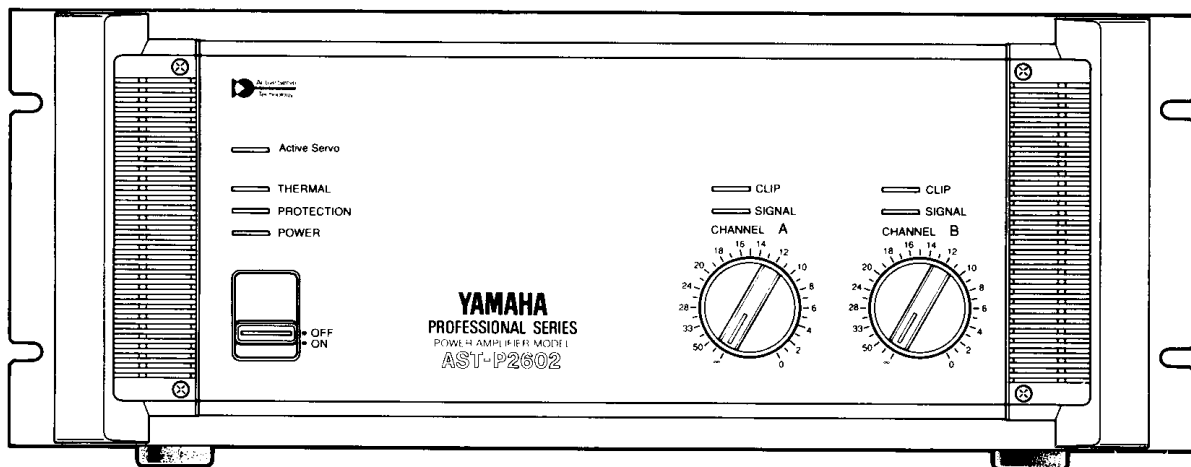


YAMAHA

PROFESSIONAL SERIES POWER AMPLIFIER

AST-P2602

OPERATING MANUAL





Thank you for purchasing the Yamaha AST-P2602 power amplifier. Utilizing Yamaha's newly developed Active Servo Technology, the AST-P2602 power amplifier is designed to be used together with the Active Servo Technology speaker system such as AST-S30 to provide ultra-low frequency performance that would be impossible for conventional amplifier/speaker systems, with low distortion and excellent Sound quality.

It can also be used with a conventional speaker system as a PA power amplifier, or as the main amplifier for an audio system.

The AST-P2602 power amplifier is a superb performer with continuous output power of 260W + 260W (8 ohm load, normal) and 250W + 250W (8 ohm load, Active Servo operation), and less than 0.01% distortion.

To ensure long and trouble-free use of your AST-P2602, please read this manual carefully before use.

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PRECAUTIONS

● Amplifier cooling considerations

When the surface temperature of the radiator reaches 70 degrees C, the THERMAL indicator will light. If this occurs, take measures to improve cooling. If the indicator stays on, take measures such as turning down the attenuators.

This unit should be placed in a location with good air circulation. Avoid placing objects on top of the unit. When using the unit outdoors, be especially careful to avoid placing it in direct sunlight, since operation in such conditions can result in abnormally high temperatures.

IMPORTANT NOTICE FOR THE UNITED KINGDOM

Connecting the Plug and Cord

IMPORTANT. The wires in this mains lead are coloured in accordance with the following code:

BLUE : NEUTRAL

BROWN : LIVE

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

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

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

SPECIFICATIONS

● Amplifier section

Continuous output power	260W + 260W (8 ohms, 20Hz — 20kHz, THD 0.05%) : Normal 250W + 250W (8 ohms, 20Hz — 20kHz, THD 0.05%) : Active Servo Technology
Frequency response	10Hz — 50kHz, 0dB ±1.0dB (8 ohms, 1W)
Power bandwidth	20Hz — 50kHz (8 ohms, 130W, THD 0.1%)
Total harmonic distortion	less than 0.01% (8 ohms, 130W, 20Hz — 20kHz)
Intermodulation distortion	less than 0.005% (8 ohms, 130W, 250Hz:12.5kHz=4:1)
Crosstalk	75dB (20Hz — 20kHz, 8 ohms, 130W, INPUT ATT MIN)
Damping factor	greater than 200 (1kHz, 8 ohms)
S/N ratio	100dB (600 ohms input, Shunt.IHF-A)
Input sensitivity	+4dBm (8 ohms, 260W)
Input impedance	15k ohms (INPUT ATT MAX)
Voltage gain	31.4dB (1kHz, INPUT ATT MAX)

● Indicator section

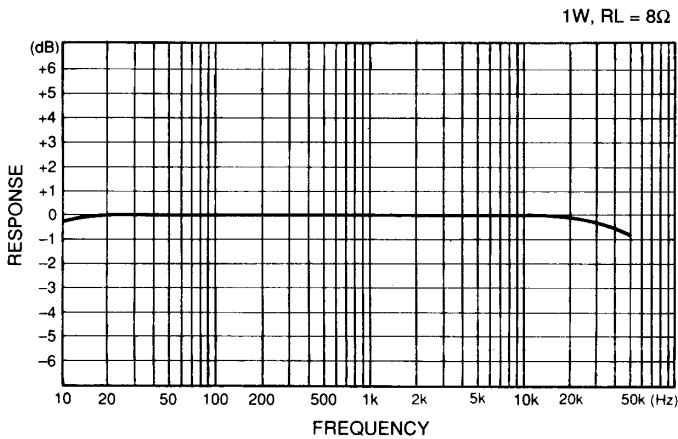
POWER indicator	red LED
PROTECTION indicator	red LED
THERMAL indicator	red LED (lights when above 70 °c)
CLIP indicator	red LED (lights when THD greater than 1%)
SIGNAL indicator	green LED (lights when greater than $V_o=2V$, 20Hz — 20kHz)
Active Servo indicator	green LED

● Other general specifications

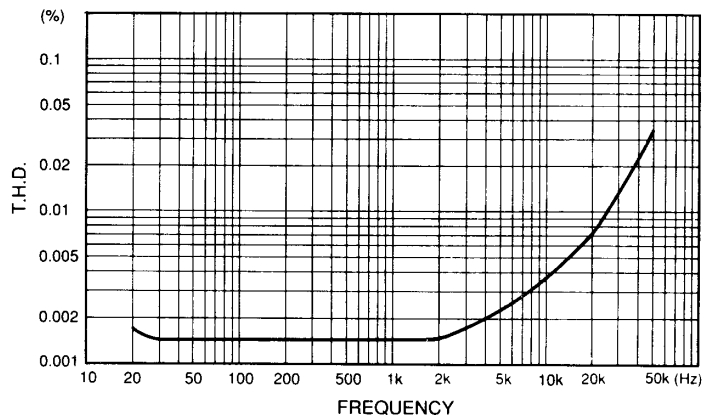
Power requirements	U.S. & Canadian models AC 120V, 60Hz General model AC220/240V, 50/60Hz
Power consumption	U.S. & Canadian models 700W 900VA General model 700W
Dimensions	480(W) x 184(H) x 433(D)mm
Panel size	480(W) x 176(H)mm
Rack mounting	mountable in a standard 19-inch rack
Weight	23.6kg
Supplied accessory	knob lock x 2

* For product improvement, specifications and appearance are subject to change without notice.

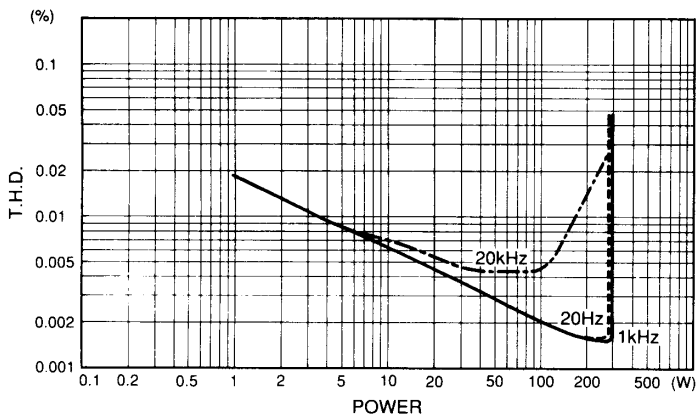
■ Frequency response



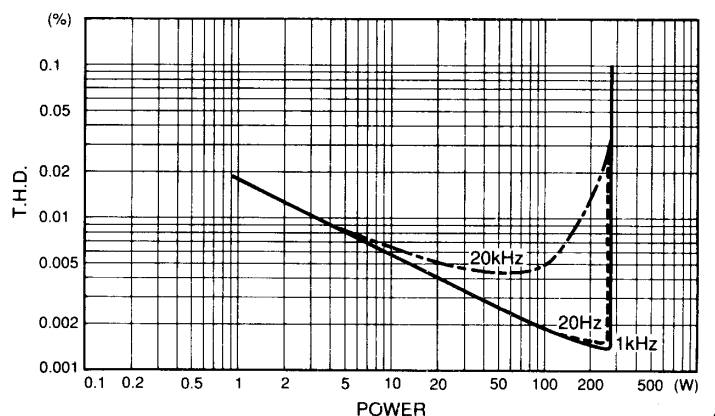
■ Frequency vs. total harmonic distortion



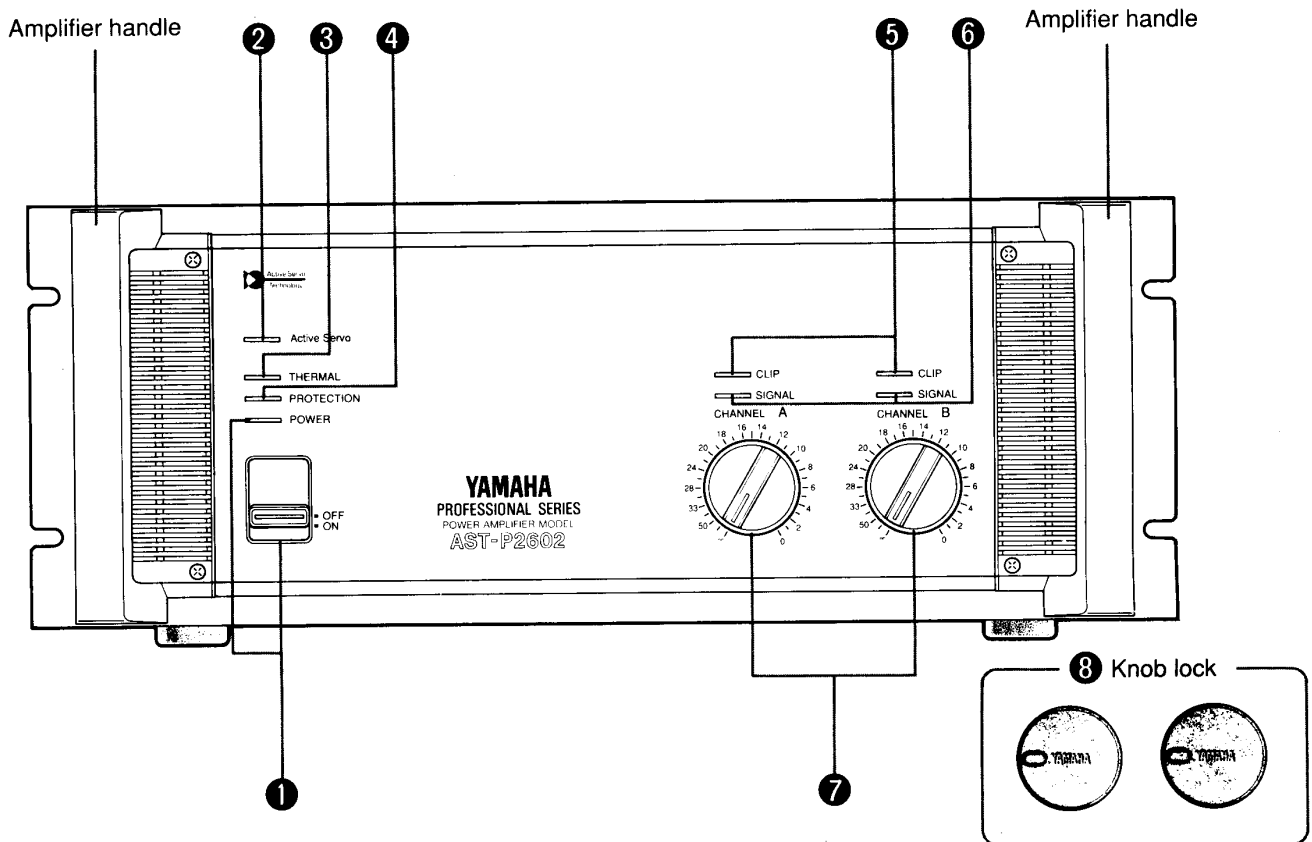
■ Output vs. total harmonic distortion (single channel driven)



■ Output vs. total harmonic distortion (Both channels driven)



FRONT PANEL



1 POWER Switch, Indicator

Pressing this switch down turns power ON, and causes the power indicator to light. Pressing the switch again turns power OFF.

2 Active Servo Technology Indicator

When a cartridge for Active Servo speaker is inserted into the slot on the rear panel, this LED will light.

* Be sure to turn OFF before inserting or removing the cartridge.

3 THERMAL Indicator

This LED will light when the surface temperature of the main radiator rises beyond 70 degrees C. If this indicator lights, measures must be taken to provide cooling.

4 PROTECTION Indicator

When you press the power switch, this will light for approximately 6 seconds, indicating that the protection circuit is in operation. While this indicator is lit, the speakers will be muted. If for some reason the protection circuit should operate, this indicator will light, and the speakers will be muted. When the cause is removed, the protection circuit will automatically recover, the indicator will go off, and normal operation will resume.

5 CLIP Indicator

When the output exceeds 1% distortion, this LED will light, indicating that the input level is too high, and clipping is occurring.

6 SIGNAL Indicator

This LED will light when the output voltage exceeds 2V, indicating that an audio signal is being input.

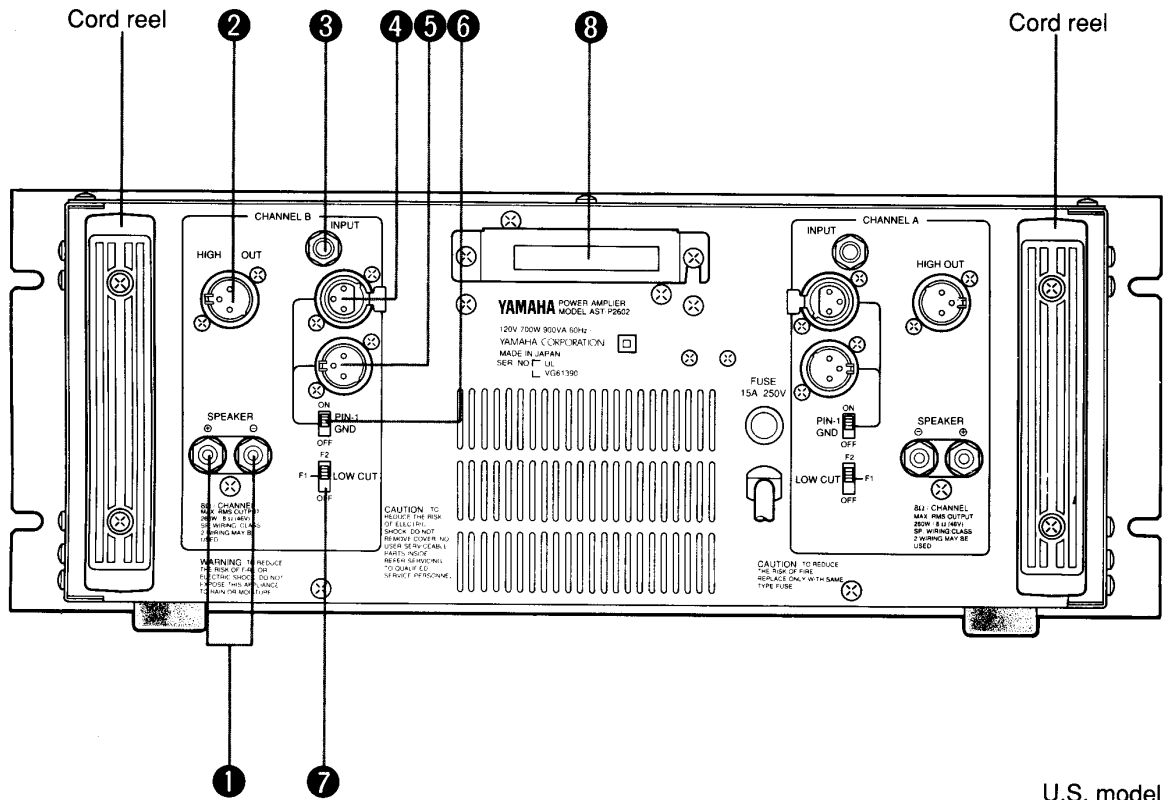
7 ATTENUATORS

These attenuators adjust the input level over 31 positions; from 0 — -20dB in steps of 1dB, and from -20 — -30dB in steps of 2dB. When fully clockwise, attenuation is 0dB. When fully counter-clockwise, attenuation is infinite.

8 KNOB LOCK (supplied accessory)

After settings have been made, the knob locks can be used to lock the attenuators in place.

REAR PANEL



U.S. model

1 SPEAKER Terminals

Connect the speaker (+) to the red terminal, and the speaker (-) to the black terminal. For the operation with an AST-S30 speaker system, this will be the LF output.

2 HIGH OUT XLR Socket (XLR-3-32 type)

When using an Active Servo speaker system, this is the HIGH OUT terminal. Connect it to another 2-channel power amplifier, and connect the SPEAKER terminal of that power amplifier to the HF input terminal of the Active Servo speaker system. Use the input attenuators of each power amplifier to adjust the level balance of the LF and HF.

3 PHONE Input Terminal

Use this terminal for input via a phone plug.

4 XLR Input Terminal (XLR-3-31 type)

This is the terminal normally used as the input. Pin 1 is shield, pin 2 is hot, and pin 3 is cold. This terminal is compatible with XLR-3-12 or Switchcraft 5C-1055A connectors.

5 XLR Input Terminal (XLR-3-32 type)

This terminal is compatible with Canon XLR-3-11C or Switchcraft 5C-1056A connectors. It can be used to send the input signal to other power amplifiers.

6 PIN 1 GND Switch

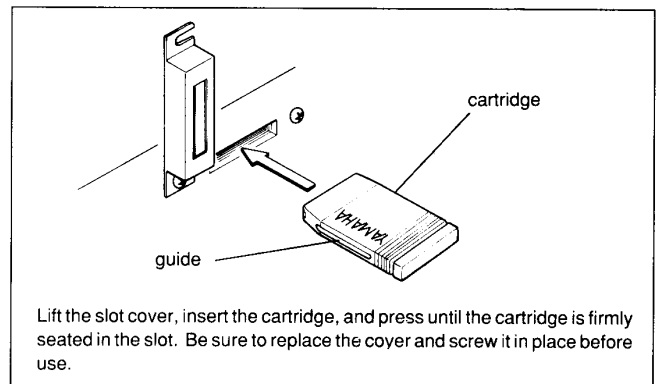
This switch turns the ground line (pin 1; shield) of the XLR connector ON/OFF. Normally you will leave this ON. In cases where a ground loop is causing hum, turning this switch OFF can break the loop and reduce hum.

7 LOW CUT Switch

This switch turns the low cut filter ON/OFF. Two positions (points) of cutoff frequency are selectable; F1 is 32Hz, and F2 is 63Hz. Use the setting appropriate for your situation.

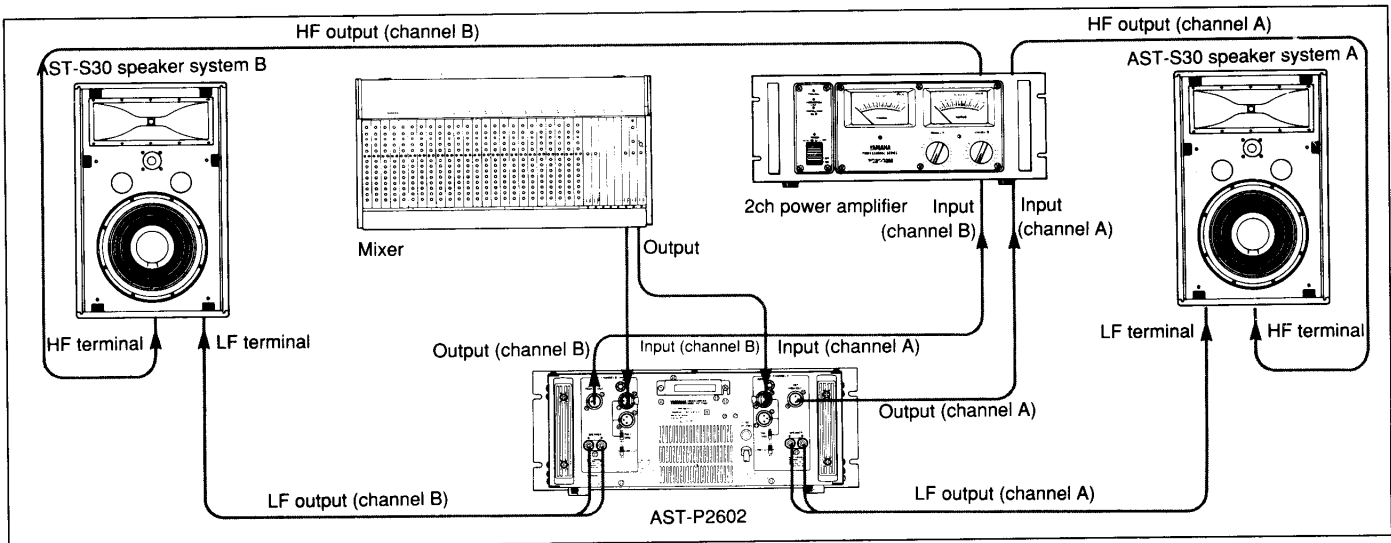
8 Cartridge Slot

Insert the cartridge for your speaker system using Active Servo Technology into this slot. Before inserting or removing the cartridge, be sure to turn the power off.

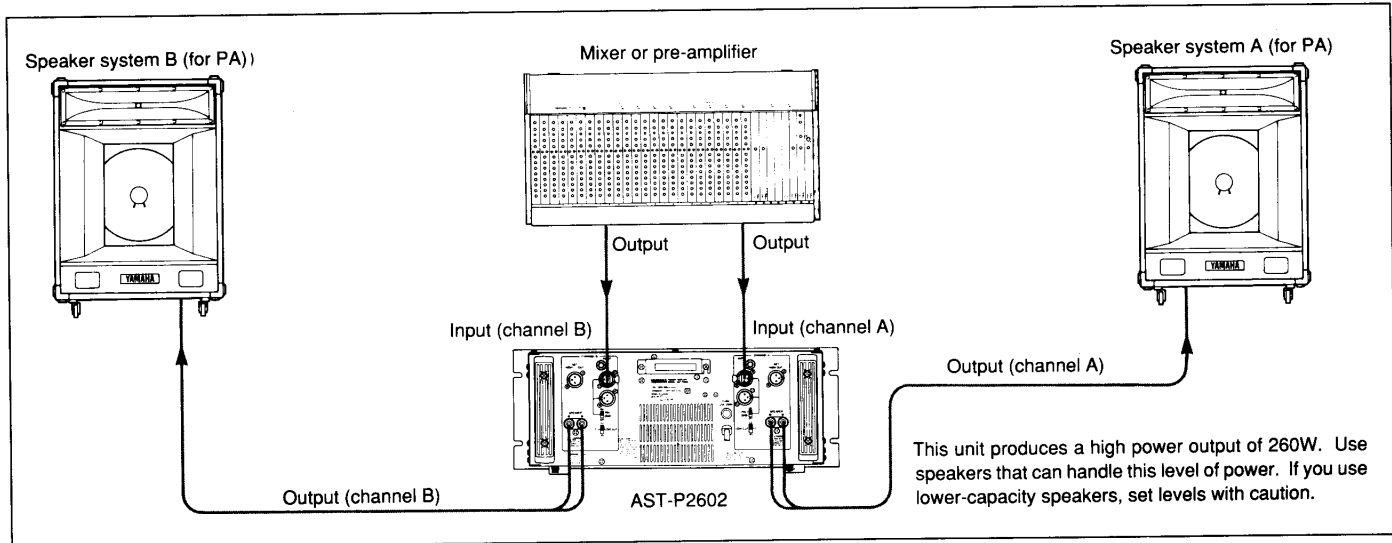


CONNECTIONS

■ Connections for an AST-S30 Active Servo Technology speaker system



■ Connections for a conventional speaker system



● Speaker output terminals

Connect the speaker cables to the corresponding speaker terminals of channel A and channel B. Be sure to make connections correctly; the red terminal is (+), and the black terminal is (-). Firmly tighten the speaker cable terminals to avoid possible short circuits. Be sure to connect and disconnect speaker cables with the power turned off.

● Input terminals

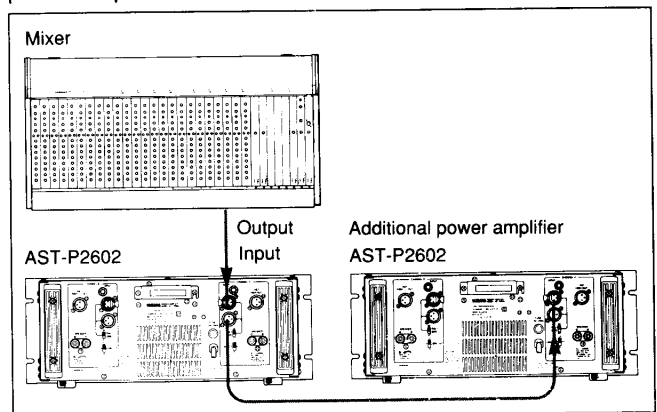
XLR connectors (balanced) and phone jacks (balanced) are provided.

● Connections to a mixer (pre-amplifier)

Connect the STEREO OUT (PRE OUT) of the mixer to the input terminals of the power amplifier.

■ Parallel connection of power amplifiers (adding amplifiers)

This unit provides two types of input connector, XLR-3-31 and XLR-3-32. These are internally wired in parallel, allowing you to use the send socket to supply the input signal to additional power amplifiers.



MOUNTING

Shelf Mounting

The AST-P2602 can be used on any flat, level surface as long as there is adequate ventilation. Do not remove the amplifier's feet as this would block airflow through the bottom panel.

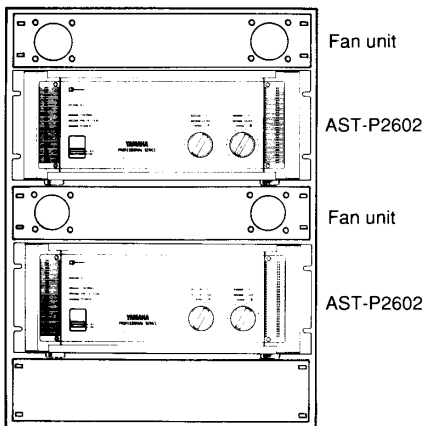
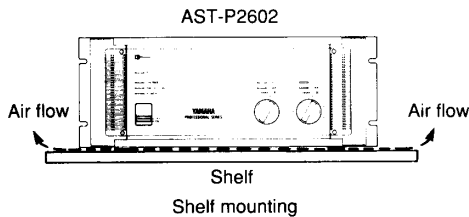
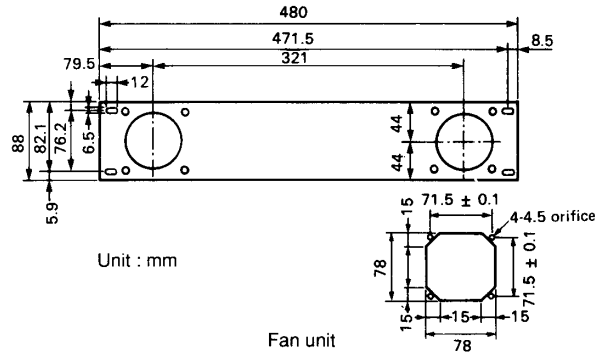
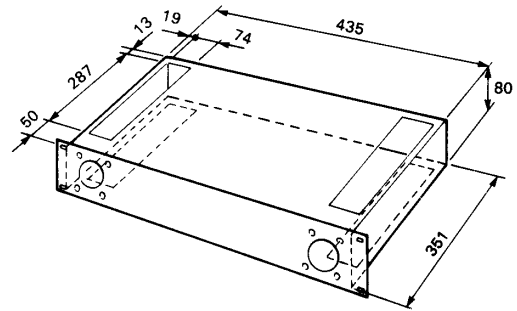
Permanent-installation Rack Mounting

The AST-P2602 can be mounted in any standard 19" electronic equipment rack. The rear panel of the rack should be left open to promote smooth airflow. Cooling fans are required for rack-mounted AST-P2602s if they must produce extremely high average power output. Refer to the diagrams to the right for the ideal cooling fan configuration.

*** One unit of AST-P2602 demands one cooling fan unit.**

Portable rack Mounting

Road cases must be durable enough to withstand rough handling and airline travel. Secure the back end of the AST-P2602 side panels to the rack with the screws provided, and provide cooling fans (like those shown to the right) if ventilation is restricted.



Rack mounting with cooling fans

Fan Unit

- * The fan unit shown uses two fans, each with a maximum volume of 19 CFM (cubic feet per minute) and a maximum pressure of 5 mm H₂O.
- * Slits should be provided on the top and bottom sides for air circulation.

CAUTION !

If unit(s) are to be used in a rack mounted installation, it is recommended that fan cooling be installed. Without fan cooling, units could be damaged from excessive temperature conditions.

The minimum required airflow rate for fans should be 2 x 19 cubic feet per minute (CFM). Use only fans with the above specification.

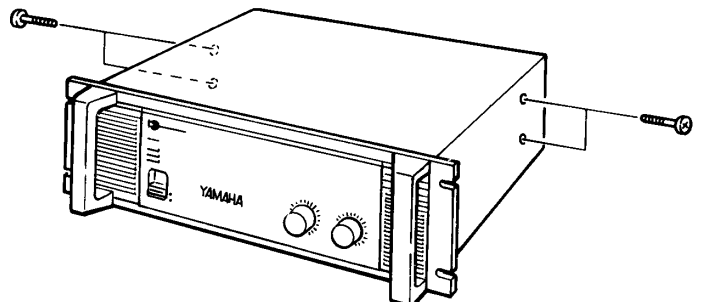
The following are some examples of fans with the proper specifications:

Manufacturer	Type/Model	Airflow Rate
ORIENTAL MOTOR CO LTD	MU825S-23 or equivalent	19 CFM * (0.54m ³ /min)

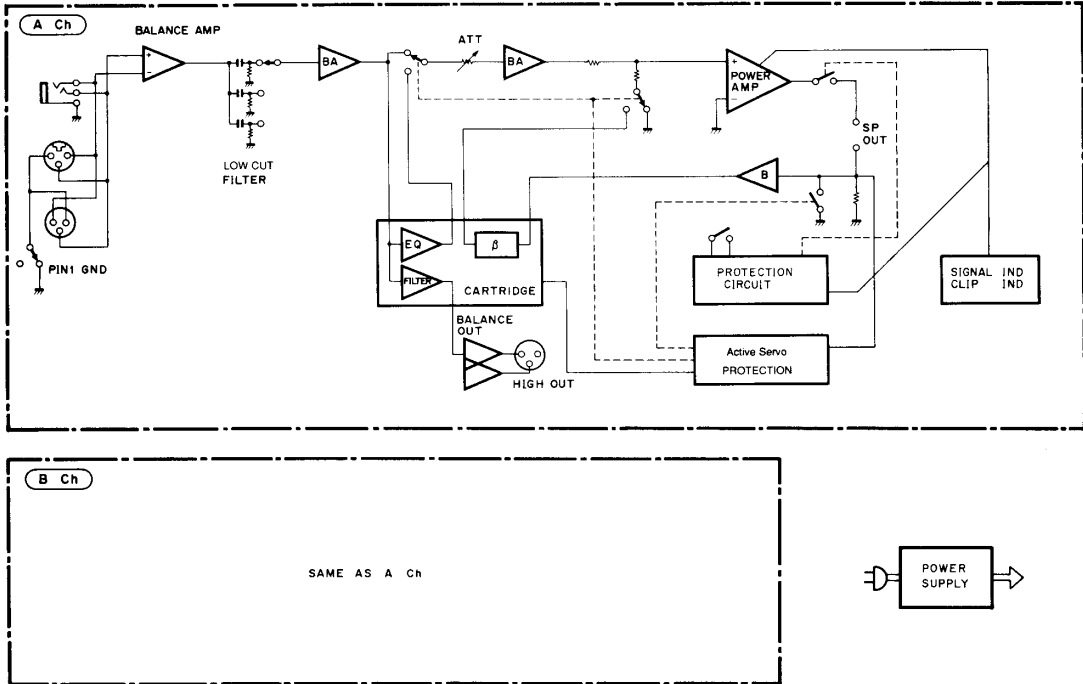
* Maximum volume of AMCA (JIS B8330) double chamber measurement method.

Side Panel Support Screws

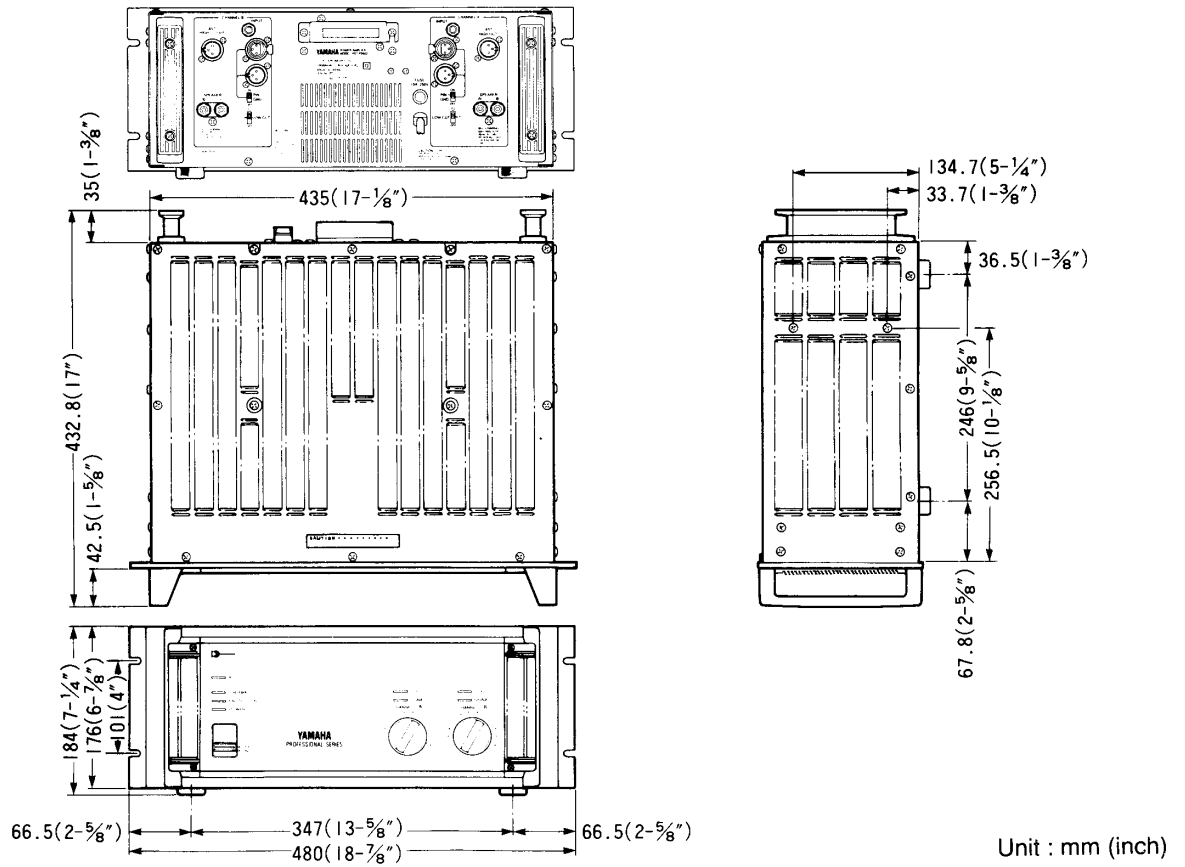
Use both the screw holes on each side panel. Use only the supplied screws (millimeter thread).



BLOCK DIAGRAM



DIMENSIONS



YAMAHA