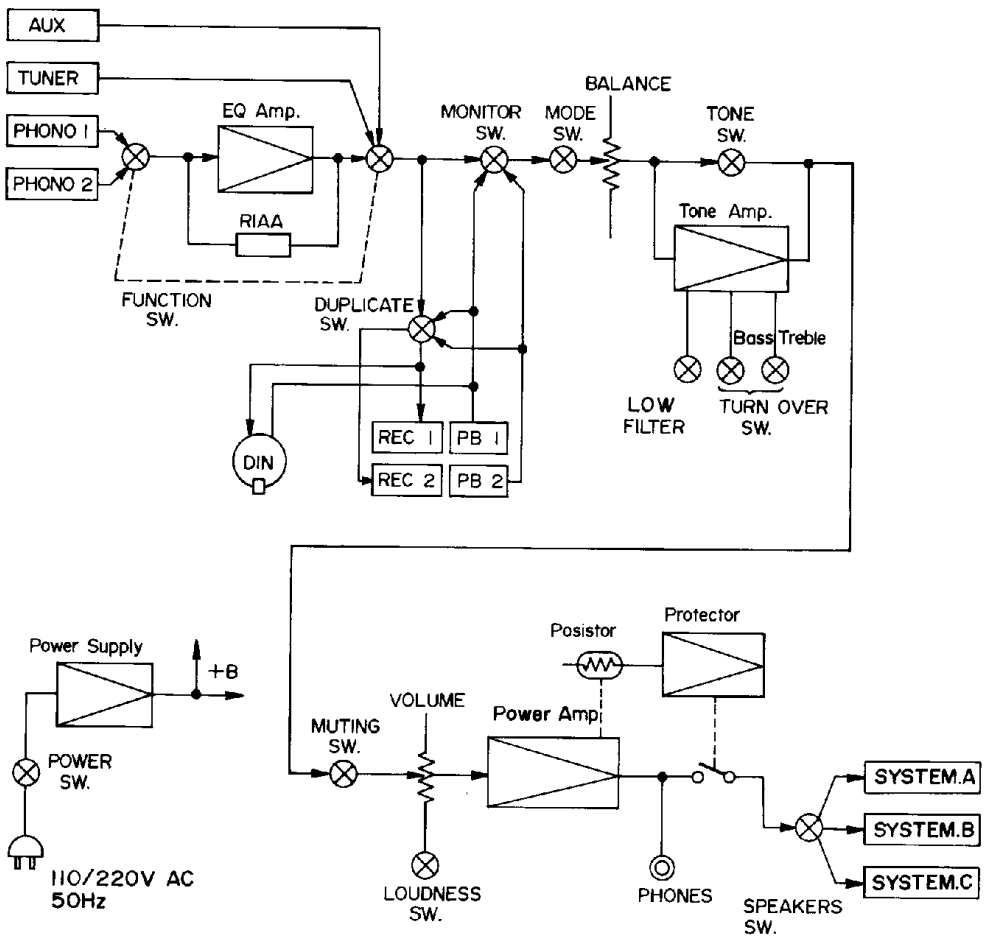
Nominal Specifications for Information Only.

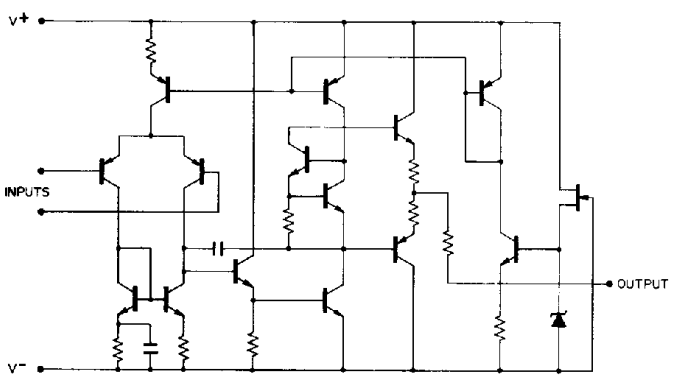
AMPLIFIER		CA2310
POWER AMPLIFIER SECTION Continuous RMS sine wave power per channel within stated bandwidth at no more than stated distortion and with an 8 ohm load		70watts
Power Band Width		20Hz-20kHz
Total Harmonic Distortion		0.05%
IM Distortion		0.05%
Speaker Damping		40
PREAMPLIFIER SECTION Frequency Response	Phono (30Hz-15kHz) Aux (20Hz-20kHz)	±1.0dB ±1.0dB
Input Sensitivity and Impedance	Phono 1	2mV/50k ohm
	Phono 2	2mV/50k ohm
	Tape Monitor 1 Tape Monitor 2	150mV/100k ohm 150mV/100k ohm
	Tuner Auxiliary	150mV/100k ohm 150mV/100k ohm
Phono Max. Input Capability		220mV
Tone Control	Bass (100Hz) Treble (10kHz) Turnover (Bass) Turnover (Treble)	±10dB ±10dB 200Hz/400Hz 3kHz/6kHz
Filter	Low at 16Hz (12dB/Oct.)	10dB
Loudness Contour (100Hz/10kHz)		+8dB/+4dB
Hum and Noise (IHF Short Circuit, A Net Work)	Phono 1, 2 Tape Monitor Tuner Auxiliary	78dB 100dB 100dB 100dB
Output Level and Impedance	Tape 1, 2	150mV/600ohm
GENERAL Power Requirements		110/220 V AC ±10% 460W/552VA
Dimensions (WxDxH)		17-1/2"x14-13/16"x5-15/16"
Weight		31.9 lbs.

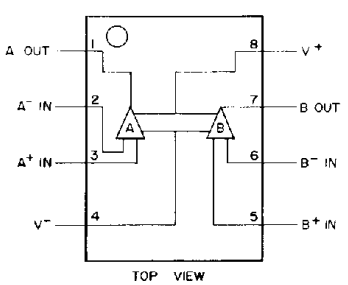
Because Fisher products are subject to continuous improvement, Fisher reserves the right to modify, change, or alter any design or specifications without notice and without incurring any obligation. Fisher reserves the right to make changes and improvements upon its products without any obligation to install such changes upon any of its products previously manufactured.

FUNCTIONAL BLOCK DIAGRAM

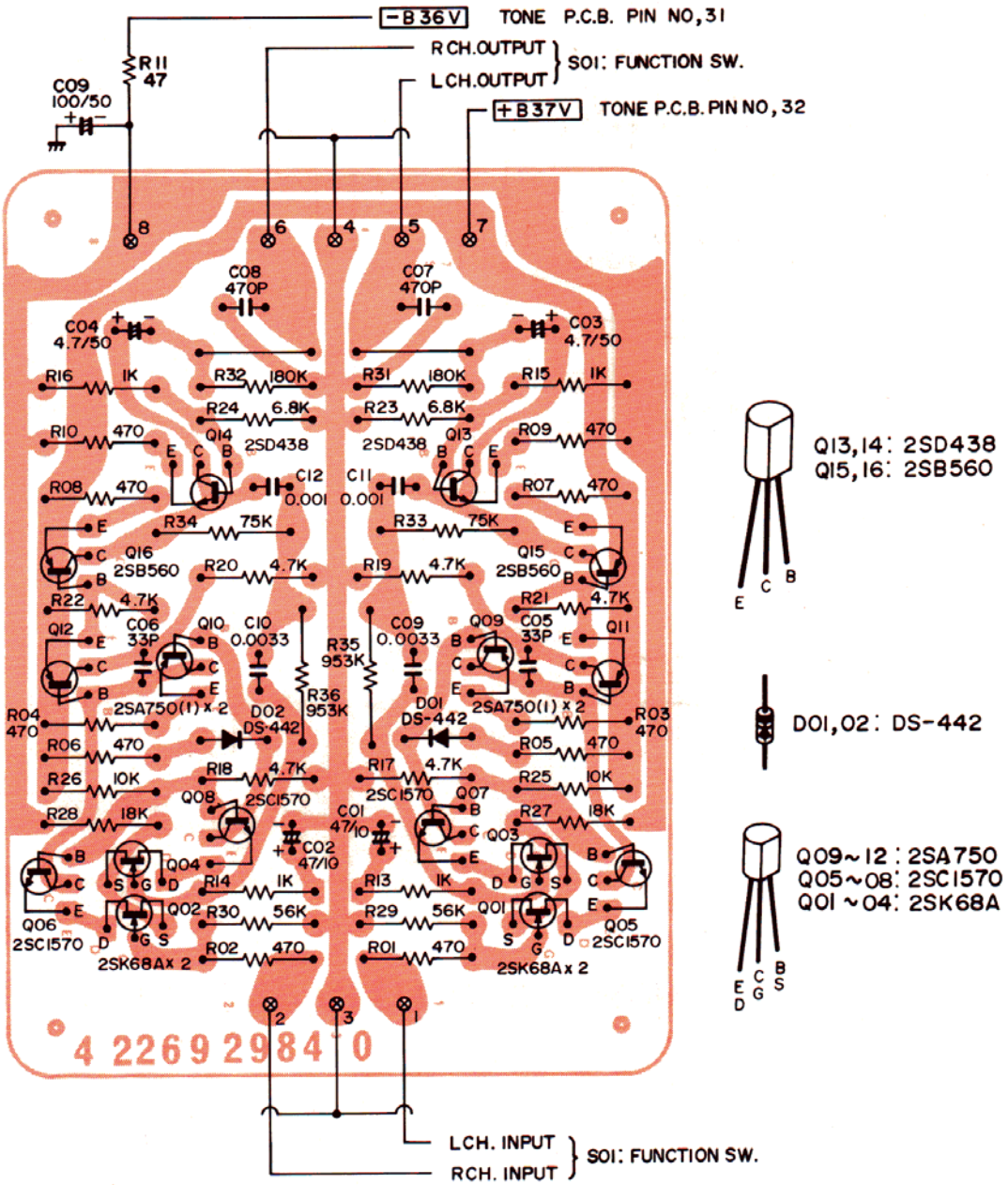


TONE AMP IC NJM4558 EQUIVALENT CIRCUIT





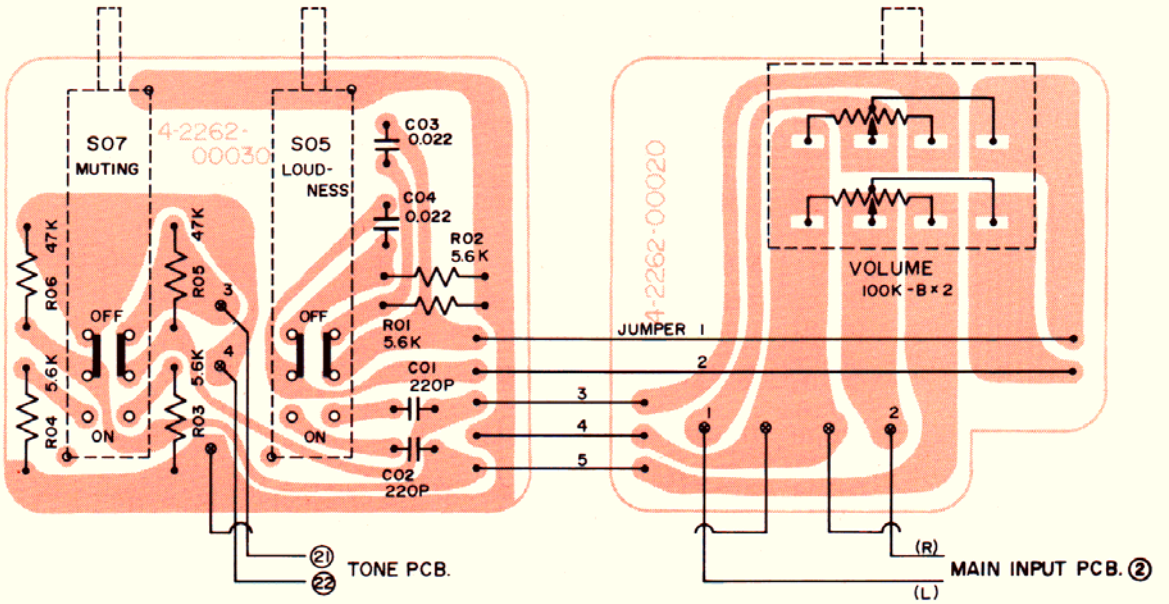
EQ AMP P.C.BOARD



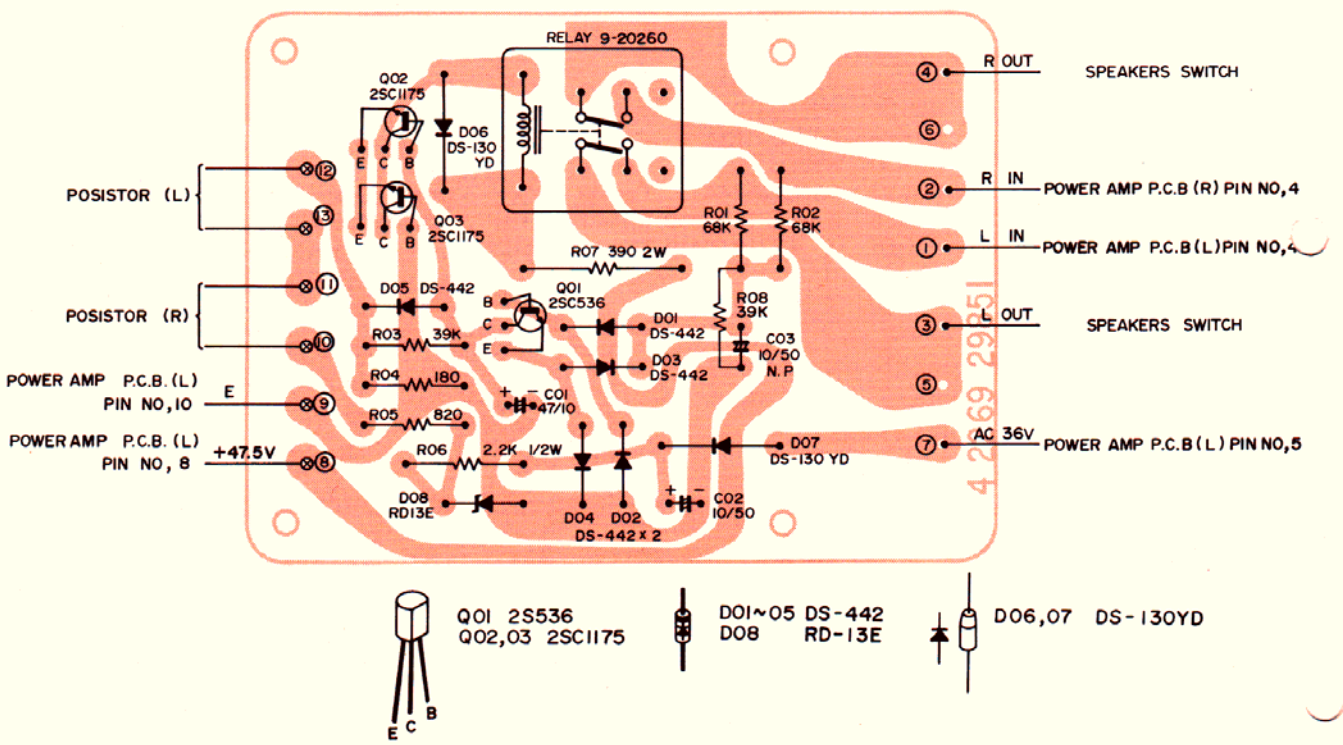
BOTTOM VIEW

TRANSISTOR DC VOLTAGES				
SYMBOL NO.	DEVICE	B, S	C, G	E, D
Q01, 02	2SK68A	0V	−22.5V	
Q03, 04	2SK68A	0V	−22.5V	
Q05, 06	2SC1570	+11.5V	+31.3V	
Q07, 08	2SC1570	+11.5V	+34.8V	
Q09, 10	2SA750	+34.8V	+31.3V	+34.8V
Q11, 12	2SA750	+31.3V	+14.5V	+31.9V
Q13, 14	2SD438	−31.0V	0V	−31.6V

LOUDNESS & MUTING/VOLUME P.C.BOARD

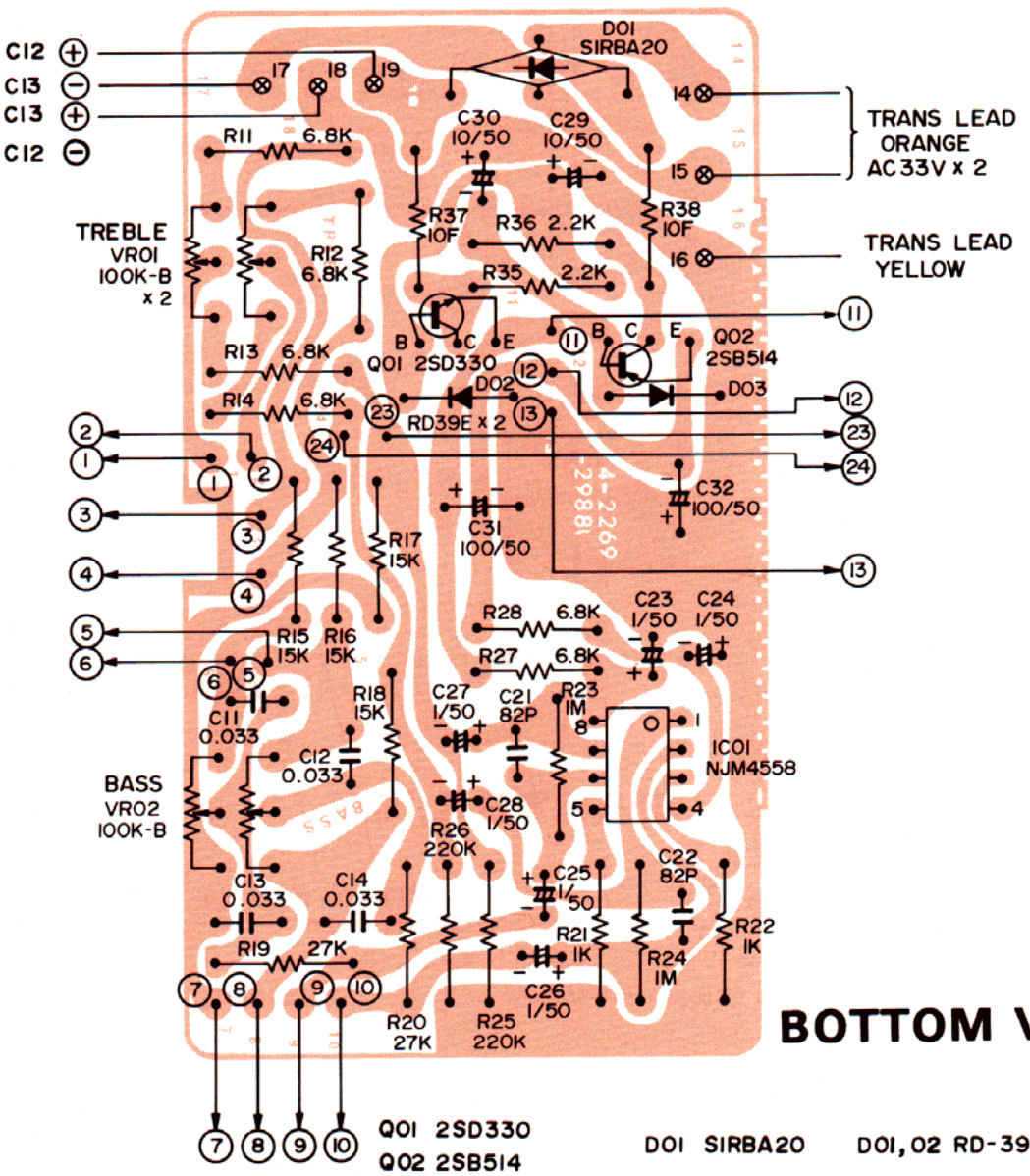


PROTECTOR P.C.BOARD



BOTTOM VIEW

TONE AMP P.C.BOARD(1/2)

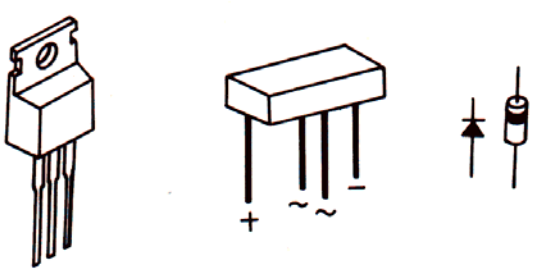


BOTTOM VIEW

Q01 2SD330
Q02 2SB514

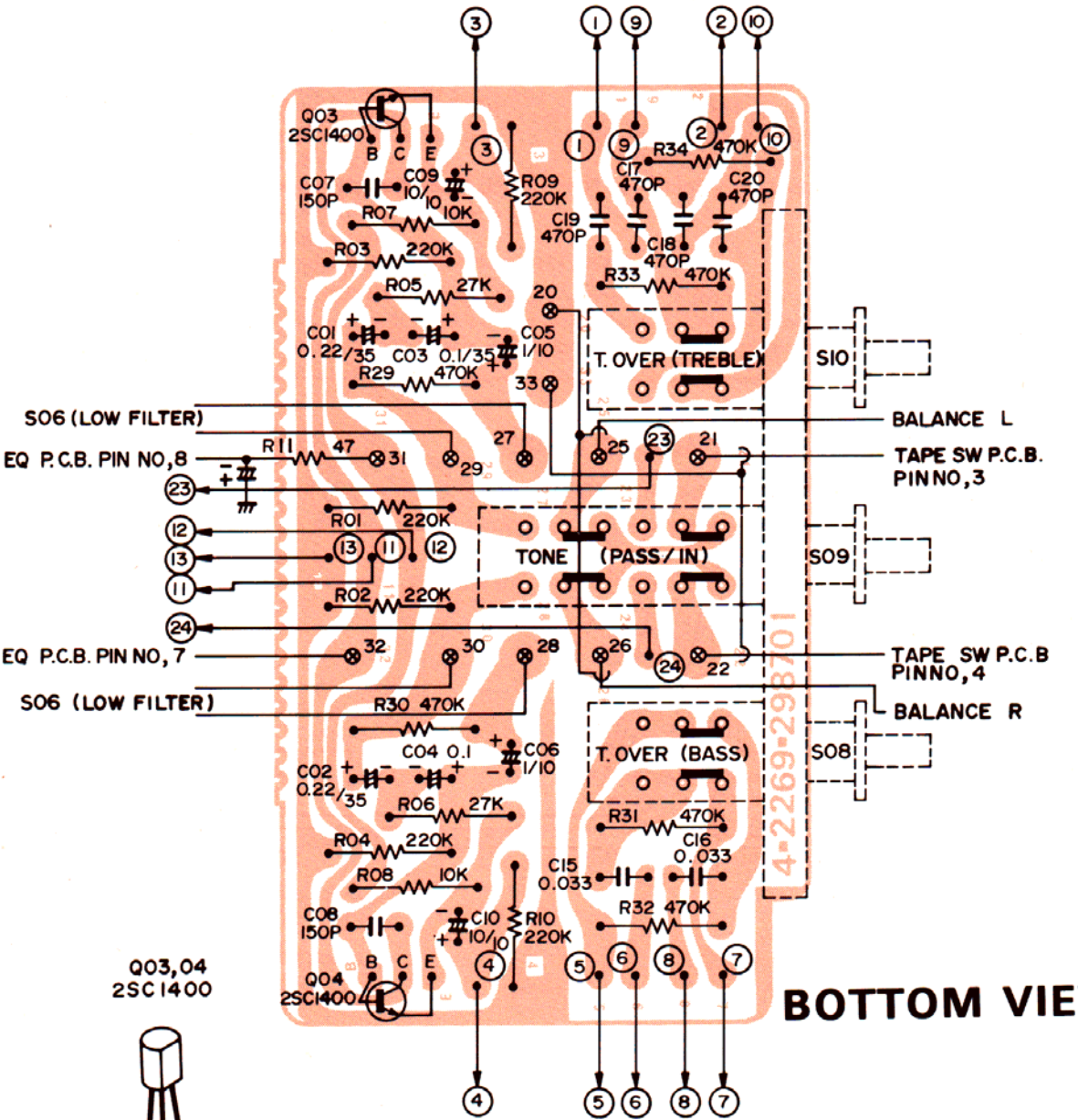
D01 SIRBA20

D01, 02 RD-39E



TONE AMP IC PIN NUMBERS VOLTAGES								
DEVICE / IC PIN NO.	1	2	3	4	5	6	7	8
IC NJM4558P	0V	0V	0V	−13V	0V	0V	0V	+13V

TONE AMP & TURN OVER SWITCH P.C.BOARD(2



Q03,04
2SC1400

BOTTOM VIEW

TRANSISTOR DC VOLTAGES				
SYMBOL NO.	DEVICE	B	C	E
Q01	2SD330	+37.6V	+45.0V	+37.0V
Q02	2SB514	−37.6V	−45.0V	−37.0V
Q03, 04	2SC1400	−0.8V	+36.0V	−1.5V

ADJUSTMENT OF THE POWER AMP. P.C. BOARD

BEFORE ADJUSTMENT

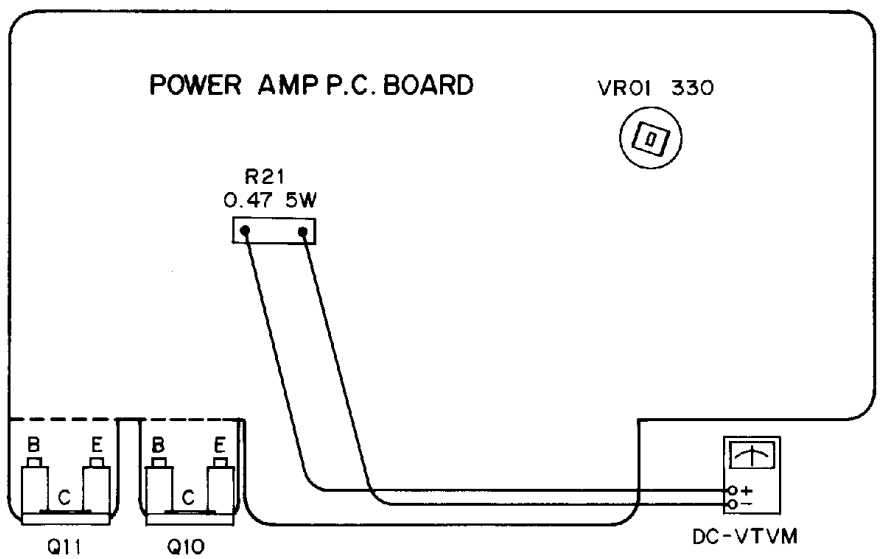
1. Unsolder the PRE OUT/MAIN IN lead.
2. After the power switch is turned ON, allow a few minutes before making adjustment, to be sure of the most stable operation.
3. Connect dummy load resistors (8 ohms) to the speaker terminals.
4. Use a DC V.T.V.M. (Input impedance: More than 50k ohms/V).

(A) IDLING CURRENT ADJUSTMENT

Adjust VR 01 (330 ohm) for an idling current of 35 mA. Measure the voltage at both sides of R21 resistor(0.47 ohm) and adjust VR01 (330 ohm) to indicate 0.018V±0.001V.
Note: Polarity of Emitter of Q10 is (+).
Mid-point is (–).

(B) Repeat steps A for optimum results.

Note: a. Turn the semi-fixed variable resistor slowly during adjustment.
b. Be careful of the polarity of each measurement point.



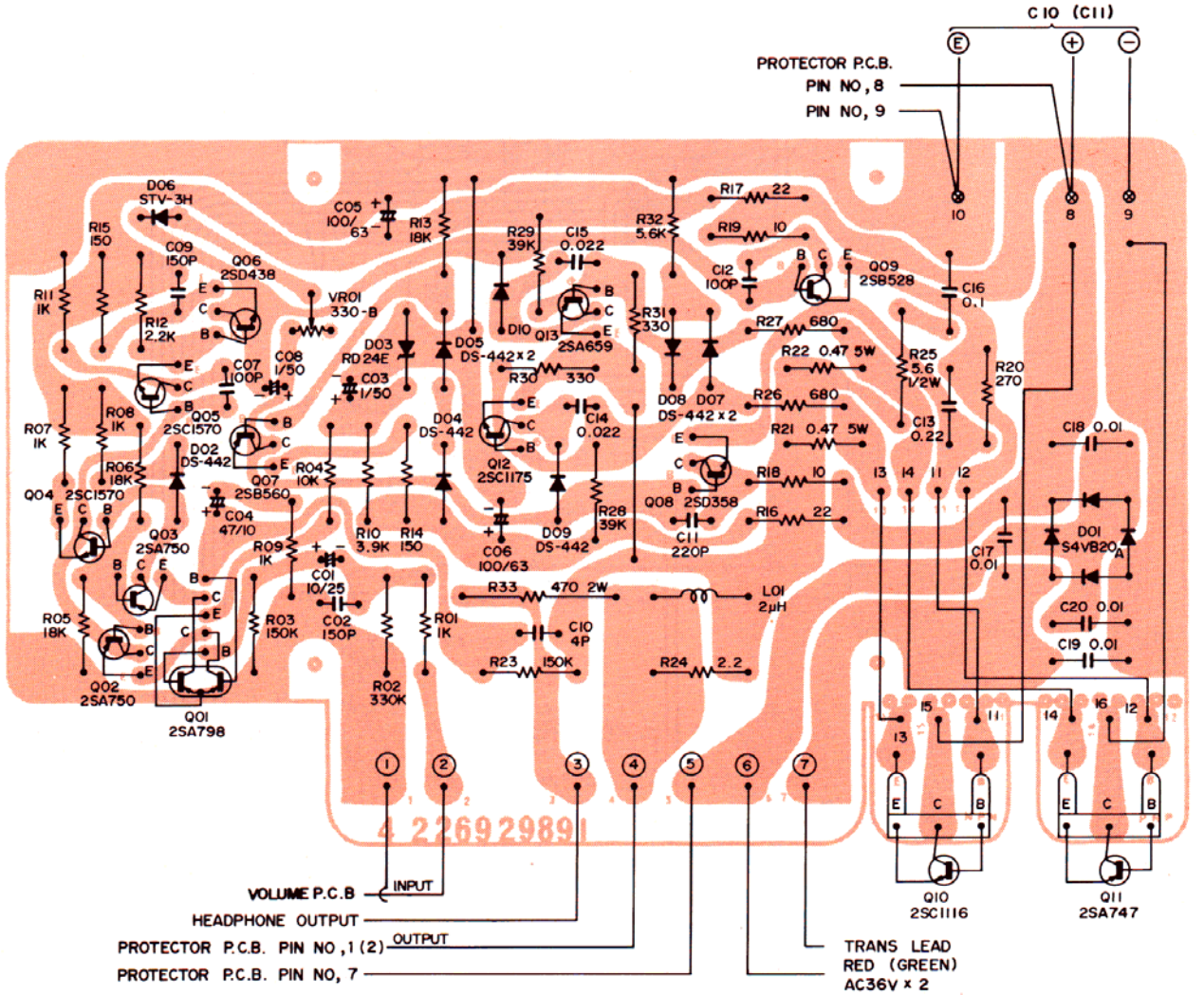
EXPLANATION OF PROTECTIVE CIRCUITS

* For about two seconds after the power switch is turned on, the speakers remain silent because the power muting circuit operates during this time.

* If this unit is operated with speakers of 4 ohm or less, or by being operated to drive two pairs of speakers of 8 ohm or less simultaneously, its power limitter will start to operate.
If under these conditions the volume is raised to a high level the sound from the speakers may be distorted

* If the speaker terminals are short-circuited or the ventilation holes at the cabinet top are blocked during long periods of operation, the internal temperature may rise abnormally. At about 100°C, the thermal sensor (temperature detection) circuit becomes activated and will interrupt the signal. If the cause is removed and the internal temperature is back to normal, the unit automatically resets itself to restore normal operation.

POWER AMP P.C.BOARD



BOTTOM VIEW

SEMICONDUCTORS FRONT VIEW

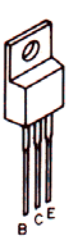
D06 STV-3H

Q06 2SD438
Q07 2SB560

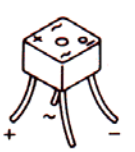
Q02,03 2SA750(1)
Q04,05 2SC1570
Q12 2SC1175
Q13 2SA659

D02,04 DS442
05,07~10
D03 RD-24E

Q09 2SB528
Q08 2SD358



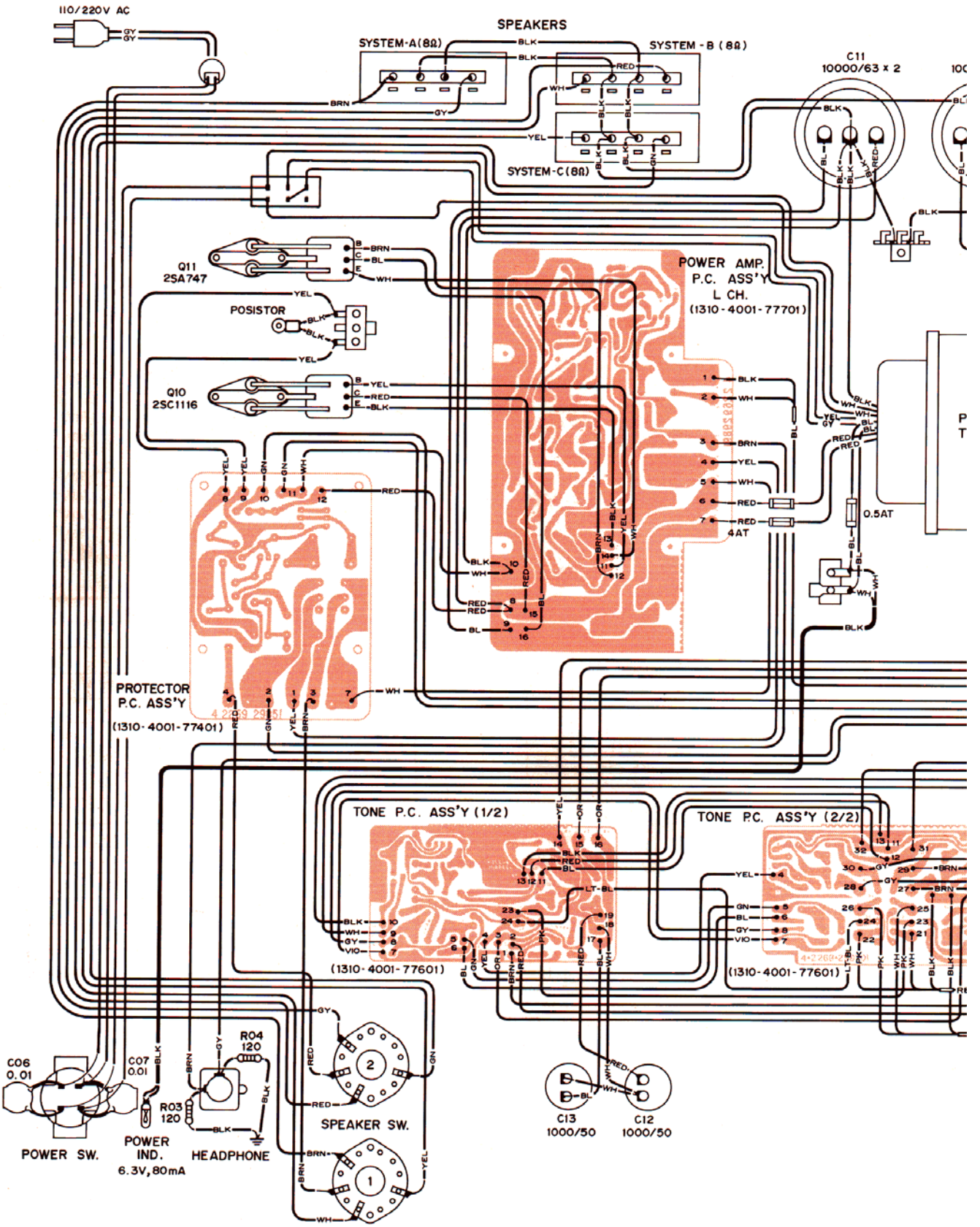
D01 S4VB20



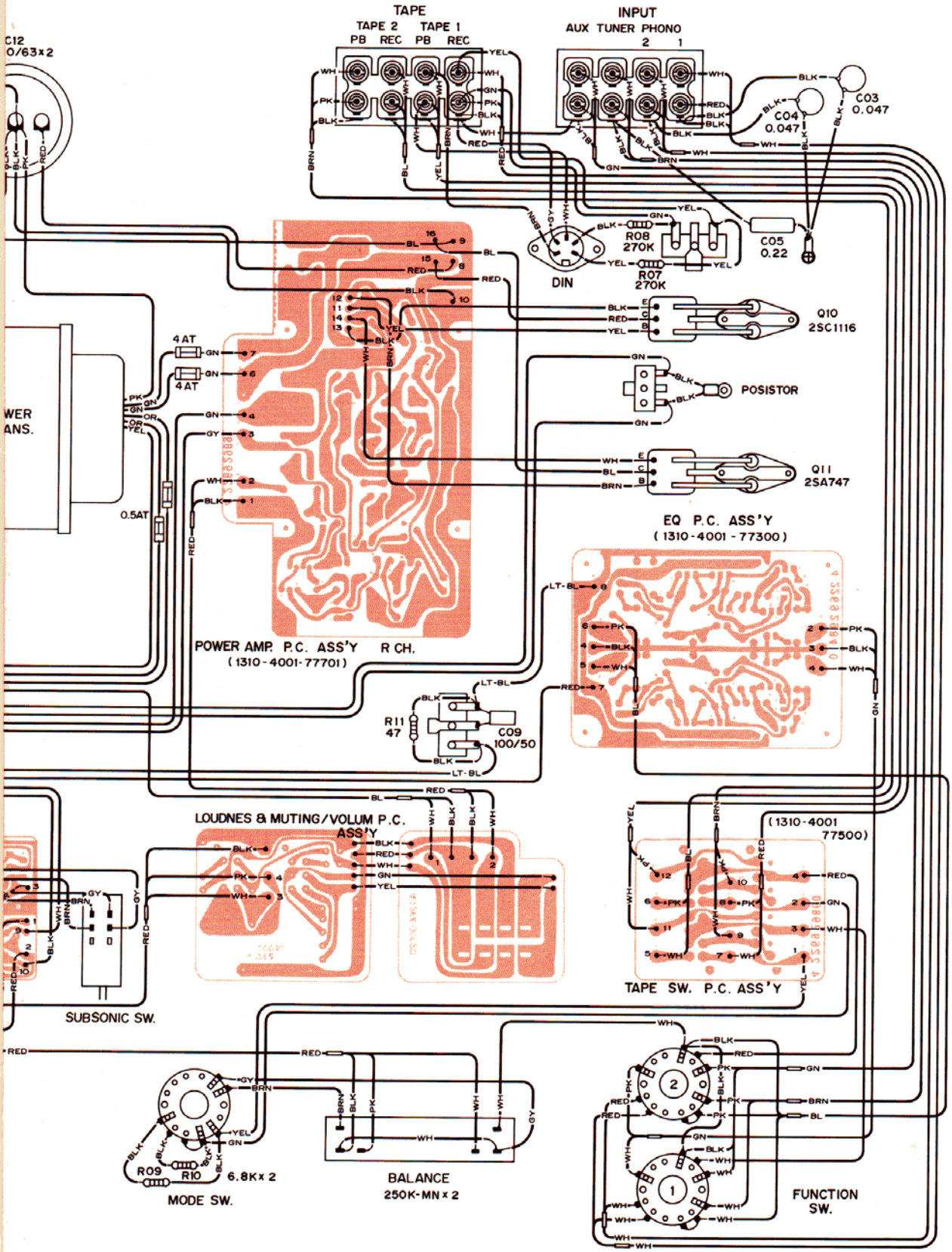
Q01 2SA798

Q11 2SA747
Q10 2SC1116

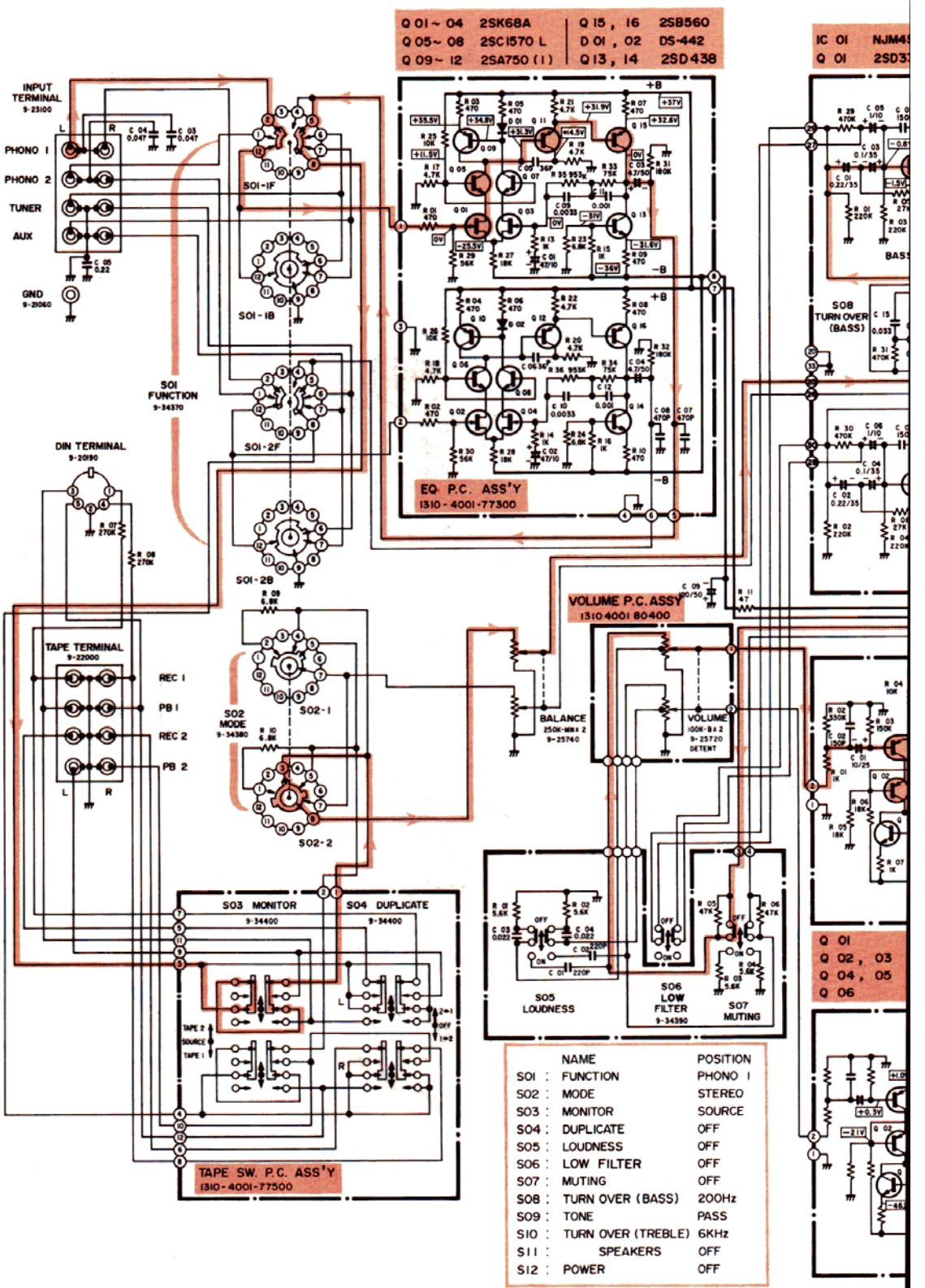
POINT TO POINT V



/IRING DIAGRAM

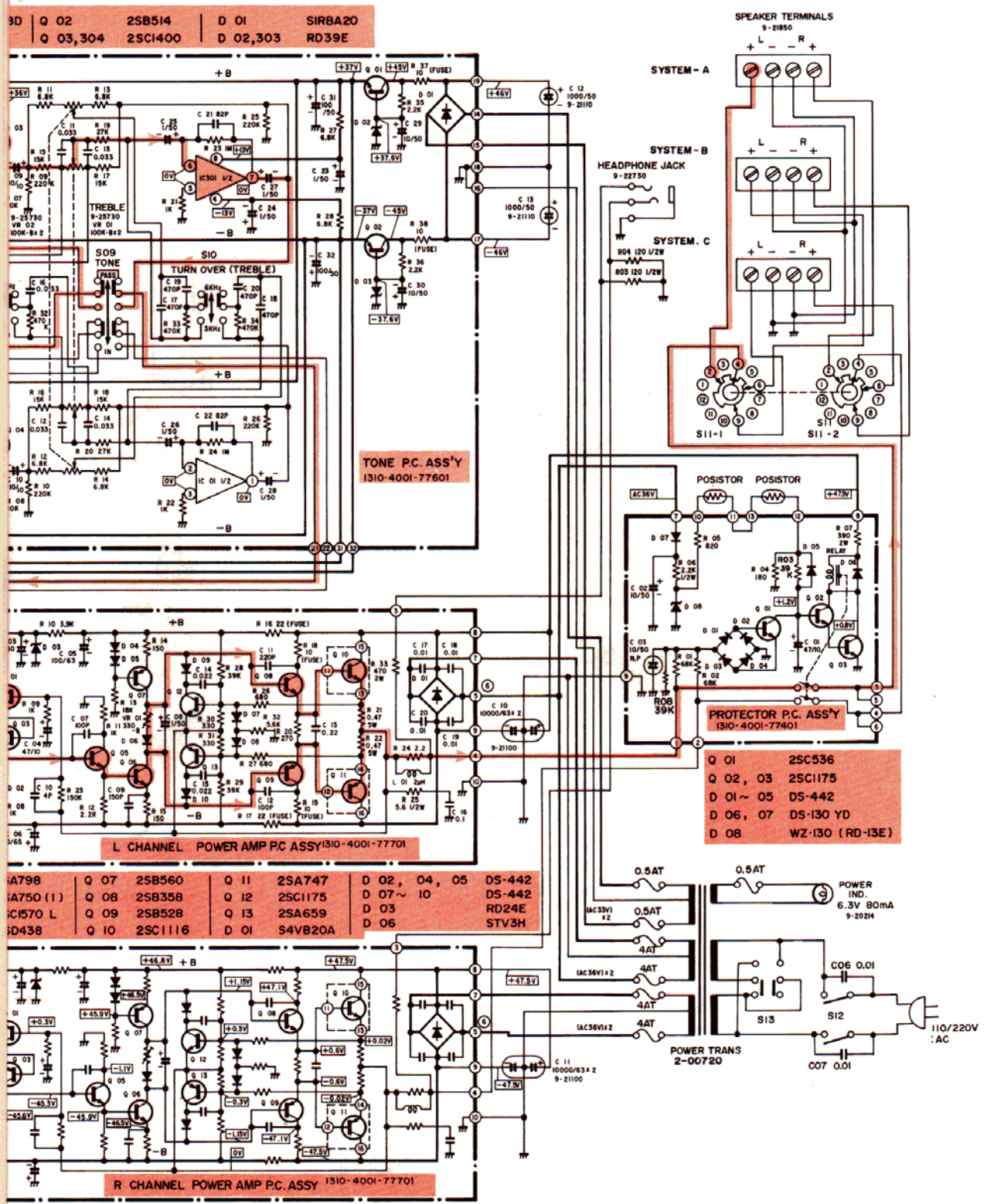


SCHEMAT



	NAME	POSITION
S01 :	FUNCTION	PHONO 1
S02 :	MODE	STEREO
S03 :	MONITOR	SOURCE
S04 :	DUPLICATE	OFF
S05 :	LOUDNESS	OFF
S06 :	LOW FILTER	OFF
S07 :	MUTING	OFF
S08 :	TURN OVER (BASS)	200Hz
S09 :	TONE	PASS
S10 :	TURN OVER (TREBLE)	6KHz
S11 :	SPEAKERS	OFF
S12 :	POWER	OFF

C DIAGRAM


Q 02 2SB514
Q 03,304 2SC1400
D 01 S1RBA20
D 02,303 RD39E
SPEAKER TERMINALS
9-21850
SYSTEM - A
SYSTEM - B
HEADPHONE JACK
9-22730
SYSTEM. C
TREBLE
9-25730
TONE
TURN OVER (TREBLE)
TONE P.C. ASS'Y
1310-4001-77601
POSISTOR
POSISTOR
PROTECTOR P.C. ASS'Y
1310-4001-77401
Q 01 2SC536
Q 02, 03 2SC1175
D 01 ~ 05 DS-442
D 06, 07 DS-130 YD
D 08 WZ-130 (RD-13E)
L CHANNEL POWER AMP P.C ASSY 1310-4001-77701
Q 07 2SB560
Q 08 2SB358
Q 09 2SB528
Q 10 2SC1116
Q 11 2SA747
Q 12 2SC1175
Q 13 2SA659
D 01 S4VB20A
D 02, 04, 05 DS-442
D 07~ 10 DS-442
D 03 RD24E
D 06 STV3H
R CHANNEL POWER AMP P.C. ASSY 1310-4001-77701
POWER IND. 6.3V 80mA
9-20214
POWER TRANS 2-00720
110/220V : AC