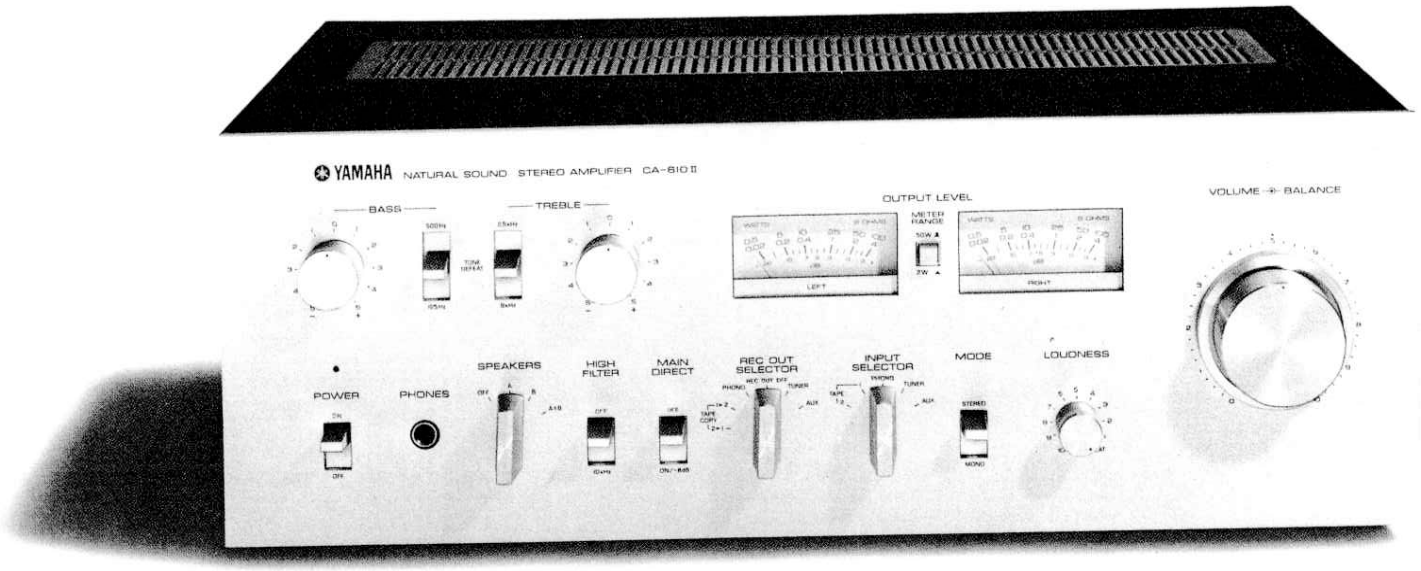
YAMAHA

Integrated Stereo Amplifier

CA-610II

OWNER'S MANUAL



U/C

CA-610II

CONTENTS AND FEATURES

YAMAHA offers you thanks and congratulations on your choice of the CA-610 II integrated stereo amplifier. Product of research directed at making the best possible audio performance available to the widest range of enthusiasts, the CA-610 II is currently setting new standards for its class.

Special Features of Your CA-610II Integrated Stereo Amplifier

1. Newly Designed Equalizer with High S/N Ratio

As the equalizer employs 3 low-noise transistors in a newly- designed NF-type circuit, the overall impedance is markedly reduced with exceptionally high S/N ratio of 85 dB (Phono → Sp Out 2.5 mV sensitivity).

Furthermore, a sub-sonic filter is incorporated in the equalizer circuit, allowing harmful ultra-low frequency noise at the time of recording play back to be eliminated.

2. High Power and Low Distortion

With a generous minimum rms output power of 45 watts per channel, both channels driven, from 20 Hz to 20 kHz, into 8-ohm speakers, and no more than 0.05% distortion, CA-610II performance is exceptional. And the same low distortion is preserved right down to 100 mW, Noise and Distortion Clearance Range (NDCR). At 20 Watts distortion drops to 0.01% (and 0.005% at 1 kHz!).

3. Full-Range Output Level Meter with Meter Range Switch

The unit employs a large, easy-to-read meter which is highly accurate. In addition, by switching the meter range switch to 50W/8Ω or 2W/8Ω at 0 dB, accurate read-out can be obtained at 2W/8Ω position even at low volume.

4. Low Noise, Low Distortion Tone Control Amp.

First stage differential amplifier and the special Yamaha NF-CR type tone controls gives extremely low noise and distortion.

5. Comprehensive Operating Controls and Functions

With the CA-610II you can listen to any one source while recording any other, or while dubbing from one tape deck to another. Also you can isolate the CA-610II from the effects of tape-deck input impedance when recordings are not actually taking place by using the Rec Out Off position.

6. Highly accurate and easy-to-operate knobs and switches are employed.

CA-610II

CAUTIONS-READ THIS BEFORE OPERATING YOUR CA-610II

1

The CA-610II is a high performance integrated stereo amplifier, combining high output power with a full range of controls. This manual is required reading if you are to get the best from it.

2

Do not drop or otherwise jar the CA-610II, which is a precision instrument.

3

Do not mount the CA-610II where it will be exposed to direct sunlight, excessive heat, moisture, or dust.

4

Do not use chemical solvents (such as benzene or alcohol) to remove traces of dirt. Wipe only with a soft, slightly damp cloth.

5

Do not assume your CA-610II is faulty before checking the 'Trouble Shooting' list on page 18 for common operating errors.

6

Do not attempt to carry out internal adjustments or repairs. Leave this to your local service representative.

7

Note that the muting circuit keeps the CA-610II silent for several seconds after switching ON, to prevent the pops and clicks that can sometimes occur.

8

In using spare AC outlets on the rear panel, make sure that the units you connect do not require more power than the outlets are rated to provide.

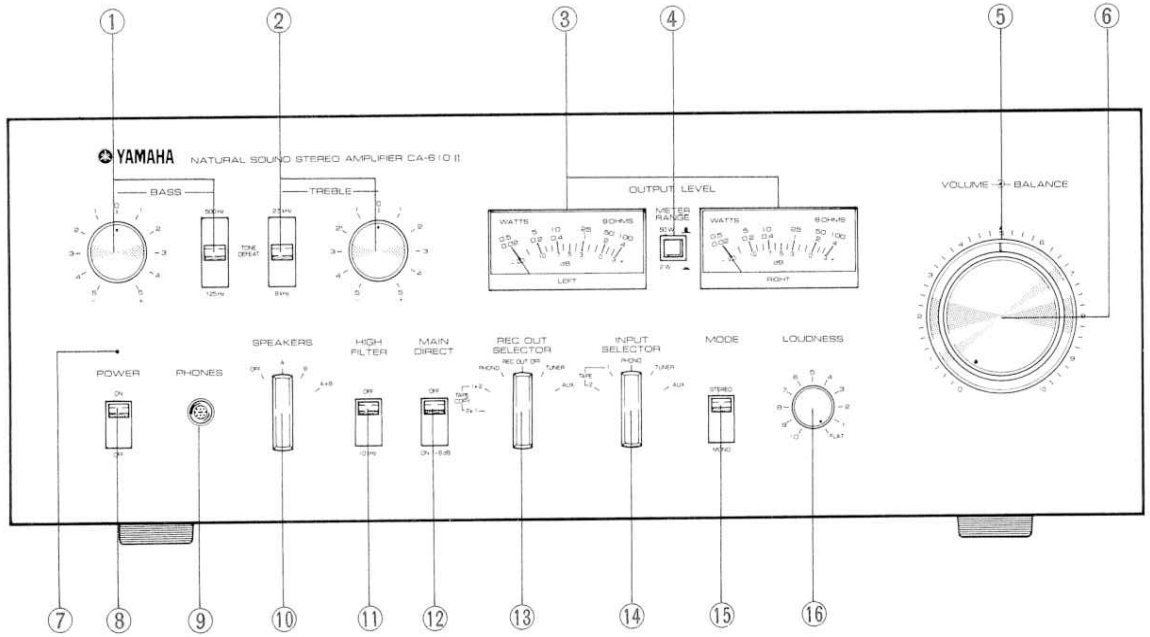
9

Keep this manual in a safe place for future reference, and refer to it frequently until you are perfectly familiar with all CA-610II controls and functions.

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

CA-610II

FRONT PANEL AND CONTROLS



❶TONE CONTROL-BASS

This BASS tone control is provided so that you can emphasize low frequency sounds, or to reduce them, depending on the tonal balance that you require. The three-position switch located next to the bass control knob provides a DEFEAT position which permits you to listen to the sound output either with or without the effect of the tone control. In addition, this switch allows you to choose between a turnover frequency of 125 Hz or 500 Hz.

❷TONE CONTROL-TREBLE

This TREBLE tone control functions for the high frequencies as the BASS tone control does for the low frequencies. It also has a three-position switch permitting DEFEAT and turnover frequency selection. In this case, the turnover frequencies available are 2.5 kHz and 8 kHz.

❸OUTPUT LEVEL METERS

This meter indicates output level from −20 dB to +3 dB and also indicates direct reading of the output when the 8Ω speaker system is connected.

❹METER RANGE Switch

When this switch is depressed, output from 20 mW to 2W can be measured. When it is not depressed, output from 500 mW to 50W can be measured.

⑤BALANCE Control

This control adjusts the balance between the left and the right stereo channels. Set it to the center "5" position, at which there is a click stop, unless you wish to emphasize the sound from one speaker in contrast to that of the other speaker.

⑥VOLUME Control

Use this control to give the volume of sound that you require. Always start with the knob turned fully to the left (counter-clockwise) at the "0" position, before turning it up to the full volume level that you want to hear.

⑦POWER ON Indicator

This LED lights when power is being supplied to the amplifier.

⑧POWER ON/OFF Switch

Switch ON to connect the main electrical supply. Leave OFF while familiarizing yourself with the controls, and while connecting other audio equipment.
Turn the volume to minimum position "0" before turning this switch ON.

⑨PHONES Jack

One headphone jack is provided. Plugging the headphone in does not mute the speakers, so use the OFF position on the SPEAKERS switch.

⑩SPEAKERS Switch

With this control, you can select either or both of two pairs of stereo speakers, or switch them all off so that you can enjoy headphone listening.

⑪HIGH FILTER

This switch allows you to utilize a high frequency, steep cut-off filter which takes effect at 10 kHz.

⑫MAIN DIRECT Switch

This switch is used for transmitting the equalizer output directly to the main amplifier through the tone amplifier circuit.

⑬REC OUT SELECTOR

This switch selects which of the programs connected to the CA-610II will be recorded. It works quite independently of the INPUT SELECTOR control, so that you can listen to any one program while recording any other. Alternatively, you can record directly from one tape deck to another. In the REC OUT OFF position the CA-610II is completely disconnected electrically from the tape recording terminals.

⑭INPUT SELECTOR

This switch is used to select the program source of your choice, whether PHONO, TUNER, one of two tape decks (1 or 2), or AUX (for 8-track tape cartridge, short-wave radio, etc.).

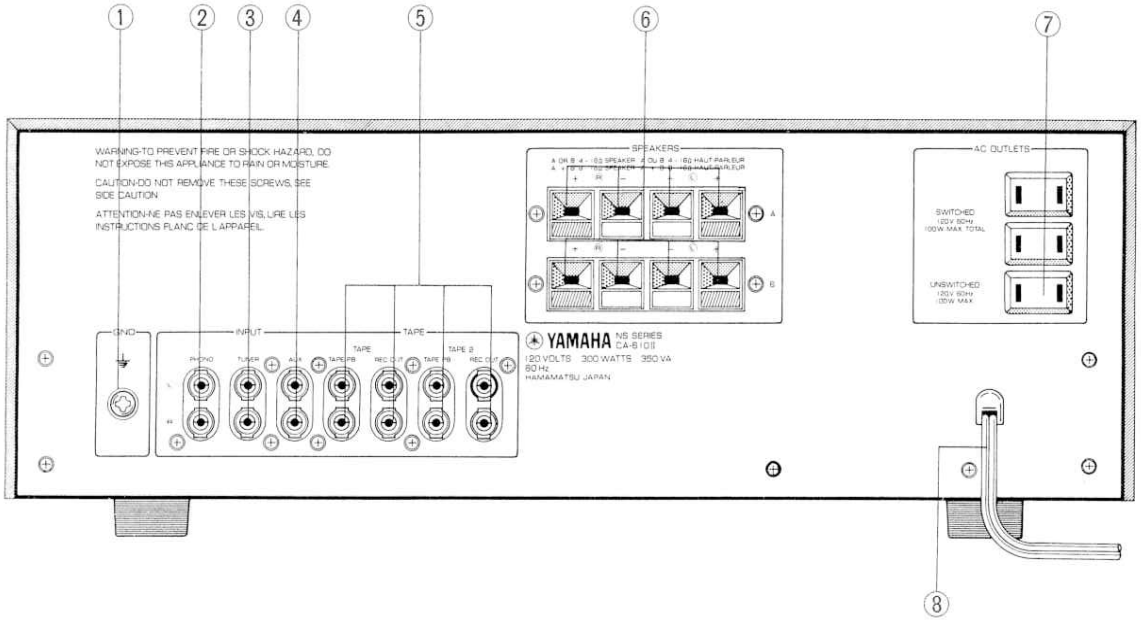
⑮MODE Switch

This switch lets you listen to stereo programs monaurally. It is useful in setting the BALANCE control: just switch to MONO and adjust BALANCE so that the sound comes from mid-way between the left and right speakers.

⑯LOUDNESS Control

This boosts the extreme low and high frequencies to compensate for our ears' reduced sensitivity to these frequencies at low volumes. Set it to the FLAT position while the VOLUME control is set to your highest normal listening level. Turning the control counter-clockwise will reduce the volume but will retain the natural balance between low and high frequencies.

REAR PANEL AND CONNECTIONS



❶ GND(Ground) Terminal

Ground terminals of turntable units and other components used with the CA-610II should be connected to this GND terminal, particularly if there is any audible 'hum' problem. Consult your local electrical dealer if you require detailed advice.

❷ PHONO INPUT Terminals

Connect the plugs from your turntable unit to these terminals. Note that for all the terminals, the upper jacks are for the left-hand channel and the lower jacks are for the right-hand channel. All conventional moving magnet, induced magnet, etc., phono cartridges are suitable. Your dealer can advise.

❸ TUNER INPUT Terminals

Connect your FM or other tuner to these terminals. If it has an adjustable output level, adjust this so that the volume does not change abruptly when switching from PHONO to TUNER.

❹ AUX Terminals

Use these terminals to connect a second tuner or other item of audio equipment, etc.

⑤ TAPE 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, and independent of the source being auditioned.

⑥ SPEAKERS Terminals

The CA-610II can handle two sets of speakers (A or B), with selection of either, both, or neither, by use of the SPEAKERS switch on the front panel. Speakers should have impedances between 4 and 16 ohms, but with two speaker sets being used at the same time, connect only speakers with impedances between 8 ohms and 16 ohms.

Making the Speaker Connections

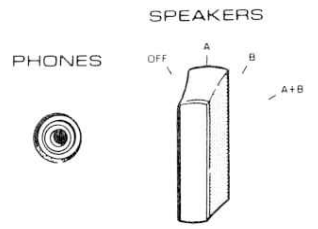
1. Strip the insulation from the speaker cable for 1/2" (10 mm), and twist stray ends together. If possible, solder the ends. Push the lever beneath the terminal as shown in the diagram, and align the inner and outer terminal holes. Then insert the wire fully home. Release the lever, and the wire end will be firmly clamped.
2. Use the upper (A) terminals first. Be careful that the terminals identified by the + and – signs above them are connected with the corresponding + and – terminals on the speakers. A mistake will result in poor bass response and ill-defined stereo image. Also be sure to connect the left-hand speaker to the L speaker terminals, and the right-hand to the R terminals.
3. Repeat this with the B terminals if other speakers are to be connected. In all cases make sure that connections are fully and firmly made, or you may not be able to get any sound from one or more speakers.

⑦ Spare AC OUTLETS

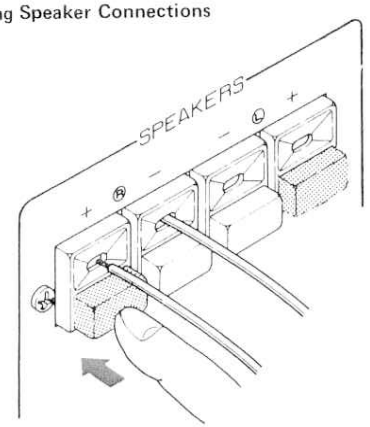
You can plug in other items of audio equipment. Two sockets are switched by the CA-610II POWER switch, and is suitable for tuners and other low power units requiring up to 100 watts. The other one is unswitched, and can only deliver a total of 100 watts. DO NOT exceed these limits.

⑧ AC MAINS Cord

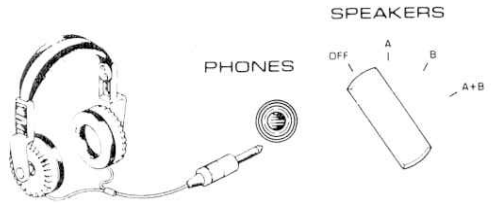
The Speaker Switch



Making Speaker Connections

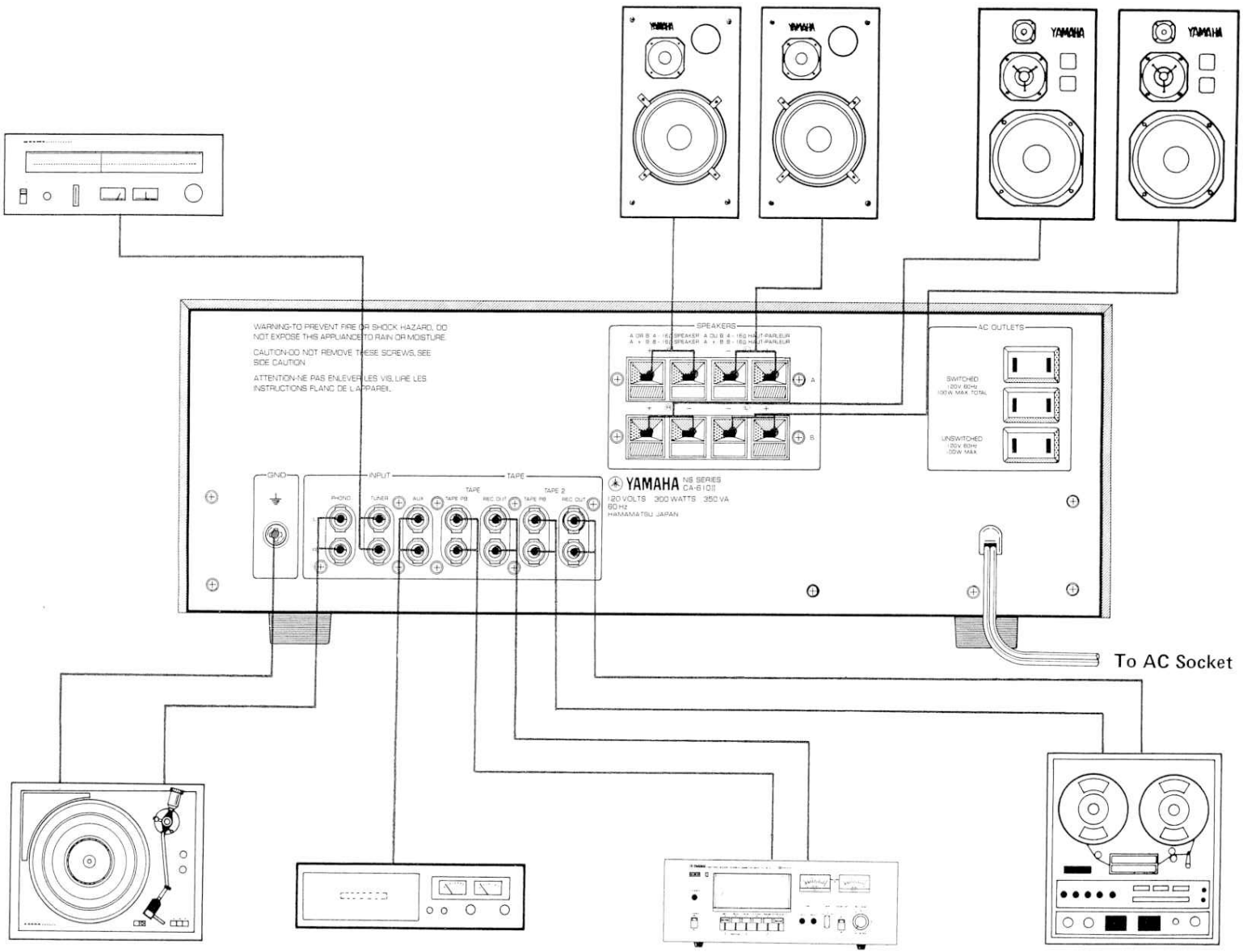


Headphone Connection



CA-610II

CONNECTION DIAGRAM



TURNTABLE AND TUNER CONNECTIONS

CONNECTING A TURNTABLE UNIT

The pin plugs on the output lead from the turntable unit should be connected to the PHONO terminal pin jacks at the left-hand side of the back panel. Check that the L and R pin plugs (for the left and right channels) have been correctly inserted. Do not forget to connect the turntable ground line to the GND terminal on the CA-610II rear panel.

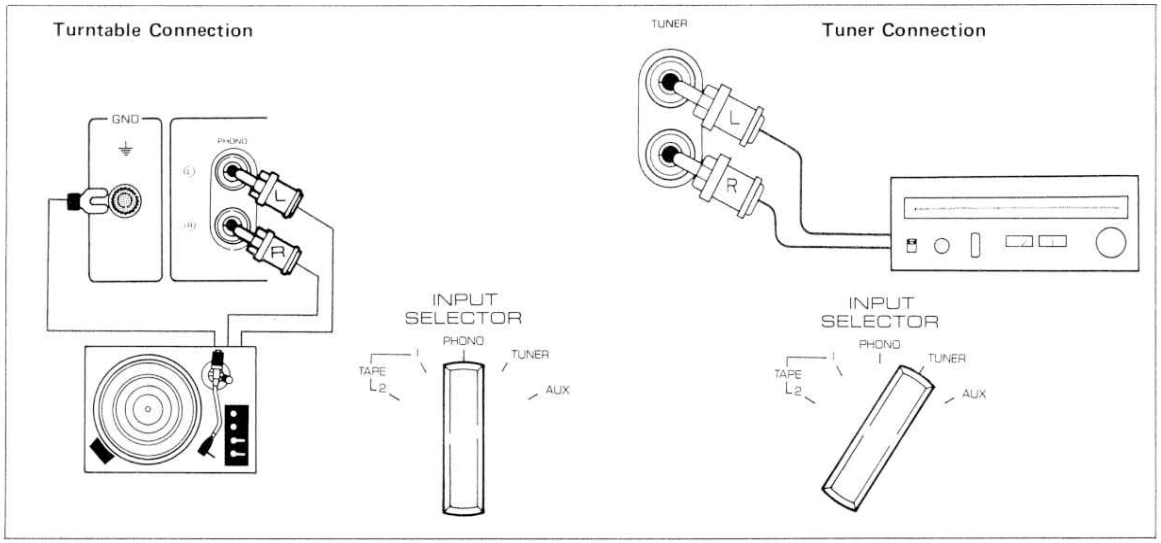
Switch on the POWER switch, and set the INPUT SELECTOR switch to PHONO.

The PHONO input circuit is intended for use with standard moving magnet (MM), moving iron (MI) or induced magnet (IM) type cartridges. Certain moving coil (MC) cartridges can also be used, but some have output levels too low for satisfactory performance without the use of a step-up transformer or head amplifier. Note that the PHONO input pin-plugs should never be connected or disconnected while the POWER switch is ON.

Always switch off your speakers by releasing the SPEAKERS switch when raising or lowering the cartridge stylus over the record to prevent overloading and possible damage.

If you play monaural records, the signal-to-noise ratio will be improved if you turn the MODE switch to the MONO position.

You can use the HIGH filter to reduce unpleasant surface noise or record 'scratch.' Use the BASS and TREBLE, controls to give the best tonal balance, and use the LOUDNESS volume control rather than the main volume control to reduce listening levels below your normal maximum.



TUNER CONNECTION

Connect the tuner output terminals to the CA-610II TUNER input jacks on the rear panel, using the pin-plug cable provided. Make sure to confirm that the left-hand and the right-hand outputs are connected to the proper input terminals.

To enjoy your tuner, turn the INPUT SELECTOR switch to the TUNER position, and operate the tuner to receive the desired AM or FM signal.

If your tuner is provided with an output level adjustment control, locate the proper position of the control to ensure that there is no significant change in the listening volume when you switch between the TUNER position and the PHONO position with the INPUT SELECTOR.

If you wish to record directly from your FM tuner onto an auxiliary tape deck, attach the tape recorder to the REC OUT jacks on the rear panel of the CA-610II, and turn the REC OUT SELECTOR to the TUNER position. Remember, while you are recording, you can listen to a different music source by using the INPUT SELECTOR switch.

AUX, VOLUME, BALANCE AND TONE CONTROLS

AUXILIARY INPUT CONNECTION

This is a spare input for any sound source you wish to connect to the CA-610II. When connecting a stereo source to these terminals, insure the left-hand and the right-hand plugs are inserted in the proper terminals.

This input has a sensitivity of 150 mV, and can be used for such inputs as Television Sound, Eight Track Stereo Cartridge Tapes, Shortwave Radio reception, and for high output level PHONO cartridges (ceramic or other types: ask your dealer's advice when using these cartridges).

In using these auxiliary units, make sure that they are compatible with the input impedance of 47 kΩ for these terminals.

To listen to these auxiliary sound sources, set the INPUT SELECTOR to the AUX position, and to record them set the REC OUT SELECTOR to the AUX position. Remember, when using a monaural input signal, the MODE Switch should be set to the MONO.

VOLUME AND BALANCE

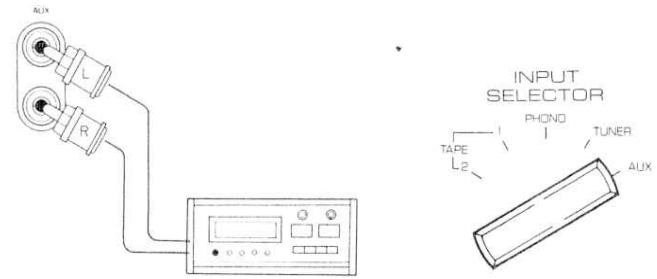
Use the VOLUME control to provide the volume of sound output that you require. When switching on your CA-610II, always set the VOLUME control at the "0" position by rotating the knob fully counter-clockwise. Then increase the volume as required. The BALANCE CONTROL adjusts the balance between the left-hand and the right-hand stereo channels. With the control set at the central "5" position, the sound should appear to be balanced centrally between the two speakers. When the control is rotated clockwise, it will emphasize the sound from the right-hand speaker, and when it is rotated counter-clockwise, it will emphasize the sound from the left-hand speaker.

TONE CONTROLS

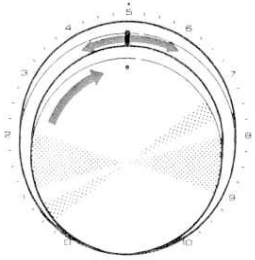
Both treble and bass tone controls on the CA-610II are provided with twin turnover frequencies and an intermediate DEFEAT position. In this position, the signal passes through the amplifier without being affected by the tone controls at all. It provides an instant comparison between the effect with, and without, the control setting you have chosen.

Turnover frequencies are either 125 or 500 Hz for the bass control and either 2.5 or 8 kHz for the treble. Start with the 125 Hz and 8 kHz positions. If adequate control cannot be obtained with these settings, try the 500 Hz and 2.5 kHz positions, which extend the effect of the tone controls well into the important central frequency range as shown in the graphs. If you listen at very low volumes, you may find that you need quite high degrees of bass and treble boost to give a natural tonal balance.

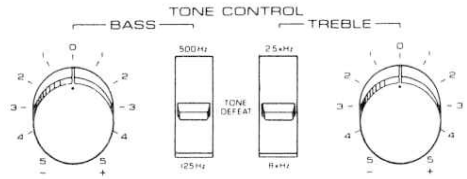
Connection to the AUX Terminals



VOLUME (the Inner Knob) and BALANCE (the Outer Ring) Controls



The TONE CONTROLS



The Bass Control

The Treble Control

FILTER, MAIN DIRECT, METERS AND METER RANGE SWITCH

HIGH FILTER

By setting the HIGH FILTER switch on, you can cancel the frequencies over 10 kHz at -6 dB/octave. This is useful for cutting tape hiss and noise from record scratches. The CA-610II also incorporates a Subsonic Filter which cancels the extremely low frequency range below 15 Hz at 12 dB/octave, thus eliminating noises which may be harmful to speakers.

MAIN DIRECT SWITCH

When the main direct switch is turned ON, the signal is transmitted directly to the main amplifier through the tone control circuit to create a perfect defeat condition.

As a result, distortion characteristics are im-expanded to 0.1 – 45W at 0.1% T·H·D and program source can be reproduced as it is.

At this point, Bass and Treble controls do not function, while other functions normally.

OUTPUT LEVEL METERS AND METER RANGE SWITCH

The output level meters indicate levels from –20 dB to +3 dB, and show the actual output when 8-ohm speakers are used. When the meter range switch is depressed, an output of from 20 mW to 2W can be measured. With the switch out, an output of from 500 mW to 50W will be indicated. That is, the indication will be 50W/8 ohms for 0 dB at 50W, and 2W/8 ohms for 0 dB at 2W.

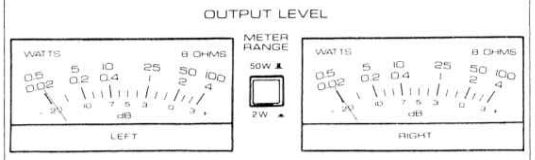
When using a speaker system other than 8 ohms, the calculations should be made according to the following formula:

$$\frac{8}{\text{Impedance of speakers being used}} \times \text{Indicated wattage} = \text{Output of speakers}$$

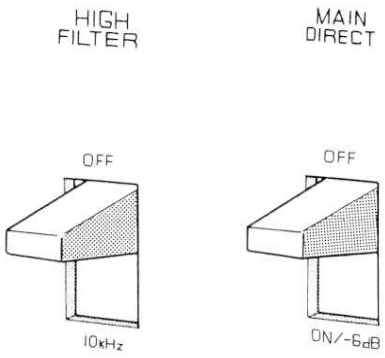
For example, in the case of a 4-ohm speaker system, the actual output will be double that indicated.

Note: When the output level is less than 20 mW, the needle will not move, as this is lower than the meter indication range.

Output Level Meters and Meter Range Switch

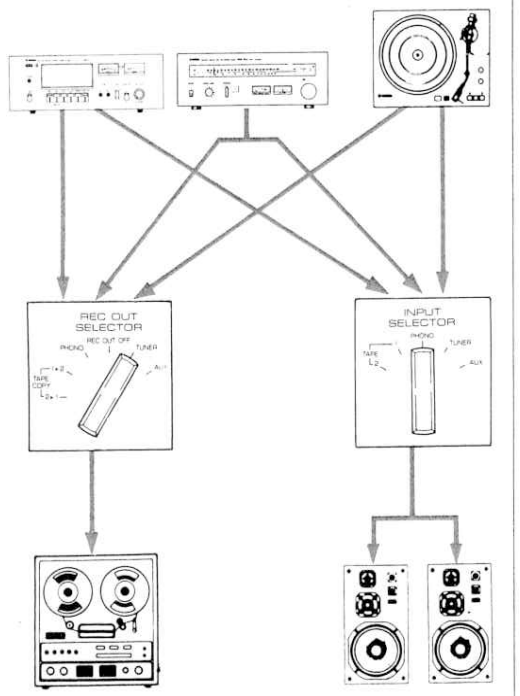


High Filter and Main Direct Switch



REC OUT SELECTOR, TAPE PLAYBACK AND RECORDING

Recording One Program Source While Listening to Another



REC OUT SELECTOR SWITCH

Do not confuse the REC OUT SELECTOR and the INPUT SELECTOR switches. The INPUT SELECTOR switch decides which program source you hear. The REC OUT SELECTOR switch decides which one you record. Yamaha amplifiers are at present unique in offering independent choice of audition and recording. Thus you can listen to a record while tape recording direct from an AM/FM tuner, or while dubbing from one tape recorder to another (set the INPUT SELECTOR switch to PHONO and the REC OUT SELECTOR switch to TUNER, TAPE 1 ▶ 2, or TAPE 2 ▶ 1 positions). Alternatively you can tape record a disc while listening to FM broadcast or a music tape played back on a second tape deck (be careful not to infringe copyright laws in tape recording proprietary-material). Just set the REC OUT SELECTOR switch to PHONO and the INPUT SELECTOR switch to TUNER or TAPE (1 or 2) respectively.

With the REC OUT SELECTOR in the OFF position, the CA-610II is completely disconnected from the recording output terminals. Thus, when you are not recording, the CA-610II will be protected from any adverse effects of unused tape deck input circuit impedances. Use this position when not recording.

TAPE PLAYBACK

The output leads provided with the tape deck are used to connect the deck LINE output terminals to the TAPE PB terminals. Use the TAPE 1 terminals for your main deck. Use the TAPE 2 terminals for a second deck or as a spare pair. Set the INPUT SELECTOR switch to TAPE 1 to play back tapes (or to TAPE 2 if you are using the TAPE 2 terminals, of course). Use the output level controls on the deck or decks to adjust the playback level so that there is no great change in volume level when switching between TUNER and TAPE 1 or 2 terminals.

TAPE DECK CONNECTION/RECORDING

The tape-deck leads provided are used to connect the deck LINE input terminals to the REC OUT terminals. Again, you should use the TAPE 1 terminals for your main deck, keeping the TAPE 2 terminals for a second or spare pair. Note that the INPUT SELECTOR switch setting has *no effect whatever* upon the signal which will be recorded via these terminals. The REC OUT terminals' signal is decided by the REC OUT SELECTOR switch.

If you refer to the description of the REC OUT function on the previous page you will see that recording of any of the program sources connected to the CA-610II is possible: just set the REC OUT SELECTOR switch to TUNER, PHONO, or AUX, respectively. Recording of any of these sources can proceed while that source, or any other, is selected for audition by the INPUT SELECTOR switch. Monitoring of the recording while it is in progress can also be carried out if you are using a three-head deck

designed for monitoring. Just set the INPUT SELECTOR switch to the TAPE position (1 or 2) via which you are recording. (Note: most cassette tape decks have only two heads, and monitoring is impossible; most open-reel decks do have three heads, with one for monitoring.

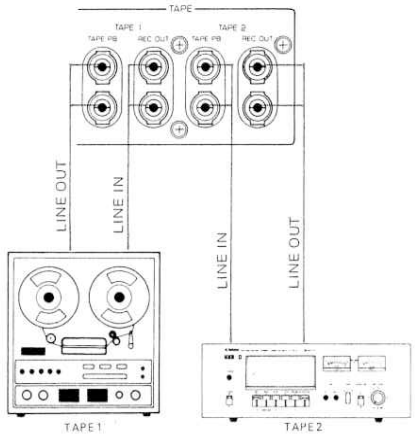
The level at which a recording is made is very important: for full details of recording technique you should consult the manual provided with your tape deck. Adjustments in level must be made with the input level controls on the tape deck.

Note that the signals from the REC OUT terminals which are recorded by your tape deck are not influenced at all by settings of the tone, filter, and volume controls, etc., and all such tonal and other adjustments must be made on playback.

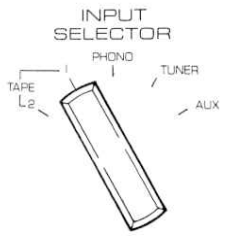
TAPE TO TAPE DUBBING

For this you will need two decks. Check carefully that the L (left) and R (right) channel pin-jacks are correctly connected before commencing recording. To copy a tape from TAPE 1 to TAPE 2 terminals, use the TAPE 1 ▶ 2 setting on the REC OUT SELECTOR switch. Similarly, to copy from TAPE 2 to TAPE 1, use the TAPE 2 ▶ 1 setting. In both cases you can compare the original recording and the copy by switching the INPUT SELECTOR between the TAPE 1 and TAPE 2 settings (provided that you have decks which allow you to monitor). Once you are satisfied that the recording is proceeding satisfactorily, you can turn the INPUT SELECTOR switch to any other program source you wish to enjoy, and the recording will not be affected.

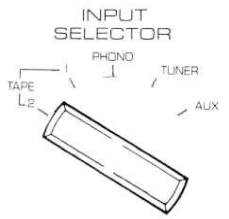
Tape Deck Connections



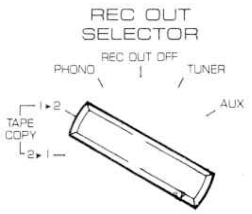
Tape 1 Playback



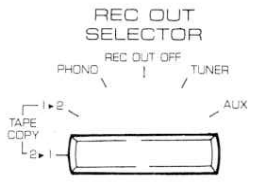
Tape 2 Playback



Tape Dubbing (1 ▶ 2)



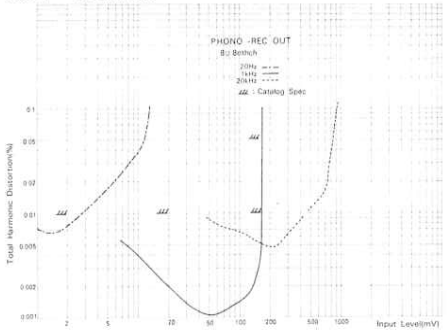
Tape Dubbing (2 ▶ 1)



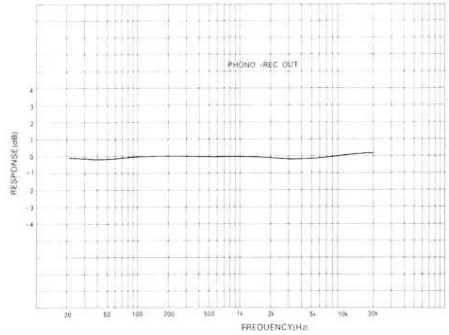
CA-610II

PERFORMANCE GRAPHS

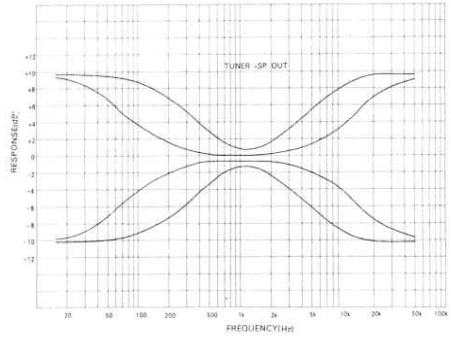
Input Level vs. Total Harmonic Distortion from PHONO to REC OUT Terminals



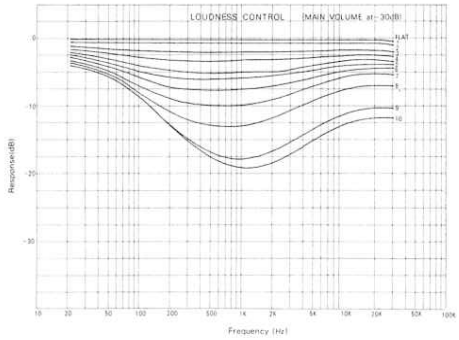
RIAA Deviation



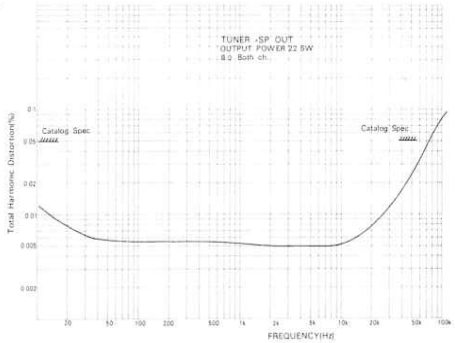
Tone Control Characteristics



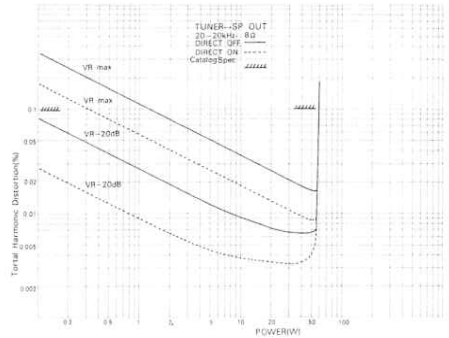
Continuous Loudness Control Contours



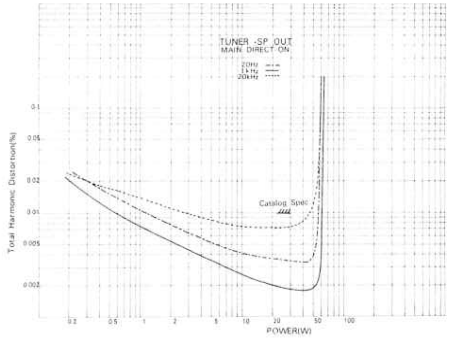
Frequency vs. Total Harmonic Distortion for TUNER to SP OUT



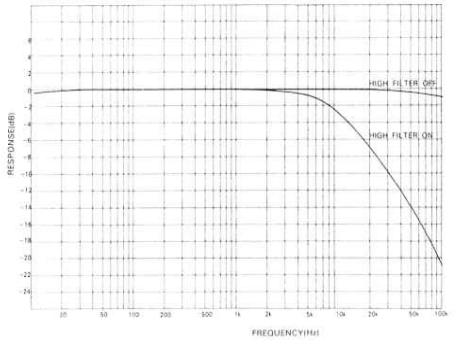
Output Power vs. Total Harmonic Distortion for TUNER to SP OUT Terminals at 1 kHz



Total Harmonic Distortion for Output Power for TUNER to SP OUT



Frequency and Filter Characteristics



CA-610Ⅱ

SPECIFICATIONS

Output Power		
Continuous rms power (both channels driven,		
AUX → Sp Out)		
20 to 20,000 Hz	8Ω	45 + 45 watts at 0.05%
		T·H·D
	4Ω	50 + 50 watts at 0.1%
		T·H·D
at 1,000 Hz	8Ω	50 + 50 watts at 0.05%
		T·H·D
	4Ω	65 + 65 watts at 0.1%
		T·H·D
Input Sensitivity/Impedance		
Phono		2.5 mV/47 kΩ
Tuner, Aux, Tape PB		150 mV/47 kΩ
Maximum Input Levels		
Phono (0.05% T·H·D)		more than 150 mV at
		1 kHz
Output Level/Impedance		
Rec Out		150 mV/600Ω
		(rated power)
Frequency Response		
Phono RIAA deviation (PHONO → REC OUT)		
		30 Hz to 15kHz ±0.3dB
Tuner, Aux, Tape PB → Sp Out 8Ω		
		10 Hz to 100 kHz +0,
		−2 dB
Power Bandwidth into 8Ω, 22.5W, 0.05% T·H·D		
		10 to 50,000 Hz

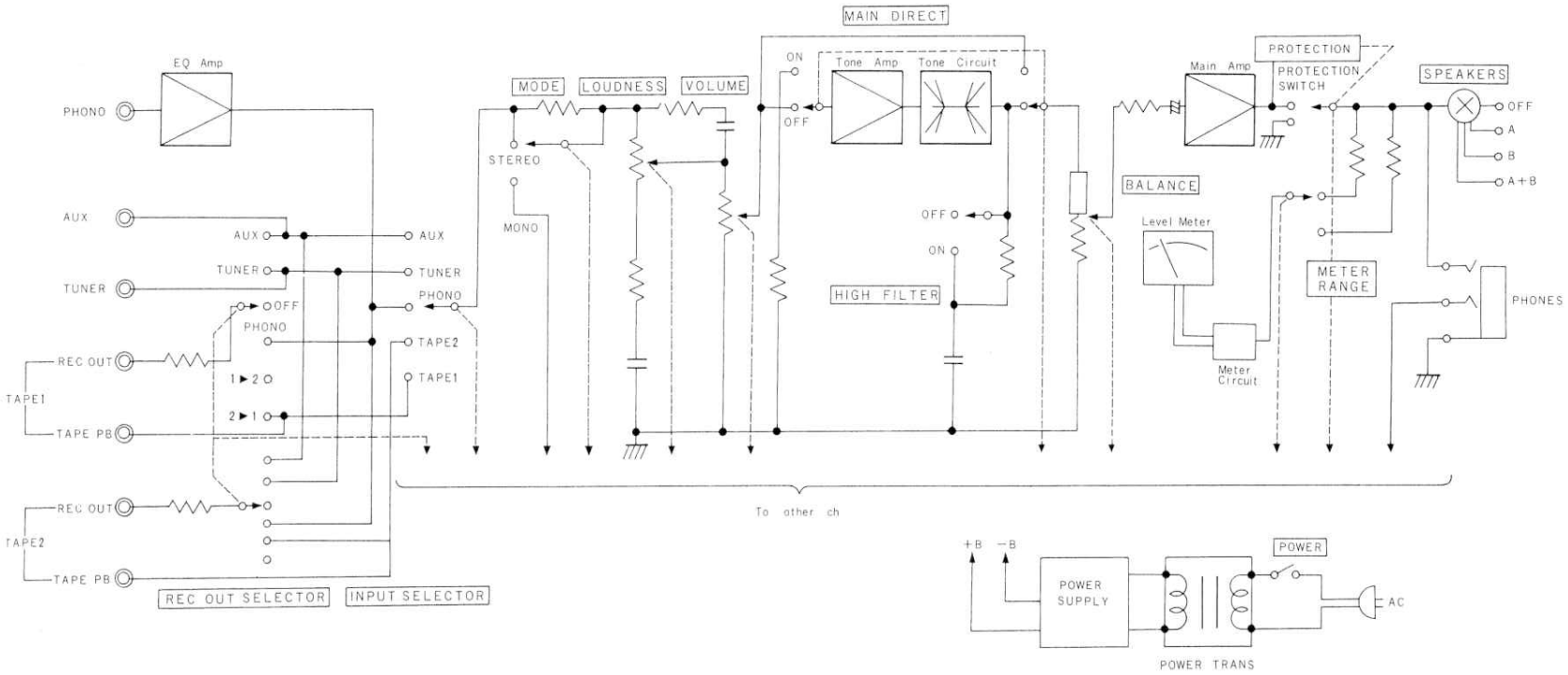
Tone Control Characteristics	
Bass turnover frequencies	125 Hz and 500 Hz
Bass boost/cut	±10 dB at 20 Hz
Treble turnover frequencies	2.5 kHz and 8 kHz
Treble boost/cut	±10 dB at 20 kHz
Filter & Loudness Control Characteristics	
High	fc = 10 kHz −6 dB/octave
Loudness	Level-related equalizer
Signal-to-Noise Ratio (IHF-A Network)	
Phono	97 dB (for 10 mV
	shorted)
Tuner, Aux, Tape PB	100 dB
Residual noise	
MAIN DIRECT OFF	Less than 0.16 mV
MAIN DIRECT ON	Less than 0.07 mV
Total Harmonic Distortion Ratio	
Phono to Rec Out (20 Hz ~ 20 kHz)	
	0.01% 1V output
Tuner, Aux, Tape PB to Sp Out	
MAIN DIRECT OFF	0.02% 22.5W/8Ω
	output
MAIN DIRECT ON	0.01% 22.5W/8Ω
	output
IM Distortion Ratio (60 Hz : 7 kHz = 4 : 1)	
Tuner, Aux, Tape PB → Sp Out	
MAIN DIRECT OFF	0.02% 22.5W/8Ω
	output
MAIN DIRECT ON	0.01% 22.5W/8Ω
	output

N·D·C·R (Phono → Sp Out, 0.1% T·H·D, Vol. at −20 dB)		
MAIN DIRECT OFF (1 kHz)	0.1W to 45W	
MAIN DIRECT ON (20 Hz ~ 20 kHz)		
	0.01W to 45W	
Damping Factor at 1 kHz	Better than 50 into 8Ω	
MAIN DIRECT ON		
Tuner, Aux, Tape PB to Sp Out Gain −6 dB		
General		
Semiconductors	Transistors	46
	Diodes	25
	LED	1
AC Outlets	SWITCHED	2
	UNSWITCHED	1
	(U.S.A. and Canada)	
Power supplies	120V AC, 60 Hz	
	(U.S.A and Canada)	
Power consumption	300W (U.S.A. and	
	Canada)	
Dimensions (W x H x D)	435 x 160 x 335 mm	
	(17-1/8" x 6-5/16" x	
	13-3/16")	
Weight	10 kg (22 lbs.)	

Specifications subject to change without notice.

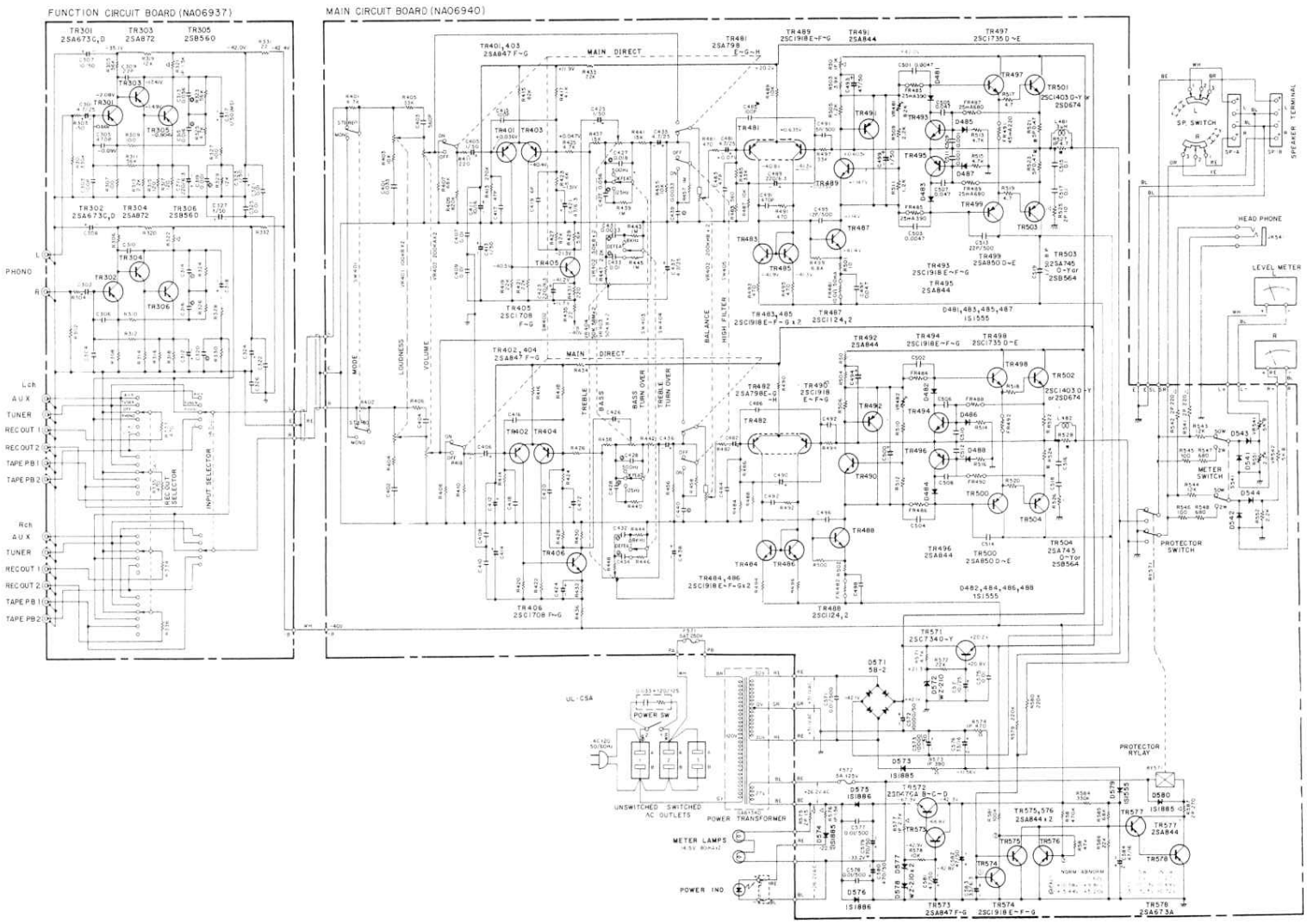
CA-610Ⅱ

BLOCK DIAGRAM



CA-610II

SCHEMATIC DIAGRAM



TROUBLE SHOOTING

Before assuming that your CA-610II is faulty, check the following trouble-shooting list, which details corrective action you can take yourself, without having to call a service representative.

Fault	Cause	Cure
No power although POWER switch is ON (POWER LED unlit)	AC power line not plugged into supply socket. AC main fuse has blown.	Plug firmly into the supply socket. Replace fuse and contact service rep. if it blows again.
No sound although power is connected	Volume set to "O" position. INPUT SELECTOR in wrong position Input pin plugs incorrectly inserted, loose, or disconnected. Speaker connections faulty SPEAKER switch in OFF position	Turn up VOLUME. Check and change as necessary. Check and insert fully in the correct positions. Check and make good. Set to correct position (A, B, or A + B).
Sound comes only, or mainly, from either L or R speaker.	Speaker connections faulty Input connections faulty Balance control not properly adjusted	Check and make good. Check and make good. Set to give correct stereo balance.
Sound suddenly ceases during audition.	The protective circuit has detected ±2 V DC at the speaker terminals, and disconnected them. AC main fuse has blown.	Sound will be restored as soon as the fault clears. If the fault persists, switch OFF and wait briefly before switching ON again. Replace fuse and contact service rep. if it blows again.
Poor bass response and badly defined stereo image	Speaker phase polarity (± connections) incorrect	Reverse the connections to one speaker (not both).
A loud 'humming' is heard instead of the record when attempting phono audition.	Either the pin-plugs from the phono cartridge are not firmly plugged into the input sockets, or the braided shielding wire is defective.	Plug in firmly, replacing the faulty shielding if necessary. Check and make good the GND (ground) wire.
The VOLUME cannot be raised during record audition without a loud 'booming' noise.	This is caused by acoustic feedback from the speakers to the phono cartridge stylus.	Increase the separation between turntable unit and speakers, avoiding locations directly in line with the speakers.
The VOLUME is inadequate even when set at max.	The Loudness control knob has been turned too far left.	Turn the LOUDNESS control to the right until optimum volume is obtain.
Tone quality cannot be controlled even by turning bass and treble control knob.	The MAIN DIRECT switch is ON.	To adjust the tone quality by using the control, switch OFF the MAIN DIRECT switch.
Your tape recorder does not record the program you are monitoring.	The REC OUT selector is not set to the required program.	Turn to the required setting.

Note: The hexagonal wrench accessory may be used to re-position or remove any selector switch knob.

SINCE 1887

YAMAHA

NIPPON GAKKI CO., LTD., HAMAMATSU, JAPAN