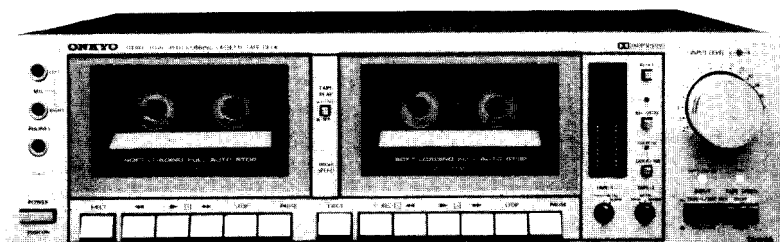


# ONKYO® SERVICE MANUAL

## STEREO CASSETTE

### TAPE DECK

### Model TA-W88



#### TABLE OF CONTENTS

Item	Page
Specifications	2
Cautions	2
Block diagram	3
Component location	4
Parts list	4
Disassembling procedures	5
Exploded view	6
Mechanism operation	7
Adjustment procedures	8
Tape 1-Exploded view	11
Tape 2-Exploded view	13
Printed circuit board view from component side	15
Schematic diagram (120V model)	17
Printed circuit board-parts list	19
Schematic diagram (G/W models)	21
Block diagram of IC	22
Packing view	23

**ONKYO®**  
**AUDIO COMPONENTS**

## SPECIFICATIONS

<b>Track System :</b>	4-track, 2-channel stereo
<b>Recording System :</b>	AC bias
<b>Erasing System :</b>	AC erase
<b>Tape Speed :</b>	4.8 cm/sec. High Speed 9.5 cm/sec.
<b>Wow and Flutter :</b>	0.06% (WRMS)
<b>Frequency Response :</b>	20—15,000 Hz (30—14,000Hz $\pm$ 3 dB) (normal position tape) 20—16,000 Hz (30—15,000 Hz $\pm$ 3 dB) (high position tape) 20—17,000 Hz (30—16,000 Hz $\pm$ 3 dB) (metal position tape)
<b>Signal-to-Noise Ratio :</b>	Dolby NR out, 58 dB (metal position tape) A noise reduction of 10 dB above 5 kHz and 5 dB at 1 kHz is possible with the Dolby NR in
<b>Input Jacks :</b>	Microphone Jacks : 2 Minimum input level : 0.3 mV/600 $\Omega$ Input impedance : 5 k $\Omega$ Optimum mic impedance : 200 $\Omega$ —50k $\Omega$ Line In : 2 Minimum input level : 50 mV Input impedance : 50 k $\Omega$ DIN Jack : 1 (Only G/W Models) Minimum input level : 0.1 mV/1k $\Omega$ Input impedance : 2.7 k $\Omega$

<b>Outputs :</b>	Line Out : 2 Output level : 350 mV (at 0 VU) Optimum load impedance : over 50 k $\Omega$ DIN Jack (Only G/W models) Standard output level : 500 mV (at 0 dB) Optimum load impedance : over 50 k $\Omega$ Headphone Jack : 1 8 $\Omega$ —200 $\Omega$
<b>Motor :</b>	DC Servo motor : 2
<b>Heads :</b>	Hard permalloy heads : 2 Ferrite head : 1
<b>Semiconductors :</b>	TR:52 Diodes:17 IC:5 LEDs:7 (G/W models) TR:50 Diodes:17 IC:5 LEDs:7 (D/Q models)
<b>Power Supply :</b>	AC 120V, 60Hz (D model) AC 220V, 50Hz (G model) AC 120/220V, 50/60Hz (W model) AC 240V, 50Hz (Q model)
<b>Power Consumption :</b>	18W
<b>Dimensions :</b>	418(W) x 122(H) x 270(D)mm 16-1/2" x 4-7/8" x 10-5/8"
<b>Weight :</b>	5.5 kg (12.1 lbs.)
<b>Accessories :</b>	Pin-type connecting cords
* Specifications and external appearance are subject to change without notice because of product improvements	

## CAUTIONS

- The continuous tape playback function is used to play back the cassette tape in TAPE-1 holder and then the cassette tape in TAPE-2 immediately afterward. If TAPE-2 does not operate, confirm that the tape playback switch is in the SEP. position.
- The TA-W88 has two cassette holders so that dubbing (copying) operations can be performed without using another cassette deck. To save time, the TA-W88 also has a high-speed dubbing capability that records tapes in about half the time required by normal speed recording. Tape dubbing can only be performed from the TAPE-1 cassette holder to the TAPE-2 cassette holder. Dubbing the opposite direction is not possible.

### 3. Voltage Selector (on back Panel)

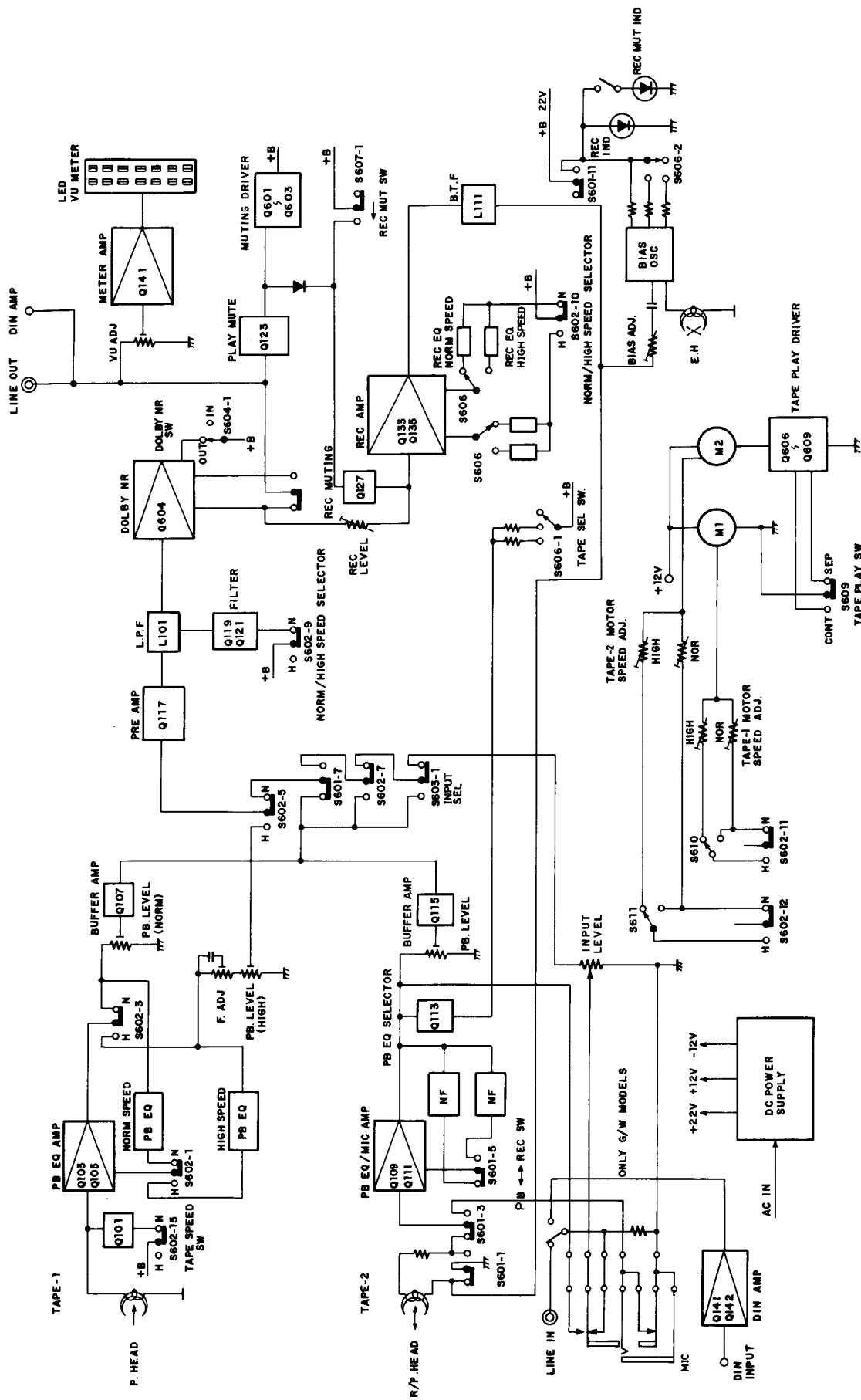
W model is equipped with a voltage selector. If the unit you own has a voltage selector, be sure it is set to the proper voltage before the power is turned on. To change the selector to conform to the power supply in your area, insert the tip of a screwdriver in the groove of the switch and slide it all the way to the left or right.



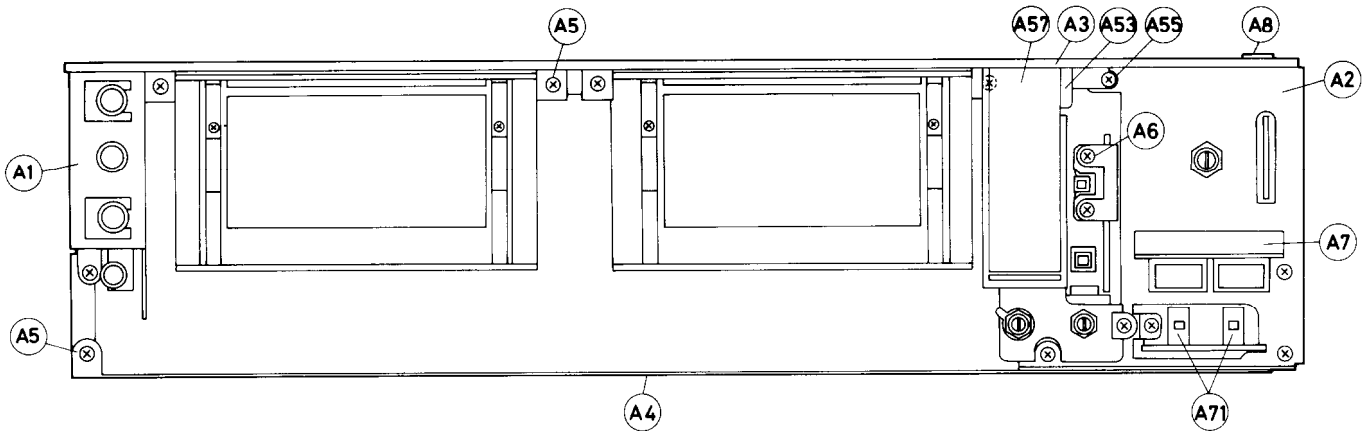
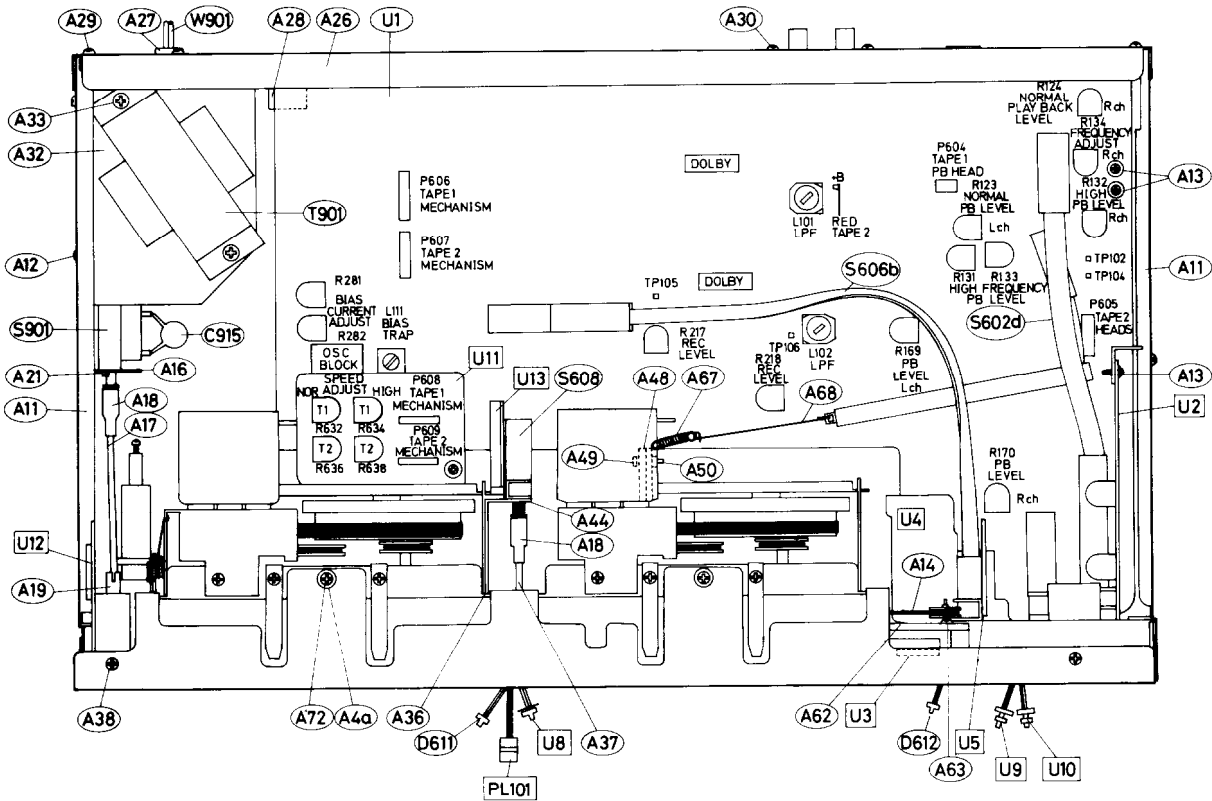
#### Note :

Units not equipped with a voltage selector can only be used in areas where the power supply agrees with the voltage specified on the back panel.

BLOCK DIAGRAM



# COMPONENT LOCATION



## PARTS LIST

REF.NO.	PARTS NO.	DESCRIPTION	REF. NO.	PARTS NO.	DESCRIPTION
A1	27140570	Bracket, headphone	A17	27260068A	Shaft
A2	27140574A	Bracket, right side	A18	28320135	Connector
A3	27140669	Bracket, up side	A19	27273016	Joint
A4	27140670	Bracket, down side	A20	834130068	3TTS + 6B, Tap screw
A5	834130068	3TTS + 6B, Tap screw	A21	82113006	3P + 6FN, Pan head screw
A6	82113006	3P + 6FN, Pan head screw	A23	27140479	Bracket, pc board
A7	28140050	Cushion	A24	831130068	3TTW + 6B, Tap screw
A8	87644010	W4x10F(BC), Washer	A26	27120381	Back panel (D)
A11	27115079B	Side bracket		27120382	Back panel (G)
A12	834130068	3TTS + 6B, Tap screw		27120383	Back panel (W)
A13	831130088	3TTW + 8B, Tap screw		27120403	Back panel (Q)
A14	24602041	Belt			
A16	27140478	Bracket, power			

REF.NO.	PARTS NO.	DESCRIPTION	REF.NO.	PARTS NO.	DESCRIPTION
A27	270025	SR-3P4, Strainrelief (D)	S901	25035224	NPS-121-L188P, Power switch (D)
	270280	SR-4K-4, Strainrelief (G/W)		25035192	NPS-122-L156P, Power switch (G)
	27300349	SR-6W-1, Strainrelief (Q)		25035207	NPS-121-L171P, Power switch (W/Q)
A28	28140338	Cushion	S902	25065123	NSS-1258P, Voltage selector switch (W)
A29	834130068	3TTS + 6B, Tap screw	T901	230496	NPT-741D, Power transformer (D)
A30	834130108	3TTS + 10B, Tap screw		230497	NPT-741G, Power transformer (G)
A32	27130247-1A	Bracket, power transformer		230498	NPT-741DG, Power transformer (W)
A33	833140087	4TTP + 8S, Tap screw		230513	NPT-741Q, Power transformer (Q)
A36	27140572-2	Bracket	U1	16391516	NAAF-1216, Rec., and playback amplifier pc board ass'y (D/Q)
A37	27260069	Shaft		16184516A	NAAF-1216a, Rec., and playback amplifier pc board ass'y (G/W)
A38	834130068	3TTS + 6B, Tap screw	U2	16391517	NAVR-1217, Volume and meter drive circuit pc board ass'y (D/Q)
A39	82113006	3P + 6FN, Pan screw		16184517A	NAVR-1217a, Volume and meter drive circuit pc board ass'y (G/W)
A41	27140571	Bracket	U3	16319518	NALED-1218, VU meter pc board ass'y
A42	834130068	3TTS + 6B, Tap screw	U4	16391519	NASW-1219, Tape selector pc board ass'y
A44	27140573	Bracket	U5	16391520	NASW-1220, Dolby and rec. muting switch pc board ass'y
A45	834130068	3TTS + 6B, Tap screw	U8	16391522	NAPL-1222, Recording indicator pc board ass'y
A46	831130068	3TTW + 6B, Tap screw	U9	16391523	NAPL-1223, Dolby indicator pc board ass'y
A48	27140633	Bracket, recording	U10	16391523	NAPL-1223, Recording muting indicator pc board ass'y
A49	82113008	3P + 8FN, Pan head screw	U11	16178524A	NASC-1224a, Speed control pc board ass'y
A50	863130	N-3FN, Nut	U12	16391525	NAMJ-1225, Mic. and headphone terminal pc board ass'y
A53	27190134	Holder	U13	16391554	NASW-1254, Tape play switch pc board ass'y
A54	28140086	Cushion	W901	253099A	AS-UC-3, Power supply cable (D)
A55	834130068	3TTS + 6B, Tap screw		253083	AS-CEE, Power supply cable (G)
A57	28130131	Clear plate		253077-1	Power supply cable (Q)
A62	24601099	Counter	Z1	244027-1	NDM-31, Tape 1
A63	838126088	2.6TTB + 8B, Tap screw	Z2	244028-1	NDM-32, Tape 2
A67	27180078A	Spring		260208	Binder
A68	27180096	Spring	Note :		
A70	27190009	Holder	D :	Only 120V model	W : Only 120/220V model
A71	27190123A	Holder, switch	G :	Only 220V model	Q : Only 240V model
A72	834130108	3TTS + 10B, Tap screw			
A3a	270638	Cushion			
A3b	27265032	3x4x6, Ring			
C915	3500060	0.01 $\mu$ F, 125V, Capacitor, CS (D)			
	3500065A	0.01 $\mu$ F, 400V, Capacitor, IS (G)			
C916, C915	3500065A	0.01 $\mu$ F, 400V, Capacitor, IS (W/Q)			
C915a	27300080	Cover, capacitor			
D611, D612	225062	SG-238D, L.E.D., Pause indicator			
PL101	210079	PL14V0.06AW-3.5, Lamp, High speed indicator			
S602d	25065181-1	Remote switch wire			
S606b	25030211-1	NRS-103-15BU, Remote switch and wire			
S608	25035248	NPS-122-L212, Push switch, tape play			

## DISASSEMBLING PROCEDURES

### 1. Top cover

Remove the three screws holding the top cover and back panel.  
Remove the two screws holding the top cover and side bracket.

### 2. Cassette lid

Press the eject button to open the cassette lid, then lift the door up and out to remove.

### 3. Front panel

Remove the top cover and two cassette lids.  
Remove the cushion on the front panel.  
Remove the six screws holding the front panel and front bracket.  
Remove the six L.E.Ds and lamp.

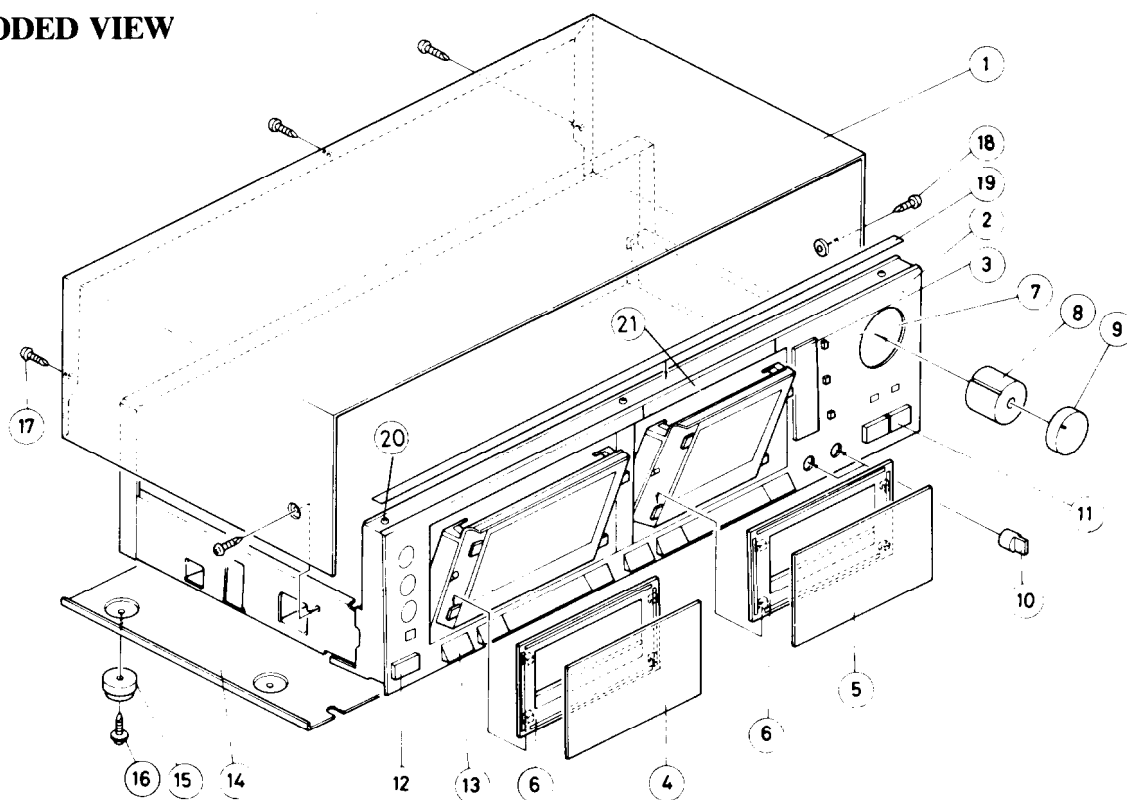


**4. Tape mechanism 2**

1. Remove the top cover, cassette lids and front panel.
2. Remove the three screws (A55) holding the meter plate and front bracket.
3. Remove the counter belt from counter pulley.
4. Remove the screw holding the up-side bracket and tape mechanism 2.
5. Remove the two screws holding the two screws holding the bottom side bracket and mechanism 2.
6. Cut the four binders to fix the lead wires from tape mechanism 1.
7. Remove the three sockets (P605, P607, P609).
8. Remove the lead wire of red colour from terminal + B.
9. Remove the two screws holding the cassette mechanism and front bracket.

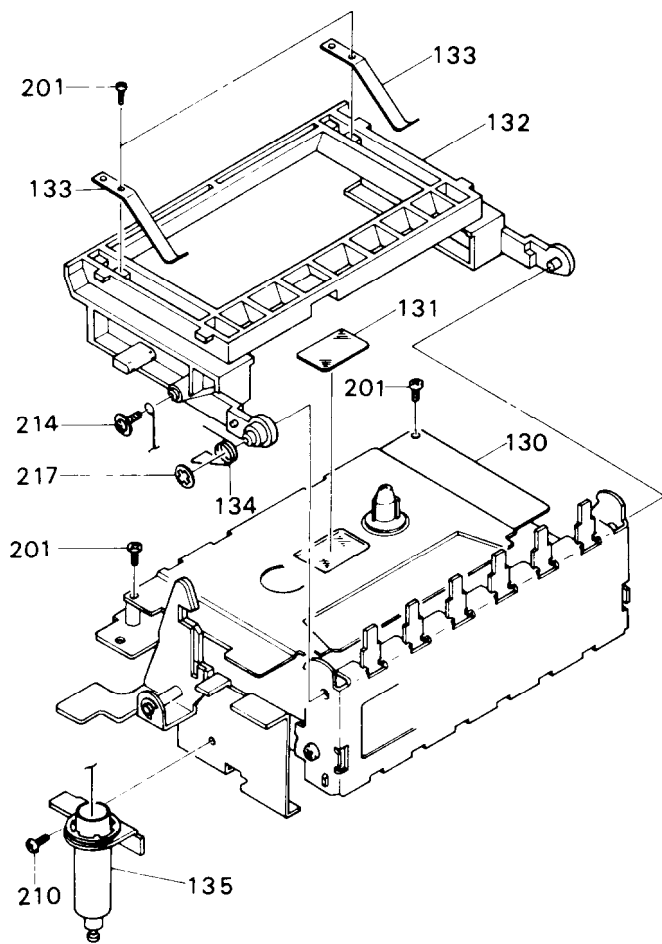
**5. Tape mechanism 1**

1. Remove the tape mechanism 2.
2. Remove the screw holding the up-side bracket and cassette mechanism 1.
3. Remove the two screws holding the bottom side bracket and tape mechanism 1.
4. Remove the two screws holding the cassette mechanism 1 and front bracket.
5. Remove the three sockets. (P604, P606, P608)

**EXPLODED VIEW**

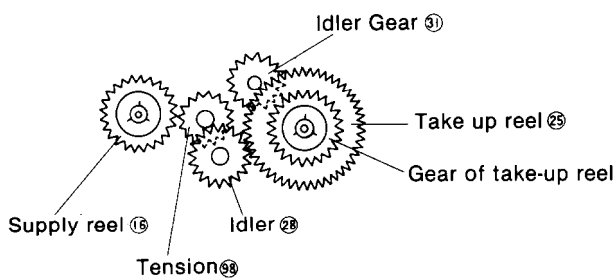
REF.NO.	PARTS NO.	DESCRIPTION
1	28184091-1	Top cover
2	16178121	Front panel ass'y
	28140386	Cushion
	28140200	Cushion
	27270086	Spacer
	27190133	Holder
	27267109	Guide, power
	27267152	Guide A
	27267155-2	Guide M1
	27267156-2	Guide M2
	27267157	Guide
	28198566	Facet
	28198549	Facet
3	28191103	Clear plate
4	28400056A	Cassette lid, tape 1
	28400070A	Cassette lid, tape 2
6	28400057A	Lid
	28140203	Cushion

REF.NO.	PARTS NO.	DESCRIPTION
7	28320670	Knob S
8	28320695	Knob R
9	28320694	Knob L
10	28320516	Knob, selector
11	28320574	Knob, selector
12	28320573	Knob, push
13	28320673-1A	Knob, cassette
14	27170115	Bottom board
15	27175003A	Leg
16	831130088	3TTW + 8B, Tapping screw
17	834130088	3TTS + 8B, Tapping screw
18	834430068	3TTS + 6B(BC), Tapping screw
19	28140024	Cushion
20	834130088	3TTS + 8B, Tapping screw
21	29360484	Caution label



REF.NO.	PARTS NO.	DESCRIPTION
130	24610733	Back plate
131	24610734	Plate
132	24610735	Cassette case
133	24605334	Spring
134	24605335	Spring
135	24610736	Damper
201	838120055	2x5, Tapping screw
210	833126056	2.6x5, Tapping screw
214	831126062	2.6x6, Tapping screw
217	8910401	CS-4, Circlip

## MECHANISM OPERATION



### PLAY

When the play button is pressed, the button lever 52 applies pressure to the select cam 92. At the same time, the cam plate 50 slides to move the start lever 108 which releases the lock of the operating gear 107 so the flywheel gear 89 rotates the operating gear. At the cam section of the operating gear, the slide panel assembly 74 slides so that the select cam 92 pushes the play panel 81 up to lock the play panel with the lock panel assembly 70. Along with the play panel 81, movement is transmitted to the brake panel 94, then sensor arm A 119, sensor arm B 118, sensor arm C 104 and finally to the sensor 101. At the same time, the play panel 81 operates the head base 13, which then operates the idler assembly 98 causing the take-up reel to begin rotating. The order of operation for FF, REW, PAUSE and STOP is basically the same.

## ADJUSTMENT PROCEDURES

### PRECAUTIONS

1. Before adjustment, clean the following parts with an alcohol moistend swab.

- \* record/playback head
- \* pinch roller
- \* rubber belt
- \* erase head
- \* capstan

2. Do not use magnetized screwdriver for adjustments.  
 3. Demagnetize record/playback head with a head demagnetizer.  
 4. The switches and controls should be set as follows unless otherwise specified.

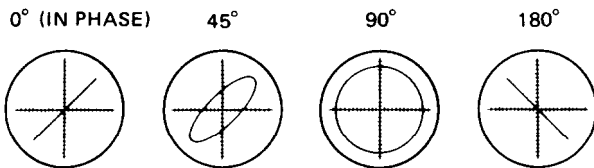
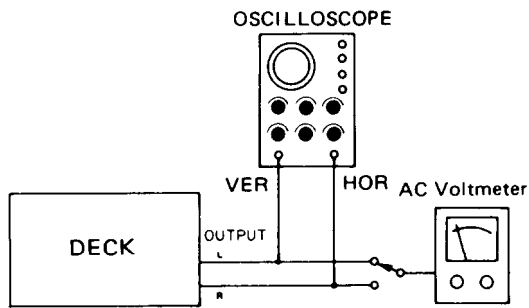
TAPE SEL. 1 & 2.....NORM  
 DOLBY NR.....OUT  
 TAPE SPEED.....NORM  
 INPUT LEVEL.....0

5. TAPE 1 ... left side, TAPE 2 ... right side

### 1. Head azimuth adjustment

- 1) Play the VTT-658 test tape back.
- 2) Adjust the head azimuth screw so that the phase relationship between L-and R-channels approximates 0 degrees as indicated on the oscilloscope.
- 3) At this time confirm that playback output level is approximately the maximum value on the AC voltmeter.
- 4) Then confirm that the phase difference of the respective frequency is with in the rated value. 90 degrees or less in the range of 40 Hz to 10 kHz is required.
- 5) Secure the screw with the locking paint.

Note : This adjustment should be performed for both TAPE 1 and TAPE 2.



Confirming phase relationship

### TEST EQUIPMENT/TOOLS REQUIRED :

- Audio oscillator
- Digital frequency counter
- Oscilloscope
- Attenuator
- AC voltmeter
- Non-magnetic screw driver, shorted clip
- Blank tapes (completely erased)
  - NORMAL.....XL/I
  - HIGH.....XL/II
  - METAL.....MX
- Test tapes
  - VTT-658 : 10kHz, -15dB
  - MTT-111 : 3kHz, -10dB
  - MTT-150 : dolby level calibration 400Hz tone 200 nWb/m
  - MTT-215C : 315Hz, 10kHz, -10dB

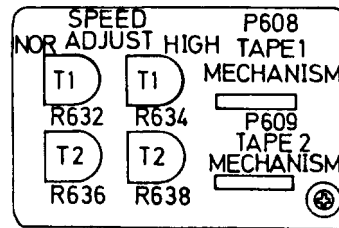
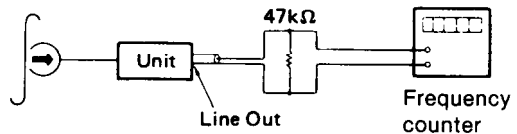
### 2. Tape speed adjustment

#### Normal speed

Insert the MTT-111 test tape into the TAPE-1 cassette holder. Play the MTT-111 back. Adjust the R632 semi-fixed resistor so that the counter indication becomes 3,010Hz to 3,020Hz. Next, insert the MTT-111 test tape into the TAPE-2 cassette holder. Play the MTT-111 back. Adjust the R636 semi-fixed resistor so that the counter indication becomes 3,000Hz to 3,010Hz.

#### High speed

Insert the MTT-111 test tape into the TAPE-1 cassette holder. Set the tape speed switch to the HIGH position. Play the MTT-111 back. Adjust the R634 semi-fixed resistor so that the counter indication becomes 6,010Hz to 6,020Hz. Next insert the MTT-111 into the TAPE-2 cassette holder. Connect the shorted clip between TP-102 and TP-104 terminals. Play the MTT-111 back. Adjust the R638 semi-fixed resistor so that the counter indication becomes 6,000Hz to 6,010Hz.





### 3. Playback level adjustment

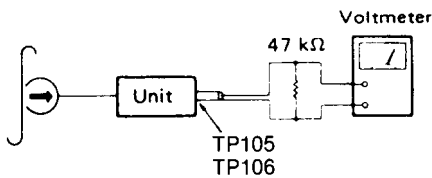
#### Normal speed

Insert the MTT-150 test tape into the TAPE-1 cassette holder. Play the MTT-150 back. Adjust the R123. (L ch.) and R124 (R ch.) semi-fixed resistors so that the indication of voltmeter becomes 580mV.

Insert the MTT-150 into the TAPE-2. Play the MTT-150 back. Adjust the R169 (L ch.) and R170 (R ch.) semi-fixed resistors so that the indication of voltmeter becomes 580mV.

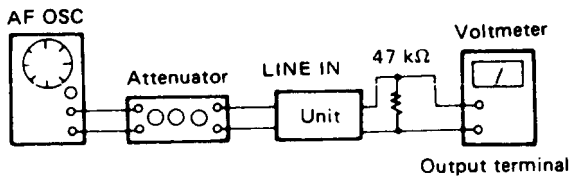
#### High speed

Set the tape speed switch to the HIGH position. Insert the MTT-150 into the TAPE-1 cassette holder. Play the MTT-150 back. Adjust the R131 (L ch.) and R132 (R ch.) semi-fixed resistors so that the indication of voltmeter becomes 580mV.



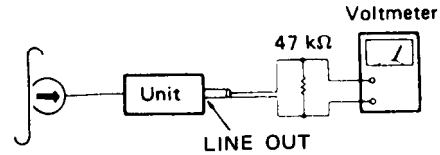
### 4. VU indication adjustment

Insert the MTT-150 test tape into the TAPE-2 cassette holder. Play the MTT-150 back. Adjust the R269 (L ch.) and R270 (R ch.) semi-fixed resistors so that the +3dB L.E.D. of VU indication lights up. Next apply the 1kHz signal to the line-in terminals. Press the pause and recording buttons and put the TAPE-2 into the recording mode. Adjust the input level volume so that the 0dB L.E.D. of VU indication light up. Then set the attenuator for -1dB input level. Adjust the R269 and R270 so that the 0dB L.E.D. goes out. Confirm that the +3dB L.E.D. light up when play the MTT-150 back.



### 5. Playback frequency adjustment

Set the tape speed switch to the HIGH position. Insert the MTT-215C test tape into the TAPE-1 cassette holder. Adjust the R133 (L ch.) and R134 (R ch.) semifixed resistors so that the 315Hz and 10kHz signals become same level.



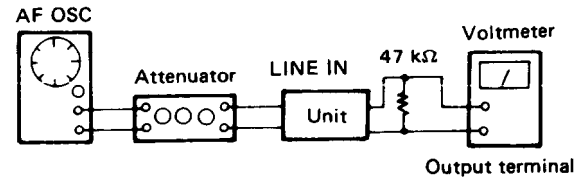
### 6. Recording bias adjustment

Insert the normal blank tape into the TAPE-2 cassette holder. Press the recording and pause buttons together and put the TAPE-2 into the recording mode.

Apply the 400Hz signal to line-in terminal. Adjust the input level volume so that the 0dB indicator light up.

Then set the attenuator for -20dB input level. Release the pause button and record on the tape. Next change the frequency of the 10kHz and record again.

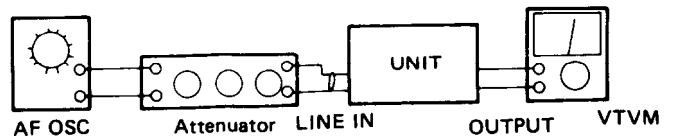
Adjust the R217 (L ch.) and R218 (R ch.) so that the 400Hz and 10kHz playback levels become same.

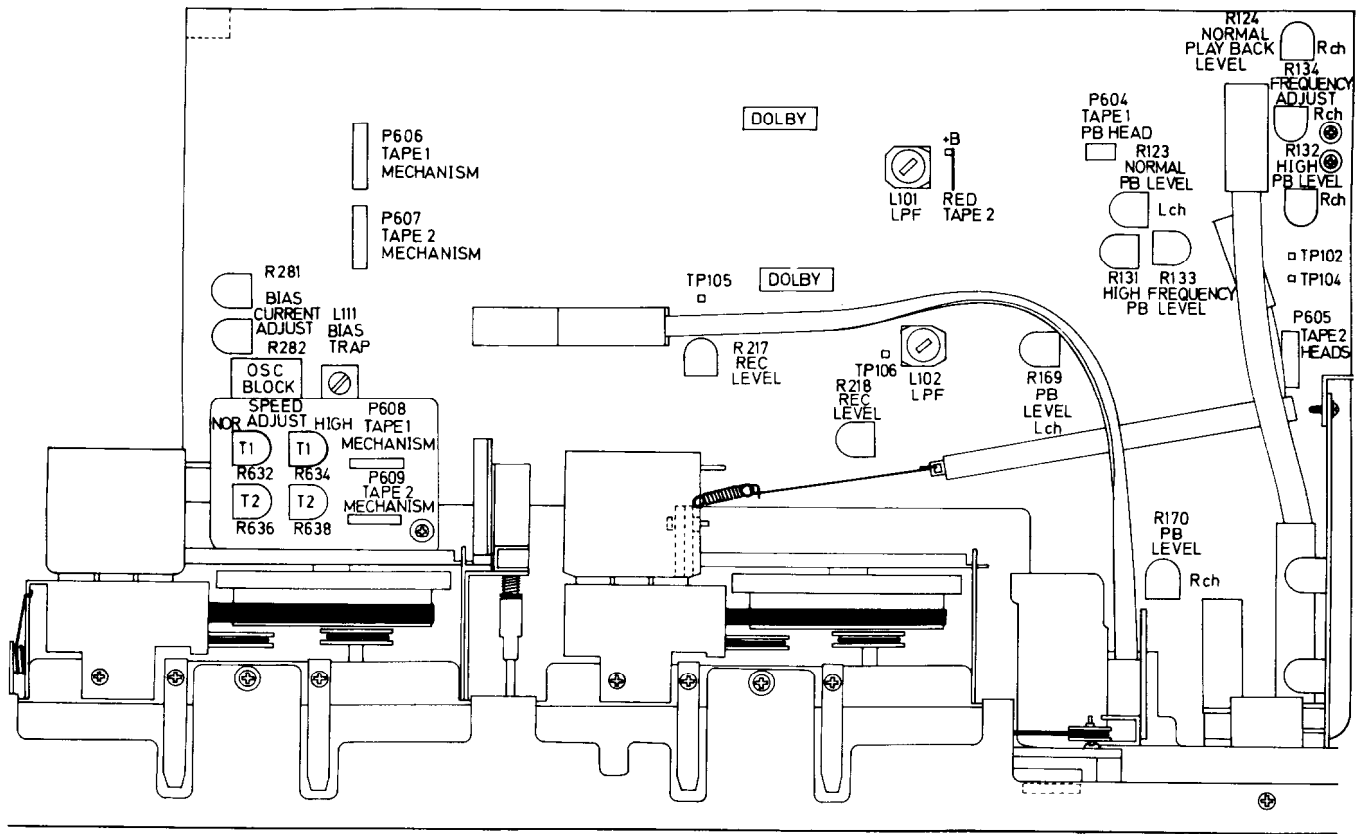


### 7. Recording level adjustment

Insert the normal blank tape into the TAPE-2 cassette holder. Apply the 1,000Hz signal to line-in terminal. Put the TAPE-2 into the recording mode. Adjust the input level volume so that the voltmeter reads 350mV.

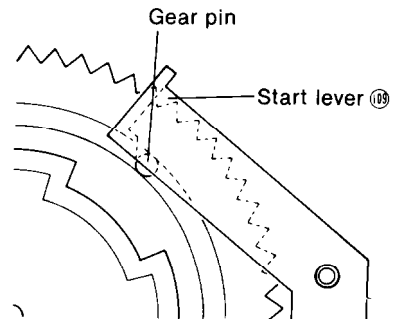
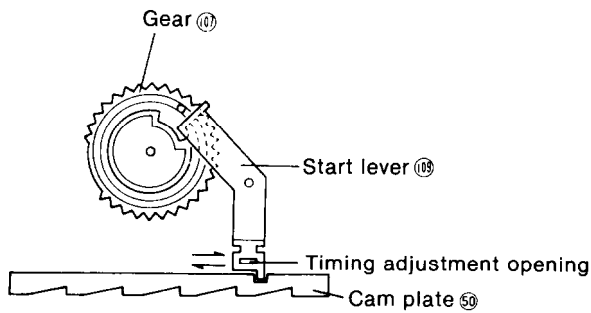
Record on the tape. Adjust the R217 (L ch.) and R218 (R ch.) so that the playback level becomes 350mV ± 0.5dB.





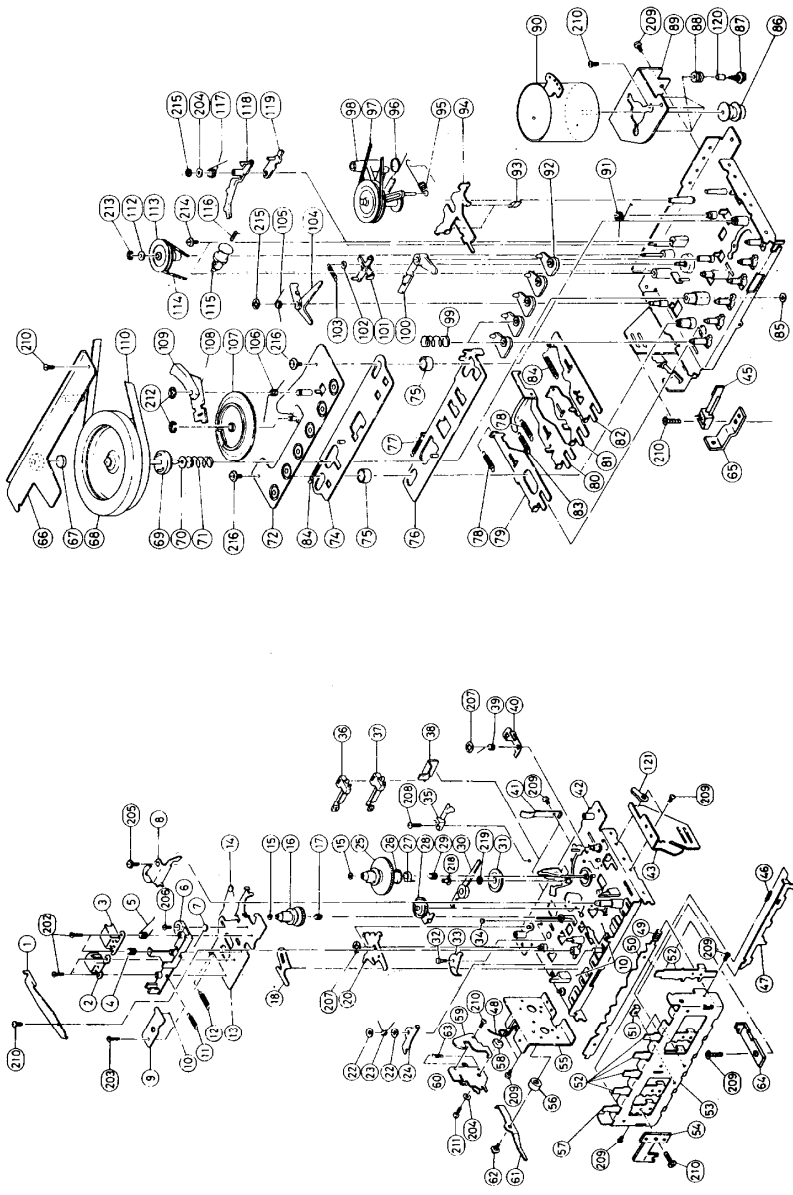
### TIMING ADJUSTMENT

As shown in the diagrams below, adjust the start lever timing so that the tip of the start lever clasp is slightly below the center of the gear pin when one of the tape transport buttons is held down until the gear is activated.



PLAY torque 35 ~ 70g/cm  
 FF torque 70 ~ 140g/cm  
 REW torque 70 ~ 140g/cm

TAPE MECHANISM 1-EXPLODED VIEW



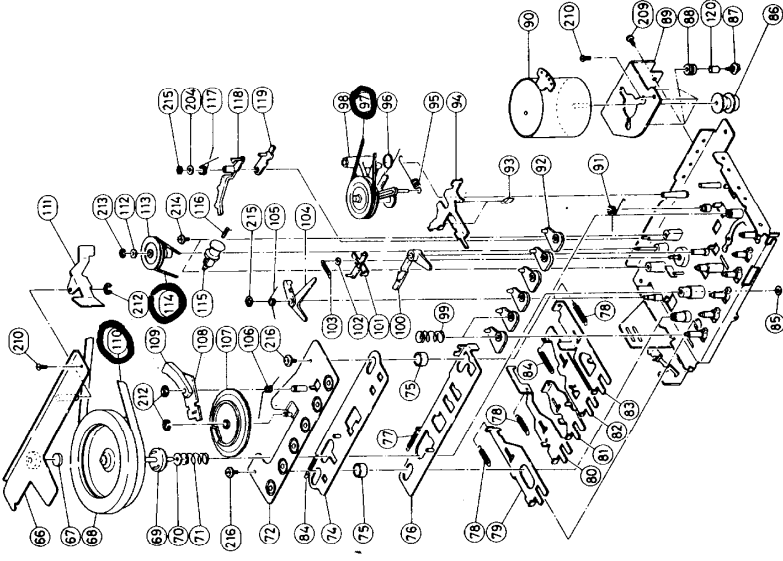
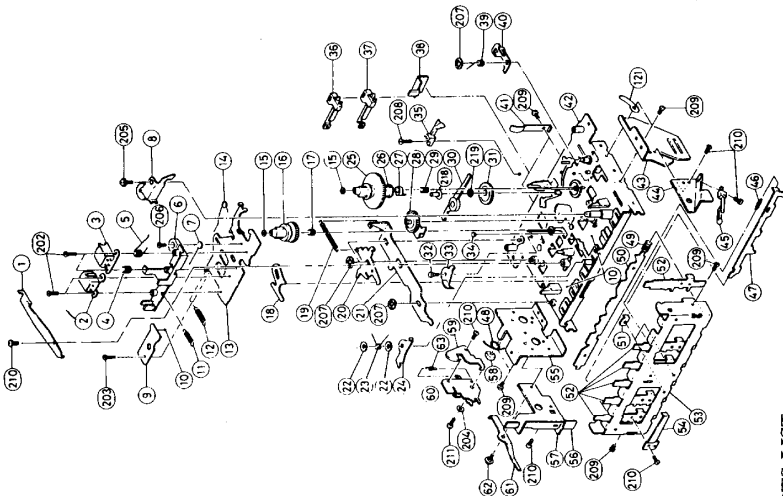
REF. NO.	PARTS NO.	DESCRIPTION
67	24610715	Capsian holder
68	24602141	Flywheel
69	24602142	Gear, flywheel
70	24610785	ø2.6xø8x0.25, Poly = vinyl slider washer
71	24605135	Spring
72	24610716	Plate
73	24610808	Slide plate
74	24610739	Collar
75	24610718	Lock plate
76	24605322	Spring
77	24605162	Spring
78	24610719	Pause lever
79	24610720	Fast forward lever
80	24610721	Play lever
81	24610722	Rewind lever
82	24605377	Spring
83	24605324	Spring
84	24610786	ø2.4xø4x0.3, Poly = vinyl slider washer
85	24610786	ø2.4xø4x0.3, Poly = vinyl slider washer
86	24601110	Motor pulley
87	801262	Screw, motor
88	24610723	Cushion
89	24610724	Bracket, motor
90	24601109-1	Motor ass'y
91	24605325	Spring
92	24610725	Selector arm
93	24610336	Rubber, brake
94	24610727	Plate, brake
95	24605326	Spring
96	24605327	Spring
97	24602143	Belt
98	24602172	Tension arm
99	24605328	Selector arm spring
100	24603212	Stop lever
101	24610212	Sensor
102	24610787	Washer
103	24605329	Spring
104	24610729	Sensor arm C
105	24605330	Spring
106	24605331	Spring
107	24602145	Gear
108	24610730	Start plate
109	24603213	Start lever
110	24602149	Belt
111	24610783	ø2.6xø4x0.2, Nylon washer
112	24602146	Worm gear
113	24602147	Belt
114	24602148	Auto-stop cam
115	24605332	Spring
116	24605333	Spring
117	24610731	Sensor arm B
118	24610732	Sensor arm A
119	24610809	Collar, motor
120	24610810	Terminal
121	83120055	2x5, Tapping screw
201	83120055	2x1.1, Screw
202	801253	2.6x10, Tapping screw
203	83126106	Washer
204	8761280705	2.6x8, Tapping screw
205	83126062	2.6x6, Tapping screw
206	835126066	CS-3, Circlip
207	8910301	2x5, Tapping screw
208	833120056	3x5, Tapping screw
209	833130056	2.6x8, Tapping screw
210	833126056	2.6x8, Tapping screw
211	833126086	E-3, Circlip
212	8930301	E-2, Circlip
213	8930201	2.6x6, Tapping screw
214	83126062	CS-2, Circlip
215	8910201	3x6, Tapping screw
216	83130062	CS-4, Circlip
217	8910401	ø2.3xø2x0.2, Eyelet
218	80006	ø2.3xø2x0.2, Washer
219	8761220502	Holder

TAPE 1-PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
1	24603209-1	Switch lever
2	24600029	Erase head
3	24600029	R/P head
4	24605136	Spring, pinch roller
5	24605308	Head stand
6	24610689	Spring
7	24605309	Pinch roller arm
8	24601090	Plate, spring
9	24605374	Steel ball
10	24601788	Spring
11	24605310	Spring
12	24605311	Head chassis
13	24610691	Spring
14	24605312-1	ø1.6xø4x0.2, Nylon washer
15	24610782	Supply reel
16	24602137	Spring
17	24605139	Lever
18	24602120	Stop plate
20	24610692	ø4-2xø10x0.25, Poly = vinyl slider washer
22	24610784	Washer

REF. NO.	PARTS NO.	DESCRIPTION
46	24605318	Spring
47	24610704	Lock plate
48	24605375	Spring
49	24605319	Spring
50	24605319	Spring
51	24610706	Cam plate
52	24603214	Internal plate
53	24610707	Lever, button
54	24610708	Holder, button
55	24610709	Plate
56	24610737	Side bracket A
57	24603215	Collar
58	24610738	Lever, button
59	24610710	Collar
60	24610711	Eject plate
61	24603211	Lever lock plate
62	801255	Screw with washer
63	24605376	Spring
64	24610712	Stopper
65	24610713	Plate, switch
66	24610714	Holder

TAPE MECHANISM 2-EXPLODED VIEW



REF. NO.	PARTS NO.	DESCRIPTION
70	24610785	φ2.6xφ8x0.25, Poly = vinyl slider washer
71	24605135	Spring
72	24610716	Slide plate
74	24610808	Collar
75	24610739	Lock plate
76	24610718	Spring
77	24605322	Spring
78	24605162	Pause lever
80	24610719	Fast forward lever
81	24610720	Play lever
82	24610721	Rewind lever
83	24610722	Recording lever
84	24605324	Spring
85	24610786	φ2.4xφ4x0.3, Poly = vinyl slider washer
86	24601110	Motor pulley
87	801262	Screw, motor
88	24610723	Cushion
89	24610724	Bracket, motor
90	24601109-1	Motor ass'y
91	24605323	Spring
92	24610745	Selector arm
93	24610726	Cushion
94	24610727	Plate, brake
95	24605326	Spring
96	24605327	Spring
97	24602143	Belt
98	24602172	Tension arm
99	24605338	Selector arm spring
100	24603212	Stop lever
101	24610725	Sensor
102	24610787	Washer
103	24605329	Spring
104	24610729	Sensor arm C
105	24605330	Spring
106	24605331	Spring
107	24602145	Gear
108	24610730	Start plate
109	24603213	Start lever
110	24602149	Belt
111	24603217	Recording lever
112	24610783	φ2.6xφ6x0.2, Nylon washer
113	24602146	Worm gear
114	24602147	Belt
115	24602148	Auto-stop cam
116	24605332	Spring
117	24605333	Spring
118	24610731	Sensor arm B
119	24610732	Sensor arm A
120	24610809	Collar, motor
121	24610810	Terminal
201	838120055	2x5, Tapping screw
202	801253	2x11, Screw
203	833126106	2.6x8, Tapping screw
204	8761280705	Washer
205	831126062	2.6x8, Tapping screw
206	835126066	2.6x6, Tapping screw
207	8910301	CS-3, Circlip
208	833120066	2x6, Tapping screw
209	833130056	3x5, Tapping screw
210	833126056	2.6x5, Tapping screw
211	833126086	2.6x8, Tapping screw
212	8930301	E-3, Circlip
213	8930201	E-2, Circlip
214	831126062	2.6x6, Tapping screw
215	8910201	CS-2, Circlip
216	831130062	3x6, Tapping screw
217	8910401	CS-4, Circlip
218	80066	φ2.3xφ2x0.2, Eyeliet
219	8761220502	φ5xφ2.2x0.2, Washer

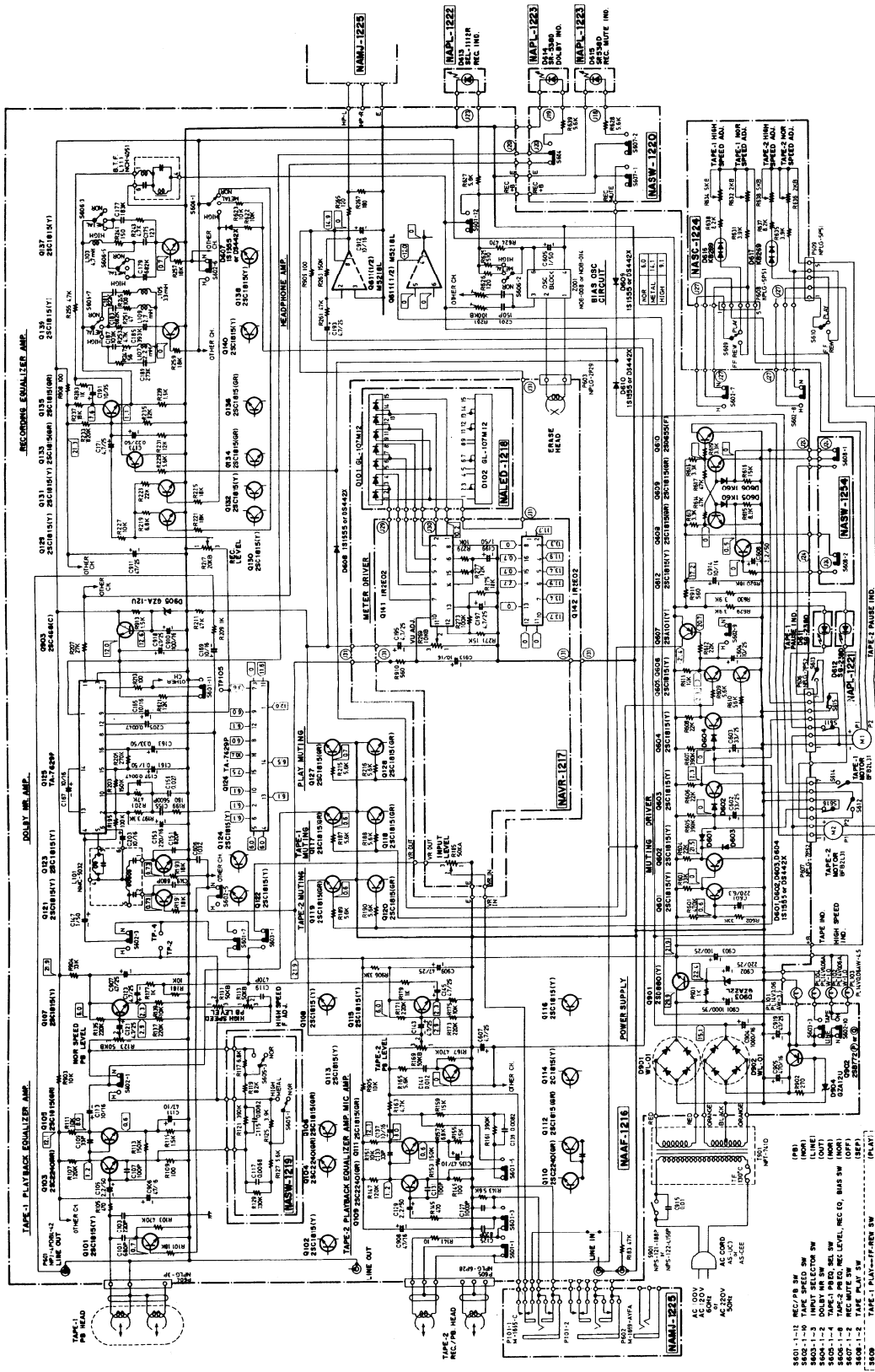
TAPE 2-PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
1	24603209-1	Switch lever
2	24600013	Erase head
3	24600022	R/P head
4	24605136	Spring
5	24605308	Spring, pinch roller
6	24610689	Head stand
7	24605310	Spring
8	24610690	Pinch roller arm
9	24605374	Steel ball
10	24610788	Plate, spring
11	24605310	Spring
12	24605311	Spring
13	24610691	Head chassis
14	24605312-1	Spring
15	24610782	φ1.6xφ4x0.2, Nylon washer
16	24602137	Supply reel
17	24605139	Spring
18	24603210	Lever
19	24605337	Spring
20	24610692	Stop plate
21	24610740	Rec. plate
22	24610784	φ4.2xφ10x0.25, Poly = vinyl slider washer

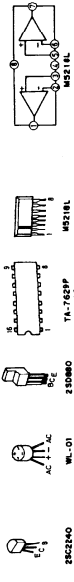
REF. NO.	PARTS NO.	DESCRIPTION
46	24605318	Spring
47	24610704	Lock plate
48	24605375	Spring
49	24605319	Spring
50	24610705	Cam plate
51	24610706	Internal plate
52	25603214	Lever, button
53	24610707	Holder, button
54	24610741	Plate
55	24610709	Slide bracket A
56	24603216	Eject lever
57	24610812	Lever guide
58	24610738	Collar
59	24610710	Eject plate
60	24610711	Eject lock plate
61	24603211	Lever
62	801255	Screw with washer
63	24605376	Spring
64	24610743	Holder
66	24610715	Capstan holder
67	24602141	Flywheel
68	24602141	Plate, switch
69	24606128	Leaf switch

**SCHEMATIC DIAGRAM**

120V model



NOTES:  
 \* RESISTORS ARE IN OHMS, UNLESS OTHERWISE NOTED.  
 \* ALL CAPACITORS ARE IN μF UNLESS OTHERWISE NOTED.  
 \* ELECTROLYTIC CAPACITORS (E-B-) ARE IN μF/WV.  
 \* VOLTAGE ARE MEASURED WITH V.T.M. (STOP POSITION) UNIT V.  
 \* VOLTAGE IN MOTOR IS PLAY POSITION AND BIAS OSC ARE REC POSITION.



- 5801-1-2 REC/PB SW (PB)
- 5801-1-3 REC/PB SW (PB)
- 5801-1-4 TAPES-1 PBD, SEL SW (PB)
- 5801-1-5 TAPES-2 PBD, SEL SW (PB)
- 5801-1-6 REC LEVEL, REC EQ, BIAS SW (OFF)
- 5801-1-7 REC MUTE SW (OFF)
- 5801-1-8 TAPES-1 PLAY SW (OFF)
- 5801-1-9 TAPES-2 PLAY SW (OFF)
- 5801-1-10 TAPES-1 PAUSE SW (OFF)
- 5801-1-11 TAPES-2 PAUSE SW (OFF)
- 5801-1-12 TAPES-1 PLAY MATHS SW (OFF)
- 5801-1-13 TAPES-2 PLAY MATHS SW (OFF)
- 5801-1-14 TAPES-1 PAUSE SW (OFF)
- 5801-1-15 TAPES-2 PAUSE SW (OFF)
- 5801-1-16 AC POWER SW (OFF)

## PRINTED CIRCUIT BOARD — PARTS LIST

### REC., AND PLAYBACK AMPLIFIER PC BOARD (NAAF-1216/a)

CIRCUIT NO.	PARTS NO.	DESCRIPTION	CIRCUIT NO.	PARTS NO.	DESCRIPTION
	<b>ICs</b>		C143-C146	352750479	4.7 $\mu$ F, 25V, Elect.
Q125, Q126	222635	TA-7629P, Dolby	C147, C148	352780109	1 $\mu$ F, 50V, Elect.
Q611	222652	M-5218L, Headphone	C153, C154	352732219	220 $\mu$ F, 10V, Elect.
	<b>Transistors</b>		C161, C162	352781099	0.1 $\mu$ F, 50V, Elect.
Q101, Q102	2211254,	2SC1815(Y),	C163, C164	352783399	0.33 $\mu$ F, 50V, Elect.
Q107, Q108	2212114,	2SC2458(Y),	C165-C170	352741009	10 $\mu$ F, 16V, Elect.
Q113-Q116	2210747 or	2SC945A(Q1) or	C171, C172	352750479	4.7 $\mu$ F, 25V, Elect.
Q121-Q124	2212154	KTN5014(Y)	C173, C174	352782299	0.22 $\mu$ F, 50V, Elect.
Q129-Q132	2211254,	2SC1815(Y),	C191, C192	352761009	10 $\mu$ F, 35V, Elect.
Q137-Q140	2212114,	2SC2458(Y),	C193, C194	352750479	4.7 $\mu$ F, 25V, Elect.
Q601-Q606	2210747 or	2SC945A(Q1) or	C203, C204	252741009	10 $\mu$ F, 16V, Elect.
Q612	2212154	KTN5014(Y)	C601	352722219	220 $\mu$ F, 6.3V, Elect.
Q103, Q104	2211405	2SC2240(GR)	C602, C603	352753309	33 $\mu$ F, 25V, Elect.
Q105, Q106	2211255,	2SC1815(GR)	C604	352751009	10 $\mu$ F, 25V, Elect.
Q111, Q112	2212115,	2SC2458(GR),	C605	352780109	1 $\mu$ F, 50V, Elect.
Q117-Q120	2210746 or	2SC945A(P) or	C607	352750479	4.7 $\mu$ F, 25V, Elect.
Q127, Q128	2212155	KTN5014(GR)	C608	352780229	2.2 $\mu$ F, 50V, Elect.
Q133-Q136			C901	352761029	1,000 $\mu$ F, 35V, Elect.
Q608, Q609			C902	352752219	220 $\mu$ F, 25V, Elect.
Q109, Q110	2211405	2SC2240(GR)	C903	352751019	100 $\mu$ F, 25V, Elect.
Q607	2211454 or	2SA1015(Y) or	C904	352741029	1,000 $\mu$ F, 16V, Elect.
	2212124	2SA1048(Y)	C905, C906	352744719	470 $\mu$ F, 16V, Elect.
Q610	2211706	2SD655(F)	C907, C909	352754709	47 $\mu$ F, 25V, Elect.
Q901	2201074	2SD880(Y)	C908, C918	352744709	47 $\mu$ F, 16V, Elect.
Q902	2201276 or	2SB772(P) or	C911	352754709	47 $\mu$ F, 25V, Elect.
	2201275	2SB772(Q)	C910	352741019	100 $\mu$ F, 16V, Elect.
Q903	2211683	2SC468(C)	C912, C914	352741009	10 $\mu$ F, 16V, Elect.
	<b>Diodes</b>		C919	352754709	47 $\mu$ F, 25V, Elect.
D601-D604	223133 or	DS442X or		<b>Resistors</b>	
D607-D610	223105	1S1555	R123-R124	5215046 or	N08HR50KBC,
D605, D606	223103 or	1N60 or	R131-R134	5215023	Semi-fixed
	223132	1K60	R169, R170		
D901, D902	223862	WL—01	R217, R218	5215003 or	N08HR20KB,
D903	224123 or	GZA22L or		5215022	Semi-fixed
	2239753	RD22EB3	R281, R282	5215024 or	N08HR100KBC,
D904, D905	224112 or	GZA12U or		5215047	Semi-fixed
	223965	RD13EB	R624	441524714	470 $\Omega$ , 1/2W, Metal oxide film
	<b>Coils</b>		R625	441525114	510 $\Omega$ , 1/2W, Metal oxide film
L101, L102	233251	NMC-5032	R626	441521214	120 $\Omega$ , 1/2W, Metal oxide film
L103, L104	24606072	NCH-1010		<b>Switches</b>	
L105, L106	24606080	NCH-1022	S601	25065107	NSS-1254, Rec/Pb switch
L107, L108	24606068	NCH-1006	S602a-S603	25035299	NPS-122-142-L265, Tape speed/input selector
L109, L110	24606076	NCH-1014	S602b	25065111	NSS-4257, Tape speed
L111, L112	233239	NCH-4051	S602c	25065111	NSS-4257, Tape speed
	<b>Oscillator block</b>		S606b	25065156	NSS-8371, Tape 2 Equalizer
Z001	24606112	NOB-014		<b>Terminal</b>	
	<b>Capacitors</b>		P601	25045084	NPJ-4PDBL42, Input/output
C105, C106	352780229	2.2 $\mu$ F, 50V, Elect.		<b>Plugs</b>	
C111, C112	352734709	47 $\mu$ F, 10V, Elect.	P603	25055038	NPLG-2P29
C113, C114	352741009	10 $\mu$ F, 16V, Elect.	P604	25055042	NPLG-3P
C121, C122	352750479	4.7 $\mu$ F, 25V, Elect.	P605	25055037	NPLG-6P28
C123, C124	352750479	4.7 $\mu$ F, 25V, Elect.	P606, P607	25055066	NPLG-7P52
C129, C130	352780229	2.2 $\mu$ F, 50V, Elect.		<b>Socket</b>	
C135, C136	352734709	47 $\mu$ F, 10V, Elect.	P610	25050064	NSCT-5P18, DIN [G/W]
C137, C138	352741009	10 $\mu$ F, 16V, Elect.		<b>Lamps</b>	
			PL102, PL104	210128	PL14V0.06AW-1.0
			PL103	210127	PL14V0.06AW-4.5
				<b>Guide</b>	
				27300410	Lamp

**VOLUME AND METER DRIVE PC BOARD (NAVR-1217a)**

CIRCUIT NO.	PARTS NO.	DESCRIPTION
<b>ICs</b>		
Q141, Q142	222623	IR-2E02
<b>Transistors</b>		
Q143, Q144	2211405	2SC2240(GR), [G/W]
<b>Capacitors, elect.</b>		
C195-C198	352750479	4.7μF, 25V
C199-C200	352780109	1μF, 50V
C209-C212	352780109	1μF, 50V [G/W]
C913, C917	352741009	10μF, 16V
<b>Resistors</b>		
R185, R186	5104132	N16RKM50KA40F, Volume control variable
R269, R270	5215010	N08HR10KBA, Semi-fixed

**SPEED CONTROL PC BOARD (NASC-1224a)**

CIRCUIT NO.	PARTS NO.	DESCRIPTION
<b>Diodes</b>		
D616, D617	4000001	KB269
<b>Resistors</b>		
R632, R636	5215043	N08HR5KBC, Semi-fixed
R634, R638	5215044	N08HR5KBC, Semi-fixed
<b>Plugs</b>		
	25055065	NPLG-5P51

**VU METER PC BOARD (NALED-1218)**

CIRCUIT NO.	PARTS NO.	DESCRIPTION
D101, D102	225071	GL-107M12, diode array

**SWITCH PC BOARD (NASW-1219/1220)**

CIRCUIT NO.	PARTS NO.	DESCRIPTION
S605	2503214	NRS-242-15U, Tape 1 equalizer switch
S604	25035282	NPS-122-L246, Dolby NR switch
S607	25035244	NPS-122-S208, Recording muting switch

**LAMP PC BOARDS (NAPL-1221/1222/1223)**

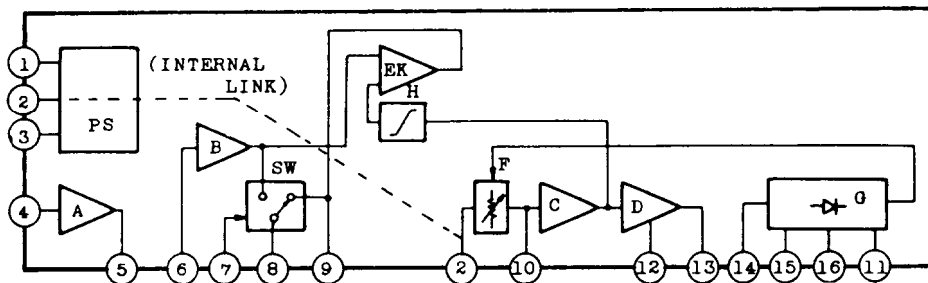
CIRCUIT NO.	PARTS NO.	DESCRIPTION
D611, D612	225062	SG238D, L.E.D
D613	225096	SEL-1112R, L.E.D
D614, D165	225057	SR538D, L.E.D

**TERMINAL PC BOARD (NAMJ-1225)**

CIRCUIT NO.	PARTS NO.	DESCRIPTION
P101	25045095	Microphone jack
P602	25045096	Stereo headphone jack

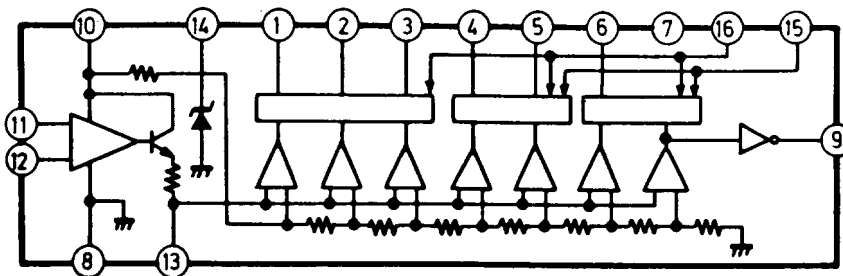
[G/W] : Only G/W models

**BLOCK DIAGRAM OF IC TA7629P (Dolby)**

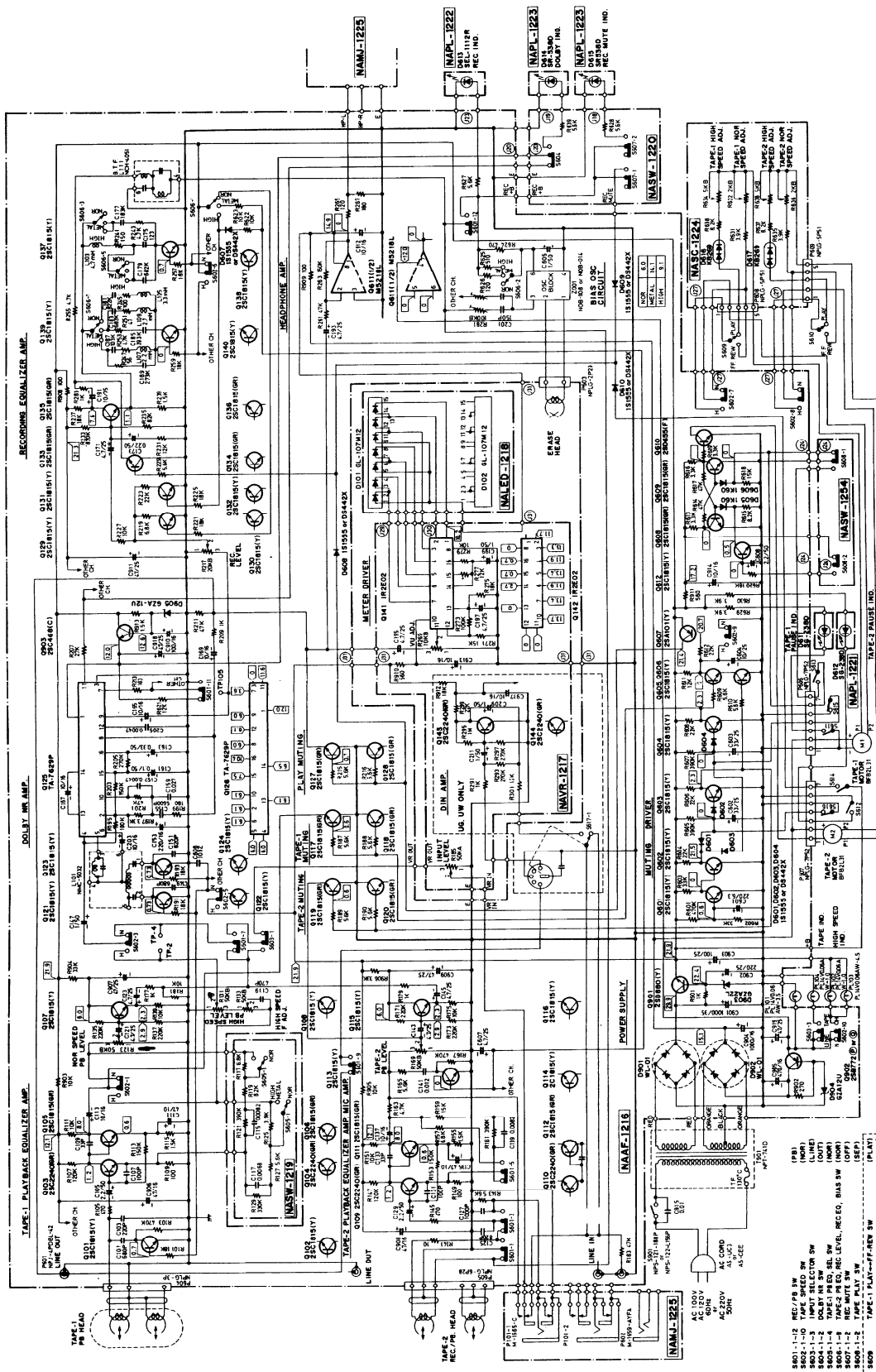


- 4. Input
- 7. Encode/Decode switch
- 8. Decode output
- 9. Encode output

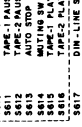
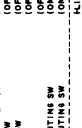
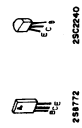
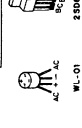
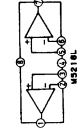
**IR2E02 (Meter drive)**



**SCHEMATIC DIAGRAM**  
G/W models



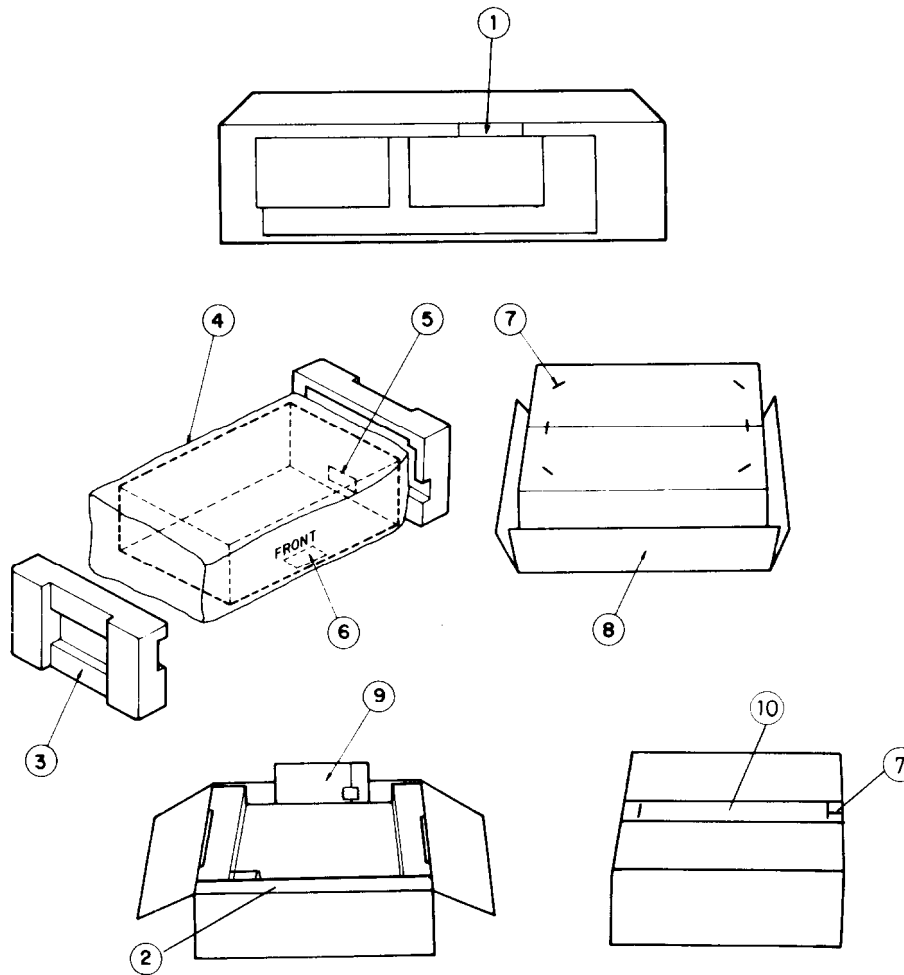
**NOTES**  
 \* ALL RESISTORS ARE IN OHMS UNLESS OTHERWISE NOTED.  
 \* ALL CAPACITORS ARE IN MICROFARADS UNLESS OTHERWISE NOTED.  
 \* ELECTROLYTIC CAPACITORS (—E—) ARE IN µF/AVV.  
 \* VOLTAGE ARE MEASURED WITH V.T.M. (STOP POSITION) UNIT V.  
 \* VOLTAGE IN MOTOR IS PLAY POSITION AND BIAS OSC ARE REC POSITION.



- 5801-1-12 REC/PB SW (R)
- 5802-1-10 TAPE SPEED SW (L)
- 5803-1-3 INPUT SELECTION SW (L)
- 5804-1-4 TAPE-1 PH ED, SEL SW (R)
- 5805-1-9 TAPE-2 PH ED, REC LEVEL, RECED, BIAS SW (R)
- 5806-1-2 TAPE-1 PLAY SW (SEP)
- 5807 TAPE-2 PLAY SW (SEP)
- 5808 TAPE-3 PLAY SW (P)
- 5809 TAPE-4 PLAY SW (P)
- 5810 TAPE-5 PLAY SW (P)
- 5811 TAPE-6 PLAY SW (P)
- 5812 TAPE-7 PLAY SW (P)
- 5813 TAPE-8 PLAY SW (P)
- 5814 TAPE-9 PLAY SW (P)
- 5815 TAPE-10 PLAY SW (P)
- 5816 TAPE-11 PLAY SW (P)
- 5817 TAPE-12 PLAY SW (P)
- 5818 TAPE-13 PLAY SW (P)
- 5819 TAPE-14 PLAY SW (P)
- 5820 TAPE-15 PLAY SW (P)
- 5821 TAPE-16 PLAY SW (P)
- 5822 TAPE-17 PLAY SW (P)
- 5823 TAPE-18 PLAY SW (P)
- 5824 TAPE-19 PLAY SW (P)
- 5825 TAPE-20 PLAY SW (P)
- 5826 TAPE-21 PLAY SW (P)
- 5827 TAPE-22 PLAY SW (P)
- 5828 TAPE-23 PLAY SW (P)
- 5829 TAPE-24 PLAY SW (P)
- 5830 TAPE-25 PLAY SW (P)
- 5831 TAPE-26 PLAY SW (P)
- 5832 TAPE-27 PLAY SW (P)
- 5833 TAPE-28 PLAY SW (P)
- 5834 TAPE-29 PLAY SW (P)
- 5835 TAPE-30 PLAY SW (P)
- 5836 TAPE-31 PLAY SW (P)
- 5837 TAPE-32 PLAY SW (P)
- 5838 TAPE-33 PLAY SW (P)
- 5839 TAPE-34 PLAY SW (P)
- 5840 TAPE-35 PLAY SW (P)
- 5841 TAPE-36 PLAY SW (P)
- 5842 TAPE-37 PLAY SW (P)
- 5843 TAPE-38 PLAY SW (P)
- 5844 TAPE-39 PLAY SW (P)
- 5845 TAPE-40 PLAY SW (P)
- 5846 TAPE-41 PLAY SW (P)
- 5847 TAPE-42 PLAY SW (P)
- 5848 TAPE-43 PLAY SW (P)
- 5849 TAPE-44 PLAY SW (P)
- 5850 TAPE-45 PLAY SW (P)
- 5851 TAPE-46 PLAY SW (P)
- 5852 TAPE-47 PLAY SW (P)
- 5853 TAPE-48 PLAY SW (P)
- 5854 TAPE-49 PLAY SW (P)
- 5855 TAPE-50 PLAY SW (P)
- 5856 TAPE-51 PLAY SW (P)
- 5857 TAPE-52 PLAY SW (P)
- 5858 TAPE-53 PLAY SW (P)
- 5859 TAPE-54 PLAY SW (P)
- 5860 TAPE-55 PLAY SW (P)
- 5861 TAPE-56 PLAY SW (P)
- 5862 TAPE-57 PLAY SW (P)
- 5863 TAPE-58 PLAY SW (P)
- 5864 TAPE-59 PLAY SW (P)
- 5865 TAPE-60 PLAY SW (P)
- 5866 TAPE-61 PLAY SW (P)
- 5867 TAPE-62 PLAY SW (P)
- 5868 TAPE-63 PLAY SW (P)
- 5869 TAPE-64 PLAY SW (P)
- 5870 TAPE-65 PLAY SW (P)
- 5871 TAPE-66 PLAY SW (P)
- 5872 TAPE-67 PLAY SW (P)
- 5873 TAPE-68 PLAY SW (P)
- 5874 TAPE-69 PLAY SW (P)
- 5875 TAPE-70 PLAY SW (P)
- 5876 TAPE-71 PLAY SW (P)
- 5877 TAPE-72 PLAY SW (P)
- 5878 TAPE-73 PLAY SW (P)
- 5879 TAPE-74 PLAY SW (P)
- 5880 TAPE-75 PLAY SW (P)
- 5881 TAPE-76 PLAY SW (P)
- 5882 TAPE-77 PLAY SW (P)
- 5883 TAPE-78 PLAY SW (P)
- 5884 TAPE-79 PLAY SW (P)
- 5885 TAPE-80 PLAY SW (P)
- 5886 TAPE-81 PLAY SW (P)
- 5887 TAPE-82 PLAY SW (P)
- 5888 TAPE-83 PLAY SW (P)
- 5889 TAPE-84 PLAY SW (P)
- 5890 TAPE-85 PLAY SW (P)
- 5891 TAPE-86 PLAY SW (P)
- 5892 TAPE-87 PLAY SW (P)
- 5893 TAPE-88 PLAY SW (P)
- 5894 TAPE-89 PLAY SW (P)
- 5895 TAPE-90 PLAY SW (P)
- 5896 TAPE-91 PLAY SW (P)
- 5897 TAPE-92 PLAY SW (P)
- 5898 TAPE-93 PLAY SW (P)
- 5899 TAPE-94 PLAY SW (P)
- 5900 TAPE-95 PLAY SW (P)
- 5901 TAPE-96 PLAY SW (P)
- 5902 TAPE-97 PLAY SW (P)
- 5903 TAPE-98 PLAY SW (P)
- 5904 TAPE-99 PLAY SW (P)
- 5905 TAPE-100 PLAY SW (P)



## PACKING PROCEDURES



REF.NO.	PARTS NO.	DESCRIPTION
1	29361484	Caution label
2	29090669	Pad, center
3	29090565F	Pad
4	29100037	650x550mm, Poly = vinyl bag
5	29360567	Label (DN)
6	29360566	Caution label (DN)
7	282301	Sealing hook
8	29050555	Master carton box
9		Accessory bag ass'y
	29340601	Instruction manual (D/Q)
	29340602	Instruction manual (G/W)
	253074	Connection cables
	25055040	Conversion plug (W)
	29358002	Service station list (DN)
	29365006-3	Warranty card (DN)
	29365005-3	Warranty card (GV)
	29100005	330x220mm, Poly = vinyl bag
10	260012	W50mm, Dampilon tape

Note :

- (D): Only 120V Model
- (G): Only 220V model
- (W): Only 120/220V model
- (Q): Only 240V model
- (GV): Only West Germany model
- (DN): Only U.S.A. model