

# ONKYO SERVICE MANUAL

## CASSETTE TAPE DECK MODEL TA-6310



### Black model

UP	230VAC, 50Hz
UW	120/220VAC, 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 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.

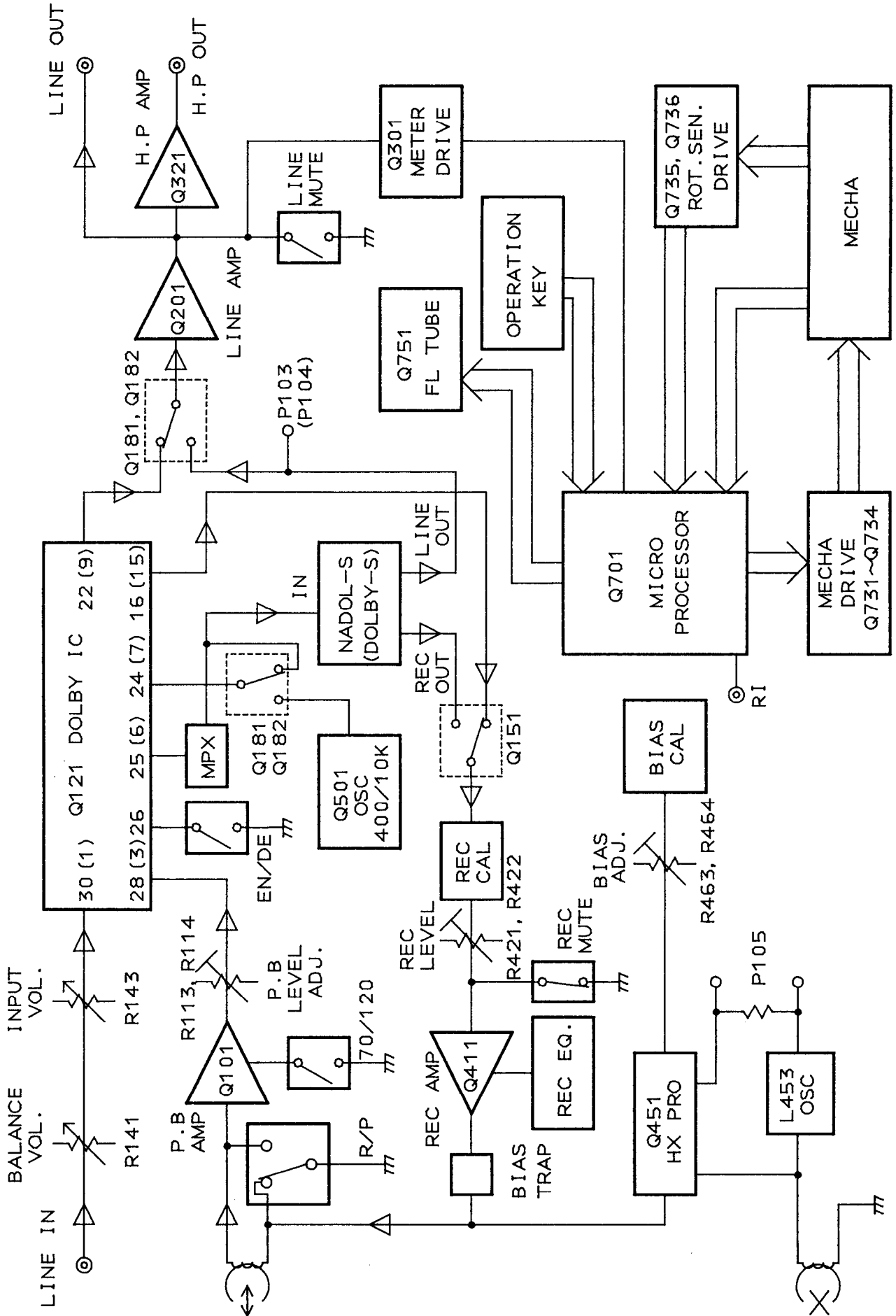
**ONKYO**  
**AUDIO COMPONENTS**

## 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:	0.07% (WRMS) 0.09% (DIN)
Frequency Response:	20—17,000Hz (normal) (30—16,000Hz $\pm$ 3dB) 20—18,000Hz (high) (30—17,000Hz $\pm$ 3dB) 20—19,000Hz (metal) (30—18,000Hz $\pm$ 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 Headphone jack: 1 Optimum load impedance: 8 to 200 ohms
Motors:	DC servo motor: 1 DC motor: 1
Heads:	REC/PB: Special Hard Permalloy $\times$ 1 Erase head: Ferrite $\times$ 1
Power Supply Rating:	European models: AC 230 V, 50Hz Worldwide models: AC 120 and 220 V, Switchable 60/50 Hz
Power Consumption:	17 watts
Dimensions:	455(W) $\times$ 120(H) $\times$ 310(D)mm 17 <sup>15</sup> / <sub>16</sub> " $\times$ 4 <sup>3</sup> / <sub>16</sub> " $\times$ 12 <sup>3</sup> / <sub>16</sub> "
Weight:	5.0 kg. (11.0 lbs.)

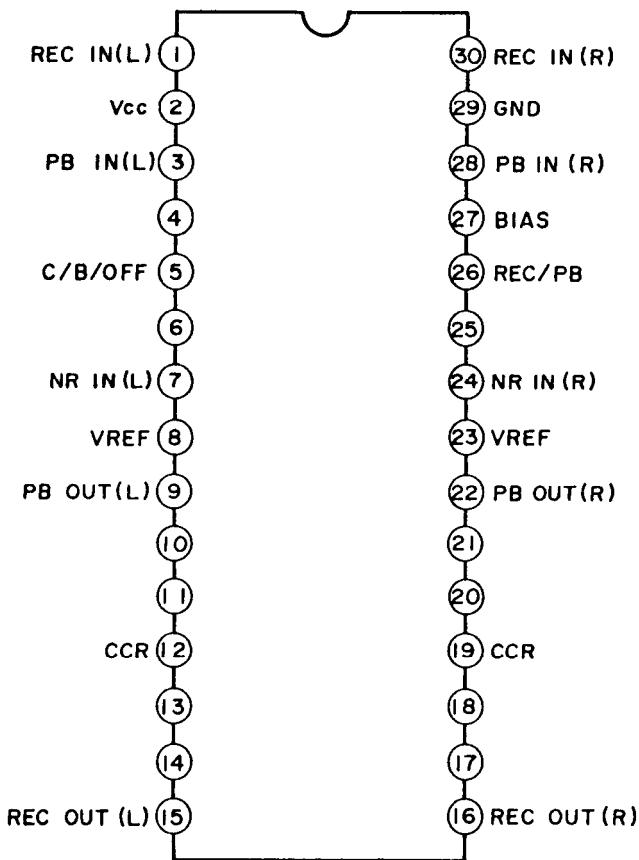
Specifications and external appearance are subject to change without notice because of product improvements.

# BLOCK DIAGRAM

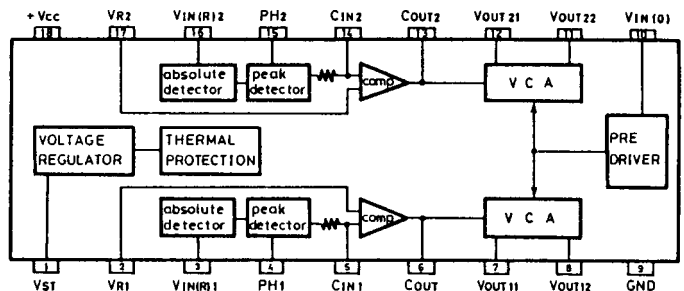


# IC BLOCK DIAGRAM

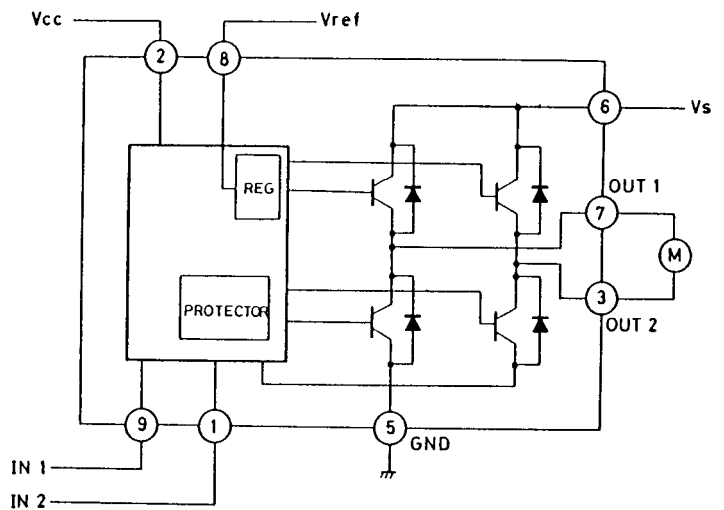
HA12142NT (DOLBY NR)



μPC1297CA (HX PRO)

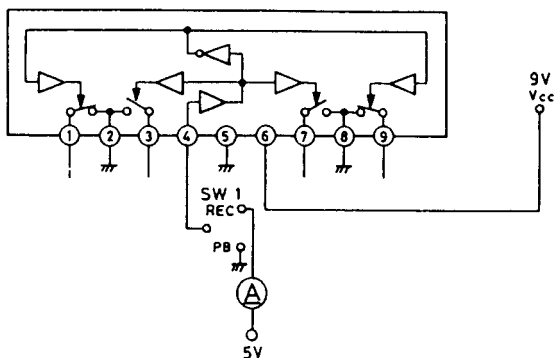


TA7291S (MOTOR DRIVE)

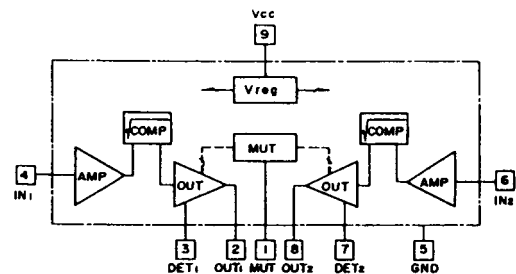


INPUT		OUTPUT		MODE
IN 1	IN 2	OUT 1	OUT 2	
0	0	∞	∞	STOP
1	0	H	L	CW/CCW
0	1	L	H	CCW/CW
1	1	L	L	BRAKE

μPC1330HA (REC/PB)



BA6138 (METER DRIVER)



# ADJUSTMENT PROCEDURES

## PRECAUTION

- 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 adjustment.
- Demagnetized record/playback head with a lead demagnetizer.

## TEST EQUIPMENT/TOOL REQUIRED

- Audio oscillator
- Digital frequency counter
- Oscilloscope
- Attenuater
- AC voltmeter
- Non-magnetic screwdriver
- Test tapes
  - TCC-153 : 10kHz, -15dB
  - MTT-111 : 3kHz, -10dB
  - MTT-150 : Dolby level calibration
- 400Hz, tone 200nWb/m

Item	Connection of instrument	Line output freq/level	Test tape	Mode	Output indicator	Adjustment point	Adjustment	Remarks
1	Tape speed	Frequency counter to LINE output terminal	MTT-111N	PB	Frequency counter	Trimmer resistor inside of Capstan motor	3,000Hz+10Hz	
2	Head azimuth	AC voltmeter and oscilloscope to LINE output terminal	TCC-154	PB	AC voltmeter	Fig.1	Maximum level & same phase at channels L and R	
3	Playback level	AC voltmeter to terminals P103 (L.ch) P104 (R.ch)	MTT-150	PB	AC voltmeter	R113 (L.ch) R114 (R.ch)	388mV (-6dBm)	
4	OSC Block	Frequency counter to P401 lead-wire loose coupling	METAL TAPE	REC	Frequency counter	L453	107kHz ± 1kHz	Measurement point P401
5	HX-PRO	DC voltmeter to terminals P105	METAL TAPE	REC	DC voltmeter	L451 (L.ch) L452 (R.ch)	Minimum	R463 R464 Maximum
6	Bias current		1kHz & 12.5kHz 35mV	NORMAL TAPE	REC/ PB	AC voltmeter	R463 (L.ch) R464 (R.ch)	1kHz : 0dB 12.5kHz : +0.5dB
7	Recording level	AC voltmeter to LINE out terminals	1kHz 350mV	NORMAL TAPE	REC/ PB	AC voltmeter	R417 (L.ch) R418 (R.ch)	Same level at REC/PB
8	Head hight check	AC voltmeter to LINE out terminals	MTT-94201	PB	AC voltmeter			See performance specifications item No.25

Blank tapes

NORMAL ··· UD-1 C-90  
HIGH ····· XL-II C-90  
METAL ··· XS C-90

PLAY torque ····· 30~70g/cm  
FF.REW torque ··· 80~180g/cm  
Back tension ····· 6~12g/cm

Head azimuth screw

Don't touch these screws.

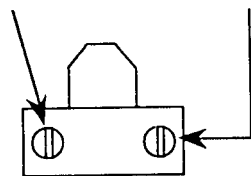


Fig.1 R/P Head

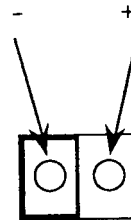


Fig.2 P105

ADJUSTMENT POINT

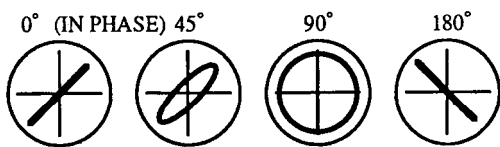
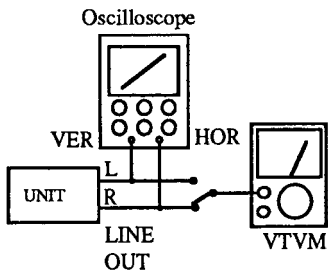
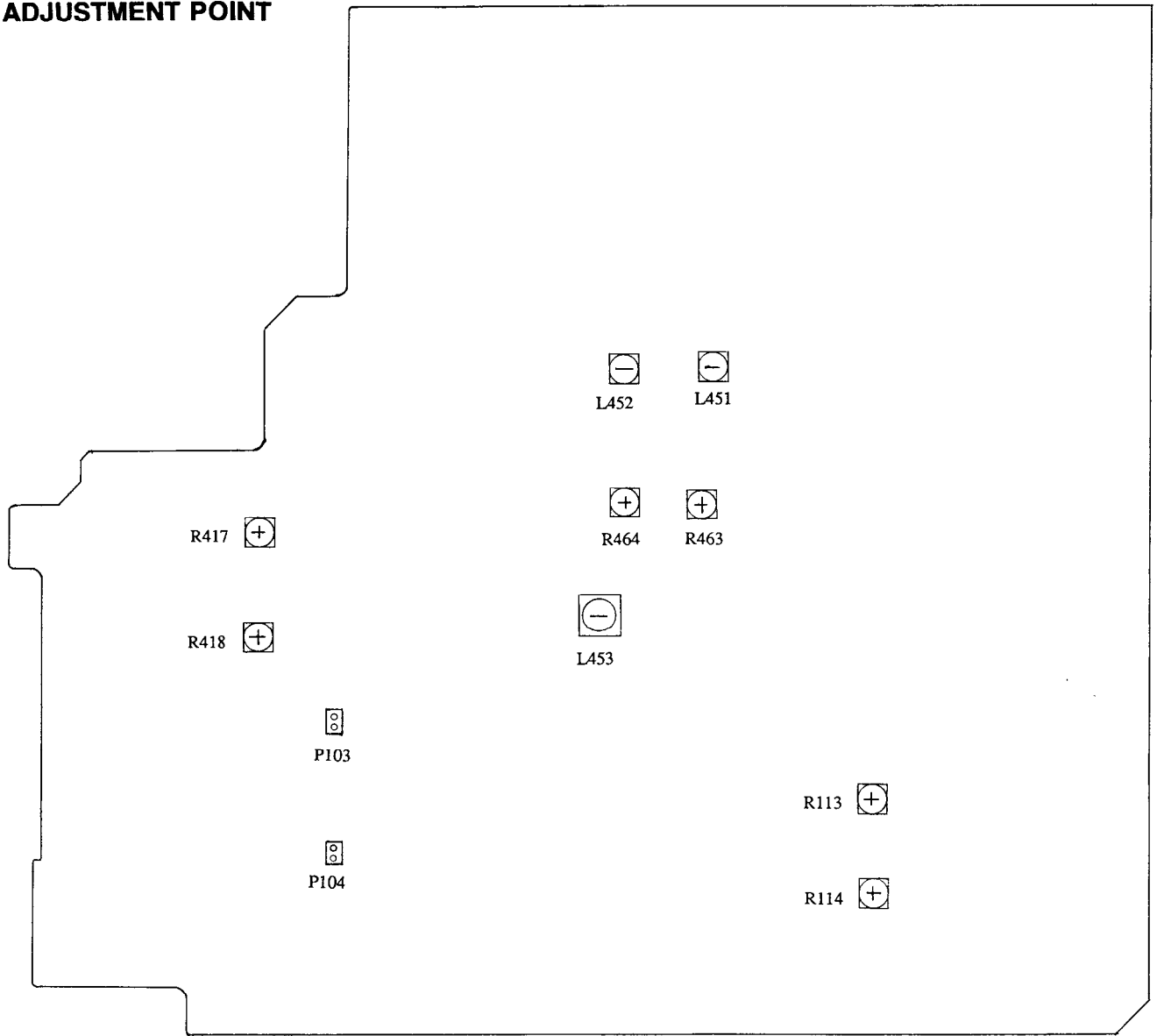


Fig.1 Confirming phase relationship

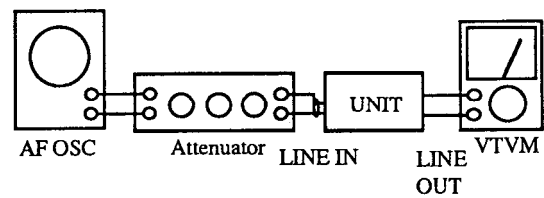
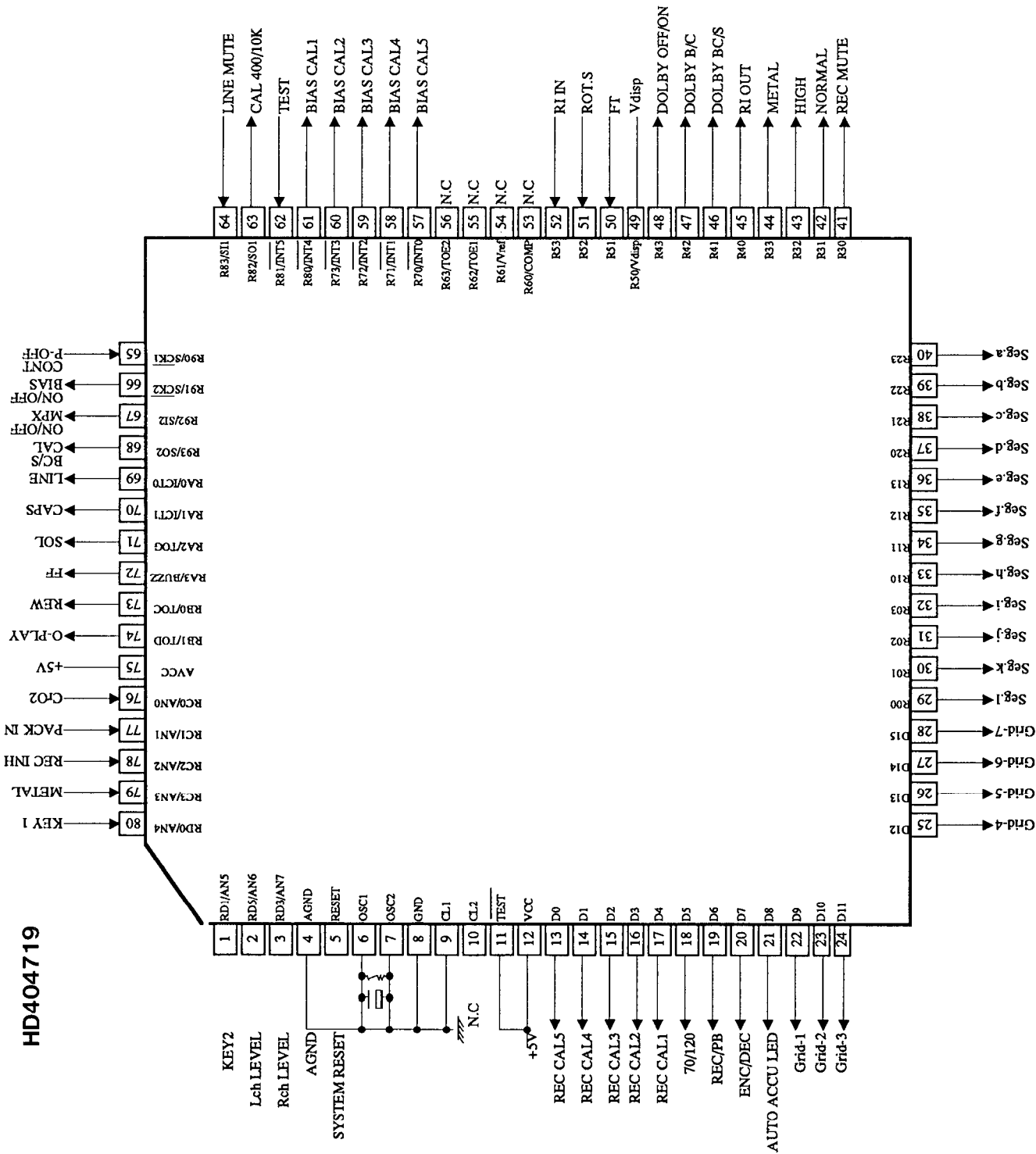


Fig. 2

# MICROPROCESSOR CONNECTION DIAGRAM

HD404719

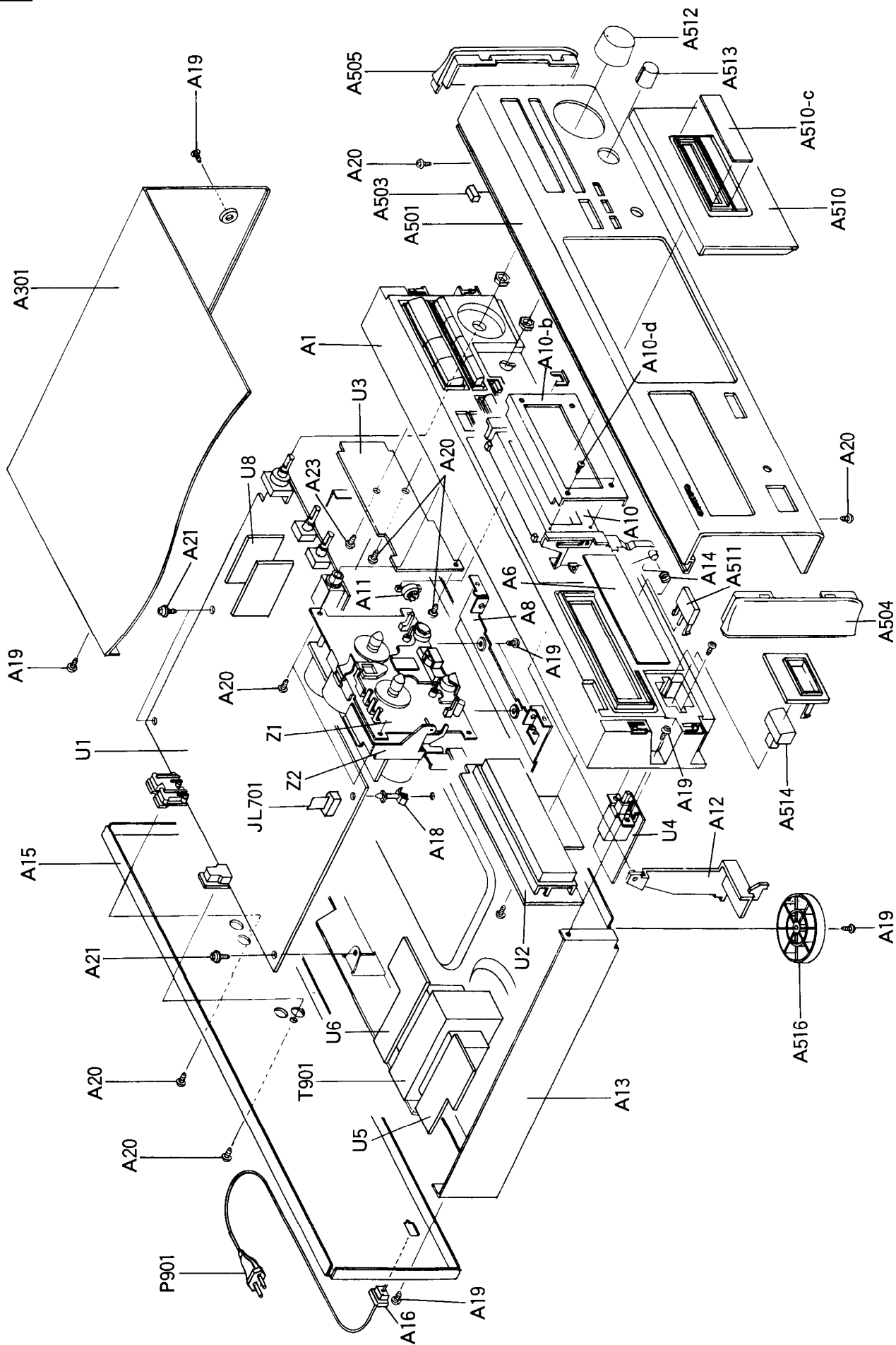


## MICROPROCESSOR TERMINAL DESCRIPTION

PIN NO.	TERMINAL	I/O	DESCRIPTION
1	KEY2	I	KEY2 input
2	Lch LEVEL	I	Lch level input
3	Rch LEVEL	I	Rch level input
4	AGND		Ground terminal
5	RESET	I	System reset
6	OSC1		Connect the 4MHz ceramic resonator.
7	OSC2		
8	GND		Ground terminal
9	CL1		Ground terminal
10	CL2		
11	TEST		Test terminal
12	VCC		VCC Power
13	REC CAL5	O	REC calibration output MSB
14	REC CAL4	O	REC calibration output
15	REC CAL3	O	REC calibration output
16	REC CAL2	O	REC calibration output
17	REC CAL1	O	REC calibration output LSB
18	70/120	O	EQ change-over output
19	REC/PB	O	Recording/Playback change-over output
20	ENC/DEC	O	Encoder/Decoder change-over output
21	AUTO ACCU LED		
22-28	Grid	O	Grid output
29-40	Seg		Segment
41	REC MUTE	O	Recording muting output
42	NORMAL	O	Recording/Playback equalizer control outputs
43	HIGH	O	On at the high level
44	METAL	O	
45	RI OUT	O	RI code output
46	DOLBY BC/S	O	Dolby IC control output
47	DOLBY B/C	O	Dolby IC control output

PIN NO.	TERMINAL		DESCRIPTION
48	DOLBY OFF/ON	O	Dolby IC control output
49	Vdisp		
50	RI IN	I	RI code input
51	FT		
52	ROT.S	I	Rotation pulse input
57	BIAS CAL5	O	Bias calibration output MSB
58	BIAS CAL4	O	Bias calibration output
59	BIAS CAL3	O	Bias calibration output
60	BIAS CAL2	O	Bias calibration output
61	BIAS CAL1	O	Bias calibration output LSB
62	TEST		Test Terminal
63	CAL 400/10K	O	Calibration 400/10KHz change-over output
64	LINE MUTE	O	Line muting output
65	P-OFF	I	Detection input when the power source is turned on.
66	BIAS CONT	O	Bias current change-over output
67	MPX ON/OFF	O	Multiplex filter change-over output
68	CAL ON/OFF	O	Calibration ON/OFF change-over output
69	LINE BC/S	O	LINE BC/S change-over output
70	CAPS	O	Capsian motor control output
71	SOL	O	Solenoid control output
72	FF	O	Reel motor control output
73	REW	O	Reel motor control output
74	O-PLAY	O	Torque control output of reel motor
75	AVCC		VCC power for A/D converter
76	CrO2	I	High position tape detection input
77	PACK IN	I	Cassette tape detection input
78	REC INH	I	Recording prevention input
79	METAL	I	Metal tape detection input
80	KEY 1	I	KEY input

# CHASSIS-EXPLODED VIEW





## CHASSIS-EXPLODED VIEW PARTS LIST

REF NO.	PART NO.	DESCRIPTION	REF NO.	PART NO.	DESCRIPTION
A1	27110878Y	Front Bracket	JL101	2009990351U1Y	NSAS-6P0488,Socket,Mechanism
A4	28141307Y	Cushion	JL401	2009990351U1Y	NSAS-2P0489,Socket,Mechanism
A6	28191670AY	Clear plate	JL701	2047232515Y	NCFC7-232512,Flexible flat cable
A8	27130728Y	Bracket F	P901	253193H1Y	△ AS-CEE,Power supply cord
A9	27141644Y	Retainer	T901	2301074Y	△ NPT-1231P,Power transformer<P>
A10	27301772AY	Cassette frame ass'y		2301078Y	△ NPT-1231P,Power transformer<W>
A11	28400520	Damper	U1	1N208545-1	NAAR-5145-1,Main circuit PC board
A12	27273157Y	Joint Eject	U2	1N208546-1	NADIS-5146-1,Disply circuit PC board
A13	27100277AY	Chassis	U3	1N208547-1	NASW-5147-1,Switch circuit PC board
A14	27180548	Spring	U4	1N208548-1	NAPS-5148-1,Power supply circuit PC board
A15	27122019Y	Rear panel <P>	U5	1N208580-1	NAETC-5180-1,Rectifier circuit PC board
	27122026AY	Rear panel <T>	U6	1N208581-1	NAETC-5181-1,Rectifier circuit PC board
	27122020Y	Rear panel <W>	U8	24606532	UNIT-S,NADOL-S
A16	27300750	Cord,bushing	Z2	24603398	Eject ass'y
A17	29110082	TAPE	Z3	833326047Y	2.6TTP+4S,Self-tapping screw
A18	27190480	KGLS-8S,Holder			
A19	838130088	3TTB+8B,Self-tapping screw			
A20	833430080	3TTP+8P(BC),Self-tapping screw			
A21	831130088	3TTW+8B,Self-tapping screw			
A22	830440089	4TTC+8C(BC),Self-tapping screw			
A23	838426088	2.6TTB+8C(BC),Self-tapping screw			
A301	28184479A	Top cover			
A303	838430088	3TTB+8B,Self-tapping screw			
A501	27211682Y	Frot panel ass'y			
A503	28141288Y	Cushion			
A504	28125248-6Y	End cap L			
A505	28125249-6Y	End cap R			
A507	28135199Y	Badge			
A508	8910301Y	CS-3, Ring			
A510	27301776Y	Cassette lid			
A511	28324912Y	Knob,eject			
A512	28324885AY	Knob,recording			
A513	28324845BY	Knob,level			
A514	28324140Y	Knob,power			
A516	27175292Y	Leg			

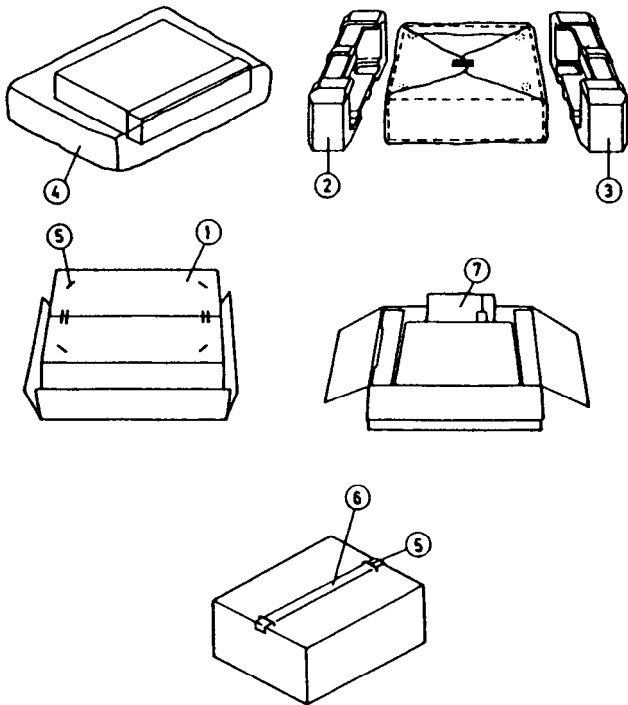
NOTE: THE COMPONENTS IDENTIFIED BY MARK  $\Delta$  ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

NOTE: <P>:230V model only  
<W>: Worldwide model only  
<T>:Taiwaneses model only

## TAPE MECHANISM-PARTS LIST

REF NO.	PART NO.	DESCRIPTION
2	24611616	Mechanism chassis
2-2	24601279	Motor reel
3	24611587	Head plate
3-9	24600122	R/P head
3-10	24600032	Erase head
4	24601283	Main motor ass'y
5	24606535	Control PC board ass'y
18	24602542	Main belt

## PACKING VIEW



## PARTS LIST

REF NO.	PART NO.	DESCRIPTION
1	29052846Y	Carton box
2	29091636AY	PAD L
3	29091637AY	PAD R
4	29100034-1Y	680 × 850mm, Styrene bag
5	282321	Staple
6	29110071	PP tape
7	Accessory bag ass'y	
	29342072Y	Instruction manual
	29342074Y	Instruction manual <P>
	29342082Y	Instruction manual <T>
	29342082Y	Instruction manual <W>
	29100097-1Y	320 × 250mm, Styrene bag
	25055040	CV-K-2, Conversion plug <W>
	2010244Y	Connection cord

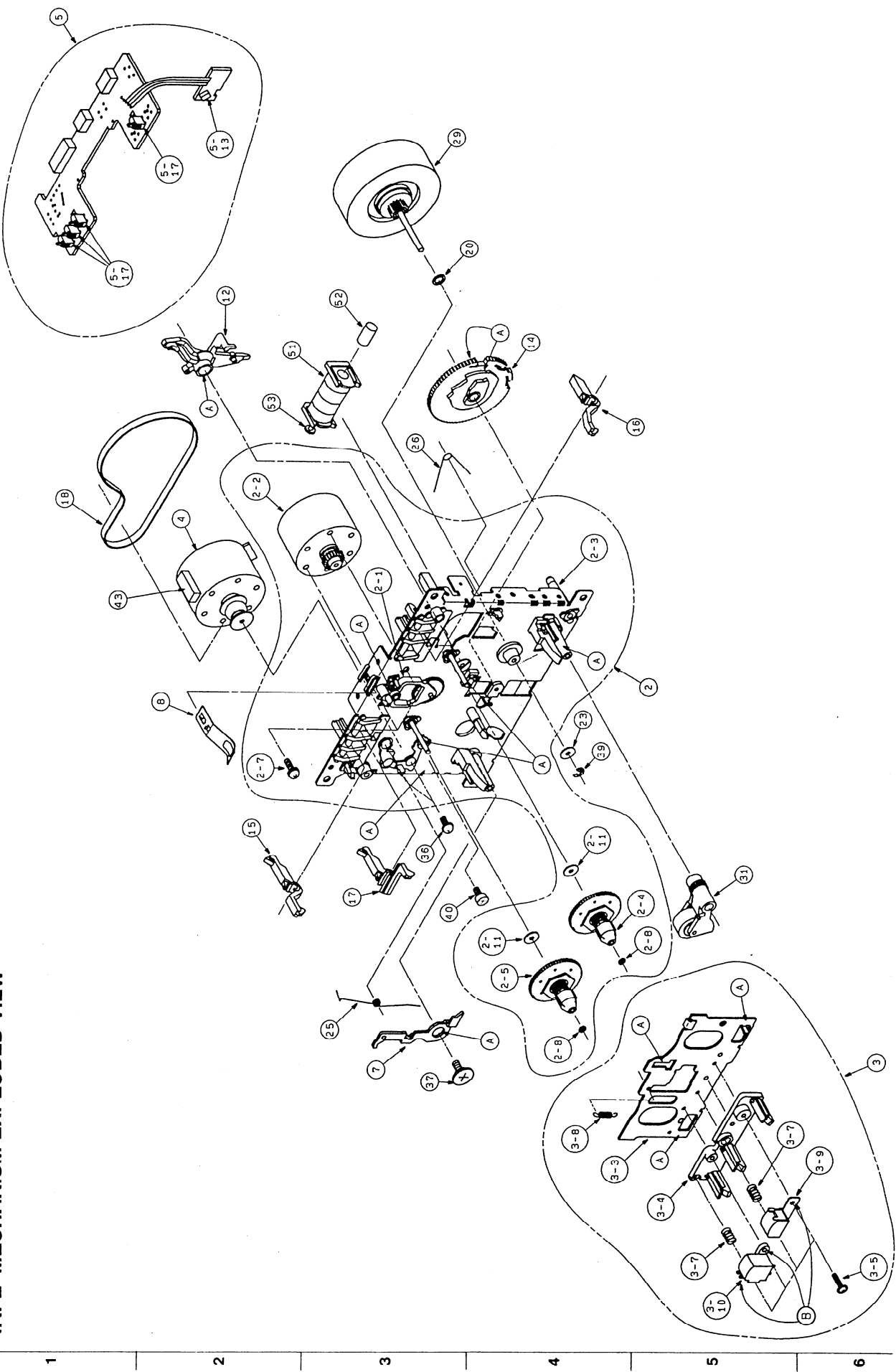
<P>:230V model only

<W>:Worldwide model only

<T>:Taiwaneses model only

A B C D E F G H

TAPE MECHANISM-EXPLODED VIEW





CIRCUIT NO.	PART NO.	DESCRIPTION
C415,C416	354782299	CE04W50V, 0.22M, ELECT C
C417,C418	354741009	CE04W16V, 10M, ELECT C
C419,C420	374721024	ECQ-B50V, 102J, TF C
C421,C422	374724714	ECQ-B50V, 471J, TF C
C423,C424	374722234	ECQ-B50V, 223J, TF C
C425,C426	354742219	CE04W16V, 220M, ELECT C
C427-C451	354741009	CE04W16V, 10M, ELECT C
C453,C454	374721034	ECQ-B50V, 103J, TF C
C455,C456	374724714	ECQ-B50V, 471J, TF C
C457-C459	374723334	ECQ-V50V, 333J, TF C
C460	374723334	ECQ-V50V, 333J, TF C
C461,C462	374721015	ECQ-B50V, 101K, TF C
C463,C464	370131514	APS100V, 151J, APS C
C465	354744709	CE04W16V, 47M, ELECT C
C466	374722234	ECQ-B50V, 223J, TF C
C467	354722219	CE04W6.3V, 220M, ELECT C
C468	354741009	CE04W16V, 10M, ELECT C
C469,C470	374723324	ECQ-B50V, 332J, TF C
C471	374721034	ECQ-B50V, 103J, TF C
C473	370131234	APS100V123J, APS C
C501	374721834	ECQ-B50V, 183J, TF C
C502	374726814	ECQ-B50V, 681J, TF C
C503	374721224	ECQ-B50V, 122J, TF C
C601,C752	354780479	CE04W50V, 4.7M, ELECT C
C621,C733	354741019	CE04W16V, 100M, ELECT C
C622	354741009	CE04W16V, 10M, ELECT C
C701,C751	354780109	CE04W50V, 1M, ELECT C
C731	354742219	CE04W16V, 220M, ELECT C
C732	352980226	NP04D50V, 2.2M, ELECT C
C754	374721044	ECQ-V50V, 104J, TF C
C755	354780479	CE04W50V, 4.7M, ELECT C
C801	354741009	CE04W16V, 10M, ELECT C
C802	354780109	CE04W50V, 1M, ELECT C
C901	374722234	ECQ-B50V, 223J, TF C
C903,C904	354752229	CE04W25V, 2200M, ELECT C
C905,C906	393341027	CE04W16V, 1000M, VX C
C907,C908	374722734	ECQ-V50V, 273J, TF C
C909,C910	393341027	CE04W16V, 1000M, VX C
C911,C912	374722734	ECQ-V50V, 273J, TF C
C913	3504168	CE68W25V, 13000M, ELECT C
C914	354741019	CE04W16V, 100M, ELECT C
C915	354780479	CE04W50V, 4.7M, ELECT C
C916	354724719	CE04W6.3V, 470M, ELECT C
C917	374722234	ECQ-B50V, 223J, TF C
C918	354744719	CE04W16V, 470M, ELECT C
C919	354741009	CE04W16V, 10M, ELECT C
C920	354780109	CE04W50V, 1M, ELECT C
C923,C924	354761019	CE04W35V, 100M, ELECT C
C925,C926	354780479	CE04W50V, 4.7M, ELECT C
C927	354741009	CE04W16V, 10M, ELECT C
C928	374722234	ECQ-B50V, 223J, TF C
C931,C932	374722734	ECQ-V50V, 273J, TF C

Resistors		
R113	5210265	N06HR, 50KBC, TRIM R
R114	5210265	N06HR, 50KBC, TRIM R
R141	5104307	N09RLC, 250KW20, VARI R
R143	5104330	N16RGL50KA, 20Z, VARI R
R417	5210262	N06HR, 10KBC, TRIM R
R418	5210262	N06HR, 10KBC, TRIM R
R455	443524704	RS1/2WBJ, 47, METAL O R
R456	443521004	RS1/2WBJ, 10, METAL O R

CIRCUIT NO.	PART NO.	DESCRIPTION
R463	5210262	N06HR, 10KBC, TRIM R
R464	5210262	N06HR, 10KBC, TRIM R
R731	443524704	RS1/2WBJ, 47, METAL O R
R731	443524704	RS1/2WBJ, 47, METAL O R
R751	49163104409	RM1/10IJ, 100K*9, R NET
R752	49163104410	RM1/10IJ, 100K*10, R NET
R901	453530224	RNU1/2WCJ, 2.2, METAL R
R904	453530684	RNU1/2WCJ, 6.8, METAL R
R912	453530104	RNU1/2WCJ, 1, METAL R

Plugs		
P101	25055136	NPLG-6P120, P PLUG
P103-P105	25055038	NPLG-2P29, P PLUG
P151,P152	25055783	NPLG-4P739, P PLUG
P153,P154	25055784	NPLG-5P740, P PLUG
P401	25055132	NPLG-2P116, P PULG

Terminals		
P102	25045329	NPJ-4PDBL183, PIN JACK
P301	25045255	YKB21-5009, JACK
P706	25045330	NPI-2PDBL184, JACK

Sockets		
P701A	25050855 or 25050963	NSCT-23P650, SOCKET or NSCT-23P750, SOCKET

Wire holders		
P702A	25055628	NPLG-7P590, WIRE TRAP
P902	25050269	NSCT-5P97, WIRE TRAP

DISPLY CIRCUIT PC BOARD (NADIS-5416-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q751	212139	BJ337GK, FL TUBE
R771	49163104409	RM1/10IJ, 100K*9, R NET
R772	49163104410	RM1/10IJ, 100K*10, R NET
S712	25035652	NPS-111-S604, P SW
P701B	25050887 or 25050929	NSCT-23P682, SOCKET or NSCT-23P716, SOCKET

SWITCH PC BOARD (NASW-5147-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
Switches		
S701-S711	△ 25035652	NPS-111-S604, Power switch
Wire holder		
JL702B	25051091	NSCT-7P878, WIRE HOL

POWER SUPPLY PC BOARD (NAPS-5148-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
C951	△ 3500065A	DE7150FZ103P, AC400V/125V, IS C
S951	△ 25035636	NPS-111-, L590P, P SW
P901A	25055675	NPLG-2P631, P PLUG

RECTIFIER PC BOARD (NAETC-5181-1)

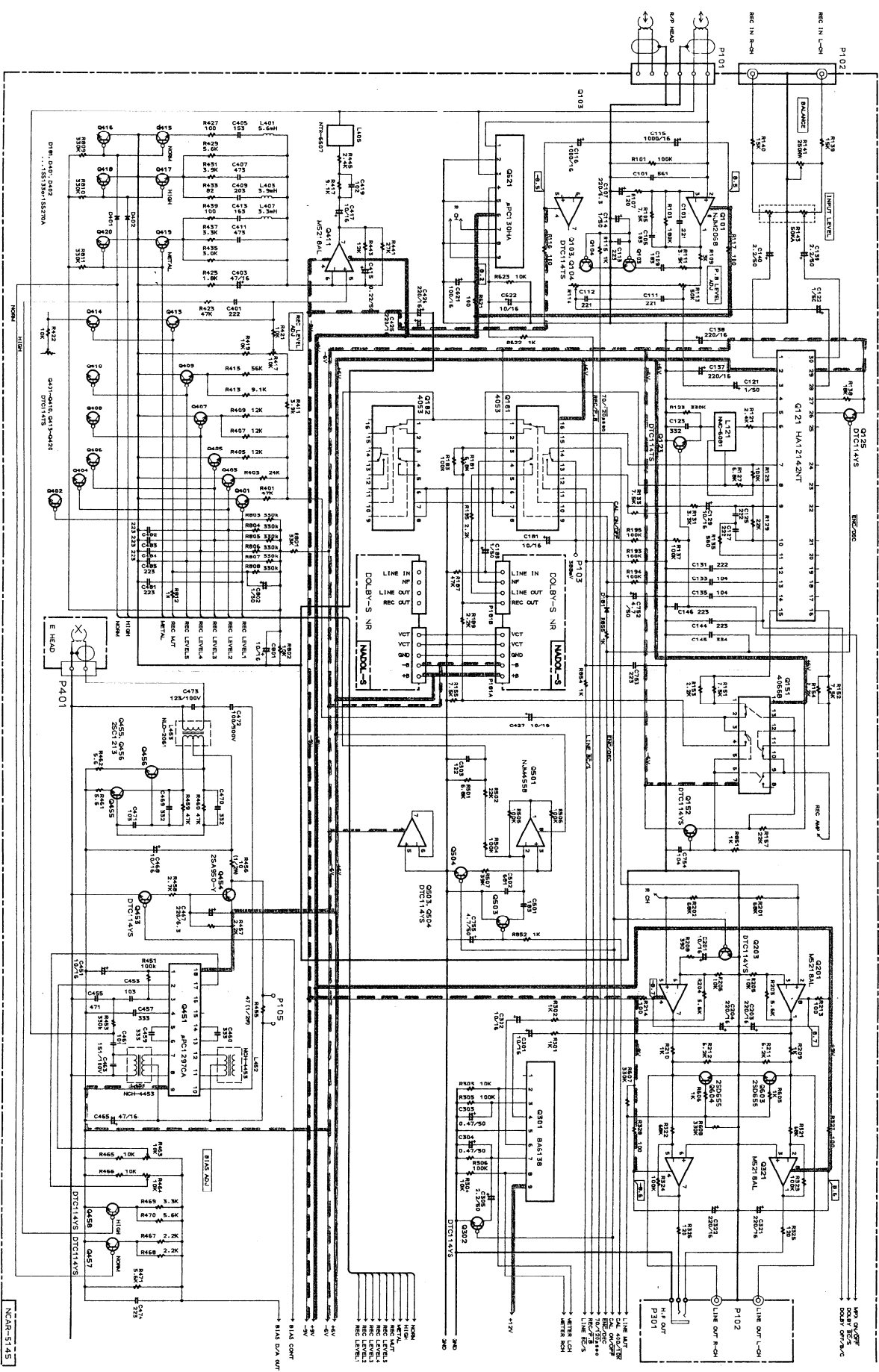
CIRCUIT NO.	PART NO.	DESCRIPTION
C933	374721044	ECQ-V50V, 104J, TF C
Diodes		
D704	223163 or 223205	1SS133 or 1SS270A
D705	225292D	SEL4310G-D, LED
D706	225291D	SEL4910D-D, LED

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

SCHEMATIC DIAGRAM 1/2

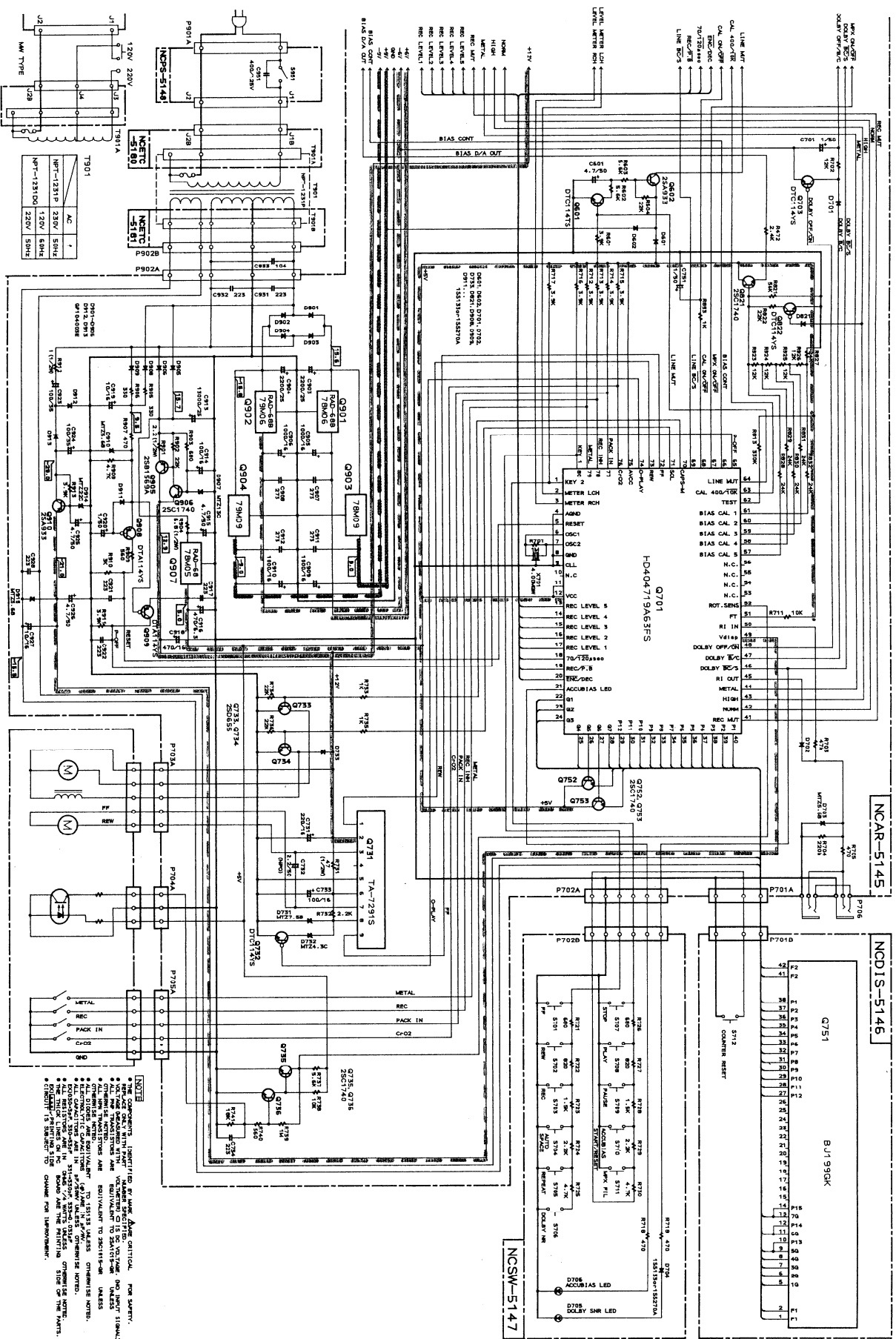
A B C D E F G

IA-6310



SCHEMATIC DIAGRAM 2/2

A B C D E F G



**NOTE**

1. ALL COMPONENTS IDENTIFIED BY MARKING SCHEMATIC FOR SAFETY.
2. ALL PARTS IDENTIFIED BY PART NUMBER OR BY VALUE AND TOLERANCE.
3. ALL PARTS IDENTIFIED BY PART NUMBER OR BY VALUE AND TOLERANCE.
4. ALL PARTS IDENTIFIED BY PART NUMBER OR BY VALUE AND TOLERANCE.
5. ALL PARTS IDENTIFIED BY PART NUMBER OR BY VALUE AND TOLERANCE.
6. ALL PARTS IDENTIFIED BY PART NUMBER OR BY VALUE AND TOLERANCE.
7. ALL PARTS IDENTIFIED BY PART NUMBER OR BY VALUE AND TOLERANCE.
8. ALL PARTS IDENTIFIED BY PART NUMBER OR BY VALUE AND TOLERANCE.
9. ALL PARTS IDENTIFIED BY PART NUMBER OR BY VALUE AND TOLERANCE.
10. ALL PARTS IDENTIFIED BY PART NUMBER OR BY VALUE AND TOLERANCE.