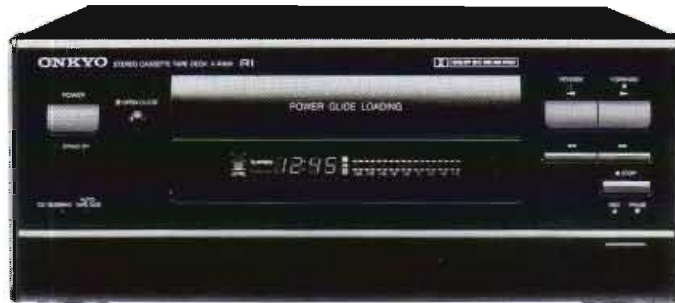


ONKYO SERVICE MANUAL

CASSETTE TAPE DECK MODEL K-R609



Black and Silver model

MP, MP ⑤	230V AC, 50Hz
MW	120/220V AC, 50/60Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK \triangle ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

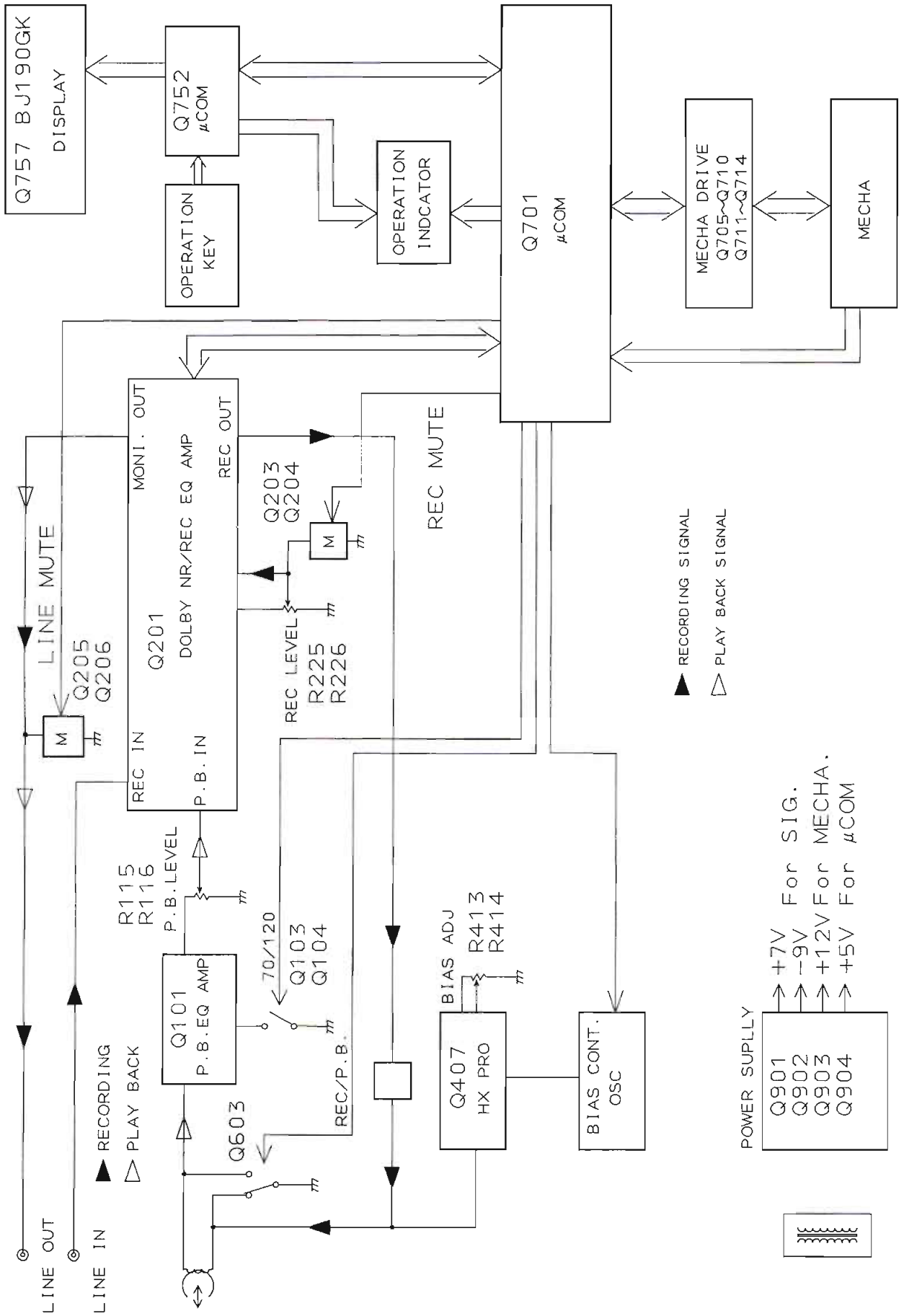
MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

ONKYO
AUDIO COMPONENTS

SPECIFICATIONS

Track Format:	4-tracks, 2-channels
Erasing System:	AC erase
Tape Speed:	4.8 cm/sec. (1-7/8 i.p.s.)
Wow and Flutter:	0.045% (WRMS) 0.09 (DIN)
Frequency Response:	20—15,000Hz (normal) (30—14,000Hz \pm 3dB) 20—16,000Hz (high) (30—15,000Hz \pm 3dB) 20—17,000Hz (metal) (30—16,000Hz \pm 3dB)
S/N Ratio:	58dB (metal tape, Dolby NR off) A noise reduction of 10dB above 5kHz and 5dB at 1kHz is possible with Dolby B NR. A noise reduction of 20dB at 5kHz is possible with Dolby C NR.
Input Jacks:	LINE IN: 2 Input sensitivity: 80 mV Input impedance: 50 kohms
Output Jacks:	LINE OUT: 2 Standard output level: 500 mV (0dB) Optimum load impedance: over 50 kohms
Motors:	DC servo motor: 1 DC motor: 2
Heads:	REC/PB: Special Hard Permalloy Erase head: Ferrite
Power Supply Rating:	U.K. and Australian models AC 240 V 50 Hz European models (Except U.K.) AC 230 V, 50Hz Worldwide models AC 120 and 220 V, Switchable 50/60 Hz
Power Consumption:	21 watts
Dimensions:	275(W) x 118(H) x 313(D)mm 10 ⁷ / ₈ " x 4 ⁵ / ₈ " x 12 ⁵ / ₁₆ "
Weight:	4.5 kg. (9.9 lbs.)

BLOCK DIAGRAM



CIRCUIT DESCRIPTION

CASSETTE LOADING FUNCTION

For the operation of this function, switch circuits are available as follows;

1. OPEN SW (Mecha. Drwg. 100: Upper 130)
2. CLOSE SW (Mecha. Drwg. 100: Lower 131)
3. DOOR PRESS SW (Mecha. Drwg. 103: Appx. 103)
4. HALF PRESS SW (Mecha. Drwg. 102: Appx. 103)
5. OPEN/CLOSE SW (Front panel)

1. OPEN SW

The Loading Motor is to rotate, while operating OPEN, until turned ON this SW by the projection of Cam Gear.

Then, because of this SW turned ON, the microcomputer will make a decision that OPEN operation is finished, and stop the Loading Motor.

If not turned ON this SW within 5 sec. after started OPEN operation, the microcomputer will judge the state to be wrong and then rotate the Loading Motor backwards to make CLOSE operation.

2. CLOSE SW

The Loading Motor is to rotate, while operating CLOSE, until turned ON this SW by the projection of Cam Gear.

Then, because of this SW turned ON, the microcomputer will make a decision that CLOSE operation is finished, and stop the Loading Motor.

If not turned ON this SW within 5 sec. after started CLOSE operation, the microcomputer will judge the state to be wrong and then rotate the Loading Motor backwards to make OPEN operation.

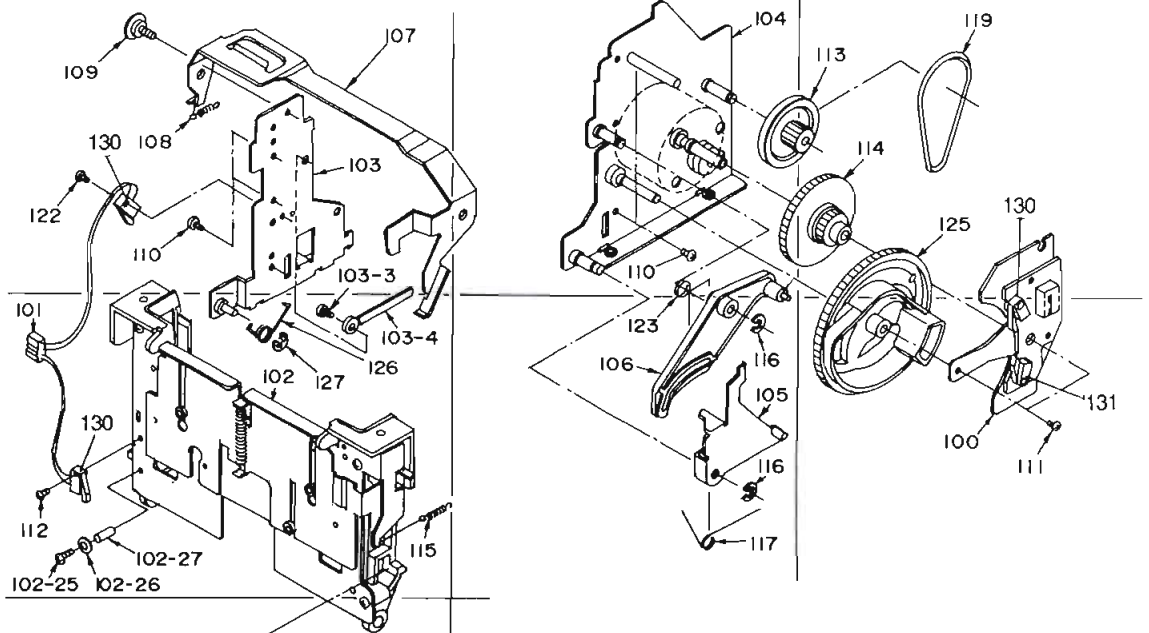
3. DOOR PRESS SW

Under OPEN state, by pressing DOOR manually this SW is to be ON and by letting DOOR go to the original position, this SW will be OFF. The microcomputer will detect this ON to OFF trailing and then rotate Loading Motor so as to carry out CLOSE operation.

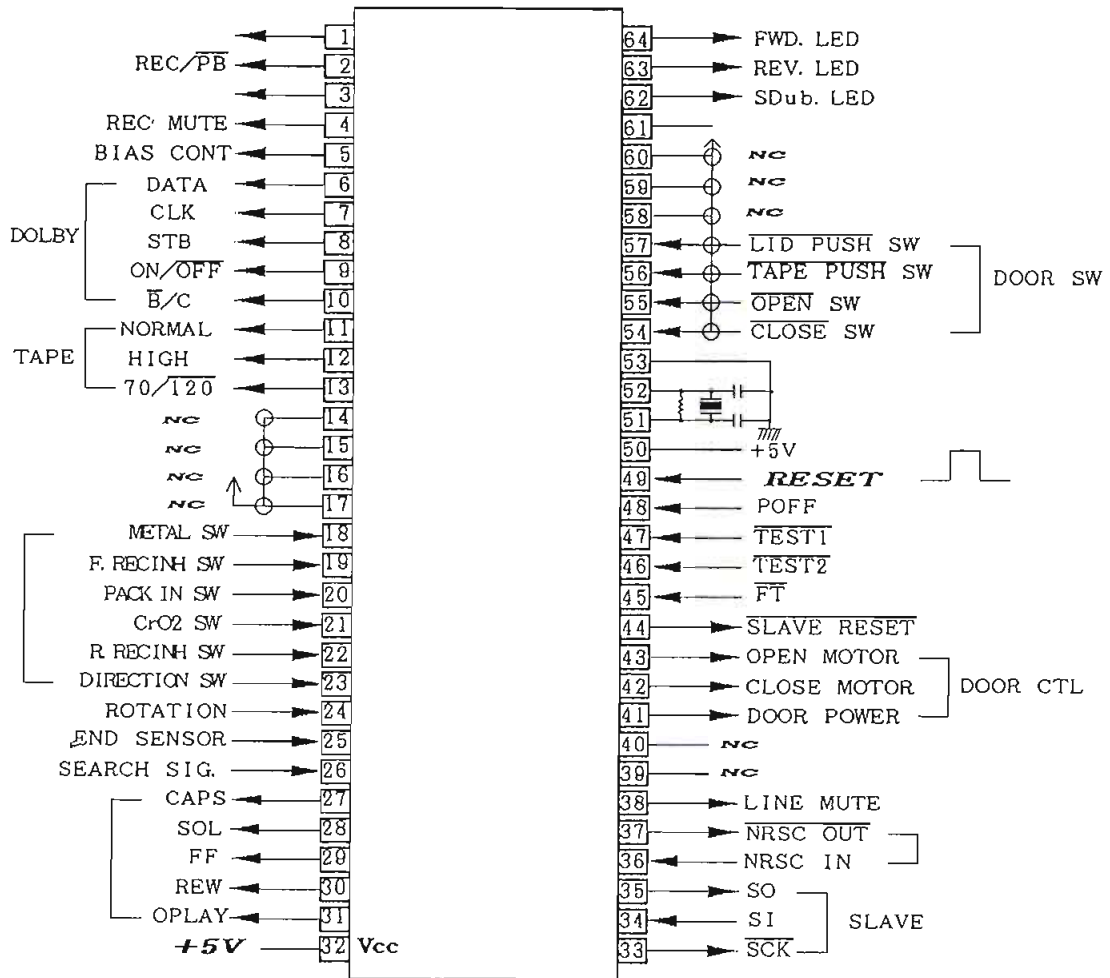
Such an operation, however, shall be carried out only in case where cassette is not put.

4. HALF PRESS SW

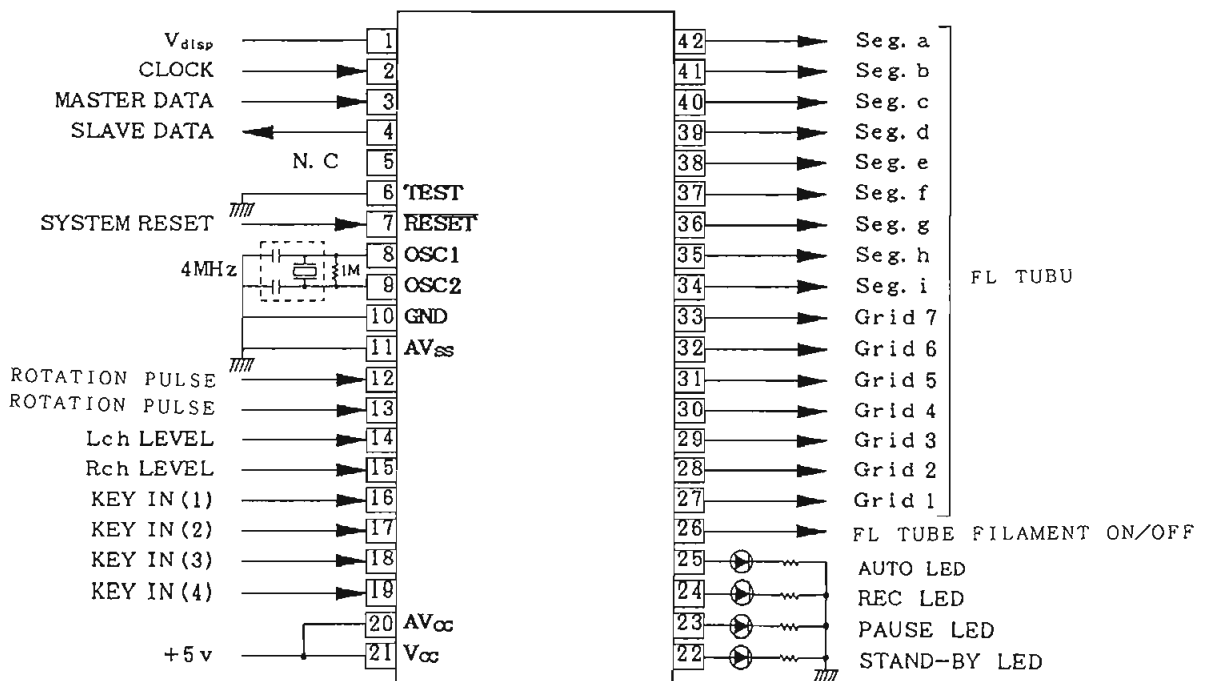
When set the Cassette Half under OPEN condition, this SW is to be ON by pressing upper part of the Cassette Half downward. The microcomputer will detect this OFF to ON rise and then rotate Loading Motor so as to carry out CLOSE operation.



HD614089SD67 (MAIN MICOM)



HD404316A06S (COUNTER MICOM)



MICROCOMPUTER TERMINAL DESCRIPTION

HD614089SD67 (MAIN MICOM)

Port no.	Name	I/O	Description	Port no.	Name	I/O	Description																	
1	NC			32	Vcc		+5V																	
2	REC/PB	OUT	Recording/playback selection	33	SSCK	OUT	Master-slave communication clock																	
3	NC			34	SDATA	IN	Slave serial data input																	
4	REC MUTE	OUT	Recording muting active:H	35	MDATA	OUT	Master serial data output																	
5	BIAS CONT	OUT	Bias control active:H	36	NRSC IN	IN	RI cord input																	
6	DATA	OUT	Data output to Dolby IC	37	NRSC OUT	OUT	RI cord output																	
7	CLK	OUT		38	LINE MUTE	OUT	Line muting active:H																	
8	STB	OUT		39, 40	NC																			
9	ON/OFF	OUT	Dolby ON/OFF control	41	DOOR POWER	OUT	Door motor torque control open:H, close:L																	
10	B/C	OUT	Dolby B/C control	42	CLOSE MOTOR	OUT	Door motor control active:H																	
11	NORMAL	OUT	Tape position selection	43	OPEN MOTOR	OUT																		
12	HIGH	OUT		<table border="1" style="display: inline-table; vertical-align: middle;"> <thead> <tr> <th>PIN</th> <th>NORMAL</th> <th>HIGH</th> <th>METAL</th> </tr> </thead> <tbody> <tr> <td>11P</td> <td>*H*</td> <td>*L*</td> <td>*L*</td> </tr> <tr> <td>12P</td> <td>*L*</td> <td>*H*</td> <td>*L*</td> </tr> <tr> <td>13P</td> <td>*L*</td> <td>*H*</td> <td>*H*</td> </tr> </tbody> </table>	PIN	NORMAL	HIGH	METAL	11P	*H*	*L*	*L*	12P	*L*	*H*	*L*	13P	*L*	*H*	*H*	44	SLAVE RESET	OUT	Slave micon reset
PIN	NORMAL	HIGH		METAL																				
11P	*H*	*L*	*L*																					
12P	*L*	*H*	*L*																					
13P	*L*	*H*	*H*																					
13	70/120	OUT		45	FT	IN																		
14~17	NC			46	TEST2	IN																		
18	METAL SW	IN	Metal tape position detection	47	TEST1	IN																		
19	F.REC INH	IN	Forward recording prevention	48	POFF	IN	Power off detection																	
20	PACK IN	IN	Tape in detection	49	RESET	IN	System micon reset																	
21	Cr02 SW	IN	High tape position detection	50	TEST	IN																		
22	R.REC INH	IN	Revers recording prevention	51, 52	OSC1, OSC2		System clock 4MHz																	
23	DIR SW	IN	Direction switch	53	GND																			
24	ROTATION SENSOR	IN	Reel rotation sensor	54	CLOSE SW	IN	Door open/close detection																	
25	OPT END SENSOR	IN	Opt.end sensor	55	OPEN SW	IN																		
26	SEARCH SIGNAL	IN	Search signal input	56	TAPE PUSH SW	IN	Tape push detection																	
27	CAPS	OUT	Capstan motor drive	57	LID PUSH SW	IN	Dorr push detection																	
28	SOL	OUT	Solenoid drive	58~61	NC																			
29	FF	OUT	Reel motor drive	62	SD LED	OUT	CD dubbing indicator																	
30	REW	OUT		63	REV. LED	OUT	Direction indicator																	
31	O.PLAY	OUT	Reel motor torque control	64	FWD. LED	OUT																		

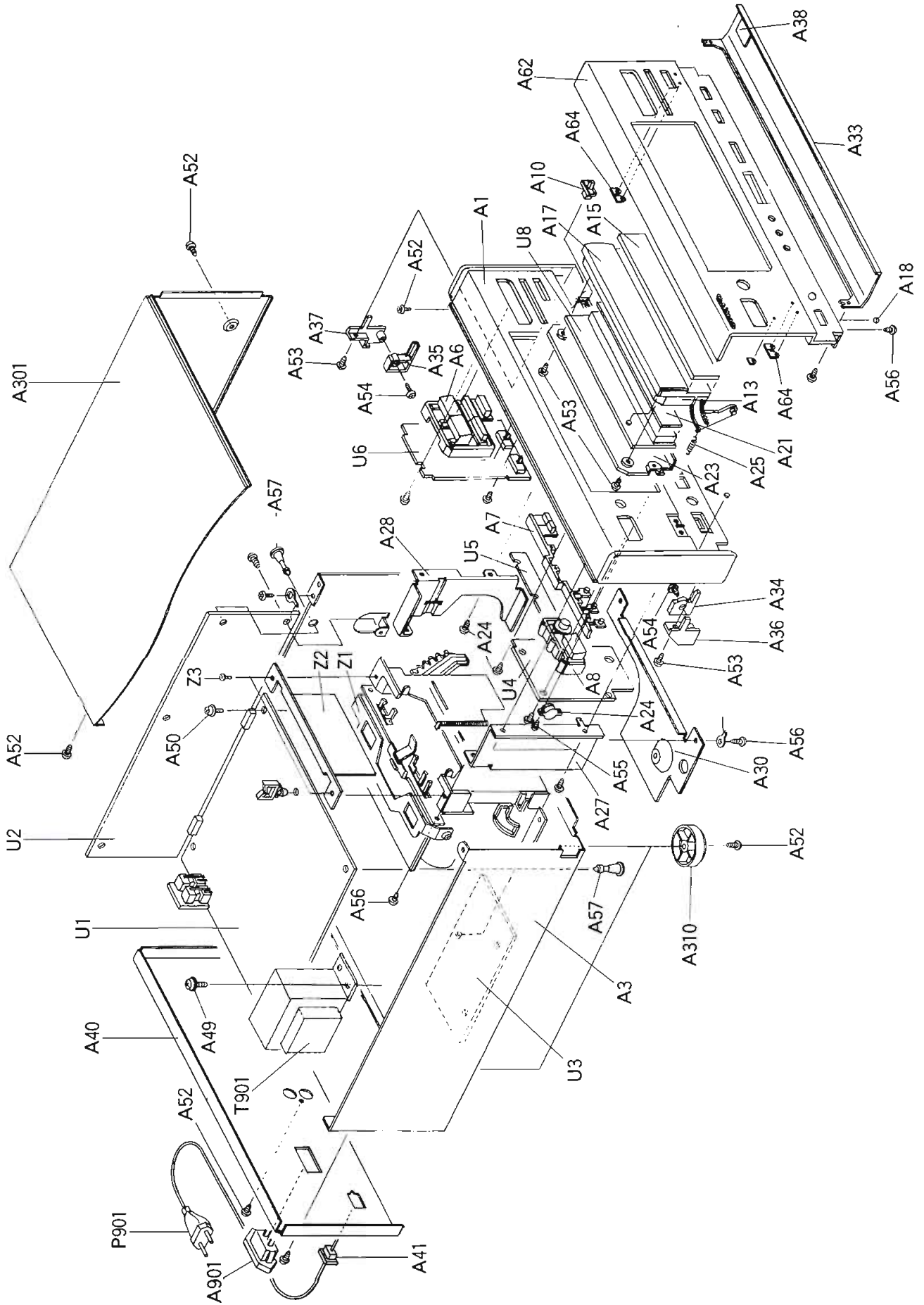
CHASSIS-EXPLODED VIEW PARTS LIST

REF.NO.	PARTS NO.	DESCRIPTION	REF.NO.	PARTS NO.	DESCRIPTION
A1	27110779A	FRONT BRACKET (B)	A53	834426088	TAP-TIGHT SCREW 2.6TTS+8B
A3	27100721	FRONT BRACKET (S)	A54	834426068	TAP-TIGHT SCREW 2.6TTS+6B
A6	28324858	CHASSIS	A55	833420108	TAP-TIGHT SCREW 2TTP + 10BB
A7	28324859	KNOB (PLAY) (B)	A56	838430068	TAP-TIGHT SCREW 3TTB + 6BBC
A8	28324862	KNOB (PLAY) (S)	A57	27190266	HOLDER
-a	28324859	KNOB (REC) (B)	A58	27190657	HOI.DER
-b	28324863	KNOB (REC) (S)	A62	27190657	HOI.DER
A10	28324880	KNOB (POW)AS (B)	A63	28135199Y	FRONT PANEL AS (B)
A11	28324881	KNOB (POW)AS (S)	A64	28198797	FRONT PANEL AS (S)
A13	28324848	KNOB (POW) (B)	A301	28184549	BADGE
A14	28324849	KNOB (POW) (S)	A303	28184550	FACL1 (7)
A15	28324913	KNOB (OP:N) (B)	A304	28141283	TOP COVER (B)
A17	28324847	KNOB (OPLN) (S)	A310	28141284	TOP COVER (S)
A18	28324118	KNOB (T) (B)	A901	27175294Y	CUSHION
A19	28324864	KNOB (T) (S)	W901	25050337	CUSHION
A21	28324888	KNOB (SD) (B)	P101A	2046213073	LEG AS
A23	28324888	KNOB (SD) (S)	F901	2009990297	NSCT-2P164,AC OUYLET
A24	27301761A	CASSETTE FRAME AS	F901	252075	NSCT-2P164,AC OUYLET
A25	27301762	CASSETTE FRAME	F901	252075	NSCT-2P164,AC OUYLET
A27	27301763	CLEAR PLATE	U1	2300955	NSAS-14P0431,HEAD WIRE
A28	27301763	CASSETTE LID (B)	U2	2300955	2.5A-SE-EAK.FUSE
A29	27301763	CASSETTE LID (S)	U3	2300955	NPT-1182P,P.TRANS (P)
A30	28140860	RUBBER CUSHION	U4	2300955	NPT-1182DG,P.TRANS (W)
A31	28133300A	BACK PLATE (B)	U5	2300955	NSS-1258P.SLIDESW (W)
A32	28133301A	BACK PLATE (S)	U6	2300955	AS-CEE,AC CORD
A33	28184546	COVER (F)	U8	2300955	AS-CEE,AC CORD
A34	27301782	DAMPER	Z1	244181-1	NAAR-4777-2
A35	27180451	SPRING (LID)	Z2	24611487A	NAAF-4778-2
A36	27130634B	BRACKET (L)	Z3	801437	NADG-4780-2
A37	27130722	BRACKET (R)			NASW-4781-2
A38	27150365	SHIELD PLATE			NASW-4782-2
A39	28148279A	DOOR (B)			NASW-4783-2
A40	28148280A	DOOR (S)			NADIS-4785-2
A41	28180112	HINGE (L)			NDM-172,CASSETTE
A42	28180113	HINGE (R)			COVER
A43	28180107A	HINGE (HL)			SCREW M2.6
A44	28180108A	HINGE (HR)			
A45	28324914-1	KNOB (DOOR) (B)			
A46	28323779-1	KNOB (DOOR) (S)			
A47	27121797	REAR PANEL (P)			
A48	27121798	REAR PANEL (W)			
A49	27300750	BUSHING (CORD)			
A50	830440089	TAP-TIGHT SCREW 4TTC + 8CBC			
A51	831130088	TAP-TIGHT SCREW 3TTW + 8B			
A52	833430080	TAP-TIGHT SCREW 3TTP + 8PBC			
	834430088	TAP-TIGHT SCREW 3TTS + 8BBC (B)			
	834230108	TAP-TIGHT SCREW 3TTS + 10B (Ni) (S)			

NOTE: <P>:Only 230V_model
 <W>:Only Worldwide_model
 <S>:Silver model only
 :Black model only

NOTE: THE COMPONENTS IDENTIFIED BY MARK  ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

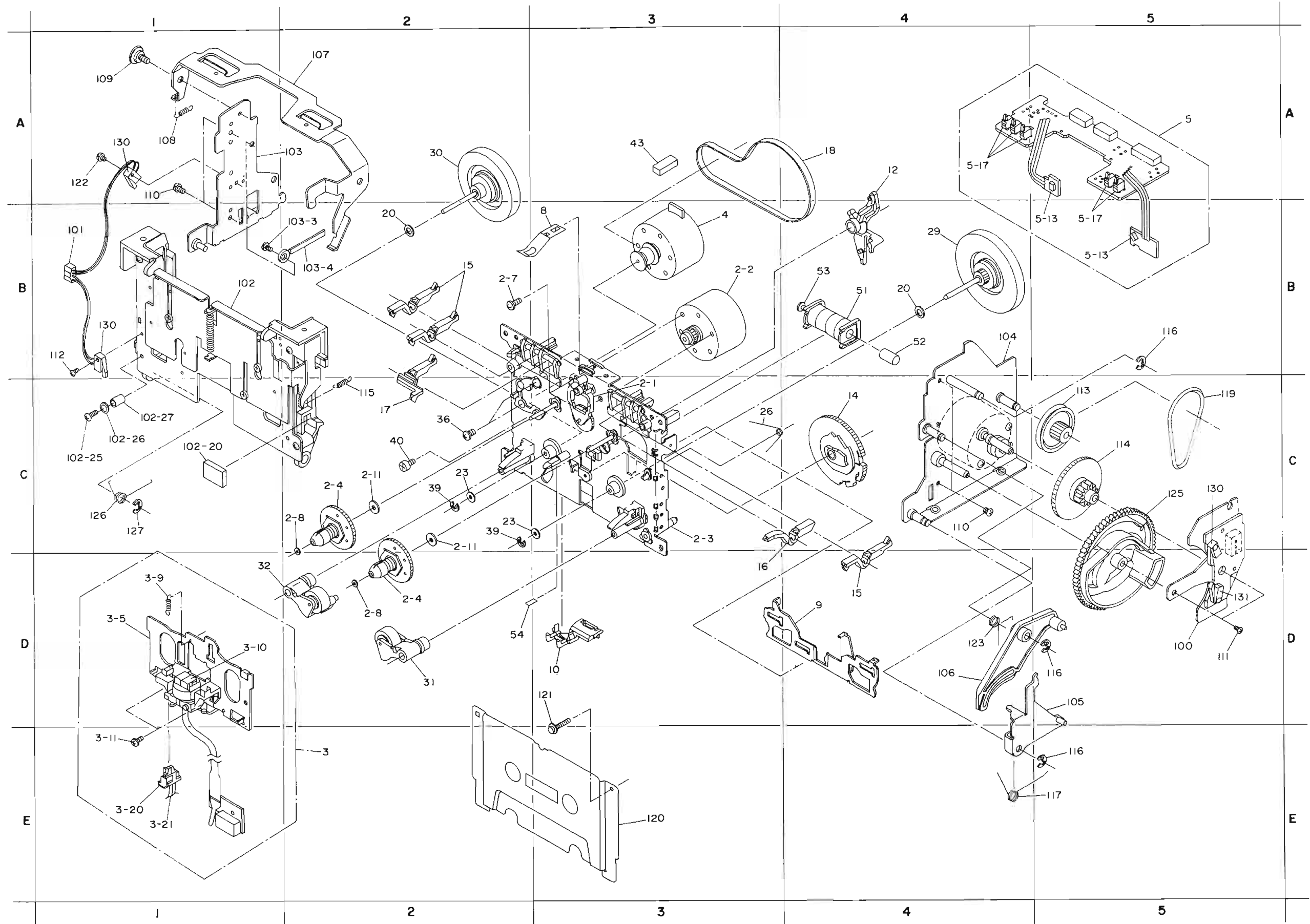
CHASSIS-EXPLODED VIEW



TAPE MECHANISM-PARTS LIST

REF.NO.	PARTS NO.	DESCRIPTION	REF.NO.	PARTS NO.	DESCRIPTION
2-1	24602482	IDLER AS	115	24605769	SPRING (LEVER)
2-2	24601245	REEL MOTOR	116	893030	E WASHER 3
2-3	24611565	BASE (CHASSIS)	117	24605760	SPRING (DOOR)
2-4	24602587	REEL BASE BLOCK	119	24602538	BELT
2-7	24609032	PAN HEAD SCREW 2.6×6.4ZN	120	24611527	BACK PLATE (CASSETTE)
2-8	24611177	PLASTIC WASHER 1.7×3.2×.25	121	24609049	TAP-TIGHT SCREW
2-11	24611175	PLASTIC WASHER 2.1×7×.25	122	24609058	PANHEAD SCREW TT2.0×8ZN
3	24600091	HEAD PLATE AS	123	24605761	SPRING (SLIDER)
3-5	24611584	HEAD BASE	125	24602585	CAM GEAR
3-9	24605711	SPRING	126	24605796	EJECT SPRING
3-10	24600121	REC/PLAY HEAD	127	893025	E WASHER 2.5
3-11	833120059	TAPPING SCREW 2×5ZN	130	24606454	SWITCH SPPB22
3-20	24606465	SPI-320-B	131	24606453	SWITCH SPPB21
3-21	24611500	LEAD WIRE (QS)			
4	24601278	MTETER M BLOCK			
5	24606523	PC BOARD C BLK			
5-13	24606494	SG-107F3			
5-17	24606271	PUSH SWITCH			
8	24605739	SPRING			
9	24611566	PLATE (SLIDE)			
10	24611385	LEAD HOLDER			
12	24607137	PLAY ARM			
14	24602550	CAM GEAR			
15	24603365A	LEVER (REC)			
16	24603366	LEVER (PACK) L			
17	24603367	LEVER (METAL) L			
18	24602551	MAIN BELT			
20	24611041	PLASTIC WASHER 2.6×0.25			
23	24610841	PLASTIC WASHER 2.6×4.7×.5			
26	24605797	SLIDE SP			
29	24602588	AS FLYWHEEL			
30	24602545	FLYWHEEL AS			
31	24602541	PINCH ROLLER AS			
32	24602589	PINTCH ROLLER AS			
36	24609001	PAN HEAD SCREW SW2.6 × 5ZN			
39	8930151	E WASHER 1.5S			
43	24611488	CUSHION (HOLDER)			
51	24606333	SOLENOID COIL AS			
52	24606332A	CORE			
53	24606331	PLANGER			
54	24611499	REFLECTER			
100	24606449	BASE AS (SW)			
101	24606497	BASE AS (SW)			
102	24611577	P HOLDER BLOCK			
102-20	24611529	HOLDER CUSHION			
102-25	24611561	PAN HEAD SCREW TT3.0×8			
102-26	24611562	WASHER W3.0			
102-27	24611563	COLLAR 4×3			
103	24611578	P HOLDER BLOCK			
103-4	24611323	LUG			
104	24611491	PLATE AS (HOLDER)			
105	24611579	P HOLDER BLOCK			
106	24603389	LEVER AS (PLAY)			
107	24603400	EJECT LEVER			
108	24605758	SPEING (EJECT)			
109	24609048	SCREW			
110	833126049	TAP-TIGHT SCREW 2.6TTP+4C			
111	833120039	PAN HEAD SCREW TT2.0×3ZN			
112	838120130	WAVE SCREW 2×13			
113	24602535	GEAR (A)			
114	24602536	GEAR (B)			

TAPE MECHANISM-EXPLODED VIEW



ADJUSTMENT PROCEDURES

PRECAUTIONS

- Before adjustment, clean the following parts with an alcohol moistend swab.
 - * record/playback head
 - * erase head
 - * pinch roller
 - * capstan
- Do not use magnetized screwdriver for adjustments.
- Demagnetize record/playback head with a head demagnetizer.

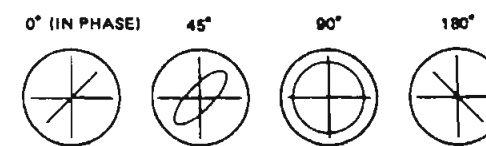
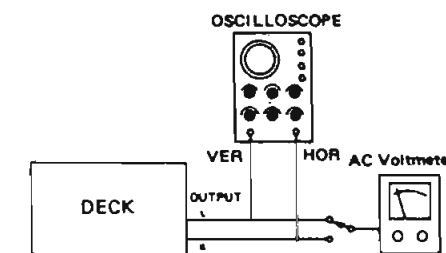
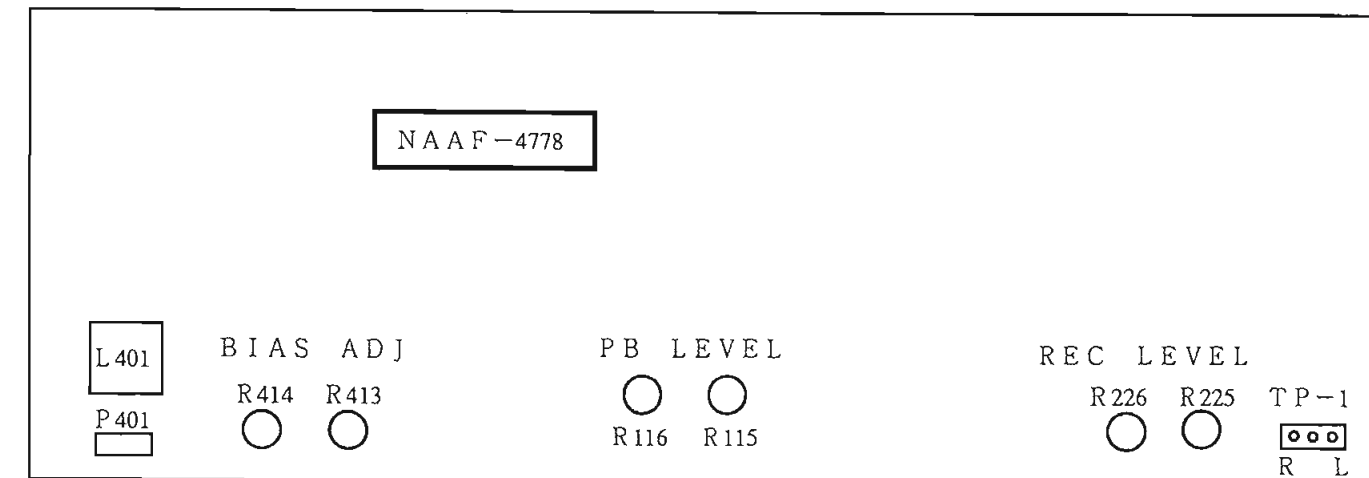
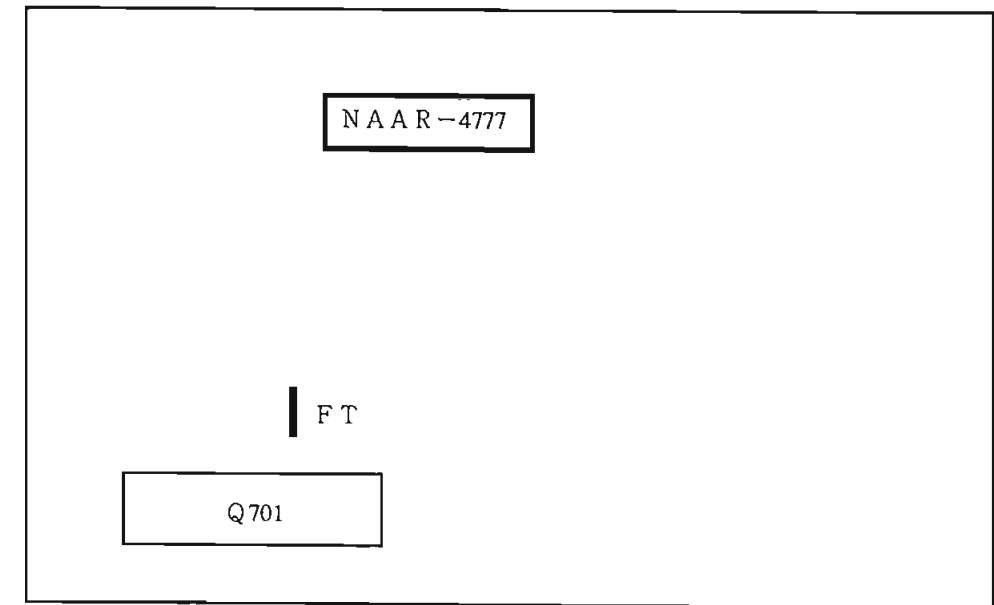
TEST EQUIPMENT/TOOLS REQUIRED:

- Audio oscillator
- Digital frequency counter
- Oscilloscope
- Attenuator
- AC voltmeter
- Non-magnetic screw driver
- Test tapes
 - TCC-153 : 10 KHz, - 5dB
 - MTT-111 : 3 kHz, - 0dB
 - MTT-150 : Dolby level calibration
400Hz, tone 200nWb/m

Item	Connection of instrument	Line input	Test tape	Mode	Output indicator	Adjustment point	Adjust	Remarks
1	Tape speed		MTT-111	PB	Frequency counter	Semi-fixed on the moter	3,000 to 3,010Hz	
2	Head azimuth		TCC-153	PB	AC vol tmeter	Haed azimuth screw	Maximum and same phase at channels L and R	fig-1
3	Playback level		MTT-150	PB	AC vol tmeter	R-115 (Ch.L) R-116 (Ch.R)	300mV	
4	OSC Block		METAL TAPE	REC	AC vol tmeter	L-401	107KHz	
5	Bias current	1KHz, -20dB and 12KHz, -20dB	NEW XL-II 90	REC/PB	AC vol tmeter	R-413 (Ch.L) R-414 (Ch.R)	Same level at REC/PB	
6	Record level	fig-2	1KHz	REC	AC vol tmeter	Attenuator or AF OSC output	350mV	
				REC/PB	AC vol tmeter	R-225 (Ch.L) R-226 (Ch.R)	Same level at REC/PB	

Blank tape
 NORMAL...NEW UD-1 C-90 PLAY torque30~70g/cm
 HIGHXL-II C-90 FF.REW torque...80~180g/cm
 METAL.....XS C-60 Back tention 2~6g/cm

ADJUSTMENT POINT



Confirming phase relationship

fig-1

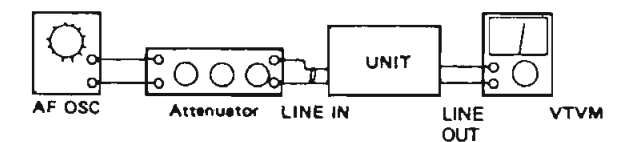
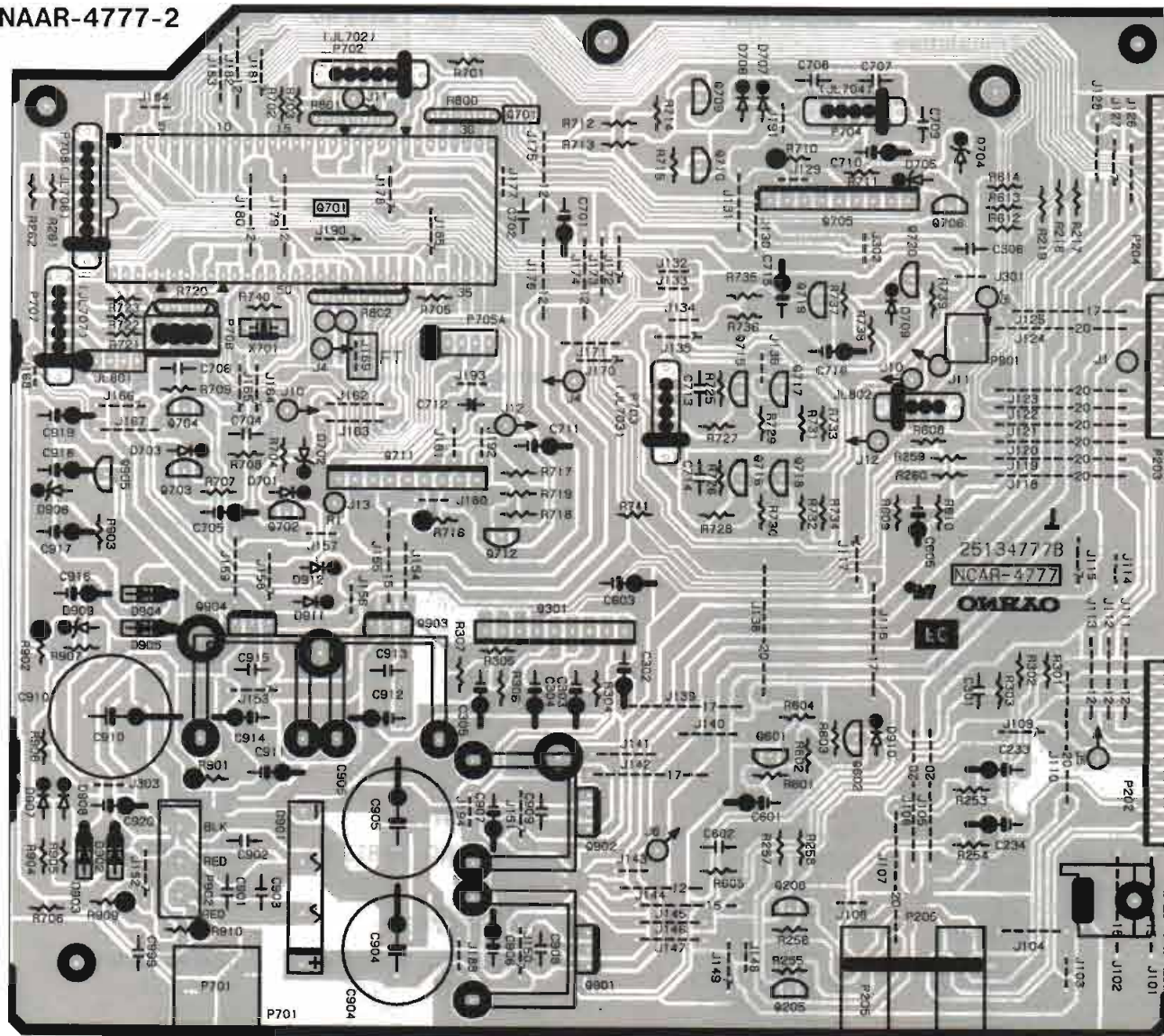


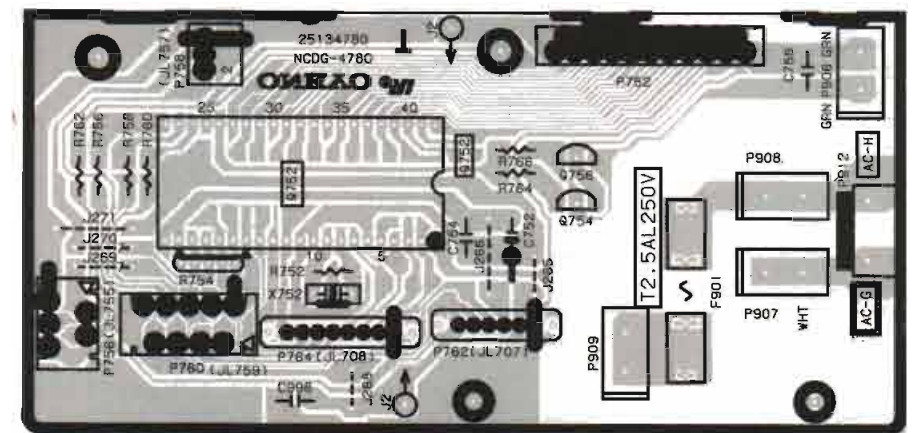
fig-2

PRINTED CIRCUIT BOARD VIEW FROM BOTTOMr SIDE

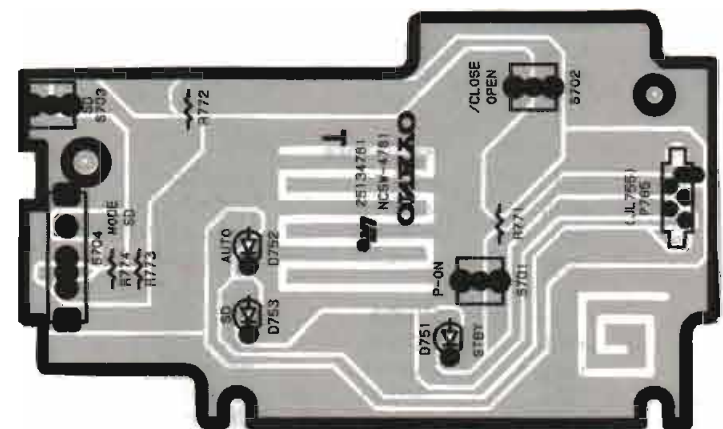
NAAR-4777-2



NADG-4780-2



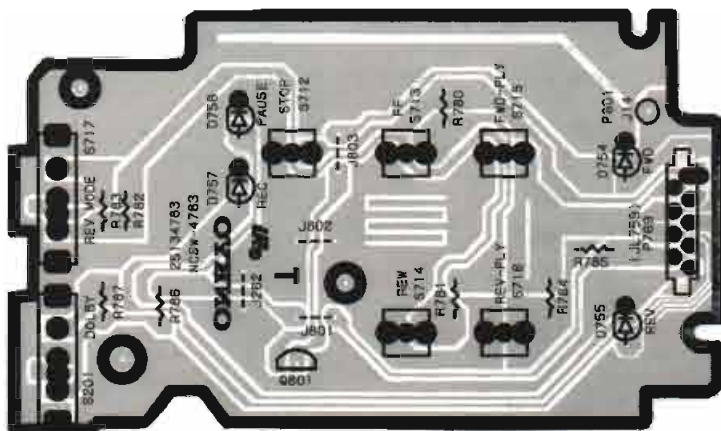
NASW-4781-2



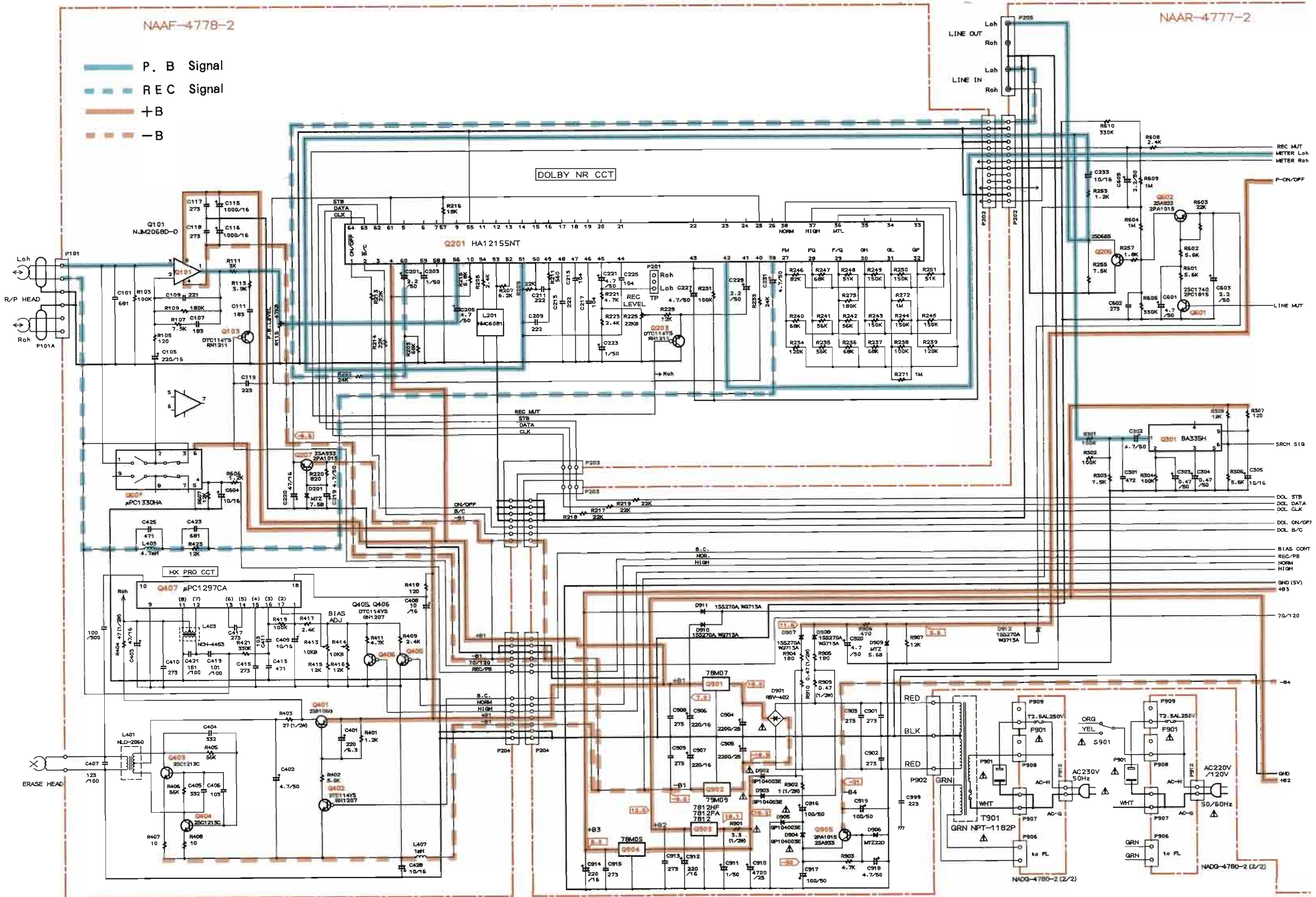
NASW-4782-2



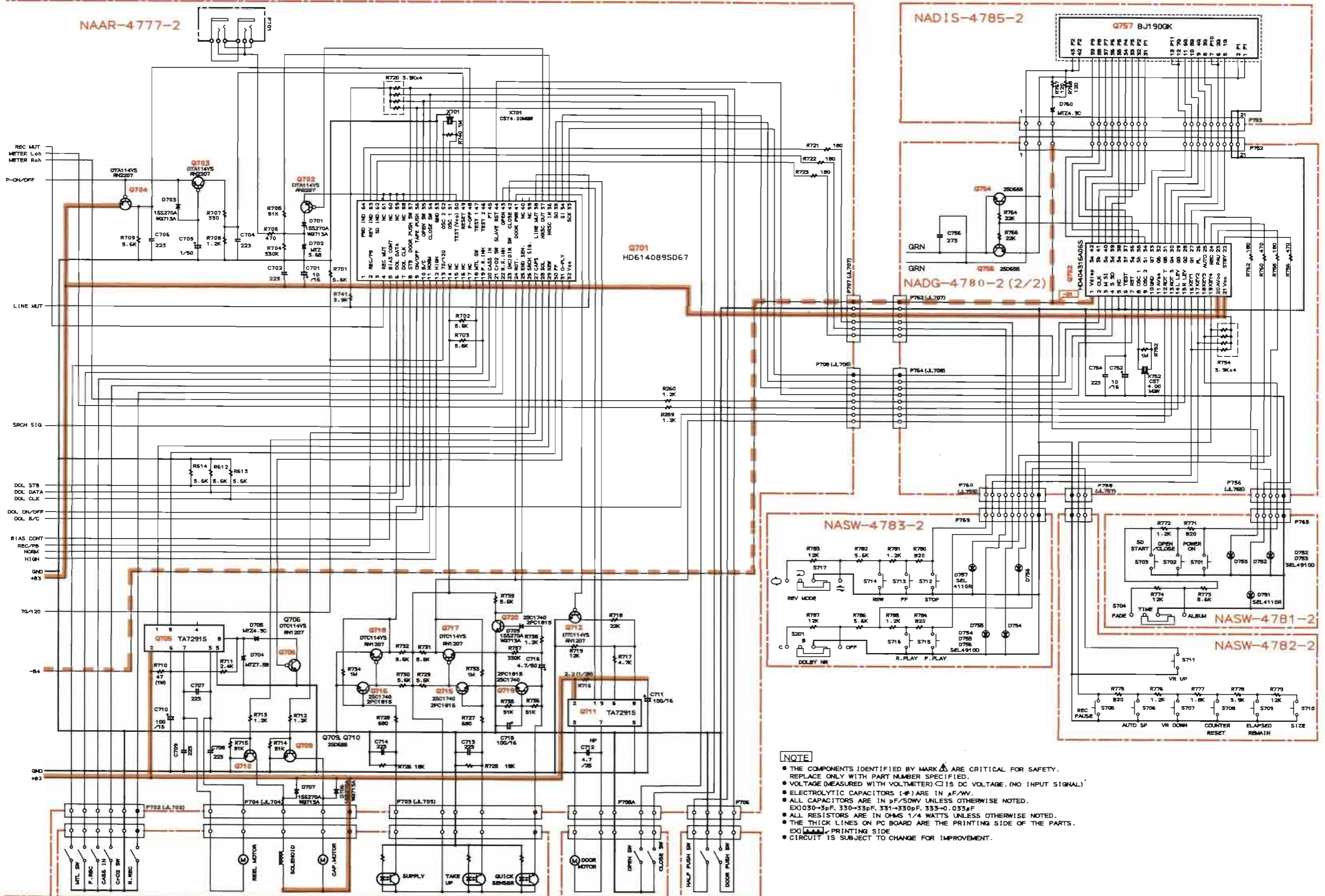
NASW-4783-2



SCHEMATIC DIAGRAM 1/2



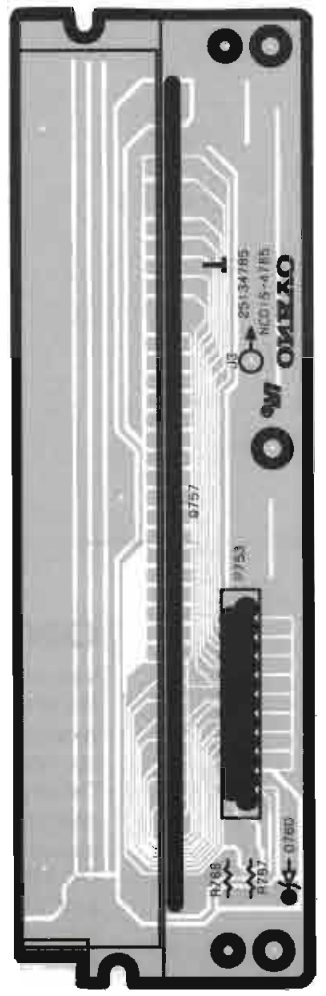
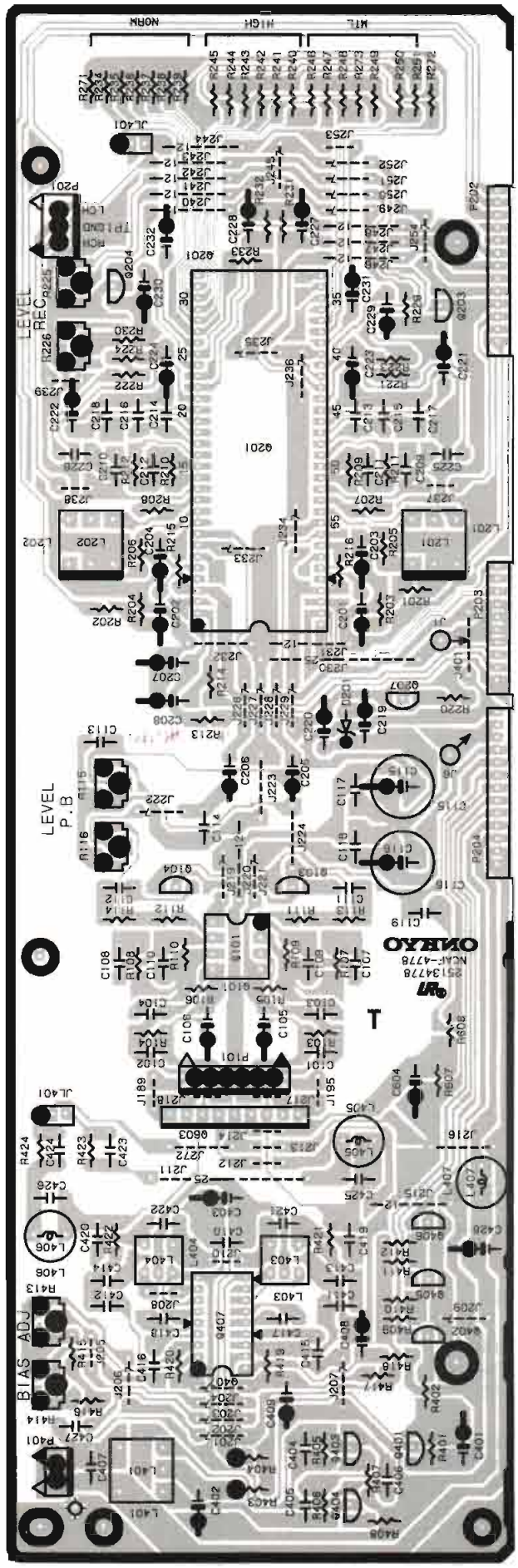
SCHEMATIC DIAGRAM 2/2



NOTE

- THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE (MEASURED WITH VOLTMETER) \square IS DC VOLTAGE. (NO INPUT SIGNAL)
- ELECTROLYTIC CAPACITORS (E) ARE IN μ F/VV.
- ALL CAPACITORS ARE IN pF/50V UNLESS OTHERWISE NOTED. EX) 030=3pF. 330=33pF. 331=330pF. 333=0.033 μ F
- ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.
- THE THICK LINES ON PC BOARD ARE THE PRINTING SIDE OF THE PARTS. EX) \square PRINTING SIDE
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

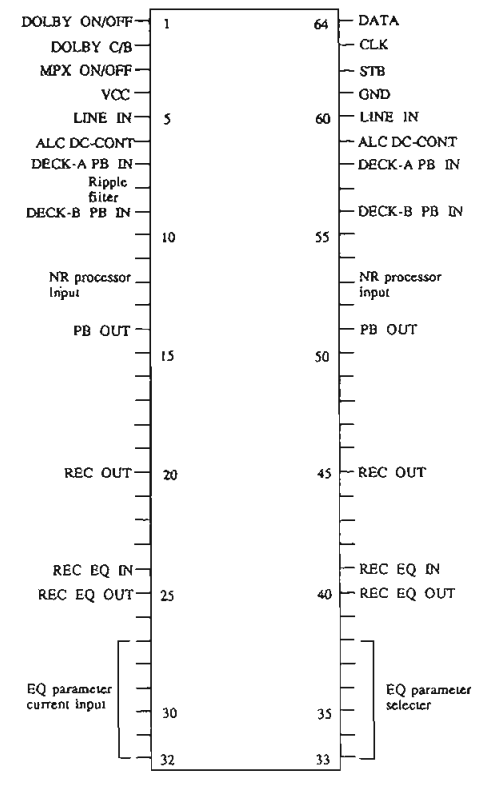
PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



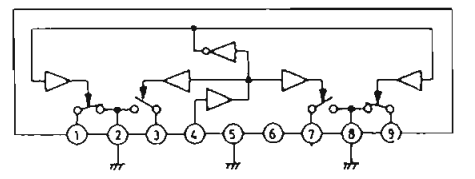
NADIS-4785-2

IC BLOCK DIAGRAM

HA12155NT (DOLBY NR)



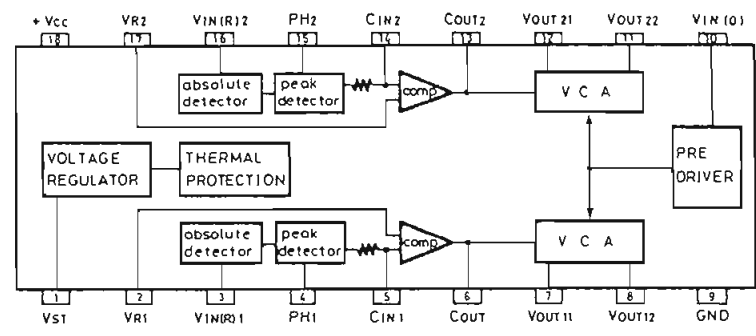
μPC1330HA (REC/PB SW)



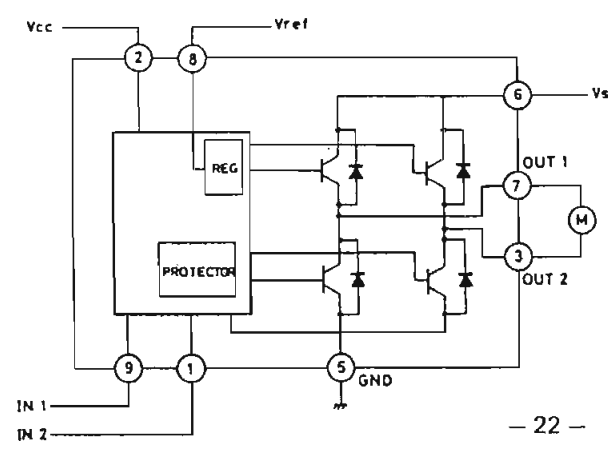
μPC1330HA

Pin No.	Function
1, 9	PB signal
2	GND
3, 7	REC signal
4	REC/PB SW control
5	GND
6	+B
8	GND

μPC1297CA (HX PRO)



TA7291S (MOTOR DRIVE)



INPUT		OUTPUT		MODE
IN 1	IN 2	OUT 1	OUT 2	
0	0	H	H	STOP
1	0	H	L	CW/CCW
0	1	L	H	CCW/CW
1	1	L	L	BRAKE

