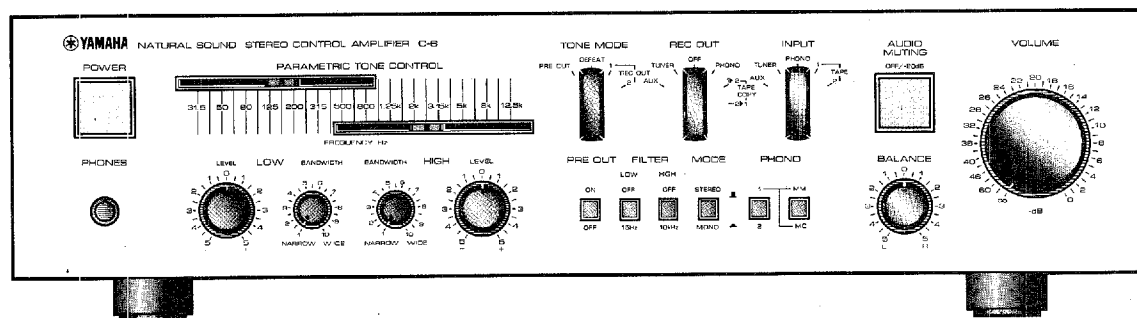


# C-6

# STEREO PRE-AMPLIFIER

# OWNER'S MANUAL

YAMAHA THANKS YOU FOR CHOOSING THE C-6 PRE-AMPLIFIER

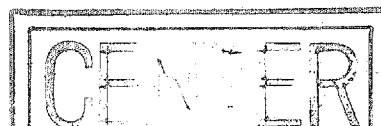


## FEATURES

- MC head amplifier and equalizer amplifier**  
 The MC head amplifier which adopts ultra-low-noise transistors and the DC equalizer amplifier with its high-transconductance dual FET combine to provide the absolute minimum of noise and a flat RIAA response.
- Parametric tone control**  
 YAMAHA's original servo control circuit with its low-noise IC featuring a high dielectric strength allows the center frequency, amplification and frequency band-width to be varied continuously and for the sound field and tonal color to be compensated as never before.
- Tone mode selector**  
 The tone mode selector is able to defeat the parametric tone control with playback, recording or totally, and it opens the door to tape recording editing and noise reduction recording and playback.
- Multi-functional REC OUT selector switch**  
 The REC OUT selector switch makes it possible to record an FM broadcast while you listen to a record or dub the contents of a tape playing in one deck onto a separate tape in another deck.
- Variety of accessory circuits**  
 A versatile variety of accessory circuits like the LOW and HIGH filters for cutting out undesirable noise, the balance control for attaining a balance in the sound through the left and right speakers, the AUDIO MUTING switch that with a flip reduces the volume to one-tenth and the headphones jack, equip the amplifier to tackle any application.

## CONTENTS

CAUTION: READ THIS FIRST .....	2
SPECIFICATIONS .....	3
FRONT PANEL AND CONTROLS .....	4
REAR PANEL AND CONNECTIONS .....	6
ADDITIONAL FUNCTIONS .....	8
TROUBLE SHOOTING .....	10
SCHEMATIC DIAGRAM .....	11



## C-6 CAUTION : READ THIS FIRST

1

Read this manual carefully to get the best performance from the Pre-Amplifier.

2

Do not drop or otherwise jar the Pre-Amplifier.

3

Do not expose the Pre-Amplifier to direct sunlight, excessive heat, cold or dust.

4

Do not use chemical solvents to clean the surfaces of the Pre-Amplifier. Wipe with a soft, slightly damp cloth.

5

Do not attempt to make internal adjustments or repairs. Leave these to your authorized YAMAHA service representative.

6

Check the "Troubleshooting" list provided in this manual for common operating errors before assuming that there is a malfunction.

7

Operate all switches and knobs according to the instructions. Avoid applying undue force. Do not try to use intermediate settings.

8

Note that a muting circuit keeps the Pre-Amplifier silent for several seconds after switching on.

9

(U.S., Canada & General models only) Do not connect audio equipment to the AC outlets on the rear panel if that equipment requires more power than the outlets are rated to provide.

10

Keep this manual in a safe place for future reference.

### IMPORTANT

#### Special Instructions for British-Standard Model

THE WIRES IN THE 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.

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

Model Name C-6

Serial No.

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

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.

# G-6 SPECIFICATIONS

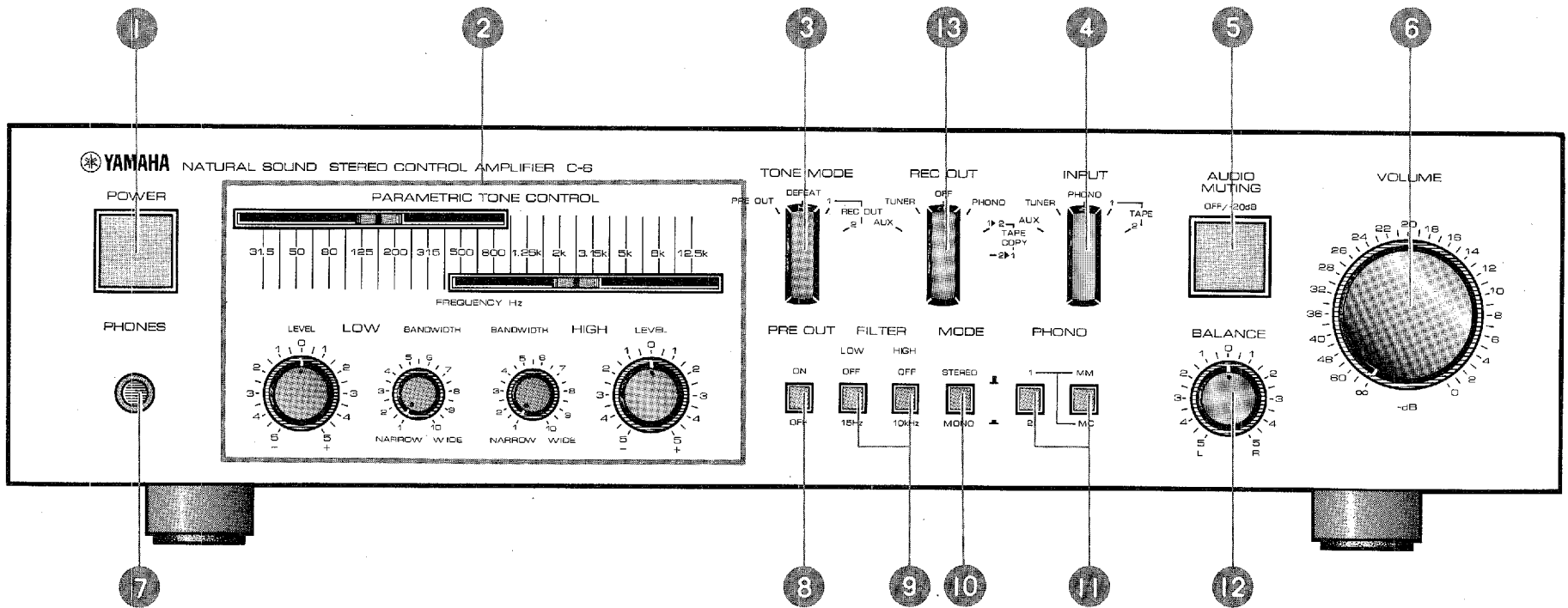
Input Sensitivity/Impedance (1kHz)	
PHONO-1, 2/MM	2.5mV/47k $\Omega$ Capacitance : 220pF
PHONO-1/MC	100 $\mu$ V/50 $\Omega$
AUX, TUNER, TAPE PB-1, 2	150mV/47k $\Omega$
Maximum Input Levels	
PHONO-1, 2/MM	240mV at 1kHz 0.01% T.H.D.
PHONO-1/MC	9mV at 1kHz 0.03% T.H.D.
AUX, TUNER, TAPE PB-1, 2	1V at 1kHz 0.01% T.H.D.
Output Level/Impedance	
REC OUT 1, 2	150mV/220 $\Omega$
PRE OUT 1, 2	2.0V/950 $\Omega$
PHONES OUT	1V/180 $\Omega$
Maximum Output Level (20Hz to 20kHz)	
REC OUT 1, 2	13V (0.01% T.H.D.)
PRE OUT	13V (0.01% T.H.D.)
PHONES OUT	12mW/8 $\Omega$
Total Harmonic Distortion Ratio (20Hz ~ 20kHz)	
PHONO-1, 2/MM to PRE OUT	0.005% at Vol. -30dB 2V output
PHONO-1/MC to PRE OUT	0.02% at Vol. -30dB 2V output
AUX, TUNER, TAPE PB1, 2	0.01% at Vol. MAX 10V output
Total Harmonic Distortion (20Hz to 20kHz total including 2nd to 10th harmonics)	
PHONO/MM to PRE OUT	0.003% at 2V output at Vol. -30dB

AUX, TUNER, TAPE PB1, 2 to PRE OUT	0.002% at 10V output Tone DEFEAT
IM Distortion Ratio	
AUX, TUNER, TAPE PB-1, 2 to PRE OUT	0.015% at 10V output TONE DEFEAT
Signal-to-Noise Ratio (IHF A-Network)	
PHONO-1, 2/MM	97dB
PHONO-1/MC	88dB
AUX, TUNER, TAPE PB-1, 2	102dB
Residual Noise	7.75 $\mu$ V
Frequency Response	
RIAA Deviation	
PHONO-1, 2/MM	$\pm$ 0.2dB (20Hz ~ 20kHz)
PHONO-1/MC	$\pm$ 0.3dB (20Hz ~ 20kHz)
AUX, TUNER, TAPE PB-1, 2	$\pm$ 0.5dB (10Hz ~ 100kHz)
Parametric Equalizer Characteristics	
FREQUENCY CONTROL LOW	31.5 ~ 640Hz
	HIGH 640Hz ~ 12.5kHz
LEVEL CONTROL LOW HIGH	$\pm$ 12dB
BANDWIDTH CONTROL LOW HIGH	Q : 0.3 ~ 3.0
Filter Characteristics	
LOW FILTER	15Hz, 12dB/oct
HIGH FILTER	10kHz, 12dB/oct
Channel Separation (1kHz)	
PHONO-1, 2/MM	Vol. -30dB (5.1k $\Omega$ short) 70dB

PHONO-1/MC	70dB
AUX, TUNER, TAPE PB-1, 2	70dB
Audio Muting	-20dB
GENERAL	
Power Supply	
U.S.A. & Canadian Models	120V AC 60Hz
General Model	110/120/220/240V AC, 50/60Hz
North European Model	220V, AC 50Hz
British & Australian Models	240V, AC 50Hz
Power Consumption	
	30W
AC Outlets (U.S.A., Canadian and General Models)	
SWITCHED	200W MAX Total
UNSWITCHED	200W MAX Total
Dimensions (W x H x D)	
	435 x 114.3 x 338.5mm (17-1/8") x (4-1/2") x (13-1/4")
Weight	
U.S.A. & Canadian Models	6.2kg (13 lb 11 oz)
Other Area Models	6.3kg (13 lb 14 oz)

Specifications subject to change without notice.

# C-6 FRONT PANEL AND CONTROLS



## ① POWER Switch

Switch ON to connect the main electrical supply. Leave OFF while connecting other audio equipment.

## ② PARAMETRIC TONE CONTROL

Allows continuous variation of center frequency, frequency band width and level. For its operation, please refer to "PARAMETRIC TONE CONTROL" on P. 8, 9.

## ③ TONE MODE Selector Switch

Is used to select one of PRE OUT, DEFEAT, REC OUT 1 and REC OUT 2, according to the intended application.

## ④ INPUT Selector Switch

Selects which program source will be HEARD: PHONO, TUNER, one of two tape decks, or AUX. This switch must be on PHONO to operate PHONO Selector. You can listen to one program source while recording another.

### 5 AUDIO MUTING Switch

Provides a 20dB reduction in volume without adjustment of VOLUME control. Use when operating switches, before lowering the phono cartridge onto the record, or when answering phone calls, etc.

### 6 VOLUME Control

Turn clockwise to increase volume. We recommend that the control be turned fully counter-clockwise when not in use.

### 7 PHONES (Headphones Jack)

Connect your stereo headphones to this jack.

### 8 PRE OUT Switch

This switch is used to put ON and OFF the output signal from the PRE OUT Terminal.

### 9 FILTER Switches

**LOW:** When this button switch is pushed, ultra low frequency noise below 15Hz out the audible frequency range, normally unnecessary for music reproduction, is cut-off so as to prevent the speakers' ultra low frequency reaction (fluttering of cone paper) due to a warped disc.

**HIGH:** Pushing this button switch, cuts high frequency noise components over 10kHz.

### 10 MODE Switch

Selects stereo or mono.

### 11 PHONO Switch

Selects PHONO 1 or PHONO 2, and MM phono cartridge or MC phono cartridge of PHONO 1.

### 12 BALANCE Control

Controls the difference in output volume between L (left) and R (right) stereo channels. Use to adjust the balance in the two channels' audio outputs, or to correct for a listening position not equidistant from your two speaker systems.

### 13 REC OUT Selector Switch

A program source from the REC OUT terminal can be recorded irrelevant to the program selected by the INPUT selector switch. For example, you can record an FM broadcast by placing the REC OUT selector switch in the TUNER position or dub a tape while listening to a disc through speaker.

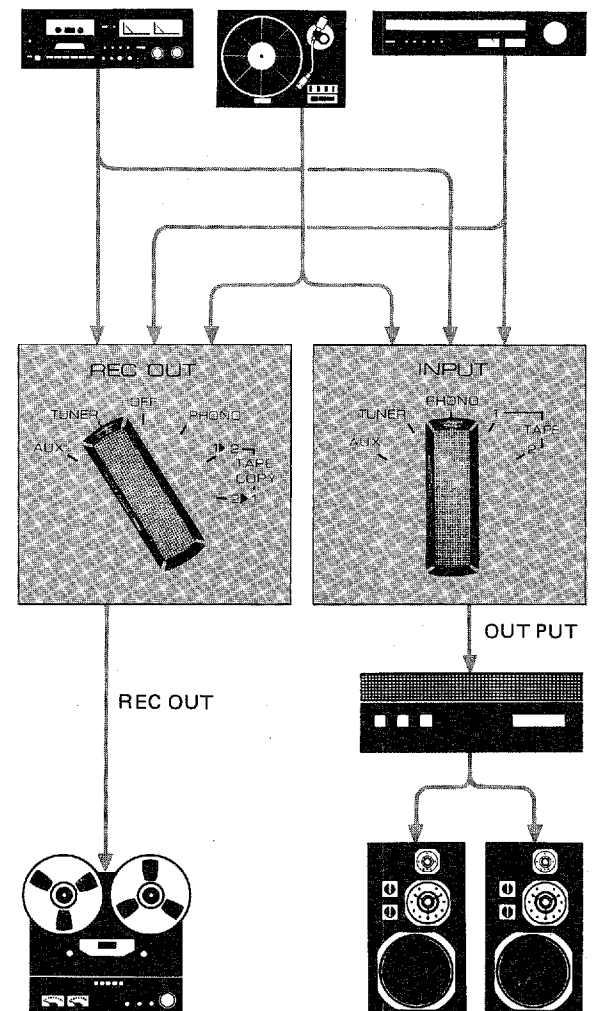
Typical examples:

INPUT Selector Switch	REC OUT Selector Switch	Speakers
PHONO	TUNER	You can record an FM or AM broadcast while listening to a disc through speakers.
TUNER	TUNER	You can record an FM or AM broadcast while listening to it.
PHONO	PHONO	You can listen to a disc through speakers while recording it.
TUNER	PHONO	You can record a disc while listening to an FM or AM broadcast.

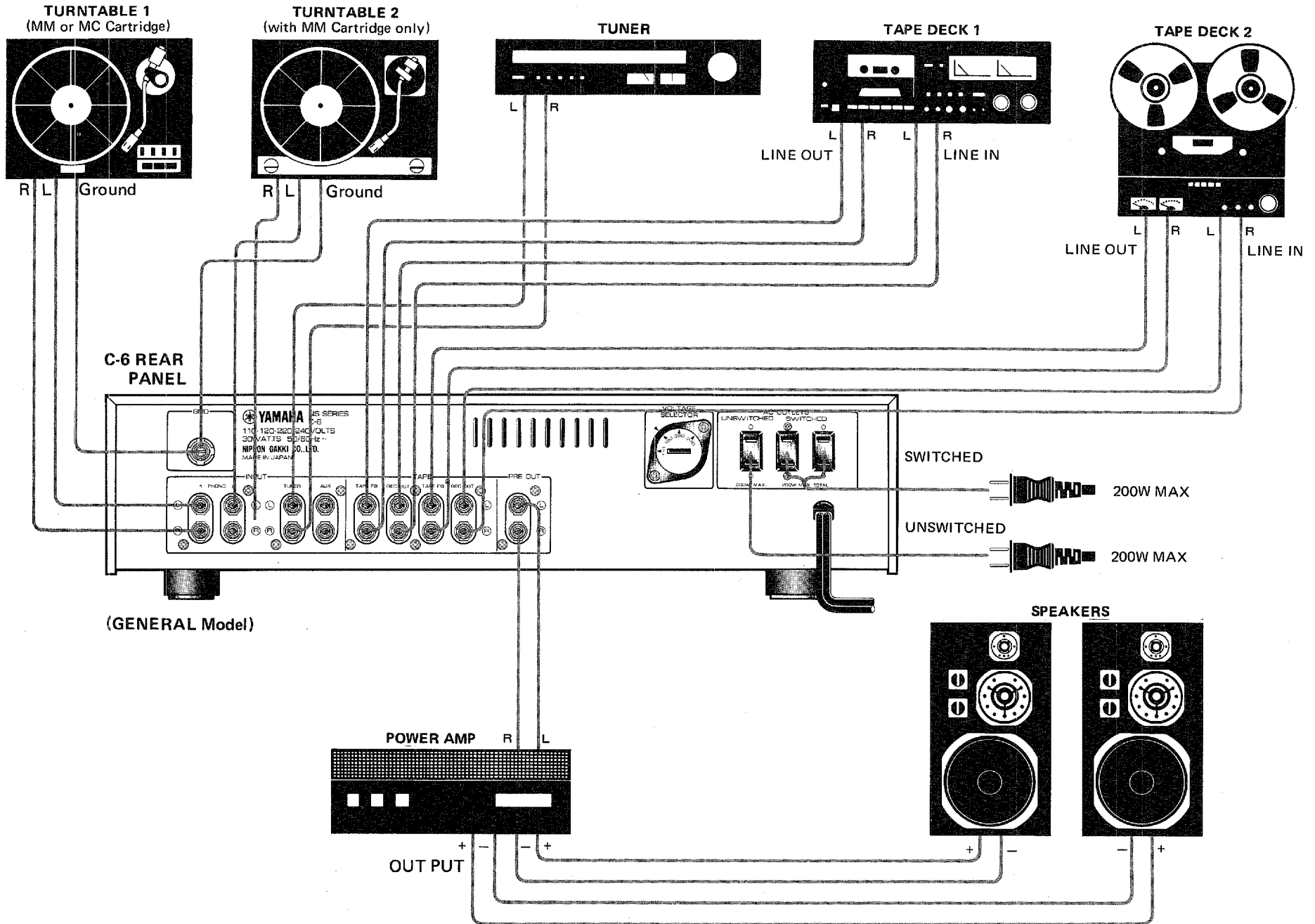
By matching other positions of the REC OUT and INPUT switches, you can enjoy various other program sources.

With the REC OUT selector switch in the OFF position, the C-6 is completely disconnected from the recording output terminals. Thus, when you are not recording, the C-6 will be protected from any adverse effects of unused tape deck input circuit impedances. Use this position when not recording.

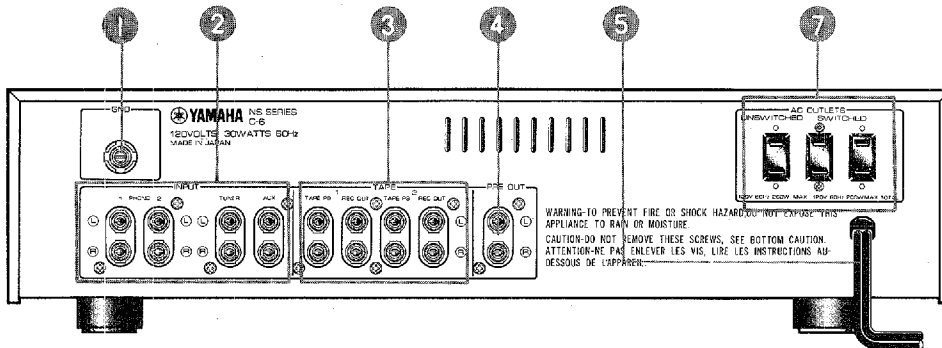
Recording One Program Source While Listening to Another



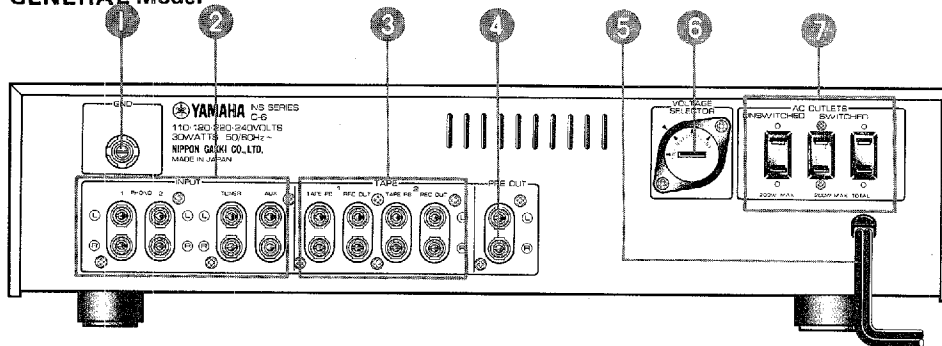
# C-6 REAR PANEL AND CONNECTIONS



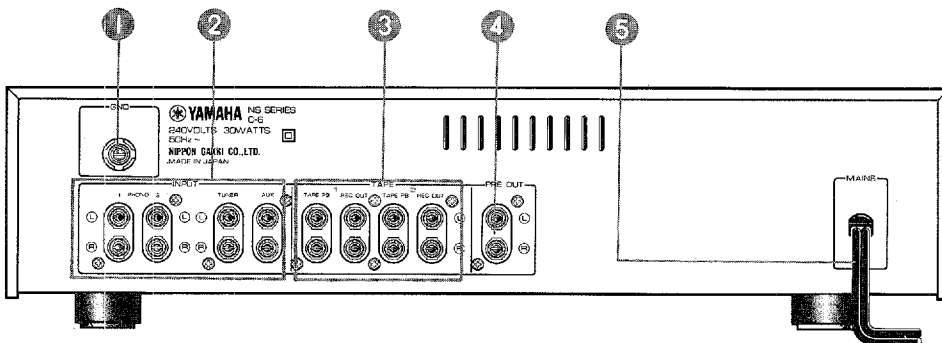
### U.S.A. and CANADIAN Models



### GENERAL Model



### NORTH EUROPEAN, BRITISH and AUSTRALIAN Models (North European Model)



#### ① GND (Ground) Terminal

Provided for grounding a turntable. Failure to connect your turntable's ground lead may result in unpleasant hum.

#### ② INPUT Terminal

Use the PHONO terminals to connect a turntables, the TUNER terminals to connect a tuner, and the AUX terminals to connect an external eight-track cartridge player, etc. Selected by INPUT Selector on the front panel.

#### ③ TAPE 1/2 PB AND REC OUT Terminals

Two tape decks can be connected to these input and output terminals. Recordings can be made on both tape decks at the same time, and tapes can be dubbed from one tape deck to the other, in either direction, according to the REC OUT Selector switch, independent of the source being played.

#### ④ PRE OUT Terminals

Connect the this terminals to the INPUT terminals on a power amplifier by means of connecting cords.

#### ⑤ AC Power Cord

Plug the receiver's power cord into a main power supply wall outlet. (With a British model, first refer to the IMPORTANT! instructions on P. 2.)

#### ⑥ VOLTAGE SELECTOR (GENERAL Model)

Set this to your local AC mains voltage. Failure to do so will result in seriously impaired performance or even severe damage.

#### ⑦ AC OUTLETS (U.S.A., CANADIAN and GENERAL Models)

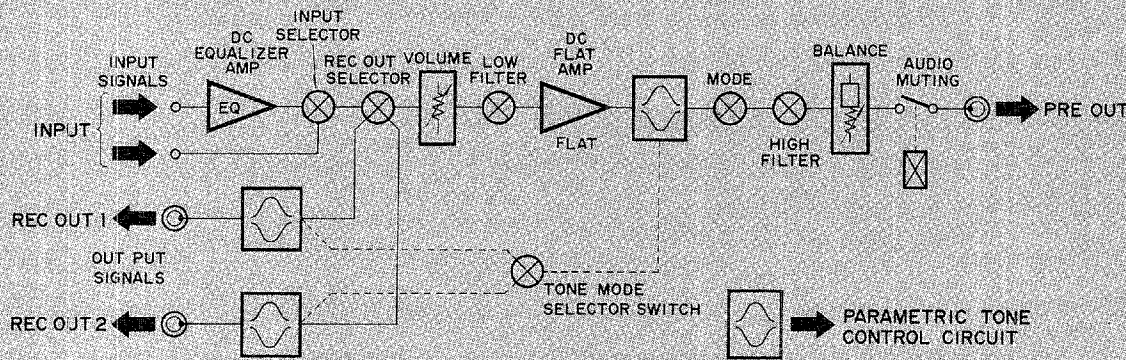
Provided for connecting other audio equipment. The left outlet, with a maximum power capacity of 200W, is switched on and off by the C-6's power switch; center and right outlets are controlled by power switches on connected equipment, and have a combined maximum capacity of 200W.

# C-6 ADDITIONAL FUNCTIONS

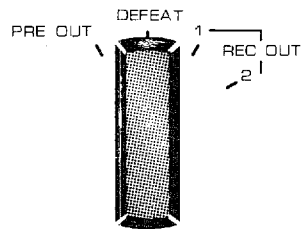
## TONE MODE SELECTOR PERMITS VERSATILE USE OF BUILT-IN PARAMETRIC TONE CONTROL

The C-6 incorporates a newly-developed Parametric Tone Control circuit, switched over by the TONE MODE Selector on the front panel.

Fig. 1 BLOCK DIAGRAM



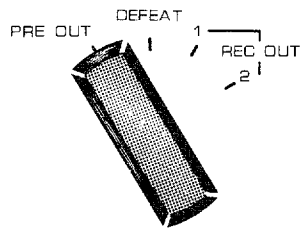
### TONE MODE



#### Defeat Position

When the Parametric Tone Control circuit is switched out of the signal path by placing the TONE MODE Selector on DEFEAT, the signal goes from the DC phono equalizer to the DC flat amp in an extremely simple circuit configuration.

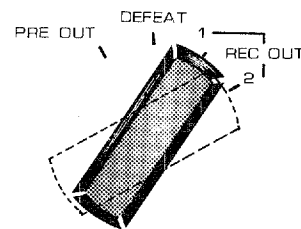
### TONE MODE



#### PRE OUT Position

When the PRE OUT position is used, the parametric Tone Control circuit enters immediately after the flat amp, permitting unrestricted control of the reproduced sound.

### TONE MODE

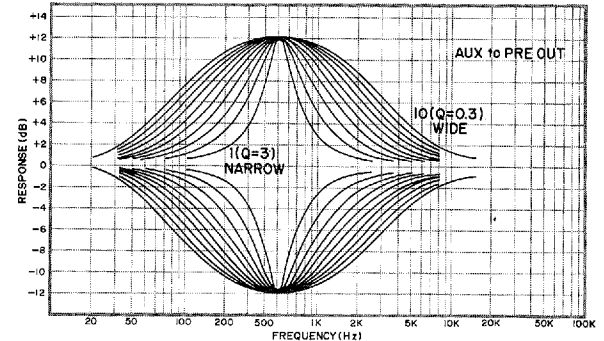


#### REC OUT 1/2 Position

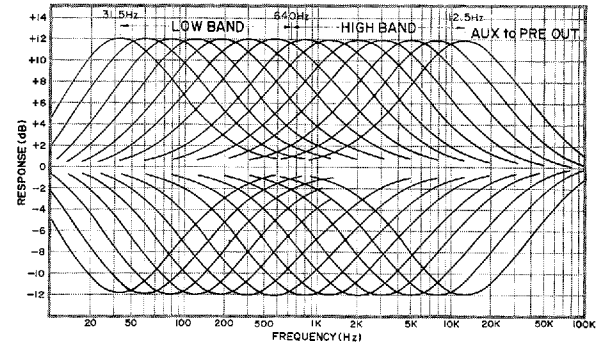
Setting the TONE MODE Selector on REC 1 or REC 2 puts the Parametric Tone Control Circuit into the corresponding REC OUT terminals, thus controlling the signal to be recorded on a connected tape deck. However, the signal reproduced by the tape deck bypasses the parametric Tone Control circuit, only passing through the DC flat amp.

Fig. 2 TONE CONTROL GRAPHS

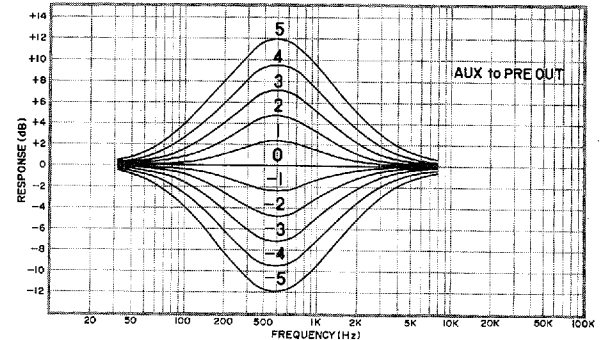
### BAND WIDTH CONTROL



### FREQUENCY CONTROL

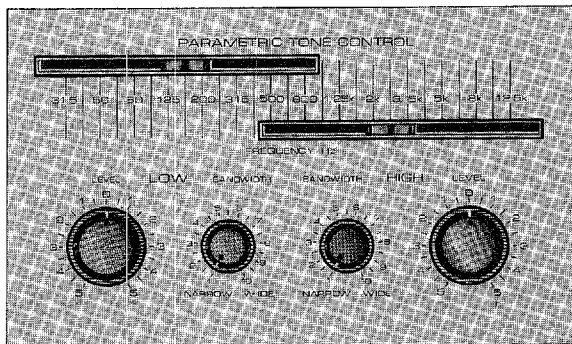


### LEVEL CONTROL





## PARAMETRIC TONE CONTROL



One of the most exciting and innovative features of the C-6 is the Yamaha-exclusive Parametric Tone Control circuit using servo control. PTC permits unrestricted, independent, continuous control of three parameters -- center frequency ( $f_0$ ), frequency bandwidth ( $Q$ ) and level -- in two frequency bands, HIGH BAND and LOW BAND. The center frequency ( $f_0$ ) control range in the LOW BAND is 31.5Hz -- 640Hz, and in the HIGH BAND, 640Hz -- 12.5kHz, thus permitting separate control of low and high frequencies; the frequency bandwidth control allows continuous variation from narrow ( $Q = 3$ ) to wide ( $Q = 0.3$ ); and the level control offers a  $\pm 12$ dB continuously variable range.

This original feature creates tone control characteristics completely different from the tone control graphs seen until now. Fig. 2, depicting the tone control characteristic with the center frequency control adjusted at intervals of 1/3 octave each, shows that the PTC does cover the entire audio frequency range. Fig. 2 shows the tone control characteristic achieved when the frequency bandwidth control ( $Q$ ) is operated; Fig. 2 interestingly shows that the conventional, previously available tone control characteristic can also be obtained quite simply from the PTC. And,

while at first glance it may look rather complicated to operate it, it is actually quite simple thanks to the 1/3 octave interval indications of the center frequency made possible by a precision six-ganged slide volume control.

### EXAMPLES OF HOW PARAMETRIC TONE CONTROL (PTC) CAN BE USED

#### PTC Accomplishes All that Conventional Tone Control Circuits Can, and Much More.

As Fig. 2 shows, PTC's independent, continuous control of three parameters -- center frequency, frequency bandwidth and level -- means it accomplishes the entire range of control previously offered by the conventional BASS/TREBLE tone controls.

#### PTC Sharply Cuts Only the Annoying Noise Heard While Listening.

If, for example, peculiar characteristics of the cartridge or speaker system used should result in annoying noise, PTC permits thorough elimination of only that annoying frequency. One way of finding and eliminating the unwanted frequency is to adjust the three parameters until the noise is emphasized to the greatest extent possible; then, by completely reversing the LEVEL Control, the unwanted noise will be totally eliminated, with no effect on other, desired frequencies.

#### Getting the Sound You Want During Recording

Just as in professional recording sessions, PTC allows you to "shape" the sound as you want, whether it means emphasizing vocals or equalizing the tonal character of the musical instruments being recorded.

#### Compensating for Room Acoustics

The particular acoustic characteristics of the listening room can have a huge effect on sound quality,

especially in the middle frequencies. The part of the frequency range needing equalization is often extremely narrow. PTC offers unrestricted control of the bandwidth, perfect for this type of equalization.

#### Convenient Solution To Problems With Simple PA Systems

When using a simple PA system of the mic to amp to speaker variety, slightly excessive volume or poor mic positioning and the like can immediately result in howling. When this happens, PTC can be used, just as a graphic equalizer is used in professional setups, to control the frequency response of the speaker systems and stabilize it against howling and also to heighten sound clarity.

#### Noise Reduction Effect, Too

When recording into a tape deck, set the TONE Selector to REC OUT 1 or 2 and use the PTC to boost the high frequencies during recording. Then, during playback, set the TONE Selector to PRE OUT, turning the LEVEL Control from the plus side all the way to the extreme end on the minus side. This will reduce the annoying tape hiss during tape playback.

# C-6 TROUBLE SHOOTING

Fault	Cause	Cure
No power although POWER switch is ON.	AC power cord not plugged into supply socket.	Plug it firmly into the supply socket.
	Power remains off despite of AC supply through firm connection.	Contact your nearest authorized service representative.
No sound although INPUT selector switch is ON.	INPUT selector switch in wrong position.	Check and change as necessary.
	VOLUME too low.	Turn up VOLUME.
	INPUT pin plug incorrectly inserted.	Check and insert it fully in correct position.
	OUTPUT cord's defective connection.	Check and make correct connection.
	PRE OUT switch at OFF position.	Turn PRE OUT switch ON.
No sound from both speakers, or sound only from either L or R speaker.	Defective connections between control and power amplifiers, or between power amp. and speakers.	Perform correct connections, or check operations.
	Balance control not properly adjusted.	Set it for correct stereo balance.
Poor bass response and inferior stereo image.	Adversely connected phase polarity (+, -) between power amp. and speakers.	Make correct connections.
Sufficient volume unobtainable through VOLUME control.	AUDIO MUTING switch remains ON.	Switch if OFF and readjust VOLUME.
Sufficient volume of MC cartridge unobtainable	PHONO switch in wrong position.	Set PHONO switch to PHONO-1 and MC.
Loud 'humming' occurs during record audition.	Defective connection of pin plug.	Plug it in firmly.
	Turntable's ground cord not connected to amp.'s GND terminal.	Connect ground cord to GND terminal on rear panel.
Reception of amateur or private station mixed with desired reception.	Such stations located in vicinity.	Consult with your authorized service representative or such stations.
Loud 'howling' noise when raising VOLUME during record audition.	Speakers and turntable are positioned closely.	Give a proper space between speakers and turntable.
MC cartridge delivers low sound volume.	MC cartridge output cord connected to PHONO-2 terminals.	Connect it to PHONO-1 terminals, and set PHONO selector switch to MC position.
Treble or bass poorly balanced.	PARAMETRIC TONE CONTROL not properly operated.	Operate it correctly referring to P. 8, 9.
PARAMETRIC TONE CONTROL does not work.	TONE MODE selector switch at DEFEAT position.	It does not work at DEFEAT position.
No recording.	REC OUT selector switch at OFF position.	Change over REC OUT selector switch according to the program source to be recorded.



SINCE 1887



**YAMAHA**

NIPPON GAKKI CO., LTD. HAMAMATSU, JAPAN