

ONKYO SERVICE MANUAL

STEREO CASSETTE TAPE DECK

MODEL TA-RW311

Black model

BMD, BMDN	120V AC, 60Hz
BMP	230V AC, 50Hz

SAFETY-RELATED COMPONENT WARNING!
COMPONENTS IDENTIFIED BY MARK Δ 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 PART 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.

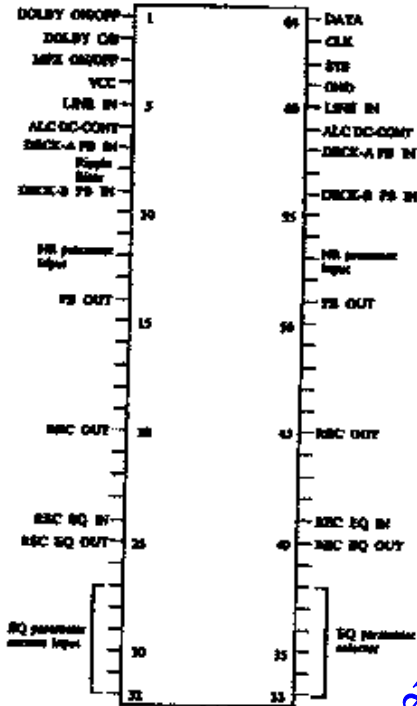


SPECIFICATIONS

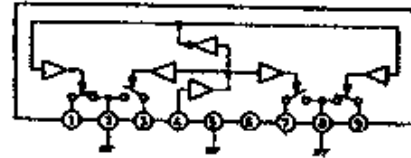
- Track Format: 4-track, 2-channel
- Erase System: AC erase
- Tape Speed: 4.8 cm/sec. (1-7/8 i.p.s.)
9.6 cm/sec. (3-3/4 i.p.s.) (high-speed dubbing)
- Wow and Flutter: 0.07 % (WRMS)
- Frequency Response: 20 — 15,000 Hz (Normal)
(30 — 14,000 Hz \pm 3 dB)
20 — 16,000 Hz (High)
(30 — 15,000 Hz \pm 3 dB)
20 — 17,000 Hz (Metal)
(30 — 16,000 Hz \pm 3 dB)
- S/N Ratio: Dolby NR off: 58 dB (metal position tape)
A noise reduction of 10 dB above 5 kHz and 5 dB at 1 kHz is possible with Dolby B NR.
A noise reduction of 20 dB at 5 kHz is possible with Dolby C NR.
- Input Jacks: Line IN: 2
Input sensitivity: 80 mV
Input impedance: 50 kohms
- Outputs: Line OUT: 2
Standard output level: 500 mV (0 dB)
Optimum load impedance: over 50 kohms
- Headphone jack: 1
Optimum load impedance: 8 to 200 ohms
- Motors: DC servo motor \times 2, DC motor \times 2
- Heads: REC/PB: 1
PB: 1
EBASE: 1
- Power Supply: European and Australian models: AC 230V, 50 Hz
U.S.A. and Canadian models: AC 120V, 60 Hz
Worldwide model: AC 120V and AC 230V, Switchable 50/60 Hz
- Power Consumption: 29 watts
- Dimensions: 455(W) \times 120(H) \times 305(D) mm
(17-7/8" \times 4-3/4" \times 12")
- Weight: 5.9 kg. (13.0 lbs.)

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

IC BLOCK DIAGRAM
HA12155NT (DOLBY NR)



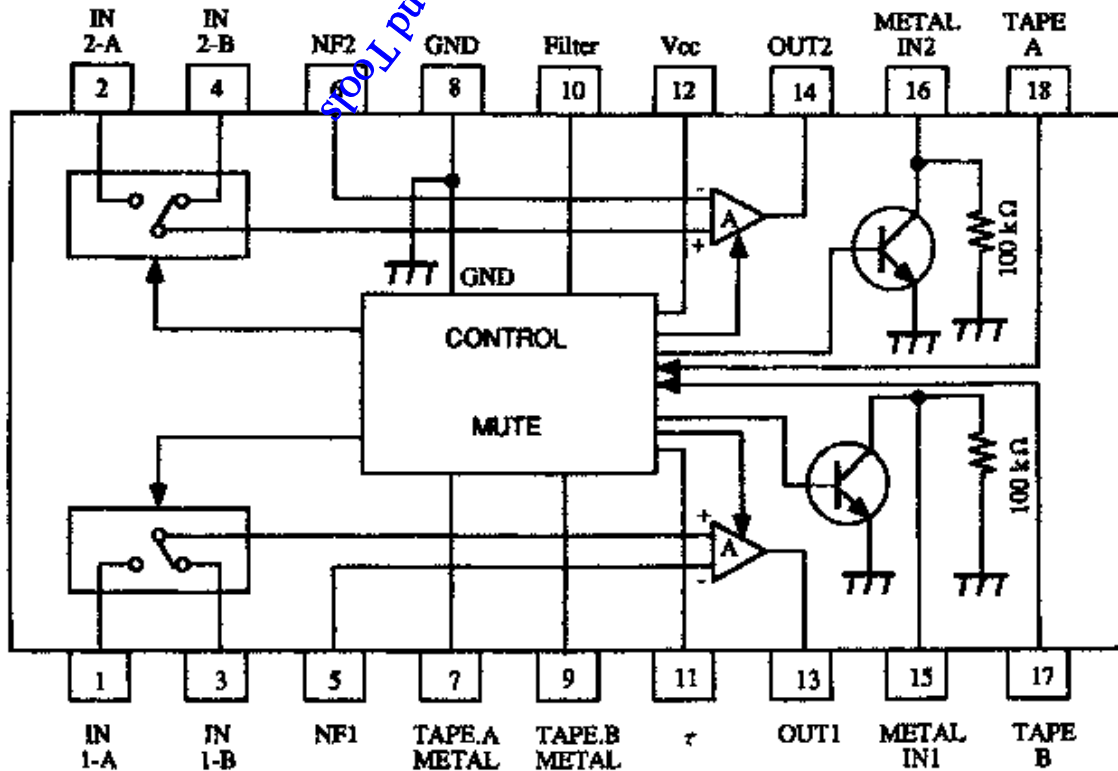
μPC1330HA (REC/PB SW)



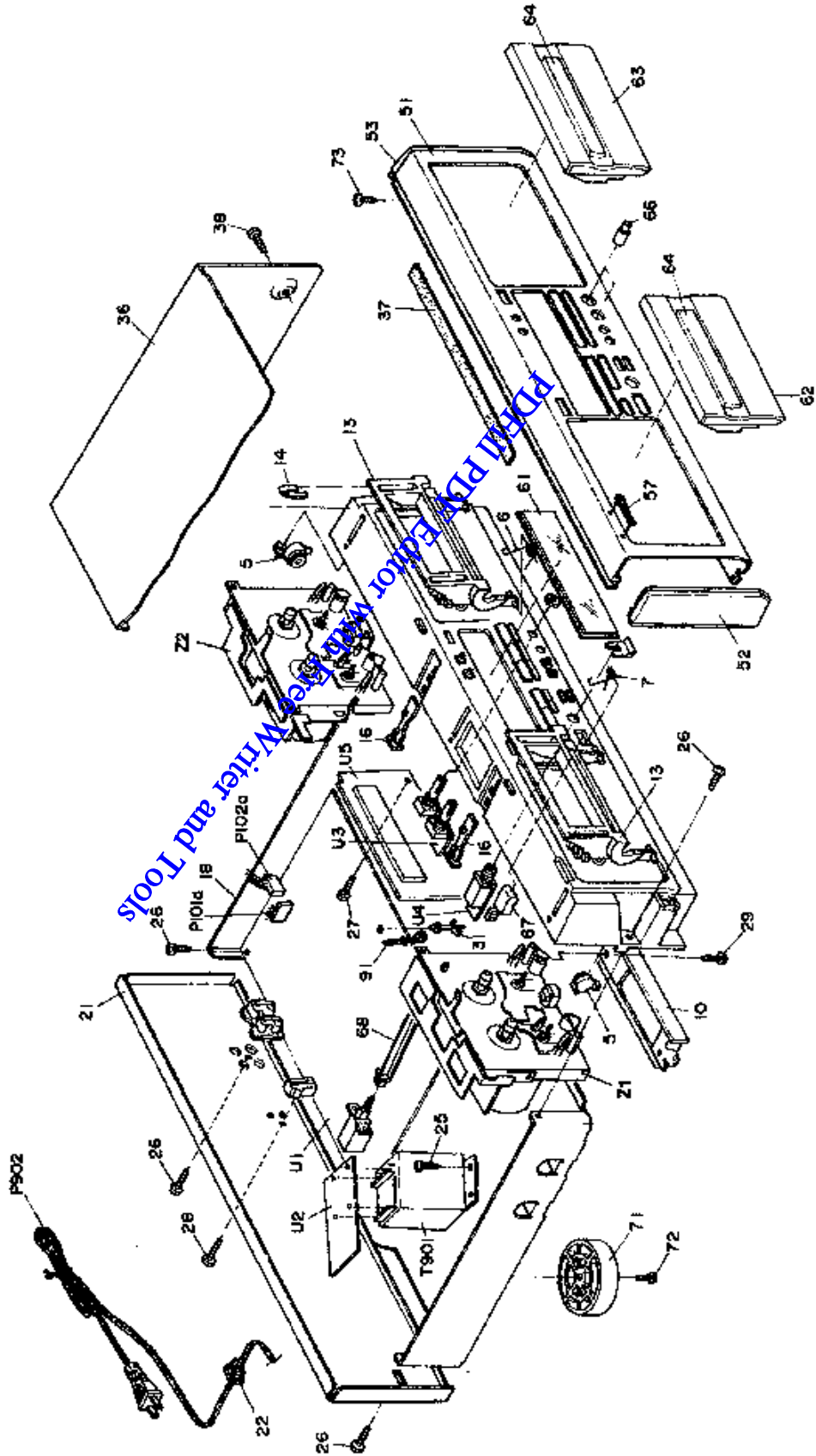
μPC1330HA

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

BA3416BL (Dual Playback Preamplifier)



CHASSIS-EXPLODED VIEW



PDF Editor and Tools

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1	27110879Y	Front bracket ass'y	P101a	2009990350JLY	NSAS-6P0487,Socket for deck A
5	28400282	Damper	P102a	2009990315JLY	NSAS-14P0449,Socket for deck B
6	27180476A	Spring B	P902	253192HIT	AS-UC-6#18,Power supply cord <D>
7	27180477A	Spring A		253193HIT	AS-CEE,Power supply cord <P>
10	27130741Y	Bracket F	T901	2301049Y	NPT-1223D,Power transformer <D>
13	27301792AY	Cassette frame		2301050Y	NPT-1223P,Power transformer <P>
14	27180435	Spring	U1	IN206586-2Y	NAAR-5086-2,Main circuit pc board ass'y
16	28324943Y	Knob,eject	U2	IN206587-2Y	NAPS-5087-2,Power supply pc board ass'y
18	27100280AY	Chassis	U3	IN206588-2Y	NAETC-5088-2,Input level volume pc board ass'y
21	27121982Y	Rear panel <D>	U4	IN206589-2Y	NAETC-5089-2,Headphone terminal pc board ass'y
21	27122109Y	Rear panel <P>	U5	IN206593-2Y	NADIS-5093-2,Display circuit pc board ass'y
22	27300750	Cord bushing	Z1	2047291512Y	NCFC-291512,Flat cable
25	830440089	4TTC+8C(BC),Self-tapping screw	Z2	244190Y	NDM-181,Deck mechanism ass'y
26	838130088	3TTB+8B,Self-tapping screw	Z3	244191Y	NDM-182,Deck mechanism ass'y
27	833430080	3TTP+8P(BC),Self-tapping screw			
29	838130088	3TTB+8B,Self-tapping screw			
31	27190480-1Y	PCB-8L,Holder			
36	28184479AY	Top cover			
37	28140837	Cushion			
38	838430088	3TTB+8B(BC),Self-tapping screw			
51	IN206121Y	Front panel ass'y			
52	28125248-6Y	End cap L			
53	28125249-6Y	End cap R			
57	28135199	Badge			
61	28191696Y	Clear plate			
62	27301853Y	Cassette lid A			
63	27301853-1Y	Cassette lid B			
64	28400625Y	Window			
66	28323671A	Knob, Volume			
67	28325053Y	Knob, Power			
68	27273135BY	Joint			
71	27175292	Leg			
72	838130088	3TTB+8B,Self-tapping screw			
73	833430080	3TTP+8P(BC),Self-tapping screw			
91	260208	Wine tile			

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ADJUSTMENT PROCEDURES

PRECAUTIONS

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

- * record/playback head
- * erase head
- * pinch roller
- * capstan

2. Do not use magnetized screwdriver for adjustments.

3. Demagnetize record/playback head with a head demagnetizer.

TEST EQUIPMENT/TOOLS REQUIRED:

- Audio oscillator
- Digital frequency counter
- Oscilloscope
- Attenuator
- AC voltmeter
- Non-magnetic screwdriver
- Test tapes
 - TCC-158 :10kHz, -15dB
 - MTT-111 :30Hz, -10dB
 - MTT-160 :Dolby level calibration
- 400Hz, tone 300mWb/m

Tape speed adjustment

Connect the digital frequency counter to the line output terminal.

Load the test tape MTT-111 into the cassette holder.

Connect the test point J285 to the ground to be unit to the adjustment mode.

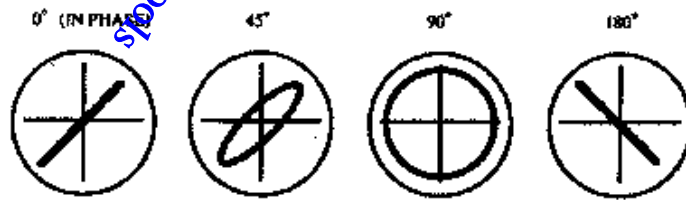
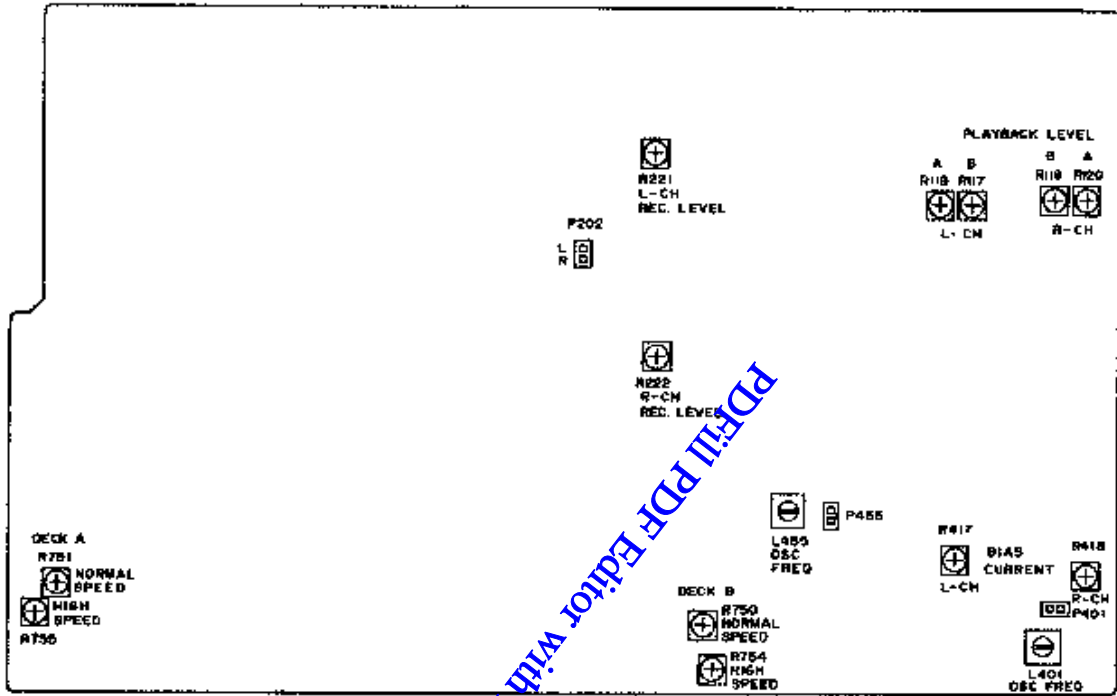
Press the forward play button twice to be unit to the high speed.

Adjust the trim resistors R755(Deck A) and R754(Deck B) so that the frequency counter reading becomes 6000Hz to 6020Hz.

Press the forward play button to be unit to the normal speed.

Adjust the trim resistors R751(Deck A) and R750(Deck B) so that the frequency counter reading becomes 3000Hz to 3010Hz.

Item	Connection of instrument	Line input	Test tape	Mode	Output indicator	Adjustment point	Adjust for	Remarks
Head azimuth	AC voltmeter and oscilloscope to output terminal		TCC-158	Playback	AC voltmeter and Oscilloscope	Head azimuth screw Forward:Left side Reverse:Right side	Maximum and same separation at left and right channels.	Figure 1
Playback level	AC voltmeter to test point P202		MTT-150	Playback	AC voltmeter	Deck A R119(Left channel) R120(Right channel) Deck B R117(Left channel) R118(Right channel)	300mV	
Oscillator block	Frequency counter to test point P401		Metal tape XS-C90	Stop	Frequency counter	L401	107±2kHz	Test mode When you press the stop key, deck becomes recording mode of metal position. Test mode
Bias current	Figure 2	1kHz, -23dB and 12kHz, -23dB	UD-t C-90	Recording/playback	AC voltmeter	R417(Left channel) R418(Right channel)	Difference of 1kHz and 12kHz become less than 1dB.	When you press the AUTO SPACE key, recording of deck starts. Next when you press the AUTO SPACE key, rewind to preceding start point and starts to playback.
Recording level	Figure 2	1kHz 350mV	UD-t C-90	Recording Recording/playback	AC voltmeter AC voltmeter	Attenuator R221(Left channel) R222(Right channel)	350mV Signals of recording and playback become same level	When you press the AUTO SPACE key, recording of deck starts. Next when you press the AUTO SPACE key, rewind to preceding start point and starts to playback.



Confirming phase relationship
Fig.1

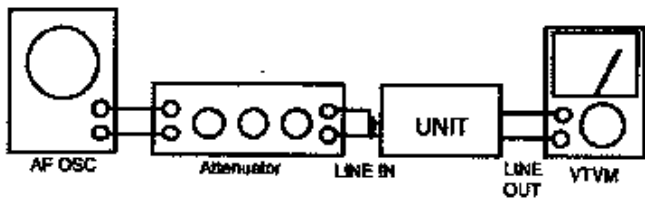


Fig. 2

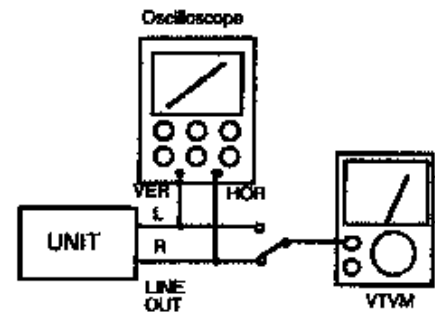
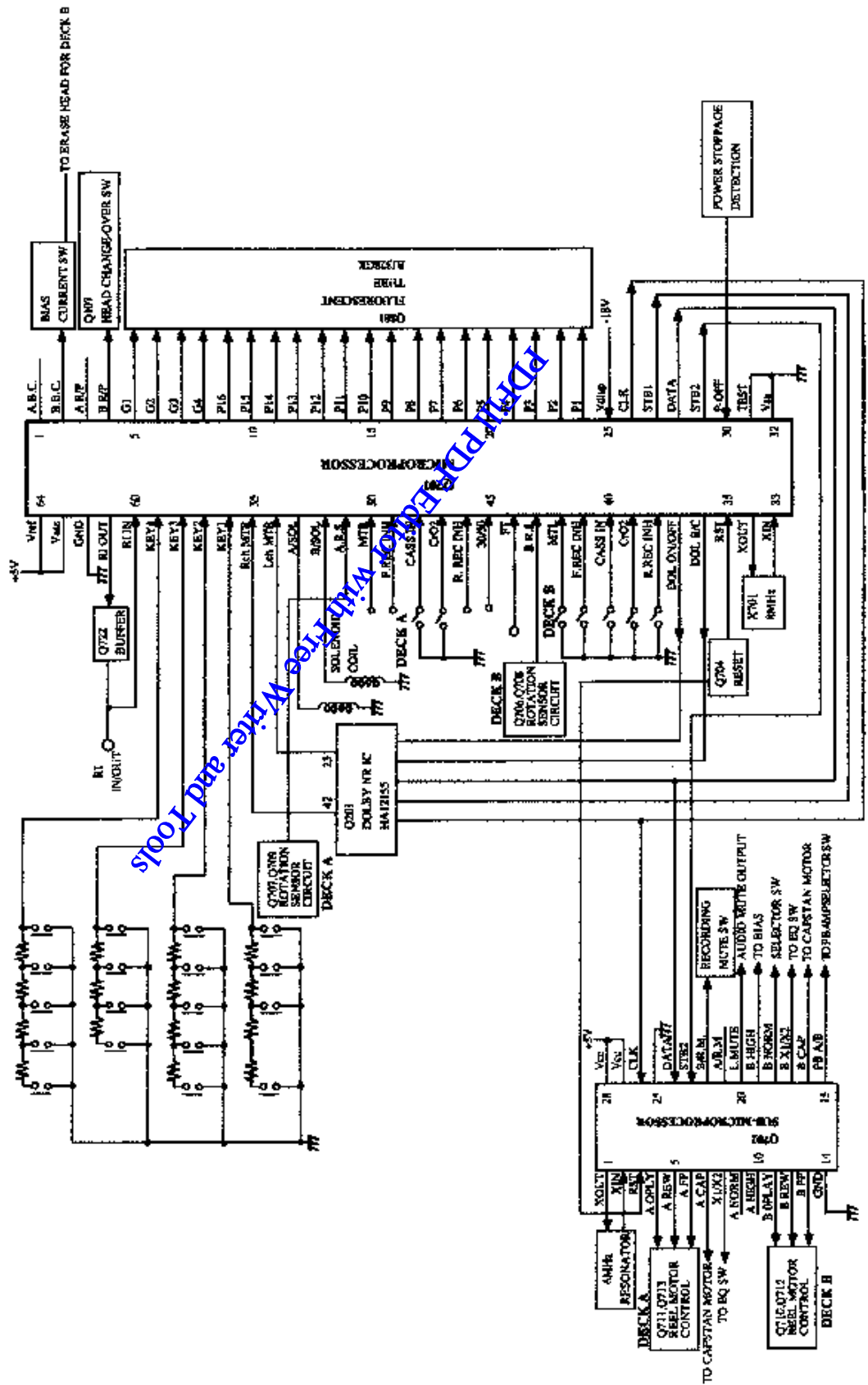


Fig.3

MICROPROCESSOR-CONNECTION DIAGRAM



MICROPROCESSOR-TERMINAL DESCRIPTIONS

MAIN MICROPROCESSOR

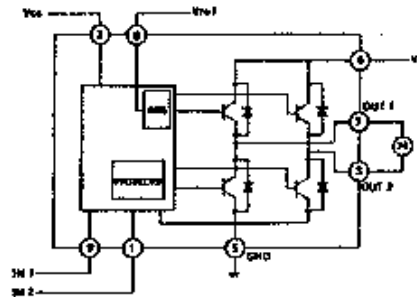
Pin No.	Terminal	Description
1	A.R.C.	Fast current change-over control output pin for Deck A
2	B.R.C.	Fast current change-over control output pin for Deck B
3	A.R.P.	Recording/playback head change-over output pin for Deck A
4	B.R.P.	Recording/playback head change-over output pin for Deck B
5	G1	Grid output pin
6	G2	Grid output pin
7	G3	Grid output pin
8	G4	Grid output pin
9	F16	Segment output pin
10	F15	Segment output pin
11	F14	Segment output pin
12	F13	Segment output pin
13	F12	Segment output pin
14	F11	Segment output pin
15	F10	Segment output pin
16	F9	Segment output pin
17	F8	Segment output pin
18	F7	Segment output pin
19	F6	Segment output pin
20	F5	Segment output pin
21	F4	Segment output pin
22	F3	Segment output pin
23	F2	Segment output pin
24	F1	Segment output pin
25	Vddap	
26	CLK	Clock output pin
27	STR1	Stroke output pin
28	DATA	Data output pin
29	STR2	Stroke output pin
30	P.OFF	Detection input pin for stoppage of electric current
31	TEST	Test pin
32	Vcc	Power supply terminal

Pin No.	Terminal	Description
33	XIN	Ceramic resonator connection pin
34	XOUT	Ceramic resonator connection pin
35	RST	Reset input
36	DOL.B/C	Dolby B/C change-over output pin
37	DOL.ON/OFF	Dolby change-over output pin
38	B.RRC INH	Recording inhibiting detection input pin for reverse side of Deck B
39	CR2	High position detection input pin for reverse side of Deck B
40	CASS IN	Cassette tape detection input pin for reverse side of Deck B
41	F.RRC INH	Recording inhibiting detection input pin for forward side of Deck B
42	MTL	Metal position detection input pin for reverse side of Deck B
43	B.R.S.	Rotation detection input pin for reel stand of Deck B
44	ST	Adjustment mode input pin
45	DS60	Initializing input
46	B.RSC INH	Recording inhibiting detection input pin for reverse side of Deck A
47	CR1	High position detection input pin for reverse side of Deck A
48	CASS IN	Cassette tape detection input pin for reverse side of Deck A
49	F.RRC INH	Recording inhibiting detection input pin for forward side of Deck A
50	MTL	Metal position detection input pin for reverse side of Deck A
51	A.R.S.	Rotation detection input pin for reel stand of Deck A
52	B.R.C.	Solenoid coil drive output pin of Deck B
53	A.R.C.	Solenoid coil drive output pin of Deck A
54	CL.1	Input pin for level meter of left channel
55	CL.2	Input pin for level meter of right channel
56	KEY1	Operation key connection pin
57	KEY2	Operation key connection pin
58	KEY3	Operation key connection pin
59	KEY4	Operation key connection pin
60	BU IN	Bias signal input pin
61	BU OUT	Bias signal output pin
62	CB1	Crowbar terminal
63	Vcc	Power supply pin
64	Vcc	Power supply pin

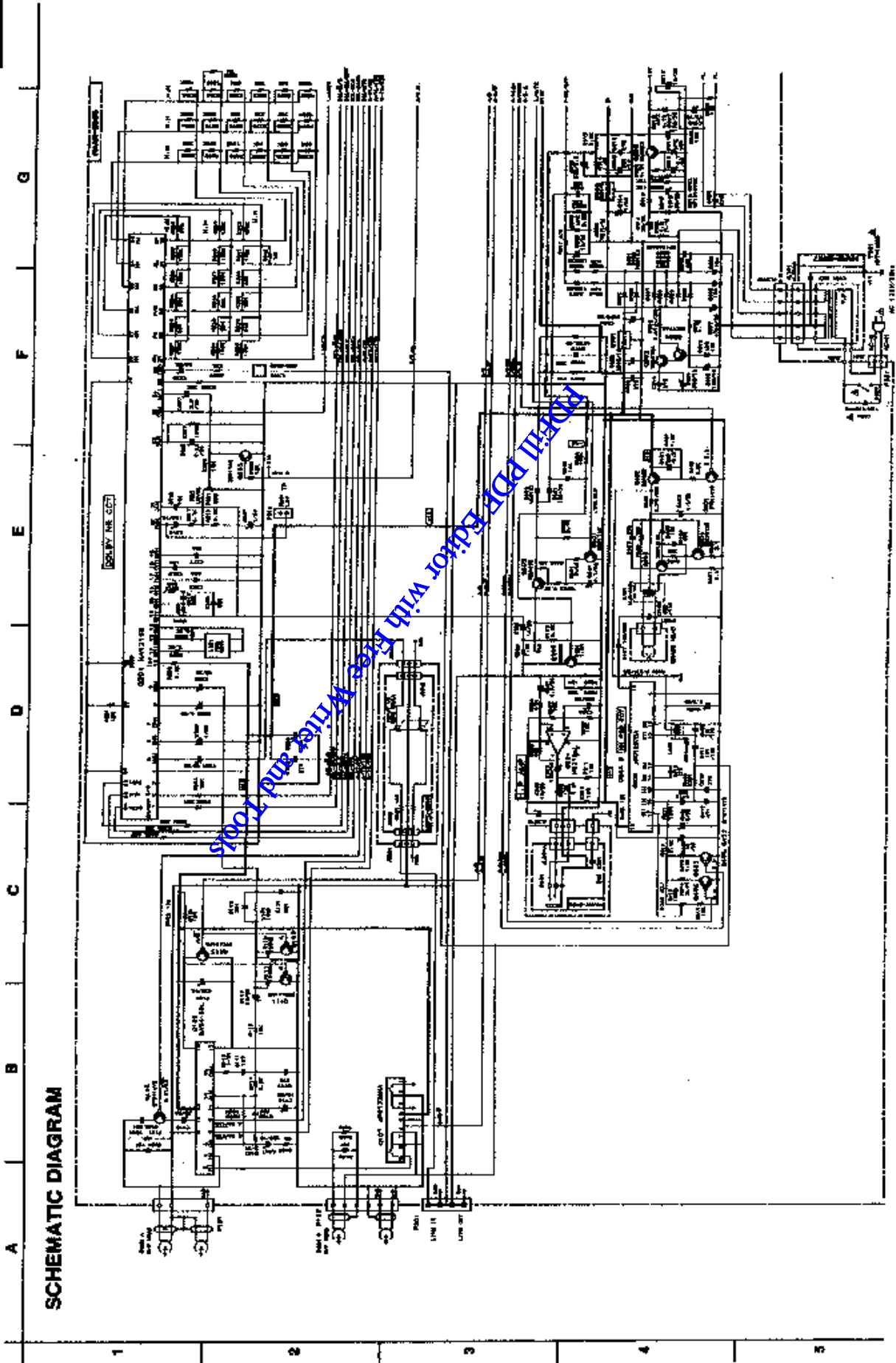
SUB-MICROPROCESSOR

Pin No.	Function	Description
1	XOIN	Ceramic resonator connection pin
2	XOUT	Connect the 6.0MHz ceramic resonator
3	RST	System reset input pin
4	A.DPL.Y	Reel motor control output pin for Deck A
5	A.RFW	Rewind control output pin for Deck A
6	A.FF	Fast forward control output pin for Deck A
7	A.CAP	Cassette motor control output pin for Deck A
8	A.X1/X2	Cassette motor rotation speed control output for deck A
9	A.NORM	Recording equalizer and bias current selector output pin for deck A
10	A.HIGH	Recording equalizer and bias current selector output pin for deck A
11	B.DPL.Y	Reel motor control output pin for Deck B
12	B.RFW	Rewind control output pin for Deck B
13	B.FF	Fast forward control output pin for Deck B
14	GND	Ground pin
15	P.R.A.B.	Playback equalizer selector pin
16	B.CAP	Cassette motor control output pin for Deck B
17	B.X1/X2	Cassette motor rotation speed control output for deck B
18	B.NORM	Recording equalizer and bias current selector output pin for deck B
19	B.HIGH	Recording equalizer and bias current selector output pin for deck B
20	L.MUTE	Audio muting control output pin
21	A/R.M.A.	Recording muting control pin for Deck A
22	B/R.M.	Recording muting control pin for Deck B
23	STR1	Stroke input pin
24	DATA	Data input pin
25		
26	CLK	Clock input pin
27	Vcc	Power supply pin
28	Vcc	Power supply pin

TA-7291S (MOTOR DRIVE)



DIRTY	DIRTY	DIRTY	DIRTY	MODE
IN 1	IN 2	OUT 1	OUT 2	STOP
1	2	3	4	ON/OFF
5	7	8	9	DOWN/UP
10	11	12	13	PAUSE



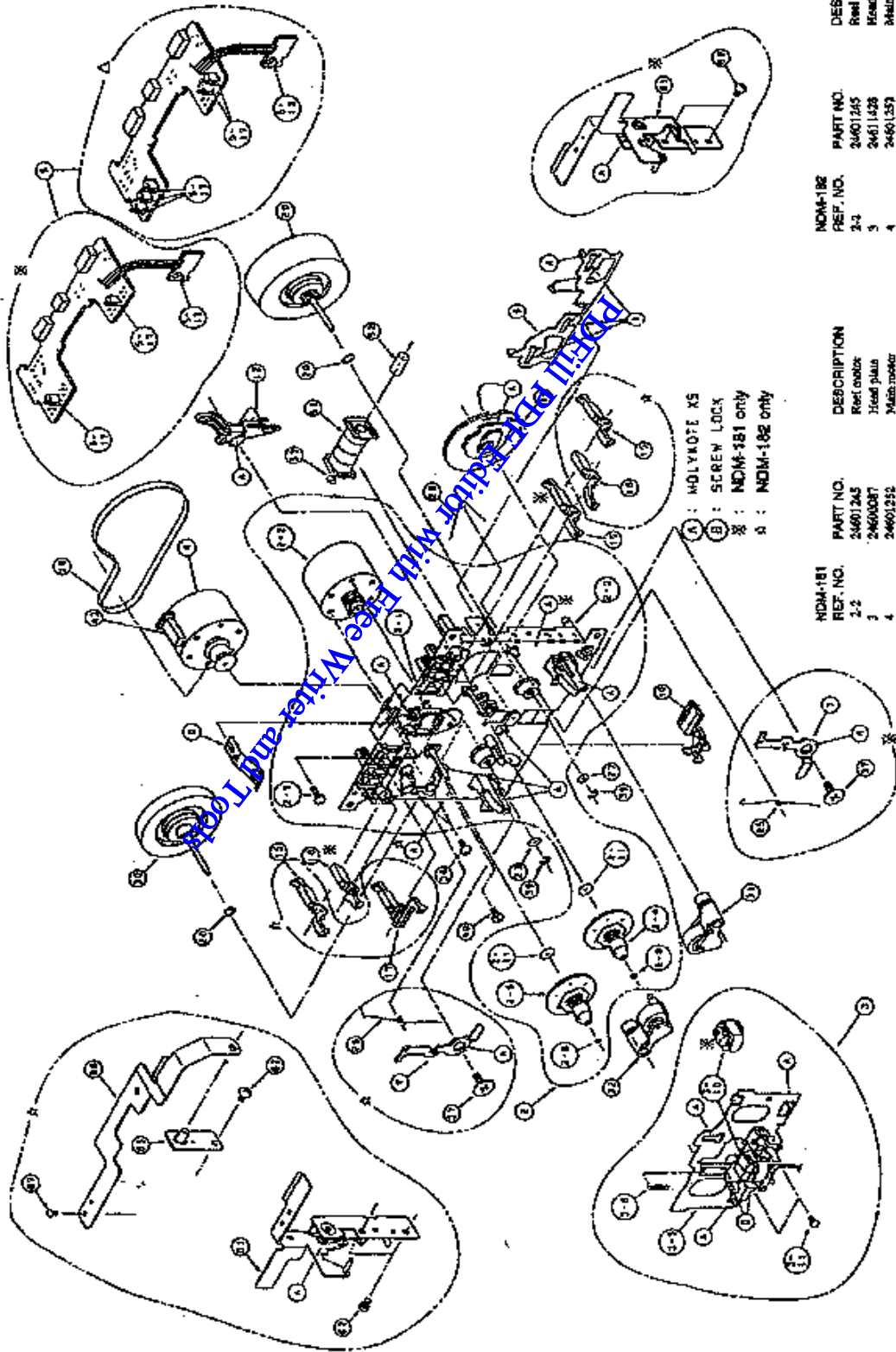
PRINTED CIRCUIT BOARD-PARTS LIST

MAIN CIRCUIT PCB BOARD (HAAR-9088-2)		CIRCUIT NO. DESCRIPTION		CIRCUIT NO. PART NO.		DESCRIPTION	
CIRCUIT NO.	PART NO.	CIRCUIT NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	CIRCUIT NO.	DESCRIPTION
Q105	22240767	D706-D707	224450732	MTZ1-5B, Zener			
Q107	22240147	D708-D709	224450472	MTZ4-7B, Zener			
Q201	22240544	D710-D712	223163	ISS113			
Q301	22240268	D713	224450462	MTZ3-6B, Zener			
Q405	2225959	D901-D902	22380031	HER152			
Q701	22240822	D907-D910	22380085	GP104003E			
Q716-Q711	22240823	D911	224451305	MTZ13C, Zener			
Q901	22240236	D912-D913	22380083	GP104003E			
Q902	222780125NET	D914	Diodes				
Q902	222780125NET	D915	224451803	MTZ18C, Zener			
Q105-Q104	222780125NET	D916	224470683	MTZ16.6C, Zener			
Q109-Q113	222780125NET	D917	ISS113				
Q203-Q204	222780125NET	D918-D919	224450462	MTZ3-6B, Zener			
Q205-Q206	222780125NET	Colt					
Q401	211281	L101-L102	231069	NCH-3137, CHOKES			
Q402	211281	L201-L202	233436	945-691, MPX			
Q403-Q404	211281	L303-L304	231221	NTR-207, TRAP			
Q406-Q407	211281	L401	231233Y	NLO-206, OSC			
Q601	2113284 or	L403-L404	211218	NCH-4433, COILS			
Q706-Q707	2113285	Resonators					
Q602-Q905	2113354 or	XT91	3010190	CST8-00MTW, Ceramic			
Q703-Q712	2113355	XT92	3010149	CST8-00MGTW, Ceramic			
Q704	2113355	C103-C104	174725514	500pF±5%, 50V, Plastic			
Q708-Q709	211281	C105-C106	374726814	680pF±5%, 50V, Plastic			
Q712-Q713	211281	C107-C108	154742219	220pF, F, 16V, Elect.			
Q714-Q717	211281	C109-C110	374723334	0.033μF±5%, 50V, Plastic			
Q718-Q719	211281	C111-C112	374721834	0.010μF±5%, 50V, Plastic			
Q720-Q721	211281	C113	354762209	22μF, F, 35V, Elect.			
Q723	2022705 or	C114-C116	354761009	10μF, F, 35V, Elect.			
Q903	2102706 or	C201-C204	354744719	4700pF, F, 16V, Elect.			
Q904	2113284 or	C205-C207	354781009	10μF, F, 35V, Elect.			
D601-D603	223163	C208-C214	374722224	2000pF±5%, 50V, Plastic			
D701	223163	C215-C218	374721044	0.1μF, F±5%, 50V, Plastic			
D704-D705	223163	C219-C220	354741019	1000pF, F, 16V, Elect.			
		C221-C222	354780109	1μF, F, 50V, Elect.			
		C223-C224	374721044	0.1μF, F±5%, 50V, Plastic			
		C225-C226	354782209	0.22μF, F, 50V, Plastic			
		C227-C228	354782209	2.2μF, F, 50V, Elect.			
		C229-C230	354761009	10μF, F, 35V, Elect.			
		C231	354745219	220μF, F, 16V, Elect.			
		C232	374722734	0.027μF, F±5%, 50V, Plastic			
		C233-C234	354761009	10μF, F, 35V, Elect.			
		C301-C302	354760479	4.7μF, F, 50V, Elect.			

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

TA-RW311 TA-RW311

MECHANISM-EXPLODED VIEW



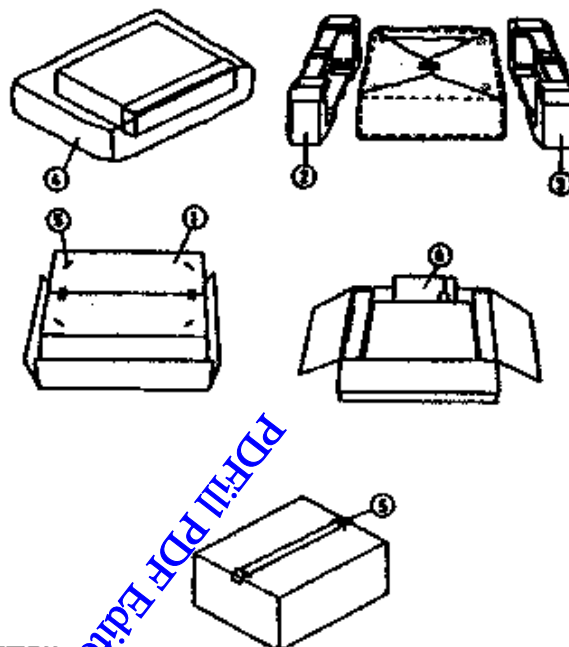
(A) : MOLYBDENE XS
 (B) : SCREEN LOCK
 * : NDM-181 only
 o : NDM-182 only

NDM-181 REF. NO.	PART NO.	DESCRIPTION
1-2	24601245	Roll motor
3	24600087	Head plate
4	24601252	Mains motor
5	24600633	Covered job
7-8	24602351	Main belt
31	24602341	Brush roller R
32	24602319	Brush roller L

NDM-182 REF. NO.	PART NO.	DESCRIPTION
2-3	24601245	Roll motor
5	24611428	Head plate
4	24601357	Mains motor
5	24600634	Covered job
14	24602351	Main belt
31	24602341	Brush roller R
32	24602319	Brush roller L

NDM-182 REF. NO.	PART NO.	DESCRIPTION
2-3	24601245	Roll motor
5	24611428	Head plate
4	24601357	Mains motor
5	24600634	Covered job
14	24602351	Main belt
31	24602341	Brush roller R
32	24602319	Brush roller L

PACKING VIEW



REF.NO.	PART NO.	DESCRIPTION
1	29052818Y	Carton box
2	29091636-1BY	Pad L
3	29091637-1BY	Pad R
4	29100034-1Y	650x850mm, Styren bag
5	282301	Staple
6	Accessory bag ass'y	
	29342035Y	Instruction manual, English
	29342147Y	Instruction manual U6 <P>
	29342117Y	Instruction manual U3 <C>
	2010244Y	Connection cord
	29100097-1Y	350x250mm, Styren bag
	29365019B	Warranty card <N>
	29358002	Service station list <N>
	29361773Y	Label UPC <N>
	29361759Y	Label CUL <N/C>

NOTE: <P>: 230V model only
 <N>: U.S.A. model only
 <C>: Canadian model only

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