

# YAMAHA AX-500U

*Natural Sound Stereo Integrated Amplifier*

*85W + 85W (8Ω) RMS Output Power, 0.01% THD, 20-20,000Hz*

*CD DIRECT for High Quality Sound*

*Continuously Variable Loudness Control*

*ALA (Absolute Linear Amplification) Circuit*

*Increased Low Impedance Drivability*

*Banana Chip Speaker Terminals for Easy Connection*

CENTER

## OWNER'S MANUAL

*Thank you for purchasing the YAMAHA AX-500U integrated stereo amplifier.*

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### IMPORTANT

Please record the serial number of your unit in the space below.

Model AX-500U

Serial no.

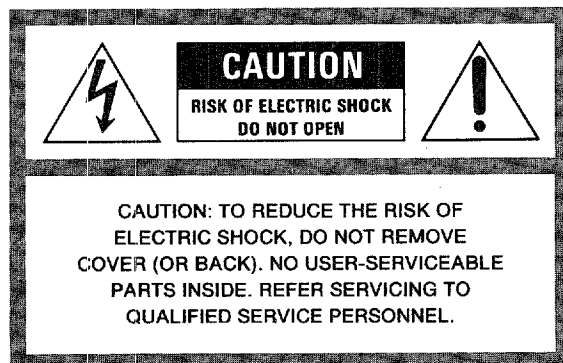
The serial number is located on the rear of the unit.

Retain this Owner's Manual in a safe place for future reference.

### WARNING

To prevent fire or shock hazard, do not expose this appliance to rain or moisture.

# AX-500U



## ● Explanation of graphical Symbols



The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert you 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 to persons.



The exclamation point within an equilateral triangle is intended to alert you to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

## SAFETY INSTRUCTIONS

**1** Read Instructions — All the safety and operating instructions should be read before the appliance is operated.

**2** Retain Instructions — The safety and operating instructions should be retained for future reference.

**3** Heed Warnings — All warnings on the appliance and in the operating instructions should be adhered to.

**4** Follow Instructions — All operating and other instructions should be followed.

**5** Water and Moisture — The appliance should not be used near water — for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.

**6** Carts and Stands — The appliance should be used only with a cart or stand that is recommended by the manufacturer.

**7** Wall or Ceiling Mounting — The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.

**8** Ventilation — The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

**9** Heat — The appliance should be situated away from heat sources such as radiators, stoves, or other appliances that produce heat.

**10** Power Sources — The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

**11** Power-Cord Protection — Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

**12** Cleaning — The appliance should be cleaned only as recommended by the manufacturer.

**13** Nonuse Periods — The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.

**14** Object and Liquid Entry — Care should be taken so that objects do not fall into and liquids not spilled into the inside of the appliance.

**15** Damage Requiring Service — The appliance should be serviced by qualified service personnel when:

- A. The power-supply cord or the plug has been damaged; or
- B. Objects have fallen, or liquid has been spilled into the appliance; or
- C. The appliance has been exposed to rain; or
- D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
- E. The appliance has been dropped, or the cabinet damaged.

**16** Servicing — The user should not attempt to service the appliance beyond those means described in the operating instructions. All other servicing should be referred to qualified service personnel.

## PLEASE NOTE

### ● CLEANING

Wipe off dust with a soft dry cloth. For heavier dirt use a soft damp cloth then dry immediately with a clean cloth. Do not use harsh cloths, alcohol or other chemical solvents as these products may damage the finish.

### ● HANDLING

Do not use force when using the switches and knobs. When removing the power plug from the wall outlet always pull directly on the plug, never yank the cord. Before moving your amplifier be sure to unplug the power cord and remove all other connecting cables.

### ● CONVENIENCE OUTLETS

Do not connect any equipment to the AC outlets on the rear panel if that equipment requires more power than the outlets are rated to provide.

## IN CASE OF TROUBLE

### ● TROUBLESHOOTING

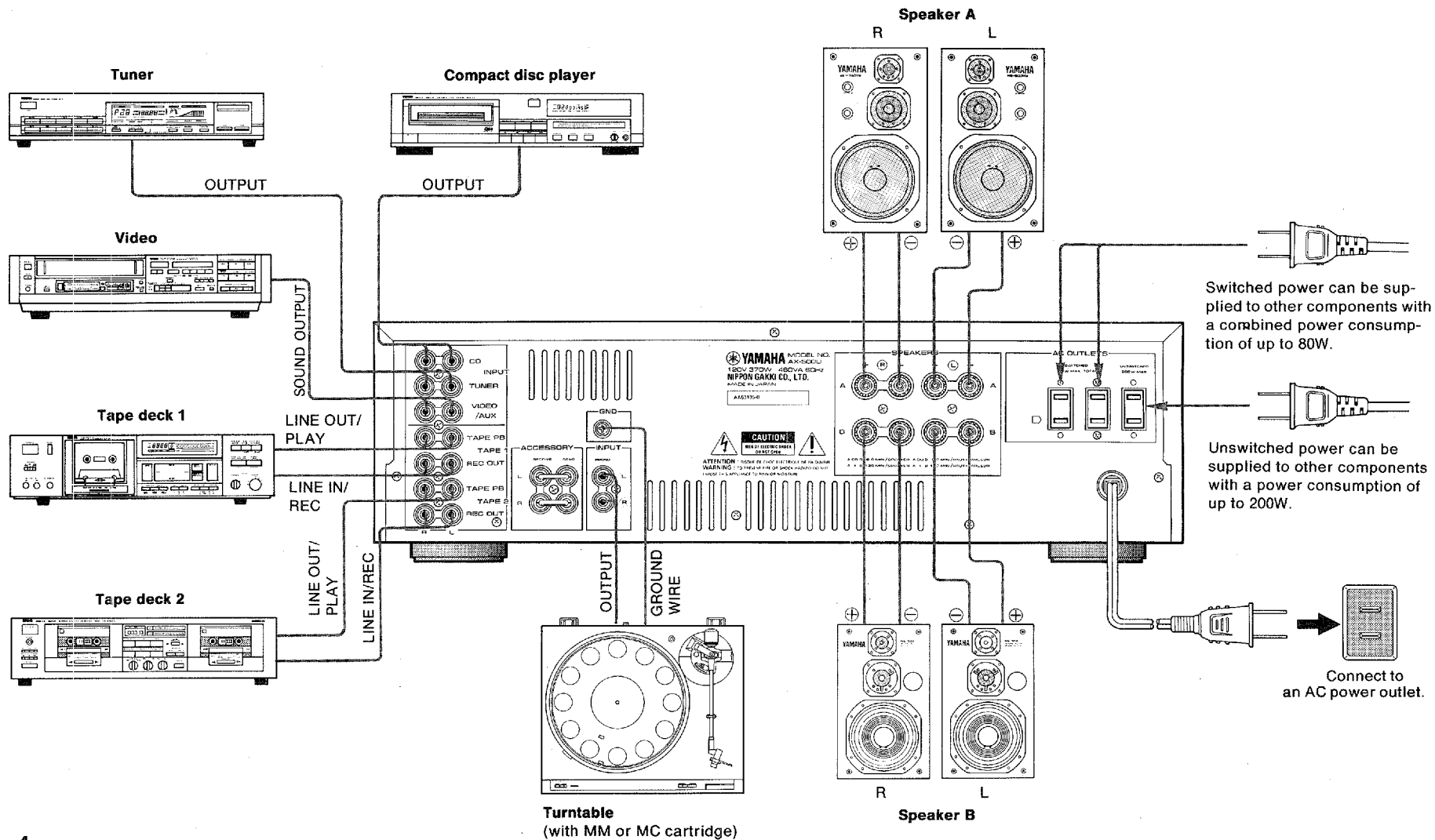
Consult the Troubleshooting Chart for advice on the common operating errors before concluding that your unit is faulty.

### ● SERVICING

Do not open the cabinet or attempt to make repairs by yourself as this may result in damage to the set or electrical shock to yourself. Refer any servicing to your Yamaha dealer.

## CONNECTION DIAGRAM

- Before making any connections turn off all equipment.  
Be sure to connect the left (L) and right (R) channels consistently between components.

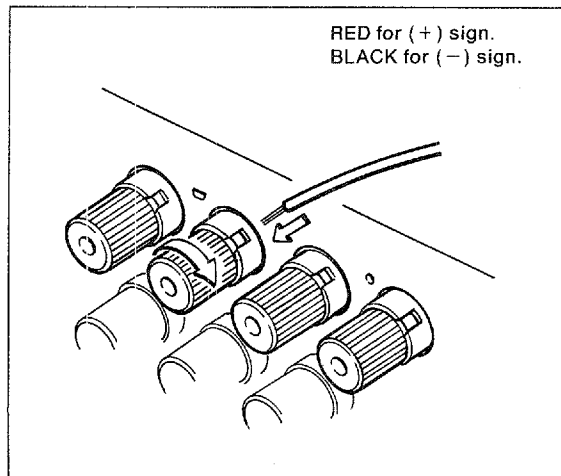


## CONNECTIONS

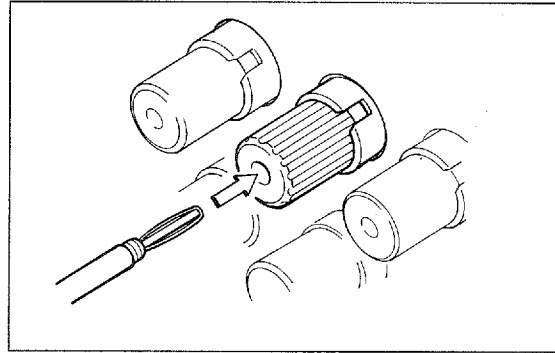
### ● CONNECTING THE SPEAKERS

Connect the cords for the left speakers to the L terminals and the right speaker cords to the R terminals, ensuring that the polarity (+ and -) markings are observed. Be sure to do this consistently from component to component. If the polarity is reversed at either speaker the sound will be unnatural and lack bass. Speaker cords should be cut as short as possible. Avoid coiling the wire on the floor or bundling it up with cords from other system components. The AX-500U speaker terminals allow for two connection methods. The first method outlined usually provides a more secure connection.

1. Strip about 1cm of insulating material from the ends of the speaker wires and twist the strands of each end. Loosen the speaker terminal knobs, insert the exposed wire into the hole and then tighten the speaker terminal knobs.



2. Banana Chip connections are also possible. Simply insert the Banana Chip connector into the corresponding terminal.



### ● CONNECTING A TURNTABLE

Connect the output cords of the turntable to the Phono jacks and connect the ground wire to the GND terminal. Normally connecting the ground wire produces minimum hum but in some cases better results are obtained with the ground wire disconnected. The turntable component and its output cords should be positioned well away from sources of hum such as power cords or power transformers of other system components.

### ● CONNECTING A TUNER

Connect the cords from the tuner's output jacks to the TUNER jacks of the amplifier. Position the tuner so that its AM antenna is well away from the amplifier for the best possible reception.

### ● CONNECTING TO THE CD AND VIDEO/AUX JACKS

Connect your CD component to the CD terminals and video sound output leads to the VIDEO/AUX terminals. Please note that a turntable cannot be connected to these jacks as they do not provide the necessary RIAA equalization.

### ● CONNECTING TAPE DECKS

#### TAPE DECK 1.

Connect the cords from the tape deck's Line In jacks to the REC OUT jacks of TAPE 1, ensuring that left and right are not reversed. Then connect the cords from the tape deck's Line Out jacks to the Tape 1 PB jacks.

TAPE DECK 2 can be connected in similar fashion to the Tape 2 terminals.

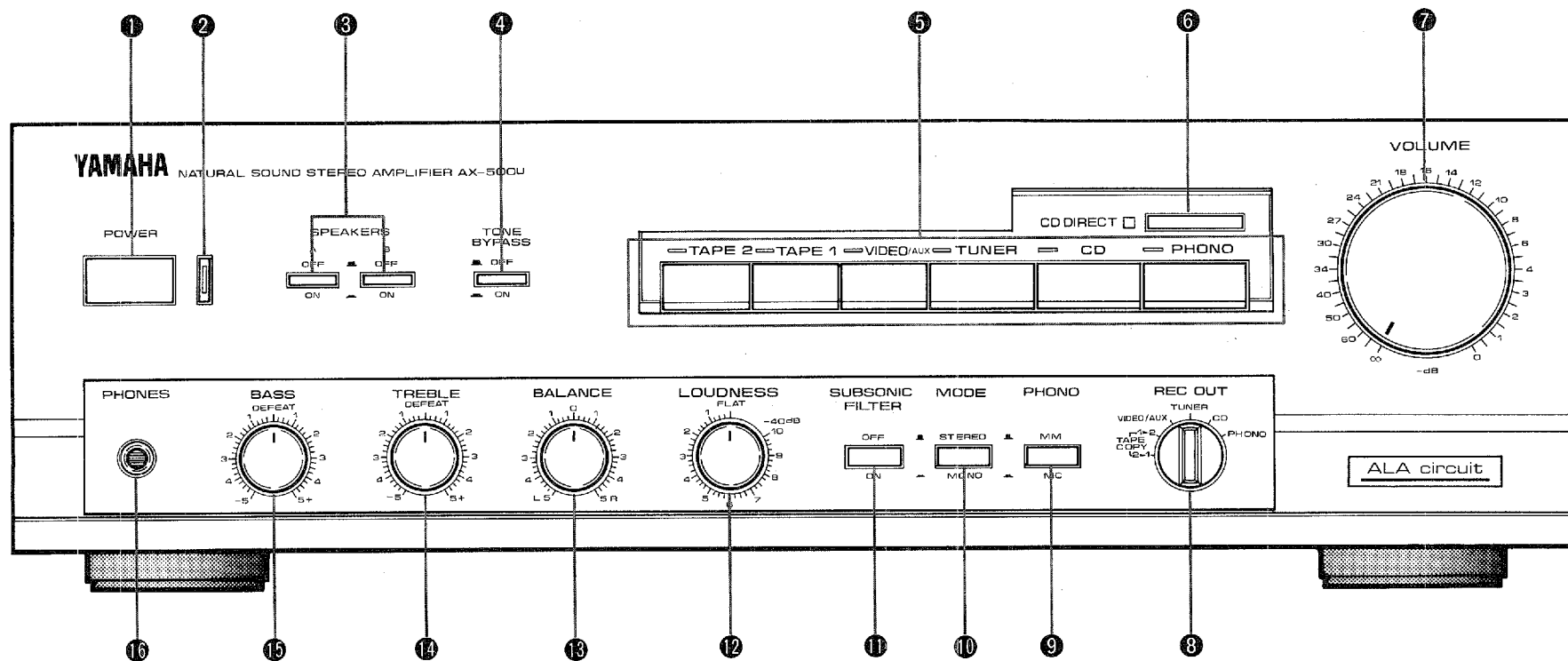
### ● AC OUTLETS

For added convenience the AX-500U provides 3 AC outlets. Two "switched" outlets (the power to these receptacles is turned on and off by this unit's power switch) and one "unswitched" outlet (the power to this receptacle is independent of this unit's power switch). Be sure not to connect appliances totaling more than 80 watts to the 2 switched outlets or 200 watts to the unswitched outlet.

### ● ACCESSORY

The Accessory option allows you to connect a signal processing system, such as an equalizer, in the signal path prior to the Tone control. Connect the Accessory send jacks to the inputs of the equalizer and the Accessory Receive jacks to the outputs of the equalizer.

## FRONT PANEL DESCRIPTIONS



### ❶ POWER SWITCH (POWER)

Press once to turn the power ON and once again to turn the power OFF. Before turning the power ON set the volume to its lowest position (extreme counterclockwise), to protect the speakers from any sudden high level sound.

### ❷ POWER ON INDICATOR

Illuminated when the power is ON.

### ❸ SPEAKERS SWITCHES (SPEAKERS)

As one or two speaker systems can be connected to the AX-500U, these switches allow you to select speaker system A, B or both at once. When listening to the headphones only press both the A and B switches to the OFF position.

## ④ TONE BYPASS CONTROL SWITCH (TONE BYPASS)

Depress this switch to channel the input signal directly to the output stage of your amplifier, bypassing the Bass and Treble controls therefore avoiding any "muddying" caused by the switch and circuit routing to provide a pure sound.

## ⑤ INPUT SELECTOR PANEL

Selects the program source you wish to listen to. The indicator LED above the selected source will light up.

## ⑥ CD DIRECT SWITCH (CD DIRECT)

This switch allows you to route the CD input signal directly to the output stage bypassing the Mode, Loudness, and Balance controls therefore avoiding any "muddying" caused by the switch and circuit routing to provide a pure sound.

## ⑦ VOLUME CONTROL KNOB (VOLUME)

This controls the sound level. Turning clockwise increases the sound volume and turning counterclockwise decreases it. Set this knob to the minimum level before turning the power ON or using the Input Selector Panel to select a different sound source, therefore, protecting the speakers from any sudden high level sound.

## ⑧ REC OUT SELECTOR (REC OUT)

This switch will select a program source and feed that source directly to the rear panel REC OUT terminals independent of the INPUT SELECTORS. This function therefore allows you to listen to any input source while recording another. This control also permits you to record directly from Tape 1 to Tape 2 or vice versa.

## ⑨ PHONO SELECTOR SWITCH (PHONO)

Selects either MM (moving magnet) or MC (moving coil) position to match your cartridge.

High performance MC cartridges can be used when in the MM position.

## ⑩ MODE SWITCH (MODE)

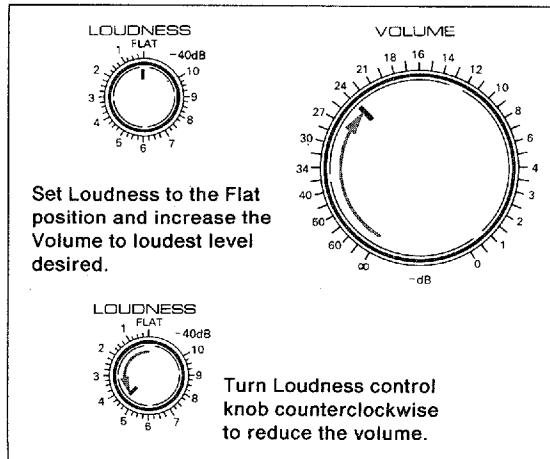
Permits switching between stereo and mono operation. Normally this switch should be set to the stereo position.

## ⑪ SUBSONIC FILTER CONTROL SWITCH (SUBSONIC)

This switch cuts out ultra low frequency signals caused by turntable rumble or warped records, yet retains sound quality.

## ⑫ LOUDNESS CONTROL KNOB (LOUDNESS)

This control provides compensation for the human ears loss of sensitivity to high and low frequency ranges at low volumes. As the amount of compensation required is determined by the listening level, this control provides the most accurate compensation for any listening level. Set it to the flat position while the volume control is set to your normal listening level. Turning it counterclockwise will decrease the volume while retaining the natural balance of low and high frequencies.



## ⑬ BALANCE CONTROL KNOB (BALANCE)

This knob is used to adjust the relative volume of the left and right channels, enabling you to compensate for unbalance created by installation locations of the speakers.

## ⑭ TREBLE CONTROL KNOB (TREBLE)

This knob controls treble response. Turn it clockwise to boost or counterclockwise to attenuate treble response. When this knob is in the center defeat position a flat response is obtained.

## ⑮ BASS CONTROL KNOB (BASS)

This knob controls bass response. Turn it clockwise to boost or counterclockwise to attenuate bass response. When this knob is in the center defeat position a flat response is obtained.

## ⑯ HEADPHONES JACK (PHONES)

Stereo headphones with a standard plug can be connected to this jack. When listening to the headphones only press both the A and B switches to the OFF position.

# AX-500U

## OPERATIONS

### ● Normal listening operation

1. Turn the volume control to the minimum level before turning the power ON. The power indicator is illuminated.
2. Using the SPEAKERS switches select the desired speaker system(s) or leave both switches in the OFF position to use the headphones.
3. Select the desired program source using the Input Selector Panel. The corresponding input indicator lights up.
4. Activate your chosen component.
5. Adjust your VOLUME, LOUDNESS, BASS, TREBLE and BALANCE to provide the desired sound quality.

### ● To record to Tape from a sound source

1. Turn the volume control to the minimum setting before turning the power ON. The power indicator is illuminated.
2. Using the REC OUT selector select the source to be recorded.
3. Activate the sound source to be recorded.
4. To monitor the sound being played via the speakers (or headphones) use the Input Selector Panel to select the source program.
5. To start recording activate the receiving Tape deck(s).  
If your tape deck has three head monitoring capability you can monitor the just recorded signal by selecting the corresponding Tape deck switch.
6. To listen to an alternate source merely select the desired source using the Input Selector Panel (noting the procedures outlined above in Normal listening operation) This will have no adverse effect on the recording.


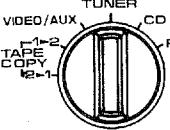

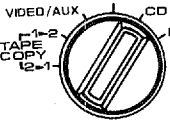

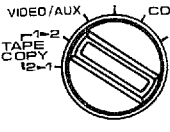
### ● Tape "dubbing".

As two tape decks can be connected to the AX-500U tape dubbing can be performed from Tape 1 ► 2 or 2 ► 1.

1. Set the REC OUT selector to the Tape Copy position (1 to 2 or 2 to 1).
2. To start recording set the source tape deck to playback and the receiving tape deck to record.

3. To monitor the sound being played use the Input Selector Panel to select Tape 1 or Tape 2, according to the source deck. If your tape deck has three head monitoring capability you can monitor the just recorded signal by selecting the corresponding Tape switch.
4. To listen to an alternate sound source merely select the desired input source using the Input Selector Panel, (noting the procedures outlined above; Normal listening operation) This has no adverse effect on the dubbing quality.

### Independent Recording and Listening Examples.

ACTION	INPUT SELECTOR	REC OUT
Listening to a record via the speakers while recording an AM/FM broadcast.	PHONO 	
Listening to a CD while recording it.	CD 	
Listening to an AM/FM broadcast while "dubbing" a tape from Tape 1 to 2.	TUNER 	



## TROUBLESHOOTING

Before assuming that your unit is faulty, please check the following troubleshooting list which details the corrective action you can take yourself without having to call a service engineer. If you have any doubts or questions, contact your nearest Yamaha dealer.

PROBLEM	CAUSE	REMEDY
Power is not supplied even though the Power switch is turned on .	The power plug is not securely plugged in.	Plug it in securely.
There is no sound with any input selector switches pressed.	The Speakers switch is not set correctly.	Set the Speakers switch correctly.
	The input cords are not connected securely.	Connect them securely.
	The speaker system is not connected correctly.	Check and secure connections.
Only CD output is possible	The CD DIRECT switch is ON.	Push the CD DIRECT switch to the OFF position.
There is no sound from one speaker.	The speaker connections are not secure.	Secure the connections.
	The Balance control is set all the way to the left or right.	Adjust the Balance control correctly.
There is a lack of bass and no ambience.	The + and - cords have been reversed at the amp or speakers.	Connect the speaker wires in the correct phase (+ and -).
There is a humming sound when playing records.	The input cords are not connected securely.	Plug the input cords in securely.
	The turntable's ground wire is not connected.	Connect the ground wire.
There is a howling sound when playing records at high volume.	The turntable and the speakers are too close together or the turntable is not mounted on a firm surface.	Change the location of the turntable or the speakers.
Turning the Bass or Treble knob does not affect the tone.	The Tone Bypass switch is on.	The Tone Bypass switch must be turned off to use the controls.
The sound suddenly goes off.	Driving speakers outside the rated impedance range at high power for an extended period has activated the speaker protection circuit.	Turning the AX-500U off and then on will reset the speaker protection circuit. Use speakers inside the rated impedance range.
	There is a malfunction in the amplifier.	Consult your Yamaha dealer.

# AX-500U

## SPECIFICATIONS

### Minimum RMS Output Power Per Channel

20Hz ~ 20kHz 0.01% THD 8Ω	85W
0.015% THD 6Ω	100W

### Dynamic Power Per Channel

(by IHF Dynamic Headroom Measuring Method)

8Ω	140W
6Ω	170W
4Ω	200W

### Dynamic Headroom

8Ω	2.17dB
6Ω	2.17dB

### Power Bandwidth

0.03% THD 42.5W 8Ω	10 ~ 50kHz
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### Damping Factor

1kHz 8Ω	> 50
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### Input Sensitivity/Impedance

Phono MC	160μV/220Ω
MM	2.5mV/47kΩ
CD/TUNER/VIDEO·AUX/TAPE	150mV/47kΩ

### Input Sensitivity (New IHF)

Phono MC	19μV
MM	0.27mV
CD/TUNER/VIDEO·AUX/TAPE	15.5mV

### Maximum Input Signal

1kHz Phono MC	10mV
MM	150mV

### Output Level/Impedance

REC OUT	150mV/470Ω
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### Headphone Jack Rated Output/Impedance

0.01% THD RL = 8Ω	0.75V/270Ω
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### Frequency Response

20Hz ~ 20kHz CD/TUNER/VIDEO·AUX/TAPE	± 0.5dB
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### RIAA Equalization Deviation

Phono MC	± 0.5dB
MM	± 0.3dB

### Total Harmonic Distortion 20Hz ~ 20kHz

Phono MC to REC OUT, 3V	0.007%
MM to REC OUT, 3V	0.003%

### Intermodulation Distortion

CD/TUNER/VIDEO·AUX/TAPE	
Rated Output/8Ω	0.01%

### Signal to Noise Ratio (IHF-A-Network)

Phono MC (500μV Input Shorted)	73dB
MM (5mV Input Shorted)	90dB
CD/TUNER/VIDEO·AUX/TAPE (Shorted)	100dB

### Signal to Noise Ratio (New IHF)

Phono MC	72dB
MM	76dB
CD/TUNER/VIDEO·AUX/TAPE	80dB

### Residual Noise (IHF-A-Network)

	140μV
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### Channel Separation Vol - 30dB

Phono MC, MM Input shorted 1kHz	50dB
CD/TUNER/VIDEO·AUX/TAPE Input	
5.1kΩ terminated 1kHz	50dB

### Tone Control Characteristics

Bass boost/cut	± 10dB (20Hz)
turnover frequency	350Hz
Treble boost/cut	± 10dB (20kHz)
turnover frequency	3.5kHz

### Filter Characteristics

Subsonic	15Hz - 12dB/oct
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### Continuously Loudness Control

(Level related equalization Attenuation)	- 40dB (1kHz)
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### Gain Tracking Error

(0 ~ -60dB)	2dB
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### Power Supply

	AC 120V 60Hz
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### Power Consumption

	370W
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### AC Outlets

Switched x 2	80W max.
Unswitched x 1	200W max.

### Dimensions (W x H x D)

	435 x 139 x 332mm
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(17.1 x 5.5 x 13.1 in)

### Weight

	7.7kg
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(17lbs.)

\* Specifications subject to change without notice.

# MEMO

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