

# BASS AMPLIFIER

# F-20B

## SERVICE MANUAL



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This document is printed on chlorine free (ECF) paper with soy ink.



## IMPORTANT NOTICE

This manual has been provided for the use of authorized Yamaha Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically Yamaha Products, are already known and understood by the users, and have therefore not been restated.

**WARNING:** Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components and failure of the product to perform as specified. For these reasons, we advise all Yamaha product owners that all service required should be performed by an authorized Yamaha Retailer or the appointed service representative.

**IMPORTANT:** This presentation or sale of this manual to any individual or firm does not constitute authorization, certification, recognition of any applicable technical capabilities, or establish a principal-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research engineering, and service departments of Yamaha are continually striving to improve Yamaha products. Modifications are, therefore, inevitable and changes in specification are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

**WARNING:** Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

**IMPORTANT:** Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

## WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the production of this product contains LEAD. In addition, other electrical / electronic and / or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and / or birth defects or other reproductive harm.

**DO NOT PLACE SOLDER, ELECTRICAL / ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHAT SO EVER!**

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder / flux vapor!

If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

### IMPORTANT NOTICE FOR THE UNITED KINGDOM

#### Connecting the Plug and Cord

**WARNING:** THIS APPARATUS MUST BE EARTHED

**IMPORTANT:** The wires in this main lead are coloured in accordance with the following code:  
 GREEN-AND-YELLOW: EARTH  
 BLUE: NEUTRAL  
 BROWN: LIVE

As the colours of the wires in the main lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The GREEN-and-YELLOW wire must be connected to the terminal in the plug that is marked with the letter E or the safety earth symbol (or coloured GREEN or GREEN-and-YELLOW).

The BLUE wire must be connected to the terminal that is marked with the letter N (or coloured BLACK).

The BROWN wire must be connected to the terminal that is marked with the letter L (or coloured RED).

This applies only to products distributed by Yamaha Kemble Music (U. K.) Ltd.

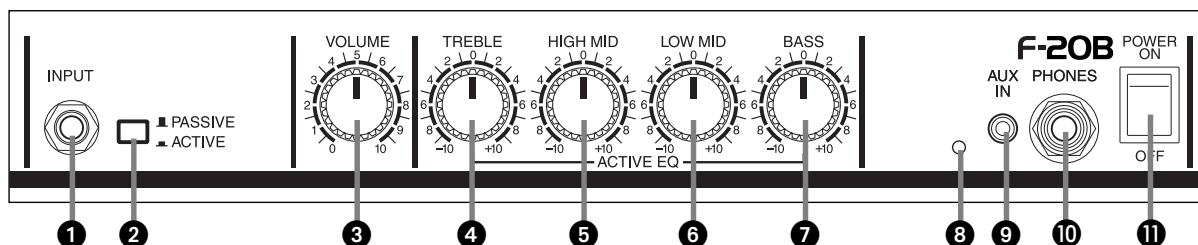
### ■ WARNING

Components having special characteristics are marked  and must be replaced with parts having specification equal to those originally installed.

## ■ SPECIFICATIONS

|                          |                                                                                              |
|--------------------------|----------------------------------------------------------------------------------------------|
| Rated Output Power:      | 20W                                                                                          |
| Speaker:                 | 25cm x 1                                                                                     |
| Controls:                | VOLUME, TREBLE, HIGH<br>MID, LOW MID, BASS,<br>Input Level Select Switch<br>(PASSIVE/ACTIVE) |
| Input/Output Terminals:  | INPUT, AUX IN, PHONES                                                                        |
| Power Consumption:       | 25W/120V (UL, CSA)<br>25W/230V (E, BS)                                                       |
| Power Requirements:      | U.S. and Canadian mod-<br>els: 120V, 60Hz<br>General model: 230V,<br>50Hz                    |
| Dimensions (W x H x D) : | 357 x 453 x 242mm (14.1"<br>x 17.8" x 9.5")                                                  |
| Weight:                  | 10.5kg (23 lbs 2 oz)                                                                         |

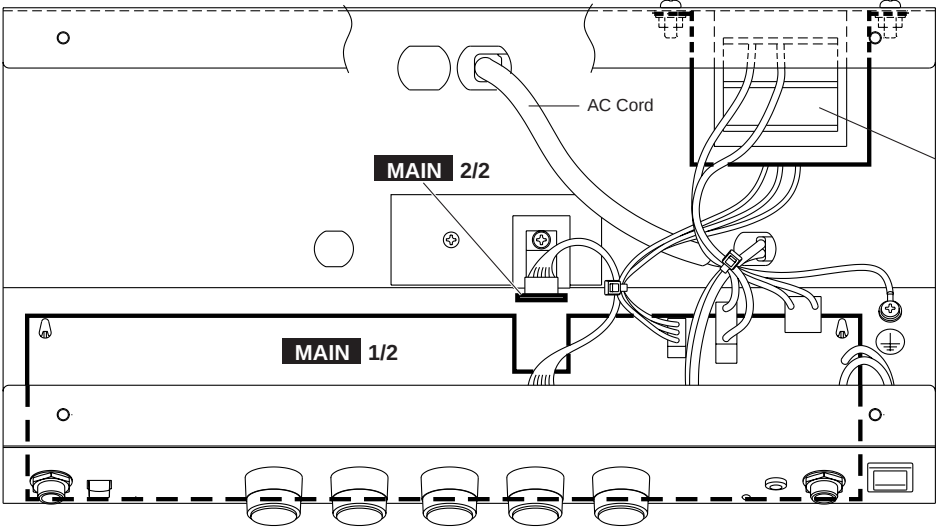
## ■ PANEL LAYOUT



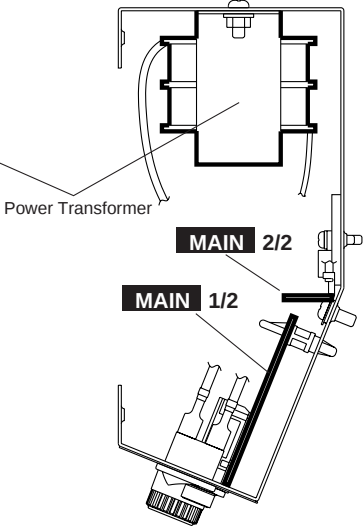
- ❶ INPUT
- ❷ PASSIVE/ACTIVE (Input Level Select Switch)
- ❸ VOLUME
  - \* No sound is produced when the VOLUME knob is set to "0".
- ACTIVE EQUALIZER
- ❹ TREBLE
- ❺ HIGH MID
- ❻ LOW MID
- ❼ BASS
- ❽ POWER INDICATOR
  - \* The lamp will light when the amplifier's power switch is ON.
- ❾ AUX IN
  - \* Use the volume control on the audio device to control its volume level.
- ❿ PHONES
  - \* The speaker will produce no sound when a pair of headphones is connected to this jack.
- ⓫ POWER

CIRCUIT BOARD LAYOUT

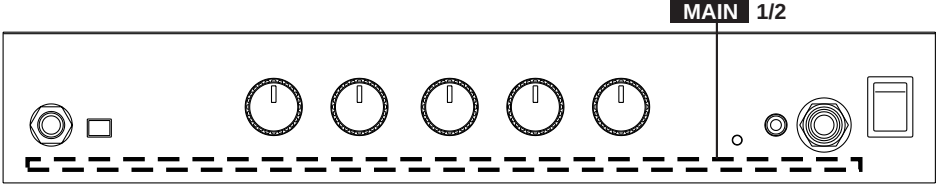
Top View



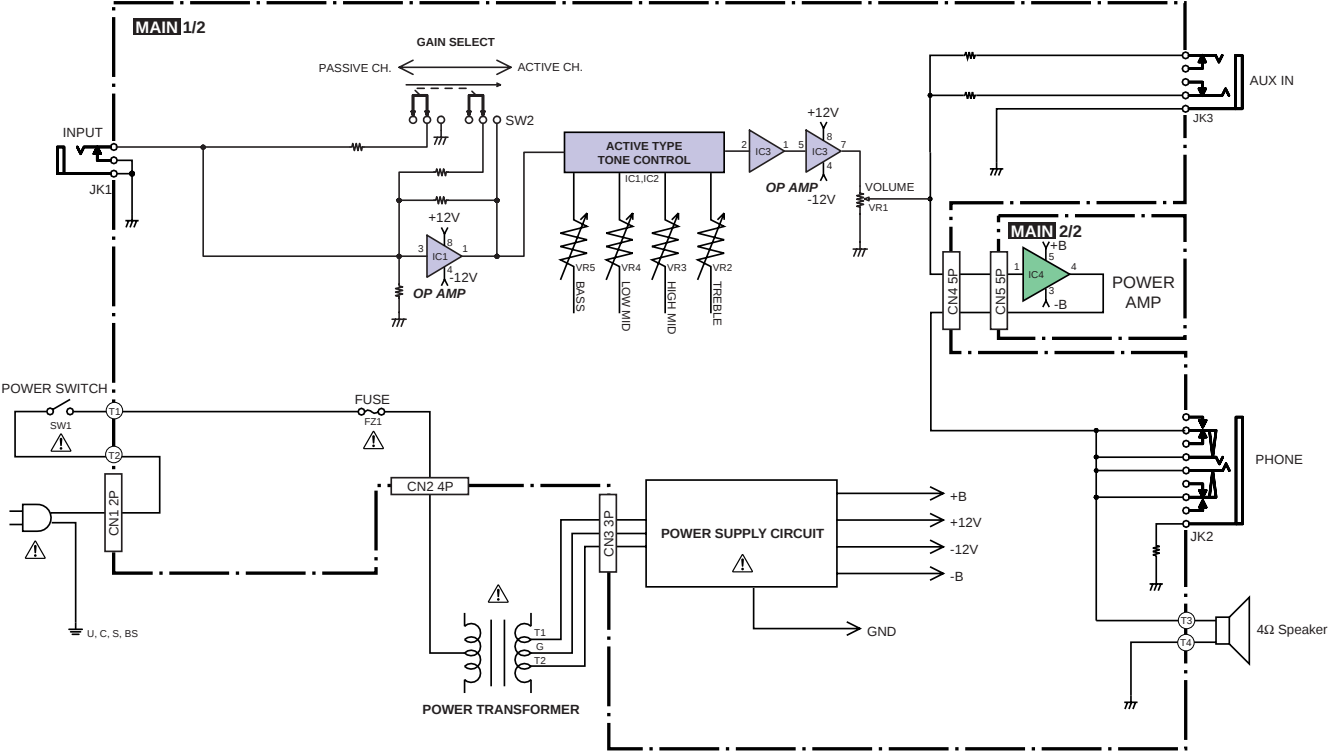
Side View



Front View



BLOCK DIAGRAM



## ■ DISASSEMBLY PROCEDURE

### 1. Pre-Main Unit (Time required: about 2 min)

- 1-1 Remove the eight (8) screws marked [A]. The back board can then be removed. (Fig.1)
- 1-2 Pull out the speaker wires. (Fig.1)
- 1-3 Remove the four (4) screws marked [30]. The pre-main unit can then be removed by sliding it backward. (Fig.1)

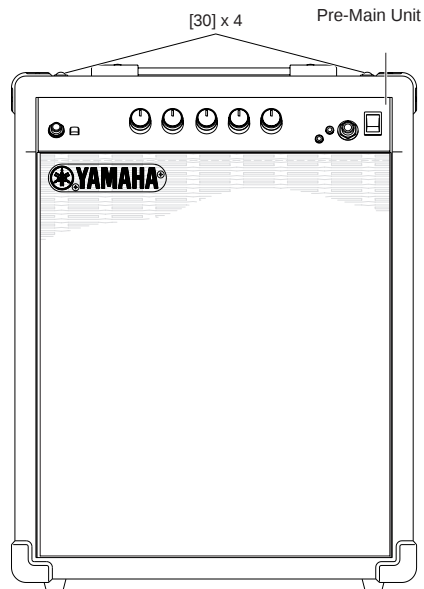
### 2. Speaker (Time required: about 2 min)

- 2-1 Remove the back board. (See Procedure 1-1)
- 2-2 Pull out the speaker wires. (Fig.1)
- 2-3 Remove the four (4) screws marked [60a]. The speaker can then be removed. (Fig.1)

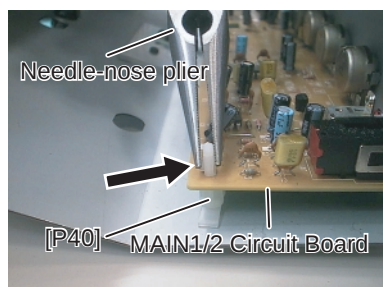
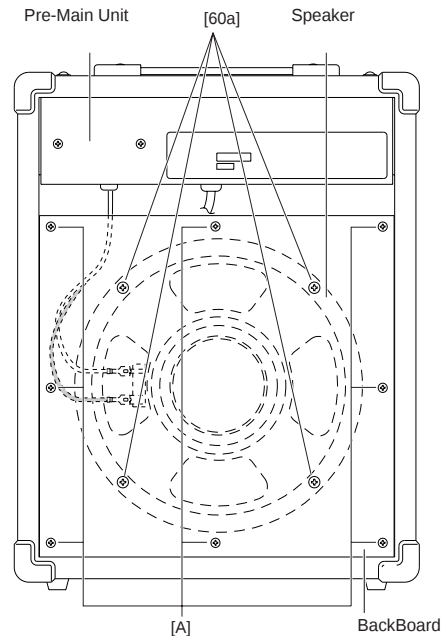
### 3. MAIN 1/2 Circuit Board (Time required: about 4 min)

- 3-1 Remove the pre-main unit. (See Procedure 1)
- 3-2 Remove the five (5) knobs marked [P100] and the five (5) hexagonal nuts marked [C]. (Fig.5)
- 3-3 Remove the hexagonal nut marked [A120] and the hexagonal nut marked [A140]. (Fig.5)
- 3-4 Push the hooks of the spacer support (at the arrow symbol area of illustration) with a needle-nose plier to unlock.

The MAIN 1/2 circuit board can then be removed. (Fig.2)



(Fig.1)



(Fig. 2)

[30]: Truss Head Screw 4.0X25 MFZN2BL (VN347600)

[A]: Bind Head Tapping Screw 4.0X25 FCRM3-BL (EI340256)

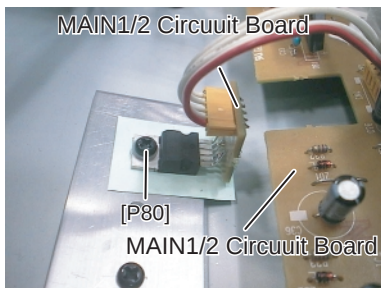
[60a]: Bind Head Screw (VB403600)

#### 4. MAIN 2/2 Circuit Board (Time required: about 3 min)

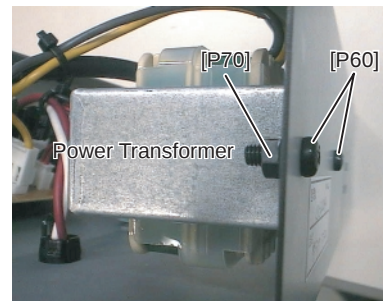
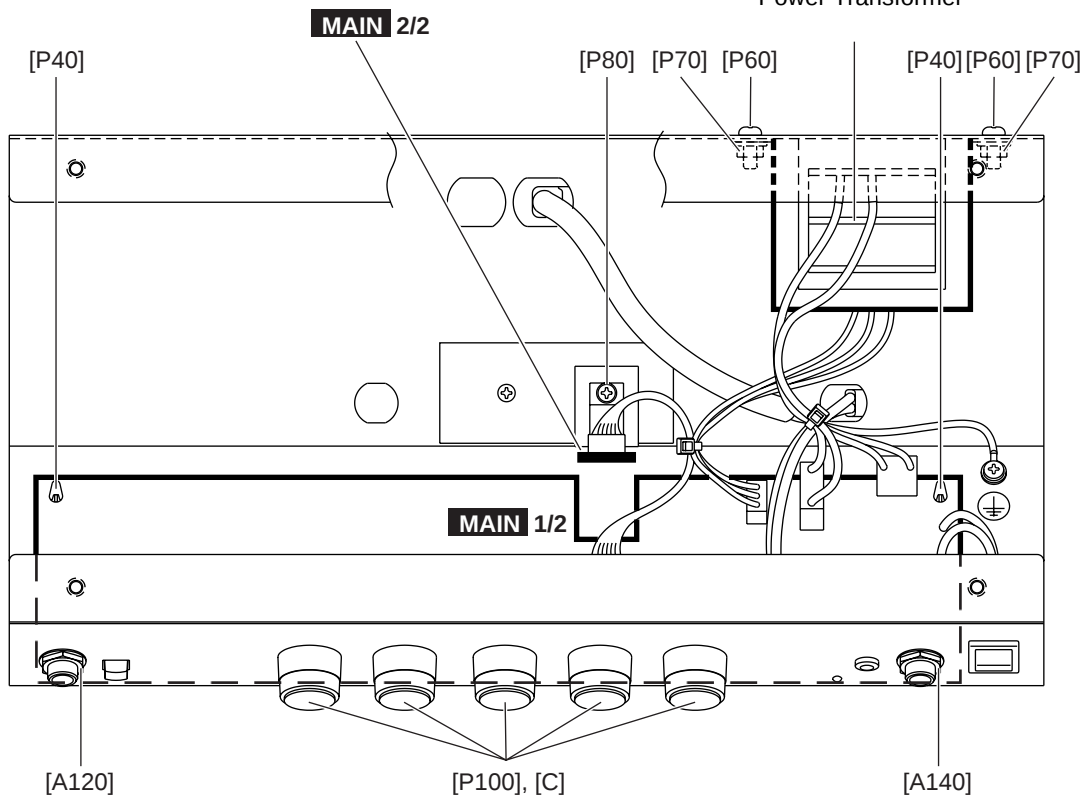
- 4-1 Remove the pre-main unit. (See Procedure 1)  
 4-2 Remove the screw marked [C80]. The MAIN 2/2 circuit board can then be removed. (Fig.3, Fig.5)

#### 5. Power Transformer (Time required: about 4 min)

- 5-1 Remove the pre-main unit. (See Procedure 1)  
 5-2 While holding the nuts marked [P70] with a spanner, remove the two (2) screws marked [P60]. The power transformer can then be removed. (Fig.4)



(Fig. 3)

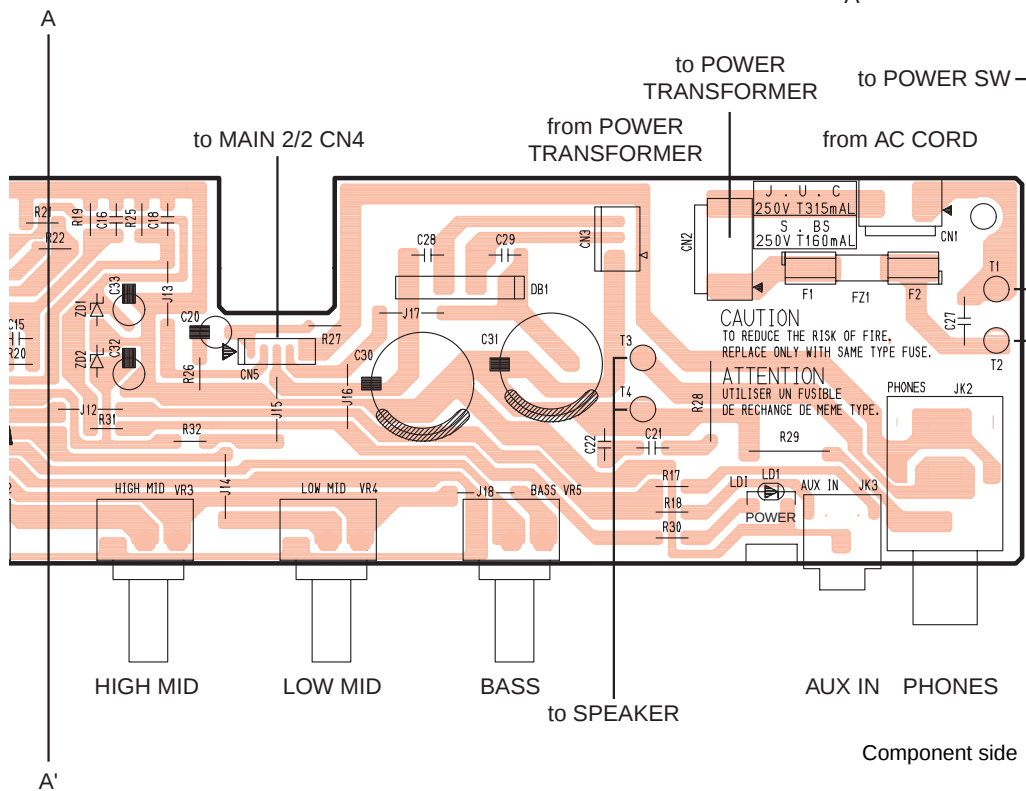
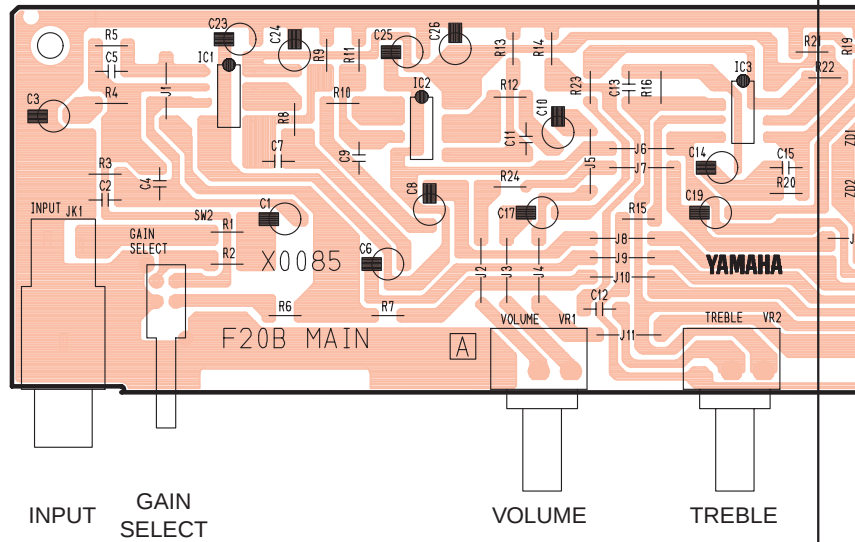
(Fig.4)  
Power Transformer

- [A120]: Hexagonal Nut 9.0 12X2 MFNI33 (LX200060)  
 [A140]: Hexagonal Nut 12.0 14X2 MFNI33 (ES200210)  
 [P60]: Pan Head Screw 4.0X10 MFZN2BL (V7018000)  
 [P70]: Hexagonal Nut #1 4.0 MFZN2Y (VB837300)  
 [P80]: Bind Head Screw-1 3.0X16 MFZN2BL (V7018100)  
 [P100]: Knob (V6955100)

(Fig. 5)

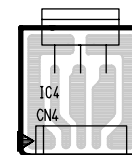
# CIRCUIT BOARDS

## MAIN1/2 CIRCUIT BOARD



| VERSION | FUSE RATE    | INDICATION                                     |
|---------|--------------|------------------------------------------------|
| J, U    | 250V 315mAL  | J . U . C<br>250V T315mAL<br>Must be<br>erased |
| E, BS   | 250V T160mAL | Must be<br>erased<br>S . BS<br>250V T160mAL    |

## MAIN2/2 CIRCUIT BOARD



to MAIN 1/2 CN5

Component side

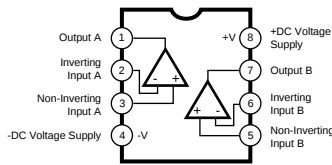
MAIN 1/2 (J, U, C): CNA-V755470  
 MAIN 1/2 (H, B): CNA-V755480  
 MAIN 2/2 (J, U, C): CNA-V755470  
 MAIN 2/2 (H, B): CNA-V755480

## ■ IC BLOCK DIAGRAM

### ● BA4558 (XO078A00)

Dual Operational Amplifier

MAIN: IC1,IC2,IC3



## ■ INSPECTIONS

### 1. Preparation

To inspect the main unit, the following jigs are required.

CD player

Headphones

Before turning the power on, set all the knobs on the panel to "0".

Raise the Input Level Select Switch to select [PASSIVE] position.

### 2. Power supply

Connect the power cord to the suitable power supply socket for each version.

(UC-120V, E&BS-220V)

### 3. Inspection procedure

- 3-1 Input the audio signal of CD player to the [AUX IN] jack.
- 3-2 Make sure that rotating the [VOLUME] knob to the right (or left) makes the sound gradually larger (or smaller).
- 3-3 Make sure that rotating the [TREBLE] knob to the right (or left) boosts (or cuts) the high frequency.
- 3-4 Make sure that rotating the [HIGH MID] knob to the right (or left) boosts (or cuts) the upper-middle frequency.
- 3-5 Make sure that rotating the [LOW MID] knob to the right (or left) boosts (or cuts) the lower-middle frequency.
- 3-6 Make sure that rotating the [BASS] knob to the right (or left) boosts (or cuts) the low frequency.
- 3-7 Make sure that the sound becomes smaller when you depress the Input Level Select Switch to select [ACTIVE] position.
- 3-8 Raise the Input Level Select Switch again to select [PASSIVE] position. Make sure that the audio signal sounds over the speaker.
- 3-9 Connect the headphones to the [PHONES] jack. Make sure that the speaker produces no sound and the audio signal sounds over the headphones.
- 3-10 Set all the knobs on the panel to "0" and finish the inspection.

# BASS AMPLIFIER

# F-20B

# PARTS LIST

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Note) DESTINATION ABBREVIATIONS

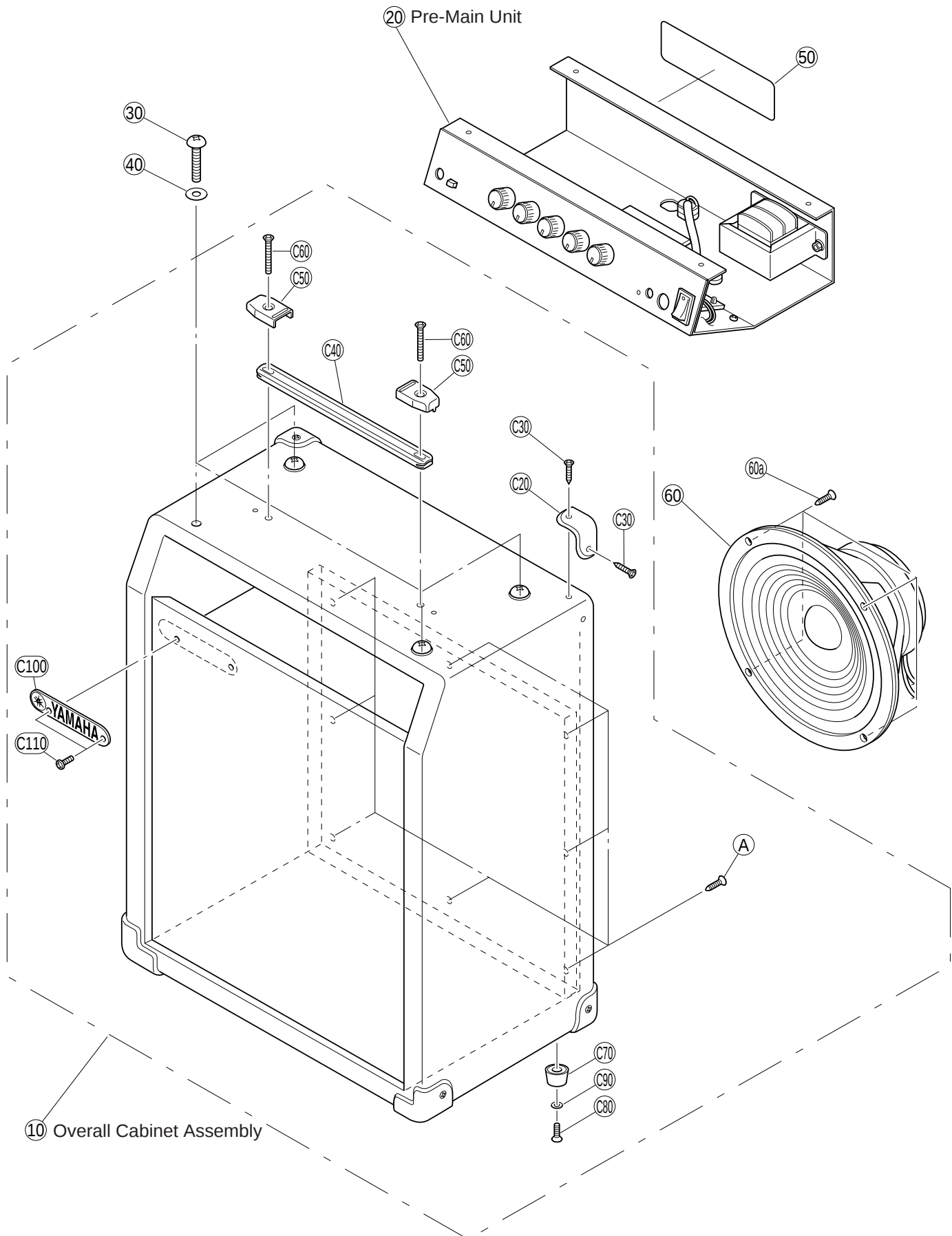
|                         |                                |
|-------------------------|--------------------------------|
| A: Australian model     | M: South African model         |
| B: British model        | O: Chinese model               |
| C: Canadian model       | Q: South-east Asia model       |
| D: German model         | T: Taiwan model                |
| E: European model       | U: U.S.A. model                |
| F: French model         | V: General export model (110V) |
| H: North European model | W: General export model (220V) |
| I: Indonesian model     | N,X: General export model      |
| J: Japanese model       | Y: Export model                |

## ■ WARNING

Components having special characteristics are marked  $\triangle$  and must be replaced with parts having specifications equal to those originally installed.

- The numbers in "QTY" shows quantities for each unit.
- The parts with "--" in "Part No." are not available as spare parts.
- The second letter of the shaded ( ) part number is I, not one.
- The second letter of the shaded ( ) part number is O, not zero.

# OVERALL ASSEMBLY

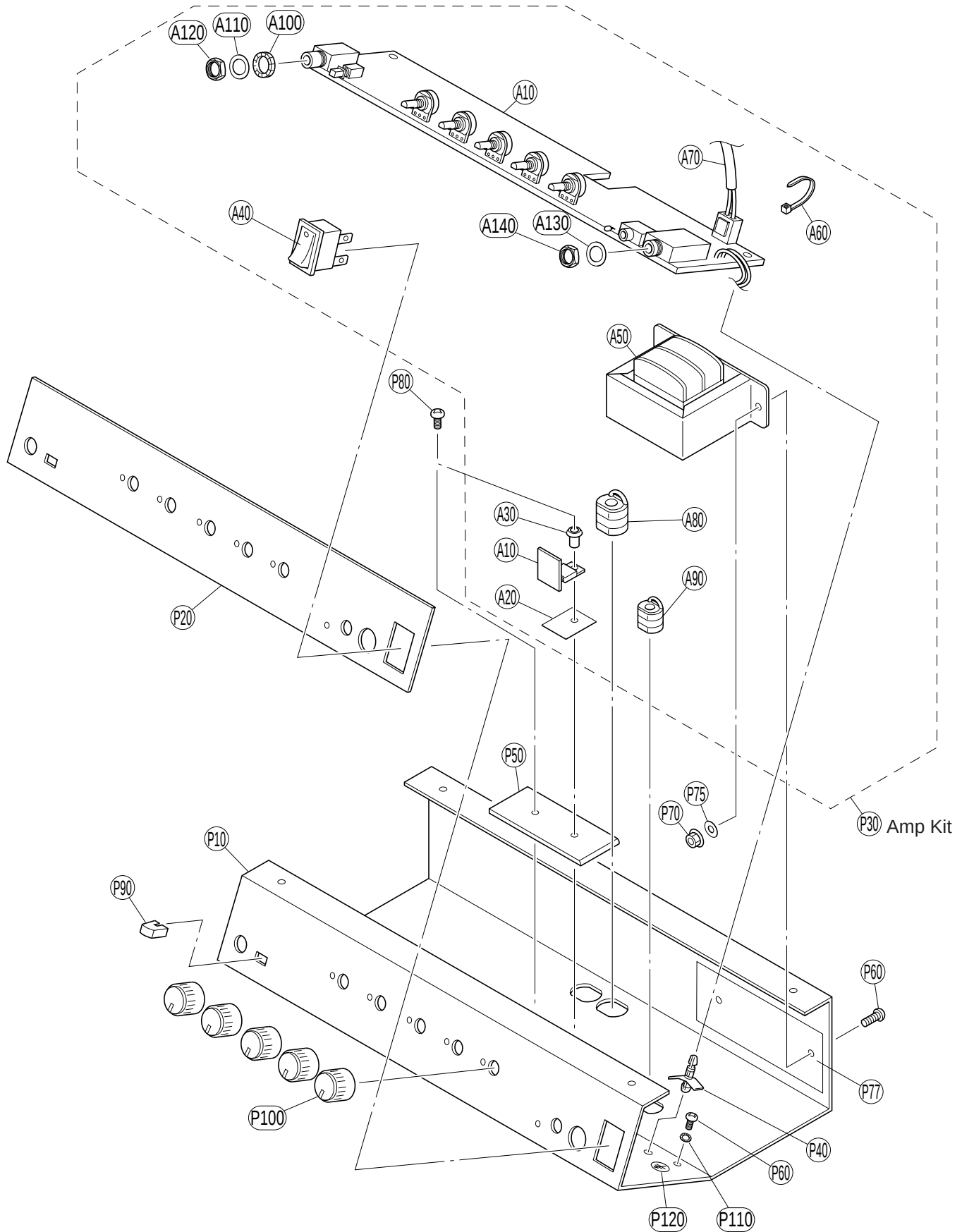


| REF NO. | PART NO. | DESCRIPTION               |                    | REMARKS       | QTY | RANK |
|---------|----------|---------------------------|--------------------|---------------|-----|------|
|         |          | OVERALL ASSEMBLY          |                    | F-20B         |     |      |
|         | --       | Overall Assembly          |                    | J (V745880)   |     |      |
|         | --       | Overall Assembly          |                    | U,C (V745890) |     |      |
|         | --       | Overall Assembly          |                    | H (V745900)   |     |      |
|         | --       | Overall Assembly          |                    | B (V745910)   |     |      |
| * 10    | V7461100 | Overall Cabinet Assembly  |                    |               |     |      |
| 20      | --       | Pre-Main Unit             |                    | J (V745930)   |     |      |
| 20      | --       | Pre-Main Unit             |                    | U,C (V745940) |     |      |
| 20      | --       | Pre-Main Unit             |                    | H (V745950)   |     |      |
| 20      | --       | Pre-Main Unit             |                    | B (V745960)   |     |      |
| 30      | VN347600 | Truss Head Screw          | 4.0X25 MFZN2BL     |               | 4   | 01   |
| 40      | ET500040 | Flat Washer               | 4.0X10X0.8 MFZN2BL |               | 4   | 01   |
| 50      | --       | Label                     |                    | J (V745970)   |     |      |
| 50      | --       | Label                     |                    | U,C (V745980) |     |      |
| 50      | --       | Label                     |                    | H,B (V745990) |     |      |
| * 60    | XO361A00 | Speaker Unit              | 4ohm 30W           |               |     |      |
| 60a     | VB403600 | Bind Head Screw           |                    |               | 4   | 01   |
|         |          |                           |                    |               |     |      |
|         |          | OVERALL CABINET ASSEMBLY  |                    | F-20B         |     |      |
| * C10   | V7461100 | Overall Cabinet Assembly  |                    |               |     |      |
|         | --       | Cabinet Assembly          |                    | (V746050)     |     |      |
| C20     | V5969000 | Corner Protector          |                    |               | 6   | 01   |
| C30     | 21770200 | Oval Head Screw           | 3.0X12 MFZN2BL     |               | 12  | 01   |
| C40     | V6327200 | Handle                    | KPBO KAH1D-205     |               |     |      |
| C50     | V6327300 | Handle Holder             | KPBO KAH3D400-A    |               | 2   |      |
| C60     | V7017900 | Oval Head Screw           | 4.0X25 MFZN2BL     |               | 2   |      |
| C70     | V6327400 | Foot                      | KPBO KRRU19        |               | 4   | 01   |
| C80     | EP030310 | Bind Head Tapping Screw-1 | 3.0X16 MFZN2BL     |               | 4   | 01   |
| C90     | 03765580 | Flat Washer               | 3.0X8X0.5 MFZN2BL  |               | 4   | 01   |
| C100    | V7363300 | Name Plate                |                    |               |     |      |
| C110    | VN729100 | Bind Head Tapping Screw-1 | 3.0X10 MFZN2BL     |               | 2   | 01   |
| A       | EI340256 | Bind Head Tapping Screw   | 4.0X25 FCRM3-BL    |               | 8   | 01   |

\*New parts

RANK: Japan only

# ■ PRE-MAIN UNIT



| REF NO. | PART NO.        | DESCRIPTION           |                   | REMARKS                 | QTY | RANK |
|---------|-----------------|-----------------------|-------------------|-------------------------|-----|------|
|         | --              | PRE-MAIN UNIT         |                   | F-20B                   |     |      |
|         | --              | Pre-Main Unit         |                   | J (V745930)             |     |      |
|         | --              | Pre-Main Unit         |                   | U,C (V745940)           |     |      |
|         | --              | Pre-Main Unit         |                   | H (V745950)             |     |      |
|         | --              | Pre-Main Unit         |                   | B (V745960)             |     |      |
| P10     | <b>V6954800</b> | Chassis               |                   |                         |     | 05   |
| P20     | <b>V7460600</b> | Panel Sheet           |                   |                         |     |      |
| P30     | --              | Amp Kit               |                   | J (V746070)             |     |      |
| P30     | --              | Amp Kit               |                   | U,C (V746080)           |     |      |
| P30     | --              | Amp Kit               |                   | H (V746090)             |     |      |
| P30     | --              | Amp Kit               |                   | B (V746100)             |     |      |
| P40     | <b>V7511400</b> | Spacer Support        | PINGOOD LCC-10    |                         | 2   |      |
| P50     | <b>V7017600</b> | Heat Sink             |                   |                         |     |      |
| P60     | <b>V7018000</b> | Pan Head Screw        | 4.0X10 MFZN2BL    |                         | 2   |      |
| P70     | <b>VB837300</b> | Hexagonal Nut         | #1 4.0 MFZN2Y     |                         | 2   |      |
| P75     | <b>VB501900</b> | Spring Washer         | 4.0 MFZN2Y        |                         | 2   |      |
| P77     | <b>V7834000</b> | Vibration-proof Tape  |                   |                         |     |      |
| P80     | <b>V7018100</b> | Pan Head Screw        | 3.0X10 MFZN2BL    |                         | 2   |      |
| P90     | <b>V7554300</b> | Button                | GA-RED            | GAIN SELECT             |     | 01   |
| P100    | <b>V6955100</b> | Knob                  |                   | VOLUME,TREBLRE,HIGH MID | 5   | 01   |
|         |                 |                       |                   | LOW MID,BASS            |     |      |
| P110    | <b>ET900050</b> | Toothed Lock Washer-B | 4.0 MFZN2BL       | U,C,H,B                 |     |      |
| P120    | --              | Earth Mark            |                   | U,C,H,B (V777110)       |     | 01   |
|         | --              | Amp Kit               |                   | J (V746070)             |     |      |
|         | --              | Amp Kit               |                   | U,C (V746080)           |     |      |
|         | --              | Amp Kit               |                   | H (V746090)             |     |      |
|         | --              | Amp Kit               |                   | B (V746100)             |     |      |
| A10     | <b>V7554700</b> | Circuit Board         | MAIN              | J,U,C                   |     |      |
| A10     | <b>V7554800</b> | Circuit Board         | MAIN              | H,B                     |     |      |
| A20     | <b>VV849300</b> | Insulation Sheet      | BFG-20AD 19X24    |                         |     | 01   |
| A30     | <b>V7356900</b> | Sleeve                | 12SWS0220         |                         |     |      |
| A40     | <b>V7054700</b> | Power SW              | SDDJE1-A-2        | POWER ON/OFF            |     | 02   |
| A50     | <b>XZ805A00</b> | Transformer           | J                 | J                       |     | 05   |
| A50     | <b>XZ806A00</b> | Transformer           | UC                | U,C                     |     |      |
| A50     | <b>XZ807A00</b> | Transformer           | E                 | H,B                     |     |      |
| A60     | <b>VV104600</b> | Cord Holder           | CV-100            |                         | 2   | 01   |
| A70     | <b>V6286700</b> | Cord                  | J VCTF            | J                       |     | 04   |
| A70     | <b>V6286900</b> | Cord                  | UC 3 SJT 18/3     | U,C                     |     |      |
| A70     | <b>V6287000</b> | Cord                  | E 3 HO5VV-F       | H                       |     |      |
| A70     | <b>V6287100</b> | Cord                  | UK 3 HO5VV-F      | B                       |     |      |
| A80     | <b>V7356700</b> | Cord Strain Relief    | KR-61 KITAGAWA    |                         |     |      |
| A90     | <b>V7356800</b> | Cord Strain Relief    | KF-41 KITAGAWA    |                         |     |      |
| A100    | <b>ET800150</b> | Toothed Lock Washer-A | 9.0 MFZN2Y        |                         |     | 01   |
| A110    | <b>VL802300</b> | Flat Washer           | 9X14 0.5 FNM3     |                         |     | 01   |
| A120    | <b>LX200060</b> | Hexagonal Nut         | 9.0 12X2 MFNI33   |                         |     | 01   |
| A130    | <b>VB508700</b> | Flat Washer           | 18X12.5 0.6 MFZN2 |                         |     |      |
| A140    | <b>ES200210</b> | Hexagonal Nut         | 12.0 14X2 MFNI33  |                         |     | 01   |

\*New parts

RANK: Japan only

# ELECTRICAL PARTS

| REF NO. | PART NO.      | DESCRIPTION             |                    | REMARKS         | QTY | RANK |
|---------|---------------|-------------------------|--------------------|-----------------|-----|------|
|         |               | ELECTRICAL PARTS        |                    | F-20B           |     |      |
| *       | V7554700      | Circuit Board           | MAIN               | J,U,C (X0085A0) |     |      |
| *       | V7554800      | Circuit Board           | MAIN               | H,B (X0085A0)   |     |      |
|         |               |                         |                    |                 |     |      |
| *       | V7554700      | Circuit Board           | MAIN               | J,U,C (X0085A0) |     |      |
| *       | V7554800      | Circuit Board           | MAIN               | H,B (X0085A0)   |     |      |
|         | --            | Connector Assembly      | #18 2P L 60        | (V660880)       |     |      |
|         | --            | Connector Assembly      | B&B #26 5P L 100   | (V735970)       |     |      |
|         | --            | Connector Assembly      | #18 2P L 300       | (V744980)       |     |      |
|         | V6609900      | Fuse Holder             | WH-007             |                 |     |      |
|         | VV291400      | Jumper Wire             | 0.60               |                 |     | 01   |
| C01     | UR866100      | Electrolytic Cap.       | 1.00 50.0V         |                 |     | 01   |
| C02     | VZ353500      | Ceramic Capacitor-SL    | 100P 50V J         |                 |     | 01   |
| C03     | UR847100      | Electrolytic Cap.       | 10.00 25.0V        |                 |     | 01   |
| C04     | VZ353500      | Ceramic Capacitor-SL    | 100P 50V J         |                 |     | 01   |
| C05     | VZ353500      | Ceramic Capacitor-SL    | 100P 50V J         |                 |     | 01   |
| C06     | UR866330      | Electrolytic Cap.       | 3.30 50.0V         |                 |     | 01   |
| C07     | VV061200      | Mylar Capacitor         | 6800P 50V J        |                 |     | 01   |
| C08     | UR865470      | Electrolytic Cap.       | 0.47 50.0V         |                 |     | 01   |
| C09     | VV060600      | Mylar Capacitor         | 3300P 50V J        |                 |     | 01   |
| C10     | UR865100      | Electrolytic Cap.       | 0.10 50.0V         |                 |     | 01   |
| C11     | VV059800      | Mylar Capacitor         | 1000P 50V J        |                 |     | 08   |
| C12     | VV062600      | Mylar Capacitor         | 0.068 50V J        |                 |     | 01   |
| C13     | VZ353500      | Ceramic Capacitor-SL    | 100P 50V J         |                 |     | 01   |
| C14     | UR866100      | Electrolytic Cap.       | 1.00 50.0V         |                 |     | 01   |
| C15     | VV059800      | Mylar Capacitor         | 1000P 50V J        |                 |     | 08   |
| C16     | VZ353500      | Ceramic Capacitor-SL    | 100P 50V J         |                 |     | 01   |
| C17     | UR866100      | Electrolytic Cap.       | 1.00 50.0V         |                 |     | 01   |
| C18     | FG613100      | Ceramic Capacitor-B     | 1000P 50V K        |                 |     | 01   |
| C19     | UR866100      | Electrolytic Cap.       | 1.00 50.0V         |                 |     | 01   |
| C20     | UR837470      | Electrolytic Cap.       | 47.00 16.0V        |                 |     | 01   |
| C21     | VV062800      | Mylar Capacitor         | 0.1 50V J          |                 |     | 01   |
| C22     | VV062800      | Mylar Capacitor         | 0.1 50V J          |                 |     | 01   |
| C23     | UR847100      | Electrolytic Cap.       | 10.00 25.0V        |                 |     | 01   |
| -26     | UR847100      | Electrolytic Cap.       | 10.00 25.0V        |                 |     | 01   |
| C27     | V7355000      | Capacitor               | 4700P 250V J.U.C.S |                 |     | 01   |
| C28     | VZ354600      | Monolithic Ceramic Cap. | 0.10 50V Z         |                 |     | 01   |
| C29     | VZ354600      | Monolithic Ceramic Cap. | 0.10 50V Z         |                 |     | 01   |
| C30     | UR749330      | Electrolytic Cap.       | 3300 25.0V         |                 |     | 03   |
| C31     | UR749330      | Electrolytic Cap.       | 3300 25.0V         |                 |     | 03   |
| C32     | UR847100      | Electrolytic Cap.       | 10.00 25.0V        |                 |     | 01   |
| C33     | UR847100      | Electrolytic Cap.       | 10.00 25.0V        |                 |     | 01   |
| CN1     | VG879900      | Base Post Connector     | VA- 2P TE          |                 |     | 01   |
| CN2     | LB932040      | Base Post Connector     | VH-4P TE           |                 |     | 01   |
| CN3     | LB918030      | Base Post Connector     | XH 3P TE           |                 |     | 01   |
| DB1     | VP344100      | Diode Stack             | D2SBA20 1.5A 200V  |                 |     | 03   |
| FZ1     | V 7 6 3 0 8 0 | Fuse                    | 315 mA JU          | J,U,C           |     |      |
| FZ1     | V 7 8 3 5 7 0 | Fuse                    | 160 mA E           | H,B             |     |      |
| IC1     | X0078A00      | IC                      | BA4558             | DIP OPAMP       |     | 02   |
| -3      | X0078A00      | IC                      | BA4558             | DIP OPAMP       |     | 02   |
| IC4     | XZ311A00      | IC                      | TDA2030A           | HIFI AMP        |     | 04   |
| JK1     | V3633400      | Phone Jack              | HTJ-064-12I        | INPUT           |     | 01   |
| JK2     | V6176500      | Phone Jack              | HTJ-064-05B        | PHONES          |     | 03   |
| JK3     | V7447000      | Phone Jack              | ST HTJ-035-09ABT   | AUX IN          |     | 02   |
| LD1     | VV620800      | LED                     | LT311G-41-C13 RED  | power on/off    |     | 01   |
| R01     | HF456220      | Carbon Resistor         | 2.2K 1/4 J         |                 |     | 01   |
| R02     | HF457270      | Carbon Resistor         | 27.0K 1/4 J        |                 |     | 01   |
| R03     | HF459100      | Carbon Resistor         | 1.0M 1/4 J         |                 |     | 01   |
| R04     | HF456100      | Carbon Resistor         | 1.0K 1/4 J         |                 |     | 01   |
| R05     | HF456270      | Carbon Resistor         | 2.7K 1/4 J         |                 |     | 01   |
| R06     | HF456100      | Carbon Resistor         | 1.0K 1/4 J         |                 |     | 01   |
| R07     | HF456330      | Carbon Resistor         | 3.3K 1/4 J         |                 |     | 01   |
| R08     | HF455680      | Carbon Resistor         | 680.0 1/4 J        |                 |     | 01   |
| R09     | HF458100      | Carbon Resistor         | 100.0K 1/4 J       |                 |     | 01   |
| R10     | HF455680      | Carbon Resistor         | 680.0 1/4 J        |                 |     | 01   |
| R11     | HF458100      | Carbon Resistor         | 100.0K 1/4 J       |                 |     | 01   |
| R12     | HF455680      | Carbon Resistor         | 680.0 1/4 J        |                 |     | 01   |
| R13     | HF458100      | Carbon Resistor         | 100.0K 1/4 J       |                 |     | 01   |
| R14     | HF455680      | Carbon Resistor         | 680.0 1/4 J        |                 |     | 01   |
| R15     | HF455220      | Carbon Resistor         | 220.0 1/4 J        |                 |     | 01   |

\*New parts

RANK: Japan only



