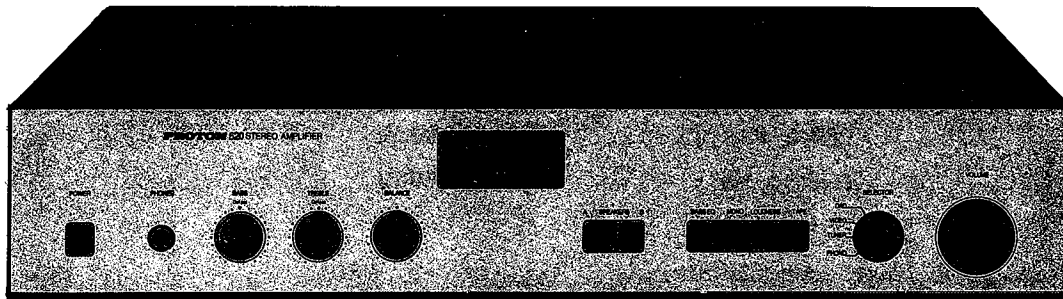


6

Service Manual

PROTON MODEL 520 STEREO AMPLIFIER



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SPECIFICATION

Continuous RMS Power Output per Channel	
at 8 OHM 20-20kHz:	20W
T.H.D. at Rated Power 20W:	0.015%
I.M.D. at Rated Power 20W:	0.015%
Clipping Power at 8 OHM/4 OHM/2 OHM:	27W/36W/40W
Dynamic Power at 8 OHM/4 OHM/2 OHM:	52W/80W/100W
Damping Factor:	90
Frequency Response 20-20kHz:	+/-0.2dB
Power Bandwidth at T.H.D. 1%:	10-60kHz
High Level Input Resistance/Capacitance:	40K OHM/220pF
Line Input Sensitivity (Video):	150mV
(Tape Play):	150mV
(Phono MM):	2.5mV
(Phono MC High/Low):	0.2mV/0.1mV
Residual Noise (flat):	0.4mV
Channel Crosstalk (1kHz):	90dB
Function Crosstalk (1kHz):	80dB
S/N Ratio (Unweighted) (DAD):	90dB
(Tape Play):	90dB
(Phono MM):	80dB
(Phono MC):	68dB
Bass Control @ 100Hz (Boost/cut):	+9/-9dB
Trable Control @ 10kHz (Boost/cut):	+9/-9dB
*Bass EQ @ 75Hz:	+3dB
Loudness @ -30dB (100Hz):	+6dB
(10kHz):	+3dB
Phono Input Resistance (MM/MC):	47K OHM/100 OHM
Phono Input Capacitance (Selectable):	100pF/200pF/320pF
Phono Overload @ T.H.D. 1% MM	
(20Hz/1kHz/20kHz):	28mV/280mV/2.8V
Phono T.H.D. at 4.5V Output (MM):	0.01%
(MC):	0.03%
Riaa Response Accuracy MM/MC:	+/-0.2dB/+/-0.5dB
*For UK Only Bass EQ Button is	
Replaced by Infrasonic Filter	
Turn Over Frequency:	20Hz
Slope:	12dB/oct

ALIGNMENT

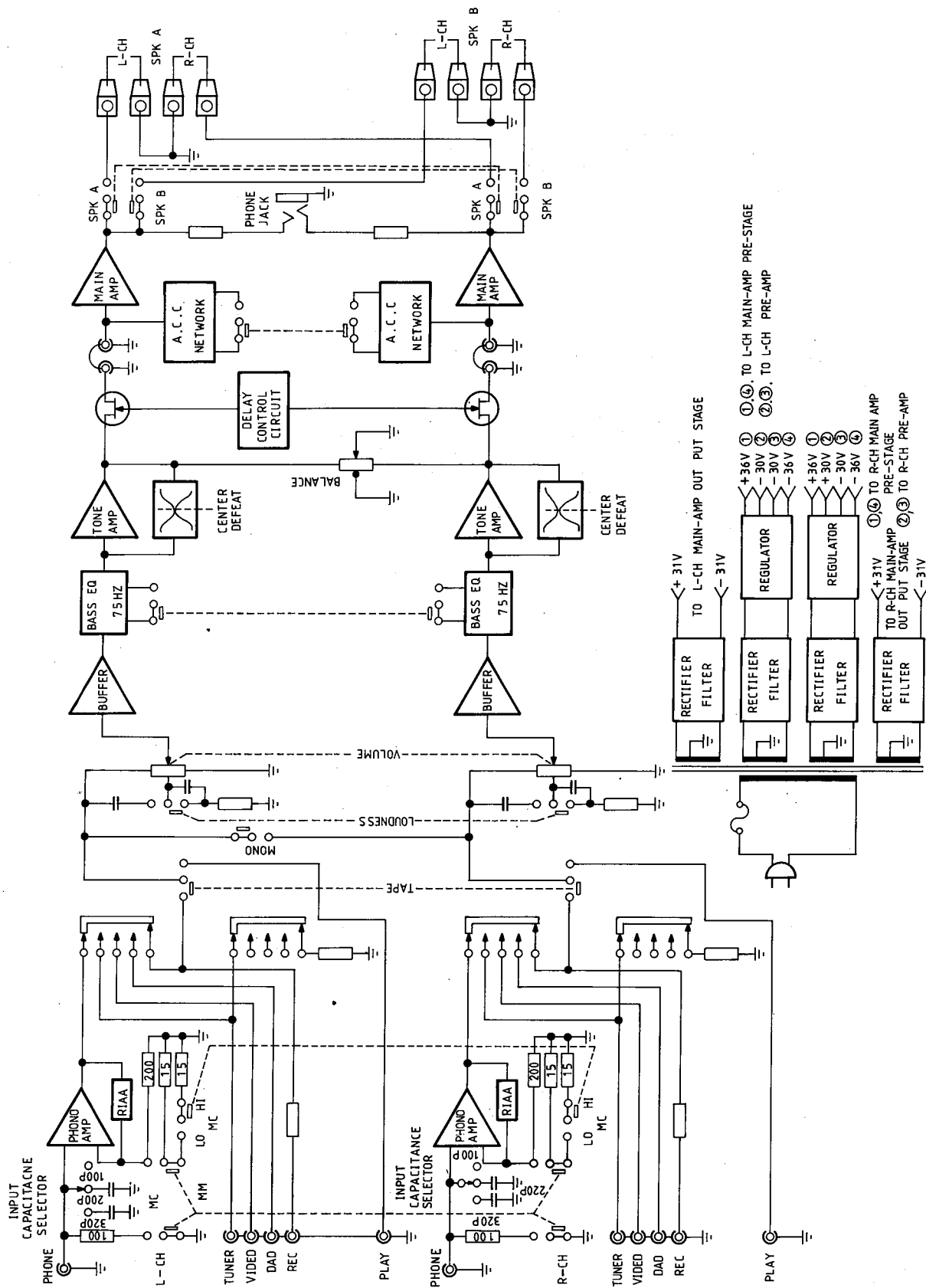
IDLE CURRENT ALIGNMENT

1. Set the volume control at minimum position.
2. Push on POWER for 5 minutes pre-heating.
3. Remove the load from speaker terminals.
4. Connect DC millivolt-meter across R665 for left channel and R666 for right channel. The meter sensitivity should be set at 100mV full scale deflection.
5. Insert 560 OHM carbon resistor to Rx1(left channel) and Rx2 (right channel) paralalled with R657(left channel) and R658 (right channel).
6. After insert 560 OHM, if the reading from meter is between 25mV and 50mV, the alignment is completed.
7. If the reading were less than 25mV. The value of Rx1 or Rx2 should be reduced till the reading is between 25mV and 50mV.
8. If the reading were more than 50mV. The value of Rx1 or Rx2 should be increase till the reading is between 25mV and 50mV.
9. Finally , short the R665(left channel) and the R666(right channel) 1 OHM resistors.

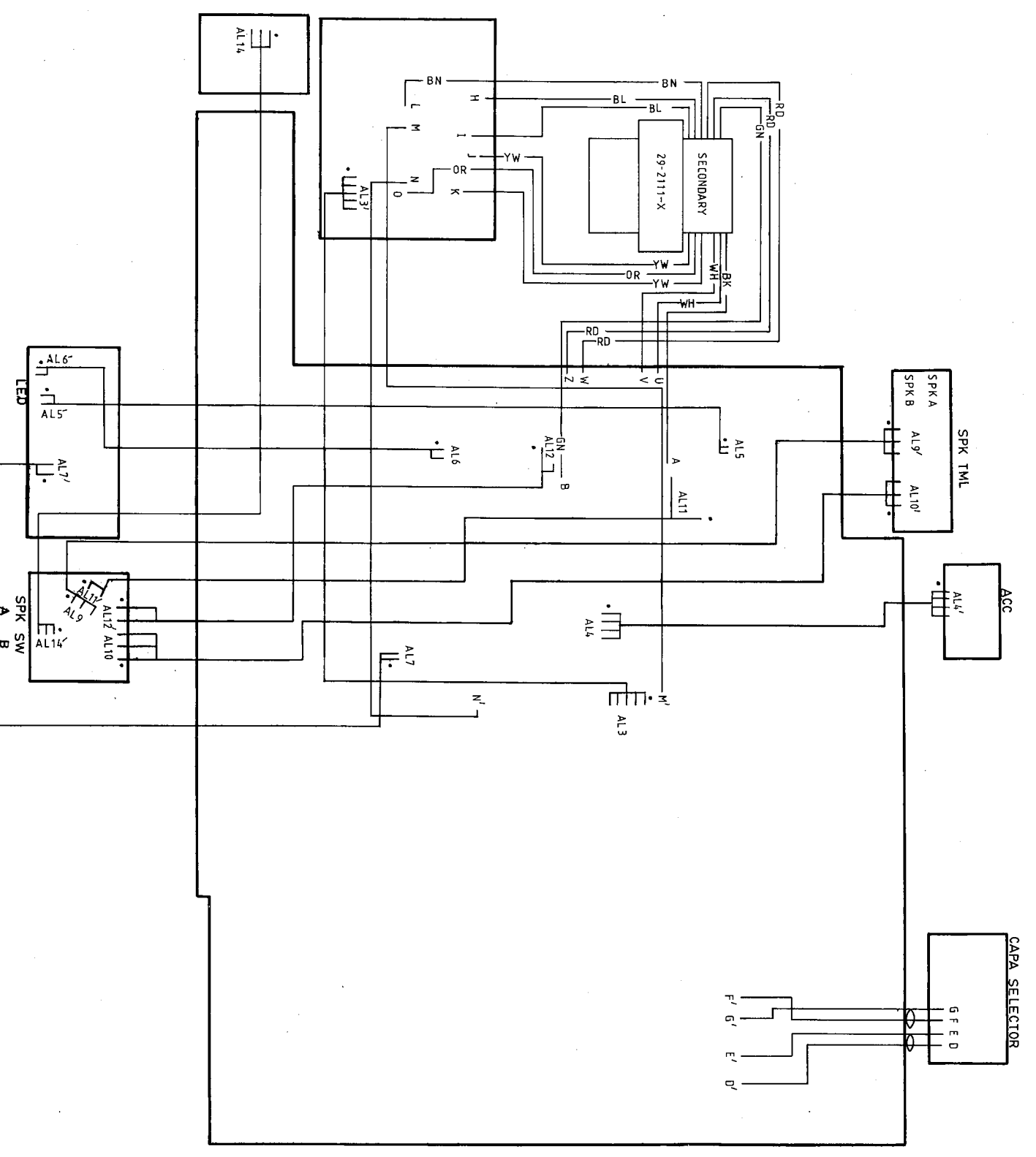
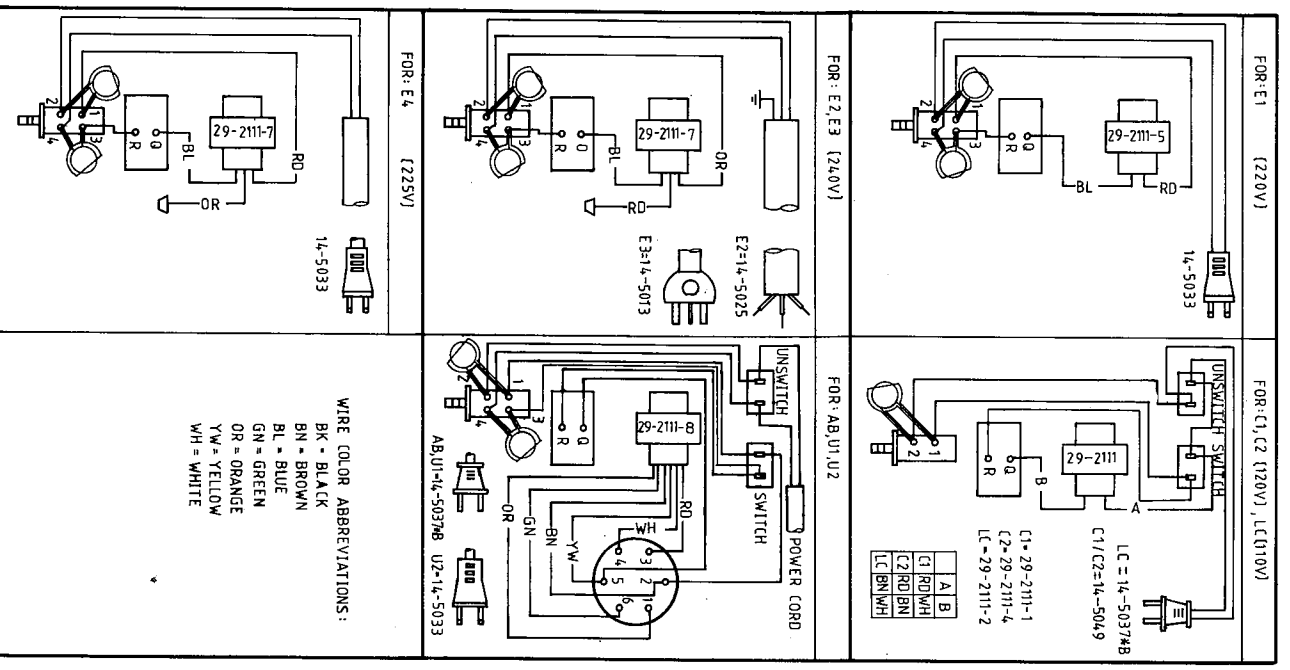
DC OFF-SET ALIGNMENT

1. Set the volume control at minimum position.
2. Push on POWER for 5 minutes pre-hearting.
3. Connect a DC millivolt-meter to speaker terminals of each channel. The meter sensitivity should be set at 100mV full scale deflection. The positive input of the meter should be connected to the red (+) speaker terminal.
4. Adjust VR5(left channel) and VR6(right channel) till the meter reading is zero.

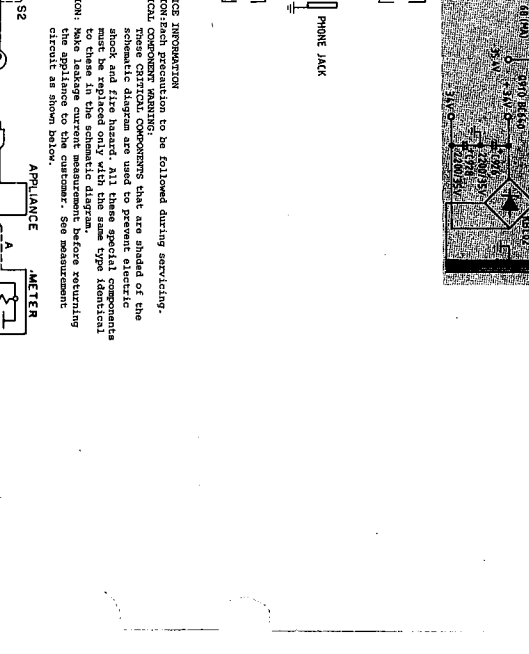
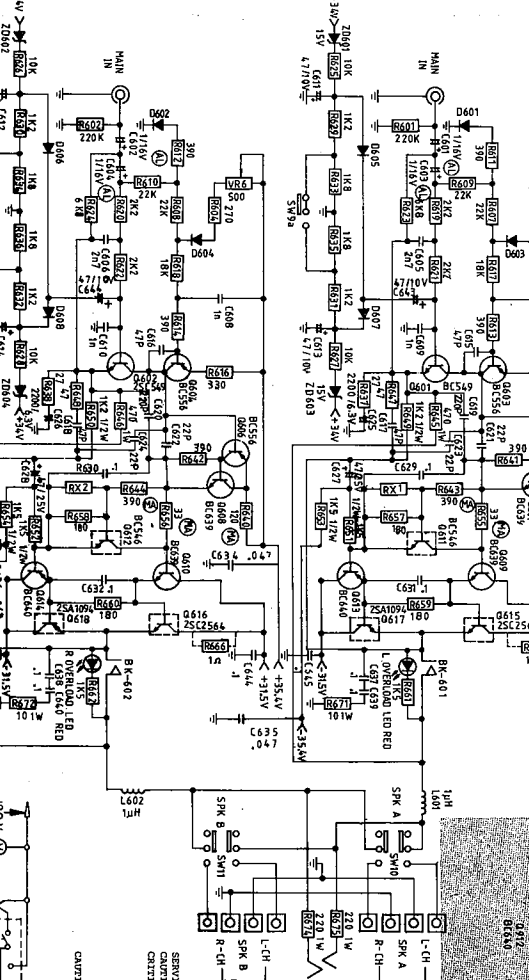
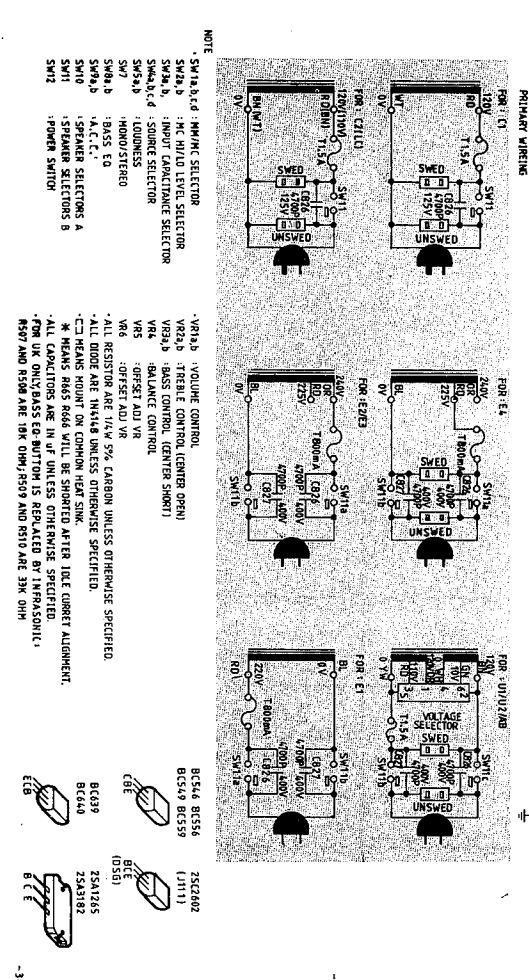
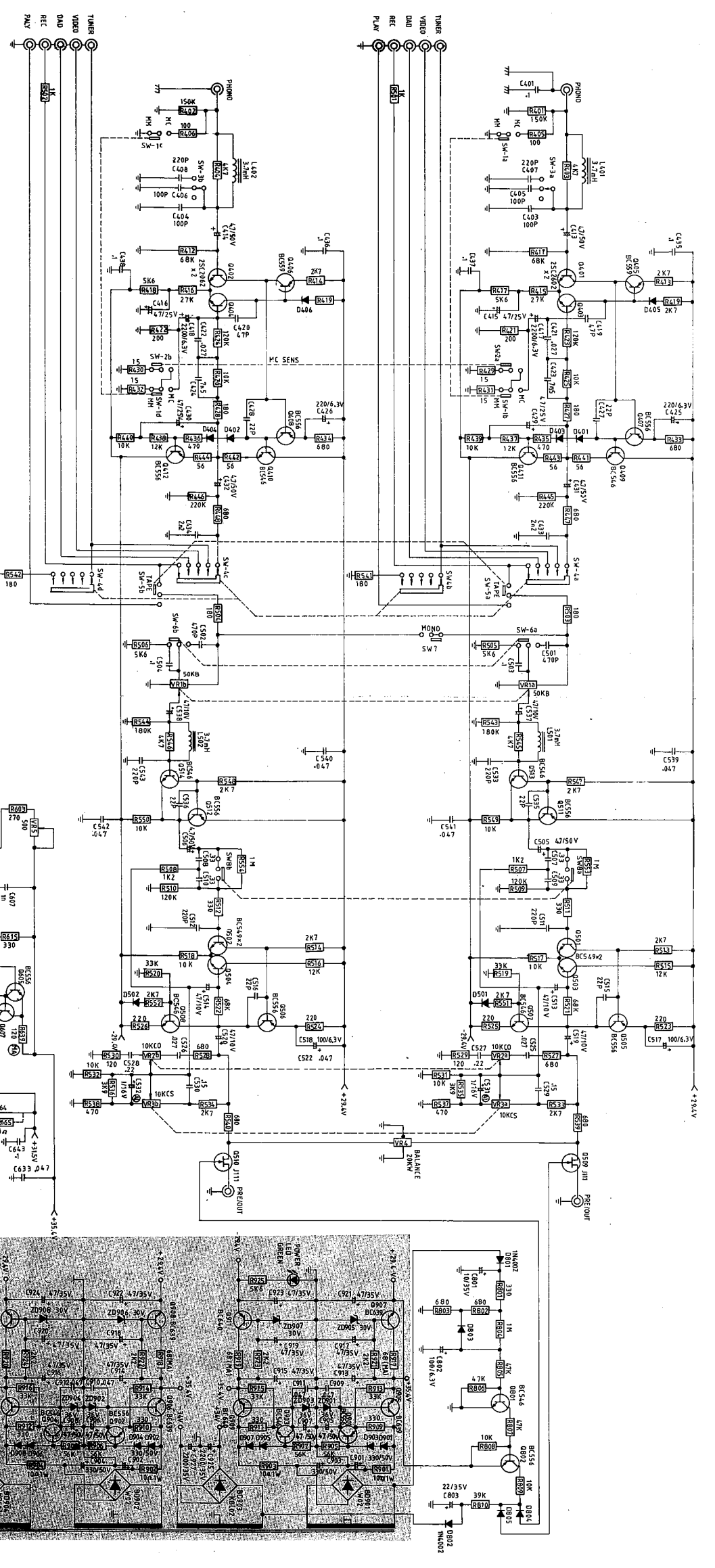
BLOCK DIAGRAM



WIRING DIAGRAM



CIRCUIT DIAGRAM



NOTE:

- SW1A, B, C, D: SWIRING SELECTOR
- SW2A, B: HC HI/LO LEVEL SELECTOR
- SW3A, B: INPUT CAPACITANCE SELECTOR
- SW4A, B: SOURCE SELECTOR
- SW5A, B: TUNING SELECTOR
- SW6: MONITOR SELECTOR
- SW7: BASS CONTROL
- SW8A, B: SPEAKER SELECTORS A
- SW9A, B: SPEAKER SELECTORS B
- SW10: POWER SWITCH

NOTE:

- VR1A, B: VOLUME CONTROL
- VR2A, B: TREBLE CONTROL (CENTER OPEN)
- VR3A, B: BASS CONTROL (CENTER SHORT)
- VR4: BALANCE CONTROL
- VR5: OFFSET ADJ VR
- VR6: OFFSET ADJ VR
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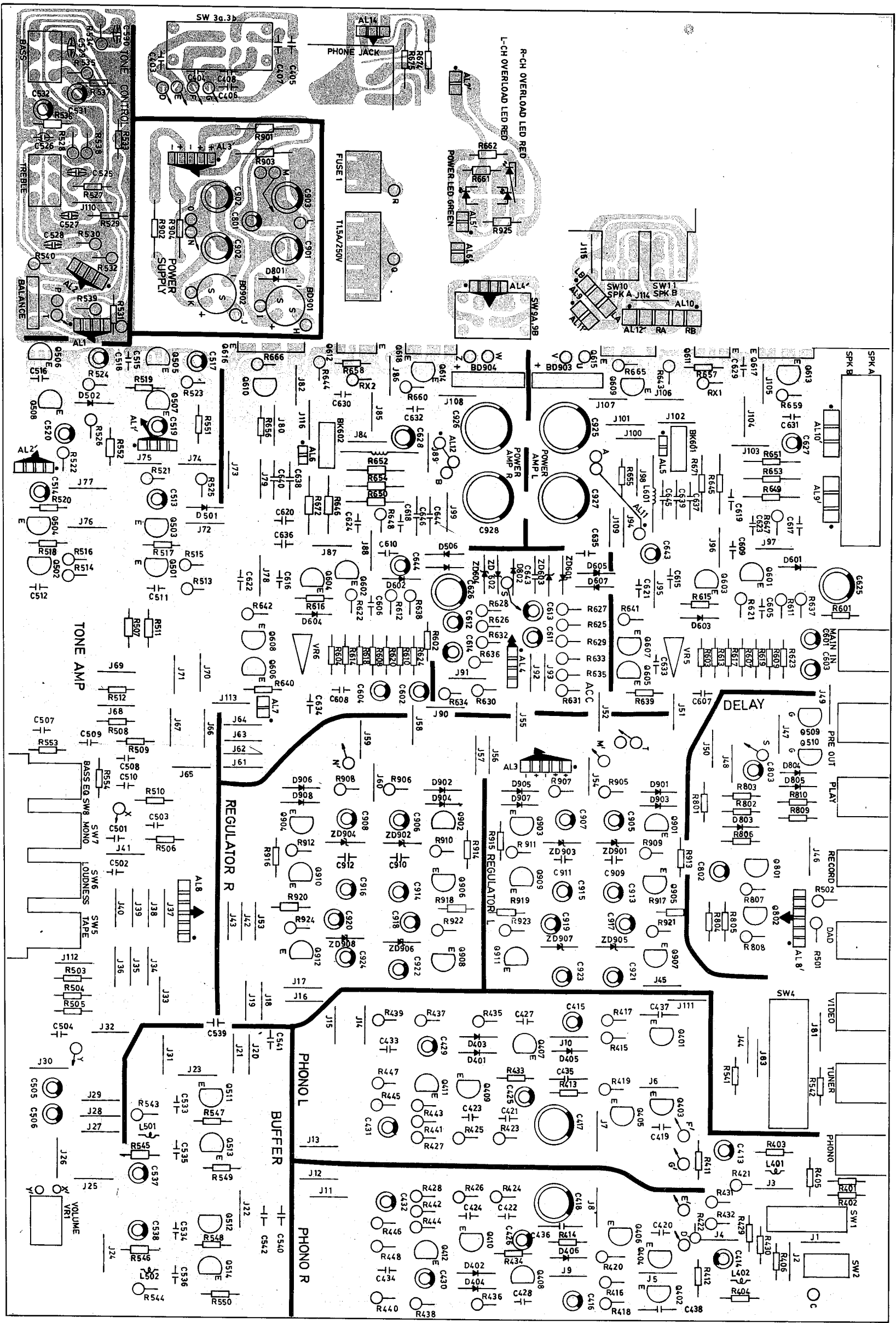
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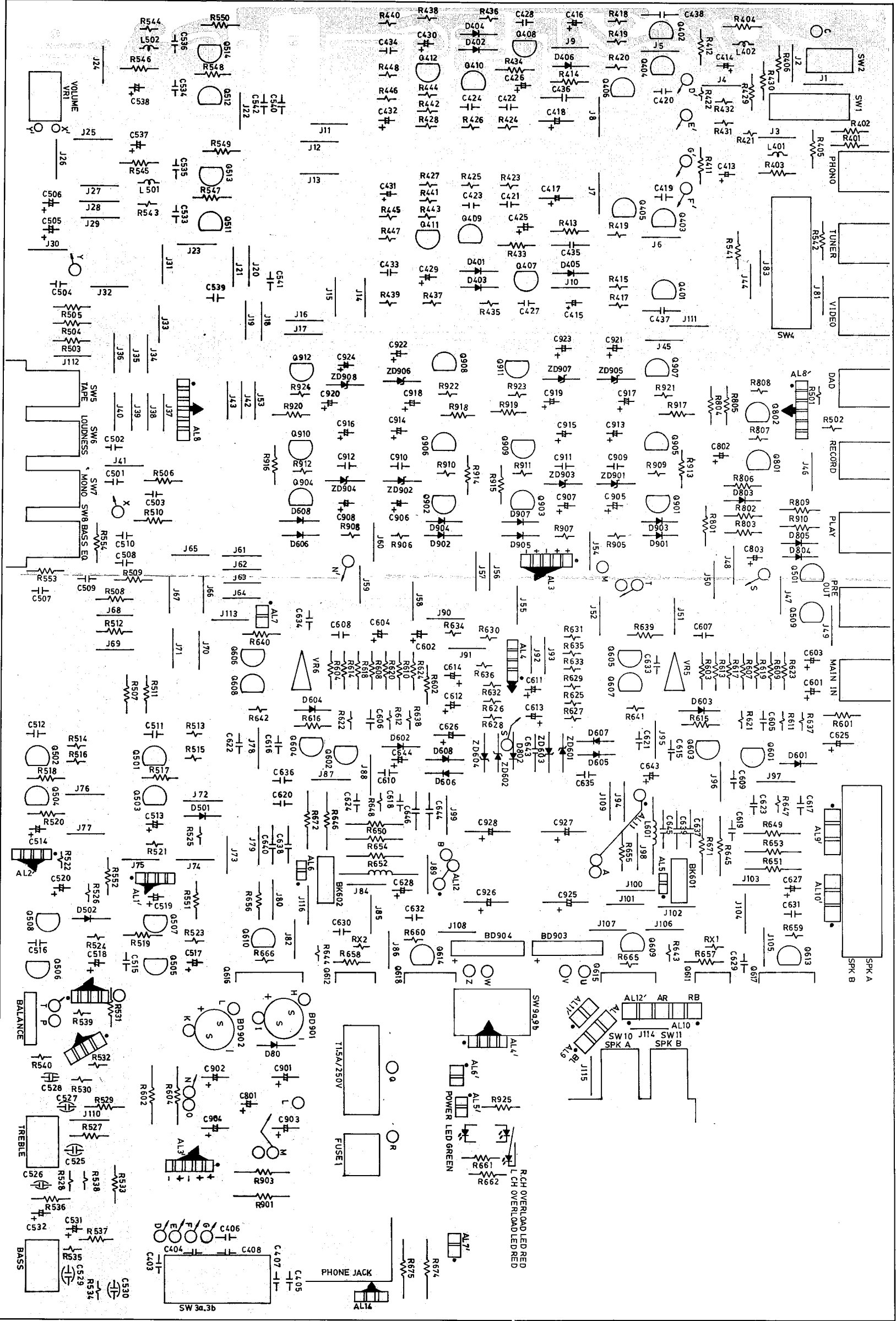
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PCB PARTS LOCATION (TOP VIEW)



PCB PARTS LOCATION (BOTTOM VIEW)



ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
RESISTORS (All are carbon film 1/4W +-5% unless noted otherwise)		
R401-R402	16-1/4CA154J	150K OHM
R403-R404	16-1/4CA472J	4K7 OHM
R405-R406	16-1/4CA101J	100 OHM
R411-R412	16-1/4CA683J	68K OHM
R413-R414	16-1/4CA272J	2K7 OHM
R415-R416	16-1/4CR273J	27K OHM
R417-R418	16-1/4CR562J	5K6 OHM
R419-R420	16-1/4CR272J	2K7 OHM
R421-R422	16-1/4CR201J	200 OHM
R423-R424	16-1/4CR124J	120K OHM
R425-R426	16-1/4CR103J	10K OHM
R427-R428	16-1/4CR181J	180 OHM
R429-R430	16-1/4CA150J	15 OHM
R431-R432	16-1/4CR150J	15 OHM
R433-R434	16-1/4CA681J	680 OHM
R435-R436	16-1/4CR471J	470 OHM
R437-R438	16-1/4CR123J	12K OHM
R439-R440	16-1/4CR103J	10K OHM
R441-R442	16-1/4CR560J	56 OHM
R443-R444	16-1/4CR560J	56 OHM
R445-R446	16-1/4CR224J	220K OHM
R447-R448	16-1/4CR681J	680 OHM
R501-R502	16-1/4CR102J	1K OHM
R503-R504	16-1/4CA181J	180 OHM
R505-R506	16-1/4CA562J	5K6 OHM
*R507-R508	16-1/4CA122J	1K2 OHM
*R509-R510	16-1/4CA124J	120K OHM
R511-R512	16-1/4CA331J	330 OHM
R513-R514	16-1/4CR272J	2K7 OHM
R515-R516	16-1/4CR123J	12K OHM
R517-R518	16-1/4CA103J	10K OHM
R519-R520	16-1/4CA333J	33K OHM
R521-R522	16-1/4CR683J	68K OHM
R523-R524	16-1/4CR221J	220 OHM
R525-R526	16-1/4CR221J	220 OHM
R527	16-1/4CA681J	680 OHM
R528	16-1/4CR681J	680 OHM
R529	16-1/4CA121J	120 OHM
R530	16-1/4CR121J	120 OHM
R531	16-1/4CA103J	10K OHM
R532	16-1/4CR103J	10K OHM
R533	16-1/4CA272J	2K7 OHM
R534	16-1/4CR272J	2K7 OHM
R535	16-1/4CR392J	3K9 OHM
R536	16-1/4CA392J	3K9 OHM
R537	16-1/4CA471J	470 OHM
R538	16-1/4CR471J	470 OHM
R539-R540	16-1/4CR681J	680 OHM
R541-R542	16-1/4CA181J	180 OHM
R543-R544	16-1/4CR184J	180K OHM
R545-R546	16-1/4CA472J	4K7 OHM
R547-R548	16-1/4CA272J	2K7 OHM
R549-R550	16-1/4CA103J	10K OHM
R551-R552	16-1/4CA272J	2K7 OHM
R553-R554	16-1/4CA105J	1M OHM
R601-R602	16-1/4CA224J	220K OHM
R603-R604	16-1/4CA271J	270 OHM
R607-R608	16-1/4CA223J	22K OHM
R609-R610	16-1/4CA223J	22K OHM
R611-R612	16-1/4CR391J	390 OHM
R613-R614	16-1/4CA391J	390 OHM
R615-R616	16-1/4CA331J	330 OHM

REF. NO.	PART NO.	DESCRIPTION
R617-R618	16-1/4CA183J	18K OHM
R619-R620	16-1/4CA222J	2K2 OHM
R621-R622	16-1/4CR222J	2K2 OHM
R623-R624	16-1/4CA682J	6K8 OHM
R625-R626	16-1/4CR103J	10K OHM
R627-R628	16-1/4CR103J	10K OHM
R629-R630	16-1/4CR122J	1K2 OHM
R631-R632	16-1/4CR122J	1K2 OHM
R633-R634	16-1/4CR182J	1K8 OHM
R635-R636	16-1/4CR182J	1K8 OHM
R637-R638	16-1/4CR270J	27 OHM
▲ R639-R640	16-1/4AS121J	1/4W MO 120 OHM
R641-R642	16-1/4CR391J	390 OHM
R643-R644	16-1/4CR391J	390 OHM
▲ R645-R646	16- 1AS471J	1W MO 470 OHM
R647-R648	16-1/4CR470J	47 OHM
R649-R650	16-1/2CS122J	1/2W CARBON 1K2 OHM
R651-R652	16-1/2CS152J	1/2W CARBON 1K5 OHM
R653-R654	16-1/2CS152J	1/2W CARBON 1K5 OHM
▲ R655-R656	16-1/4AS330J	1/4W MO 33 OHM
R657-R658	16-1/4CA181J	180 OHM
R659-R660	16-1/4CR181J	180 OHM
R661-R662	16-1/4CA152J	1K5 OHM
R665-R666	16-1/4CR1R0J	1 OHM
▲ R671-R672	16- 1AS100J	1W MO 10 OHM
▲ R674-R675	16- 1AS221J	1W MO 220 OHM
R801	16-1/4CA331J	330 OHM
R802-R803	16-1/4CA681J	680 OHM
R804	16-1/4CA105J	1M OHM
R805-R806	16-1/4CA473J	47K OHM
R807	16-1/4CR473J	47K OHM
R808	16-1/4CR103J	10K OHM
R809	16-1/4CA103J	10K OHM
R810	16-1/4CA393J	39K OHM
▲ R910-R902	16- 1AS100J	1W MO 10 OHM
▲ R903-R904	16- 1AS100J	1W MO 10 OHM
R905-R906	16-1/4CR563J	56K OHM
R907-R908	16-1/4CR563J	56K OHM
R909-R910	16-1/4CR331J	330 OHM
R911-R912	16-1/4CR331J	330 OHM
R913-R914	16-1/4CA333J	33K OHM
R915-R916	16-1/4CA333J	33K OHM
▲ R917-R918	16-1/4AS680J	1/4W MO 68 OHM
▲ R919-R920	16-1/4AS680J	1/4W MO 68 OHM
R921-R922	16-1/4CR222J	2K2 OHM
R923-R924	16-1/4CR222J	2K2 OHM
CAPACITORS		
C403-C404	17-5DR101M	CERAMIC 100pF 50V +-20%
C405-C406	17-5DR101M	CERAMIC 100pF 50V +-20%
C407-C408	17-5DR221M	CERAMIC 220pF 50V +-20%
C413-C414	17-5ER475Y	ELECTROLYTIC 4.7uF 50V +50-10%
C415-C416	17-2.5ER476Y	ELECTROLYTIC 47uF 25V +50-10%
C417-C418	17-0.63EF228Y	ELECTROLYTIC 2200uF 6.3V +50-10%
C419-C420	17-5DR470M	CERAMIC 47pF 50V +-20%
C421-C422	17-5FR273J	MYLAR 0.027uF 50V +- 5%
C423-C424	17-5FR752J	MYLAR 0.0075uF 50V +- 5%
C425-C426	17-0.63ER227Y	ELECTROLYTIC 220uF 6.3V +50-10%
C427-C428	17-5DR220M	CERAMIC 22pF 50V +-20%
C429-C430	17-2.5ER476Y	ELECTROLYTIC 47uF 25V +50-10%
C431-C432	17-5ER475Y	ELECTROLYTIC 4.7uF 50V +50-10%
C433-C434	17-5FR222J	MYLAR 0.0022uF 50V +- 5%
C435-C436	17-5DH104Z	CERAMIC 0.1uF 50V +80-20%
C437-C438	17-5DH104Z	CERAMIC 0.1uF 50V +80-20%

Note: The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

* FOR UK ONLY, R507-R508 (18K OHM), R509-R510 (33K OHM)

Note: The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

