

INTEGRATED AMPLIFIER

A-S2100

SERVICE MANUAL

A-S2100

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 any service required should be performed by an authorized Yamaha Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification or recognition of any applicable technical capabilities, or establish a principle-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 specifications 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 part replacement. Recheck all work before you apply power to the unit.

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■ TO SERVICE PERSONNEL

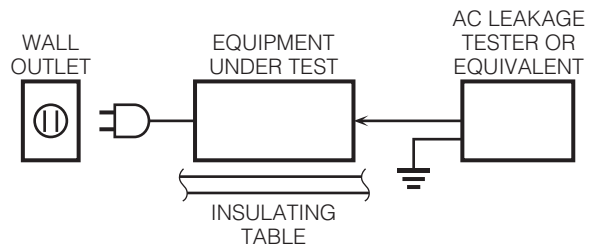
1. Critical Components Information

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

2. Leakage Current Measurement (For 120V Models Only)

When service has been completed, it is imperative to verify that all exposed conductive surfaces are properly insulated from supply circuits.

- Meter impedance should be equivalent to 1500 ohms shunted by 0.15 μ F.



- Leakage current must not exceed 0.5mA.
- Be sure to test for leakage with the AC plug in both polarities.



For U model

“CAUTION”

“F1: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 10A, 125V FUSE.”

For C model

CAUTION

F1: REPLACE WITH SAME TYPE 10A, 125V FUSE.

ATTENTION

F1: UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE DE 10A, 125V.

WARNING: CHEMICAL CONTENT NOTICE!

This product contains chemicals known to the State of California to cause cancer, or birth defects or other reproductive harm.

DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHATSOEVER!

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.

About lead free solder / 無鉛ハンダについて

All of the P.C.B.s installed in this unit and solder joints are soldered using the lead free solder.

Among some types of lead free solder currently available, it is recommended to use one of the following types for the repair work.

- Sn + Ag + Cu (tin + silver + copper)
- Sn + Cu (tin + copper)
- Sn + Zn + Bi (tin + zinc + bismuth)

Caution:

As the melting point temperature of the lead free solder is about 30°C to 40°C (50°F to 70°F) higher than that of the lead solder, be sure to use a soldering iron suitable to each solder.

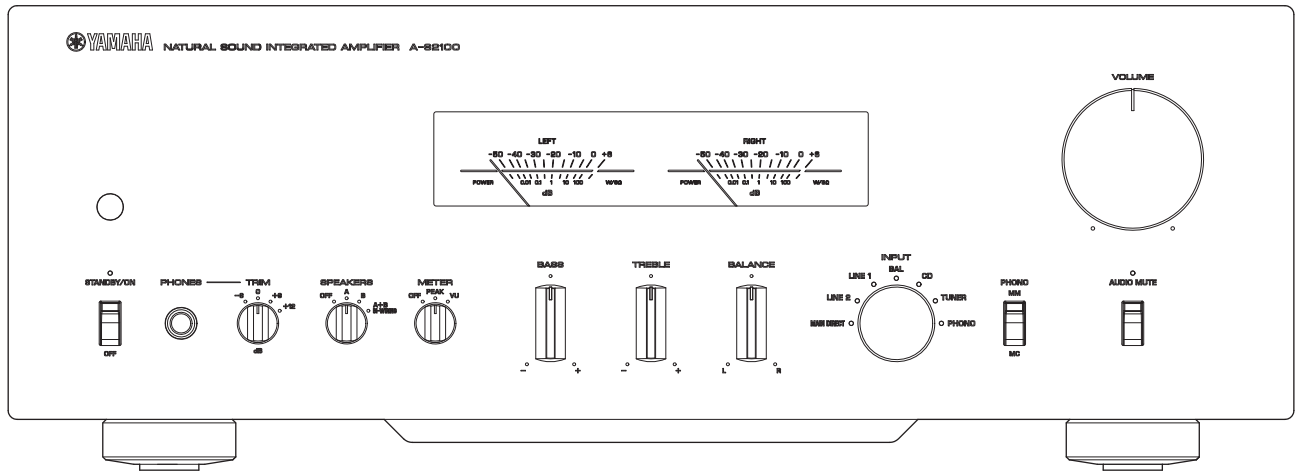
本機に搭載されているすべての基板およびハンダ付けによる接合部は無鉛ハンダでハンダ付けされています。

無鉛ハンダにはいくつかの種類がありますが、修理時には下記のような無鉛ハンダの使用を推奨します。

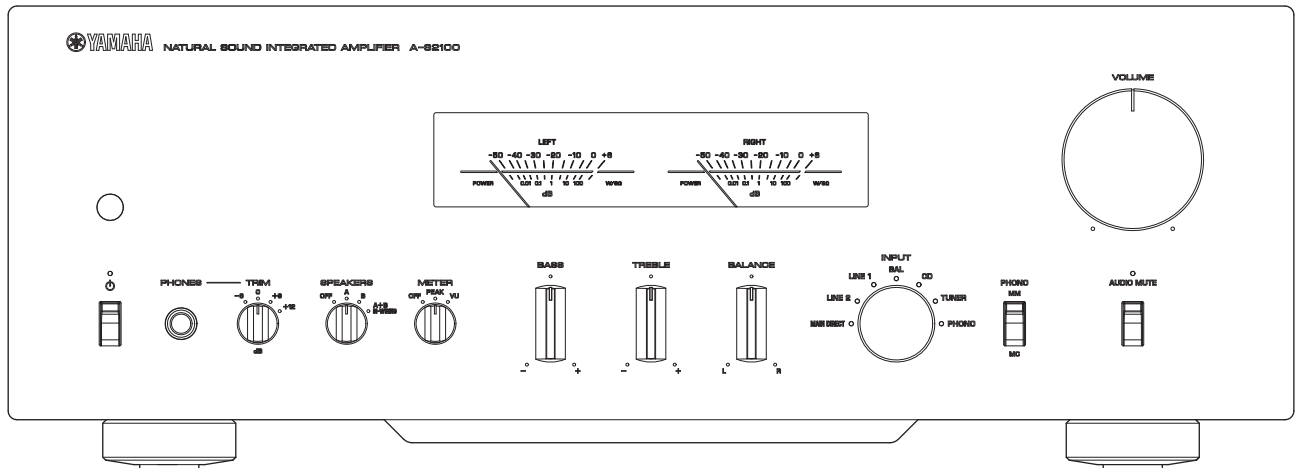
- Sn+Ag+Cu (錫 + 銀 + 銅)
- Sn+Cu (

FRONT PANELS

U, K, A, B, G, L, V, S, J models

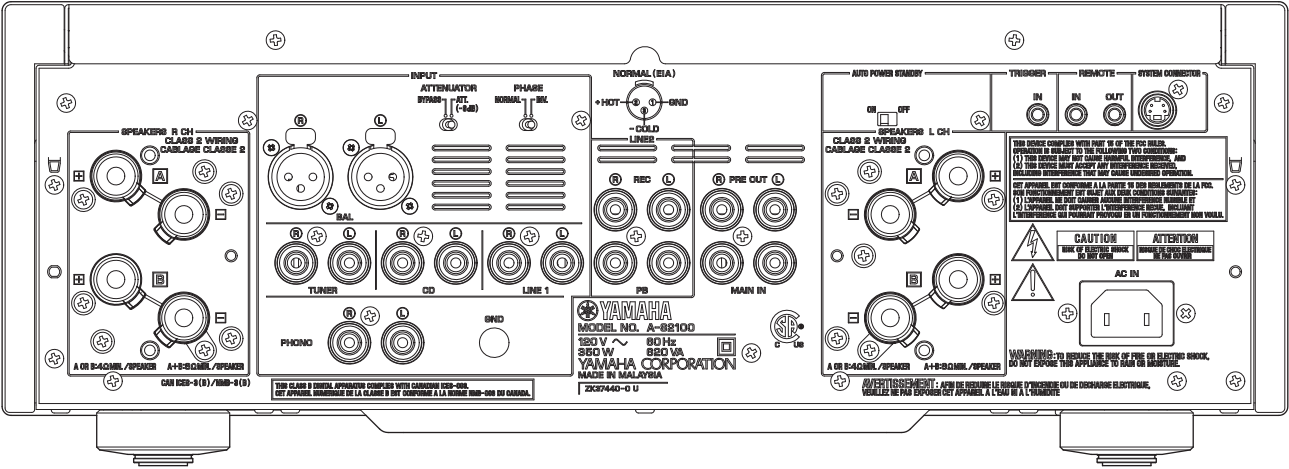


T model

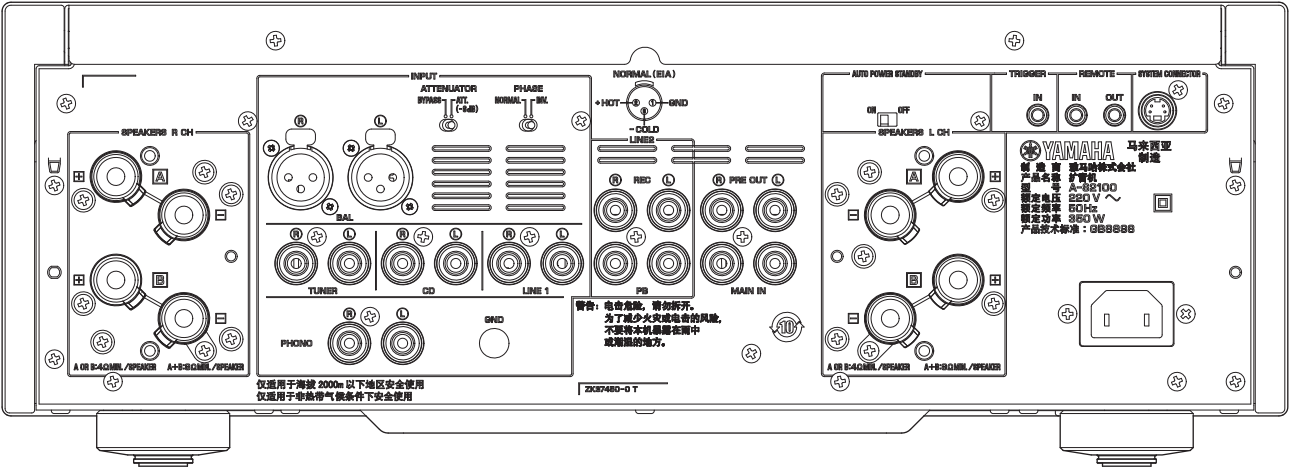


REAR PANELS

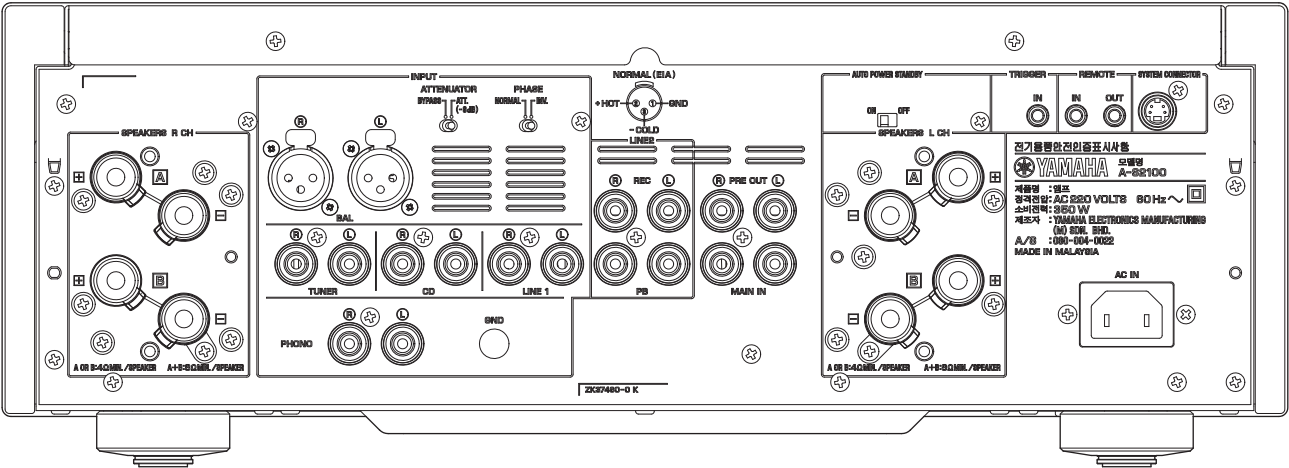
U model



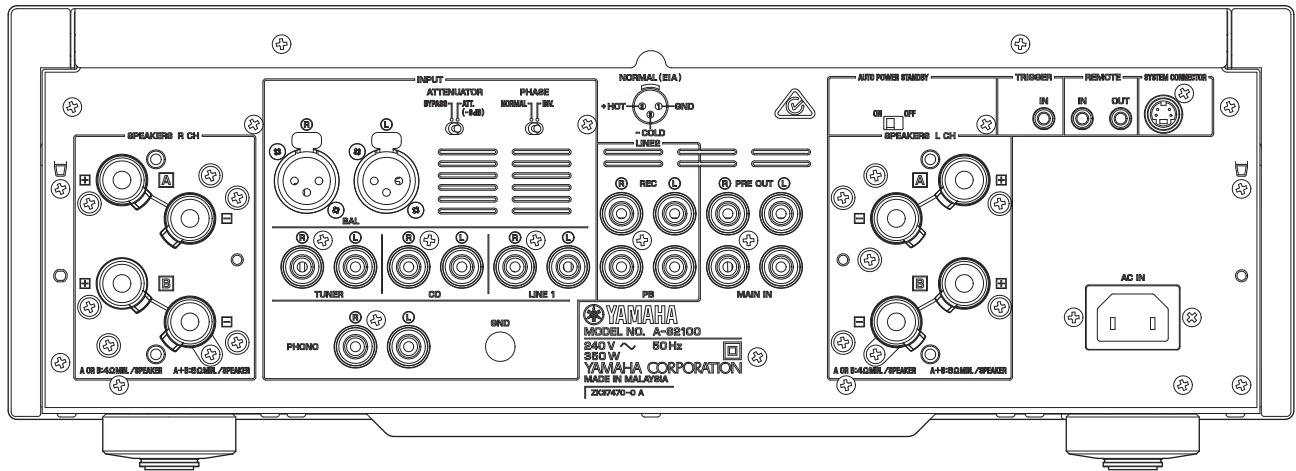
T model



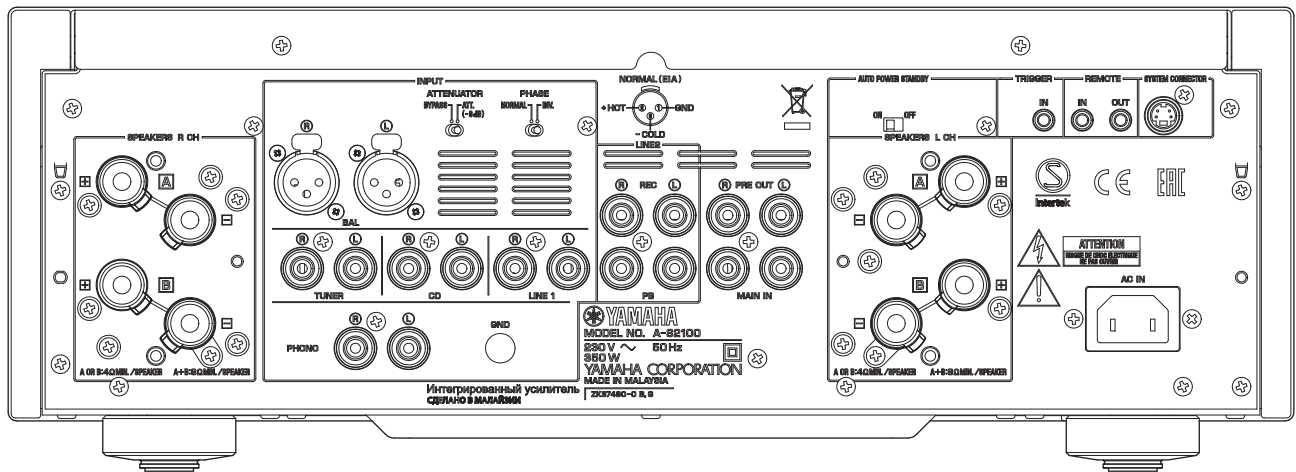
K model



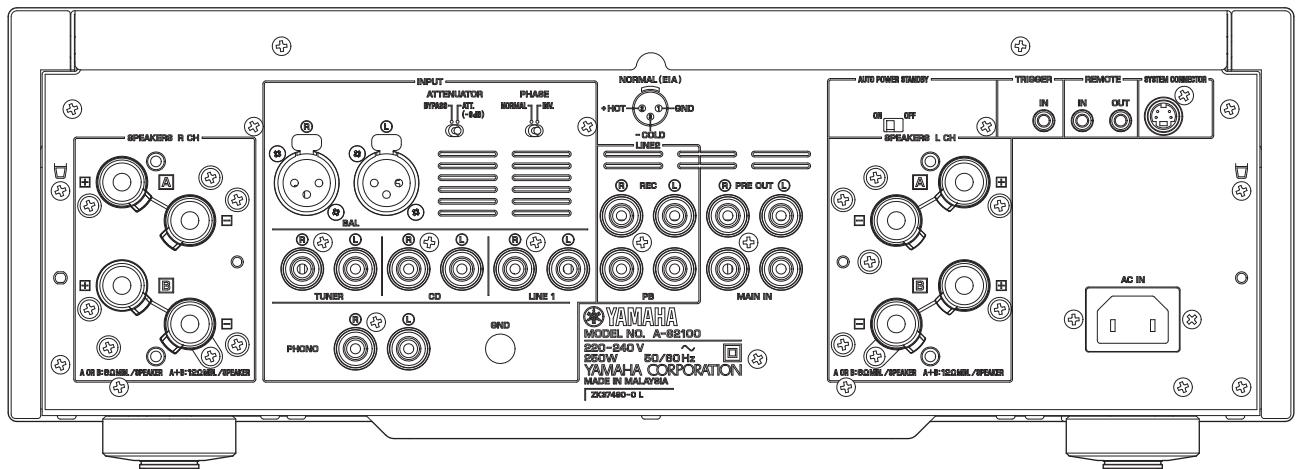
A model



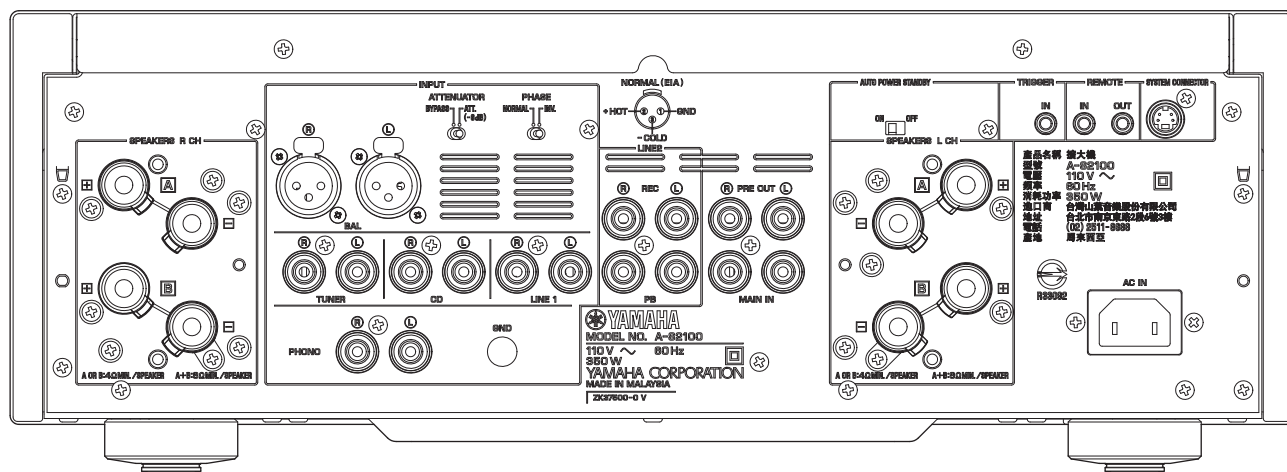
B, G models



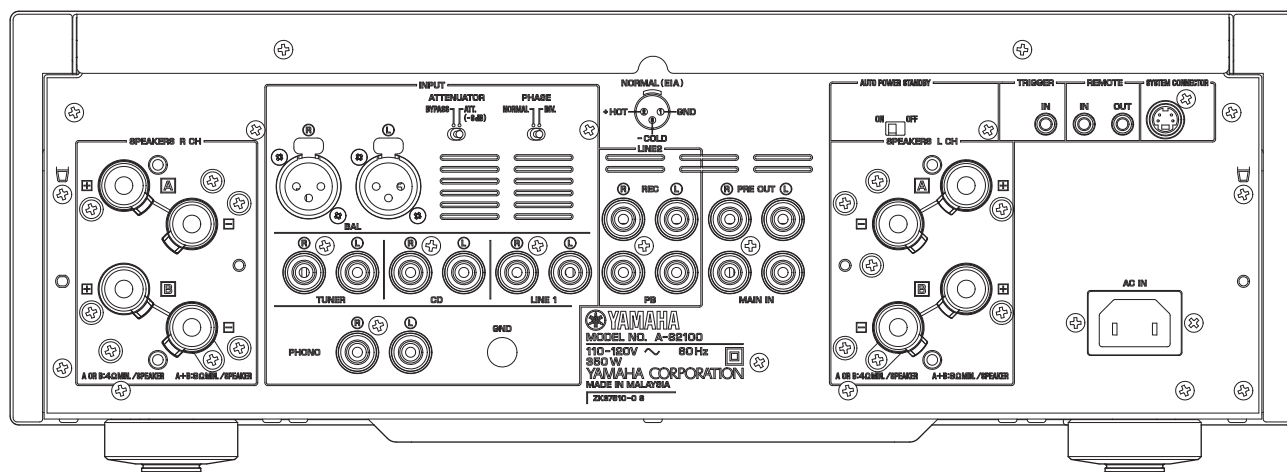
L model



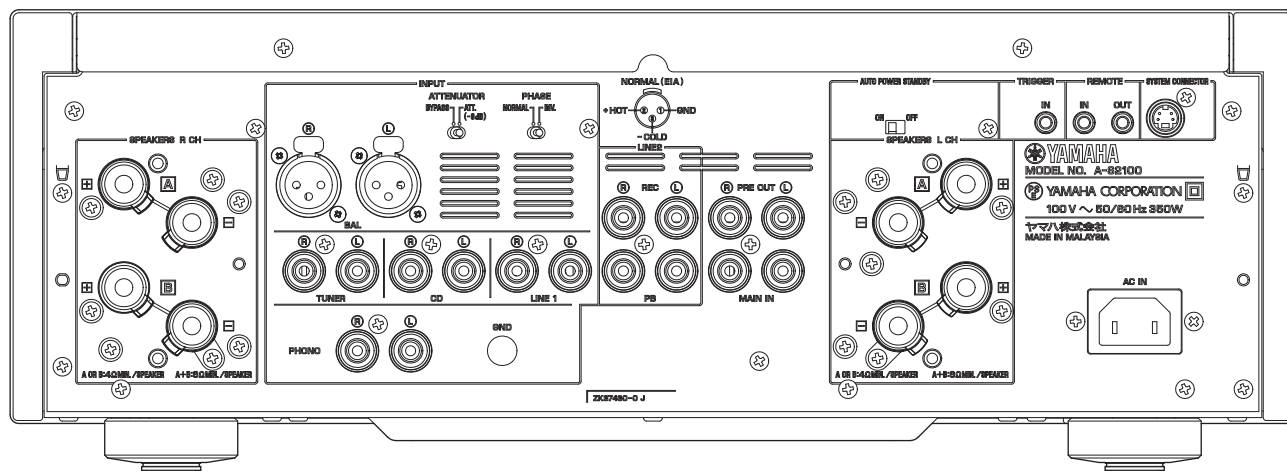
V model



S model

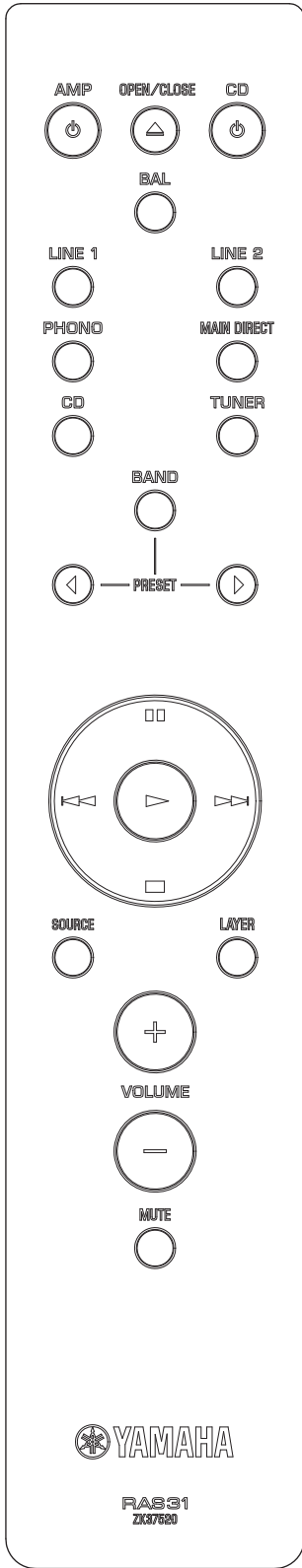


J model



■ REMOTE CONTROL PANEL

RAS31



■ SPECIFICATIONS / 参考仕様

■ Audio Section / オーディオ部

Rated Output Power / 定格出力 (20 Hz to 20 kHz, 0.07 % THD)

U, T, K, A, B, G, V, S, J models	
8 ohms	90 W + 90 W
4 ohms	150 W + 150 W
L model	
8 ohms	90 W + 90 W
6 ohms	110 W + 110 W

Dynamic Power Per Channel / ダイナミックパワー (IHF)

8 ohms	105 W + 105 W
6 ohms	135 W + 135 W
4 ohms	190 W + 190 W
2 ohms	220 W + 220 W

Dynamic Headroom / ダイナミックヘッドルーム

8 ohms	0.67 dB
--------	---------

Maximum Output Power (1 kHz, 0.7 % THD) [B, G models]

4 ohms	160 W + 160 W
--------	---------------

IEC Output Power (1 kHz, 0.02 % THD) [B, G models]

8 ohms	95 W + 95 W
--------	-------------

Maximum Effective Output Power / 実用最大出力 (JEITA)

(1 kHz, 10 % THD) [T, K, B, L, V, S, J models]	
8 ohms	

Total Harmonic Distortion / 全高調波歪率 (20 Hz to 20 kHz)

PHONO (MC) to REC OUT (1.2 Vrms)	0.02 %
(MM) to REC OUT (1.2 Vrms)	0.005 %
CD, etc. to SP OUT (50 W/8 ohms)	0.025 %
BAL (balanced) to SP OUT (50 W/8 ohms)	0.025 %

Signal to Noise Ratio / 信号対雑音比 (IHF-A network)

PHONO (MC) (Input shorted, 500 μ Vrms)	85 dB
(MM) (Input shorted, 5 mVrms)	93 dB
CD, etc. (Input shorted, 200 mVrms)	103 dB

Residual Noise / 残留ノイズ (IHF-A network)

.....	33 μ Vrms
-------	---------------

Channel Separation / チャンネルセパレーション (1 kHz/10 kHz)

PHONO (MC) (Input shorted, Vol: -30 dB)		66 dB or more / 77 dB or more
(MM) (Input shorted, Vol: -30 dB)		90 dB or more / 77 dB or more
CD, etc. (Input 5.1 k-ohms terminated)		74 dB or more / 54 dB or more

Tone Control Characteristics / トーンコントロール特性

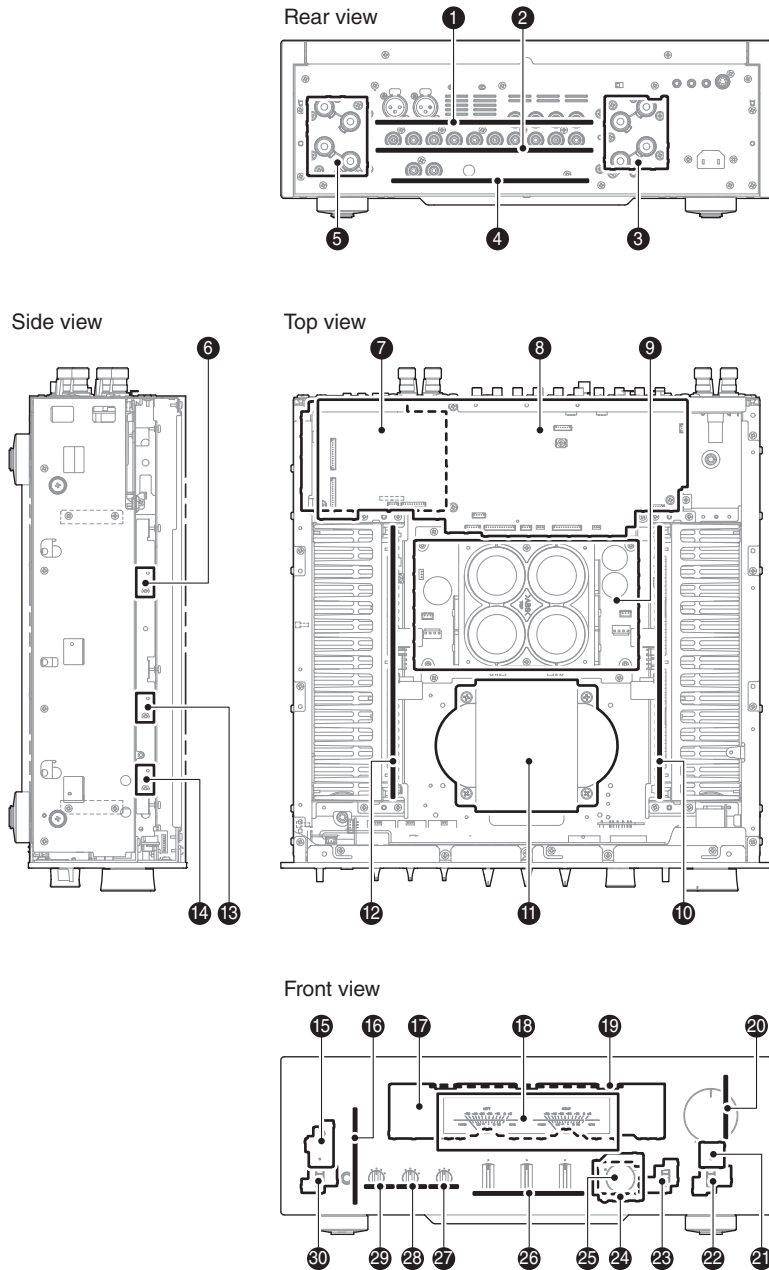
Bass	
Boost/Cut	± 9 dB, at 50 Hz
Turnover frequency	350 Hz
Treble	
Boost/Cut	± 9 dB, at 20 kHz
Turnover frequency	3.5 kHz

General / 総合**Power Supply / 電源電圧**

U model	AC 120 V, 60 Hz
T model	AC 220 V, 50 Hz
K model	AC 220 V, 60 Hz
A model	AC 240 V, 50 Hz
B, G models	AC 230 V, 50 Hz
L model	AC 220-240 V, 50/60 Hz
V model	AC 110 V, 60 Hz
S model	AC 110-120 V, 60 Hz
J model	AC 100 V, 50/60 Hz

Power Consumption / 消費電力

INTERNAL VIEW



- ① INPUT (2) P.C.B.
- ② INPUT (1) P.C.B.
- ③ FRONT (17) P.C.B.
- ④ FUNCTION (2) P.C.B.
- ⑤ FRONT (16) P.C.B.
- ⑥ FRONT (20) P.C.B.
- ⑦ FUNCTION (3) P.C.B.
- ⑧ FUNCTION (1) P.C.B.
- ⑨ MAIN (3) P.C.B.
- ⑩ MAIN (1) P.C.B.
- ⑪ POWER TRANSFORMER
- ⑫ MAIN (2) P.C.B.
- ⑬ FRONT (18) P.C.B.
- ⑭ FRONT (19) P.C.B.
- ⑮ FRONT (13) P.C.B.
- ⑯ FRONT (12) P.C.B.
- ⑰ FRONT (1) P.C.B.
- ⑱ METER UNIT
- ⑲ FRONT (15) P.C.B.
- ⑳ FRONT (2) P.C.B.
- ㉑ FRONT (3) P.C.B.
- ㉒ FRONT (5) P.C.B.
- ㉓ FRONT (6) P.C.B.
- ㉔ FRONT (4) P.C.B.
- ㉕ FRONT (7) P.C.B.
- ㉖ FRONT (8) P.C.B.
- ㉗ FRONT (9) P.C.B.
- ㉘ FRONT (10) P.C.B.
- ㉙ FRONT (11) P.C.B.
- ㉚ FRONT (14) P.C.B.

■ SERVICE PRECAUTIONS / サービス時の注意事項

Safety measures

- Some internal parts in this product contain high voltages and are dangerous.
Be sure to take safety measures during servicing, such as wearing insulating gloves.
- Note that the capacitors indicated below are dangerous even after the power is turned off because an electric charge remains and a high voltage continues to exist there.
Before starting any repair work, connect a discharging resistor (5 k-ohms/10 W) to the terminals of each capacitor indicated below to discharge electricity.
The time required for discharging is about 30 seconds per each.

C309, C310, C317 to C320, C327 and C328
on MAIN (3) P.C.B.

For details, refer to "PRINTED CIRCUIT BOARDS".

Precaution for handling measuring instrument

Since the speaker output of this unit is BALANCED OUT connected, the ground side of the measuring instrument to be connected to the speaker terminal MUST be kept in floating condition.

安全対策

- この製品の内部には高電圧部分があり危険です。修理の際は、絶縁性の手袋を使用するなどの安全対策を行ってください。
- 下記のコンデンサには電源を OFF にした後も電荷が残り、高電圧が維持されており危険です。
修理作業前に放電用抵抗 (5 k Ω /10 W) を下記の各コンデンサの端子間に接続して放電してください。
放電所用時間は各々約 30 秒間です。

MAIN (3) P.C.B. の C309、C310、
C317 ~ C320、C327、C328

詳しくは "PRINTED CIRCUIT BOARDS" を参照してください。

計測機器取り扱い上の注意

本機のスピーカー出力は BALANCED OUT 接続となっていますので、スピーカー端子に接続する計測器のアース側はフローティング状態に保つ必要があります。

■ DISASSEMBLY PROCEDURES / 分解手順

(Remove parts in the order as numbered.)
Disconnect the power cable from the AC outlet.

(番号順に部品を外してください。)
AC 電源コンセントから、電源コードを抜いてください。

1. Removal of Side Panel L and Side Panel R

- Remove 2 screws (①) together with the coned disc spring L and washer. (Fig. 1)
- Lift the side panel L a little, release hooks at 3 locations and then remove the side panel L. (Fig. 1)
- Remove 2 screws (②) together with the coned disc spring L and washer. (Fig. 1)
- Lift the side panel R a little, release hooks at 3 locations and remove the side panel R. (Fig. 1)

1. サイドパネル L、サイドパネル R の外し方

- ① のネジ 2 本をサラバネ L、ワッシャーと一緒に外します。(Fig. 1)
- サイドパネル L を少し持ち上げ、3 ヶ所のフックを外し、サイドパネル L を外します。(Fig. 1)
- ② のネジ 2 本をサラバネ L、ワッシャーと一緒に外します。(Fig. 1)
- サイドパネル R を少し持ち上げ、3 ヶ所のフックを外し、サイドパネル R を外します。(Fig. 1)

2. Removal of Top Cover

- Remove 10 screws (③) and 2 screws (④). (Fig. 1)
- Remove the top cover. (Fig. 1)

2. トップカバーの外し方

- ③ ネジ 10 本、④ ネジ 2 本を外します。(Fig. 1)
- トップカバーを外します。(Fig. 1)

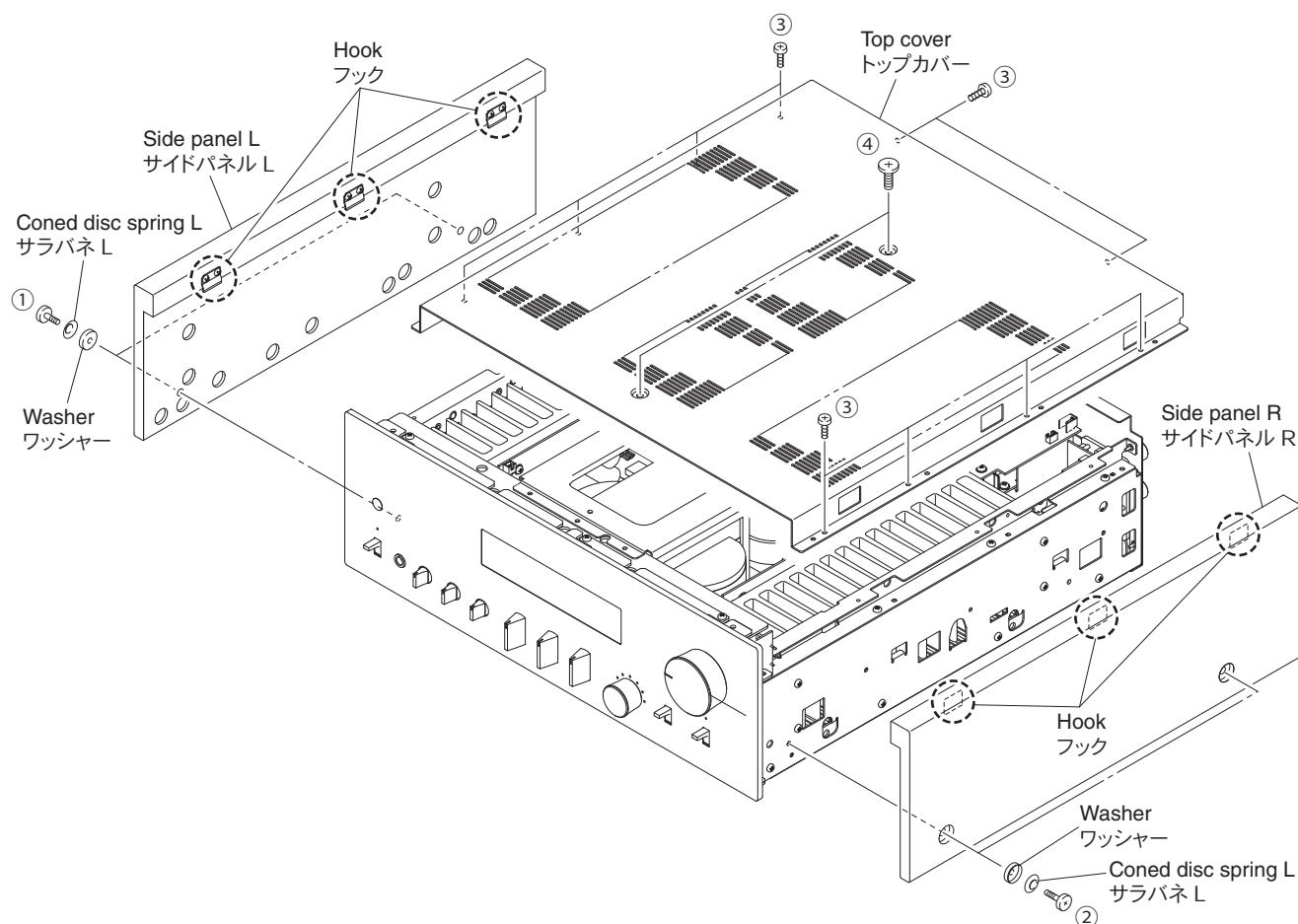


Fig. 1

3. Removal of Front Panel Unit

- Remove 4 screws (⑤). (Fig. 2)
- Remove the top frame. (Fig. 2)
- Remove 8 screws (⑥). (Fig. 2)
- Remove CB401, CB403, CB405 and CB406. (Fig. 2)
- Remove the front panel unit. (Fig. 2)

3. フロントパネルユニットの外し方

- ⑤ のネジ 4 本を外します。 (Fig. 2)
- トップフレームを外します。 (Fig. 2)
- ⑥ のネジ 8 本を外します。 (Fig. 2)
- CB401、CB403、CB405、CB406 を外します。 (Fig. 2)
- フロントパネルユニットを外します。 (Fig. 2)

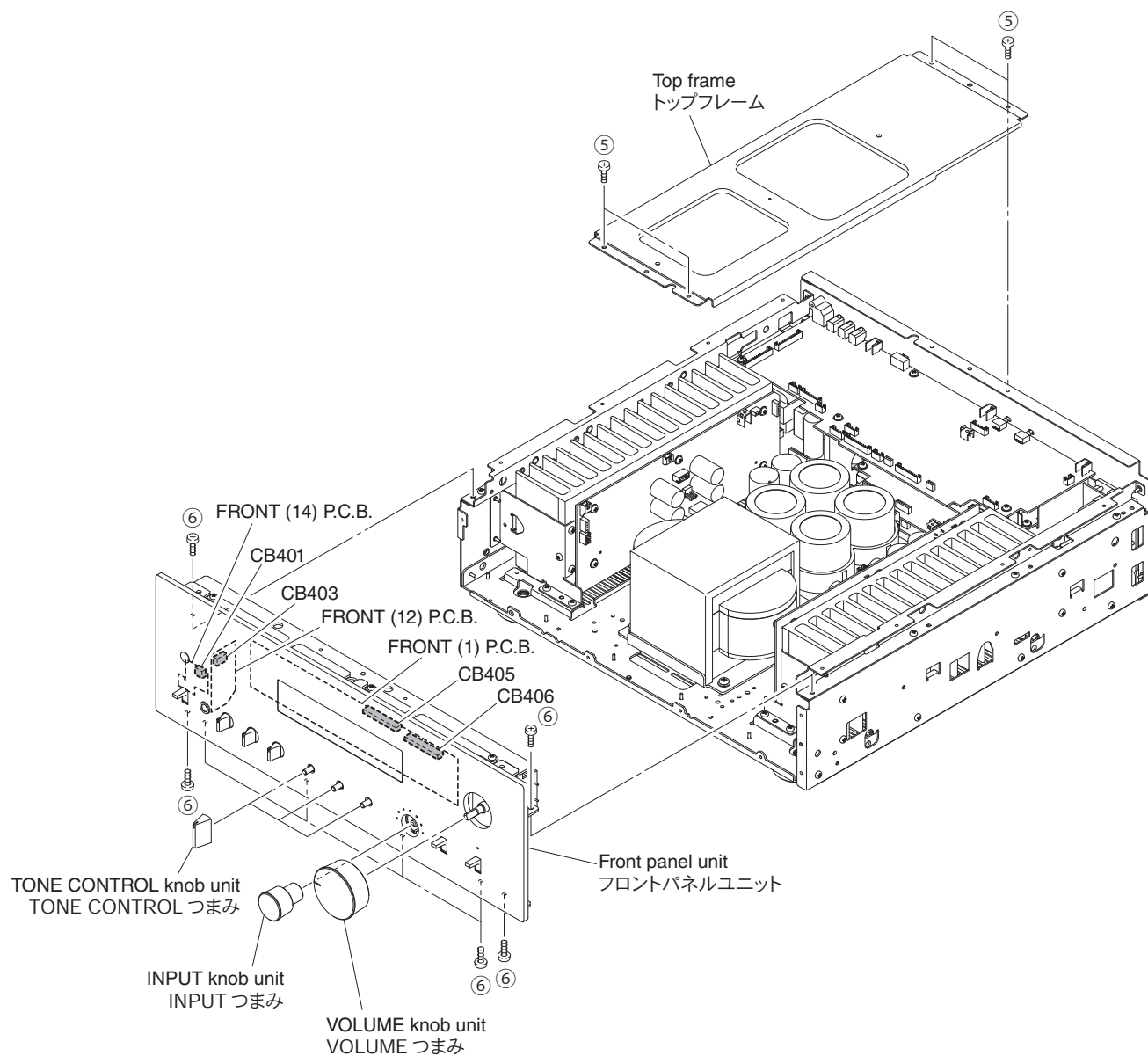


Fig. 2

● When installing the knob unit

- * Prepare a hexagonal screwdriver (2 mm) for installation of knob unit.

When installing the VOLUME knob unit:

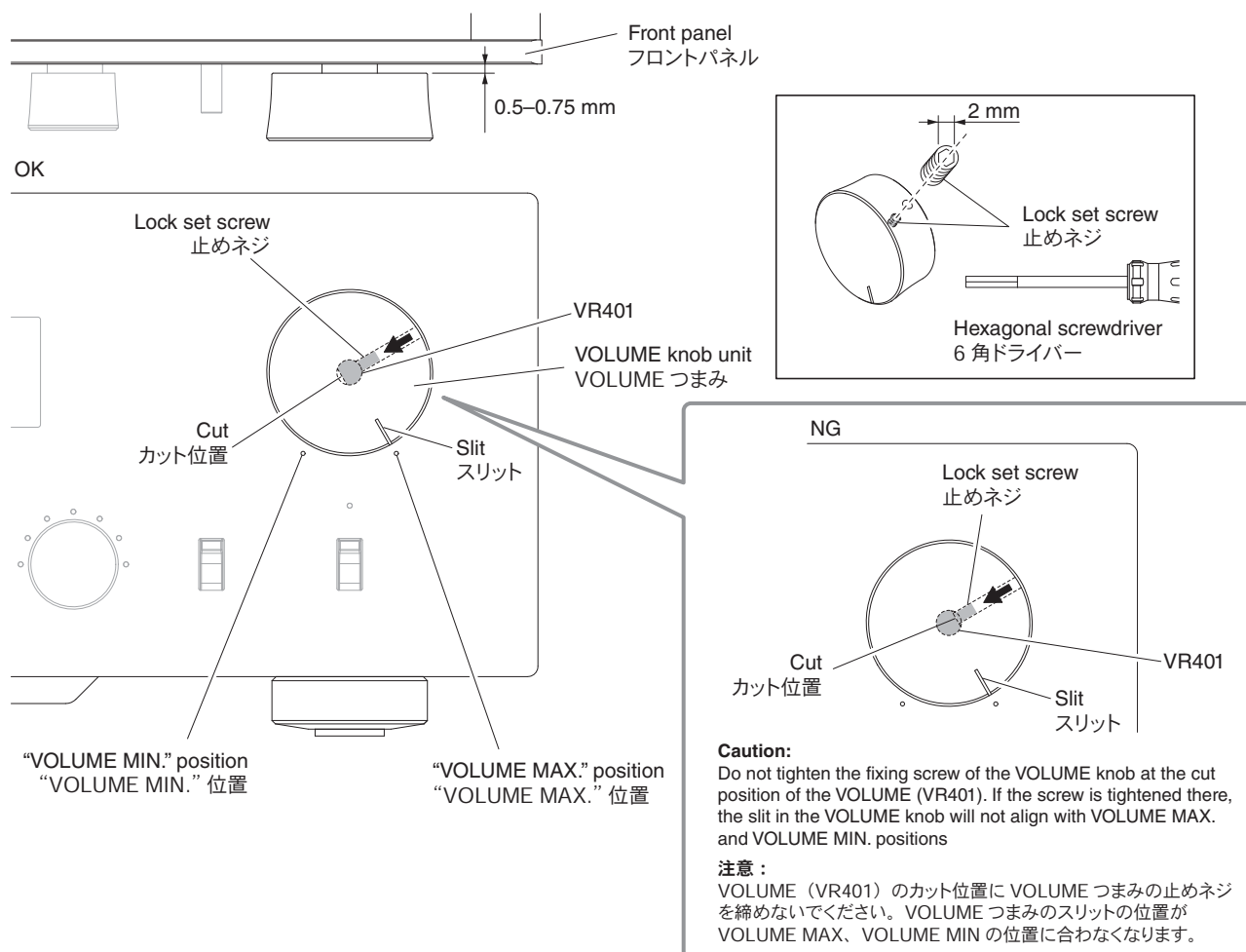
- Turn the VOLUME (VR401) clockwise fully. (Fig. 3)
- Match the slit in the VOLUME knob unit with the "VOLUME MAX." position and install it in that state. (Fig. 3)
 - * At this time, do not tighten the lock set screw.
- Keep about 0.5 mm to 0.75 mm clearance from the front panel to VOLUME knob unit. (Fig. 3)
- Tighten the lock set screw. (Fig. 3)
- After installation, perform following checks.
 - Turn the VOLUME knob unit both directions to check that it does not rub against the front panel.
 - Turn the VOLUME knob unit clockwise fully and check that the slit in it matches with the "VOLUME MAX." position.
 - Turn the VOLUME knob unit counterclockwise fully and check that the slit in it matches with the "VOLUME MIN." position.

● つまみを取り付ける場合

- ※ つまみを取り付ける場合、6 角ドライバー (2 mm) を準備します。

VOLUME つまみを取り付ける場合：

- VOLUME (VR401) を右いっぱいに戻します。(Fig. 3)
- VOLUME つまみのスリットを "VOLUME MAX." の位置に合わせ、取り付けます。(Fig. 3)
 - ※ このとき、まだ止めネジは締めません。
- フロントパネルから VOLUME つまみまで 0.5 ～ 0.75mm 程度隙間をあけます。(Fig. 3)
- 止めネジを締めます。(Fig. 3)
- 取り付け後、次の動作を確認します。
 - VOLUME つまみを左右に回し、フロントパネルに擦っていないか？
 - VOLUME つまみを右いっぱいに戻し、VOLUME つまみのスリットが "VOLUME MAX." の位置に合うか？
 - VOLUME つまみを左いっぱいに戻し、VOLUME つまみのスリットが "VOLUME MIN." の位置に合うか？

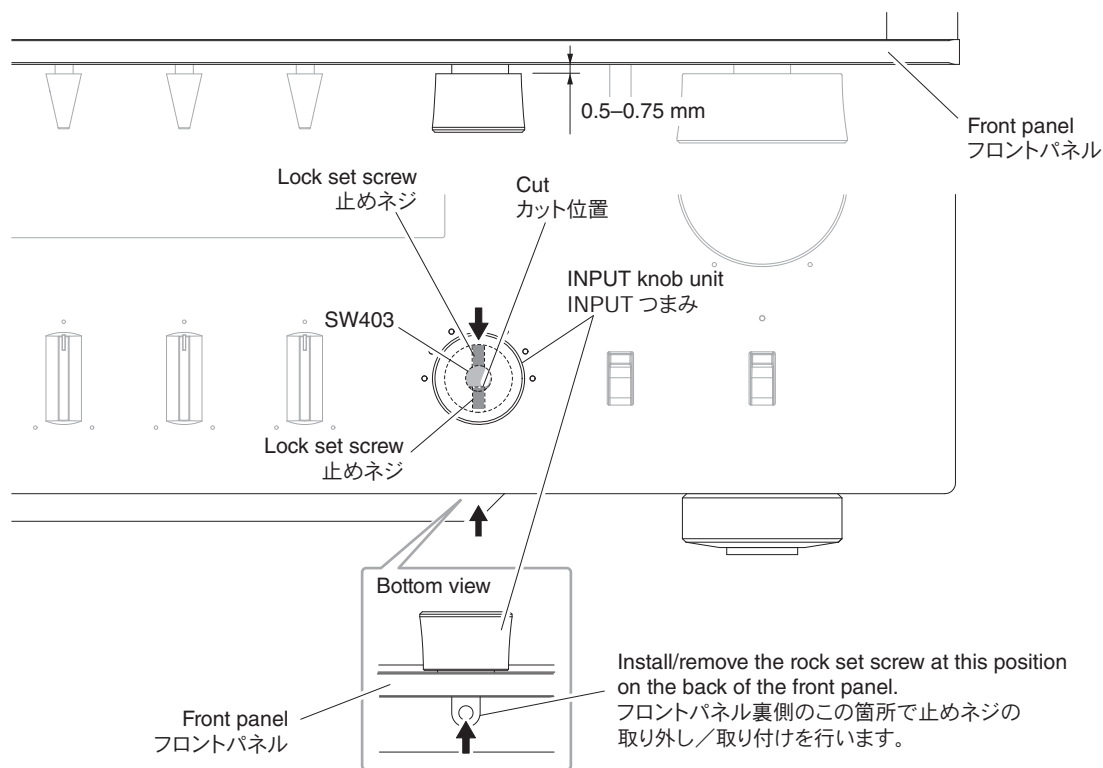


When installing the INPUT knob unit:

- Turn the INPUT (SW403) so that the cut in it comes at the under. (Fig. 4)
- Install the INPUT knob unit with its lock set screw positioned at the under. (Fig. 4)
 - * At this time, do not tighten the lock set screw.
- Keep about 0.5 mm to 0.75 mm clearance from the front panel to INPUT knob unit. (Fig. 4)
- Match the lock set screw position with the cut in INPUT (SW403) and tighten the lock set screw. (Fig. 4)
- Turn the INPUT knob unit by 180 degrees (6 clicks) and tighten another lock set screw. (Fig. 4)
- After installation, perform following checks.
 - Turn the INPUT knob unit in both directions to check that it does not rub against the front panel.

INPUTつまみを取り付ける場合：

- INPUT (SW403) のカット位置が下になるよう回します。(Fig. 4)
- INPUTつまみの止めネジ位置を下にして取り付けます。(Fig. 4)
 - ※ このとき、止めネジは締めません。
- フロントパネルからINPUTつまみまで 0.5 ～ 0.75 mm 程度隙間をあけます。(Fig. 4)
- INPUT (SW403) のカット位置に止めネジ位置を合わせ、止めネジを締めます。(Fig. 4)
- INPUTつまみを 180° 回転 (6 クリック) させ、もう 1 つの止めネジを締めます。(Fig. 4)
- 取り付け後、次の動作を確認します。
 - INPUTつまみを左右に回し、フロントパネルに擦っていないか？

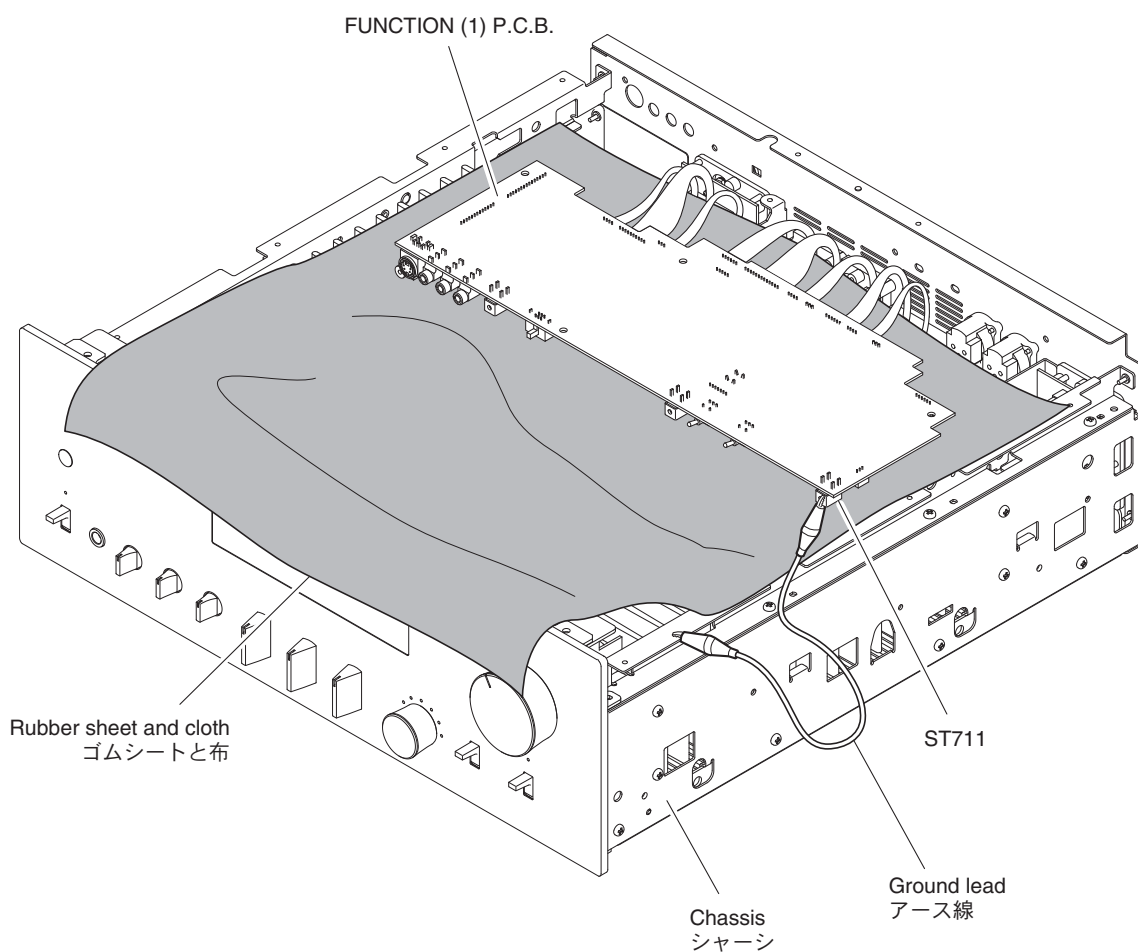
**Fig. 4**

When checking the FUNCTION (1) P.C.B.:

- Put the rubber sheet and cloth over this unit, and place the FUNCTION (1) P.C.B. on them. (Fig. 12)
- Connect ST711 on FUNCTION (1) P.C.B. to the chassis with a ground lead. (Fig. 12)
- When connecting the flexible flat cable, be careful with polarity.

FUNCTION (1) P.C.B. をチェックする場合には：

- 本機の上にゴムシートと布を敷き、その上に FUNCTION (1) P.C.B. を置きます。(Fig. 12)
- FUNCTION (1) P.C.B. の ST711 のアースをリード線でシャーシに接続してください。(Fig. 12)
- フラットケーブルを接続する際、極性に注意してください。

**Fig. 12**

● Operation procedures

1. Set the "STANDBY/ON, OFF" (U, K, A, B, G, L, V, S models) / "⏻" (Power) (T model) switch to the "ON" position.
2. Connect the power cable of this unit to the AC outlet.
The power to this unit is supplied and the microprocessor is in the writing mode.
3. Start up FlashSta.exe.
The screen appears as shown below. (Fig. 3)
4. Select the data to be transmitted and port. (Fig. 3)

● Select Program

Select Internal flash memory.

● RS232C

Select the port of RS-232C.

- * For selection of the port, COM1 to 4 can be used.
As COM5 or higher port cannot be used, select out of COM 1 to 4 of the setting on the PC side.

● 操作方法

1. "STANDBY/ON、OFF"（電源）スイッチを "ON" にします。
2. 本機の電源コードを AC コンセントに接続します。
本機に電源が入り、マイコンが書き込みモードになります。
3. FlashSta.exe を起動します。
下記の画面が表示されます。(Fig. 3)
4. 送信データ、ポートを選択します。(Fig. 3)

● Select Program

Internal flash memory を選択します。

● RS232C

接続している RS-232C ポートを選択します。

- ※ ポートの選択は COM1 ～ 4 までが使用できます。
COM5 以上は使用できませんので、PC 側の設定で COM1 ～ 4 を選択してください。



Fig. 3

