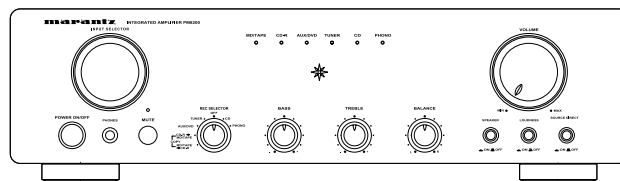


Service Manual

PM8200 /N1B, /N1G

Integrated Amplifier



PM8200

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

marantz®

PM8200

338J855010 AO
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First Issue:2001.06

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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.

Parts for your **MARANTZ** equipment are generally available to our National Marantz Subsidiary or Agent.

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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.

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ITASCA, IL. 60143
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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 SPECIFICATIONS

Rated power output 60 W x 2 (8 Ω load)
 (1 kHz, 2ch simultaneous drive)
 70 W x 2 (6 Ω load)
 80 W x 2 (4 Ω load)

Total harmonic distortion (20Hz to 20 kHz, 2ch drive, 8 Ω load)..... 0.01 %
 Cross-modulation distortion (SMPTE) 0.01 %
 Output bandwidth (8 Ω load, 0.04 %) 10 Hz to 50 kHz
 Frequency response (CD, SOURCE DIRECT) 5 Hz to 60 kHz, +0 / -1 dB
 Damping factor (8 Ω load, 20Hz to 10 kHz) 100

Input sensitivity
 PHONO (MM) 2.3 mV
 HIGH LEVEL 200 mV

Maximum allowable PHONO input (1 kHz)
 MM 130 mV
 RIAA deviation (20 Hz to 20 kHz) ± 0.2 dB

S/N (1/6 A network, input shorted)
 PHONO (MM) 85 dB
 HIGH LEVEL 110 dB

Loudness (-20 dB)
 100 Hz 8 dB
 10 kHz 3 dB

Tone control
 BASS (100 Hz) ± 8 dB
 TREBLE (10 kHz) ± 8 dB

Supply voltage 230V AC, 50Hz
 Power consumption 155 W

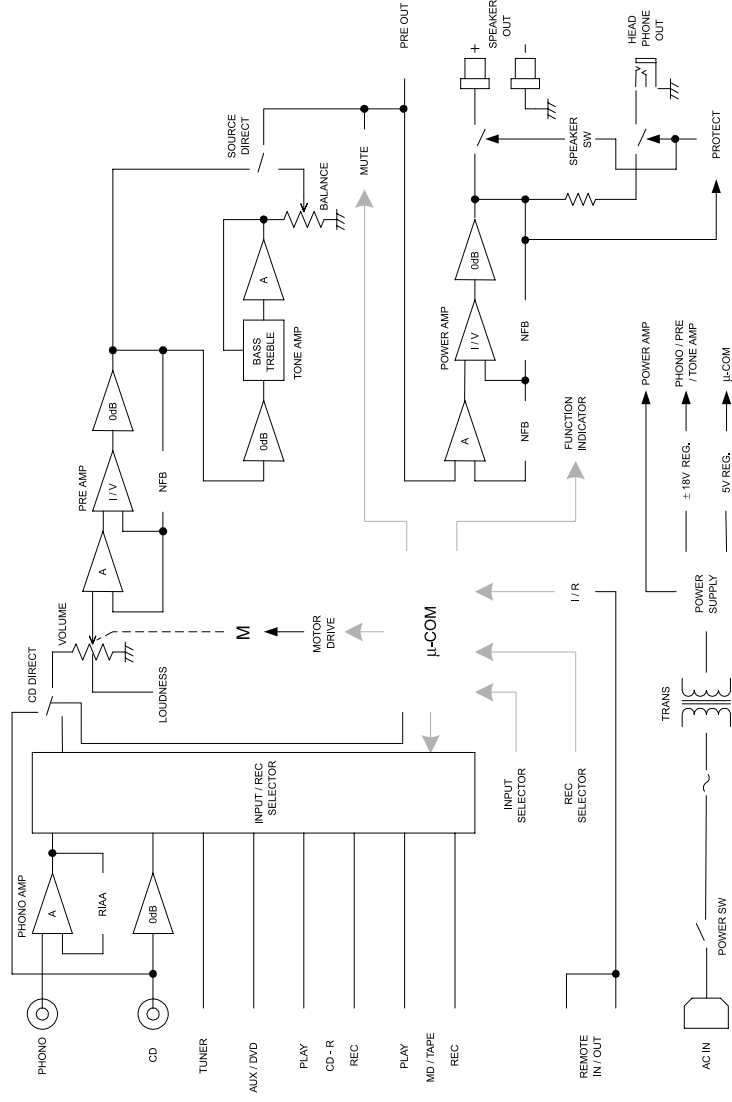
Dimensions
 Width 440 mm
 Height 124 mm
 Depth 340 mm
 Weight 8.0 kg

Accessories
 Remote control unit (RC8100PM) x 1

Dimensions
 Width 55 mm
 Height 197 mm
 Depth 21 mm
 Weight (without batteries) 90 g
 SUM-3 ("AA" size) dry cell battery x 2

Design and specifications are subject to change without notice.

2. BLOCK DIAGRAM



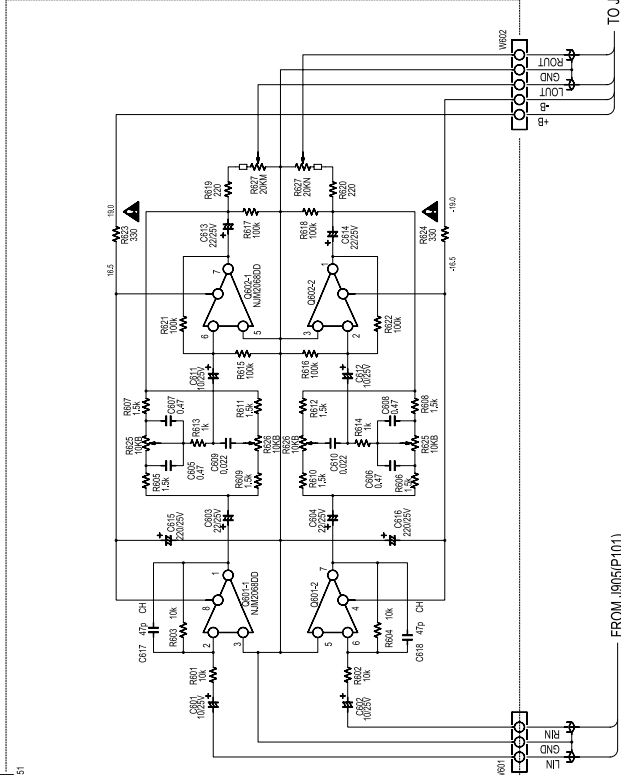
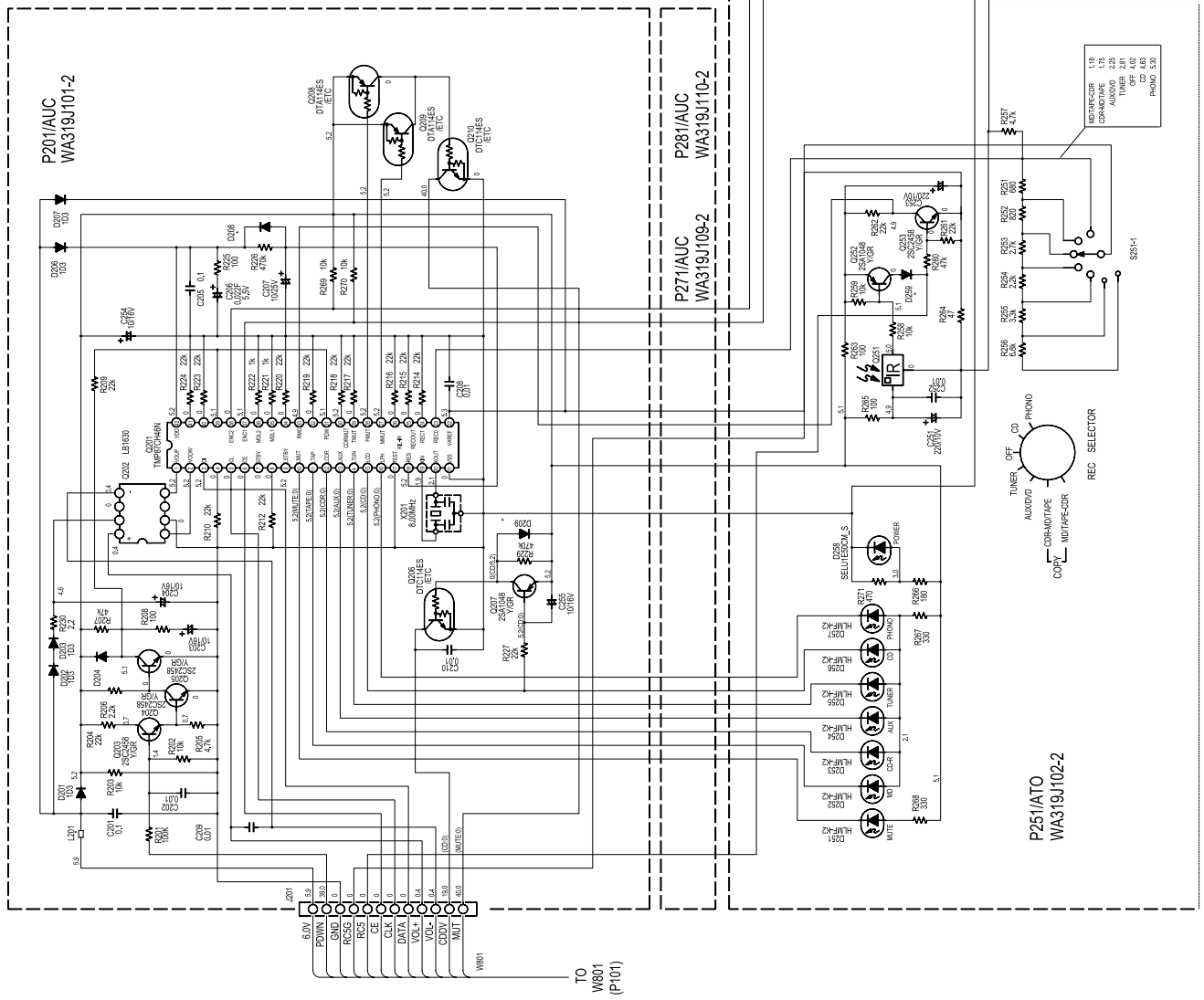
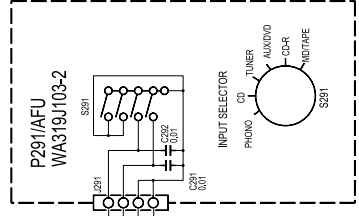
3. TEST EQUIPMENT REQUIRED FOR SERVICING

Item	Use
Distortion Analyzer	Distortion measurements
Audio Oscillator	Sinewave and squarewave signal source
AC VTVM	Voltage measurements (AC)
Oscilloscope	Waveform analysis and trouble shooting and ASO alignment
DC VTVM	Voltage measurements (DC)
AC Wattmeter	Monitors primary power to amplifier
Line Voltmeter	Monitors potential of primary power to amplifier
Variable Autotransformer	Adjust level of primary power to amplifier
Circuit Tester	Trouble shooting
Shorting Plug	Shorts amplifier input to eliminate noise pickup

4. SCHEMATIC DIAGRAM AND PARTS LOCATION (Pattern Side)

Q201:TMP87CH46N

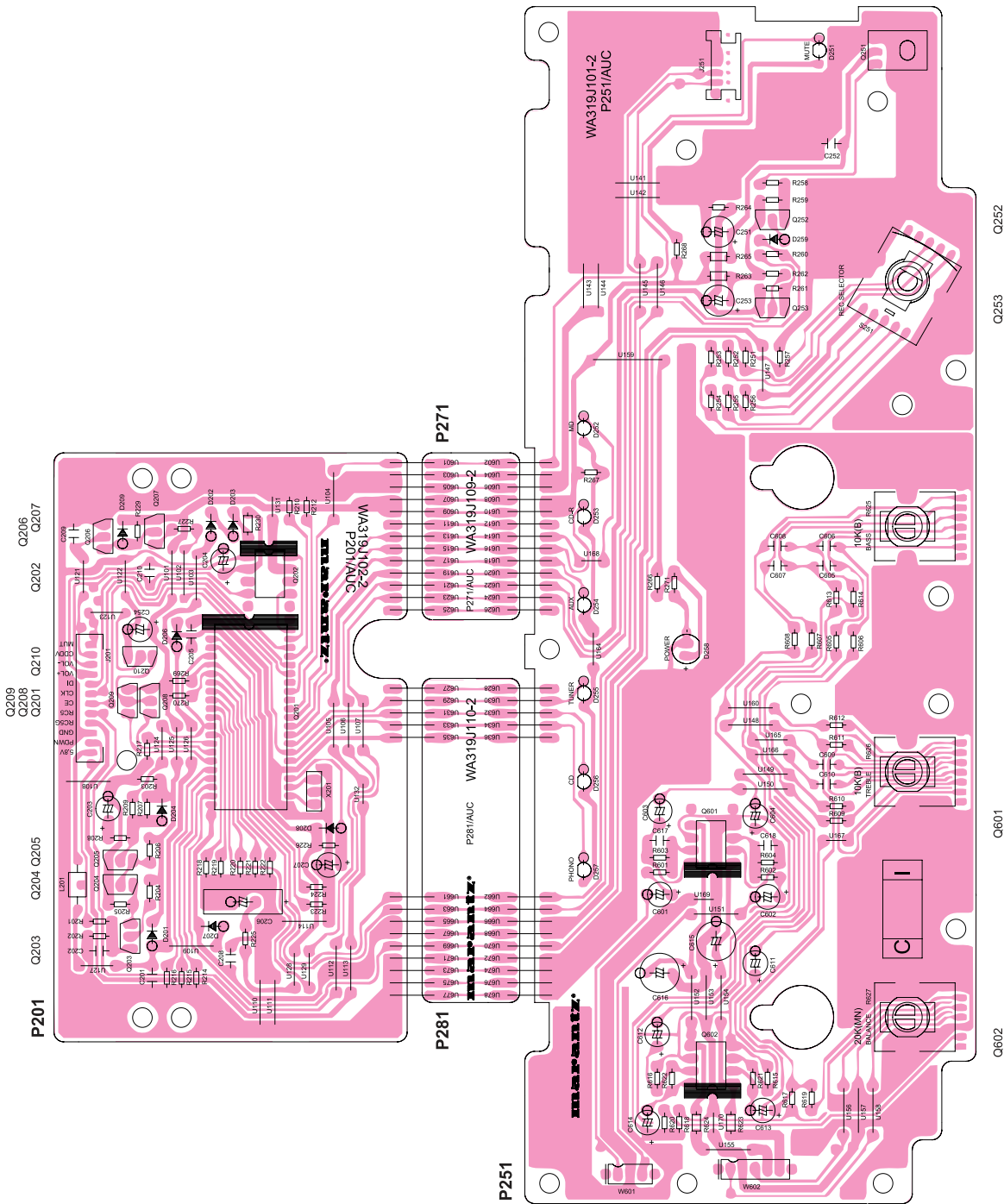
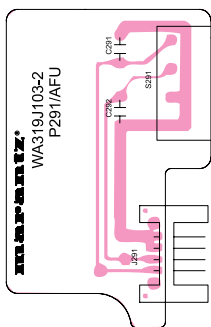
pin	port name	IO	use	Name	Part Setting	Note
					Act. Std. Back	
1	P277 (HSD)	IO (O)	○	VOL UP	L	L Volume UP
2	P276 (HSDCK)	IO (O)	○	VOL DOWN	L	L Volume DOWN
3	P275 (SD)	IO (O)	○	DI	L	L Data to LC78212
4	P274 (SI)	IO (O)	○		-	- pull down
5	P273 (SCK)	IO (O)	○	CLK	L	L Check to LC78212
6	P272 (PDD/FWM)	IO (O)	○	CE	L	L GE to LC78212
7	P271 (INT4)	IO (O)	○	STBY	H	H Amp. Circuit Power off
8	P270 (INT3/TC3)	IO (O)	○		-	- pull down
9	P267	IO	○	LED STANDBY	L	L Standby LED
10	P266	IO	○	LED MUTE	L	L Manual Mute LED
11	P265	IO	○	LED TAPE	L	L MD/TAPE LED
12	P264	IO	○	LED CDR	L	L CDR LED
13	P263	IO	○	LED AUX	L	L AUX/DVD LED
14	P262	IO	○	LED TUNER	L	L TUNER LED
15	P261	IO	○	LED CD	L	L CD LED
16	P260	IO	○	LED PHONO	L	L PHONO LED
17	TEST	IO	○		-	- to VSS
18	RESET	IO	○		-	-
19	KIN	IO	○		-	-
20	KOUT	IO	○		-	-
21	VASSVSS	IO	○		-	-
22	VAREF	IO	○		-	-
23	P267 (AIN0)	IO (I)	○	REC_SEL0	-	- A/D Reference
24	P267 (AIN1)	IO (I)	○	REC_SEL1	-	- Rec-Out Sel AD
25	P267 (AIN2)	IO (I)	○		-	- pull down
26	P267 (AIN3)	IO (I)	○	M_MUTE	L	L Manual Mute
27	P267 (AIN4)	IO (I)	○	INPUT MUTE	L	L Input Source Mute
28	P267 (AIN5)	IO (I)	○	TAPE MUTE	L	L TAPE MUTE
29	P267 (AIN7)	IO (I)	○	CDR MUTE	L	L CDR MUTE
30	P267 (AIN7)	IO (I)	○	POWER_DOWN	L	L Detect Power Down
31	P210 (INT1)	IO (O)	○		-	- pull down
32	P211 (INT1)	IO (O)	○	RC5_IN	-	- RC-5 Input
33	P212 (INT2/CT1)	IO (O)	○		-	- pull down
34	P213 (DVC)	IO (O)	○	MODEL1	-	- Model Check
35	P214 (PPG)	IO (O)	○	MODEL2	-	- Model Check
36	P215 (TC2)	IO (O)	○	ENC1	-	- Input Sel. Rotary enc.
37	P16	IO	○	ENC1	-	- Input Sel. Rotary enc.
38	P17	IO	○	ENC2	-	- Input Sel. Rotary enc.
39	P20	IO (I)	○	STOP	-	- 31Pin short
40	P21 (XTIN)	IO (O)	○		-	- pull down
41	P22 (XTOUT)	IO (O)	○		-	- pull down
42	VDD	IO (O)	○		-	-



TO J904(P101)

FROM J905(P101)

P291



Q602

Q601

Q253

Q252

P251

P281

P271

P201

Q204

Q205

Q209

Q208

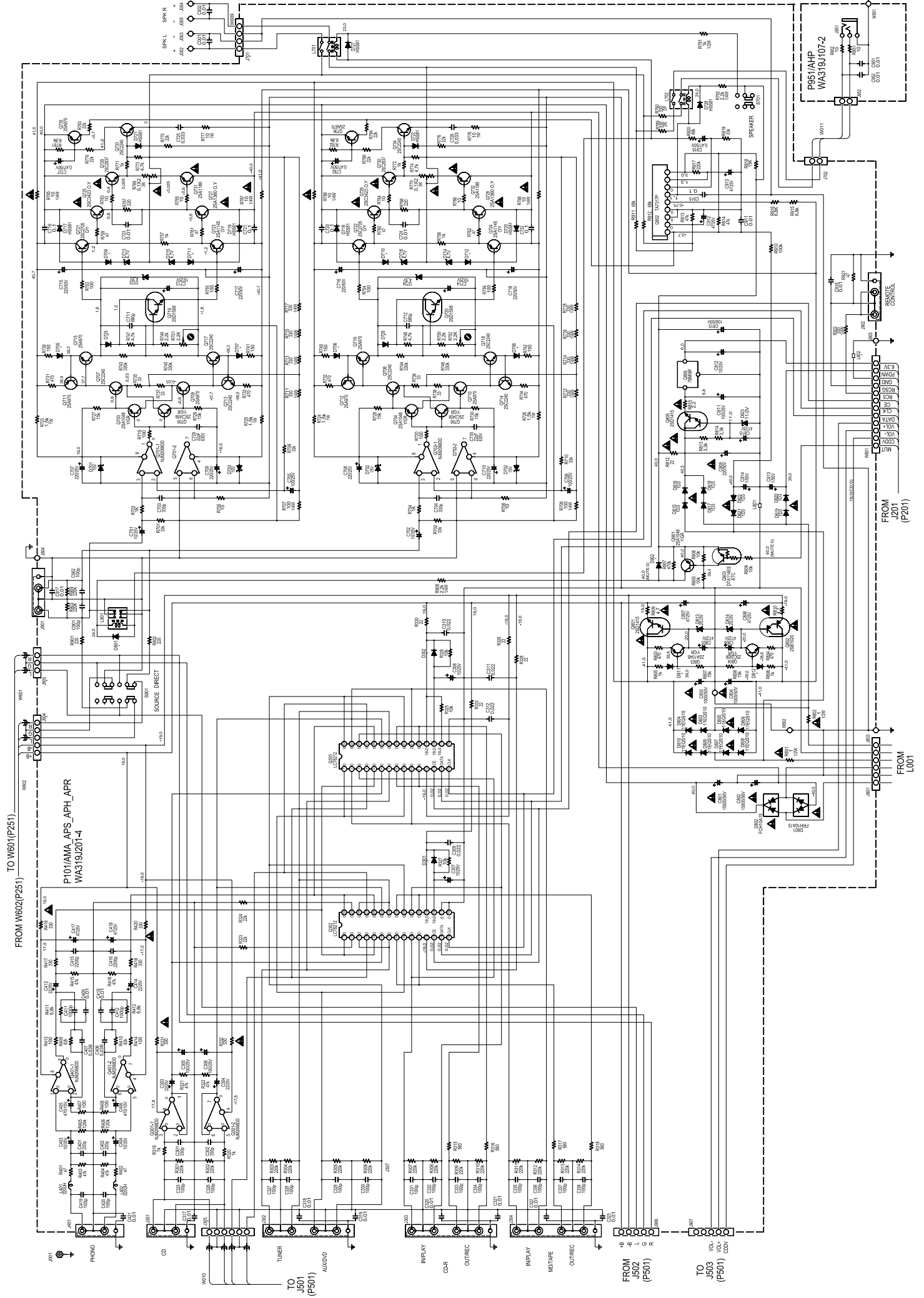
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Q210

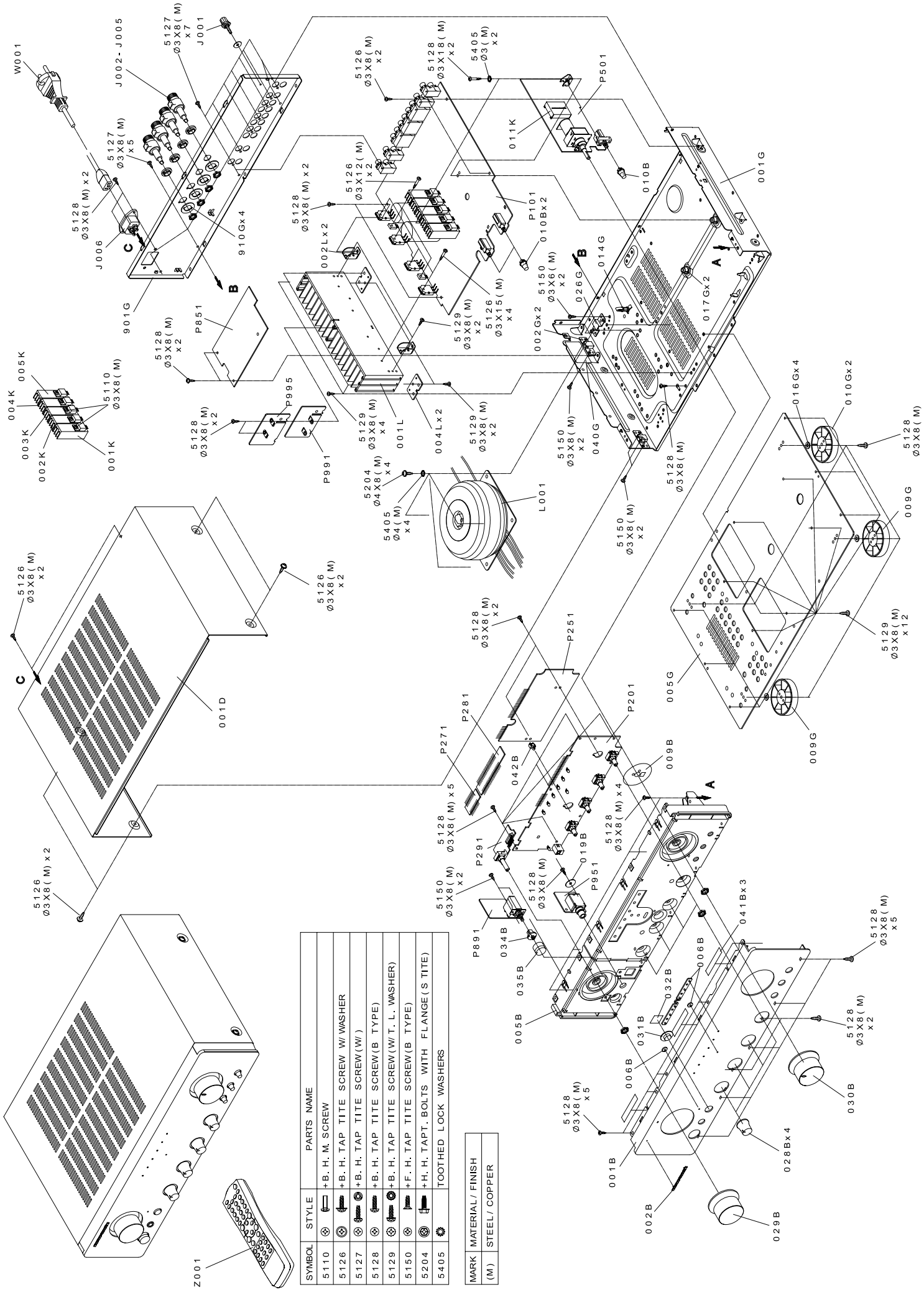
Q202

Q206

Q207



5. EXPLODED VIEW AND PARTS LIST



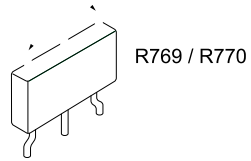
POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
001B	BLACK	9965 000 09772	FRONT AL PANEL (BLACK)	338J248010
001B	GOLD	9965 000 09846	FRONT AL PANEL (GOLD)	338J248110
002B		9965 000 07461	MARANTZ BADGE	185J251010
005B	BLACK	9965 000 09777	FRONT MOLD CHASSIS (BLACK)	319J105020
005B	GOLD	9965 000 09847	FRONT MOLD CHASSIS (GOLD)	319J105120
006B		9965 000 09781	LED LENS	319J355010
010B	BLACK	9965 000 09785	FUNCTION BUTTON (BLACK)	275W270010
010B	GOLD	9965 000 09850	FUNCTION BUTTON (GOLD)	275W270020
028B	BLACK	9965 000 09787	TONE/REC KNOB (BLACK)	332J154030
028B	GOLD	9965 000 09851	TONE/REC KNOB (GOLD)	332J154130
029B	BLACK	9965 000 03432	INPUT SELECTOR KNOB (BLACK)	312J154010
029B	GOLD	9965 000 01391	INPUT SELECTOR KNOB (GOLD)	312J154020
030B	BLACK	9965 000 09791	MASTER KNOB (BLACK)	312J154110
030B	GOLD	9965 000 09852	MASTER KNOB (GOLD)	312J154120
031B	BLACK	9965 000 03433	IR LENS (BLACK)	275W355010
031B	GOLD	9965 000 01392	IR LENS (GOLD)	275W355110
034B		9965 000 01394	POWER BUTTON JOINT	312J125010
035B	BLACK	9965 000 01975	POWER SW BUTTON (BLACK)	255W270010
035B	GOLD	9965 000 01395	POWER SW BUTTON (GOLD)	255W270110
009G		4822 462 42129	LEG (FRONT SIDE)	183J057010
010G		4822 462 42048	LEG (REAR SIDE)	183J057110
910G		9965 000 09798	SPEAKER SPACER	319J118020
J002		4822 265 11424	TERMINAL WBT-0765 POLE RED	YT01010360
J003		4822 265 11425	TERMINAL WBT-0765 POLE WHT	YT01010370
J004		4822 265 11424	TERMINAL WBT-0765 POLE RED	YT01010360
J005		4822 265 11425	TERMINAL WBT-0765 POLE WHT	YT01010370
▲ J006		4822 265 11399	JACK 2P MAINS INLET SOT-16C	YJ04002360
▲ L001		9965 000 09767	POWER TRANSF. MAINS	TS41001040
▲ W001		4822 321 11033	MAINS CORD 10A 250V CLASS2	ZC01803080
			PACKING CASE	
001T		9965 000 09774	USER GUIDE PM8200 N	338J851310
Z001		9965 000 09817	REMOTE COMMANDER (RC8100PM)	ZK319J0010
			NOT STANDARD SPARE PARTS	
001S			PACKING CASE	338J801010
002S			CUSHION	319J809010

NOTE : *hsp* PART IS LISTED FOR REFERENCE ONLY. MARANTZ WILL NOT SUPPLY THESE PARTS.

6. IDLING CURRENT ALIGNMENT

1. Each of cement resistor R769(on the PCB P101:Lch) and cement resistor R770(on the PCB P101:Rch) are provided with three test points. Connect the digital voltage meter, set for the DC voltage input, to the test points at the two extremities of three test points of R769(L ch) and R770(R ch).
2. After the setup above, turn the mains switch ON and heat up the amplifier about 10 minutes.
3. Adjust variable resistors R751(on the PCB P101:L ch) and R752(on the PCB P101:R ch) according to the digital volt meter reading. The target setting value is $10\text{mV} \pm 1\text{mV}$ (50mA) for both L ch and R ch.

Measurement point



POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)	POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
			P101-MAIN BOARD CIRCUIT BOARD P101-CAPACITORS						
C301		4822 126 14166	FILM 330pF J 100V	OF15331540	C815		4822 124 90355	ELECT 100µF M 50V	OA10705020
C302		4822 126 14166	FILM 330pF J 100V	OF15331540	C901		9965 000 01344	FILM 100pF J 100V	OF15101540
C303		9965 000 01581	ELECT 22µF M 25V	OA22602520	C902		9965 000 01344	FILM 100pF J 100V	OF15101540
C304		9965 000 01581	ELECT 22µF M 25V	OA22602520	C911		4822 124 12276	FILM 0.01µF J 100V	OF15103540
C305		4822 124 41535	ELECT 100µF M 25V	OA10702520	C912		4822 124 22698	ELECT 47µF M 25V	OA47602520
C306		4822 124 41535	ELECT 100µF M 25V	OA10702520	C913		4822 124 22698	ELECT 47µF M 25V	OA47602520
C307		4822 124 41534	ELECT 10µF M 25V	OA10602520	C915		4822 122 40617	CER. 0.1µF +80 -20% 50V	DD38104010
C308		4822 124 41534	ELECT 10µF M 25V	OA10602520	C916		4822 124 22273	ELECT 0.47µF M 50V	OA47405020
C317					C917		4822 122 30043	CER. 0.01µF Z 50V	DK18103310
{		4822 122 30043	CER. 0.01µF Z 50V	DK18103310	C918		4822 122 30043	CER. 0.01µF Z 50V	DK18103310
C323									
C325									
{		9965 000 01344	FILM 100pF J 100V	OF15101540					
C338									
C401		4822 121 10792	FILM 220pF J 100V	OF15221540					
C402		4822 121 10792	FILM 220pF J 100V	OF15221540	▲ R328		4822 052 10229	22 Ω ±5% 1/6W	GG05220160
C403		4822 124 80543	ELECT 10µF 35V	OA10603540	▲ R329		4822 052 10229	22 Ω ±5% 1/6W	GG05220160
C404		4822 124 80543	ELECT 10µF 35V	OA10603540	▲ R330		4822 052 10229	22 Ω ±5% 1/6W	GG05220160
C405		4822 124 90371	ELECT 470µF M 10V	OA47701020	R331		4822 111 31001	330 Ω ±5% 1/6W	GG05331160
C406		4822 124 90371	ELECT 470µF M 10V	OA47701020	R332		4822 111 31001	330 Ω ±5% 1/6W	GG05331160
C411		4822 121 70437	FILM 1000pF J 100V	OF15102540	▲ R333		4822 052 10229	22 Ω ±5% 1/6W	GG05220160
C412		4822 121 70437	FILM 1000pF J 100V	OF15102540	R419		4822 111 31001	330 Ω ±5% 1/6W	GG05331160
C413		9965 000 02015	ELECT 22µF M 25V	OA22602540	R420		4822 111 31001	330 Ω ±5% 1/6W	GG05331160
C414		9965 000 02015	ELECT 22µF M 25V	OA22602540	R723				
C417		9965 000 09801	ELECT 47µF 25V	OA47602540	{		4822 053 10152	1.5k Ω ±5% 1W	GA05152010
C418		9965 000 09801	ELECT 47µF 25V	OA47602540	R726				
C419		8220 200 62290	FILM 100pF J 100V	OF15101550	R731				
C420		8220 200 62290	FILM 100pF J 100V	OF15101550	{		4822 052 10471	470 Ω ±5% 1/6W	GG05471160
C421		4822 122 30043	CER. 0.01µF Z 50V	DK18103310	R734				
					R739				
C701		4822 124 80543	ELECT 10µF 35V	OA10603540	{		4822 052 10151	150 Ω ±5% 1/6W	GG05151160
C702		4822 124 80543	ELECT 10µF 35V	OA10603540	R742				
C703		9965 000 09806	FILM 330pF J 100V	OF15331550	R751		4822 100 20681	TRIM. 2.2k Ω RH0638CJ3R	RA02220780
C704		9965 000 09806	FILM 330pF J 100V	OF15331550	R752		4822 100 20681	TRIM. 2.2k Ω RH0638CJ3R	RA02220780
C705		4822 124 41535	ELECT 100µF M 25V	OA10702520	R753				
C706		4822 124 41535	ELECT 100µF M 25V	OA10702520	{		4822 052 10101	100 Ω ±5% 1/6W	GG05101160
C707					R756				
{		4822 124 90365	ELECT 220µF M 25V	OA22702520	R757		4822 052 10102	1k Ω ±5% 1/6W	GG05102160
C710					R758		4822 052 10102	1k Ω ±5% 1/6W	GG05102160
C711		9965 000 09807	FILM 680pF ±5% 100V	OF55681570	R759				
C712		9965 000 09807	FILM 680pF ±5% 100V	OF55681570	{		4822 052 10479	47 Ω ±5% 1/6W	GG05470160
C713		4822 124 41534	ELECT 10µF M 25V	OA10602520	R762				
C714		4822 124 41534	ELECT 10µF M 25V	OA10602520	R763				
C715					{		4822 052 10109	10 Ω ±5% 1/6W	GG05100160
{		4822 124 90366	ELECT 220µF M 50V	OA22705020	R766				
C718					R767		4822 052 10221	220 Ω ±5% 1/6W	GG05221160
C723		4822 124 12276	FILM 0.01µF J 100V	OF15103540	R768		4822 052 10221	220 Ω ±5% 1/6W	GG05221160
C724		4822 124 12276	FILM 0.01µF J 100V	OF15103540	▲ R769		4822 111 91402	FIXED 0.1 Ω X2 3 W	BZ10102010
C727		4822 124 22273	ELECT 0.47µF M 50V	OA47405020	▲ R770		4822 111 91402	FIXED 0.1 Ω X2 3 W	BZ10102010
C728		4822 124 22273	ELECT 0.47µF M 50V	OA47405020	R771		4822 052 10102	1k Ω ±5% 1/6W	GG05102160
C729		9965 000 09803	FILM 22pF J 630V	OF55220560	R772		4822 052 10102	1k Ω ±5% 1/6W	GG05102160
C730		9965 000 09803	FILM 22pF J 630V	OF55220560	R773				
▲ C801		9965 000 09756	ELECT 1500µF 56V	OB15905610	R774				
▲ C802		9965 000 09756	ELECT 1500µF 56V	OB15905610	R777		4822 053 10109	10 Ω ±5% 1W	GA05100010
C803		4822 124 12056	ELECT ELNA RA2 16X25	OA10805020	R778		4822 053 10109	10 Ω ±5% 1W	GA05100010
C804		4822 124 12056	ELECT ELNA RA2 16X25	OA10805020	R785				
C805		4822 124 22698	ELECT 47µF M 25V	OA47602520	{		4822 052 10109	10 Ω ±5% 1/4W	GG05100140
C806		4822 124 22698	ELECT 47µF M 25V	OA47602520	R788				
C807		9965 000 09801	ELECT 47µF 25V	OA47602540	R789		4822 116 60494	METAL 330 Ω ±5% 2W	NK05331020
C808		9965 000 09801	ELECT 47µF 25V	OA47602540	R790		4822 116 60494	METAL 330 Ω ±5% 2W	NK05331020
C809		4822 124 90366	ELECT 220µF M 50V	OA22705020	R791		4822 050 21022	1k Ω ±5% 1/2W	GG05102120
C810		4822 124 22698	ELECT 47µF M 50V	OA47602520	R792		4822 050 22622	2.2k Ω ±5% 1/4W	GG05222140
C811		4822 124 41535	ELECT 100µF M 50V	OA10702520	R801		4822 050 21108	1 Ω ±5% 1/2W	GG05010120
C812		4822 124 41534	ELECT 10µF M 50V	OA10602520	R802		4822 050 21108	1 Ω ±5% 1/2W	GG05010120
C813		4822 124 41543	ELECT 1µF M 50V	OA10505020	R809		4822 052 10478	4.7 Ω ±5% 1/6W	GG05047160
C814		4822 124 41543	ELECT 1µF M 50V	OA10505020	R810		4822 052 10478	4.7 Ω ±5% 1/6W	GG05047160

NOTE : "nsp" PART IS LISTED FOR REFERENCE ONLY, MARANTZ WILL NOT SUPPLY THESE PARTS.

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MUJ)	POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MUJ)
R812		4822 052 10229	22 Ω ±5% 1/6W	GG05220160	Q703		4822 130 60107	TRS. 2SA1048 Y OR GR	HT110482B0
▲ R815		4822 052 10228	2.2 Ω ±5% 1/6W	GG05022160	Q704		4822 130 60107	TRS. 2SA1048 Y OR GR	HT110482B0
R908		4822 050 22262	2.2K Ω ±5% 1/4W	GG05222140	Q705		4822 130 60839	TRS. 2SC2458 Y OR GR	HT324582B0
			P101-RESISTORS(COMMON)		Q706		4822 130 60839	TRS. 2SC2458 Y OR GR	HT324582B0
	R***		CARBON FILM FIXED RES. ±5% 1/4W : R707 R708 R711-R718 R922		Q707		4822 130 43233	TRS. 2SC2240 GR OR BL	HT322402A0
					Q708		4822 130 43233	TRS. 2SC2240 GR OR BL	HT322402A0
					Q709				
					§		4822 130 42949	TRS. 2SA970 (GR) OR (BL)	HT109702A0
	R***		CARBON FILM FIXED RES. ±5% 1/6W : R301-R327 R401-R418 R701-R706 R709 R710 R719 R720 R727-R730 R735-R738 R743-R750 R775 R776 R779-R784 R803-R808 R813 R814 R901-R907 R909-R921		Q712				
					Q713		4822 130 43233	TRS. 2SC2240 GR OR BL	HT322402A0
					Q714		4822 130 43233	TRS. 2SC2240 GR OR BL	HT322402A0
					Q715		4822 130 42949	TRS. 2SA970 (GR) OR (BL)	HT109702A0
					Q716		4822 130 42949	TRS. 2SA970 (GR) OR (BL)	HT109702A0
					Q717		4822 130 43233	TRS. 2SC2240 GR OR BL	HT322402A0
					Q718		4822 130 43233	TRS. 2SC2240 GR OR BL	HT322402A0
					Q719		4822 130 60526	TRS. 2SD1508	HT415080A0
					Q720		4822 130 60526	TRS. 2SD1508	HT415080A0
					Q721		4822 130 43283	TRS. 2SC2705 O OR Y	HT327052A0
					Q722		4822 130 43283	TRS. 2SC2705 O OR Y	HT327052A0
D301		4822 130 32362	DIODE 1SS176/MA165/1SS254 30V 0.1A	HD20002000	Q723		4822 130 42999	TRS. 2SA1145 O OR Y	HT111452A0
D302		4822 130 32362	DIODE 1SS176/MA165/1SS254 30V 0.1A	HD20002000	Q724		4822 130 42999	TRS. 2SA1145 O OR Y	HT111452A0
D701					Q725		5322 130 61737	TRS. 2SC3423 O OR Y	HT334232A0
§ D704		4822 130 80322	ZENER DIODE 15V	HD31501000	Q726		5322 130 61737	TRS. 2SC3423 O OR Y	HT334232A0
D705					Q727		5322 130 61728	TRS. 2SA1360 O OR Y	HT113602A0
§ D712		4822 130 32362	DIODE 1SS176/MA165/1SS254 30V 0.1A	HD20002000	Q728		5322 130 61728	TRS. 2SA1360 O OR Y	HT113602A0
§ D713					Q729		9965 000 09812	TRS. 2SC2837 R OR O	HT328372A0
§ D716		4822 130 10667	ZENER DIODE 4.7V	HD30471000	Q730		9965 000 09812	TRS. 2SC2837 R OR O	HT328372A0
§ D717					Q731		9965 000 09810	TRS. 2SA1186 R OR O	HT111862A0
§ D722		4822 130 80837	DIODE HSS81TD 150V 150MA	HD20027010	Q732		9965 000 09810	TRS. 2SA1186 R OR O	HT111862A0
D723		4822 130 31554	ZENER DIODE 4.3V	HD30431000	Q733		4822 130 43233	TRS. 2SC2240 GR OR BL	HT322402A0
D724		4822 130 31554	ZENER DIODE 4.3V	HD30431000	Q734		4822 130 43233	TRS. 2SC2240 GR OR BL	HT322402A0
D725		4822 130 32362	DIODE 1SS176/MA165/1SS254 30V 0.1A	HD20002000	Q735		4822 130 42949	TRS. 2SA970 (GR) OR (BL)	HT109702A0
					Q736		4822 130 42949	TRS. 2SA970 (GR) OR (BL)	HT109702A0
D726		4822 130 32362	DIODE 1SS176/MA165/1SS254 30V 0.1A	HD20002000	Q801		4822 130 11605	TRS. 2SD1415	HT41415100
					Q802		4822 130 11604	TRS. 2SB1020	HT21020100
D727		4822 130 80837	DIODE HSS81TD 150V 150NA	HD20027010	Q803		4822 130 60107	TRS. 2SA1048 Y OR GR	HT110482B0
D728		4822 130 80837	DIODE HSS81TD 150V 150MA	HD20027010	Q804		4822 130 60839	TRS. 2SC2458 Y OR GR	HT324582B0
▲ D801		9965 000 09757	DIODE FRH10A15	HE10004100	▲ Q805		4822 130 11605	TRS. 2SD1415	HT41415100
▲ D802		9965 000 09759	DIODE FCH10A15	HE10003100	▲ Q806		4822 209 83821	IC NJM78M06FA	HC38506090
▲ D803					Q901		4822 130 60107	TRS. 2SA1048 Y OR GR	HT110482B0
§					Q902		4822 209 83312	IC TA7317P	HC10042050
▲ D810		9965 000 09763	DIODE SHOTTKY 11EQS10 1A 100V	HD20055100	Q903		4822 130 61227	SEMICON.COMP DTA114ES/UN4111 10K/10K	BA10001000
D811		4822 130 32362	DIODE 1SS176/MA165/1SS254 30V 0.1A	HD20002000	J301		4822 290 61242	P101-MISCELLANEOUS TERMINAL 14X14 RA 2L2P BLK AU FLM-GND	YT02021360
					J302		9965 000 09132	TERMINAL YKC21-3441	YT02041120
D812		4822 130 32362	DIODE 1SS176/MA165/1SS254 30V 0.1A	HD20002000	J303		9965 000 09132	TERMINAL YKC21-3441	YT02041120
					J304		9965 000 09132	TERMINAL YKC21-3441	YT02041120
D813		4822 130 34499	ZENER DIODE 20V	HD32001000	J401		4822 290 61242	TERMINAL 14X14 RA 2L2P BLK AU FLM-GND	YT02021360
D814		4822 130 34499	ZENER DIODE 20V	HD32001000	J901		4822 290 61242	TERMINAL 14X14 RA 2L2P BLK AU FLM-GND	YT02021360
▲ D815					J902		4822 267 41009	TERMINAL 2P RCA PIN JACK	YT02020890
§		4822 130 82421	DIODE 1D3 1A/250V	HD20002710	L401		4822 156 11019	CHOKO COIL 320μH LF-1	LC13240010
▲ D822					L402		4822 156 11019	CHOKO COIL 320μH LF-1	LC13240010
D823		4822 130 34488	ZENER DIODE 11V	HD31101000	L701		9965 000 05895	RELAY G5PA-28 5A/250VAC	LY20240490
D901		4822 130 32362	DIODE 1SS176/MA165/1SS254 30V 0.1A	HD20002000	L702		9965 000 01576	RELAY MR82-24USR	LY20240480
					L801		4822 526 10584	FERRITE CORE ZBF50D-00TA	FC90090010
D902		4822 130 32362	DIODE 1SS176/MA165/1SS254 30V 0.1A	HD20002000	L802		4822 158 60605	FERRITE CORE BEADS (B-01-RT)	FC90050060
Q301		4822 209 73064	IC NJM-2068-DD	HC10053090	L901		9965 000 01576	RELAY MR82-24USR	LY20240480
Q302		4822 209 32553	IC LC78212	HC10309030	S701		4822 276 20519	PUSH SWITCH ALPS SPUN 1KEY 2POLE 2.5MM	SP02011950
Q303		4822 209 32553	IC LC78212	HC10309030	S901		9965 000 09816	PUSH SWITCH SPUN19	SP04010670
Q401		4822 209 73064	IC NJM-2068-DD	HC10053090					
Q701		4822 209 73064	IC NJM-2068-DD	HC10053090					
Q702		4822 209 73064	IC NJM-2068-DD	HC10053090					

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POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)	POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
			P201-LED & TONE CIRCUIT BOARD						
			P201-CAPACITORS						
C201		4822 122 40617	CER. 0.1µF +80 -20% 50V	DD38104010	C613		9965 000 01581	ELECT 22µF M 25V	OA22602520
C202		9965 000 01569	CER. 0.01µF +80 -20% 50V	DD38103010	C614		9965 000 01581	ELECT 22µF M 25V	OA22602520
C203		4822 124 90352	ELECT 10µF M 16V	OA10601620	C615		4822 124 90365	ELECT 220µF M 25V	OA22702520
C204		4822 124 90352	ELECT 10µF M 16V	OA10601620	C616		4822 124 90365	ELECT 220µF M 25V	OA22702520
C205		4822 122 40617	CER. 0.1µF +80 -20%50V	DD38104010	C617		4822 122 31205	CER. 47pF J CH 50V	DD15470300
C206		4822 124 90406	BIG ELECT FMOH223ZTP16 SUPER	EX22300530	C618		4822 122 31205	CER. 47pF J CH 50V	DD15470300
C207		4822 124 90352	ELECT 10µF M 16V	OA10601620				P251-CAPACITORS(COMMON)	
C208		9965 000 01569	CER. 0.01µF +80 -20% 50V	DD38103010				PLASTIC FILM CAPACITOR	
C209		4822 124 12276	FILM 0.01µF J 100V	OF15103540				±5% 50V : C605-C610	
C210		4822 124 12276	FILM 0.01µF J 100V	OF15103540	R263		4822 052 10101	100 Ω ±5% 1/6W	GG05101160
C254		4822 124 90352	ELECT 10µF M 16V	OA10601620	R265		4822 052 10101	100 Ω ±5% 1/6W	GG05101160
C255		4822 124 11947	ELECT 10µF 16V	EQ10601630	▲ R623		4822 111 31001	330 Ω ±5% 1/6W	GG05331160
			P201-RESISTOR		▲ R624		4822 111 31001	330 Ω ±5% 1/6W	GG05331160
R230		4822 052 10228	2.2 Ω ±5% 1/6W	GG05022160	R625		9965 000 09813	VARIABLE 10k Ω (B)X2	RM01030990
			P201-RESISTORS(COMMON)		R626		9965 000 09813	VARIABLE 10k Ω (B)X2	RM01030990
			CARBON FILM FIXED RES.		R627		9965 000 09814	VARIABLE 20k Ω (MN)X2	RM02030570
			±5% 1/6W : R201-R210 R212					RK14K124	
			R214-R227 R229 R269 R270					RK14K124	
			P201-SEMICONDUCTORS					P251-RESISTORS(COMMON)	
D201		4822 130 32362	DIODE 1SS176/MA165/1SS254 30V 0.1A	HD20002000				CARBON FILM FIXED RES.	
▲ D202		4822 130 82421	DIODE 1D3 1A/250V	HD20002710				±5% 1/6W : R251-R262 R264	
▲ D203		4822 130 82421	DIODE 1D3 1A/250V	HD20002710				R266-R268 R271 R601-R622	
D204		4822 130 32362	DIODE 1SS176/MA165/1SS254 30V 0.1A	HD20002000				P251-SEMICONDUCTORS	
D206					D251		4822 130 11569	L.E.D. HLMF-K200 RED	HI10005340
D209		4822 130 32362	DIODE 1SS176/MA165/1SS254 30V 0.1A	HD20002000	D257		9965 000 09808	L.E.D. SELU1E50CM-S BLUE LED	HI10039080
Q201		9965 000 09809	MICROPROCESSOR 8BIT 42PIN TMP87CH46N-B0024	HU319JT000	D258		4822 130 32362	DIODE 1SS176/MA165/1SS254 30V 0.1A	HD20002000
Q202		4822 209 73287	IC LB1630	HC10235030	D259		4822 130 32362	DIODE 1SS176/MA165/1SS254 30V 0.1A	HD20002000
Q203		4822 130 60839	TRS. 2SC2458 Y OR GR	HT324582B0	Q251		4822 209 16735	PHOTO UNIT PNA4655M00HB	HW10006020
Q204		4822 130 60839	TRS. 2SC2458 Y OR GR	HT324582B0	Q252		4822 130 60107	IR SENSOR	HT110482B0
Q205		4822 130 60839	TRS. 2SC2458 Y OR GR	HT324582B0	Q253		4822 130 60839	TRS. 2SC2458 Y OR GR	HT324582B0
Q206		4822 130 60588	SEMICON.COMP	BA20001000	Q601		4822 209 73064	IC NJM-2068-DD	HC10053090
Q207		4822 130 60107	DTC114ES/UN4211 10K/10K	HT110482B0	Q602		4822 209 73064	IC NJM-2068-DD	HC10053090
Q208		4822 130 61227	SEMICON.COMP	BA10001000				P251-MISCELLANEOUS	
Q209		4822 130 61227	DTA114ES/UN4111 10K/10K	BA10001000	S251		9965 000 09815	ROTARY SWITCH	SR01070050
Q210		4822 130 60588	SEMICON.COMP	BA20001000				SRBV17-F0020-11	
L201		4822 158 60605	FERRITE CORE BEADS (B-01-RT)	FC90050060				P291-INPUT SELECTOR CIRCUIT BOARD	
X201		4822 242 72066	SERAMIC VIB. CST8.0MHz (MT)	FQ08004010	C291		9965 000 01569	CER. CAP. 0.01µF +80% -20% 50V	DD38103010
			P251-µ CON CIRCUIT BOARD		C292		9965 000 01569	CER. CAP. 0.01µF +80% -20% 50V	DD38103010
			P251-CAPACITORS		S291		4822 273 20368	ROTARY SWITCH SRRSIC	SR01120070
C251		9965 000 01318	ELECT 220µF M 10V	OA22701020				P501-VOLUME AMP CIRCUIT BOARD	
C252		9965 000 01569	CER. 0.01µF +80% -20%50V	DD38103010				P501-CAPACITORS	
C253		9965 000 01318	ELECT 220µF M 10V	OA22701020	C503		4822 121 70437	FILM 1000pF J 100V	OF15102540
C601		4822 124 41534	ELECT 10µF M 25V	OA10602520	C504		4822 121 70437	FILM 1000pF J 100V	OF15102540
C602		4822 124 41534	ELECT 10µF M 25V	OA10602520	C505		4822 124 80543	ELECT 10µF 35V	OA10603540
C603		9965 000 01581	ELECT 22µF M 25V	OA22602520	C506		4822 124 80543	ELECT 10µF 35V	OA10603540
C604		9965 000 01581	ELECT 22µF M 25V	OA22602520	C507		4822 121 10792	FILM 220pF J 100V	OF15221540
C611		4822 124 41534	ELECT 10µF M 25V	OA10602520	C508		4822 121 10792	FILM 220pF J 100V	OF15221540
C612		4822 124 41534	ELECT 10µF M 25V	OA10602520	C509		9965 000 09803	FILM 22pF J 630V	OF55220560
					C510		9965 000 09803	FILM 22pF J 630V	OF55220560
					C511		9965 000 02015	ELECT 22µF M 25V	OA22602540

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POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)	POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
C512 C513 }		9965 000 02015	ELECT 22µF M 25V	OA22602540				P951-HEAD PHONE CIRCUIT BOARD	
C516		4822 124 90365	ELECT 220µF M 25V	OA22702520	C951		4822 124 12276	FILM 0.01µF J 100V	OF15103540
C517		4822 124 41534	ELECT 10µF M 25V	OA10602520	C952		4822 124 12276	FILM 0.01µF J 100V	OF15103540
C518		4822 124 41534	ELECT 10µF M 25V	OA10602520				P951-RESISTORS	
C519		9965 000 01561	MICA 10pF D 250WV	DF31100520	R951		4822 052 10109	10 Ω ±5% 1/6W	GG05100160
C520		9965 000 01561	MICA 10pF D 250WV	DF31100520	R952		4822 052 10109	10 Ω ±5% 1/6W	GG05100160
C521		4822 124 41543	ELECT 1µF M 50V	OA10505020				P951-MISCELLANEOUS	
			P501-CAPACITORS(COMMON) PLASTIC FILM CAPACITOR ±5% 50V : C501 C502		J951		9965 000 01662	JACK HLJ0540-01-410 BLK	YJ01003870
			P501-RESISTORS						
▲ R549 }		4822 111 31001	330 Ω ±5% 1/6W	GG05331160					
▲ R552 R553 R554		4822 052 10122	1.2k Ω ±5% 1/6W	GG05122160					
		9965 000 09811	VARIABLE 30k Ω (B) RK16312MC (9MM)	RM03030580					
			P501-RESISTORS(COMMON) CARBON FILM FIXED RES. ±5% 1/6W : R501-R510 R513-R548 R555 R556 R557						
			P501-SEMICONDUCTORS						
D501 }		4822 130 32362	DIODE 1SS176/MA165/1SS254 30V 0.1A	HD20002000					
D506 D508		4822 130 32362	DIODE 1SS176/MA165/1SS254 30V 0.1A	HD20002000					
Q501		4822 209 73064	IC NJM-2068-DD	HC10053090					
Q502		4822 209 73064	IC NJM-2068-DD	HC10053090					
Q503		4822 130 60107	TRS. 2SA1048 Y OR GR	HT110482B0					
Q504		4822 130 60107	TRS. 2SA1048 Y OR GR	HT110482B0					
Q505 }		4822 130 60839	TRS. 2SC2458 Y OR GR	HT324582B0					
Q508 Q509 }		4822 130 60107	TRS. 2SA1048 Y OR GR	HT110482B0					
Q512		4822 130 60839	TRS. 2SC2458 Y OR GR	HT324582B0					
Q513		4822 130 60839	TRS. 2SC2458 Y OR GR	HT324582B0					
Q514		4822 130 43233	TRS. 2SC2240 GR OR BL	HT322402A0					
Q515		4822 130 43233	TRS. 2SC2240 GR OR BL	HT322402A0					
Q516		4822 130 43233	TRS. 2SC2240 GR OR BL	HT322402A0					
Q517		4822 130 42949	TRS. 2SA970 (GR) OR (BL)	HT109702A0					
Q518		4822 130 42949	TRS. 2SA970 (GR) OR (BL)	HT109702A0					
Q519		4822 130 60107	TRS. 2SA1048 Y OR GR	HT110482B0					
			P501-MISCELLANEOUS						
L501		9965 000 01576	RELAY MR82-24USR	LY20240480					
S501		4822 276 13449	PUSH SWITCH SPUN12	SP02012090					
			P851-AC OUTLET/VOL.SEL. CIRCUIT BOARD						
▲ F851		4822 070 33152	FUSE 3.15 A 250V BS LISTED/FOR N	FS10315850					
			P891-POWER SW. CIRCUIT BOARD						
▲ C891		4822 121 43732	FILM CAP. 0.01µF 250V AC	DF77103500					
▲ S891		4822 276 12647	PUSH SWITCH ESB-99753V-4 TV-8	SP01011470					

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