

C 720BEE

**STEREO
RECEIVER**

C 720BEE

**STEREO
RECEIVER**

SERVICE MANUAL

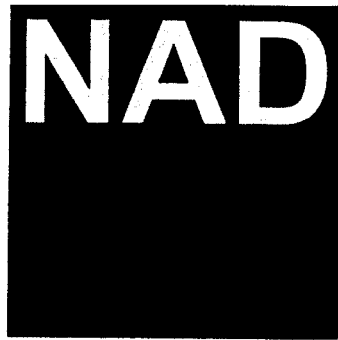


TABLE OF CONTENTS

DESCRIPTION	PAGE
SERVICE CAUTION.....	3
REAR PANEL/FRONT PANEL VIEW.....	4
SPECIFICATIONS.....	5-7
ALIGNMENT PROCEDURE.....	6-7
WIRING DIAGRAM.....	8
BLOCK DIAGRAM.....	9-15
ALIGNMENT PROCEDURE.....	16
SCHEMATICS.....	17-20
PCB LAYOUT.....	21-24
SPECIAL FUNCTION/TROUBLE SHOOTING GUIDE.....	25
ELECTRICAL PARTS LIST.....	26-34
EXPLODED VIEW.....	35
EXPLODED VIEW PARTS LIST.....	36
PROTECT IC CHANGE	37

SERVICING PRECAUTIONS

CAUTION: Before servicing the Stereo Receiver covered by this service data and its supplements and addends, read and follow the **SAFETY PRECAUTIONS**. **NOTE:** if unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions in this publication, always follow the safety precautions.

Remember Safety First:

General Servicing Precautions

1. Always unplug the Stereo Receiver AC power cord from the AC power source before:
 - (1) Removing or reinstalling any component, circuit board, module, or any other assembly.
 - (2) Disconnecting or reconnecting any internal electrical plug or other electrical connection.
 - (3) Connecting a test substitute in parallel with an electrolytic capacitor.

Caution: A wrong part substitute or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.
2. Do not spray chemicals on or near this Stereo Receiver or any of its assemblies.
3. Unless specified otherwise in this service data, clean electrical contacts by applying an appropriate contact cleaning solution to the contacts with a pipe cleaner, cottontipped swab, or comparable soft applicator. Unless specified otherwise in this service data, lubrication of contacts is not required.
4. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service manual might be equipped.
5. Do not apply AC power to this Stereo Receiver and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
6. Always connect test instrument ground lead to the appropriate ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.

Insulation Checking Procedure

Disconnect the attachment plug from the AC outlet and turn the power on. Connect an insulation resistance meter (500V) to the blades of the attachment plug. The insulation resistance between each blade of the attachment plug and accessible conductive parts (Note 1) should be more than 1 M-ohm. Note 1: Accessible Conductive Parts including Metal panels, Input terminals, Earphone jacks, etc.

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field effect transistors and semiconductor chip components.

The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

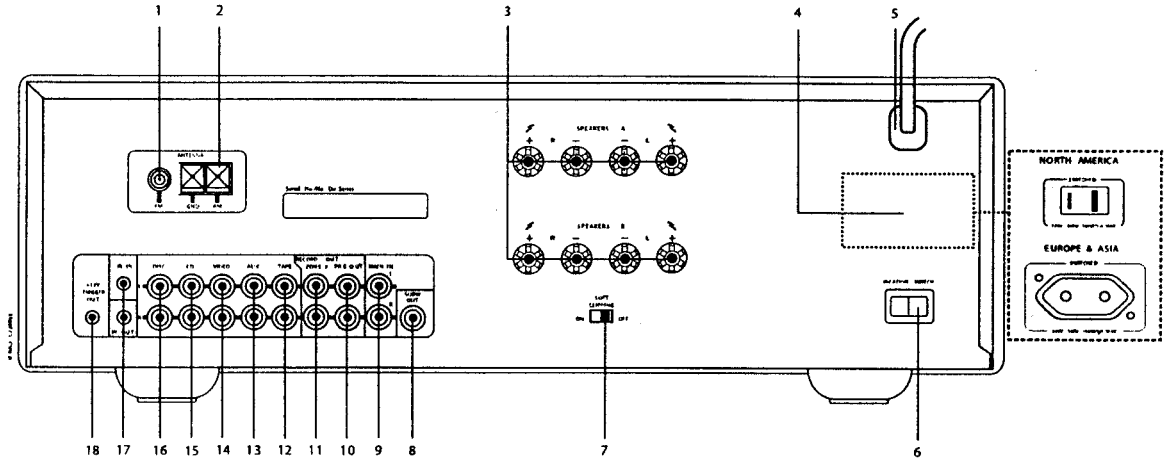
1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reason prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an antistatic solder removal device. Some solder removal devices not classified a "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freonpropelled chemicals. These can generate electrical charge sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil, or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

Caution: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Normally harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

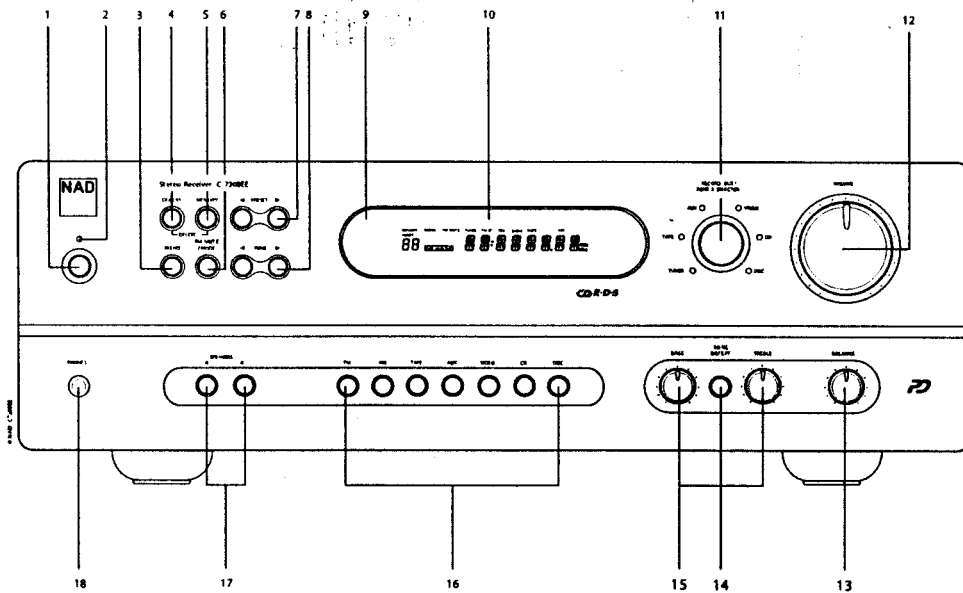
FRONT PANEL/REAR PANEL

REAR PANEL



- | | |
|---------------------------|-----------------------|
| 1&2 FM&AM ANTENNA | 11. RECORD OUT/ZONE 2 |
| 3. SPEAKER A&B | 12. TAPE IN |
| 4. SWITCHED AC OUTLET | 13. AUX INPUT |
| 5. AC LINE CORD | 14. VIDEO INPUT |
| 6. VACATION SWITCH ON/OFF | 15. CD INPUT |
| 7. SOFT CLIPPING | 16. DISC INPUT |
| 8. SUBW OUT | 17. IR INPUT/OUTPUT |
| 9. MAIN IN | 18. +12V TRIGGER OUT |
| 10. PRE-OUT | |

FRONT PANEL



- | | |
|---------------------------------|--------------------------------|
| 1. POWER | 10. DISPLAY PANEL |
| 2. POWER/STANDBY/PROTECTION LED | 11. RECORD OUT/ZONE 2 SELECTOR |
| 3. BLEND | 12. VOLUME |
| 4. DISPLAY | 13. BALANCE |
| 5. MEMORY | 14. TONE DEFEAT |
| 6. FM MUTE/MODE | 15. TONE CONTROLS |
| 7. PRESET | 16. INPUT SELECTOR |
| 8. TUNE | 17. SPEAKER A&B |
| 9. IR RECEIVER | 18. PHONES SOCKET |

SPECIFICATIONS

NAD C720BEE Stereo Receiver

Note: Specifications are measured in accordance with EIA Standard RS-490 (IHF A-202) for amplifiers and ANSI-IEEE Standard 185(1975), i.e. input and converted to equivalent 300-ohm values.

Power Amplifier Section

CONTINUOUS AVERAGE POWER

OUTPUT AT 8 OHMS

(Minimum RMS power per channel, both channels

50W (17dBw)

driven, With no more than the rated distortion)

Rated distortion (THD)(20Hz -20kHz)

≤0.03%

Channel Separation

≥70dB

(MAIN IN, 20W Out at 8Ω, 1kΩ shorted, 1kHz)

Clipping power, 1kHz

68W

(Maximum continuous power per channel)

Dynamic Headroom at 8 ohms:

3.4dB

Dynamic power

8ohms

110W

(Maximum short-term power per channel)

4ohms

160W

2ohms

210W

Damping factor

≥100

Slew factor

≥50

Slew rate

≥20V/μsec

T.H.D and SMPTE I.M.

≤0.03%

(Distortion from 250mW to rated output)

IHF I.M. (CCIF IM) and T.I.M distortion

≤0.03%

(From 250mW to rated output))

Input impedance

22kΩ//470pF

Input sensitivity(For 50 Watts out)

≥700mV

Power amp gain

29dB

Preampifier Section

Input Impedance

22kΩ//100pF

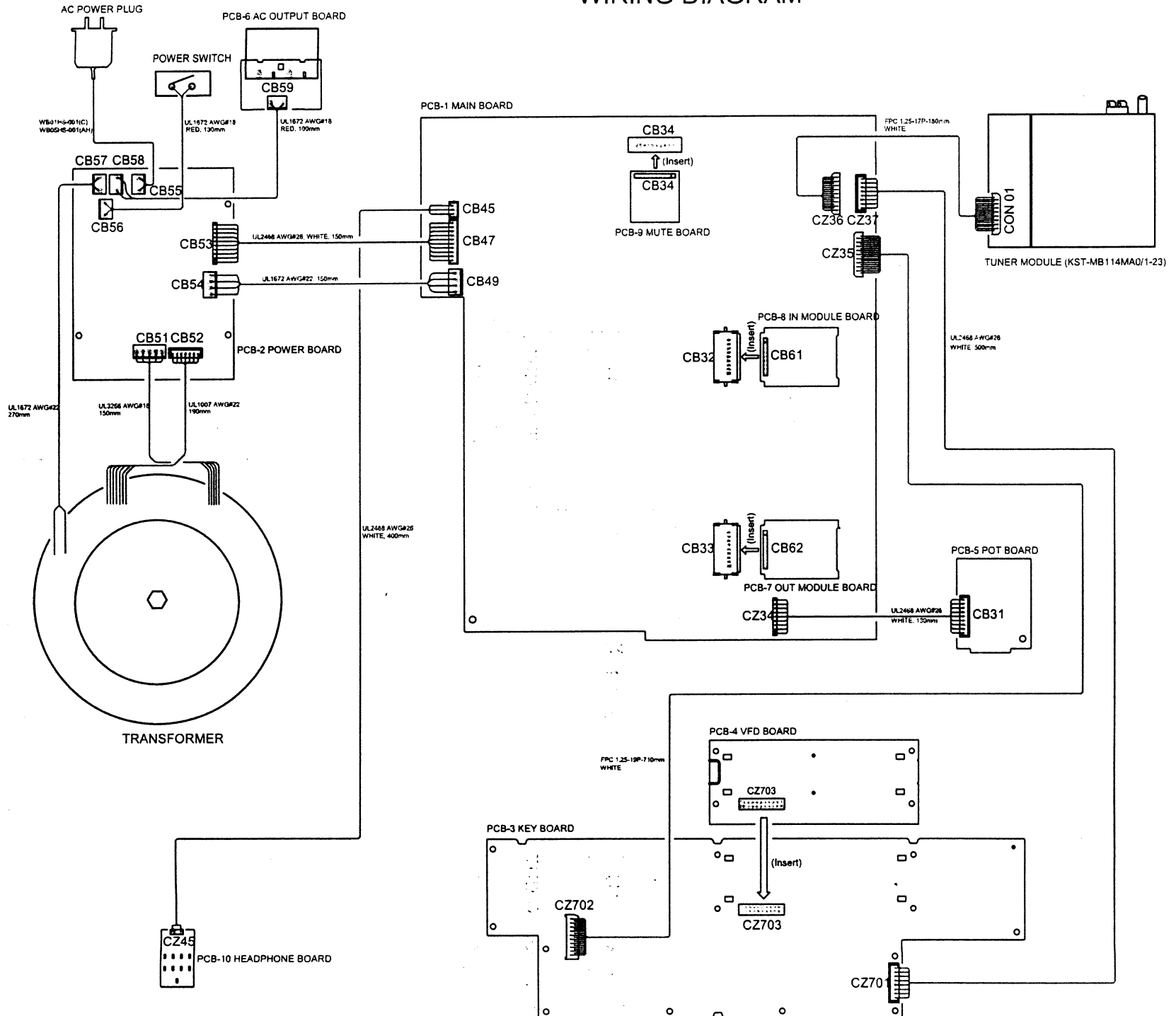
Signal-to-Noise ratio (A-weighted, 1kHz CD In, Pre-Out)		110dB ref 500mV
Rated distortion (THD)(20Hz –21kHz)		≤0.03%
Channel Separation 2V CD IN, 2V Pre-Out, 1kΩ shorted, 1kHz		≥70dB
Input Sensitivity		320mV for 1V out
Input Overload		≥10V
Frequency response	tone defeat tone on	+/-0.1dB +/-0.5dB
THD (SUB OUT) (2V CD in, 2V SUB out; 50Hz, 80kHz LPF)		≤0.03%
THD (ZONE 2 OUT) (2V CD IN, 1kHz, 80kHz LPF)		≤0.03%
Frequency Response(SUB OUT) 50Hz)		≤3dB at 100Hz
Outputs		
Preamp output impedance		80Ω
Zone2 output impedance		Source Z+ 600Ω
Controls		
Treble		±5dB at 10kHz
Bass		±8dB at 100Hz
Pre-in ,Power AMP out,input 2V		
Signal-to-Noise ratio, A-weighted (500mV CD in, SPK out, 8Ω, A weighted)		98dB ref 1 W out
Rated distortion (THD)(20Hz –20kHz)		≤0.03%
Input sensitivity (CD in, SPK out, at rated power, volume max.)		225mV
Channel Separation (CD in, 20W out at 8Ω, 1kΩ shorted, 1kHz)		≥70dB
Frequency response	tone defeat tone on	+/-0.1dB +/-0.5dB
Tuner FM Section(At 75kHz deviation for AH ; 40kHz for C)		
Usual sensitivity	Mono, -30dB THD+N Mono, 50 dB S/N	≤12dBuV ≤25dBuV

Capture ratio (at 45 and 65 dBf)		≤3 dB
AM rejection (at 65 and 85dBf)		≥40 dB
Alternative channels Selectivity (RF±400KHz, at 30dB)		≥40 dB
Image rejection (at usable sensitivity)		≥70 dB
I.F. rejection (at usable sensitivity)		≥70 dB
Pilot suppression (1kHz, 60dBu)		≥55 dB
THD	Mono, 1kHz, 60dBu Stereo, 1kHz, 60dBu	≤0.8% ≤1%
Signal-to-noise ratio (Mono, 60dBu)		≥60 dB
Frequency response (50Hz -15kHz)		±3dB
Stereo separation (1kHz; 60dBu)		≥35 dB
Tuner AM Section(30% mod)		
Usable sensitivity (at S/N=20dB)		≤60 dBμ
THD (74dBu input , 30% mod)		≤3%
1 signal Selectivity (at usable sen.)		≥20 dB
Image rejection (at usable sen.)		≥28 dB
I.F. rejection (at usable sen.)		≥40 dB
S/N ratio (30% mod, 80dBu input)		≥40 dB

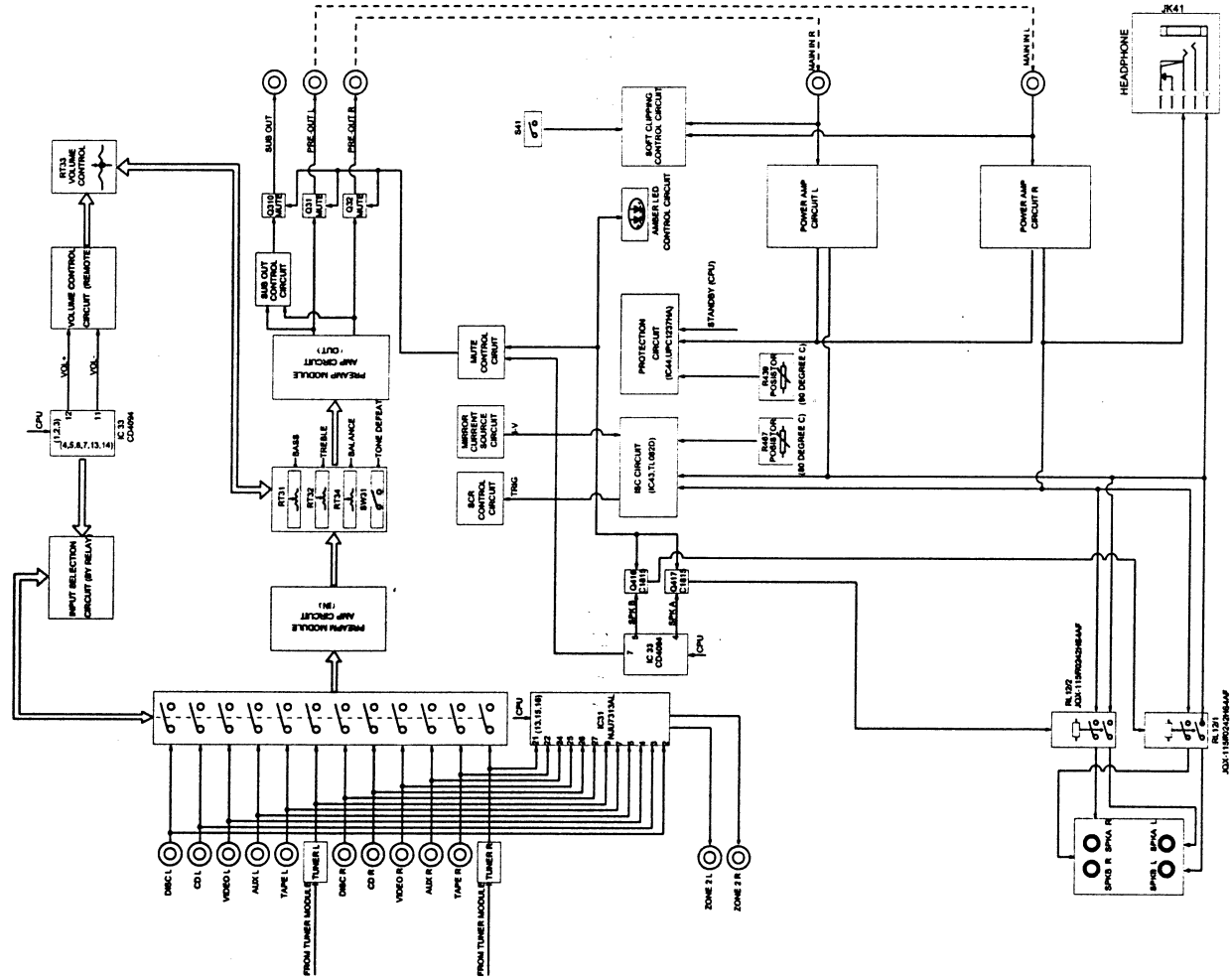
Physical Specifications

Width × Height × Depth	435x133x350mm
Net Weight	8.7kg
Shipping Weight	10.3kg
Power Consumption	110W
(50/60 Hz, at 110 or 120VAC for AH, 230 or 240VAC for C)	

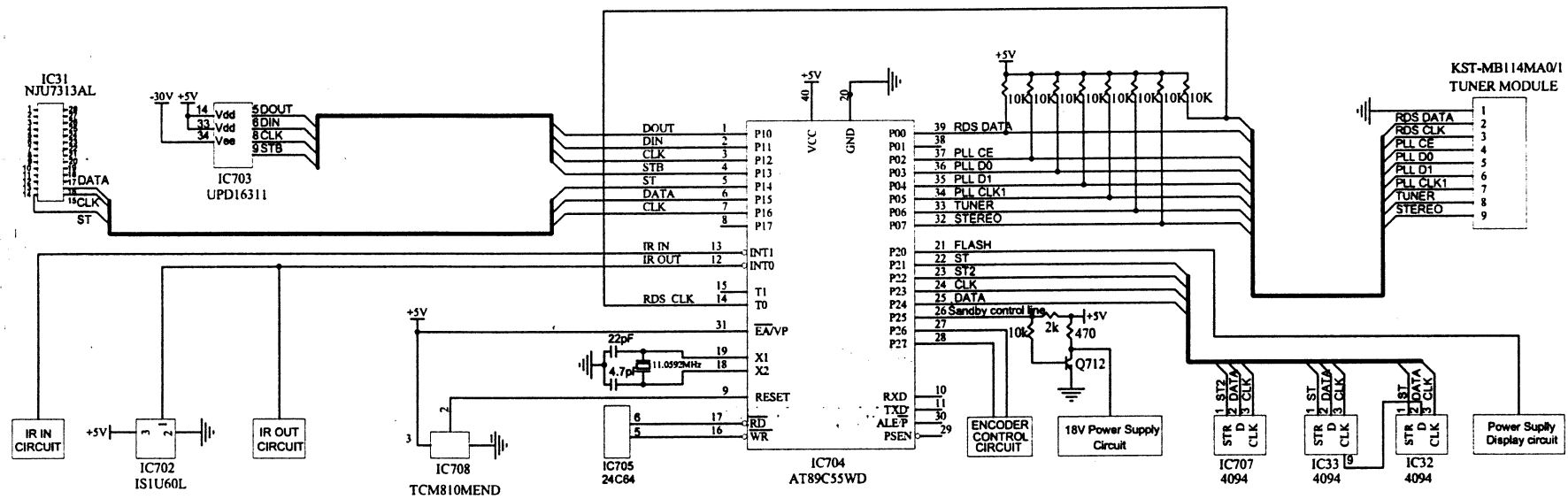
WIRING DIAGRAM



BLOCK DIAGRAM



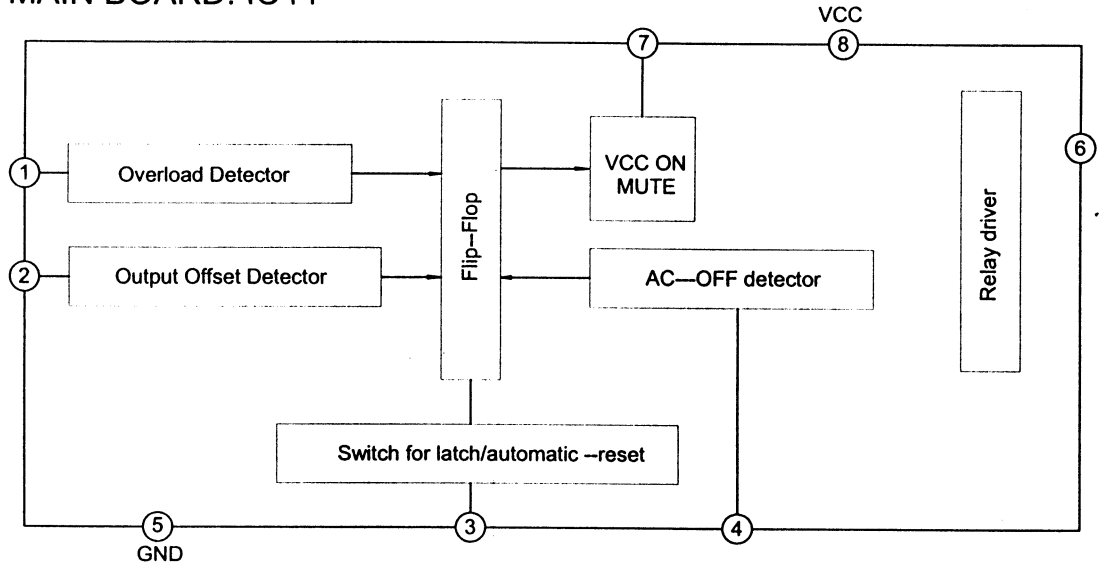
MICROPROCESSOR CONNECTION DIAGRAM



ICS BLOCK DIAGRAM

uPC1237HA

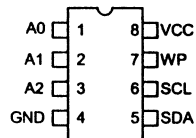
MAIN BOARD: IC44



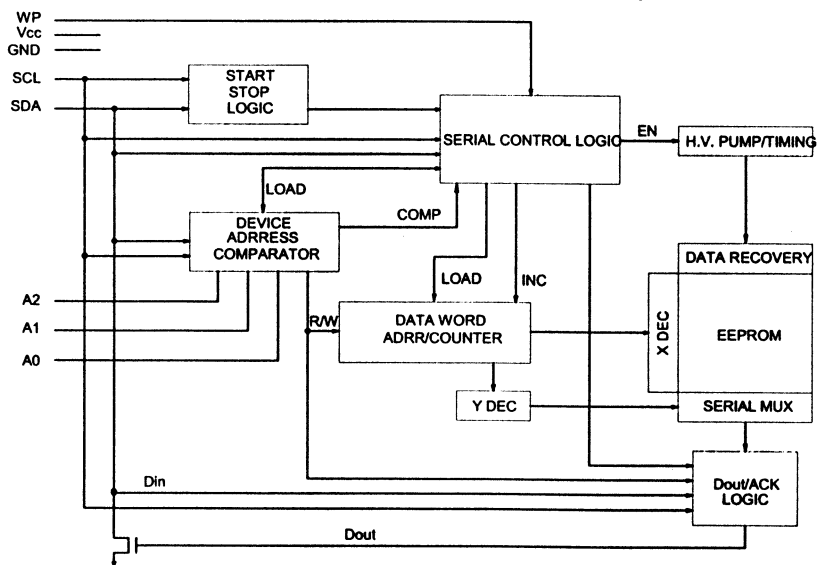
AT24C64A

KEY BOARD: IC705

PIN CONFIGURATION

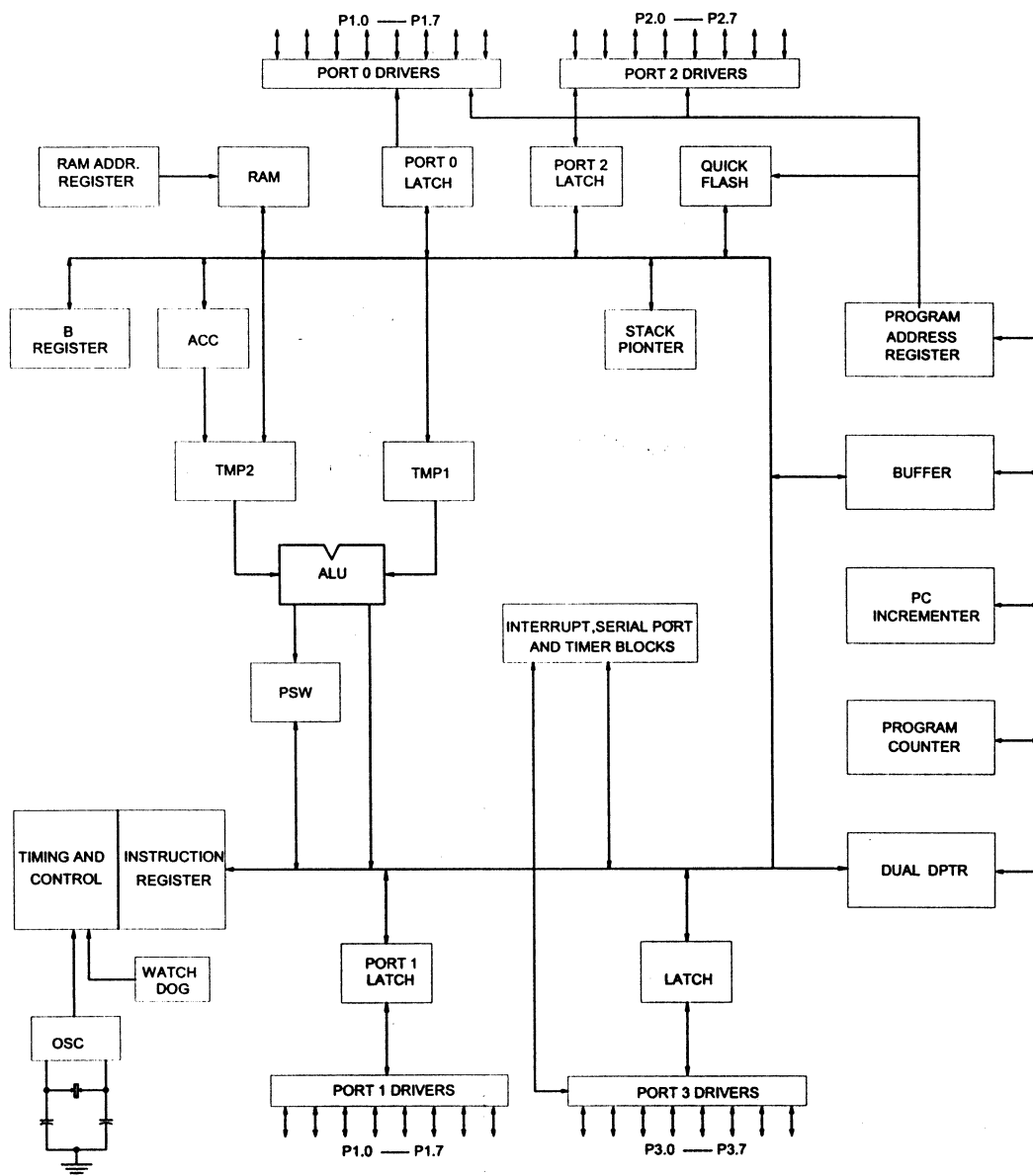
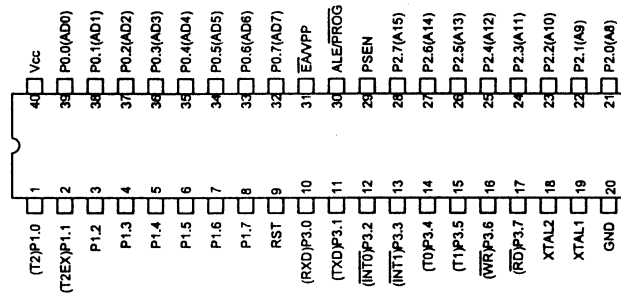


PIN NAME	FUNCTION
A0-A2	ADDRESS INPUTS
SDA	SERIAL DATA
SCL	SERIAL CLOCK INPUT
WP	WRITE PROTECT



AT89C55WD
KEY BOARD : IC704

PIN CONFIGURATION

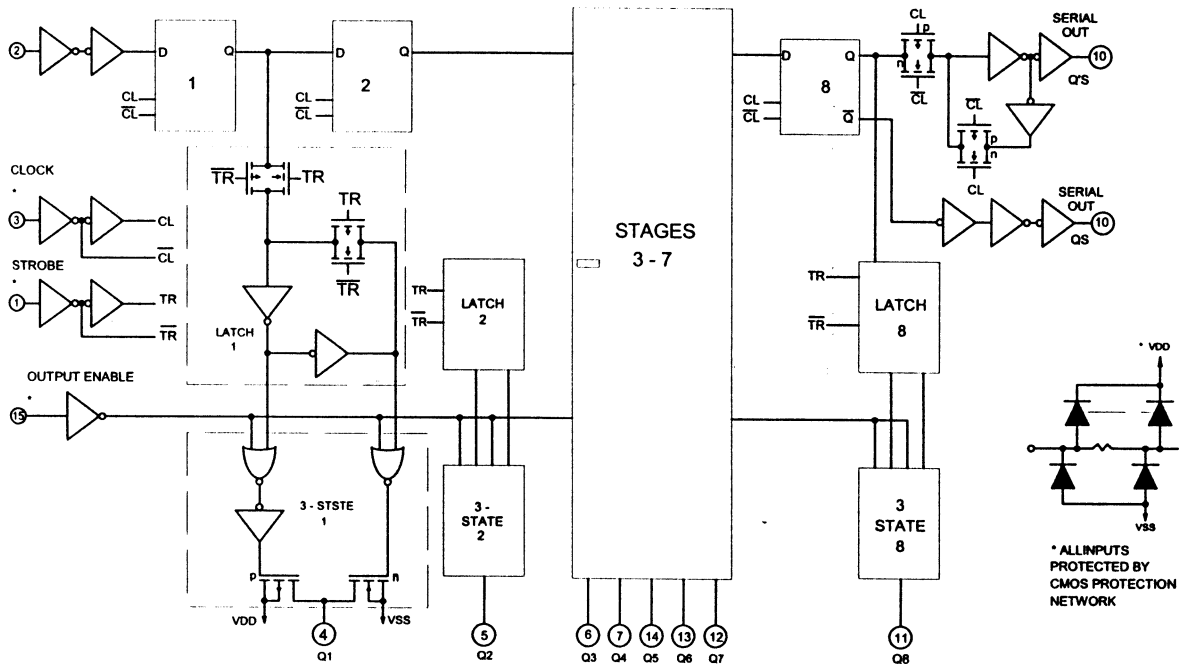
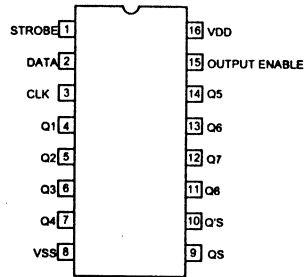


CD4094

MAIN BOARD: IC32 & IC33

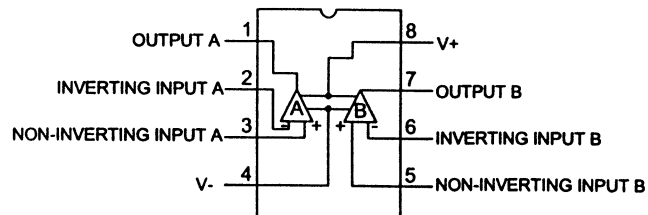
KEY BOARD: IC707

PIN CONFIGURATION



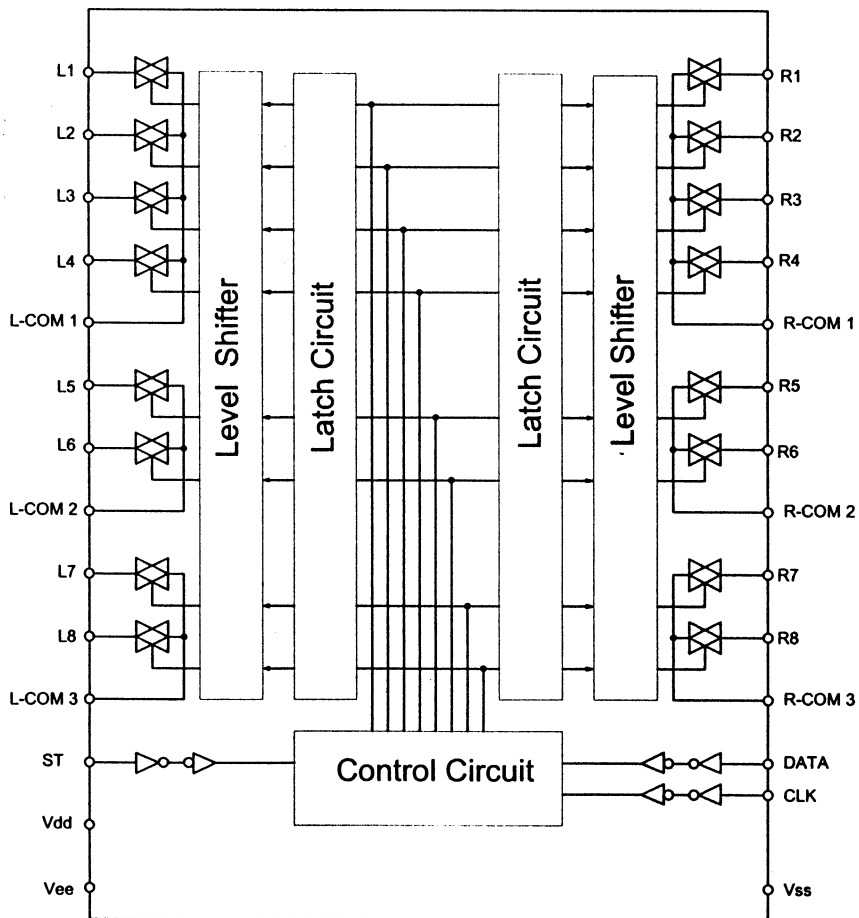
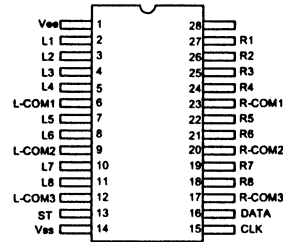
TL082CP/D

MAIN BOARD: IC3, IC4, IC34, IC43



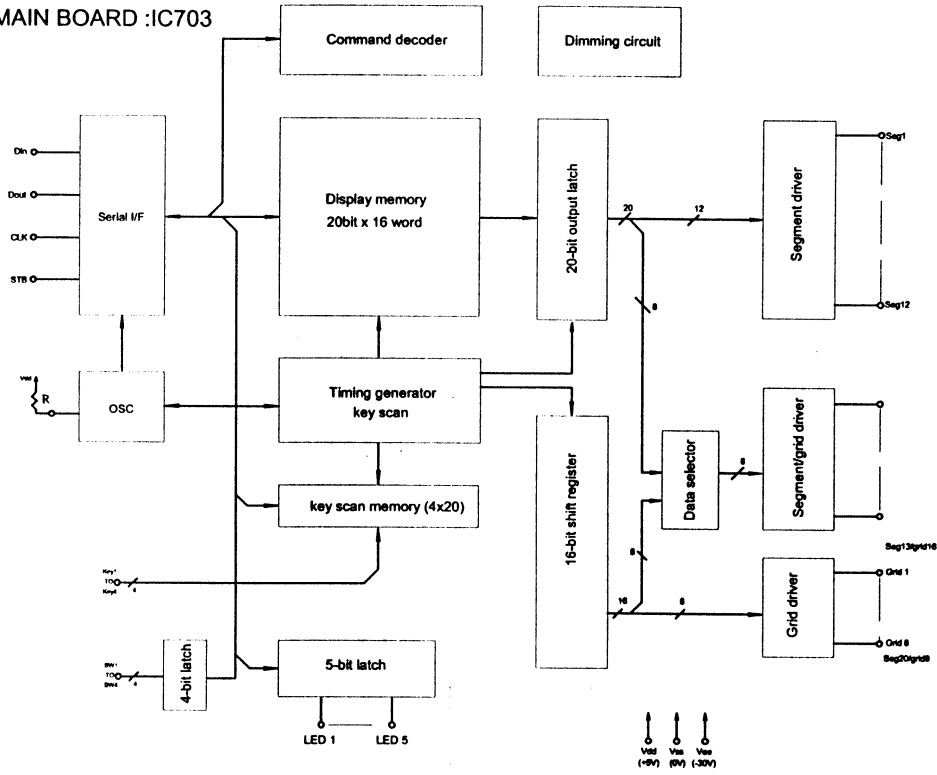
NJU7313AL
 MAIN BOARD: IC31

PIN CONFIGURATION

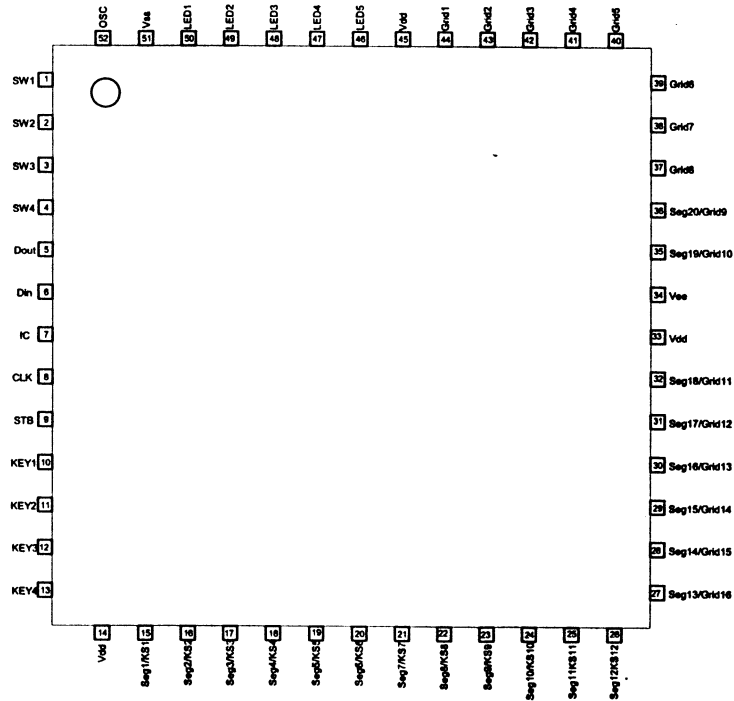


uPD16311

MAIN BOARD :IC703



PIN CONFIGURATION(Top View)



ALIGNMENT PROCEDURES

I. INITIAL

A. LOWEST VOLUME ADJUSTMENT

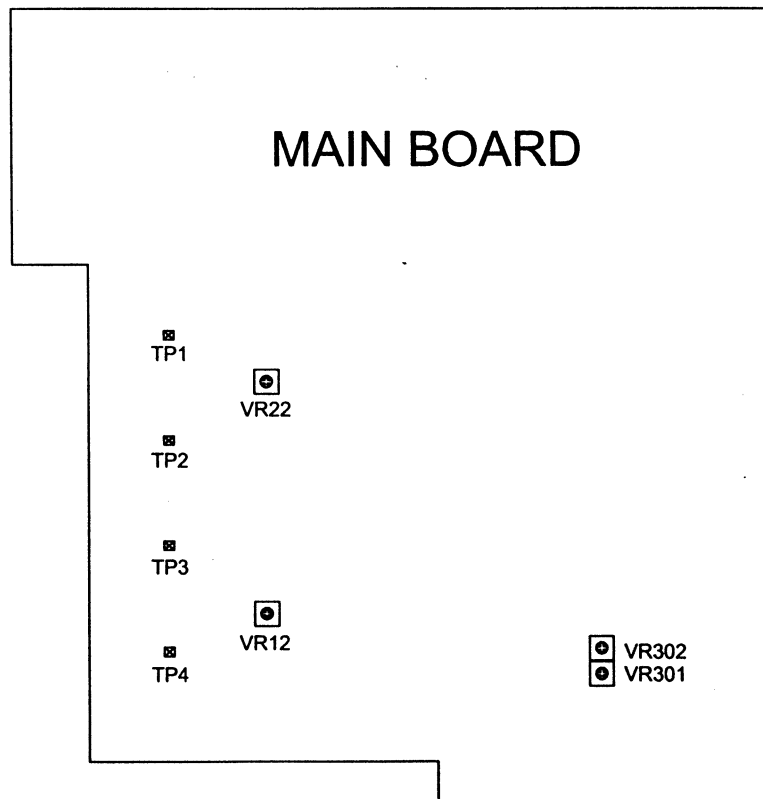
1. Tune the volume pot to lowest state.
2. Input a high voltage signal such as 5V from CD input.
3. Connect a oscilloscope to L channel binding posts.
4. Observing the oscilloscope,adjust VR301,make the output of speakers become to the lowest level.
5. Adjusting VR302,make R channel output become to the lowest level by same way.

B. IDLING CURRENT

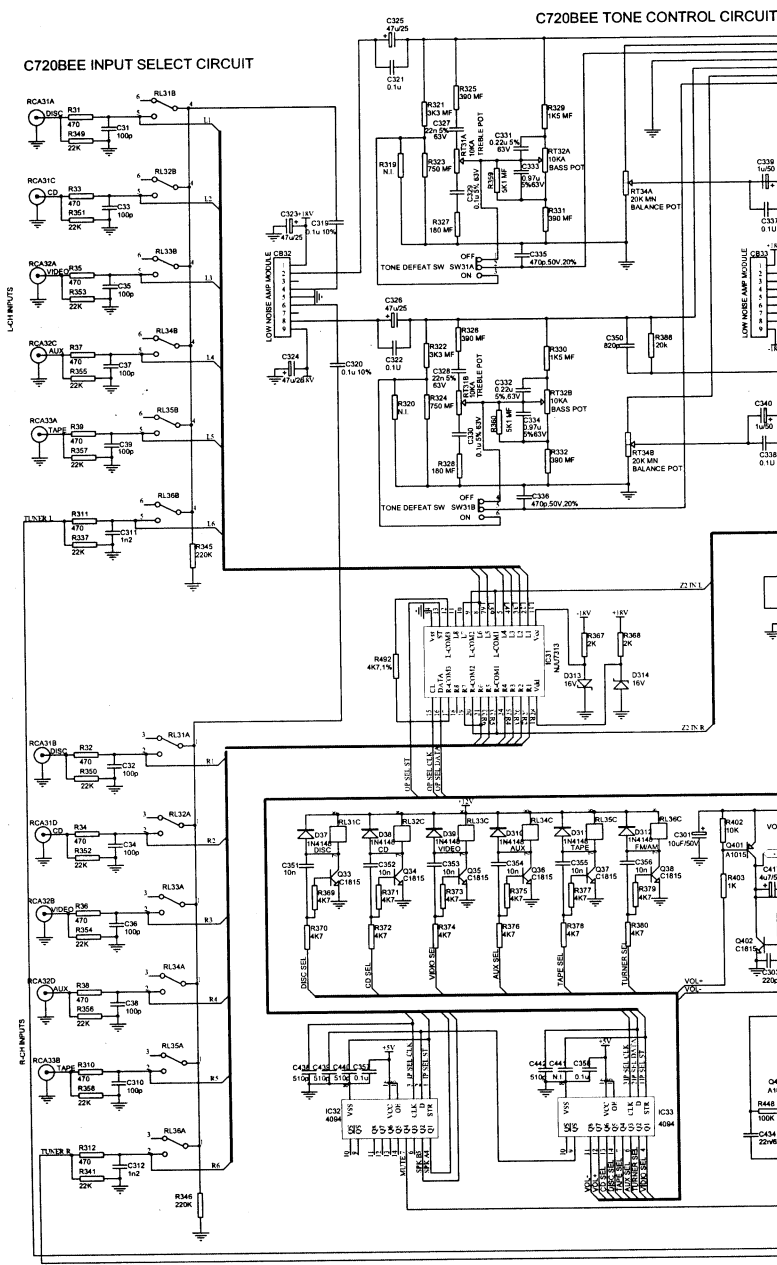
1. Connect a DC voltmeter to TP1 and TP2 ,adjust VR22 for 4-5mV reading on voltmeter.
2. Connect a DC voltmeter to TP3 and TP4 ,adjust VR12 for 4-5mV reading on voltmeter.
3. Level power on for a minimum of 5 minutes

II. FINAL ADJUSTMENT

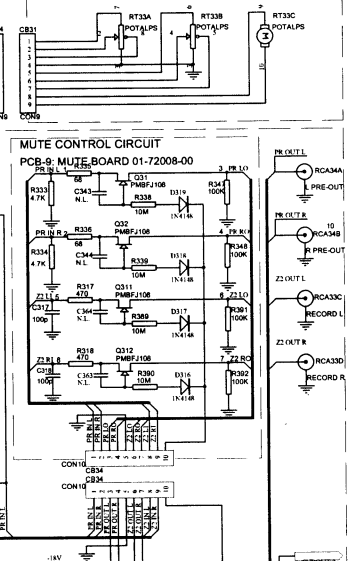
Repeat procedure A and B for lowest volume level and idling current alignment respectively.



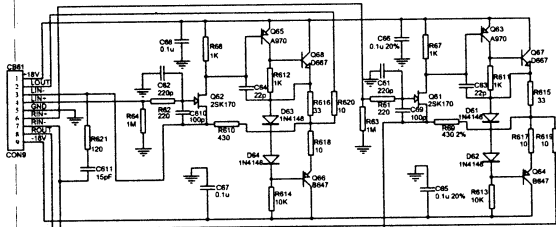
PREAMP AMP CIRCUIT FOR Vm1.7
PCB-1: MAIN BOARD FOR Vm5.0



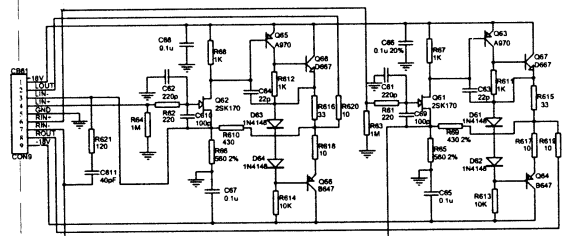
MOTO POT FOR Vm1.6
PCB-5: POT BOARD FOR Vm5.0



PREAMP OUT MODULE CIRCUIT FOR Vm1.6
PCB-7: OUT MODULE BOARD FOR Vm5.0

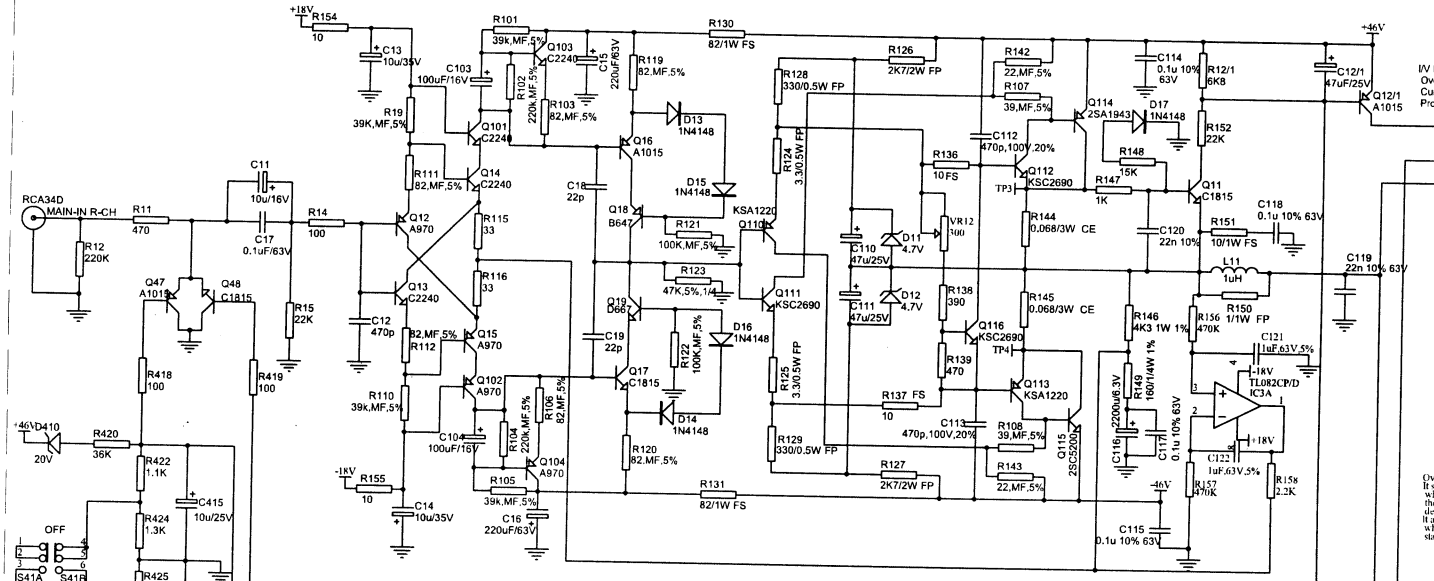


PREAMP OUT MODULE CIRCUIT FOR Vm1.6
PCB-8: IN MODULE BOARD FOR Vm5.0

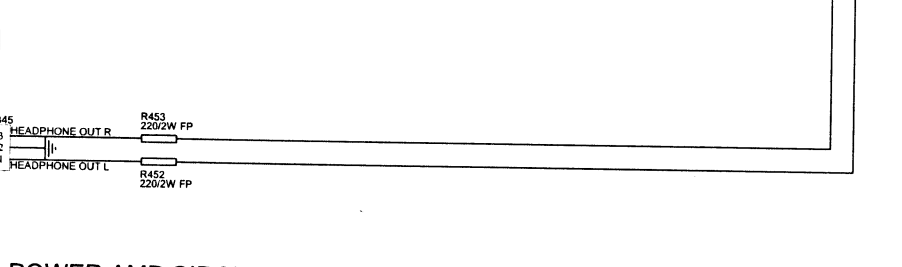
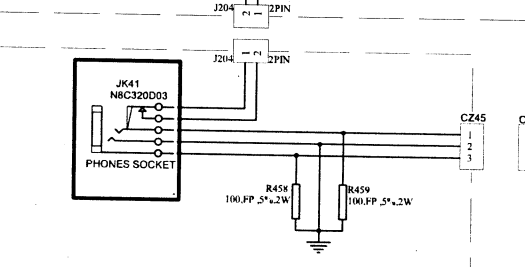
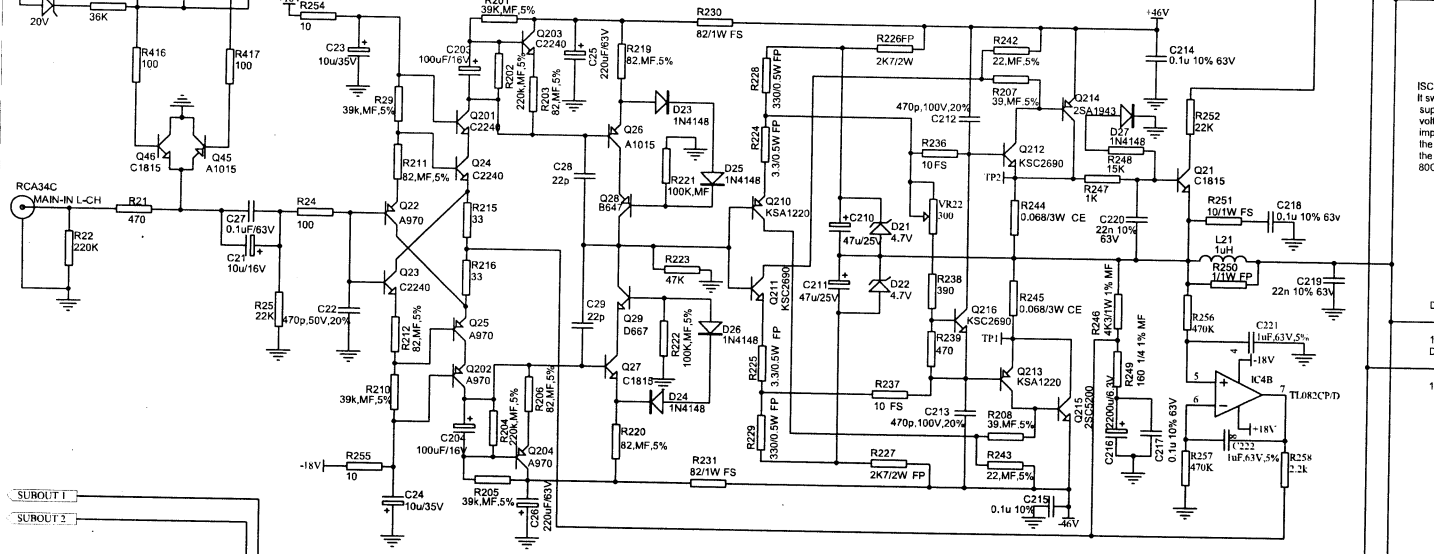


SCHEMATIC DIAGRAM (1/4)

C720BEE POWER AMP CIR. R

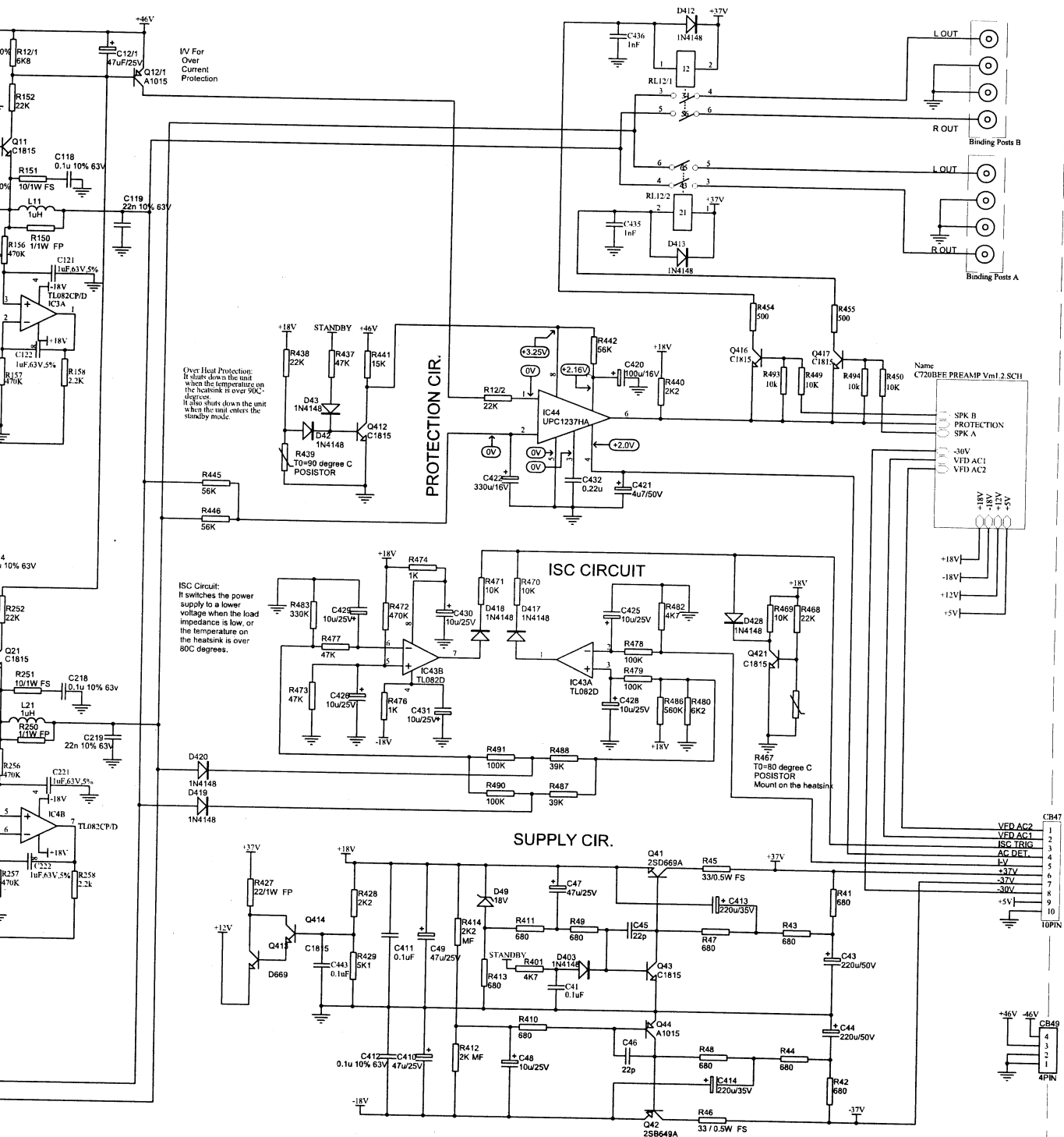


POWER AMP CIR. R



HEADPHONE OUT CIRCUIT FOR Vm1.7
PCB-10: HEADPHONE BOARD FOR Vm5.0

POWER AMP CIRCUIT FOR Vm1.7
PCB-1: MAIN BOARD FOR Vm5.0



IV For
Over
Current
Protection

Over Heat Protection:
It shuts down the unit
when the temperature on
the heatsink is over 90C.
It also shuts down the unit
when the unit enters the
standby music.

ISC Circuit:
It switches the power
supply to a lower
voltage when the load
impedance is low, or
the temperature on
the heatsink is over
80C degrees.

PROTECTION CIR.

ISC CIRCUIT

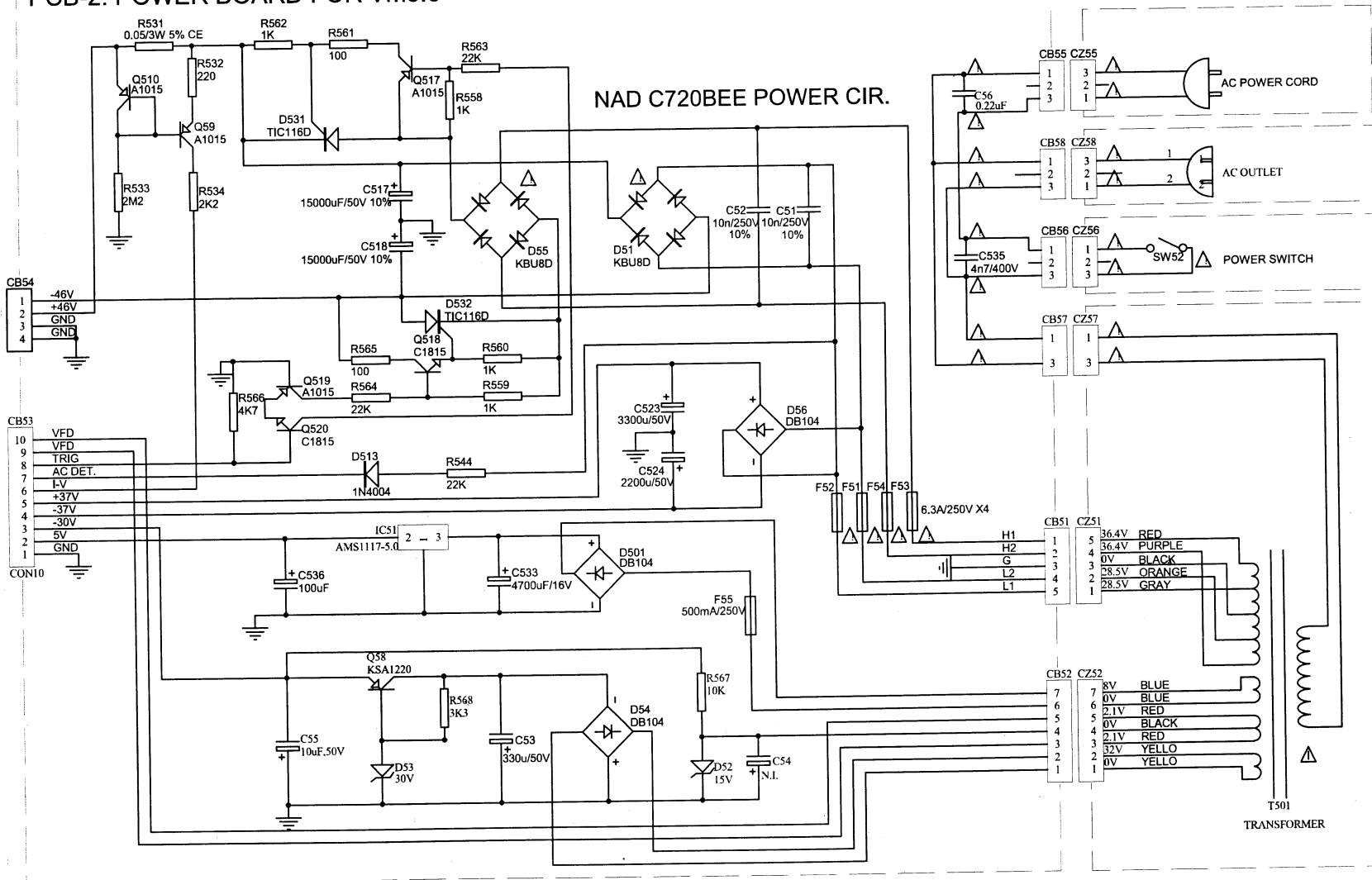
SUPPLY CIR.

Name
C720BEE PREAMP Vm1.2 SCH

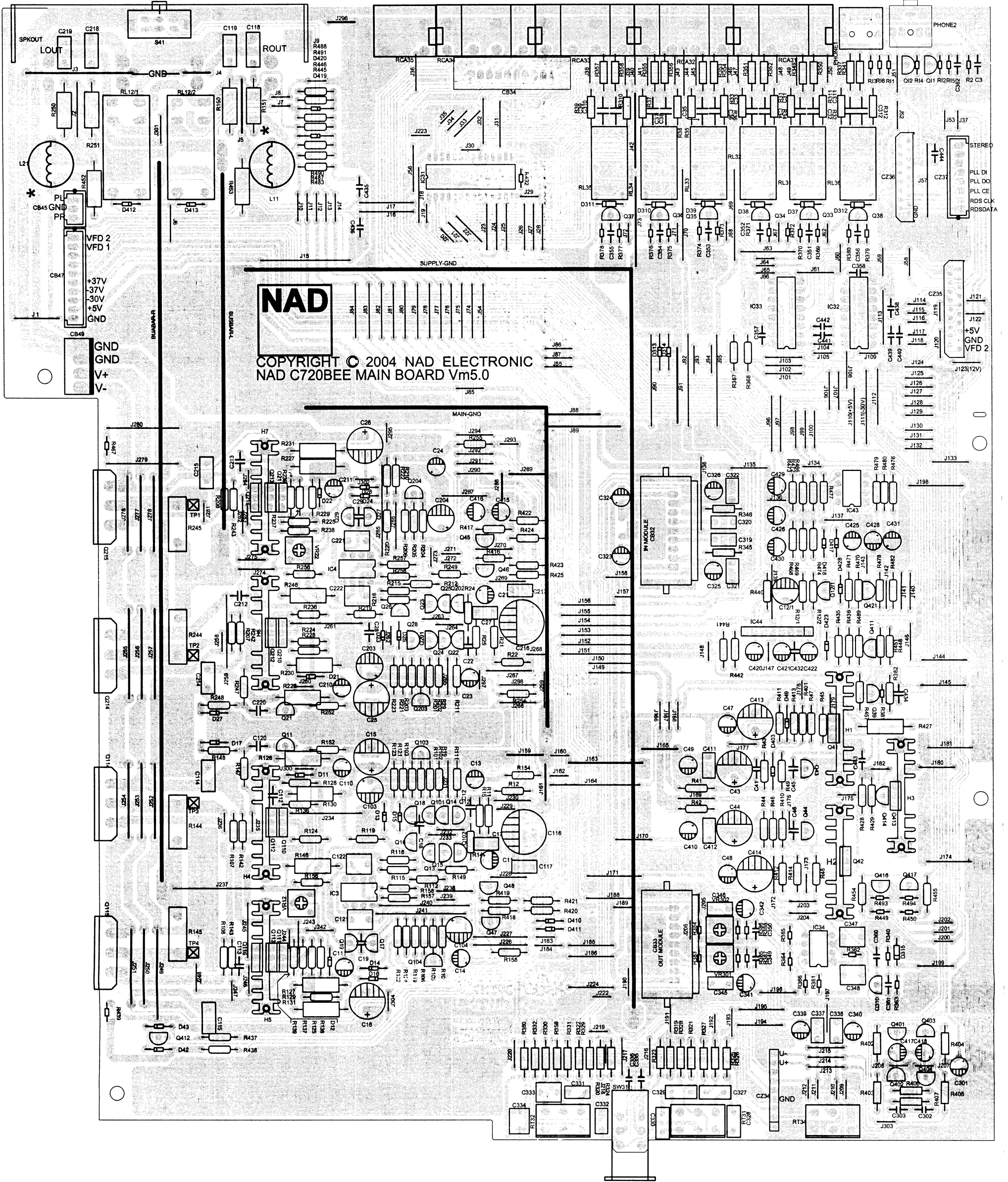
- 1 VFD AC2
 - 2 VFD AC1
 - 3 ISC TRIG
 - 4 AC DET
 - 5 LV
 - 6 -32V
 - 7 -30V
 - 8 -30V
 - 9 +5V
 - 10 10PIN
-
- 1 +6V
 - 2 -46V
 - 3 1
 - 4 1
 - 4PIN

SCHEMATIC DIAGRAM (2/4)

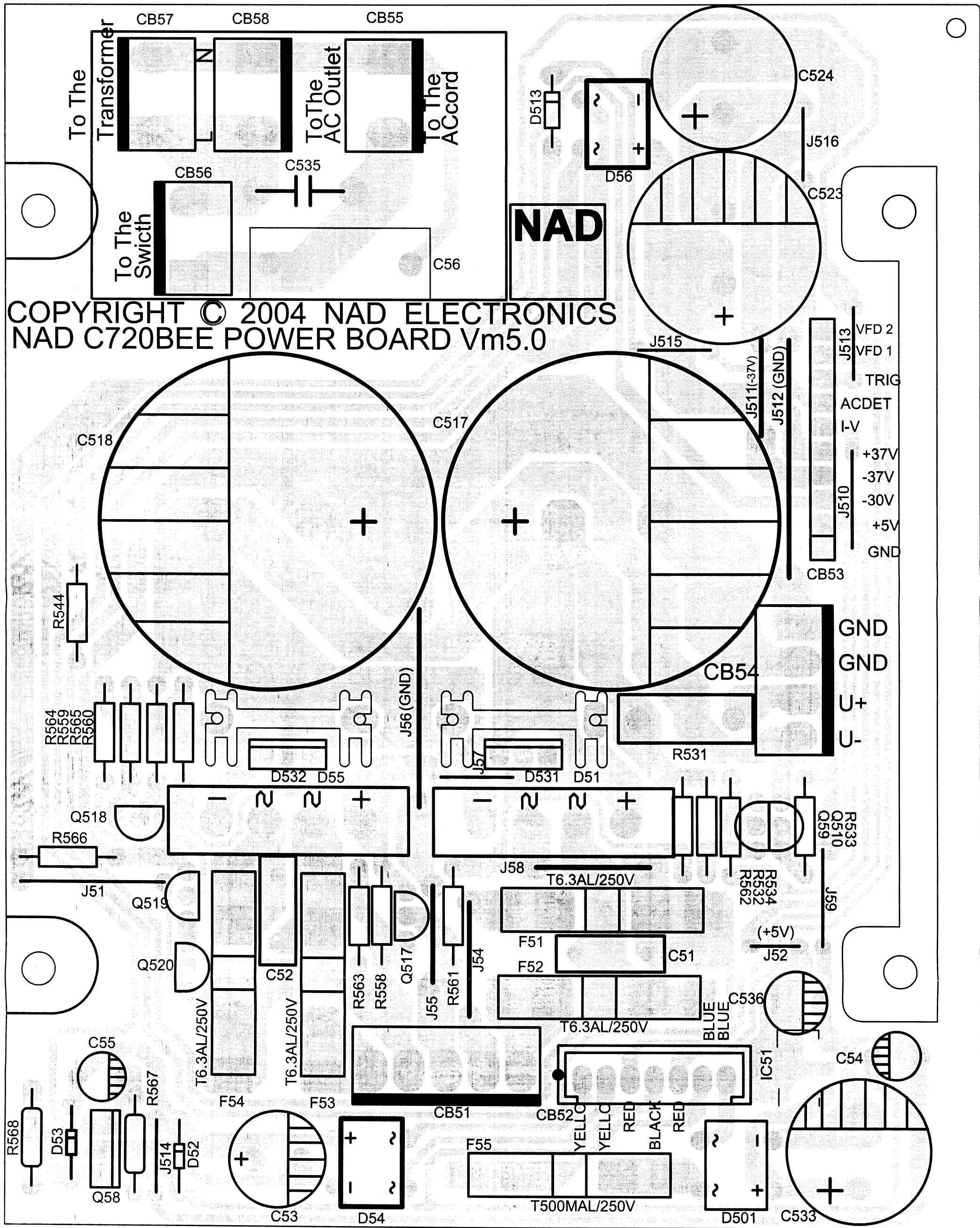
POWER SUPPLY CIRCUIT FOR Vm1.6 PCB-2: POWER BOARD FOR Vm5.0



PCB-1 : MAIN BOARD FOR Vm5.0

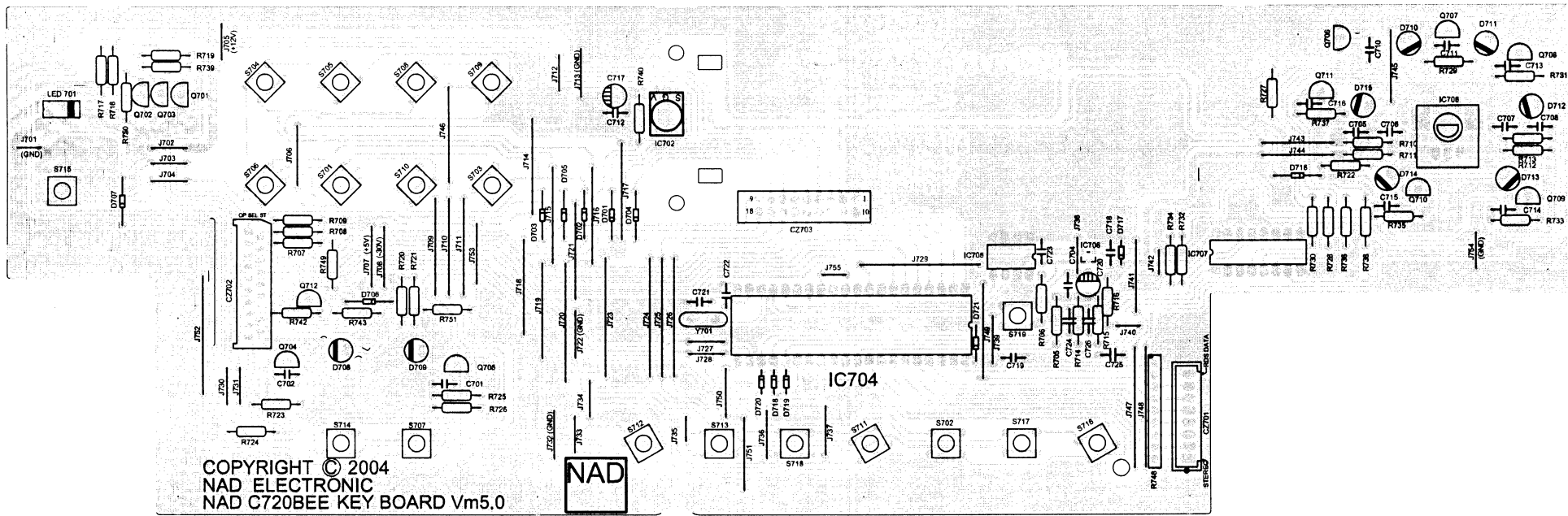


PCB-2: POWER BOARD FOR Vm5.0

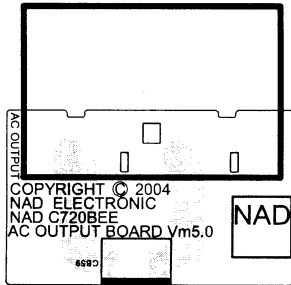


COPYRIGHT © 2004 NAD ELECTRONICS
 NAD C720BEE POWER BOARD Vm5.0

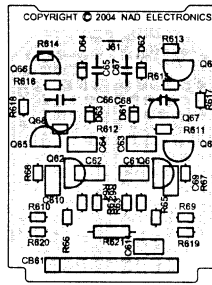
PCB-3: KEY BOARD FOR Vm5.0



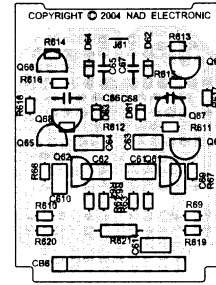
PCB-6: AC OUT BOARD FOR Vm5.0



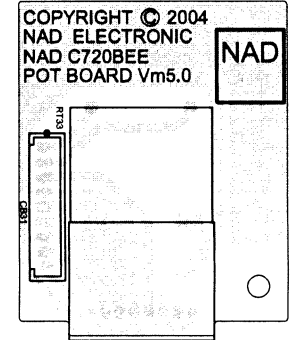
PCB-8: IN MODULE BOARD FOR Vm5.0



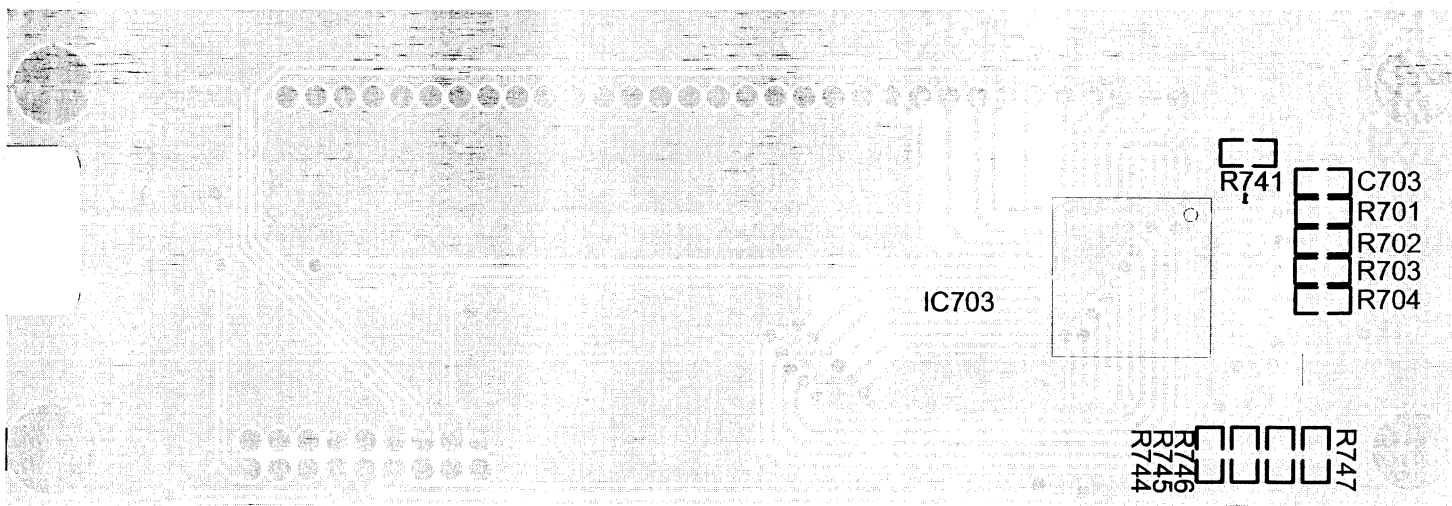
PCB-7: OUT MODULE BOARD FOR Vm5.0



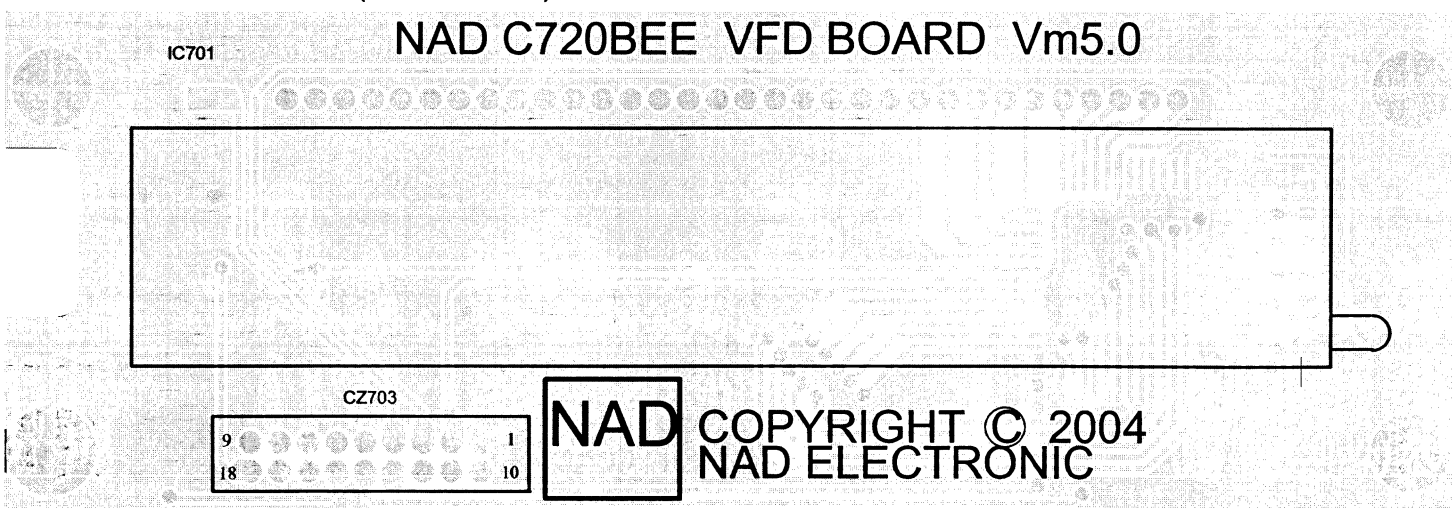
PCB-5: POT BOARD FOR Vm5.0



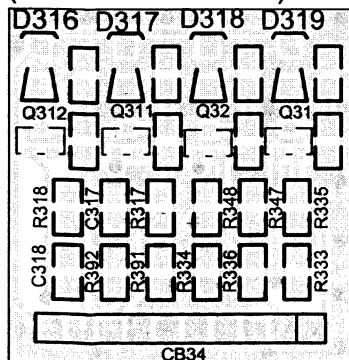
PCB-3: KEY BOARD (BOTTOM VIEW)



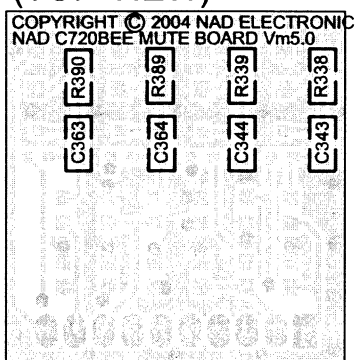
PCB-3: KEY BOARD (TOP VIEW)



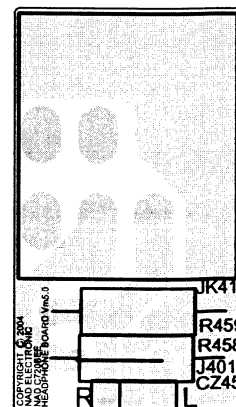
PCB-9: MUTE BOARD (BOTTOM VIEW)



PCB-9: MUTE BOARD (TOP VIEW)



PCB-10: HEADPHONE BOARD



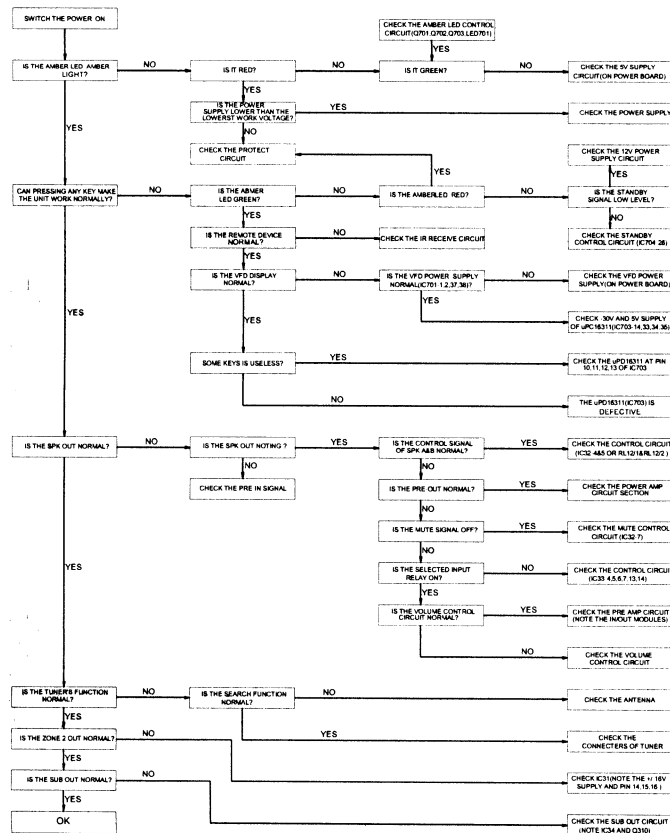
ELECTRIAL PARTS LIST

SPECIAL FUNCTION

TUNER SECTION	Simultaneously press "FM"+"CD": C-version (230V) factory reset
	Simultaneously press "FM"+"DISC": AH-version (120V) factory reset
	Simultaneously press "FM"+"AM": displays software version
	Press "AM"+"TAPE": all icons in the VFD DISPLAY light up

In addition, in tuner mode, press the "MEMORY" key once, and then press the "DISPLAY" key once. This will allow you to change the current display; to a familiar name, and it can be stored with the "MEMORY" key.

TROUBLESHOOTING GUIDE



CIRCUIT NO.	PART NO.	DESCRIPTION
PCB-1: MAIN BOARD		
ICS		
IC3, IC4, IC34, IC43	03-00082-00	TL082CP/D
IC44	03-01237-00	UPC1237HA
IC32, IC33	03-04094-00	CD4094/HEF4094
IC31	03-07313-00	NJU7313AL
DIODES		
D13, D14, D15, D16, D17, D23, D24, D25, D26, D27, D37, D38, D39, D310, D311, D312, D315, D42, D43, D403, D412, D413, D417, D418, D423, D428	33-44148-02	1N4148
D419, D420	33-44148-03	1N4148
D11, D12, D21, D22	33-14709-01	4.7V 0.5W
D313, D314	33-11800-01	16V 0.5W
D49	33-11800-01	18V 0.5W
D410, D411	33-12000-02	20V 0.5W
TRANSISTORS		
Q12, Q12/1, Q16, Q26, Q44, Q45, Q47, Q401, Q403, Q411	31-01015-00	2SA1015 GR
Q11, Q11, Q17, Q21, Q27, Q33, Q34, Q35, Q36, Q37, Q38, Q39, Q43, Q46, Q48, Q402, Q404, Q412, Q414, Q416, Q417, Q421	31-01815-00	2SC1815 GR
Q12, Q15, Q22, Q25, Q102, Q104, Q202, Q204	31-00970-00	2SA970 GR
Q13, Q14, Q23, Q24, Q101, Q103, Q201, Q203	31-02240-00	2SC2240 GR
Q18, Q28	31-00647-00	2SB647A
Q19, Q29	31-00667-00	2SD667A
Q110, Q113, Q210, Q213, Q42	31-01220-00	KSA1220
Q111, Q112, Q211, Q212, Q116, Q216, Q41, Q413	31-02690-00	KSC2690
Q310	31-00363-00	2SK363
CAPACITORS		
C18, C19, C28, C29, C45, C46	05-22012-00	22p/100V ±10%
C360	05-10112-01	100p/100V ± 10%
C302, C303, C361	05-22112-01	220p/100V ±10%
C12, C22, C335, C336, C112, C113, C212, C213	05-47112-00	470p/100V ±10%
C438, C439, C440, C442	05-51112-00	510p/100V ±10%
C31, C32, C33, C34, C35, C36, C37, C38, C39, C310	24-10161-01	100p/63V, ±10%
C311, C312	24-12261-00	1n2/63V, ±10%
C3, C357, C358, C41, C443, C444	24-10461-00	0.1u/63V ± 20%
C432	24-22461-00	0.22u/63V ± 20%
C350	24-82161-00	820p/63V 10%
C349, C435, C436	24-10261-00	1n/63V 10%
C351, C352, C353, C354, C355, C356, C362	24-10361-03	10n/63V 10%

ELECTRIAL PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
C120, C220, C434	24-22312-04	22n/100V 10%
C119, C219, C327, C328	25-22361-05	22n/63V 5%
C118, C218	25-10461-04	0.1u/63V 5%
C17, C114, C115, C117, C27, C214, C215, C217, C319, C320, C321, C322, C337, C338, C345, C346, C411, C412,	25-10412-02	0.1u/100V 10%
C329, C330, C347	25-10461-07	0.1u/63V 5%
C331, C332, C348	25-22461-02	0.22u/63V 5%
C333, C334	25-95461-00	0.95u/63V 5%
C121, C122, C221, C222	25-10561-02	1u/63V 5%
C339, C340	06-10951-08	1u/50V 20%
C417, C418, C421	06-47951-00	4u7/50V 20%
C13, C14, C23, C24, C48, C415, C416, C425, C426, C428, C429, C430, C431, C301	06-10051-00	10u/50V 20%
C11, C21	06-10051-08	10u/50V 20%
C12/1, C47, C49, C110, C111, C210, C211, C323, C324, C410	06-47021-00	47u/25V 20%
C325, C326, C341, C342	06-47021-06	47u/25V 20%
C103, C104, C203, C204, C420	06-10111-00	100u/16V 20%
C15, C16, C25, C26	06-22161-00	220u/63V 20%
C43, C44	06-22151-00	220u/50V 20%
C413, C414	06-22131-00	220u/35V 20%
C422	06-33111-01	330u/16V 20%
C116, C216	06-22260-01	2200u/6.3V 20%
RESISTORS		
R385, R386	07-10189-00	1.8 Ω ±5% 1/6w
R154, R155, R254, R255	07-10100-10	10 Ω ±5% 1/4w
R2	07-10100-00	10 Ω ±5% 1/6w
R13	07-10330-00	33 Ω ±5% 1/6w
R115, R116, R215, R216	07-10330-10	33 Ω ±5% 1/4w
R14, R24, R416, R417, R418, R419	07-10101-10	100 Ω ±5% 1/4w
R363, R16	07-10101-00	100 Ω ±5% 1/6w
R138, R238	07-10391-10	390 Ω ±5% 1/4w
R11, R139, R21, R239, R31, R310, R311, R312, R32, R33, R34, R35, R36, R37, R38 R39	07-10471-10	470 Ω ±5% 1/4w
R454, R455	07-10511-10	510 Ω ±5% 1/4w
R41, R42, R43, R44, R47, R48, R49, R410, R411, R413,	07-10681-10	680 Ω ±5% 1/4w
R147, R247, R403, R405, R406, R407, R474, R476	07-10102-10	1K Ω ±5% 1/4w
R12	07-10102-00	1K Ω ±5% 1/6w
R422, R423	07-10112-10	1.1K Ω ±5% 1/4w
R424, R425	07-10132-10	1.3K Ω ±5% 1/4w
R367, R368, R412	07-10202-10	2K Ω ±5% 1/4w
R158, R258, R414, R428, R440	07-10222-10	2.2K Ω ±5% 1/4w
R14, R369, R370, R371, R372, R373, R374, R375, R376, R377, R378, R379, R380	07-10472-00	4.7K Ω ±5% 1/6w
R401, R482	07-10472-10	4.7K Ω ±5% 1/4w

ELECTRIAL PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
R429	07-10512-10	5.1K Ω ±5% 1/4w
R381	07-10512-00	5.1K Ω ±5% 1/6w
R480	07-10622-10	6.2K Ω ±5% 1/4w
R12/1	07-10682-10	6.8K Ω ±5% 1/4w
R402, R469, R470, R471, R404	07-10103-10	10K Ω ±5% 1/4w
R364, R365, R366, R449, R450, R493, R494, R15	07-10103-00	10K Ω ±5% 1/6w
R11	07-10123-00	12K Ω ±5% 1/6w
R148, R248, R441	07-10153-10	15K Ω ±5% 1/4w
R387, R388	07-10203-00	20K Ω ±5% 1/6w
R12/2, R15, R152, R25, R252, R337, R341, R349, R350, R351, R352, R353, R354, R355, R356, R357, R358, R382, R438, R468	07-10223-10	22K Ω ±5% 1/4w
R420, R421	07-10363-10	36K Ω ±5% 1/4w
R487, R488	07-10393-10	39K Ω ±5% 1/4w
R123, R223, R437, R473, R477	07-10473-10	47K Ω ±5% 1/4w
R442, R445, R446, R436	07-10563-10	56K Ω ±5% 1/4w
R448, R478, R479, R489, R490, R491	07-10104-10	100K Ω ±5% 1/4w
R12, R22, R345, R346, R457	07-10224-10	220K Ω ±5% 1/4w
R483, R451	07-10334-10	330K Ω ±5% 1/4w
R435	07-10394-10	390K Ω ±5% 1/4w
R156, R157, R256, R257, R472	07-10474-10	470K Ω ±5% 1/4w
R486	07-10564-10	560K Ω ±5% 1/4w
R142, R143, R242, R243	07-20220-10	22 Ω ±5% 1/4w
R107, R108, R207, R208	07-20390-10	39 Ω ±5% 1/4w
R103, R106, R111, R112, R120, R203, R206, R211, R212, R220, R219, R119	07-20820-10	82 Ω ±5% 1/4w
R149, R249	07-21600-10	160 Ω 1% 1/4w
R327, R328	07-20181-10	180 Ω 5% 1/4w
R325, R326, R331, R332	07-23900-10	390 Ω 1% 1/4w
R383, R384	07-25600-01	560 Ω 2% 1/6w
R323, R324	07-27500-10	750 Ω 1% 1/4w
R329, R330	07-21501-10	1.5K Ω ±1% 1/4w
R321, R322	07-23301-10	3.3K Ω 1% 1/4w
R359, R360	07-20512-10	5.1K Ω 5% 1/4w
R319, R320		N.I
R361, R362	07-21102-00	11K Ω ±1% 1/6w
R492	07-24701-00	4.7K Ω ±1% 1/6w
R121, R122, R221, R222	07-20104-10	100K Ω ±5% 1/4w
R102, R104, R202, R204	07-20224-10	220K Ω ±5% 1/4w
R340	07-20106-00	10M Ω ±5% 1/6w
R146, R246	07-24301-20	4.3K Ω 1% 1/2w
R19, R101, R105, R110, R29, R201, R205, R210	07-20393-10	39K Ω 5% 1/4w
R150, R250	07-30109-01	1 Ω /1W 5%
R427	07-30220-01	22 Ω /1W 5%
R452, R453	07-30221-03	220 Ω /2W 5%
R128, R129, R228, R229	07-30331-00	330 Ω /0.5W 5%
R124, R125, R224, R225	07-30339-00	3.3 Ω /1/2W 5%
R126, R127, R226, R227	07-32701-02	2.7K Ω 2% 2w
R144, R145, R244, R245	07-40687-03	0.068 Ω /3W 10%
R136, R137, R236, R237	07-50100-10	10 Ω /1/4W 5%
R151, R251	07-50100-01	10 Ω /1W 5%
R45, R46	07-50330-00	33 Ω /0.5W 5%
R130, R131, R230, R231	07-50820-02	82 Ω /1W 5%

ELECTRIAL PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	INDUCTORS	
L11, L21	08-01010-00	1uH
	POTS	
RT31, RT32	09-01103-07	10KA
RT34	09-01203-06	20K MN
VR12, VR22	09-02301-00	300 Ω
VR301, VR302	09-02101-00	100 Ω
	SWITCHES	
SW31	11-02202-00	TONE DEFEAT
SW41	11-05202-12	SOFT CLIPPING
	RELAYS	
RL31, RL32, RL33, RL34 RL35, RL36	12-02101-02	JRC-27F/012/S
RL12/1, RL12/2	12-03102-00	JQX-115F/0242HS4AF
	CONNECTERS	
CZ34—CB31	14-72009-10	SCN 2.5A-9D XHB2.5A-9Y26AWG;UL2468#; 130mm
TP1, TP2, TP3, TP4	13-10001-00	Test-1(R)
CB47	13-22510-00	XHB 2.5A-10A
CB45	13-22503-00	XHB 2.5A-3A
CB49	13-23904-00	VH 3.96A-4A
CZ37	13-22508-00	XHB 2.5A-8A
CZ36	13-21217-00	FPC1.25 17PIN
CZ35	13-21219-00	FPC1.25 19PIN
PHONE1	17-02002-00	SCJ351P00XS0B00
	17-02002-01	ST-5037B-04
PHONE2	17-02001-03	SCJ349P00XS0B01
	17-02001-04	ST-323B-04
RCA31, RCA32, RCA33, RCA34	17-01004-05	4 holes red and white, gilt
RCA35	17-01001-11	1 hole red,AV-8.4-14,gilt
CB715	02-03005-20	C version
CB715	02-03005-10	AH version
	LINKS	
J7, J8, J9, J19, J20, J29, J30, J35, J37, J53, J62, J64, J65, J66, J67, J68, J71, J72, J104, J105, J109, J114, J115, J116, J117, J118, J119, J121, J122, J134, J136, J143, J147, J148, J157, J160, J162, J173, J175, J176, J178, J179, J182, J183, J189, J192, J200, J201, J202, J205, J206, J207, J208, J209, J210, J211, J212, J218, J219, J222, J223, J235, J236, J239, J244, J247, J258, J260, J262, J268, J271, J272, J273, J281, J283, J284, J293, J295, J297, J300, J302, J303, J304	21-06500-00	L=5mm

ELECTRIAL PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
J10, J11, J12, J13, J14, J21, J34, J38, J39, J40, J41, J43, J45, J46, J47, J48, J49, J50, J52, J55, J58, J59, J60, J85, J86, J87, J93, J94, J120, J123, J124, J125, J126, J127, J128, J129, J130, J131, J132, J137, J142, J158, J166, J167, J168, J177, J184, J190, J191, J193, J197, J203, J204, J220, J232, J233, J242, J243, J246, J248, J263, J264, J275, J301	21-06750-00	L=7.5mm
J4, J288, J296	21-10750-00	L=7.5mm
J6, J22, J33, J36, J51, J61, J98, J99, J100, J101, J102, J103, J106, J107, J108, J133, J135, J140, J141, J146, J169, J170, J172, J180, J196, J199, J213, J214, J215, J216, J217, J228, J230, J231, J238, J265, J266, J269, J270, J274, J282, J290, J291, J292, J294, J298, J299	21-06101-00	L=10mm
J159, J161, J165, J289	21-10101-00	L=10mm
J1, J23, J24, J25, J26, J27, J28, J31, J32, J44, J56, J144, J145, J149, J150, J174, J181, J185, J186, J188, J194, J195, J224, J267, J286, J287	21-06121-01	L=12.5mm
J2, J16, J17, J18, J54, J63, J74, J75, J76, J77, J78, J79, J80, J81, J82, J83, J84, J96, J97, J110, J112, J113, J139, J156, J171, J198, J226, J227, J245	21-06151-00	L=15mm
J5, J88	21-10151-00	L=15mm
J57, J111, J138, J151, J152, J153, J154, J155, J234, J259, J261, J279, J280	21-06201-00	L=20mm
J42, J89, J91, J163, J250, J251, J252, J253, J254, J276, J277, J278	21-10201-00	L=20mm
J15, J69, J70, J90, J92, J95, J164, J237, J240, J241, J285	21-06251-00	L=25mm
J73, J249, J255, J256, J257	21-10251-00	L=25mm
J3	21-10301-00	L=30mm
PCB-7:OUT MODULE ; PCB-8: IN MODULE		
CIRCUIT NO.	PART NO.	DESCRIPTIONS
TRANSISTORS		
Q63, Q65	31-00970-00	2SA970 GR
Q64, Q66	31-00647-00	2SB647
Q67, Q68	31-00667-00	2SD667
Q61, Q62	31-00170-00	2SK170-BL
DIODES		
D61, D62, D63, D64	33-44148-01	1N4148

ELECTRIAL PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
CAPACITORS		
C63, C64	05-22012-01	22p/100V ±10%
C611	05-15012-00	15p/100V ±10%(OUT MODULE)
C611	05-40012-00	40p/100V ±10%(IN MODULE)
C610, C69	05-10112-00	100p/100V± 10%
C61, C62	05-22112-00	220p/100V ±10%
C65, C66, C67, C68	24-10461-00	0.1u/63V± 20%
RESISTORS		
R617, R618, R619, R620	07-10100-00	10 Ω ±5% 1/6w
R615, R616	07-10330-00	33 Ω ±5% 1/6w
R621	07-10121-10	120 Ω ±5% 1/4w
R61, R62	07-10221-00	220 Ω ±5% 1/6w
R67, R68, R611, R612	07-10102-00	1K Ω ±5% 1/6w
R613, R614	07-10103-00	10K Ω ±5% 1/6w
R69, R610	07-24300-00	430 Ω 1% 1/6w
R65, R66	07-25600-01	560 Ω 2% 1/6w(IN MODULE)
R63, R64	07-20105-00	1M ±5% 1/6W
CONNECTER		
CB61	13-12509-01	9PIN CONNECTER (IN MODULE TO CB32/ OUT MODULE TO CB33)
PCB-9: MUTE BOARD		
01-72008-00		
CIRCUIT NO. PART NO. DESCRIPTION		
TRANSISTORS		
Q31, Q32, Q311, Q312	31-00108-01	PMBFJ108
DIEDES		
D316, D317, D318, D319	33-44148-11	LL4148
RESISTORS		
R335, R336	07-90680-01	68 Ω ±5%
R317, R318	07-90471-01	470 Ω ±5%
R333, R334	07-90472-01	4.7K Ω ±5%
R347, R348, R391, R392	07-90104-01	100K Ω ±5%
R338, R339, R389, R390	07-90106-01	10M Ω ±5%
CAPACITORS		
C317, C318	26-10151-01	100pF 50V ±5%
CONNECTER		
CB34	13-12510-01	10PIN:glit
PCB-2: POWER BOARD		
CIRCUIT NO. PART NO. DESCRIPTION		
ICS		
IC51	03-01117-01	AMS1117-5.0/LM1117MPX-5.0
TRANSISTORS		
Q59, Q510, Q517, Q519	31-01015-00	2SA1015 GR
Q518, Q520	31-01815-00	2SC1815 GR
Q58	31-01220-00	KSA1220
DIODES		
D513	33-24004-02	1N4004
D52	33-11500-01	15V 0.5W
D501, D54, D56	33-30142-00	DB104
D51, D55	33-30822-00	8A/200V
D531, D532	33-60116-00	TIC116D/BT151-500R
D53	33-13000-02	30V 0.5W
CAPACITORS		
C535	△ 05-47242-00	4n7p, 400V, ±20%
C56	△ 25-22422-03	MKP62, 275V, 0.22uF 5%
C53	06-33151-01	50V/330u 20%
C51, C52	25-10322-00	10n/250V 10%
C536	06-10111-00	100u/16V 20%
C524	06-22251-00	2200u/50V 20%
C533	06-47211-00	4700u/16V 20%
C523	06-33251-00	3300u/50V 20%
C517, C518	06-15351-01	1500u/50V 10%

ELECTRIAL PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
C65	06-10051-00	10u/50V 20%
RESISTORS		
R561, R565	07-10101-10	100 Ω ±5% 1/4w
R532	07-10221-10	220 Ω ±5% 1/4w
R558, R559, R560, R562	07-10102-10	1K Ω ±5% 1/4w
R534	07-10222-10	2.2K Ω ±5% 1/4w
R566	07-10472-10	4.7K Ω ±5% 1/4w
R544, R563, R564	07-10223-10	22K Ω ±5% 1/4w
R533	07-10225-10	2.2M Ω ±5% 1/4w
R531	07-40507-03	0.05 Ω/3W 5%
R567	07-10103-10	10K Ω ±5% 1/4w
R568	07-10332-10	3.3K Ω ±5% 1/4w
FUSES		
F51, F52, F53, F54	△ 20-12632-00	T6.3AL250V-50T-063-H
F55	△ 20-12501-00	500mA/250V
CONNECTERS		
CB55, CB56, CB58	△ 13-23903-01	VH 3.96A-3A
CB57	△ 13-23903-11	VH 3.96A-3A
CB54	△ 13-23904-00	VH 3.96A-4A
CB51	△ 13-23905-12	VH 3.96A-5A
CB52	△ 13-22507-10	7PIN
CB53 — CB47	14-72010-00	SCN 2.5A-10D; XHB 2.5A-10Y; 26AWG UL2468# .white; 150mm
LINKS		
J52	21-06500-00	L=5mm
J53, J513, J514, J515	21-06750-00	L=7.5mm
J57	21-10750-00	L=7.5mm
J59, J510	21-06101-00	L=10mm
J55, J511	21-10101-00	L=10mm
J54, J58	21-10121-00	L=12mm
J51	21-06151-00	L=15mm
J56	21-10201-00	L=20mm
J512	21-10251-00	L=25mm
PCB-3: KEY BOARD		
CIRCUIT NO. PARTS NO DESCRIPTION		
ICS		
IC704	03-08955-12	AT89C55WD-24PC/24PI
IC704	13-22540-00	DIP-40
IC707	03-04094-00	CD4094/HEF4094
IC702	03-00038-40	HS0038B4
IC706	37-12122-00	EC12E1220801-F20
IC705	03-02464-00	AT24C64A-10PI-2.7
IC708	03-00810-02	TCM810MENB
TRANSISTORS		
Q701, Q702, Q703, Q704, Q705, Q706, Q707, Q708, Q709, Q710, Q711, Q712	31-01815-00	2SC1815 GR
DIODES		
D701, D702, D703, D704, D705, D706, D707, D716	33-44148-03	1N4148
D708, D709, D710, D711, D712, D713, D714, D715	33-50550-00	L-513GD
LED701	33-50525-00	515AW COM-Cathode
CRYSTAL		
Y701	04-11102-00	11.0592MHz, CL=15pF
CAPACITORS		
C722	05-47912-00	4.7p/100V ±0.5p
C721	05-22012-00	22p/100V ±10%
C724, C725, C726	05-51112-00	510p/100V ±10%
C701, C702, C710, C711, C712, C713, C714, C715, C716	24-10312-00	10n/100V±20%

ELECTRIAL PARTS LIST

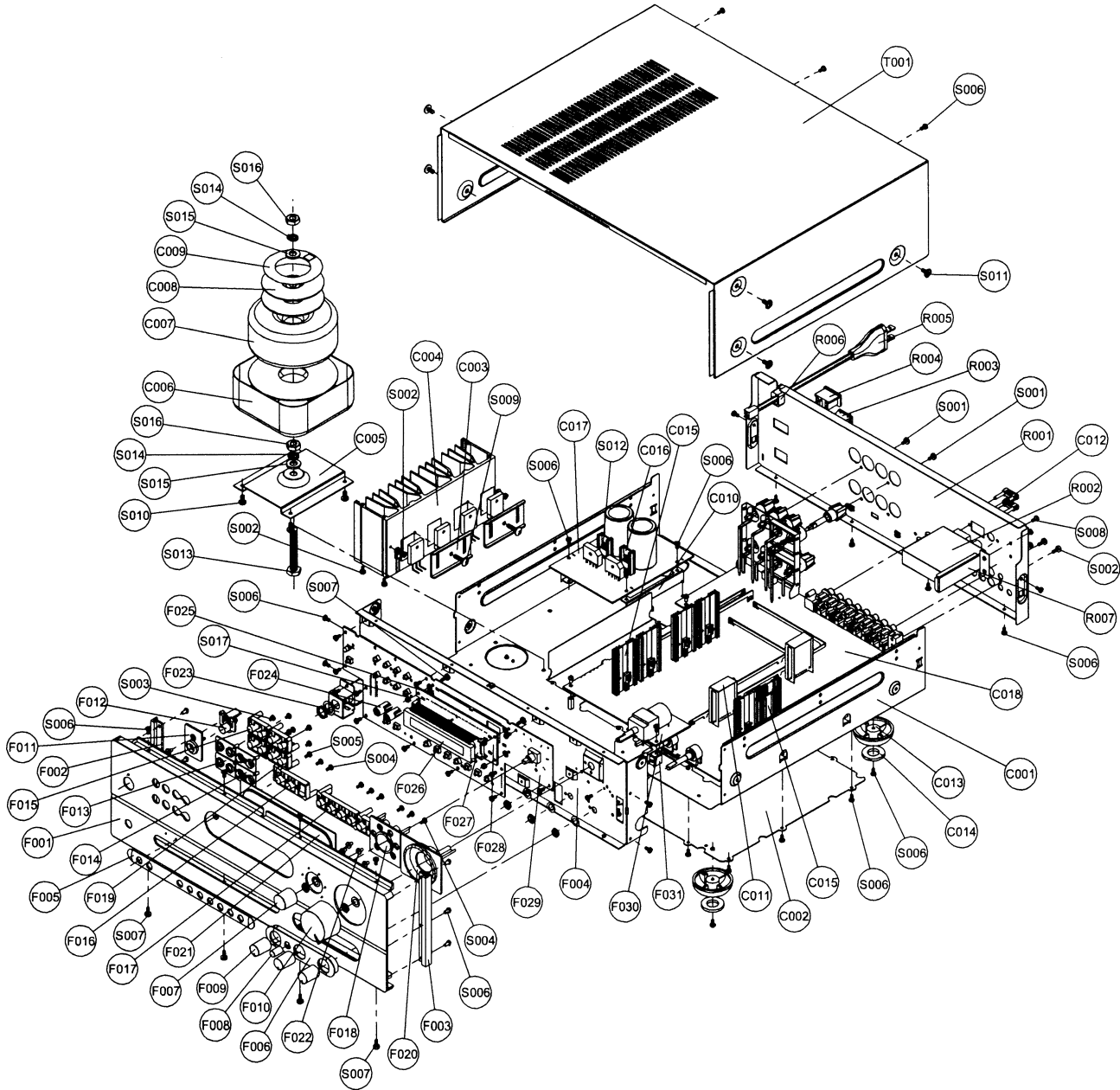
CIRCUIT NO.	PART NO.	DESCRIPTION
C704, C705, C706, C707, C708, C718, C719, C723	24-10461-00	0.1u/63V± 20%
C720	06-10051-00	10u/50V 20%
C717	06-10111-00	100u/16V 20%
RESISTORS		
R718	07-10301-10	300 Ω ±5% 1/4w
R717	07-10331-10	330 Ω ±5% 1/4w
R742	07-10471-10	470 Ω ±5% 1/4w
R710, R713	07-10821-10	820 Ω ±5% 1/4w
R750, R751	07-10202-10	2K Ω ±5% 1/4w
R719, R720, R721, R722	07-10222-10	2.2K Ω ±5% 1/4w
R723, R724, R725, R726, R727, R728, R729, R730, R731, R732, R733, R734, R735, R736, R737, R738	07-10472-10	4.7K Ω ±5% 1/4w
R705, R706, R707, R708, R709, R711, R712, R714, R715, R716, R740, R743, R749	07-10103-10	10K Ω ±5% 1/4w
R739	07-10153-10	15K Ω ±5% 1/4w
R748	07-01002-09	10K, 2%, 9PIN
SWITCHES		
S701, S702, S703, S704, S705, S706, S707, S708, S709, S710, S711, S712, S713, S714, S715, S716, S717, S718, S719	11-04101-00	Selector
CONNECTERS		
CZ702	13-21219-00	19PIN
CZ701	13-22508-00	XHB 2.5A-8A
LINKS		
J701, J735, J740, J742, J755	21-06500-00	L=5mm
J702, J703, J704, J705, J712, J727, J728, J730, J731, J733, J734, J738, J754	21-06750-00	L=7.5mm
J713, J722, J732, J736, J737, J739, J750	21-06101-00	L=10mm
J706, J707, J708, J753	21-06121-00	L=12mm
J741, J743, J744, J745, J751	21-06151-00	L=15mm
J709, J710, J711, J714, J715, J716, J717, J718, J719, J721, J746, J749	21-06201-00	L=20mm
J720, J723, J724, J725, J726, J729, J747, J748, J752	21-06251-00	L=25mm
PCB-4: VFD BOARD		
CIRCUIT NO.	PART NO	DESCRIPTION
ICS		
IC703	03-16311-01(or)	Upd16311GC-AB6
IC701	36-01012-00	HNA-10SM12
CAPACITORS		
C703	26-10451-01	100nZ, 50V, Y5V 0805
RESISTORS		
R701, R702, R703, R704, R744, R745, R746, R747	07-90103-01	10K Ω ±5% 1/8w
R741	07-90473-01	47K Ω ±5% 1/8w
CONNECTERS		
CZ703	13-12518-00	2.5mm; 2×9PIN ; 13.7mm
PCB-5: POT BOARD		

ELECTRIAL PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
POT		
RT33	09-01203-05	20KB
CONNECTER		
CB31	13-22509-00	9PIN; 2.5mm
PCB-9: HEADPHONE BOARD		
CIRCUIT NO.	PART NO.	DESCRIPTION
RESISTORS		
R458, R459	07-30101-04	100 Ω 2W ±5%
CONNECTER		
JK41	17-02001-00	PH-2ASW
CZ45—CB45	14-72003-10	SCN 2.5A-3D; XHB 2.5A-3Y; 26AWG UL2468# ; WHITE; 400mm
LINKS		
J401	21-06750-00	L=7.5mm
PCB-6: AC OUT BOARD		
CIRCUIT NO.	PART NO.	DESCRIPTION
CONNECTER		
CB59	13-23903-01	VH 3.96A-3A(去掉中间针)
OTHERS		
CIRCUIT NO.	PART NO.	DESCRIPTION
TRANSFORMER	18-72151-20	TD-230-0150C (C VERSION)
TRANSFORMER	18-72151-10	TD-120-0150L (AH VERSION)
CONNECTERS		
CB58—AC OUTPUT	△ 14-72002-00	VH 3.96A-3Y; KST FDFD2-187(8); 18AWG; UL1672# ; RED; 100mm
CB58—CB59	△ 14-72002-01	VH 3.96A-3Y; 18AWG UL1672# ; RED; 100mm
CB56—POWER SWITCH	△ 14-72002-02	VH 3.96A-3Y; KST FDFD2-187(8); 18AWG UL1672# ; RED; 130mm
CB49—CB54	△ 14-72004-00	VH 3.96A-4Y; 22AWG UL1672# ; 150mm
CZ37—CZ701	14-72008-10	XHB 2.5A-8Y; 26AWG UL2468# ; WHITE; 500mm
CZ36—TUNER	14-72017-10	FPC; 17PIN; 180mm
CZ35—CZ702	14-72019-00	FPC; 19PIN; 710mm
AC CORD (C)	△ 15-02251-20	WB01HS-001
AC CORD (AH)	△ 15-10121-10	WB05HS-001
AC Outlet	△ 17-07002-20	A302-D006-0P
AC Outlet	△ 17-07002-10	JY0647A
Rock Switch	△ 11-01101-03	RF-1003-BB2
Ferrit Ring	19-26030-00	F5B RH 26*30*16
TUNER		
TUNER MODULE	37-01140-23	KST-MB114MA0-23
TUNER MODULE	37-01141-23	KST-MB114MA1-23
TUNER ANTENNA (AM)	30-37300-10	LSO146BL-X000101-0
TUNER ANTENNA (FM)	30-37300-00	HAN-001
TV Matcher	30-87200-00	IF-11/ZB-6

NOTES:	AH	C
TRANSFORMER	TD-120-0150L	TD-230-0150C
AC CORE	WB05HS-001	WB01HS-001
TUNER MODULE	KST-MB114MA0-23	KST-MB114MA1-23

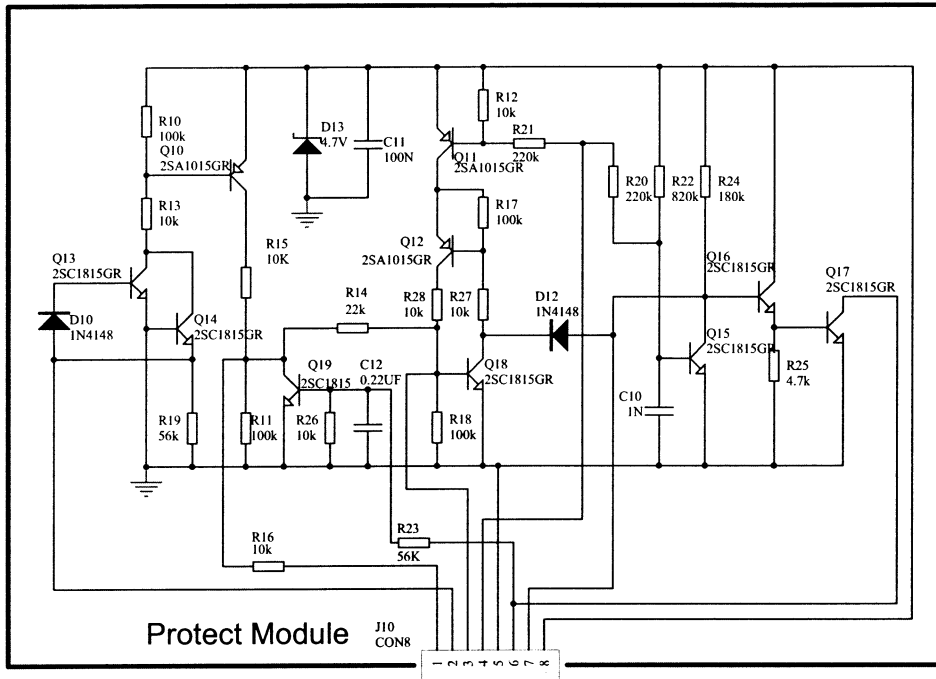
EXPLODED VIEW



EXPLODED VIEW PARTS LIST

REF.NO	PART NO.	DESCRIPTION	Qty.	REF.NO	PART NO.	DESCRIPTION	Qty.
C001	66-047001-1	Chassis	1	F024	75-005001-0	Sleeve	2
C002	66-047003-0	Service Cover	1	F025	66-011006-0	IR Bracket	1
C003	66-001009-0	Clamper	2	F026	36-01012-00	VFD	1
C004	70-047001-1	Main Heat Sink	1	F027	75-047004-0	VFD Bracket	1
C005	66-001010-0	Transformer Bracket	1	F028	01-72003-01	VFD MODULE	1
C006	67-001011-0	Shielding Box	1	F029	01-72003-00	KEY BOARD	1
C007	△ 18-72151-20	C Version Transformer	1	F030	01-72005-00	POTS BOARD	1
	△ 18-72151-10	AH Version Transformer	1	F031	66-011011-0	Connectible Bracket	1
C008	66-001008-0	Metal Disc	1				
C009	94-001004-2	Label	1	R001	67-047002-1	Rear Panel (AH)	1
C010	66-001007-0	PCB Support	1		67-047003-1	Rear Panel (C)	1
C011	66-001011-0	Module Support	1	R002	37-01140-23	Tuner(AH)	1
C012	30-63200-00	Shorting Plug	1		37-01141-23	Tuner(C)	1
C013	75-010004-1	Foot	4	R003	△ 11-01101-03	Rock Switch	1
C014	78-001002-0	Foot Pad	4	R004	△ 17-07002-20	AC Outlet (C)	1
C015	70-014002-2	Heatsink1	7		△ 17-07002-10	AC Outlet (AH)	1
C016	70-001002-0	Heatsink2	2	R005	△ 15-02251-20	AC CORD (C)	1
C017	01-72002-00	Power Board	1		△ 15-10121-10	AC CORD (AH)	1
C018	01-72001-20	Main Board(C Version)		R006	84-001002-0	Relief Bushing	1
	01-72001-10	Main Board(AH Version)	1	R007	66-047004-0	Tuner Bracket	1
F001	67-047004-1	Fascia	1				
F002	67-047005-0	End Cap L	1	T001	67-047001-0	Top cover	1
F003	67-047006-0	End Cap R	1				
F004	66-047002-1	Subfascia	1	S001	61-023206-0	Self Taping Screws BTB3X6	4
F005	75-047003-0	Input Button Lozenge	1	S002	61-023208-0	Self Taping Screws BTB3X8	12
F006	77-001001-1	Tone Control Lozenge	1				C:14
F007	75-047001-1	Selector Knob	1	S003	61-022205-0	Self Taping Screws BTB2X5	8
F008	74-001001-1	Tone Defeat Button	1	S004	61-022206-6	Self Taping Screws BTB2.6X6	7
F009	73-014001-1	Tone Knob	3	S005	61-022205-6	Self Taping Screws BTB2.6X5	2
F010	73-014002-1	Volume Knob	1	S006	61-023106-0	Self Taping Screws STB3X6	58
F011	77-026001-0	Power Button Bezel	1	S007	61-023108-0	Self Taping Screws STB3X8	8
F012	77-026001-0	Power Button	1	S008	61-023506-0	Machine Screws MB3X6	4
F013	77-011004-1	Duo Bezel	2	S009	61-044514-0	Machine Screws MT4X14	2
F014	75-047005-0	Linked Goggle Bezel	2	S010	61-024108-0	Self Taping Screws STB4X8	4
F015	74-011001-1	Duo Buttons	4	S011	61-084108-0	Self Taping Screws STP4X8	6
F016	74-047001-0	Trio Buttons	2	S012	61-023204-0	Self Taping Screws BTB3X4	2
F017	74-001008-0	Quad Buttons	1	S013	64-108055-0	Bolt GB5781 M8X55	1
F018	75-047002-0	Selector Knob Bezel	1	S014	63-020820-1	Spring Washer GB93(8)	2
F019	75-003003-0	Bracket	2	S015	63-010816-0	Washer GB97(8)	2
F020	77-025001-1	Volume Knob Bezel	1	S016	62-010802-0	Nut GB6170(M8)	2
F021	76-011001-1	T172 Windows Lens	1	S017	62-010302-1	Nylon Nut (M3)	4
F022	76-003001-0	LED Lens	1				
F023	66-018003-1	Phone Bracket	1				

PROTECT IC CHANGE



This Protect Module replaces Protection IC 44

Remove the part below:

R442 Remove 56K Ohm resistor.

Replace and change orientation for the part below:

C421 From 4.7uF/50V to 0.47uF/50V. Reverse mount the new C421

Change orientation for the part below:

D513 Reverse mount the 1N4004