

# Trader

## SERVICE SHEET

A stereo cassette deck with Dolby, the National Panasonic RS-269USD features manual ferric/chrome tape switching, separate rotary recording level controls for each channel, twin VU-meters, and a tape transport driven from an electronically-controlled d.c. motor.

The deck controls are standard, with a separate pause control, and a digital counter; automatic tape-end stop is incorporated. Inputs available include those for separate microphones and that from an external amplifier. Outputs available are to an external amplifier and for headphones.

The complete RS-269USD is housed in a teak-finish low-profile cabinet with black and silver trim.

NOTE: The version described in this "Trader" service sheet is the RS-269USD, which is that for the UK. This version has a mains supply unit accepting 240V 50Hz a.c. mains only, which is fused in the low voltage mains transformer secondary, and also has a fused pilot lamp. The standard model, RS-269US, differs in that a wide range of mains input supply voltages can be accepted, and the circuit is protected by a single fuse in the common a.c. input line to the transformer primary. In all other respects both models are electrically identical.

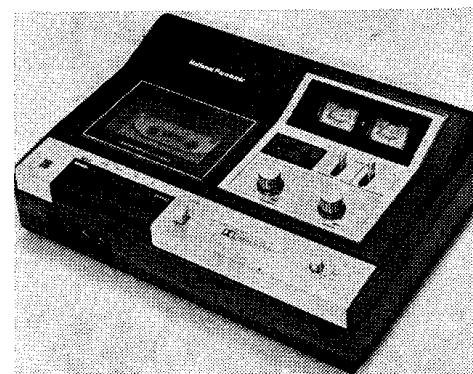
### Brief Specification

Power supply	240V 50Hz a.c. mains			
Consumption	8W (approx)			
Fuses	315mA (two), 500mA (miniature cartridge)			
Transistors	2SC644 (two), 2SC666 (two), 2SC828 (fourteen), 2SC1327 (four), 2SC1347 (three), 2SK30AD (two)			
Diodes	OA90 (six), 1S1211 (six), S1B0102 (two), EQA0108S			
Tape speed	1½ in (4.75cm) per second			
Tracks	4-channel, 2-track stereo			
Recording system	AC bias (80kHz)			
Erase	A.C.			
Wow and flutter	Less than 0.15 per cent			
Frequency response	30Hz to 12kHz (ferric tape) 30Hz to 13kHz (chrome tape)			
Signal/noise ratio	Better than 49dB (without Dolby) Better than 57dB (with Dolby)			
Winding times	Fast forward and rewind: 90 minutes approx (for standard C60 cassette)			
Inputs	Microphone: 0.3mV, impedance 200 to 600 kilohms (via jacks) External amplifier: 30mV into 220 kilohms (via jacks or 5-pin DIN socket)			
Outputs	External amplifier: 0.42mV into 50 kilohms (via jacks or 5-pin DIN socket) Headphones: 45mV into 8 ohms (via jack)			
Motor	Low-voltage d.c., electronically-controlled speed			
Dimensions and weight	Height	Width	Depth	Weight
	4½ in (116mm)	14 in (355mm)	9½ in (244mm)	8 lb 14oz (4.0kg)
Manufacturer	Matsushita Electrical Industrial Co., Osaka, Japan			
UK Distribution and Service	National Panasonic (UK) Ltd., 107 to 109 Whitby Road Trading Estate, Slough, Berks. Slough 34522			

# 3229

# National Panasonic RS-269USD

Stereo cassette  
deck



### Dismantling

1. Disconnect mains lead from supply, and unplug all input leads from sockets.
2. Invert deck on to protective resilient surface, and remove four screws A securing rubber feet, and a fifth screw B with a square grip-washer. Carefully ease cabinet tray off from chassis.
3. To remove deck top controls cover:
  - (a) Remove both recording level knobs.
  - (b) Remove six coppered-head screws C from deck underside.
  - (c) Carefully ease off top cover.
4. This gives access to most parts of the deck mechanism, power supply and switches. To gain access to p.c. board components; the board is removed as follows:

### Mechanical Adjustments

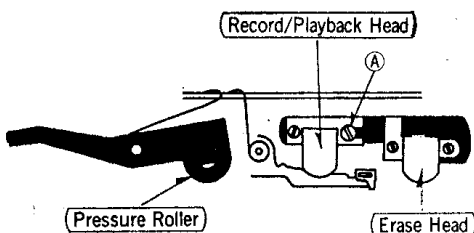


Figure 1

**Head azimuth** (Figure 1). Using test tape, connect VTVM across each channel output (phone LINE OUT jacks) and adjust screw A for equal and maximum output on

each channel, together with optimum channel separation. Lock screw A.

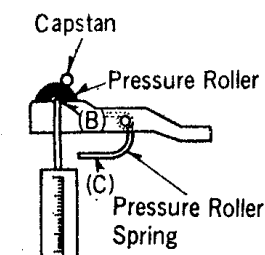


Figure 2

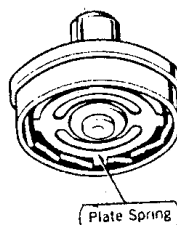


Figure 3

**Pressure roller** (Figure 2). Hook tension gauge over pressure roller spindle B upper end, and check tension required to just pull roller from capstan (300 to 440gr). Bend lug C of pressure roll spring to obtain condition.

**Take-up spool tension** (Figure 3). Load torque-measuring cassette. Select "PLAYBACK", and check meter scale on cassette for 40 to 70 gr reading. To adjust, turn plate spring below take-up spool carrier as shown.

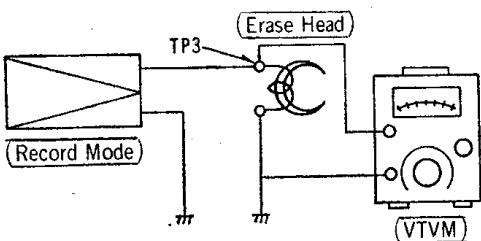


Figure 8

**Bias oscillator frequency.** Connect frequency meter to test point TP3 (Figure 8). Select "RECORD". Frequency should be between 73 and 87kHz.

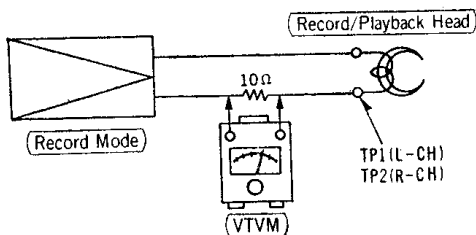


Figure 9

**Record bias current.** Connect VTVM across R6 (100 ohms) in series with record/playback head (Figure 9). Select "RECORD". Adjust L5 (l.h. channel) and then L6 (r.h. channel) for 5.4 to 5.6mV (6.2 to 6.4mV for CRO<sub>2</sub> tape).

**Level ("VU") meters.** Inject 1kHz signal via appropriate LINE IN jack, connect VTVM to corresponding LINE OUT jack. Select "RECORD". Adjust VR13 (l.h.), VR14 (r.h.) until corresponding level meter is at 0dB or a 0.42V reading on the VTVM.

**Bias trap.** Connect VTVM to appropriate LINE OUT jack, select "RECORD". Adjust L1 (l.h.), L2 (r.h.) to obtain minimum VTVM reading per channel.

**Overall gain**

1. Connect test equipment.
2. Select CRO<sub>2</sub>; select "RECORD".
3. Inject a 1kHz signal (at -30dB) via attenuator to LINE IN jack.
4. Adjust attenuator until level at LINE IN jack is 0.42V and make a recording, using a CRO<sub>2</sub> tape.

5. Play back the recording. Check that LINE OUT level is 0.42V on each channel. If it is not, then adjust VR11 (l.h.) or VR12 (r.h.) for correct value reading.
6. Select NORMAL. Repeat steps 3, 4 and 5, using a ferric tape.
7. If meter reading is greater than 0.5V, transfer shorting link from positions 1 to positions 2. If reading is below 0.35V, short-circuit both positions 1 and 2.

**Overall frequency response**

1. With test equipment connected as for "Overall gain", inject signal to LINE IN jack 20dB lower than VU-meter 0dB level.
2. Vary a.f. generator tuning to give a series of spot frequencies between 40Hz and 10kHz, and record these on ferric tape.
3. Play back the tape, check output at each spot frequency on VTVM. Check that measured value is within the range ±3dB 50Hz to 10kHz. If it is not, then adjust L5 (l.h.) and L6 (r.h.). If the readings are outside the given range at 10kHz, adjust L7 (l.h.) and L8 (r.h.).

Resistors	
R1	220kΩ
R2	220kΩ
R3	2.7kΩ
R4	2.7kΩ
R5	10Ω
R6	10Ω
R7	10kΩ
R8	10kΩ
R9	100kΩ
R10	100kΩ
R11	8.2kΩ
R12	8.2kΩ
R13	100kΩ
R14	100kΩ
R15	100Ω
R16	100Ω
R17	3.9kΩ
R18	3.9kΩ
R19	68kΩ
R20	68kΩ
R21	4.7kΩ
R22	4.7kΩ
R23	820Ω
R24	820Ω
R25	4.7kΩ
R26	4.7kΩ
R27	5.6kΩ
R28	5.6kΩ
R29	1.5kΩ
R30	1.5kΩ
R31	680kΩ
R32	680kΩ
R33	10kΩ
R34	10kΩ
R35	180Ω
R36	180Ω
R37	680Ω
R38	680Ω
R39	68kΩ
R40	68kΩ
R41	56kΩ
R42	56kΩ
R43	6.8kΩ
R44	6.8kΩ
R45	2.7kΩ
R46	2.7kΩ
R47	82kΩ
R48	82kΩ
R49	33kΩ
R50	33kΩ
R51	120kΩ
R52	120kΩ
R53	18kΩ
R54	18kΩ
R55	15kΩ
R56	15kΩ
R57	560Ω
R58	560Ω
R59	220Ω
R60	220Ω
R61	120kΩ
R62	120kΩ

R63	2.7kΩ
R64	2.7kΩ
R65	33kΩ
R66	33kΩ
R67	270kΩ
R68	270kΩ
R69	47kΩ
R70	47kΩ
R71	8.2kΩ
R72	8.2kΩ
R73	6.8kΩ
R74	6.8kΩ
R75	1.8kΩ
R76	1.8kΩ
R77	680kΩ
R78	680kΩ
R79	15kΩ
R80	15kΩ
R81	8.2kΩ
R82	8.2kΩ
R83	220kΩ
R84	220kΩ
R85	10kΩ
R86	10kΩ
R87	8.2kΩ
R88	8.2kΩ
R89	8.2kΩ
R90	8.2kΩ
R91	33kΩ
R92	33kΩ
R93	120kΩ
R94	120kΩ
R95	47kΩ
R96	47kΩ
R97	2.7kΩ
R98	2.7kΩ
R99	1kΩ
R100	1kΩ
R101	33Ω
R102	33Ω
R103	47Ω
R104	47Ω
R105	15kΩ
R106	15kΩ
R107	270kΩ
R108	270kΩ
R109	270kΩ
R110	270kΩ
R111	5.6kΩ
R112	5.6kΩ
R113	4.7kΩ
R114	4.7kΩ
R115	3.9kΩ
R116	3.9kΩ
R117	680kΩ
R118	680kΩ
R119	680Ω
R120	680Ω
R121	3.3kΩ
R122	3.3kΩ
R123	180Ω
R124	180Ω

Potentiometers	
VR1	10kΩ
VR2	10kΩ
VR3	20kΩ
VR4	20kΩ
VR5	20kΩ
VR6	20kΩ
VR7	5kΩ
VR8	5kΩ
VR9	500Ω
VR10	500Ω
VR11	20kΩ
VR12	20kΩ
VR13	1kΩ
VR14	1kΩ

Capacitors	
C3	120pF
C4	120pF
C5	10μF
C6	10μF
C7	0.001μF
C8	0.001μF
C9	0.0022μF
C10	0.0022μF
C11	33μF
C12	33μF
C13	47μF
C14	47μF
C15	0.001μF
C16	0.001μF
C17	100pF
C18	100pF
C19	33μF
C20	33μF
C21	0.001μF
C22	0.001μF
C23	0.027μF
C24	0.027μF
C25	10μF
C26	10μF
C27	0.012μF
C28	0.012μF
C29	1μF

Components	
C30	1μF
C31	47pF
C32	47pF
C33	100μF
C34	100μF
C35	100μF
C36	100μF
C37	3.3μF
C38	3.3μF
C39	0.0015μF
C40	0.0015μF
C41	820pF
C42	820pF
C43	10μF
C44	10μF
C45	10μF
C46	10μF
C47	10μF
C48	10μF
C49	0.0056μF
C50	0.0056μF
C51	0.027μF
C52	0.027μF
C53	0.0047μF
C54	0.0047μF
C55	10μF
C56	10μF
C57	0.1μF
C58	0.1μF
C59	47μF
C60	47μF
C61	10μF
C62	10μF
C63	0.1μF
C64	0.1μF
C65	0.1μF
C66	0.1μF
C67	10μF
C68	10μF
C69	0.1μF
C70	0.1μF
C71	0.1μF
C72	0.1μF
C73	0.33μF
C74	0.33μF
C75	0.33μF
C76	0.33μF
C77	0.0022μF
C78	0.0022μF
C79	1μF
C80	1μF
C81	47pF
C82	47pF
C83	4.7μF
C84	4.7μF
C85	0.22μF
C86	0.22μF
C87	0.0068μF
C88	0.0068μF
C89	4.7μF
C90	4.7μF
C91	10μF

C92	10μF
C98	100μF
C201	27pF
C202	27pF
C203	0.0082μF
C204	0.018μF
C205	0.022μF
C206	1μF
C207	100μF
C208	100μF
C209	0.01μF
C210	220μF
C211	220μF
C212	1000μF
C213	1000μF

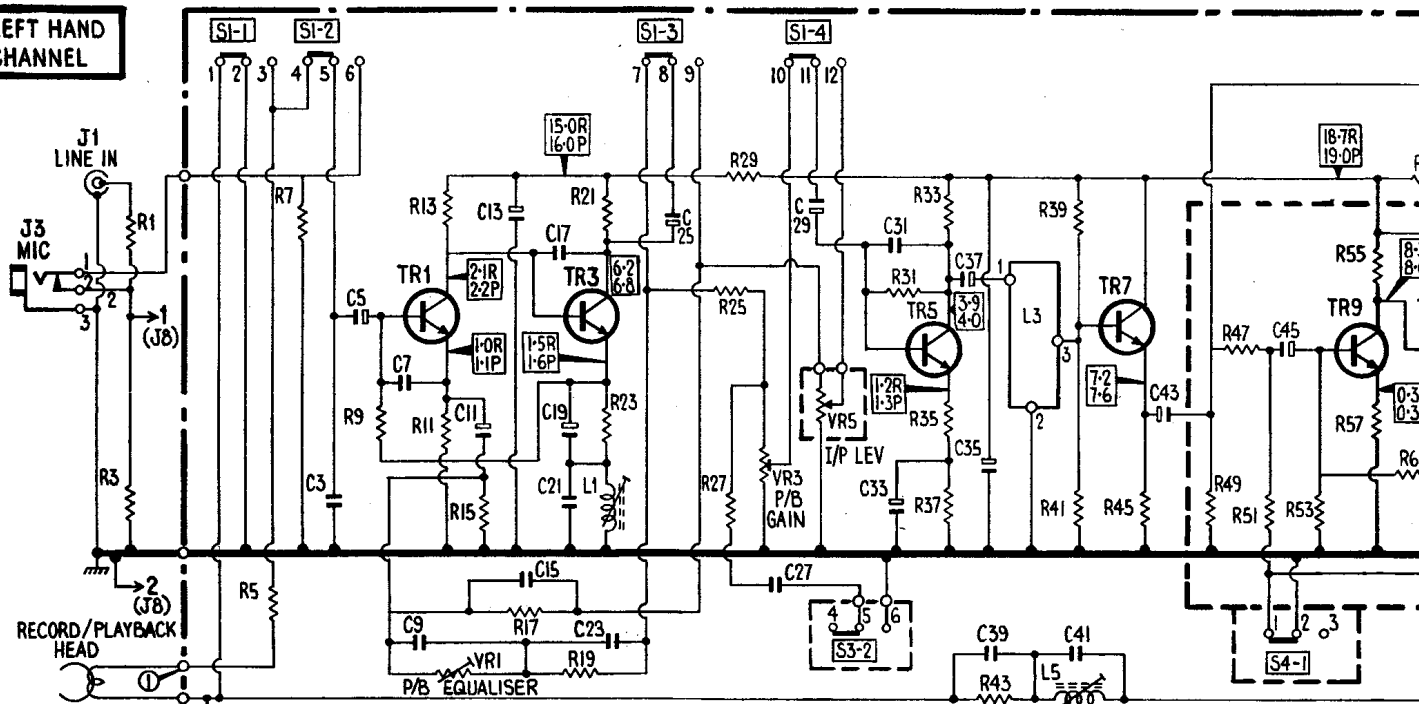
Transistors	
Tr1	2SC1327
Tr2	2SC1327
Tr3	2SC1327
Tr4	2SC1327
Tr5	2SC644
Tr6	2SC644
Tr7	2SC828
Tr8	2SC828
Tr9	2SC828
Tr10	2SC828
Tr11	2SC828
Tr12	2SC828
Tr13	2SC828
Tr14	2SC828
Tr15	2SA666
Tr16	2SA666
Tr17	2SC828
Tr18	2SC828
Tr19	2SC828
Tr20	2SC828
Tr21	2SC828
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Tr25	2SC1347
Tr26	2SC1347
Tr27	2SC1347
Tr29	2SK30AD
Tr30	2SK30AD

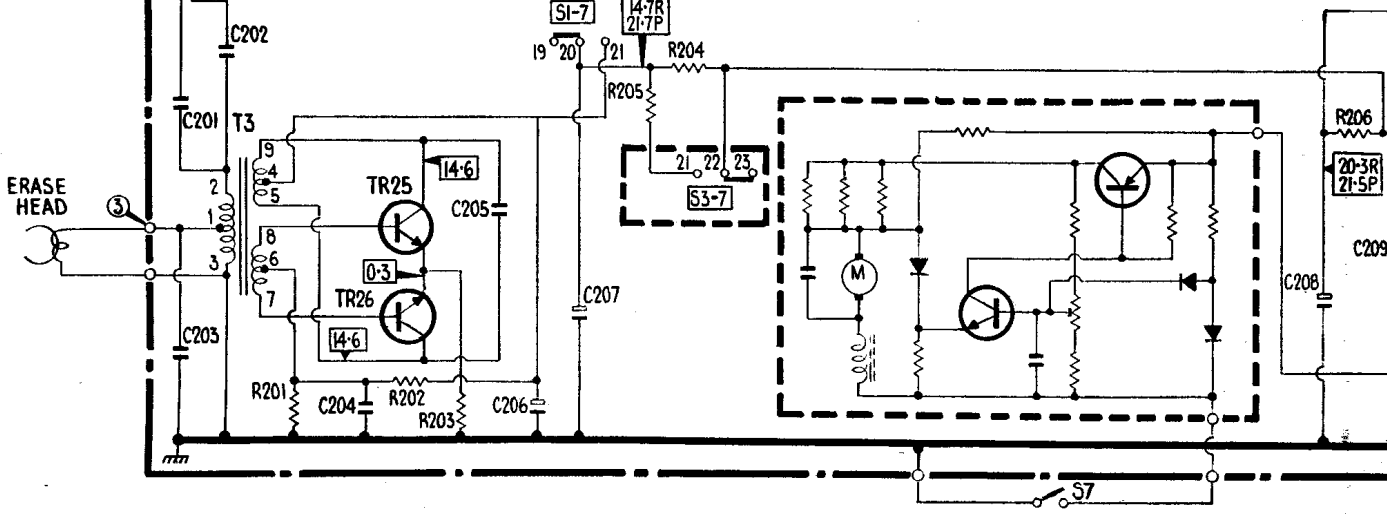
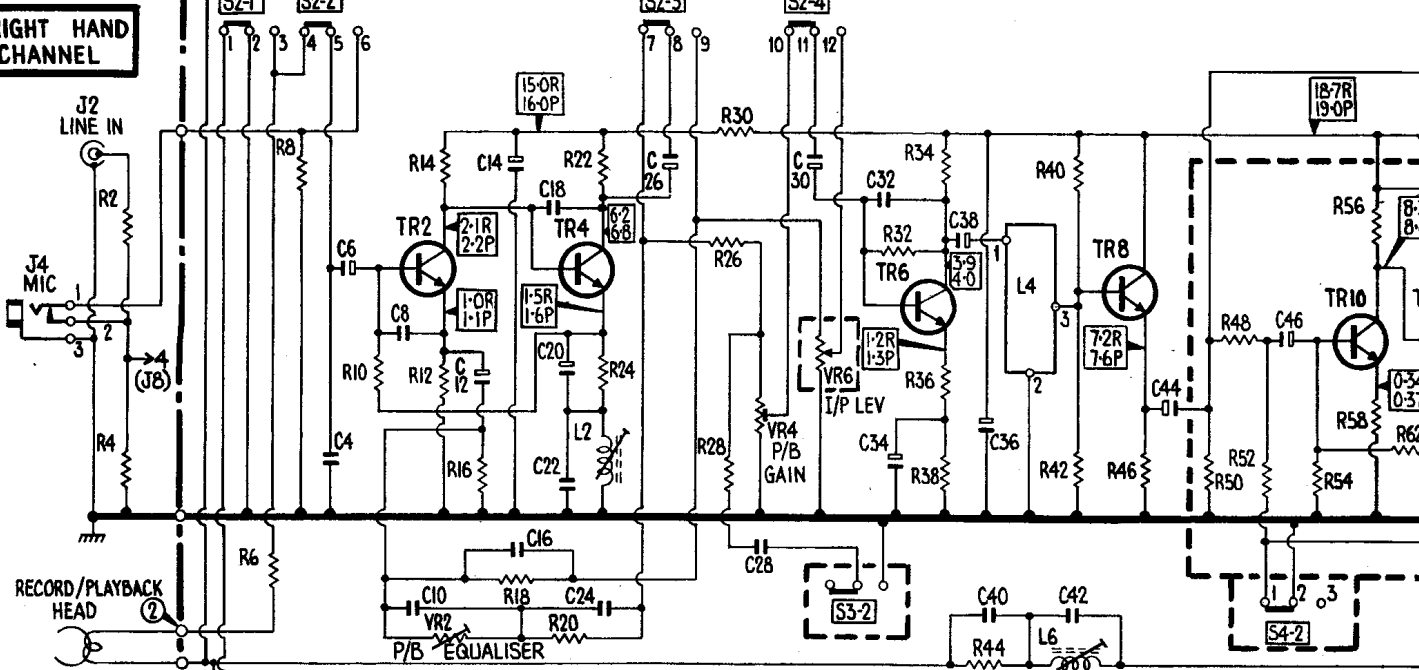
Diodes	
D1	OA90
D2	OA90
D3	1S1211
D4	1S1211
D5	1S1211
D6	1S1211
D7	OA90
D8	OA90
D9	1S1211
D10	1S1211
D11	OA90
D12	OA90
D15	1B0102
D16	1B0102
D17	EQA0108S

C				3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39	41	43	45										
		201	203	202	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46									
R	1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	57	61					
	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	62					
				201			202	203					205	204																	208				

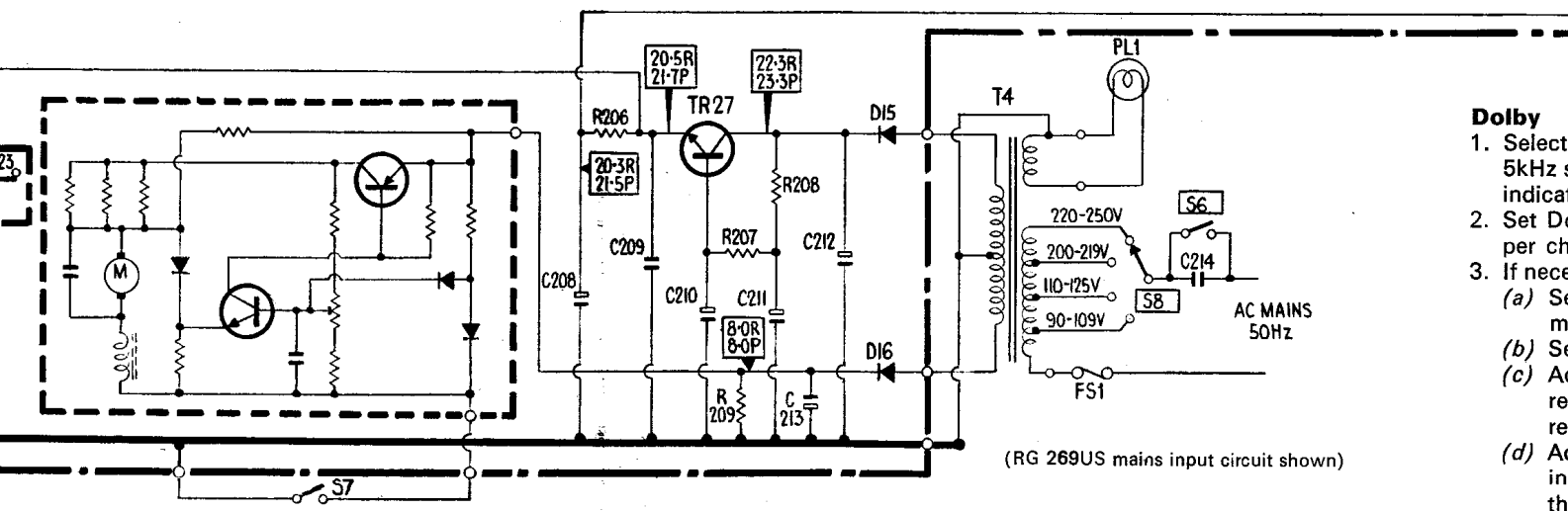
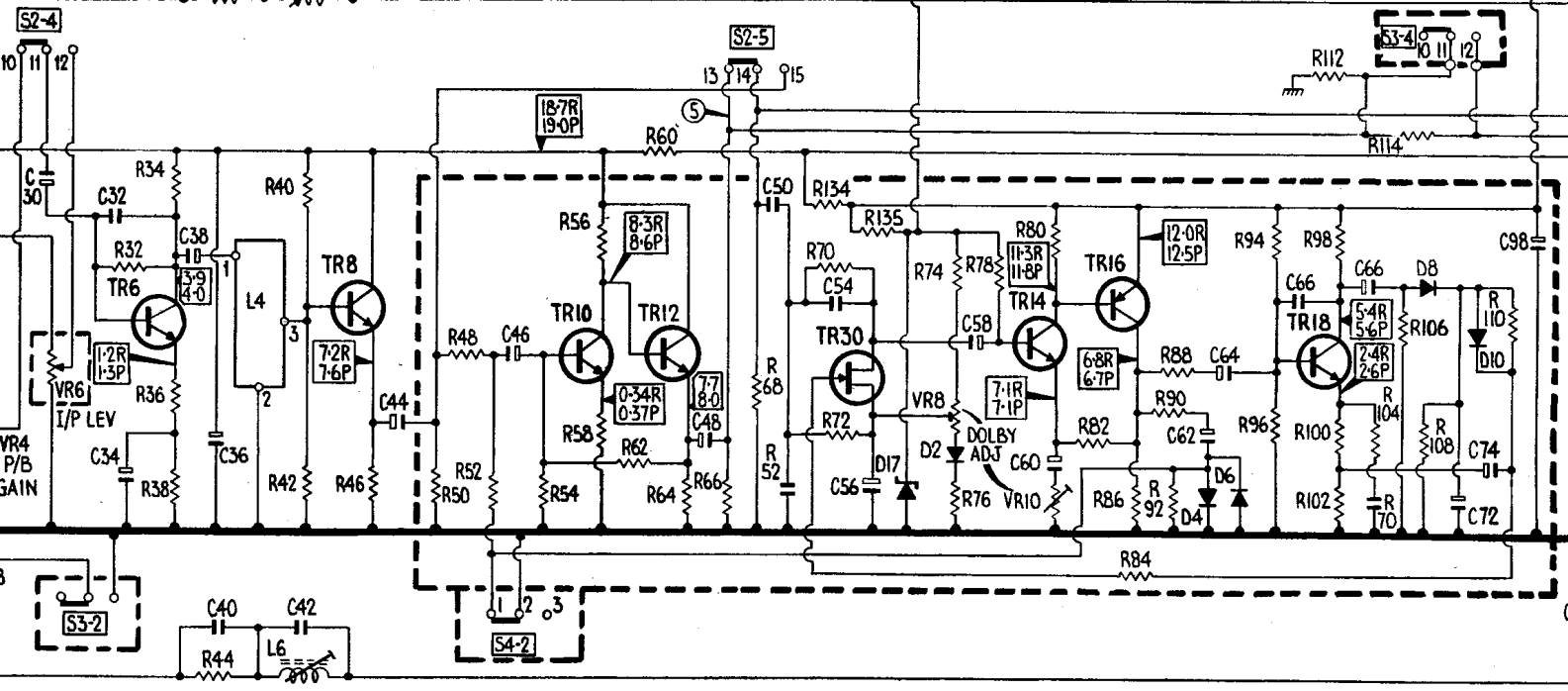
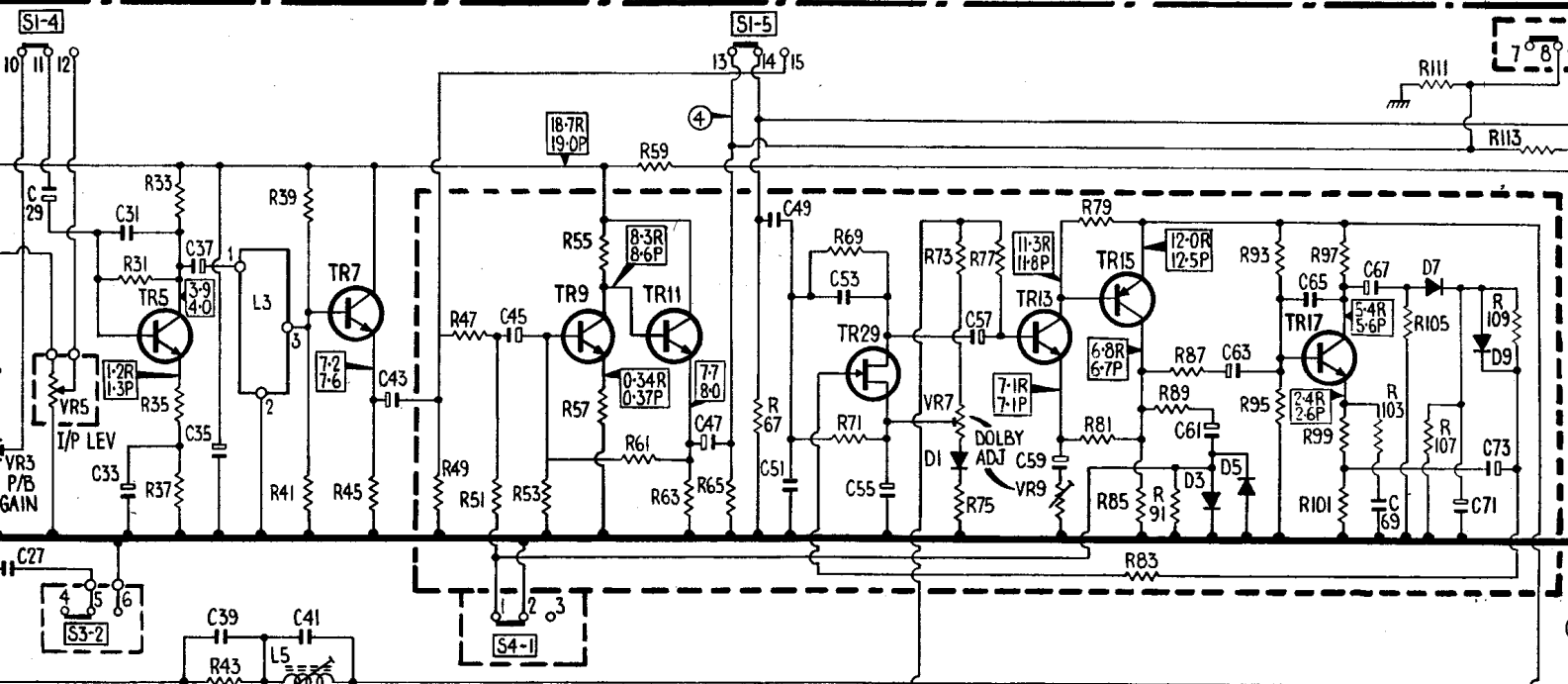
**LEFT HAND CHANNEL**



**RIGHT HAND CHANNEL**



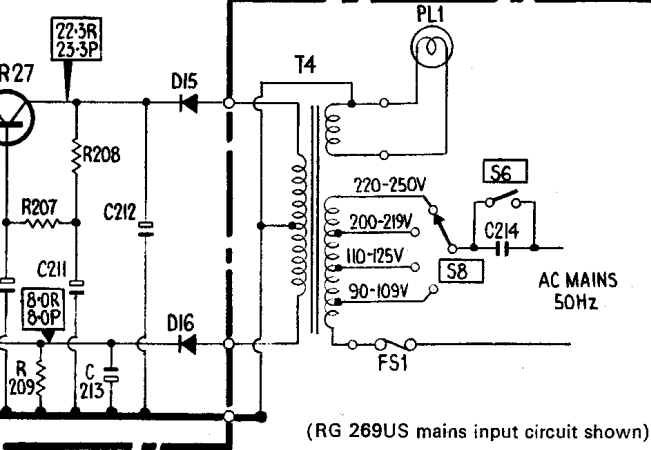
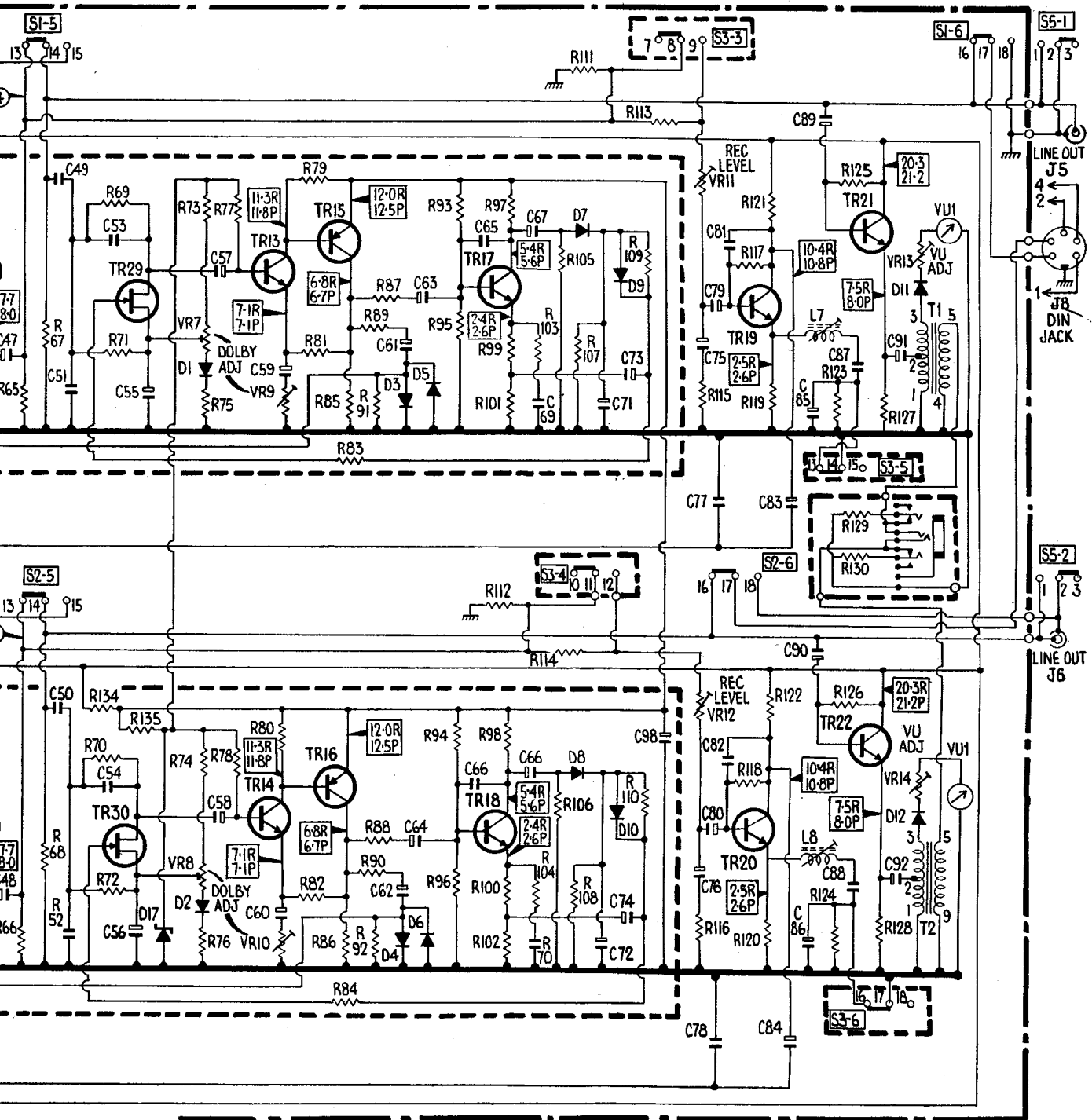
27	29	31	33	37	35	39	41	43	45	47	49	51	53	55	57	59	61	63	65	67	69	71	73
28	30	32	34	38	36	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74
VR3 VR5	31	33	35	37	43	39	41	45	49	51	53	55	57	59	61	63	65	67	69	71	73	75	
VR4 VR6	32	34	36	38	44	40	42	46	50	52	54	56	58	60	62	64	66	68	70	72	74	76	



- Dolby**
- Select 5kHz s indicate per ch
  - Set Do per ch
  - If nece (a) Se m (b) Se (c) Ac re re (d) Ac in th

(RG 269US mains input circuit shown)

47	49	51	53	55	57	59	61	63	65	67	69	71	73	75	79	77	81	83	85	89	87	91																			
48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	80	78	82	84	86	90	88	92																			
210	211	213	212																																						
65	67	69	71	134	73	VR7	75	77	VR9	79	81	85	83	91	89	87	93	95	97	99	101	103	105	107	111	113	109	VR11	115	117	121	119	123	129	125	130	127	VR13			
66	68	70	72	135	74	VR8	76	78	VR10	80	82	86	84	92	90	88	94	96	98	100	102	104	106	108	112	114	110	VR12	116	118	122	120	124	126	128	126	128	VR14			
207	209	208																																							

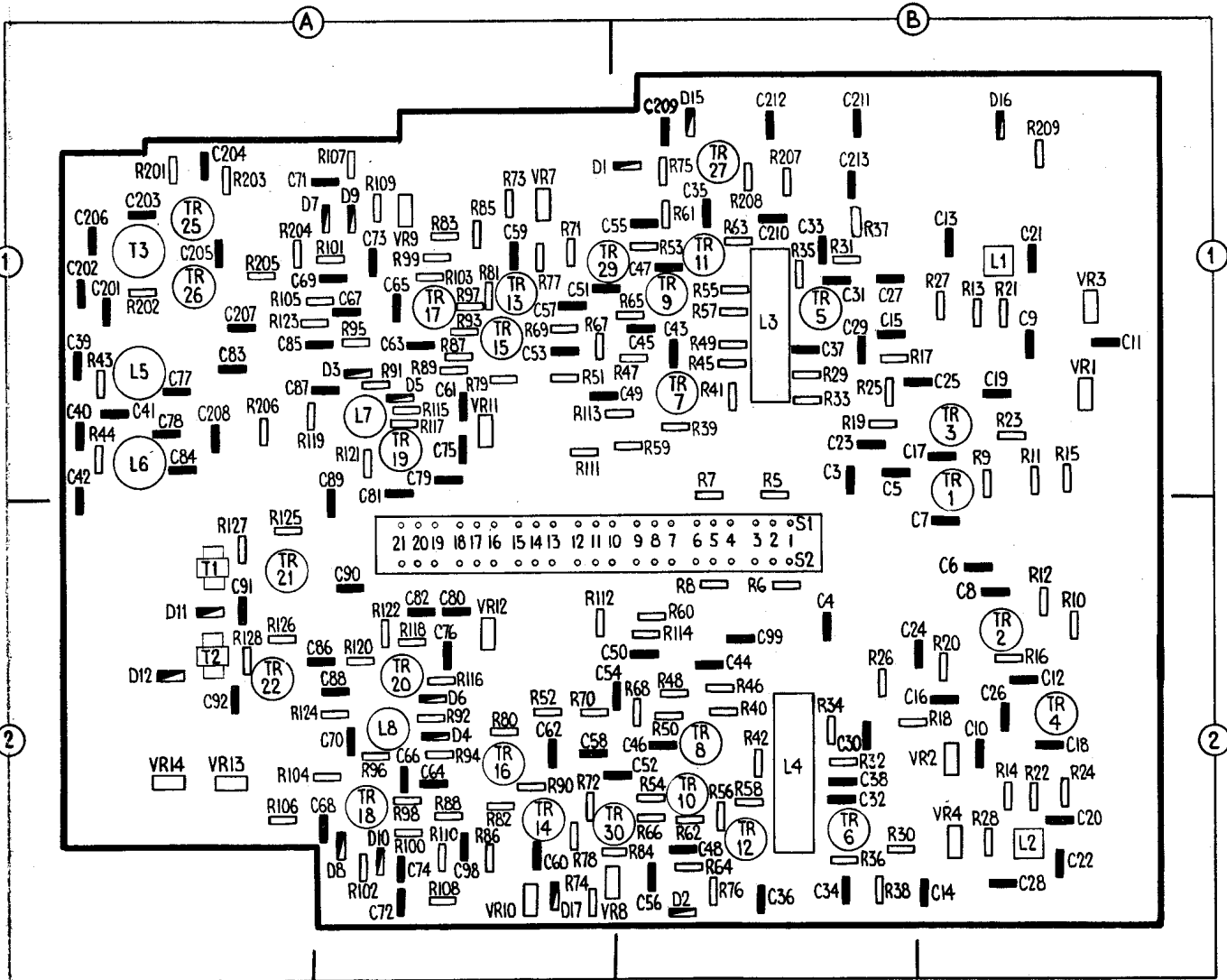


(RG 269US mains input circuit shown)

**Dolby**

1. Select "RECORD", set Dolby switch to OUT. Inject a 5kHz signal to LINE IN jacks to obtain a -35dB meter indication from test point TP4 (l.h.) and TP5 (r.h.).
2. Set Dolby switch to IN; the levels should rise by 8dB per channel.
3. If necessary, adjust Dolby circuit as follows:
  - (a) Set presets **VR7**, **VR8**, **VR9** and **VR10** to maximum.
  - (b) Set Dolby switch to IN.
  - (c) Adjust **VR9** (l.h.) and **VR10** (r.h.) until meter reading indicates -25dB (i.e. 10dB below reading in (1)).
  - (d) Adjust **VR7** (l.h.) and **VR8** (r.h.) until meter readings at TP4 and TP5 become -27dB (i.e. 2dB less than those obtained in adjustment (c)).

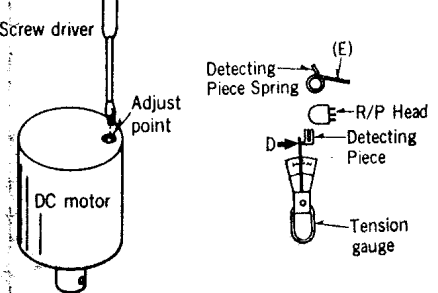
**Trader SERVICE SHEET 3229 National Panasonic RS-269USD**



**Dismantling (continued)**

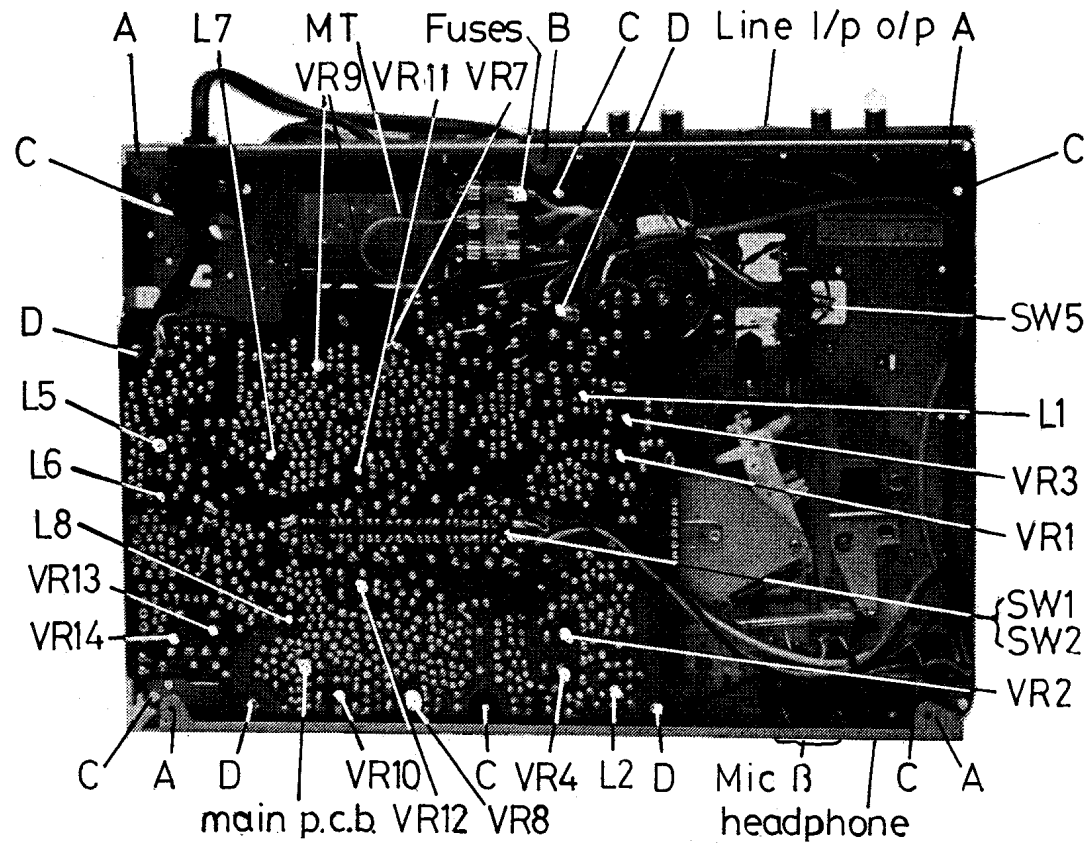
- (a) Remove four screws D from board.
- (b) Uncleat leads, disconnect where necessary (noting lead colours and connecting points for refitting), and ease board up from supporting pillars.

**Tape speed** (Figure 4). Using a test tape, with the 3000Hz speed test track, and a frequency counter, adjust for correct speed by means of the small preset screw in the motor.

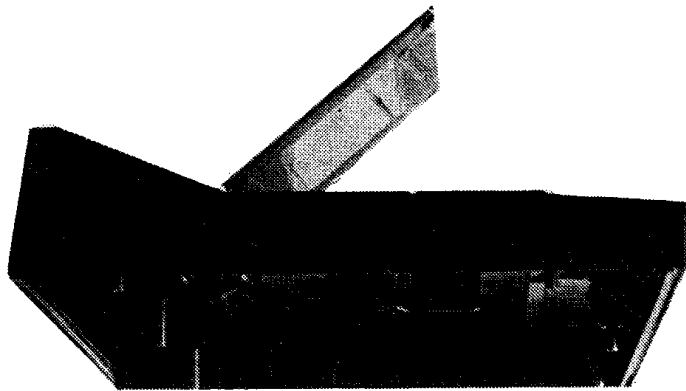


**Figure 4** **Figure 5**

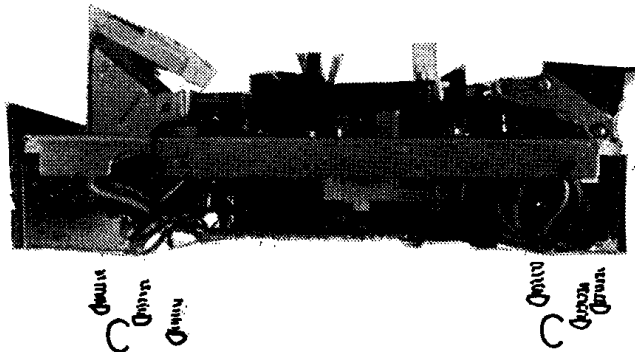
**Auto-stop mechanism** (Figure 5). Apply tension gauge to lug of detecting piece and exert pressure in direction of arrow D. When detecting piece just starts to move, pressure should be 40 to 60 gr. Adjust by bending tail E of detecting piece spring.



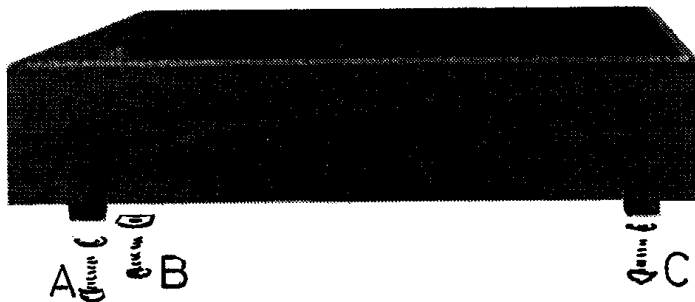
Top controls cover



Chassis assembly



Cabinet



### Electrical Adjustments

*Preliminaries:* Check that heads, capstan and pressure roller are clean and free of any oil or grease. Set record level controls to maximum, tape select switch to NORMAL. Dolby switch to OUT. See diagrams in text for connection points, equipment and required results.

Playback Frequency Response Chart

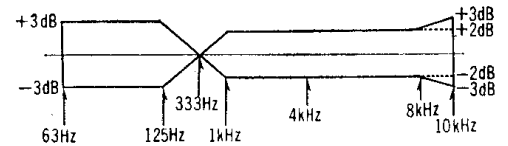


Figure 6

*Playback frequency response.* Connect VTVM to l.h. channel LINE OUT jack. Play back test tape. Adjust preset **VR1** for optimum response as shown in Figure 6. Repeat for r.h. channel, adjust by means of **VR2**.

*Playback gain.* With conditions as for frequency response check, repeat test using the 333Hz part of the test tape. Adjust preset **VR3** (l.h.) and **VR4** (r.h.) for 0.38 to 0.46 meter reading.

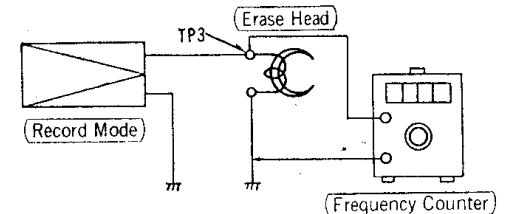


Figure 7

*Erase current.* Connect VTVM to test point TP3 (Figure 7). Select "RECORD". Check that meter reading is not less than 13V (15V for CRO<sub>2</sub> tape).

