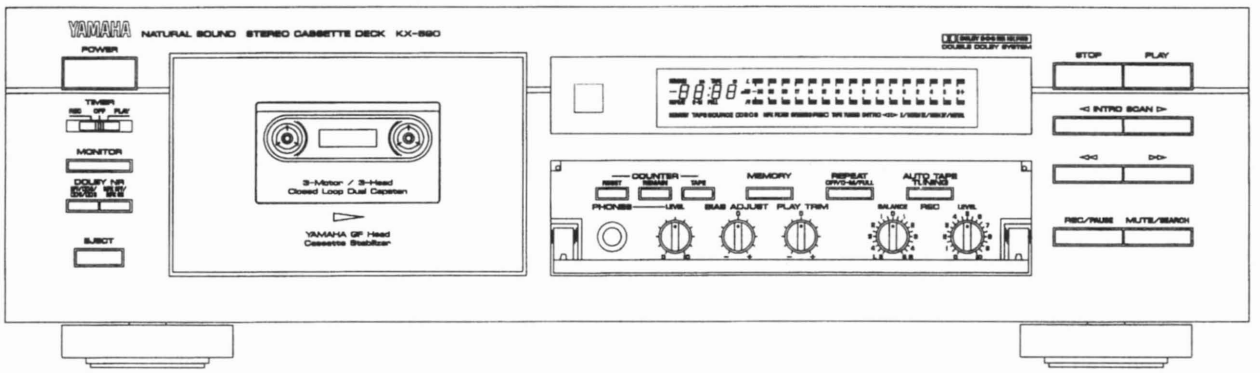
STEREO CASSETTE DECK

KX-690

SERVICE MANUAL



IMPORTANT NOTICE

This manual has been provided for the use of authorized YAMAHA Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically YAMAHA Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components, and failure of the product to perform as specified. For these reasons, we advise all YAMAHA product owners that any service required should be performed by an authorized YAMAHA Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual of firm does not constitute authorization, certification or recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of YAMAHA are continually striving to improve YAMAHA products. Modifications are, therefore, inevitable and specifications are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and part replacement. Recheck all work before you apply power to the unit.

■ CONTENTS

100548

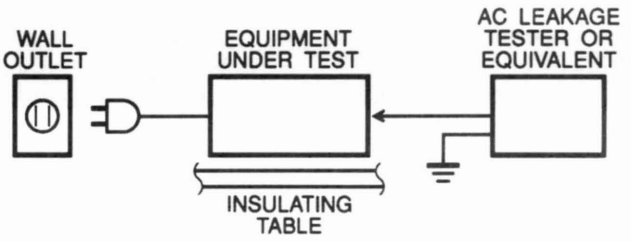
YAMAHA
YAMAHA CORPORATION
P.O.Box1.Hamamatsu.Japan

2.85K-473 Ⓟ Printed in Japan '96.9

■ TO SERVICE PERSONNEL

1. Critical Components information.
   Components having special characteristics are marked and must be replaced with parts having specifications equal to those originally installed.

2. Leakage Current Measurement (For 120V Model only).
   When service has been completed, it is imperative that you verify that all exposed conductive surfaces are properly insulated from supply circuits.



- Meter impedance should be equivalent to 1500 ohm shunted by 0.15μF.
- Leakage current must not exceed 0.5mA.
- Be sure to test for leakage with the AC plug in both polarities.

WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

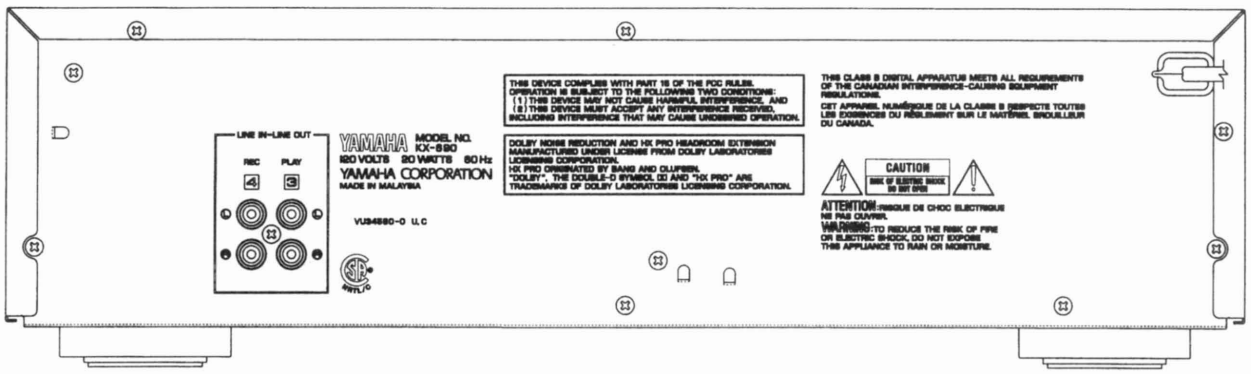
DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHATSOEVER!

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

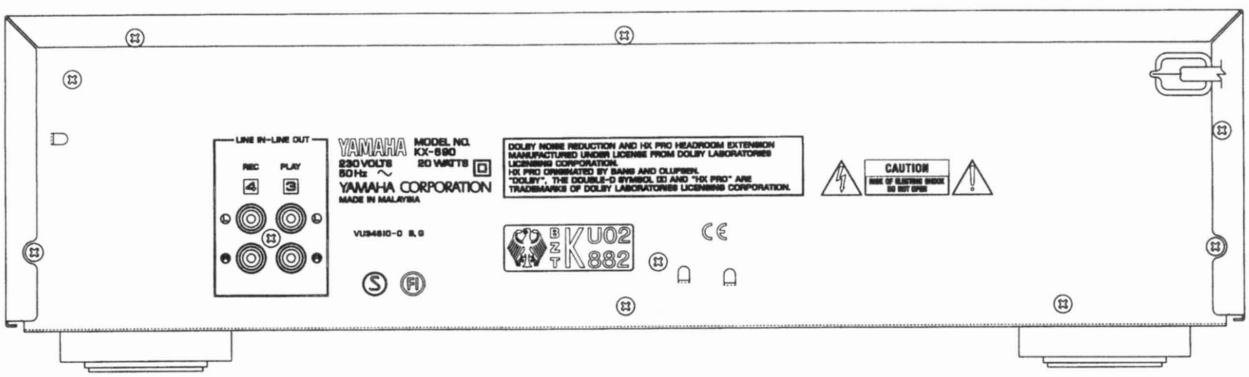
If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

■ REAR PANELS

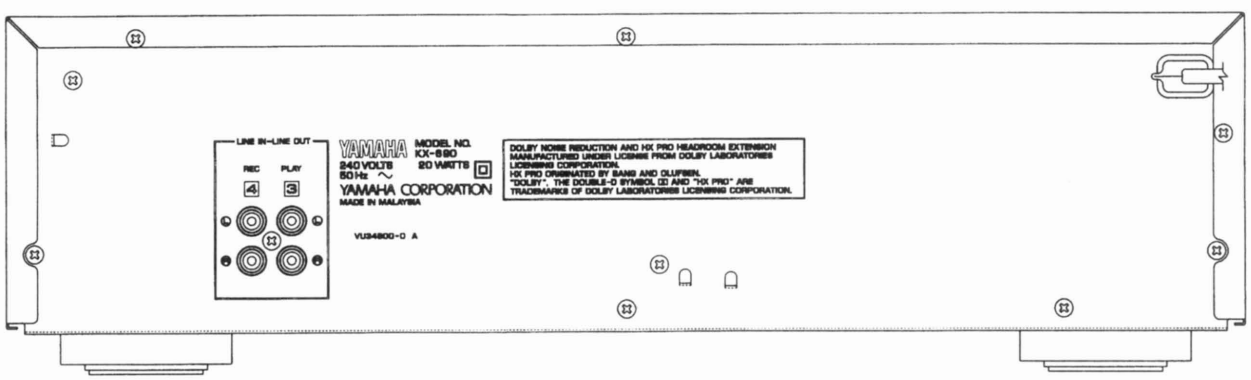
▼ U.S.A. & Canadian models



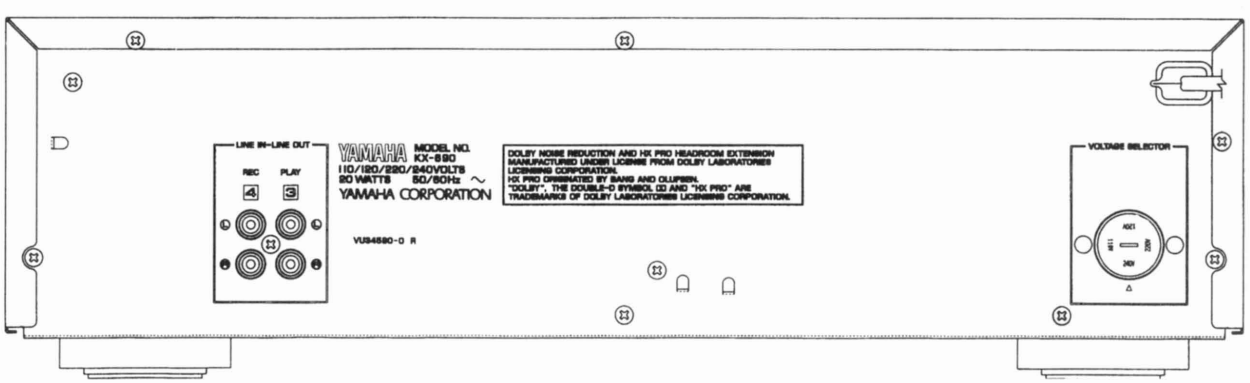
▼ British & European models



▼ Australian model



▼General model



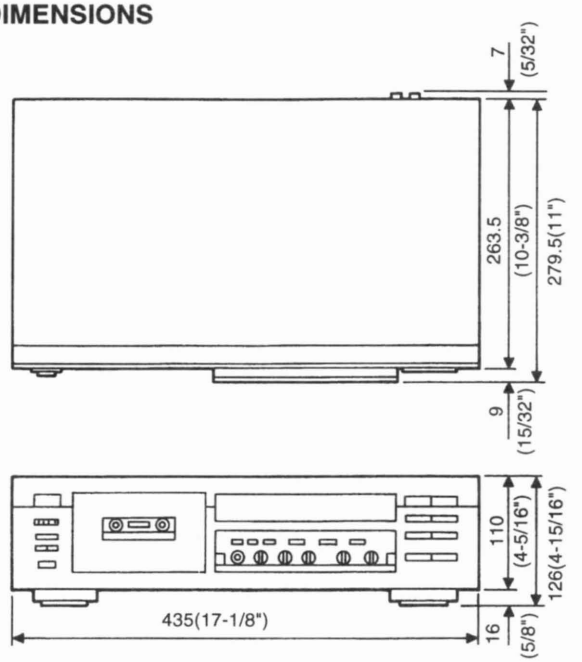
■ SPECIFICATIONS

Type	4-Track 2-Channel recording and playback Stereo Cassette Deck
Heads	
REC/PB	GF Head (Hard permalloy)
Erase	Double Gap Ferrite
Motors	
Capstan	DC servo motor
Reel	DC motor
Assist	DC motor
Wow & Flutter	
W.PEAK	±0.07%
W.RMS	0.04%
Fast Winding Time	about 95 seconds (C-60 tape)
Frequency Response (-20dB)	
Normal tape (Type Ⅰ)	20-18000Hz±3dB
High tape (Type Ⅱ)	20-19000Hz±3dB
Metal tape (Type Ⅳ)	20-21000Hz±3dB
S/N Ratio	
NR off	60dB
Dolby B NR on	68dB
Dolby C NR on	76dB
Dolby S NR on	80dB
Harmonic distortion	0.8%
Channel Separation(1kHz)	More than 45dB
Crosstalk(125Hz)	More than 55dB
Input Sensitivity/Impedance (0dB)	
Line	100mV/43kΩ
Output Level (0dB)	
Line	570mV/2kΩ
Headphones	1.5mW/8Ω
Power Supply	
U,C models	AC120V, 60Hz
B,G models	AC230V, 50Hz
A model	AC240V, 50Hz
R model	AC110, 120, 220, 240V,50/60Hz
Power Consumption	20W
Dimensions (W x H x D)	435 x 126 x 279.5mm (17-1/8" x4-15/16" x 11")
Weight	5.0kg(11lbs)
Accessories	Input, output cords (RCA type)

** Specifications are subject to change without notice.*

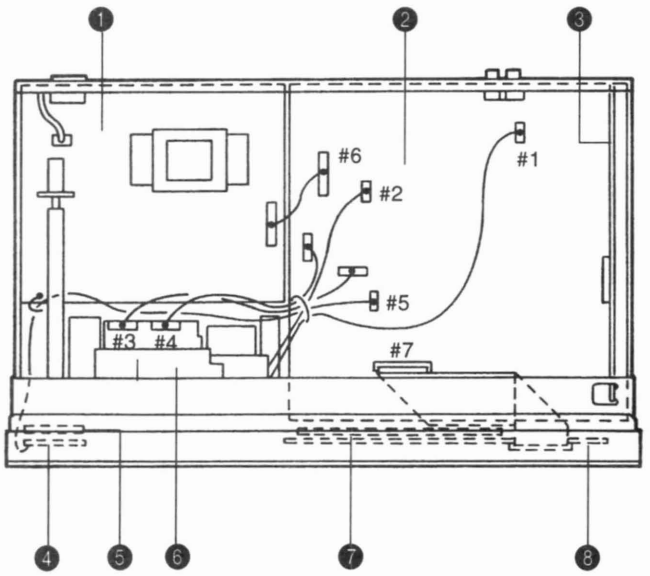
U..... U.S.A. model
C..... Canadian model
B..... British model
G ..... European model
A..... Australian model
R..... General model

● DIMENSIONS



Unit: mm (inch)

■ INTERNAL VIEW



1. SUB P.C.B. ASS'Y (1)
2. MAIN P.C.B. ASS'Y (1)
3. MAIN P.C.B. ASS'Y(2)
4. SUB P.C.B. ASS'Y (4)
5. SUB P.C.B. ASS'Y(5)
6. CASSETTE MECHANISM UNIT
7. SUB P.C.B. ASS'Y (3)
8. SUB P.C.B. ASS'Y (2)

■ DISASSEMBLY PROCEDURES

(Remove parts in disassembly order as numbered.)

1. Removal of Top Cover

Remove 7 screws (①) in Fig. 1.

2. Removal of Front Panel

a. Remove the Extention Bar in Fig. 1.
b. Remove 5 knobs.
c. Remove the Lid Panel.
d. Remove 6 screws (②) in Fig. 1.
e. Pull out 1 connector (#7).
(See page 3, INTERNAL VIEW)

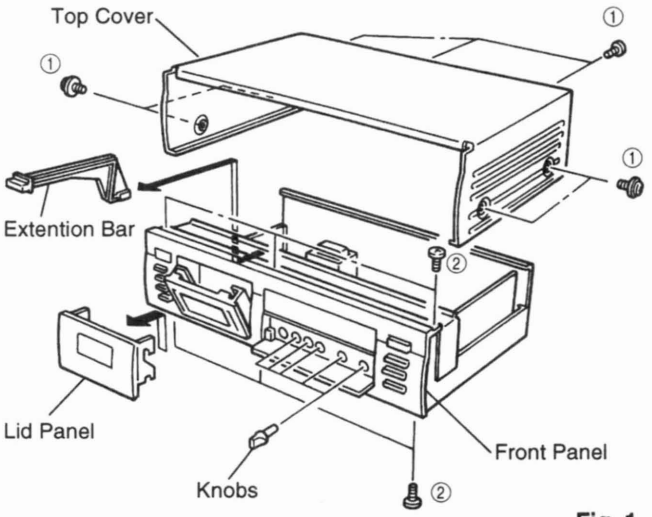


Fig. 1

3. Removal of Cassette Mechanism Unit

a. Remove 2 screws (③) and 3 plastic rivets (④) in Fig. 2 and then remove the Top Frame.
b. Remove 2 screws (⑤) in Fig. 2 and then pull off the Cassette Mechanism Unit to the upper side gently.
c. Remove 4 connectors (#1 to #4) at the Mechanism side in Fig.2. (See page 3, INTERNAL VIEW)

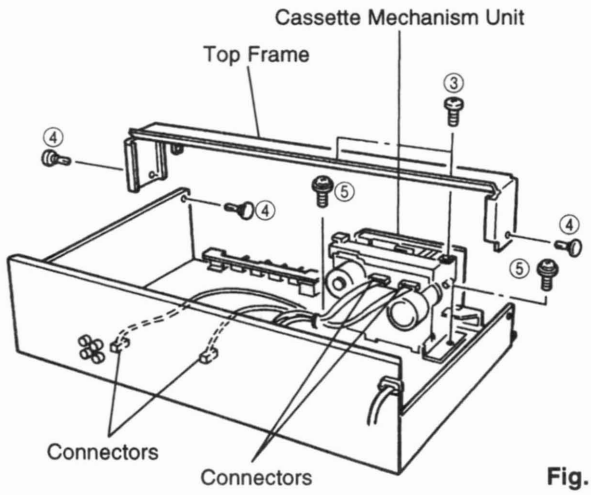


Fig. 2

4. Removal of Housing Ass'y

a. Detach the spring in Fig. 3.
b. Remove 1 screw (⑥) and then remove the Damper Ass'y in Fig.3.
c. Remove lower part of the Housing Ass'y by pressing it to the outside.
d. Remove the Housing Ass'y from the damper arm.

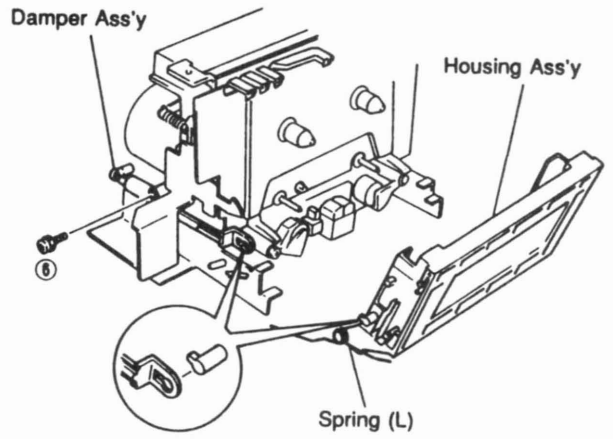


Fig. 3

5. Removal of Pinch Roller

Remove 1 nut (⑦)and 1 washer (⑧) in Fig. 4 and remove the Pinch Roller.

6. Removal of Head Unit

Remove 2 screws (⑨) in Fig. 4 and then remove the Head Unit.

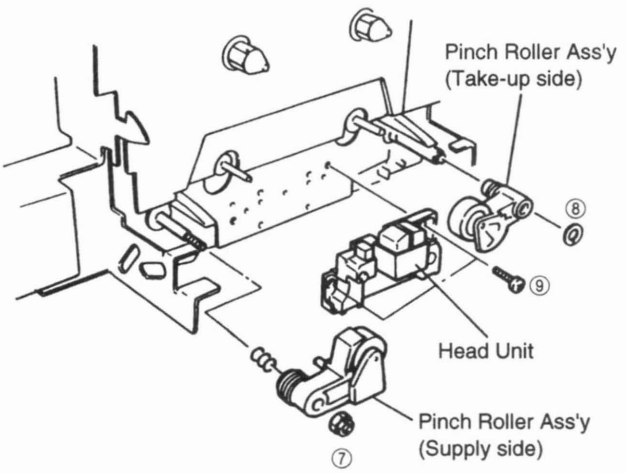


Fig. 4

7. Removal of Capstan & Assist Motors

a. Remove the wire from the Capstan and Assist motors.

b. Remove 4 screws (⑩) in Fig. 5 and then remove the Back Plate.

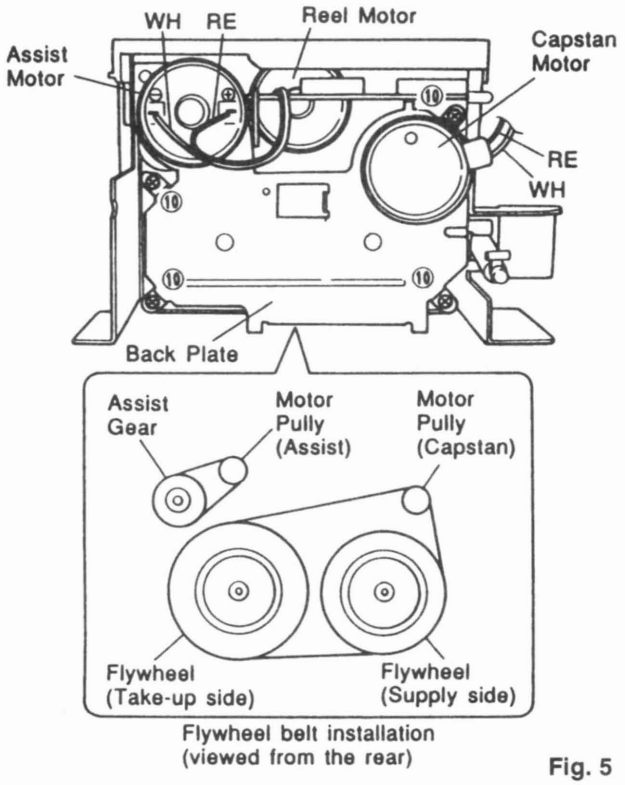


Fig. 5

c. Remove 3 screws (⑪) in Fig.6 and then remove the Capstan Motor.

d. Remove 2 screws (⑫) in Fig. 6 and then remove the Assist Motor.

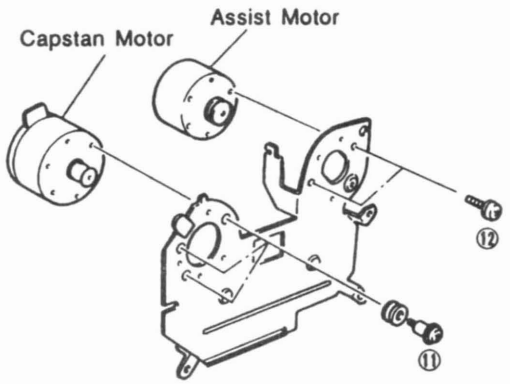


Fig.6

8. Removal of Reel Motor

a. Remove 1 screw (⑬) and 1 plastic rivet (⑭) in Fig. 7.

b. Remove the Back Plate.
(*When resinstalling it, be sure to fit its lower ends to the positioning hooks in Fig. 7.)

c. Detach the spring (Eject Arm) in Fig. 7.

d. Remove 2 special screws (⑮) and then remove the Eject Arm in Fig. 7.

e. Remove the wire from the Reel Motor.

f. Pull off 1 hook and then remove the Control P.C.B. Ass'y in Fig. 7a.

g. Remove 2 screws (⑯) and then remove the Reel Motor in Fig. 7.

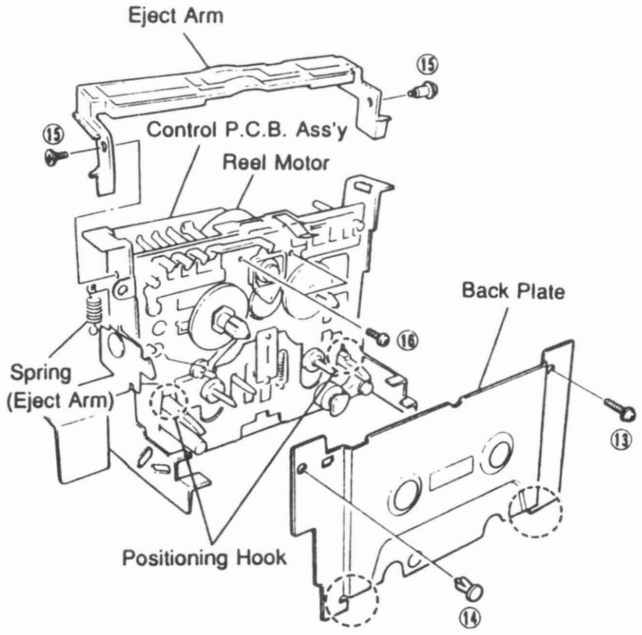


Fig. 7

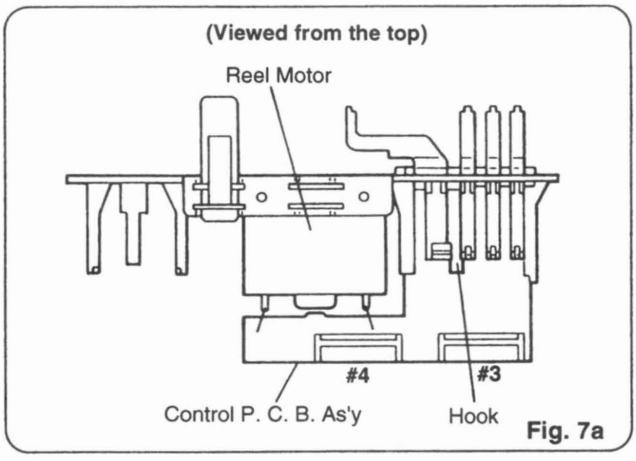


Fig. 7a

■ ADJUSTMENTS

1. Before adjustment:

- Make sure that AC line voltage comes within

Models	AC line voltage
U, C	120V ± 10%
B, G	230V ± 10%
A	240V ± 10%

- Since head magnetization, dust accumulations, etc. are likely to introduce error in the various characteristics, it is very important that the heads are properly demagnetized and cleaned.
- Make adjustments of mechanical system-1 and 2, playback system and recording system in that order.

2. Instruments required

- Audio frequency oscillator
- ACVM (or dual channel ACVM)
- Wow/flutter meter
- Oscilloscope
- Frequency counter
- Torque meter
  TW-2111A (TX911580) ..... Take up/back tension
  CT-160L (TX911120) ..... FF/REW
- DCVM

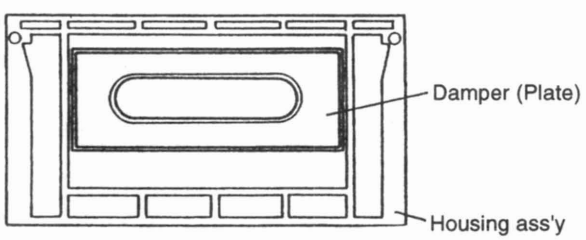
3. Test tape required

- MTT-111N (TX911650) ..... Normal speed
- MTT-114N (TX911680) ..... Azimuth
- MTT-212N (TX911660) ..... Playback level
- MTT-256 (TX911300) ..... Playback frequency response (Normal)
- MTT-356 (TX911310) ..... Playback frequency response (CrO_2)
- Reference tape
  Normal (LH) : ..... TDK AC225 (VU16720)
  High (CrO_2) : ..... TDK AC514 (VU16730)
  METAL : ..... TDK AC713(VU16740)

● How to remove the damper from the housing ass'y.

1. Press the damper inward to unsnap the hinge as shown in Fig.B.
2. Take out the damper, by lifting it up.

Note: When installing the damper, press out to snap into place after ensuring that the bottom damper levers do not jam when closing the door.



The lid panel is removed

Fig. A

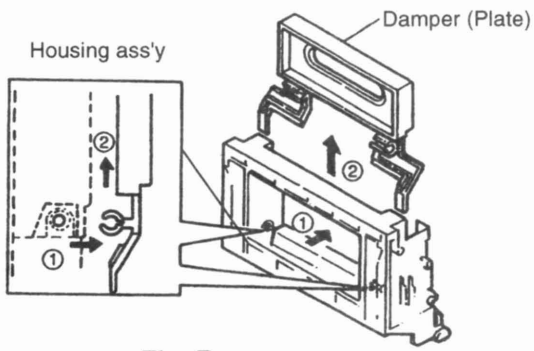


Fig. B

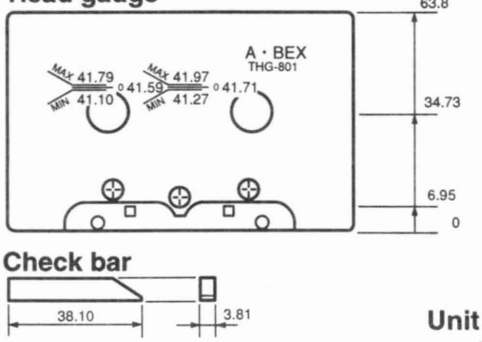
MECHANICAL ADJUSTMENT-1

● Head Adjustment Gauge

This head adjustment gauge has been produced on the basis of precision cassette mechanism standards. It permits precise measurement of head position-a factor which is critical for proper tape travel. It provides a standard for accurate measurement of tape travel misalignment and other factors which do not show up in torque measurement or monitor cassette tape travel tests. (See page 13, CLEANING MODE)

* **When wow/flutter cannot be reduced.**
* **When tape travel misalignment sometimes occurs causing the tape to be wound up into the mechanism, use this gauge to check the head position.**
* **When record/playback head or pinch roller (with Tape guide) is replaced.**

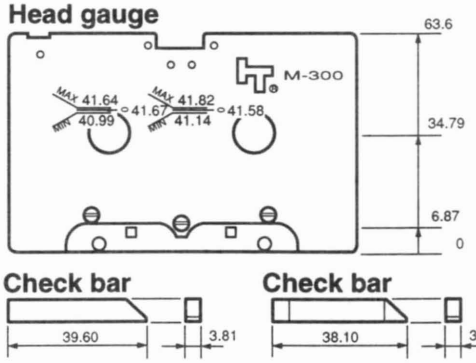
A.BEX THG-801
Part No. TX911420
Head gauge



Check bar

Unit : mm
Fig. C

M-300
(No supply available)
Head gauge



Check bar

Check bar

Unit : mm
Fig. D

Step	Item to be Adjusted	Tape	Instrument required	Mode	Adjustment part	Adjustment procedure and Rating	Remarks
1	Height of supply side pinch roller and tape guide		Head gauge (THG-801 or M-300)		Supply side pinch roller tape guide height adjusting screw (Fig.1)	Insert the head gauge. In the play mode, adjust the height using the tape guide adjust screw so that the gauge bar does not touch the tape guide. (If should smoothly enter the Tape guide.) (Fig.2a)	Perform one time in the first.
2	Height of record/play-back head and tape guide		Head gauge (THG-801 or M-300)		Tape guide height adjusting screw (Fig.1)	Insert the head gauge. In the play mode, adjust the height using the tape guide adjust screw so that the gauge bar does not touch the tape guide. (If should smoothly enter the Tape guide.) (Fig.2b)	
3	Record/Play-back head tilt angle		Head gauge (THG-801 or M-300)		Tilt angle adjusting screw (Fig.1)	Insert the head gauge. In the recording mode, slide the check bar again. The head adjust so that there is gap between the bar and the head gauge. (Fig.3)	
4	Azimuth	MTT-114N 10kHz, -10dB	ACVM Oscilloscope	PLAY	Azimuth adjusting screw (Fig.1)	Playback output of L and R is maximum and phase difference should be minimum in both directions.(Fig.4)	Repeat at least 2 times the adjustments in step 2 to 4. After the final adjust-ments only, make sure to apply screw lock point.

Note : Adjustments in step1 to 4 must be performed with the damper ass'y removed. Reinstall damper for find alignment confirmation.

● Caution of head adjusting

1. In tightening the head fixing screws, take care not to allow the lead edge of spring to protrude from the head base. (Fig. E)
2. Tighten 3 screws evenly so that each screw extrudes by 0.5 ~1.0mm.(Fig. E)

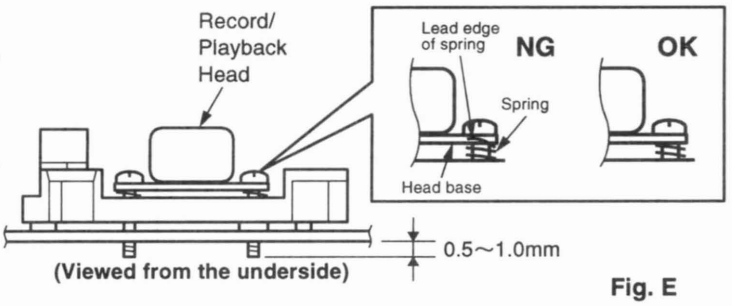


Fig. E

● TEST POINT

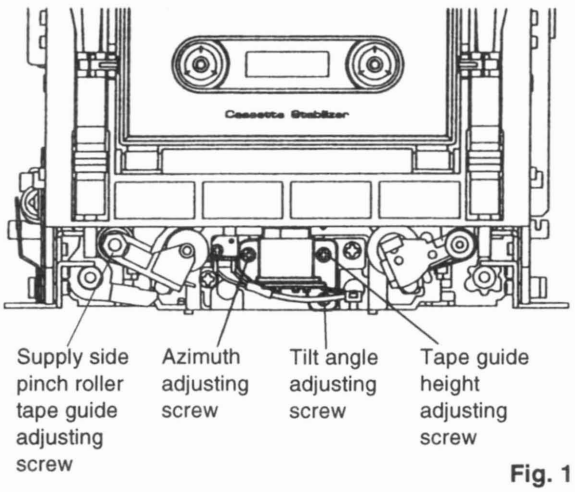


Fig. 1

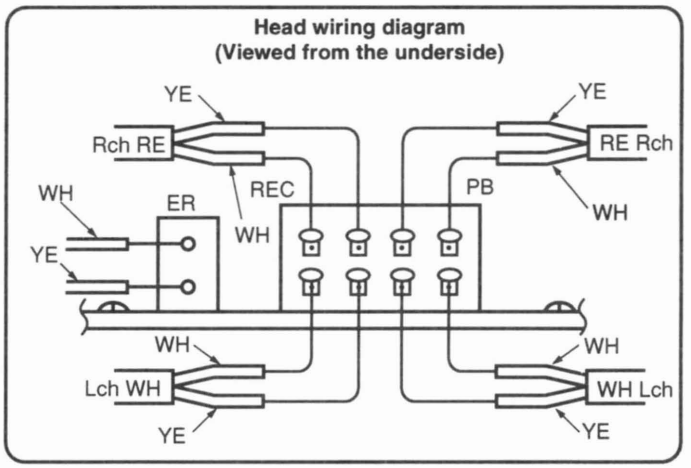


Fig. 1a

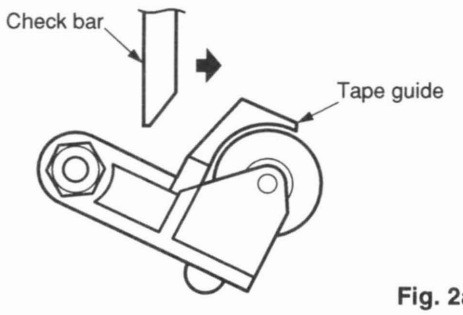


Fig. 2a

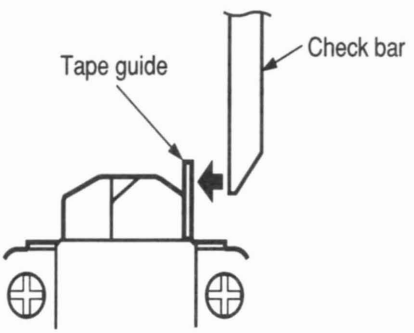


Fig. 2b

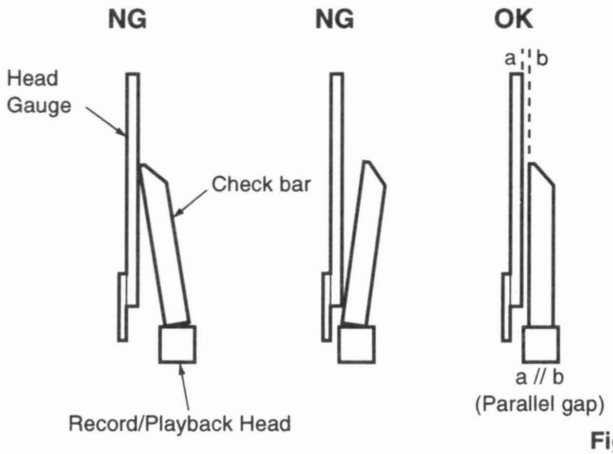


Fig. 3

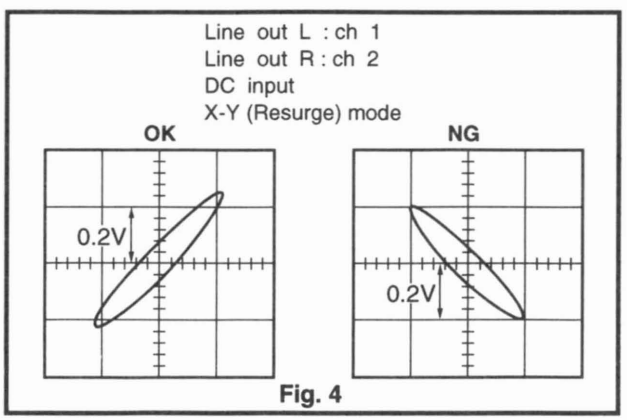
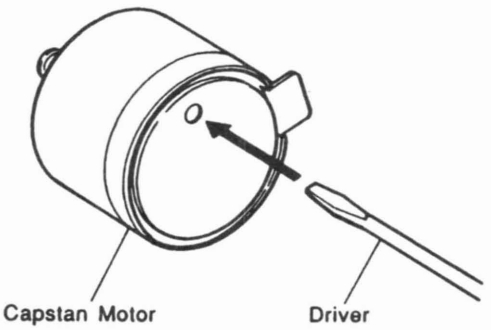


Fig. 4

MECHANICAL ADJUSTMENT-2

Step	Item to be Adjusted	Tape	Instrument required	Mode	Adjustment part	Rating	Remarks
1	Check each torque	CT-160L (FF, REW)	Torque meter	FF REW		FF, REW torque: more than 70g/cm.	
		TW-2111A		PLAY		Take up torque : 30~70g/cm.	
						Back tension : 6~12g/cm.	
2	Check FF, REW take up time	AC-514 (C-60)		FF REW		80 to 110 seconds.	
3	Tape Speed	MTT-111N 3kHz, -10dB	Frequency counter	PLAY	Preset Potentiometer at the back of the Capstan motor. (Fig.5)	3005Hz ± 10Hz	
4	Wow/Flutter	MTT-111N 3kHz, -10dB	Wow/flutter meter	PLAY		Less than 0.08% (WRMS)	Perform confirm at the center of the test tape length if possible.

● TEST POINT



Tape Speed Adjustment

Fig. 5

ELECTRICAL ADJUSTMENT

- Use 560mV (250nwb/m) for 0dB as the standard level of the unit.
  0dB = 250nwb/m (315Hz) = -5dBV (Line out level)
- Test conditions
  BIAS ADJUST → Center
  * PLAY TRIM → Center
  PHONES LEVEL → Min
  * DOLBY NR → OFF

  * Except for Bias Leakage Adjustment.

<Playback section>

Step	Item to be Adjusted	Tape	Instrument required	Mode	Measurement conditions	Points of measurement	Adjustment parts	Rating
1	Playback level (315Hz)	MTT-212N 315Hz 250nwb/m	ACVM	PLAY		LINE OUT	VR301 (L ch) VR302 (R ch)	-5 ± 0.3 dBV
2	Playback level (10kHz)	MTT-114N 10kHz,-10dB	ACVM	PLAY		LINE OUT	VR1 (L ch) VR2 (R ch)	-15 ± 0.5 dBV
3	Confirmation of playback frequency response	Test tape for frequency check, 3180 μs + 120 μs (LH) (MTT-256) 3180 μ s + 70 μs (CrO_2) (MTT-356)	ACVM Oscilloscope	PLAY		LINE OUT		Confirm that the 14kHz playback level is within 0 ± 3.5dB of the 1kHz playback level. (Fig. 6)

● PLAYBACK FREQUENCY RESPONSE

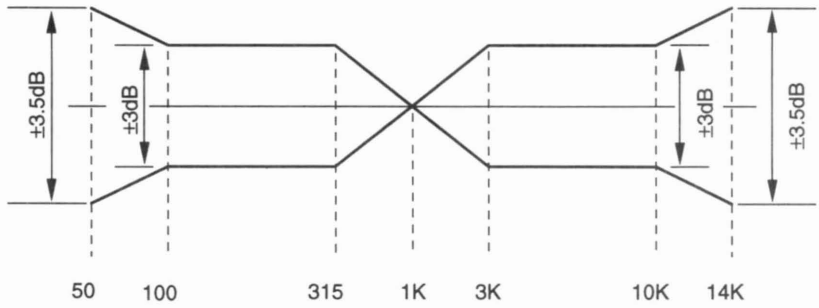
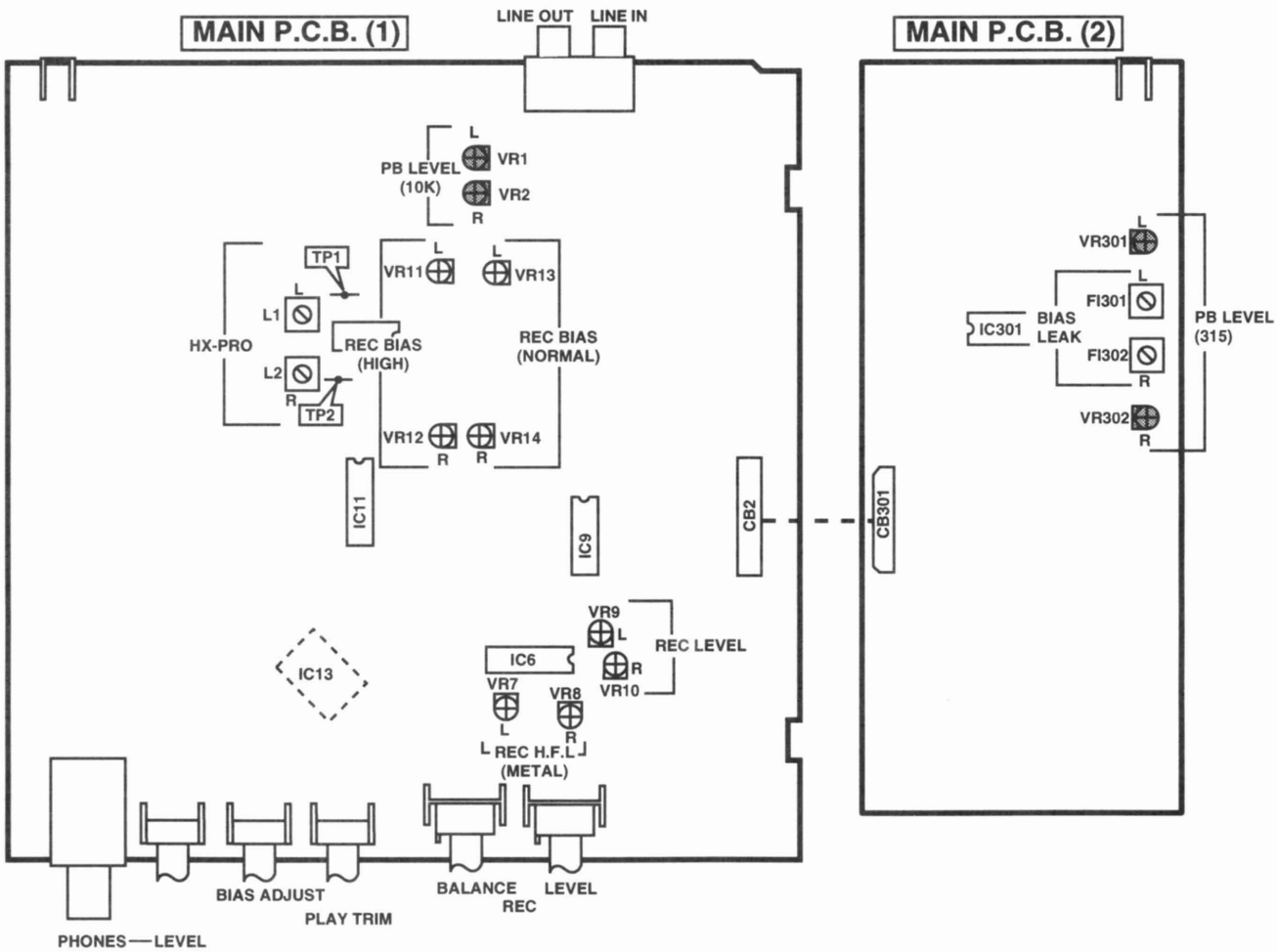


Fig. 6

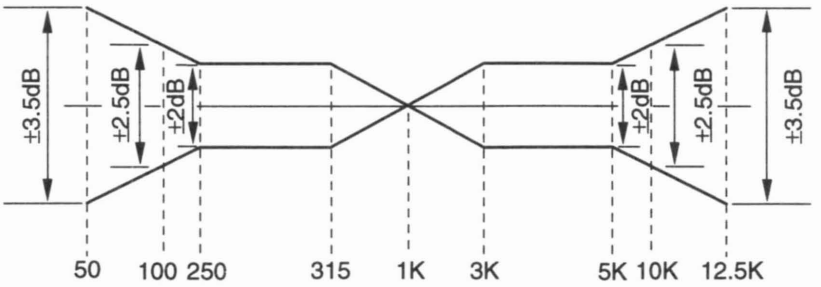
● TEST POINT


MAIN P.C.B. (1)
LINE OUT
LINE IN
MAIN P.C.B. (2)
L
PB LEVEL
(10K)
VR1
VR2
R
TP1
L
VR11
L
VR13
L1
HX-PRO
REC BIAS
(HIGH)
REC BIAS
(NORMAL)
L2
R
TP2
VR12
R
R
VR14
IC11
IC9
CB2
CB301
VR9
L
REC LEVEL
IC13
IC6
R
VR10
VR7
VR8
L
R
REC H.F.L
(METAL)
BIAS ADJUST
PLAY TRIM
BALANCE
REC
LEVEL
PHONES — LEVEL
VR301
L
FI301
L
IC301
BIAS
LEAK
PB LEVEL
(315)
FI302
R
VR302
R

<Recording section>

Step	Item to be Adjusted	Tape	Instrument required	Mode	Measurement conditions	Points of measurement	Adjustment parts	Rating
1	HX PRO	AC-514 High (CrO_2)	DCVM	REC/ PLAY		TP1 (L)~G TP2 (R)~G	L1 (L ch) L2 (R ch)	Adjust L1 and L2 so that the DC voltage is minimized at TP1(L ch) and TP2(R ch).
2	Bias Leakage	AC-514 High (CrC_2)	ACVM	REC/ PLAY MONI-TOR ON (TAPE)	1. Set PLAY TRIM to maximum. 2. Set DOLBY NR to S ON. (With no signal applied)	LINE OUT	FI301 (L ch) FI302 (R ch)	Line out levels is minimized.
3	Recording level	AC-514 High (CrO_2) Side B	ACVM Audio frequency oscillator	REC MONI-TOR ON (TAPE)	1. Set REC LEVEL to maximum. 2. Input 315Hz Signal to LINE IN TERMI-NAL from Audio Fre-quency Oscillator. Adjust output level of Audio Frequency Oscillator so that the voltage of LINE OUT TERMINAL becomes -25dBV.	LINE OUT	VR9 (L ch) VR10 (R ch)	Adjust for equal level of the record and playback levels. (–25 ± 0.3 dBV)
4	Recording bias (Total frequency response)	AC-514 High (CrO_2) Side B	ACVM Audio frequency oscillator	REC MONI-TOR ON (TAPE)	1. Set REC LEVEL to maximum. 2. Input 12.5kHz Signal to LINE IN TERMI-NAL from Audio Fre-quency Oscillator. Adjust output level of Audio Frequency Oscillator so that the voltage of LINE OUT TERMINAL becomes -25dBV.	LINE OUT	VR11 (L ch) VR12 (R ch)	Adjust for equal level of the record and playback levels. (-25 ± 0.5 dBV)
		AC-225 Normal (LH) Side B					VR13 (L ch) VR14 (R ch)	Adjust for equal level of the record and playback levels. (Fig.7)
		AC-713 METAL Side B					VR7 (L ch) VR8 (R ch)	
5	Confirmation of recorded level	AC-514 High (CrO_2) Side B AC-713 METAL Side B AC-225 Normal (LH) Side B	ACVM Audio frequency oscillator	REC		LINE OUT		Confirm recorded level rating as in step 3 When recorded level rating is improper, go back to step 3 and also carry out con-firmation in step 5 again.

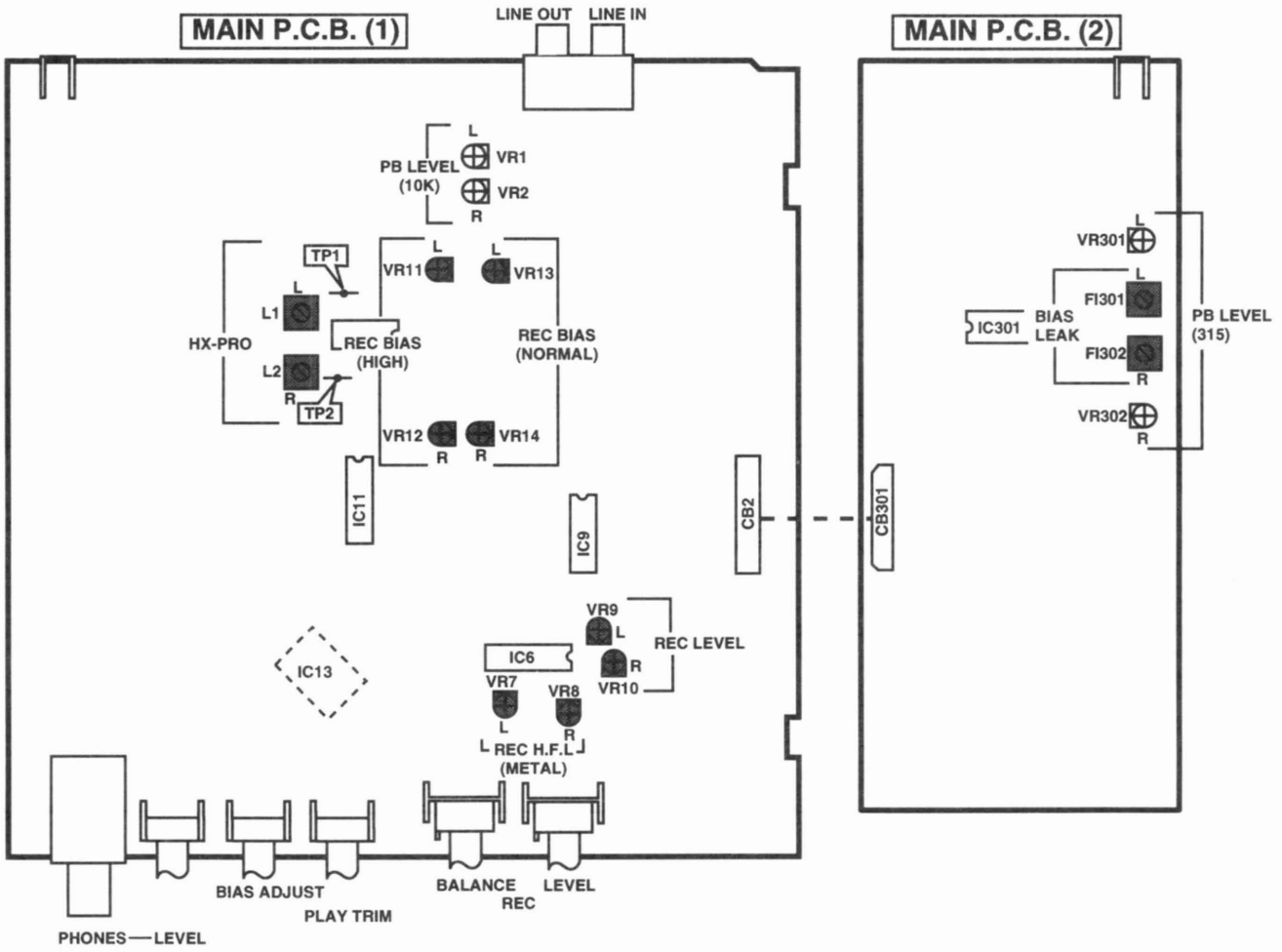
● TOTAL FREQUENCY RESPONSE (-20dB)



NR : NR off / Dolby B NR on / Dolby C NR on
(B&C NR : Reference level must be recorded level.)
TAPE : Normal (LH) /High (CrO_2) / METAL

Fig.7

● TEST POINT



● TEST MODE (DISPLAY Check)

To enter the test mode, start with the power off, while holding down the RESET key and the MONITOR key, press the power switch on.

POWER SW + RESET KEY + MONITOR KEY — Test mode ON

↓

MODE 1 — All DISPLAY light on check. (GRID and SEGMENT open check)

↓ Press the RESET KEY

MODE 2 — DISPLAY GRID and SEGMENT short check. (Fig. 8 is OK)

↓ Press the RESET KEY again or switch power OFF and ON again

Normal MODE

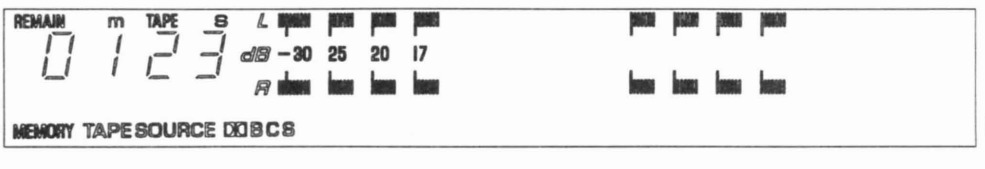


Fig. 8

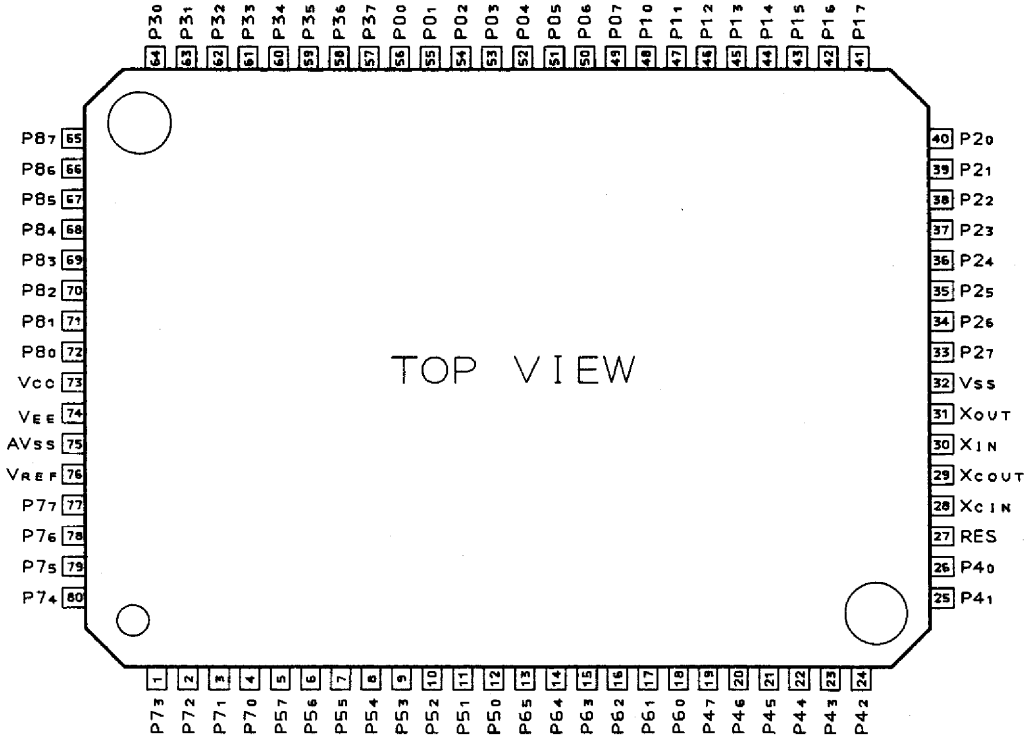
● CLEANING MODE

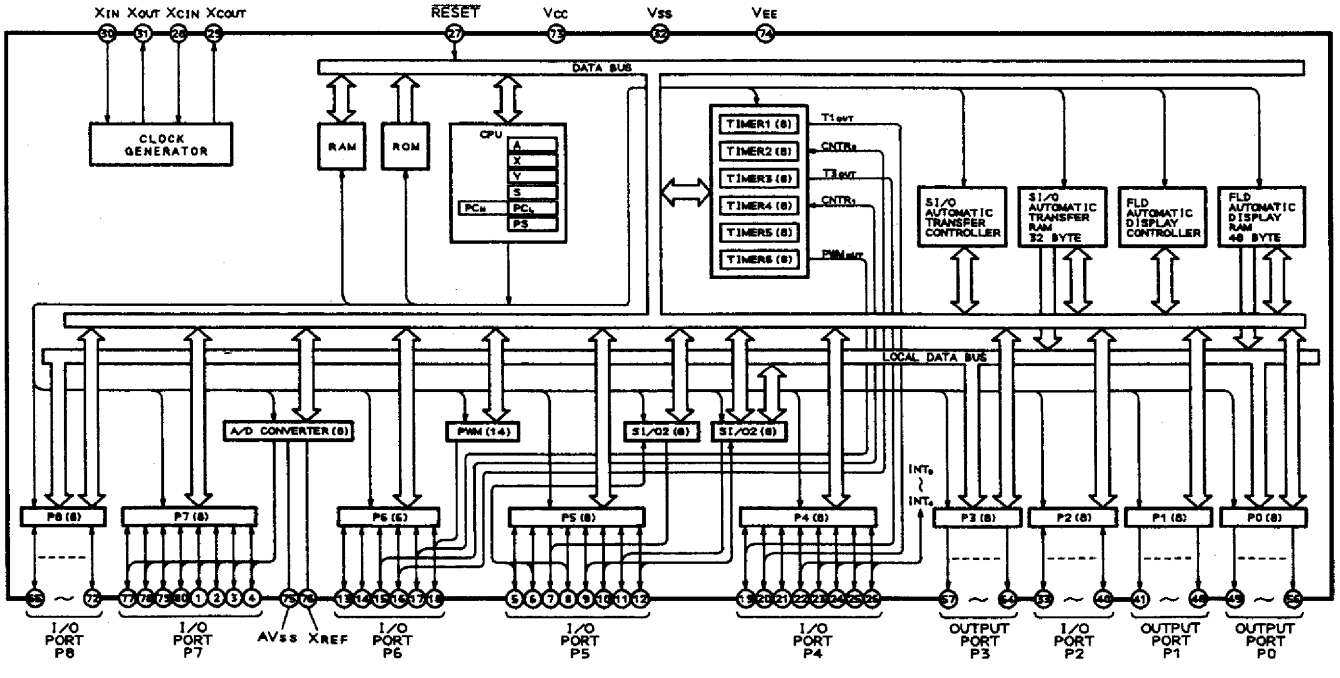
(Playback mode without a cassette tape.)

- To enter the CLEANING MODE, press the RESET KEY, MUTE/SEARCH KEY and the PLAY KEY simultaneously.
- To escape from this mode, press the STOP KEY.

■ μ-COM DATA / マイコンデータ

IC13 : M38172M4-501FP
8 bit μ-COM





No.	Port	I/O	Function	Logic
1	P73	I	OPERATION 1	
2	P72	I	TIMER SW	
3	P71	I	MECHA. SW 1	
4	P70	I	MECHA. SW 2	
5	P57	I	REEL PULSE (TAKE UP)	
6	P56	I	REEL PULSE (SUPPLY)	
7	P55	O	ASSIST MOTOR +	
8	P54	O	ASSIST MOTOR –	
9	P53	O	REEL MOTOR +	
10	P52	O	REEL MOTOR –	
11	P51	O	OPEN	
12	P50	O	REEL MOTOR VOLTAGE CONTROL	H:PLAY
13	P65	O	MID/HIGH RANGE CONTROL 3	
14	P64	O	MID/HIGH RANGE CONTROL 2	
15	P63	O	MID/HIGH RANGE CONTROL 1	
16	P62	O	MID-RANGE CONTROL 4	
17	P61	O	MID-RANGE CONTROL 3	
18	P60	O	MID-RANGE CONTROL 2	
19	P47	O	MID-RANGE CONTROL 1	
20	P46	O	SQUARE WAVE	
21	P45	O	FREQUENCY SELECT 1	H:4&12.5KHz
22	P44	O	FREQUENCY SELECT 2	H:4KHz
23	P43	O	FREQUENCY SELECT 3	H:488Hz
24	P42	I	CASSETTE SW	
25	P41	I	REMOTE CONTROL	INT1
26	P40	I	POWER PULSE	INT0
27	RES		RESET	
28	X_{CIN}		GND	
29	X_{COUT}		OPEN	
30	X_{IN}		4MHz	
31	X_{OUT}		4MHz	
32	V_{SS}		GND	
33	P27	O	BIAS CONTROL (Lch-4)	
34	P26	O	BIAS CONTROL (Lch-3)	
35	P25	O	BIAS CONTROL (Lch-2)	
36	P24	O	BIAS CONTROL (Lch-1)	
37	P23	O	BIAS CONTROL (Rch-4)	
38	P22	O	BIAS CONTROL (Rch-3)	
39	P21	O	BIAS CONTROL (Rch-2)	
40	P20	O	BIAS CONTROL (Rch-1)	

No.	Port	I/O	Function	Logic
80	P74	I	OPERATION 2	
79	P75	I	OPERATION 3	
78	P76	I	METER (Lch)	
77	P77	I	METER (Rch)	
76	V_{REF}		+5V	
75	AV_{SS}		GND	
74	V_{EE}		-21V	
73	V_{CC}		+5V	
72	P80	O	BIAS ON / OFF	H:ON
71	P81	O	TAPE SELECTOR (NORMAL)	H:ON
70	P82	O	TAPE SELECTOR (HIGH)	H:ON
69	P83	O	TAPE SELECTOR (METAL)	H:ON
68	P84	O	DOLBY-C	H:C
67	P85	O	DOLBY-ON	H:ON
66	P86	O	DOLBY-S	L:S
65	P87	O	MPX	H:ON
64	P30	O	LINE MUTE	H:ON
63	P31	O	REC MUTE	H:ON
62	P32	O	TAPE / SOURCE	L:TAPE
61	P33	O	AUTO TAPE TUNING	L:ON
60	P34	O	SEGMENT 1	
59	P35	O	SEGMENT 2	
58	P36	O	SEGMENT 3	
57	P37	O	SEGMENT 4	
56	P00	O	SEGMENT 5	
55	P01	O	SEGMENT 6	
54	P02	O	SEGMENT 7	
53	P03	O	SEGMENT 8	
52	P04	O	SEGMENT 9	
51	P05	O	SEGMENT 10	
50	P06	O	DIGIT 10	
49	P07	O	DIGIT 9	
48	P10	O	DIGIT 8	
47	P11	O	DIGIT 7	
46	P12	O	DIGIT 6	
45	P13	O	DIGIT 5	
44	P14	O	DIGIT 4	
43	P15	O	DIGIT 3	
42	P16	O	DIGIT 2	
41	P17	O	DIGIT 1	

■ PRINTED CIRCUIT BOARD (Foil side) / シート図（パターン側）

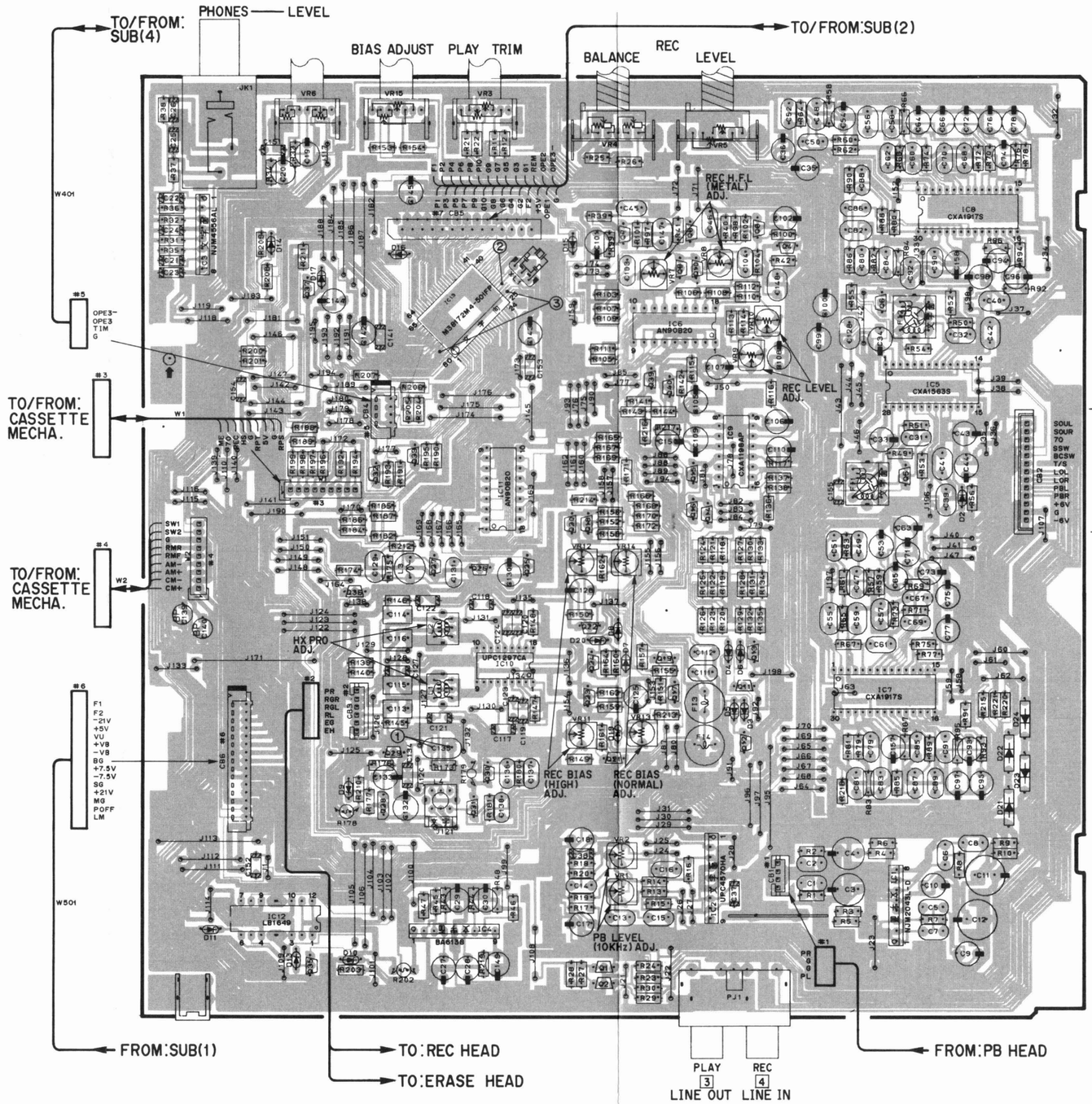
①~③ : TEST POINT WAVEFORMS(See page 22) /①~③：波形ポイント（20 ページ参照）

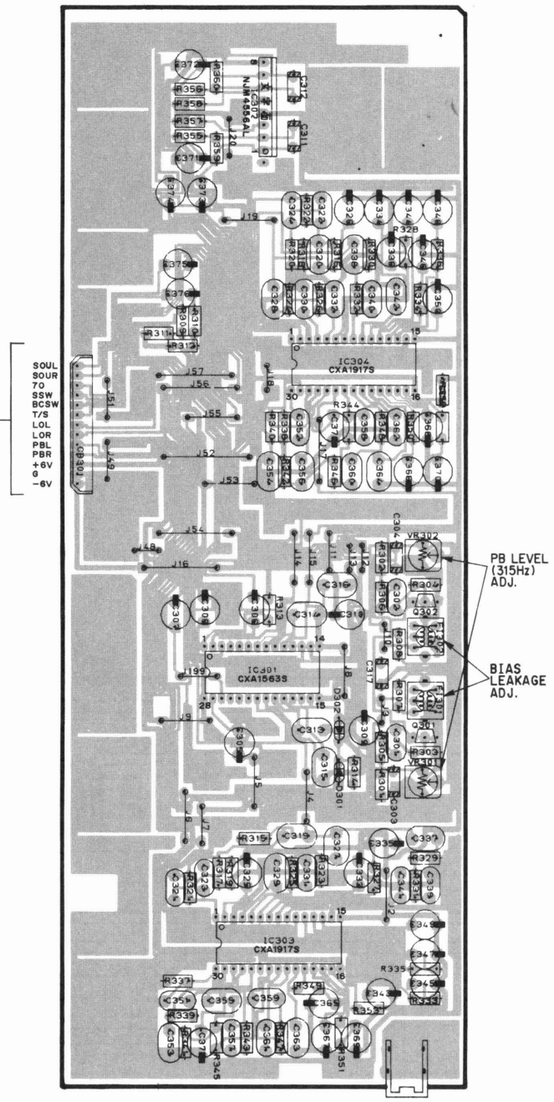
MAIN P. C. B. (1)

MAIN P. C. B. (2)

● Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D2	F3	Q1	D5
D3	E4	Q2	D5
D4	E4	Q3	E2
D5	E4	Q4	E2
D6	E4	Q5	F3
D7	D4	Q6	F2
D8	D4	Q7	D2
D9	C4	Q8	E2
D10	C5	Q9	E2
D11	C5	Q10	E2
D13	C5	Q11	E4
D14	C2	Q12	E4
D15	D2	Q13	E4
D16	D2	Q14	E3
D17	C2	Q15	E3
D19	D4	Q16	E3
D20	D4	Q17	E4
D21	F4	Q18	D3
D22	F4	Q19	E4
D23	F4	Q20	D3
D24	F4	Q21	D4
D301	H4	Q22	D4
D302	H4	Q23	D4
IC1	F5	Q24	D4
IC2	E5	Q25	D3
IC3	C2	Q26	D3
IC4	D4	Q27	D3
IC5	F3	Q28	D4
IC6	E3	Q29	D4
IC7	F4	Q30	D4
IC8	F2	Q31	D4
IC9	E3	Q32	D3
IC10	D4	Q33	D3
IC11	D3	Q35	C5
IC12	C5	Q36	C4
IC13	D2	Q37	C2
IC301	G4	Q39	E3
IC302	G2	Q40	E3
IC303	G5	Q301	H4
IC304	H3	Q302	H4

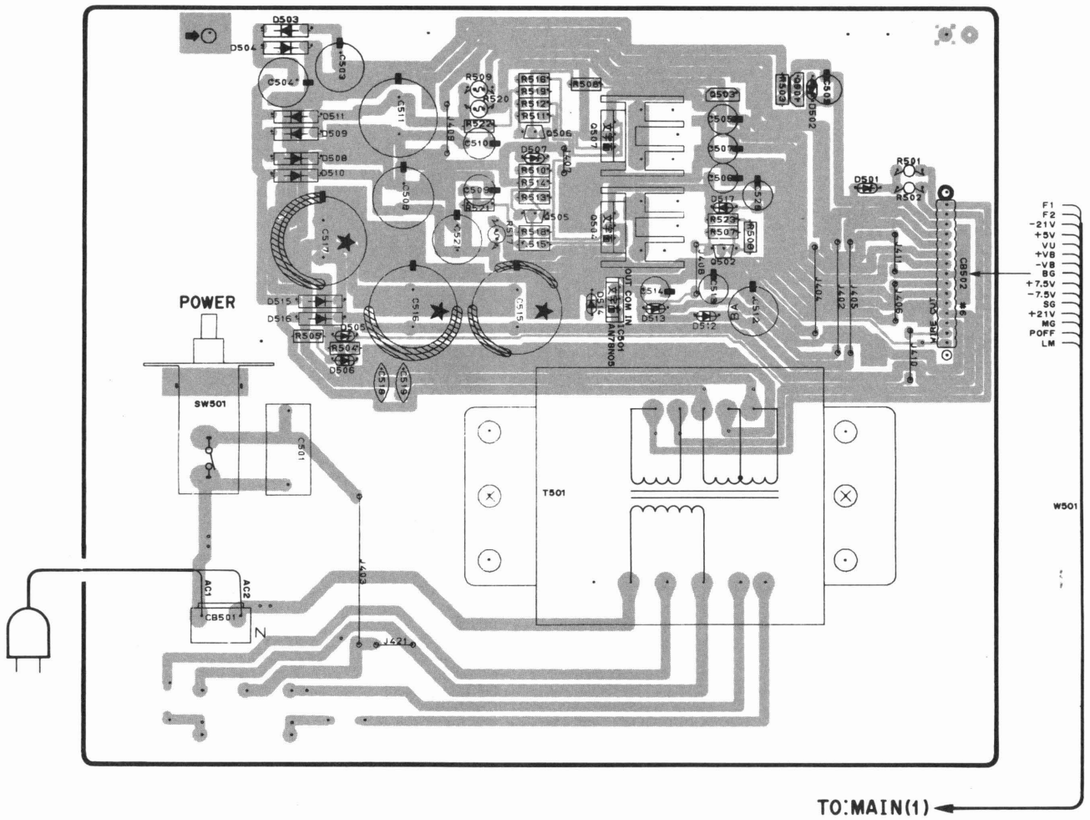




■ PRINTED CIRCUIT BOARD (Foil side) / シート図（パターン側）

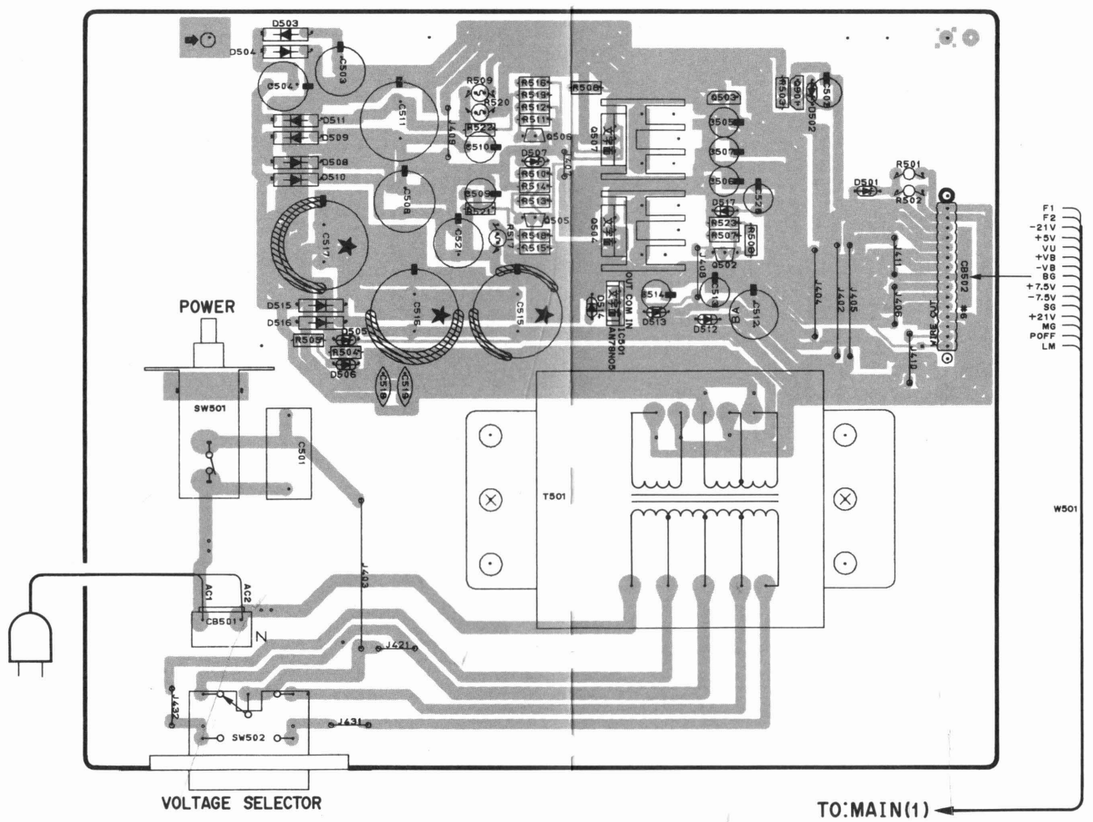
● U,C,B,G,A,J models

SUB P. C. B. (1)

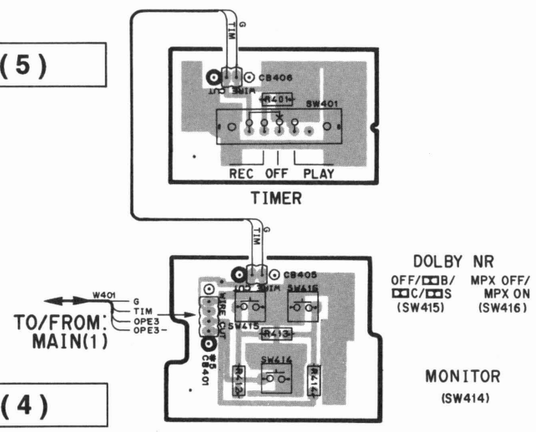


● R model

SUB P. C. B. (1)

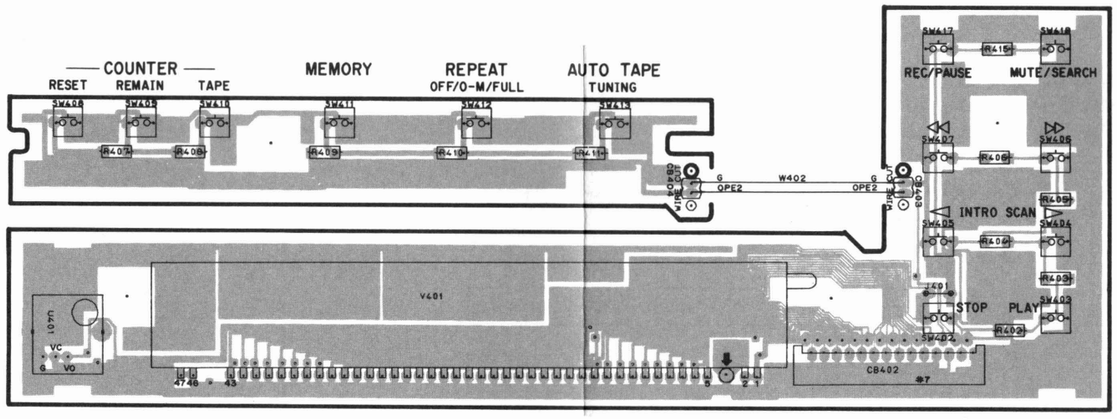


SUB P. C. B. (5)



SUB P. C. B. (4)

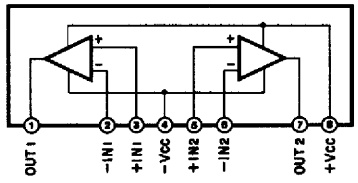
SUB P. C. B. (3)



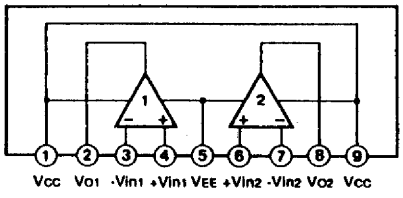
SUB P. C. B. (2)

■ IC BLOCK / IC ブロックダイアグラム

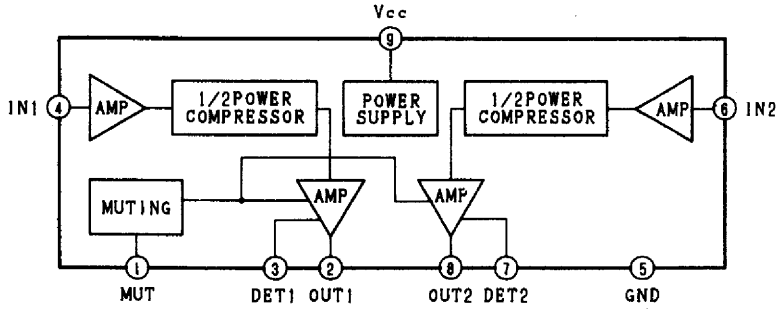
IC1 : NJM2043L-D
IC3, 302 : NJM4556AL
Dual OP-Amp



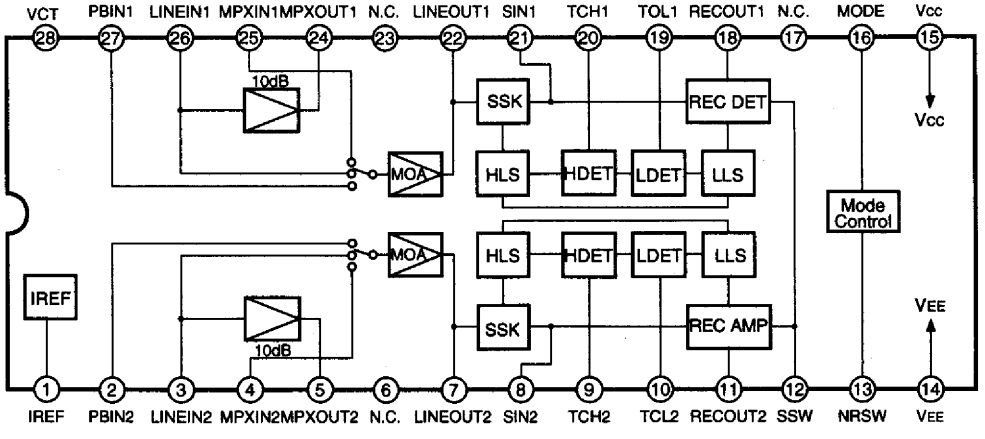
IC2 : μPC4570HA
Dual OP-Amp



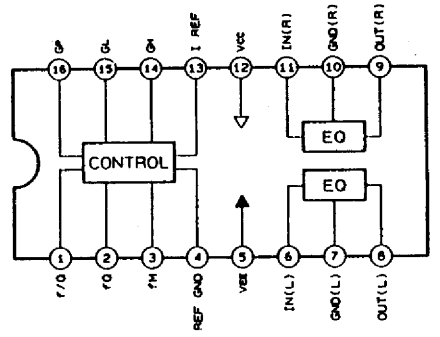
IC4 : BA6138
Dual 1/2 Compressor



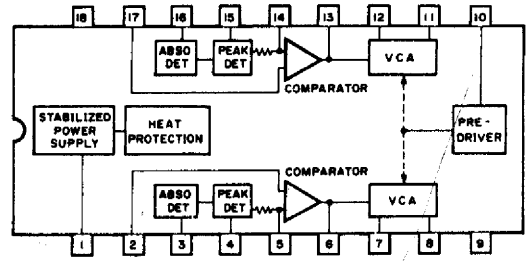
IC5, 301 : CXA1563S
Dolby S-Type Selection Switch built-in,
Dolby B & C-Type Noise Reduction Processor



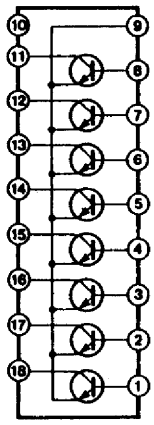
IC9 : CXA1198AP
Recording Equalizer Amp



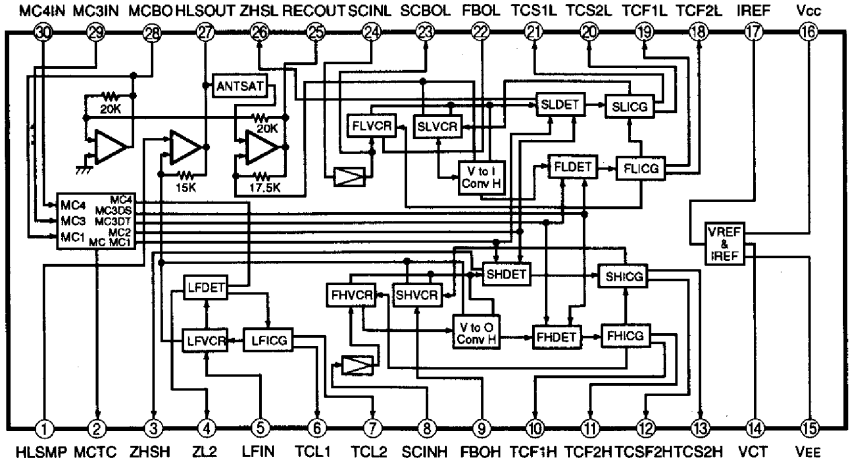
IC10: μPC1297CA
Dolby HX PRO



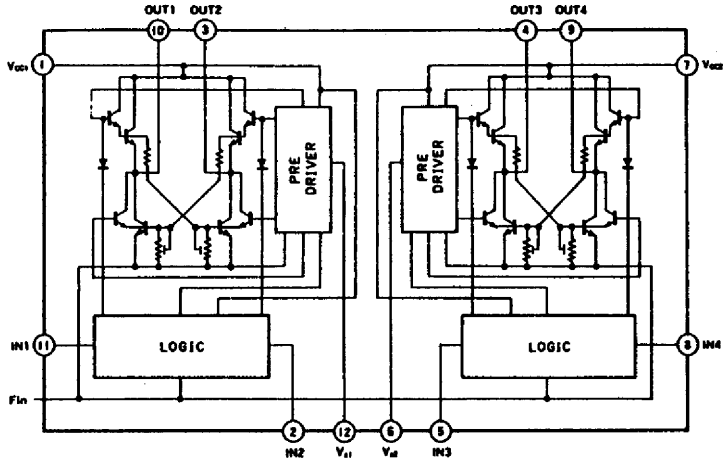
IC6, 11 : AN90B20
Transistor Arrey



IC7, 8, 303, 304 : CXA1917S
Dolby S-Type Noise Reduction Processor

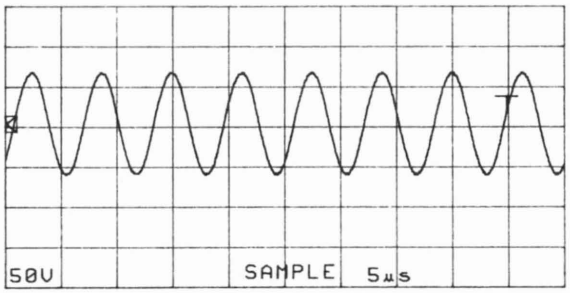


IC12 : LB1649
Motor Drive

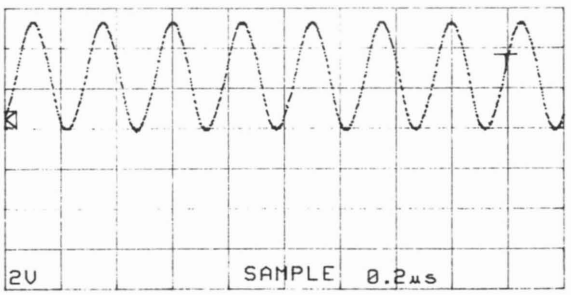


■ TEST POINT WAVEFORMS / 波形ポイント

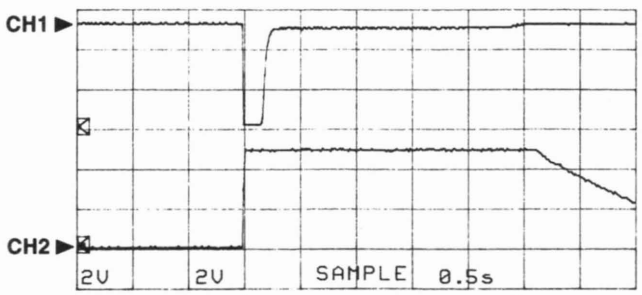
Point ①
(C135 REC MODE)
V : 50V/div H : 5µsec/div
AC range 1 : 1probe



Point ②
(Pin 30 of IC13)
V : 2V/div H : 0.2µsec/div
DC range 1 : 1probe



Point ③
(CH1 : Pin 27 of IC13
CH2 : Pin 76 of IC13)
V : 2V/div H : 0.5sec/div
DC range 1 : 1probe



With the POWER switch turned ON, connect the power cord to the AC outlet.

Disconnect the power cord from the AC outlet.

(This waveform is not available by pushing the power switch ON and OFF.)

■ DISPLAY DATA / ディスプレイデータ

● V401 : BJ460GK

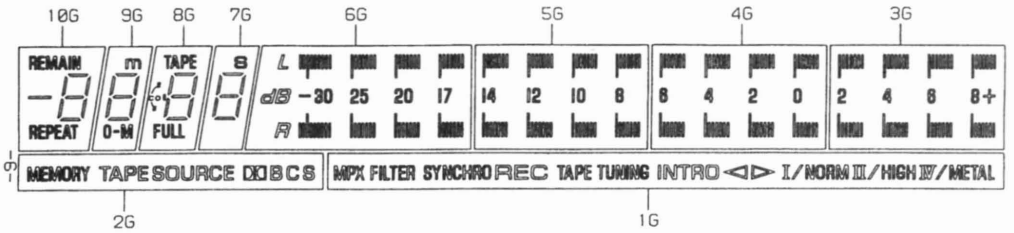
• PIN CONNECTION

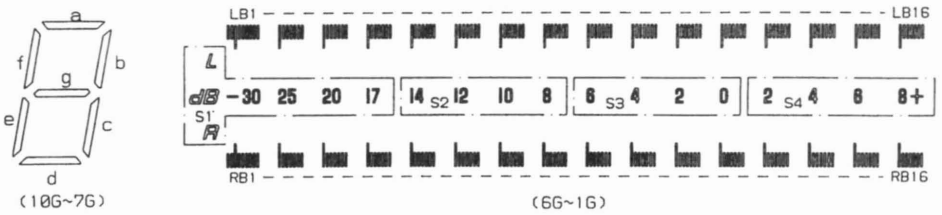
Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
CONNECTION	F1	F1	NP	NP	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

Pin No.	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
CONNECTION	NC	NC	NC	NC	NC	NC	NC	NC	NC	10G	9G	8G	7G	6G	SG	4G	3G	2G	1G	NP	NP	F2	F2

NOTE 1) F1, F2 ..... Filament
2) NP ..... No pin
3) NC ..... No connection
4) DL ..... Datum Line
5) 1G~10G ..... Grid
6)Angle of visual field
..... 30°min. on upper side.
..... 30°min. on lower side.

• GRID ASSIGNMENT

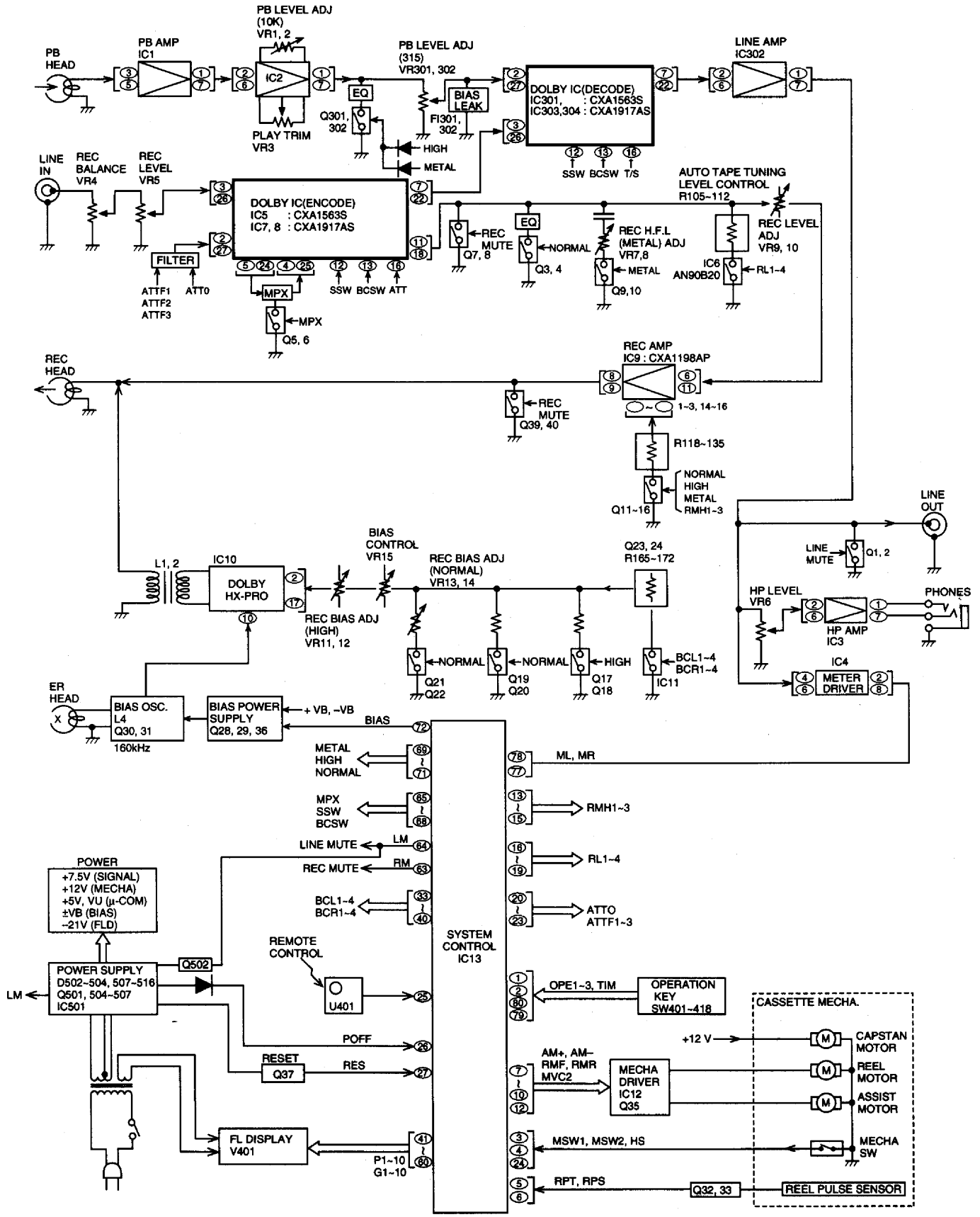




• ANODE CONNECTION

	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	a	a	a	a	LB1	LB5	LB9	LB13	MEMORY	MPX FILTER
P2	b	b	b	b	LB2	LB6	LB10	LB14	—	SYNCHRO
P3	c	c	c	c	LB3	LB7	LB11	LB15	—	REC
P4	d	d	d	d	LB4	LB8	LB12	LB16	—	TAPE TUNING
P5	e	e	e	e	RB1	RB5	RB9	RB13	TAPE	INTRO
P6	f	f	f	f	RB2	RB6	RB10	RB14	SOURCE	◁
P7	g	g	g	g	RB3	RB7	RB11	RB15	DD	▷
P8	REPEAT	0-M	FULL	—	RB4	RB8	RB12	RB16	B	I/NORM
P9	REMAIN	m	TAPE	S	S1	S2	S3	S4	C	II/HIGH
P10	—	—	—	—	—	—	—	—	S	IV/METAL

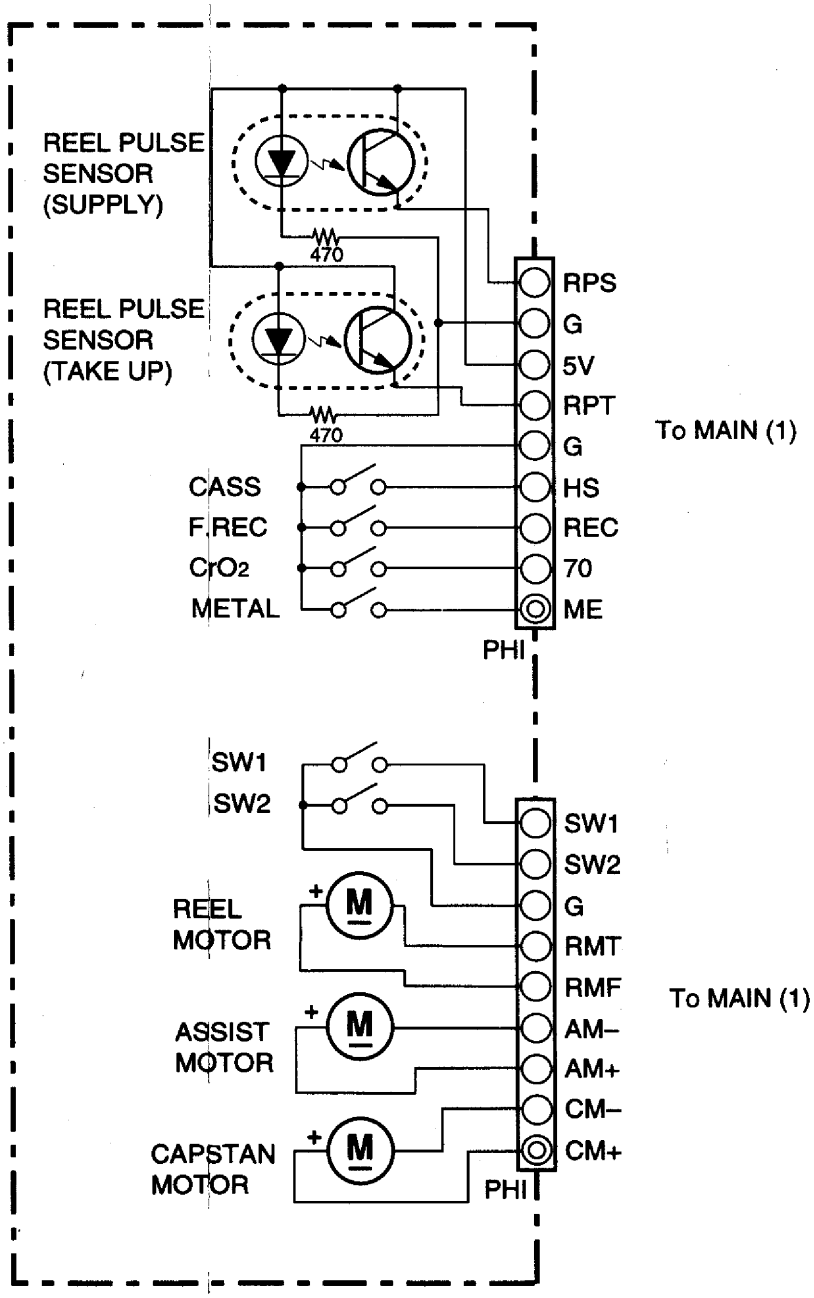
■ BLOCK DIAGRAM / ブロックダイアグラム



■ SCHEMATIC DIAGRAM / 総回路図

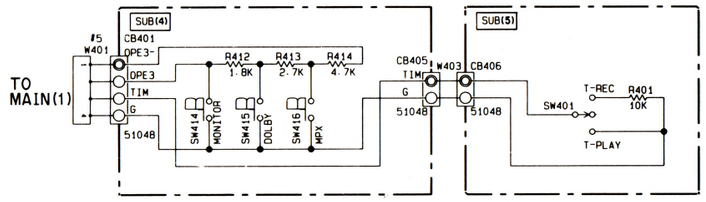
● ▒▒▒▒ marked voltages are measured using LH tape in the PLAY mode (no-signal condition) /
▒▒▒▒ 印の電圧は、ノーマルテープでPLAY状態での電圧です。(無信号)

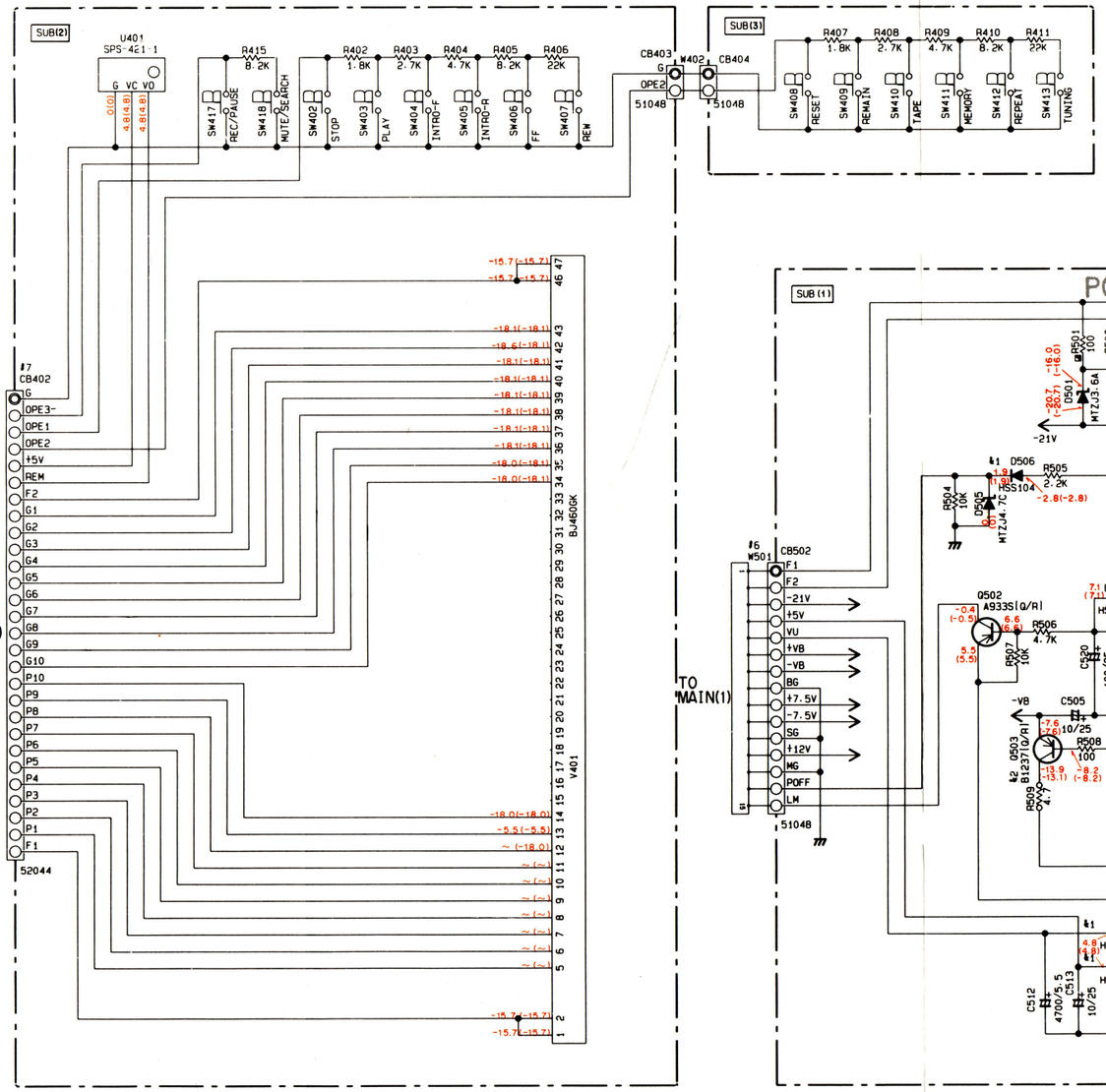
● CASSETTE MECHA.

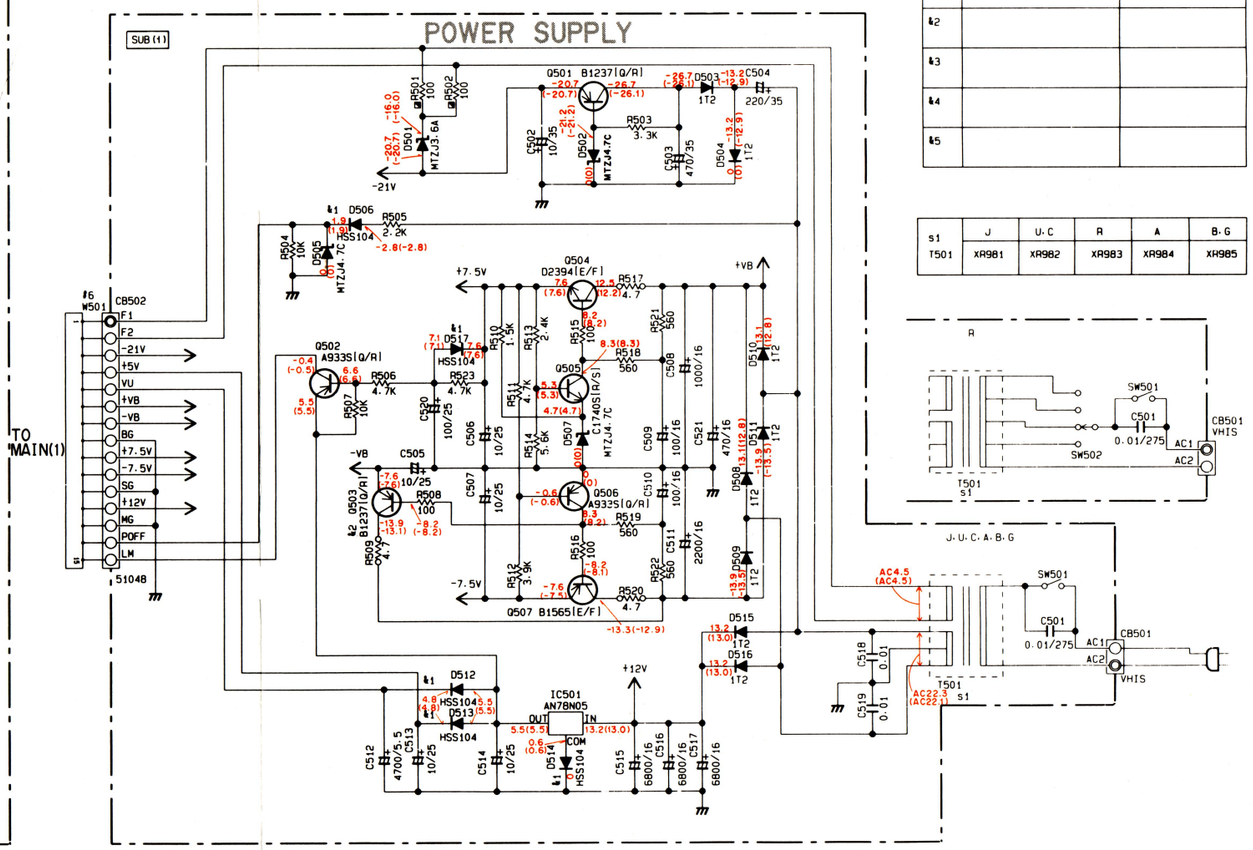


■SCHEMATIC DIAGRAM / 総回路図

● The voltages are measured using LH tape in the PLAY mode (no-signal condition) Only the voltages in ( ) are in the REC mode. ／
各電圧は、ノーマルテープでPLAY状態での電圧です。（無信号）ただし（　　）の電圧値は、REC状態です。







RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
⊘	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
◪	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

CAPACITOR

REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	‡
⊗	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	‡‡
◉	CERAMIC TUBULAR CAPACITOR	
◎	POLYESTER FILM CAPACITOR	
○	POLYSTYRENE FILM CAPACITOR	
Ⓘ	MICA CAPACITOR	
Ⓟ	POLYPROPYLENE FILM CAPACITOR	
●	SEMICONDUCTIVE CERAMIC CAPACITOR	

Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
‡1	0506·512-514·517	HSS104 1SS133 1SS176
‡2		
‡3		
‡4		
‡5		

PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICS.

2SA933S (Q, R) 2SC1740S (R, S)	2SB1237 (Q, R)	2SD2394(E, F) 2SB1565(E,F)	1T2 1SS133 1SS176 HSS104 MTZJ4.7C MTZJ22B	AN78N05
B C E	B C E	B C E	Anode / Cathode	IN COM OUT

★ *All voltages are measured with a 10MΩ/V DC electric volt meter.*
★ *Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.*
★ *Schematic diagram is subject to change without notice.*

● 電圧は、内部抵抗 10M Ωの電圧計で測定したものです。
● ⚠印のある部品は、安全性確保部分を示しています。部品の交換が必要な場合、パーツリストに記載されている部品を使用してください。
● 本回路図は、標準回路図です。改良のため予告なく変更することがあります。

■ SCHEMATIC DIAGRAM / 総回路図

● The voltages are measured using LH tape in the PLAY mode (no-signal condition) Only the voltages in ( ) are in the REC mode. ／各電圧は、ノーマルテープでPLAY状態での電圧です。(無信号) ただし ( ) の電圧値は、REC状態です。

①-③ : TEST POINTWAVEFORMS (See page 22) ／①～③ : 波形ポイント (20 ページ参照)

PLAY mode	REC mode
DOLBY NR : OFF	DOLBY NR : DOLBY B ON
TAPE : LH	TAPE : METAL

RESISTOR

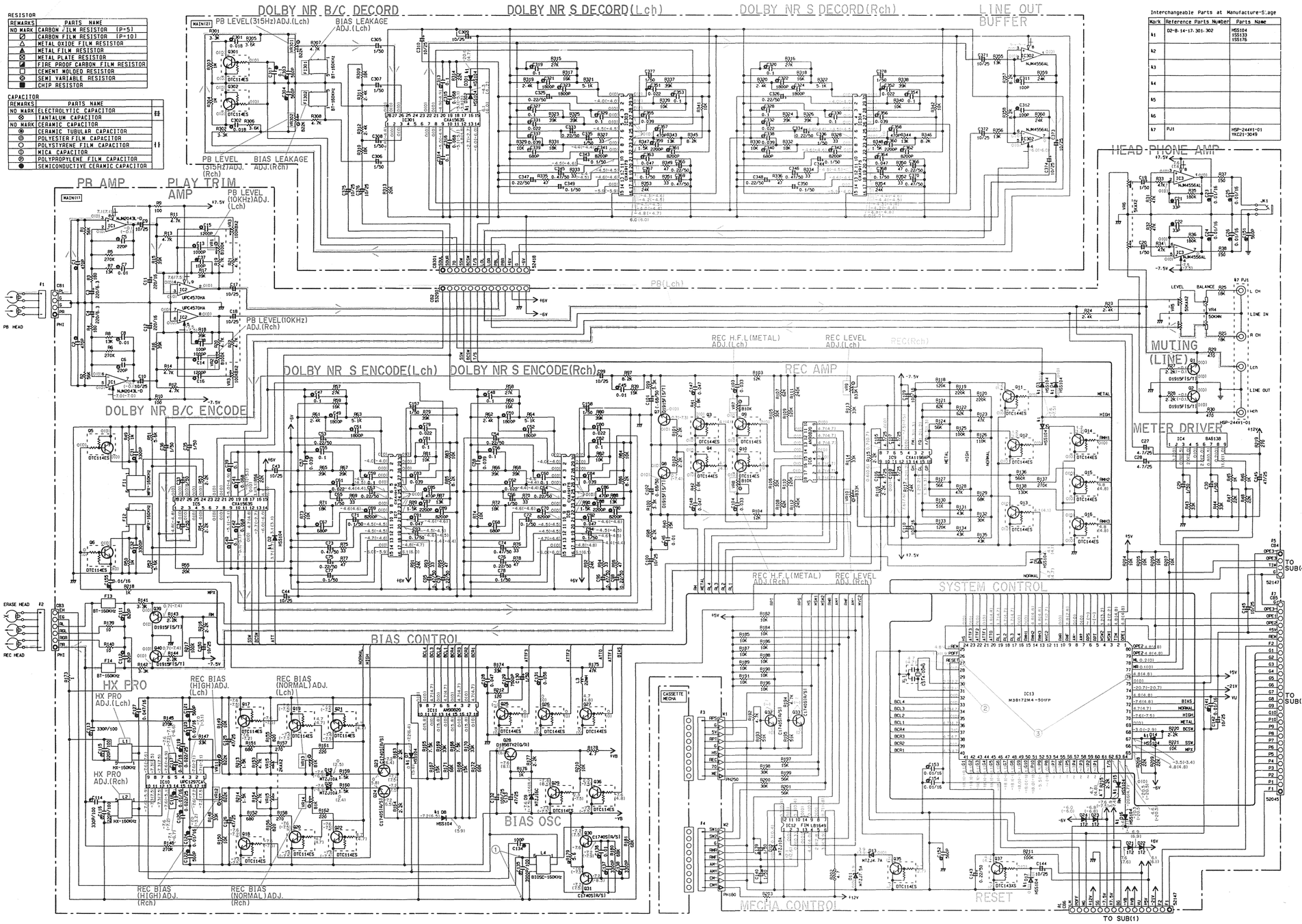
REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
∅	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
◪	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

CAPACITOR

REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊗	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
◉	CERAMIC TUBULAR CAPACITOR
◎	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
①	MICA CAPACITOR
⊘	POLYPROPYLENE FILM CAPACITOR
●	SEMICONDUCTIVE CERAMIC CAPACITOR

Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
k1	D2-B.14-17.301-302	HSS104 1SS133 1SS176
k2		
k3		
k4		
k5		
k6		
k7	PJ1	HSP-244Y1-01 YKZ21-3049



PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICS.

2SC1740S (R, S) 2SD1915F (S, T) DTA114ES DTC114ES DTC143XS DTC144ES	2SD1858 (Q, R)	1T2 1SS133 1SS176 HSS104 MTZJ4.7A MTZJ7.5A MTZJ10A MTZJ16C	NJM45586AL NJM2043L-D	µPC4570HA	BA6138	LB1649	CXA1198AP	µPC1297CA AN90B20	CXA1563S	CXA1917AS	M38172M4-501FP

** All voltages are measured with a 10MΩ/V DC electric volt meter.*
** Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.*
** Schematic diagram is subject to change without notice.*

● 電圧は、内部抵抗 10M Ωの電圧計で測定したものです。
● ⚠印のある部品は、安全性確保部分を示しています。部品の交換が必要な場合、パーツリストに記載されている部品を使用してください。
● 本回路図は、標準回路図です。改良のため予告なく変更することがあります。

PARTS LIST

■ ELECTRICAL PARTS

■ **WARNING**
Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.

- Carbon resistors (1/6W or 1/4W) are not included in the ELECTRICAL PARTS List. For the parts No. of the carbon resistore,refer to last page.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS:

C. A. EL. CHP	: CHIP ALUMI. ELECTROLYTIC CAP
C. CE	: CERAMIC CAP
C. CE. ARRAY	: CERAMIC CAP ARRAY
C. CE. CHP	: CHIP CERAMIC CAP
C. CE. ML	: MULTILAYER CERAMIC CAP
C. CE. M. CHP	: CHIP MULTILAYER CERAMIC CAP
C. CE. SAFTY	: RECOGNIZED CERAMIC CAP
C. CE. TUBLR	: CERAMIC TUBULAR CAP
C. CE. SMI	: SEMI CONDUCTIVE CERAMIC CAP
C. EL	: ELECTROLYTIC CAP
C. MICA	: MICA CAP
C. ML. FLM	: MULTILAYER FILM CAP
C. MP	: METALLIZED PAPER CAP
C. MYLAR	: MYLAR FILM CAP
C. MYLAR. ML	: MULTILAYER MYLAR FILM CAP
C. PAPER	: PAPER CAPACITOR
C. PLS	: POLYSTYRENE FILM CAP
C. POL	: POLYESTER FILM CAP
C. POLY	: POLYETHYLENE FILM CAP
C. PP	: POLYPROPYLENE FILM CAP
C. TNTL	: TANTALUM CAP
C. TNT. CHP	: CHIP TANTALUM CAP
C. TRIM	: TRIMMER CAP
CN	: CONNECTOR
CN. BS. PIN	: CONNECTOR, BASE PIN
CN. CANNON	: CONNECTOR, CANNON
CN. DIN	: CONNECTOR, DIN
CN. FLAT	: CONNECTOR, FLAT CABLE
CN. POST	: CONNECTOR, BASE POST
COIL. MX. AM	: COIL, AM MIX
COIL. AT. FM	: COIL, FM ANTENNA
COIL. DT. FM	: COIL, FM DETECT
COIL. MX. FM	: COIL, FM MIX
COIL. OUTPT	: OUTPUT COIL
DIOD. ARRAY	: DIODE ARRAY
DIODE. BRG	: DIODE BRIDGE
DIODE. CHP	: CHIP DIODE
DIODE. VAR	: VARACTOR DIODE
DIOD. Z. CHP	: CHIP ZENER DIODE
DIODE. ZENR	: ZENER DIODE
DSCR. CE	: CERAMIC DISCRIMINATOR
FER. BEAD	: FERRITE BEADS
FER. CORE	: FERRITE CORE
FET. CHP	: CHIP FET
FL. DSPLY	: FLUORESCENT DISPLAY
FLTR. CE	: CERAMIC FILTER
FLTR. COMB	: COMB FILTER MODULE
FLTR. LC. RF	: LC FILTER, EMI
GND. MTL	: GROUND PLATE
GND. TERM	: GROUND TERMINAL
HOLDER. FUS	: FUSE HOLDER
IC. PRTCT	: IC PROTECTOR
JUMPER. CN	: JUMPER CONNECTOR
JUMPER. TST	: JUMPER, TEST POINT
L. DTCT	: LIGHT DETECTING MODULE
L. EMIT	: LIGHT EMITTING MODULE
LED. DSPLY	: LED DISPLAY
LED. INFRD	: LED, INFRARED
MODUL. RF	: MODULATOR, RF
PHOT. CPL	: PHOTO COUPLER
PHOT. INTR	: PHOTO INTERRUPTER
PHOT. RFLCT	: PHOTO REFLECTOR
PIN. TEST	: PIN, TEST POINT
PLST. RIVET	: PLASTIC RIVET
R. ARRAY	: RESISTOR ARRAY
R. CAR	: CARBON RESISTOR
R. CAR. CHP	: CHIP RESISTOR
R. CAR.FP	: FLAME PROOF CARBON RESISTOR
R. FUS	: FUSABLE RESISTOR
R. MTL. CHP	: CHIP METAL FILM RESISTOR
R. MTL. FILM	: METAL FILM RESISTOR
R. MTL. OXD	: METAL OXIDE FILM RESISTOR
R. MTL. PLAT	: METAL PLATE RESISTOR
RSNR. CE	: CERAMIC RESONATOR
RSNR. CRYS	: CRYSTAL RESONATOR
R. TW. CEM	: TWIN CEMENT FIXED RESISTOR
R. WW	: WIRE WOUND RESISTOR
SCR. BND. HD	: BIND HEAD B-TITE SCREW
SCR. BW. HD	: BW HEAD TAPPING SCREW
SCR. CUP	: CUP TITE SCREW
SCR. TERM	: SCREW TERMINAL
SCR. TR	: SCREW, TRANSISTOR
SUPRT. PCB	: SUPPORT, P. C. B.
SURG. PRTCT	: SURGE PROTECTOR
SW. TACT	: TACT SWITCH
SW. LEAF	: LEAF SWITCH
SW. LEVER	: LEVER SWITCH
SW. MICRO	: MICRO SWITCH
SW. PUSH	: PUSH SWITCH
SW. RT. ENC	: ROTARY ENCODER
SW. RT. MTR	: ROTARY SWITCH WITH MOTOR
SW. RT	: ROTARY SWITCH
SW. SLIDE	: SLIDE SWITCH
TERM. SP	: SPEAKER TERMINAL
TERM. WRAP	: WRAPPING TERMINAL
THRMST. CHP	: CHIP THERMISTOR
TR. CHP	: CHIP TRANSISTOR
TR. DGT	: DIGITAL TRANSISTOR
TR. DGT. CHP	: CHIP DIGITAL TRANSISTOR
TRANS	: TRANSFORMER
TRANS. PULS	: PULSE TRANSFORMER
TRANS. PWR	: POWER TRANSFORMER ASS'y
TUNER. AM	: TUNER PACK, AM
TUNER. FM	: TUNER PACK, FM
TUNER. PK	: FRONT-END TUNER PACK
VR	: ROTARY POTENTIOMETER
VR. MTR	: POTENTIOMETER WITH MOTOR
VR. SW	: POTENTIOMETER WITH ROTARY SW
VR. SLIDE	: SLIDE POTENTIOMETER
VR. TRIM	: TRIMMER POTENTIOMETER

Note) Those parts marked with "#" are not included in the P. C. B. Ass'y.

MAIN P.C.B.

Schm No.	PART NO.	Description		
*	VU611900	P.C.B.	MAIN	
CB1	VD004700	CN. BS. PIN	4P	
CB2	VQ963400	CN. BS. PIN	13P	
CB3	VD004900	CN. BS. PIN	6P	
CB4	VK024800	CN. BS. PIN	4P	
CB5	VN773600	CN. BS. PIN	28P	
CB6	VF667600	CN. BS. PIN	15P	
CB301	VQ961600	CN	13P	
C1	UA652470	C. MYLAR	470pF	50V
C2	UA652470	C. MYLAR	470pF	50V
C3	VH619100	C. EL	220uF	6. 3V
C4	VH619100	C. EL	220uF	6. 3V
C5	UA652220	C. MYLAR	220pF	50V
C6	UA652220	C. MYLAR	220pF	50V
C7	UA654100	C. MYLAR	0. 01uF	50V
C8	UA654100	C. MYLAR	0. 01uF	50V
C9	UM417100	C. EL	10uF	50V
C10	UM417100	C. EL	10uF	50V
C11	VH620400	C. EL	220uF	16V
C12	VH620400	C. EL	220uF	16V
C13	UA653100	C. MYLAR	1000pF	50V
C14	UA653100	C. MYLAR	1000pF	50V
C15	UA653120	C. MYLAR	1200pF	50V
C16	UA653120	C. MYLAR	1200pF	50V
C17	UM417100	C. EL	10uF	50V
C18	UM417100	C. EL	10uF	50V
C19	VJ839100	C. EL	1uF	50V
C20	VJ839100	C. EL	1uF	50V
C21	VG277000	C. CE. TUBLR	33pF	50V
C22	VG277000	C. CE. TUBLR	33pF	50V
C23	VF467300	C. CE. TUBLR	0. 01uF	16V
C24	VF467300	C. CE. TUBLR	0. 01uF	16V
C25	VF467300	C. CE. TUBLR	0. 01uF	16V
C26	VF467300	C. CE. TUBLR	0. 01uF	16V
C27	UM416470	C. EL	4. 7uF	50V
C28	UM416470	C. EL	4. 7uF	50V
C29	VJ839100	C. EL	1uF	50V
C30	VJ839100	C. EL	1uF	50V
C31	UA653330	C. MYLAR	3300pF	50V
C32	UA653330	C. MYLAR	3300pF	50V
C33	VJ839100	C. EL	1uF	50V
C34	VJ839100	C. EL	1uF	50V
C35	VJ839100	C. EL	1uF	50V
C36	VJ839100	C. EL	1uF	50V
C37	VF466800	C. CE. TUBLR	100pF	50V
C38	VF466800	C. CE. TUBLR	100pF	50V
C39	UA655100	C. MYLAR	0. 1uF	50V
C40	UA655100	C. MYLAR	0. 1uF	50V
C41	UA654680	C. MYLAR	0. 068uF	50V
C42	UA654680	C. MYLAR	0. 068uF	50V
C43	UM417100	C. EL	10uF	50V
C44	UM417100	C. EL	10uF	50V
C45	UA654100	C. MYLAR	0. 01uF	50V

*New Parts

Schm No.	PART NO.	Description		
C46	UA654100	C. MYLAR	0. 01uF	50V
C47	UA655100	C. MYLAR	0. 1uF	50V
C48	UA655100	C. MYLAR	0. 1uF	50V
C49	UA653180	C. MYLAR	1800pF	50V
C50	UA653180	C. MYLAR	1800pF	50V
C51	UA653180	C. MYLAR	1800pF	50V
C52	UA653180	C. MYLAR	1800pF	50V
C53	VJ838800	C. EL	0. 22uF	50V
C54	VJ838800	C. EL	0. 22uF	50V
C55	UA655100	C. MYLAR	0. 1uF	50V
C56	UA655100	C. MYLAR	0. 1uF	50V
C57	UA654390	C. MYLAR	0. 039uF	50V
C58	UA654390	C. MYLAR	0. 039uF	50V
C59	UA655100	C. MYLAR	0. 1uF	50V
C60	UA655100	C. MYLAR	0. 1uF	50V
C61	UA654220	C. MYLAR	0. 022uF	50V
C62	UA654220	C. MYLAR	0. 022uF	50V
C63	VJ838800	C. EL	0. 22uF	50V
C64	VJ838800	C. EL	0. 22uF	50V
C65	VJ839100	C. EL	1uF	50V
C66	VJ839100	C. EL	1uF	50V
C67	UA652680	C. MYLAR	680pF	50V
C68	UA652680	C. MYLAR	680pF	50V
C69	UA653820	C. MYLAR	8200pF	50V
C70	UA653820	C. MYLAR	8200pF	50V
C71	UM215100	C. EL	0. 1uF	50V
C72	UM215100	C. EL	0. 1uF	50V
C73	VJ839000	C. EL	0. 47uF	50V
C74	VJ839000	C. EL	0. 47uF	50V
C75	VJ838800	C. EL	0. 22uF	50V
C76	VJ838800	C. EL	0. 22uF	50V
C77	UM215100	C. EL	0. 1uF	50V
C78	UM215100	C. EL	0. 1uF	50V
C79	UA654220	C. MYLAR	0. 022uF	50V
C80	UA654220	C. MYLAR	0. 022uF	50V
C81	UA655100	C. MYLAR	0. 1uF	50V
C82	UA655100	C. MYLAR	0. 1uF	50V
C83	UA654390	C. MYLAR	0. 039uF	50V
C84	UA654390	C. MYLAR	0. 039uF	50V
C85	UA652470	C. MYLAR	470pF	50V
C86	UA652470	C. MYLAR	470pF	50V
C87	UA653220	C. MYLAR	2200pF	50V
C88	UA653220	C. MYLAR	2200pF	50V
C89	UA653820	C. MYLAR	8200pF	50V
C90	UA653820	C. MYLAR	8200pF	50V
C91	UA654470	C. MYLAR	0. 047uF	50V
C92	UA654470	C. MYLAR	0. 047uF	50V
C93	UM215100	C. EL	0. 1uF	50V
C94	UM215100	C. EL	0. 1uF	50V
C95	VJ839000	C. EL	0. 47uF	50V
C96	VJ839000	C. EL	0. 47uF	50V
C97	VJ838800	C. EL	0. 22uF	50V
C98	VJ838800	C. EL	0. 22uF	50V

*New Parts

MAIN P.C.B.

	Schm No.	PART NO.	Description		
	C99	UM417100	C. EL	10uF	50V
	C100	UM417100	C. EL	10uF	50V
	C101	UJ865680	C. EL	0. 68uF	50V
	C102	UJ865680	C. EL	0. 68uF	50V
	C103	UA654330	C. MYLAR	0. 033uF	50V
	C104	UA654330	C. MYLAR	0. 033uF	50V
	C105	UM416470	C. EL	4. 7uF	50V
	C106	UM416470	C. EL	4. 7uF	50V
	C107	UM416470	C. EL	4. 7uF	50V
	C108	UM416470	C. EL	4. 7uF	50V
	C109	VF964800	C. EL	100uF	16V
	C110	VF964800	C. EL	100uF	16V
	C111	UA652820	C. MYLAR	820pF	50V
	C112	UA652820	C. MYLAR	820pF	50V
	C113	UT452330	C. PP	330pF	100V
	C114	UT452330	C. PP	330pF	100V
	C115	UT452220	C. PP	220pF	100V
	C116	UT452220	C. PP	220pF	100V
	C117	VF467300	C. CE. TUBLR	0. 01uF	16V
	C118	VF467300	C. CE. TUBLR	0. 01uF	16V
	C119	VG280100	C. CE. TUBLR	0. 022uF	25V
	C120	VG280100	C. CE. TUBLR	0. 022uF	25V
	C121	VG278800	C. CE. TUBLR	560pF	50V
	C122	VG278800	C. CE. TUBLR	560pF	50V
	C123	VF467300	C. CE. TUBLR	0. 01uF	16V
	C124	VF467300	C. CE. TUBLR	0. 01uF	16V
	C125	UJ667470	C. EL	47uF	50V
	C126	UJ667470	C. EL	47uF	50V
	C127	VJ599000	C. CE. TUBLR	0. 047uF	16V
	C128	UA654470	C. MYLAR	0. 047uF	50V
*	C129	UA653750	C. MYLAR	7500pF	50V
	C130	VJ839100	C. EL	1uF	50V
	C131	UA654560	C. MYLAR	0. 056uF	50V
	C132	UJ648100	C. EL	100uF	25V
	C133	UJ667470	C. EL	47uF	50V
	C134	VF466800	C. CE. TUBLR	100pF	50V
	C135	UT453390	C. PP	3900pF	100V
	C136	UA654100	C. MYLAR	0. 01uF	50V
	C137	UA653330	C. MYLAR	3300pF	50V
	C138	UA653330	C. MYLAR	3300pF	50V
	C139	VG722100	C. EL	1uF	50V
	C140	VG722100	C. EL	1uF	50V
	C141	VF467300	C. CE. TUBLR	0. 01uF	16V
	C142	UM417100	C. EL	10uF	50V
	C143	VJ838800	C. EL	0. 22uF	50V
	C144	UM417100	C. EL	10uF	50V
	C145	UM417100	C. EL	10uF	50V
	C147	UA654470	C. MYLAR	0. 047uF	50V
	C148	UA654470	C. MYLAR	0. 047uF	50V
	C149	UJ667470	C. EL	47uF	50V
	C150	UM417100	C. EL	10uF	50V
	C151	VG278800	C. CE. TUBLR	560pF	50V
	C152	VG278800	C. CE. TUBLR	560pF	50V

*New Parts

Schm No.	PART NO.	Description		
C153	VF467300	C. CE. TUBLR	0. 01uF	16V
C154	VF467300	C. CE. TUBLR	0. 01uF	16V
C155	VF467300	C. CE. TUBLR	0. 01uF	16V
C157	VJ839100	C. EL	1uF	50V
C158	VJ839100	C. EL	1uF	50V
C301	UA654180	C. MYLAR	0. 018uF	50V
C302	UA654180	C. MYLAR	0. 018uF	50V
C303	VG278800	C. CE. TUBLR	560pF	50V
C304	VG278800	C. CE. TUBLR	560pF	50V
C305	VJ839100	C. EL	1uF	50V
C306	VJ839100	C. EL	1uF	50V
C307	VJ839100	C. EL	1uF	50V
C308	VJ839100	C. EL	1uF	50V
C309	UM417100	C. EL	10uF	50V
C310	UM417100	C. EL	10uF	50V
C311	VF466800	C. CE. TUBLR	100pF	50V
C312	VF466800	C. CE. TUBLR	100pF	50V
C313	UA655100	C. MYLAR	0. 1uF	50V
C314	UA655100	C. MYLAR	0. 1uF	50V
C315	UA654680	C. MYLAR	0. 068uF	50V
C316	UA654680	C. MYLAR	0. 068uF	50V
C317	VH053100	C. CE. TUBLR	0. 1uF	50V
C319	UA655100	C. MYLAR	0. 1uF	50V
C320	UA655100	C. MYLAR	0. 1uF	50V
C321	UA653180	C. MYLAR	1800pF	50V
C322	UA653180	C. MYLAR	1800pF	50V
C323	UA653180	C. MYLAR	1800pF	50V
C324	UA653180	C. MYLAR	1800pF	50V
C325	VJ838800	C. EL	0. 22uF	50V
C326	VJ838800	C. EL	0. 22uF	50V
C327	UA655100	C. MYLAR	0. 1uF	50V
C328	UA655100	C. MYLAR	0. 1uF	50V
C329	UA655100	C. MYLAR	0. 1uF	50V
C330	UA655100	C. MYLAR	0. 1uF	50V
C331	UA654220	C. MYLAR	0. 022uF	50V
C332	UA654220	C. MYLAR	0. 022uF	50V
C333	VJ838800	C. EL	0. 22uF	50V
C334	VJ838800	C. EL	0. 22uF	50V
C335	VJ839100	C. EL	1uF	50V
C336	VJ839100	C. EL	1uF	50V
C337	UA654390	C. MYLAR	0. 039uF	50V
C338	UA654390	C. MYLAR	0. 039uF	50V
C339	UA652680	C. MYLAR	680pF	50V
C340	UA652680	C. MYLAR	680pF	50V
C341	UA653820	C. MYLAR	8200pF	50V
C342	UA653820	C. MYLAR	8200pF	50V
C343	UM215100	C. EL	0. 1uF	50V
C344	UM215100	C. EL	0. 1uF	50V
C345	VJ839000	C. EL	0. 47uF	50V
C346	VJ839000	C. EL	0. 47uF	50V
C347	VJ838800	C. EL	0. 22uF	50V
C348	VJ838800	C. EL	0. 22uF	50V
C349	UM215100	C. EL	0. 1uF	50V

*New Parts

MAIN P.C.B.

Schm No.	PART NO.	Description	
C350	UM215100	C. EL	0. 1uF 50V
C351	UA654220	C. MYLAR	0. 022uF 50V
C352	UA654220	C. MYLAR	0. 022uF 50V
C353	UA655100	C. MYLAR	0. 1uF 50V
C354	UA655100	C. MYLAR	0. 1uF 50V
C355	UA654390	C. MYLAR	0. 039uF 50V
C356	UA654390	C. MYLAR	0. 039uF 50V
C357	UA652470	C. MYLAR	470pF 50V
C358	UA652470	C. MYLAR	470pF 50V
C359	UA653220	C. MYLAR	2200pF 50V
C360	UA653220	C. MYLAR	2200pF 50V
C361	UA653820	C. MYLAR	8200pF 50V
C362	UA653820	C. MYLAR	8200pF 50V
C363	UA654470	C. MYLAR	0. 047uF 50V
C364	UA654470	C. MYLAR	0. 047uF 50V
C365	VJ838800	C. EL	0. 22uF 50V
C366	VJ838800	C. EL	0. 22uF 50V
C367	UM215100	C. EL	0. 1uF 50V
C368	UM215100	C. EL	0. 1uF 50V
C369	VJ839000	C. EL	0. 47uF 50V
C370	VJ839000	C. EL	0. 47uF 50V
C371	UM417100	C. EL	10uF 50V
C372	UM417100	C. EL	10uF 50V
C373	UM417100	C. EL	10uF 50V
C374	UM417100	C. EL	10uF 50V
C375	UM417100	C. EL	10uF 50V
C376	UM417100	C. EL	10uF 50V
C377	VJ839100	C. EL	1uF 50V
C378	VJ839100	C. EL	1uF 50V
D2	VD631600	DIODE	1SS133, 176, HSS104
D3	VD631600	DIODE	1SS133, 176, HSS104
D4	VD631600	DIODE	1SS133, 176, HSS104
D5	VD631600	DIODE	1SS133, 176, HSS104
D6	VD631600	DIODE	1SS133, 176, HSS104
D7	VD631600	DIODE	1SS133, 176, HSS104
D8	VD631600	DIODE	1SS133, 176, HSS104
D9	VG441200	DIODE. ZENR	MTZJ16C 16V
D10	VG439400	DIODE. ZENR	MTZJ10A 10V
D11	VG438500	DIODE. ZENR	MTZJ7. 5A 7. 5V
D13	VG437000	DIODE. ZENR	MTZJ4. 7A 4. 7V
D14	VD631600	DIODE	1SS133, 176, HSS104
D15	VD631600	DIODE	1SS133, 176, HSS104
D16	VD631600	DIODE	1SS133, 176, HSS104
D17	VD631600	DIODE	1SS133, 176, HSS104
D19	VG439400	DIODE. ZENR	MTZJ10A 10V
D20	VG439400	DIODE. ZENR	MTZJ10A 10V
D21	VS997800	DIODE	1T2
D22	VS997800	DIODE	1T2
D23	VS997800	DIODE	1T2
D24	VS997800	DIODE	1T2
D301	VD631600	DIODE	1SS133, 176, HSS104
D302	VD631600	DIODE	1SS133, 176, HSS104
FI1	VM548100	FLTR. MPX	160KHz MPX

*New Parts

Schm No.	PART NO.	Description	
FI2	VM548100	FLTR. MPX	160KHz MPX
FI3	VM548200	FLTR. LC	160KHz BEF
FI4	VM548200	FLTR. LC	160KHz BEF
FI301	VN766200	COIL. BIAS	160KHz
FI302	VN766200	COIL. BIAS	160KHz
IC1	XR618A00	IC	NJM2043L-D OP AMP
IC2	XB247301	IC	uPC4570HA
IC3	XP844A00	IC	NJM4556AL
IC4	IG074900	IC	BA6138
* IC5	XR903A00	IC	CXA1563S
IC6	IG089900	IC	AN90B20
* IC7	XR904A00	IC	CXA1917S
* IC8	XR904A00	IC	CXA1917S
IC9	XH104A00	IC	CXA1198AP
IC10	XA300A00	IC	uPC1297CA
IC11	IG089900	IC	AN90B20
⚠ IC12	XA299A00	IC	LB1649
IC13	XR912B00	IC	M38172M4-501FP CPU
* IC301	XR903A00	IC	CXA1563S
IC302	XP844A00	IC	NJM4556AL
* IC303	XR904A00	IC	CXA1917S
* IC304	XR904A00	IC	CXA1917S
JK1	LB301370	JACK. PHONE	
L1	VM548000	COIL	160KHz
L2	VM548000	COIL	160KHz
L3	VS932000	COIL	22mH
L4	VO048000	COIL	160KHz
PJ1	VT029100	JACK. PIN	4P
Q1	VK432900	TR	2SD1915F S, T
Q2	VK432900	TR	2SD1915F S, T
Q3	VG722000	TR. DGT	DTC144ES
Q4	VG722000	TR. DGT	DTC144ES
Q5	VD678700	TR. DGT	DTC114ES
Q6	VD678700	TR. DGT	DTC114ES
Q7	VK432900	TR	2SD1915F S, T
Q8	VK432900	TR	2SD1915F S, T
Q9	VD678700	TR. DGT	DTC114ES
Q10	VD678700	TR. DGT	DTC114ES
Q11	VG722000	TR. DGT	DTC144ES
Q12	VG722000	TR. DGT	DTC144ES
Q13	VG722000	TR. DGT	DTC144ES
Q14	VG722000	TR. DGT	DTC144ES
Q15	VG722000	TR. DGT	DTC144ES
Q16	VG722000	TR. DGT	DTC144ES
Q17	VD678700	TR. DGT	DTC114ES
Q18	VD678700	TR. DGT	DTC114ES
Q19	VD678700	TR. DGT	DTC114ES
Q20	VD678700	TR. DGT	DTC114ES
Q21	VD678700	TR. DGT	DTC114ES
Q22	VD678700	TR. DGT	DTC114ES
Q23	IC174020	TR	2SC1740S R, S
Q24	IC174020	TR	2SC1740S R, S
Q25	VG722000	TR. DGT	DTC144ES

*New Parts

MAIN P.C.B. & SUB P.C.B.

	Schm No.	PART NO.	Description		
	Q26	VG722000	TR. DGT	DTC144ES	
	Q27	VG722000	TR. DGT	DTC144ES	
	Q28	VE613400	TR	2SD1858 Q, R	
	Q29	VD678700	TR. DGT	DTC114ES	
	Q30	IC174020	TR	2SC1740S R, S	
	Q31	IC174020	TR	2SC1740S R, S	
	Q32	IC174020	TR	2SC1740S R, S	
	Q33	IC174020	TR	2SC1740S R, S	
	Q35	VD678700	TR. DGT	DTC114ES	
	Q36	VD678700	TR. DGT	DTC114ES	
	Q37	VD488500	TR. DGT	DTC143XS	
	Q39	VK432900	TR	2SD1915F S, T	
	Q40	VK432900	TR	2SD1915F S, T	
	Q301	VD678700	TR. DGT	DTC114ES	
	Q302	VD678700	TR. DGT	DTC114ES	
⚠	R178	VE009700	R. FUS	4.7Ω	1/4W
⚠	R179	HV453560	R. CAR. FP	5.6Ω	1/4W
⚠	R202	VE009700	R. FUS	4.7Ω	1/4W
	VR1	VJ694200	VR. TRIM	B100KΩ	
	VR2	VJ694200	VR. TRIM	B100KΩ	
	VR3	VM641000	VR	B100KΩ	
	VR4	VR114800	VR	A50KΩ	
	VR5	VR090600	VR	A50KΩ	
	VR6	VM640800	VR	A5KΩ	
	VR7	VJ693600	VR. TRIM	B10KΩ	
	VR8	VJ693600	VR. TRIM	B10KΩ	
	VR9	VJ693900	VR. TRIM	B33KΩ	
	VR10	VJ693900	VR. TRIM	B33KΩ	
	VR11	VJ693800	VR. TRIM	B22KΩ	
	VR12	VJ693800	VR. TRIM	B22KΩ	
	VR13	VJ693000	VR. TRIM	B1KΩ	
	VR14	VJ693000	VR. TRIM	B1KΩ	
*	VR15	VU687600	VR	A2KΩ	
	VR301	VJ693800	VR. TRIM	B22KΩ	
	VR302	VJ693800	VR. TRIM	B22KΩ	
	XL1	VE906000	RSNR. CE	4MHz	
		VJ828000	PIN	IMSA-6024-03E	
		VR710800	PLATE	W25	
		BB071360	SCR. TERM	8.3x13	

*New Parts

	Schm No.	PART NO.	Description		
*		VU612100	P. C. B.	SUB(UC)	
*		VU612200	P. C. B.	SUB(R)	
*		VU612300	P. C. B.	SUB(A)	
*		VU612400	P. C. B.	SUB(BG)	
	CB401	VI878200	CN. BS. PIN	4P	
	CB402	VQ045700	CN. BS. PIN	28P	
	CB403	VI878000	CN. BS. PIN	2P	
	CB404	VI878000	CN. BS. PIN	2P	
	CB405	VI878000	CN. BS. PIN	2P	
	CB406	VI878000	CN. BS. PIN	2P	
	CB501	VG879900	CN. BS. PIN	2P	
	CB502	VI879300	CN. BS. PIN	15P	
⚠	C501	VS741700	C. CE. SAFTY	0.01uF	275V
	C502	UM417100	C. EL	10uF	50V
	C503	UJ658470	C. EL	470uF	35V
	C504	UJ658220	C. EL	220uF	35V
	C505	UM417100	C. EL	10uF	50V
	C506	VE742700	C. EL	10uF	50V
	C507	VE742700	C. EL	10uF	50V
	C508	VN137400	C. EL	1000uF	16V
	C509	VF964800	C. EL	100uF	16V
	C510	VF964800	C. EL	100uF	16V
	C511	VK275000	C. EL	2200uF	16V
	C512	VT180400	C. EL	4700uF	5.5V
	C513	UM417100	C. EL	10uF	50V
	C514	UM417100	C. EL	10uF	50V
	C515	VH507200	C. EL	6800uF	16V
	C516	VH507200	C. EL	6800uF	16V
	C517	VH507200	C. EL	6800uF	16V
	C518	FG214100	C. CE	0.01uF	50V
	C519	FG214100	C. CE	0.01uF	50V
	C520	UJ648100	C. EL	100uF	25V
	C521	UJ638470	C. EL	470uF	16V
	D501	VG437200	DIODE. ZENR	MTZJ4.7C	4.7V
	D502	VG442100	DIODE. ZENR	MTZJ22B	22V
⚠	D503	VS997800	DIODE	1T2	
⚠	D504	VS997800	DIODE	1T2	
	D505	VG437200	DIODE. ZENR	MTZJ4.7C	4.7V
	D506	VD631600	DIODE	1SS133, 176, HSS104	
	D507	VG437200	DIODE. ZENR	MTZJ4.7C	4.7V
⚠	D508	VS997800	DIODE	1T2	
⚠	D509	VS997800	DIODE	1T2	
⚠	D510	VS997800	DIODE	1T2	
⚠	D511	VS997800	DIODE	1T2	
	D512	VD631600	DIODE	1SS133, 176, HSS104	
	D513	VD631600	DIODE	1SS133, 176, HSS104	
	D514	VD631600	DIODE	1SS133, 176, HSS104	
⚠	D515	VS997800	DIODE	1T2	
⚠	D516	VS997800	DIODE	1T2	
	D517	VD631600	DIODE	1SS133, 176, HSS104	
⚠	IC501	XA507A00	IC	AN78N05	
⚠	Q501	VE613300	TR	2SB1237 Q, R	
	Q502	IA093320	TR	2SA933S Q, R	

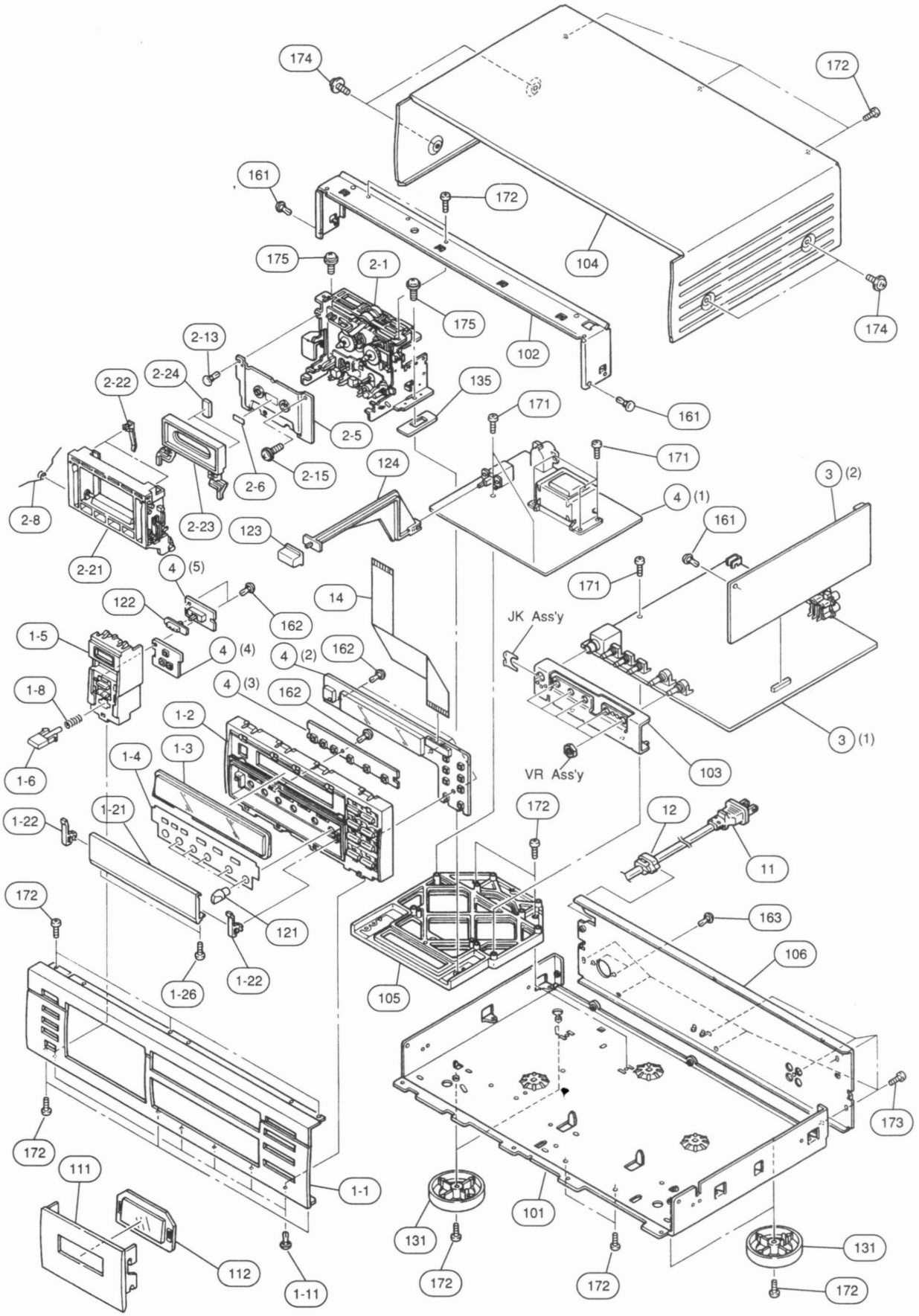
*New Parts

SUB P.C.B.

	Schm No.	PART NO.	Description	
⚠	Q503	VE613300	TR	2SB1237 Q,R
⚠	Q504	VS883400	TR	2SD2394 E,F
	Q505	IC174020	TR	2SC1740S R,S
	Q506	IA093320	TR	2SA933S Q,R
⚠	Q507	VS883300	TR	2SB1565 E,F
⚠	R501	HV455100	R. CAR. FP	100Ω 1/4W
⚠	R502	HV455100	R. CAR. FP	100Ω 1/4W
⚠	R509	VE009700	R. FUS	4.7Ω 1/4W
⚠	R517	VE009700	R. FUS	4.7Ω 1/4W
⚠	R520	VE009700	R. FUS	4.7Ω 1/4W
	SW401	VF113100	SW. SLIDE	SSSU01
	SW402	VG392900	SW. TACT	SKHVAA
	SW403	VG392900	SW. TACT	SKHVAA
	SW404	VG392900	SW. TACT	SKHVAA
	SW405	VG392900	SW. TACT	SKHVAA
	SW406	VG392900	SW. TACT	SKHVAA
	SW407	VG392900	SW. TACT	SKHVAA
	SW408	VG392900	SW. TACT	SKHVAA
	SW409	VG392900	SW. TACT	SKHVAA
	SW410	VG392900	SW. TACT	SKHVAA
	SW411	VG392900	SW. TACT	SKHVAA
	SW412	VG392900	SW. TACT	SKHVAA
	SW413	VG392900	SW. TACT	SKHVAA
	SW414	VG392900	SW. TACT	SKHVAA
	SW415	VG392900	SW. TACT	SKHVAA
	SW416	VG392900	SW. TACT	SKHVAA
	SW417	VG392900	SW. TACT	SKHVAA
	SW418	VG392900	SW. TACT	SKHVAA
⚠	SW501	VC133100	SW. PUSH	SDDLD1
⚠	SW502	VG388100	VOLT. SELCT	HXW0244-01-080(R)
⚠*	T501	XR982A00	TRANS. PWR	(UC)
⚠*	T501	XR983A00	TRANS. PWR	(R)
⚠*	T501	XR984A00	TRANS. PWR	(A)
⚠*	T501	XR985A00	TRANS. PWR	(BG)
	U401	VK498900	L. DTCT	S-100
*	V401	VU439000	FL. DSPLY	BJ460GK
		VJ828000	PIN	IMSA-6024-03E
		VQ948200	SPACER	FL
		VQ859800	SHEET. FL	
		VR506800	HEAT. SINK	PUH16-25
		ED330066	SCR. BND. HD	3x6 FCRM3-BL
		EI030086	SCR. BND. HD	3x8 ZMC2-Y

*New Parts

■ EXPLODED VIEW



■ MECHANICAL PARTS

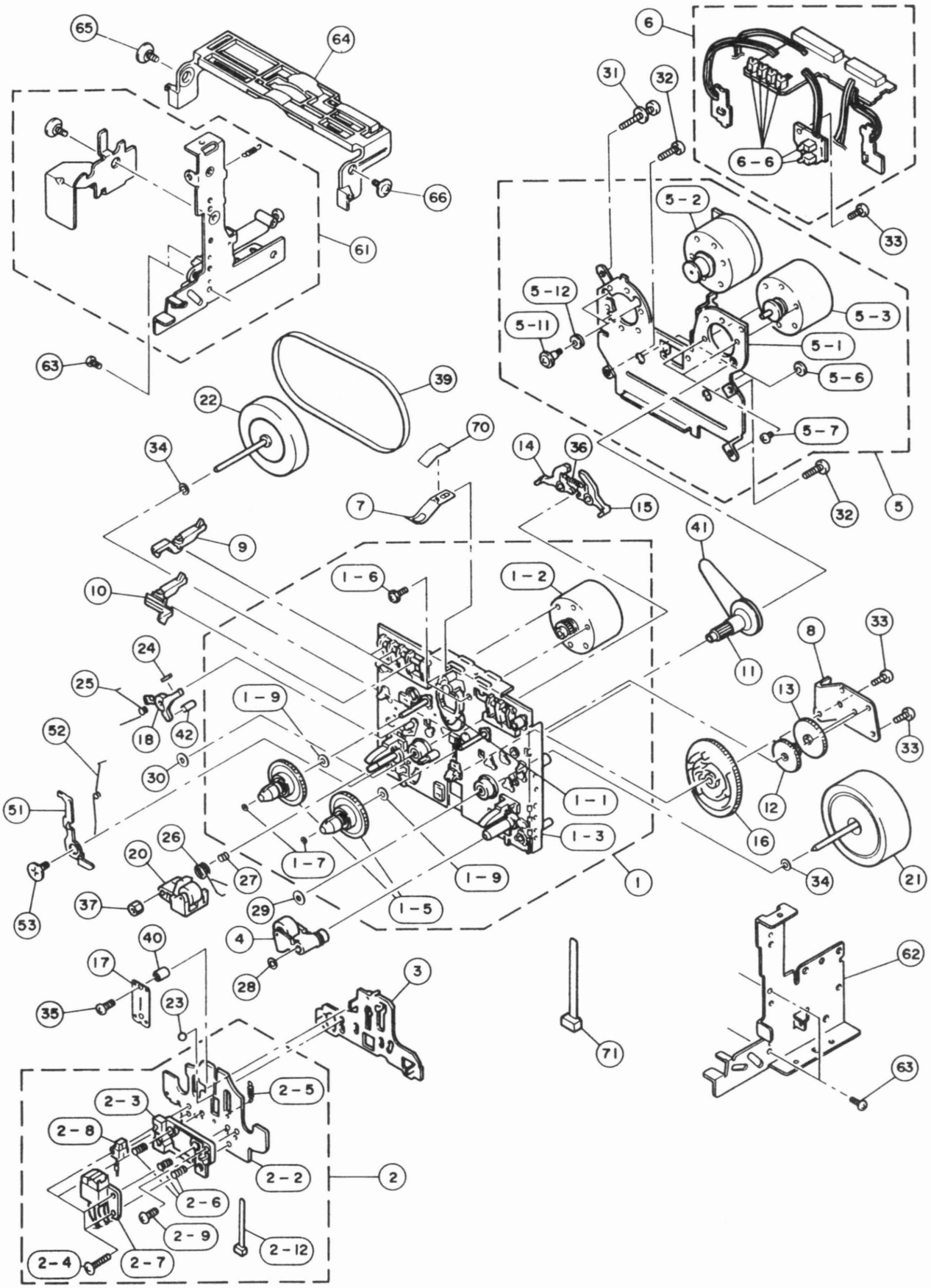
	Ref. No.	PART NO.	Description			Remarks	Markets
*	1- 1	VU344800	FRONT PANEL			BL	
*	1- 1	VU344900	FRONT PANEL			TI	
	1- 2	VQ858400	SUB PANEL			BL	
	1- 2	VU096600	SUB PANEL			TI	
	1- 3	VQ793300	WINDOW PANEL				
*	1- 4	VU345000	PLATE, SP			BL	
*	1- 4	VU345100	PLATE, SP			TI	
*	1- 5	VU345200	BUTTON GUIDE			BL	
*	1- 5	VU345300	BUTTON GUIDE			TI	
	1- 6	VQ852700	BUTTON	EJ		BL	
	1- 6	VU097000	BUTTON	EJ		TI	
	1- 8	VQ852900	SPRING	D6.4C			
	1-11	VQ368600	PUSH RIVET	P3555-B			
	1-21	VQ858600	PANEL LID			BL	
	1-21	VQ858700	PANEL LID			TI	
	1-22	VQ859300	HINGE, LID			BL	
	1-22	VQ958500	HINGE, LID			TI	
	1-26	EX601590	BIND HEAD P-TITE SCREW	2.6x8	FCRM3-BL		
	2- 1	VM986200	CASSETTE MECHANISM				
	2- 5	VR398300	BACK PLATE	B			
	2- 6	VQ146900	LABEL B.P				
	2- 8	VM873800	SPRING	EJ			
	2-13	VQ368500	PUSH RIVET	P3545-B			
	2-15	EK096060	PW HEAD S-TITE SCREW	2.5x12	FCRM3-BL		
	2-21	VQ860400	CASSETTE HOUSING				
	2-22	VM868200	GUIDE, CASSETTE				
	2-23	VQ860600	PLATE, DAMPER				
	2-24	VK919000	DAMPER				
*	3	VU611900	P.C.B. ASS'Y	MAIN			
*	4	VU612100	P.C.B. ASS'Y	SUB			(UC)
*	4	VU612200	P.C.B. ASS'Y	SUB			(R)
*	4	VU612300	P.C.B. ASS'Y	SUB			(A)
*	4	VU612400	P.C.B. ASS'Y	SUB			(BG)
⚠	11	VQ508500	POWER CORD ASS'Y				(R)
⚠	11	VQ508600	POWER CORD ASS'Y				(A)
⚠	11	VS168300	POWER CORD ASS'Y				(UC)
⚠	11	VS168400	POWER CORD ASS'Y				(G)
⚠	11	VS680700	POWER CORD ASS'Y				(B)
	12	VN158600	CORD STOPPER	No.2104			
*	14	MF128250	FLEXIBLE FLAT CABLE	28P 250mm			
	101	VT752300	CHASSIS				
*	102	VU345600	FRAME, TOP				
*	103	VU346200	BRACKET, VR				
	104	VQ854400	TOP COVER			BL	
	104	VQ854500	TOP COVER			TI	
*	105	VU345400	CHASSIS				
*	106	VU345800	REAR PANEL				(UC)
*	106	VU345900	REAR PANEL				(R)
*	106	VU346000	REAR PANEL				(A)
*	106	VU346100	REAR PANEL				(BG)
	111	VT830500	SUB PANEL, LID			BL	
	111	VT830600	SUB PANEL, LID			TI	
*	112	VT830400	WINDOW, PANEL	LID			

*New Parts

	Ref. No.	PART NO.	Description		Remarks	Markets
	121	VQ859400	KNOB, VR	D10	BL	
	121	VU096800	KNOB, VR	D10	TI	
	122	VQ853500	KNOB, SL		BL	
	122	VU096900	KNOB, SL		TI	
	123	VH889400	BUTTON	10x25	BL	
*	123	VU587000	BUTTON	10x25	TI	
	124	VM633500	EXTENSION BAR	P		
	131	VQ780300	LEG	D60xH16		
	135	VV264200	SPACE	18x54		
	161	VQ368500	PUSH RIVET	P3545-B		
	162	VQ368600	PUSH RIVET	P3555-B		
	163	VR101100	PUSH RIVET	P3065-B		(R)
	171	VC161100	BIND HEAD P-TITE SCREW	3x12 ZMC2-BL		
	172	EI330086	BIND HEAD B-TITE SCREW	3x8 FCRM3-BL		
	173	EN301010	BIND HEAD BONDING TAP. SCREW	3x8 FCRM3-BL		
	174	EK365090	PW HEAD S-TITE SCREW	4x8-10 FCRM3-BL	BL	
	174	EX601150	BW HEAD S-TITE SCREW	4x8-10 FNM3-BL	TI	
	175	EX602240	BW HEAD TAPPING SCREW	3x10		
			ACCESSORIES			
		VS381600	PIN PLUG CORD	1.0m		

*New Parts

■ EXPLODED VIEW (Cassette Deck Mechanism)



■ MECHANICAL PARTS (Cassette Deck Mechanism)

Ref. No.	PART NO.	Description		Remarks	Markets
	VM986200	CASSETTE MECHANISM			
1	NX611600	CHASSIS ASS'Y		F511524	
1-1	NX611640	IDLER ASS'Y		F517053	
1-2	NX611660	MOTOR ASS'Y, REEL		F564302	
1-3	NX611680	CHASSIS ASS'Y, BASE		F612176	
1-5	NX611690	REEL BASE ASS'Y		F623076	
1-6	AX617750	PAN HEAD SCREW	2.6x10 ZN	UG14C13	
1-7	XX636610	WASHER	1.7x3.2x0.25	FJ11117	
1-9	XX641850	WASHER	2.1x7x0.25	UJ12V11	
2	NX611620	HEAD BASE ASS'Y		F513679	
2- 2	AX617560	HEAD BASE D		FC57D14	
2- 3	AX617630	HEAD SPACER D		FD49L14	
2- 4	AX617640	PAN HEAD SCREW	2x8	FG14026	
2- 5	AX617680	SPRING, HEAD BASE		FK30W11	
2- 6	AX617690	SPRING, AZIMUTH		FK30Y11	
2- 7	JX601340	HEAD, REC/PB	GF-50 H-2381	FU20D21	
2- 8	JX601330	HEAD, ERASE	H-3311	FU19W11	
2- 9	EJ026056	PAN HEAD TAPPING SCREW	2.6x5 ZMC2-Y	KG19429	
2-12	CX674330	BINDING TIE		FH12611	
3	NX611610	PLATE BASE ASS'Y		F512122	
4	NX611630	PINCH ROLLER ASS'Y		F514093	
5	NX611650	MAIN MOTOR ASS'Y		F525293	
5- 1	AX617570	F/W BRACKET		FC57F14	
5- 2	JX601360	MOTOR, CAPSTAN		FW16C11	
5- 3	JX601350	MOTOR, ASSIST		FW15C11	
5- 6	XX662650	SCREW, WHEEL		FM17722	
5- 7	XX641930	PAN HEAD SEMS SCREW	2.6x3.5	UG11S14	
5-11	XX670360	SCREW, MOTOR		UG12W12	
5-12	XX662730	CUSHION, MOTOR		FJ11512	
6	NX611670	P.C.B. ASS'Y, CONTROL		F567461	
6-6	KX601080	PUSH SWITCH		UE16E11	
7	AX608300	SPRING, CASSETTE		FC52H13	
8	AX617590	BRACKET, P.C.B.		FC57H11	
9	AX611250	SENSOR LEVER	REC	FD44T14	
10	CX612740	SENSOR LEVER	METAL TAPE	FD44V12	
11	CX674280	GEAR A		FD48Y21	
12	CX674290	GEAR B		FD49A11	
13	CX674300	GEAR C		FD49B11	
14	AX617600	BRAKE L		FD49C11	
15	AX617610	BRAKE R		FD49D12	
16	CX674270	CAM GEAR		FD48W12	
17	AX617580	SPRING, THRUST		FC57G12	
18	AX617620	ARM, BACK TENSION		FD49E14	
20	NX611720	PINCH ROLLER ASS'Y		FR23F11	
21	NX611700	FLYWHEEL ASS'Y, TAKE UP		FR23D21	
22	NX611710	FLYWHEEL ASS'Y, SUPPLY		FR23E11	
23	AX617740	STEEL BALL	1/16	MM11311	
24	CX674350	FELT		FZ11Y12	
25	AX617700	SPRING, BACK TENSION		FK31A11	
26	AX617660	SPRING, PINCH ROLLER (L)		FK26S14	
27	AX617670	SPRING, ADJUST		FK26V11	
28	CX674340	WASHER		FJ12322	
29	BX602070	WASHER, OIL SEAL	2.4x0.25	FJ14111A	

*New Parts

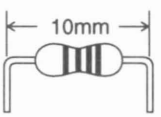
Ref. No.	PART NO.	Description		Remarks	Markets
30	BX602080	WASHER, OIL SEAL	2.15x0.25	FJ14114A	
31	AX617760	SPECIAL SCREW S-TITE	2.6x25 ZN	UG19G11	
32	XX684890	SPECIAL SCREW	2.6x8	UG12H14	
33	XX695350	SCREW	2x6	UG12H11	
34	XX636810	WASHER	2.6x0.25	FJ11130	
35	AX617770	PAN HEAD TAP-TITE SCREW	2x7 ZN	UG22B11	
36	AX617650	SPRING, BRAKE		FK20R21	
37	CX674360	NUT, NYLON		UG20L12	
39	CX674310	MAIN BELT		FF16M31	
40	AX617720	SPACER		FL42C11	
41	CX674320	BELT		FF18R11	
42	AX617730	ARM SHAFT, BACK TENSION		FL42N11	
51	CX612060	PROTECT ARM (L), EJECT	L	FC39L70	
52	AX617710	PROTECT SPRING (L), EJECT		FK31M11	
53	AX613160	SPECIAL SCREW	7.7	UG15S11A	
61	AX616700	PLATE HOLD ASS'Y		F573246	
62	BX602360	HOLDER R, MECHANISM		FC58H12	
63	EI026046	BIND HEAD TAPPING SCREW	2.6x4 ZMC2-Y	KG19428	
64	CX672990	ARM, EJECT		FD50E13	
65	AX613170	SPECIAL SCREW	4.7	UG14M31	
66	XX684660	SPECIAL SCREW		UG14L11	
70	CX673400	TAPE, ACETATE	20mm	EF15N00	
71	CB069250	BINDING TIE		FH12613	
	NX611670	P.C.B. ASS'Y, CONTROL		F567461	
1	LX608170	CONNECTOR	PH 9P WH	UY20E18	
2	LX608180	CONNECTOR	PH 9P BL	UY20E38	
3	KX601080	PUSH SWITCH		UE16E11	
4	IX632590	PHOTO SENSOR		AW13L00	

*New Parts

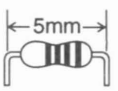
Parts List for Carbon Resistors

Value	**1/4W** Type Part No.	**1/6W** Type Part No.	Value	**1/4W** Type Part No.	**1/6W** Type Part No.
1.0 Ω	HJ35 3100	HF85 3100	10 kΩ	HF45 7100	HF45 7100
1.8 Ω	HJ35 3180	✳	11 kΩ	HF45 7110	HF45 7110
2.2 Ω	HJ35 3220	HF85 3220	12 kΩ	HJ35 7120	HF85 7120
3.3 Ω	HJ35 3330	HF85 3330	13 kΩ	HF45 7130	HF45 7130
4.7 Ω	HJ35 3470	HF85 3470	15 kΩ	HF45 7150	HF45 7150
5.6 Ω	HJ35 3560	HF85 3560	18 kΩ	HF45 7180	HF45 7180
10 Ω	HF45 4100	HF45 4100	22 kΩ	HF45 7220	HF45 7220
15 Ω	HJ35 4150	HF85 4150	24 kΩ	HF45 7240	HF45 7240
22 Ω	HF45 4220	HF45 4220	27 kΩ	HJ35 7270	HF85 7270
27 Ω	HJ35 4270	HF85 4270	30 kΩ	HF45 7300	HF45 7300
33 Ω	HF45 4330	HF45 4330	33 kΩ	HF45 7330	HF45 7330
39 Ω	HJ35 4390	HF85 4390	36 kΩ	HF45 7360	HF45 7360
47 Ω	HF45 4470	HF45 4470	39 kΩ	HF45 7390	HF45 7390
56 Ω	HF45 4560	HF45 4560	47 kΩ	HF45 7470	HF45 7470
68 Ω	HF45 4680	HF45 4680	51 kΩ	HF45 7510	HF45 7510
75 Ω	HF45 4750	HF45 4750	56 kΩ	HF45 7560	HF45 7560
82 Ω	HF45 4820	HF45 4820	62 kΩ	HF45 7620	HF45 7620
91 Ω	HF45 4910	HF45 4910	68 kΩ	HF45 7680	HF45 7680
100 Ω	HF45 5100	HF45 5100	82 kΩ	HF45 7820	HF45 7820
110 Ω	HJ35 5110	HF85 5110	91 kΩ	HF45 7910	HF45 7910
120 Ω	HF45 5120	HF45 5120	100 kΩ	HF45 8100	HF45 8100
150 Ω	HF45 5150	HF45 5150	110 kΩ	HF45 8110	HF45 8110
160 Ω	HJ35 5160	✳	120 kΩ	HF45 8120	HF45 8120
180 Ω	HF45 5180	HF45 5180	150 kΩ	HF45 8150	HF45 8150
200 Ω	HF45 5200	HF45 5200	180 kΩ	HF45 8180	HF45 8180
220 Ω	HF45 5220	HF45 5220	220 kΩ	HJ35 8220	HF85 8220
270 Ω	HF45 5270	HF45 5270	270 kΩ	HF45 8270	HF45 8270
330 Ω	HF45 5330	HF45 5330	300 kΩ	HF45 8300	HF45 8300
390 Ω	HF45 5390	HF45 5390	330 kΩ	HF45 8330	HF45 8330
430 Ω	HF45 5430	HF45 5430	390 kΩ	HJ35 8390	HF85 8390
470 Ω	HF45 5470	HF45 5470	470 kΩ	HF45 8470	HF45 8470
510 Ω	HF45 5510	HF45 5510	560 kΩ	HJ35 8560	HF85 8560
560 Ω	HF45 5560	HF45 5560	680 kΩ	HJ35 8680	HF85 8680
680 Ω	HF45 5680	HF45 5680	820 kΩ	HJ35 8820	HF85 8820
820 Ω	HF45 5820	HF45 5820	1.0 MΩ	HF45 9100	HF45 9100
910 Ω	HF45 5910	HF45 5910	1.2 MΩ	HJ35 9120	✳
1.0 kΩ	HF45 6100	HF45 6100	1.5 MΩ	HJ35 9150	HF85 9150
1.2 kΩ	HF45 6120	HF45 6120	1.8 MΩ	HJ35 9180	HF85 9180
1.5 kΩ	HF45 6150	HF45 6150	2.2 MΩ	HJ35 9220	HF85 9220
1.8 kΩ	HF45 6180	HF45 6180	3.3 MΩ	HJ35 9330	HF85 9330
2.0 kΩ	HJ35 6200	HF85 6200	3.9 MΩ	HJ35 9390	✳
2.2 kΩ	HF45 6220	HF45 6220	4.7 MΩ	HJ35 9470	HF85 9470
2.4 kΩ	HJ35 6240	HF85 6240			
2.7 kΩ	HF45 6270	HF45 6270			
3.0 kΩ	HF45 6300	HF45 6300			
3.3 kΩ	HF45 6330	HF45 6330			
3.6 kΩ	HJ35 6360	HF85 6360			
3.9 kΩ	HF45 6390	HF45 6390			
4.7 kΩ	HF45 6470	HF45 6470			
5.1 kΩ	HF45 6510	HF45 6510			
5.6 kΩ	HF45 6560	HF45 6560			
6.8 kΩ	HF45 6680	HF45 6680			
8.2 kΩ	HF45 6820	HF45 6820			
9.1 kΩ	HF45 6910	HF45 6910			

1/4W Type
HJ35 ○○○○



1/4W Type
HF45 ○○○○
1/6W Type
HF85 ○○○○



✳: Not available

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KX-690

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