



SERVICE MANUAL

6220

STEREO CASSETTE DECK

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SPECIFICATION

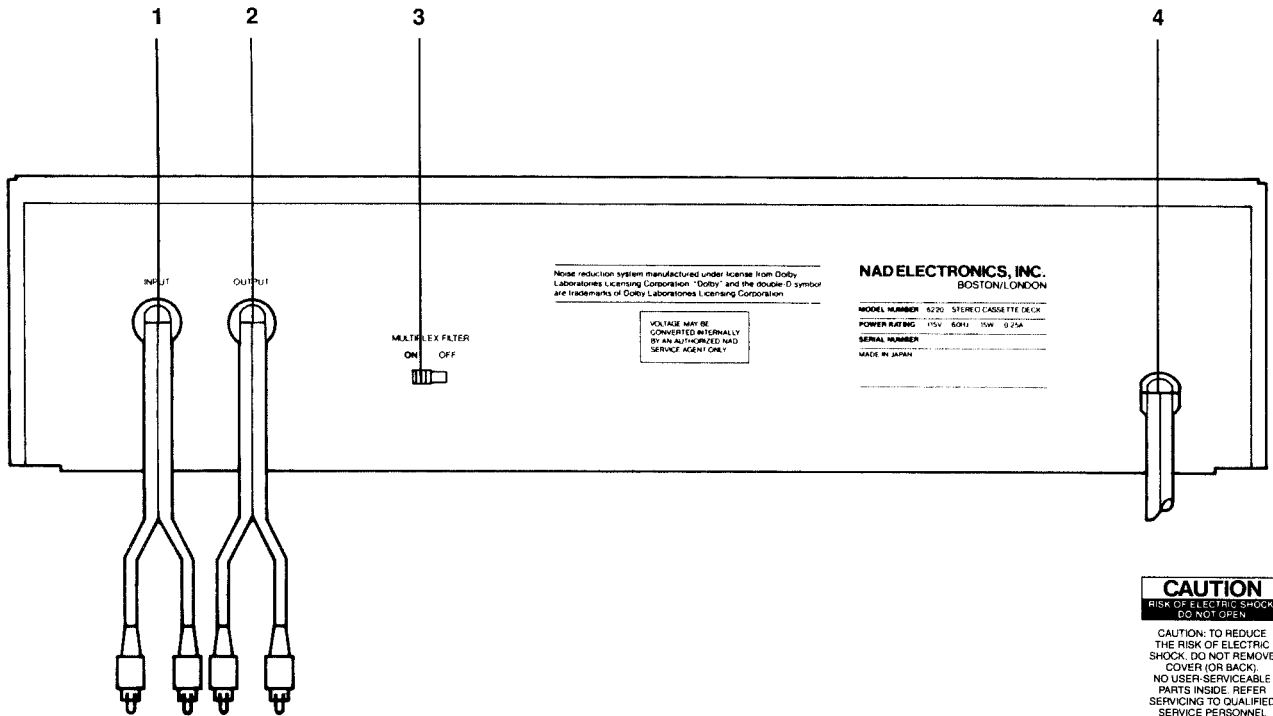
Tape speed	4.75cm/sec	
Wow and flutter (JIS Weighted)		
Playback	0.13%	
Pressure roller force	300 ~ 500g	
Play torque	35 ~ 75g/cm	
F.F. torque	60 ~ 170g/cm	
Rew torque	60 ~ 170g/cm	
F.F. time (C-60)	110 sec	
Rew time (C-60)	110 sec	
Input sens. and impedance		
Line	41mV/8.2k Ω	
Frequency response		
(Dolby level – 25dB Dolby NR off)		
Normal tape	35 ~ 16,000Hz ± 2 dB	
CrO ₂ tape	35 ~ 17,000Hz ± 2 dB	
Signal to noise ratio		
CCIR/ARM weighted 400Hz to Dolby level		
Dolby C Normal	69dB	
CrO ₂	71dB	
Dolby B Normal	60dB	
CrO ₂	61dB	
Dolby off Normal	50dB	
CrO ₂	52dB	
Erase effect		
with band pass filter 1kHz		
Input 0VU + 10dB	65dB	
Separation		
with band pass filter 1kHz		
Input 1kHz Dolby level	45dB	
Cross talk		
with band pass filter 1kHz		
Input 1kHz 0VU + 10dB	65dB	
Output level at Dolby level		
(MTT-150 play)		
RCA	520mV	
Distortion		
(Normal Tape 1kHz at Dolby Level)	0.8%	
GENERAL		
Maximum power consumption	15W	
AC power supply	230V/50Hz	
	115V/50Hz	
	120V/60Hz	
Weight and Dimensions (Approx.)		
Net weight	3.8kg	
Dimension (W/H/D)	420.5/121.5/225mm	
	(w/knobs & feet)	

Specifications and design are subject to change without notice.

FRONT/REAR VIEW

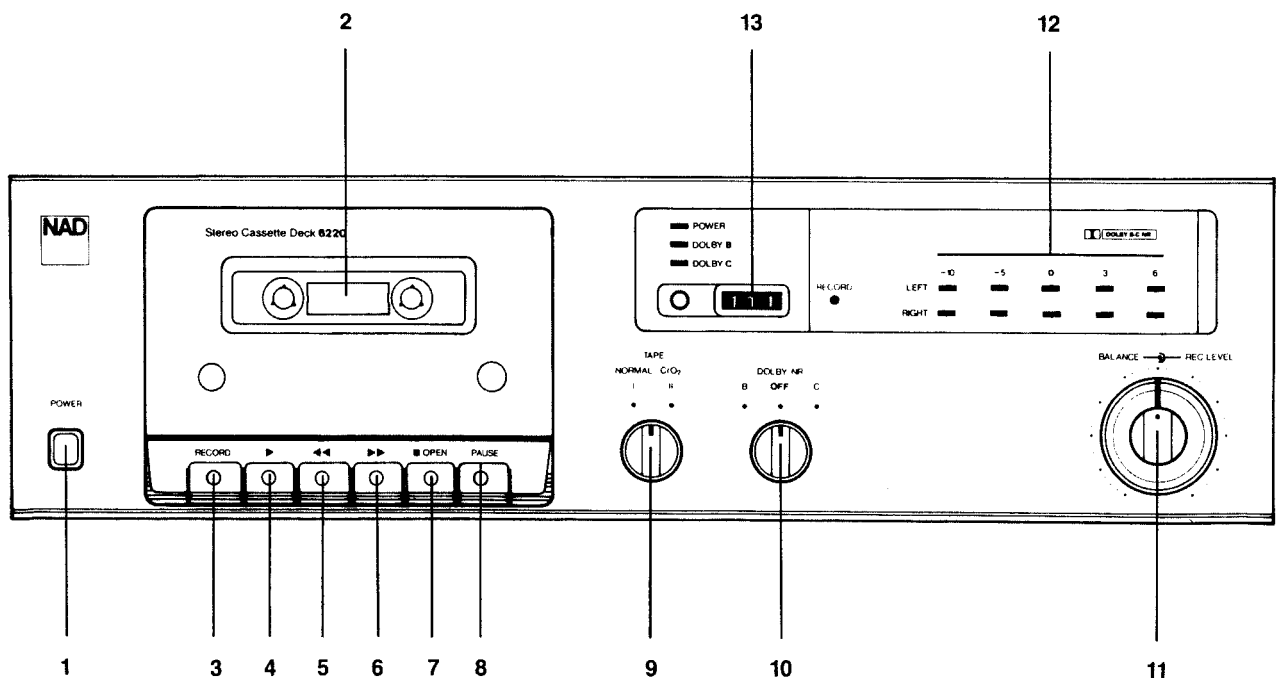
REAR PANEL

1. Input.
2. Output.
3. MPX Filter.
4. AC Power Cord.



FRONT PANEL

1. Power.
2. Cassette Compartment.
3. Record.
4. Play.
5. Rewind.
6. Fast Forward.
7. Stop/Open.
8. Pause.
9. Tape Selector.
10. Dolby NR On/Off.
11. Recording Level.
12. Recording Level Display.
13. Tape Counter.



ALIGNMENT METHOD

IMPORTANT

The tape path (heads, tape guides, capstan, pinch roller) should be cleaned and degaussed before alignment.

This tape recorder is designed to work well with a variety of tapes, however, maximum performance will be obtained with recommended tapes or similar.

Recommended tapes.	for North America	for Europe -DIN
Type I / Normal	Maxell UDS-I	Maxell UD-I, BASF TP18 No R723 DG
Type II / CrO ₂	Maxell UDS-II	Maxell UD-II, BASF TP18 No S4592A

All adjustments done with Dolby NR Off and MPX filter (on back panel) Off.

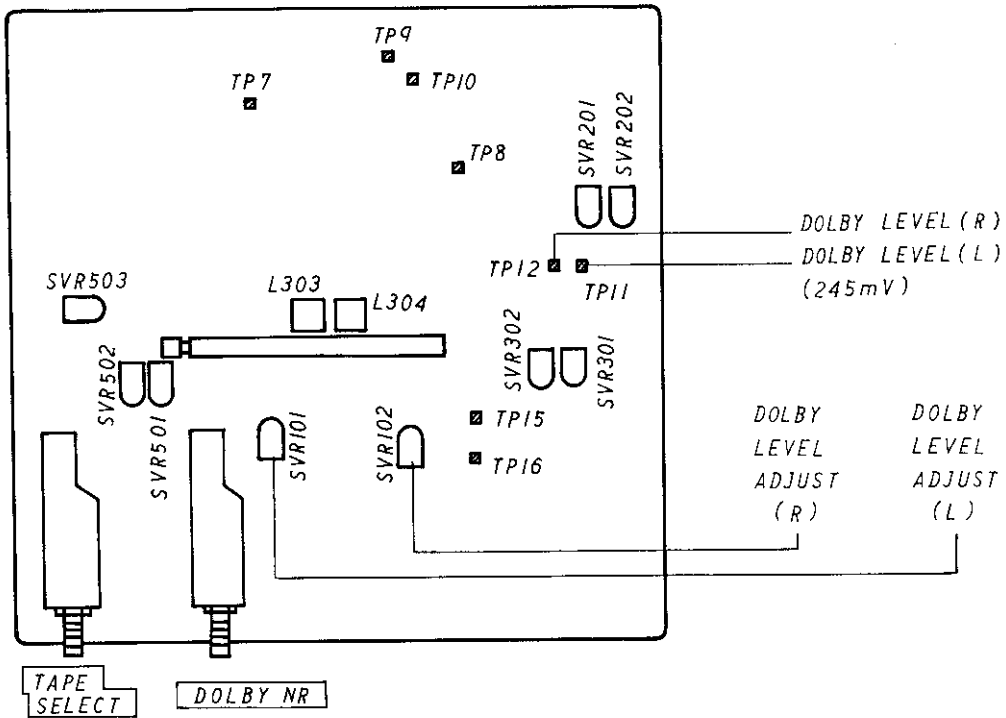
Dolby NR Level (200 nWb/m) = 245 mV on test points TP 11/12; approximately 530 mV at output.

STEP	TAPE TYPE INPUT	MODE	CONNECTION	ADJUST	ADJUST FOR	TOLERANCE	
		SEL. POS.	OUTPUT MONITOR			NOTE	
SPEED							
1	MTT-111	Play	Line out	Hole in motor rear	3000Hz 3150Hz	±1%	
	MTT-211	Normal	Counter/W+F				
AZIMUTH							
2	MTT-255C	Play	Line out	Azimuth screw	Maximum and in phase	Seal screw afterwards. Use lock paint, not glue.	
		Normal	VTVM/Scope				
PLAYBACK LEVEL							
3	MTT-150	Play	TP 11/12 (L/R)	SVR 101 (L) SVR 102 (R)	245mV	DOLBY Level	
		Normal	VTVM/Scope				
LEVEL METERS AND OUTPUT LEVEL							
4	MTT-150	Play	Line out	SVR 201 (L) SVR 202 (R)	0 dB LED just lights up	Note: output level should be near 530mV	
		Normal	VTVM/Scope				
BIAS TRAP							
5	Type I (blank tape)	Record/pause	TP 15/16 (L/R)	L 303 (L) L 304 (R)	Minimum	Less than 15 mV RMS No audio input.	
		CrO ₂	VTVM/Scope				
RECORD LEVEL							
6	A	Type I Line in 400Hz	Record Normal	Line out VTVM/Scope	Generator output	-20 dB from level noted in step 4	Record levels fully clockwise. Output level near 50mV.
	B	Rewind and play back	Play Normal	Line out VTVM/Scope	SVR 301 (L) SVR 302 (R)	Same as 6 A	±0.5 dB
	C REPEAT UNTIL SAME RECORD AND PLAY BACK LEVEL						
BIAS ADJUST NORMAL							
7	A	Type I Line in 400 Hz and 12 kHz	Record Normal	Line out VTVM/Scope	Generator output	Same as 6 A	
	B	Rewind and Play back	Play Normal	Line out VTVM/Scope	SVR 501 (L) SVR 502 (R)	Same as 6 A	±0.5 dB
	C REPEAT UNTIL SAME RECORD AND PLAY BACK LEVEL						
BIAS ADJUST CrO₂							
8	A	Type II Line in 400 Hz and 12 kHz	Record CrO ₂	Line out VTVM/Scope	Same as 6 A	Same as 6 A	
	B	Rewind and Play back	Play CrO ₂	Line out VTVM/Scope	SVR 503	Same as 6 A	±0.5 dB
	C REPEAT UNTIL SAME RECORD AND PLAY BACK LEVEL						

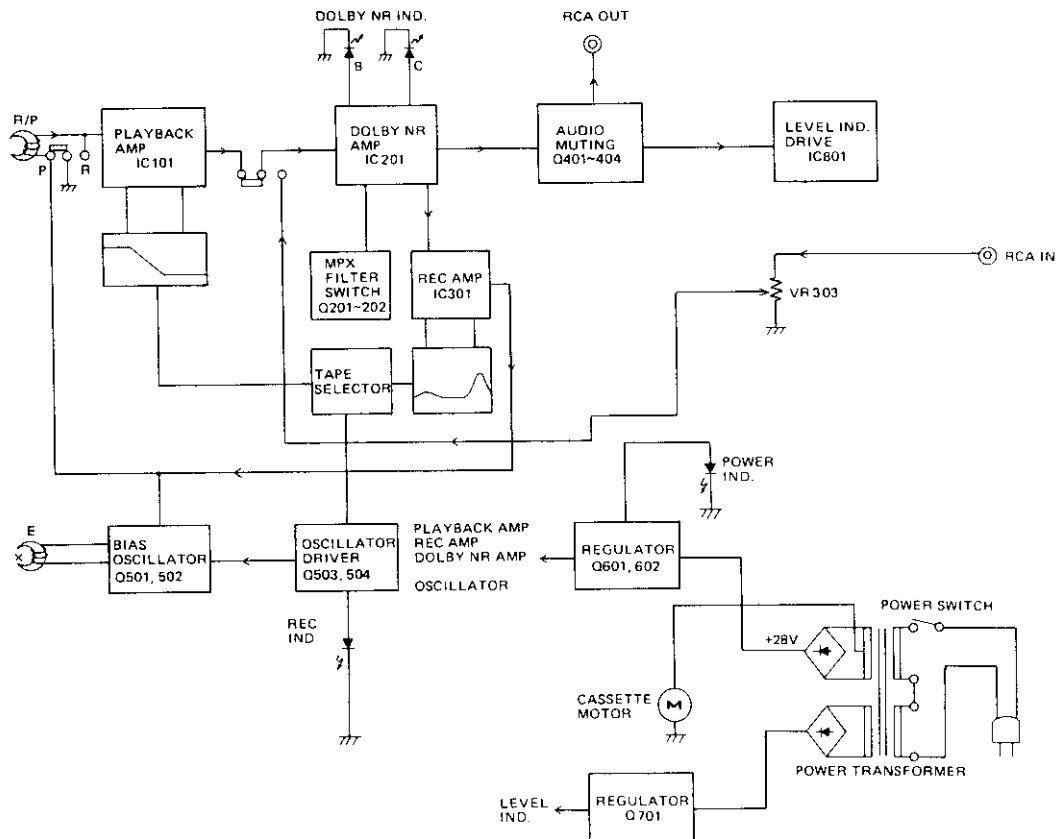
NOTE: VTVM = AC millivoltmeter
Scope = Oscilloscope
Counter = Frequency counter
W+F = Wow and Flutter meter

ALIGNMENT COMPONENT LAYOUT

Main PC Board

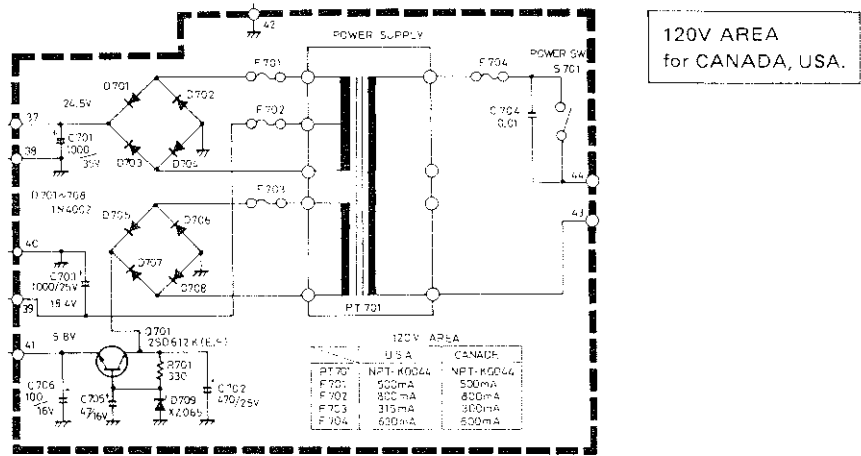


BLOCK DIAGRAM

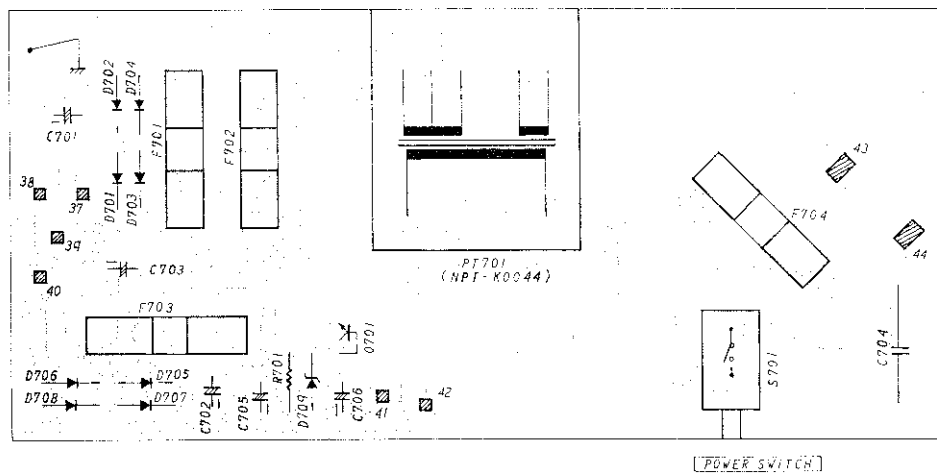


SCHEMATIC AND PCB LAYOUT (Foil side)

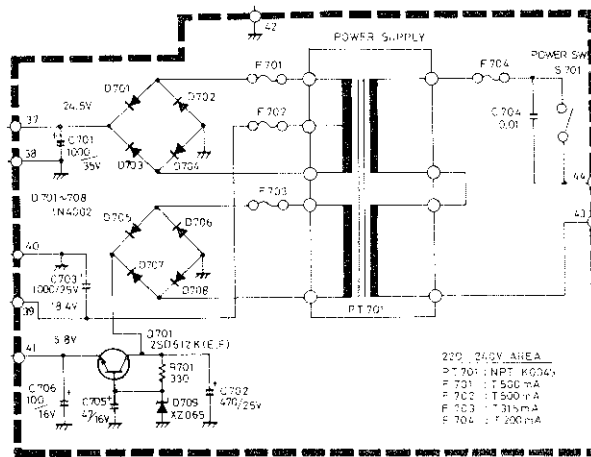
Power Supply Circuit (PS-K008)



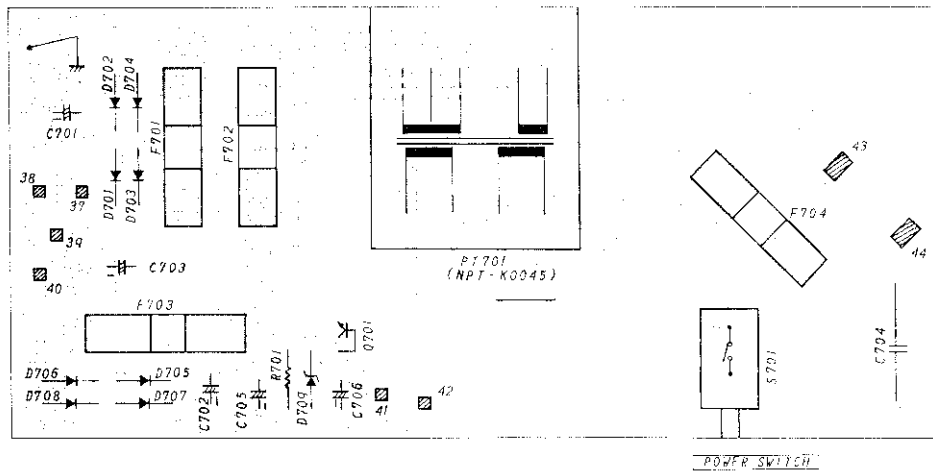
120V AREA
for CANADA, USA.



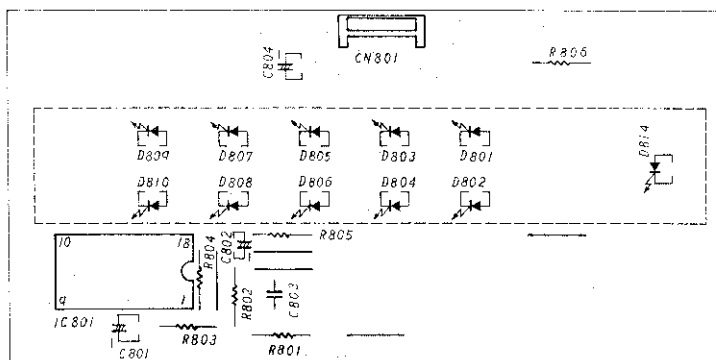
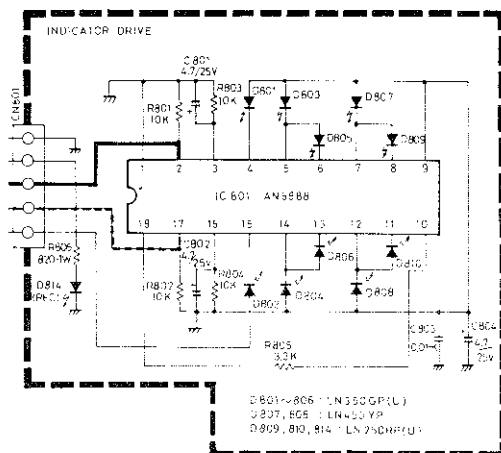
Power Supply Circuit (PS-K008)



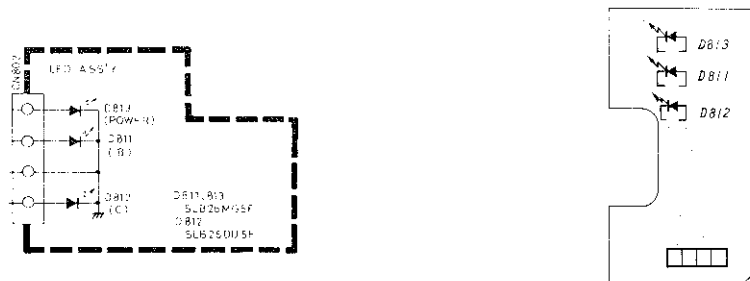
220 ~ 240V AREA
for EUROPE, AUSTRALIA.



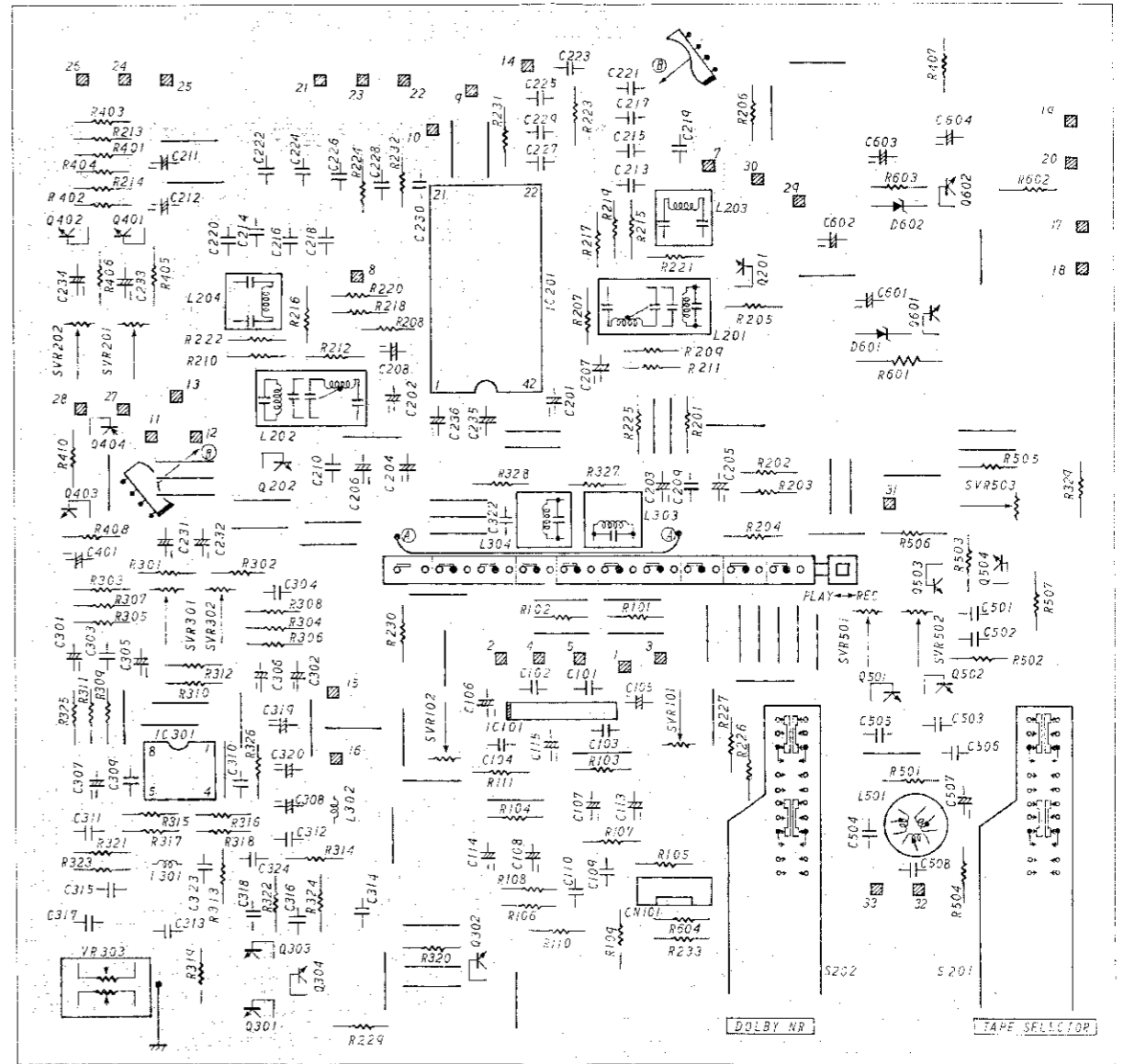
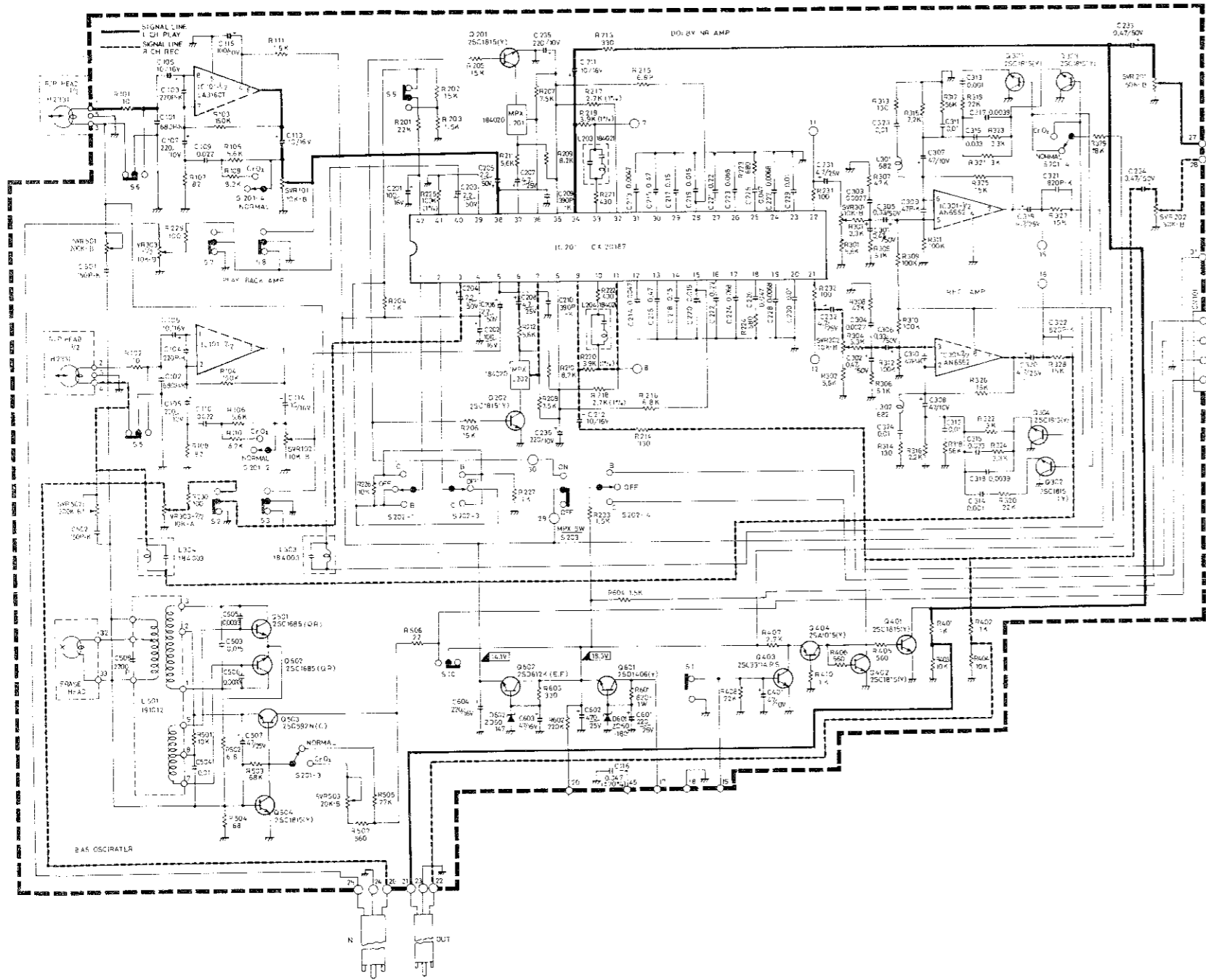
Indicator Drive Circuit (LEDD-K006)



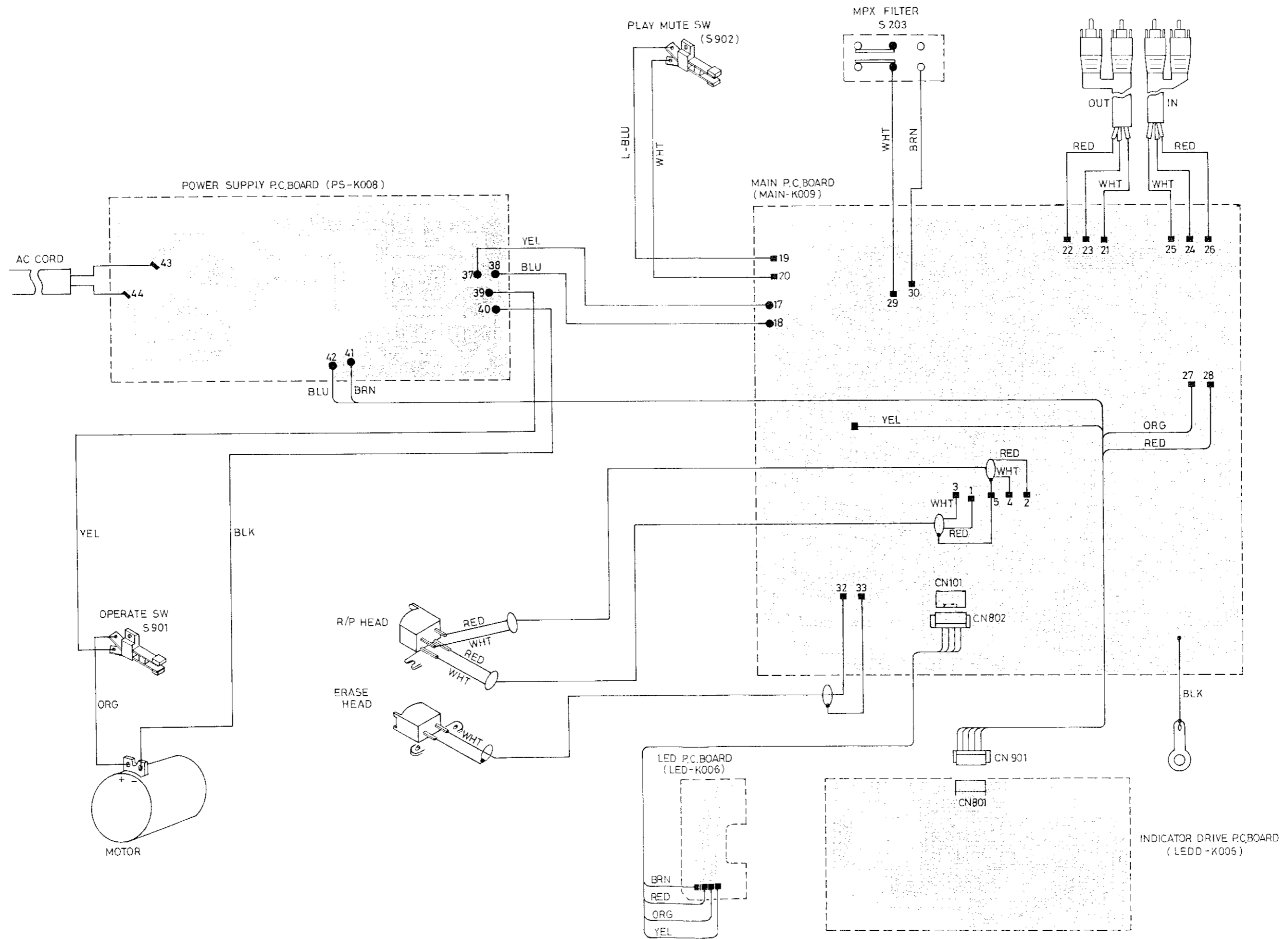
Indicator Circuit (LED-K006)



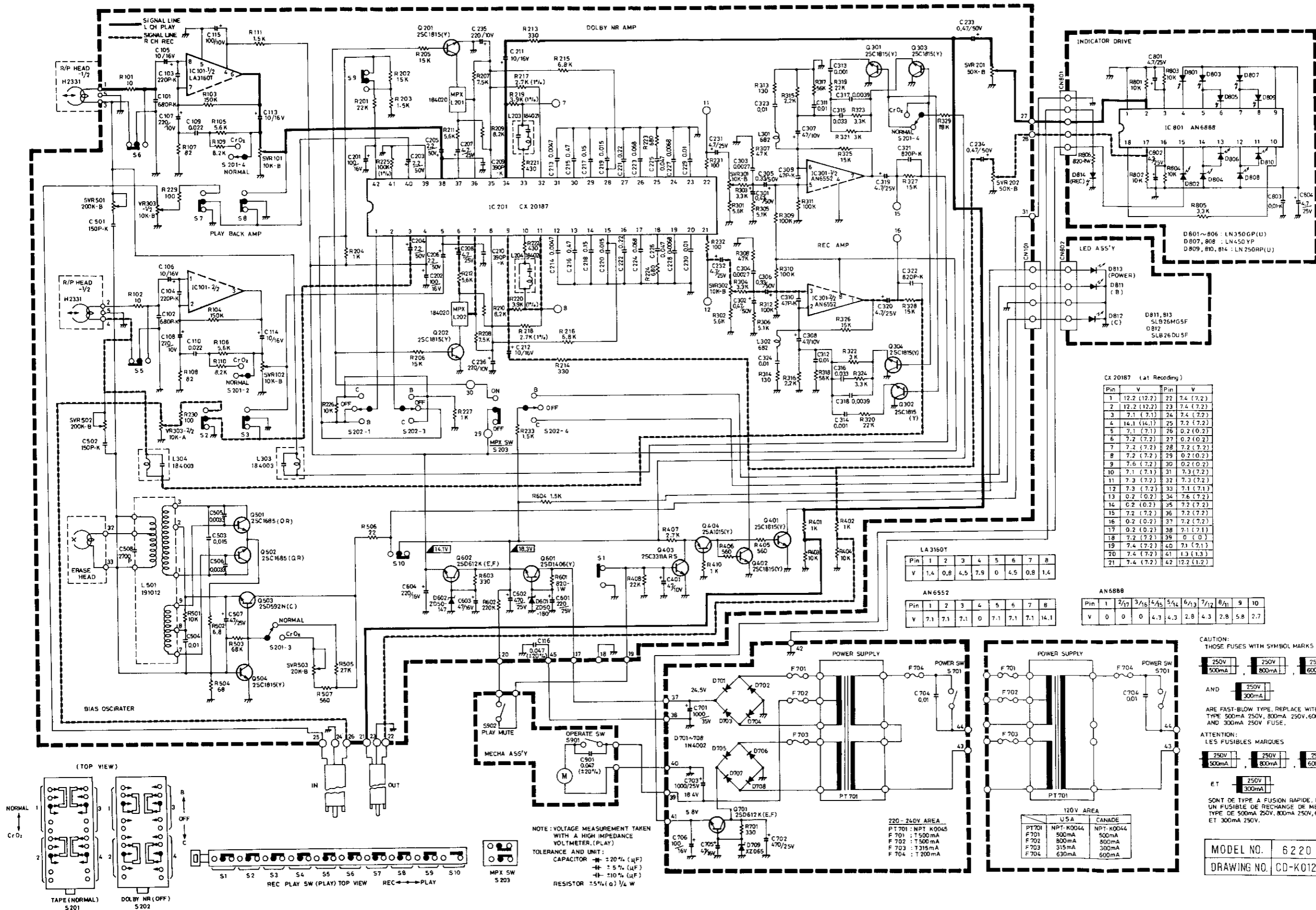
Main Circuit (MAIN-K009)



WIRING DIAGRAM (Component side)

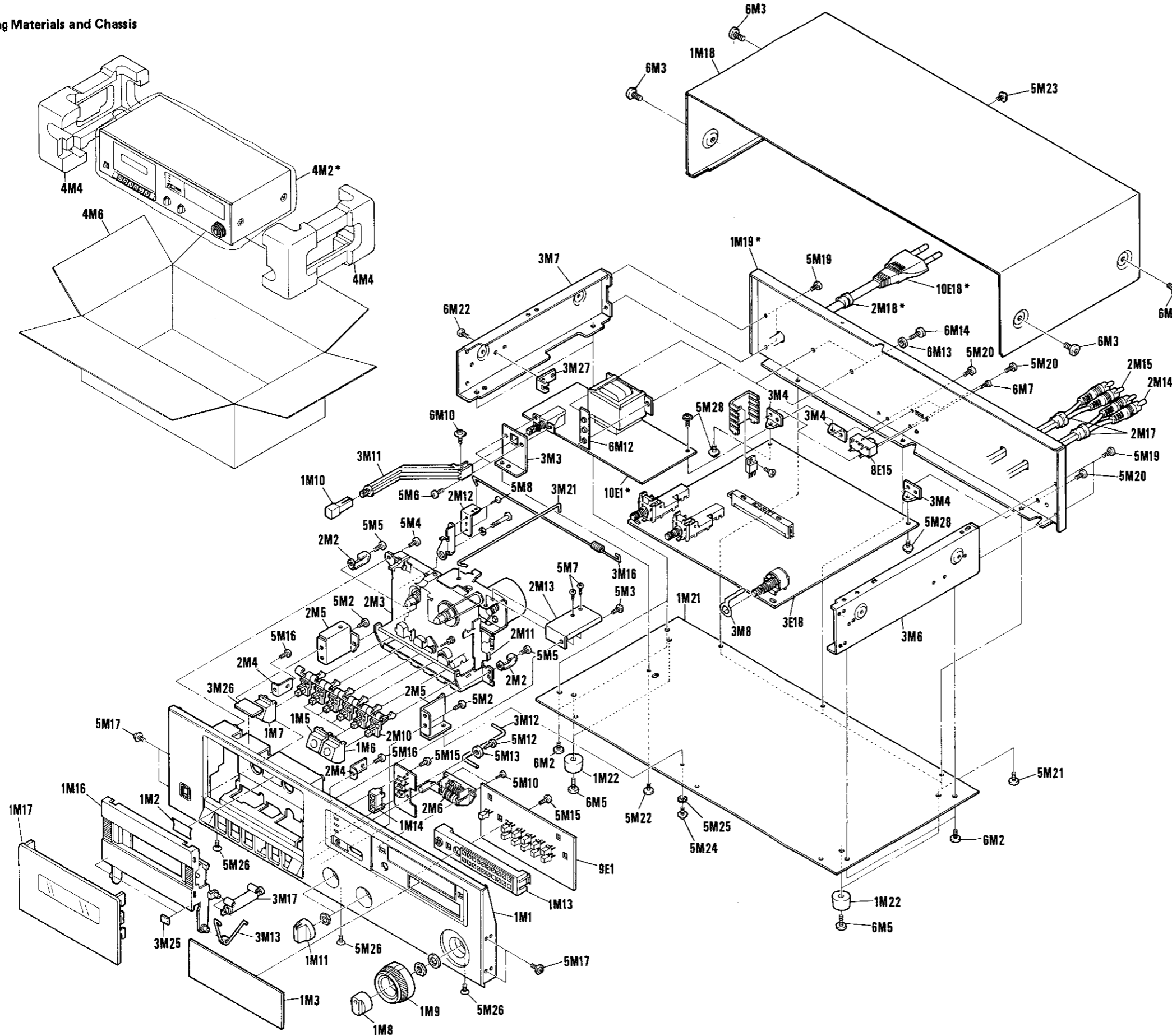


SCHEMATIC DIAGRAM



EXPLODED VIEW AND PARTS LIST

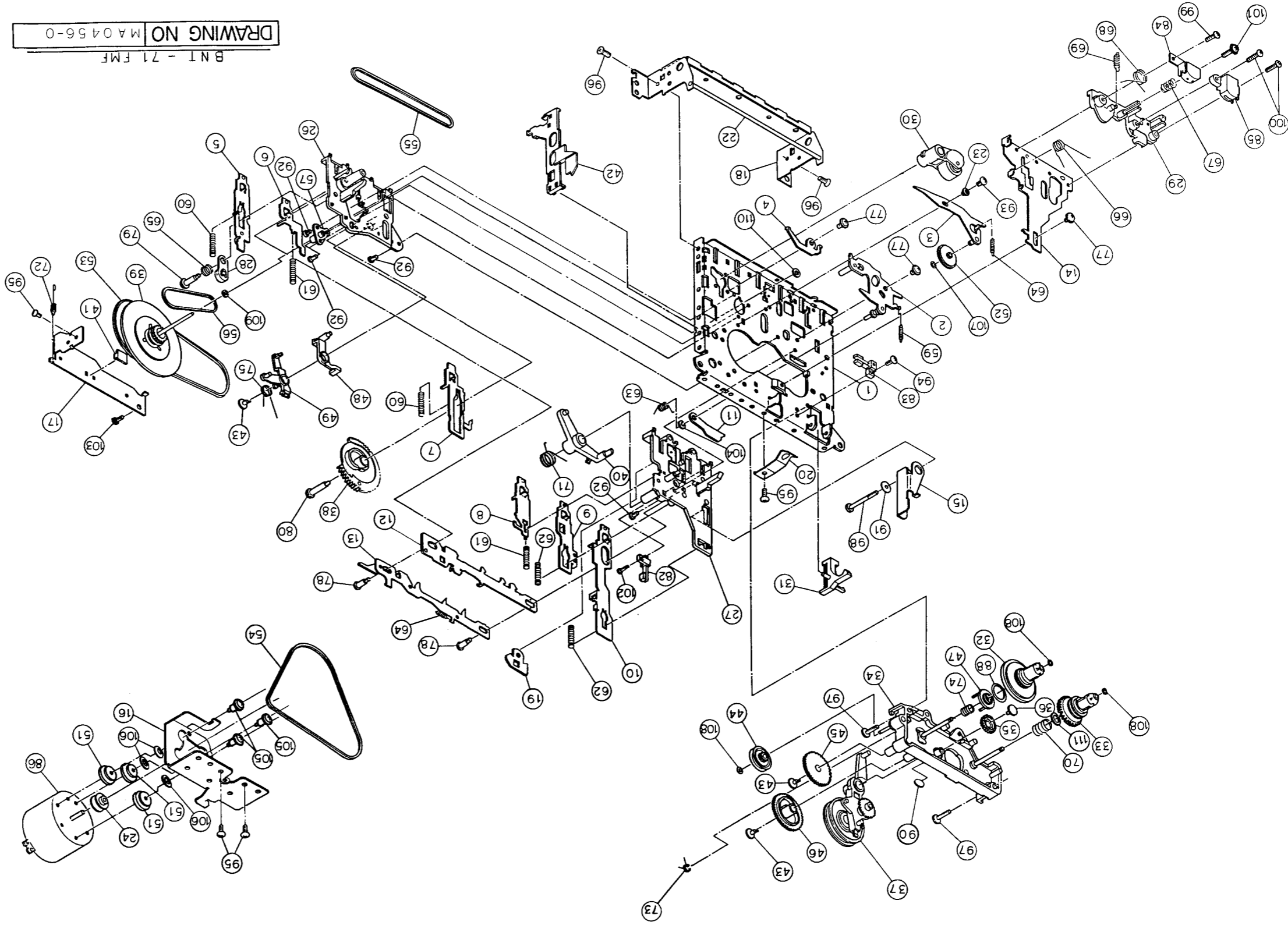
Packing Materials and Chassis



Ref. No.	Part No.	Description
1M1	BK1003	Front Panel
1M2	SN-241186-1	Cassette Mirror
1M3	BK4053	Front Glass
1M5	BK4040-BK	Cassette Button (Black)
1M6	BK4040-GY	Cassette Button (Gray)
1M7	BK4040-R	Cassette Button (Red)
1M8	62-2318-0-0	Knob (Potentiometer)
1M9	62-2319-0-0	Knob (Potentiometer)
1M10	N44642-GRN	Push Button (Green)
1M11	62-2317-0-0	Control Knob
1M13	BK3012	Led Holder A
1M14	BK4054	Led Holder B
1M16	N21024A-BK	Cassette Case
1M17	BK2006-1	Cassette Glass
1M18	BK2011	Cabinet
1M19*		Rear Panel
1M21	BK2013A	Bottom Board
1M22	NO. 7104	Foot
2M2	VJR-3	Snake Lug
2M3	BNT-71FMF	Cassette Mecha
2M4	BK4067	Cassette Case Holder
2M5	BK4044	Mecha Holder
2M6	SG10-105B1-839	Counter
2M10	N30742B	Cassette Button Base
2M11	BK4055	Eject Lever
2M12	BK4061	Rec Holder
2M13	BK4058	Mecha Holder A
2M14	PC-037A	RCA Pin Coad Ass'y
2M15	PC-038A	RCA Pin Coad Ass'y
2M17	SR-3P-4	Cord Stopper
2M18*		Cord Stopper
3M2	SH-1230	Heat Sink
3M3	BK4066	Fittings (Switch)
3M4	N42635	Fittings (P.C.B.)
3M6	N30627B	Side Chassis R
3M7	N30651A	Side Chassis L
3M8	N41622A	Lug (Tuning)
3M11	N42470B	SW Shaft
3M12	BK4063	Damper Pin
3M13	BK4062	Eject Spring
3M16	BK4064	Rec Spring
3M17	K-105-1	Air-Damper
3M18	N42557	Washer
3M21	BK4065	Rear Spring
3M24	N40848G	Shaft Tape
3M25	BK4088	Cushion A
3M26	BK4089	Cushion B
3M27	N42842	Shaft Guide
4M1	N40487	Polyethylene Bag (Accessories)
4M2*		Polyethylene Bag (Unit)
4M4	BK2014	Packing Pad
4M6	BK4059	Shipping Carton
4M9	OM-K006	Instruction Manual
4M10	SL. 1024	Label, Serial No.
5M2, 3	TPM+30X08-B	Tap Screw P, Round Head, B
5M4	TPS+30X08-B	Tap Screw P, Flat Head, B
5M5, 6	SSP+30X06-Y	Screw, Pan Head, Y
5M7	TSB+26X08-Y	Tap Screw S, Bind Head, Y
5M8	TSB+20X05-Y	Tap Screw S, Bind Head, Y
5M10	TBB+26X08-Y	Tap Screw B, Bind Head, Y
5M12	TPM+30X08-B	Tap Screw P, Round Head, B
5M13	2AWX1230-08-Y	Plain Washer, Y
5M15	TPM+30X08-B	Tap Screw P, Round Head, B
5M16	TPM+30X06-Y	Tap Screw P, Round Head, Y
5M17	TSC+30X08-Y	Tap Screw S, Washer Faced, Y
5M19, 20	TSB+30X08-B	Tap Screw S, Bind Head, B
5M21 ~ 24	TSC+30X06-B	Tap Screw S, Washer Faced, B
5M25	2TWX30	Toothed Washer (8)
5M26	TSS+30X08-B	Tap Screw S, Flat Head, B
5M28	TSC+30X08-Y	Tap Screw S, Washer Faced, Y
6M2, 3	TCB+40X08-B	Tap Screw C, Bind Head, B
6M5	TSP+40X10-Y	Tap Screw S, Pan Head, Y
6M7	SSP+26X04-B	Screw, Pan Head, B
6M10	ZC-10X30X08-2N	Tap Screw, Washer Faced, N
6M12	N42722	Fittings (P.T.)
6M13	2AWX1040-08-B	Plain Washer, B
6M14	TSB+40X10-B	Tap Screw S, Bind Head, B
6M20, 21	TSB+30X08-Y	Tap Screw S, Bind Head, Y

Classify Parts by Destinations

Ref. No.	1M19*	2M18*	4M2*
Description	Rear Panel	Cord Stopper	Polyethylene Bag (Unit)
AUSTRALIA	BK2012-2	SR-3P-4	N41318
CANADA	BK2012-3	SR-4N-4	N41318
N.Z.	BK2012-2	SR-3P-4	N41318
SCANDINAVIA	BK2012	SR-3P-4	N41318
U.K.	BK2012-1	SR-5N-4	N44660
U.S.A.	BK2012-3	SR-4N-4	N41318
W. GERMANY	BK2012	SR-3P-4	N41318



Ref. No.	Part No.	Description	Note
1	MA1141	Chassis	
2	MD1242	Idle Arm (HT) Assy	
3	MD1173	Idle Arm	
4	MD1004	Pause Arm	
5	MD1165	Pause Lever (B) Assy	
6	MD1233	Stop Lever	
7	MD1234	F.F. Lever (B)	
8	MD1235	Flw. Lever (B)	
9	MD1236	Play Lever (B)	
10	MD1238	Flw. Lever (C)	
11	MD1108	Flw. Lever (H)	
12	MC1140	Lock Cam (A)	
13	MD1045	Lock Cam (B) Assy	
14	MC1287	Head Chassis	
15	MD1292	Rec. Arm	
16	MD1096	Motor Bracket	
17	MD1018	Flywheel Bracket	
18	MC1131	Button Holder (B)	
19	MD1081	Inter. Lock Arm	
20	MD1097	Pack Spring	
21	MD2037	Button Shaft	
22	MD2033	Collar	
24	MD2038	Motor Pulley	
25	MB3116	Lower Holder (A)	
26	MB3125	Lower Holder (B)	
27	MB3125	Lower Holder (B)	
28	MC3014	Pause Cam	
29	MC3019	Head Base	
30	MD3072	P. Roller Arm Assy	
31	MC3021	Rec. Sensor	
32	MD153	T. Flw. Assy	
33	MC3154	S. Flw. Assy	
34	MC3156	Flw. Base Assy (B)	
35	MD3015	F.F. Gear	
36	KD3052	Bush	
37	MD3088	Cutch Arm Assy	
38	MC3083	Gear (C)	
39	MD3171	Flywheel Assy (S)	
40	MC3088	Lock Arm (H)	
41	MD3087	Capiton Spacer	
42	MD3047	Eject Lever	
43	MD3066	Bush Pulley	
44	MD3065	Auto. Pulley	
45	MD3065	Auto. Gear	
46	MD3044	Auto. Cam Gear	
47	MD3130	Auto. Cutch	
48	MD3043	Auto. Arm (B)	
49	MD3042	Auto. Lock Arm	
50	MD4002	Motor Cution	
51	MD4001	Play. Idler	
52	MD4017	D.W.H. Belt	
53	KD4005	Belt	
54	MD4030	Counter Belt	
55	MD4003	Auto. Belt	
56	MD5002	Housing Assy	
57	MD5055	Shift Arm Spring (C)	
58	MD5055	Shift Arm Spring (C)	
59	MD5055	Shift Arm Spring (C)	
60	MD5055	Shift Arm Spring (C)	
61	MD5005	Flw. Lever Spring	
62	MD5003	Flw. Lever Spring	
63	MD5019	Flw. Lever Spring (B)	
64	MD5008	Cam Spring	
65	MD5007	Pause Cam Spring	
66	MD5010	Head Cam Spring	
67	KD5009	Head Spring	
68	MD5060	P. Roller Spring	
69	MD5001	Head Chassis Return Spring	
70	MD5102	Back Tension Spring	
71	MD5050	Lock Arm Spring	
72	MD5040	Eject Lever Spring	
73	MD5052	Auto. Sensor Spring	
74	MD5088	Auto. Cutch Spring	
75	MD5017	Auto. Lock Arm Spring	
76	MD5002	Screw (A)	
77	MD5003	Screw (B)	
78	MD5004	Screw (C)	
80	MD5005	Screw (D)	
81	94019051	Leaf Switch	
82	94019010	Leaf Switch	
83	9299064	RP Head	
84	92990130	E. Head	
85	9199001	Motor	
86	9199001	Motor	
87	8356709511	Auto. Cutch Flt.	
88	MD6008	MD6008	
89	5.5 x 0.1881	5.5 x 0.1881	
90	2.66	2.66	
91	2.66	2.66	
92	2.66	2.66	
93	2.66	2.66	
94	2.66	2.66	
95	2.66	2.66	
96	2.66	2.66	
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