



## Electrical adjustments for the TCD 340A

### General

Before adjusting, the tape path must be cleaned and demagnetized. It is necessary that the tape path is correctly adjusted, consult the service manual for the TCD 330, part No. 714021.

Carry out the adjustments in the order described because the adjustments affect each other. Remove the top panel, base panel, and right side panel.

### Equipment required

- 2 volt meters
- Audio signal generator
- Frequency counter
- Distortion meter
- Wow and flutter meter
- Tandberg test cassettes
  - No. 21 (Speed check, 1000 Hz)
  - No. 22 (Wow and flutter check, 3150 Hz)
  - No. 23 (Azimuth adj. playb. head, 6300 Hz)
  - No. 24 (Playback level adj., 1000 Hz)
- Measuring cassettes
  - Maxell UD XL I (Type I)
  - Maxell UD XL II (Type II)

Before adjusting, set the buttons to:

- MPX-FILTER (situated at the back of the deck) to OFF.
- Dolby NR\* to Off.
- Tape to Type I.
- Output Level controls to max.

\* The word "Dolby" is registered trade mark of Dolby Laboratories Inc., USA.  
NR stands for Noise Reduction.

### Oscillator

The oscillator frequency is between 80 and 100 kHz. The voltage measured on the erase head should be between 25 and 32 volts.

### Sensitivity adjustment

- Set the Monitor button to Source position, and Input and Output Level controls to maximum.
- Apply 8mV, 1000 Hz to the RADIO socket (DIN) or 80 mV, 1000 Hz to the INPUT sockets (Phono) from the audio signal generator.
- Adjust the SENSITIVITY ADJ. pots. R101-R201 to obtain 775 mV measured on a voltmeter connected to the Dolby encoder output, see Figure 1.
- Move the measure probe to the Dolby decoder output, see Figure 2.
- Adjust the SOURCE LEVEL ADJ. pots. R118-R218 to obtain 775 mV.
- Check the frequency response in Source.

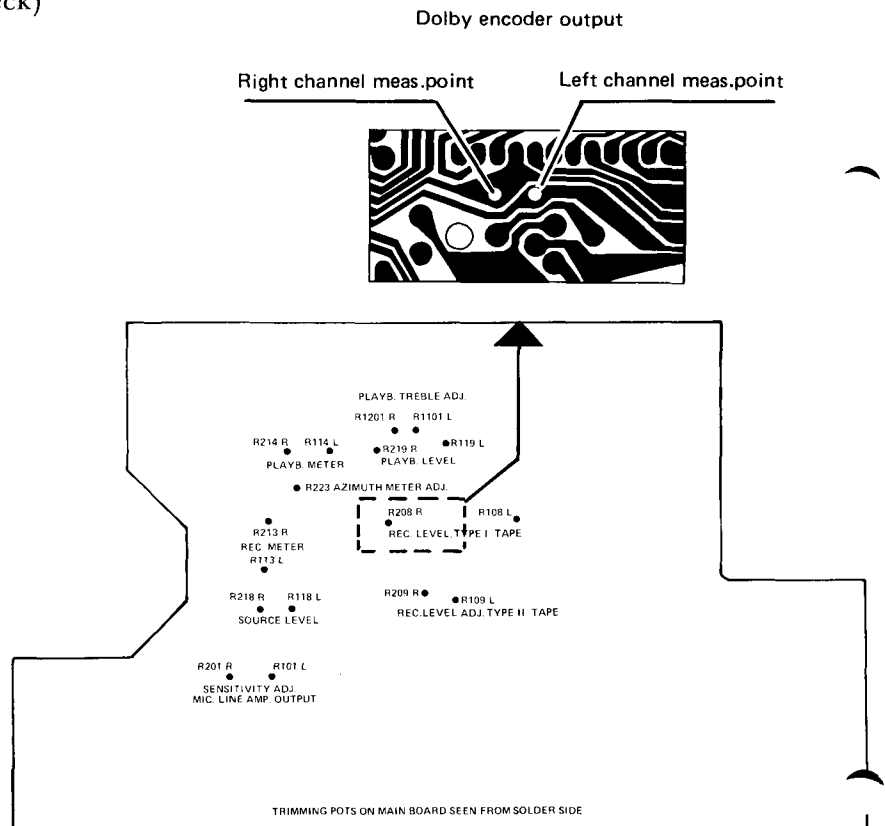


Figure 1 Trimming pots. and Dolby encoder measurement points

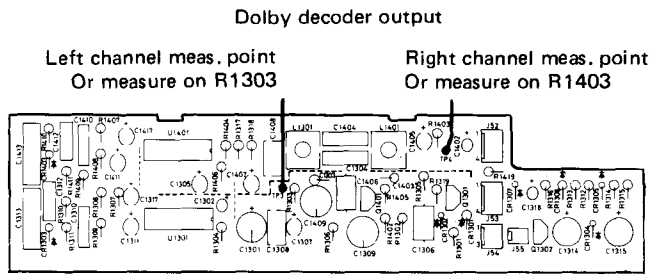


Figure 2 Dolby decoder measurement points

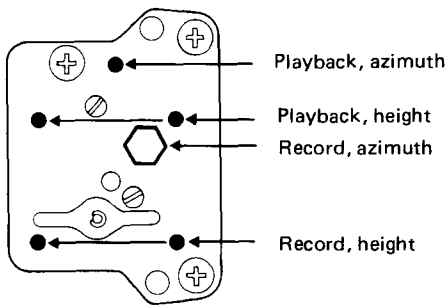


Figure 3 Adjustments for the heads

#### Azimuth adjustment, playback head

- Insert a Tandberg test cassette No. 23 or a standard azimuth cassette.
- Set the Monitor button to Tape and connect a voltmeter to each channel of the OUTPUT sockets.
- Press the Play button. Adjust the playback azimuth screws shown in Figure 3 to obtain maximum reading on each channel.

#### Playback level

- Insert test cassette No. 24.
- Connect a voltmeter to each channel of the Dolby decoder output shown in Figure 2.
- Adjust the PLAYBACK LEVEL pots. R119 and R219 until you read 775 mV on each channel.

#### Level meter adjustment, playback

- Insert Tandberg test cassette No. 24.

When the playback level is correct, adjust the level meter to 0 dB with PLAYBACK METER R114 and R214.

#### Azimuth and height, record head

- Use Maxell UD XL I or an equivalent tape.
- Apply 1000 Hz to the INPUT sockets both channels.
- Set the Monitor button to Tape and connect a voltmeter to the OUTPUT sockets both channels.
- Press the Record button and turn the two record head height screws shown in Figure 3 by equal amounts (the same number of degrees) to obtain the maximum reading on both channels of the OUTPUT sockets, or the best compromise.
- Adjust the azimuth (10 kHz) and the height alternatively, until the head sits correctly.
- Azimuth can also be adjusted with the built-in control oscillator (10 kHz).

**NOTE!** The record height screws must be adjusted by equal amounts to ensure that the head parallelism does not change.

#### Overall frequency response with Type I Tape (bias)

- Set the Monitor button to Tape.
- Apply 1000 Hz from the signal generator to one of the inputs.
- Reduce the level at the signal generator by 35 dB or reduce the level by a similar amount on the Input Level controls.
- Press the Record button, and adjust the BIAS ADJ. TYPE I TAPE, C1502 and C1602 to obtain maximum reading at the outputs.
- Sweep the audio generator through the full frequency range and check that the response curve is correct.
- If necessary, adjust the curve with C1502 and C1602 to obtain the correct response,  $\pm 3$  dB, 30 to 18000 Hz.

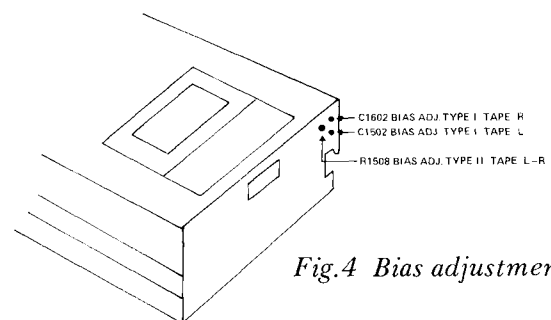


Fig.4 Bias adjustments

### Adjusting the record current (Source/Tape) Type I Tape

- Use the same input level as for the bias adjustment (– 35 dB) and 1000 Hz.
- Adjust the record current by means of the REC. LEVEL ADJ. pots. R108 and R208 to obtain the same output level for both positions on the Monitor button.
- Then depress the Dolby NR button and check the overall frequency response.

### Overall frequency response with Type II Tape (bias)

- Use the same procedure as for the Type I tape.
- Insert a Maxell UD XL II or an equivalent tape.
- Set the Tape button to Type II position, and press the Record button.
- Check the frequency response, and if necessary, adjust the BIAS ADJ. TYPE II TAPE, pot. R1508 to obtain the correct response.

### Adjusting the record current (Source/Tape) Type II Tape

- Use the same input level as for the bias adjustment (– 35 dB) and 1000 Hz.
- Adjust the record current by means of the REC. LEVEL ADJ. pots R109 and R209 to obtain the same output level for both positions on the Monitor button.

R1101 and R1201 affect the treble response in the frequency region 15–18 kHz on the playback curve for all types of tapes.

### Level meters adjustment, record

- Set the Monitor button to Tape.
- Apply 1000 Hz to the INPUT sockets (both channels).
- Press the Record button and adjust the Input Level controls for 1.5 volt reading on the OUTPUT sockets.
- Adjust the REC. METER pots. R113 and R213 to obtain 0 dB on the level meters.

### Distortion

Record 1000 Hz at 0 dB deflection on the meters. The max. distortion for record/playback is 3%.

### Erase test

Connect a microphone to the TCD 340A and record an overload signal. Record again to erase the overload recording and play back to ensure that the overload signal cannot be heard.

### Azimuth meter adjustment

- Set the built-in oscillator to ON.
- Set the Output Level controls to maximum.
- Insert a Type I tape and press the Record button.
- Adjust R223 (AZIMUTH METER ADJ.) to approximately – 3 dB deflection on the right meter.
- Check also that the meter deflection with a Type II tape is within the meter scale.

### Speed check

Play back Tandberg test cassette No. 21 (speed check 1000 Hz) and measure with a frequency counter on the OUTPUT sockets:

$< \pm 0.5\%$  (995 to 1005 Hz).

### Wow and flutter

Play back a Tandberg test cassette No. 22 (3150 Hz) and measure with a wow and flutter meter on the OUTPUT sockets:

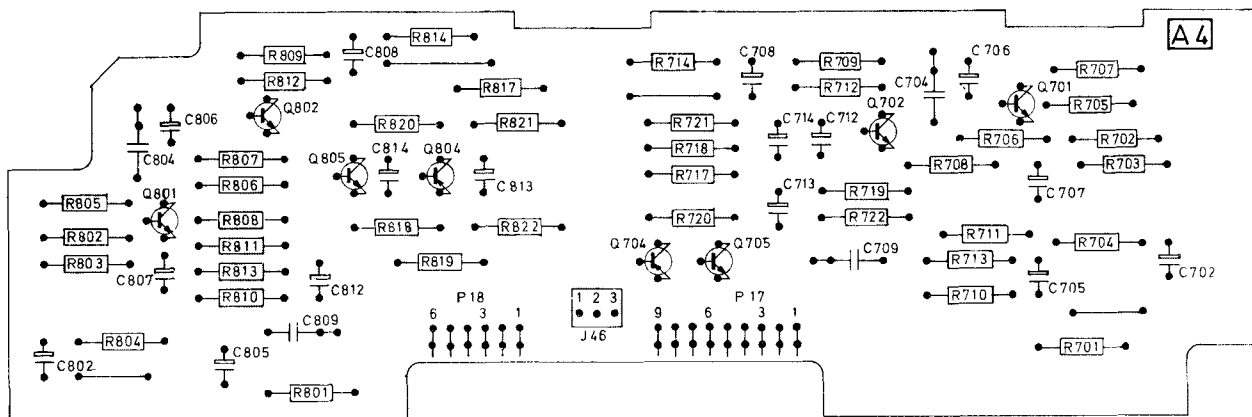
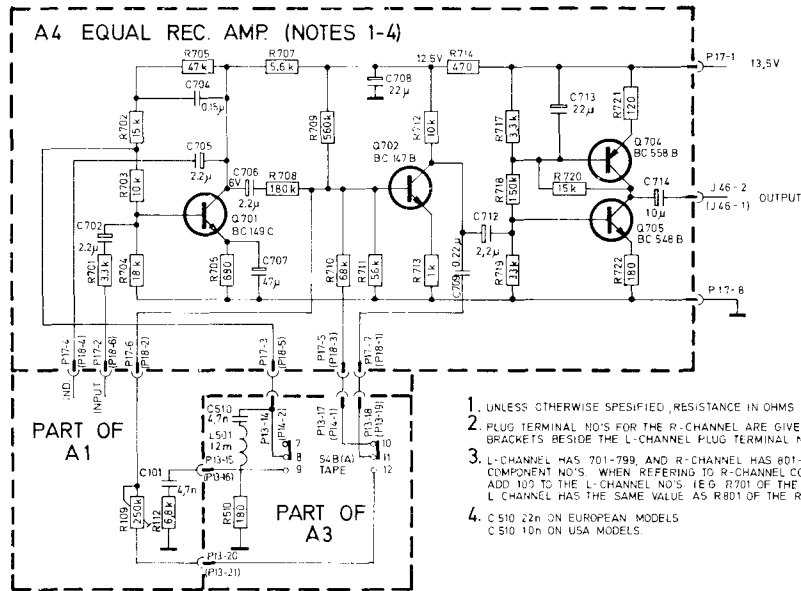
Weighted RMS:  $< 0.09\%$

Weighted Peak DIN 45511:  $< 0.2\%$

### Record/playback

Record from a generator 3150 Hz (check with a frequency counter and measure with the wow and flutter meter on the OUTPUT sockets.

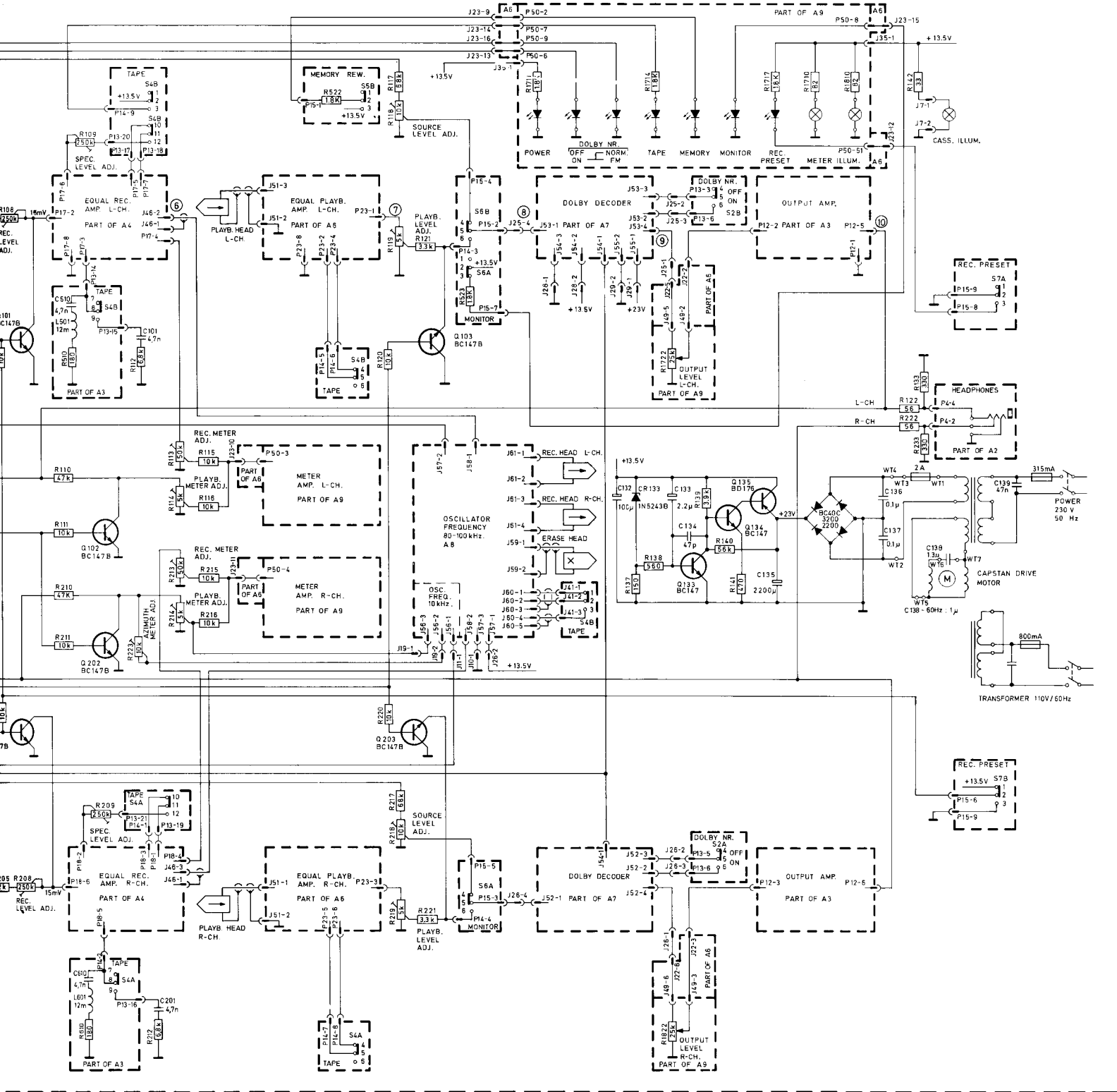
Weighted RMS:  $< 0.12\%$



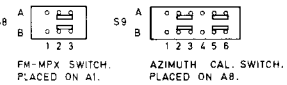
**A4 EQUAL REC.AMP.**







THE FM-MPX AND AZIMUTH CAL. SWITCHES ARE SEEN FROM THE FRONT SIDE.



FM-MPX SWITCH. PLACED ON A1.  
AZIMUTH CAL. SWITCH. PLACED ON A8.

NOTES:

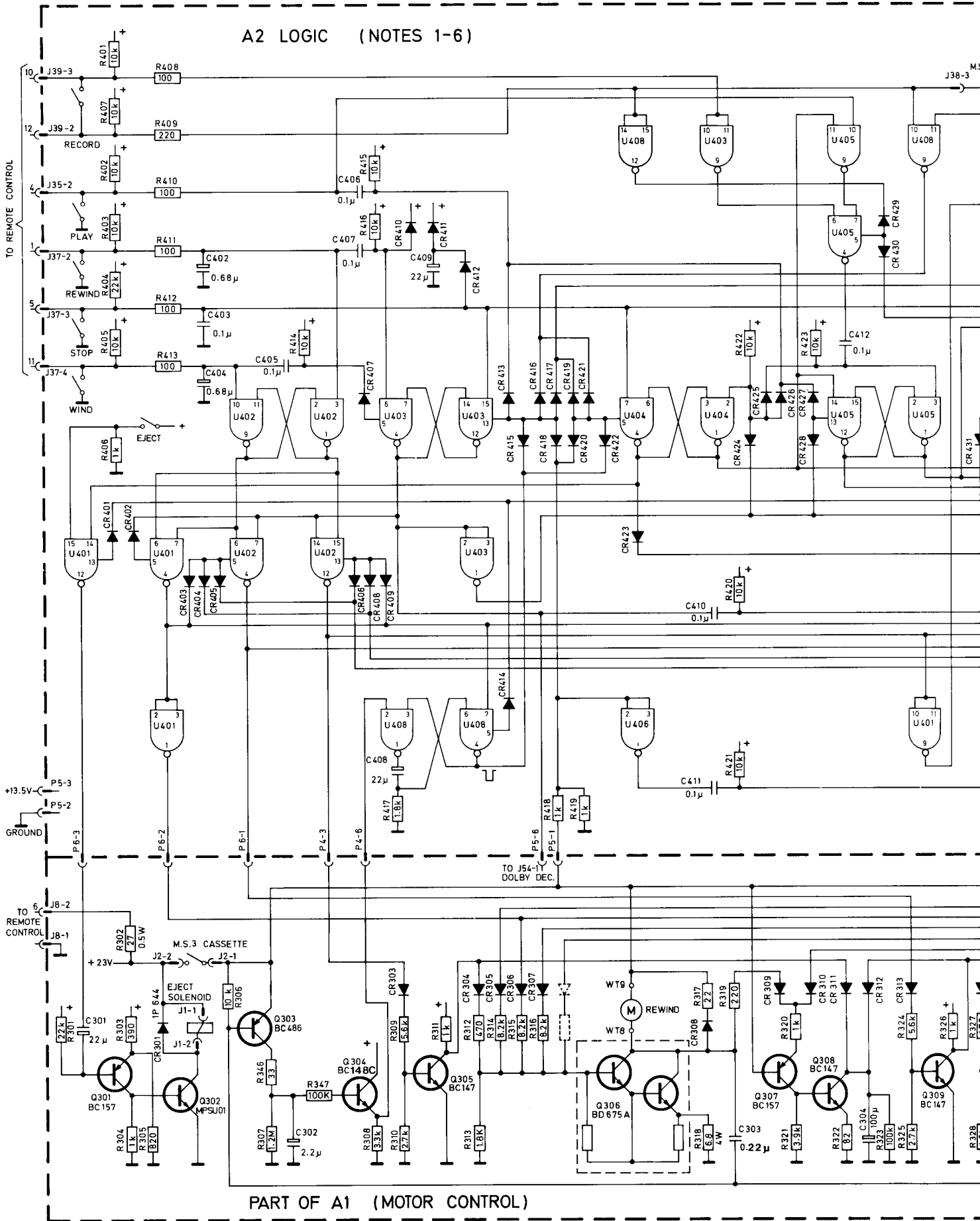
- UNLESS OTHERWISE SPECIFIED, RESISTANCE IN OHMS.
- ALL SWITCHES ARE SHOWN IN THE "POWER OFF" POSITION.
- LEFT CHANNEL COMPONENTS HAVE 101-130, RIGHT CHANNEL COMPONENTS HAVE 201-230. COMPONENTS COMMON FOR BOTH CHANNELS HAVE 131-199.
- LOGICAL LEVELS FROM LOGIC BOARD:  
J38-1, ONLY LOW IN RECORD.  
J4-5, ONLY LOW IN PLAY.  
J39-4, ONLY HIGH IN STOP.  
J5-6, ONLY HIGH IN WIND AND REWIND.  
LOW IS VOLTAGE BELOW 1.5V.  
HIGH IS VOLTAGE ABOVE 10V.

TABLE I. SENSITIVITY OF AMPLIFIERS

SENSITIVITY AT 1000 Hz.	
①	8 mV
②	80 mV
③	25 mV
④	22 mV
⑤	775 mV
⑥	11 V
⑦	80 mV
⑧	40 mV
⑨	250 mV
⑩	1.5 V
⑪	775 mV
⑫	1.5 V



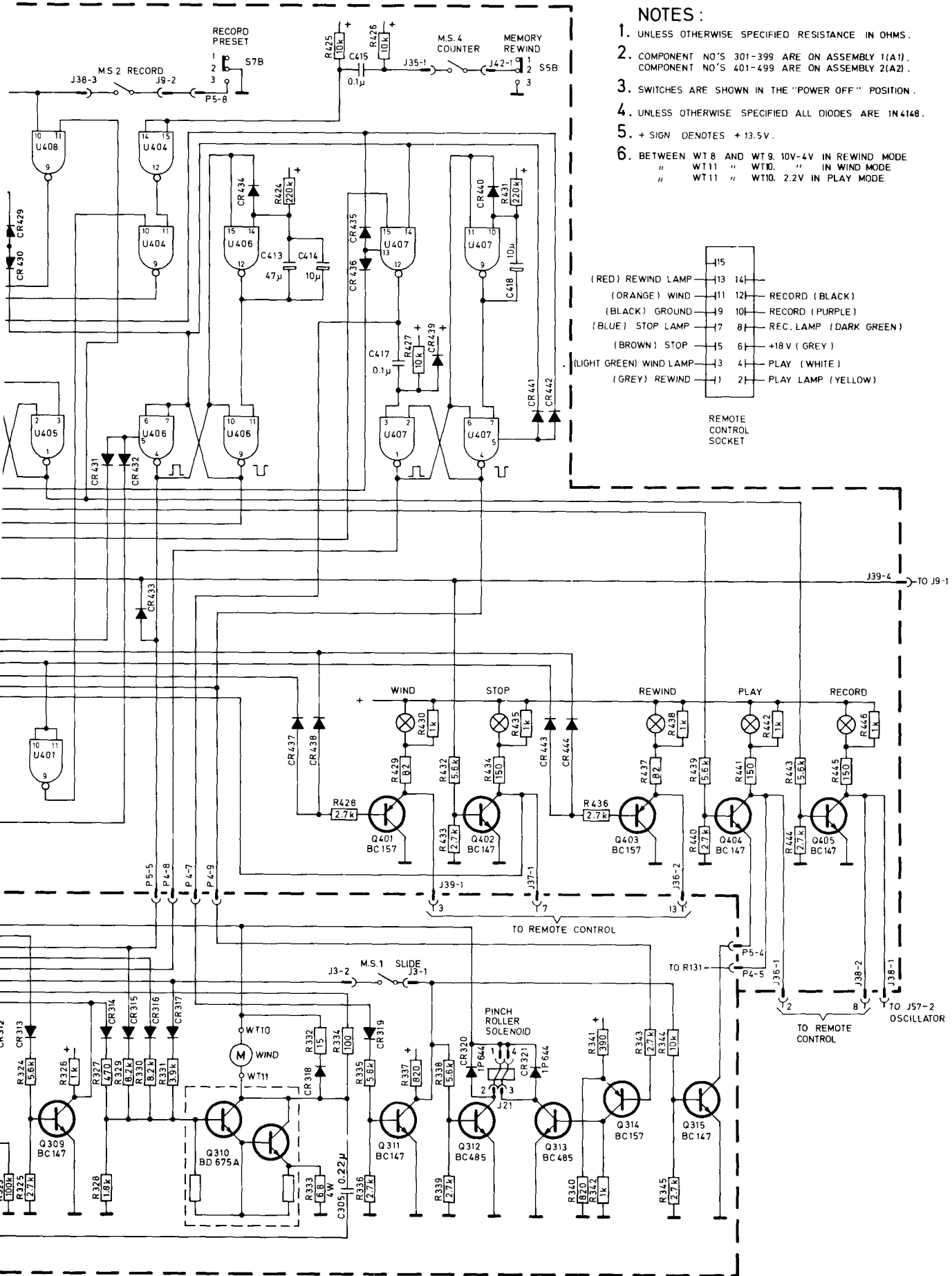
A2 LOGIC (NOTES 1-6)



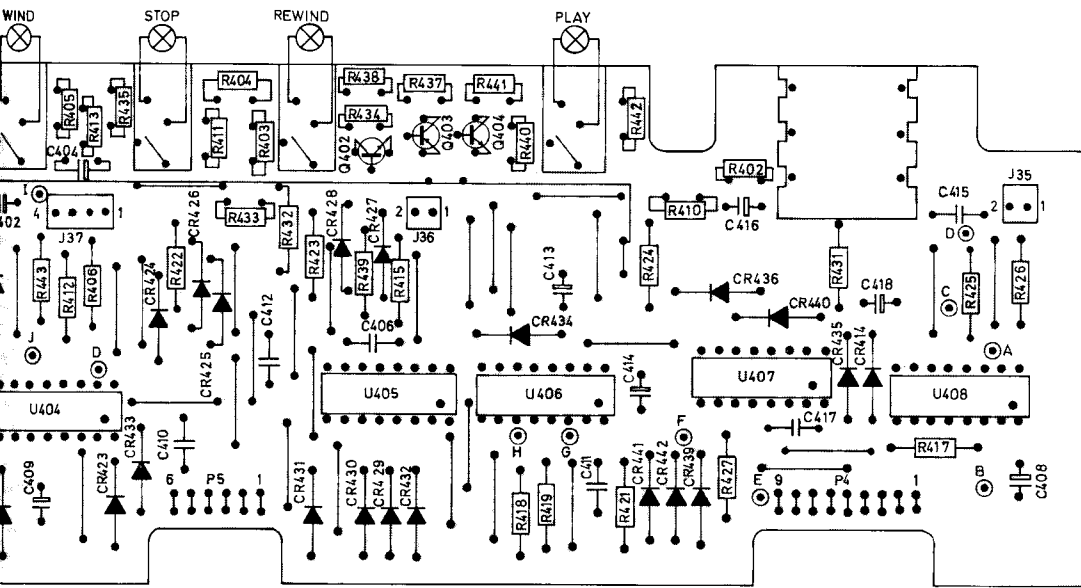
PART OF A1 (MOTOR CONTROL)

**NOTES :**

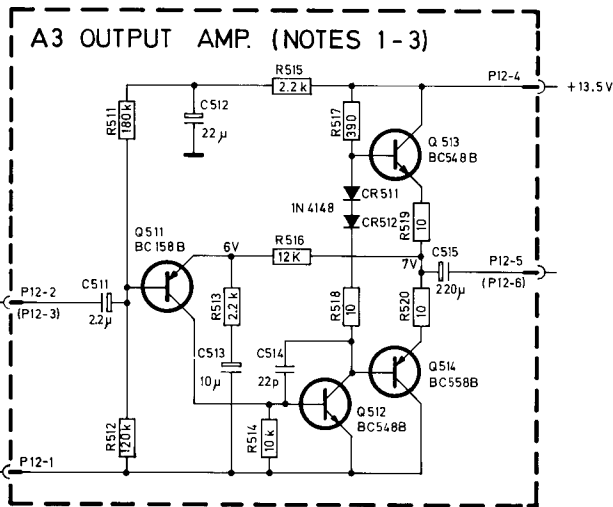
1. UNLESS OTHERWISE SPECIFIED RESISTANCE IN OHMS.
2. COMPONENT NO'S 301-399 ARE ON ASSEMBLY 1(A1).  
COMPONENT NO'S 401-499 ARE ON ASSEMBLY 2(A2).
3. SWITCHES ARE SHOWN IN THE "POWER OFF" POSITION.
4. UNLESS OTHERWISE SPECIFIED ALL DIODES ARE 1N4148.
5. + SIGN DENOTES +13.5V.
6. BETWEEN WT 8 AND WT 9. 10V-4V IN REWIND MODE  
" WT 11 " WT 10. " IN WIND MODE  
" WT 11 " WT 10. 2.2V IN PLAY MODE.





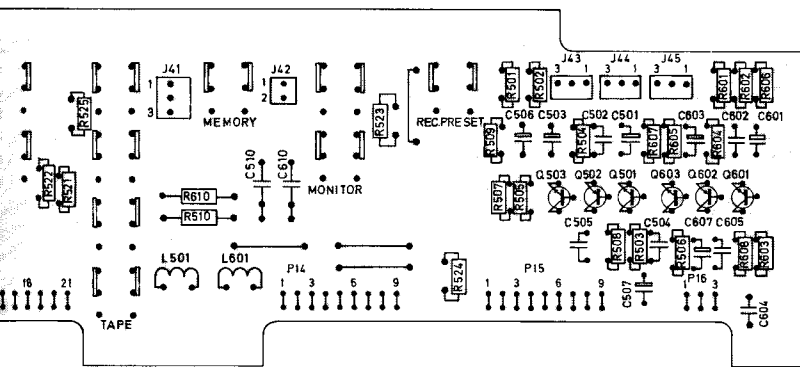


**C BOARD**

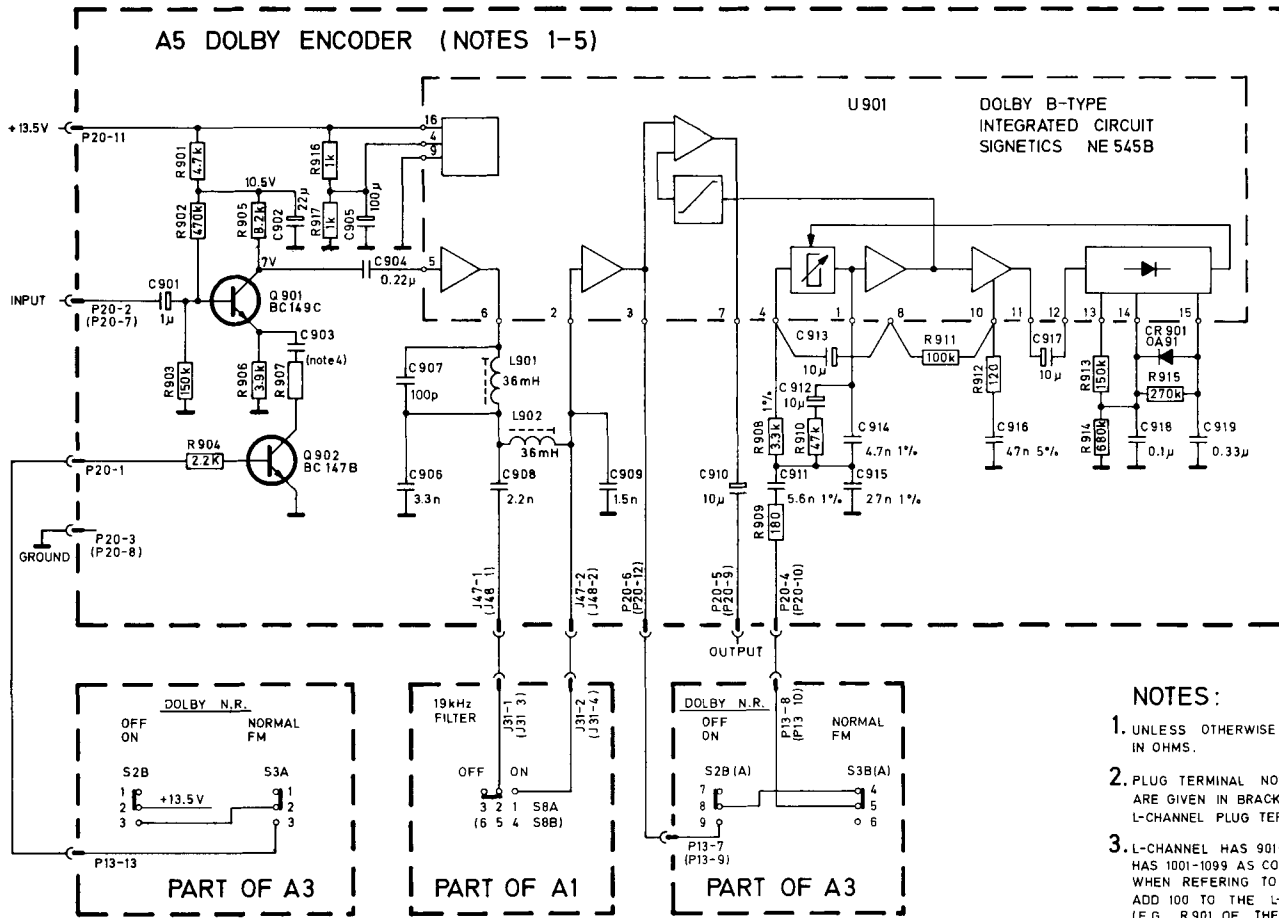


**NOTES:**

1. UNLESS OTHERWISE SPECIFIED RESISTANCE IN OHMS
2. PLUG TERMINAL NO'S FOR THE R-CHANNEL ARE GIVEN IN BRACKETS BESIDE THE L-CHANNEL PLUG TERMINAL NO'S
3. L-CHANNEL HAS 511 - 599, AND R-CHANNEL HAS 611 - 699 AS COMPONENT NO'S WHEN REFERRING TO R-CHANNEL COMPONENT ADD 100 TO THE L-CHANNEL NO'S (E.G. R511 OF THE L-CHANNEL HAS THE SAME VALUE AS R611 OF THE R-CHANNEL)

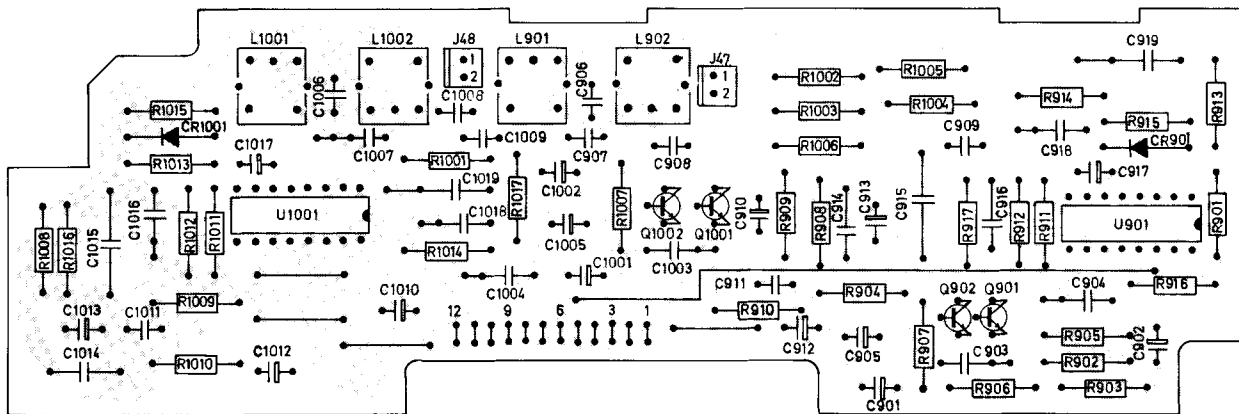


**A3 OUTPUT MIC/LINE AMP.**

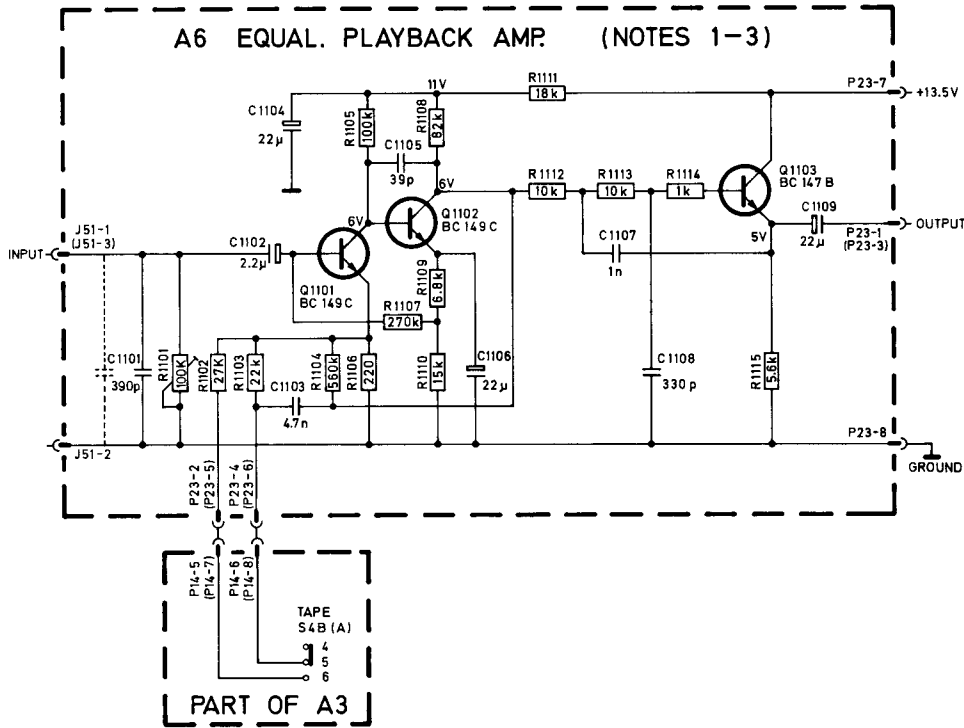


**NOTES:**

1. UNLESS OTHERWISE SPECIFIED RESISTANCE IN OHMS.
2. PLUG TERMINAL NO'S FOR THE R-CHANNEL ARE GIVEN IN BRACKETS BESIDE THE L-CHANNEL PLUG TERMINAL NO'S.
3. L-CHANNEL HAS 901-999, AND R-CHANNEL HAS 1001-1099 AS COMPONENT NO'S. WHEN REFERRING TO R-CHANNEL COMPONENT ADD 100 TO THE L-CHANNEL NO'S. (E.G. R901 OF THE L-CHANNEL HAS THE SAME VALUE AS R1001 OF THE R CHANNEL.)
4. R907 = 2.2K, C903 = 15n GIVES a "75-25" DOLBY FM COMPENSATOR  
R907 = 3.9K, C903 = 12n GIVES a "50-25" DOLBY FM COMPENSATOR

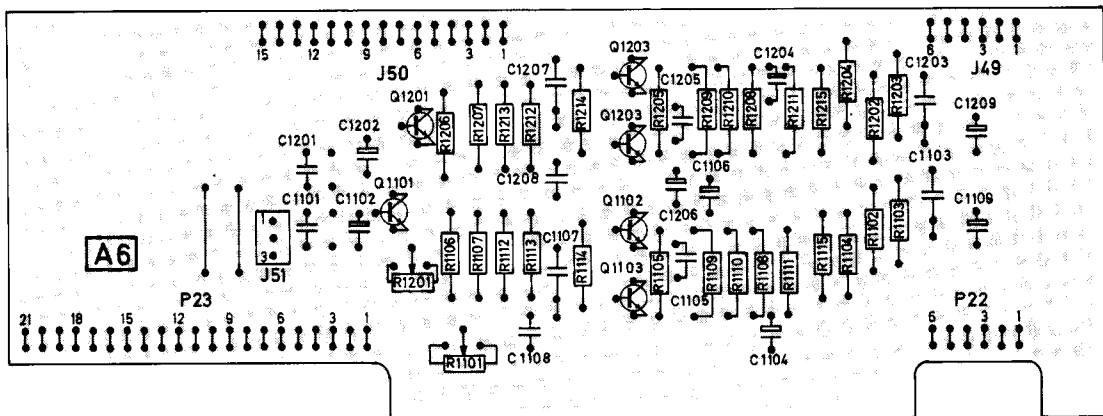


**A5 DOLBY ENCODER**



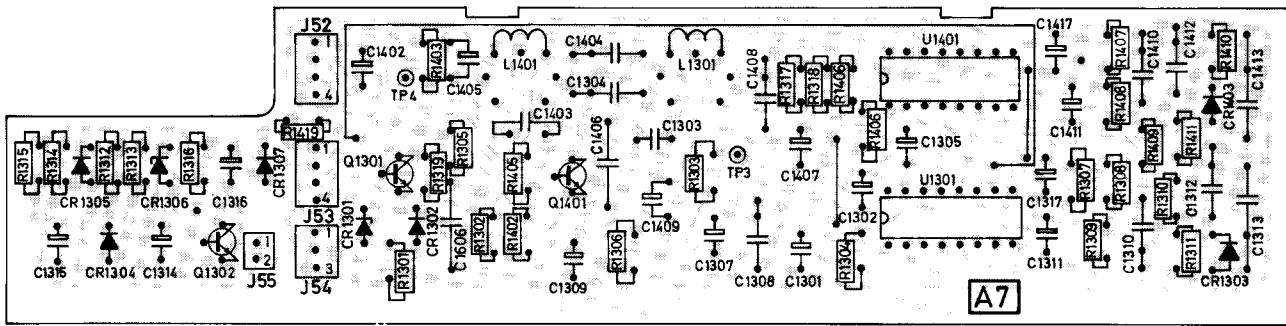
**NOTES:**

1. UNLESS OTHERWISE SPECIFIED RESISTANCE IN OHMS.
2. PLUG TERMINAL NO'S FOR THE R-CHANNEL ARE GIVEN IN BRACKETS BESIDE THE L-CHANNEL PLUG TERMINAL NO'S.
3. L-CHANNEL HAS 1101-1199, AND R-CHANNEL HAS 1201-1299 AS COMPONENT NO'S. WHEN REFERRING TO R-CHANNEL COMPONENT ADD 100 TO THE L-CHANNEL NO'S. (E.G. R1101 OF THE L-CHANNEL HAS THE SAME VALUE AS R1201 OF THE R-CHANNEL.)

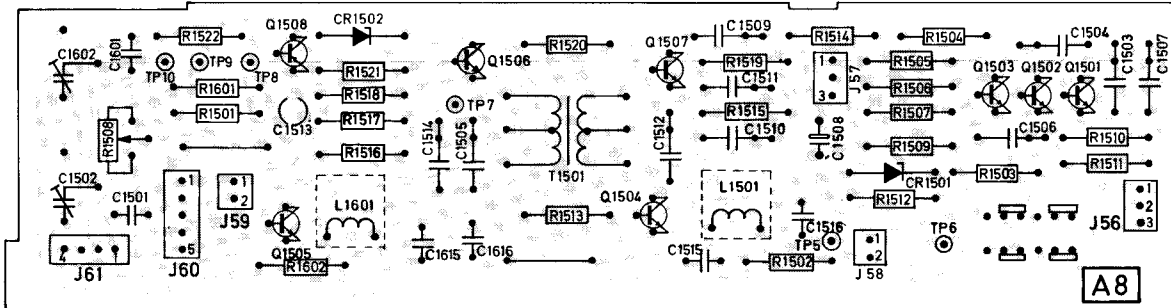


**A6 EQUAL PLAYBACK AMP.**

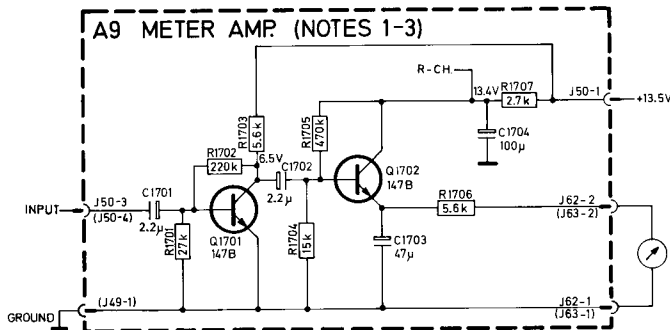




**A7 DOLBY DECODER**

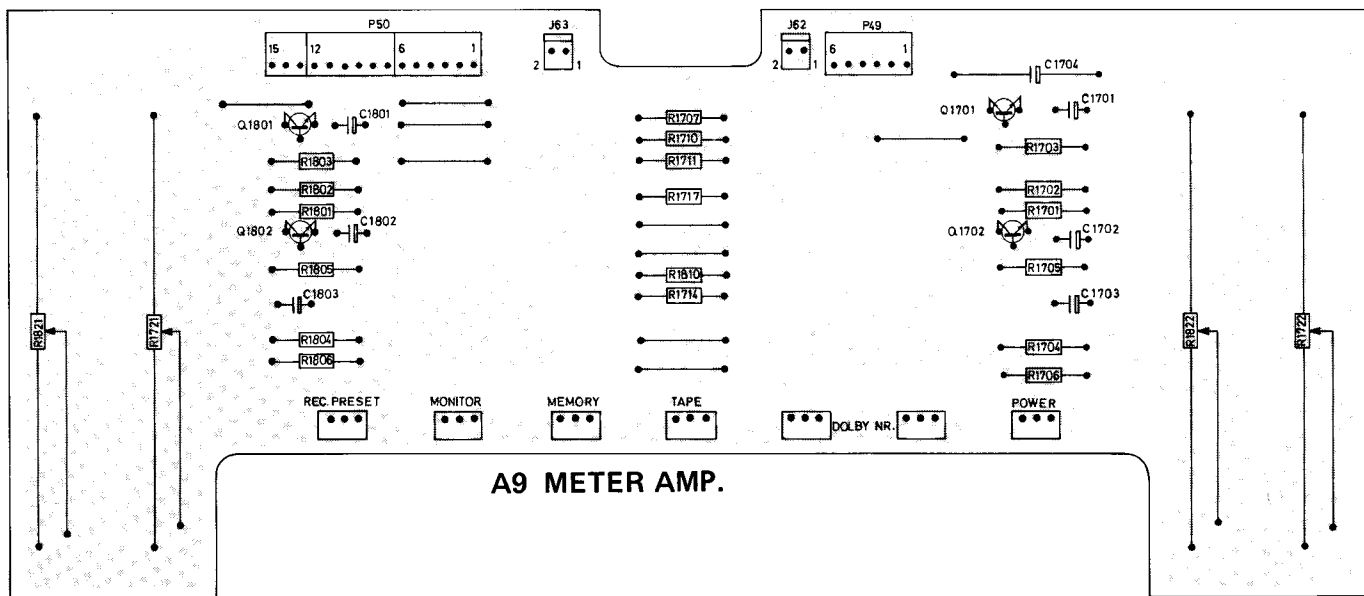


**A8 OSCILLATOR**



**NOTES:**

1. UNLESS OTHERWISE SPECIFIED RESISTANCE IN OHMS.
2. PLUG TERMINAL NO'S FOR THE R-CHANNEL ARE GIVEN IN BRACKETS BESIDE THE L-CHANNEL PLUG TERMINAL NO'S
3. L-CHANNEL HAS 1701-1799, AND R-CHANNEL HAS 1801-1899 AS COMPONENT NO'S. WHEN REFERRING TO R-CHANNEL COMPONENT ADD 100 TO THE L-CHANNEL NO'S. (E.G R1701 OF THE L-CHANNEL HAS THE SAME VALUE AS R1801 OF THE R-CHANNEL)



**A9 METER AMP.**