

SHERWOOD

S 9500c

MODEL S-9500c STEREO AMPLIFIER SERVICE MANUAL

Function Switch.
Controls stereo or
mono operation.

Tone controls for both channels.
Adjustment of the Bass or Treble
control knob will vary the tone of
both channels simultaneously.

Main control for Power on-off and
Loudness of both channels. Auto-
matically boosts bass at low levels
(if switch below is at "Loudness In").

Selector Switch.
Chooses phono,
tuner, or auxiliary
inputs.

Controls left-to-right
stereo balance.

Preamplifier Level. Controls
preamplifier level only.

Stereo head-
phone jack.

Tape Monitor Switch.
Normally set to left.
If depressed right will
connect in tape
monitor jacks on rear.

Pilot Light

Hi Filter. Depress
right for 12db/octave
attenuation of un-
desired tones such
as record "scratch".

Remote Speaker Set On-off Switch. Will
disconnect this speaker set when
depressed right.

Loudness Compensation Switch.
Normally set to left. If depressed
right, it removes circuit
which boosts bass at low
listening levels.

Main Speaker Set On-off Switch. Will
disconnect this speaker set when
depressed right.

SPECIFICATIONS *

INPUTS: 8 high level (2 tape monitor), 2 (RIAA) Phono-preamp.

TOTAL POWER OUTPUT: 4 ohms: 140 watts $\pm$ 1db; 115 watts IHF; 90 watts RMS. 8 ohms: 100 watts $\pm$ 1db; 80 watts IHF; 70 watts RMS.

OUTPUTS: 4 to 16-ohm left and right spkr. main and remote; mono speaker, stereo headphone and record output.

INVERSE FEEDBACK: 35 db.

DAMPING FACTOR: 30:1 at 8 ohms.

FREQUENCY RESPONSE: 20 Hz to 20 KHz $\pm$ 1 db.

TONE CONTROL RESPONSE: Flat setting, 20 Hz to 20 KHz $\pm$ 1 db.

TONE CONTROL RANGE: 15 KHz, 15 db, boost or cut 40 Hz 20 db, boost or cut.

PREAMP. EQUALIZER CURVES: AES/RIAA phono.

SENSITIVITY: Radio - 0.25v Phono - 1.6 mv. Tape head 1.2mv. (PH and TP inputs are adjustable with Preamp Level control).

MAX. INPUT CAPABILITY: Phono: 160 mv. for less than 1% dist. Radio: 2.8v. for less than 1% dist.

MAX. HUM and NOISE: Vol. control min., 90 db. (weighted) below rated output. Tuner input (controls max.), 80 db, (weighted) below rated output. Phono input (controls flat), 60 db, below rated output.

INTERCHANNEL CROSSTALK: Less than -45 db, at 1 KHz.

POWER CONSUMPTION: 115-125 v, 60 Hz; 10 to 120 watts fused.

TRANSISTOR COMPLEMENT: 22 silicon transistors, 2 silicon rectifiers.

SIZE: 14 x 10-1/2 x 4 in. high.

SHIPPING WEIGHT: 22 lbs.

*All specifications taken with 120V line.

AMPLIFIER SERVICING AND ADJUSTMENT

NOTE: To simplify the following descriptions only the left channel and its related circuitries are described. The right channel is identical except for reference symbol numbers. (see schematic diagrams)

Preliminary checks of the dc voltages present at various points in the S-9500c can indicate whether a transistor is open, shorted, or functioning. Fault isolation in the pre-amplifier, tone amplifier, and driver stages can generally be isolated by checking the dc voltages or by comparing gain measurements of 1 KHz as indicated on the schematic or by comparing the operating channel with the defective channel.

FUSE AND SPEAKER SYSTEM CHECKS:

Your amplifier incorporates two speaker fuses, one for each channel. If the fuse opens, check the speaker connections for shorted wires or a shorted speaker. (The speaker resistance should not be less than 4 ohms.) If the speaker and connections are not shorted replace the fuse with the proper value as marked on the rear panel. If the speaker fuse still opens your amplifier needs servicing.

While servicing the amplifier it will be valuable to operate the amplifier using a variable voltage power line (VARIAC) equipped with a line wattmeter to identify abnormal power consumption. Increase the power line voltage upward while observing the wattmeter. Power consumption should not exceed 10-20 watts (loudness control at volume minimum) as the voltage is increased to the rated 120VAC. If the power consumption begins to exceed 20 watts, do NOT increase the power line voltage any further and determine whether the malfunction is in the power supply, or amplifier section.

If the power amplifier is suspected, verify center-point voltage on the dc side of the output electrolytic, C290 for approximately one-half of the B+ supply voltage. If the center-point voltage reads extremely low, suspect a defective output transistor on the low side (schematic shows transistor as bottom device in each channel). If center-point voltage reads extremely high, suspect a defective high side output transistor.

If the output transistors are not at fault, then verify that the output coupling electrolytic capacitor is not shorted, other capacitors are not shorted, circuit board contains no solder or etching shorts, open resistors, poor solder connections or broken pads.

The following performance indicates a properly operating amplifier with an 8 ohm resistive load.

Less than 0.25% IM or Harmonic (1KHz)
Distortion at 2.0V

Typically 0.3% IM or Harmonic (1KHz)
Distortion at 10V

Typically 35 Watts Dual Channel at 0.8%

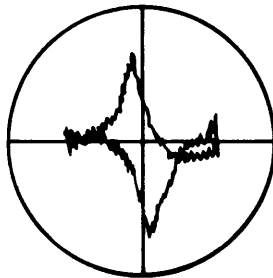
Typically 40 Watts Single Channel at 0.8%

OUTPUT TRANSISTORS

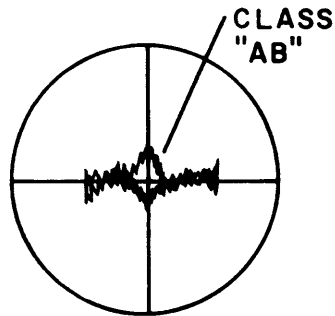
1. BIAS ADJUSTMENT:

Adjust potentiometer R284, so that crossover distortion is at point of being eliminated (Class "AB" operation).

NOTE: Class "A" operation (continued CW rotation) will cause the output transistors to draw excessive current and overheat.



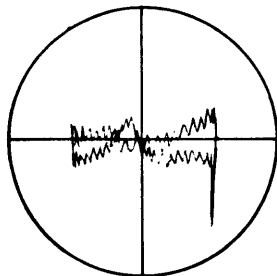
**IMPROPER BIAS
ADJUSTMENT**



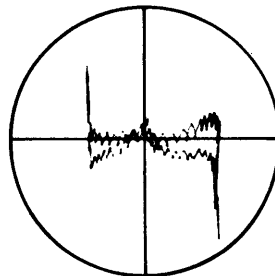
**PROPER BIAS
ADJUSTMENT**

2. OUTPUT BALANCE ADJUSTMENT:

Increase audio drive until clipping can be observed and fine adjust R270 so that clipping is symmetrical.



**IMPROPER
ADJUSTMENT**

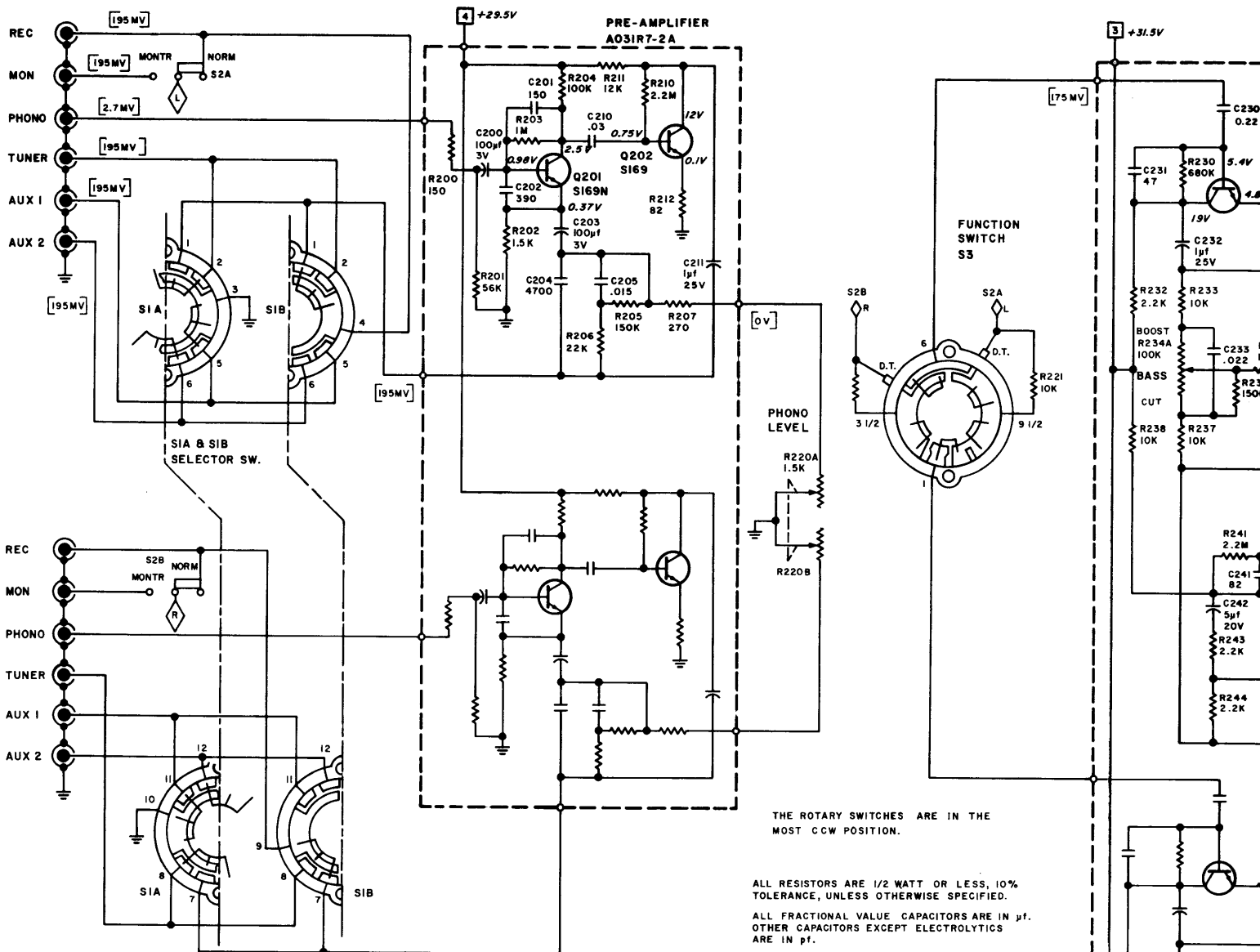


**PROPER
ADJUSTMENT**

S-9500c PARTS LIST

PART DESCRIPTION	SCHEMATIC REFERENCE NO.	PART NO.	LIST PRICE*
<u>TRANSISTORS</u>			
AUDIO, LOW SIGNAL	Q201,202,203,204,301,302,303,304	BC169/S169	.63
AUDIO, LOW SIGNAL	Q205,207,305,307	SPS41	.81
AUDIO, NPN	Q206,306	SPS4199	.95
AUDIO, NPN	Q209,309	S522	3.96
DRIVER, NPN	Q206,308	4036IF/38132	2.47
OUTPUT, NPN	Q210,211,310,311	S356	3.82
<u>CAPACITORS</u>			
1uf @ 40V	C211,232,270,272,311,332,370,372	B120X76-2	.59
5uf @ 20V	C242,342	B120X6-2	.59
8uf @ 40V	C240,340	B120X8-2	.45
20uf @ 50V	C271,371	B120B14-2	.68
100uf @ 3V	C200,203,260,300,303,360	B120X24-2	.45
500uf @ 50V	C174,175,176	B120B30-2	1.66
1500uf @ 45V	C290,390	A120T7-4	2.70
2700uf @ 45V	C290,390	A120T7-6	2.70
3000uf @ 80V	C173	A120T12-0	4.99
<u>GENERAL SECTION</u>			
INSULATOR, MICA, TO-3		A021F1-0	.05
FUSE, 2 AMP. 3AG	F1	312002.	.15
FUSE, 2½ AMP. 3AG	F2,3	31202.5	.15
KNOBS, MEDIUM (W/INDICATOR)		B467X4-2	2.43
KNOB, SMALL PLASTIC, UNMARKED, PHONO LEVEL		460AB5-3	.15
LIGHT-BULB, PILOT, #53		630B53	.18
CONTROL, PHONO LEVEL, 1.5K OHM	R220A,220B	A670T11-1	1.89
CONTROL, BASS, 100K OHM DUAL	R234A,234B	A670T12-0	1.94
CONTROL, TREBLE, 100K OHM DUAL	R240A,240B	A670T12-0	1.94
CONTROL, BALANCE, 100K OHM	R253	A670T7-3	1.04
CONTROL, LOUDNESS, 50K OHM DUAL	R250A,250B,S4	A671T1-7	.90
W/SWITCH			
POT., P.C., 500 OHM, BIAS	R284,384	A675T1-0A	.45
POT., P.C., 500 OHM, OUTPUT BAL	R270,370	A675T10-0A	.41
RECTIFIER, SILICON	X1,2	A692X16-0	1.71
SOCKET, DRIVER TRANSISTOR (TO-5)		A790T4M-1	.27
SOCKET, OUTPUT TRANSISTOR (TO-3)		A790T7-0	1.30
STEREO HEADPHONE JACK		A795L1-0	1.08
FUSE POST		A796X2-1A	1.04
SWITCH, ROTARY, FUNCTION, 5 POS.		A860K5-3	2.25
SWITCH, ROTARY, SELECTOR, 4 POS.		A860T7-0	3.50
SWITCH, ROCKER, (NON-SHORTING), S2A,2B DPDT		A864T22-7	.86
SWITCH, ROCKER, (SHORTING) DPDT	S5A,5B,6A,6B,7A,7B,8A 8B	A864T23-7	.86
TRANSFORMER, POWER, DOMESTIC, 60Hz	T1	B922T3-1	19.30
TRANSFORMER, POWER, EXPORT, 50/60Hz	T1 EXPORT	B022T3-1X	27.70

*NOTE: PRICES SUBJECT TO CHANGE WITHOUT NOTICE.



THE ROTARY SWITCHES ARE IN THE MOST CCW POSITION.

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

ALL FRACTIONAL VALUE CAPACITORS ARE IN μ f. OTHER CAPACITORS EXCEPT ELECTROLYTICS ARE IN pF.

ALL VOLTAGES ARE REFERENCED TO GROUND UNDER THE FOLLOWING CONDITIONS:

DC:

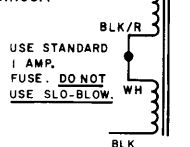
NO SIGNAL.

AC:

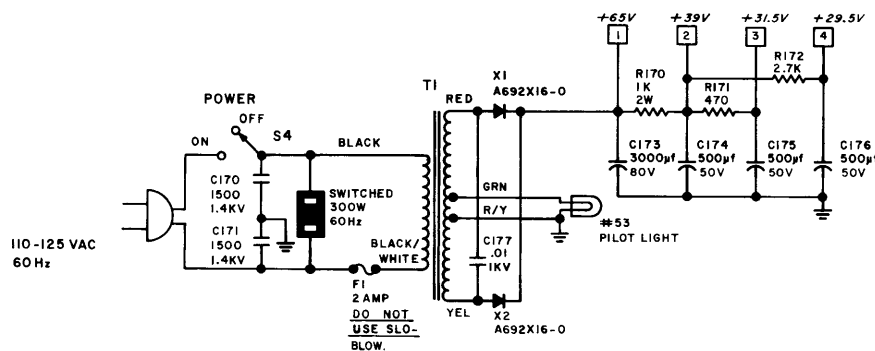
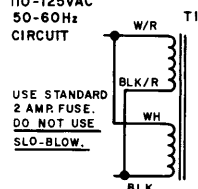
[] AC SIGNAL VOLTAGES FOR RATED OUTPUT, AT 8 OHMS LOAD, WITH PHONO LEVEL AND VOL. MAX.

ALTERNATE PRIMARY HOOK UP FOR EXPORT MODELS.

220-245 VAC
50-60Hz
CIRCUIT



110-125 VAC
50-60Hz
CIRCUIT



SHERWOOD S-9500c
STEREO AMPLIFIER
SERIAL NO. T007003 & UP

