

C 320BEE

**STEREO
AMPLIFIER**

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SERVICE MANUAL



PRODUCT SAFETY SERVICING GUIDELINES

CAUTION : DO NOT ATTEMPT TO MODIFY THIS PRODUCT IN ANY WAY. NEVER PERFORM CUSTOMIZED INSTALLATIONS WITHOUT MANUFACTURER'S APPROVAL. UNAUTHORIZED MODIFICATIONS WILL NOT ONLY VOID THE WARRANTY, BUT MAY LEAD TO YOUR BEING LIABLE FOR ANY RESULTING PROPERTY DAMAGE OR USER INJURY.

SERVICE WORK SHOULD BE PERFORMED ONLY AFTER YOU ARE THOROUGHLY FAMILIAR WITH ALL OF THE FOLLOWING SAFETY CHECKS AND SERVICING GUIDELINES. TO DO OTHERWISE, INCREASES THE RISK OF POTENTIAL HAZARDS AND INJURY TO THE USER.

WHILE SERVICING, USE AN ISOLATION TRANSFORMER FOR PROTECTION FROM AC LINE SHOCK.

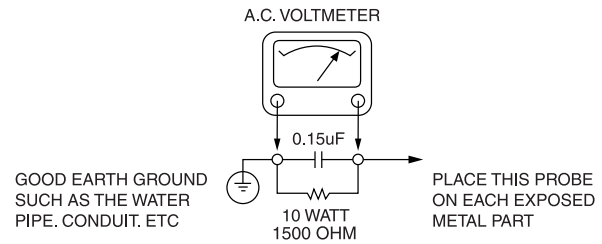
SAFETY CHECKS

AFTER THE ORIGINAL SERVICE PROBLEM HAS BEEN CORRECTED. A CHECK SHOULD BE MADE OF THE FOLLOWING.

SUBJECT : FIRE & SHOCK HAZARD

1. BE SURE THAT ALL COMPONENTS ARE POSITIONED IN SUCH A WAY AS TO AVOID POSSIBILITY OF ADJACENT COMPONENT SHORTS. THIS IS ESPECIALLY IMPORTANT ON THOSE MODULES WHICH ARE TRANSPORTED TO AND FROM THE REPAIR SHOP.
2. NEVER RELEASE A REPAIR UNLESS ALL PROTECTIVE DEVICES SUCH AS INSULATORS, BARRIERS, COVERS, SHIELDS, STRAIN RELIEFS, POWER SUPPLY CORDS, AND OTHER HARDWARE HAVE BEEN REINSTALLED PER ORIGINAL DESIGN. BE SURE THAT THE SAFETY PURPOSE OF THE POLARIZED LINE PLUG HAS NOT BEEN DEFEATED.
3. SOLDERING MUST BE INSPECTED TO DISCOVER POSSIBLE COLD SOLDER JOINTS, SOLDER SPLASHES OR SHARP SOLDER POINTS. BE CERTAIN TO REMOVE ALL LOOSE FOREIGN PARTICLES.
4. CHECK FOR PHYSICAL EVIDENCE OF DAMAGE OR DETERIORATION TO PARTS AND COMPONENTS. FOR FRAYED LEADS, DAMAGED INSULATION (INCLUDING AC CORD). AND REPLACE IF NECESSARY FOLLOW ORIGINAL LAYOUT, LEAD LENGTH AND DRESS.
5. NO LEAD OR COMPONENT SHOULD TOUCH A RECEIVING TUBE OR A RESISTOR RATED AT 1 WATT OR MORE. LEAD TENSION AROUND PROTRUDING METAL SURFACES MUST BE AVOIDED.
6. ALL CRITICAL COMPONENTS SUCH AS FUSES, FLAMEPROOF RESISTORS, CAPACITORS, ETC. MUST BE REPLACED WITH EXACT FACTORY TYPES, DO NOT USE REPLACEMENT COMPONENTS OTHER THAN THOSE SPECIFIED OR MAKE UNRECOMMENDED CIRCUIT MODIFICATIONS.
7. AFTER RE-ASSEMBLY OF THE SET ALWAYS PERFORM AN AC LEAKAGE TEST ON ALL EXPOSED METALLIC PARTS OF THE CABINET, (THE CHANNEL SELECTOR KNOB, ANTENNA TERMINALS. HANDLE AND SCREWS) TO BE SURE THE SET IS SAFET TO OPERATE WITHOUT DANGER OF ELECTRICAL SHOCK. DO NOT USE A LINE ISOLATION TRANSFORMER DURING THIS TEST USE AN AC VOLTMETER, HAVING 5000 OHMS PER VOLT OR MORE SENSITIVITY, IN THE FOLLOWING MANNER; CONNECT A 1500 OHM 10 WATT RESISTOR, PARALLELED BY A .15 MFD, 150V AC TYPE CAPACITOR BETWEEN A KNOWN GOOD EARTH GROUND (WATER PIPE, CONDUIT, ETC.) AND THE EXPOSED METALLIC PARTS, ONE AT A TIME.
MEASURE THE AC VOLTAGE ACROSS THE COMBINATION OF 1500 OHM RESISTOR AND .15 MFD CAPACITOR.
REVERSE THE AC PLUG AND REPEAT AC VOLTAGE MEASUREMENTS FOR EACH EXPOSED METALLIC PART.

VOLTAGE MEASURE MUST NOT EXCEED 75 VOLTS R.M.S. THIS CORRESPONDS TO 0.5 MILLIAMPS AC ANY VALUE EXCEEDING THIS LIMIT CONSTITUTES A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED IMMEDIATELY.



SUBJECT : GRAPHIC SYMBOLS



THE LIGHTNING FLASH WITH ARROWHEAD SYMBOL, WITHIN AN EQUILATERAL TRIANGLE, IS INTENDED TO ALERT THE USER TO THE PRESENCE OF UNINSULATED "DANGEROUS VOLTAGE" WITHIN THE PRODUCT'S ENCLOSURE THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK.



THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE USER TO THE PRESENCE OF IMPORTANT OPERATING AND MAINTENANCE (SERVICING) INSTRUCTIONS IN THE LITERATURE ACCOMPANYING THE APPLIANCE.

SUBJECT : TIPS ON PROPER INSTALLATION

1. NEVER INSTALL ANY PRODUCT IN A CLOSED-IN RECESS, CUBBYHOLE OR CLOSELY FITTING SHELF SPACE. OVER OR CLOSE TO HEAT DUCT, OR IN THE PATH OF HEATED AIR FLOW.
2. AVOID CONDITIONS OF HIGH HUMIDITY SUCH AS: OUTDOOR PATIO INSTALLATIONS WHERE DEW IS A FACTOR, NEAR STEAM RADIATORS WHERE STEAM LEAKAGE IS A FACTOR, ETC.
3. AVOID PLACEMENT WHERE DRAPERIES MAY OBSTRUCT REAR VENTING. THE CUSTOMER SHOULD ALSO AVOID THE USE OF DECORATIVE SCARVES OR OTHER COVERINGS WHICH MIGHT OBSTRUCT VENTILATION.
4. WALL AND SHELF MOUNTED INSTALLATIONS USING A COMMERCIAL MOUNTING KIT MUST FOLLOW THE FACTORY APPROVED MOUNTING INSTRUCTIONS A PRODUCT MOUNTED TO A SHELF OR PLATFORM MUST RETAIN ITS ORIGINAL FEET (OR THE EQUIVALENT THICKNESS IN SPACERS) TO PROVIDE ADEQUATE AIR FLOW ACROSS THE BOTTOM, BOLTS OR SCREWS USED FOR FASTENERS MUST NOT TOUCH ANY PARTS OR WIRING. PERFORM LEAKAGE TEST ON CUSTOMIZED INSTALLATIONS.
5. CAUTION CUSTOMERS AGAINST THE MOUNTING OF A PRODUCT ON SLOPING SHELF OR A TILTED POSITION, UNLESS THE PRODUCT IS PROPERLY SECURED.
6. A PRODUCT ON A ROLL-ABOUT CART SHOULD BE STABLE ON ITS MOUNTING TO THE CART. CAUTION THE CUSTOMER ON THE HAZARDS OF TRYING TO ROLL A CART WITH SMALL CASTERS ACROSS THRESHOLDS OR DEEP PILE CARPETS.
7. CAUTION CUSTOMERS AGAINST THE USE OF A CART OR STAND WHICH HAS NOT BEEN LISTED BY UNDERWRITERS LABORATORIES, INC. FOR USE WITH THEIR SPECIFIC MODEL OF TELEVISION RECEIVER OR GENERICALLY APPROVED FOR USE WITH T.V.'S OF THE SAME OR LARGER SCREEN SIZE.
8. CAUTION CUSTOMERS AGAINST THE USE OF EXTENSION CORDS, EXPLAIN THAT A FOREST OF EXTENSIONS SPROUTING FROM A SINGLE OUTLET CAN LEAD TO DISASTROUS CONSEQUENCES TO HOME AND FAMILY.

SERVICING PRECAUTIONS

CAUTION : Before servicing the A/V 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 A/V 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 substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.
2. Do not spray chemicals on or near this A/V 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 A/V 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 1M-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 reasons 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 handing 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.)

PREAMPLIFIER SECTION

LINE LEVEL INPUTS

(Disk, CD, Video, Auxiliary, Tuner, Tape 1, Tape 2)

| | |
|---|---|
| Input impedance (R and C) | 200 kohms + 320 pF |
| Input sensitivity (ref. rated power) | 220 mV |
| Maximum input signal | 6 V |
| Signal / Noise ratio, A-weighted (from CD Input to Speakers Output, Volume Setting for 500mV in , 8ohms 1W out) | 93.0 dB ref. 1W |
| Signal to noise ratio preamp out, IHF "A" weighted | 106 dB re 500mV |
| Frequency response, 20 Hz – 20 kHz | < +/-0.1 dB (tone defeat on) < +/-0.5 dB (tone defeat off) |
| THD + Noise, SMPTE IM | < 0.01% at 5 V out |

LINE LEVEL OUTPUTS

| | |
|--------------------------|---|
| Pre-amp output impedance | 80 ohms |
| Tape output impedance | Source Z + 1kohms |
| Maximum output level | pre-amp out : > 12 V Tape-out : > 10 V |

CONTROLS

| | |
|--------|--------------------|
| Treble | +/- 5 dB at 10 kHz |
| Bass | +/- 8 dB at 100 Hz |

IR IN and OUT

| | |
|-------------------|------------|
| Input Resistance | > 10 kohms |
| Input Voltage | Min 5 V |
| Output Resistance | < 30 ohms |

TRIGGER Out

| | |
|----------------|-------|
| Output Current | 50 mA |
| Output Voltage | 12 V |

DIMENSIONS AND WEIGHTS

| | |
|-------------------|-------------------|
| Net Weight | 6.5 kg (14.3 lb) |
| Shipping Weight | 8 kg (17.6 lb) |
| DIMENSION (W×H×D) | 435 ´ 100 ´ 290MM |

ALIGNMENT PROCEDURES

I. INITIAL ADJUSTMENT (No load connected)

A. OUTPUT OFFSET VOLTAGE

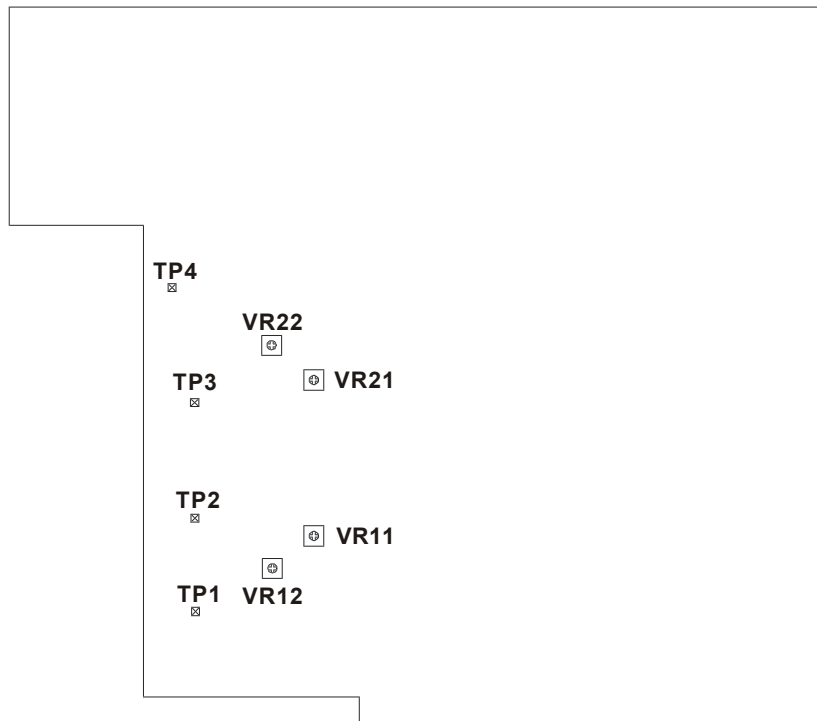
1. Connect a DC Millivoltmeter to L Channel speaker output terminals.
2. Turn unit ON and adjust VR21 (100 ohms) to get the reading of 0V+/-30mV.
3. Connect the DC Millivoltmeter to R Channel speaker output terminals and adjust VR11 (100ohms) to get a reading of 0V+/-30mV.

B. IDLING CURRENT

1. Connect a DC Millivoltmeter to TP1 and TP2 and adjust VR12 (300 ohms) for 3-5mV reading on meter.
2. Connect the DC Millivoltmeter to TP3 and TP4 and adjust VR22 (300 ohms) for 3-5mV reading on meter.
3. Leave power on for a minimum of 5 minutes.

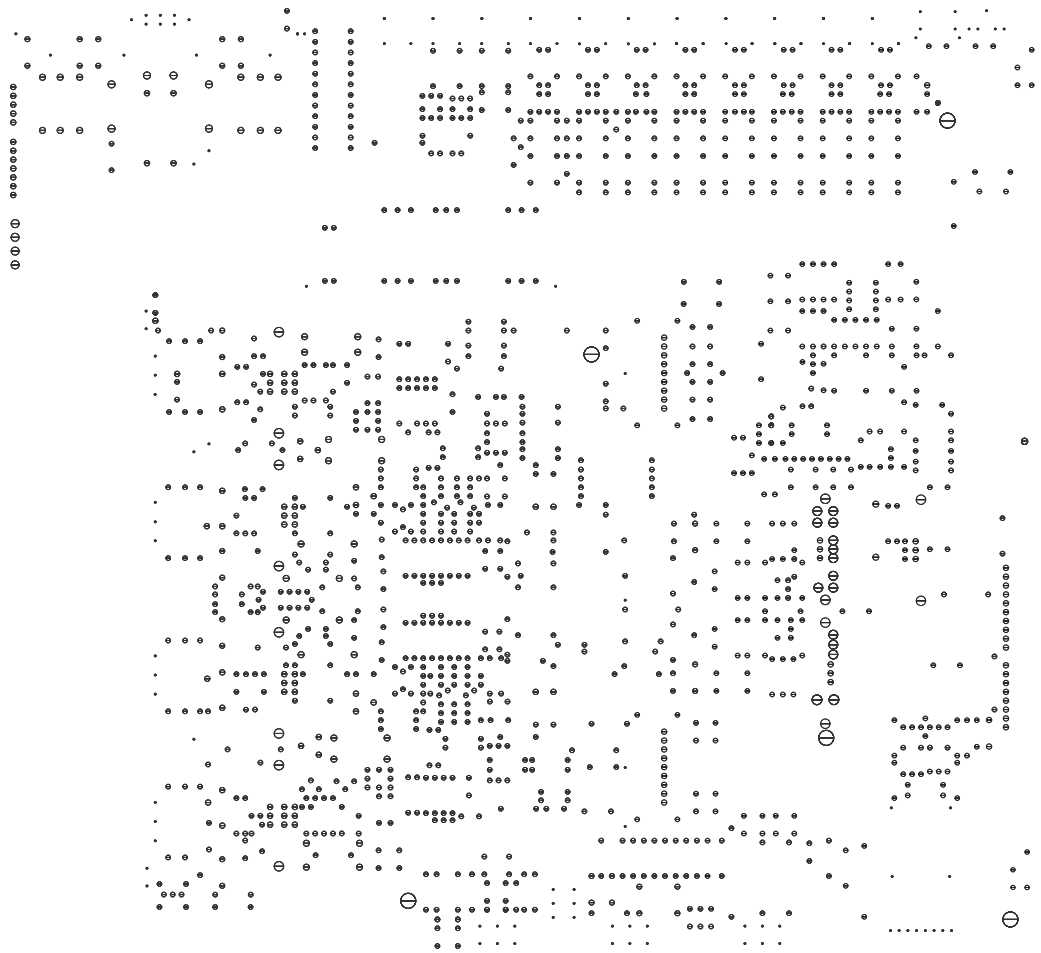
II. FINAL ADJUSTMENT

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

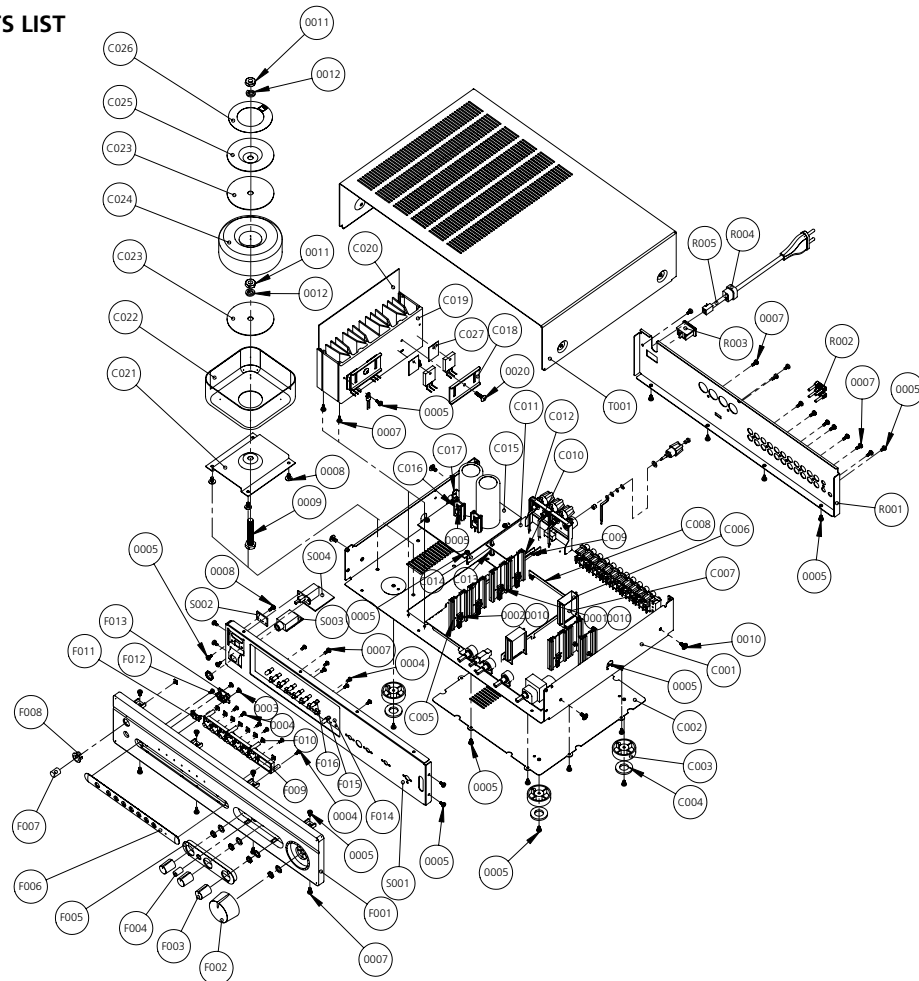








EXPLODED VIEW PARTS LIST



EXPLODED VIEW PARTS LIST

| Ref. No. | Part No. | Description | Qt'y | Ref. No. | Part No. | Description | Qt'y |
|------------|-------------|--------------------------|------|------------|-------------|----------------------------|------|
| C001 | 66-014001-0 | Chassis | 1 | F009 | 74-001002-0 | Input Button | 1 |
| C002 | 66-001004-0 | Base Cover | 1 | F010 | 76-001001-0 | LED Lens | 9 |
| C003 | 75-001008-0 | Foot | 4 | F011 | 76-001002-0 | IR Lens | 1 |
| C004 | 78-001002-0 | Rubber Pad | 4 | F012 | 66-001005-1 | IR Bracket | 1 |
| C005 | 70-014002-1 | Heatsink 1 | 7 | F013 | 16-32190-00 | IR Board | 1 |
| C006 | 66-001011-0 | Module Box | 2 | F014 | 16-32130-00 | Key Board | 1 |
| C007 | 16-32140-00 | Module PCB | 2 | F015 | 85-014001-0 | LED Spacer Support | 1 |
| C008 | 69-001011-0 | Bus Bar A | 1 | F016 | 85-001002-0 | LED Spacer Support | 7 |
| C009 | 69-001013-0 | Busbar C | 1 | S001 | 66-014003-0 | Subfascia | 1 |
| C010 | 69-001012-0 | Busbar B | 1 | S002 | 16-32170-00 | LED Board | 1 |
| C011 | 16-32110-00 | Main PCB | 1 | S003 | 17-02001-00 | Headphone Jack | 1 |
| C012 | 66-001006-0 | BDP Supporter | 1 | S004 | 16-32150-00 | SW Board | 1 |
| C013 | 85-001001-0 | PCB SPACER | 1 | T001 | 66-014002-0 | Top Cover, Grey | 1 |
| C014 | 66-001007-0 | PSU PCB Supporter | 1 | | 80-020001-0 | Top Cover, Titanium | 1 |
| C015 | 16-32120-00 | Power PCB | 1 | | | | |
| C016 | 70-001002-0 | Heatsink 2 | 2 | R001*B,C | 67-014001-0 | Rear Panel | 1 |
| C017 | 66-001013-0 | Stopper | 1 | R001*AH | 67-014002-0 | Rear Panel | 1 |
| C018 | 66-001009-0 | Clamper | 2 | R002 | 30-63200-00 | Shorting Plug | 1 |
| C019 | 70-014001-0 | Heatsink | 1 | ⚠ R003*AH | 17-07002-10 | AC Outlet | 1 |
| C020 | 70-001012-0 | Heatsink Plate | 1 | ⚠ R004 | 84-001002-0 | Strain Relief Bushing | 1 |
| C021 | 66-001010-0 | Transformer Bracket | 1 | ⚠ R005*B,C | 15-02251-20 | AC Cord | 1 |
| C022 | 67-001011-0 | Transformer Box | 1 | ⚠ R005*AH | 15-10121-10 | AC Cord | 1 |
| ⚠ C023*B,C | 18-33201-20 | Transformer TD-230-0150A | 1 | | | | |
| ⚠ C024*AH | 18-33201-10 | Transformer | 1 | 0001 | 61-022510-5 | Machine Screw MB2.5X10 | 5 |
| C025 | 66-001008-0 | Metal Disc | 1 | 0002 | 61-022514-5 | Machine Screw MB2.5X14 | 2 |
| C026 | 94-001004-0 | Metal Disc Label | 1 | 0003 | 61-022206-6 | Self Taping Screw BTB2.6X4 | 2 |
| C027 | 78-001004-0 | Heat Conductive Pad | 1 | 0004 | 61-022206-6 | Self Taping Screw BTB2.6X6 | 13 |
| F001 | 77-014001-0 | Fascia Grey | 1 | 0005 | 61-023106-0 | Self Taping Screw STB3X6 | 35 |
| | 77-020001-0 | Fascia Titanium | 1 | 0006 | 61-023108-0 | Self Taping Screw STB3X8 | 4 |
| F002 | 73-014001-0 | Volume Knob | 1 | 0007*AH | 61-023208-0 | Self Taping Screw BTB3X8 | 18 |
| F003 | 73-014002-0 | Tone Knob | 3 | 0007*C | 61-023208-0 | Self Taping Screw BTB3X8 | 19 |
| F004 | 74-001001-0 | Tone Button | 1 | 0008 | 61-084108-0 | Self Taping Screw STPW4X8 | 8 |
| F005 | 77-001002-0 | Tone Control Lozenge | 1 | 0009 | 64-108050-0 | Bolt M8x50 | 1 |
| F006 | 77-001001-0 | Input Button Lozenge | 1 | 0010 | 62-010202-5 | Nut M2.5 | 7 |
| F007 | 77-001006-0 | Power Button | 1 | 0011 | 62-010802-0 | Nut M8 | 2 |
| F008 | 77-001007-0 | Power Button Bezel | 1 | 0012 | 63-020820-0 | Spring Washer 8mm | 2 |

Parts marked with the symbol ⚠ are critical with regard to the risk of fire and electric shock. Replace only with parts recommended by the manufacturer.

PARTS LIST

| PART NUMBER | DESCRIPTION | | PARTS LOCATION |
|---------------------|-------------------|--------------------|---|
| DIODES | | | |
| 33-44148-01 | Switch Diode | 1N4148 | D61 D62 D63 D64 |
| 33-44148-02 | Switch Diode | 1N4148 | D12 D13 D14 D15 D16 D17 D22 D23 D24 D25 D26 D27 D37 D38 D39 D310 D311 D312 D313 D403 D412 D417 D418 D423 D428 D429 D510 D511 D512 D513 D515 D42 D43 |
| 33-44148-03 | Switch Diode | 1N4148 | D419 D420 D514 |
| 33-24002-00 | Rectifier Diode | 1N4002 | D413 D424 D425 D426 D427 D430 |
| 33-14709-00 | Zener Diode | 4.7V,0.5W | D11 D12 D21 D22 |
| 33-15609-00 | Zener Diode | 5V6,0.5W | D58 |
| 33-16809-00 | Zener Diode | 6V8,0.5W | D59 |
| 33-12000-00 | Zener Diode | 20V,0.5W | D410 D411 |
| 33-12400-00 | Zener Diode | 18V,0.5W | D49 |
| 33-50350-00 | LED | GREEN LED | D52 D53 D57 LD41 D54 D56 D51 |
| 33-50340-00 | LED | AMBER LED | D55 |
| 33-50525-00 | LED | DUAL COLOUR | |
| 33-30142-00 | Rectifier Bridge | DB104 | D401 |
| 33-30822-00 | Rectifier Bridge | KBU8D | D41 D45 |
| TRANSISTORS | | | |
| 31-00363-00 | J-FET | K363 | Q31 Q32 |
| 31-00369-00 | J-FET | 2SK369 | Q61 Q62 |
| 31-00827-00 | TRANSISTOR | A872 | Q104 Q204 |
| 31-00970-00 | TRANSISTOR | A970 | Q12 Q15 Q22 Q25 Q102 Q202 Q63 Q65 |
| 31-01015-00 | TRANSISTOR | A1015 | Q12/1 Q16 Q26 Q44 Q45 Q47 Q411 Q55 Q57 Q58 Q49 Q410 Q417 Q419 Q56 Q51 Q12 |
| 31-01775-00 | TRANSISTOR | C1775 | Q103 Q203 |
| 31-01815-00 | TRANSISTOR | C1815 | Q11 Q17 Q21 Q27 Q43 Q46 Q48 Q412 Q414 Q418 Q420 Q52 Q53 Q54 Q59 Q510 Q511 Q512 Q513 Q514 Q515 Q516 Q517 Q421 Q112 |
| 31-02240-00 | TRANSISTOR | C2240 | Q13 Q14 Q23 Q24 Q101 Q201 |
| 31-00647-00 | TRANSISTOR | B647 | Q18 Q28 Q64 Q66 |
| 31-00667-00 | TRANSISTOR | D667 | Q19 Q29 Q67 Q68 |
| 31-00649-00 | TRANSISTOR | 2SB649A | Q42 Q110 Q113 Q210 Q213 |
| 31-00669-00 | TRANSISTOR | 2SD669A | Q41 Q111 Q112 Q211 Q212 Q413 |
| 31-02690-00 | TRANSISTOR | KSC2690 | Q116 Q216 |
| 31-00669-00 | TRANSISTOR | 2SD669A | Q116 Q216 |
| 31-01943-00 | TRANSISTOR | 2SA1943 | Q114 Q214 |
| 31-05200-00 | TRANSISTOR | 2SC5200 | Q115 Q215 |
| 33-60116-00 | THYRISTOR | TIC116D/BT151-500R | D431 D432 |
| INTEGRATED CIRCUITS | | | |
| 03-07805-00 | Regulator | LM7805 | IC41 |
| 03-00082-00 | Dual Op-amp | TL082CP/CN/D | IC43 |
| 03-01237-00 | Protect IC | UPC1237HA | IC44 |
| 03-02400-00 | EEPROM | 24C01 | IC51 |
| 03-04094-00 | I/O IC | CD4094 | IC54 IC55 |
| 03-86812-05 | MICOM | Z86C0812PSC | IC53 |
| 03-00038-00 | Remote IC | HS0038B | IC52 |
| CRYSTALS | | | |
| 04-11202-00 | Crystal | 12MHz | Y51 |
| CAPACITORS | | | |
| 05-15012-00 | Ceramic Capacitor | 15p,100V,20% | C63 C64 |
| 05-22051-00 | Ceramic Capacitor | 22p,50V,20% | C18 C19 C28 C29 C45 C46 C59 C510 |

PARTS LIST

| PART NUMBER | DESCRIPTION | | PARTS LOCATION |
|------------------|--------------------------------|-----------------------|---|
| 05-40012-00 | Ceramic Capacitor | 40p,100V,20% | C611 |
| 05-15012-00 | Ceramic Capacitor | 15p,100V,20% | C611 |
| 05-10151-01 | Ceramic Capacitor | 100p,50V,20% | C31 C32 C33 C34 C35 C36 C37 C38 C39 C310 C311 C312 C313 C314 C315 C316 C317 C318 |
| 05-10151-00 | Ceramic Capacitor | 100p,50V,20% | C69 C610 |
| 05-22151-01 | Ceramic Capacitor | 220p,50V,20% | C343 C344 C53 |
| 05-22151-00 | Ceramic Capacitor | 220p,50V,20% | C61 C62 |
| 05-47151-00 | Ceramic Capacitor | 470p,50V,20% | C12 C22 C335 C336 C112 C113 C212 C213 |
| 05-10312-00 | Ceramic Capacitor | 10n,100V,+50%-20% | C1 C6 C57 C514 C515 C516 C517 C518 C519 C520 |
| 05-47242-00 | High-Voltage Ceramic Capacitor | 4n7/400V,20% | C435 |
| 05-22361-02 | Polyester Capacitor | 22n,63V,10%,CL21 | C119 C219 |
| 05-10322-00 | Polyester Capacitor | 10n/250V 10% CL21 | C41 C42 C5 |
| 05-22361-01 | Polyester Capacitor | 22n,63V, 5% CL21 | C327 C328 |
| 05-22361-00 | Polyester Capacitor | 22n,63V,10%,CL11 | C120 C220 C434 |
| 05-10461-00 | Monolithic | 0.1uF/63V 20% | C3 C65 C66 C67 C68 C52 C58 C511 C512 (C550 C551 C552) |
| 05-10461-05 | Polyester Capacitor | 0.1uF 63V 5% CL21 | C329 C330 |
| 05-10461-01 | Polyester Capacitor | 0.1uF 63V 10% CL21 | C4 C114 C115 C118 C214 C215 C218 C411 C412 |
| 05-10461-06 | Polyester Capacitor | 0.1uF 63V 10% CL21X | C17 C27 C322 C321 C345 C346 C337 C338 C117 C217 C319 C320 |
| 05-23461-00 | Polyester Capacitor | 0.23uF 63V 5% CL23B | C331 C332 |
| 05-22461-02 | Polyester Capacitor | 0.22uF 63V 20% | C432 |
| 05-95461-00 | Polyester Capacitor | 0.95uF/63V 5% CL23B | C333 C334 |
| 06-10951-00 | Alum. Electrolytic Capacitor | 1uF/50V 20%,CD110 | C339 C340 |
| 06-47951-00 | Alum. Electrolytic Capacitor | 4.7uF/50V,20%,CD110 | C421 C55 C56 |
| 06-10021-02 | Alum. Electrolytic Capacitor | 10uF/25V,20%,CD110 | C11 C21 C48 C415 C416 C425 C426 C428 C429 C430 C431 C13 C14 C23 C24 |
| 06-10111-00 | Alum. Electrolytic Capacitor | 100uF/16V,20%,CD110 | C420 |
| 06-47021-00 | Alum. Electrolytic Capacitor | 47uF/25V,20%,CD110 | C110 C111 C210 C211 C323 C324 C325 C326 C341 C342 C47 C49 C410 C12/1 |
| 06-10160-00 | Alum. Electrolytic Capacitor | 100uF/6.3V,20%,CD110 | C436 |
| 06-10111-00 | Alum. Electrolytic Capacitor | 100uF/16V,20%,CD110 | C103 C104 C203 C204 C51 |
| 06-22131-00 | Alum. Electrolytic Capacitor | 220uF/35V,20%,CD110 | C413 C414 |
| 06-22151-00 | Alum. Electrolytic Capacitor | 220uF/50V,20%,CD110 | C43 C44 |
| 06-22161-00 | Alum. Electrolytic Capacitor | 220uF/63V,20%,CD110 | C15 C16 C25 C26 |
| 06-33111-01 | Alum. Electrolytic Capacitor | 330uF/16V,20%,CD110 | C422 |
| 06-22260-00 | Alum. Electrolytic Capacitor | 2200uF/6.3V,20%,CD110 | C116 C216 |
| 06-22211-00 | Alum. Electrolytic Capacitor | 2200uF/16V,20%,CD110 | C433 |
| 06-22251-00 | Alum. Electrolytic Capacitor | 2200uF/50V,20%,CD110 | C424 |
| 06-33251-00 | Alum. Electrolytic Capacitor | 3300uF/50V,20%,CD110 | C423 |
| 06-15351-01 | Alum. Electrolytic Capacitor | 15000uF/50V 20%,CD294 | C417 C418 |
| RESISTORS | | | |
| 07-20100-00 | Metal Film Resistor | 10R,1/6W,5% | R617 R618 R619 R620 |
| 07-20330-00 | Metal Film Resistor | 33R,1/6W,5% | R615 R616 |
| 07-20121-01 | Metal Film Resistor | 120R,1/6W,5% | R621 |
| 07-20181-10 | Metal Film Resistor | 180R,1/4W,5% | R327 R328 |
| 07-20221-00 | Metal Film Resistor | 220R,1/6W,5% | R61 R62 |
| 07-25600-00 | Metal Film Resistor | 560R,1/6W, 2% | R65 R66 |
| 07-24300-00 | Metal Film Resistor | 430R,1/6W, 1% | R69 R610 |
| 07-20102-00 | Metal Film Resistor | 1K,1/6W,5% | R67 R68 R611 R612 |
| 07-20103-00 | Metal Film Resistor | 10K,1/6W,5% | R613 R614 |
| 07-20105-00 | Metal Film Resistor | 1M,1/6W,5% | R63 R64 |
| 07-20106-00 | Metal Film Resistor | 10M,1/6W,5% | D31 D32 |
| 07-23900-10 | Metal Film Resistor | 390R,1/4W,1% | R331 R332 R325 R326 |
| 07-27500-10 | Metal Film Resistor | 750R,1/4W,1% | R323 R324 |
| 07-21601-10 | Metal Film Resistor | 1.6K,1/4W,1% | R329 R330 |
| 07-20332-10 | Metal Film Resistor | 3K3,1/4W,5% | R321 R322 |

PARTS LIST

| PART NUMBER | DESCRIPTION | | PARTS LOCATION |
|-------------|----------------------|---------------------|---|
| 07-20512-10 | Metal Film Resistor | 5.1K, 1/4W, 5% | R359 R360 |
| 07-21402-10 | Metal Film Resistor | 14K, 1/4W, 5%(OMIT) | R319 R320 |
| 07-20202-10 | Metal Film Resistor | 2K, 1/4W, 5% | R412 |
| 07-20222-10 | Metal Film Resistor | 2.2K, 1/4W, 5% | R414 |
| 07-24301-00 | Metal Film Resistor | 4.3K, 1/2W, 1% | R146 R246 |
| 07-21500-10 | Metal Film Resistor | 150R, 1/4W, 1% | R149 R249 |
| 07-10330-00 | Carbon Film Resistor | 33R, 1/6W, 5% | R12 |
| 07-10101-00 | Carbon Film Resistor | 100R, 1/6W, 5% | C8 |
| 07-10102-00 | Carbon Film Resistor | 1K, 1/6W, 5% | R11, R13 |
| 07-10100-10 | Carbon Film Resistor | 10R, 1/4W, 5% | R136 R137 R154 R155 R236 R237 R254 R255 R2 R514 R515 R516 |
| 07-10220-10 | Carbon Film Resistor | 22R, 1/4W, 5% | R142 R143 R242 R243 |
| 07-10330-10 | Carbon Film Resistor | 33R, 1/4W, 5% | R115 R116 R215 R216 |
| 07-10390-10 | Carbon Film Resistor | 39R, 1/4W, 5% | R107 R108 R207 R208 |
| 07-10680-10 | Carbon Film Resistor | 68R, 1/4W, 5% | R335 R336 |
| 07-10470-10 | Carbon Film Resistor | 47R, 1/4W, 5% | R119 R219 |
| 07-10820-10 | Carbon Film Resistor | 82R, 1/4W, 5% | R103 R106 R111 R112 R120 R203 R206 R211 R212 R220 |
| 07-10101-10 | Carbon Film Resistor | 100R, 1/4W, 5% | R1 R3 R14 R24 R416 R417 R418 R419 R461 R465 |
| 07-10221-10 | Carbon Film Resistor | 220R, 1/4W, 5% | R432 |
| 07-10331-10 | Carbon Film Resistor | 330R, 1/4W, 5% | R51 |
| 07-10391-10 | Carbon Film Resistor | 390R, 1/4W, 5% | R138 R238 |
| 07-10471-10 | Carbon Film Resistor | 470R, 1/4W, 5% | R11 R21 R31 R32 R33 R34 R35 R36 R37 R38 R39 R139 R239 R310 R311 R312 R313 R314 R315 R316 R317 R318 R52 R503 |
| 07-10681-10 | Carbon Film Resistor | 680R, 1/4W, 5% | R41 R42 R43 R44 R47 R48 R49 R410 R411 R413 |
| 07-10911-10 | Carbon Film Resistor | 910R, 1/4W, 5% | R426 |
| 07-10102-10 | Carbon Film Resistor | 1K, 1/4W, 5% | R147 R247 R474 R476 R458 R459 R460 R462 |
| 07-10132-10 | Carbon Film Resistor | 1.3K, 1/4W, 5% | R422 R423 R424 R425 |
| 07-10222-10 | Carbon Film Resistor | 2K2, 1/4W, 5% | R58 R59 R428 R511 R512 R434 R526 R527 R440 R501 |
| 07-10472-10 | Carbon Film Resistor | 4K7, 1/4W, 5% | R401 R482 R466 R528 R541 R542 R543 R544 R545 R546 R547 R548 R549 R550 R551 R552 R553 R554 R333 R334 |
| 07-10512-10 | Carbon Film Resistor | 5K1, 1/4W, 5% | R429 R533 |
| 07-10622-10 | Carbon Film Resistor | 6K2, 1/4W, 5% | R480 |
| 07-10682-10 | Carbon Film Resistor | 6K8, 1/4W, 5% | R12/1 |
| 07-10103-10 | Carbon Film Resistor | 10K, 1/4W, 5% | R470 R471 R502 R529 R556 R557 R558 R53 R54 R469 R508 |
| 07-10153-10 | Carbon Film Resistor | 15K, 1/4W, 5% | R148 R248 R441 R530 |
| 07-10363-10 | Carbon Film Resistor | 36K, 1/4W, 5% | R420 R421 |
| 07-10223-10 | Carbon Film Resistor | 22K, 1/4W, 5% | R12/2 R15 R25 R152 R252 R468 R444 R463 R464 |
| 07-10393-10 | Carbon Film Resistor | 39K, 1/4W, 5% | R19 R101 R105 R110 R29 R205 R210 R487 R488 R201 |
| 07-10473-10 | Carbon Film Resistor | 47K, 1/4W, 5% | R123 R223 R473 R477 R437 |
| 07-10563-10 | Carbon Film Resistor | 56K, 1/4W, 5% | R436 R442 R445 R446 |
| 07-10104-10 | Carbon Film Resistor | 100K, 1/4W, 5% | R121 R122 R221 R222 R347 R348 R435 R448 R478 R479 R489 R490 R491 |

PARTS LIST

| PART NUMBER | DESCRIPTION | | PARTS LOCATION |
|--------------------------------------|----------------------|----------------------|--|
| 07-10184-10 | Carbon Film Resistor | 180K, 1/4W, 5% | R438 |
| 07-10224-10 | Carbon Film Resistor | 220K, 1/4W, 5% | R12 R22 R102 R104 R202 R204 R457 R345 R346 |
| 07-10334-10 | Carbon Film Resistor | 330K, 1/4W, 5% | R451 R483 |
| 07-10474-10 | Carbon Film Resistor | 470K, 1/4W, 5% | R472 |
| 07-10564-10 | Carbon Film Resistor | 560K, 1/4W, 5% | R486 |
| 07-10105-10 | Carbon Film Resistor | 1M, 1/4W, 5% | R337 R338 R339 R341 R342 R343 R349 R350 R351 R352 R353 R354 R355 R356 R357 R358 |
| 07-10225-10 | Carbon Film Resistor | 2M2, 1/4W, 5% | R433 |
| 07-30339-00 | Flame Proof | 3.3R/0.5W 5% | R124 R125 R224 R225 |
| 07-30331-00 | Flame Proof | 330R/0.5W 5% | R128 R129 R228 R229 |
| 07-30109-01 | Flame Proof | 1R/1W 5% | R150 R250 |
| 07-30221-00 | Flame Proof | 220R/1W FP 5% | J206 |
| 07-30221-03 | Flame Proof | 220R/2W FP 5% | R452 R453 |
| 07-50271-02 | Fusible Resistor | 270R/2W 5% FS | R427 |
| 07-30122-02 | Flame Proof | 1K2/2W FP 5% | R153 R253 |
| 07-30272-02 | Flame Proof | 2K7/2W FP 5% | R126 R127 R226 R227 |
| 07-40507-03 | Ceramic Case | 0.05R/3W CE 5% | R431 |
| 07-40687-03 | Ceramic Case | 0.068R/3W CE 5% | R144 R145 R244 R245 |
| 07-50330-00 | Fusible Resistor | 33R/0.5W 5% FS | R45 R46 |
| 07-50151-00 | Fusible Resistor | 150R, 1/2W, 5% | R443 |
| 07-50100-01 | Fusible Resistor | 10R/1W FS 5% | R151 R251 |
| 07-50820-02 | Fusible Resistor | 82R/1W FS 5% | R130 R131 R230 R231 |
| 09-02101-00 | Variable Resistor | 100R | VR11 VR21 |
| 09-02301-00 | Variable Resistor | 300R | VR12 VR22 |
| 07-70471-08 | Posistor | PTH9M04BF471TS2F333 | R467 |
| 07-70471-09 | Posistor | PTH9M04BE471TS2F333 | R439 |
| 09-01103-01 | Potentiometer | RK163121A2CA 10Kx2 | RT31 RT32 |
| 09-01203-05 | Potentiometer | RK16812MG 20KBx2 | RT33 |
| 09-01203-03 | Potentiometer | RK163121A10D 20KMNx2 | RT34 |
| INDUCTORS | | | |
| 08-01010-00 | Inductor | 1uH | L11 L21 |
| 19-05005-00 | Ferrite | 5x3x5 | |
| CONNECTORS / SOCKETS / CABLES | | | |
| 13-10001-00 | Socket | | TP4 x4 |
| 13-10001-03 | Socket | 20mm | P11 P12 P13 P14 P15 |
| 13-12509-01 | Socket | S006 | J61 |
| 13-23903-00 | Socket | 3.96A-3Y1 | CB410 CB42 CB411 CZ411 |
| 13-23904-00 | Socket | 3.96A-4Y1 | CB49 CZ48 |
| 13-22505-00 | Socket | XHB2.5A-5A | CB45 |
| 13-22507-00 | Socket | XHB2.5A-7A | CB47 |
| 13-22508-00 | Socket | XHB2.5A-8A | CB34 |
| 13-22510-00 | Socket | XHB2.5A-10A | CB31 |
| 13-23907-00 | Socket | 3.96A-7Y1 | CB41 |
| 14-32104-00 | Wire | 4P3.96-A80A | |
| 14-32005-00 | Wire | 5P2.54-A350B | CZ44 |
| 14-32107-00 | Wire | 7P2.54-A80B | CZ46 |
| 14-32108-00 | Wire | 8P2.54-A350B | CZ51 |
| 14-32010-00 | Wire | 10P2.54-A350B | CZ52 |
| 14-32003-00 | Wire | 3P2.54-80 | |
| 14-32102-00 | Wire | 2P7.92-A280A | |
| 14-32001-01 | Wire | 1007#26 100 | |
| 15-02251-20 | AC CORD (C | WB01HS-001 | |
| 15-10121-10 | AC CORD (AH | WB05HS-001 | |
| 17-01004-00 | 4RCA | 4RCA | AV-8.4-13 |
| 17-01006-00 | 6RCA | 6RCA | AV-8.6-13 |
| 17-02001-03 | 3.5 PHONE JACK | PHONEJACK1 | J12 |
| 17-02002-00 | 3.5 PHONE JACK | PHONEJACK2 | J-IN J-OUT |
| 17-02001-00 | 6.35 PHONE JACK | | JK41 |
| 32-28042-00 | Eyelet | GND-8 | |
| RELAYS | | | |
| 12-02101-00 | Relay | HRS2H-S-DC12V | RL31 RL32 RL33 RL34 RL35 RL36 RL37 RL38 |
| 12-01101-03 | Relay | F1AA012V | RL12/1 |
| 11-05202-02 | Slide Switch | SK-22F03G7 | S41 |
| 11-01101-20 | Power Switch | SDDL1027u-RN | SW42 |

PARTS LIST

| PART NUMBER | DESCRIPTION | | PARTS LOCATION |
|------------------------------|-------------------------|--------------|-----------------------------|
| 11-04101-00 | Tact Switch | IT-1102D-116 | S52 S53 S57 S55 S54 S56 S51 |
| 11-02202-00 | Tone Switch | SPUN19K605 | SW31 |
| FUSES | | | |
| 20-12501-00 | Fuse | T0.5AL/250V | F45 |
| 20-12632-00 | Fuse | T6.3AL/250V | F41 F42 F43 F44 |
| 20-20000-00 | Fuse Holder | HF-004 | |
| TRANSFORMERS | | | |
| 18-33201-20 | Transformer | TD-230-0150A | T401 |
| 18-33201-10 | Transformer | TD-120-0150D | T401 |
| PCB | | | |
| 16-32130-00 | KEY PCB | | |
| 16-32160-00 | IRE PCB | | |
| 16-32170-00 | LED PCB | | |
| 16-32140-00 | MODULE PCB | | |
| 16-32120-00 | POWER PCB | | |
| 16-32150-00 | SW PCB | | |
| 16-32110-00 | MAIN PCB | | |
| 16-32180-00 | PHONE PCB | | |
| 16-32190-00 | IR INTERFACE PCB | | |
| HARDWARE | | | |
| 66-014001-0 | Chassis | | |
| 67-014001-0 | Rear Panel (C Version) | | |
| 67-014002-0 | Rear Panel (AH Version) | | |
| 66-014002-0 | Top Cover | | |
| 66-014003-0 | Subfascia 2 | | |
| 66-001005-1 | IRE Bracket | | |
| 66-001013-0 | Baffle | | |
| 66-001011-0 | Module Bracket | | |
| 66-001007-0 | PCB SUPPORT | | |
| 66-001010-0 | TRANSFORMER BRACKET | | |
| 66-001004-0 | BASE COVER | | |
| 66-001008-0 | METAL DISC | | |
| 66-001009-0 | CLAMPER | | |
| 66-001006-0 | BDP SUPPORT | | |
| 70-001012-0 | Heatsink Plate | | |
| 70-014002-1 | Heatsink 1 | L=60 | |
| 70-001002-0 | Heatsink 2 | | |
| 70-014001-0 | Heatsink | | |
| 69-001011-0 | Bus bar A | | |
| 69-001012-0 | Bus bar B | | |
| 69-001013-0 | Bus bar C | | |
| 69-001010-0 | BDP PIN | | |
| 67-001011-0 | BOX | | |
| 30-63200-00 | SHORTING PLUG | | |
| 69-001001-0 | | | |
| 69-001002-0 | | | |
| 77-001001-0 | Input Button Lozenge | 27215306 | |
| 77-001002-0 | Tone Control Lozenge | 27215309 | |
| 74-001001-0 | Tone Button | 28325610 | |
| 74-001002-0 | Input Button | 28325608 | |
| 76-001002-0 | IR Lens | 28191833 | |
| 77-001006-0 | Power Button | | |
| 77-001007-0 | Power Button Bezel | | |
| 77-014001-0 | Fascia | | |
| 76-001001-0 | LED Lens | | |
| 73-014002-0 | Tone Knob | | |
| 73-014001-0 | Volume Knob | | |
| 75-001008-0 | Foot | | |
| 30-63200-01 | Plug Cap | | |
| 17-03002-02 | Binding Post | | |
| 17-03002-01 | | | |
| 71-001001-0 | | | |
| 73-001003-0 | | | |
| 73-001004-0 | | | |
| 73-001005-0 | | | |
| 73-001006-0 | | | |
| SCREWS / NUTS / BOLTS | | | |
| 61-023108-0 | Self Taping Screw | STB3X8 | |
| 61-023106-0 | Self Taping Screw | STB3X6 | |
| 61-084108-0 | Self Taping Screw | STPW4X8 | |
| 61-023208-0 | Self Taping Screw | BTB3X8 | |
| 61-022206-6 | Self Taping Screw | BTB2.6X6 | |

PARTS LIST

| PART NUMBER | DESCRIPTION | | PARTS LOCATION |
|---------------------------------|----------------------------|-----------|----------------|
| 61-022204-6 | Self Taping Screw | BTB2.6X4 | |
| 61-044514-0 | Machine Screw | MT4X14 | |
| 61-022510-5 | Machine Screw | MB2.5X10 | |
| 61-022514-5 | Machine Screw | MB2.5X14 | |
| 62-010202-5 | Nut | M2.5 | |
| 64-108050-0 | Bolt | M8X50 | |
| 62-010802-0 | Nut | M8 | |
| 63-020820-0 | Spring Washer | 8mm | |
| | | | |
| | | | |
| | | | |
| MECHANICAL MISCELLANEOUS | | | |
| 78-001002-0 | Rubber Pad | | |
| 78-001001-0 | Sleeve Boot | 811810-23 | |
| 85-001001-0 | PCB SPACER | TCBS-20 | |
| 85-001002-0 | Led Spacer Support | LEDS-10 | |
| 85-014001-0 | Led Spacer Support | LEDS-12 | |
| 84-001002-0 | Relief Bushing | SB4F-4 | |
| 94-001004-0 | LABEL | | |
| 78-001004-0 | Heat Conductive Pad | SFAT482 | |
| 78-005002-0 | Insulation Cushion (Small) | SFAT690 | |
| 84-001003-0 | Cable Tie | YJ-100 | |
| 84-001001-1 | Cable Tie | KL-2 3M | |
| 78-014001-0 | Heat Shrinking Tube | 40×30mm | |
| | | | |
| PACKING | | | |
| 88-014001-0 | CARTON BOX | | |
| 89-014001-1 | POLYFOAM END CAP | | |
| 89-001002-0 | Polyform BDP Unit | | |
| 90-001001-0 | POLYBAG | | |
| 90-001002-0 | MANU POLYBAG | | |
| 90-001003-0 | AC CORD POLYBAG | | |
| 90-001004-0 | EPE FASCIA | | |
| 94-014001-0 | SERIAL NO LABEL | | |
| 94-014002-0 | VERSION LABEL (AH) | | |
| 94-014003-0 | VERSION LABEL (B) | | |
| 94-014004-0 | VERSION LABEL (C) | | |
| | | | |
| ACCESSORIES | | | |
| 30-43210-00 | INSTRUCTION MANUAL | | |
| 30-13210-00 | REMOTE CONTROL | SR-4 | |
| 30-23200-00 | BATTERIES | AAA SIZE | |

SERVICE MANUAL

C 320BEE STEREO AMPLIFIER

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