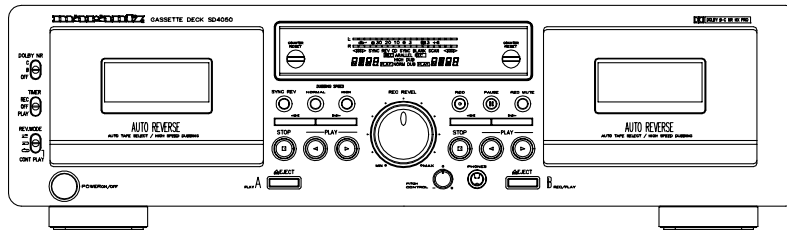


# Service Manual

SD4050 /N1B, /U1B, /F1B

Cassette Deck



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Please use this service manual with referring to the user guide (D.F.U) without fail.

修理の際は、必ず取扱説明書を準備し操作方法を確認の上作業を行って下さい。

# marantz®

- SD4050 -

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Using superior design and selected high grade components, **MARANTZ** company has created the ultimate in stereo sound. Only original **MARANTZ** parts can insure that your **MARANTZ** product will continue to perform to the specifications for which it is famous.

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### ORDERING PARTS :

Parts can be ordered either by mail or by Fax.. In both cases, the correct part number has to be specified.

The following information must be supplied to eliminate delays in processing your order :

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
6. Signature : any order form or Fax. must be signed, otherwise such part order will be considered as null and void.

#### USA

**MARANTZ AMERICA, INC.**  
440 MEDINAH ROAD  
ROSELLE, ILLINOIS 60172  
USA  
PHONE : 630 - 307 - 3100  
FAX : 630 - 307 - 2687

#### EUROPE / TRADING

**MARANTZ EUROPE B.V.**  
P.O.BOX 80002, BUILDING SFF2  
5600 JB EINDHOVEN  
THE NETHERLANDS  
PHONE : +31 - 40 - 2732241  
FAX : +31 - 40 - 2735578

#### BRAZIL

**MARANTZ BRAZIL**  
CAIXA POSTAL 21462  
CEP 04698-970  
SAO PAULO, SP, BRAZIL  
PHONE : 0800 - 123123(Discagem Direta Gratuita)  
FAX : +55 11 534. 8988

#### PROFESSIONAL AMERICAS

**SUPERSCOPE TECHNOLOGIES, INC.**  
MARANTZ PROFESSIONAL PRODUCTS  
2640 WHITE OAK CIRCLE, SUITE A  
AURORA, ILLINOIS 60504 USA  
PHONE : 630 - 820 - 4800  
FAX : 630 - 820 - 8103

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PICKERING, ONTARIO L1W 3K1  
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#### AUSTRALIA

**JAMO AUSTRALIA PTY LTD**  
1 EXPO COURT, P.O. BOX 350  
MT. WAVERLEY VIC 3149  
AUSTRALIA  
PHONE : +61 - 3 - 9543 - 1522  
FAX : +61 - 3 - 9543 - 3677

#### THAILAND

**MRZ STANDARD CO.,LTD**  
746 - 754 MAHACHAI ROAD.,  
WANGBURAPAPIROM, PHRANAKORN,  
BANGKOK, 10200 THAILAND  
PHONE : +66 - 2 - 222 9181  
FAX : +66 - 2 - 224 6795

#### SINGAPORE

**WO KEE HONG (S) PTE LTD**  
WO KEE HONG CENTRE  
NO.23, LORONG 8, TOA PAYOH  
SINGAPORE 319257  
PHONE : +65 2544555  
FAX : +65 2502213

#### TAIWAN

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6 TH FL NO, 148 SUNG KIANG ROAD,  
TAIPEI, 10429, TAIWAN R.O.C.  
PHONE : +886 - 2 - 25221304  
FAX : +886 - 2 - 25630415

#### MALAYSIA

**WO KEE HONG ELECTRONICS SDN. BHD.**  
NO. 102 JALAN SS 21/35, DAMANSARA  
UTAMA, 47400 PETALING JAYA  
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PHONE : +60 3 - 7184666  
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#### JAPAN *Technical*

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SAGAMIHARA - SHI, KANAGAWA  
JAPAN 228-8505  
PHONE : +81 42 748 1013  
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神奈川県相模原市相模大野7-35-1  
営業本部 〒150-0022  
東京都渋谷区恵比寿南1-11-9

#### KOREA

**MK ENTERPRISES LTD.**  
ROOM 604/605, ELECTRO-OFFICETEL, 16-58,  
3GA, HANGANG-RO, YONGSAN-KU, SEOUL  
KOREA  
PHONE : +822 - 3232 - 155  
FAX : +822 - 3232 - 154

### SHOCK, FIRE HAZARD SERVICE TEST :

**CAUTION :** After servicing this appliance and prior to returning to customer, measure the resistance between either primary AC cord connector pins ( with unit NOT connected to AC mains and its Power switch ON ), and the face or Front Panel of product and controls and chassis bottom.

Any resistance measurement less than 1 Megohms should cause unit to be repaired or corrected before AC power is applied, and verified before it is return to the user/customer.

Ref. UL Standard No. 1492.

In case of difficulties, do not hesitate to contact the Technical Department at above mentioned address.


## 1. TECHNICAL SPECIFICATION


<b>Track System :</b>	4-track, 2-channel stereo
<b>Heads :</b>	Deck I ; 1 Playback (Rotating) Deck II ; 1 Erase and 1 Record/ Playback (Rotating)
<b>Type of Tape :</b>	Cassette tape C-60 and C-90 (Philips type)
<b>Tape Speeds :</b>	4.8 cm/sec, 4.9 cm/sec (When high speed dubbing)
<b>Motors :</b>	DC servo motor x 2
<b>Wow and Flutter :</b>	0.09 % RMS, +/- 0.1 %w. peak
<b>Frequency response (Overall, -20 dB) :</b>	25-18,000Hz +/- 3 dB (at -20 dB, metal tape)
<b>Signal-to-Noise Ratio (Overall) :</b>	More than 74 dB (CCIR/ARM); Dolby C NR on
<b>Fast Winding Time :</b>	Appox. 110sec with a C60 cassette
<b>Inputs :</b>	100 mV/50k ohm input level at maximum
<b>Outputs :</b>	460 mV/47k ohm maximum (0 dB : 200 nWb/mm)
<b>Power Requirements :</b>	120 V AC, 60 Hz (U.S.A./Canada model) 230 V AC, 50 Hz (Europe model)
<b>Power Consumption :</b>	0.16 A
<b>Dimensions (W x H x D) :</b>	440 x 124 x 286 mm (W x H x D)
<b>Weight :</b>	4.0 kg
<b>Standard Accessories :</b>	Remote control unit (RC455SD) x 1 (U.S.A. /Canada model only), Battery (SUM-3, "AA", "R6" type) x 2 (U.S.A. / Canada model only), Input-output connection cord x 1 Remote control cable x 1
<b>Recording Bias :</b>	Approx. 100 kHz
<b>Channel Separation :</b>	More than 40 dB (at 1 kHz)
<b>Phones :</b>	0.95 mW (load impedance 8 ohm to 1.2k ohm)

- Improvements may result in specification or feature changing without notice.

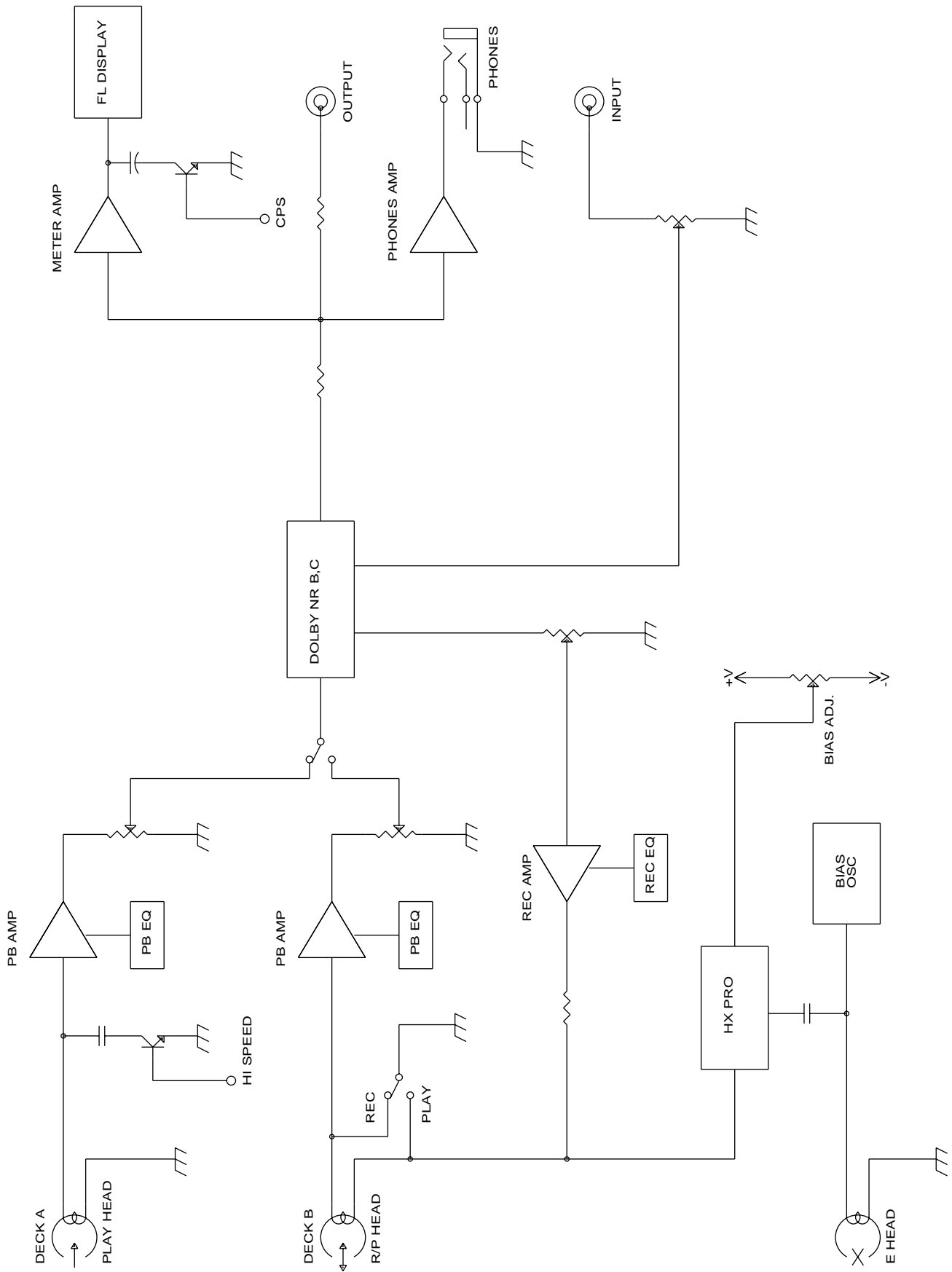
トラック形式	4トラック2チャンネル	ステレオ
ヘッド構成	Deck I : 再生ヘッドX1 Deck II : 録音/再生ヘッドX1 消去ヘッドX1	
使用テープ	C-60, C-90タイプカセットテープ	
テープ速度	4.8cm/sec, 4.9cm/sec (倍速ダビング時)	
モーター	Deck I : DCサーボモーターX1 Deck II : DCサーボモーターX1	
ワウ・フラッター	0.09% (W. RMS) ±0.1% (W. Peak)*	
周波数特性	(総合) メタル 25~18,000Hz (30~17,000Hz ±3 dB*)	
SN比 (総合)	74 dB (ドルビーC NR ON, CCIR-ARM)	
早巻時間	約110秒 (C-60テープ)	
入力	ライン : 100 mV (入力インピーダンス50kΩ)	
出力	ライン : 0.46 mV (負荷インピーダンス47kΩ以上)	
電源	100 V AC, 50 - 60 Hz	
消費電力	0.16 A	
外形寸法	440 x 124 x 286 (W x H x D)	
質量	4.0 kg	
付属品	リモートコントロールユニット (RC 455SD) X1、単3形乾電池X2、入出力コード2本 (1組)、取扱説明書、保証書 RC-5 バス接続コード 1本	

- この仕様は特に表示した項目を除き、当社基準テープを使用して測定したものです。
- 仕様および外観は、改善のため予告なく変更することがあります。
- \*印は、日本電子機械工業会 (EIAJ CP - 2311) 規格に定められた測定法によるものです。

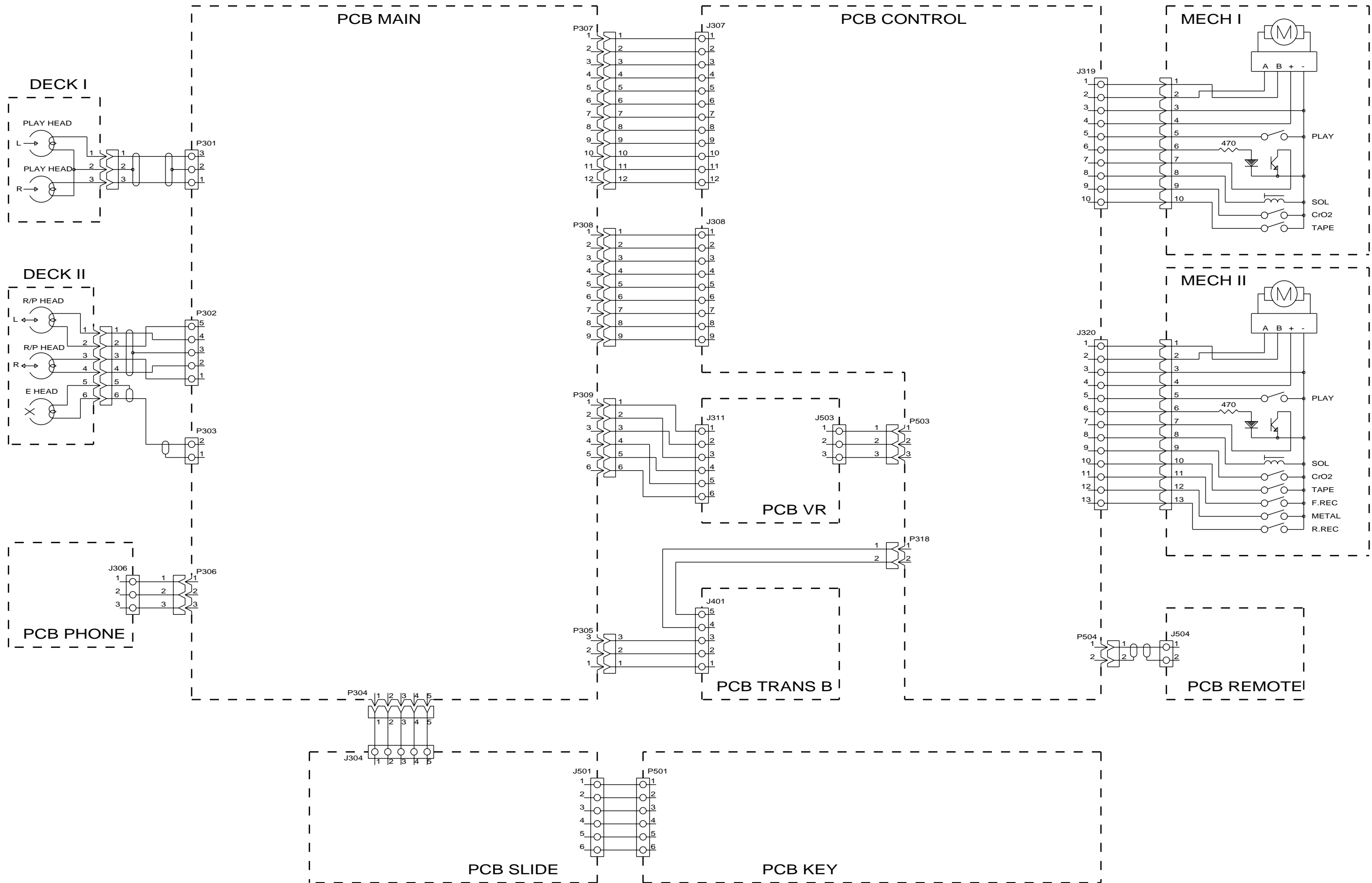
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## 2. BLOCK DIAGRAM



### 3. WIRING DIAGRAM



## 4. ADJUSTMENT PROCEDURE

### 4-1 MECHANICAL ADJUSTMENT

#### 4-1-1 Wow and flutter (playback method)

In both FWD and REV play modes, these measurements should be made at the beginning, middle, and the end of the tape.

1. Connect a wow-and-flutter meter to the LINE OUT.
2. Load and play a TEAC MTT-111N test tape.
3. Check that readings on the wow-and-flutter meter is within 0.19% (JIS WTD).

#### 4-1-2 Tape speed

1. Connect a frequency counter to the LINE OUT.
2. Load a TEAC MTT-111N test tape and play in FWD direction the beginning of the test tape.
3. Adjust each variable resistor to get the following values.

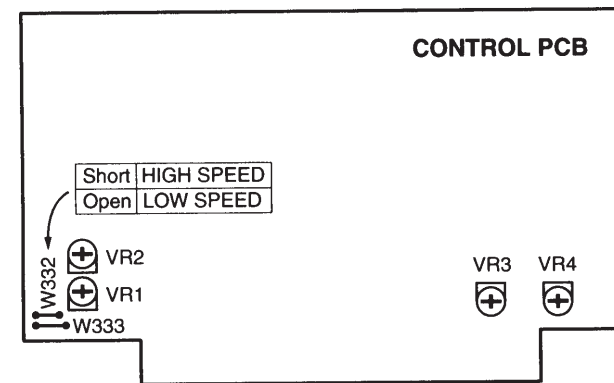


Fig. 2-1

4. In play mode, check that the following values are obtained at the beginning and end of the tape.  
Speed drifting : Within 120 Hz (HIGH speed)  
Within 60 Hz (LOW speed)

#### 4-1-3 Reel torque

1. Load the cassette torque meter on the deck and read the pointer indication on the dial scale for each tape transport operation. The measured torque should be within the following specified values.  
Take-up : 30 to 70g-cm  
Supply : 1.5 to 6g-cm  
FF/REV : 70 to 150g-cm

#### Torque metter

MTT-8111W : Forward torque & back tension  
MTT-8121W : Reverse torque & back tension  
MTT-8242 : Fast forward & rewind static torque

### 4-1 機構部の調整

#### 4-1-1 ワラ・フラッタ (再生法)

FWD, REV 両方向でテープの巻始め、中間、巻終わりを測定する。

1. LINE OUT端子にワラ・フラッタメーターを接続する。
2. テストテープMTT-111Nを再生する。
3. ワラ・フラッタ値が0.19% (JIS WTD) 以下であることを確認する。

#### 4-1-2 テープスピード

1. LINE OUT 端子に周波数カウンターを接続する。
2. テストテープMTT-111Nの巻始め部をFWD方向で再生する。
3. 周波数値が下表の範囲内になるよう、各調整VRを調整する。

	Adjustment point 調整箇所		Adjustment value 調整値
PLAYBACK	HIGH speed	VR2	6,000 ±30Hz
	LOW speed	VR1	3,000 ±20Hz
REC/PLAY	HIGH speed	VR4	6,000 ±30Hz
	LOW speed	VR3	3,000 ±20Hz

4. 巻始めから巻終わりまで再生し、変動幅を確認する。  
変動幅 : 120Hz以内 (ハイスピード)  
60Hz以内 (ロースピード)

#### 4-1-3 リートトルク

1. カセット型トルクメーターによる測定値が下記の範囲内であることを確認する。  
テイクアップトルク : 30~70g-cm  
バックテンショントルク : 1.5~6g-cm  
早送り/巻戻しトルク : 70~150g-cm

#### トルクメーター

MTT-811W : 巻取りトルクとバックテンション (FWD用)  
MTT-812 : 巻取りトルクとバックテンション (REV用)  
MTT-8242 : 早送り/巻戻しトルク

### 4-2 ELECTRICAL ADJUSTMENT

#### 4-2-1 Precautions

- Before performing adjustments and checks clean and demagnetize the entire tape parh.
- In general, adjustments and checks are made in the order of Lch then Rch. Double REF. Nos. indicate Lch/Rch. (Example ; R11/R21)
- 0dB is referenced to 0.775V.
- The AC voltmeter used in the procedures must have an input impedance of 1MΩ or more.
- Unless specified otherwise, adjustments and checks are made in FWD direction.

### 4-2 アンプ部の調整

#### 4-2-1 注意

- アンプ部の調整・確認の前に、テープ走行系の消磁と清掃を行なってください。
- 特に指定のない限り、調整はLch、Rchの順序で行なってください。尚、R11/R21のように記されている回路番号はLch/Rchを示します。
- 0dBは0.775Vです。
- 測定に使用するレベル計の入力インピーダンスは1MΩ以上のものを使用してください。
- 特に指定のない場合、調整および確認はFWD方向で行なってください。

#### 4-2-2 Adjustment locations 調整箇所

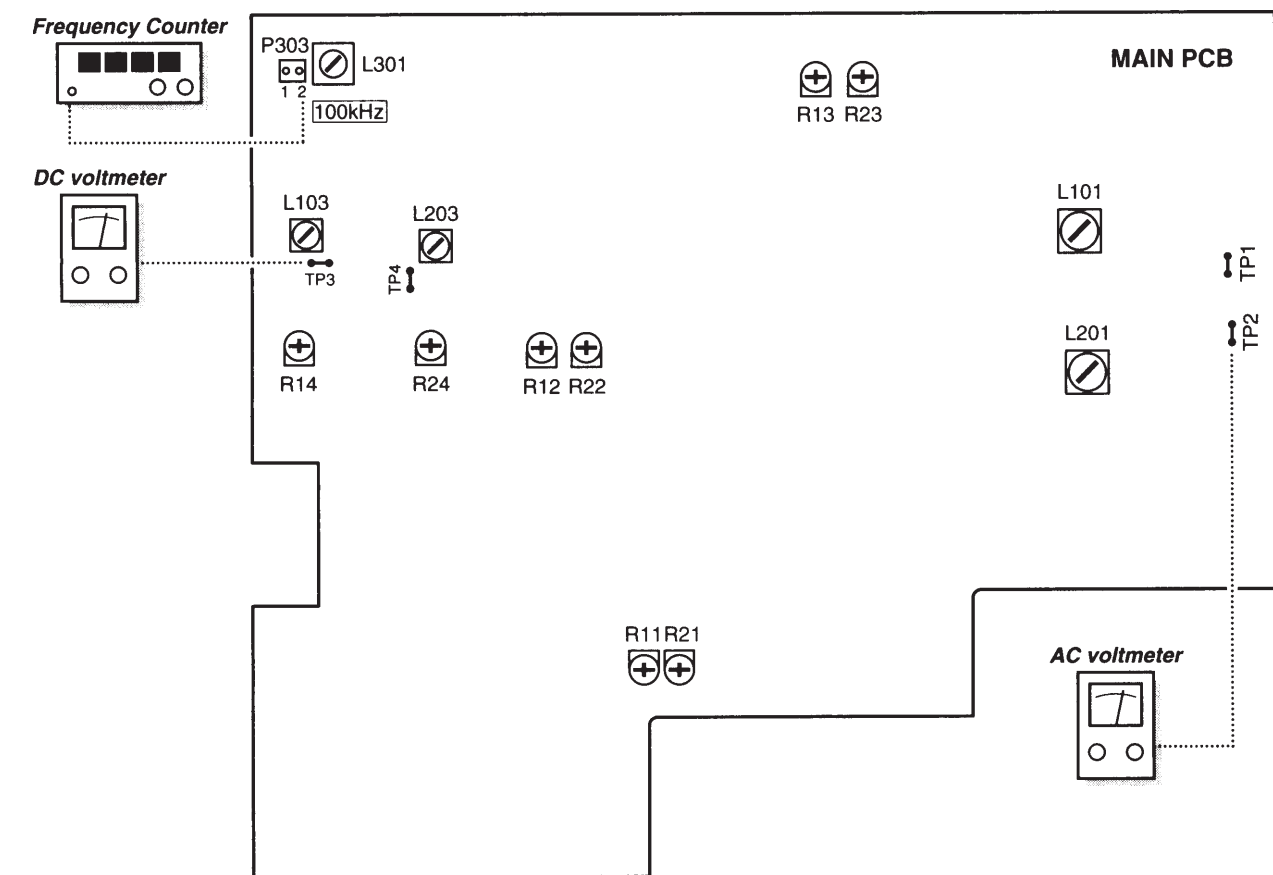


Fig. 2-2

### 4-2-3 Playback performance 再生系

#### Deck settings :

Mode : PLAY

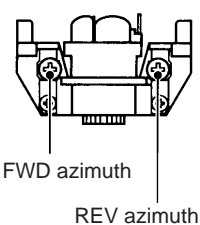
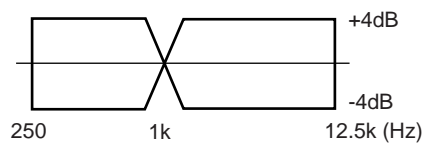
DOLBY NR Switch : OFF

#### TEAC test tapes :

MTT-150C : For Dolby level calibration

MTT-25702 : For playback frequency response check NORMAL tape

MTT-5513 : For S/N check NORMAL tape

ITEM 項目	SETTING 設定	INPUT SIGNAL 入力信号	ADJUSTMENTS 調整箇所	MEASURING POINTS, RESULT 測定箇所・調整値	REMARKS 備考
1. Head azimuth adjustment アジマス調整	Connection:Fig. 2-4 Check and adjust in FWD, REV respectively FWD、REVそれぞれ 調整・確認	MTT-150C	Check	LINE OUT: Phase: within 45° 位相 : 45° 以内 (Fig. 2-5)	 FWD azimuth REV azimuth
		MTT-25702 (12.5kHz)	Azimuth screws アジマス調整 ねじ	LINE OUT: Maximum output level at L & R -ch Lch、Rchとも出力 最大	
2. DOLBY level ドルビー レベル	Connection:Fig. 2-2 FWD, PLAY	MTT-150C	R11/R21	TP1/TP2: -6dB	PLAYBACK I
			R12/R22		REC/PLAY II
3. Playback output level 再生出力 レベル	Connection:Fig. 2-3 FWD/REV PLAY	MTT-150C	Check	LINE OUT: -4.5 ±1dB	Ref. output level 基準出力レベル
4. Meter level メーター レベル		MTT-150C	Check	LEVEL METER: □□ mark ±1dot	
5. PHONES output level PHONES 出力レベル		MTT-150C	Check	PHONES: -19 ±3dB	8Ω load 8Ω 負荷
6. Playback frequency response 再生周波数 特性	Connection:Fig. 2-3	MTT-25702	Check	 250                      1k                      12.5k (Hz)	
7. Playback S/N ratio 再生S/N比	Connection:Fig. 2-3	MTT-5513 Playback the leader tape portion リーダーテープ 部を再生	Check	46dB min.	Ratio of ref. level to noise 基準出力レベル とノイズの比

#### 4-2-4 Recording performance 録音系

##### Deck settings :

Mode : REC/PLAY

DOLBY NR Switch : OFF

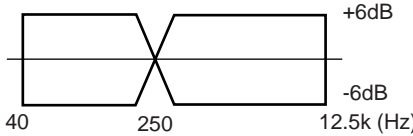
REC LEVEL Control : Specified position (Item 8)

##### TEAC recording test tapes :

MTT-5513 : For NORMAL

MTT-5563 : For CrO<sub>2</sub>

MTT-5572 : For METAL

ITEM 項目	SETTING 設定	INPUT SIGNAL 入力信号	ADJUSTMENTS 調整箇所	MEASURING POINTS, RESULT 測定箇所・調整値	REMARKS 備考
<b>8. Specified LINE input level</b> ライン規定入力レベル	Connection:Fig. 2-3 Mode: REC	LINE IN: 400Hz/-9dB	REC LEVEL	LINE OUT: -4.5dB	After adjusting, do not move (Specific position) 調整後は動かさない こと(規定位置)
<b>9. Bias osc frequency</b> バイアス発振周波数	Connection:Fig. 2-2 TAPE: MTT-5513 Mode: REC	LINE IN: No signal 無信号	L301	P303 Pin 2: 100kHz	
<b>10. Step up coil</b> ステップアップコイル	Connection:Fig. 2-2 TAPE: MTT-5572 Mode: REC	LINE IN: No signal 無信号	L103/L203	TP3/TP4: Min. DC voltage DC電圧最小	
<b>11. Record bias</b> 録音バイアス	Connection:Fig. 2-3 TAPE: MTT-5513	LINE IN: 250Hz/10kHz -42dB	R14/R24	LINE OUT: Nearly equal level at both frequencies 両周波数の録再出力 が同レベル(±0.5dB)	
<b>12. MPX filter</b> MPXフィルター	Connection:Fig. 2-3 Mode: REC	LINE IN: 19kHz/-12dB	L101/L201	30dB min.	Ratio of ref. level to signal 基準出力レベル に対する比
<b>13. Record level</b> 録音レベル	Connection:Fig. 2-3 TAPE: MTT-5513	LINE IN: 400Hz/-12dB	R13/R23	LINE OUT: -7.5dB	
	TAPE: MTT-5563 MTT-5572		Check	LINE OUT: -7.5 ±1dB	
<b>14. Total harmonic distortion</b> 総合歪率	Connection:Fig. 2-3 TAPE: MTT-5513 MTT-5563 MTT-5572	LINE IN: 400Hz/-12dB	Check	NORMAL:2.0% or less CrO <sub>2</sub> :2.5% or less METAL :3.0% or less	
<b>15. Overall frequency response</b> 録再周波数特性	Connection:Fig. 2-3 TAPE: MTT-5513 MTT-5563 MTT-5572	LINE IN: 40Hz -12.5kHz -42dB	Check		
<b>16. Overall S/N ratio</b> 総合S/N比	Connection:Fig. 2-3 TAPE: MTT-5513 MTT-5563 MTT-5572	LINE IN: No signal 無信号	Check	NORMAL:45dB min. CrO <sub>2</sub> :46dB min. METAL :46dB min.	Ratio of ref. level to noise 基準出力レベル とノイズの比



ITEM 項目	SETTING 設定	INPUT SIGNAL 入力信号	ADJUSTMENTS 調整箇所	MEASURING RESULT 調整値	REMARKS 備考
17. Erase efficiency 消去率	Connection: Fig. 2-3 TAPE: MTT-5572 1kHz B.P.F in	LINE IN: 1kHz/+1dB	Check	65dB min.	Ratio of the 1kHz recorded portion to the erased portion. 未消去部分と消去部分の比
18. REC MUTE function REC MUTE 効果	Connection: Fig. 2-3 TAPE: MTT-5572 1kHz B.P.F in	LINE IN: 1kHz/+1dB	Check	55dB min.	Ratio of the 1kHz recorded portion to the "REC MUTE" portion. 録音部分と"REC MUTE"部分の比
19. Channel separation チャンネルセパレーション	Connection: Fig. 2-3 TAPE: MTT-5563 1kHz B.P.F in	LINE IN: Lch 1kHz/ -9dB Rch No signal 無信号	Check	35dB min.	Ratio of Lch (1kHz) to Rch (no signal). Lch (1kHz)とRch (無信号)の比
20. Adjacent track crosstalk トラック間クロストーク	Connection: Fig. 2-3 TAPE: MTT-5572	LINE IN: Lch No signal 無信号 Rch 125Hz/ -9dB	Check	40dB min.	Invert tape and play Rch track. Check leakage level against the output reference of previously recorded portion. テープを反転して再生した時のRch出力レベルの比

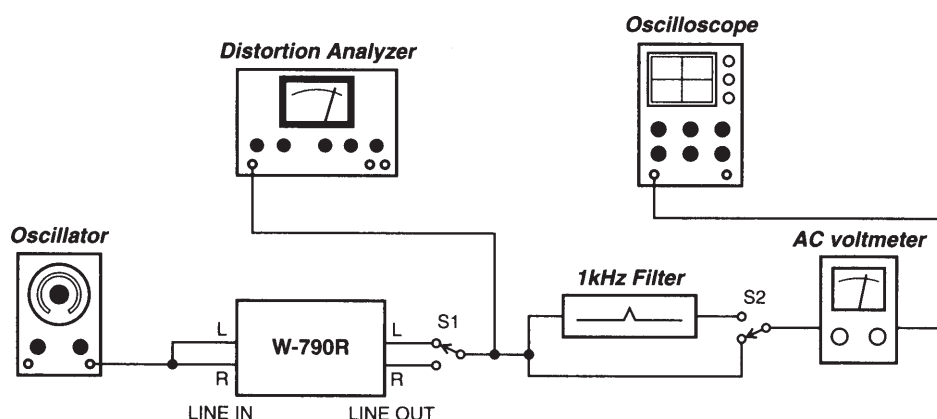


Fig. 2-3

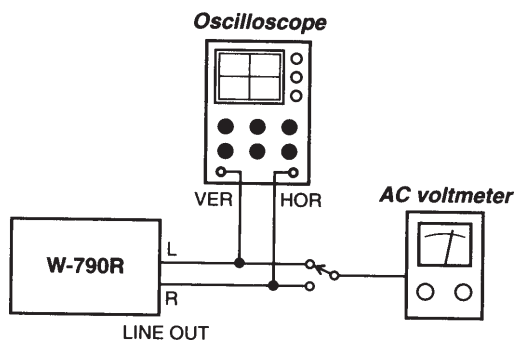


Fig. 2-4

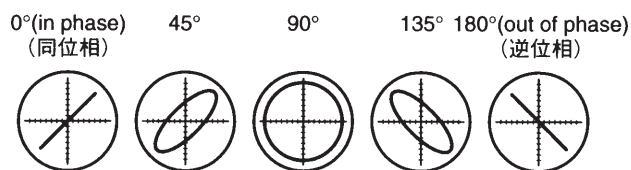


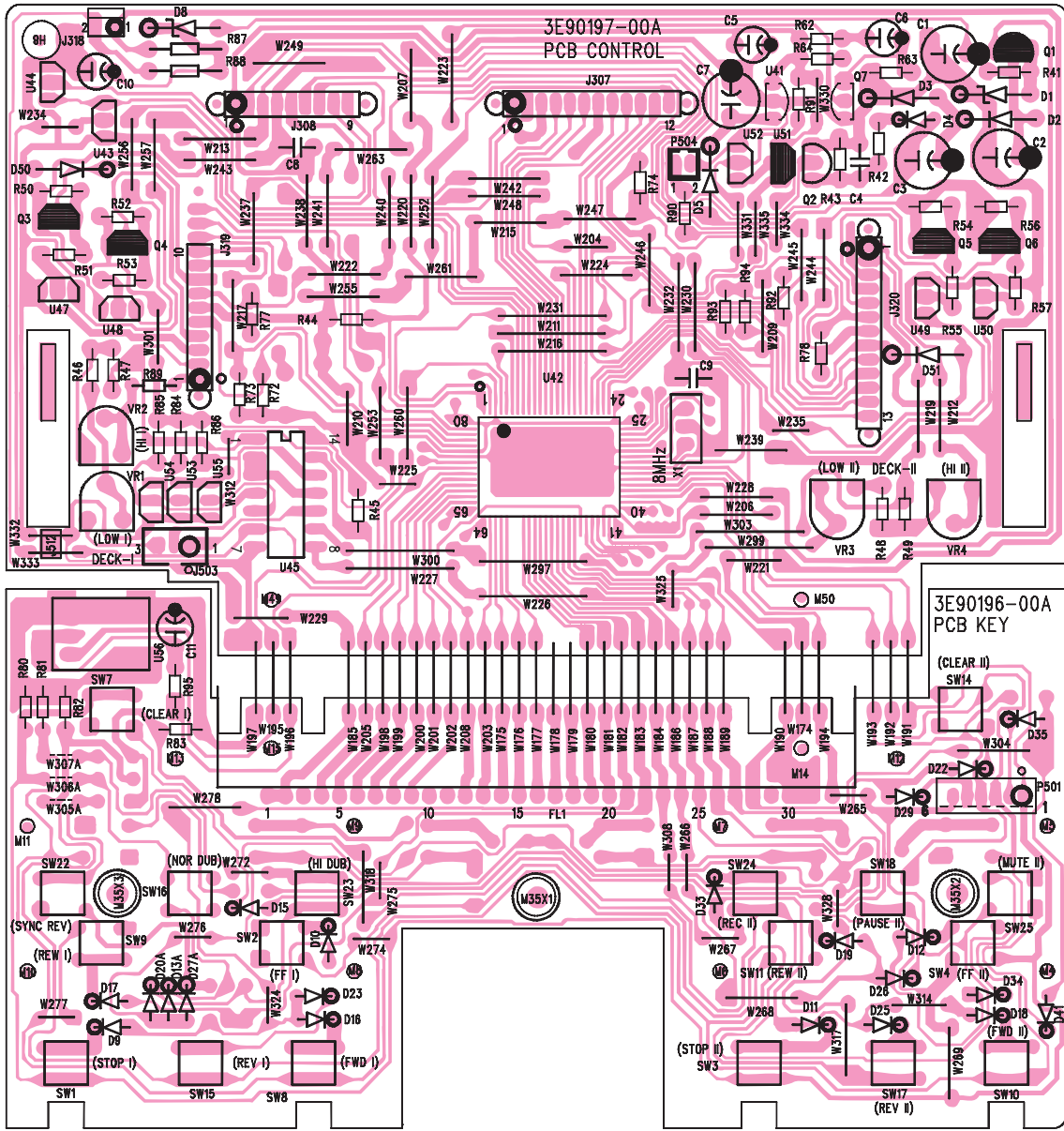
Fig. 2-5

# 5. SCHEMATIC DIAGRAM AND PARTS LOCATION

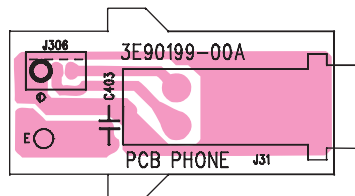
## CONTROL PCB/KEY PCB

U44 U43  
Q3 Q4  
U47 U48 U54 Q53 U55 U45

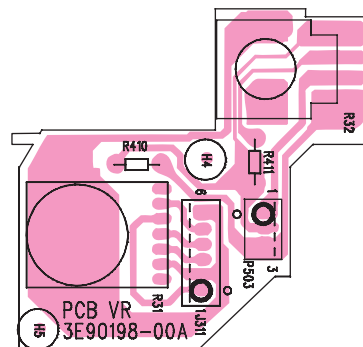
U42 U41 Q7 Q5 Q1  
U52 U51 Q2 U49 U50 Q6



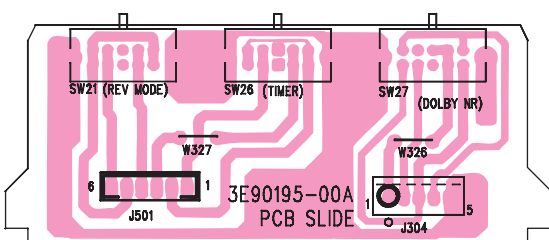
## PHONE PCB

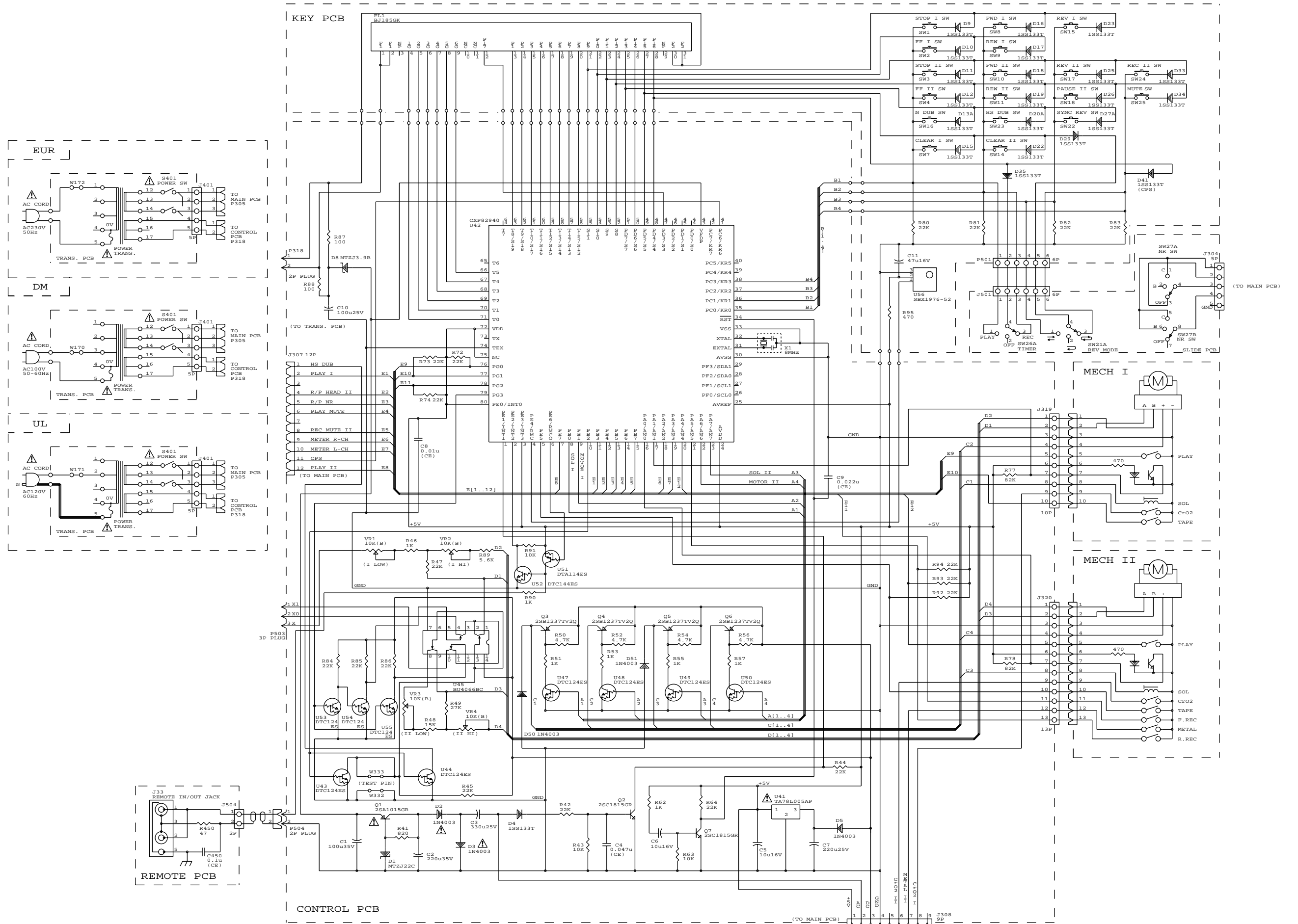


## VR PCB



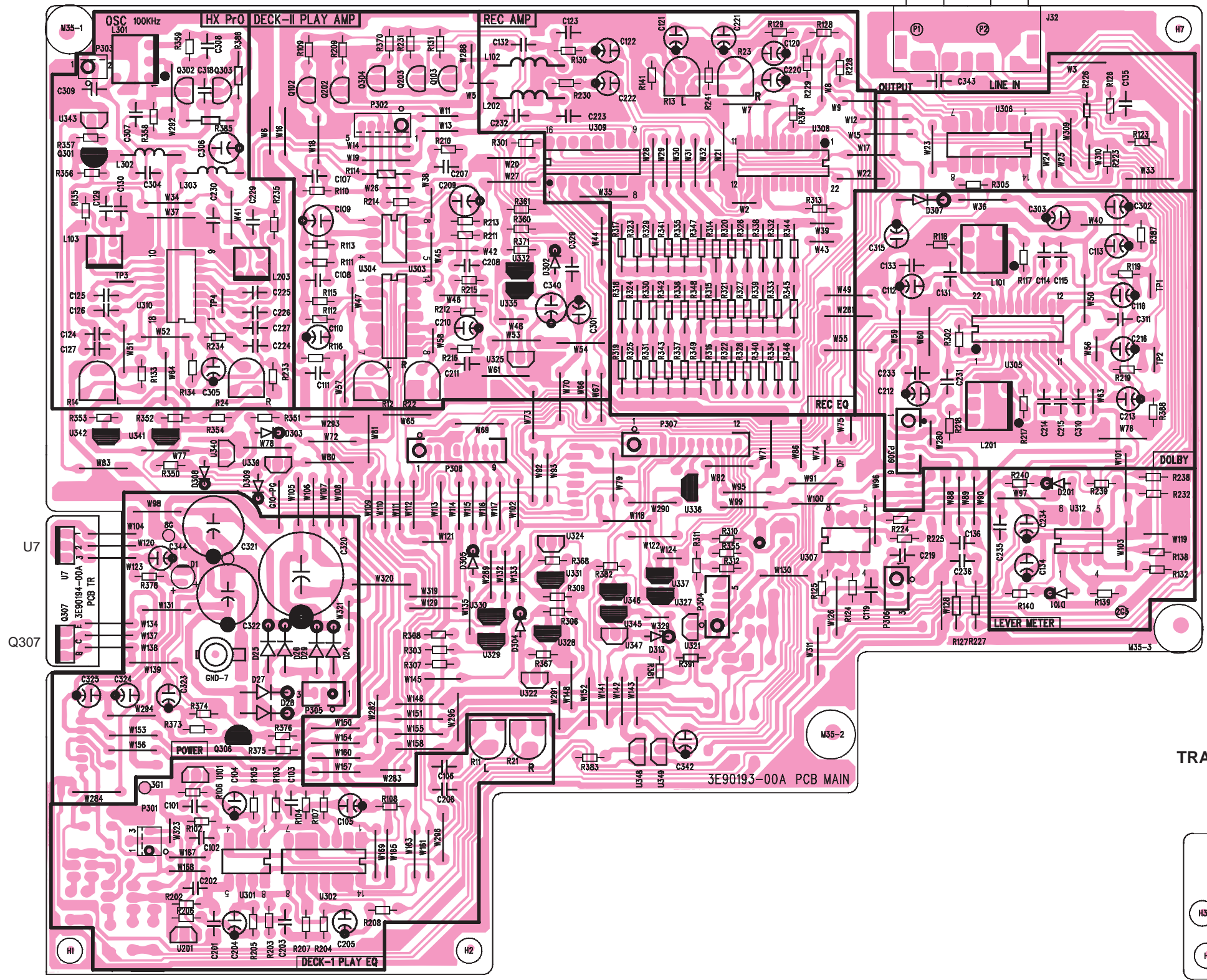
## SLIDE PCB



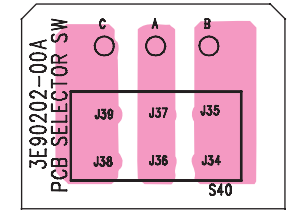


**MAIN PCB/TR PCB**

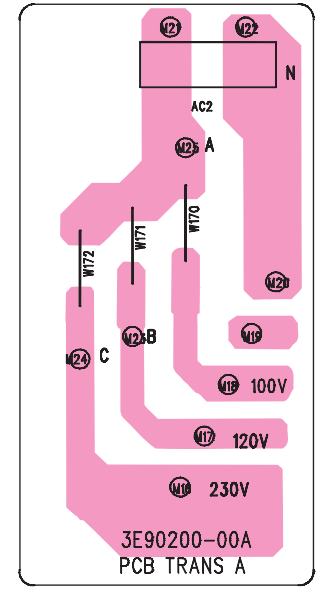
Q302 Q303 U343 U340 U339 Q304 Q203 Q103 U332 U309 U346  
 U342 U341 U201 U301 U302 U304 U330 U325 U331 U347 U327 U336 U366 U305 U312  
 U301 U302 U304 U329 U322 U328 U348 U349 U321 U308 U307



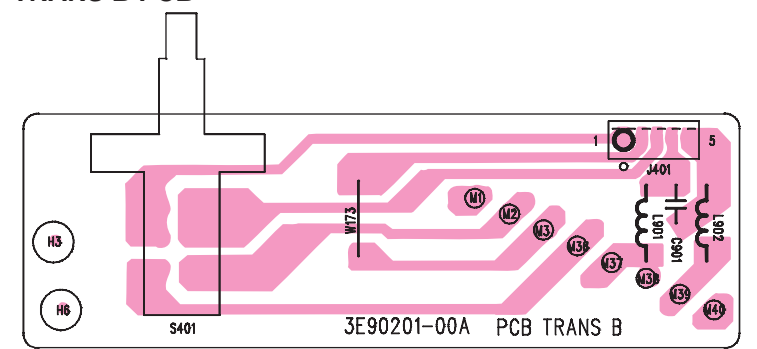
**SELECTOR SW PCB**

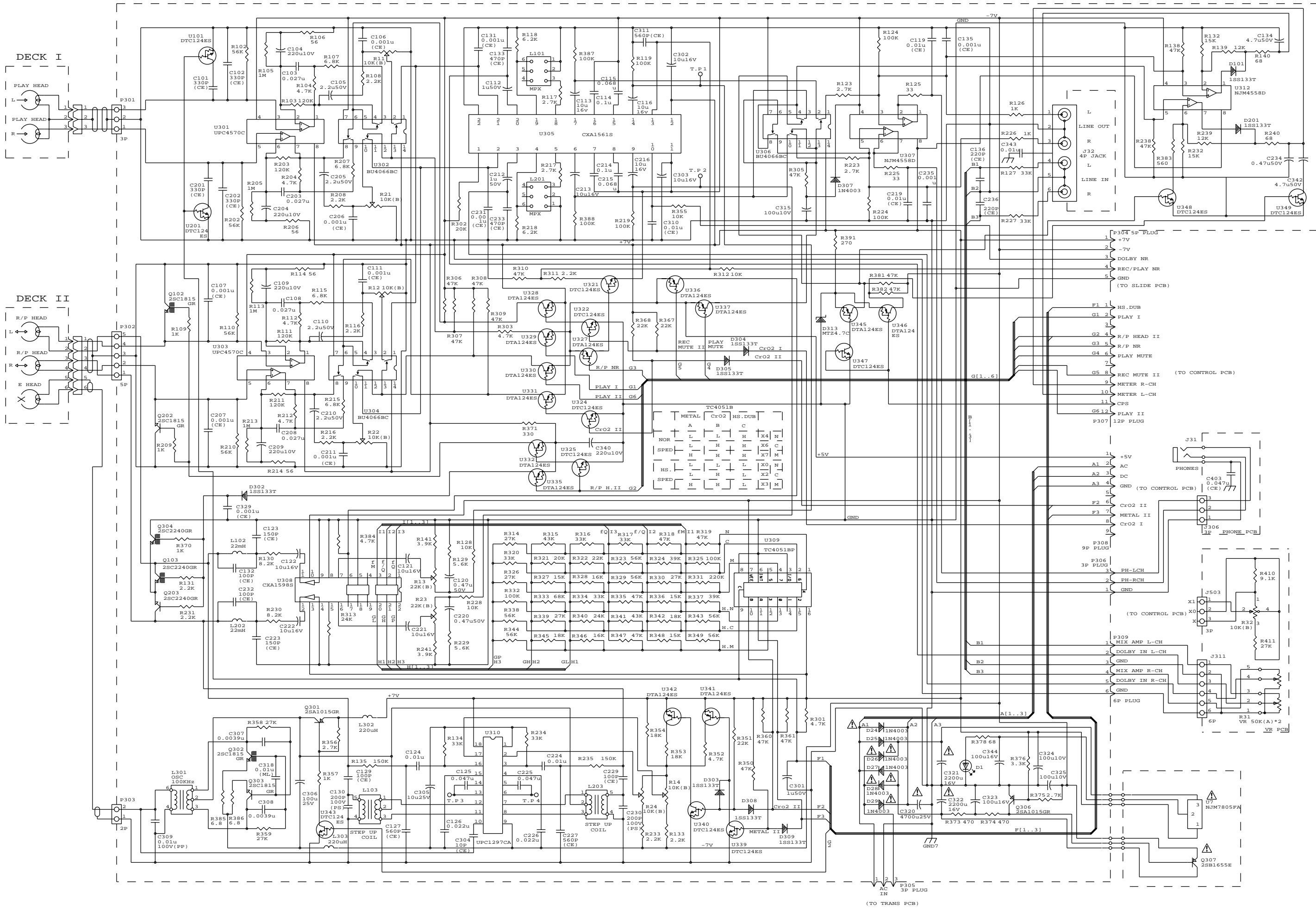


**TRANS A PCB**



**TRANS B PCB**





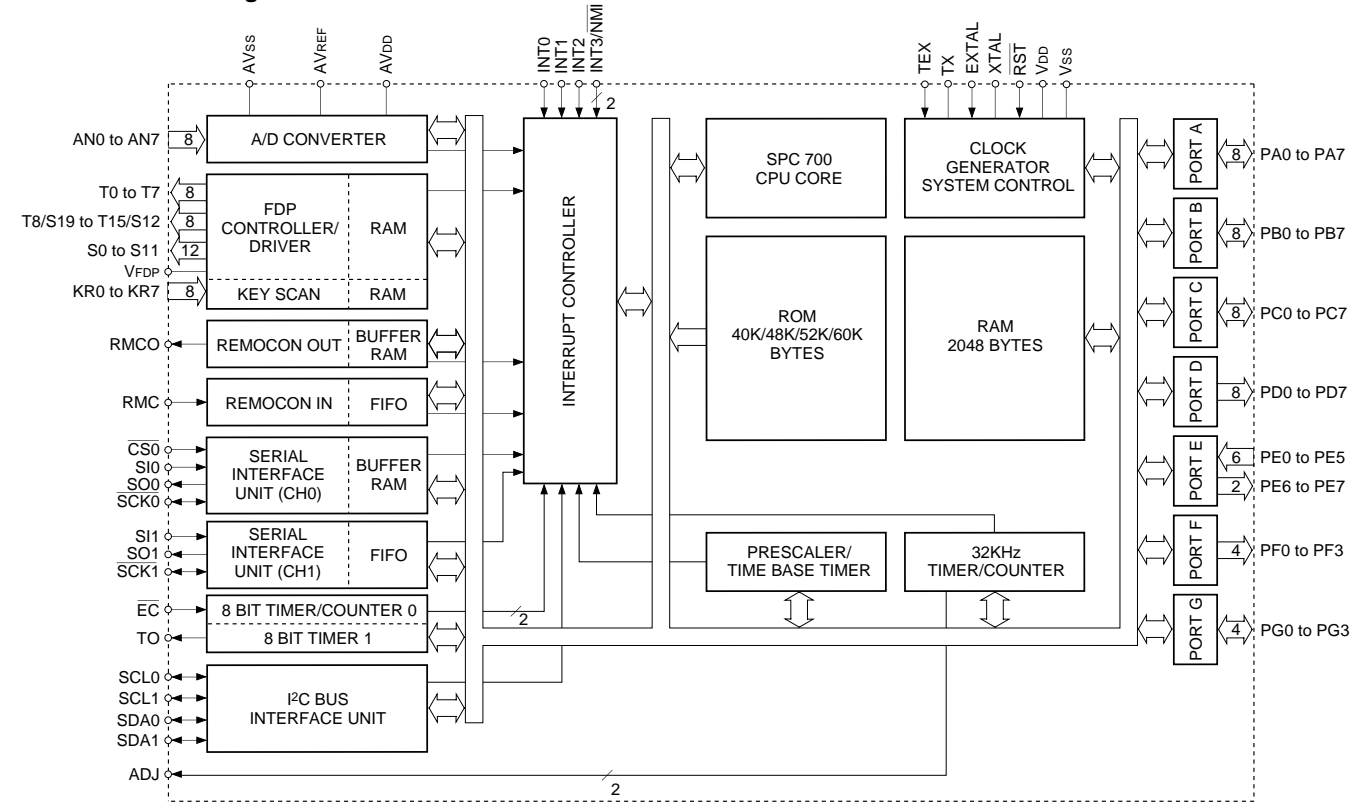
## 6. MICROPROCESSOR AND IC DATA

### U42 : CXT82940

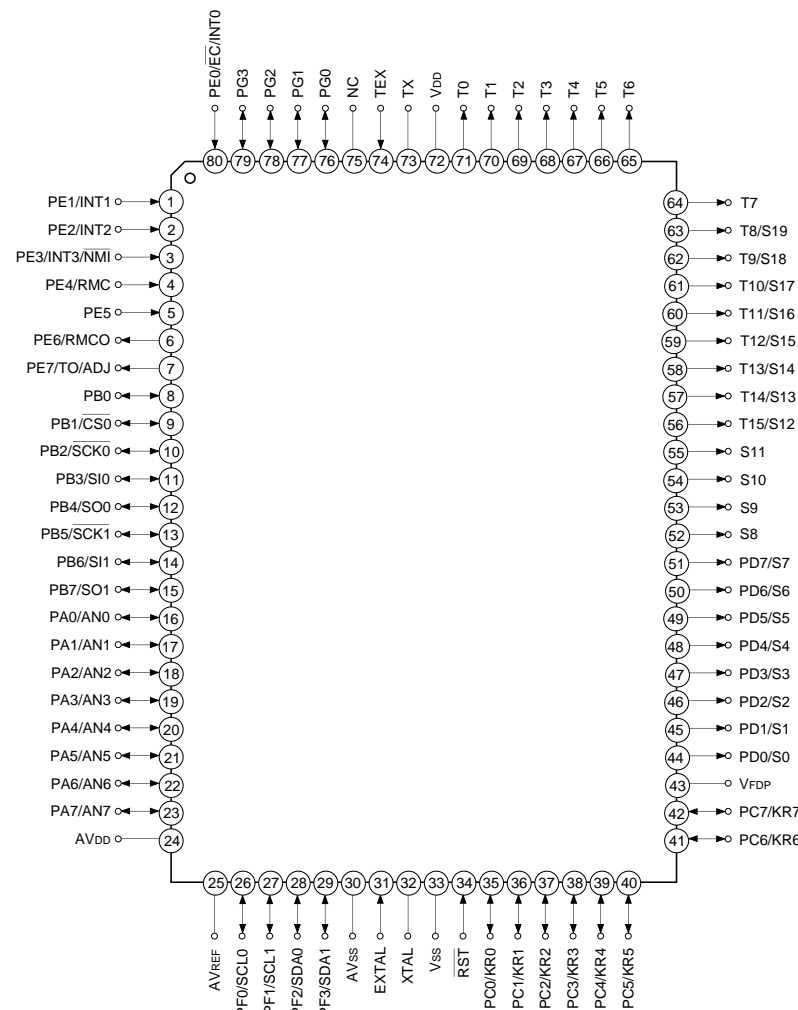
#### 1. Pin Functions

Pin code	I/O	Functions	
PA0/AN0 to PA7/AN7	I/O/ Analog input	(Port A) 8-bit I/O port. I/O can be set in a unit of single bits. Incorporation of pull-up resistor can be set through the software in a unit of 4 bits. (8 pins) Analog inputs to A/D converter. (8 pins)	
PB0	I/O	(Port B) 8-bit I/O port. I/O can be set in a unit of single bits. Incorporation of pull-up resistor can be set through the software in a unit of 4 bits. (8 pins) Serves as key return inputs when operating key scan with fluorescent display panel (FDP) segment signal (8 pins).	
PB1/CS0	I/O/Input		Chip select input for serial interface (CH0).
PB2/SCK0	I/O/I/O		Serial clock I/O (CH0).
PB3/SI0	I/O/Input		Serial data input (CH0).
PB4/SO0	I/O/Output		Serial data output (CH0).
PB5/SCK1	I/O/I/O		Serial clock I/O (CH1).
PB6/SI1	I/O/Input		Serial data input (CH1).
PB7/SO1	I/O/Output	Serial data output (CH1).	
PC0/KR0 to PC7/KR7	I/O/Input	(Port C) 8-bit I/O port. I/O can be set in a unit of single bits. Capable of driving 12mA sync current. Incorporation of pull-up resistor can be set through the software in a unit of 4 bits. (8 pins)	
PE0/INT0/EC	Input/Input/Input	(Port E) 8-bit port. Lower 6 bits are for inputs; upper 2 bits are for outputs. (8 pins)	
PE1/INT1	Input/Input		Inputs for external interruption request.
PE2/INT2	Input/Input		Non-maskable interruption request input.
PE3/INT3/NMI	Input/Input/Input		Remote control reception circuit input.
PE4/RMC	Input/Input		Carrier output of remote control transmission circuit.
PE5	Input	Output for the timer/counter rectangular waves, and 32kHz oscillation dividing frequency.	
PE6/RMCO	Output/Output	Transfer clock I/Os for I <sup>2</sup> C bus interface.	
PE7/TO/ADJ	Output/Output/Output	Transfer data I/Os for I <sup>2</sup> C bus interface.	
PF0/SCL0 PF1/SCL1	Output/I/O	(Port F) 4-bit output port, operating as N-ch open drain output for large current (12mA). (4 pins)	
PF2/SDA0 PF3/SDA1	Output/I/O		FDP segment signal outputs. (8 pins)
PG0 to PG3	I/O	(Port G) 8-bit I/O port. I/O can be set in a unit of single bits. Incorporation of pull-up resistor can be set through the software in a unit of 4 bits. (4 pins)	
PD0/S0 to PD7/S7	Output/Output	FDP segment signal outputs. (4 pins)	
S8 to S11	Output	Outputs for FDP timing signals/segment signals. (8 pins)	
T0 to T7	Output	FDP timing signal outputs.	
V <sub>FDP</sub>		FDP voltage supply when incorporated resistor is set by mask option.	
EXTAL	Input	Crystal connectors for system clock oscillation. When the clock is supplied externally, input to EXTAL; opposite phase clock should be input to XTAL.	
XTAL	Output		
TEX	Input	Crystal connectors for 32kHz timer/counter clock oscillation. Set 32kHz crystal oscillator between TEX and TX. For usage as event input, attach clock source to TEX, and open TX.	
TX	Output		
RST	Input	Low-level active, system reset.	
NC		NC. Under normal operation, connect to V <sub>DD</sub> .	
AV <sub>DD</sub>		Positive power supply for A/D converter.	
AV <sub>REF</sub>	Input	Reference voltage input for A/D converter.	
AV <sub>SS</sub>		A/D converter GND.	
V <sub>DD</sub>		Positive power supply.	
V <sub>SS</sub>		GND.	

#### 2. Block Diagram

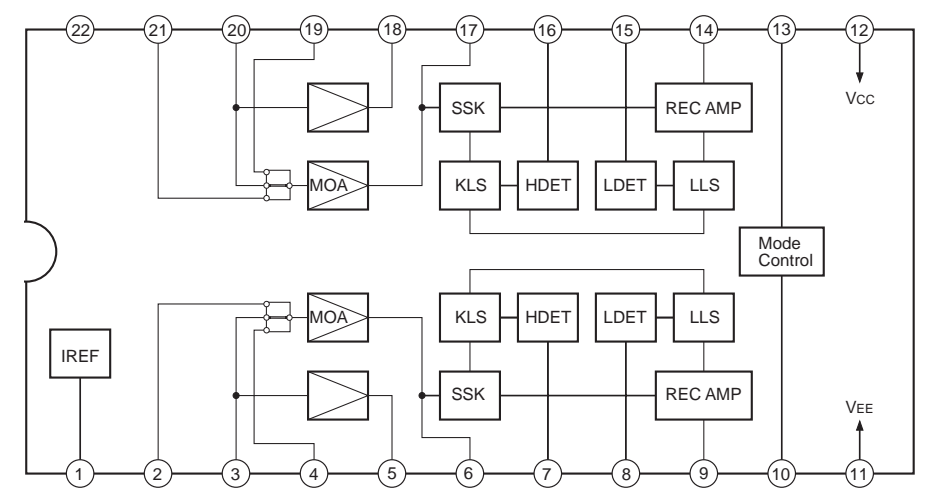


#### 3. Pin Configuration

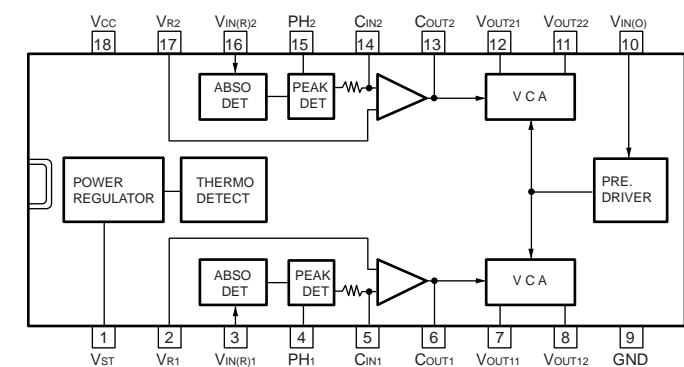


Note) NC (Pin 75) must be connected to V<sub>DD</sub>.

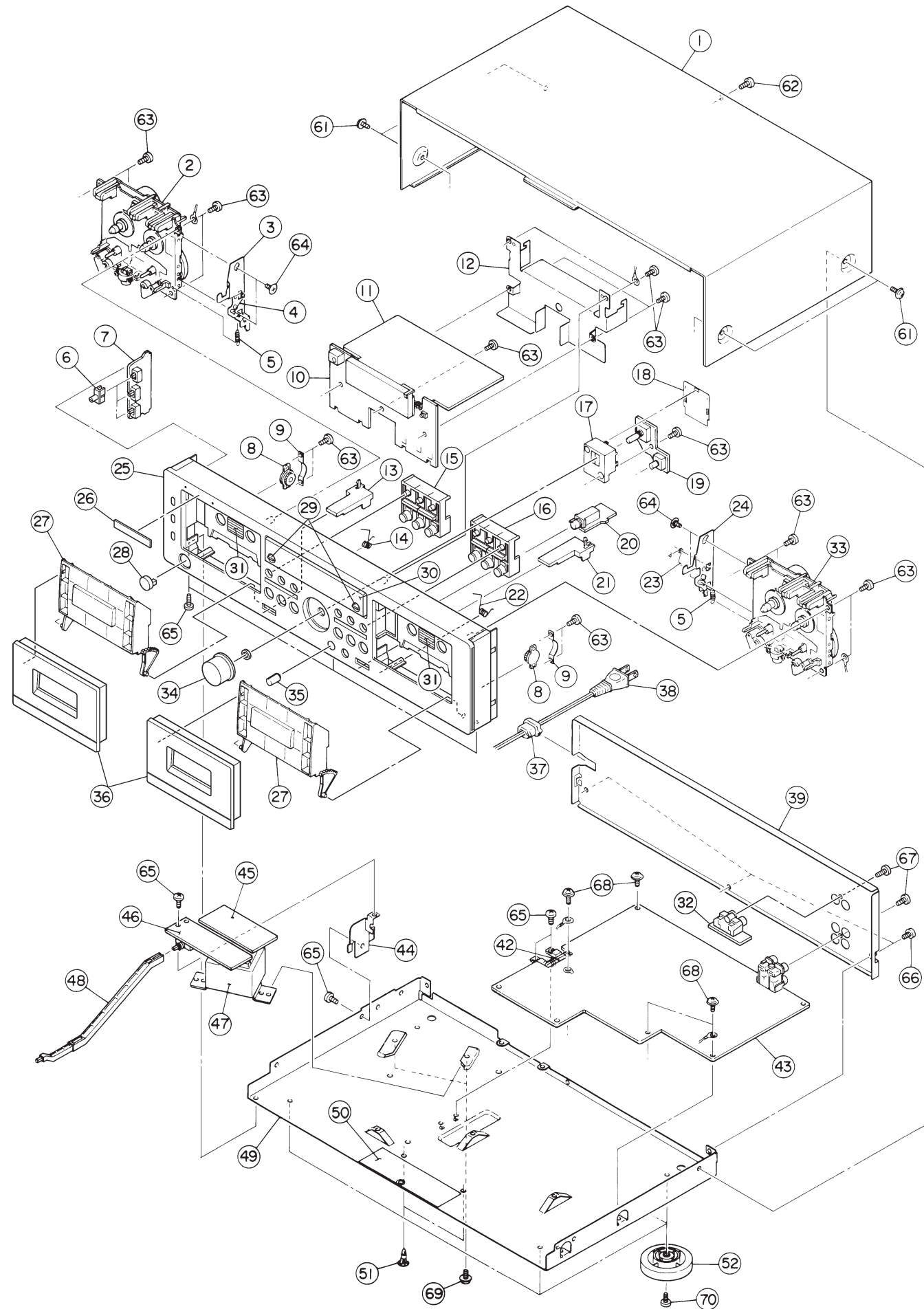
#### U305 : CXA1561S



#### U310 : μPC1297CA

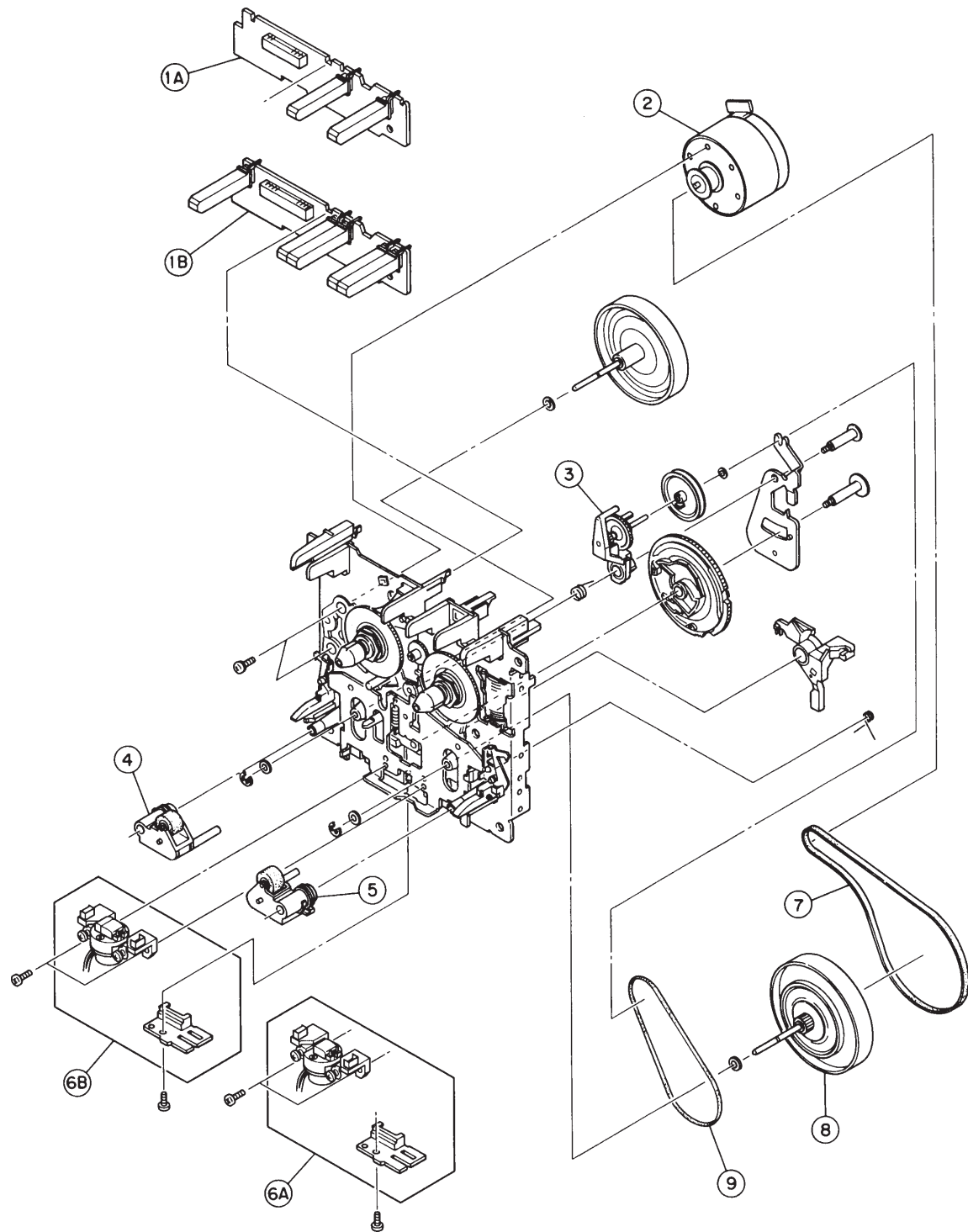


## 7. EXPLODED VIEW AND PARTS LIST



(VERS.:VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, N:EUROPE)

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJ)
1		nsp	BONNET	nsp
2		9965 000 01104	MECH ASSY,PB CMAL2Z093A	286W304500
3		9965 000 01105	HOOK,EJECT (L)	286W258110
4		9965 000 01106	SPRING,HOOK L	286W115110
5		9965 000 01107	SPRING EJECT W-790R	286W115120
6		9965 000 01108	KNOB,SLIDE	286W154020
8		9965 000 01109	DAMPER,GEAR 001P-O-L NF	286W130110
13		9965 000 01110	BUTTON,EJECT L (B)	286W270140
14		9965 000 01111	SPRING,L	286W115130
15		9965 000 01112	BUTTON,MAIN A	286W270110
16		9965 000 01113	BUTTON,MAIN B	286W270120
21		9965 000 01114	BUTTON,EJECT R (B)	286W270130
22		9965 000 01115	SPRING,R	286W115140
23		9965 000 01116	SPRING,HOOK R	286W115150
24		9965 000 01117	HOOK,EJECT (R)	286W258120
25		9965 000 01118	PANEL,FRONT	286W248010
26		4822 454 11825	MZ BADGE	185J251012
27		9965 000 01119	LEAD	185W271110
28		9965 000 01120	BUTTON,POWER	286W270010
29		9965 000 01121	BUTTON,RESET	286W270050
30		9965 000 01122	WINDOW,FL	286W158010
31		9965 000 01123	PLATE,REFLECT	286W274110
33		9965 000 01124	MECH ASSY,R/P CMAL2Z094A	286W304510
34		9965 000 01125	KNOB,REC VOLUME	286W154010
35		9965 000 01126	KNOB,M (B)	286W154030
36		9965 000 01127	LID,CASSETTE	286W053010
▲ 47		9965 000 01128	MAINS TRANSFORMER W0020B	*TS001060R
48		9965 000 01129	LINKAGE,POWER	286W121110
52		nsp	FOOT ASSY, SD455	nsp
61		nsp	SCREW J, S M3X6 BLK	nsp
62		nsp	SCREW VPC M3X8 BLK	nsp
63		nsp	SCREW BPP M3X8	nsp
64		nsp	SCREW 2.6X4.5	nsp
65		nsp	SCREW BPS M3X6	nsp
66		nsp	SCREW BPS M3X6 BLK	nsp
67		nsp	SCREW BPP M3X8 BLK	nsp
68		nsp	SCREW J, S M3X6	nsp
69		nsp	SCREW BPAW M4X8	nsp
70		nsp	SCREW BPS M3X8	nsp
			<b>PACKING</b>	
	F	nsp	USER GUIDE (JPN)	286W851110
	U	nsp	USER GUIDE (USA)	286W851250
	N	9965 000 01130	USER GUIDE (EUR)	286W851310
	F U	nsp	REMOTE CONTROL UNIT RC455SD	ZK240W0010
			<b>NOT STANDARD SPARE PARTS</b>	
		nsp	CUSHION TOP	286W809010
		nsp	CUSHION BOTTOM	286W809020
		nsp	CARTON BOX INNER	286W801010



## 8. ELECTRICAL PARTS LIST

### ASSIGNMENT OF COMMON PARTS CODES.

#### RESISTORS

R\*\*\* : 1) GD05 x x x 140, Carbon film fixed resistor, ±5% 1/4W  
 R\*\*\* : 2) GD05 x x x 160, Carbon film fixed resistor, ±5% 1/6W  
 ↓ Resistance value

Examples  
 ① Resistance value  
 0.1Ω ..... 001    10Ω ..... 100    1kΩ ..... 102    100kΩ ..... 104  
 0.5Ω ..... 005    18Ω ..... 180    2.7kΩ ..... 272    680kΩ ..... 684  
 1Ω ..... 010    100Ω ..... 101    10kΩ ..... 103    1MΩ ..... 105  
 6.8Ω ..... 068    390Ω ..... 391    22kΩ ..... 223    4.7MΩ ..... 475

Note : Please distinguish 1/4W from 1/6W by the shape of parts used actually.

#### CAPACITORS

C\*\*\* : CERAMIC CAP.

3) DD1 x x x x 370, Ceramic capacitor  
 Disc type  
 Temp. coeff. P350~N1000, 50V  
 ↓ Capacity value  
 ↓ Tolerance

Examples  
 ② Tolerance (Capacity deviation)  
 ±0.25 pF ..... 0  
 ±0.5 pF ..... 1  
 ±5 % ..... 5  
 Tolerance of COMMON PARTS handled here are as follows :  
 0.5 pF - 5 pF ..... ± 0.25 pF  
 6 pF - 10 pF ..... ± 0.5 pF  
 12 pF - 560 pF ..... ± 5 %

③ Capacity value  
 0.5 pF ..... 005    3 pF ..... 030    100 pF ..... 101  
 1 pF ..... 010    10 pF ..... 100    220 pF ..... 221  
 1.5 pF ..... 015    47 pF ..... 470    560 pF ..... 561

C\*\*\* : CERAMIC CAP.

4) DK16 x x x 300, High dielectric constant ceramic capacitor  
 Disc type  
 Temp. chara. 2B4, 50V  
 ↓ Capacity value

Examples  
 ④ Capacity value  
 100 pF ..... 101    1000 pF ..... 102    10000 pF ..... 103  
 470 pF ..... 471    2200 pF ..... 222

C\*\*\* : 5) ELECTROLY CAP. ( , 6) FILM CAP. ( )

5) EA x x x x x 10, Electrolytic capacitor  
 One-way lead type, Tolerance ±20%  
 ↓ Working voltage  
 ↓ Capacity value

Examples  
 ⑤ Capacity value  
 0.1 μF ..... 104    4.7 μF ..... 475    100 μF ..... 107  
 0.33 μF ..... 334    10 μF ..... 106    330 μF ..... 337  
 1 μF ..... 105    22 μF ..... 226    1100 μF ..... 118  
 2200 μF ..... 228  
 ⑥ Working voltage  
 6.3 V ..... 006    25 V ..... 025  
 10 V ..... 010    35 V ..... 035  
 16 V ..... 016    50 V ..... 050

6) DF15 x x x 350 → Plastic film capacitor  
 DF15 x x x 310 → One-way type, Mylar ±5% 50V  
 DF16 x x x 310 → Plastic film capacitor  
 One-way type, Mylar ±10% 50V  
 ↓ Capacity value

Examples  
 ⑦ Capacity value  
 0.001 μF (1000 pF) ..... 102    0.1 μF ..... 104  
 0.0018 μF ..... 182    0.56 μF ..... 564  
 0.01 μF ..... 103    1 μF ..... 105  
 0.015 μF ..... 153

**NOTE** 1) The above CODES (R\*\*\*, R\*\*\*, C\*\*\*, C\*\*\* and C\*\*\*) are omitted on the schematic diagram in some case.  
 2) On the occasion, be confirmed the common parts on the parts list.  
 3) Refer to "Common Parts List" for the other common parts (R105, DD4, DK4).

### NOTE ON SAFETY FOR FUSIBLE RESISTOR :

The suppliers and their type numbers of fusible resistors are as follows ;

1. KOA Corporation  
 Part No. (MJI)    Type No. (KOA)    Description  
 NH05 x x x 140    RF25S x x x x Ω    J ±5% (1/4W)  
 NH05 x x x 120    RF50S x x x x Ω    J ±5% (1/2W)  
 NH85 x x x 110    RF73B2A x x x x Ω    J ±5% (1/10W)  
 NH95 x x x 140    RF73B2E x x x x Ω    J ±5% (1/4W)  
 ↓ Resistance value    ↓ Resistance value (0.1Ω - 10kΩ)

2. Matsushita Electronic Components Co., Ltd  
 Part No. (MJI)    Type No. (MEC)    Description  
 NF05 x x x 140    ERD-2FCJ x x x    (±5% 1/4W)  
 RF05 x x x 140    ↓  
 NF02 x x x 140    ERD-2FCG x x x    (±2% 1/4W)  
 RF02 x x x 140    ↓  
 ↓ Resistance value

Examples  
 \* Resistance value  
 0.1Ω ..... 001    10Ω ..... 100    1kΩ ..... 102    100kΩ ..... 104  
 0.5Ω ..... 005    18Ω ..... 180    2.7kΩ ..... 272    680kΩ ..... 684  
 1Ω ..... 010    100Ω ..... 101    10kΩ ..... 103    1MΩ ..... 105  
 6.8Ω ..... 068    390Ω ..... 391    22kΩ ..... 223    4.7MΩ ..... 475

### ABBREVIATION AND MARKS

ANT. : ANTENNA	BATT. : BATTERY
CAP. : CAPACITOR	CER. : CERAMIC
CONN. : CONNECTING	DIG. : DIGITAL
HP : HEADPHONE	MIC. : MICROPHONE
μ-PRO : MICROPROCESSOR	REC. : RECORDING
RES. : RESISTOR	SPK : SPEAKER
SW : SWITCH	TRANSF. : TRANSFORMER
TRIM. : TRIMMING	TRS. : TRANSISTOR
VAR. : VARIABLE	X' TAL : CRYSTAL

### NOTE ON SAFETY:

Symbol Fire or electrical shock hazard. Only original parts should be used to replaced any part marked with symbol Any other component substitution ( other than original type), may increase risk of fire or electrical shock hazard.

### 安全上の注意 :

がついている部品は、安全上重要な部品です。必ず指定されている部品番号の部品を使用して下さい。

(VERS. :VERSION, U.U.S.A., F:JAPAN, K:FAR EAST, N:EUROPE)

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
DM1A		9965 000 01131	PCB CONTROL (PB)	*ZZ001340R
DM1B		9965 000 01132	PCB CONTROL (REC/PB)	*ZZ001350R
DM2		9965 000 01133	MOTOR MAIN	*MM000940R
DM3		9965 000 01134	CLUTCH ASSY	286W061500
DM4		4822 528 11202	POLLER PINCH (L)	240W255010
DM5		4822 528 11203	POLLER PINCH (R)	240W255020
DM6A		9965 000 01135	PLATE HEAD (PB)	*LH200110R
DM6B		9965 000 01136	PLATE HEAD (REC/PB)	*LH400170R
DM7		4822 358 31201	BELT MAIN	240W264010
DM8		4822 528 11204	CAPSTAN ASSY	240W061020
DM9		4822 358 31124	F/R BELT	240W264020



(VERS.:VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, N:EUROPE)

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
<b>MAIN CIRCUIT BOARD CAPACITORS</b>				
C101	nsp	CER.	330pF 50V	nsp
C102	nsp	CER.	330pF 50V	nsp
C103	nsp	Mylar	0.027 $\mu$ F 100V	nsp
C104	nsp	ELECT	220 $\mu$ F 10V	nsp
C105	nsp	ELECT	2.2 $\mu$ F 50V	nsp
C106	nsp	CER.	1000pF 50V	nsp
C107	nsp	CER.	1000pF 50V	nsp
C108	nsp	Mylar	0.027 $\mu$ F 100V	nsp
C109	nsp	ELECT	220 $\mu$ F 10V	nsp
C110	nsp	ELECT	2.2 $\mu$ F 50V	nsp
C111	nsp	CER.	1000pF 50V	nsp
C112	nsp	ELECT	1 $\mu$ F 50V	nsp
C113	nsp	ELECT	10 $\mu$ F 16V	nsp
C114	nsp	CER.	0.1 $\mu$ F 50V	nsp
C115	nsp	Mylar	0.068 $\mu$ F 100V	nsp
C116	nsp	ELECT	10 $\mu$ F 16V	nsp
C119	nsp	CER.	0.01 $\mu$ F 50V	nsp
C120	nsp	ELECT	0.47 $\mu$ F 50V	nsp
C121	nsp	ELECT	10 $\mu$ F 16V	nsp
C122	nsp	ELECT	10 $\mu$ F 16V	nsp
C123	nsp	CER.	150pF 50V	nsp
C124	nsp	CER.	0.01 $\mu$ F 50V	nsp
C125	nsp	Mylar	0.047 $\mu$ F 100V	nsp
C126	nsp	Mylar	0.022 $\mu$ F 100V	nsp
C127	nsp	CER.	560pF 50V	nsp
C129	nsp	CER.	100pF 50V	nsp
C130	nsp	Poly	200pF 100V	nsp
C131	nsp	CER.	1000pF 50V	nsp
C132	nsp	CER.	100pF 50V	nsp
C133	nsp	CER.	470pF 50V	nsp
C134	nsp	ELECT	4.7 $\mu$ F 50V	nsp
C135	nsp	CER.	1000pF 50V	nsp
C136	nsp	CER.	220pF 50V	nsp
C201	nsp	CER.	330pF 50V	nsp
C202	nsp	CER.	330pF 50V	nsp
C203	nsp	Mylar	0.027 $\mu$ F 100V	nsp
C204	nsp	ELECT	220 $\mu$ F 10V	nsp
C205	nsp	ELECT	2.2 $\mu$ F 50V	nsp
C206	nsp	CER.	1000pF 50V	nsp
C207	nsp	CER.	1000pF 50V	nsp
C208	nsp	Mylar	0.027 $\mu$ F 100V	nsp
C209	nsp	ELECT	220 $\mu$ F 10V	nsp
C210	nsp	ELECT	2.2 $\mu$ F 50V	nsp
C211	nsp	CER.	1000pF 50V	nsp
C212	nsp	ELECT	1 $\mu$ F 50V	nsp
C213	nsp	ELECT	10 $\mu$ F 16V	nsp
C214	nsp	CER.	0.1 $\mu$ F 50V	nsp
C215	nsp	Mylar	0.068 $\mu$ F 100V	nsp
C216	nsp	ELECT	10 $\mu$ F 16V	nsp
C219	nsp	CER.	0.01 $\mu$ F 50V	nsp
C220	nsp	ELECT	0.47 $\mu$ F 50V	nsp
C221	nsp	ELECT	10 $\mu$ F 16V	nsp
C222	nsp	ELECT	10 $\mu$ F 16V	nsp
C223	nsp	CER.	150pF 50V	nsp
C224	nsp	CER.	0.01 $\mu$ F 50V	nsp
C225	nsp	Mylar	0.047 $\mu$ F 100V	nsp
C226	nsp	Mylar	0.022 $\mu$ F 100V	nsp
C227	nsp	CER.	560pF 50V	nsp
C229	nsp	CER.	100pF 50V	nsp
C230	nsp	Poly	200pF 100V	nsp
C231	nsp	CER.	1000pF 50V	nsp
C232	nsp	CER.	100pF 50V	nsp
C233	nsp	CER.	470pF 50V	nsp
C234	nsp	ELECT	0.47 $\mu$ F 50V	nsp
C235	nsp	CER.	1000pF 50V	nsp
C236	nsp	CER.	220pF 50V	nsp

(VERS.:VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, N:EUROPE)

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
C301		nsp	ELECT 1 $\mu$ F 50V	nsp
C302		nsp	ELECT 10 $\mu$ F 16V	nsp
C303		nsp	ELECT 10 $\mu$ F 16V	nsp
C304		nsp	CER. 10pF 50V	nsp
C305		nsp	ELECT 10 $\mu$ F 25V	nsp
C306		nsp	ELECT 100 $\mu$ F 25V	nsp
C307		nsp	Mylar 3900pF 100V	nsp
C308		nsp	Mylar 3900pF 100V	nsp
C309		nsp	Poly 0.01 $\mu$ F 100V	nsp
C310		nsp	CER. 0.01 $\mu$ F 50V	nsp
C311		nsp	CER. 560pF 50V	nsp
C315		nsp	ELECT 100 $\mu$ F 10V	nsp
C318		nsp	CER. 0.01 $\mu$ F 50V	nsp
▲ C320		4822 124 81133	ELECT 4700 $\mu$ F 25V	OA47802520
▲ C321		9965 000 01137	ELECT 2200 $\mu$ F 16V	*EA000670R
▲ C322		9965 000 01137	ELECT 2200 $\mu$ F 16V	*EA000670R
C323		nsp	ELECT 100 $\mu$ F 16V	nsp
C324		nsp	ELECT 100 $\mu$ F 10V	nsp
C325		nsp	ELECT 100 $\mu$ F 10V	nsp
C329		nsp	CER. 1000pF 50V	nsp
C340		nsp	ELECT 220 $\mu$ F 10V	nsp
C342		nsp	ELECT 4.7 $\mu$ F 50V	nsp
C343		nsp	Mylar 0.01 $\mu$ F 100V	nsp
C344		nsp	ELECT 100 $\mu$ F 16V	nsp
<b>DIODES</b>				
D1		9965 000 01139	LED. RED LH2041	*HI100830R
▲ D24				
∫		4822 130 31878	1N4003	HD200010AR
▲ D29				
D101		4822 130 32778	1SS133	HD20015210
D201		4822 130 32778	1SS133	HD20015210
D302				
∫		4822 130 32778	1SS133	HD20015210
D305				
D307		4822 130 31878	1N4003	HD200010AR
D308		4822 130 32778	1SS133	HD20015210
D309		4822 130 32778	1SS133	HD20015210
D313		9965 000 01138	Zener Diode MTZJ4.7C	*HD301690R
<b>INTEGRATED CIRCUITS</b>				
U301		4822 209 14617	UPC4570C	*HC103780R
U303		4822 209 14617	UPC4570C	*HC103780R
U302		4822 209 61973	BU4066BC	HC406621B0
U304		4822 209 61973	BU4066BC	HC406621B0
U305		4822 209 16073	CXA1561S	*HC104140R
U306		4822 209 61973	BU4066BC	HC406621B0
U307		4822 209 83631	NJM4558D	HC10003090
U308		4822 209 16849	CXA1598S	*HC105090R
U309		4822 209 63181	TC4051BP	HC405105B0
U310		4822 209 72874	UPC1297CA	HC100100AR
U312		4822 209 83631	NJM4558D	HC10003090
<b>TRANSISTORS</b>				
U101		4822 130 42683	DTC124ES	BA20024210
U201		4822 130 42683	DTC124ES	BA20024210
U321		4822 130 42683	DTC124ES	BA20024210
U322		4822 130 42683	DTC124ES	BA20024210
U324		4822 130 42683	DTC124ES	BA20024210
U325		4822 130 42683	DTC124ES	BA20024210
U327				
∫		4822 130 42593	DTA124ES	BA10016210
U332				
U335		4822 130 42593	DTA124ES	BA10016210
U336		4822 130 42593	DTA124ES	BA10016210
U337		4822 130 42593	DTA124ES	BA10016210
U339		4822 130 42683	DTC124ES	BA20024210
U340		4822 130 42683	DTC124ES	BA20024210
U341		4822 130 42593	DTA124ES	BA10016210

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POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
U342		4822 130 42593	DTA124ES	BA10016210
U343		4822 130 42683	DTC124ES	BA20024210
U345		4822 130 42593	DTA124ES	BA10016210
U346		4822 130 42593	DTA124ES	BA10016210
U347		4822 130 42683	DTC124ES	BA20024210
U348		4822 130 42683	DTC124ES	BA20024210
U349		4822 130 42683	DTC124ES	BA20024210
Q102		4822 130 41306	2SC1815GR	HT318151C0
Q103		4822 130 43233	2SC2240GR	HT322401A0
Q202		4822 130 41306	2SC1815GR	HT318151C0
Q203		4822 130 43233	2SC2240GR	HT322401A0
Q301		4822 130 11101	2SA1015GR	HT110151C0
Q302		4822 130 41306	2SC1815GR	HT318151C0
Q303		4822 130 41306	2SC1815GR	HT318151C0
Q304		4822 130 43233	2SC2240GR	HT322401A0
Q306		4822 130 11101	2SA1015GR	HT110151C0
			<b>RESISTORS</b>	
			<b>All resistor are rated <math>\pm 5\%</math> tolerance and 1/8 watt.</b>	
R102	nsp		56k $\Omega$	nsp
R103	nsp		120k $\Omega$	nsp
R104	nsp		4.7k $\Omega$	nsp
R105	nsp		1M $\Omega$	nsp
R106	nsp		56 $\Omega$	nsp
R107	nsp		6.8k $\Omega$	nsp
R108	nsp		2.2k $\Omega$	nsp
R109	nsp		1k $\Omega$	nsp
R110	nsp		56k $\Omega$	nsp
R111	nsp		120k $\Omega$	nsp
R112	nsp		4.7k $\Omega$	nsp
R113	nsp		1M $\Omega$	nsp
R114	nsp		56 $\Omega$	nsp
R115	nsp		6.8k $\Omega$	nsp
R116	nsp		2.2k $\Omega$	nsp
R117	nsp		2.7k $\Omega$	nsp
R118	nsp		6.2k $\Omega$	nsp
R119	nsp		100k $\Omega$	nsp
R123	nsp		2.7k $\Omega$	nsp
R124	nsp		100k $\Omega$	nsp
R125	nsp		33 $\Omega$	nsp
R126	nsp		1k $\Omega$	nsp
R127	nsp		33k $\Omega$	nsp
R128	nsp		10k $\Omega$	nsp
R129	nsp		5.6k $\Omega$	nsp
R130	nsp		8.2k $\Omega$	nsp
R131	nsp		2.2k $\Omega$	nsp
R132	nsp		15k $\Omega$	nsp
R133	nsp		2.2k $\Omega$	nsp
R134	nsp		33k $\Omega$	nsp
R135	nsp		150k $\Omega$	nsp
R138	nsp		47k $\Omega$	nsp
R139	nsp		12k $\Omega$	nsp
R140	nsp		68 $\Omega$	nsp
R141	nsp		3.9k $\Omega$	nsp
R202	nsp		56k $\Omega$	nsp
R203	nsp		120k $\Omega$	nsp
R204	nsp		4.7k $\Omega$	nsp
R205	nsp		1M $\Omega$	nsp
R206	nsp		56 $\Omega$	nsp
R207	nsp		6.8k $\Omega$	nsp
R208	nsp		2.2k $\Omega$	nsp
R209	nsp		1k $\Omega$	nsp
R210	nsp		56k $\Omega$	nsp
R211	nsp		120k $\Omega$	nsp
R212	nsp		4.7k $\Omega$	nsp
R213	nsp		1M $\Omega$	nsp

(VERS.:VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, N:EUROPE)

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
R214		nsp	56 $\Omega$	nsp
R215		nsp	6.8k $\Omega$	nsp
R216		nsp	2.2k $\Omega$	nsp
R217		nsp	2.7k $\Omega$	nsp
R218		nsp	6.2k $\Omega$	nsp
R219		nsp	100k $\Omega$	nsp
R223		nsp	2.7k $\Omega$	nsp
R224		nsp	100k $\Omega$	nsp
R225		nsp	33 $\Omega$	nsp
R226		nsp	1k $\Omega$	nsp
R227		nsp	33k $\Omega$	nsp
R228		nsp	10k $\Omega$	nsp
R229		nsp	5.6k $\Omega$	nsp
R230		nsp	8.2k $\Omega$	nsp
R231		nsp	2.2k $\Omega$	nsp
R232		nsp	15k $\Omega$	nsp
R233		nsp	2.2k $\Omega$	nsp
R234		nsp	33k $\Omega$	nsp
R235		nsp	150k $\Omega$	nsp
R238		nsp	47k $\Omega$	nsp
R239		nsp	12k $\Omega$	nsp
R240		nsp	68 $\Omega$	nsp
R241		nsp	3.9k $\Omega$	nsp
R301		nsp	4.7k $\Omega$	nsp
R302		nsp	20k $\Omega$	nsp
R303		nsp	4.7k $\Omega$	nsp
R305				
R310		nsp	47k $\Omega$	nsp
R311		nsp	2.2k $\Omega$	nsp
R312		nsp	10k $\Omega$	nsp
R313		nsp	24k $\Omega$	nsp
R314		nsp	27k $\Omega$	nsp
R315		nsp	43k $\Omega$	nsp
R316		nsp	33k $\Omega$	nsp
R317		nsp	33k $\Omega$	nsp
R318		nsp	47k $\Omega$	nsp
R319		nsp	47k $\Omega$	nsp
R320		nsp	33k $\Omega$	nsp
R321		nsp	20k $\Omega$	nsp
R322		nsp	22k $\Omega$	nsp
R324		nsp	39k $\Omega$	nsp
R325		nsp	100k $\Omega$	nsp
R326		nsp	27k $\Omega$	nsp
R327		nsp	15k $\Omega$	nsp
R328		nsp	16k $\Omega$	nsp
R323		nsp	56k $\Omega$	nsp
R329		nsp	56k $\Omega$	nsp
R330		nsp	27k $\Omega$	nsp
R331		nsp	220k $\Omega$	nsp
R332		nsp	100k $\Omega$	nsp
R333		nsp	68k $\Omega$	nsp
R334		nsp	33k $\Omega$	nsp
R335		nsp	47k $\Omega$	nsp
R336		nsp	15k $\Omega$	nsp
R337		nsp	39k $\Omega$	nsp
R338		nsp	56k $\Omega$	nsp
R339		nsp	27k $\Omega$	nsp
R340		nsp	24k $\Omega$	nsp
R341		nsp	43k $\Omega$	nsp
R342		nsp	18k $\Omega$	nsp
R343		nsp	56k $\Omega$	nsp
R344		nsp	56k $\Omega$	nsp
R345		nsp	18k $\Omega$	nsp
R346		nsp	16k $\Omega$	nsp
R347		nsp	47k $\Omega$	nsp
R348		nsp	15k $\Omega$	nsp
R349		nsp	56k $\Omega$	nsp

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POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
R350		nsp	47k Ω	nsp
R351		nsp	22k Ω	nsp
R352		nsp	4.7k Ω	nsp
R353		nsp	18k Ω	nsp
R354		nsp	18k Ω	nsp
R355		nsp	10k Ω	nsp
R356		nsp	2.7k Ω	nsp
R357		nsp	1k Ω	nsp
R358		nsp	27k Ω	nsp
R359		nsp	27k Ω	nsp
R360		nsp	47k Ω	nsp
R361		nsp	47k Ω	nsp
R367		nsp	22k Ω	nsp
R368		nsp	22k Ω	nsp
R370		nsp	1k Ω	nsp
R371		nsp	330 Ω	nsp
R373		nsp	470 Ω	nsp
R374		nsp	470 Ω	nsp
R375		nsp	2.7k Ω	nsp
R376		nsp	3.3k Ω	nsp
R378		nsp	68 Ω	nsp
R381		nsp	47k Ω	nsp
R382		nsp	47k Ω	nsp
R383		nsp	560 Ω	nsp
R384		nsp	4.7k Ω	nsp
R385		nsp	6.8 Ω 1/4W	nsp
R386		nsp	6.8 Ω 1/4W	nsp
R387		nsp	100k Ω	nsp
R388		nsp	100k Ω	nsp
R391		nsp	270 Ω	nsp
R11		9965 000 01140	VSemi-fixed 10k Ω(B)	*RA000780R
R21		9965 000 01140	VSemi-fixed 10k Ω(B)	*RA000780R
R12		9965 000 01140	VSemi-fixed 10k Ω(B)	*RA000780R
R22		9965 000 01140	VSemi-fixed 10k Ω(B)	*RA000780R
R13		9965 000 01141	VSemi-fixed 22k Ω(B)	*RA000920R
R23		9965 000 01141	VSemi-fixed 22k Ω(B)	*RA000920R
R14		9965 000 01140	VSemi-fixed 10k Ω(B)	*RA000780R
R24		9965 000 01140	VSemi-fixed 10k Ω(B)	*RA000780R
L102		9965 000 01143	22mH	*LC107240R
L202		9965 000 01143	22mH	*LC107240R
L103		9965 000 01144	STEP UP	*TC000310R
L203		9965 000 01144	STEP UP	*TC000310R
L301		9965 000 01145	Bias SM-10F	*TC000330R
L302		9965 000 01146	220μH	*LC106610R
L303		9965 000 01146	220μH	*LC106610R
L101		9965 000 01142	Filter Low Pass MPX	*TC000300R
L201		9965 000 01142	Filter Low Pass MPX	*TC000300R
J32		9965 000 01147	Jack RCA 4P	*YT001790R
P304		nsp	Plug 5P	nsp
P305		nsp	Plug 3P	nsp
P306		nsp	Plug 3P	nsp
P307		nsp	Plug 12P	nsp
P308		nsp	Plug 9P	nsp
P309		nsp	Plug 6P	nsp
▲ U7		4822 209 31631	IC NJM7805FA	HC3890509F
▲ Q307		9965 000 01148	2SB1655E	*HT200360R

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POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
SW21		9965 000 01149	Switch Slide AXA 2-3	*SS000600R
SW26		9965 000 01149	Switch Slide AXA 2-3	*SS000600R
SW27		9965 000 01149	Switch Slide AXA 2-3	*SS000600R
C11		nsp	ELECT 47μF 16V	nsp
D9		4822 130 32778	1SS133	HD20015210
D12		4822 130 32778	1SS133	HD20015210
D13A		4822 130 32778	1SS133	HD20015210
D15		4822 130 32778	1SS133	HD20015210
D19		4822 130 32778	1SS133	HD20015210
D20A		4822 130 32778	1SS133	HD20015210
D22		4822 130 32778	1SS133	HD20015210
D23		4822 130 32778	1SS133	HD20015210
D25		4822 130 32778	1SS133	HD20015210
D26		4822 130 32778	1SS133	HD20015210
D27A		4822 130 32778	1SS133	HD20015210
D29		4822 130 32778	1SS133	HD20015210
D33		4822 130 32778	1SS133	HD20015210
D34		4822 130 32778	1SS133	HD20015210
D35		4822 130 32778	1SS133	HD20015210
D41		4822 130 32778	1SS133	HD20015210
U56		9965 000 01150	IR Sensor SBX1976-52	*HW100340R
R80		nsp	22k Ω ±5% 1/8W	nsp
R83		nsp	470 Ω ±5% 1/8W	nsp
R95		nsp	470 Ω ±5% 1/8W	nsp
FL1		9965 000 01151	Display SVA-06SM14	*HQ300370R
SW1		9965 000 01153	Switch Tact SKQSAB HMR-187	*SP000750R
SW4		9965 000 01153	Switch Tact SKQSAB HMR-187	*SP000750R
SW7		9965 000 01153	Switch Tact SKQSAB HMR-187	*SP000750R
SW11		9965 000 01153	Switch Tact SKQSAB HMR-187	*SP000750R
SW14		9965 000 01153	Switch Tact SKQSAB HMR-187	*SP000750R
SW18		9965 000 01153	Switch Tact SKQSAB HMR-187	*SP000750R
SW22		9965 000 01153	Switch Tact SKQSAB HMR-187	*SP000750R
SW25		9965 000 01153	Switch Tact SKQSAB HMR-187	*SP000750R
C1		nsp	ELECT 100μF 35V	nsp
C2		nsp	ELECT 220μF 35V	nsp
C3		nsp	ELECT 330μF 25V	nsp
C4		nsp	Mylar 0. 047μF 100V	nsp
C5		nsp	ELECT 10μF 16V	nsp
C6		nsp	ELECT 10μF 16V	nsp
C7		9965 000 01154	ELECT 220μF 25V	*EA000660R
C8		nsp	CER. 0.01μF 50V	nsp
C9		nsp	Mylar 0.022μF 100V	nsp
C10		nsp	ELECT 1000μF 25V	nsp

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POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
			<b>DIODES</b>	
D1		4822 130 80598	Zener Diode MTZJ22C	*HD301680R
D2		4822 130 31878	1N4003	HD200010AR
D3		4822 130 31878	1N4003	HD200010AR
D4		4822 130 32778	1SS133	HD20015210
D5		4822 130 31878	1N4003	HD200010AR
D8		9965 000 01155	Zener Diode MTZJ3.9B	*HD301410R
D50		4822 130 31878	1N4003	HD200010AR
D51		4822 130 31878	1N4003	HD200010AR
			<b>INTEGRATED CIRCUITS</b>	
U41		5322 209 73891	TA78L005AP	*HC300180R
U42		9965 000 01156	CXP82940	*HC105100R
U45		4822 209 61973	BU4066BC	HC406621B0
			<b>TRANSISTORS</b>	
U43		4822 130 42683	DTC124ES	BA20024210
U44		4822 130 42683	DTC124ES	BA20024210
U47		4822 130 42683	DTC124ES	BA20024210
U50				
U51		4822 130 42593	DTA124ES	BA10016210
U52		4822 130 42683	DTC124ES	BA20024210
U55				
▲ Q1		4822 130 11101	T2SA1015GR	HT110151C0
Q2		4822 130 41306	T2SC1815GR	HT318151C0
Q3		9965 000 01157	T2SB1237TV2Q	*HT200310R
Q6				
Q7		4822 130 41306	T2SC1815GR	HT318151C0
			<b>RESISTORS</b>	
			All resistor are rated ±5% tolerance and 1/8 watt.	
R41	nsp		820 Ω	nsp
R42	nsp		22k Ω	nsp
R43	nsp		10k Ω	nsp
R44	nsp		22k Ω	nsp
R45	nsp		22k Ω	nsp
R46	nsp		1k Ω	nsp
R47	nsp		22k Ω	nsp
R48	nsp		15k Ω	nsp
R49	nsp		27k Ω	nsp
R50	nsp		4.7k Ω	nsp
R51	nsp		1k Ω	nsp
R52	nsp		4.7k Ω	nsp
R53	nsp		1k Ω	nsp
R54	nsp		4.7k Ω	nsp
R55	nsp		1k Ω	nsp
R56	nsp		4.7k Ω	nsp
R57	nsp		1k Ω	nsp
R62	nsp		1k Ω	nsp
R63	nsp		10k Ω	nsp
R64	nsp		22k Ω	nsp
R72	nsp		22k Ω	nsp
R73	nsp		22k Ω	nsp
R74	nsp		22k Ω	nsp
R77	nsp		82k Ω	nsp
R78	nsp		82k Ω	nsp
R84	nsp		22k Ω	nsp
R85	nsp		22k Ω	nsp
R86	nsp		22k Ω	nsp
R87	nsp		100 Ω 1/4W	nsp
R88	nsp		100 Ω 1/4W	nsp
R89	nsp		5.6k Ω	nsp
R90	nsp		1k Ω	nsp
R91	nsp		10k Ω	nsp
R92	nsp		22k Ω	nsp

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POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
R93		nsp	22k Ω	nsp
R94		nsp	22k Ω	nsp
VR1		9965 000 01140	VSemi-fixed 10k Ω(B)	*RA000780R
VR2		9965 000 01140	VSemi-fixed 10k Ω(B)	*RA000780R
VR3		9965 000 01140	VSemi-fixed 10k Ω(B)	*RA000780R
VR4		9965 000 01140	VSemi-fixed 10k Ω(B)	*RA000780R
			<b>MISCELLANEOUS</b>	
P318		nsp	Plug 2P	nsp
P503		nsp	Plug 3P	nsp
P504		nsp	Plug 2P	nsp
X1		9965 000 01158	Resonator Ceramic 8MHz	*FQ000400R
			<b>VR CIRCUIT BOARD</b>	
			<b>RESISTORS</b>	
R410		nsp	9.1k Ω ±5% 1/8W	nsp
R411		nsp	27k Ω ±5% 1/8W	nsp
R31		9965 000 01159	Variable Resistor 50k Ω(A)*2	*RM000380R
R32		9965 000 01160	Variable Resistor 10k Ω(B)	*RM000390R
			<b>PHONE CIRCUIT BOARD</b>	
C403		nsp	CER. CAP 0.047μF 50V	nsp
J31		9965 000 01161	Jack JY-6317-01-030G	*YT001780R
			<b>TRANS A CIRCUIT BOARD</b>	
AC2	N	nsp	Terminal Lapping 2P	nsp
W170	F	nsp	Jumper 10mm	nsp
W171	U	nsp	Jumper 10mm	nsp
W172	N	nsp	Jumper 10mm	nsp
			<b>TRANS B CIRCUIT BOARD</b>	
C901		nsp	CER. CAP 0.1μF 50V	nsp
▲ S401		9965 000 01162	Switch Push SPUN-12	*SP000740R
L901		9965 000 01163	COIL 3.3μH	*LC107250R
L902		9965 000 01163	COIL 3.3μH	*LC107250R
			<b>REMOTE CIRCUIT BOARD</b>	
C450		nsp	CER. CAP 0.1μF 50V	nsp
R450		nsp	RES. 47Ω ±5% 1/8W	nsp
J33		9965 000 01164	Jack RCA 2P (ORANGE)	*YT001800R
▲ 47		9965 000 01128	MAINS TRANSFORMER	*TS001060R