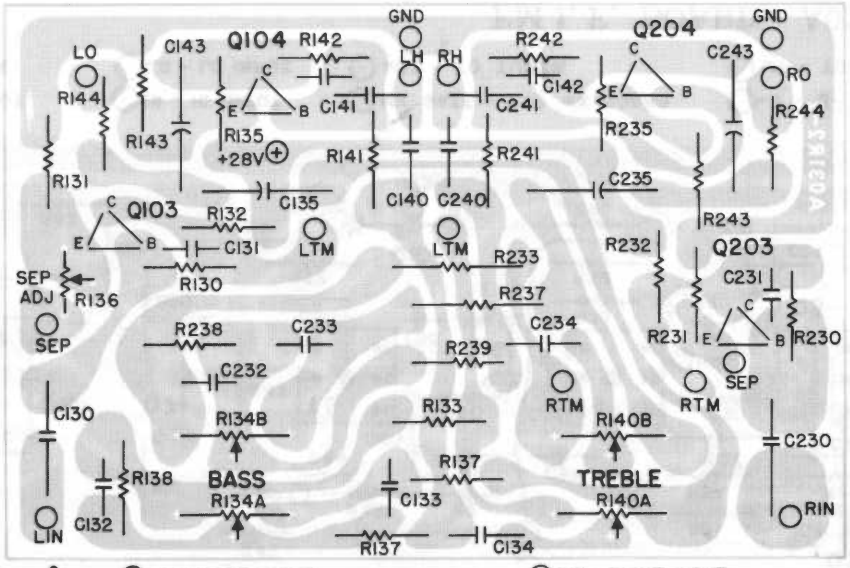
TRANSISTOR SOCKET

TRANSISTOR

OUTPUT TRANSISTOR CONNECTIONS

- YET – EMITTER, TOP, (YELLOW)
- GBT – BASE, TOP, (GREEN)
- +70V – COLLECTOR, TOP, (RED)
- GEB – EMITTER, BOTTOM, (GREY)
- BBB – BASE, BOTTOM, (BROWN)
- OCB – COLLECTOR, BOTTOM, (ORANGE)
- IN – INPUT
- FBK – FEED-BACK

DRIVER BOARD A031R11-1



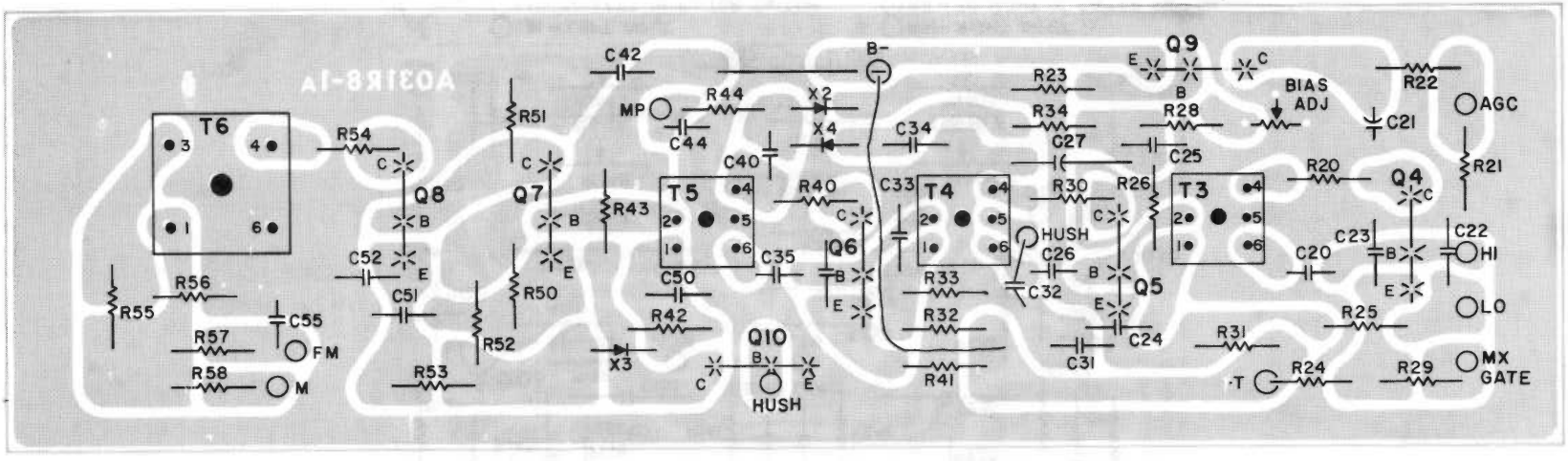
TRANSISTOR

- LIN – LEFT INPUT
- LH – TO LEFT HI FILTER SWITCH
- LTM – TO LEFT TAPE MONITOR SW.
- LO – LEFT OUTPUT
- SEP ADJ – SEPARATION ADJUSTMENT
- RIN – RIGHT INPUT
- RH – TO RIGHT HI FILTER SWITCH
- RTM – TO RIGHT TAPE MONITOR SW.
- RO – RIGHT OUTPUT
- SEP – TO SELECTOR SWITCH

TONE BOARD A031R2-2

Sherwood

MODEL S-8800 (Serial No. 706201 to R707950)
CIRCUIT BOARDS ARE SHOWN FROM COMPONENT SIDE

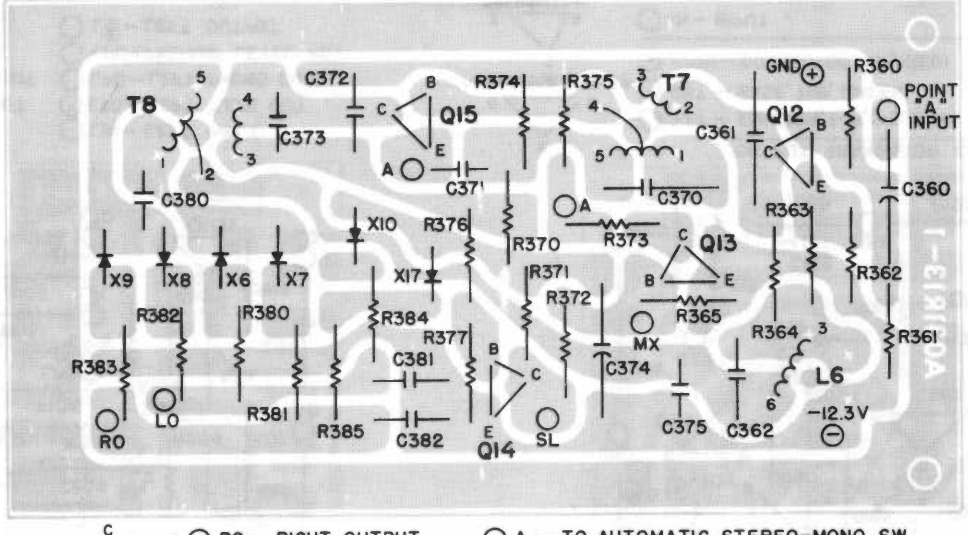


TRANSISTOR (C B E)

⊙FM - FM OUTPUT ⊙M - TO METER ⊙HI - HI INPUT ⊙LO - LO INPUT ⊙MX GATE - TO MX BOARD ⊙AGC - TO TUNER ⊙-T - B- TO TUNER ⊙MP - TO MULTI PATH TEST POINT ⊙HUSH - TO POT.

FM I. F. BOARD A031R8 - 1a

NOTE: FOR A VIEW FROM THE COPPER SIDE OF THESE BOARDS, TURN THIS SHEET OVER AND HOLD UP TO A LIGHT.



TRANSISTORS (C E B)

⊙RO — RIGHT OUTPUT ⊙LO — LEFT OUTPUT ⊙SL — TO STEREO LIGHT ⊙A — TO AUTOMATIC STEREO-MONO SW. ⊙MX — MX GATE FROM I.F. BOARD

MULTIPLEX BOARD A031R13-1

SERVICING

VOLTAGE CHECKS

Preliminary checks of the D.C. voltages present at various points in the S–8800a can prove useful in locating defective components. They are inconclusive, however, in determining if transistors are operating properly in all aspects. They can only indicate wheth -er the transistor is open, shorted or functioning, not how well the transistor is functioning.

IN GENERAL:

Correct voltages indicate a functioning transistor.

The same voltage at the collector and emitter indicates a shorted transistor.

Full supply voltage on the collector and no voltage on the emitter indicates an open transistor.

OUTPUT TRANSISTOR BIAS

Of all the specifications which require checking to ascertain correct performance of the S–8800a, proper output transistor operation is the most important and critical. Adjustment of the output transistor bias is necessary if output transistors are replaced*, or the amplifier exhibits one or more of the following symptoms:

1. Overheating of the output transistors under normal operating conditions.

2. Excessive low level Intermodulation Distortion- more than 0.5% at 2.0 volts across 8 ohms (0.8 watts, IM power).

Adjustment of output transistor bias should then proceed as follows:

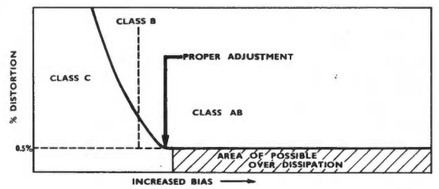


FIG. 1

1. Turn amplifier off.

2. Set output balance pots (left and right channels) to mechanical center and bias pots fully counter-clockwise.

3. Connect D.C. voltmeter of at least 3% known accuracy to transistor side of appropriate channel's output terminals.

4. Turn amp. on and adjust output balance pot for that channel so that approx. 1/2B+ voltage is on the output capacitor.

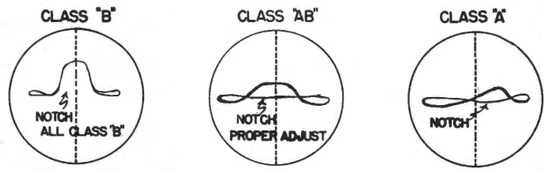
5. Connect an Intermodulation Distortion analyzer to to the amplifier TP. MON. (aux.) input, turn volumn control to maximum and adjust the analyzer output for an amplifier output of 2.0V across 8 ohms. (Because the output stages have been set into heavy class "B" operation by the "presetting" in Step 2, a class "B" notch in the distortion waveform will be obvious.) NOTE: When adjusting bias for class "AB", adjust until class "B" notch is almost eliminated. Class "A" begins beyond this point. Notch shifts to right.

6. Increase analyzer output until clipping can be observed. Fine adjust output balance pot. so that clipping is symmetrical.

IMPORTANT: Misadjustment of the bias pot can cause heavy class "A" operation of the output transistors, causing them to overheat.

The following performance indicates a properly operating output stage with 8 ohm load.

-Less than 0.5%IM distortion at 2.0V.
-Typically 0.6%IM distortion at 10 Volts.
-18 watts of power per channel at clipping.



1. PROTECTIVE CIRCUITRY (IOP) & SPEAKER SYSTEM CHECK: The Model S-8800a incorporates special protective circuitry, (Instamatic Overload Protection), which turns off the drive to the power amplifiers when danger to the receiver output circuitry exists. If the receiver turns itself off, check the speaker connections for shorted wires. Speaker line resistance should not measure below 3 ohms.

The overload protective circuit consists of a type of bi-stable multivibrator. Transistor Q105 samples the output transistors current. At approximately 5A peak output current, Q105 is triggered and clamps the base of Q106 to ground and locks in this state, preventing AC drive to the power amplifier and thereby protecting it.

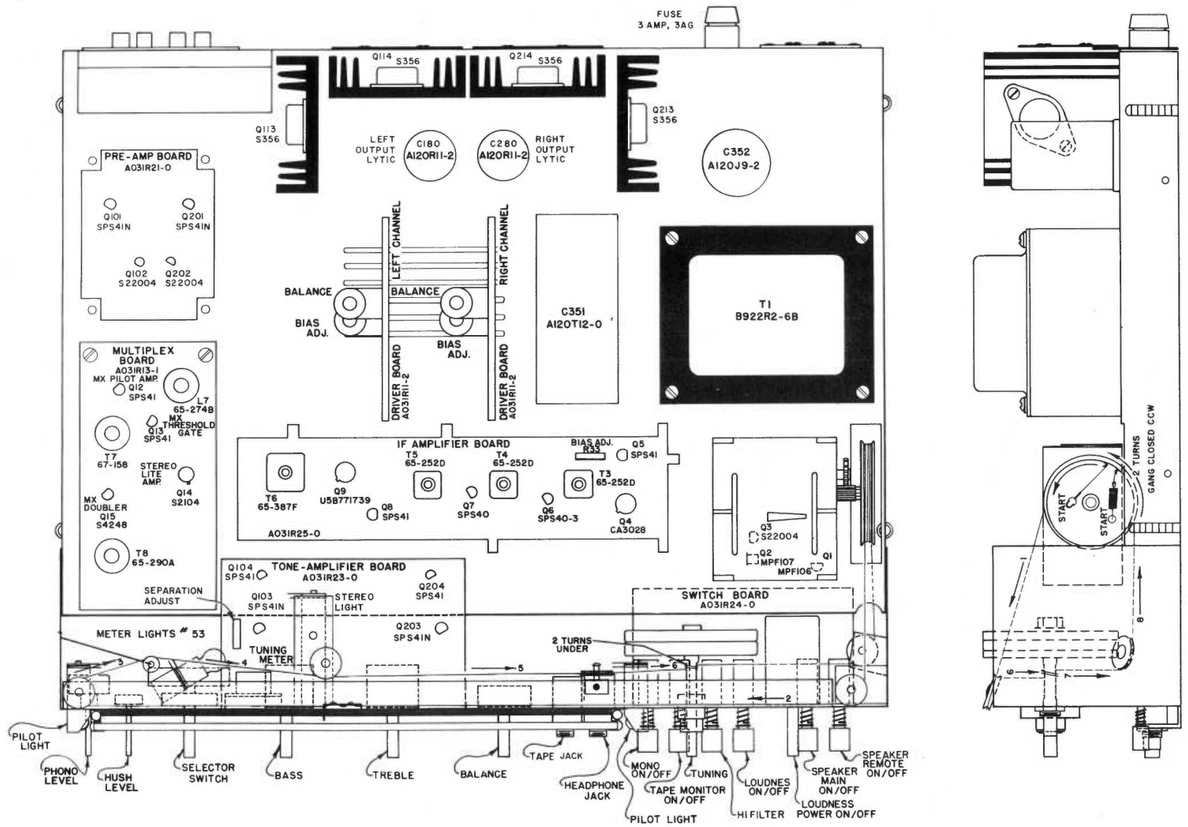
*It is extremely important that the mica insulating washers used to separate the output transistors from their heat sinks be unbroken and installed properly with silicon grease liberally applied to all surfaces in contact with each other. Make certain the emitter and base pins of the output transistors do not contact any part of the heat sinks.

NOTE: Refer to speaker load connections on schematic, being careful to observe ground-connections.

ALIGNMENT CHART

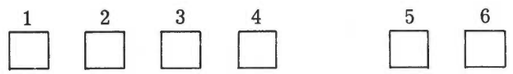
		switch position	signal generator input: coupling	signal generator input: freq.	signal generator input: modulation	dial setting	indicating instrument	adjust	indication
FM ALIGNMENT	1	Selector FM Mode: Mono	none	none	none	pt. of no interf.	DC-VTVM across R36 1KΩ	R33 bias adj	2.0 V-DC
	2	"	"	"	"	"	Probe at Q6 base, CRO: HORIZ. EXT. MODULATION (Audio in all steps).	Short T4 & T5 Pin 4 to Gnd. (Short jumper wire).	
		RF PROBE DETECTOR — USING HIGH FREQUENCY GERMANIUM DIODES X1 & X2 (Sherwood #A692M5-2): PROBE INPUT — 47pf — X2 — X1 — 470K — 220K — 220pf							
	3	"	300 Ant. Input	90MHz	400 or 60Hz ±300KHz FM	90MHz	"	L4, L2, L3, T2 & T3 top & bottom	IF response for max. deflection & symmetry about 10.7MHz marker.
		Inject 10.7MHz marker into feethru C9 on tuner chassis (see pictorial on Tuner schematic).							
	4	"	"	106MHz	"	106MHz	"	C19,C2,C6	"
	5	Repeat steps 3 & 4 until no further improvement.							
	6	"	"	96MHz	"	96MHz	Probe at Q7 base.	(Remove T4 jumper short) T4 Top & Bottom	" (±120KHz BW at -3db).
	7	"	"	"	"	"	Probe at Q9 Pin 1	(Remove T5 jumper short) T5 top & bottom	"
	8	Repeat step 1							
	9	"	"	"	400 or 60Hz ±75KHz FM. centered on IF	"	DC-VTVM across C55, 100pf.	T6 Top	0 V-DC
	10	"	"	"	400 or 60Hz ±300KHz FM	"	"	T6 bottom	FM detector response curve for maximum deflection & symmetry
	11	"	"	" 100uv input	400 or 60Hz ±75KHz FM. centered on IF	"	CRO at Audio Left (across R390)	T6 bottom	Fine adjust for linear lissajous* (recheck for the 0 VDC of step 9).
MX ALIGNMENT	1	Disconnect FM detector from Point A (Short Q13 emitter–base junction)							
	2	Selector FM Mode: Auto Stereo	10K source impedance	60MV RMS 19KHz into point A	none	point of no interf.	CRO &/or AC voltmeter base of Q15	T7 top & bottom	maximum deflection
	3	"	"	"	"	"	CRO &/or AC voltmeter T8 pin 1 to ground	T8 top & bottom	"
	4	"	"	1.0V RMS 67KHz into point A	"	"	"	L7	null
	5	"	"	feed composite MX sig. left CH modulation 1.7V p-p or 0.3V RMS 400Hz into point A		"	CRO &/or AC voltmeter across R390	none	Note: approx. 0.4V Audio at Left channel output
	6	"	"	"		"	CRO &/or AC voltmeter across R391	T7 top	null at unmodulated channel output (approx. -10db from left)
	7	"	"	switch off stereo gen. audio mod.		"	CRO &/or AC voltmeter across R390	none	residual 19KHz and 38KHz to be approx. -45db below 100% audio
	8	Reconnect FM detector to point A (Remove Q13 emitter–base short)							
	9	"	300 balanced input to FM ant. input	96MHz 100uv	±75KHz composite stereo sig. left CH modulation only	96MHz	CRO &/or AC voltmeter across R391	fine adjust T7 top	null at unmodulated channel output.
	10	"	"	"	"	"	CRO &/or AC–VTVM at record output (right channel)	Adjust separation R136	Adjust for null separation (to be more than -30db)

*If distortion analyzer is available, null T6 bottom for minimum distortion with 75KHz modulation.



B866R3 PUSH BUTTON SWITCH

REPAIR PROCEDURE



REMOVAL OF BROKEN PUSH BUTTON.

(a) depress and lock buttons 1, 2, 3, 5, & 6 (depress completely to lock)
(b) with thumb of left hand depress button #4 approx. 3/16" to 1/4" and hold in that position. With long nose pliers grasp flange of locking key. (located on right hand side of pushbutton #4) Pull key forward enough to clear tab on left side of switch and slide locking key as far to the right as it will go and release locking key from pliers. Then slide key to the left and slowly release the tension on push button #4.
(c) Each button may now be individually removed by depressing and then releasing the button slowly.

REINSERTION OF BUTTONS

(a) depress and lock buttons 1, 2, 3, 5, & 6.
(b) Slide locking key as far to the right as it will go. With thumb of right hand depress push button #4 approx. 1/4" to 3/8". With small screwdriver in left hand slide small tab (located just to left of push button #4) as far to the right as it will go.

Slowly release push button #4. It should return to its normal position and stop.
(c) With long nose pliers grasp locking key flange and pull it forward enough to clear small tab on left hand side of #4 push button. Then slide locking key to the left until small tab is visible through hole in locking key. Slowly allow locking key to return to a flush position against switch mounting plate, making sure small tab is encompassed by locking key.
(d) Using a pliers or screwdriver slide locking key flange gently to the right until lite snap is heard.
(e) All push buttons are now locked and may be returned to their normal position by depressing and releasing each button.
NOTE: If push button #4 binds, pin on right hand side of locking key has been caught by spring.

PARTS LIST

TRANSISTORS (All silicon)	PART NO.	PRICE
Audio, Low signal - No dot (High beta), (Q5, 8, 12, 13, 105, 205)	SPS41	$0.31
Audio, Low signal, No dot, (Q102, 108, 202, 208)	S22004	0.63
Audio, Low signal - Green dot (Low Noise), (Q101, 103, 201, 203)	SPS41N	0.91
Audio, Low signal - White dot, (Q106, 206)	S22004V	0.73
Audio, PNP (Q10, 15)	S4248	0.50
Pre-Driver, NPN (Q107, 207)	SPS4199	0.95
Pre-Driver, PNP (Q110, 210)	S437	3.16
Pre-Driver, NPN (Q14, 109, 209)	S2104	0.92
Driver, NPN (Q111, 112, 211, 212)	S409F	2.70
Output, NPN (Q113, 114, 213, 214)	S356	8.33
B Supply, NPN (Q11)	37649	1.80
RF Amp., FET (Q1)	MPF106	2.12
RF Mixer, FET (Q2)	MPF107	2.21
RF, IF, NPN (Q3, 6, 7) (Use same beta code 1, 2, 3)	SPS40	0.90
Microcircuit, (Q4)	CA3028	4.01
Microcircuit, (Q9)	U5B771739	5.40

You will note that all transistors used in the S-8800a are color-coded with a dot or mark of some color prominently located on the top of their case. (Some transistors have no mark, but this also is identification.) When ordering replacement transistors, it is imperative that you indicate not only its part no., but the color dot on the transistor body: red, yellow, none, (1, - 2, - or - 3). This is particularly important when replacing output transistors.

DESCRIPTION	PART NO.	PRICE
0.5μf, 50V, (C150, 171, 250, 271)	B120X3	$0.72
5μf, 20V, (C151, 152, 251, 252)	B120X6	0.59
1μf, 25V, (C90, 111, 211, 360)	B120X7	0.59
8μf, 40V, (C140, 142, 240, 242)	B120X8	0.45
20μf, 5V, (C160, 260)	B120X12	0.59
100μf, 3V, (C100, 102, 200, 202)	B120X24	0.45
1μf, 40V, (C163, 263)	B120X76	0.63
LYTICS - BYPASS		
0.5μf, 50V, (C20, 31, 34)	B120B3	0.59
8μf, 40V, (C374)	B120B8	0.45
10μf, 10V, (C161, 261)	B120B9	0.45
20μf, 50V, (C170, 270)	B120B14	0.45
500μf, 25V, (C353)	B120B31	0.99
250μf, 35V, (C340, 341, 343)	B120B33	0.86
125μf, 16V, (C18)	B120B26	0.46
250μf, 15V, (C342)	B120B74	0.59
50μf, 15V, (C25)	B120X36	0.90
Insulator, Mica (T0-3)	A021F1	0.05
Fuse, 3 Amp., 3AG	312003.	0.15
Dial Glass	B322R9-0	1.13
Knobs, Small, (w/indicator)	B467X1-2	1.98
Knobs, Mini.	A467X5-2	1.13
Knobs, Medium, (w/indicator)	B467X4-2	2.25
Tuning Meter	A550G3	6.30
Light Bulb, Pilot, #53	630B53	0.16
Light Bulb, Stereo, #1302	630B1302	0.64
Control, Bass, 100K, (R134A, B)	A670R20-0	1.67
Control, Treble, 100K, (R140A, B)	A670R20-0	1.67
Control, Balance, 100K, (R122)	A670R22-1	0.90
Control, Hush, 15K, (R35)	A670R18-2	0.95
Control, Ph. Level 1.5K, (R120A, B)	A670R19-2	2.12

DESCRIPTION	PART NO.	PRICE
Control, Loudness, Dual w/AC sw. 50K, (R121A, B)	A671R3-3	4.28
Pot., P.C., 500, (R183, 283)	A675T1-0A	0.45
Pot., P.C., 25K, (R136)	A675T8-0A	0.45
Pot., P.C., 250K, (R33)	A675T9-0A	0.72
Pot., P.C., 500K, (R174, 274)	A675T10-0A	0.63
Rectifier, Silicon, (X14)	A692T5	0.48
Diode, Silicon, (X2, 4, 6, 7, 8, 9, 10, 17)	A692X13	1.22
Rectifier, Silicon, (X12, 13)	A692X16	1.71
Rectifier, Silicon, (X15, 16)	A692X17	0.62
Diode, Zener, Silicon, 13V, 5%, (Z1)	A694X1	1.21
Socket, Driver Transistor, T0-5	A790T4M	0.23
Socket, Output Transistor, T0-3	A790T7	0.18
Stereo Headphone Jack	A795R3	0.95
Stereo Tape Jack	A795R3	0.95
Fuse Post	A796X2	0.70
Selector Switch, 3 Position, (S1)	A860R9-1	5.04
Switch, Push Button Assembly	B866R3-3A	7.69
Transformer, Power, Domestic, (T1)	B922R2-6	20.97
Transformer, Export, Power, (T1)'	2B922R2X-6	27.95
Transformer, FM IF (T3, 4, 5)	65-252D	2.75
Transformer, FM Discrim., (T6)	65-387F	4.92
Transformer, FM Converter, (T2)	67-101	2.07
Transformer, 38KHz, (T8)	65-290A	1.52
Transformer, 19KHz, (T7)	67-158	2.43
Coil, 67KHz Null, (L7)	65-274B	0.96
Coil, Mixer (L3)	68-131	1.13
Coil, Balun, (L1)	67-288	0.86
Choke, RF, (L5, 6)	64-103	0.52

SERVICING

VOLTAGE CHECKS

Preliminary checks of the D.C. voltages present at various points in the S-8800 can prove useful in locating defective components. They are inconclusive, however, in determining if transistors are operating properly in all aspects. They can only indicate wheth-er the transistor is open, shorted or functioning, not how well the transistor is functioning.

IN GENERAL:

Correct voltages indicate a functioning transistor.

The same voltage at the collector and emitter indicates a shorted transistor.

Full supply voltage on the collector and no voltage on the emitter indicates an open transistor.

OUTPUT TRANSISTOR BIAS

Of all the specifications which require checking to ascertain correct performance of the S-8800, proper output transistor operation is the most important and critical. Adjustment of the output transistor bias is necessary if output transistors are replaced*, or the amplifier exhibits one or more of the following symptoms:

1. Overheating of the output transistors under normal operating conditions.

2. Excessive low level Intermodulation Distortion-more than 0.5% at 2.0 volts across 8 ohms (0.8 watts, IM power).

Adjustment of output transistor bias should then proceed as follows:

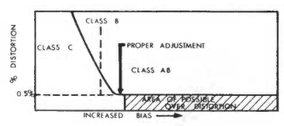


FIG. 1

1. Turn amplifier off.

2. Set output balance pots (left and right channels) to mechanical center and bias pots fully counter-clockwise.

3. Connect D.C. voltmeter of at least 3% known accuracy to transistor side of appropriate channel's output terminals.

4. Turn amp. on and adjust output balance pot for that channel so that approx. 1/2B+ voltage is on the output capacitor.

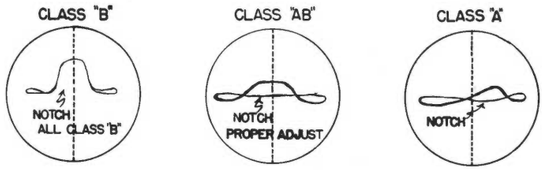
5. Connect an Intermodulation Distortion analyzer to to the amplifier TP. MON. (aux.) input, turn volumn control to maximum and adjust the analyzer output for an amplifier output of 2.0V across 8 ohms. (Because the output stages have been set into heavy class "B" operation by the "presetting" in Step 2, a class "B" notch in the distortion waveform will be obvious.) NOTE: When adjusting bias for class "AB", adjust until class "B" notch is almost eliminated. Class "A" begins beyond this point. Notch shifts to right.

6. Increase analyzer output until clipping can be observed. Fine adjust output balance pot. so that clipping is symmetrical.

IMPORTANT: Misadjustment of the bias pot can cause heavy class "A" operation of the output transistors, causing them to overheat.

The following performance indicates a properly operating output stage with 8 ohm load.

-Less than 0.5%IM distortion at 2.0V.
-Typically 0.6%IM distortion at 10 Volts.
-18 watts of power per channel at clipping.



1. PROTECTIVE CIRCUITRY (IOP) & SPEAKER SYSTEM CHECK: The Model S-8800 incorporates special protective circuitry, (Instamatic Overload Protection), which turns off the drive to the power amplifiers when danger to the receiver output circuitry exists. If the receiver turns itself off, check the speaker connections for shorted wires. Speaker line resistance should not measure below 3 ohms.

The overload protective circuit consists of a type of bi-stable multivibrator. Transistor Q105 samples the output transistors current. At approximately 5A peak output current, Q105 is triggered and clamps the base of Q106 to ground and locks in this state, preventing AC drive to the power amplifier and thereby protecting it.

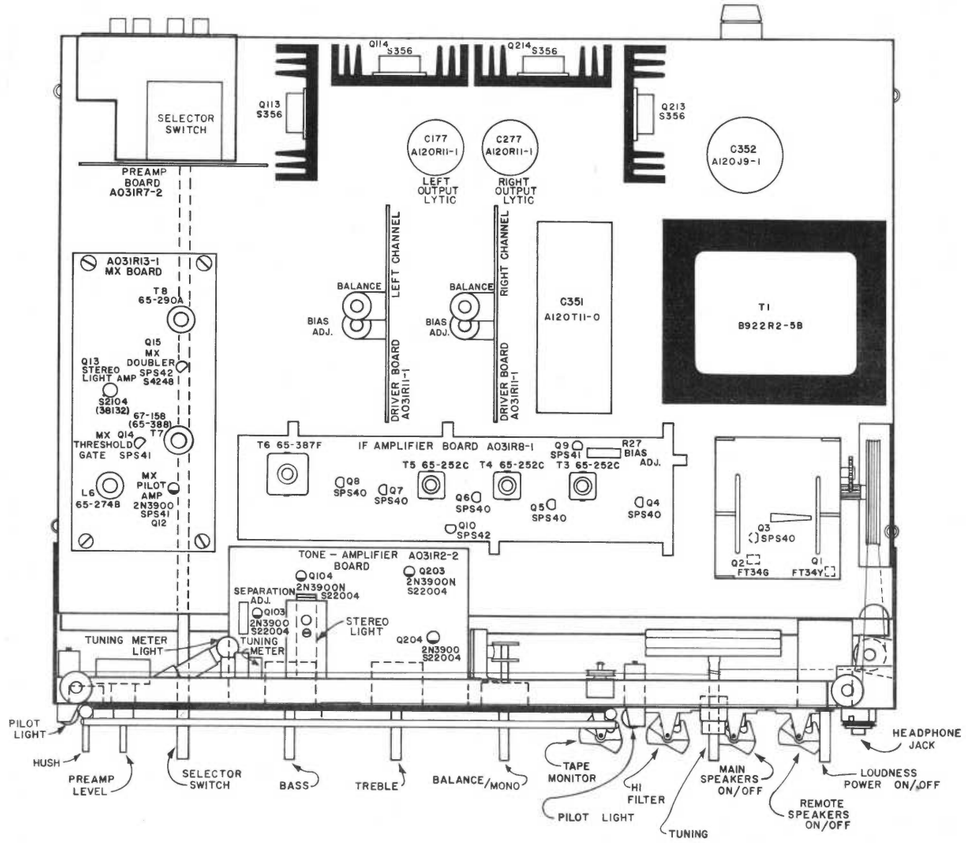
*It is extremely important that the mica insulating washers used to separate the output transistors from their heat sinks be unbroken and installed properly with silicon grease liberally applied to all surfaces in contact with each other. Make certain the emitter and base pins of the output transistors do not contact any part of the heat sinks.

NOTE: Refer to speaker load connections on schematic, being careful to observe ground-connections.

ALIGNMENT CHART

		switch position	signal generator input: coupling	signal generator input: freq.	signal generator input: modulation	dial setting	indicating instrument	adjust	indication
FM ALIGNMENT	1	Selector: FM Mode: Mono	none	none	none	pt. of no interf.	DC-VTVM across R24 820Ω	R27 bias adj	1.2V-DC
	2	"	.01uf to base of Q4 (HI INPUT)	10.7MHz	400 or 60 Hz ±300KHz FM	"	CRO thru 10KΩ to Collector of Q7 & shunt CRO input w/.005uf	T3, T4, T5 top & bot.	maximum deflection & symmetry
	3	"	"	"	none	"	DC VTVM across C55	T6 top	0V-DC
	4	Repeat Step #1							
	5	"	300Ω ant. input	90MHZ	400 or 60 Hz ±300KHz FM	90MHz	CRO thru 10KΩ to Collector of Q7 & shunt CRO input w/.005uf.	L2, L3, L4, T2 top & bottom	maximum deflection & symmetry
	6	"	"	106MHz	"	106MHz	"	C2, C6, C19	"
	7	Repeat Steps 5 & 6 until no further improvement							
	8	Same as Step 5			±300KHz FM	"	CRO thru 10K to Collector of Q7	T2, T3, T4, T5 top & bottom	recheck for max. deflection & adj. for symmetry *
	9	"			NONE	90MHz	DC VTVM across C55	T6 top	recheck for 0 V-DC
	10	"			400 or 60Hz ±75KHz FM	"	CRO & DC VTVM across C55	T6 bottom	maximum deflection & symmetry *
MX ALIGNMENT	1	Disconnect FM detector from Point A							
	2	Selector: FM Mode: Auto Stereo	10K source impedance	60MV RMS 19KHz into point A	none	point of no interf. & short Q13 emitter base junction.	AC voltmeter base of Q15	T7 top & bottom	maximum deflection
	3	"	"	"	"	"	AC voltmeter T8 pin 1 to ground	T8 top & bottom	"
	4	"	"	1.0V RMS 67KHz into point A	"	"	"	L6	null
	5	"	"	feed composite MX sig, left CH modulation 1.7V p-p or 0.3V RMS 400Hz into point A		"	AC voltmeter across C382	T7 top	null at unmodulated channel output
	6	Reconnect FM detector to point A							
	7	"	300Ω balanced input to FM ant. input	96MHz 100μv	±75KHz composite stereo sig. left CH modulation only	96MHz	"	fine adjust T7 top	null at unmodulated channel output. separation 30db

* If distortion analyzer is available, null T6 bottom for minimum distortion with 75KHz modulation.

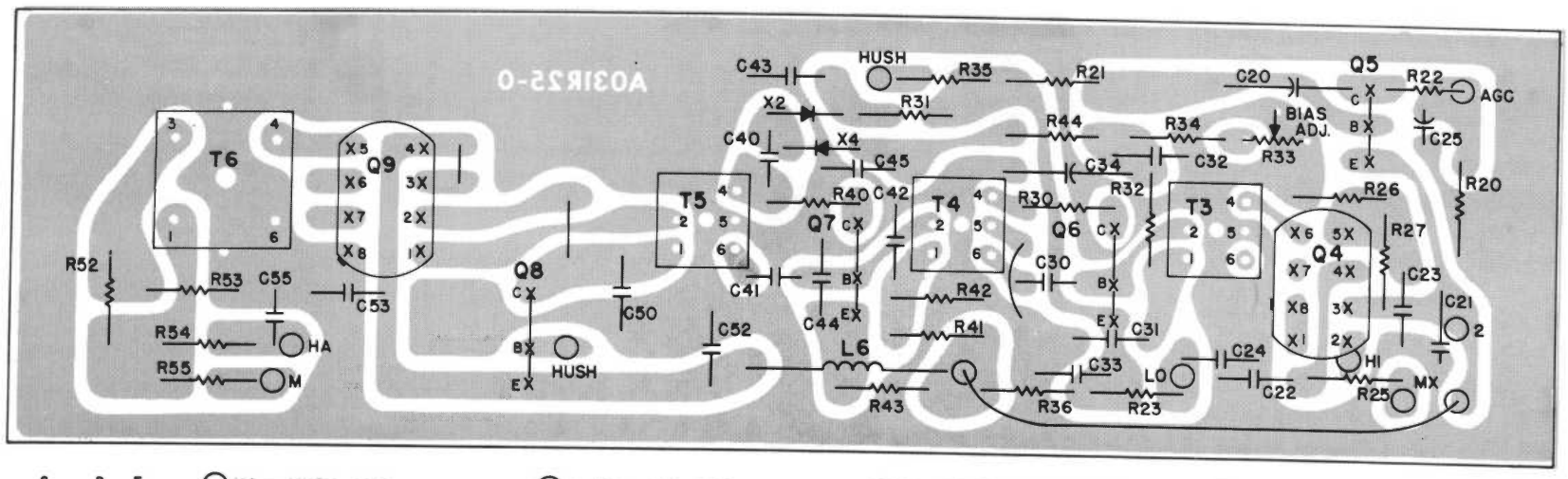


TRANSISTOR (All are silicon)	PART NO.	PRICE
Audio, Low signal - no dot (Hi-beta), (Q9, 12, 102, 103, 108, 202, 203, 208)	2N3900	$1.04
	S22004	0.63
	SPS41	0.81
Audio, Low signal - Green dot (Low Noise), (Q100, 104, 200, 204)	2N3900N	1.14
	SPS41	0.81
Audio, Low signal - White dot (40 volts), (Q106, 206)	2N3900V	1.14
Audio, NPN (Q13, 105, 205)	SPS41	0.81
Audio, PNP (Q10, 15)	SPS42	0.90
	S4248	0.50
Audio, NPN (Q14) (Replace with S2104)	S2104	0.92
	38132	----
	7A1011	----
	7A995	----
Pre-Driver, NPN (Q107, 207)	16E1330	1.26
Pre-Driver, PNP (Q110, 210)	S437F	3.16
Pre-Driver, NPN (Q109, 209)	S2104	0.92
Driver, NPN (Q111, 112, 211, 212)	S409F	2.70
Output, NPN (Q113, 114, 213, 214)	S356	8.33
B Supply, NPN (Q13)	37649	1.80
RF Amp., FET (Q1) (Yellow dot)	FT34Y	2.70
RF Mixer, FET (Q2) (Green dot)	FT34G	2.70
RF, IF, NPN (Q3, 4, 5, 6, 7, 8) (Use same beta code -1, -2, -3 or B, R, O)	SPS40	0.90
	SL40	0.95

PARTS LIST
(continued)

You will note that all transistors used in the S-8800 are color-coded with a dot or mark of some color prominently located on the top of their case. (Some transistors have no mark, but this also is identification.) When ordering replacement transistors, it is imperative that you indicate not only its part no., but the color dot on the transistor body: red, yellow, none, (1, - 2, - or - 3). This is particularly important when replacing output transistors.

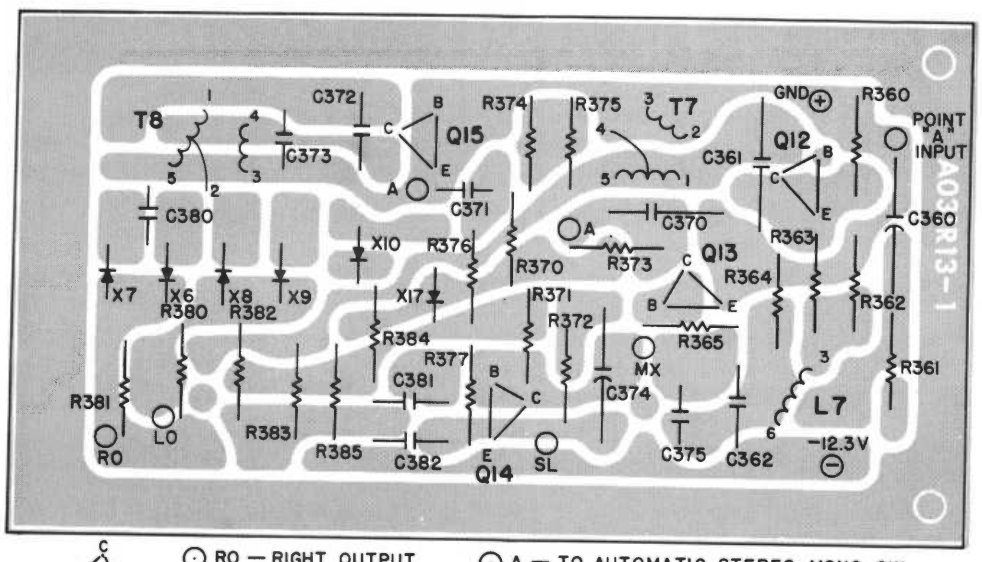
DESCRIPTION		
500 - 500μf, 45V (C352A, B)	A120J9-2	2.49
1500μf, 45V (C180, 280)	A120R11-2	2.88
2500μf, 80V (C351)	A120T11-0	6.35
0.5μf, 50V (C27, 163, 171, 263, 271)	B120X3	0.59
1μf, 25V (C111, 120, 121, 211, 220, 221, 360)	B120X7	0.59
8μf, 40V (C135, 143, 235, 243, 374)	B120X8	0.45
10μf, 10V (C161, 261)	B120X9	0.65
20μf, 5V (C160, 260)	B120X12	0.63
20μf, 50V (C170, 270)	B120X14	0.68
100μf, 3V or 125μf, 4V (C100, 102, 200, 202)	B120X24	0.45
500μf, 25V or 640μf, 25V (C353)	B120X31	1.31
250μf, 35V or 40V (C341, 342, 344)	B120X33	0.95
50μf, 15V (Plug-In) (C21)	B120X36	0.77
5μf, 15V (C150, 250)	B120X73	0.68
250μf, 15V (C343)	B120X74	0.95
Insulator, Mica (T0-3)	A021F1	0.05
Fuse, 3 AMP, 3AG	312003.	0.14
Knobs, Small	B467X1	1.98
Knobs, Large (unmarked)	B467X2	2.16
Knobs, Large (w/indicator)	B467X3	2.20
Light Bulb, Pilot	630B53	0.14
Light Bulb, Stereo	630B1302	0.23
Dial Glass	B322R4-1	1.13
Control, Bass, 1MΩ, dual, (R134A, B)	A670R6-3A	2.70
Control, Treble, 250KΩ, dual, (R140A, B)	A670R7-3A	2.03
Control, Phono Level, 1.5KΩ, (R122A, B)	A670R10-6A	1.18
Control, Hush, 500Ω, (R35)	A670R11-2B	1.02
Control, Balance, 100KΩ, w/Mono Sw. (R154, S2)	A671R2-4A	1.71
Control, Loudness, 50KΩ, dual, (R151A, B)	A671R3-3	4.23
Pot., P.C., 25KΩ, (R136)	A675T8-0A	0.40
Pot., P.C., 500Ω, (R183, 283)	A675T1-0A	0.54
Pot., P.C., 250KΩ, (R27, 174, 274)	A675T9-0A	0.72
Diode, Germanium (X3)	A691M4	0.27
Diode, Silicon, (X2, 4, 6, 7, 8, 9, 10, 17)	B692X13	0.44
Rectifier, Silicon, (X12, 13)	A692X16	1.71
Rectifier, Silicon, (X15, 16)	A692X17	0.62
Rectifier, Silicon, (X14)	A692T5	0.48
Diode, Zener, 13V, 5%, (Z1)	A694X1	1.21
Socket, Driver Transistor (T0-5)	A790T4	0.23
Socket, Output Transistor (T0-3)	A790T7	0.18
Stereo Headphone Jack	A795L1	1.08
Fuse Post	A796X2	0.95
Switch, Selector, 4 Pos. (S1)	A860R5-1B	3.66
Switch, Rocker (Black slide) (S3A & B)	A864H22-5	0.90
Switch, Rocker (Red or Grey slide) (S4A & B, 6A & B)	A864H23-5	0.90
Transformer, Power, (T1)	B922R2-5B	22.36
Transformer, FM IF (T3, 4, 5)	65-252C	2.75
Transformer, FM Discrim. (T6)	65-387F	4.92
Transformer, FM Converter (T2)	67-101	2.07
Transformer, 38KHz (T8)	65-290A	1.52
Transformer, 19KHz (T7) (Replace 65-388 with 67-158)	67-158	2.25
Coil, 67KHz (L6)	65-274B	0.96
Coil, RFC (L5)	64-103	0.52



C B E
X X X
TRANSISTOR

- HA - HUSH AMP.
- AGC - TO TUNER
- HUSH - TO POT
- HI - HI INPUT
- M - TO TUNING METER
- LO - LO INPUT
- MX - TO MX BOARD
- 2 - FM B- (TUNER)

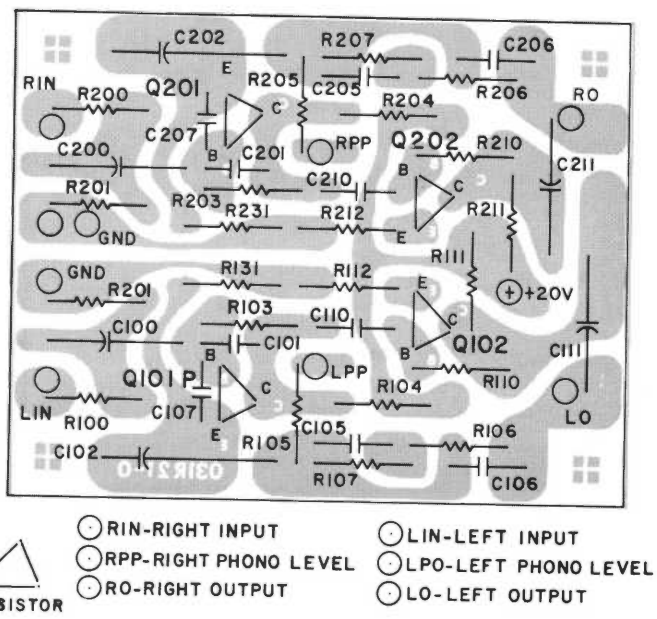
A031R25-0 I.F. AMP. BOARD



- RO — RIGHT OUTPUT
- LO — LEFT OUTPUT
- SL — TO STEREO LIGHT
- A — TO AUTOMATIC STEREO-MONO SW.
- MX — MX GATE FROM I.F. BOARD

C
E B
TRANSISTORS

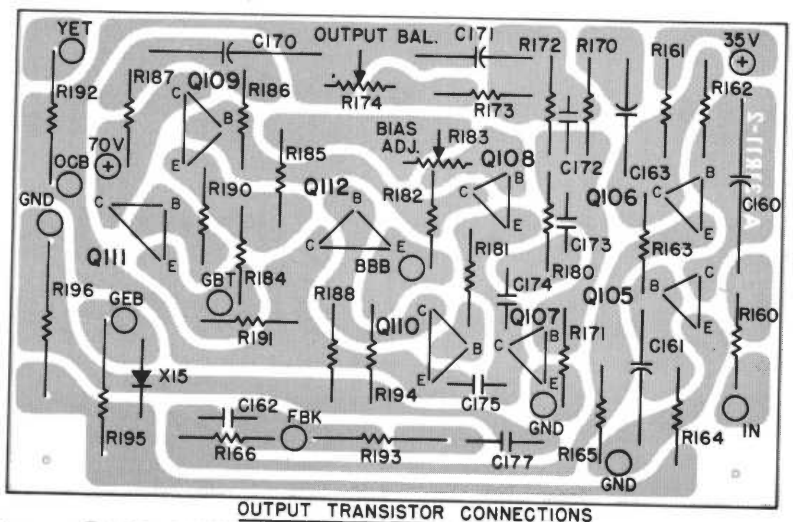
A031R13-1 MULTIPLEX BOARD



- RIN-RIGHT INPUT
- RPP-RIGHT PHONO LEVEL
- RO-RIGHT OUTPUT
- LIN-LEFT INPUT
- LPO-LEFT PHONO LEVEL
- LO-LEFT OUTPUT

TRANSISTOR

A031R21-0A PRE-AMP BOARD



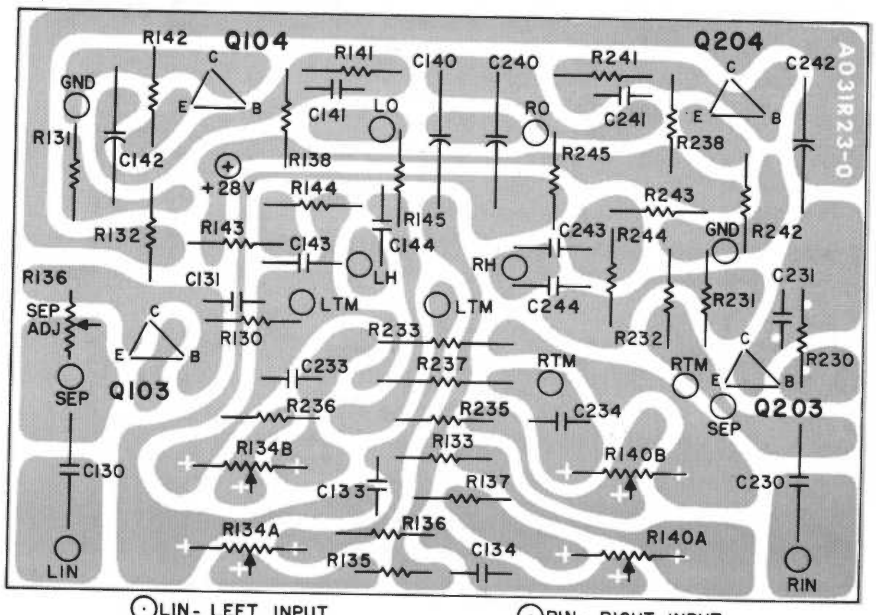
OUTPUT TRANSISTOR CONNECTIONS

- YET — EMITTER, TOP, (YELLOW)
- GBT — BASE, TOP, (GREEN)
- +70V — COLLECTOR, TOP, (RED)
- GEB — EMITTER, BOTTOM, (GREY)
- BBB — BASE, BOTTOM, (BROWN)
- OCB — COLLECTOR, BOTTOM, (ORANGE)
- IN — INPUT
- FBK — FEED-BACK

B
C E
TRANSISTOR SOCKET

C
E B
TRANSISTOR

A031R11-2 DRIVER BOARD

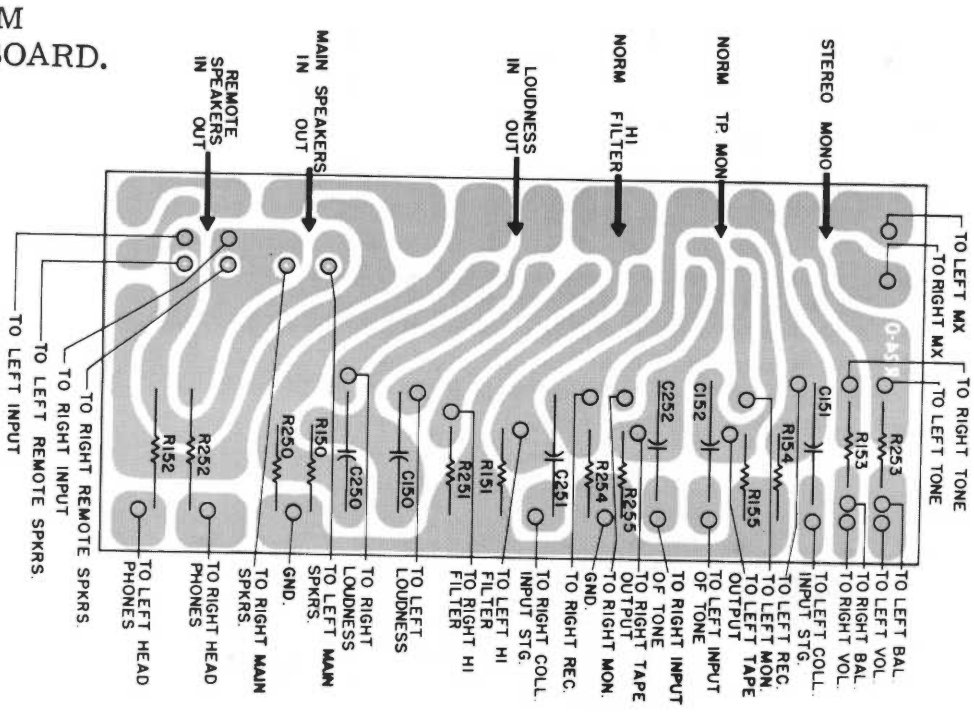


- LIN- LEFT INPUT
- LH- TO LEFT HI FILTER SWITCH
- LTM-TO LEFT TAPE MONITOR SW.
- LO- LEFT OUTPUT
- SEP ADJ - SEPARATION ADJUSTMENT
- RIN- RIGHT INPUT
- RH- TO RIGHT HI FILTER SWITCH
- RTM-TO RIGHT TAPE MONITOR SW.
- RO- RIGHT OUTPUT
- SEP- TO SELECTOR SWITCH

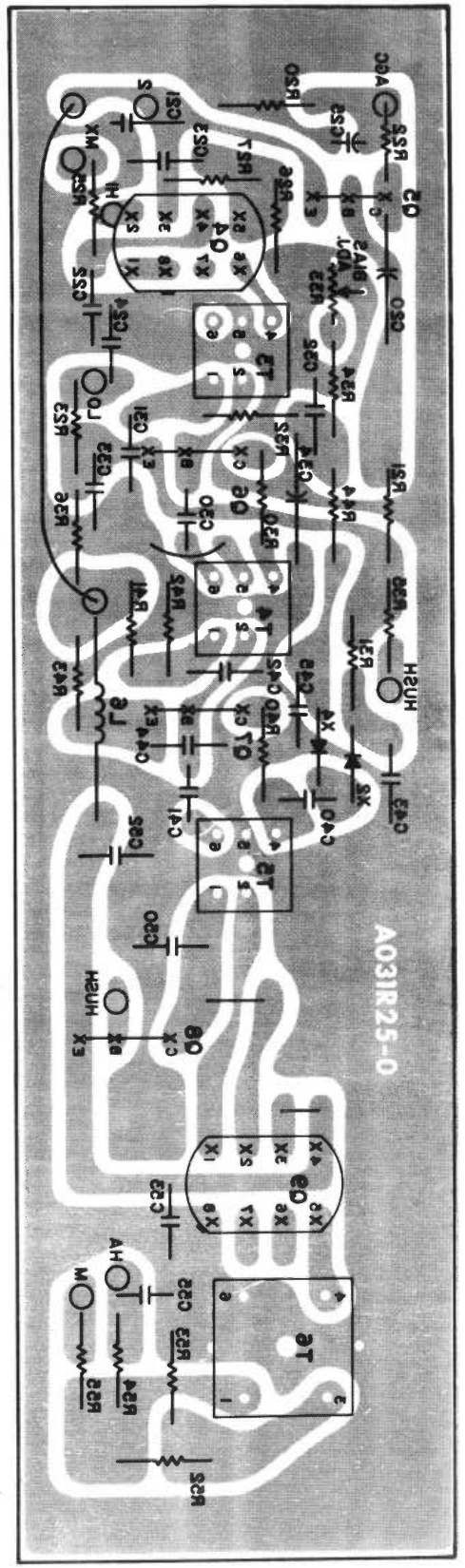
C
E B
TRANSISTOR

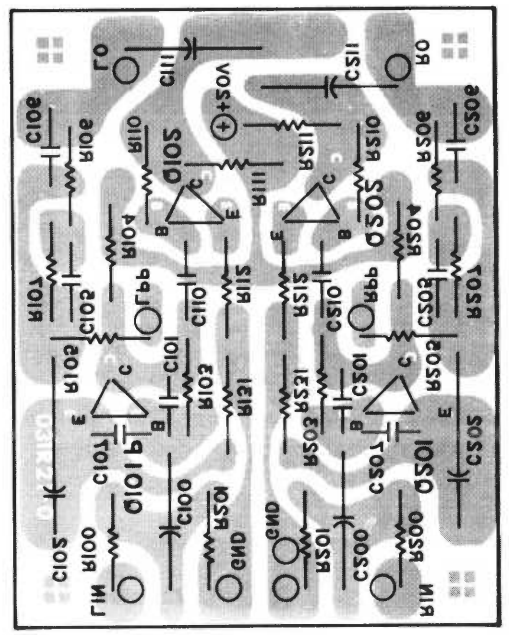
A031R23-0 TONE BOARD

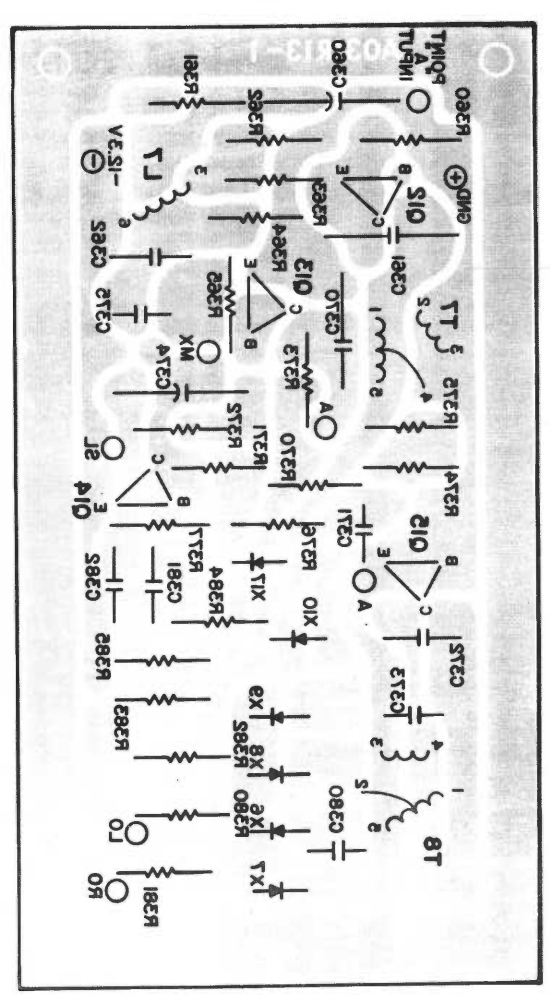
NOTE: AS VIEWED FROM COMPONENT SIDE OF BOARD.

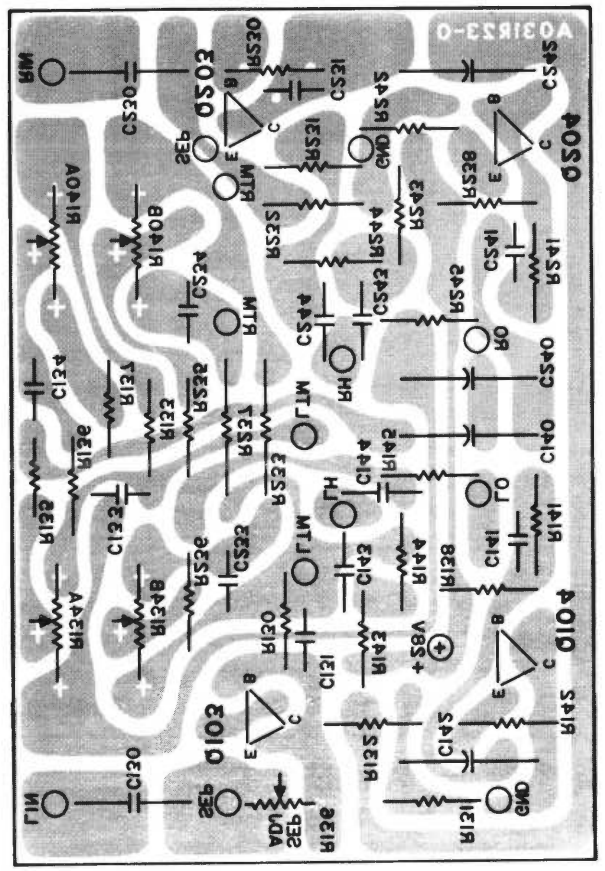


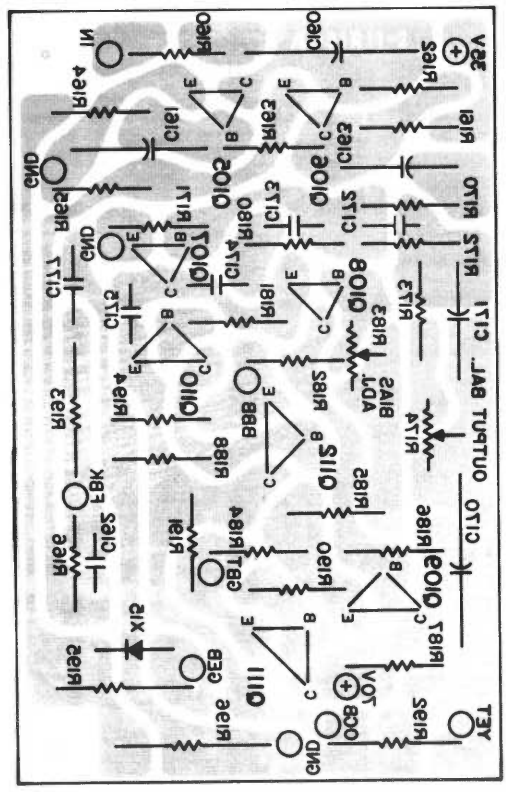
A031R24-0 SWITCH BOARD

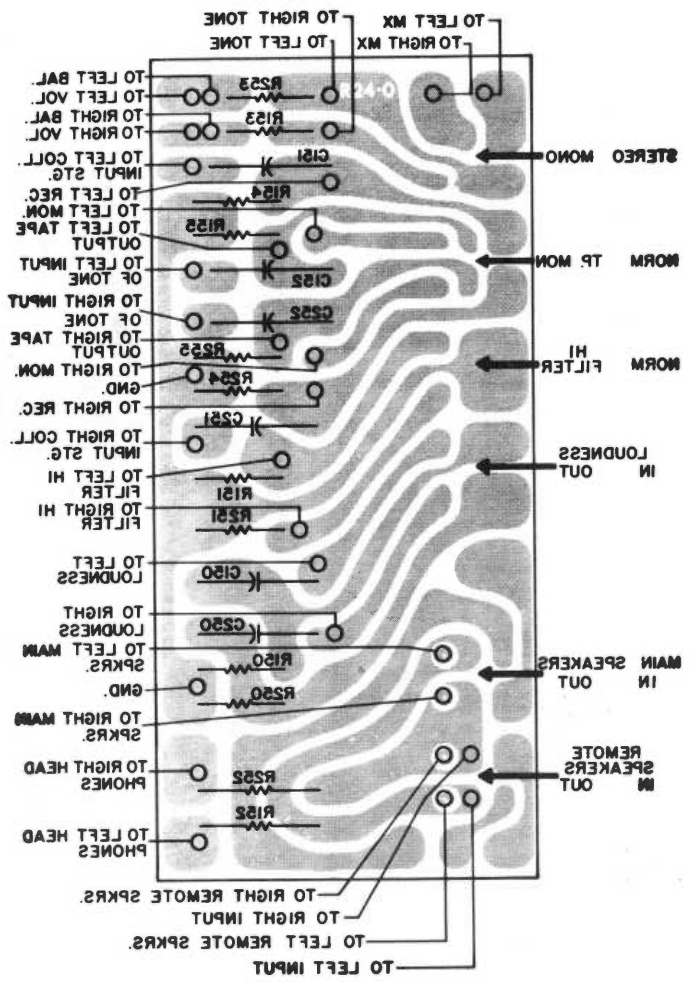

A03IR25-0

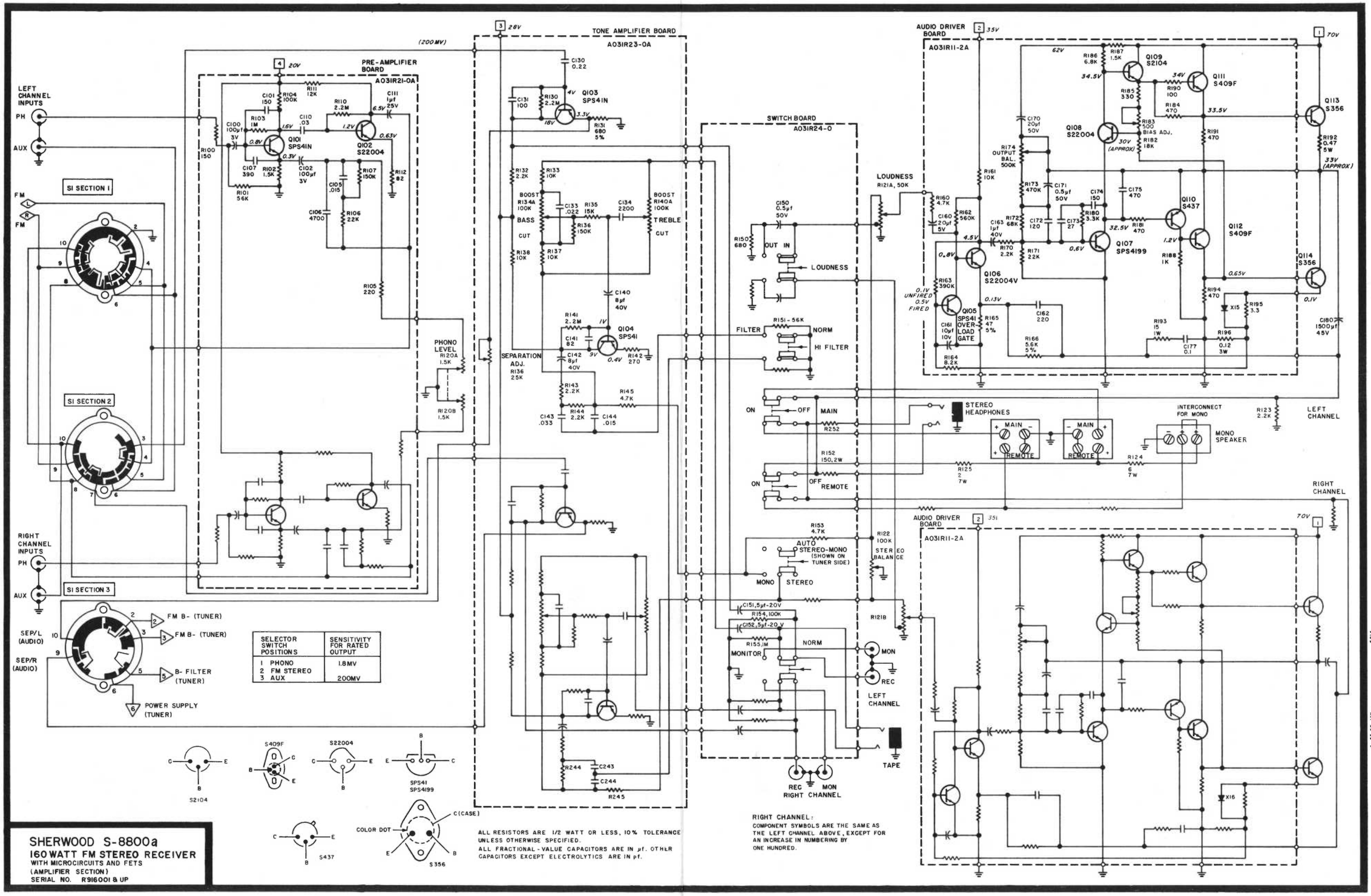





A03IR23-0




STEREO MONO
NORM TP MON
NORM HI FILTER
LOUDNESS IN OUT
MAIN SPEAKERS IN OUT
REMOTE SPEAKERS IN OUT
TO LEFT MX
TO RIGHT TONE
TO LEFT TONE
TO LEFT BAL.
TO LEFT VOL.
TO RIGHT BAL.
TO RIGHT VOL.
TO LEFT COLL. INPUT STG.
TO LEFT REC.
TO LEFT MON.
TO LEFT TAPE OUTPUT
TO LEFT INPUT OF TONE
TO RIGHT INPUT OF TONE
TO RIGHT TAPE OUTPUT
TO RIGHT MON.
GND.
TO RIGHT REC.
TO RIGHT COLL. INPUT STG.
TO LEFT HI FILTER
TO RIGHT HI FILTER
TO LEFT LOUDNESS
TO RIGHT LOUDNESS
TO LEFT MAIN SPKRS.
GND.
TO RIGHT MAIN SPKRS.
TO RIGHT HEAD PHONES
TO LEFT HEAD PHONES
TO RIGHT REMOTE SPKRS.
TO RIGHT INPUT
TO LEFT REMOTE SPKRS.
TO LEFT INPUT


LEFT CHANNEL INPUTS
PH
AUX
FM
SI SECTION 1
SI SECTION 2
RIGHT CHANNEL INPUTS
SI SECTION 3
SEP/L (AUDIO)
SEP/R (AUDIO)
FM B- (TUNER)
FM B- (TUNER)
B- FILTER (TUNER)
POWER SUPPLY (TUNER)
PRE-AMPLIFIER BOARD A03IR2I-0A
TONE AMPLIFIER BOARD A03IR23-0A
SWITCH BOARD A03IR24-0
AUDIO DRIVER BOARD A03IR11-2A
PHONO LEVEL R120A 1.5K
R120B 1.5K
SEPARATION ADJ. R136 25K
BASS
TREBLE
CUT
BOOST
LOUDNESS R121A, 50K
FILTER
NORM
HI FILTER
LOUDNESS
ON
OFF
MAIN
REMOTE
STEREO HEADPHONES
INTERCONNECT FOR MONO
MONO SPEAKER
LEFT CHANNEL
RIGHT CHANNEL
AUTO STEREO-MONO (SHOWN ON TUNER SIDE)
MONO
STEREO
R122 100K STEREO BALANCE
R121B
MONITOR
NORM
MON
REC
TAPE
REC MON RIGHT CHANNEL
BIAS ADJ. R182 1K
OUTPUT BAL. 500K
OVERLOAD GATE
UNFIRED 0.1V
FIRED 0.5V
Q101 SPS41N
Q102 S22004
Q103 SPS41N
Q104 SPS41
Q105 SPS41
Q106 S22004V
Q107 SPS4199
Q108 S22004
Q109 S2104
Q110 S437
Q111 S409F
Q112 S409F
Q113 S356
Q114 S356
S2104
S409F
S22004
SPS41 SPS4199
S437
S356
COLOR DOT
C(CASE)
SELECTOR SWITCH POSITIONS
SENSITIVITY FOR RATED OUTPUT
1 PHONO 1.8MV
2 FM STEREO
3 AUX 200MV
ALL RESISTORS ARE 1/2 WATT OR LESS, 10% TOLERANCE UNLESS OTHERWISE SPECIFIED.
ALL FRACTIONAL-VALUE CAPACITORS ARE IN µf. OTHER CAPACITORS EXCEPT ELECTROLYTICS ARE IN pf.
RIGHT CHANNEL:
COMPONENT SYMBOLS ARE THE SAME AS THE LEFT CHANNEL ABOVE, EXCEPT FOR AN INCREASE IN NUMBERING BY ONE HUNDRED.
SHERWOOD S-8800a
160 WATT FM STEREO RECEIVER
WITH MICROCIRCUITS AND FETS
(AMPLIFIER SECTION)
SERIAL NO. R9160001 & UP
5014
4-28-49-JAY-

FET RF TUNER

10.7 MHZ IF AMPLIFIER
A031R25-0

FM RF AMP Q1 MPF106

RF CONVERTER Q2 MPF107

FM AGC AMP Q5 SPS41

IST FM IF Q4 CA3028

2ND FM IF Q6 SPS40-3

3RD FM IF Q7 SPS40

FM LIMITER Q9 U5B771739

FM DETECTOR

RF OSC Q3 SPS40 SL40

HUSH AMP Q8 SPS41

FM ANTENNA

U5B771739 SCHEMATIC

CA3028

CA3028 DIAGRAM

ALTERNATE PRIMARY CIRCUITS FOR EXPORT MODELS

NOTE:
ALL DC VOLTAGES ARE MEASURED WITHOUT SIGNAL, HUSH OFF. (EXCEPT DC VOLTAGES IN THE MULTIPLEX DECODER, WHICH ARE MEASURED WITH 100 MICROVOLTS INTO THE FM ANTENNA OR 50 MILLIVOLTS, 19KHz INTO POINT A.)

ALL DC VOLTAGES IN PARENTHESIS ARE MEASURED WITHOUT INPUT SIGNAL BUT WITH HUSH ON.

† USE .0018 MICROFARADS FOR EUROPEAN 50 MICROSECOND DE-EMPHASIS.

VOLTAGE REGULATOR Q11 37649

MX DOUBLER Q15 S4248

MX PILOT AMP Q12 SPS41

MX THRESHOLD Q13 SPS41

STEREO LITE AMP Q14 S2104

TUNING METER 75-0-75μa

Q10 2N4248

A SECTION OF SWITCH BOARD A031R24-0

STEREO MULTIPLEX BOARD A031R13-1

* MATCHED TO 2%

SHERWOOD S-8800a
160 WATT FM STEREO RECEIVER
WITH MICROCIRCUITS AND FETS
(TUNER SECTION)
SERIAL NO. R916001 & UP

5014
4-25-69-JAY-12-2-69-JAY

SHERWOOD S-8800a

160 WATT FM STEREO RECEIVER

WITH MICROCIRCUITS AND FETS

(AMPLIFIER SECTION)

SERIAL NO. R916001 & UP

S-8800A

SELECTOR SWITCH POSITIONS	SENSITIVITY FOR RATED OUTPUT
1 PHONO	1.8MV
2 FM STEREO	
3 AUX	200MV

ALL RESISTORS ARE 1/2 WATT OR LESS, 10% TOLERANCE UNLESS OTHERWISE SPECIFIED.

ALL FRACTIONAL-VALUE CAPACITORS ARE IN μf. OTHER CAPACITORS EXCEPT ELECTROLYTICS ARE IN pf.

RIGHT CHANNEL:
COMPONENT SYMBOLS ARE THE SAME AS THE LEFT CHANNEL ABOVE, EXCEPT FOR AN INCREASE IN NUMBERING BY ONE HUNDRED.

4-25-69-JAY-

5014

SHERWOOD S-8800a
160 WATT FM STEREO RECEIVER
WITH MICROCIRCUITS AND FETS
(TUNER SECTION)
SERIAL NO. R916001 & UP

FET RF TUNER

FM ANTENNA

FM RF AMP Q1 MPF106

RF CONVERTER Q2 MPF107

RF OSC Q3 SPS40 SL40

FM AGC AMP Q5 SPS41

IST FM IF Q4 CA3028

2ND FM IF Q6 SPS40-3

3RD FM IF Q7 SPS40

FM LIMITER Q9 U5B771739

FM DETECTOR

10.7 MHZ IF AMPLIFIER A03IR25-0

HUSH AMP Q8 SPS41

TUNING METER 75-0-75μa

Q10 2N4248

AUTO. MONO STEREO

A SECTION OF SWITCH BOARD A03IR24-0

STEREO MULTIPLEX BOARD A03IRI3-1

POINT A. SEE NOTE

MX DOUBLER Q15 S4248

MX PILOT AMP Q12 SPS41

MX THRESHOLD Q13 SPS41

STEREO LITE AMP Q14 S2104

VOLTAGE REGULATOR QII 37649

AUDIO LEFT

AUDIO RIGHT

U5B771739 SCHEMATIC

CA3028

CA3028 DIAGRAM

SPS40 SPS41

37649

SL40 S4248

S2104

ALTERNATE PRIMARY CIRCUITS FOR EXPORT MODELS

225-245 VAC 50-60 Hz — 1-1/2 AMP

112-125 VAC; 50-60 Hz — 3 AMP

120V 300W SW

115-125 VAC 60 Hz — F1-3 AMP

NOTE:
ALL DC VOLTAGES ARE MEASURED WITHOUT SIGNAL, HUSH OFF. (EXCEPT DC VOLTAGES IN THE MULTIPLEX DECODER, WHICH ARE MEASURED WITH 100 MICROVOLTS INTO THE FM ANTENNA OR 50 MILLIVOLTS, 19KHz INTO POINT A.)

ALL DC VOLTAGES IN PARENTHESIS ARE MEASURED WITHOUT INPUT SIGNAL BUT WITH HUSH ON.

† USE .0018 MICROFARADS FOR EUROPEAN 50 MICROSECOND DE-EMPHASIS.

* MATCHED TO 2%

10.7 MHz SEC(TOP) PRI (BOT)

67-158 — 65-274B — 65-290A

T3,4,&5 LOCATING BOSS

T6 COLOR DOT

4-28-69-JAY-12-2-69-JAY

8014

SHERWOOD S-8900
FM STEREO RECEIVER
WITH SOLID STATE IF FILTER AND FETS
(AMPLIFIER SECTION)
SERIAL NO. 8●19251 & UP

PRE-AMPLIFIER BOARD A031R21-0C

TONE AMPLIFIER BOARD A031R23-2A

PUSH BUTTON BOARD A031R32-0A

AUDIO DRIVER BOARD A031R29-0A

LEFT CHANNEL INPUTS: PH. [1.4MV], AUX. [140MV]

RIGHT CHANNEL INPUTS: PH., AUX.

SI SECTION 1

SI SECTION 2

SI SECTION 3

SELECTOR SWITCH POSITIONS	SENSITIVITY FOR RATED OUTPUT
1 PHONO	1.4MV
2 FM STEREO	
3 AUX	140MV

FM B- (TUNER)
FM B- (TUNER)
B- FILTER (TUNER)
POWER SUPPLY (TUNER)

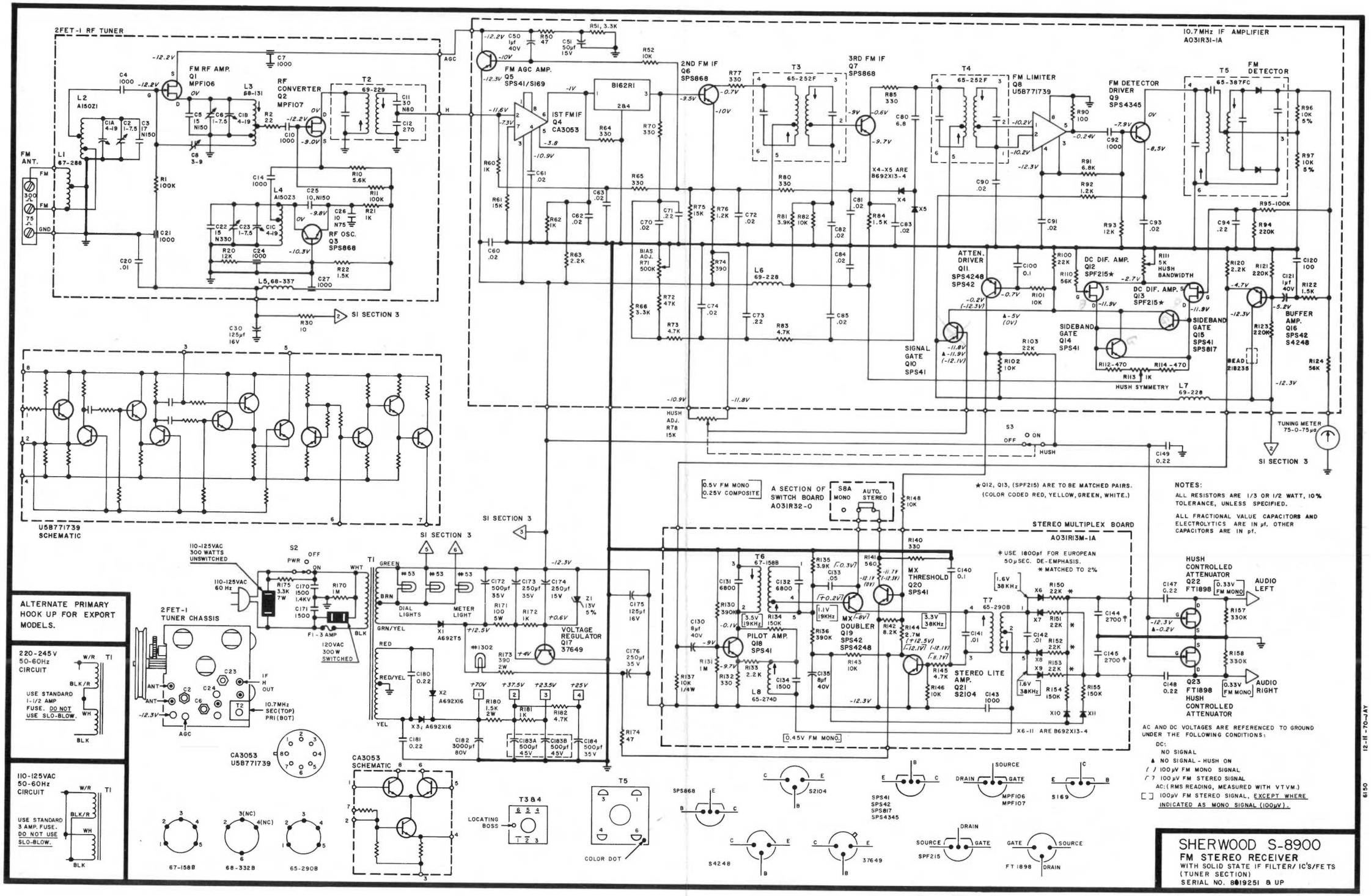
ALL VOLTAGES ARE REFERENCED TO GROUND UNDER THE FOLLOWING CONDITIONS:
DC:
NO SIGNAL
AC:
[ ] AC SIGNAL VOLTAGES AT 1KHz, FOR RATED OUTPUT, WITH AN 8 OHM LOAD, WITH PHONO LEVEL AND VOLUME CONTROL AT MAX.

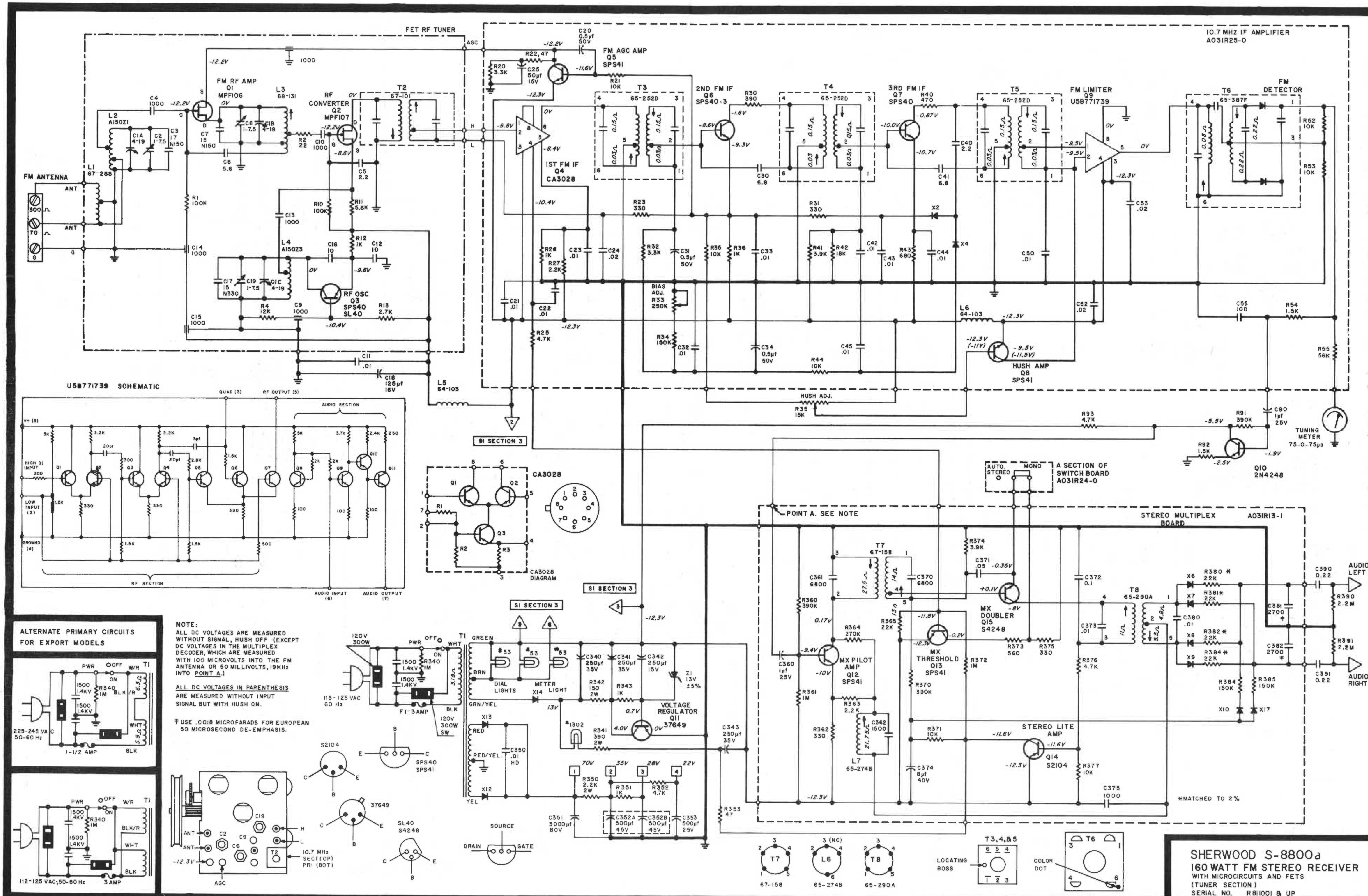
S409F, S2104, SPS41 SPS817 SPS4199, S522, S356, S169

RIGHT CHANNEL:
COMPONENT SYMBOLS ARE THE SAME AS THE LEFT CHANNEL ABOVE EXCEPT FOR AN INCREASE IN NUMBERING BY ONE HUNDRED.

ALL RESISTORS ARE 1/2 WATT OR LESS, 10% TOLERANCE UNLESS OTHERWISE SPECIFIED.
ALL FRACTIONAL-VALUE CAPACITORS ARE IN µf. OTHER CAPACITORS EXCEPT ELECTROLYTICS ARE IN pf.
OUTPUT TRANSISTORS ARE BETA COLOR CODED AND SHOULD HAVE A MATCHED PAIR IN EACH CHANNEL.

6150 12-11-70-JAY


2FET-1 RF TUNER
FM RF AMP. Q1 MPF106
RF CONVERTER Q2 MPF107
RF OSC. Q3 SPS868
FM AGC AMP. Q5 SPS41/SI69
1ST FM IF Q4 CA3053
2ND FM IF Q6 SPS868
3RD FM IF Q7 SPS868
FM LIMITER Q8 U5B771739
FM DETECTOR DRIVER Q9 SPS4345
10.7MHz IF AMPLIFIER A031R31-1A
FM DETECTOR
ATTEN. DRIVER Q11 SPS4248 SPS42
SIGNAL GATE Q10 SPS41
DC DIF. AMP. Q12 SPF215★
DC DIF. AMP. Q13 SPF215★
SIDEBAND GATE Q14 SPS41
SIDEBAND GATE Q15 SPS41 SPS817
BUFFER AMP. Q16 SPS42 S4248
HUSH ADJ. R78 15K
HUSH SYMMETRY
TUNING METER 75-0-75μa
SI SECTION 3
U5B771739 SCHEMATIC
110-125VAC 300 WATTS UNSWITCHED
110-125VAC 60 Hz
120VAC 300W SWITCHED
2FET-1 TUNER CHASSIS
VOLTAGE REGULATOR QI7 37649
CA3053 U5B771739
CA3053 SCHEMATIC
ALTERNATE PRIMARY HOOK UP FOR EXPORT MODELS.
220-245V 50-60Hz CIRCUIT
USE STANDARD 1-1/2 AMP FUSE. DO NOT USE SLO-BLOW.
110-125VAC 50-60Hz CIRCUIT
USE STANDARD 3 AMP. FUSE. DO NOT USE SLO-BLOW.
67-1588
68-3328
65-2908
0.5V FM MONO 0.25V COMPOSITE
A SECTION OF SWITCH BOARD A031R32-0
S8A MONO AUTO. STEREO
STEREO MULTIPLEX BOARD A031R3M-1A
MX THRESHOLD Q20 SPS41
PILOT AMP. Q18 SPS41
MX DOUBLER Q19 SPS42 SPS4248
STEREO LITE AMP. Q21 S2104
0.45V FM MONO
HUSH CONTROLLED ATTENUATOR Q22 FT1898
HUSH CONTROLLED ATTENUATOR Q23 FT1898
AUDIO LEFT
AUDIO RIGHT
★Q12, Q13, (SPF215) ARE TO BE MATCHED PAIRS. (COLOR CODED RED, YELLOW, GREEN, WHITE.)
NOTES:
ALL RESISTORS ARE 1/3 OR 1/2 WATT, 10% TOLERANCE, UNLESS SPECIFIED.
ALL FRACTIONAL VALUE CAPACITORS AND ELECTROLYTICS ARE IN μf. OTHER CAPACITORS ARE IN pf.
AC AND DC VOLTAGES ARE REFERENCED TO GROUND UNDER THE FOLLOWING CONDITIONS:
DC:
NO SIGNAL
▲ NO SIGNAL - HUSH ON
( ) 100μV FM MONO SIGNAL
[ ] 100μV FM STEREO SIGNAL
AC: (RMS READING, MEASURED WITH VTVM.)
[ ] 100μV FM STEREO SIGNAL, EXCEPT WHERE INDICATED AS MONO SIGNAL (100μV).
SHERWOOD S-8900
FM STEREO RECEIVER
WITH SOLID STATE IF FILTER/ IC'S/FETS (TUNER SECTION)
SERIAL NO. 8019251 & UP
12-11-70-JAY
6150



NOTE:
ALL DC VOLTAGES ARE MEASURED WITHOUT SIGNAL, HUSH OFF (EXCEPT DC VOLTAGES IN THE MULTIPLEX DECODER, WHICH ARE MEASURED WITH 100 MICROVOLTS INTO THE FM ANTENNA OR 50 MILLIVOLTS, 19KHz INTO POINT A.)

ALL DC VOLTAGES IN PARENTHESIS ARE MEASURED WITHOUT INPUT SIGNAL BUT WITH HUSH ON.

† USE .0018 MICROFARADS FOR EUROPEAN 50 MICROSECOND DE-EMPHASIS.

SHERWOOD S-8800a
160 WATT FM STEREO RECEIVER
WITH MICROCIRCUITS AND FETS
(TUNER SECTION)
SERIAL NO. R811001 & UP

SHERWOOD S-8800a

160 WATT FM STEREO RECEIVER

WITH MICROCIRCUITS AND FETS

(AMPLIFIER SECTION)

SERIAL NO. R811001 & UP

SELECTOR SWITCH POSITIONS	SENSITIVITY FOR RATED OUTPUT
1 PHONO	2 MV
2 FM STEREO	
3 AUX	200MV

ALL RESISTORS ARE 1/2 WATT OR LESS, 10% TOLERANCE UNLESS OTHERWISE SPECIFIED.

ALL FRACTIONAL-VALUE CAPACITORS ARE IN µf. OTHER CAPACITORS EXCEPT ELECTROLYTICS ARE IN pf.

RIGHT CHANNEL:

COMPONENT SYMBOLS ARE THE SAME AS THE LEFT CHANNEL ABOVE, EXCEPT FOR AN INCREASE IN NUMBERING BY ONE HUNDRED.

7-15-68-JAY

4289

FET RF TUNER

10.7 MHZ IF AMPLIFIER A03IR25-0

FM ANTENNA

FM RF AMP Q1 MPF106

RF CONVERTER Q2 MPF107

FM AGC AMP Q5 SPS41

2ND FM IF Q6 SPS40-3

3RD FM IF Q7 SPS40

FM LIMITER Q9 U5B7717I39

FM DETECTOR

1ST FM IF Q4 CA3028

RF OSC Q3 SPS40 SL40

HUSH AMP Q8 SPS41

TUNING METER 75-0-75μa

Q10 2N4248

A SECTION OF SWITCH BOARD A03IR24-0

STEREO MULTIPLEX BOARD A03IRI3-1

MX DOUBLER Q15 S4248

MX PILOT AMP Q12 SPS41

MX THRESHOLD Q13 SPS41

STEREO LITE AMP Q14 S2104

VOLTAGE REGULATOR Q11 37649

U5B7717I39 SCHEMATIC

CA3028

CA3028 DIAGRAM

ALTERNATE PRIMARY CIRCUITS FOR EXPORT MODELS

NOTE:
ALL DC VOLTAGES ARE MEASURED WITHOUT SIGNAL, HUSH OFF. (EXCEPT DC VOLTAGES IN THE MULTIPLEX DECODER, WHICH ARE MEASURED WITH 100 MICROVOLTS INTO THE FM ANTENNA OR 50 MILLIVOLTS, 19KHz INTO POINT A.)

ALL DC VOLTAGES IN PARENTHESIS ARE MEASURED WITHOUT INPUT SIGNAL BUT WITH HUSH ON.

† USE .0018 MICROFARADS FOR EUROPEAN 50 MICROSECOND DE-EMPHASIS.

* MATCHED TO 2%

C11 --- WAS OFF FET RF TUNER
R55 --- WAS 56K
R91 --- WAS 390K
R93 --- WAS 4.7K
T3,4,5 -WERE 65-252D

67-158 (T7) 65-274B (L6) 65-290A (T8)

T3,4,&5 LOCATING BOSS

T6 COLOR DOT

SHERWOOD S-8800a

160 WATT FM STEREO RECEIVER

WITH MICROCIRCUITS AND FETS
(TUNER SECTION)
SERIAL NO. R91400I & UP

4627 2-28-69-JAY

SHERWOOD S-8800a

160 WATT FM STEREO RECEIVER

WITH MICROCIRCUITS AND FETS

(AMPLIFIER SECTION)

SERIAL NO. R914001 & UP

SELECTOR SWITCH POSITIONS	SENSITIVITY FOR RATED OUTPUT
1 PHONO	1.8MV
2 FM STEREO	
3 AUX	200MV

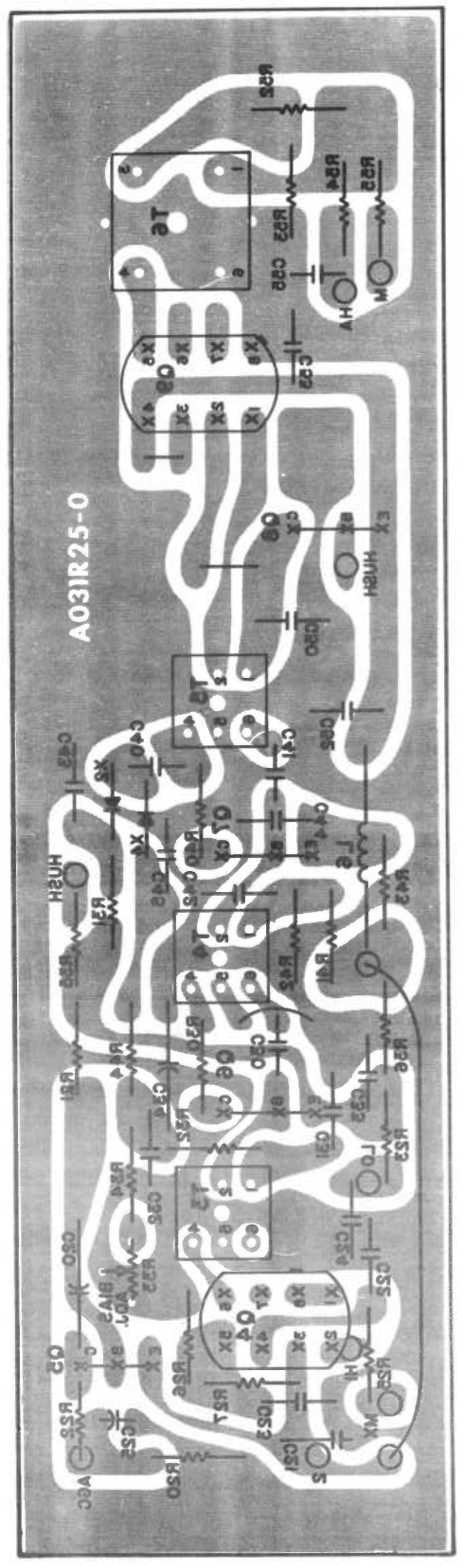
ALL RESISTORS ARE 1/2 WATT OR LESS, 10% TOLERANCE UNLESS OTHERWISE SPECIFIED.

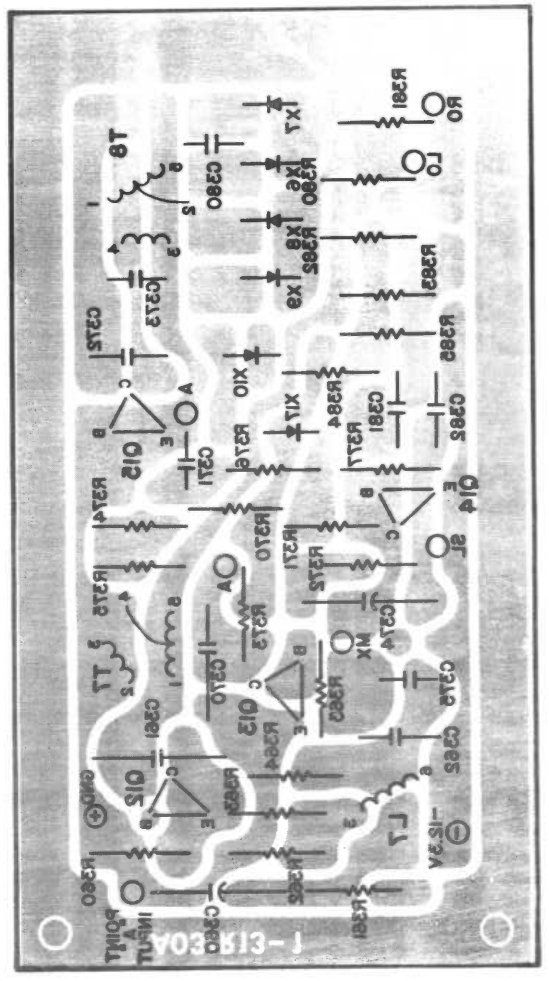
ALL FRACTIONAL-VALUE CAPACITORS ARE IN μf. OTHER CAPACITORS EXCEPT ELECTROLYTICS ARE IN pf.

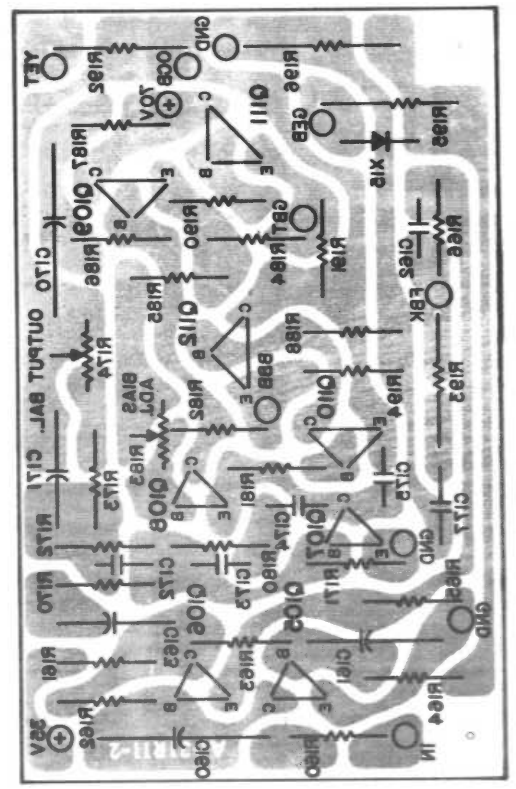
RIGHT CHANNEL:
COMPONENT SYMBOLS ARE THE SAME AS THE LEFT CHANNEL ABOVE, EXCEPT FOR AN INCREASE IN NUMBERING BY ONE HUNDRED.

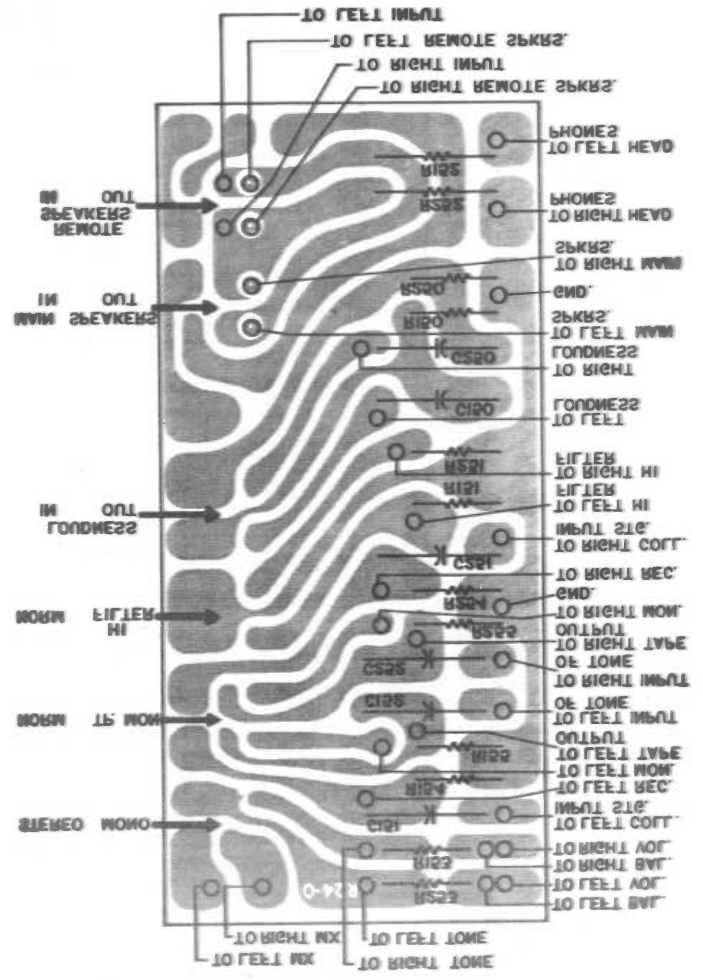
1-21-69-JAY - LCI-69-PAM - 3-20-69-JAY

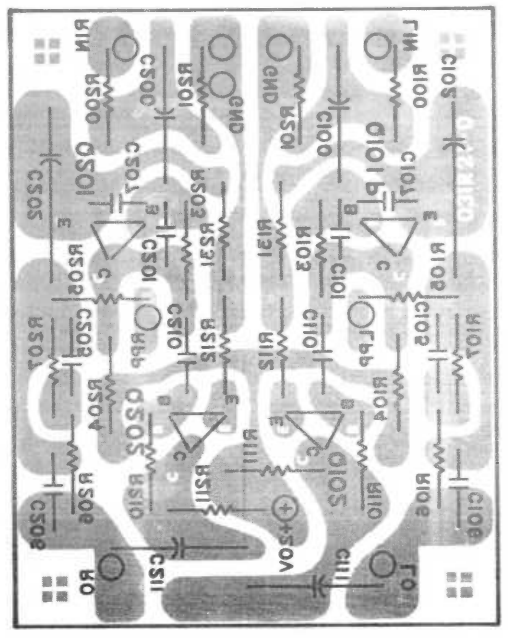
46627

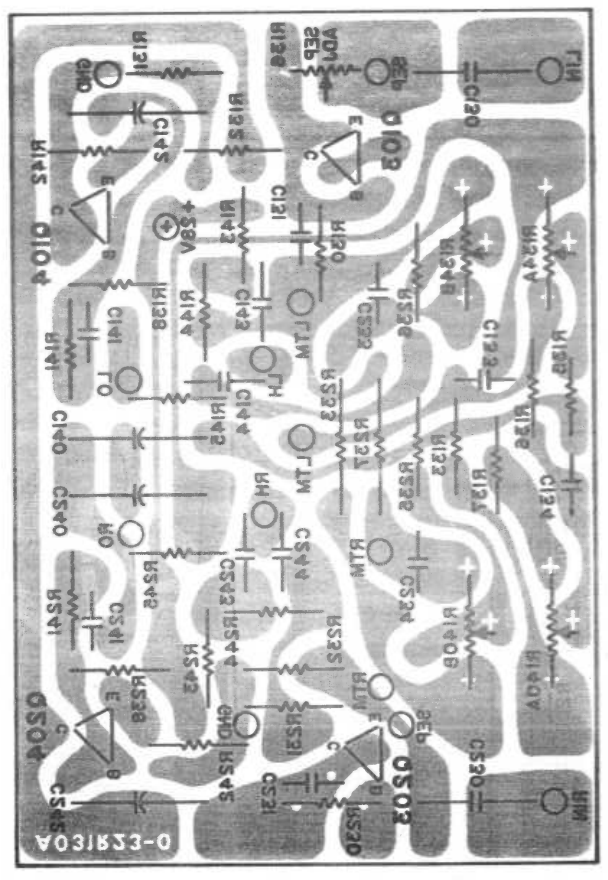

A031R25-0

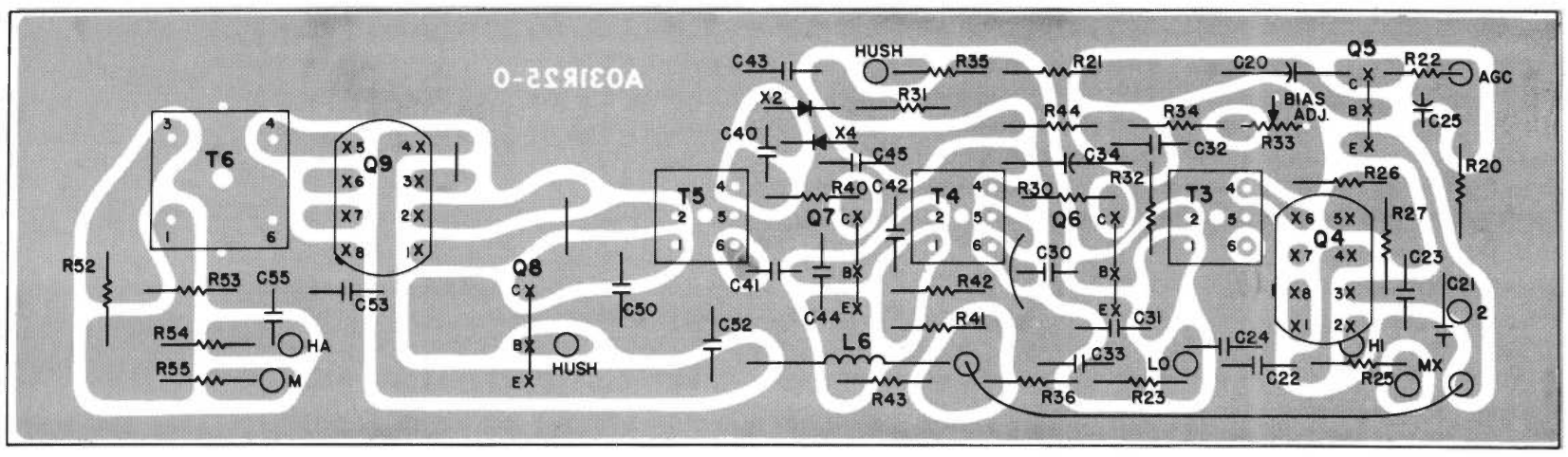

A031R13-1


A031R11-2


TO LEFT INPUT
TO LEFT REMOTE SPKR.
TO RIGHT INPUT
TO RIGHT REMOTE SPKR.
PHONES
TO LEFT HEAD
PHONES
TO RIGHT HEAD
SPKR.
TO RIGHT MAIN
GND.
SPKR.
TO LEFT MAIN
LOUDNESS
TO RIGHT
LOUDNESS
TO LEFT
TP.TEN
TO RIGHT HI
TP.TEN
TO LEFT HI
INPUT SIG.
TO RIGHT COLL.
GND.
TO RIGHT REC.
OUTPUT
TO RIGHT MON.
TO RIGHT TAPE
TO RIGHT INPUT
TO LEFT INPUT
OUTPUT
TO LEFT TAPE
TO LEFT MON.
TO LEFT REC.
INPUT SIG.
TO LEFT COLL.
TO RIGHT AUX.
TO RIGHT BAL.
TO LEFT AUX.
TO LEFT BAL.
TO RIGHT AX
TO LEFT TONE
TO RIGHT TONE
A031R24-0
STEREO MONO
MON TP
MON HI
LOUDNESS IN OUT
MAIN SPEAKERS IN OUT
REMOTE SPEAKERS IN OUT


A031R30-0

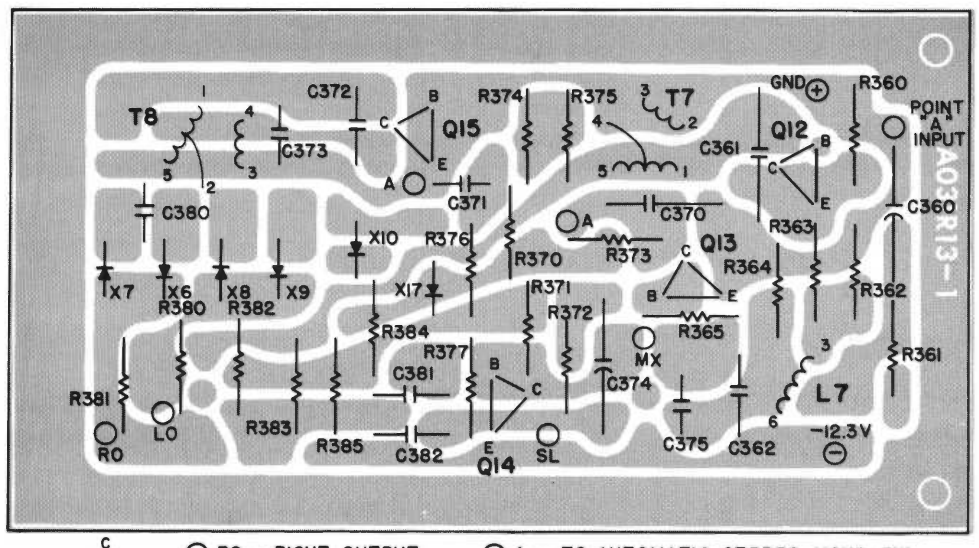

A031R33-0



C B E
TRANSISTOR

- HA - HUSH AMP.
- AGC - TO TUNER
- HUSH - TO POT
- HI - HI INPUT
- M - TO TUNING METER
- LO - LO INPUT
- MX - TO MX BOARD
- 2 - FM B- (TUNER)

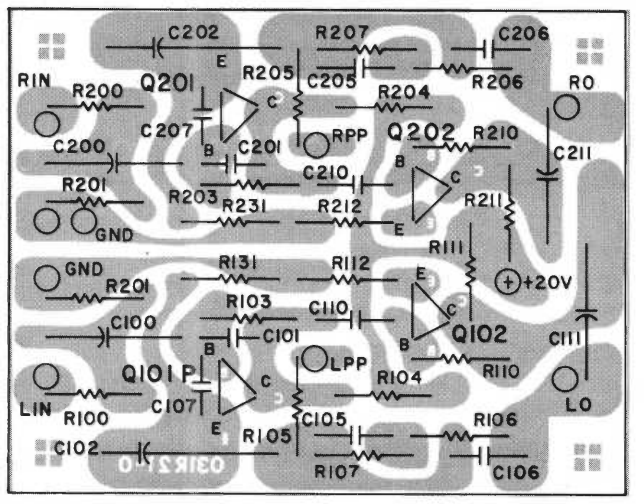
A031R25-0 I. F. AMP. BOARD



- RO — RIGHT OUTPUT
- LO — LEFT OUTPUT
- SL — TO STEREO LIGHT
- A — TO AUTOMATIC STEREO-MONO SW.
- MX — MX GATE FROM I.F. BOARD

C
E B
TRANSISTORS

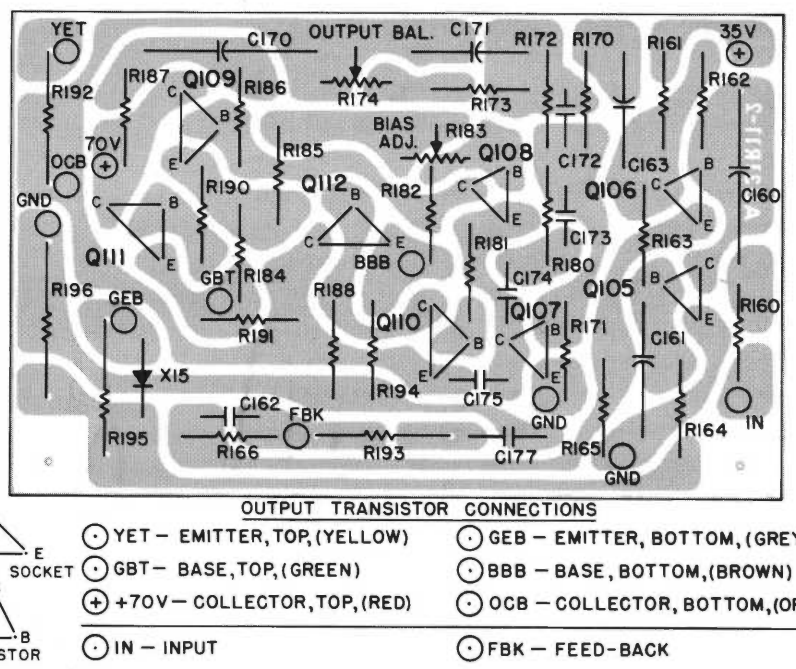
A031R13-1 MULTIPLEX BOARD



- RIN-RIGHT INPUT
- RPP-RIGHT PHONO LEVEL
- RO-RIGHT OUTPUT
- LIN-LEFT INPUT
- LPO-LEFT PHONO LEVEL
- LO-LEFT OUTPUT

C
E B
TRANSISTOR

A031R21-0A PRE-AMP BOARD



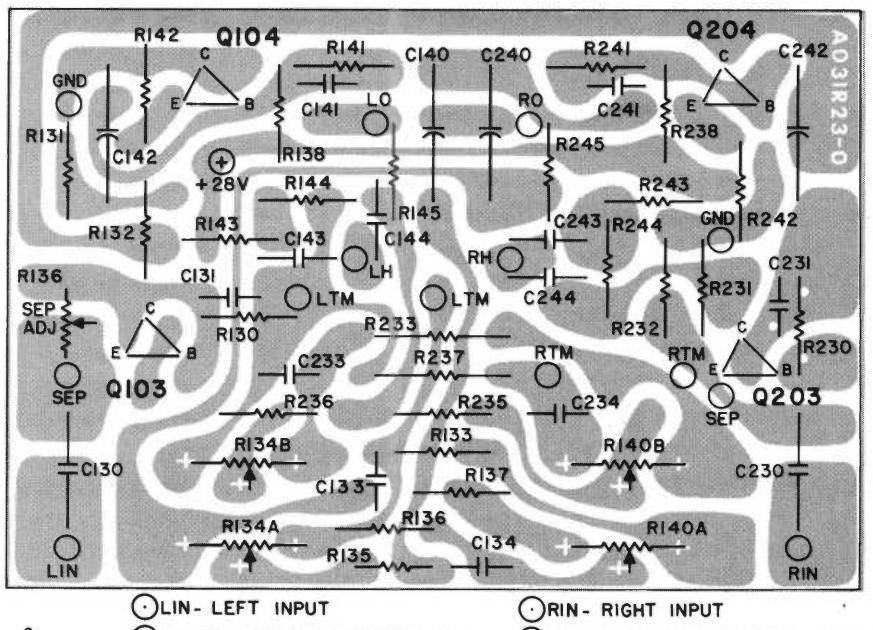
OUTPUT TRANSISTOR CONNECTIONS

- YET — EMITTER, TOP, (YELLOW)
- GBT — BASE, TOP, (GREEN)
- +70V — COLLECTOR, TOP, (RED)
- GEB — EMITTER, BOTTOM, (GREY)
- BBB — BASE, BOTTOM, (BROWN)
- OCB — COLLECTOR, BOTTOM, (ORANGE)
- IN — INPUT
- FBK — FEED-BACK

B
C E
TRANSISTOR SOCKET

C
E B
TRANSISTOR

A031R11-2 DRIVER BOARD

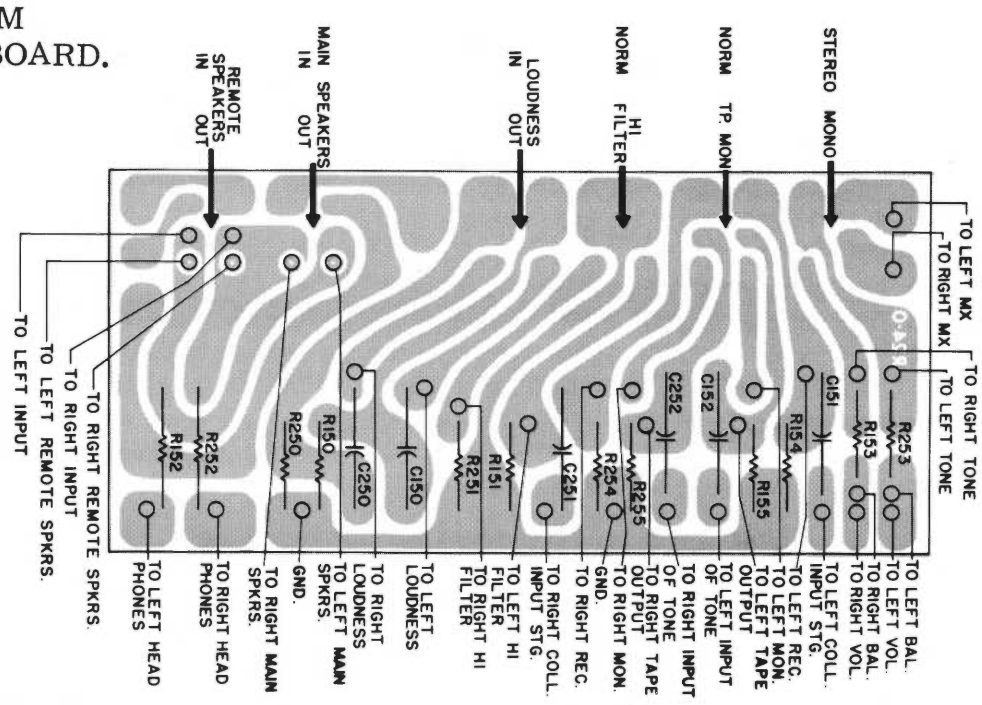


- LIN - LEFT INPUT
- LH - TO LEFT HI FILTER SWITCH
- LTM - TO LEFT TAPE MONITOR SW.
- LO - LEFT OUTPUT
- SEP ADJ - SEPARATION ADJUSTMENT
- RIN - RIGHT INPUT
- RH - TO RIGHT HI FILTER SWITCH
- RTM - TO RIGHT TAPE MONITOR SW.
- RO - RIGHT OUTPUT
- SEP - TO SELECTOR SWITCH

C
E B
TRANSISTOR

A031R23-0 TONE BOARD

NOTE: AS VIEWED FROM COMPONENT SIDE OF BOARD.



A031R24-0 SWITCH BOARD

SHERWOOD S-8800a

160 WATT FM STEREO RECEIVER

WITH MICROCIRCUITS AND FETS
(TUNER SECTION)
SERIAL NO. R914001 & UP

FET RF TUNER

10.7 MHZ IF AMPLIFIER
A03IR25-0

FM ANTENNA

FM RF AMP Q1 MPF106

RF CONVERTER Q2 MPF107

RF OSC Q3 SPS40 SL40

1ST FM IF Q4 CA3028

FM AGC AMP Q5 SPS41

2ND FM IF Q6 SPS40-3

3RD FM IF Q7 SPS40

FM LIMITER Q9 U5B771739

FM DETECTOR

HUSH AMP Q8 SPS41

BIAS ADJ. R33 250K

HUSH ADJ. R35 15K

TUNING METER 75-0-75μa

Q10 2N4248

A SECTION OF SWITCH BOARD A03IR24-0

MONO / AUTO. STEREO

STEREO MULTIPLEX BOARD A03IR13-1

POINT A. SEE NOTE

MX DOUBLER Q15 S4248

MX PILOT AMP Q12 SPS41

MX THRESHOLD Q13 SPS41

STEREO LITE AMP Q14 S2104

AUDIO LEFT

AUDIO RIGHT

* MATCHED TO 2%

C11 --- WAS OFF FET RF TUNER
R55--- WAS 56K
R91 --- WAS 390K
R93 --- WAS 4.7K
T3,4,5 -WERE 65-252D

U5B771739 SCHEMATIC

QUAD (3) RF OUTPUT (5) AUDIO SECTION

RF SECTION

AUDIO INPUT (6) AUDIO OUTPUT (7)

CA3028

CA3028 DIAGRAM

SI SECTION 3

ALTERNATE PRIMARY CIRCUITS FOR EXPORT MODELS

225-245 VAC 50-60 Hz — 1-1/2 AMP

112-125 VAC; 50-60 Hz — 3 AMP

NOTE:
ALL DC VOLTAGES ARE MEASURED WITHOUT SIGNAL, HUSH OFF. (EXCEPT DC VOLTAGES IN THE MULTIPLEX DECODER, WHICH ARE MEASURED WITH 100 MICROVOLTS INTO THE FM ANTENNA OR 50 MILLIVOLTS, 19KHz INTO POINT A.)

ALL DC VOLTAGES IN PARENTHESIS ARE MEASURED WITHOUT INPUT SIGNAL BUT WITH HUSH ON.

* USE .0018 MICROFARADS FOR EUROPEAN 50 MICROSECOND DE-EMPHASIS.

120V 300W — 115-125 VAC 60 Hz — F1-3AMP — 120V 300W SW

DIAL LIGHTS — METER LIGHT

VOLTAGE REGULATOR Q11 37649

SPS40 SPS41

37649

SL40 S4248

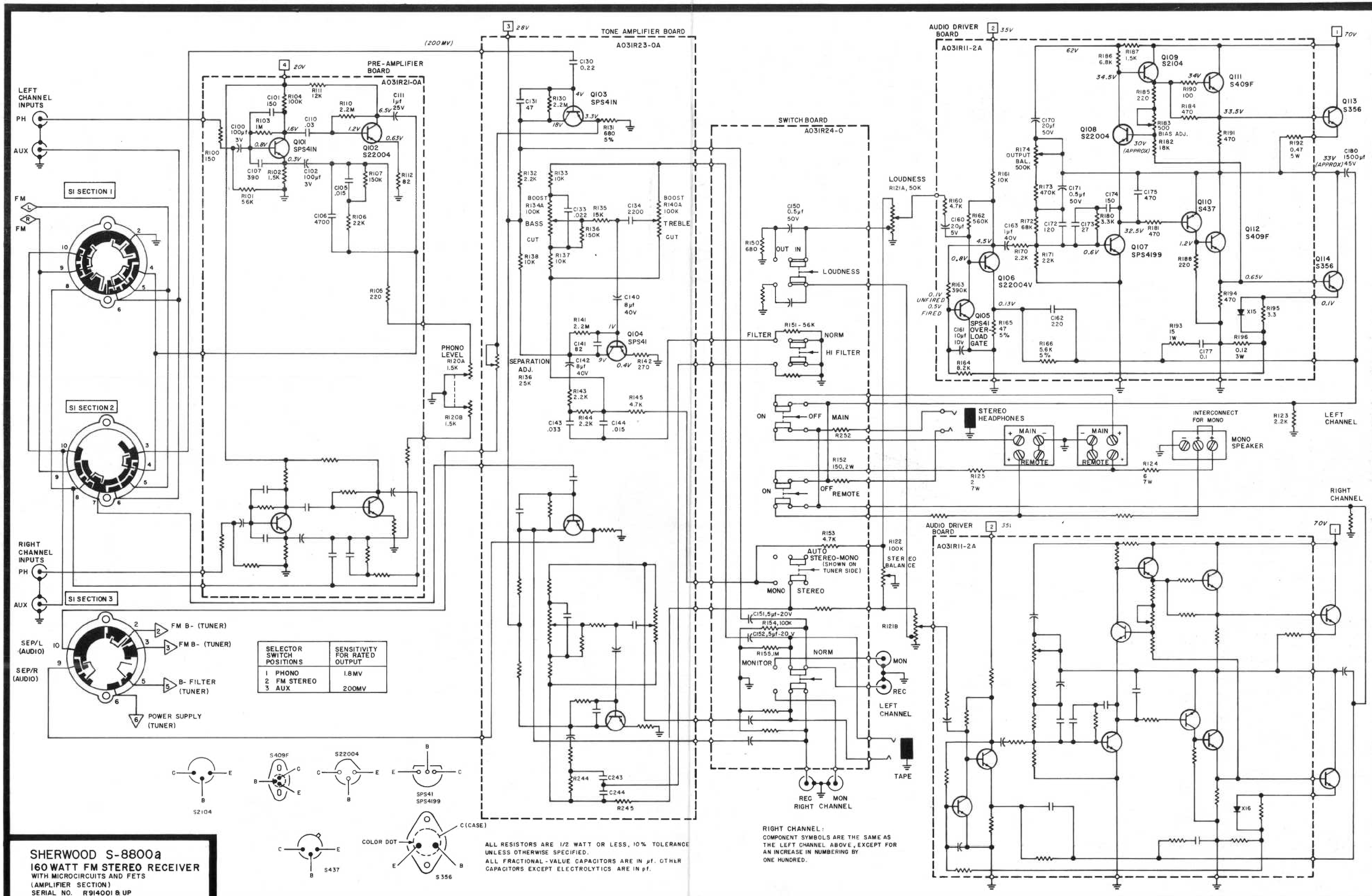
SOURCE DRAIN GATE

10.7 MHz SEC(TOP) PRI (BOT)

T3,4,&5 LOCATING BOSS

COLOR DOT

67-158 65-274B 65-290A


LEFT CHANNEL INPUTS
PH
AUX
SI SECTION 1
SI SECTION 2
SI SECTION 3
FM
RIGHT CHANNEL INPUTS
PRE-AMPLIFIER BOARD
A031R21-0A
TONE AMPLIFIER BOARD
A031R23-0A
SWITCH BOARD
A031R24-0
AUDIO DRIVER BOARD
A031R11-2A
(200MV)
20V
28V
35V
70V
Q101 SPS41N
Q102 S22004
Q103 SPS41N
Q104 SPS41
Q105 SPS41 OVERLOAD GATE
Q106 S22004V
Q107 SPS4199
Q108 S22004
Q109 S2104
Q110 S437
Q111 S409F
Q112 S409F
Q113 S356
Q114 S356
PHONO LEVEL R120A 1.5K
R120B 1.5K
BASS
TREBLE
BOOST
CUT
SEPARATION ADJ. R136 25K
LOUDNESS R121A, 50K
OUT IN
LOUDNESS
FILTER
NORM
HI FILTER
ON
OFF
MAIN
REMOTE
STEREO HEADPHONES
INTERCONNECT FOR MONO
MONO SPEAKER
LEFT CHANNEL
RIGHT CHANNEL
AUTO STEREO-MONO (SHOWN ON TUNER SIDE)
MONO
STEREO
STEREO BALANCE
R121B
MONITOR
MON
REC
TAPE
REC MON RIGHT CHANNEL
R174 OUTPUT BAL. 500K
R183 500 BIAS ADJ.
X15
X16
FM B- (TUNER)
B- FILTER (TUNER)
POWER SUPPLY (TUNER)
SEP/L (AUDIO)
SEP/R (AUDIO)
S2104
S409F
S22004
SPS41 SPS4199
S437
COLOR DOT
C(CASE)
S356

SELECTOR SWITCH POSITIONS	SENSITIVITY FOR RATED OUTPUT
1 PHONO	1.8MV
2 FM STEREO	
3 AUX	200MV

ALL RESISTORS ARE 1/2 WATT OR LESS, 10% TOLERANCE UNLESS OTHERWISE SPECIFIED.
ALL FRACTIONAL-VALUE CAPACITORS ARE IN µf. OTHER CAPACITORS EXCEPT ELECTROLYTICS ARE IN pf.

RIGHT CHANNEL:
COMPONENT SYMBOLS ARE THE SAME AS THE LEFT CHANNEL ABOVE, EXCEPT FOR AN INCREASE IN NUMBERING BY ONE HUNDRED.

SHERWOOD S-8800a

160 WATT FM STEREO RECEIVER

WITH MICROCIRCUITS AND FETS
(AMPLIFIER SECTION)
SERIAL NO. R914001 & UP