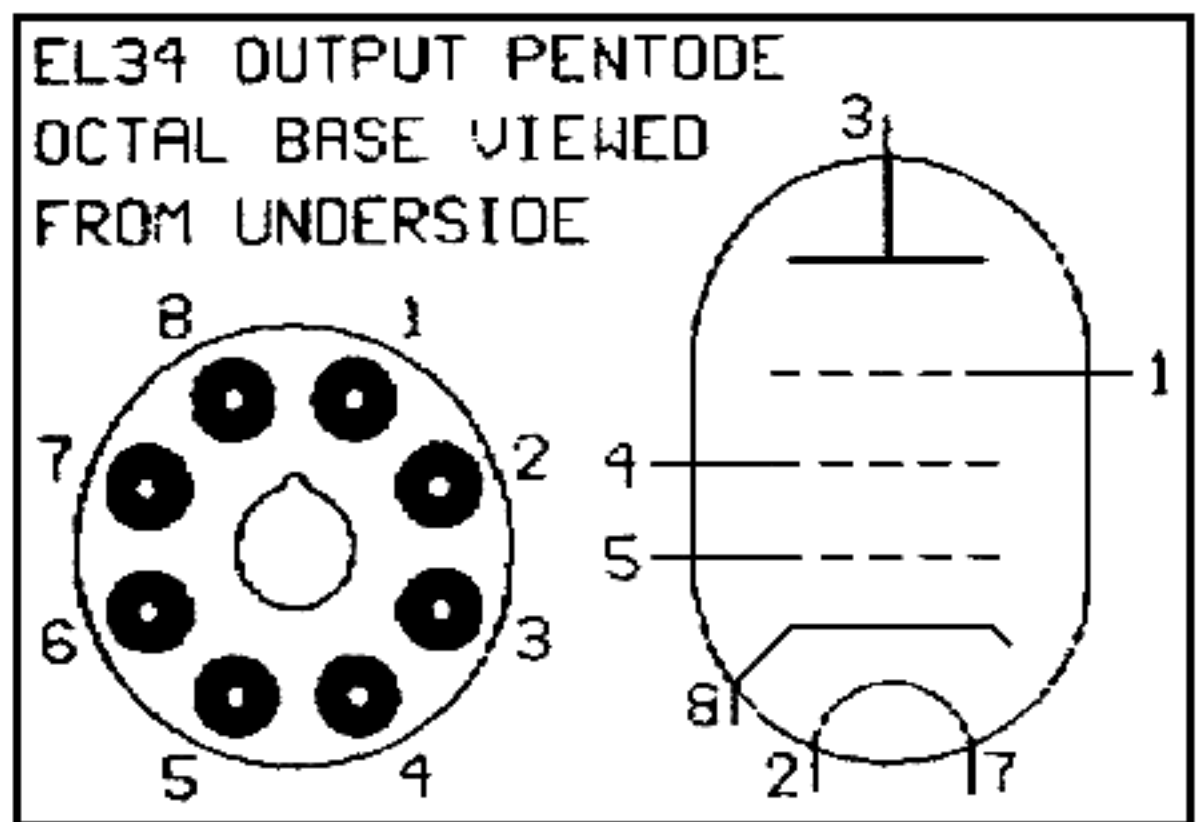


# VOLTAGE MEASUREMENTS AUDIO INNOVATIONS SERIES 700 INTEGRATED AMPLIFIER

- 1 Column A is for 220V & B for 100/110/120/240V product  
 2 Voltages using 20M Ohm input impedance meter  
 3 Voltages should be within +/-15% up to 10 volts, +/-10% between 10 & 250 volts and +/-5% above 250 volts  
 4 All voltages are D.C with respect to GROUND unless otherwise stated

| TEST POINT | Note 1 |     | DC VOLTAGES FOR 25 VOLT PEAK-PEAK AT 8 OHM TERMINAL 1 kHz SINE WAVE 10 OHM LOAD |
|------------|--------|-----|---|
|            | A      | B   |   |
| TP1        | 137    | 144 | 3.5 VOLTS PEAK - PEAK   |
| TP2        | 1.3    | 1.4 |   |
| TP3        | 1.7    | 1.8 |   |
| TP4        | 203    | 214 | 3.5 VOLTS PEAK - PEAK   |
| TP5        | 4.4    | 4.6 |   |
| TP6        | 4.4    | 4.6 |   |
| TP7        | 106    | 112 | 35 VOLTS PEAK - PEAK  |
| TP8        | 106    | 112 | 35 VOLTS PEAK - PEAK  |
| TP9        | 26     | 27  | 13 mV RIPPLE AT 100 Hz (No signal)  |
| TP10       | 26     | 27  | 13 mV RIPPLE AT 100 Hz (No signal)  |
| TP11       | 354    | 372 | 350 VOLTS PEAK - PEAK   |
| TP12       | 354    | 372 | 350 VOLTS PEAK - PEAK   |

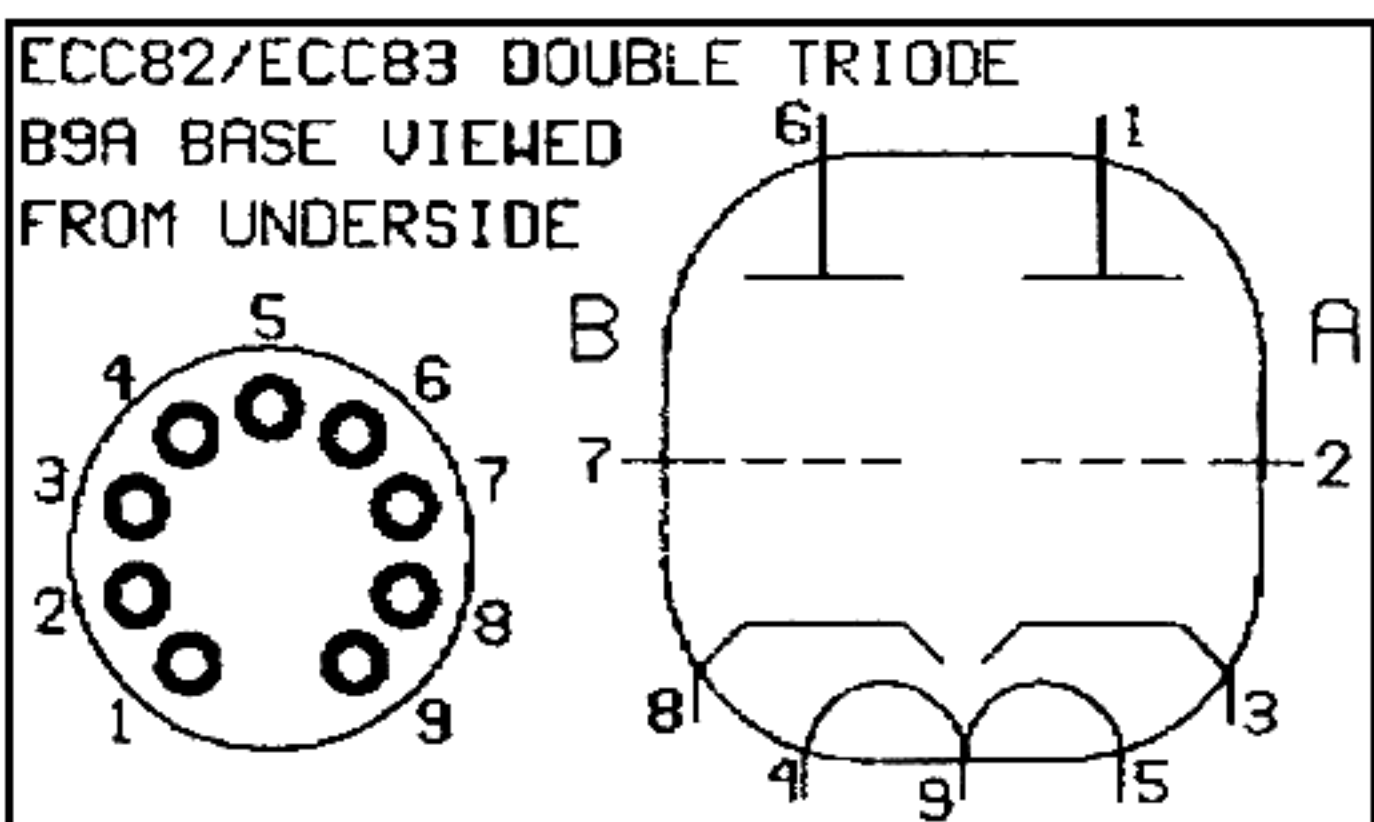
| TEST POINT | Note 1 |     | DC VOLTAGES FOR 25 VOLT PEAK-PEAK AT 8 OHM TERMINAL 1 kHz SINE WAVE 10 OHM LOAD |
|------------|--------|-----|---|
|            | A      | B   |   |
| TP13       | 354    | 373 | 150 VOLTS PEAK - PEAK   |
| TP14       | 354    | 373 | 150 VOLTS PEAK - PEAK   |
| TP15       | 280    | 295 | NEGLIGIBLE RIPPLE   |
| TP16       | 304    | 320 | 10 mV RIPPLE AT 100 Hz  |
| TP17       | 353    | 372 | 800 mV RIPPLE AT 100 Hz   |
| TP18       | 6.0    | 6.3 |   |
| TP19       |        |     | 3.2 VOLTS RMS   |
| TP20       |        |     | 3.2 VOLTS RMS   |
| TP21       |        |     | 3.2 VOLTS RMS   |
| TP22       |        |     | 3.2 VOLTS RMS   |
| TP23       | 364    | 383 | 7 VOLTS RIPPLE AT 100 Hz  |
| W21        |        |     | 500 mV PEAK - PEAK  |



### Hum & Noise

Hum and noise measured at the 8 ohm speaker terminal with shorted input and volume control at maximum should be <3mV

|            |         |            |        |
|------------|---------|------------|--------|
| DRAWN      | CHECKED | DATE       | PAGE   |
| RS         |         | 6/08/93    | 1 of 1 |
| DRAWING NO |         | Z711/09/01 |        |



BILL OF MATERIALS

K40311.PCB

| Quantity | Package      | Value            | Components   |
|----------|--------------|------------------|--|
| 1        | BR 07        | A2010 KBPC804    | BR1  |
| 4        | C A P 15 05  | C1006 100u 100V  | C1,C2,C4,C5  |
| 2        | C A P 15 065 | C2001 33u 350V   | C10,C11  |
| 2        | C A P 20 075 | C1007 4700u 16V  | C12,C13  |
| 8        | C R N 09-011 | C4005 0u47 400V  | C14,C15,C18,C19,C6,C7,C8,C9  |
| 2        | C A N 07 015 | C3010 270p 630V  | C16,C17  |
| 2        | C A P 07 035 | C1005 220u 10V   | C20,C23  |
| 2        | C A N 07 015 | C3003 51p 630V   | C21,C22  |
| 1        | C R N 06 035 | C4016 0u1 250V X | C3   |
| 4        | R 17         | R4016 470R 7W    | R1,R2,R3,R4  |
| 6        | R 07         | R3018 2K2 1W     | R10,R13,R40,R42,R47,R49  |
| 4        | R 07         | R3004 1K0 1W     | R11,R12,R14,R15  |
| 6        | R 07         | R3005 4K7 1W     | R16,R17,R18,R19,R35,R36  |
| 7        | R 07         | R3009 100K 1W    | R20,R21,R24,R25,R26,R27,R9   |
| 1        | R 17         | R4003 4K7 7W     | R22  |
| 1        | R 07         | R3020 10K 1W     | R23  |
| 4        | R 07         | R3007 47K 1W     | R28,R29,R30,R31  |
| 2        | R 07         | R3033 6K8 1W     | R32,R39  |
| 4        | R 07         | R3025 3K3 1W     | R33,R34,R37,R38  |
| 8        | R 07         | R3011 220K 1W    | R41,R44,R45,R48,R5,R6,R7,R8  |
| 2        | R 07         | R3001 100R 1W    | R43,R46  |
| 4        | EL34         | K2047 V/BASE OCT | V1,V2,V3,V4  |
| 5        | ECC83        | K2018 V/BASE B9A | V5,V6,V7,V8,V9   |
| 2        | VR MIN PRE   | R5009 47K PRESET | VR1,VR2  |
| 1        | LAYON        | MAINS Tx YELLOW  | W1   |
| 2        | LAYON        | O/P Tx GREEN     | W10,W12  |
| 2        | LAYON        | O/P Tx BLUE      | W11,W9   |
| 2        | LAYON        | O/P Tx BLACK     | W13,W7   |
| 2        | LAYON        | O/P Tx VIOLET    | W14,W8   |
| 1        | LAYON        | HT +Ve           | W15  |
| 2        | LAYON        | MAINS Tx GREY    | W16,W17  |
| 1        | LAYON        | FEEDBACK L       | W18  |
| 1        | LAYON        | FEEDBACK R       | W19  |
| 1        | LAYON        | MAINS Tx VIOLET  | W2   |
| 1        | LAYON        | I/P LEFT HOT     | W20  |
| 1        | LAYON        | I/P RIGHT HOT    | W21  |
| 1        | LAYON        | I/P COM GND      | W22  |
| 1        | LAYON        | EARTH GRN/YELLOW | W3   |
| 1        | LAYON        | GROUND BLACK     | W4   |
| 1        | LAYON        | MAINS Tx WHITE   | W5   |
| 1        | LAYON        | MAINS Tx GREEN   | W6   |
| 20       | SOLDER       |                  |  |
| 5        | CORNER       |                  |  |
| 9        | BEAD         |                  |  |
| 1        | SOLDERT      |                  |  |
| 1        | BEADB        |                  |  |
| 1        | BEADT        |                  |  |
| 1        | BEADR        |                  |  |
| 1        | LINK 07      |                  | L1   |
| 22       | PIN VIA      |                  | P1,P10,P11,P12,P13,P14,P15,<br>P16,P17,P18,P19,P2,P20,P21,<br>P22,P3,P4,P5,P6,P7,P8,P9 |

# Audio Innovations Series 700

Audio Components Ltd, Albany Court, Albany Road, Granby Industrial Estate, Weymouth, Dorset DT4 9TH. Tel: 0305 761 017



**A**rchaic valve amplifiers have long been partnered with modern digital gear to good effect. This works particularly well as, on the whole, glowing bottles are better able to deal with the RF interference generated by CD players than their transistorised counterparts. So what, in this day and age, could be more appropriate than a line-only valve amp?

In practice the *Series 700* is a derivative of the *Series 500*, sharing the same wacky styling of enclosed mains and output transformers with a semi-circle of valves exposed to the front. Therefore, handle with care and store well away from inquisitive little fingers.

The *Series 700* also matches the *500's* pricetag but has sacrificed the vinyl disc stage to concentrate on improvements in the execution of the power amp. Separate ECC83 drivers and phase-splitters are employed, just as the two 'phases' are level-matched, in order to keep distortion in hand.

Add to this an ECC82 double-triode and EL34 pentode output stage (in the classic ultralinear configuration) and you've got the measure of this intriguing amp.

## Lab report

Compared with previous efforts from the Al stable (see issues 63, 77, 97 and 109) the *Series 700's* technical performance is merely appalling. The 1.5ohm output impedance is particularly gruesome while its power output and dynamic headroom are even worse. If only the damn thing didn't sound so good!

It will furnish a heady 23-24W at 1kHz, for example, though distortion climbs just as power fades at the frequency extremes. So at 20Hz the 80hm delivery rises from 5.5W to just 8.6W for an increase to three per cent THD, while its current rating (via the 40hm tap) increases from 2.9A at one per cent THD, to 4.5A at three per cent THD and 4.7A with a thumping five per cent distortion.

On the whole, however, this distortion is composed of a smooth series of 2nd, 3rd, 4th and 5th harmonics that finally die away at the outer limits of the spectrum. Intermodulation distortion is similarly bold but also clearly defined with nothing save 2nd and 3rd order components sneaking into the audio band (see 3D plot).

## Sound quality

An understated and graceful sounding amplifier 'oozing both pedigree and class', according to our panel. A wealth of atmospheric detail now surrounded the jazz sax, just as the accompanying cymbals stood out clearly without appearing bright. Furthermore, during the bass solo the pianist could now be heard 'twiddling his thumbs and striking the odd key in the background'.

Subtle and ambient distractions of this nature ensured the *Series 700* was consistently entertaining. Tonally it was judged neutral, indeed the piano from Prokofiev's *Romeo and Juliet* sounded as rich, vivid and natural as we could have wished. More importantly these complex recordings were now mercifully free of the congestion that had plagued lesser amps.

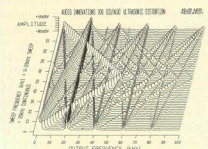
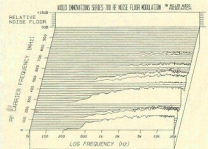
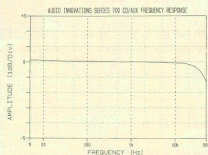
Our listeners' applause continued in a similar vein through the Jennifer Warnes track where the resonance of her bass guitar acquired an almost 'elastic' quality. Switching from the 40hm to the 80hm tap brought about a general softening, however, whereupon both the bass line and male harmonies were described as 'splodgy'.

## Conclusion

Midnight oil still needs to be burned on technical and safety grounds, yet Audio Innovations has succeeded in maintaining its reputation for fine sound quality. Just stick with very sensitive, easy going loudspeakers and the *Series 700* will provide rich rewards with music that's clean, nimble and utterly charming.

## TEST RESULTS

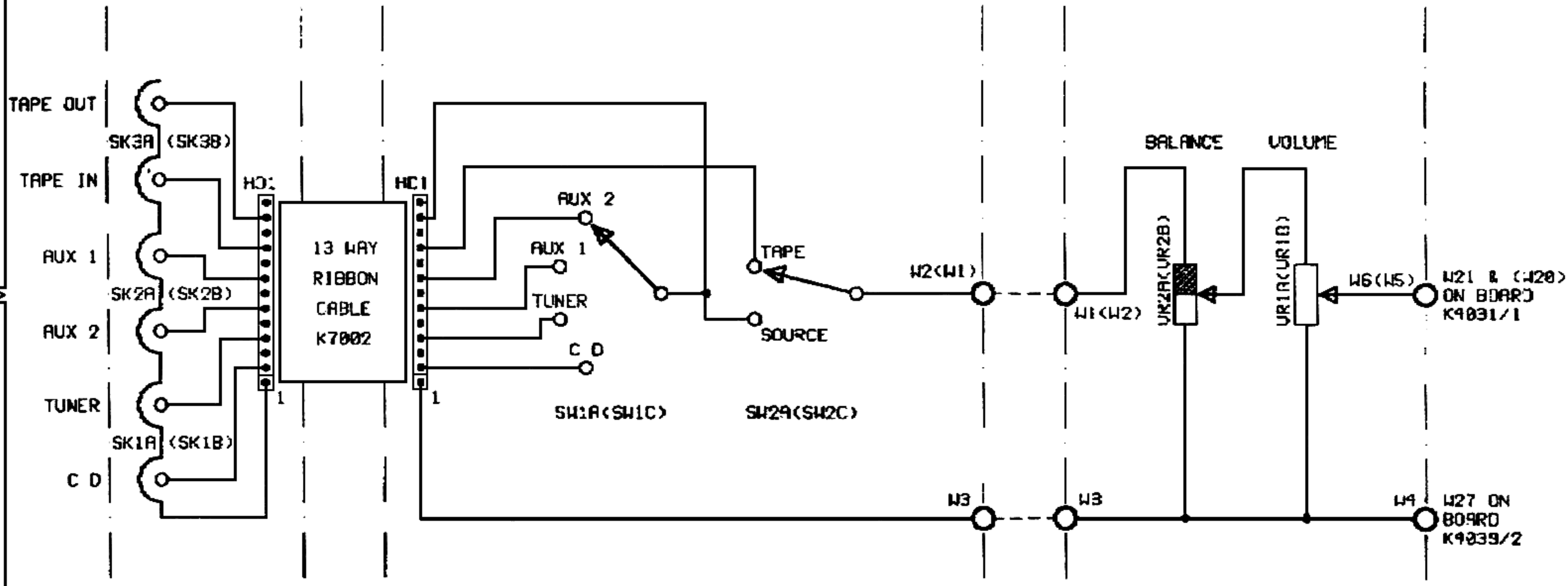
|   | 20Hz | 1kHz         | 20kHz         |
|---|------|--------------|---------------|
| <b>Maximum Continuous Power Output</b>        |      |              |               |
| 80hms   | 5.5W | 23.6W        | 7.0W          |
| 40hms   | 5.5W | 23.3W        | 5.2W          |
| <b>Dynamic Headroom (IHF) +0.54dB (26.7W)</b> |      |              |               |
| <b>Peak Current (5msec, 1% THD)</b>           |      | +2.9A        |               |
| <b>Output Impedance</b>                       |      | 1.53ohm      |               |
| <b>Damping Factor</b>                         |      | 5.2          |               |
|   |      |              | <b>CD/Aux</b> |
| <b>Stereo Separation</b>                      |      |              |               |
| (1kHz)  |      | 57.8dB       |               |
| (20kHz)                                       |      | 43.2dB       |               |
| <b>Channel Balance</b>                        |      |              |               |
| (1kHz, -20dBV)                                |      | 0.34dB       |               |
| (-50dBV)                                      |      | 3.02dB       |               |
| <b>Total Harmonic Dist.</b>                   |      |              |               |
| (0dBW)  |      | -66.7dB      |               |
| (2/3 power)                                   |      | -53.8dB      |               |
| <b>CCIR Intermod. Dist.</b>                   |      |              |               |
| (0dBW)  |      | -64.1dB      |               |
| (2/3 power)                                   |      | -50.4dB      |               |
| <b>A wide Noise</b>                           |      |              |               |
| (0dBW)  |      | -85.7dB      |               |
| (2/3 power)                                   |      | -92.1dB      |               |
| <b>Residual noise</b>                         |      |              |               |
| (unwtd)                                       |      | -71.4dBV     |               |
| <b>Input Sensitivity</b>                      |      |              |               |
| (for 0dBW)                                    |      | 57.1mV       |               |
| (for full output)                             |      | 293mV        |               |
| <b>Line Overload</b>                          |      |              |               |
| (1kHz)  |      | >15V         |               |
| (20kHz)                                       |      | >15V         |               |
| (50kHz)                                       |      | >15V         |               |
| <b>Tap Output Impedance</b>                   |      |              |               |
| As source / as source                         |      |              |               |
| Input loading                                 |      | 47kohm/100pF |               |
| <b>DC offset, left/right</b>                  |      | 0mV/0mV      |               |
| <b>Retail Price</b>                           |      | £999         |               |



CIRCUIT BOARD K4032/1

CIRCUIT BOARD K4033/2

CIRCUIT BOARD K4042/1



**NOTES**

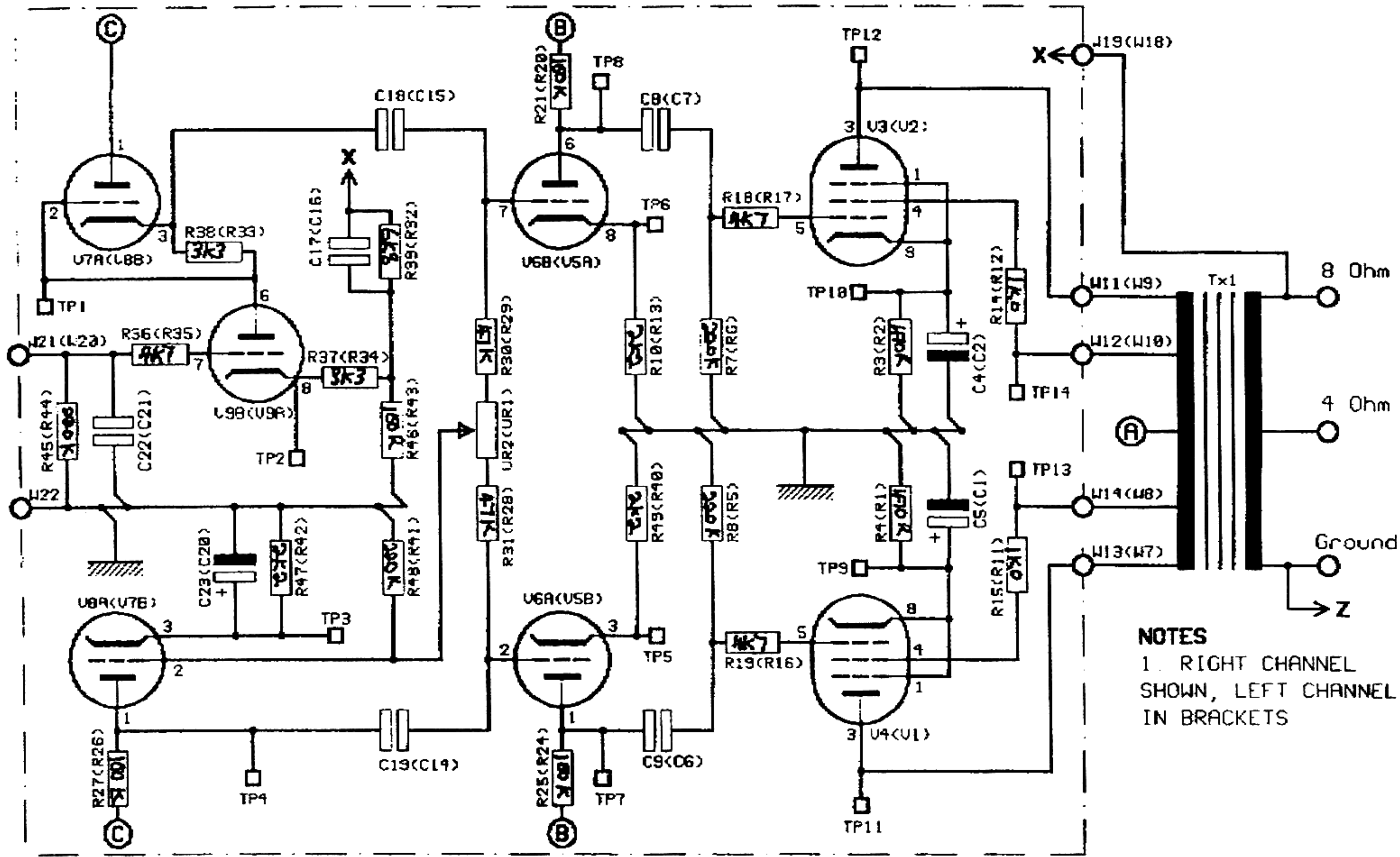
- 1. RIGHT CHANNEL SHOWN  
LEFT CHANNEL IN BRACKETS

**AUDIO COMPONENTS LTD ©**

TITLE  
S700 Integrated  
Circuit Diagram  
Input Circuit

|                    |         |                   |                |
|--------------------|---------|-------------------|----------------|
| DRAWN<br><b>RS</b> | CHECKED | DATE<br>4/08/93   | PAGE<br>1 of 3 |
| DRAWING NO         |         | <b>Z711/06/01</b> |                |





**NOTES**  
 1. RIGHT CHANNEL SHOWN, LEFT CHANNEL IN BRACKETS

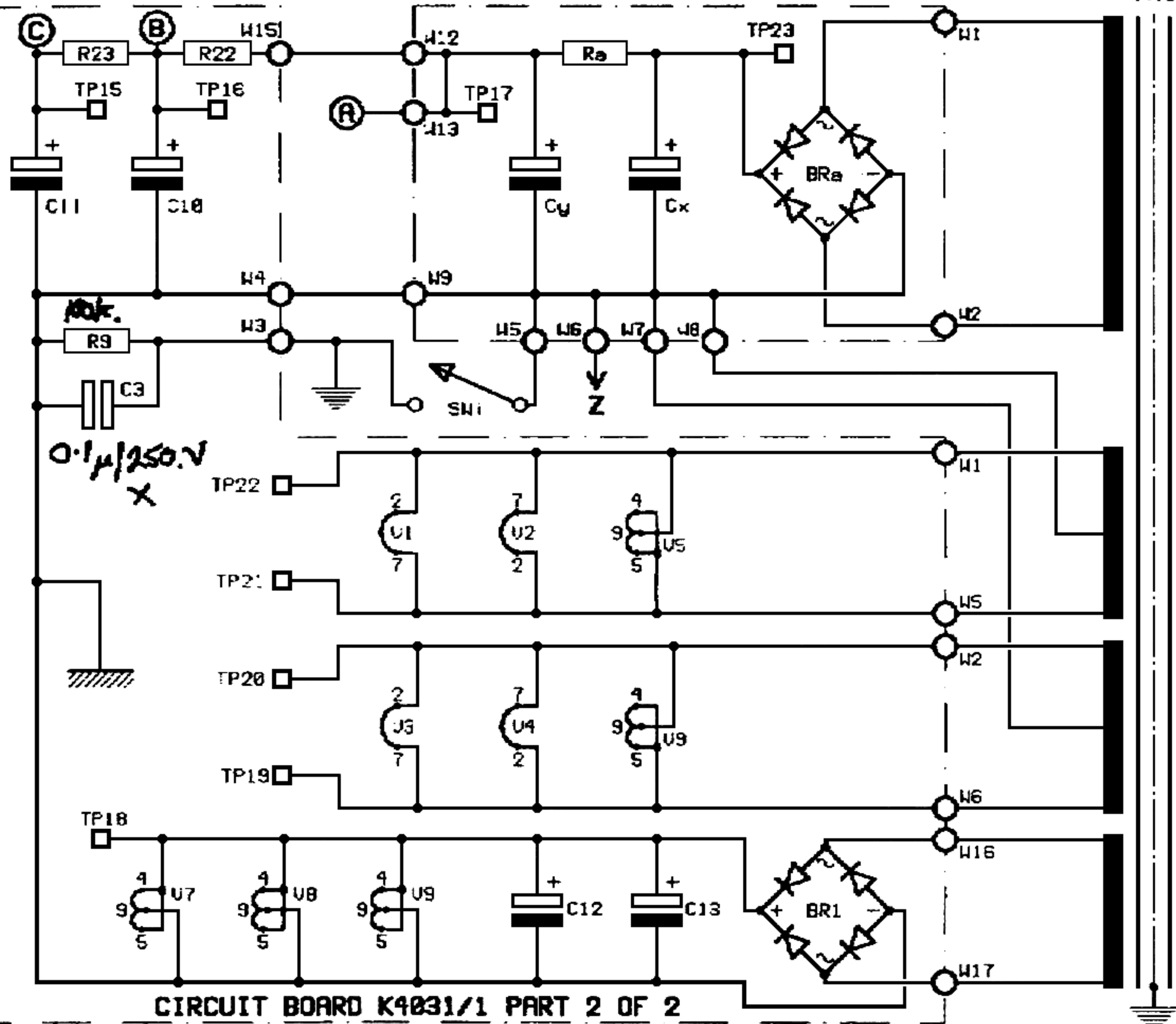
CIRCUIT BOARD K4031/1 PART 1 OF 2

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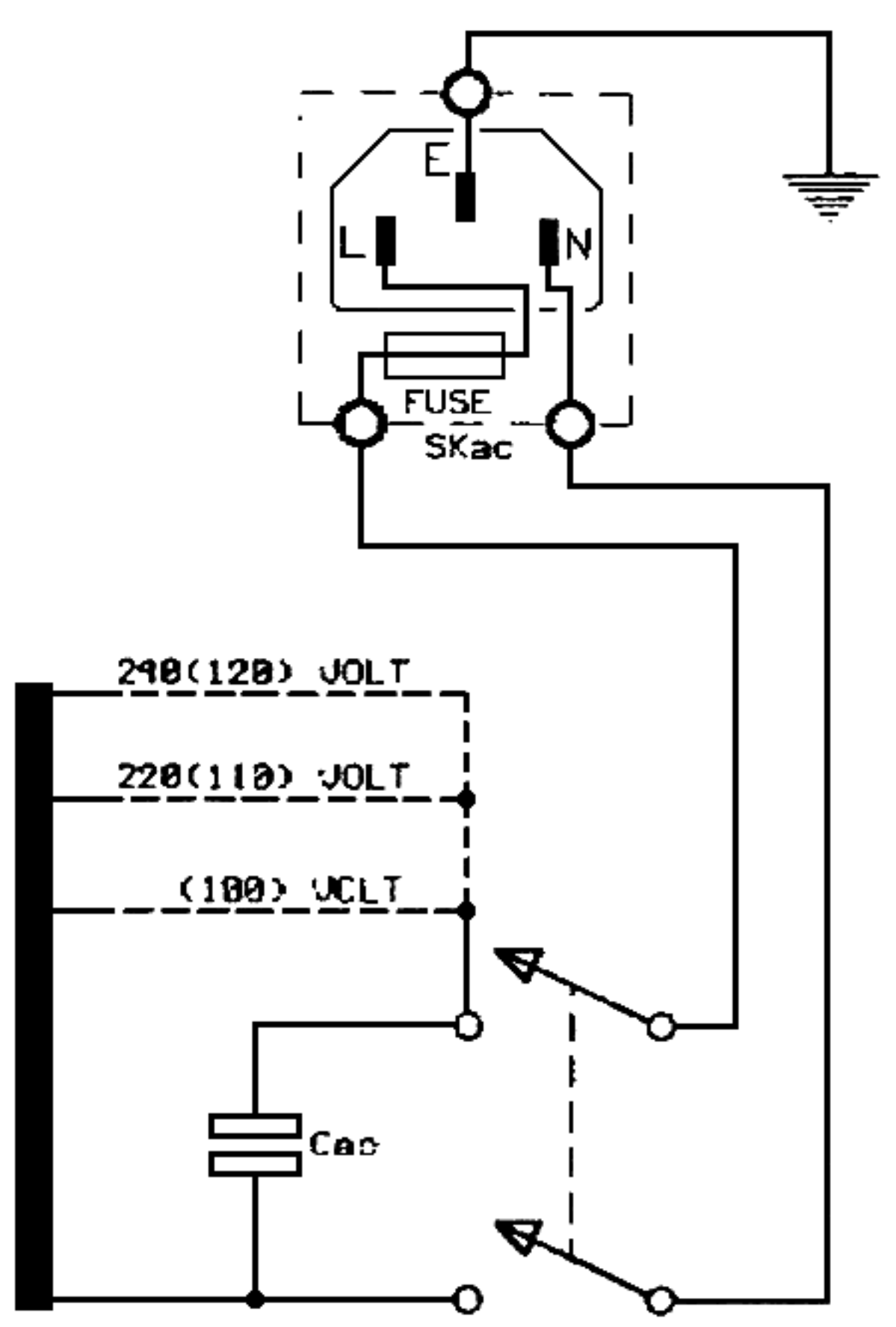
TITLE  
 S700 Integrated  
 Circuit Diagram  
 Main Amplifier

|                    |         |                   |                |
|--------------------|---------|-------------------|----------------|
| DRAWN<br><b>RS</b> | CHECKED | DATE<br>4/08/93   | PAGE<br>2 of 3 |
| DRAWING NO         |         | <b>Z711/07/01</b> |                |

CIRCUIT BOARD K4026/1



CIRCUIT BOARD K4031/1 PART 2 OF 2



- NOTES**
- 1 220/240 VOLT TRANSFORMER A6000/2
  - 2 (100/110/120)VOLT TRANSFORMER A6016/2

AUDIO COMPONENTS LTD ©

TITLE  
S700 Integrated  
Circuit Diagram  
Power Supply

|                    |         |                   |                |
|--------------------|---------|-------------------|----------------|
| DRAWN<br><b>RS</b> | CHECKED | DATE<br>5/08/93   | PAGE<br>3 of 3 |
| DRAWING NO         |         | <b>Z711/08/01</b> |                |