

**TASCAM**<sup>®</sup>  
TEAC PROFESSIONAL

## SERVICE MANUAL

# 202MKV

## Double Auto Reverse Cassette Deck

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#### **INSTRUCTIONS FOR SERVICE PERSONNEL**

BEFORE RETURNING APPLIANCE TO THE CUSTOMER, MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT.

# 1. Specifications

## 仕様

### Rating & Audio performance

Track System:	4-track, 2-channel stereo
Heads:	
Deck 1;	1 Erase and 1 Record/Playback(Rotating)
Deck 2;	1 Erase and 1 Record/Playback(Rotating)
Type of Tape:	Cassette tape C-60 and C-90 (Philips type)
Tape Speeds:	4.76 cm/sec (1-7/8 ips) 9.5 cm/sec (3-3/4 ips) (High speed dubbing)
Pitch Control:	±12%
Motors:	2 DC servo motors (1 ea. deck)
Wow and Flutter:	0.25 % (WRMS)
Frequency response (Overall, -20 dB):	30-19,000 Hz, Metal tape(Playback only) 30-18,000 Hz, CrO2 tape 30-17,000 Hz, Normal tape
Signal-to-Noise Ratio (Overall):	59 dB (NR off, 3 % THD Level, Weighted) 69 dB (Dolby B NR on, over 5 kHz)
Fast Winding Time:	Approximately 160 seconds for C-60
Inputs	
Line:	-9 dB, 50 k Ω
Mic:	-57 dB, 200 Ω
Outputs:	
Line:	-4.5 dB for load impedance of 50 k Ω or more
Headphones:	1 mW / 32 Ω

### Physical specifications

Power Requirements:	
General Export model	120 / 230 V AC, 50-60 Hz
U.S.A./Canada model	120 V AC, 60 Hz
Europe model	230 V AC, 50 Hz ( )
Australia model	240 V AC, 50 Hz ( )
Power Consumption:	22 W
Dimensions (W x H x D):	482 x 138.5 x 286 mm (17-1/8" x 4-15/16" x 11-1/2")
Weight (net):	5.5 kg (12.1 lbs.)
Standard Accessories:	Rack mounting kit x 1

### 定格・オーディオ性能

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 1 :	録音/再生ヘッド×1 消去ヘッド×1
Deck 2 :	録音/再生ヘッド×1 消去ヘッド×1
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, 9.5cm/sec (高速ダビング時)
ピッチコントロール:	±12%
モーター:	
Deck 1 :	DCサーボモーター×1
Deck 2 :	DCサーボモーター×1
ワウ・フラッター:	0.25% (W.RMS) ±0.1% (W.Peak)*
周波数特性(総合)	
メタル :	30~19,000Hz (再生のみ)
クローム :	30~18,000Hz
ノーマル :	30~17,000Hz
SN比(総合)	58dB (NR OFF, 規定録音レベル) 69dB (ドルビーB NR ON, CCIR-ARM)
早巻時間	約160秒 (C-60テープ)
入力	
ライン :	-9dB (入力インピーダンス50kΩ)
マイク :	-57dB (入力インピーダンス200Ω)
出力	
ライン :	-4.5dB (負荷インピーダンス50kΩ以上)
ヘッドフォン :	1mW / 32Ω

### 一般

電源	100V AC, 50-60Hz
消費電力	16W
外形寸法	482×138.5×286mm (W×H×D)
質量	5.5kg
付属品	ラックマウントビスケット ×1,

● 0 dB=0.775V

● 0 dB=0.775V



## 2. Adjustment and Checks

### 調整と確認

#### 1. MECHANICAL ADJUSTMENT

##### 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 the readings on the wow-and-flutter meter is within 0.25% (JIS WTD).

##### 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.

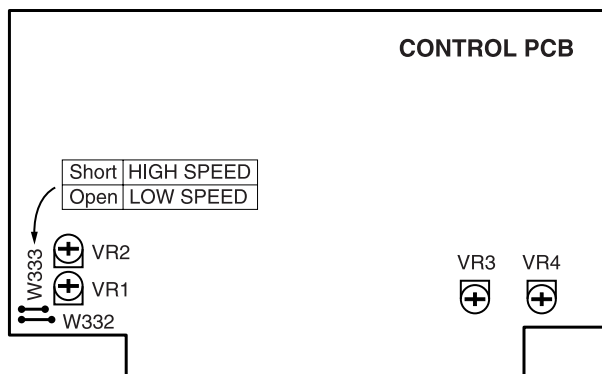


Fig. 2-1

4. In play mode, check that the following values are obtained at the beginning and end of the tape.
 

Speed drifting	Within 120Hz (HIGH speed)
	Within 60Hz (LOW speed)

##### 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 75g-cm
Supply:	1.5 to 6g-cm
FF/REW:	55 to 170g-cm

##### Torque meter

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

#### 1. 機構部の調整

##### 1-1 ワウ・フラッタ(再生法)

FWD, REV両方向でテープの巻始め、中間、巻終りを測定する。

1. LINE OUT端子にワウ・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. ワウ・フラッタ値が0.25% (JIS WTD) 以下であることを確認する。

##### 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
REC/PLAY 1	HIGH speed	VR2 6,000±30Hz
	LOW speed	VR1 3,000±20Hz
REC/PLAY 2	HIGH speed	VR4 6,000±30Hz
	LOW speed	VR3 3,000±20Hz

4. 巻始めから巻終りまで再生し、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)

##### 1-3 リールトルク

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:	30~75g-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:	55~170g-cm

##### トルクメーター

MTT-8111W:	巻取りトルクとバックテンション (FWD用)
MTT-8121W:	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

## 2. ELECTRICAL ADJUSTMENT

### 2-1 Precautions

- Before performing adjustments and checks clean and demagnetize the entire tape path.
- 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  $1M\Omega$  or more.
- Unless specified otherwise, adjustments and checks are made in FWD direction.

### 2-2 Adjustment locations

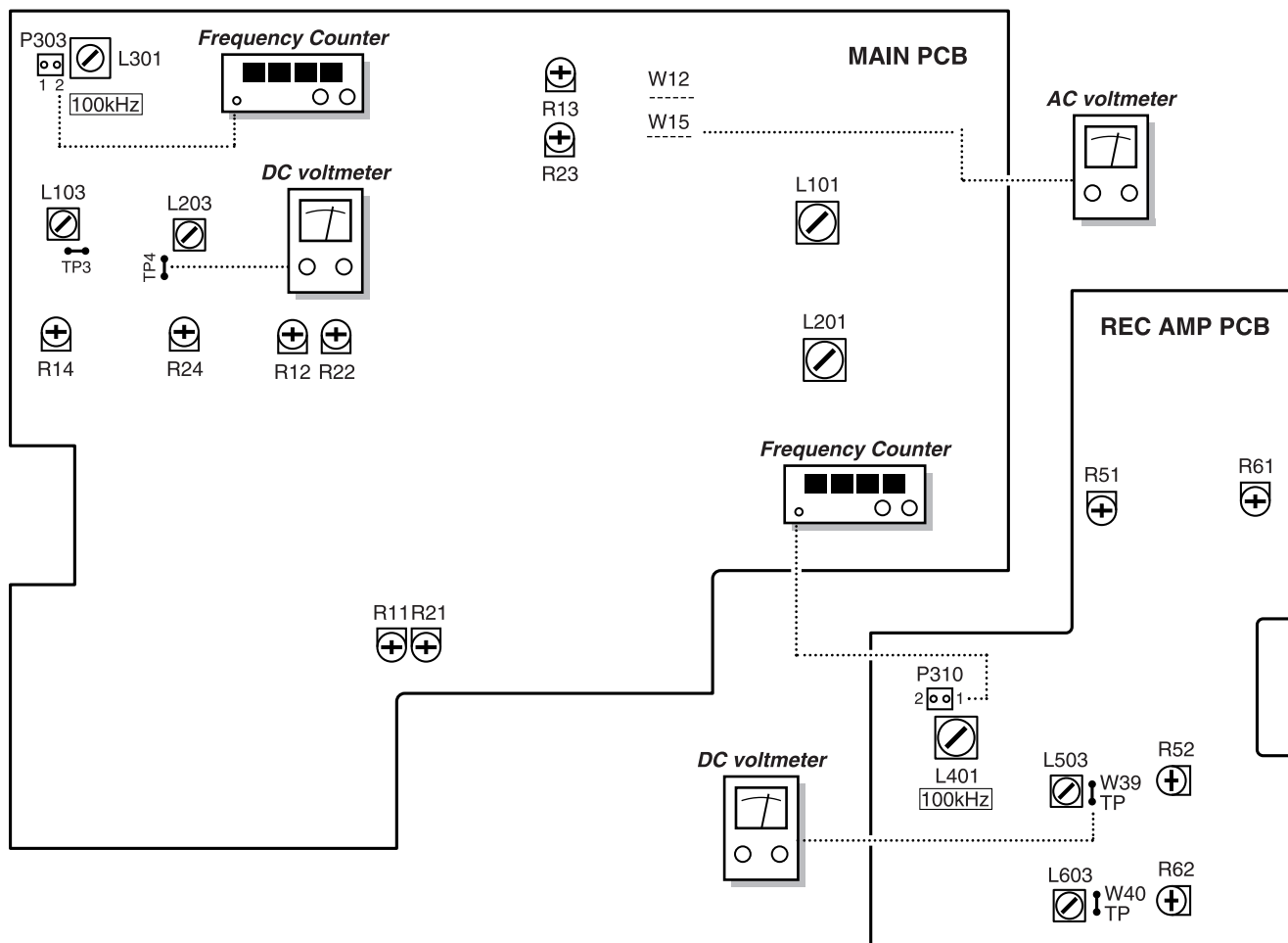


Fig. 2-2

## 2. アンプ部の調整

### 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 $1M\Omega$ 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。

### 2-2 調整箇所

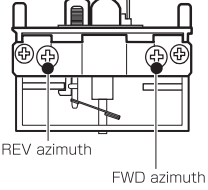
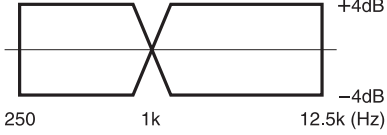
## 2-3 Playback performance 再生系

## Deck settings:

Mode: PLAY  
DOLBY NR Switch: OFF

## TEAC test tapes:

MTT-150: 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 respec- tively 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)	 REV azimuth FWD 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	W12/W15: 300mV	REC/PLAY 1
			R12/R22		REC/PLAY 2
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 ±1 dot	
5. PHONES output level PHONES 出力レベル		MTT-150C	Check	PHONES: -13±3dB	32Ω load 32Ω 負荷
6. Playback frequency response 再生周波数 特性	Connection: Fig. 2-3	MTT-25702	Check	 +4dB -4dB 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

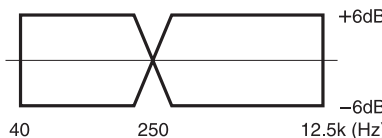
## 2-4 Recording performance 録音系

## 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 CrO2  
 MTT-5572: For META

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
8. Specified LINE input level 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)
9. Bias osc frequency 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	REC/PLAY 2
			L401	P310 Pin 1: 100kHz	REC/PLAY 1
10. Step up coil 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	REC/PLAY 2
			L503/L603	W39/W40: Min. DC voltage DC電圧最小	REC/PLAY 1
11. Record bias 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)	REC/PLAY 2
			R52/R62		REC/PLAY 1
12. MPX filter 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
13. Record level 録音レベル	Connection: Fig. 2-3 TAPE: MTT-5513	LINE IN: 400Hz/−12dB	R13/R23	LINE OUT: −7.5dB	REC/PLAY 2
			R51/R61		REC/PLAY 1
	TAPE: MTT-5563	Check	LINE OUT: −7.5±1dB		
14. Total har- monic distortion 総合歪率	Connection: Fig. 2-3 TAPE: MTT-5513 MTT-5563	LINE IN: 400Hz/−12dB	Check	NORMAL: 2.0% or less CrO2 : 2.5% or less	
15. Overall frequency response 録再周波数 特性	Connection: Fig. 2-3 TAPE: MTT-5513 MTT-5563	LINE IN: 40Hz−12.5kHz −42dB	Check		
16. Overall S/N ratio 総合S/N比	Connection: Fig. 2-3 TAPE: MTT-5513 MTT-5563	LINE IN: No signal 無信号	Check	NORMAL : 45dB min. CrO2 : 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-5563 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-5563 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-5563	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

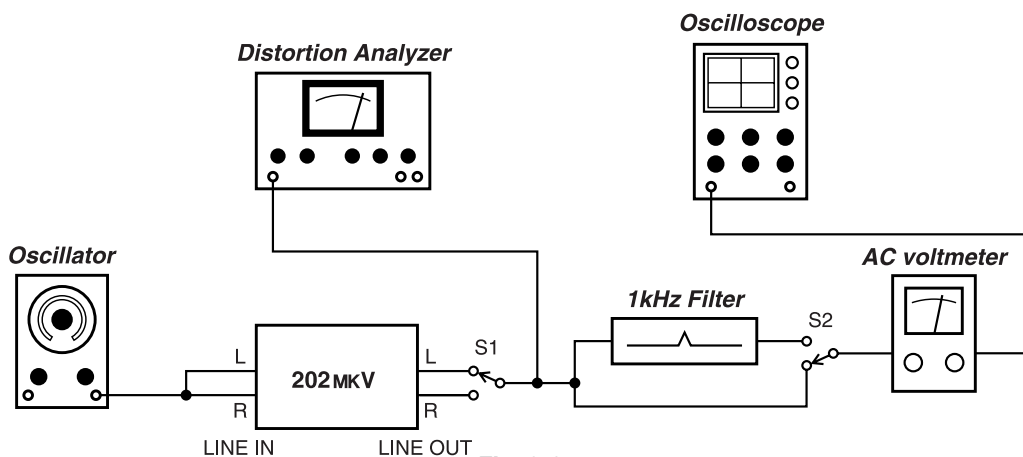


Fig. 2-3

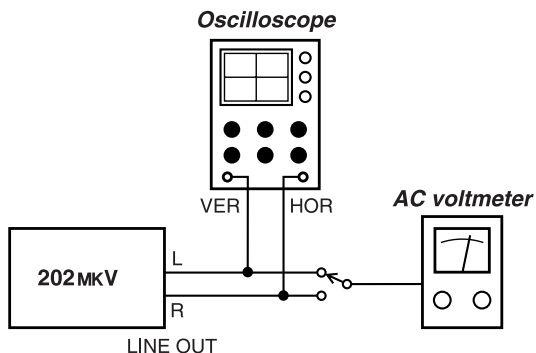


Fig. 2-4

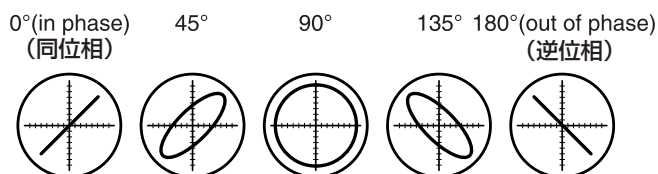


Fig. 2-5

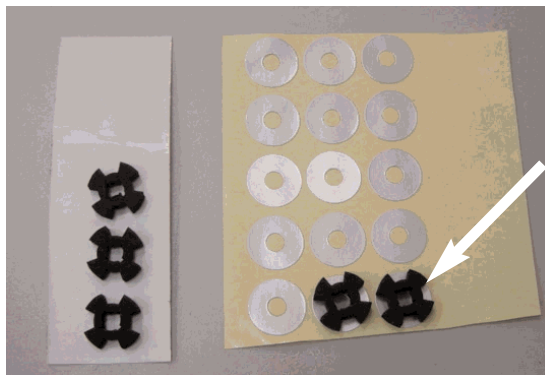


### 3. Mounting the Reel Sensor

#### リールセンサーの組み付け方法

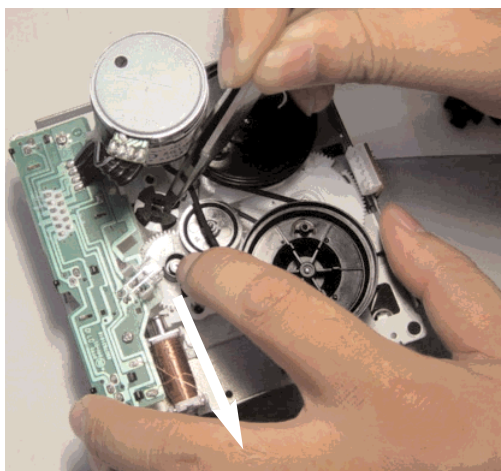
1. In advance, attach a SHEET, SENSOR 222SLMK2 G to a SHEET, REFLEX 222SLMK2 G.

1. 予めSHEET,SENSOR 222SLMK2 GをSHEET,REFLEX 222SLMK2 Gに貼り付ける。

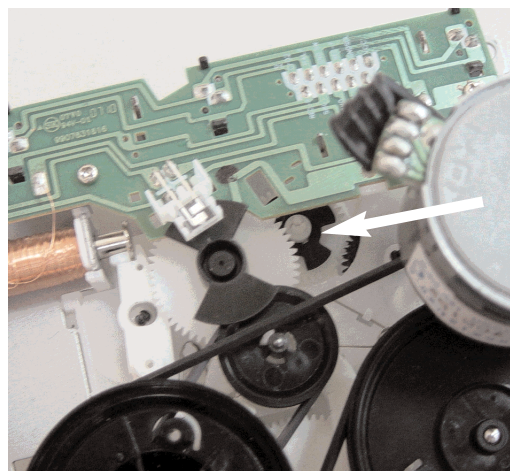


2. Move the winged gear on the center in the direction of the arrow and fit the combination of sheets into the gear shaft below the winged gear position.

2. 中央の羽が付いた歯車を矢印方向に避け、下にある歯車の軸に挿入する。



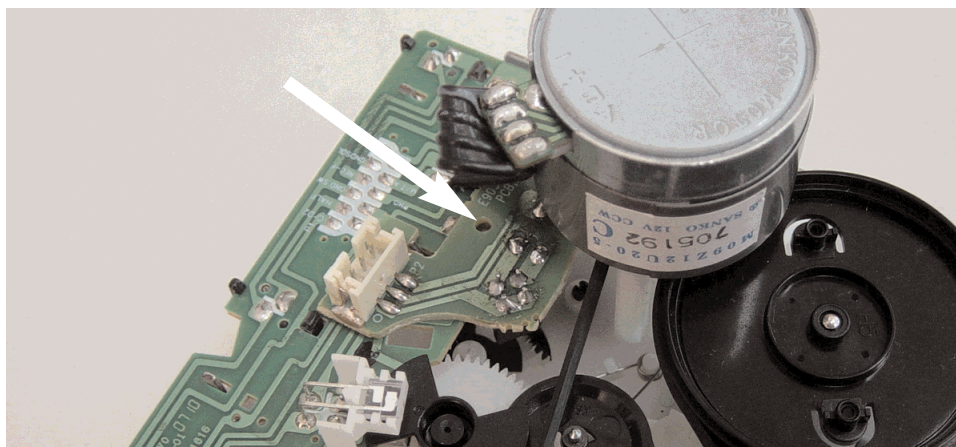
Let this part escape in the direction of the arrow.  
この部品を矢印の方向に避ける。



Attach in the position indicated by the arrow.  
矢印の位置に取り付ける。

3. Mount the SENSOR PCB Ass'y.

3. SENSOR PCB Ass'yを取り付ける。

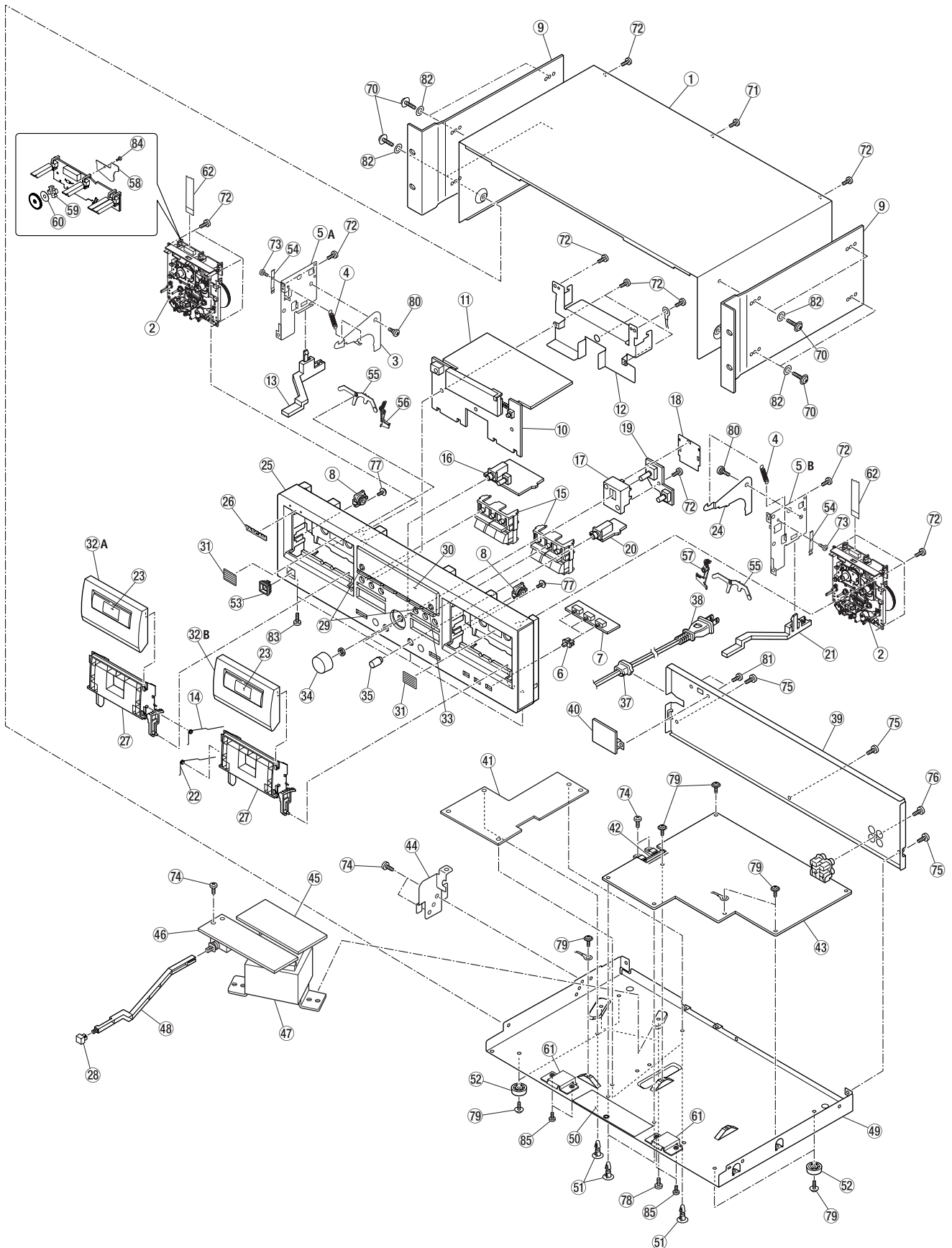


Fix on the position indicated by the arrow using SCREW, BPP 2\*8 FZC G.  
矢印の位置にSCREW, BPP 2\*8 FZC Gで固定する。

# 4. Exploded Views and Parts List

分解図とパーツリスト

## Exploded View-1



## Exploded View-1

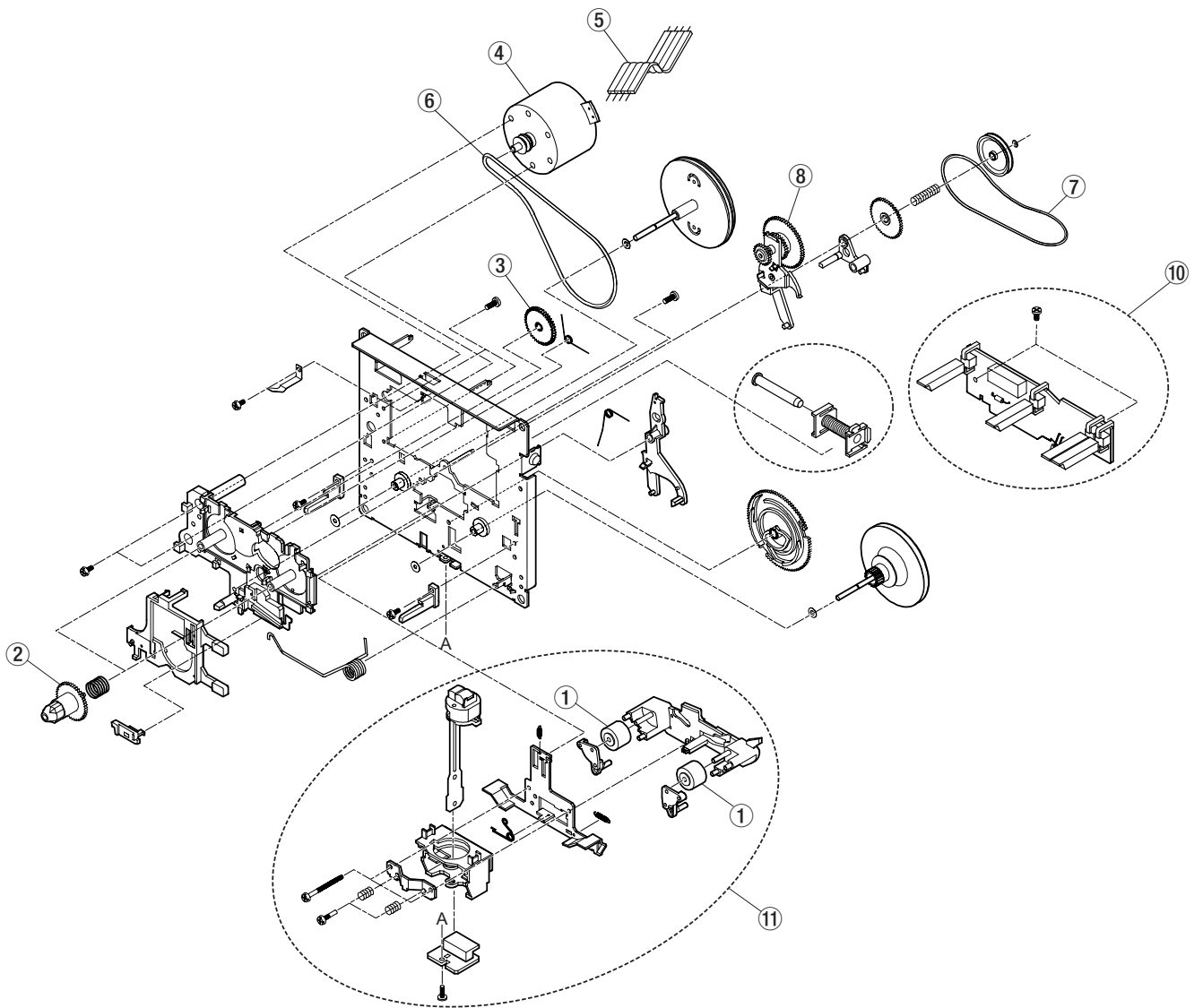
REF.NO.	PARTS NO.	DESCRIPTION	REMARKS
1- 1	3M0016100B	BONNET G	
1- 2	M02753900B	MECH ASSY,RP CRP42606 G	
1- 3	3M0029810A	HOOK,EJECT A W-780R G	
1- 4	M02520800A	TRSN SPR,EJECT 202MK4 G	
1- 5A	M02719600B	BRACKET,EJECT A G	
1- 5B	M02719700A	BRACKET,EJECT B G	
1- 6	3M0053700A	KNOB,SLIDE(B) G	
1- 7		PCBA,SLIDE SW 202MK5 G .....	GATHER PCBA,C 202MK5 G (Refer to page 18 & 19)
1- 8	3M0011200A	DAMPER,(SD-385)	
1- 9	3M0026600H	RACK MOUNTING 102MK2 G	
1-10		PCB ASSY,KEY 202MK5 G .....	GATHER PCBA,C 202MK5 G (Refer to page 18 & 19)
1-11		PCB ASSY,CONTROL 202MK5 G .....	GATHER PCBA,C 202MK5 G (Refer to page 18 & 19)
1-12	3M0054000B	PLATE,SHIELD G	
1-13	M02465800A	KNOB,EJECT L 202MK4 G	
1-14	3M0010400A	TORSION SPRING,CASE I G	
1-15	M02487300A	BUTTON,PLAY 202MK4 G	
1-16		PCBA,MIC 202MK5 G [ Except E ] .....	GATHER PCBA,B 202MK5 G (Refer to page 17)
		PCBA,MIC EUR 202MK5 G [ E ] .....	GATHER PCBA,B 202MK5 G (Refer to page 17)
1-17	3M0056100A	BRACKET,BASE G	
1-18	3M0056000A	BRACKET,TOP G	
1-19		PCBA,VR 202MK5 G .....	GATHER PCBA,C 202MK5 G (Refer to page 18 & 19)
1-20		PCBA,PHONE 202MK5 G .....	GATHER PCBA,C 202MK5 G (Refer to page 18 & 19)
1-21	M02465900A	KNOB,EJECT R 202MK4 G	
1-22	3M0010500B	TORSION SPRING,CASE II G	
1-23	3M0026500B	WINDOW,LID AD500 G	
1-24	3M0030000E	HOOK,EJECT B W-780R G	
1-25	M02888800A	FRONT PANEL,202MK5 G	
1-26	3M0134900A	BADGE TASCAM SILVER G	
1-27	3M0011100A	CASE,LEAD W-780R G	
1-28	M01509810A	BUTTON,POWER BLK G	
1-29	3M0052600A	BUTTON,CLEAR(B) G	
1-30	M02888900A	WINDOW,FL 202MK5 G	
1-31	M02551900B	PLATE,REFLECT S-LINE G	
1-32A	M02473500A	DOOR,LID1 202MK4 G	
1-32B	M02473600A	DOOR,LID2 202MK4 G	
1-33	3M0052500B	BUTTON,WINDOW(B) G	
1-34	M02487400A	KNOB,REC 202MK4 G	
1-35	3M0052900A	KNOB,M(B) G	
1-37	3M000880	BUSHING, #2271(CSA)-G	
1-38	△ 3E000350	POWER CORD,UK G [ UK ]	
1-38	△ 3E000360	POWER CORD,AUS G [ A ]	
1-38	△ 3E009230	POWER CORD,UL/CSA SPEI-G [ ETC ]	
1-38	△ 3E015210	POWER CORD,EUR-G [ E ]	
1-38	△ E0140630	POWER CORD,KOREA WS-006 [ K ]	
1-38	△ E0140770	POWER CORD,JPN PSE 7A G [ J ]	
1-38	△ E0148200	POWER CORD,CQ-5818-00 G [ CH ]	
1-38	△ E0156970	POWER CORD,TM 7A BSMI G [ T ]	
1-39	M02465500B	PANEL,REAR 202MK4 G [ Except ETC ]	
1-39	M02465593B	PANEL,REAR EXTC 202MK4 G [ ETC ]	
1-40	M02953800A	AC SELECT ASSY,202MK5 G [ ETC ]	
	△ 3E040130	SW,SL14-22AH-OAN G [ ETC ]	
	E01557100A	HARNESS ASSY,WHT (0V) G [ ETC ]	
	E01557200A	HARNESS ASSY,BRW (120V) G [ ETC ]	
	E01557300A	HARNESS ASSY,ORG (230V) G [ ETC ]	

**Exploded View-1**

REF.NO.	PARTS NO.	DESCRIPTION	REMARKS
1-41		PCBA,REC AMP 202MK5 G .....	GATHER PCBA,B 202MK5 G (Refer to page 17)
1-42		PCBA,TR 202MK5 G .....	GATHER PCBA,A 202MK5 G (Refer to page 15 & 16)
1-43		PCBA,MAIN 202MK5 G.....	GATHER PCBA,A 202MK5 G (Refer to page 15 & 16)
1-44	3M0016400C	BRACKET, LINKAGE G	
1-45		PCBA,TRANS A JPN 202MK5 G [ J ].....	GATHER PCBA,C 202MK5 G (Refer to page 18 & 19)
1-45		PCBA,TRANS A EUR 202MK5 G [ K,A,E,CH,UK ] .....	GATHER PCBA,C 202MK5 G (Refer to page 18 & 19)
1-45		PCBA,TRANS A EXTC 202MK5G [ ETC,TM ] .....	GATHER PCBA,C 202MK5 G (Refer to page 18 & 19)
1-46		PCBA,TRANS B 202MK5 G [ J ].....	GATHER PCBA,C 202MK5 G (Refer to page 18 & 19)
1-46		PCBA,TRANS B EUR 202MK5 G [ K,A,E,CH,UK ] .....	GATHER PCBA,C 202MK5 G (Refer to page 18 & 19)
1-46		PCBA,TRANS B EXTC 202MK5G [ ETC,TM ] .....	GATHER PCBA,C 202MK5 G (Refer to page 18 & 19)
1-47	△ 3E0399900A	@TRANS,POWER W-860R ALL G	
1-48	M02482500A	LINK,POWER 202MK4 G	
1-49	3M0010830F	MAIN CHASSIS, W-790R G	
1-50	3M0062000B	INSULATE SHEET W-790R G	
1-51	3M003070	SUPPORT,PCB SCB-8-G	
1-52	3M001950	FOOT,21MM G	
1-53	3M0118800B	RING,POWER CC-222 G	
1-54	M02719800A	LEAF,SPRING G	
1-55	M02719300A	LEVER,CTRL	
1-56	M02719500C	LEVER,STPR R G	
1-57	M02719400A	LEVER,STPR L G	
1-58		PCB ASSY,SENSOR 222SL2 G.....	GATHER PCBA,SER 222SL2 G (Refer to page 21)
1-59	M02757500C	SHEET,SENSOR 222SLMK2 G	
1-60	M02876800A	SHEET,REFLEX 222SLMK2 G	
1-61	M02888700A	BRACKET,LEAD 202MK5 G	
1-62	E01523500A	FLAT CABLE,11P P=1.25 G	
1-70	B00197612A	SCREW,PPSU 3*12 FZB G	
1-71	B00170608A	SCREW,VPCR 3*8 FZB G	
1-72	B00199008A	SCREW,BPP 3*8 FZC G	
1-73	B00198204A	SCREW,BPS 2.6*4 FZC G	
1-74	B00198306A	SCREW,BPS 3*6 FZC G	
1-75	B00198606A	SCREW,BPS 3*6 FZB G	
1-76	B00199708A	SCREW,BPB 3*8 FZB G	
1-77	B00256308A	SCREW,PPPT 3*8FZB G	
1-78	B00198706A	SCREW,BPS 4*6 FZB G	
1-79	B00197806A	SCREW,PPSU 3*6 FZC G	
1-80	B00247300A	SCREW,PPSP 4*1.3FZC G	
1-81	B00199808A	SCREW,BPB 4*8 FZB G	
1-82	3M002020	FIBER WSHR,3X8X0.3T BLK	
1-83	B00247000A	SCREW,DPS 3*6.9FZB G	
1-84	B00198808A	SCREW,BPP 2*8 FZC G	
1-85	B00199406A	SCREW,BPB 3*6 FZC G	
	3E002720	FER.CORE K5AT18.3X10X10 G	
	E0132620	FER,CORE CTNF-65B G	
	3E002730	FER.CORE K5AT 13X7X5 G	

## Exploded View-2

- The parts with no reference number in the exploded views are not supplied.
- 分解図に部番のない部品は供給できません。



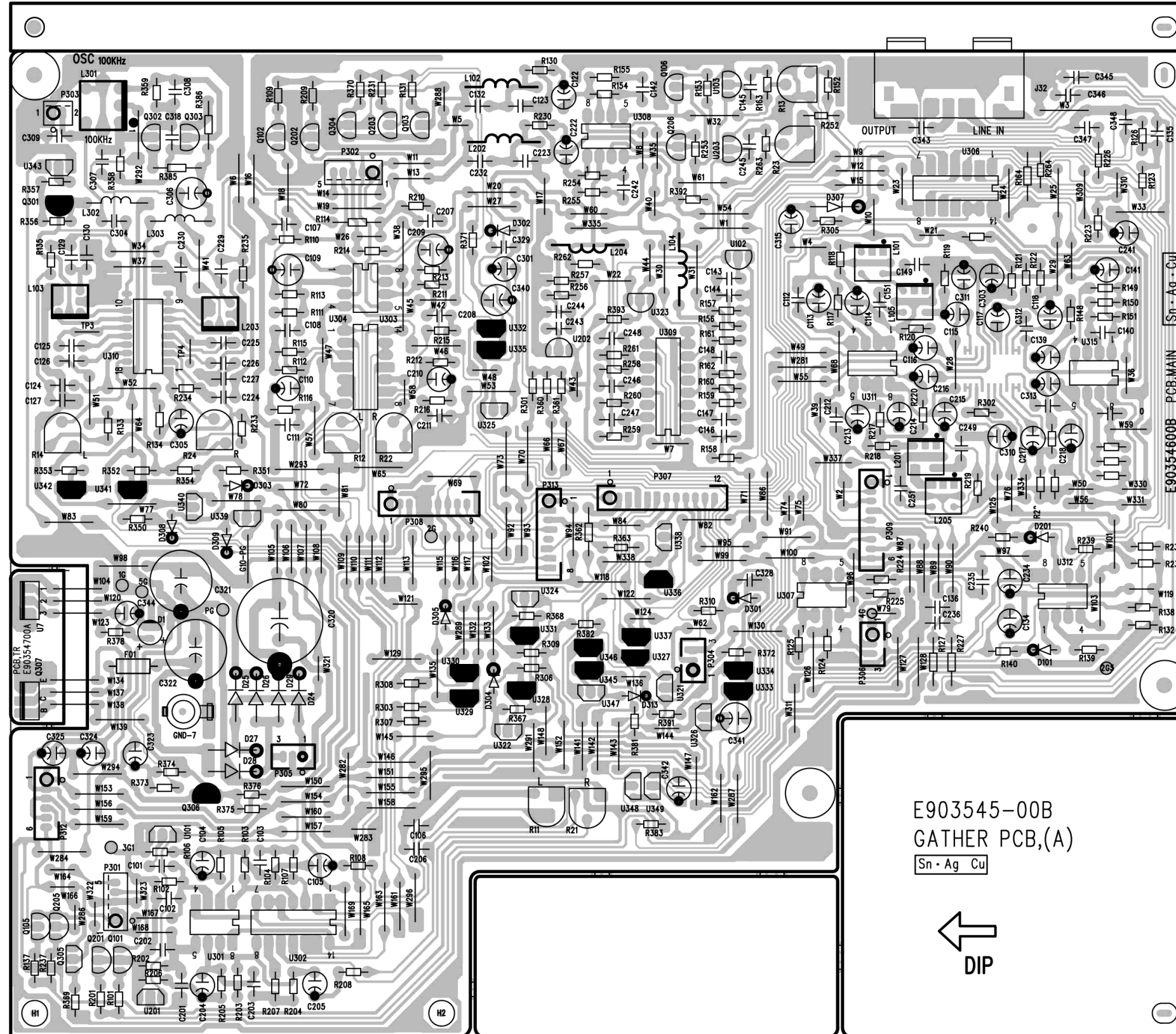
**Exploded View-2**

REF.NO.	PARTS NO.	DESCRIPTION	REMARKS
2- 1	V00178500A	ROOLER, PINCH CC-222SLMK2 .....	50-027-4685
2- 2	V00178600A	GEAR, REEL B CC-222SLMK2 .....	50-222-31333
2- 3	V00178700A	GEAR, IDLER CC-222SLMK2 .....	50-222-41226
2- 4	V00178900A	MOTOR ASSY CC-222SLMK2 .....	50-093-41644
2- 5	V00179000A	WIRE, MOTOR 4 CC-222SLMK2 .....	50-072-4516
2- 6	V00179100A	BELT, SR CC-222SLMK2 .....	02-083-4283
2- 7	V00179200A	BELT, FR CC-222SLMK2 .....	02-083-4293
2- 8	V00178800A	CLUTCH ASSY, REEL .....	50-093-41399
2-10	V00179300A	PCB ASSY,S CC-222SLMK2 .....	50-093-41661
2-11	V00179400A	HEAD ASSY,BR CC-222SLMK2 .....	50-093-41744

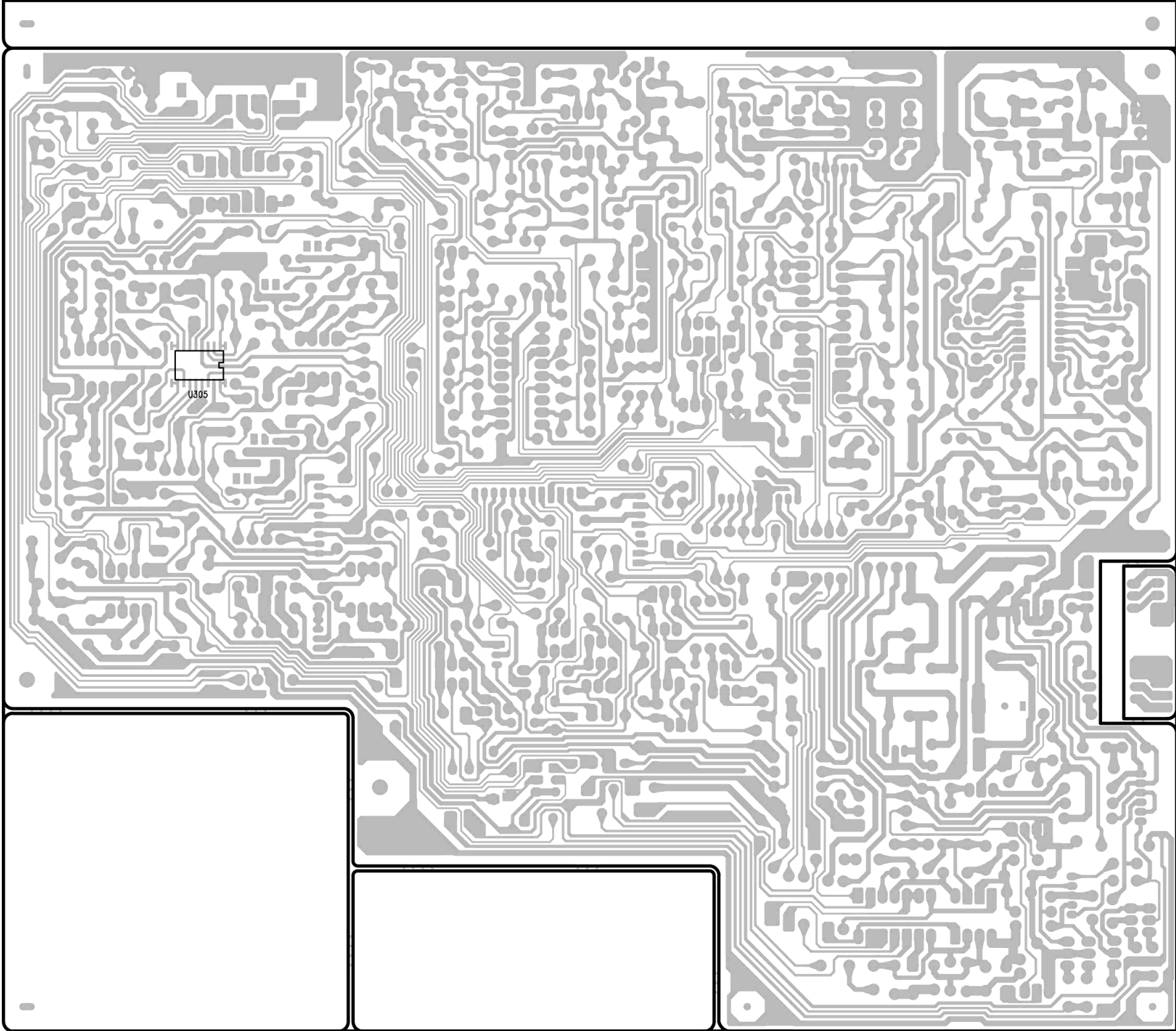
# 5. PC Boards and Parts List

基板図とパーツリスト

GATHER PCBA,A 202MK5 G (Side A)

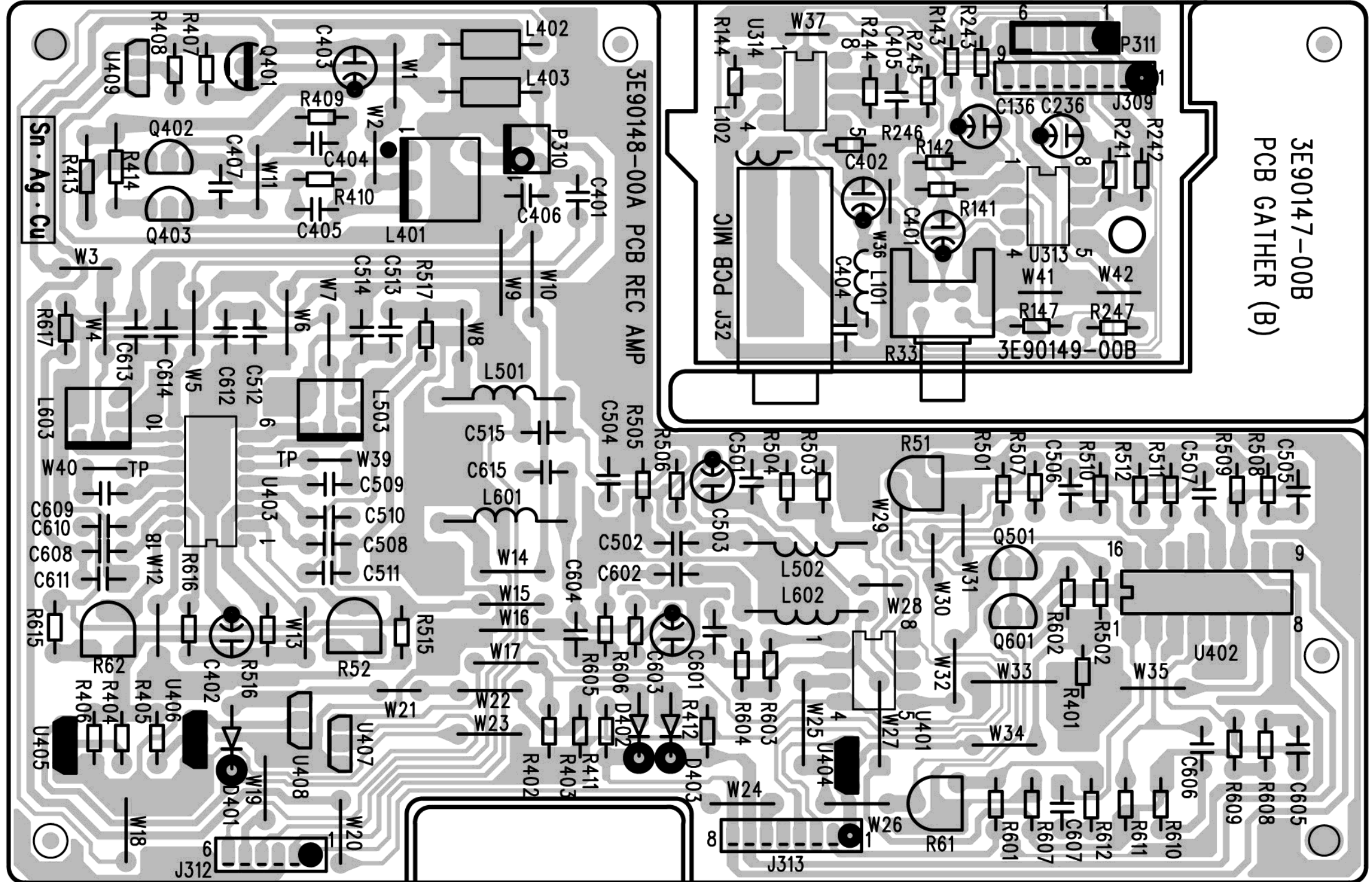


GATHER PCBA,A 202MK5 G (Side B)

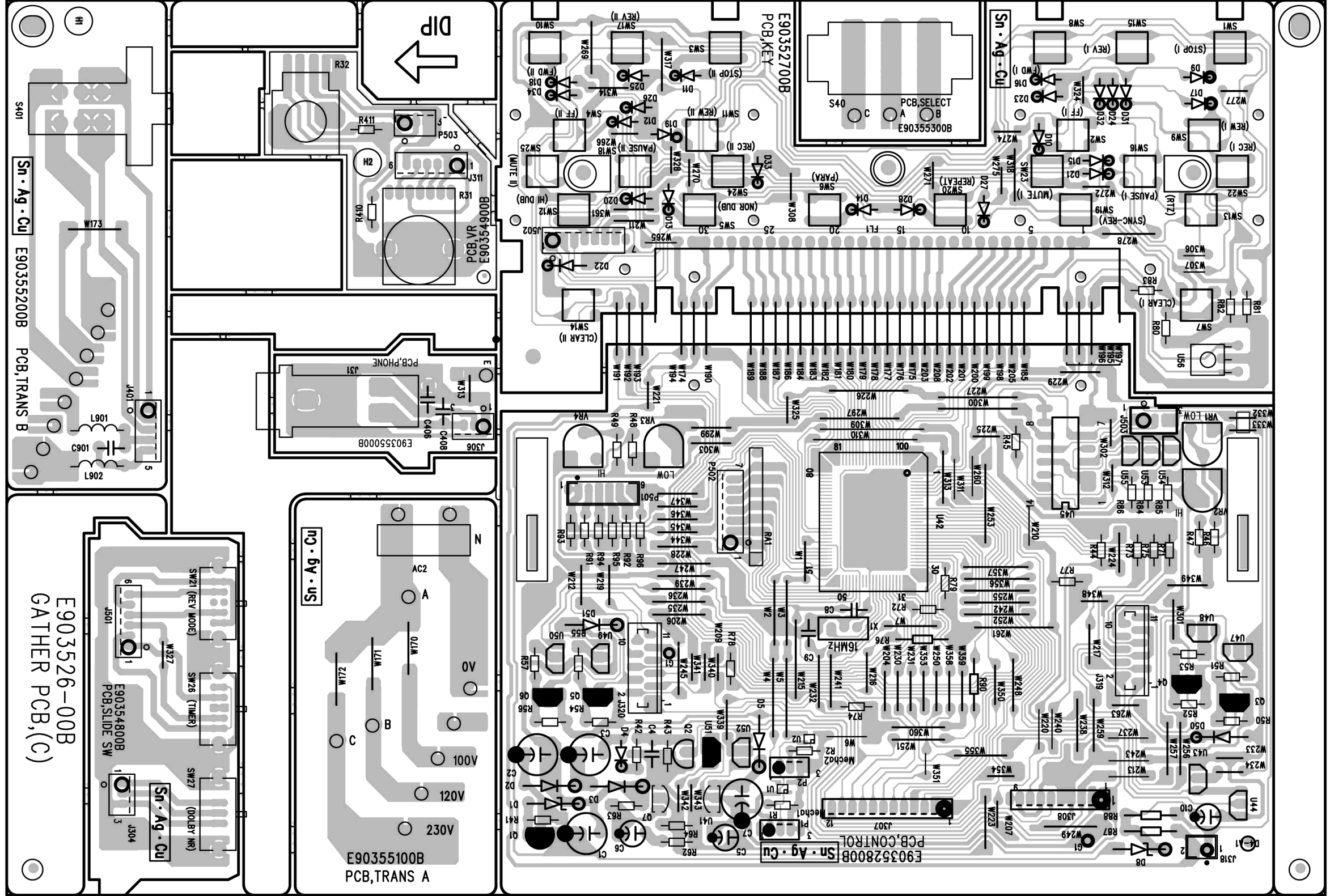




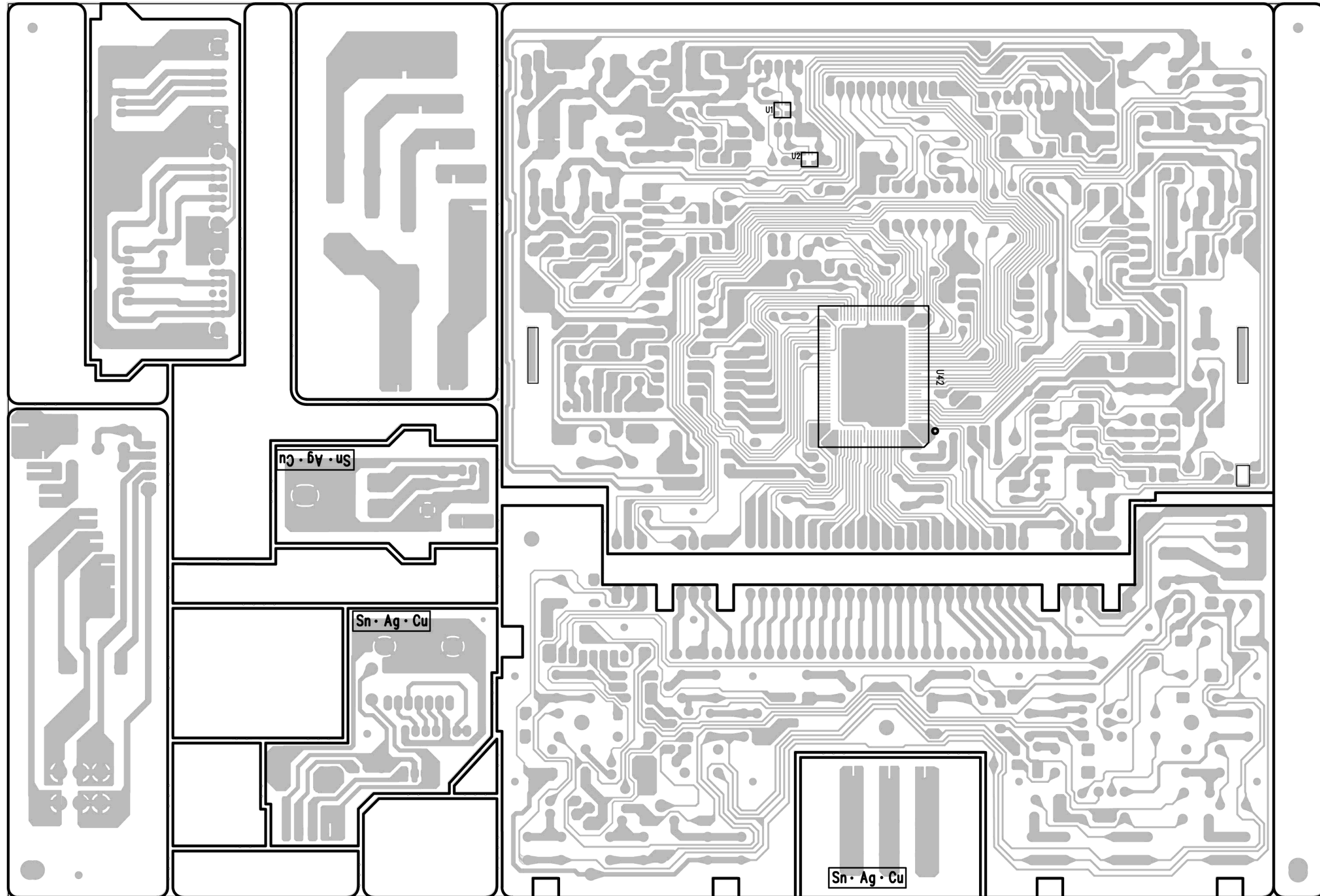
GATHER PCBA,(B) 202MK5 G



GATHER PCBA,C 202MK5G (SideA)



GATHER PCBA,C 202MK5G (SideB)



## GATHER PCBA, A 202MK5 G

REF.NO.	PARTS NO.	DESCRIPTION
	E95354500A	GATHER PCBA,A 202MK5 G PCB,MAIN 202MK5 G PCB,TR 202MK5 G
		PCBA,MAIN 202MK5 G
C320	△ C0077300	CE,GS 25V6800UF M G
C321 C322	△ C0058922	CE,25V 2200UFGS G
D1	3S000190	LED, RED(3DIA)LH2041 G
D101D201	S0067021	DIODE,1SS133 T-77 G
D24D29	△ S0071821	DI,SCHOTTKY,SR160 TP-G
D24D29	3E0186910A	TUBE,SU-SRT 2.0*11MM-G
D25-D28	△ S0071811	DI,1N4003-F TAPINGW=52 G
D301 D302	S0067021	DIODE,1SS133 T-77 G
D304 D305	S0067021	DIODE,1SS133 T-77 G
D307	S0071811	DI,1N4003-F TAPINGW=52 G
D308	S0067021	DIODE,1SS133 T-77 G
F01	△ R0186982	POLY SW ,RXEF040-2 G
GND7	E01515800A	TERMINAL, EARTH PLATE B G
J32	3E0064100B	JACK,RCA 4P RJ-1073-09-G
L101L201	E01523300A	VAR COIL,MPX 079418007 G
L102 L202	3E002051G	COIL,22MH EC46-223K-T2 G
L103L203	3E002180G	COIL,STEP UP G
L104 L204	3E004421G	COIL, 8.2MH EC46-822J-T5G
L105L205	E01523400A	VAR COIL,MPX 079418008 G
L301	E01523200A	OSC CORE,SM-10F 4309T014G
L302 L303	3E004411G	COIL, 220UH EC36-221K-T5G
P301	E01523600A	HARN ASSY,HEAD 5PDECK1 G
P302	E01523700B	HARN ASSY,HEAD 5PDECK2 G
P304	3E038550G	CONNET B3B-PH-K BLUE G
P305	E0119740	CONNECTOR,B 3B-PH-K-S G
P306	3E019350	PLUG, B3B-PH 3P RED G
P307	E0119830	CONNECTOR,B12B-PH-K-S G
P308	E0119800	CONNECTOR,B 9B-PH-K-S G
P309	E0119800	CONNECTOR,B 9B-PH-K-S G
P312	E0119770	CONNECTOR,B 6B-PH-K-S G
P313	E0119790	CONNECTOR,B 8B-PH-K-S G
Q101Q201	S0065482	TR,2SC1815-GR(TPE2.F) GZO
Q102Q202	S0065482	TR,2SC1815-GR(TPE2.F) GZO
Q103Q203	S0077972	TRANSISTOR,2SC2240GR G
Q105Q205	S0077972	TRANSISTOR,2SC2240GR G
Q106Q206	3S000731	TR, 2SD2144S TP G
Q301	S0066842	TRANSISTOR,2SA1015GR-T G
Q302Q303	S0065482	TR,2SC1815-GR(TPE2.F) GZO
Q304Q305	S0077972	TRANSISTOR,2SC2240GR G
Q306	S0066842	TRANSISTOR,2SA1015GR-T G
U101U201	S0069222	TRANSISTOR,DTC124ESATP G
U102U202	S0069222	TRANSISTOR,DTC124ESATP G
U103U203	S0069222	TRANSISTOR,DTC124ESATP G
U301	3S000280G	IC, UPC4570C-A G
U302	S0078210	IC,BU4066BC G
U303	3S000280G	IC, UPC4570C-A G
U304	S0078210	IC,BU4066BC G
U305	S0061754	IC,HA12134AFEL-E G
U306	S0078210	IC,BU4066BC G

## GATHER PCBA, A 202MK5 G

REF.NO.	PARTS NO.	DESCRIPTION
U307U312	S0064550	IC,NJM4558D G
U308	S0064550	IC,NJM4558D G
U309	S0063820	IC,TC4052BP(N,F) G
U310	3S000270G	IC, UPC1297CA-A G
U311	S0064550	IC,NJM4558D G
U315	S0064550	IC,NJM4558D G
U321-U326	S0069222	TRANSISTOR,DTC124ESATP G
U327-U337	S0069232	TRANSISTOR,DTA124ESATP G
U338 U340	S0069222	TRANSISTOR,DTC124ESATP G
U342	S0069232	TRANSISTOR,DTA124ESATP G
U343	S0069222	TRANSISTOR,DTC124ESATP G
1G-2G	3E0044500C	WIRE,#24UL1007 BLK 1-2G G
		PCBA,TR 202MK5 G
Q307	△ 3S004920G	TR,2SB1375(F,M)
Q307	3E0186920A	TUBE,SU-SRT 2.0*6.3MM-G
U7	△ S0066600	IC,NJM7805FA G

**GATHER PCBA,(B) 202MK5 G**

REF.NO.	PARTS NO.	DESCRIPTION
	E95294610A	GATHER PCBA,(B) 202MK5 G
	E95294660A	GA PCBA,(B) EUR 202MK5 G PCB,REC AMP W-860R G PCB,MIC W-860R G
		PCBA,REC AMP 202MK5 G
D402	S0067021	DIODE,1SS133 T-77 G
J312	3E0076700A	6P R/P WIRE G
J313	3E0076801A	8P R/P WIRE G
L401	E01523200A	OSC CORE,SM-10F 4309T014G
L402 L403	3E004411G	COIL, 220UH EC36-221K-T5G
L501 L601	3E002051G	COIL,22MH EC46-223K-T2 G
L502 L602	3E004421G	COIL, 8.2MH EC46-822J-T5G
L503 L603	3E002180G	COIL,STEP UP G
P310	E0119730	CONNECTOR,B 2B-PH-K-S G
Q401	S0066842	TRANSISTOR,2SA1015GR-T G
Q402	S0065482	TR,2SC1815-GR(TPE2.F) GZO
Q403	S0065482	TR,2SC1815-GR(TPE2.F) GZO
Q501 Q601	3S000731	TR, 2SD2144S TP G
R51 R61	R0185710	VAR RES,KVSF637AC223 G
R52 R62	R0185680	VAR RES,KVSF637AC103 G
U401	S0064550	IC,NJM4558D G
U402	S0063820	IC,TC4052BP(N,F) G
U403	3S000270G	IC, UPC1297CA-A G
U404	S0069232	TRANSISTOR,DTA124ESATP G
U406	S0069232	TRANSISTOR,DTA124ESATP G
U408	S0069222	TRANSISTOR,DTC124ESATP G
U409	S0069222	TRANSISTOR,DTC124ESATP G
		PCBA,MIC 202MK5 G [ J,ETC,T ]
J32	E0133770	JACK,JY-6317*01-130 G
J309	3E0077101A	9P MIC WIRE G
L101	E0123301	JUMPER WIRE,10MM G
L102	E0123271	JUMPER WIRE,7.5MM G
P311	E0119770	CONNECTOR,B 6B-PH-K-S G
R33	3R004360	VAR RES,RK09K12A0001-TK G
U313	S0064550	IC,NJM4558D G
U314	S0067650	IC,NJM4580D G
	E01325700A	HARNESS ASSY,MIC GND G
		PCBA,MIC EUR 202MK5 G [ E,UK,A,K ]
J32	E0133770	JACK,JY-6317*01-130 G
J309	3E0077101A	9P MIC WIRE G
L101	3E009040G	COIL,8.2UH EC24-8R2K G
L102	3E009040G	COIL,8.2UH EC24-8R2K G
P311	E0119770	CONNECTOR,B 6B-PH-K-S G
R33	3R004360	VAR RES,RK09K12A0001-TK G
U313	S0064550	IC,NJM4558D G
U314	S0067650	IC,NJM4580D G
	E01325700A	HARNESS ASSY,MIC GND G

**GATHER PCBA,SER 222SL2 G**

REF.NO.	PARTS NO.	DESCRIPTION
	E95335700A	GATHER PCBA,SER 222SL2 G PCB,SENSOR 222SLMK2 G
		PCB ASSY,SENSOR 222SL2 G
P2	3E007850G	CONNEX,B3B-PH-SM4-TB(LF)G
U1	S0075300	PHOTO SNSR,RPR-220 G

**GATHER PCBA,C 202MK5G**

REF.NO.	PARTS NO.	DESCRIPTION
	E95352600A	GATHER PCBA,C JPN 202MK5G
	E95352610A	GATHER PCBA,C EUR 202MK5G
	E95352620A	GATHER PCBA,C EXTC202MK5G PCB,KEY 202MK5 G PCB,CONTROL 202MK5 G PCB,SLIDE SW 202MK5 G PCB,VR 202MK5 G PCB,PHONE 202MK5 PCB,TRANS A 202MK5 G PCB,TRANS B 202MK5 G PCB,SELECT 202MK5 G
		PCB ASSY,KEY 202MK5 G
D9-D28	S0067021	DIODE,1SS133 T-77 G
D31-D34	S0067021	DIODE,1SS133 T-77 G
FL1	3E0106310C	DISPLAY,FL SVAC065M14 G
SW1	E0127100	SW,TACT SKHHAM2520 G
SW2	E0127100	SW,TACT SKHHAM2520 G
SW3	E0127100	SW,TACT SKHHAM2520 G
SW4	E0127100	SW,TACT SKHHAM2520 G
SW5	E0127100	SW,TACT SKHHAM2520 G
SW6	E0127100	SW,TACT SKHHAM2520 G
SW7	E0127100	SW,TACT SKHHAM2520 G
SW8	E0127100	SW,TACT SKHHAM2520 G
SW9	E0127100	SW,TACT SKHHAM2520 G
SW10	E0127100	SW,TACT SKHHAM2520 G
SW11	E0127100	SW,TACT SKHHAM2520 G
SW12	E0127100	SW,TACT SKHHAM2520 G
SW13	E0127100	SW,TACT SKHHAM2520 G
SW14	E0127100	SW,TACT SKHHAM2520 G
SW15	E0127100	SW,TACT SKHHAM2520 G
SW16	E0127100	SW,TACT SKHHAM2520 G
SW17	E0127100	SW,TACT SKHHAM2520 G
SW18	E0127100	SW,TACT SKHHAM2520 G
SW19	E0127100	SW,TACT SKHHAM2520 G
SW20	E0127100	SW,TACT SKHHAM2520 G
SW22	E0127100	SW,TACT SKHHAM2520 G
SW23	E0127100	SW,TACT SKHHAM2520 G
SW24	E0127100	SW,TACT SKHHAM2520 G
SW25	E0127100	SW,TACT SKHHAM2520 G
	3M0060400A	HOLDER FL(L) W-790R G
	3M0060500A	HOLDER FL(R) W-790R G
		PCB ASSY,CONTROL 202MK5 G
D1	3S001801	ZDI, MTZJ22C T-77 G
D2 D3	S0071811	DI,1N4003-F TAPINGW=52 G
D4	S0067021	DIODE,1SS133 T-77 G
D5	S0071811	DI,1N4003-F TAPINGW=52 G
D8	S0076581	ZENER DIO,MTZJ3.9B T-77 G
D50 D51	S0071811	DI,1N4003-F TAPINGW=52 G
J307	3E0076501A	12P CONTROL WIRE G
J308	3E0076600A	9P CONTROL WIRE G
J318	E0119730	CONNECTOR,B 2B-PH-K-S G
J319 J320	E0023360	CONNECTOR,11FE-BT-VK-N G
J503	E0119740	CONNECTOR,B 3B-PH-K-S G

**GATHER PCBA,C 202MK5G**

REF.NO.	PARTS NO.	DESCRIPTION
P1	E01524000A	HARN ASSY,3P SER A G
P2	E01524100A	HARN ASSY,3P SER B G
P501	E0119770	CONNECTOR,B 6B-PH-K-S G
P502-J502	E01523900B	HARN ASSY,7P KEY G
Q1	S0066842	TRANSISTOR,2SA1015GR-T G
Q2 Q7	S0065482	TR,2SC1815-GR(TPE2.F) GZO
Q3-Q6	3S000320	TR, 2SB1237TV2Q G
RA1	3R025430	RES,ARRAY100KX8 P=2.5MM G
U1 U2	S0031624	IC,TC7S14FU G
U41	3S000380G	IC, TA78L005AP (F) G
U42	S00786200A	IC,CXP82032-166Q 202MK5 G
U43 U44	S0069222	TRANSISTOR,DTC124ESATP G
U45	S0078210	IC,BU4066BC G
U47-U50	S0069222	TRANSISTOR,DTC124ESATP G
U53-U55	S0069222	TRANSISTOR,DTC124ESATP G
VR1-VR4	R0185700	VAR RES,KVSF637AC222 G
X1	3E016130	RESONATOR CSTLS16M0X51B0G
G1-G1	E01524300A	WIRE,BLK 110MM G
J304	E01282000B	PCBA,SLIDE SW 202MK5 G
J501	E01523800A	HARN ASSY,6P SLIDE G
SW21	3E006380	SW,SLIDE AXA 2-3-G
SW26	3E006380	SW,SLIDE AXA 2-3-G
SW27	E0128230	SW,SLIDE AXA 2-2-G
R31	3R004510	PCBA,VR 202MK5 G
R32	3R003980	VAR RES,RK14K12D 50KA*2 G
J311	3E0077301A	6P MIC-B WIRE G
P503	3E0076901B	3P PITH CON WIRE G
J31	E0128310	PCBA,PHONE 202MK5 G
J306	3E0076401C	JACK,PHONE JY6317-01-030G
E	3E0082600C	3P PHONE WIRE G PHONE JACK GND WIRE G
AC2	3E002170	PCBA,TRANS A JPN 202MK5 G
A	E01557100A	PCBA,TRANS A EUR 202MK5 G
B	E01557200A	PCBA,TRANS A EXTC 202MK5G
C	E01557300A	PIN,TERMINAL LAPPING 2P G HARN ASSY,WHT (0V) G HARN ASSY,BRW (120V) G HARN ASSY,ORG (230V) G
C901	△ 3C006122	PCBA,TRANS B 202MK5 G
J401	3E0076201A	PCBA,TRANS B EUR 202MK5 G
L901 L902	E0123301	PCBA,TRANS B EXTC 202MK5G
S401	△ 3E002060	CC,YF 50V 0.10UFZ CER TPG 5P POWER WIRE G JUMPER WIRE,10MM G SW,PUSH SPUN 12 G

## 6. Included Accessories

### 付属品

#### Included Accessories

REF.NO.	PARTS NO.	DESCRIPTION	REMARKS
	D01053901A	OWNERS MNL,(J)202MK5 G [ J ]	
	D01053920A	OWNERS MNL,(E)202MK5 G [ Except J ]	
	D01053984A	OWNERS MNL,(C)202MK5 G [ CH ]	
	D01053980A	OWNERS MNL,(G)202MK5 G [ E ]	
	D01053981A	OWNERS MNL,(F)202MK5 G [ E ]	
	D01053982A	OWNERS MNL,(I)202MK5 G [ E ]	
	D01053983A	OWNERS MNL,(S)202MK5 G [ E ]	
	3M0028300A	ASSY,RACK MOUNT SCREW KIT SCREW,BPA M5X12 (NI) WASHER-FIBER(BLK)	

#### NOTES

- PC boards shown are viewed from parts side.
- Parts marked with \* require longer delivery time.
- The parts with no reference number or no parts number in the exploded views are not supplied.
- As regards the resistors and capacitors, refer to the circuit diagrams contained in this manual.
- △ Parts marked with this sign are safety critical components. They must be replaced with identical components - refer to the appropriate parts list and ensure exact replacement.
- Parts of [ ] mark can be used only with the version designated.  
[ J ] : JAPAN [ US/C ] : U.S.A./CANADA [ K ] : KOREA [ E ] : EUROPE  
[ UK ] : U.K. [ JEX ] : JAPAN & ASIA [ A ] : AUSTRALIA [ T ] : TAIWAN  
[ CH ] : CHINA [ ETC ] : U.S.A./CANADA/South America

#### 注意

- プリント基板図は部品面を示しています。
- \*印の部品は納期が若干かかります。あらかじめご了承ください。
- 分解図に部番のない部品および品番のない部品は供給できません。
- 標準の抵抗、コンデンサーは省略してあります。回路図を参照してください。
- △印は安全重要部品です。交換する時は必ず指定の部品を使用してください。
- 仕向先  
[ J ] : JAPAN [ US/C ] : U.S.A./CANADA [ K ] : KOREA [ E ] : EUROPE  
[ UK ] : U.K. [ JEX ] : JAPAN & ASIA [ A ] : AUSTRALIA [ T ] : TAIWAN  
[ CH ] : CHINA [ ETC ] : U.S.A./CANADA/South America