



Technical Bulletin C372

Product: Integrated Amplifier

Hardware Technical Bulletin: C372-H2005-01

Date: June 1/05

Subject: Power supply capacitors

Note: Implemented in production from serial number: H54C37210151

Previous T.B.'s required:

☐ YES

☒ NO

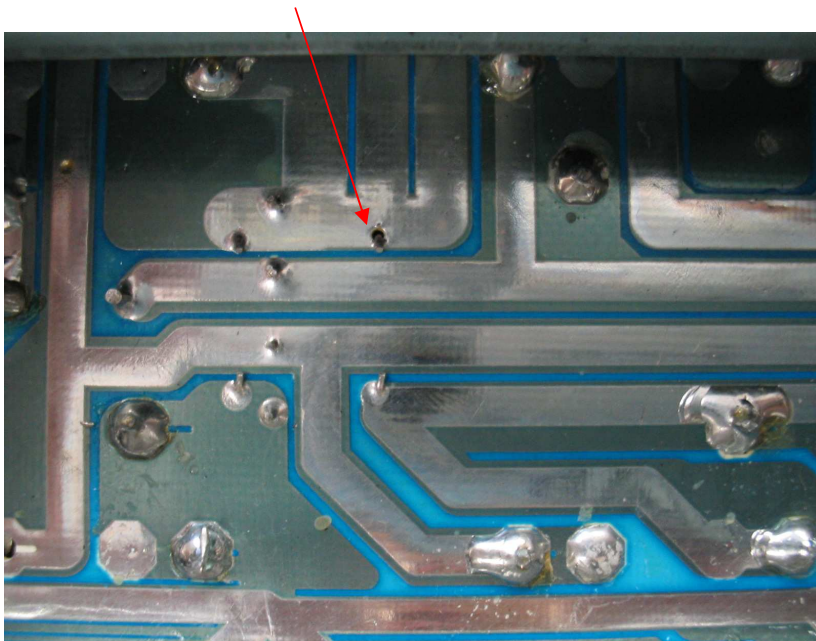
DESCRIPTION: Please perform the following modification when in for service for any reason .Power supply capacitors maybe stressed(top of caps are expanded) due to insufficient soldering on pc board trace. A very small percentage of units are affected, but severe damage is possible due to the high voltage and current in this part of the circuit.

REASON:Solder pads around jumper wires have higher than normal resistance causing power supply ripple to increase across filter capacitors. See figure 1.

SOLUTION:Add 18 gauge wires to thePCB to lower the circuit resistance.To install this modification, first remove the bottom service plate. Look for the PCB area shown in figure 2. In figure 3, the addition of black jumper wires to lower the resistance of these pc board traces is shown. Capacitors showing any signs of stress or damage should also be replaced at the same time.

Warning: Check the correct polarity after performing this change . Use a variac to bring up supply voltage to ensure proper polarity. Failure to do this check could destroy capacitors!!

Figure 1 (Original layout, showing cracked solder on jumper wire)





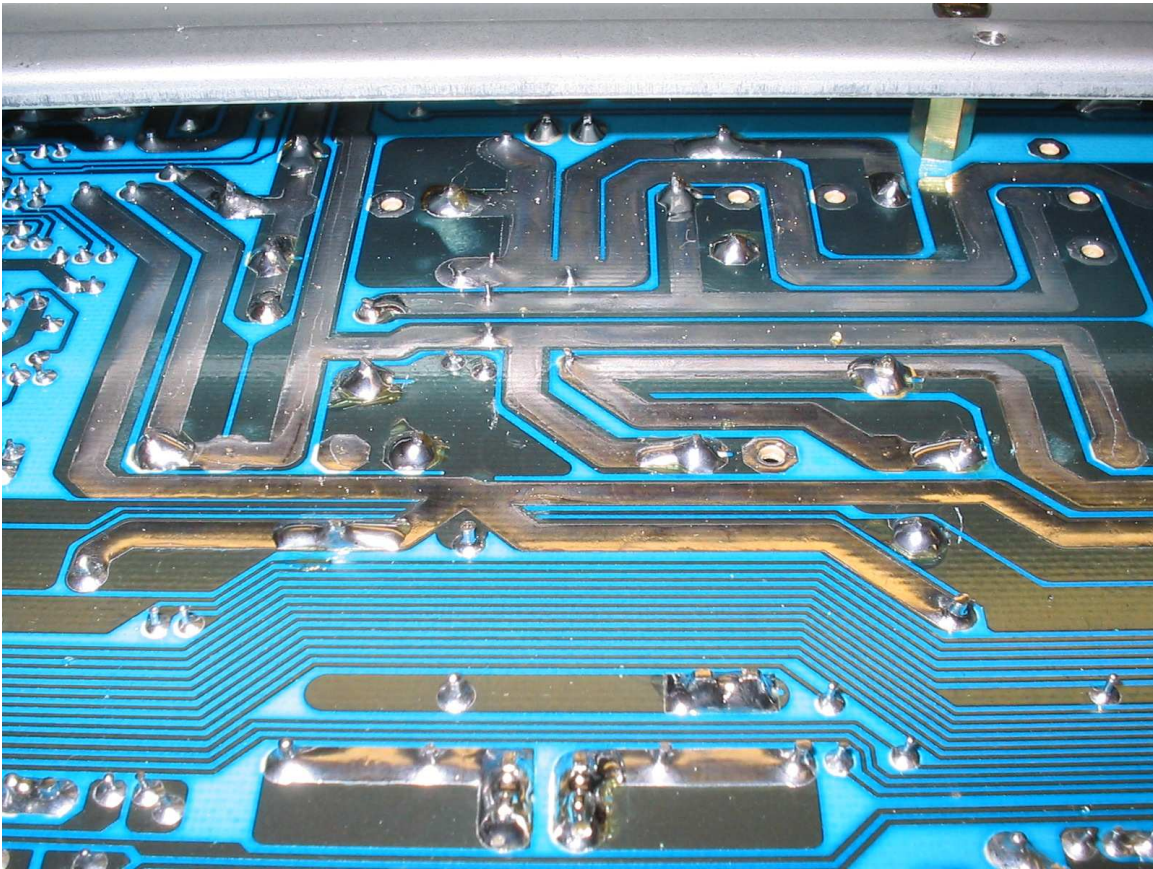
Technical Bulletin C372

Product: Integrated Amplifier

Hardware Technical Bulletin: C372-H2005-01

Figure 2

Area of PCB to be modified



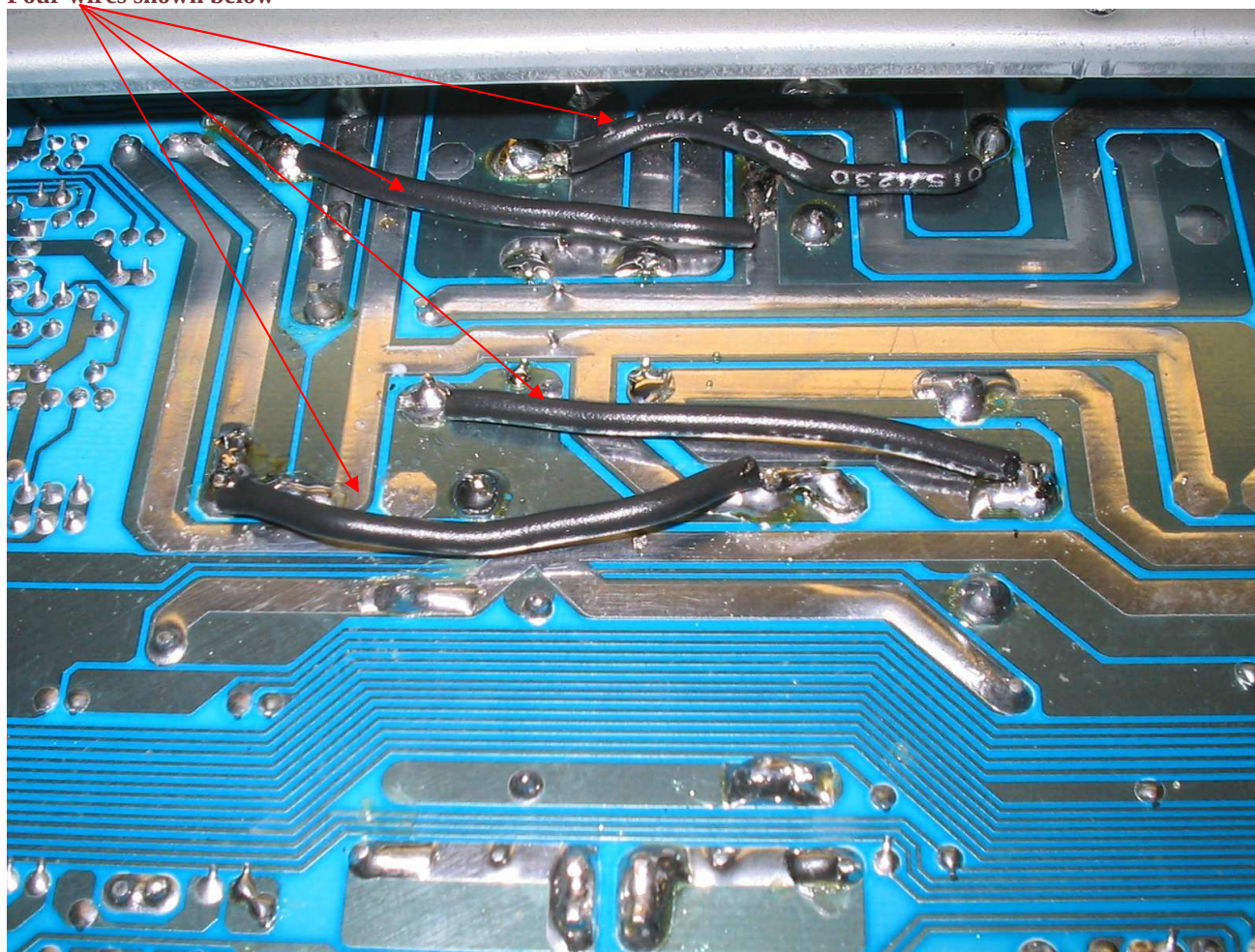
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Hardware Technical Bulletin: C372-H2005-01

Figure 3

Addition of wires to PC Board area

Four wires shown below

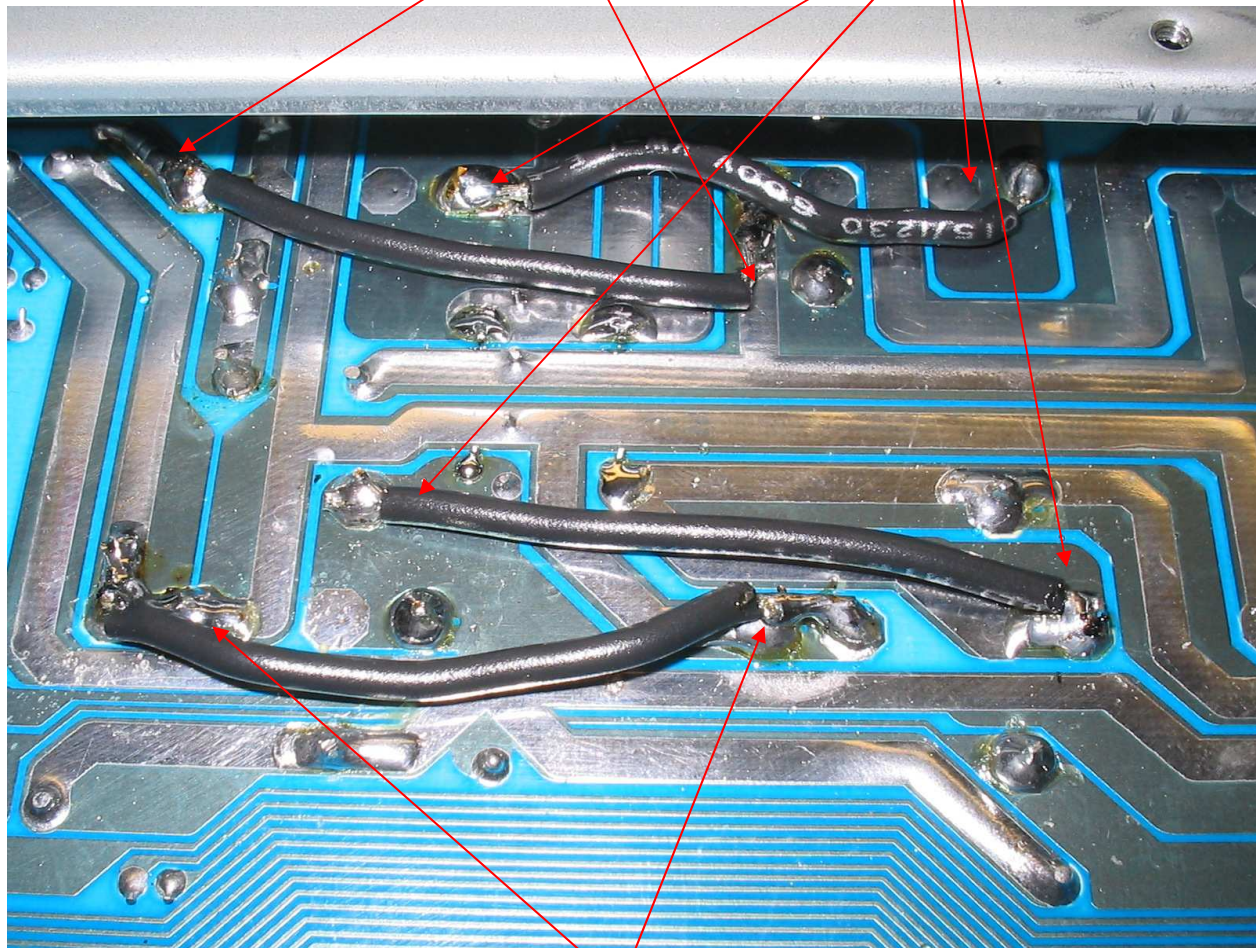


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Figure 4

Alternative view showing four wires



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C 372

**STEREO
AMPLIFIER**

C 372

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SERVICE MANUAL

May 2005



ALIGNMENT PROCEDURE (C372)

I. INITIAL ADJUSTMENT (No load connected)

A. OUTPUT OFFSET VOLTAGE

1. Connect a DC Millivoltmeter between TP303 and TP304, then adjust VR303 (50kohms) to get a reading of 0V +/-3V so at the speaker terminals of 0V+/-30mV.
2. Connect a DC Millivoltmeter between TP403 and TP404, then adjust VR401 (50kohms) to get a reading of 0V +/-3V so at the speaker terminals of 0V+/-30mV.

B. IDLING CURRENT

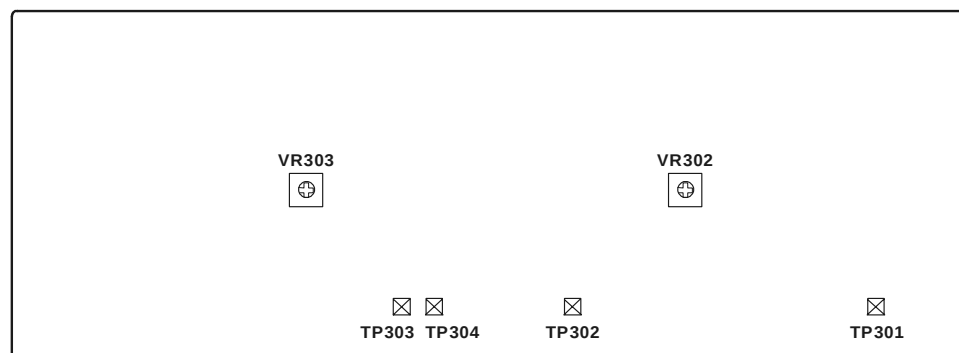
1. Connect a DC Millivoltmeter to TP301 and TP302, then adjust VR302 (500ohms) for 5-6mV reading on meter.
2. Connect a DC Millivoltmeter to TP401 and TP402, then adjust VR402 (500ohms) for 5-6mV reading on meter.
3. Leave power "ON" for a minimum of 5 minutes.

C. ISC SENSITIVITY

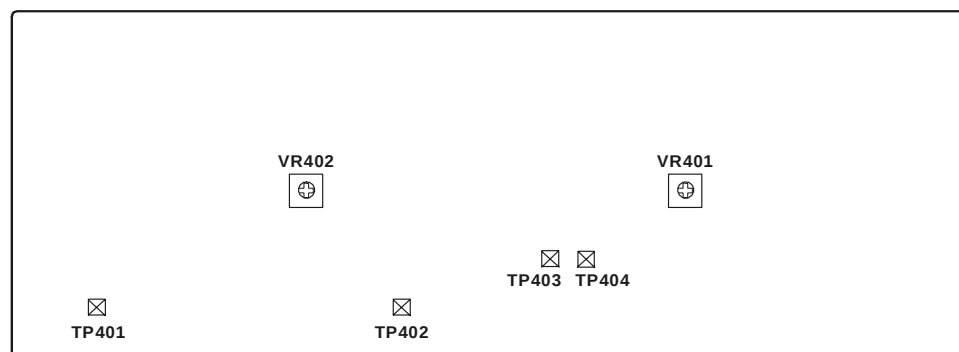
Connect a DC Millivoltmeter to TP701 and TP702, then adjust VR701 (47kohms) between -50mV to -100mV.

II. FINAL ADJUSTMENT

Repeat procedure A and B for offset voltage and idling current alignment respectively.

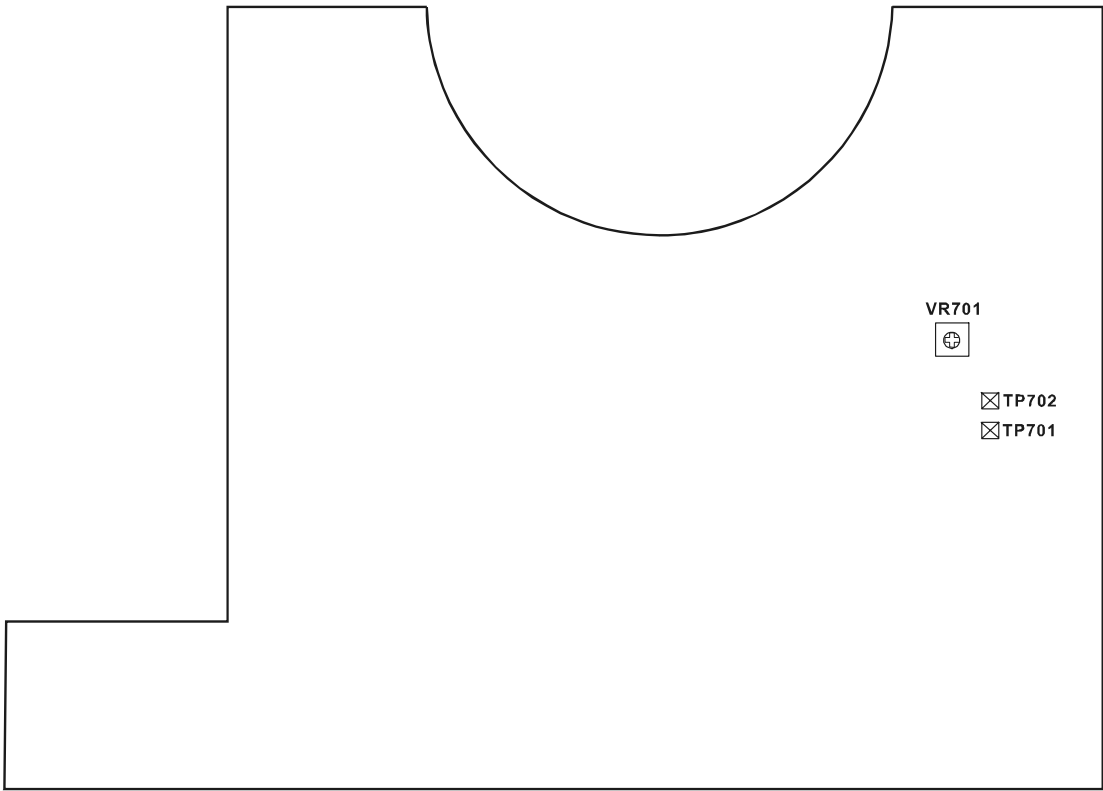


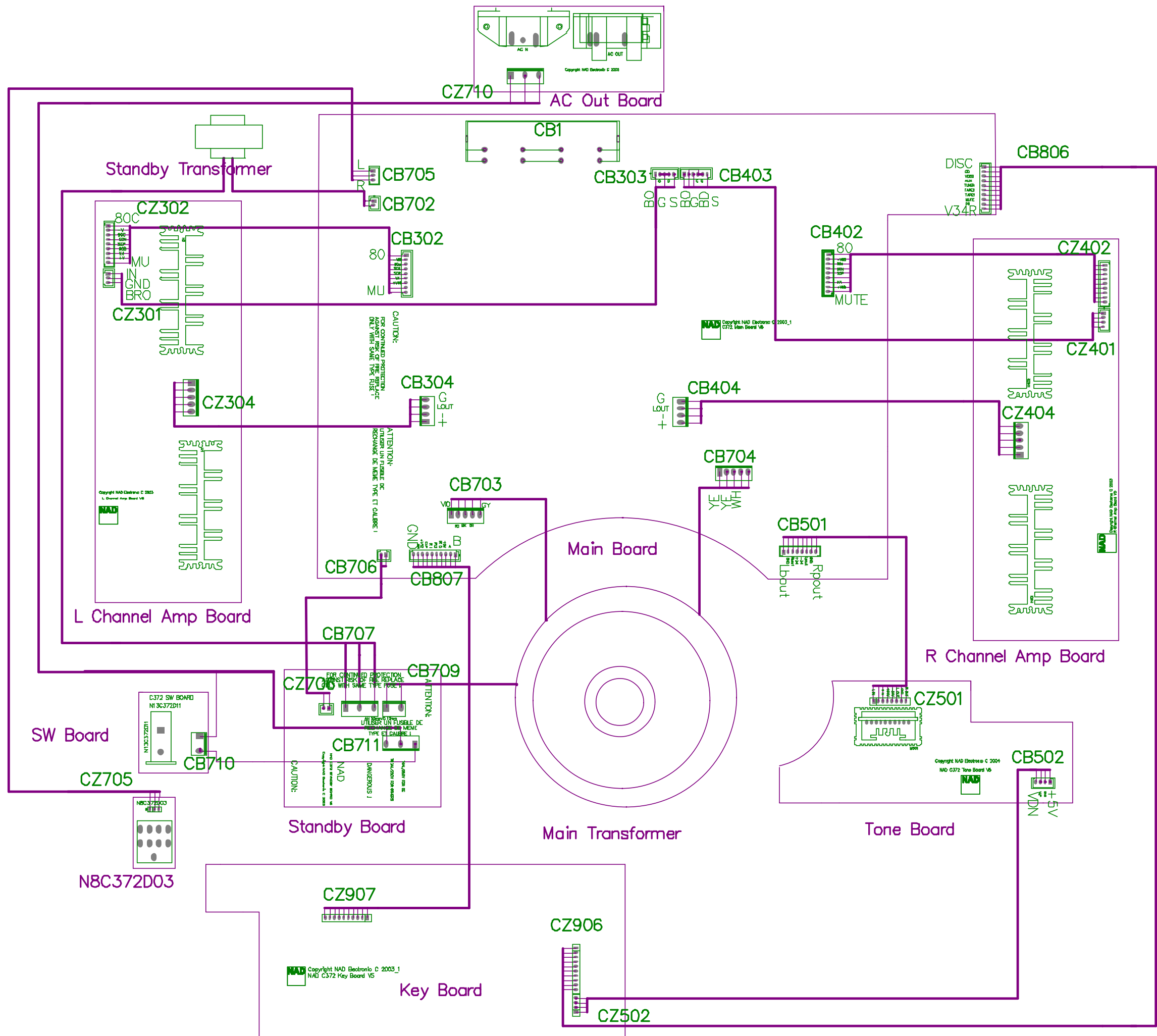
LEFT CHANNEL

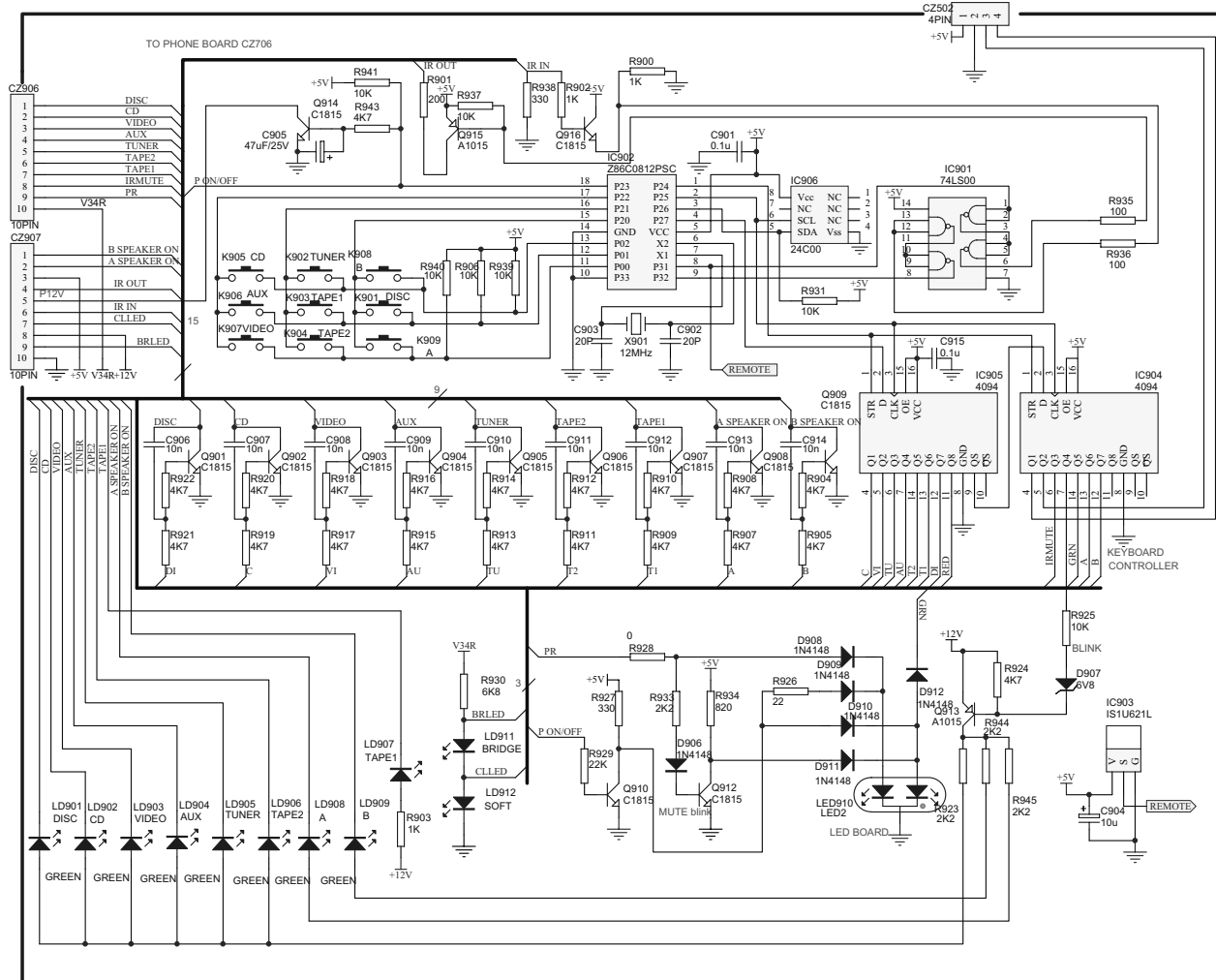
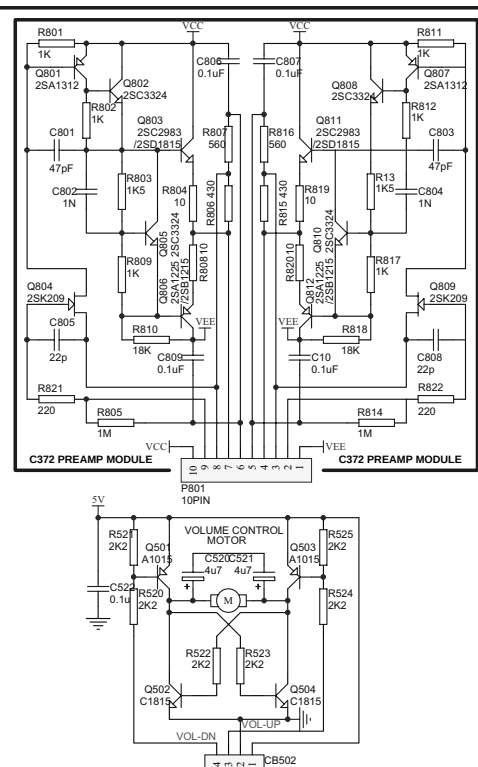
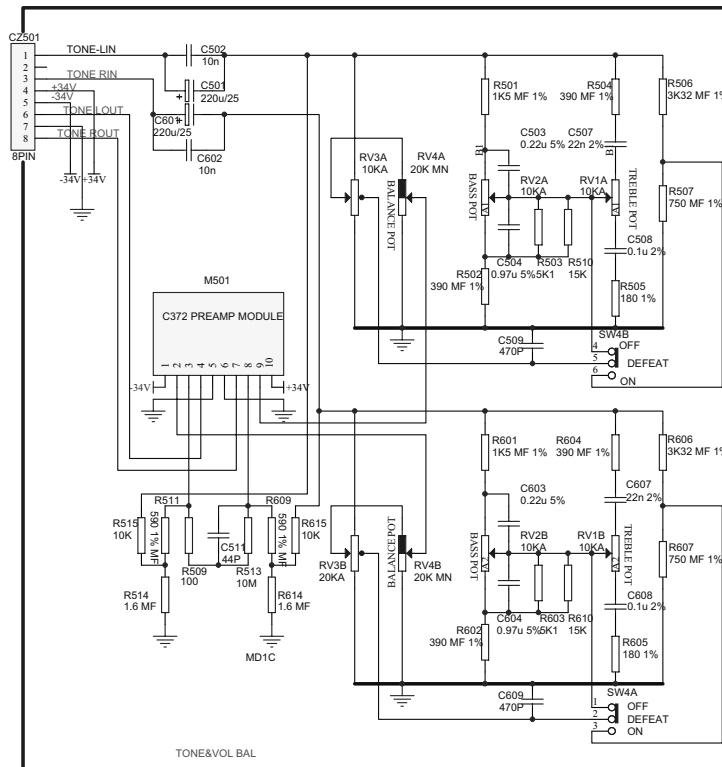
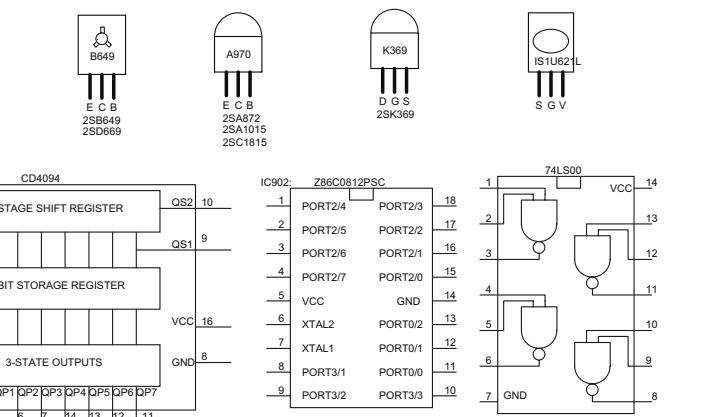
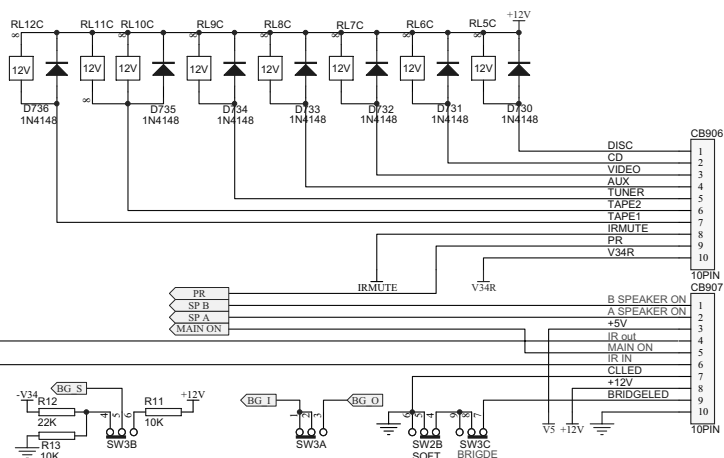
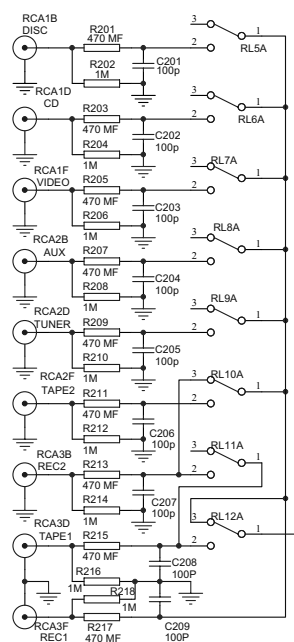
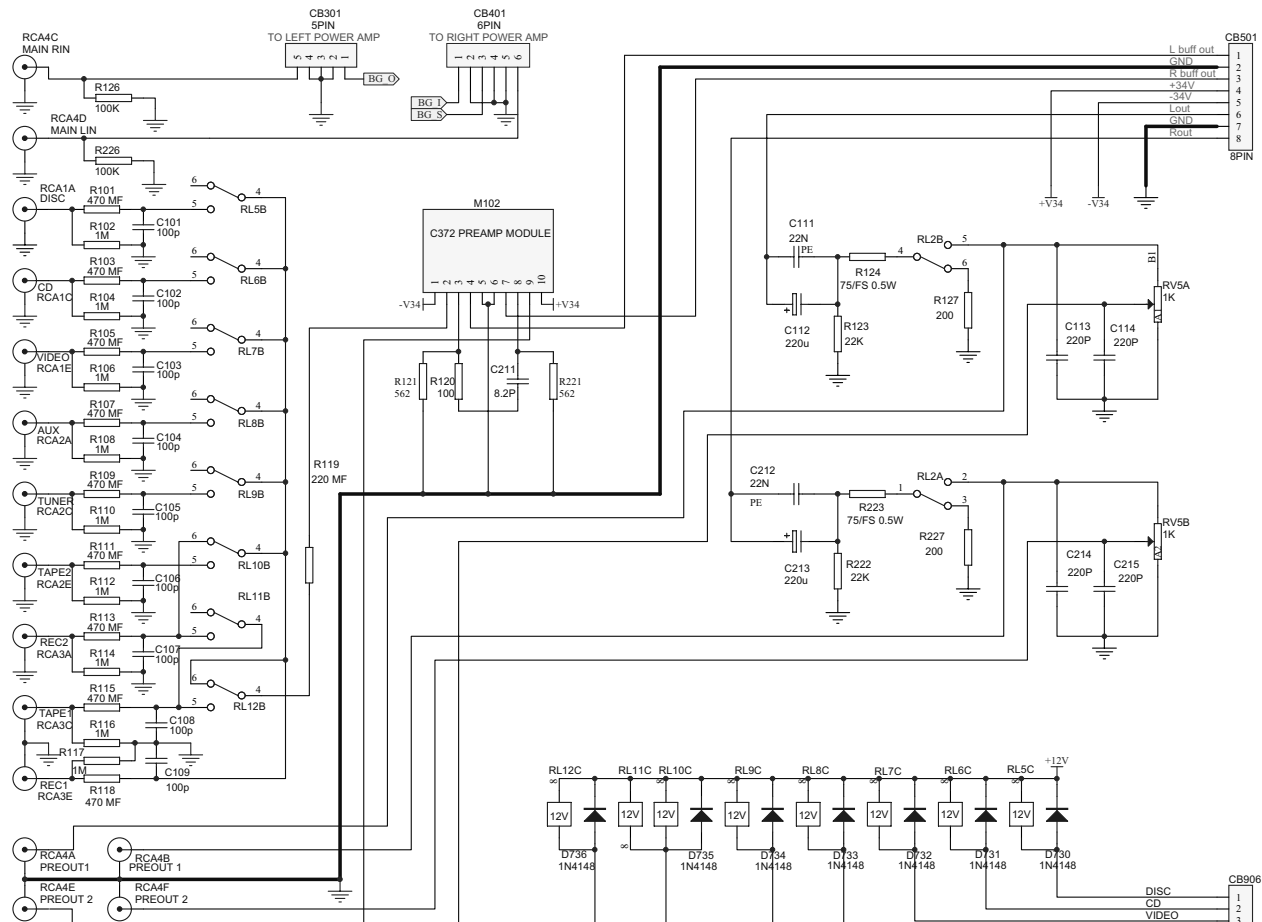


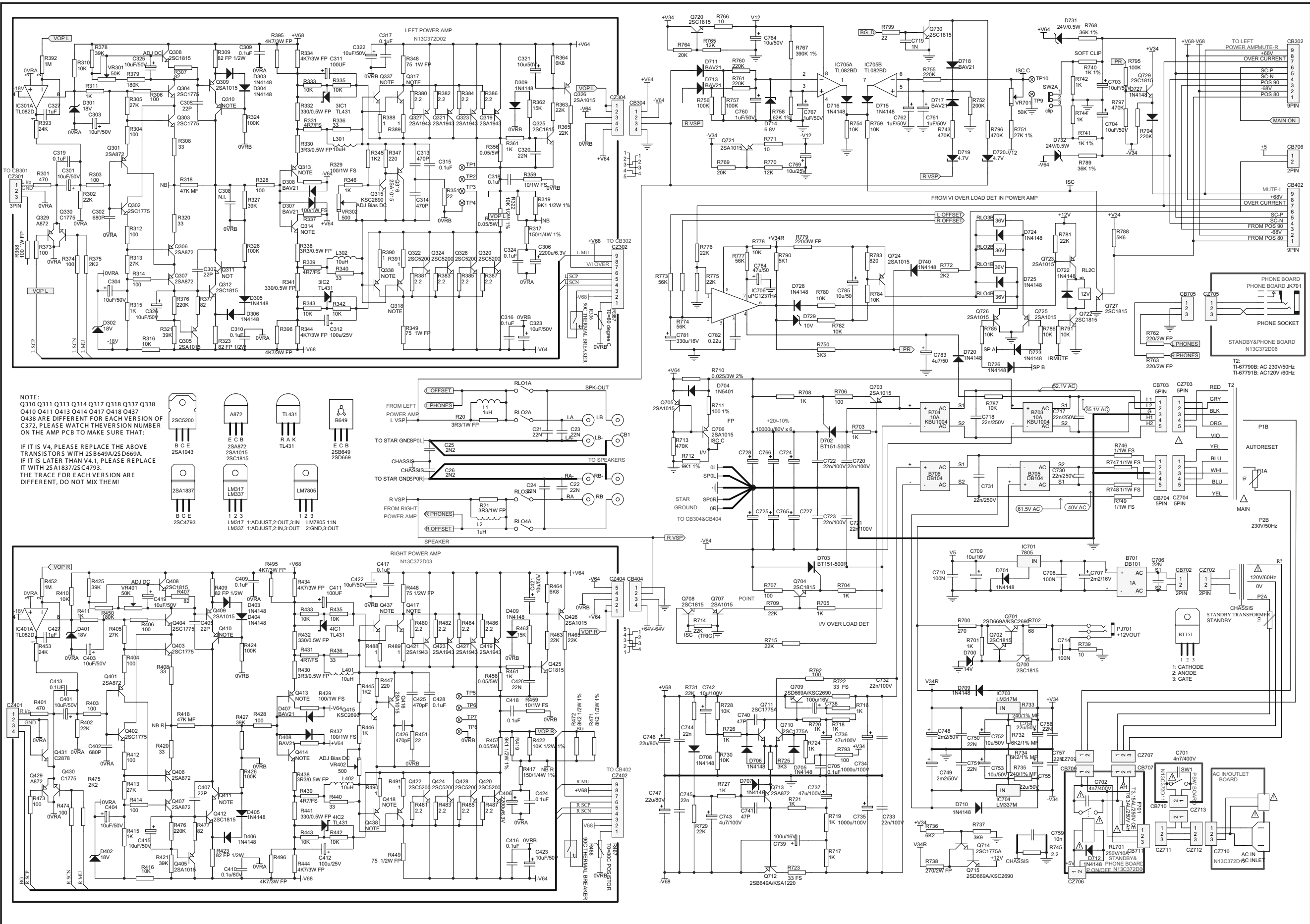
RIGHT CHANNEL

MAIN BOARD

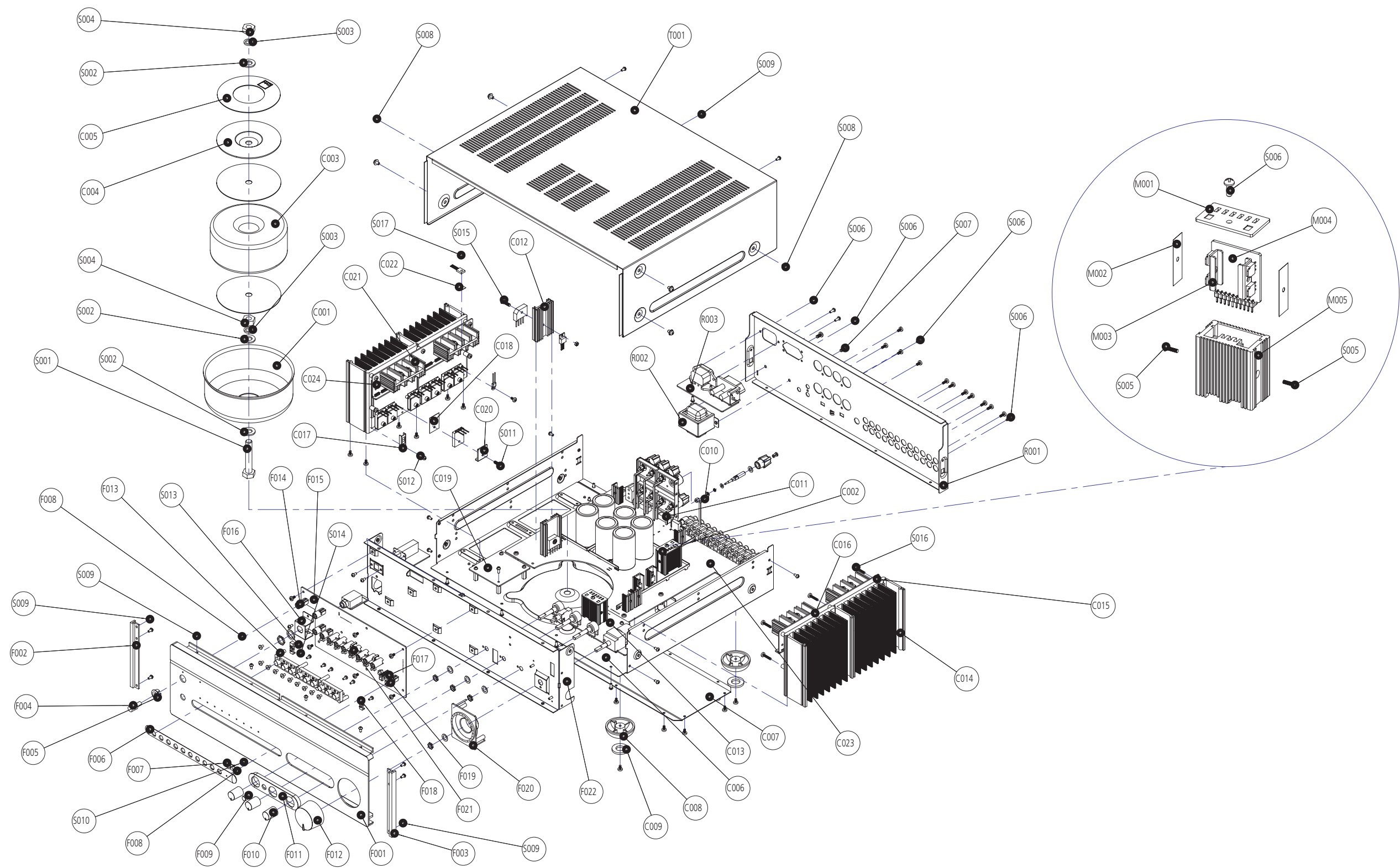








EXPLODED VIEW



EXPLODED VIEW PARTS LIST

REF. NO	PART NO.	DESCRIPTION	Qty.	REF. NO	PART NO.	DESCRIPTION	Qty.
C001	67-005010-0	Transformer Shielding Box	1	F007	76-001001-0	IR Lens	1
C002	01-37205-10	Assembled Pre Amp Module	2	F008	76-003001-0	LED Lens	12
C003	18-37371-22	Transformer C Version	1	F009	77-002002-1	Tone Defeat Button	1
	18-37371-12	Transformer AH Version	1	F010	73-014001-1	Tone Knob	3
C004	66-005007-0	Metal Disc	1	F011	77-001001-1	Tone Control Lozenge	1
C005	94-005004-1	Transformer Disc Label	1	F012	73-014002-1	Volume Knob	1
C006	66-018001-1	Chassis	1	F013	74-001002-1	Input Button (3P)	3
C007	66-005004-0	Base Cover	1	F014	75-005001-0	Sleeve(1P)	4
C008	75-010004-1	Foot	4	F015	01-37204-00	Assembled Key Board	1
C009	78-001002-0	Foot Pad	4	F016	66-018003-0	Headphone Bracket	1
C010	69-005006-0	BDP Pin Big	4	F017	66-005005-0	IR Bracket	1
C011	69-002004-0	BDP Pin Small	4	F018	75-003003-0	Bracket	2
C012	70-004003-1	Heat Sink Small B	2	F019	75-003002-0	Sleeve(1P)	1
C013	01-37203-00	Assembled Tone PCB	1	F020	77-018001-0	Knob Volume lozenge	1
C014	70-018001-0	Main Heatsink	2	F021	75-003001-0	Sleeve(7P)	1
C015	85-005001-0	PCB Spacer	10	F022	66-018002-0	Subfascia	1
C016	01-37202-02	Assembled R Channel AMP PCB	1				
C017	66-018005-0	Tem. SW Clamper	2	R001	67-018006-0	Rear Panel(C)	1
C018	78-005005-0	Insulated Cashion	16		67-018005-0	Rear Panel(AH)	1
C019	01-37206-00	Assembled Relay PCB	1	R002	18-37060-01	Standby Transformer	1
C020	66-005009-0	Transistor Clamping	16	R003	01-37208-01	Assembled AC Inlet PCB (C Version)	1
C021	70-018003-1	Heatsink C	4		01-37208-02	Assembled AC Inlet PCB (AH Version)	1
C022	78-005002-0	Insulation Cushion(Small)	9				
C023	01-37201-00	Assembled Main PCB	1	S001	64-110070-0	Bolt, GB5781, M10X70	1
C024	01-37202-01	Assembled L Channel AMP PCB	1	S002	63-011020-2	Washers, GB97-87φ10	3
				S003	63-021030-0	Spring Washers, GB93φ10	2
M001	70-018004-0	Module Lid	2	S004	62-011002-0	Nuts, GB6170, M10	2
M002	78-018001-0	Insulated Cashion	4	S005	61-062108-0	Self Taping Screws, STF2X8-0	4
M003	66-018004-0	Trans Clamp (Module)	4	S006	61-023208-0	Self Taping Screws, BTB3X8	32
M004	01-37205-00	Assembled Pre Amp Module PCB	2	S007	61-024108-0	Self Taping Screws, STB3X8	11
M005	70-018002-0	Module heatsink box	2	S008	61-084108-0	Self Taping Screws, STPW4X8	6
				S009	61-023106-0	Self Taping Screws, STB3X6	44
T001	67-018004-0	Top Cover	1	S010	61-022204-6	Self Taping Screws, BTB2.6X4	1
				S011	61-023212-0	Self Taping Screws, BTB3X12	2
F001	67-018003-0	Fascia	1	S012	61-223514-0	Hex Screws, GB70, 3X14	16
F002	67-018001-0	End Cap L	1	S013	61-022205-6	Self Taping Screws, BTB2.6X5	2
F003	67-018002-0	End Cap R	1	S014	61-022206-6	Self Taping Screws, BTB2.6X6	14
F004	77-002002-1	Power Button	1	S015	61-083515-0	Machine Screws, MPW3X15	2
F005	77-001007-1	Power Button Bezel	1	S016	61-033420-0	Self Taping Screws, PTP3X20	10
F006	77-005001-1	Input Button Lozenge	1	S017	61-022206-8	Self Taping Screws, BTB2.6X8	18

ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION				
L CHANNEL AMP BOARD						
DIODES	16-37202-01	L Channel Raw PCB				
	01-37202-01	Assembled L Channel PCB				
	D303, D304, D305, D306, D309	33-44148-02	1N4148			Switch Diode
	D302	33-11800-00	18V	1/2W		Zener Diode
	D301	33-11800-01	18V	1/2W		Zener Diode
D307, D308	33-40021-01	BAV21			Switch Diode	
TRANSISTORS						
Q329, Q301, Q306, Q307	31-00872-00	2SA872A E				Transistor
Q305, Q309, Q316, Q326	31-01015-00	2SA1015GR				Transistor
Q302, Q303, Q304, Q330	31-01775-00	2SC1775A E				Transistor
Q308, Q312, Q325	31-01815-00	2SC1815GR				Transistor
Q310, Q313, Q318, Q338	31-00649-00	2SB649A C				Transistor
Q311, Q314, Q317, Q337	31-00669-00	2SD669A C				Transistor
Q315	31-02690-00	KSC2690A Y				Transistor
Q319, Q321, Q323, Q327	31-01943-00	2SA1943 O				Transistor
Q320, Q322, Q324, Q328	31-05200-00	2SC5200 O				Transistor
ICS						
3IC1, 3IC2	03-00431-00	TL431/KA431				IC, Regulator
IC301	03-00082-00	TL082D				IC, OP-AMP
CAPACITORS						
C305, C307	05-22052-00	22pF	500V	±20%		Cermatic Disk Capacitor
C302	05-68152-00	680pF	500V	±20%		Cermatic Disk Capacitor
C313, C314	05-47152-00	470pF	500V	±20%		Cermatic Disk Capacitor
C320	05-22312-00	22nF	100V	+50%-20%		Cermatic Disk Capacitor
C315, C319, C324	25-10451-03	0.1uF	50V	±10%		Metallized Polyester Film Capacitor
C318	25-10461-01	0.1uF, CL21	63V	±10%		Metallized Polyester Film Capacitor
C309, C310, C316, C317	25-10412-02	0.1uF, CL23B	100V	±10%		Metallized Polyester Film Capacitor
C327	25-10561-00	1uF, CL233X	63V	±5%		Metallized Polyester Film Capacitor
C301, C303, C304, C321, C325, C326	06-10051-00	10uF, CD110	50V	±20%		Alu Electrolytic Capacitor
C322, C323	06-10012-00	10uF, CD110	100V	±20%		Alu Electrolytic Capacitor
C311, C312	06-10121-02	100uF, CD263	25V	±20%		Alu Electrolytic Capacitor
C306	06-22260-00	2200uF, CD110	6.3V	±20%		Alu Electrolytic Capacitor
RESISTORS						
R388, R389, R390, R391	07-10109-10	1 Ω	1/4W	±5%		Carbon Film Resistor
R380, R381, R382, R383, R384, R385, R386, R387	07-10229-12	2R2 Ω	1/4W	±5%		Carbon Film Resistor
R308, R320, R336, R340	07-10330-10	33 Ω	1/4W	±5%		Carbon Film Resistor
R377, R307	07-10820-10	82 Ω	1/4W	±5%		Carbon Film Resistor
R303, R304, R306, R312, R314, R328, R373, R374	07-10101-10	100 Ω	1/4W	±5%		Carbon Film Resistor
R347	07-10221-10	220 Ω	1/4W	±5%		Carbon Film Resistor
R301	07-10471-10	470 Ω	1/4W	±5%		Carbon Film Resistor
R311, R315, R346, R361	07-10102-10	1k Ω	1/4W	±5%		Carbon Film Resistor
R345	07-10122-10	1k2 Ω	1/4W	±5%		Carbon Film Resistor
R375	07-10222-10	2k2 Ω	1/4W	±5%		Carbon Film Resistor
R364	07-10682-10	6k8 Ω	1/4W	±5%		Carbon Film Resistor
R310, R316, R333, R335, R342, R343	07-10103-10	10k Ω	1/4W	±5%		Carbon Film Resistor
R362	07-10153-10	15k Ω	1/4W	±5%		Carbon Film Resistor
R302, R363, R365	07-10223-10	22k Ω	1/4W	±5%		Carbon Film Resistor
R317	07-21500-10	150 Ω	1/4W	±1%		Metal Film Resistor

ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION			
R393	07-20243-10	24k Ω	1/4W	$\pm 5\%$	Metal Film Resistor
R305, R313	07-20273-10	27k Ω	1/4W	$\pm 5\%$	Metal Film Resistor
R321, R378, R327	07-20393-10	39k Ω	1/4W	$\pm 5\%$	Metal Film Resistor
R318	07-20473-10	47k Ω	1/4W	$\pm 5\%$	Metal Film Resistor
R324, R326	07-20104-10	100k Ω	1/4W	$\pm 5\%$	Metal Film Resistor
R379	07-20184-10	180k Ω	1/4W	$\pm 5\%$	Metal Film Resistor
R376	07-20224-10	220k Ω	1/4W	$\pm 5\%$	Metal Film Resistor
R392	07-20105-10	1M Ω	1/4W	$\pm 5\%$	Metal Film Resistor
R319	07-29101-20	9k1 Ω	1/2W	$\pm 1\%$	Metal Film Resistor
R322	07-21002-20	10k Ω	1/2W	$\pm 1\%$	Metal Film Resistor
R330, R338	07-30339-00	3R3 Ω	1/2W	$\pm 5\%$	Metallized Oxid Film Resistor
R309, R323	07-38209-00	82 Ω	1/2W	$\pm 2\%$	Metallized Oxid Film Resistor
R332, R341	07-30331-01	330 Ω	1/2W	$\pm 5\%$	Metallized Oxid Film Resistor
R351	07-30220-00	22 Ω , 0.5W, $\pm 5\%$	1/2W	$\pm 5\%$	Metallized Oxid Film Resistor
R359	07-30100-01	10 Ω	1W	$\pm 5\%$	Metallized Oxid Film Resistor
R348, R349	07-30750-01	75 Ω	1W	$\pm 5\%$	Metallized Oxid Film Resistor
R358	07-30101-01	100 Ω	1W	$\pm 5\%$	Metallized Oxid Film Resistor
R329, R337	07-30101-15	100 Ω	1W	$\pm 5\%$	Metallized Oxid Film Resistor
R334, R344, R395, R396	07-30472-03	4k7 Ω	3W	$\pm 5\%$	Metallized Oxid Film Resistor
R331, R339	07-50479-01	4R7 Ω	1/2W	$\pm 5\%$	Fusible Resistor
R356, R357	07-50507-05	0.05 Ω	5W	$\pm 5\%$	CERAMIC CASE
R367	07-70471-08	T0=80 C degree PTH9M04BF471TS2F333			PTC
R366	07-70022-09	T0=90 C degree ST-22 90C			Thermal breaker
VR302	09-02501-00	500 Ω			Variable Resistor
VR301	09-02503-00	50k Ω			Variable Resistor
INDUCTORS					
L301, L302	08-02100-00	10uH			Inductor
CONNECTORS					
CZ304	13-23905-00	VH 3.96A-5Y1			Connector
CZ301	13-22503-00	XHB 2.54A-3A			Connector
CZ302	13-22509-00	XHB 2.54A-9A			Connector
TP303-TP304	13-12502-00	2PIN			Connector
TP301, TP302	13-10001-00	1PIN			Connector
R CHANNEL AMP BOARD					
DIODES	16-37202-02	R Channel Raw PCB			
	01-37202-02	Assembled R Channel PCB			
	D403, D404, D405, D406, D409	33-44148-02	1N4148		Switch Diode
	D407, D408	33-40021-01	BAV21		Switch Diode
	D402	33-11800-00	18V	1/2W	Zener Diode
	D401	33-11800-01	18V	1/2W	Zener Diode
	TRANSISTORS				
	Q401, Q406, Q407, Q429	31-00872-00	2SA872A E		Transistor
	Q405, Q409, Q416, Q426	31-01015-00	2SA1015GR		Transistor
	Q402, Q403, Q404, Q430	31-01775-00	2SC1775A E		Transistor
	Q408, Q412, Q425	31-01815-00	2SC1815GR		Transistor
	Q431	31-02878-00	2SC2878A		Transistor
	Q410, Q413, Q418, Q438	31-00649-00	2SB649A C		Transistor
	Q411, Q414, Q417, Q437	31-00669-00	2SD669A C		Transistor
	Q415	31-02690-00	KSC2690A Y		Transistor
	Q419, Q421, Q423, Q427	31-01943-00	2SA1943 O		Transistor
	Q420, Q422, Q424, Q428	31-05200-00	2SC5200 O		Transistor

ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION				
ICS						
4IC1, 4IC2	03-00431-00	TL431/KA431				IC, Regulator
IC401	03-00082-00	TL082D				IC, OP-AMP
CAPACITORS						
C405, C407	05-22052-00	22pF	500V	±20%		Cermatic Disk Capacitor
C402	05-68152-00	680pF	500V	±20%		Cermatic Disk Capacitor
C425, C426	05-47152-00	470pF	500V	±20%		Cermatic Disk Capacitor
C420	05-22312-00	22nF	100V	+50%-20%		Cermatic Disk Capacitor
C413, C424, C428	25-10451-03	0.1uF, CL23B	50V	±10%		Metallized Polyester Film Capacitor
C418	25-10461-01	0.1uF, CL21	63V	±10%		Metallized Polyester Film Capacitor
C409, C410, C416, C417	25-10412-02	0.1uF, CL23B	100V	±10%		Metallized Polyester Film Capacitor
C427	25-10561-00	1uF, CL233X	63V	±5%		Metallized Polyester Film Capacitor
C401, C403, C404, C421, C415, C419	06-10051-00	10uF, CD110	50V	±20%		Alu Electrolytic Capacitor
C422, C423	06-10012-00	10uF, CD110	100V	±20%		Alu Electrolytic Capacitor
C411, C412	06-10121-02	100uF, CD263	25V	±20%		Alu Electrolytic Capacitor
C406	06-22260-00	2200uF, CD110	6.3V	±20%		Alu Electrolytic Capacitor
RESISTORS						
R488, R489, R490, R491	07-10109-10	1 Ω	1/4W	±5%		Carbon Film Resistor
R480, R481, R482, R483, R484, R485, R486, R487	07-10229-12	2R2 Ω	1/4W	±5%		Carbon Film Resistor
R408, R420, R436, R440	07-10330-10	33 Ω	1/4W	±5%		Carbon Film Resistor
R407, R477	07-10820-10	82 Ω	1/4W	±5%		Carbon Film Resistor
R403, R404, R406, R412, R414, R428, R473, R474	07-10101-10	100 Ω	1/4W	±5%		Carbon Film Resistor
R447	07-10221-10	220 Ω	1/4W	±5%		Carbon Film Resistor
R401	07-10471-10	470 Ω	1/4W	±5%		Carbon Film Resistor
R411, R415, R446, R461	07-10102-10	1k Ω	1/4W	±5%		Carbon Film Resistor
R445	07-10122-10	1k2 Ω	1/4W	±5%		Carbon Film Resistor
R475	07-10222-10	2k2 Ω	1/4W	±5%		Carbon Film Resistor
R464	07-10682-10	6k8 Ω	1/4W	±5%		Carbon Film Resistor
R410, R416, R433, R435, R442, R443	07-10103-10	10k Ω	1/4W	±5%		Carbon Film Resistor
R462	07-10153-10	15k Ω	1/4W	±5%		Carbon Film Resistor
R402, R463, R465	07-10223-10	22k Ω	1/4W	±5%		Carbon Film Resistor
R417	07-21500-10	150 Ω	1/4W	±1%		Metal Film Resistor
R453	07-20243-10	24k Ω	1/4W	±5%		Metal Film Resistor
R405, R413	07-20273-10	27K Ω	1/4W	±5%		Metal Film Resistor
R421, R425, R427	07-20393-10	39K Ω	1/4W	±5%		Metal Film Resistor
R418	07-20473-10	47K Ω	1/4W	±5%		Metal Film Resistor
R424, R426	07-20104-10	100K Ω	1/4W	±5%		Metal Film Resistor
R450	07-20184-10	180K Ω	1/4W	±5%		Metal Film Resistor
R476	07-20224-10	220K Ω	1/4W	±5%		Metal Film Resistor
R452	07-20105-10	1M Ω	1/4W	±5%		Metal Film Resistor
R471, R472	07-28201-20	8K2 Ω	1/2W	±1%		Metal Film Resistor
R419	07-29101-20	9K1 Ω	1/2W	±1%		Metal Film Resistor
R422	07-21002-20	10K Ω	1/2W	±1%		Metal Film Resistor
R430, R438	07-30339-00	3R3 Ω	1/2W	±5%		Metallized Oxid Film Resistor
R451	07-30220-00	22 Ω	1/2W	±5%		Metallized Oxid Film Resistor
R409, R423	07-38209-00	82 Ω	1/2W	±2%		Metallized Oxid Film Resistor
R432, R441	07-30331-01	330 Ω	1/2W	±5%		Metallized Oxid Film Resistor
R459	07-30100-01	10 Ω	1W	±5%		Metallized Oxid Film Resistor
R429, R437	07-30101-15	100 Ω	1W	±5%		Metallized Oxid Film Resistor
R449, R448	07-30750-01	75 Ω	1W	±5%		Metallized Oxid Film Resistor
R434, R444, R495, R496	07-30472-03	4K7 Ω	3W	±5%		Metallized Oxid Film Resistor
R431, R439	07-50479-01	4R7 Ω	1/2W	±5%		Fusible Resistor
R456, R457	07-50507-05	0.05 Ω	5W	±5%		CERAMIC CASE

ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION				
R467	07-70471-08	T0=80 C degree PTH9M04BF471TS2F333			PTC	
R466	07-70022-09	T0=90 C degree ST-22 90C			Thermal breaker	
VR402	09-02501-00	500 Ω			Variable Resistor	
VR401	09-02503-00	50K Ω			Variable Resistor	
INDUCTORS						
L401, L402	08-02100-00	10uH			Inductor	
CONNECTORS						
CZ404	13-23905-00	VH 3.96A-5Y1			Connector	
CZ401	13-22504-00	XHB 2.54A-4A			Connector	
CZ402	13-22509-00	XHB 2.54A-9A			Connector	
TP403-TP404	13-12502-00	2PIN			Connector	
TP401, TP402	13-10001-00	1PIN			Connector	
TONE BOARD						
TRANSISTORS	16-37203-00	Tone Raw PCB				
	01-37203-00	Assembled Tone PCB				
	Q501, Q503	31-01015-00	2SA1015GR			Transistor
	Q502, Q504	31-01815-00	2SC1815GR			Transistor
RESISTORS						
R520, R521, R522, R523, R524, R525	07-10222-10	2K2 Ω	1/4W	±5%	Carbon Film Resistor	
R515	07-10103-10	10K Ω	1/4W	±5%	Carbon Film Resistor	
R615	07-10103-00	10K Ω	1/6W	±5%	Carbon Film Resistor	
R509	07-10101-00	100 Ω	1/6W	±5%	Carbon Film Resistor	
R514, R614	07-20169-00	1.6 Ω	1/6W	±5%	Metal Film Resistor	
R505, R605	07-21800-10	180 Ω	1/4W	±1%	Metal Film Resistor	
R502, R602, R504, R604	07-23900-10	390 Ω	1/4W	±1%	Metal Film Resistor	
R511, R609	07-25900-00	590 Ω	1/6W	±1%	Metal Film Resistor	
R507, R607	07-27500-10	750 Ω	1/4W	±1%	Metal Film Resistor	
R601, R501	07-21501-10	1K5 Ω	1/4W	±1%	Metal Film Resistor	
R606, R506	07-23221-10	3K32 Ω	1/4W	±1%	Metal Film Resistor	
R503	07-25101-00	5K1 Ω	1/6W	±1%	Metal Film Resistor	
R603	07-25101-10	5K1 Ω	1/4W	±1%	Metal Film Resistor	
R510, R610	07-20153-10	15K Ω (Debug part)	1/4W	±5%	Metal Film Resistor	
R513	07-20106-00	10M Ω	1/6W	±5%	Metal Film Resistor	
RV3	09-01203-05	RK16812MGA10(20KBX2)			POT	
RV1, RV2	09-01103-07	RD163121A023-10KAX2			POT	
RV4	09-01203-06	RD163121A020-20KMN			POT	
CAPACITORS						
C511	05-43022-00	43pF	250V	±20%	Cermatic Disk Capacitor	
C509, C609	05-47122-00	470pF	250V	±20%	Cermatic Disk Capacitor	
C522	24-10461-00	0.1uF	63V	±20%	Cermatic Disk Capacitor	
C502, C602	25-10361-04	10nF, CL23B	63V	±10%	Metallized Polyester Film Capacitor	
C507, C607	25-22312-05	22nF, CBB25	100V	±2%	Metallized Polyester Film Capacitor	
C508, C608	25-10461-03	0.1uF, CBB25	63V	±2%	Metallized Polyester Film Capacitor	
C503, C603	25-23461-00	0.23uF, CL23B	63V	±5%	Metallized Polyester Film Capacitor	
C504, C604	25-95461-00	0.95uF, CL23B	63V	±5%	Metallized Polyester Film Capacitor	
C520, C521	06-47961-01	4.7uF, CD110	63V	±20%	Alu Electrolytic Capacitor	
C501, C601	06-22121--00	220uF, CD110	25V	±20%	Alu Electrolytic Capacitor	
SWITCHS						
SW4	11-02202-00	SPUN19K605			Push Switch	

ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
CONNECTIONS		
CZ501	14-37208-00	8P2.54-A50B Connection
CB502	13-22504-00	XHB 2.54A-4A Connection
PRE AMP MODULE(2 PCS)		
	16-37205-00	PRE AMP Module Raw PCB
	01-37205-00	Assembled PRE AMP Module PCB
TRANSISTORS		
Q804, Q809	31-00209-00	2SK209GR MOSFET
Q801, Q807	31-01312-00	2SA1312GR Transistor
Q802, Q805, Q808, Q810	31-03324-00	2SC3324GR Transistor
Q806, Q812	31-01225-00	2SA1225Y(Complementary pair with 2SC2983Y) Transistor
Q806, Q812	31-01215-10	(or 2SB1215S)(Complementary pair with 2SD1815S) Transistor
Q803, Q811	31-02983-00	2SC2983Y(Complementary pair with 2SA1225Y) Transistor
Q803, Q811	31-01815-10	(or 2SD1815S)(Complementary pair with 2SB1215S) Transistor
CAPACITORS		
C805, C808	26-22051-01	22pF, 0805 50V ±5% Cermatic Capacitor Smd
C801, C803	26-47051-01	47pF, 0805 50V ±5% Cermatic Capacitor Smd
C802, C804	26-10251-01	1nF, 0805 50V ±10% Cermatic Capacitor Smd
C806, C807, C809, C810	26-10451-01	0.1uF, 0805 50V +80%-20% Cermatic Capacitor Smd
RESISTOR		
R804, R808, R819, R820	07-90100-01	10 Ω 0805 ±5% Resistor Smd
R821, R822	07-90221-01	220 Ω 0805 ±5% Resistor Smd
R806, R815	07-94320-01	432 Ω 0805 ±1% Resistor Smd
R801, R802, R809, R811, R812, R817	07-90102-01	1k Ω 0805 ±58% Resistor Smd
R803, R813	07-90152-01	1k5 Ω 0805 ±5% Resistor Smd
R810, R818	07-90183-01	18k Ω 0805 ±5% Resistor Smd
R805, R814	07-90105-01	1M Ω 0805 ±5% Resistor Smd
CONNECTORS		
P801	13-12510-01	10PIN Connector
KEY BOARD		
	16-37204-00	Key Raw PCB
	01-37204-00	Assembled Key PCB
DIODES		
D906, D908, D909, D910, D911	33-44148-02	1N4148 Switch Diode
D912	33-44148-03	1N4148 Switch Diode
D907	33-16809-00	6V8 Zener Diode
LD908, LD904, LD909, LD902, LD901, LD912, LD905, LD903, LD906	33-50550-00	L-513DG LED Green
LD907, LD911	33-50540-00	L-513AD LED Red
LED910	33-50525-00	L-519EGFW LED Dual Color
TRANSISTORS		
Q916, Q901, Q902, Q903, Q904, Q905, Q906, Q907, Q908, Q909, Q910, Q912, Q914	31-01815-00	2SC1815GR
Q915, Q913	31-01015-00	2SA1015GR
ICS		

ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION			
IC906	03-02400-00	AT24C01			IC, EEPROM
IC901	03-07400-00	74LS00 N			IC, LOGIC IC
IC904, IC905	03-04094-00	HEF4094/CD4094			IC, LOGIC IC
IC902	03-86812-05	Z86E(或C)0812PSC			IC, MCU
IC903	03-01701-00	GP1UV701QS			IC, IR Receiver
IC903	03-00038-40	(or HS0038B4)			IC, IR Receiver
CAPACITORS					
C902, C903	05-20022-00	20pF	250V	±20%	Cermatic Disk Capacitor
C906, C907, C908, C909, C910, C911, C912, C913, C914	25-10361-01	10nF, CL11	63V	±10%	Metallized Polyester Film Capacitor
C901, C915	24-10461-00	0.1uF	63V	±20%	Monolithic
C904	06-10061-01	10uF, CD110	63V	±20%	Alu Electrolytic Capacitor
C905	06-47061-00	47uF, CD110	63V	±20%	Alu Electrolytic Capacitor
RESISTORS					
R926	07-10220-10	22 Ω	1/4W	±5%	Carbon Film Resistor
R901, R935, R936	07-10101-10	100 Ω	1/4W	±5%	Carbon Film Resistor
R927, R938	07-10331-10	330 Ω	1/4W	±5%	Carbon Film Resistor
R934	07-10821-10	820 Ω	1/4W	±5%	Carbon Film Resistor
R900, R902, R903	07-10102-10	1K Ω	1/4W	±5%	Carbon Film Resistor
R923, R933, R944, R945	07-10222-10	2K2 Ω	1/4W	±5%	Carbon Film Resistor
R904, R905, R907, R908, R909, R910, R911, R912, R913, R914, R915, R916, R917, R918, R919, R920, R921, R922, R924, R943	07-10472-10	4K7 Ω	1/4W	±5%	Carbon Film Resistor
R930	07-10682-10	6K8 Ω	1/4W	±5%	Carbon Film Resistor
R906, R925, R937, R939, R940, R941, R931	07-10103-10	10K Ω	1/4W	±5%	Carbon Film Resistor
R929	07-10223-10	22K Ω	1/4W	±5%	Carbon Film Resistor
SWITCHS					
K909, K906, K908, K905, K901, K903, K904, K902, K907	11-04101-00	IT-1102D-1160			Tact Switch
CRYSTALS					
X901	04-11202-00	12MHz, HC-49uF			Crystal
CONNECTORS					
CZ502	14-37004-00	4PIN, L=260mm			Connector
CZ907	14-37010-01	10PIN, L=170mm			Connector
CZ906	14-37010-00	10PIN, L=550mm			Connector
MAIN BOARD					
DIODES	16-37201-00	Main Board Raw PCB			
	01-37201-00	Assembled Main Board PCB			
	33-44148-02	1N4148			Switch Diode
	33-44148-03	1N4148			Switch Diode
	33-40021-00	BAV21			Switch Diode
	33-25401-01	1N5401			Rectifier Diode

ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION			
D719, D720	33-14709-00	4.7V	1/2W		Zener Diode
D714	33-16809-00	6.8V	1/2W		Zener Diode
D729	33-11000-00	10V	1/2W		Zener Diode
D700	33-11300-00	13V	1/2W		Zener Diode
D741, D742	33-11800-00	18V	1/2W		Zener Diode
D721	33-12400-02	(24V, with 24V relay)	5W		Zener Diode
B703, B704	33-31542-00	KBU1504			Rectifier Bridge
B701, B705, B706	33-30142-00	DB104			Rectifier Bridge
TRANSISTORS					
Q713	31-00872-00	2SA872AE			Transistor
Q703, Q705, Q706, Q707, Q721, Q723, Q724, Q725, Q726	31-01015-00	2SA1015GR			Transistor
Q710, Q711, Q714	31-01775-00	2SC1775AE			Transistor
Q700, Q702, Q704, Q708, Q720, Q722, Q727, Q729, Q730	31-01815-00	2SC1815GR			Transistor
Q712	31-01220-00	KSA1220AYSTU			Transistor
Q701, Q709, Q715	31-02690-00	KSC2690AYSTU			Transistor
D702, D703	33-60116-00	BT151-500R			SCR
ICS					
IC701	03-07805-00	LM7805			IC, Regulator
IC703	03-00317-00	LM317(T)			IC, Tunable Regulator
IC704	03-00337-00	LM337(T)			IC, Tunable Regulator
IC705	03-00082-00	TL082D			IC, OP-AMP
IC706	03-01237-00	uPC1237HA			IC, Protect IC
CAPACITORS					
C211	05-82922-00	8.2pF	250V	±0.5pF	Ceramic Disk Capacitor
C740, C741	05-47022-00	47pF	250V	±20%	Ceramic Disk Capacitor
C101, C102, C103, C104, C105, C106, C107, C108, C109, C201, C202, C203, C204, C205, C206, C207, C208, C209	05-10152-00	100pF	500V	±20%	Ceramic Disk Capacitor
C113, C114, C214, C215	05-22122-00	220pF	250V	±20%	Ceramic Disk Capacitor
C759, C786	24-10361-05	10nF	63V	±20%	Ceramic Disk Capacitor
C705, C708, C710, C714	24-10461-00	0.1uF	63V	±20%	Ceramic Disk Capacitor
C782	24-22461-00	0.22uF	63V	±20%	Ceramic Disk Capacitor
C719	25-10251-06	1nF, CL11	50V	±20%	Metallized Polyester Film Capacitor
C25, C26	25-22261-01	2.2nF, CL11	63V	±20%	Metallized Polyester Film Capacitor
C706, C750, C751, C756, C757, C722, C723, C111, C212	25-22312-01	22nF, CL23B	100V	±10%	Metallized Polyester Film Capacitor
C21, C22, C23, C24, C720, C721, C745, C744, C732, C733	25-22312-04	22nF, CL21	100V	±10%	Metallized Polyester Film Capacitor
C717, C718, C730, C731	25-22322-02	22nF, CL21	250V	±10%	Metallized Polyester Film Capacitor
C761, C762, C767, C760, C764, C752, C753	06-10951-00	1uF, CD110	50V	±20%	Alu Electrolytic Capacitor
C783	06-47951-00	4.7uF, CD110	50V	±20%	Alu Electrolytic Capacitor
C743	06-47912-00	4.7uF, CD110	100V	±20%	Alu Electrolytic Capacitor
C703, C704, C709, C769, C785	06-10051-00	10uF, CD110	50V	±20%	Alu Electrolytic Capacitor
C742	06-10012-01	10uF, CD263	100V	±20%	Alu Electrolytic Capacitor
C754, C755	06-22051-00	22uF, CD110	50V	±20%	Alu Electrolytic Capacitor
C746, C747	06-22012-00	22uF, CD110	100V	±20%	Alu Electrolytic Capacitor
C784	06-47051-00	47uF, CD110	50V	±20%	Alu Electrolytic Capacitor

ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION			
C736, C737	06-47012-00	47uF, CD110	100V	±20%	Alu Electrolytic Capacitor
C738, C739	06-10121-02	100uF, CD263	25V	±20%	Alu Electrolytic Capacitor
C112, C213	06-22121-00	220uF, CD110	25V	±20%	Alu Electrolytic Capacitor
C781	06-33111-01	330uF, CD110	16V	±20%	Alu Electrolytic Capacitor
C734, C735	06-10212-01	1000uF, CD294	100V	±20%	Alu Electrolytic Capacitor
C707	06-22211-00	2200uF, CD110	16V	±20%	Alu Electrolytic Capacitor
C748, C749	06-22251-01	2200uF, CD263	50V	±20%	Alu Electrolytic Capacitor
C724, C725, C727, C728	06-10381-02	10000uF, CD294	80V	±20%	Alu Electrolytic Capacitor
RESISTORS					
R745	07-10229-00	2R2 Ω	1/6W	±5%	Carbon Film Resistor
R759	07-10103-00	10K Ω	1/6W	±5%	Carbon Film Resistor
R739, R766, R771, R799	07-10100-10	10 Ω	1/4W	±5%	Carbon Film Resistor
R702	07-10680-10	68 Ω	1/4W	±5%	Carbon Film Resistor
R120	07-10101-00	100 Ω	1/6W	±5%	Carbon Film Resistor
R706, R707, R753, R792, R793	07-10101-10	100 Ω	1/4W	±5%	Carbon Film Resistor
R127, R227	07-10201-00	200 Ω	1/6W	±5%	Carbon Film Resistor
R783(with 36V relay)	07-10821-10	820 Ω	1/4W	±5%	Carbon Film Resistor
R701, R703, R704, R705, R708, R716, R717, R718, R719, R720, R721, R724, R726, R727, R742, R744	07-10102-10	1K Ω	1/4W	±5%	Carbon Film Resistor
R772	07-10222-10	2K2 Ω	1/4W	±5%	Carbon Film Resistor
R725, R750, (R783)(with 24V relay)	07-10332-10	3K3 Ω	1/4W	±5%	Carbon Film Resistor
R737	07-10392-10	3K9 Ω	1/4W	±5%	Carbon Film Resistor
R790	07-10512-10	5K1 Ω	1/4W	±5%	Carbon Film Resistor
R788	07-10562-10	5K6 Ω	1/4W	±5%	Carbon Film Resistor
R736	07-10622-10	6K2 Ω	1/4W	±5%	Carbon Film Resistor
R11, R13, R728, R730, R785, R786, R787, R791, R778, R780, R782, R784	07-10103-10	10K Ω	1/4W	±5%	Carbon Film Resistor
R123, R222, R12, R709, R714, R715, R781, R775, R776	07-10223-10	22K Ω	1/4W	±5%	Carbon Film Resistor
R773, R774, R777	07-10563-10	56K Ω	1/4W	±5%	Carbon Film Resistor
R754	07-10103-00	10K Ω	1/6W	±5%	Carbon Film Resistor
R756, R757	07-10104-00	100K Ω	1/6W	±5%	Carbon Film Resistor
R126, R226, R795	07-10104-10	100K Ω	1/4W	±5%	Carbon Film Resistor
R752	07-10204-10	200K Ω	1/4W	±5%	Carbon Film Resistor
R755, R794	07-10224-10	220K Ω	1/4W	±5%	Carbon Film Resistor
R760, R761	07-10224-00	220K Ω	1/6W	±5%	Carbon Film Resistor
R743, R796	07-10474-00	470K Ω	1/6W	±5%	Carbon Film Resistor
R713, R797	07-10474-10	470K Ω	1/4W	±5%	Carbon Film Resistor
R711	07-21000-10	100 Ω	1/4W	±1%	Metal Film Resistor
R119, R219	07-20221-10	220 Ω	1/4W	±5%	Metal Film Resistor
R733, R735	07-22400-10	240 Ω	1/4W	±1%	Metal Film Resistor
R101, R103, R105, R107, 109, R111, R113, R115, R118, R201, R203, R205, R207, R209, R211, R213, R215, R217	07-20471-00	470 Ω	1/6W	±5%	Metal Film Resistor
R121, R221	07-25620-10	562 Ω	1/4W	±1%	Metal Film Resistor
R740, R741	07-21001-11	1K Ω	1/4W	±2%	Metal Film Resistor
R732, R734	07-26201-10	6K2 Ω	1/4W	±1%	Metal Film Resistor
R712	07-29101-10	9K1 Ω	1/4W	±1%	Metal Film Resistor
R765, R770	07-21202-11	12K Ω	1/4W	±2%	Metal Film Resistor
R768, R789	07-23602-10	36K Ω	1/4W	±1%	Metal Film Resistor
R764, R769	07-22002-10	20K Ω	1/4W	±1%	Metal Film Resistor

ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION			
R729, R731	07-22202-10	22K Ω	1/4W	$\pm 1\%$	Metal Film Resistor
R751	07-22702-10	27K Ω	1/4W	$\pm 1\%$	Metal Film Resistor
R758	07-26202-00	62K Ω	1/6W	$\pm 1\%$	Metal Film Resistor
R767	07-23903-10	390K Ω	1/4W	$\pm 1\%$	Metal Film Resistor
R102, R104, R106, R108, R110, R112, R114, R116, R117, R202, R204, R206, R208, R210, R212, R214, R216, R218	07-20105-00	1M Ω	1/6W	$\pm 5\%$	Metal Film Resistor
R20, R21	07-30339-01	3R3 Ω	1W	$\pm 5\%$	Metallized Oxid Film Resistor
R762, R763	07-30221-05	220 Ω	2W	$\pm 5\%$	Metallized Oxid Film Resistor
R779	07-30221-04	220 Ω	3W	$\pm 5\%$	Metallized Oxid Film Resistor
R738, R700	07-30271-02	270 Ω	2W	$\pm 5\%$	Metallized Oxid Film Resistor
R722, R723	07-50330-01	33 Ω	1/2W	$\pm 5\%$	Fusible Resistor
R124, R223	07-50750-00	75 Ω	1/2W	$\pm 5\%$	Fusible Resistor
R746, R747, R748, R749	07-50109-01	1 Ω	1W	$\pm 5\%$	Fusible Resistor
R710	07-40257-03	0.025 Ω	3W	$\pm 2\%$	Ceramic Case
VR701	09-02503-00	50K Ω			Variable Resistor
RV5	09-02102-00	1KA, RV142			POT
INDUCTORS					
L1, L2	08-01010-00	1uH			Inductor
RELAYS					
RLO1, RLO2, RLO3, RLO4	12-03101-04	JQX-115F/036/1HS1			Relay
RLO1, RLO2, RLO3, RLO4	12-03101-03	(or JQX-115F/024/1HS1)			Relay
RL2, RL5, RL6, RL7, RL8, RL9, RL10, RL11, RL12	12-02101-02	JRC-27F/012/S			Relay
SWITCHES					
SW2	11-05202-00	SSSU122NB1			SLIDE SWITCH
SW3	11-05202-01	SSSU142NB1			SLIDE SWITCH
CONNECTORS					
PJ701	17-07001-00	PY301-030-100			Headphone Socket
RCA1, RCA2, RCA3, RCA4	17-01006-00	AV6-8.4-13			RCA Socket
JIR	17-02002-00	SCJ351P00XS0B00			Dual 3.5 Headphone Socket
TP701-TP702	13-12502-00	2PIN			Connector
CB702	13-22502-00	XHB 2.5A-2A			Connector
CB705	13-22503-00	XHB 2.5A-3A			Connector
CB303	13-22505-00	XHB 2.5A-5A			Connector
CB403	13-22506-00	XHB 2.5A-6A			Connector
CB501	13-22508-00	XHB 2.5A-8A			Connector
CB302, CB402	13-22509-00	XHB 2.5A-9A			Connector
CB806, CB807	13-22510-00	XHB 2.5A-10A			Connector
CB304, CB404	13-23904-00	VH 3.96A-4Y1			Connector
CB703, CB704	13-23905-00	VH 3.96A-5Y1			Connector
TRANSISTOR ASSEMBL BOARD					
CONNECTORS	16-37210-00	Transistor Assemble Raw PCB			
	01-37210-00	Transistor Assemble PCB with components			
	13-12504-01	4PIN			Connector
	13-12506-00	6PIN			Connector

ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
RELAY BOARD		
	16-37206-00	Relay Board Raw PCB
DIODES D712 CAPACITORS C702 RELAYS RL701 FUSES F701 CONNECTIONS CZ706 CB709 CB707, CB711 OTHERS J701	01-37206-01	Relay Board with components (C Version)
	01-37206-02	Relay Board with components (AH Version)
	33-44148-02	1N4148 Switch Diode
	05-47242-00	4.7nF, 400V, ±20%, CT81 High-Voltage Ceramic Capacitor
	12-02101-01	DH5D1-O(M) TV-8 Relay
	20-20000-01	HF-003-1 Fuse Holder
	20-12402-01	T4.0AL/250V (C Version)
	20-12632-01	T6.3AL/250V (AH Version)
	13-22502-00	XHB 2.5A-2A Connector
	13-23903-01	VH 3.96A-5Y1 (Removed the middle pin) Connector
	13-23905-01	VH 3.96A-5Y1 (Removed the 2nd and 4th pin) Connector
MAIN SWITCH BOARD		
CAPACITORS C701 SWITCHS SW1 CONNECTONS CB710	16-37207-00	Main Switch Board Raw PCB
	01-37207-00	Main Switch Board PCB with components
	05-47242-00	4.7nF, 400V, ±20%, CT81 High-Voltage Ceramic Capacitor
	11-01101-00	SFDFA1117U Power Switch
	13-23903-01	VH 3.96A-3Y1 (Removed the middle pin)
AC INLET BOARD		
CONNECTIONS CZ710	16-37208-00	AC Inlet Board Raw PCB
	01-37208-00	AC Inlet Board PCB with components
	17-07102-00	GSP1.9500.1/R-30190 2PIN AC Inlet
	17-07002-20	A3-02-D006-0P(C Version) AC Outlet
	17-07002-12	A2-02-D003-0P(AH Version) AC Outlet
	13-23905-01	VH 3.96A-5Y1 (Remover the 2nd and 4th pin) Connector
HEADPHONE SOCKET BOARD		
CONNECTORS JK701	16-37209-00	Headphone Socket Board Raw PCB
	01-37209-00	Headphone Socket Board PCB with components
	17-02001-00	PH-2ASW(with nut and washer) Phone Jack

ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
OTHERS			
	18-37371-22	TD-230-0300A(C Version)	MAIN TRANSFORMER
	18-37371-12	TD-120-0300B(AH Version)	MAIN TRANSFORMER
	18-37060-01	TD050-E103S	STANDBY TRANSFORMER
	15-10125-00	T582-AH(AH Version)	AC Cord
	15-10250-00	T582-C(C Version)	AC Cord