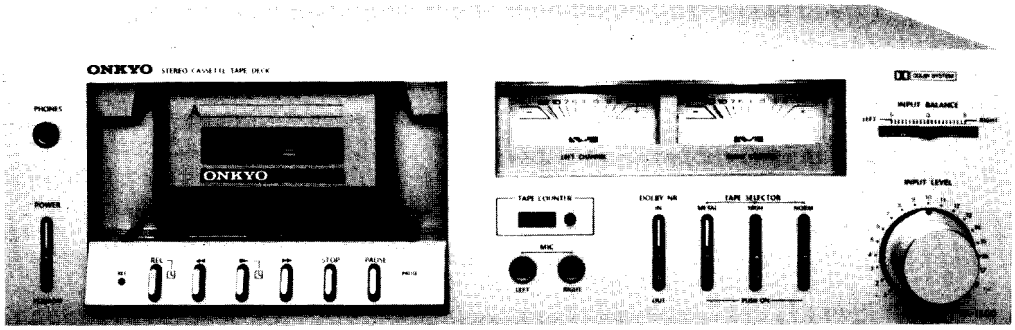
SERIAL NO. 3109

ONKYO® SERVICE MANUAL

STEREO CASSETTE TAPE DECK MODEL TA-1500



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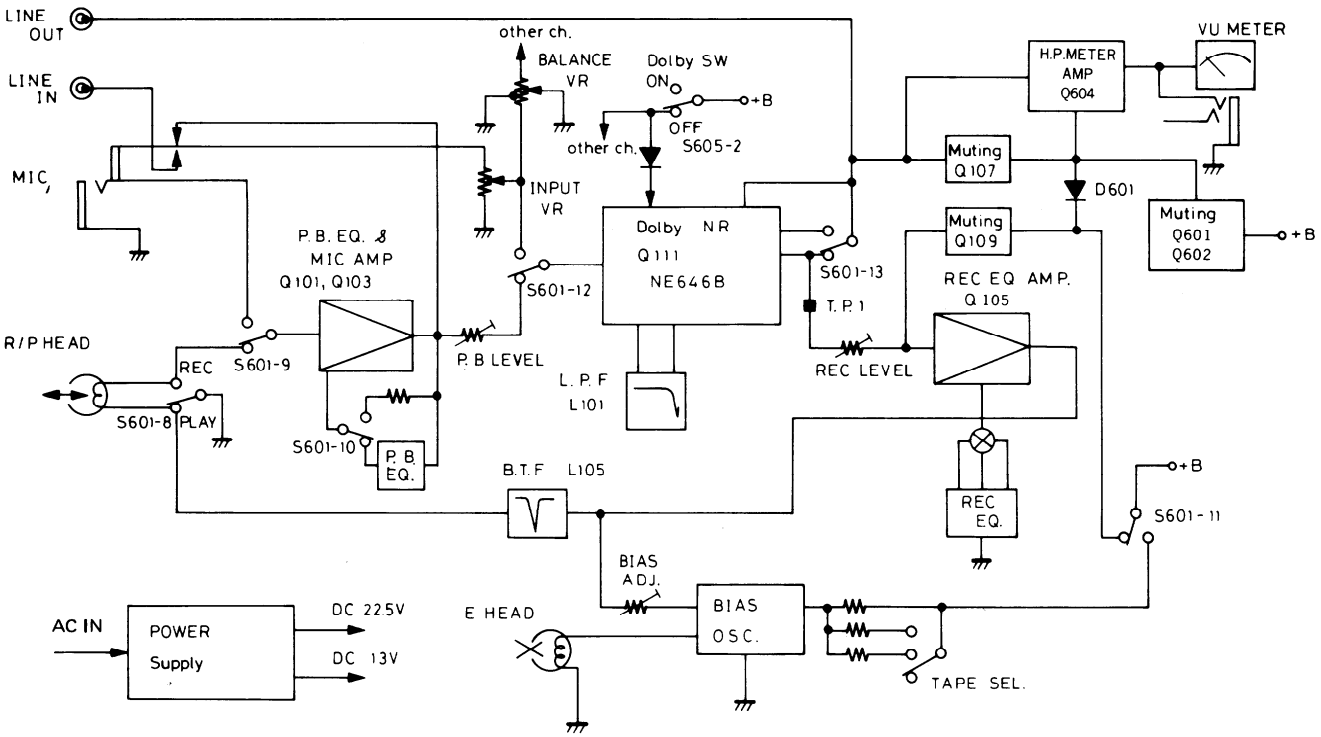
ONKYO®
AUDIO COMPONENTS

SPECIFICATIONS

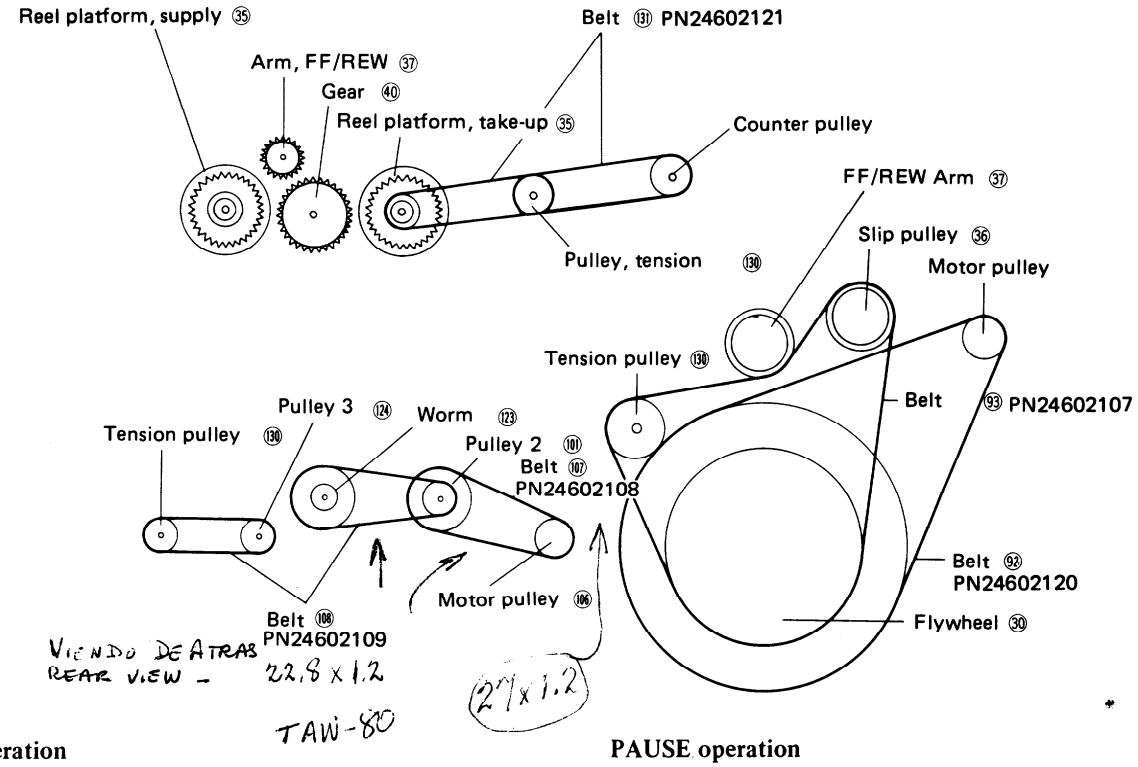
Track System:	4-track, 2-channel stereo
Recording System:	AC bias
Erasing System:	AC erase
Tape Speed:	4.8 cm/sec.
Wow and Flutter:	0.06% (WRMS)
Frequency Response:	20 – 15,000 Hz (30 –14,000 Hz ± 3 dB) (normal position tape) 20 – 16,000 Hz (30 – 15,000 Hz ± 3 dB) (high position tape) 20 – 16,000 Hz (30 – 15,000 Hz ± 3dB) (metal position tape)
Signal-to-Noise Ratio:	58 dB (metal position tape, Dolby NR out) A noise reduction of 10 dB above 5 kHz and 5 dB at 1 kHz is possible wieh the Dolby NR in
Input Jacks:	Microphone Jacks: 2 Minimum input level: 0.3 mV/600Ω Input impedance: 5 kΩ Optimum mic impedance: 200Ω – 50 kΩ Line In: 2 Minimum input level: 50 mV Input impedance: 50 kΩ DIN Jack: 1 (G/W) Minimum input level: 0.1 mV/1 kΩ Input impedance: 1 kΩ
Outputs:	Line Out: 2 Output level: 350 mV (at 0 VU) Optimum load impedance: more than 50 kΩ DIN Jack (G/W) Standard output level: 350 mV (0 VU) Optimum load impedance: more than 50 kΩ Headphone Jack: 1 Optimum impedance: 8Ω – 200Ω
Motor:	DC Servo motor: 1
Heads:	Hard permalloy head and three gap ferrite erase head
Semiconductors:	TR: 17 Diodes: 8 IC: 3 LED: 2
Power Supply	D: 120 V/ 60 Hz, G: 220 V/ 50 Hz, W: 120/220 V 50/60 Hz or Q: 240 V/50 Hz
Power Consumption	13 W
Dimensions:	418(W) x 122(H) x 270 (D) mm 16-1/2" x 4-11/16" x 10-5/8"
Weight:	4.4 kg (9.7 lbs)
Accessories:	Pin-type connecting cords: 2

* Specifications and external appearance are subject to change without notice because of product improvements.

BLOCK DIAGRAM



TAPE MECHANISM OPERATION



PLAY operation

When the play key is pressed, the trigger arm (25) of the trigger lever (110) unlocks the operation gear (24) and the flywheel gear (31) and operation gear (24) engage. The driving force from the motor is transmitted through the flywheel gear to drive the operating gear. The operating gear camshaft pulls the operating plate (17) up and, at the same time, the head chassis 1 ass'y (2) is pulled up by the operating plate. The head chassis is then locked in place by the locking plate (70). The operating plate returns to its original position as the operating gear makes one complete revolution to be ready for the next operation. At the same time, the head chassis 1 ass'y (2) is moved, the slip pulley (36) comes in contact with the take-up reel table (35) and tape is wound.

FF operation

When the fast forward key is pressed, the trigger arm of the trigger lever unlocks the operating gear and the flywheel gear and operating gear engage. The operating gear camshaft pulls the operating plate up to move the FF lever. The gear (40) comes in contact with the FF, REW arm ass'y (37) and the take-up reel table and tape is wound.

REW operation

When the rewind key is pressed, the trigger arm of the trigger lever unlocks the operating gear and the flywheel gear and operating gear engage. The operating gear camshaft pulls the operating plate up to raise the REW lever which is then locked in place by the locking plate (70). At the same time, the REW lever causes the FF, REW arm ass'y gear and take-up reel table (35) to come in contact and tape is wound.

PAUSE operation

When the pause key is pressed, the trigger lever, trigger arm (25) and operating gear (24) are activated in that order and the operating plate (17) is raised. At the same time, the operating plate pulls up the pause lever (58) which moves the slip pulley ass'y (36) so that it is disengaged from the reel table. The pause lever is locked in place by the pause camshaft (61).

Auto-stop operation

When the end of the tape is reached, the reel table stops moving and the auto-stop ass'y slider section also stops moving. At the camshaft (126) when the stop lever 2 (90) is pressed via the slider, the trigger camshaft (25), operating gear (24), operating plate (17), and stop lever (54) are activated in that order to cause the locking plate (70) to slide and release the stop key.

Circled part numbers are disassembly diagram numbers.

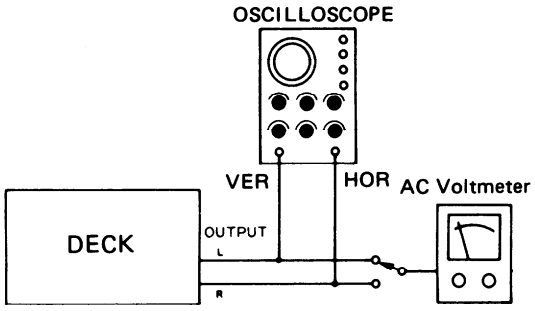
ADJUSTMENT PROCEDURES

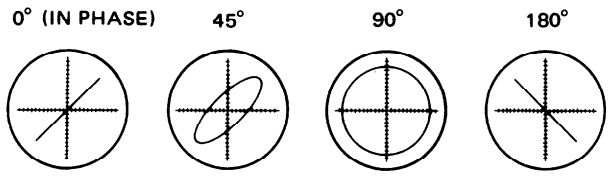
PRECAUTIONS

1. Before adjustment, clean the following parts with an alcohol moinstend swab.
   * record/playback head * erase head
   * pinch roller * capstan
   * rubber belt
2. Do not use magnetized screwdriver for adjustments.
3. Damagnetize record/playback head with a head demagnetizer.
4. The switches and controls should be set as follows unless otherwise specified.
   TAPE SELECTOR ..... NORM
   DOLBY NR ..... OUT
   INPUT BALANCE ..... CENTER
   INPUT LEVEL 0

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 40Hz to 10kHz is required.
5) Secure the screw with the locking paint.





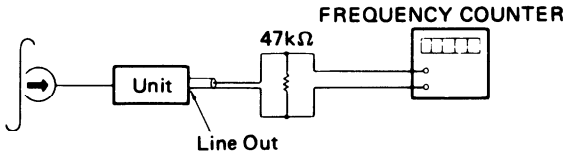
Confirming phase relationship

TEST EQUIPMENT/TOOLS REQUIRED:

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

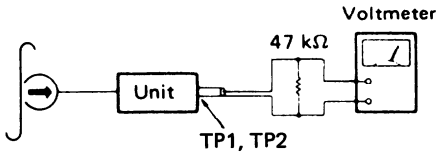
2. Tape speed adjustment

Insert the MTT-111 test tape into the cassette holder. Play the MTT-111 back. Adjust the semi-fixed resistor in the motor so that the counter indication becomes 3,000Hz to 3,010Hz.



3. Playback level adjustment

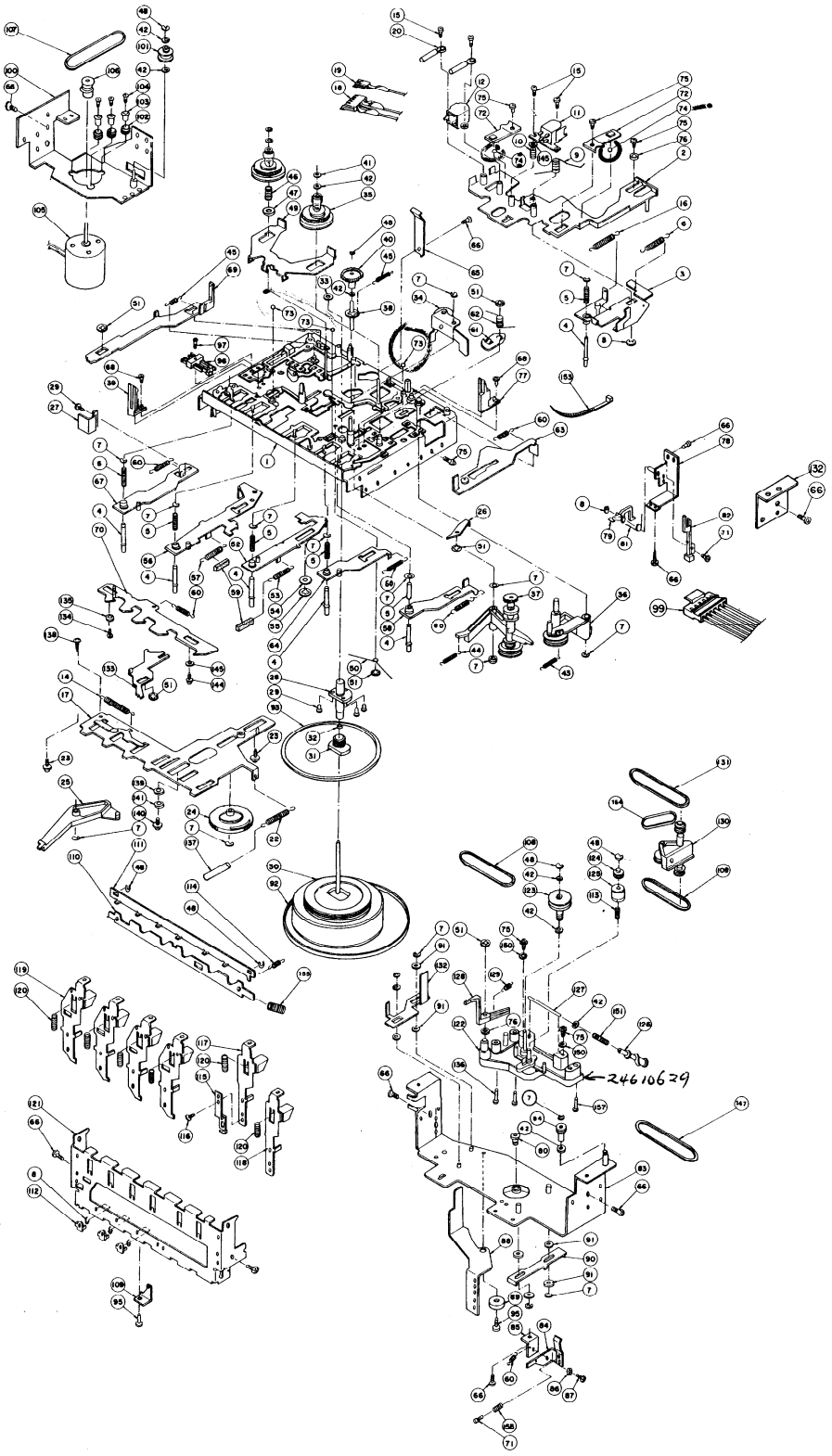
Insert the MTT-150 test tape into the cassette holder. Play the MTT-150 back. Adjust the R121 (L ch.) and R122 (R ch.) semi-fixed resistors so that the indication of voltmeter becomes 580mV.



4. VU meter adjustment

Insert the MTT-150 test tape into the cassette holder. Play the MTT-150 back. Adjust the R175 (L ch.) and R176 (R ch.) semi-fixed resistors so that the indication of VU meter becomes +3 VU.

TAPE MECHANISM-EXPLODED VIEW



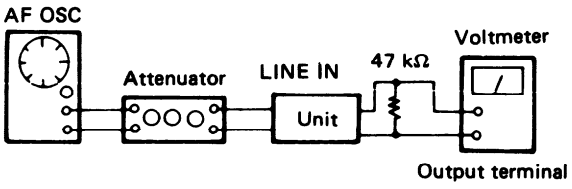
REF. NO.	PARTS NO.	DESCRIPTION
1	24610522	Chassis
2	24610615	Head chassis 1
3	24610616	Head chassis 2
4	24604042	Shaft
5	24605248	Spring for 4
6	24605275	Spring for 3
7	893020	E-2, Circlip
8	893030	E-3, Circlip
9	24605250	Spring
10	24605284	Head azimuth adjusting spring
11	24600026	Rec/pb head
12	24600027	Erase head
14	24605270	Spring for 17
15	801237	2×6mm, Screw
16	24605286	Spring for 3
17	24610525	Actuating plate
18	25050074	Rec/pb connector

REF. NO.	PARTS NO.	DESCRIPTION
19	25050075	Erase connector
20	24610526	Terminal
22	24605277	Spring for 17
23	831130062	TPT+3×6mm, Screw
24	24602111	Gear
25	24610528	Trigger arm
26	24610529	Canceller arm
27	24610530	Recording arm
28	24610531	Flywheel holder
29	82112604	FM+2.6×4, Screw
30	24602103	Flywheel
31	24602104	Flywheel gear
32	24610564	PSW2.5×.47×0.25, Washer
33	24610567	2.4×8×0.3, Washer, Nylon
34	24610617	Pinch roller
35	24602127	Reel stand
36	24602126	Slip pulley
37	24610533	FF/REW arm

REF. NO.	PARTS NO.	DESCRIPTION
38	24610534	Slider
39	24610535-1	Holder (L)
40	24602112	Gear
41	24610565	PSW1.6×3.2×0.25, Washer
42	24610566	PSW2×4×0.25, Washer
43	24605254	Spring for 36
44	24605255	Spring for 37
45	24605256	Spring
46	24605257	Spring for back tension
47	24610568	NW4×10×0.5, Washer
48	893015	E-1.5, Circlip
49	24610618	Brake plate
50	24605271	Spring for brake
51	891030	CS3, CS ring
52	24603197	FF lever ass'y
53	24605282	Spring for 52
54	8761401005	FW4×10×0.5, Washer
55	891040	CS4, CS ring
56	24603166	Rewind lever
57	24605288	Spring for 56
58	24603167	Pause lever
59	24610580	Cushion
60	24605261	Spring
61	24610593	Pause cam
62	24605262	Spring for 61
63	24603198	Pause lever 2
64	24603169	Stop lever
65	24605263	Cassette holding spring
66	833130059	CT3×5, Screw
67	24603170	Recording lever 1
68	82112604	FM+2.6×4, Screw
69	24610540	Lever
70	24610541	Locking plate
71	82112606	FM+2.6×6, Screw
72	24605265	Spring
73	24610542	3φ, Steelball
74	24610543	2φ, Steelball
75	831126042	TPT+2.6×4, Screw
76	8761420704	FW4.2×7×0.4, Washer
77	24610536-1	Holder (R)
78	24610544	Switch bracket 1
79	24603171	Lever 1
80	24610571	Thrust adjusting screw
81	24605279	Spring for 79
82	24603178	Leafswitch
83	24610545	Flywheel bracket
84	24603172	Stop lever 1
85	24610546	Bracket
86	87610583	Spacer
87	833126059	CT2.6×5, Screw
88	24603173	Recording lever
89	24610572	Spacer
90	24603174	Stop lever 2
91	24610588	NW3.2×8×0.3, Washer
92	24602106	Belt
93	24602107	Belt
94	24602114	Pulley
95	833130089	CT3×8, Screw
96	24603179	Leafswitch
97	82112010	FM+2×10, Screw
99	25050076	Connector
100	24610549	Motor bracket
101	24602115	Pulley 2
102	24610550	Motor cushion
103	24604040	Pipe
104	801178	2.6×8, Sems screw
105	24601085	Motor ass'y
106	24601096	Motor pulley
107	24602108	Belt
108	24602109	Belt
109	24610551	Bracket for spring
110	24610552	Trigger cam
111	24610553	Locking plate
112	24610554	Seesaw cam
113	24605280	Spring
114	24605281	Spring
115	24603175	Lever
116	82113003	FM+3×3, Screw
117	24610555	Operation lever 3
118	24610556	Operation lever 2
119	24610557	Operation lever 1
120	24605269	Spring
121	24610558	Operation lever bracket
122-129	24610629	Auto-stop ass'y
122	24610559	Bracket
123	24602117	Worm
124	24602116	Pulley 3
125	24610560	Guide
126	24610561	Cam
127	24604041	Shaft
128	24603176	Lever 2
129	24605270	Spring
130	24610562	Tension pulley bracket
131	24602121	Belt
132	24610563	Switch lever
133	24603177	Switch lever 1
134	82112608	FM+2.6×8, Screw
135	24610583	Spacer
136	833130169	CT3×16, Screw
137		Tube
138	82112004	FM+2×4, Screw
139	24610577	Felt
140	831130082	TPT3×8, Screw
141	8761321308	FW3.2×13×0.8, Washer
144	833126052	TP2.6×5, Screw
145	8761260805	FW2.6×7.5×0.5, Washer
147	24602118	Belt
148	24602109	Belt
150	8761300803	FW3×8×0.3, Washer
151	24605273	Spring for 126
152		Tube
153	260208	Binder
154	24602119	Belt
155	24605291	Spring
156	24503088	Spring
157	82113015	FM+3×15, Screw
158	833126069	CT2.6×6, Screw
159	24605295	Spring

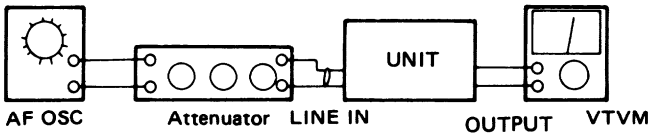
5. Recording bias adjustment

Insert the normal blank tape into the cassette holder.
Press the recording and pause buttons and put the cassette deck into the recordig 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 −10dB input level. Release the pause button and record on the tape. Next change the frequency of the 10kHz and record again.
Adjust the R169 (L ch.) and R170 (R ch.) so that the 400Hz and 10kHz playback levels become same.



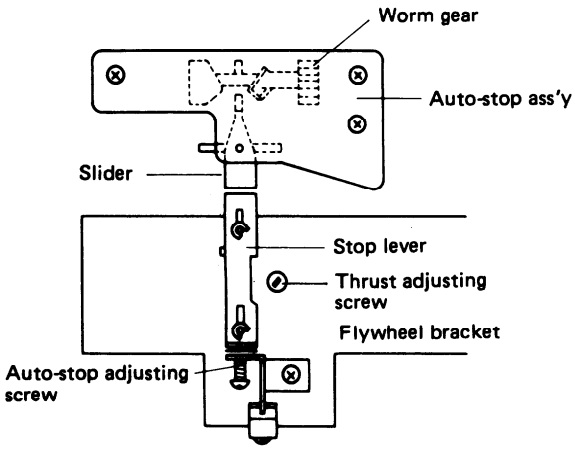
6. Recording level adjustment

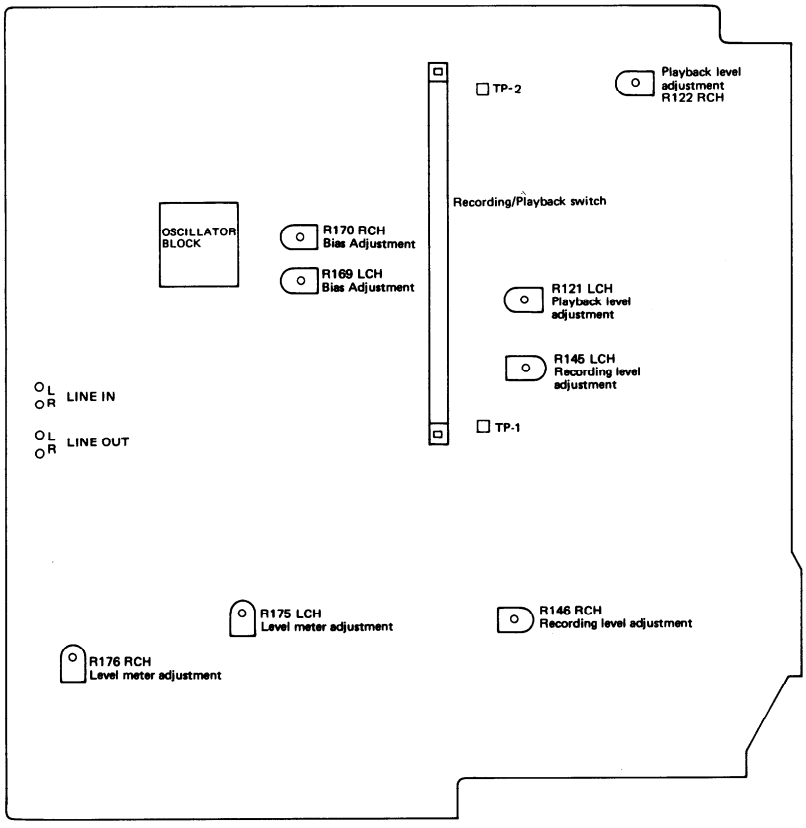
Insert the normal blank tape into the cassette holder. Apply the 1,000Hz signal to line-in terminal. Put the cassette deck into the recording mode. Adjust the input level volume so that the voltmeter reads 350mV.
Record on the tape. Adjust the R145 (L ch.) and R146 (R ch.) so that the playback level becomes 350mV ±0.5dB.



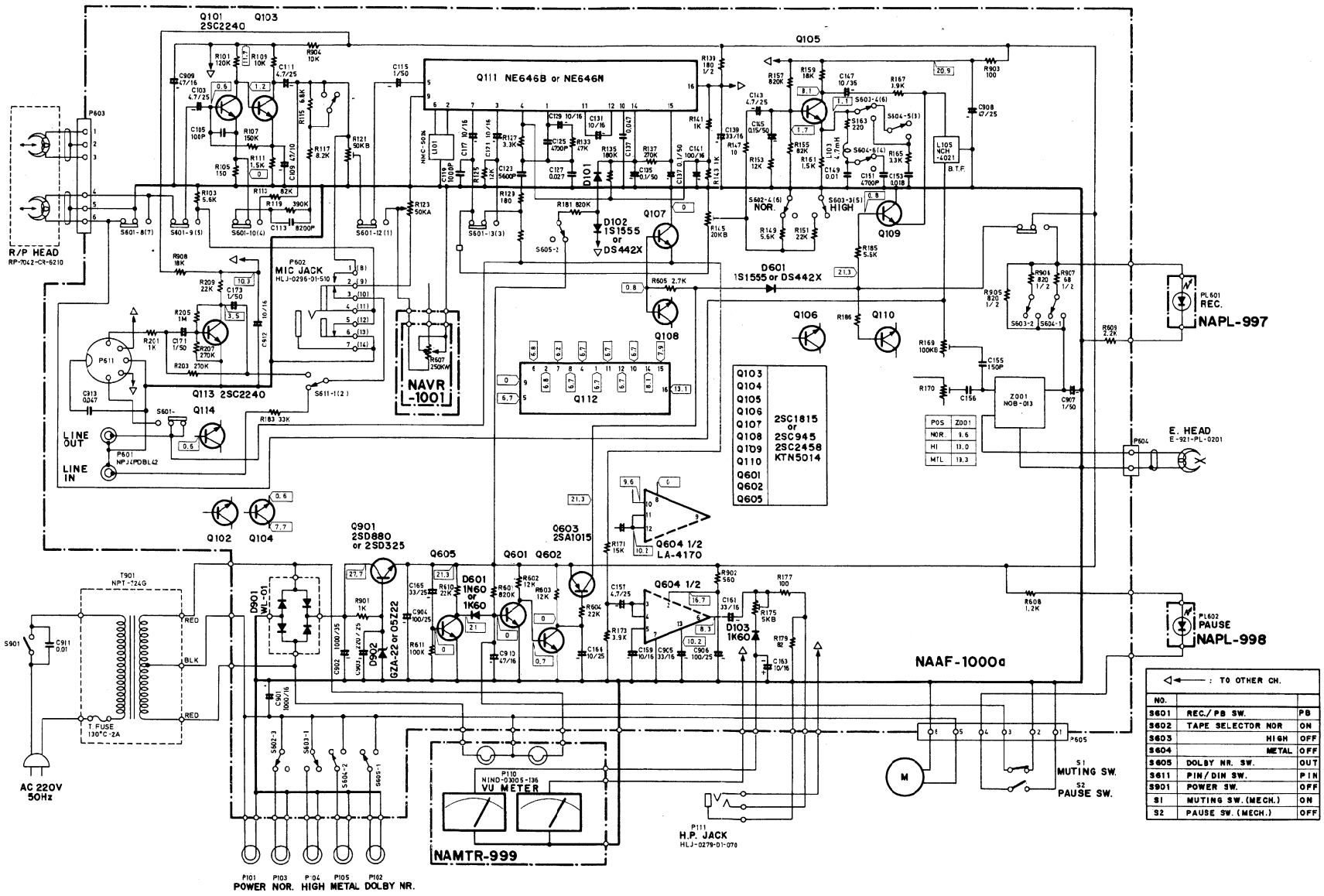
7. Auto-stop adjustment

While confirming that auto-stop is operating properly, turn the adjustment screw to obtain stable auto-stop operation. When the stroke of the stop lever is too small, turn the adjustment screw clockwise. If the stop lever is so heavy that it can not be depressed by the worm gear when the stop lever is pressed by the slider, turn the adjustment screw counterclockwise.





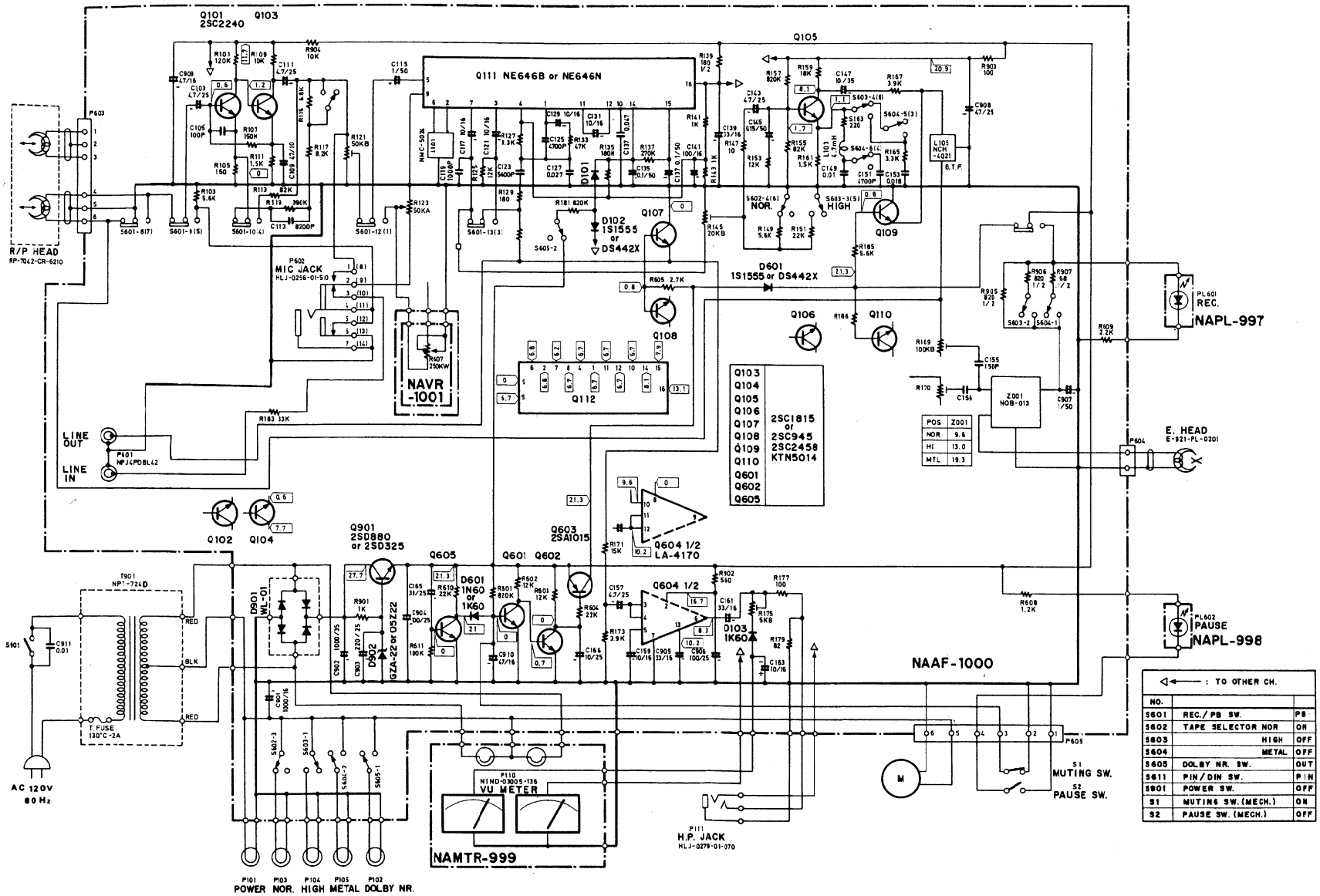
SCHEMATIC DIAGRAM (G/W)



NO.		
S601	REC./PB SW.	PB
S602	TAPE SELECTOR NOR	ON
S603	HIGH	OFF
S604	METAL	OFF
S605	DOLBY NR. SW.	OUT
S611	PIN/DIN SW.	PIN
S901	POWER SW.	OFF
S1	MUTING SW. (MECH.)	ON
S2	PAUSE SW. (MECH.)	OFF

POS	Z001
NOR	9.6
HI	13.0
MTL	13.3

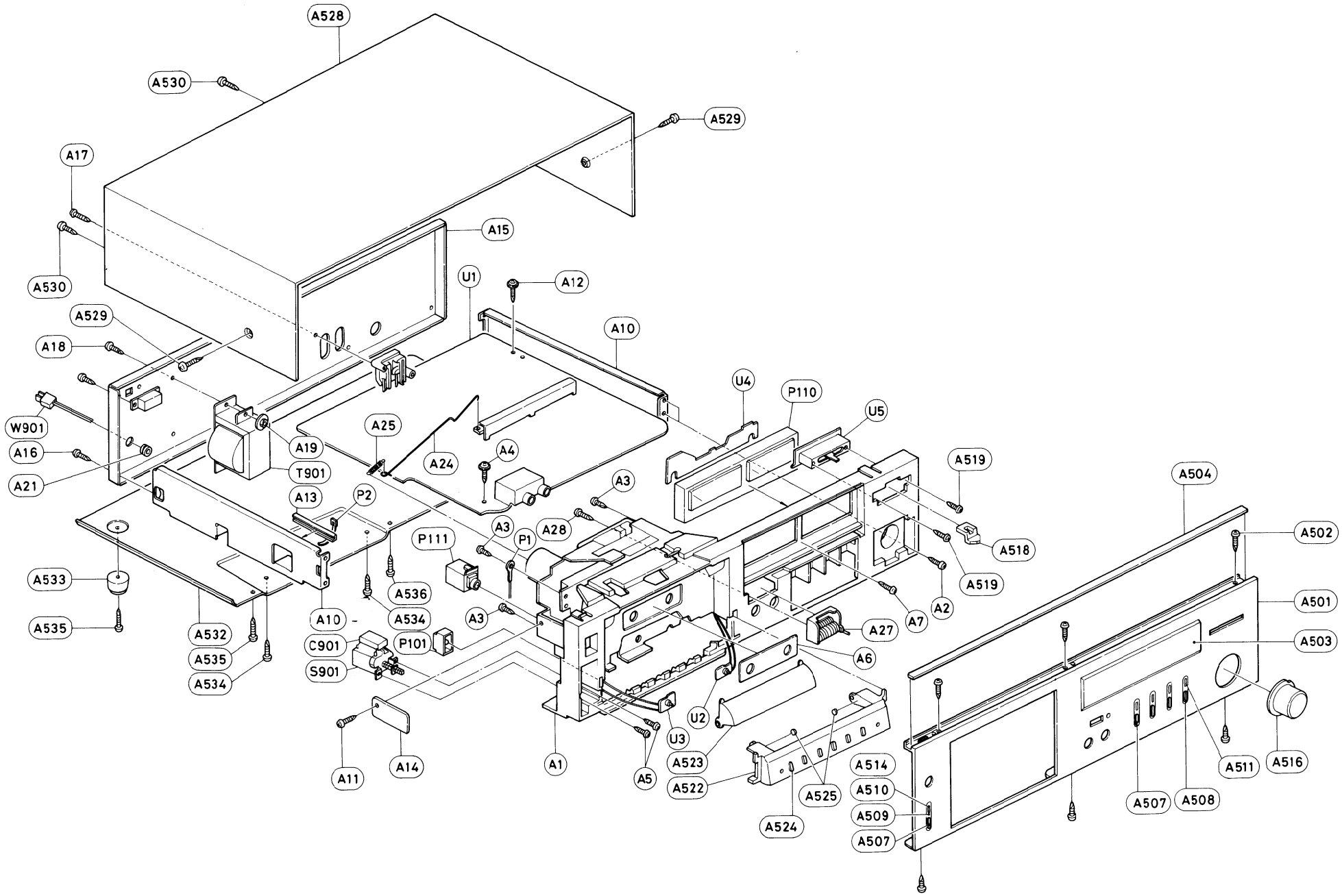
SCHEMATIC DIAGRAM (D/Q)



◁—— : TO OTHER CH.

NO.		
S601	REC./PB SW.	PB
S602	TAPE SELECTOR NOR	ON
S603	HIGH	OFF
S604	METAL	OFF
S605	DOLBY NR. SW.	OUT
S611	PIN/DIN SW.	PIN
S901	POWER SW.	OFF
S1	MUTING SW.(MECH.)	ON
S2	PAUSE SW.(MECH.)	OFF

EXPLODED VIEW



PRINTED CIRCUIT BOARD-PARTS LIST (D/Q)

CIRCUIT NO.	PARTS NO.	DESCRIPTION
	ICs	
Q111, Q112	222616 or	NE646B or
	222631	NE646N
Q604	222543	LA-4170
	Transistors	
Q101, Q102	2211405	2SC2240(GR)
Q103–Q110	2211255	2SC1815(GR)
Q601, Q602	2211255	2SC1815(GR)
Q603	2211454	2SA1015(Y)
Q605	2211255	2SC1815(GR)
Q901	2201074 or	2SD880(Y) or
	2201035	2SD325(E)
	Diodes	
D101, D102	223133or	DS442X or
	223105	1S1555
D103, D104	223132	1K60
D601	223133 or	DS442X or
	223105	1S1555
D602	2231031	1N60(ONK)
D901	223862	WL-01
D902	224123 or	GZA-22L or
	224068	05Z22L
	L.E.Ds	
PL601	225074	SEL-102R(C)
PL602	225079	SEL-302(E)(C)
	Coils	
L101, L102	233231	NMC-5024
L103, L104	24606072	NCH-1010
L105, L106	233146	NCH-4021
	Osc. block	
Z001	24606111	NOB-013
	Capacitors	
C103, C104	352750479	4.7μF, 25V, Elect.
C109, C110	252734709	47μF, 10V, Elect.
C111, C112	352750479	4.7μF, 25V, Elect.
C115, C116	352780109	1μF, 50V, Elect.
C121, C122	352741009	10μF, 16V, Elect.
C129–C132	352741009	10μF, 16V, Elect.
C135, C136	352781099	0.1μF, 50V, Elect.
C137, C138	352783399	0.33μF, 50V, Elect.
C140	352743309	33μF, 16V, Elect.
C141, C142	352741019	100μF, 16V, Elect.
C143, C144	352750479	4.7μF, 25V, Elect.
C145, C146	352781599	0.15μF, 50V, Elect.
C157, C158	352750479	4.7μF, 25V, Elect.
C159, C160	352741009	10μF, 16V, Elect.
C161, C162	352743309	33μF, 16V, Elect.
C163, C164	352741009	10μF, 16V, Elect.
C165	352753309	33μF, 25V, Elect.
C166	352751009	10μF, 25V, Elect.
C901	352741029	1,000μF, 16V, Elect.
C902	352761029	1,000μF, 35V, Elect.
C903	352752219	220μF, 25V, Elect.
C904	352751019	100μF, 25V, Elect.
C905	352743309	33μF, 16V, Elect.
C906	352751019	100μF, 25V, Eelct.
C907	352780109	1μF, 50V, Elect.
C908	352754709	47μF, 25V, Elect.
C909	352744709	47μF, 16V, Elect.
C910	352744709	47μF, 16V, Elect.

CIRCUIT NO.	PARTS NO. 210109	DESCRIPTION
	Lamps	
P102–P105	210110	PL14V0.06AW-1.0
	Resistors	
R607	6142006	N30LL25KW15F, Input balance control variable
R121, R122	5215023	N08HR50KBC, Semi-fixed
R123, R124	5148057	N16RGL50KA35, Input level control variable
R140	431521815	180Ω, 1/2W, Solid
R145, R146	5215003	N08HR20KBC, Semi-fixed
R169, R170	5215024	N08HR100KBC, Semi-fixed
R175, R176	5215020	N08HR5KBC, Semi-fixed
R905, R906	442528214	820Ω, 1/2W, Metal oxide film
R907	442526804	68Ω, 1/2W, Metal oxide film
	Switches	
S601	25065129	NSS-14261, Recording/playback selector
S602-S605	25035233	NPS-362-142-L179
	Terminals	
P601	25045084	NPJ-4PDBL42, Input/Output
P603	25055037	NPLG-6P28
P604	25055038	NPLG-2P29
P605	25065059	NPLG-6P14
	27300352	Input volume
	Jacks	
P602	25045057	HLJ-0296-01-510, Mic.

PRINTED CIRCUIT BOARD-PARTS LIST (G/W)

CIRCUIT NO.	PARTS NO.	DESCRIPTION
	ICs	
Q111, Q112	222616 or	NE646B or
	222631	NE646N
Q604	222543	LA-4170
	Transistors	
Q101, Q102	2211405	2SC2240(GR)
Q103–Q110	2211255	2SC1815(HR)
Q113, Q114	2211405	2SC2240(GR)
Q601, Q602	2211255	2SC1815(GR)
Q603	2211454	2SA1015(Y)
Q605	2211255	2SC1815(GR)
Q901	2201074 or	2SD880(Y) or
	2201035	2SD325(E)
	Diodes	
D101, D102	223133or	DS442X or
	223105	1S1555
D103, D104	223132	1K60
D601	223133 or	DS442X or
	223105	1S1555
D602	2231031	1N60(ONK)
D901	223862	WL-01
D902	224123 or	GZA-22L or
	224068	05Z22L
	L.E.Ds	
PL601	225074	SEL-102R(C)
PL602	225079	SEL-302(E)(C)
	Coils	
L101, L102	233231	NMC-5024
L103, L104	24606072	NCH-1010
L105, L106	233146	NCH-4021
	Osc. block	
Z001	24606111	NOB-013
	Capacitors	
C103, C104	352750479	4.7μF, 25V, Elect.
C109, C110	252734709	47μF, 10V, Elect.
C111, C112	352750479	4.7μF, 25V, Elect.
C115, C116	352780109	1μF, 50V, Elect.
C121, C122	352741009	10μF, 16V, Elect.
C129–C132	352741009	10μF, 16V, Elect.
C135, C136	352781099	0.1μF, 50V, Elect.
C137, C138	352783399	0.33μF, 50V, Elect.
C140	352743309	33μF, 16V, Elect.
C141, C142	352741019	100μF, 16V, Elect.
C143, C144	352750479	4.7μF, 25V, Elect.
C145, C146	352781599	0.15μF, 50V, Elect.
C157, C158	352750479	4.7μF, 25V, Elect.
C159, C160	352741009	10μF, 16V, Elect.
C161, C162	352743309	33μF, 16V, Elect.
C163, C164	352741009	10μF, 16V, Elect.
C165	352753309	33μF, 25V, Elect.
C166	352751009	10μF, 25V, Elect.
C171–C174	352780109	1μF, 50V, Elect.
C901	352741029	1,000μF, 16V, Elect.
C902	352761029	1,000μF, 35V, Elect.
C903	352752219	220μF, 25V, Elect.
C904	352751019	100μF, 25V, Elect.
C905	352743309	33μF, 16V, Elect.
C906	352751019	100μF, 25V, Eelct.
C907	352780109	1μF, 50V, Elect.
C908	352754709	47μF, 25V, Elect.
C909	352744709	47μF, 16V, Elect.
C910	352744709	47μF, 16V, Elect.
C912	352741009	10μF, 16V, Elect.

CIRCUIT NO.	PARTS NO.	DESCRIPTION
	Lamps	
P102–P105	210110	PL14V0.06AW-1.0
	Resistors	
R607	6142006	N30LL25KW15F, Input balance control variable
R121, R122	5215023	N08HR50KBC, Semi-fixed
R123, R124	5148057	N16RGL50KA35, Input level control variable
R140	431521815	180Ω, 1/2W, Solid
R145, R146	5215003	N08HR20KBC, Semi-fixed
R169, R170	5215024	N08HR100KBC, Semi-fixed
R175, R176	5215020	N08HR5KBC, Semi-fixed
R905, R906	442528214	820Ω, 1/2W, Metal oxide film
R907	442526804	68Ω, 1/2W, Metal oxide film
	Switches	
S601	25065129	NSS-14261, Recording/playback selector
S602-S605	25035233	NPS-362-142-L179
	Terminals	
P601	25045084	NPJ-4PDBL42, Input/Output
P603	25055037	NPLG-6P28
P604	25055038	NPLG-2P29
P605	25065059	NPLG-6P14
	27300352	Input volume
P606	25050064	NSCT-5P18, DIN
	Jacks	
P602	25045057	HLJ-0296-01-510, Mic.

PARTS LIST

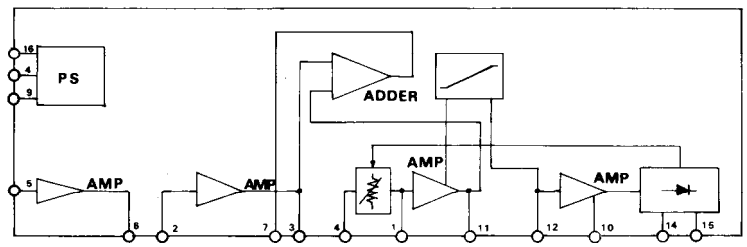
SYMBOL NO.	PARTS NO.	DESCRIPTION
A1	27110122-1	Front bracket
A2	834130082	3STS+8BQ, Tapping screw
A3	834130102	3STS+10BQ, Tapping screw
A4	831130082	3STW+8BQ, Tapping screw
A5	82113006	3P+6FN, Pan head screw
A6	27262079	Plate
A7	27300353	Plate
A10	27115079	Side bracket
A11	834130062	3STS+6BQ, Tapping screw
A13	28170014	Bushing
A14	28175038	Insulating Plate
A15	27120315	Back panel (D)
	27120316	Back panel (G)
	27120317	Back panel (W)
	27120318	Back panel (Q)
A16	834130062	3STS+6BQ, Tapping screw
A17	834130102	3STS+10BQ, Tapping screw
A18	82114010	4P+10FN, Pan head screw
A19	86414010	WN4x10FN, Nut with washer
A20	870065	Washer, power transformer (G/W/Q)
A21	270025	SR-3P-4K, Strainrelief (D)
	270280	SR-4K-4, Strainrelif (G/W/QB)
	27300349	SR-6W-1, Strainrelief (QA)
A24	27180078A	Spring
A25	27180065A	Spring
A27	24601081	Counter
A28	838126088	2.6TTB+8B, Tap screw
A501	16259121	Front panel ass'y
A502	833130100	3TTP+10P, Tapping screw
A503	28191069	Clear plate
A504	28140252	Cushion
A507	28320485	Knob
A508	27267086	Knob
A509	27267087A	Guide, power
A510	28198541A	Facet
A511	28198541-1	Facet
A512	28199019A	Film
A513	261014	Tape, red
A514	27300354	Filter
A516	28320442	Knob
A518	28320484	Knob
A519	82512006	2B+6F, Small screw
A522	27300350	Operation frame
A523	27300351	Cover
A524	28320483-2	Button
A525	27270056	Spacer
A528	28184091-1	Top cover
A529	834430062	3STS+6BQ(BC), Tapping screw
A530	834130082	3STS+8BQ, Tapping screw
A532	27170095	Bottom board
A533	27175003A	Leg
A534	831130102	3STW+10BQ, Tapping screw
A535	831130082	3STW+8BQ, Tapping screw
A536	831130080	3TTW+8P, Tapping screw
C901	350057	0.01μF, 125V, CS capacitor (D)
C901	3500058	PME265MB510, IS capacitor (G/QB)
C901, C921	3500058	PME265MB510, IS capacitor (W/QA)
P1	223004	Terminal
P2	260208	Binder
P101	210109	PL14V0.06AW-4.0, Pilot lamp
P110	243136	NIND-0300S136, Level meter
P111	25045067	HLJ-0279-01-070, Stereo headphone jack
S901	25035224	NPS-121-L188P, Power switch (D)
	25035192	NPS-122-L156P, Power switch (G/QB)
	25035207	NPS-121-L171P, Power switch (W/QA)
S902	25065123	NSS-1258P, Voltage seelctor (W)
T901	230509	NPT-724D, Power transformer (D)
	230510	NPT-724G, Power transformer (G)
	230511	NPT-724DG, Power transformer (W)
	230512	NPT-724Q, Power transformer (Q)
U1	16395500	NAAF-1000, Recording and playback amplifer pc board ass'y (D/Q)
U1	16262500A	NAAF-1000a, Recording and playback amplifier pc board ass'y (G/W)
U2	16395597	NAPL-997, Recording indicator pc board ass'y
U3	16395598	NAPL-998, Pause Indicator pc board ass'y
U4	16395599	NAMTR-999, Meter pc board ass'y
U5	16395501	NAVR-1001, Input balance volume pc board ass'y
W901	253099A	AS-UC-3, Power supply cable (D)
	253083	AS-CEE, Power supply cable (G/W)
	253077	Power supply cable (QA)
	253104	Power supply cable (QB)
Z001	244019	NDM-14, Tape deck mechanism ass'y

Note:

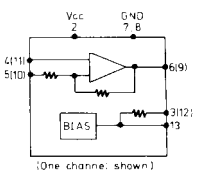
D:	Only 120V model	Q:	Only 240V model
G:	Only 220V model	QA:	Only Australia model
W:	Only 120/220V model	QB:	Only U.K. model

BLOCK DIAGRAM OF IC

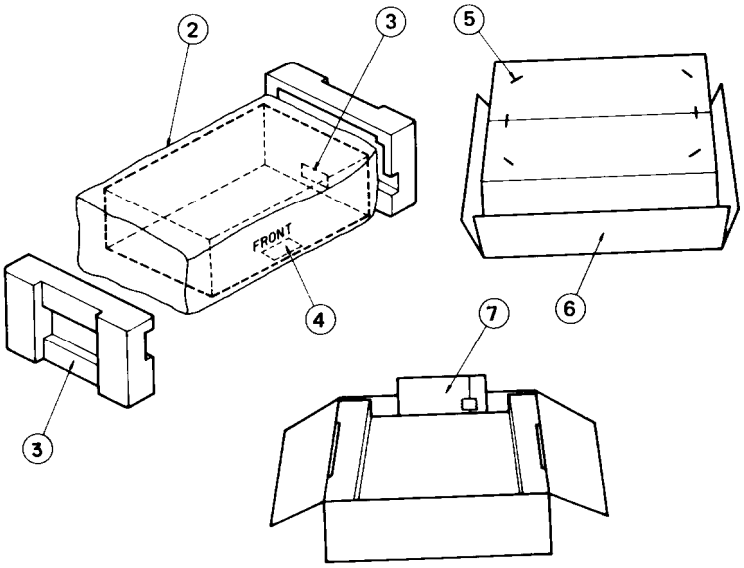
NE646



LA4170



PROCEDURES



REF. NO.	PARTS NO.	DESCRIPTION
1	29090565C	Pad
2	29100037	650x500mm, Poly bag
3	29360378	Label (DN)
4	29360363	Caution label (DN)
5	282301	Sealing hook
6	29050459	Master carton box
7		Accessary bag ass'y
	29340517	Instruction manual (D/Q)
	29340518	Instruction manual (G/W)
	253074	Connection cables
	25055018	Conversion plug (W)
	29258002	Service station list (DN)
	29365006-1	Warranty card (DN)
	29365005-3	Warranty card (GV)
	29100005	330x220mm, Poly bag
	29380073	Instruction sheet (D)
	29380075	Instruction sheet (G/W/Q)

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

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