

# Owner's Manual

CONTROL CENTER C-1000

**WARNING:** TO PREVENT FIRE OR SHOCK HAZARD,  
DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

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Thank you for purchasing one of our quality products, the LUXMAN C-1000. With natural care, it will give you many years of outstanding performance and personal delight. Please read this Owner's Manual carefully before operating the unit, which gives detailed descriptions and operating procedures for the electronic and mechanical components of the C-1000. Again, thank you for your selection, and may "good listening" be your daily pleasure.



# Switches & Controls

## 1. Input Selector Switch

This switch allows to select desired programme source: you may select either of 5 positions (aux-1, tuner, phono-1, phono-2, aux-2)

## 2. Linear Equalizer

This is a new tone control which provides a total compensation specially intended for subtly augmenting regular tone controls. With the control in its mid-position, flat frequency response is achieved. When switched to either of the 2 "up-tilt" positions, the entire response curve is rotated so as to linearly increase treble response while simultaneously decreasing of bass response. Conversely selection of a "down-tilt" position rotates the response curve in a clockwise direction and provides a gradual decrease of treble and a simultaneous increase of bass.

This equalizer is not released even when the Tone Control Switch (7) is set at the "off" position. For further details, refer to the Operation of Linear Equalizer (Page14).

## 3. Bass Level Control (Bass)

A clockwise turn of the control boosts the bass response, and a counter-clockwise turn decreases and cuts the bass. This control has a click stopper of 10 points for both increase and decrease respectively. It yields a flat frequency response when set at the center of rotation.

## 4. Bass Frequency Selector Switch

Bass turnover (roll-off) frequencies are selected with this switch. When the desired frequency (150Hz, 300Hz or 600Hz) is set by this switch, tone control operates below the selected frequency.

## 5. Treble Level Control (TREBLE)

A clockwise turn of this knob boosts the treble response, while a counter-clockwise turn decreases the treble. This control has a click stopper of 10 points for both increase and decrease respectively. It yields flat frequency response when set at the center of rotation.

## 6. Treble Frequency Selector Switch

Treble turnover (roll-off) frequencies are selected with this

switch. When the desired frequency (1.5KHz, 3KHz or 6KHz) is set by this switch, tone control operates above the selected frequency.

## 7. Tone Control Switch & Low-Boost Switch

This switch functions both as tone control switch which operates tone control function (3) (4) (5) (6) and low-booster. If this switch is set at "tone cont." position tone control is put into operation, while at "off" position tone control circuit is by-passed. And when this switch is set at "tone cont. & low-boost" tone control circuit and low boost circuit operate simultaneously; you may adjust the tone control freely together with operation of low-boost circuit which boost the low frequency below 70Hz. Please note that the maximum increase point of this low-boost circuit is set at 8dB, therefore this has a shelf below 15Hz.

## 8. Low Cut Filter

When this switch is set at the upper position low frequency range below 70Hz can be cut off at the rate of -12dB/oct., while at the lower position below 10Hz at the rate of -18dB/oct. At the center point the filter function is by-passed to have flat frequency response; the signal will override this circuit.

## 9. High Cut Filter

When this switch is set at the upper position high frequency range above 7KHz can be cut off at the rate of -12dB/oct., while at the lower position above 12KHz also at the rate of -12dB/oct. At the center point the filter function is by-passed to have flat frequency response; the signal will override this circuit.

## 10. Input Impedance Adjuster for PHONO-1

You may set this Input Impedance Adjuster for PHONO-1 (34) at any impedance you desire between 30Kohms - 100Kohms. Click stoppers are provided at 30Kohms, 50 Kohms and 100Kohms, and approximate impedance is known by the slit of the screw. Adjustment to obtain the appropriate load resistance for cartridge is easily made by turning the screw with a small  $\ominus$  driver.

### 11. Input Sensitivity Control for PHONO-1 & 2

This is to control the input of the equalizer stage in compliance with the output voltage of pick-up cartridges connected to PHONO-1 and PHONO-2 terminals. This adjustment may be operated both on PHONO-1 and PHONO-2 terminals due to the method of varying the quantity of Negative Feedback in equalizer circuitry. Adjustment of  $\pm 5\text{dB}$  is possible at an input sensitivity of 2.5mV. Therefore input sensitivity is adjustable between 1.4mV – 4.4mV approximately.

The 0dB point is easily found by means of the click stopper. Adjustment should be done with a small  $\ominus$  driver. And approximate input sensitivity is known by the position of the slit of the screw.

### 12. Mode Selector Switch

Reproduction mode can be selected by these two switches and 9 combinations are feasible. The right switch provides "stereo reverse" "stereo" and "monaural", while the left one provides "left channel only", "stereo" and "right channel only". Various reproduction modes are obtainable by these two switches. For the normal stereo reproduction both of these switches should be set at the center "stereo" position.

### 13. Tape Reprint Switch (DUBBING)

Tape dubbing is possible with this switch. When the lever is set at the "1 to 2" position, the playback signals of the DECK-1 terminals can be copied on DECK-2, and vice versa when set at the "2 to 1" position. While in the dubbing process, it is possible to monitor with the Tape Monitor Switch (14). Except when reprinting a tape, it is recommended that this switch be set at the center "source" position. This tape

reprinting circuit is independent and reproduction of other sources such as record or tuner is possible while the operation of tape dubbing.

### 14. Tape Monitor Switch

By this switch this set is divided into two separate sections; from each input terminal such as PHONO, TUNER or AUX to the REC. OUT terminals and the amplifier section annexed to MONITOR terminals. At the position of "deck-1", reproduction by tape deck is feasible from "DECK-1 MONI" (39). While at "deck-2" position reproduction by tape deck is feasible either from "DECK-2 MONI" (42) or from "DECK-2 TAPE CONNECTOR" (43).

In case 3-head tape deck is used, simultaneous playback monitoring is possible while recording. In this case the amplifier receives the playback signals from either of the DECK-1/ DECK-2 REC. OUT terminals (38) (41) or the Tape Connector (40) & (43). Bear in mind that when the Monitor switch is set either at "deck-1" or "deck-2" position, playback is not possible from other sources than tape-recorder.

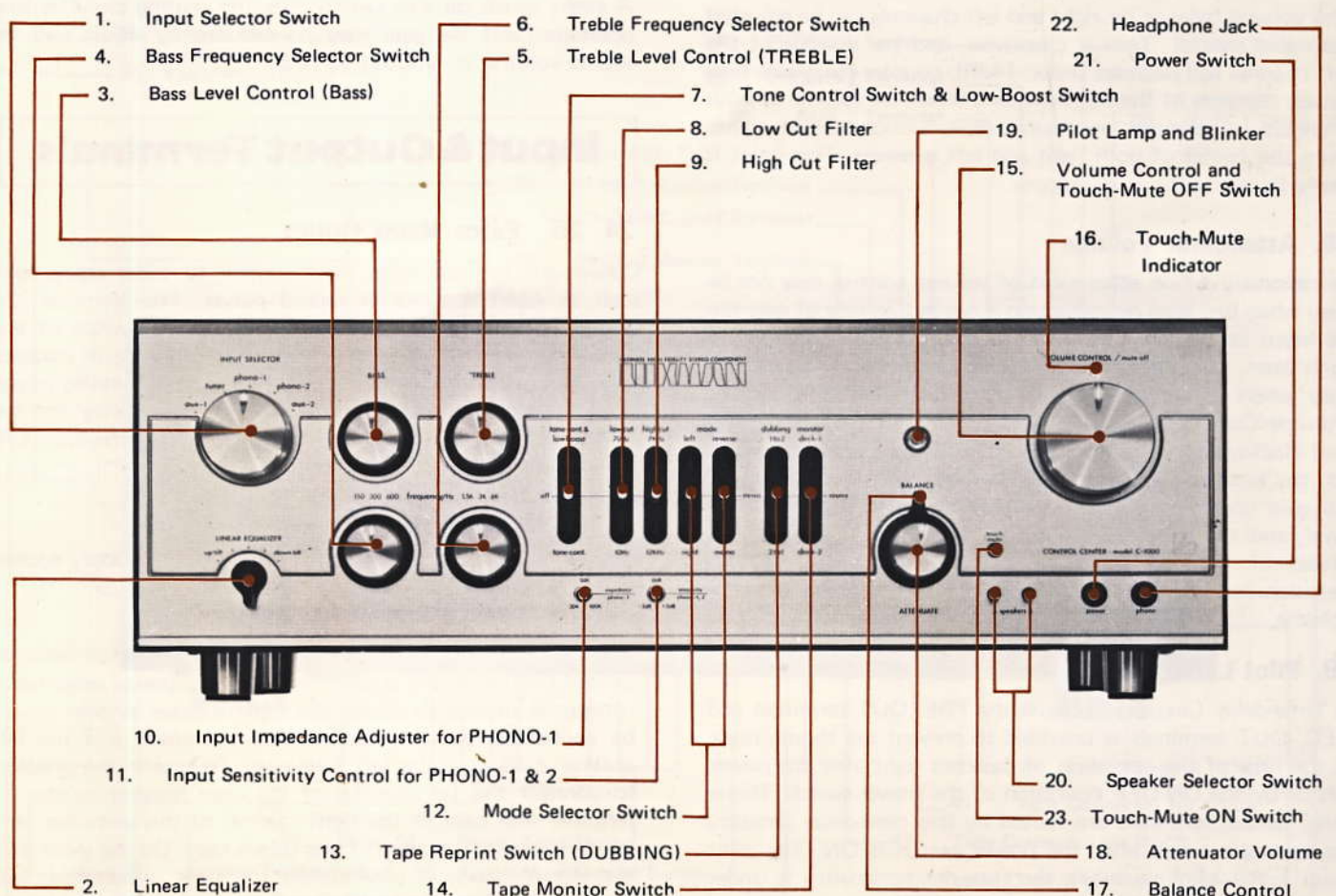
### 15. Volume Control and Touch Mute OFF Switch

This knob controls both volume and Touch Mute Circuit off operation.

#### ----- Volume Control -----

A precision detent-volume of high-grade attenuator type which enables an accurate adjustment of attenuation of both the right and left channels. A clockwise turn of this control increases volume, while a counter-clockwise turn decreases and finally cuts off volume.

Please note that a time-delay circuitry is incorporated in the



output stage to prevent noises caused by the operation of switches right after the power ON or the thumps at the ON/OFF operation of the power switch. And the output circuitry will be kept isolated for several seconds after the power switch is turned ON.

If this volume control is left increased, by the operation of this time-delay circuitry, loud sound level may be reproduced suddenly, therefore it is advisable to set the volume control at the extreme counter-clockwise position at first.

#### ----- Touch Mute Switch -----

Most of the current amplifiers are equipped with Audio Muting Circuitry, with which instantaneous attenuation of main volume is feasible for such an urgent occasion as the phone-call during reproduction.

Usual case is to do ON-OFF operation mechanically by a switch, while this model has adopted new electronic Touch-Mute system. The Touch-Mute function consists of 3 switches: Touch-Mute OFF Switch (15), Touch-Mute ON Switch (23) and Touch-Mute Release Switch (45) on the back panel. To operate this muting circuitry touch by hand the Touch-Mute ON Switch (23) and the gain may be reduced by 16dB and the sound volume is reduced to 1/6. Cancellation is possible by touching the volume control knob just like the case of normal operation of the main volume.

### 16. Touch-Mute Indicator

This indicator lights up when the touch-mute function is ON, and goes out when OFF.

### 17. Balance Control

The volume balance on right and left channels can be adjusted with this control. Turn it clockwise, and the volume of the left channel will decrease (max:-14dB); counter-clockwise turn causes decrease of the right channel. When the volume of both channels is balanced, monaural reproduction sound comes from the center of both right and left speakers. This point is easily found by the click-stopper.

### 18. Attenuator Volume

Occasionally a fine adjustment of volume control may not be easy when low level reproduction is needed; in case of over-rated input at the input terminals or the mid-night listening. In such cases, the adjustment by the attenuator volume makes it easy when it is operated after the rough level is set by the Volume Control (15).

Full clockwise turn is equivalent to 0dB, that is, not attenuated, the position of which may be used for measurement or full-gain operation. While a counter-clockwise turn decreases level, and the full turn attains -20dB attenuation. Thus free preset of the maximum point of the volume is feasible between 0dB and -20dB by the adjustment of this attenuator volume.

### 19. Pilot Lamp and Blinker

A Time-delay Circuitry to mute the PRE. OUT terminals and REC. OUT terminals is provided to prevent the thump noise at the time of the operation of switches right after the power ON or by the ON-OFF operation of the power switch. Therefore, output terminals are muted by this time-delay circuitry for several seconds after the power switch is ON. The pilot lamp keeps blinking while the time-delay circuitry is under operation, and will light on and stop blinking when normal

operation is allowed.

### 20. Speaker Selector Switch

This amplifier offers convenient use of 2 speaker systems. You can choose independent or simultaneous driving of 1 or 2 systems. When the A button is pressed in, the speaker terminals A (28) will operate and the B button is for the terminals B (29). When both of the A and B buttons are pressed in, the A and B terminals will operate at the same time. In this case, make sure that the overall impedance is not less than 4 ohms.

### 21. Power Switch

Mains power is "on" when this switch is pushed, and the pilot lamp begins to blink for a several seconds until this set is in perfect operational condition. And the next push shuts off the mains power.

### 22. Headphone Jack

The headphone amplifier is not incorporated in this model. Signal for reproduction begins to flow to this jack only when a power amplifier is connected to the terminal "FROM POWER AMPLIFIER". In this case, output signal is always available at headphone jack, an insertion of the plug of stereo headphone into this jack is enough. When reproduction from the headphone only is desired, both of the Speaker Selector Switch (20) have to be released. For stereophonic reproduction, however, it is recommended to set the speaker switch at the "off" position.

### 23. Touch-Mute ON Switch

A slight touch on this switch puts the muting circuitry into operation and the gain may be reduced by 16dB and the sound volume is reduced to 1/6.

## Input & Output Terminals

### 24. 25. Extra Mains Outlet

Convenient for supplying mains power to other equipment such as AM/FM tuner or record player. The terminal (24 UNSWITCHED) is independent of the mains switch of the amplifier, while the other (25 SWITCHED) is both coupled with the mains switch (21). The supply of the mains power depends on the mains switch. The total capacity for the UNSWITCHED is 200W. The rated capacity for the SWITCHED is 300W.

### 26. Power Supply Cord

Plug in the end of this cord to the wall power supply socket.

### 27. Terminal for Power Amplifier

Speaker systems can be selected by the Speaker Selector Switch (20) when the output terminal of a power amplifier is connected to this terminal. The right speaker system should be connected to the right speaker terminals, and the left speaker system to the left terminals. To match the phase is to connect the (+) terminal of the right speaker to the (+) terminal (red cap) in the right channel of this amplifier, and the (-) terminal to the (-) one (black cap). Do the same with the left speakers. If mismatched for some reason (e.g. misconnection of speaker), the low frequency range is subdued

and stable playback cannot be realized. To firmly connect the speaker terminals, strip off the end of the shield wire by 10mm and insert into the terminal hole by pressing the terminal head, and then releasing it.

### 28. 29. Speaker Terminals (A and B)

The speaker systems should be connected to these terminals. These terminals are coupled with the speaker switches, and the speaker switch must be set at the position corresponding to the terminal to which the speaker systems are connected. (28) is for the A speakers, and (29) is for the B speakers. The red terminal is for (+) and the black for (-). For further details, refer to Connection of Speakers.

### 30. AUX-1 Terminal

This is an auxiliary input terminals for playback of flat frequency response such as AM/FM stereo tuner, line output of a tape recorder, or the audio output of a television receiver. Input sensitivity is 150mV. Input impedance is 70Kohms.

### 31. Level Control for AUX-1 Terminals

This is a variable resistor to set an input level of the AUX-1 terminals. It can be used to adjust possible volume level deviation at the time of selection of the Input Selector Switch.

### 32. Tuner Terminals

For reproduction of tuner (AM/FM/LW/SW). The input level can be adjusted by the Level Control for Tuner terminal (32). Max. sensitivity, 150mV. Input impedance, 70Kohms.

### 33. Level Control for Tuner Terminal

This is a variable resistor to set an input level of the Tuner terminals (31). It can be used to adjust possible volume level deviation at the time of the Input Selector Switch operation.

### 34. PHONO-1 Terminal

For playback through magnetic cartridges (MM, MI, MC type). The input sensitivity can be adjusted freely in the range of 2.5mV (0dB)  $\pm$ 5dB, that is, 1.4mV - 4.4mV. Input impedance can also be adjusted between 30Kohms and 100Kohms. For such MC type cartridge of very low output level, it is necessary to boost voltage up to the specified level by use of a step-up transformer or a head-amplifier.

### 35. PHONO-2 Terminal

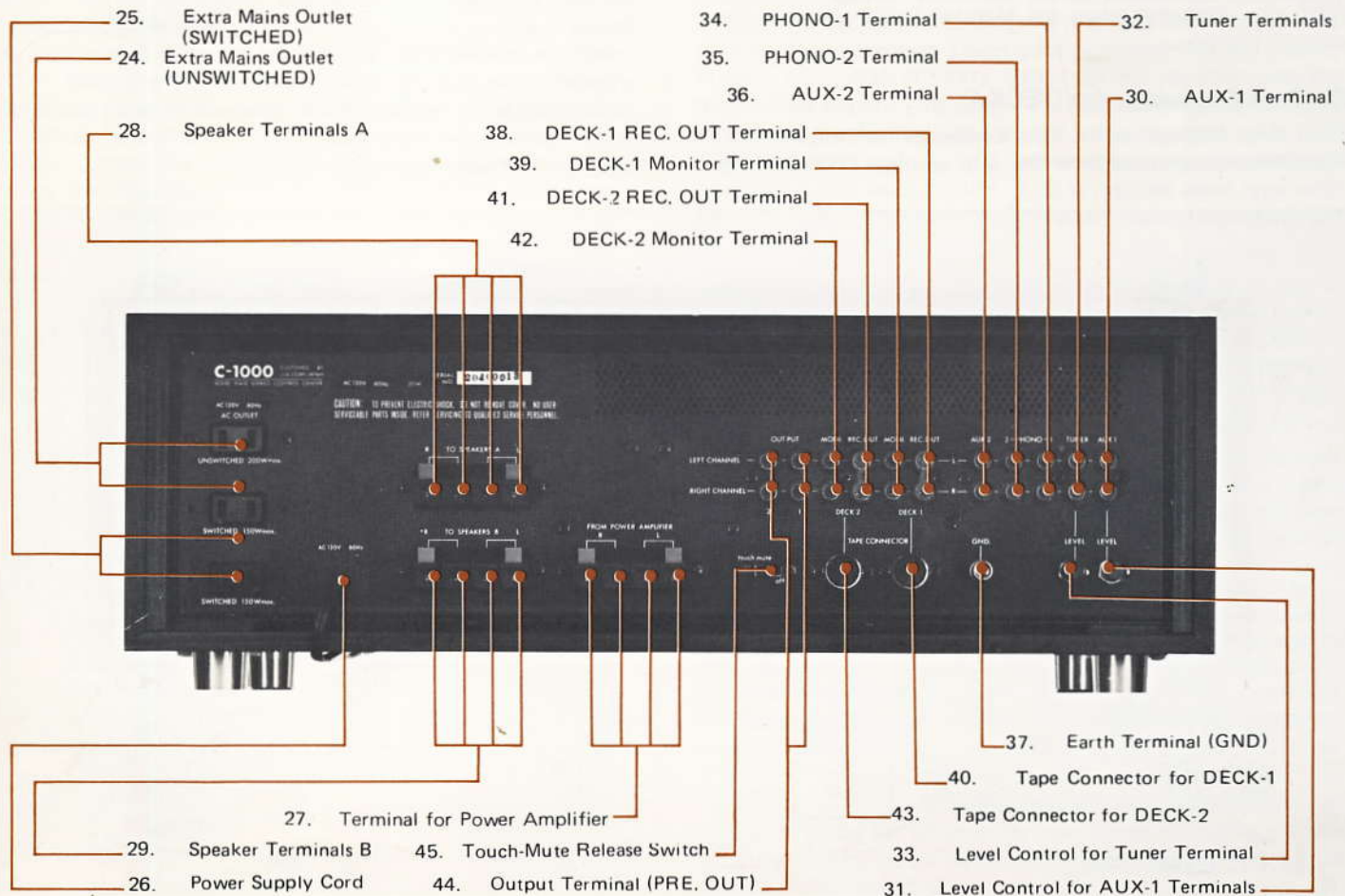
Same as PHONO-1 Terminal, except that the input impedance is fixed at 50Kohms. Input Sensitivity can also be adjusted by Input Level Control (11).

### 36. AUX-2 Terminal

This is an auxiliary input terminal for playback of flat frequency response such as AM/FM stereo-tuner, line output of a tape recorder, or the audio output of a television receiver. Input sensitivity, 150mV. Input impedance 25Kohms. Input Level is not controllable.

### 37. Earth Terminal (GND)

Connect the earth lead wire of the record player (from motor or pick-up arm) to ground to the amplifier.



### 38. DECK-1 REC. OUT Terminal

A signal for recording is taken out from this terminal (always available when input signals are given to any of the input terminals). In case the Dubbing Switch (13) is set at the "2 to 1" position, the recording signals come from the DECK-2 recording output terminals.

### 39. DECK-1 Monitor Terminal

Playback of the line output of a tape recorder is possible from this terminal. It is put into operation when the Monitor Switch (14) is set at "deck-1" position. In case a 3-head tape deck is used, simultaneous playback monitoring is possible.

### 40. Tape Connector for Deck-1

This connector is of DIN standard. With the recording output terminal (REC. OUT) and the tape monitor terminal in it, connection for recording and playback is feasible with a single lead-wire with DIN plug — providing the tape recorder has the same connector. For playback through this connector, the Monitor Switch (14) must be at the "deck-1" position, and the Dubbing Switch (13) at the "source" position. Recording output signal is always available from this connector, except when the dubbing switch is set at the "2 to 1" position.

### 41. DECK-2 REC. OUT Terminal

Offers the same function as the DECK-1 REC. OUT Terminal (38). If the Dubbing Switch is set at the "1 to 2" position, the signal from the DECK-1 terminals is available.

### 42. DECK-2 Monitor Terminal

Offers the same function as the DECK-1 Monitor Terminal. It is put into operation when the Monitor Switch is set at the "deck-2" position.

### 43. Tape Connector for DECK-2

Offers same function as the Tape Connector for DECK-1 (40). This connector is in the same line with terminal (41) (42), and

the operation of Tape Monitor Switch or Tape Dubbing Switch, should be done accordingly.

### 44. Output Terminal (PRE. OUT)

The whole output, including the tone controls and the linear equalizer, can be taken out from this terminal. Two lines are provided to enable to drive two sets of the power amplifier. When using a shield wire, there is no attenuation in the high frequencies because this terminal has sufficiently low output impedance of about 300 ohms. This terminal is for independent use of the pre-amplifier, as well as for a multi-amplifier system using a channel divider.

### 45. Touch-Mute Release Switch

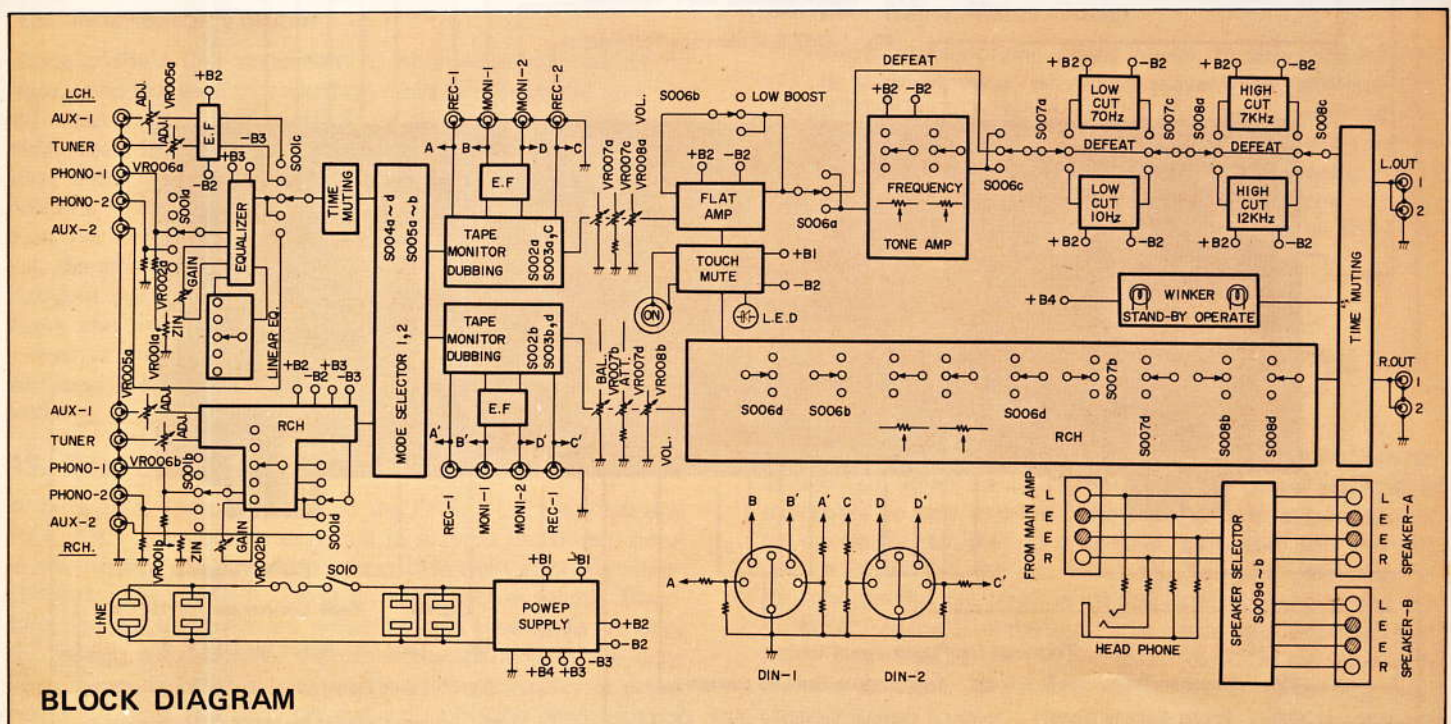
When this switch is set at the "out" position the Touch-Mute Circuitry is completely released. In this case Touch-Mute ON Switch (23) and Touch-Mute OFF Switch (15) will not operate.

Therefore it is recommended to set this switch normally at the "in" position to make the Touch-Mute operation always feasible.

**NOTE:** As for the Touch-Mute Control Switch, those units manufactured in the first production lot usually with the serial No. up to 5100780 are different from what is stated in this manual. In this case to operate this muting circuitry, touch by hand the center metal part of the main volume and the gain may be reduced by 16dB and the volume is reduced to 1/6. Cancellation is possible by touching the outer metal part of the knob just like the case of normal operation of the main volume. Therefore such additional switches as Touch-Mute ON Switch (23) and Touch-Mute Release Switch (45) are not provided.

Please note that this circuitry may not operate under a special condition, for instance, that this set is placed in the perfectly shielded room with the GND terminal (37) grounded.

In such occasion, operate in the same way as described above while touching the front panel by other hand, and the Touch-Mute Switch will operate perfectly.



**BLOCK DIAGRAM**



# Circuitry

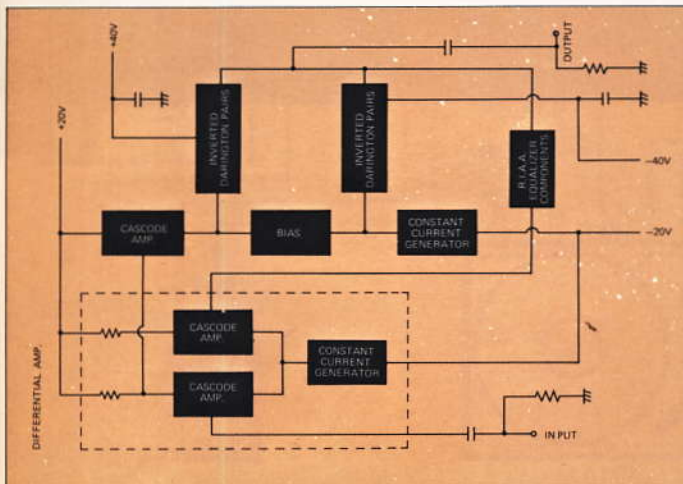
## \*Equalizer Stage

A Cascoded Differential Direct Coupled Amplifier is adopted. This differential circuitry at the top stage stabilizes the direct coupled stage and helps obtain better linearity. Also this shields the NF amp immune from being unstabilized by the exterior effects such as cartridges to be connected to the input. Good linearity, stability and SN ratio are ensured thanks to the Cascoded Amplifier adopted for this differential stage and the following stage.

As for the output stage, the adoption of the transistor of TO-5 type at the final stage together with the push-pull circuitry by Class A Inverted Darlington Configuration permits to accept the low impedance loads.

This is designed for the professional use because current standard control amp cannot stand the severe load condition at equalizer stage when a lot of lines of recording output is used frequently with professional equipment.

Constant Current Circuits are adopted at important points to improve the linearity of the transistor itself, the open loop gain and the differential function, all of which contribute to lower the distortion. The permissible input voltage at PHONO terminals is 450mV at 1KHz (R.M.S. Input Sensitivity 0dB). R.I.A.A. equalization is within  $\pm 0.2\text{dB}$ , which is realized by careful selection of components used in this equalizer stage. Other functions related to this stage are Input Sensitivity Adjuster, Input Impedance Adjuster and Linear Equalizer.



## \*Intermediate Amp & Tone Control Circuitry

These two stages adopt cascoded direct-coupled amp to improve linearity especially at high frequency range, and stability and SN ratio are just the same with that of the equalizer stage.

Constant Current Circuitry is adopted in the output stage to improve linearity of the transistor itself and the open loop gain. Phase compensation for NF stabilization is just one, and the aggravation of the distortion at high frequency range is almost nil.

Tone Control Circuitry of LUX original NF type improves the distortion together with the above mentioned amplifying circuitry. Tone control function is provided with independent frequency selector with 3 points for both bass (150Hz, 300Hz, 600Hz) and treble (1.5KHz, 3KHz, 6KHz) together with the tone defeat switch. This circuitry allows low boost at the same time. Thus a wider tonal adjustment is feasible.

Further a detent-volume of 21 points type is adopted for both bass and treble level control. This is just the same type with the high-grade attenuator, which prevents gang error between right and left channel.

## \*Buffer Circuitry

Emitter follower circuitry is adopted for this stage. But this is somewhat different from the ordinary one. Here two transistors are used; one is for the emitter follower and the other for the constant current circuitry to the emitter follower stage. This constant current driving circuitry not only keeps good linearity of the transistor itself but suppresses the distortion lowest for wide frequency range by means of its high open gain.

## \*Filter Circuit

This stage is an NF type utilizing emitter follower. The constant drive system is adopted likewise the Buffer stage. Cut off frequency can be selected either at 10Hz (-18dB/oct.) or 70Hz (-12dB/oct.) for Bass cut and 7KHz (-12dB/oct) or 12KHz (-12dB/oct) for Treble cut. Independent filter circuitries for each cut off frequency are provided, and these cut off points can be selected by the whole switching of the circuitry. Of course no signals will go through these circuitries when the filter switch is off.

# Connection Procedure

## Connection to Input Terminals:

Connect the outputs of player, tuner, or tape-recorder to the relevant input terminals of this amplifier. As to the details, see the section on Playback of Disc, Tuner and Tape-recorder.

## Connection to Power Amplifier:

Connect the output terminal (44) — either of the two terminals — to the input terminal of the power amplifier, using pin-jack cord (shield-wire). It is useful to use different color cord to prevent mis-connection of R-ch and L-ch.

## Connection Cable (Cord Wire):

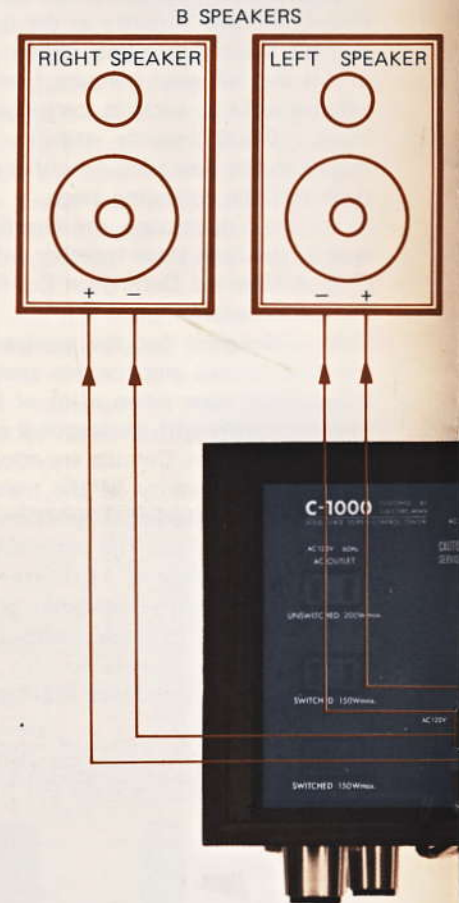
For connection of the record-player, tuner, and tape recorder, shield wire is advisable to use for protection from external noise or inductance noise. Usually, this shield-wire has the capacitance of approx. 200pF/m, and even so called low capacitance shield wire has 100pF/m, i.e., the adoption of a connection cable gives the same effect as that of the insertion of a capacitor in parallel with input sources or output load equipment (which composes a kind of high-cut filter circuit). For instance 2 meters of this shield wire has 400pF capacitance, and if this cord is used at the point where parallel composite value of input and output impedance is 50Kohms, it means an insertion of a high-cut filter with cut-off frequency at about 10KHz, which causes unnecessary attenuation of the high frequency range. Use of the shortest wire is, therefore, recommended, especially for high impedance equipment.

Choose a shield-wire of good quality and make it as short as possible for connection of this amplifier (at PHONO, AUX, Tape-monitor, etc.) with the high impedance equipment. In case input or output impedance is sufficiently low, the effect is not much, since parallel composite impedance becomes lower and cut-off frequency will be shifted out of the audible range. It does not matter if relatively long cable is used for terminals, since their impedances are so designed as to be sufficiently low (approx. 100 ohms).

## Connection of Speakers:

Stereophonic playback is made with a pair of speaker systems for right and left channels. The right speaker system should be connected to the Right speaker terminals, and the Left speaker system to the Left terminals.

Note that perfect sound reproduction cannot be expected if



the phase is not matched between both channels. To match the phase is to connect the (+) terminal of the right speaker to the (+) terminal (red cap) in the right channel of power amplifier, and the (-) terminal to the (-) one (black cap). Do the same with the left speaker. If mismatched for some reason (e.g., mis-connection of speakers), the low frequency range is subdued and stable playback cannot be realized.

To firmly connect the speaker terminals, strip off the end of the shield-wire by 10mm and insert it into the terminal hole by pressing the terminal head, and then releasing it.

### Connection of Mains Power Supply Source:

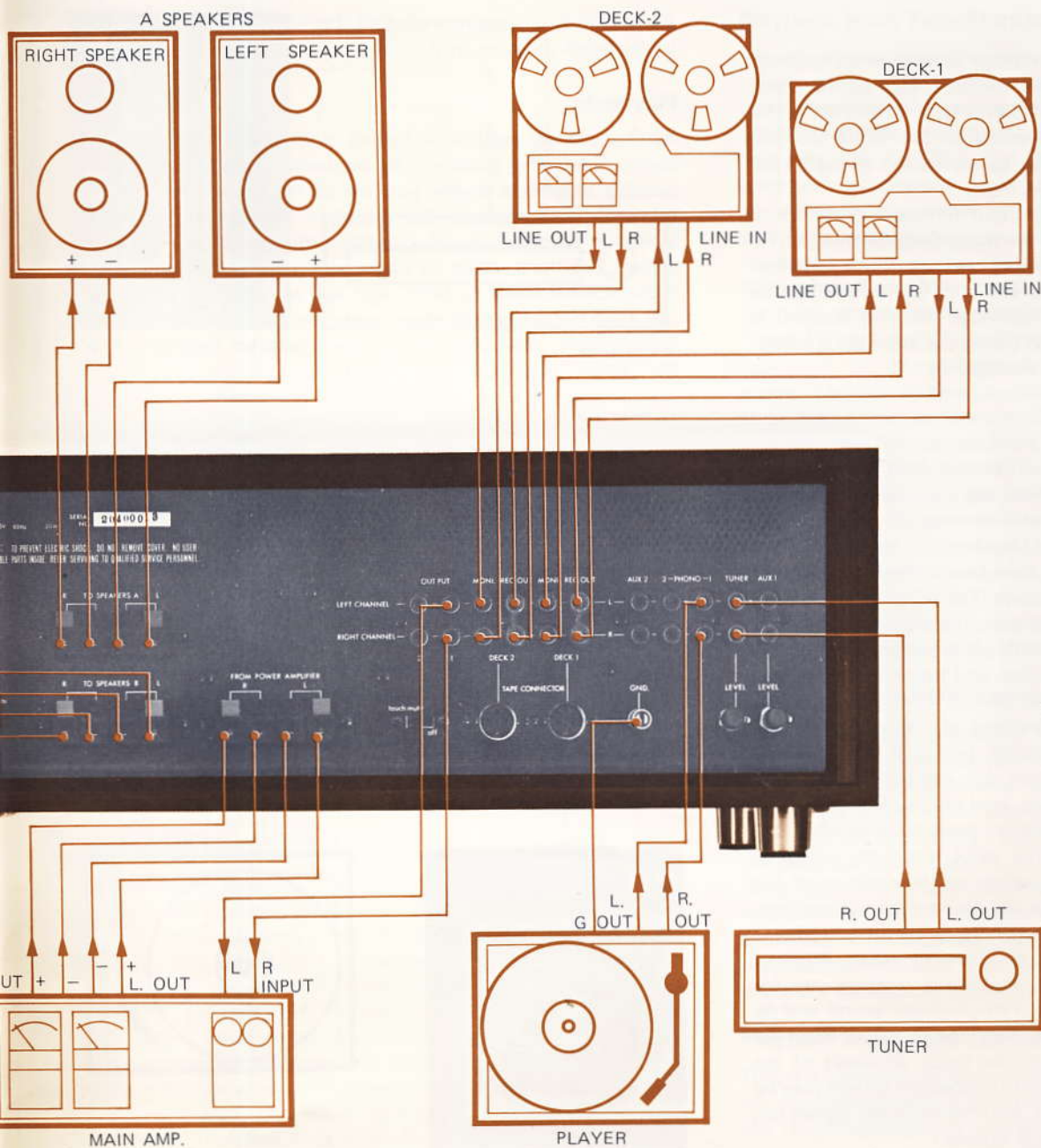
As the final step of preparation, connect the amplifier to the mains power supply source. Connect the Power Cord (26) to the power supply outlet. Then press the Power Switch (21). The Pilot Lamp (19) begins to blink for several seconds and light up finally when all the circuitry is put into operational condition.

### Connection of the Speaker Terminals to the Power Amplifier:

This set is purely a control amplifier and naturally does not accommodate power amp. But switching of two pairs of speaker systems for comparison is feasible and headphone is serviceable at the same time when the output of the power amp is connected to this model.

Connect the L-ch and R-ch of the speaker terminals of the power amp with respective L-ch and R-ch of the terminals "FROM POWER AMPLIFIER" using the speaker-cord. And then connect speaker system A to the terminal A, while speaker system B to the terminal B.

Now, switching of two pairs of speaker systems, or driving both of them at the same time is possible by the Speaker Switch (20). Also listening through headphone is feasible when the 8-ohm headphone is connected to the Headphone Jack (22). In this case speaker switch should be at the "OFF" position.



# Record Player

## Connections:

The player has 2 cords with pin-plugs at their ends for both right and left channels. Connect the pin-plugs to the input terminals of this amplifier (34 PHONO-1, 35 PHONO-2). The player's earth lead can be connected to the GND terminal (37). The player's power flex can be connected to the Extra AC Outlet (24) (25) of the amplifier.

This amplifier is provided with 2 input terminals (PHONO-1 & PHONO-2) to be selected by the Input Selector Switch (1). This is useful for comparing or using two record players. For use of one player, either of the two input terminals can be selected. But in case MM-type cartridge (Moving Magnet) is used, its impedance can be varied (using the impedance adjuster) to give a proper load to the cartridge.

## Signal Paths:

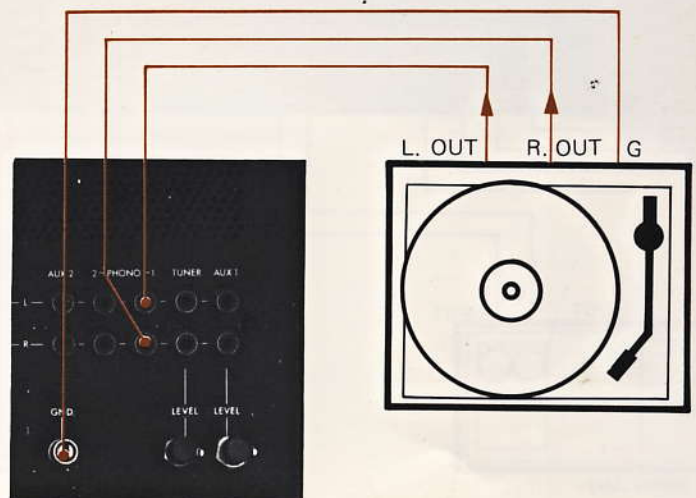
First, the signals fed to the amplifier through PHONO terminals are brought to the equalizer section, where recorded signals are restored to the original frequency curve. Incidentally, this equalizer curve has been standardized to the R.I.A.A. curve. The equalized signals are then fed to the input selector switch (function switch) via Linear Equalizer stage. If this switch is not set at PHONO position, the signals are blocked here and no amplification is possible. After input selector, one line goes to the REC. OUT terminal, and the other to the tape monitor switch. If the Monitor Switch (14) is set at the "source" position, the signals are sent to the mode selector switch, balance and volume controls, but if at the "deck-1" or "deck-2" position, the signals are stopped at the tape monitor terminals. Except during tape playback the monitor switch must be kept at the "source" position. But when the input signals are fed to PHONO or AUX terminals, recording output is always obtainable regardless of the position of the monitor switch. Then the signals are sent to the volume control through the mode selector and balance control.

Such controls as Linear Equalizer, Low-cut filter, High-cut filter, Attenuator, Low booster, and Tone controls are for flexible and diversified adjustment of playback sound and do not block the signals completely. Then the signals go from the output terminals of this amp to the input terminals of the power amp to be amplified so that the speaker system may be driven enough by the power amp. And the recorded signals can be heard as sound from the speaker system.

As for the easy understanding of the signal paths, please refer to the block diagram on P.6.

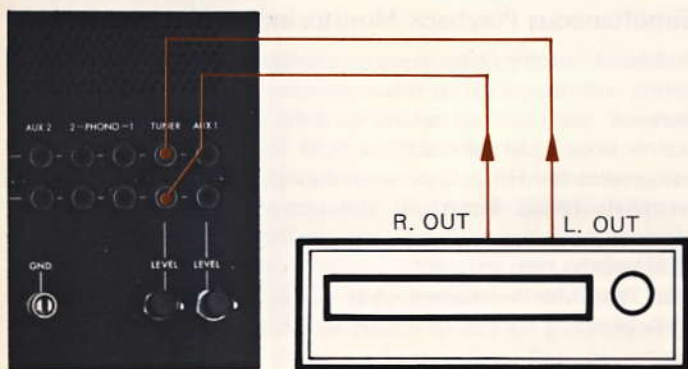
## Playback:

As the volume control is turned clockwise, playback sound comes from the speakers. As explained above, playback is possible regardless of the position of the Mode Selector, etc. Input Selector Switch (1), Monitor Switch (14), Speaker Switch (20) and Volume Control (15) should be set at the correct positions. After all preparations are completed, check if the volume levels on both right and left speakers are identical. If different, adjust them with the Balance Control. For Stereophonic playback, set the Mode Selector Switch (12) to the "stereo" position.



# Tuner

# Tape Deck



## Playback from Tuner:

Connect the tuner's output terminals (left and right) to the amplifier's TUNER terminals (32).

The Input Selector Switch (1) must be set at the "tuner" position. As shown in the block diagram, the input signals from the tuner are fed directly to the input selector circuit. Afterwards, the signals trace the same blocks as are explained in the Tape Deck section and are reproduced from the speaker systems. Both for FM stereophonic and monaural broadcasting, the Mode Selector Switch should be set at the "stereo" position, for such accommodation to the input source can be made in the tuner. Modulation hum in the AM programme can be eliminated by varying the distance and angle of these components.

## Input Level Control:

The matching level on the TUNER terminals and PHONO terminals can be obtained by the TUNER Input Level Control (33). In case two tuners or a tuner and other audio equipment are used, level adjustment is feasible by using TUNER Input Level Control and AUX-1 Input Level Control (31) with the connection to TUNER terminals and AUX-1 terminals. When tuner and 2 other audio equipments are used, each 3 input levels can be adjusted by the Input Level Controls if the programme source with the lowest output is connected to the AUX-2 terminals, and other two sources are connected to TUNER terminals and AUX-1 terminals respectively.

## Playback from Tape Monitor Terminals:

Almost all tape-recorders and tape-decks currently marketed include an equalizer amplifier in their circuitry, and some tape-players are made exclusively for playback.

Connect the output terminal (LINE OUT) to the Tape Monitor terminals (39, 42). Then set the Monitor Switch (14) at the corresponding position to which the tape-recorder is connected. If two tape-recorders are connected to the terminals (39) and (42), selection between either of two units is possible by the Tape Monitor Switch (14).

When the Tape Monitor Switch (14) is set at "source" position, signals before recording are reproduced, and at "deck-1" or "deck-2" position the signals recorded on each tape deck can be reproduced. Therefore, a 3-head tape deck makes it feasible to have playback monitoring while recording. Note that a normal function cannot be expected if 2 sets of tape-recorders for playback are connected to the terminals of either DECK-1 and Deck-1 Tape Connector (40) or DECK-2 terminals and Deck-2 Tape Connector at the same time, since these two are coupled in the inside circuit and affect each other. Therefore, if the Tape Monitor terminals and the Tape Connector are used, the tape-recorders should be connected to the terminals of DECK-2 (with the Monitor Switch at the "deck-2" position) and to the Deck-1 Tape Connector (40), or DECK-1 and Deck-2 Tape Connector (43).

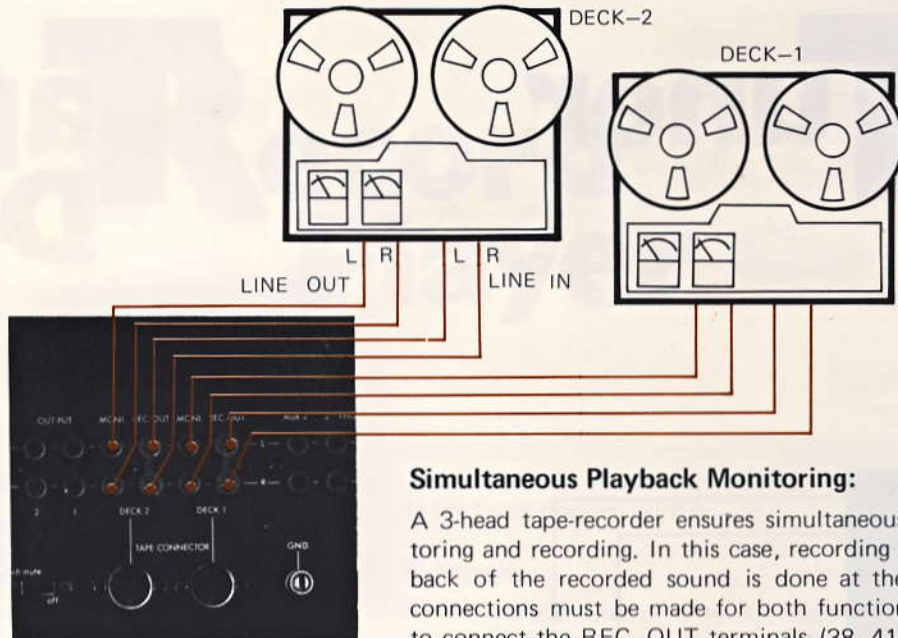
## Playback from AUX Terminals:

Playback of tape is possible if the line output of the tape-recorder or tape-deck is connected to the AUX terminals of this amplifier by use of a pin-jack lead, and the Input Selector Switch (1) is set at the position corresponding to the AUX terminals. All operations in this case are the same as those for the playback from tuner (P. 11).

Note that when tape playback is made through the AUX terminals or TUNER terminals, the line input or AUX input terminals of the tape deck should be kept free. If connected to the Recording Output terminals (REC. OUT) of the amplifier, there will be possible oscillation by feed-back of signals.

## Playback from Tape Connector:

This is a connector of DIN standards and is convenient for simple connection with a patch cord between the tape-recorder and recording/playback connectors of this amplifier. Playback



of deck from the Tape Connector (40 or 43) is possible if the Monitor Switch is set at the position corresponding to the Tape Connector to which the tape deck is connected.

### Recording on Tape:

In case of playback of various programme sources through input terminals of this amplifier, the same signals as those reproduced in the speakers are always available at the REC. OUT terminals (38, 41) and the Tape Connector (40, 43). But please note that availability of signals at the REC. OUT terminals depends on the position of Tape Dubbing Switch (13), e.g., when the Tape Dubbing Switch is set at "1 to 2" position, no signal is at DECK-2 REC. OUT terminals. By connecting these terminals to the input terminals (AUX or LINE IN) of the tape-recorder, you can enjoy simultaneous recording and playback. (It is recommended that the Dubbing Switch be kept at the "source" position). These recording signals are taken out before the tape monitoring stage, and there is no influence from the Filter, Volume or Tone Controls, etc. as far as the quality of the recorded signal is concerned.

### Tape Dubbing (REPRINTING):

With this amplifier, it is possible to reprint from one tape-recorder to another. Connect the line output terminals and the line input (or AUX) terminals of one tape-recorder to the DECK-1 Monitor and REC. OUT terminals of the amplifier respectively. Likewise, connect the line input and output of the other tape-recorder to the DECK-2 terminals. Dubbing is now possible by use of the Dubbing Switch. At the "1 to 2" position, the signals on DECK-1 can be reprinted on the tape of the DECK-2, and vice versa at the "2 to 1" position. In this way, repetition of switching between "source" and "1 to 2" or "2 to 1" makes it possible to compare the master tape and the reprinted tape. Except when actually dubbing, it is recommended to set the Dubbing Switch at the "source" position.

The Dubbing circuitry is independent from the main signal paths, and disc or tuner reproduction is feasible in the course of tape dubbing operation when the tape Monitor Switch is set at "source" position.

### Simultaneous Playback Monitoring:

A 3-head tape-recorder ensures simultaneous playback monitoring and recording. In this case, recording on tape and playback of the recorded sound is done at the same time, and connections must be made for both functions. It is necessary to connect the REC. OUT terminals (38, 41) to the line input terminals (AUX Input) of the tape-recorder and the Tape Monitor terminals (39, 42) to the output terminals (LINE OUT) of the tape-recorder.

The Tape Monitor Switch (14) should be set at the position corresponding to the terminals to which the tape-recorder is connected, and repetition of switching between "source" and "deck-1" or "deck-2" allows a comparison between the original and the recorded sound. Possible recording errors can thus be prevented. Incidentally, note that reproduction of recorded sound becomes a little delayed as compared with that of original sound since there is a gap between the recording head and the playback head.

Simultaneous playback monitoring can be made through the Tape Connector (40, 43) as well. A single piece of DIN cord ensures connection for recording and playback on the Tape Connector, and simple operation of switching between "source" and "deck-1" or "deck-2" is sufficient.

### Simultaneous Recording:

Output for recording can be taken out from either of the two REC. OUT terminals (38) (41), and the simultaneous recording is feasible when two tape decks are connected. When the Tape Dubbing Switch (13) is set at "source" position under the same connection with Tape Dubbing, repetition of switching of Tape Monitor Switch (14) between "source" and "deck-1" or "deck-2" allows a comparison to be made between the original and either of the recorded sound of two tape decks under simultaneous recording.

### Playback from Other Sources:

The signals of flat frequency response from such sources as TV receivers do not need an equalizer stage. For playback of such audio equipment, either of the AUX terminals or the TUNER terminal can be used. Connection and operation is the same as that of a tuner.

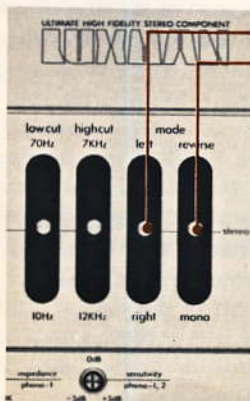
# Operation of Controls

## Mode Selector:

This amplifier is for stereophonic reproduction and incorporates independent amplifiers for two channels (right and left). Without the Mode Selector, the signals fed to the right channel terminals are reproduced at the right channel speaker only. The Mode Selector is placed between the two amplifiers to change the mode of reproduction. The Mode Selector (12) is composed of two switches; the right switch is to select "reverse", "stereo" and "mono", while the left one selects "left", "stereo" and "right". The combination of these two switches offers various Mode selection. Please refer to the following chart for the details.

Mode Selector Chart

Mode Selector A	Mode Selector B	Connection input output	Use
stereo	stereo	L → L R → R	for normal stereo playback
reverse	stereo	L → R R → L	when program source is reversely connected
mono	stereo	L → L R → R	for playback of monaural record with a stereo pick-up
stereo	left	L → L R → R	for check
reverse	left	L → R R → L	for check
mono	left	L → L R → R	for check
stereo	right	L → L R → R	for check
reverse	right	L → R R → L	for check
mono	right	L → L R → R	for check



Mode Selector Switch A  
Mode Selector Switch B

## Volume Control:

The variable resistor of this control has a logarithmic curve. In the attenuation characteristics of A type, the turning angle is proportionate to the attenuation degree (dB), and the dB value and the volume audible to human ears are in the proportionate relation. In other words, the rotation of the control is in proportion to the sound volume felt by human ears. The increasing degree of volume is felt quite natural as the control is turned toward the clockwise direction.

A precision detent-volume of high-grade attenuator type assures a precise adjustment of volume on both right and left channels. The special detent-volume with 22 points of contact may not allow a fine-tune volume control in case of the mid-night listening at extreme low level or the over-rated input at each input terminal. In such occasion, firstly set the main volume at an appropriate level, then control with the Attenuator Volume (18).

Usually, it may be unnecessary to operate this set at its maximum gain, and if the index of this attenuator is set at its center position (-6dB), fine-tune adjustment is easy for compensation of the main volume (15). Any position between 0dB and -16dB is obtainable by this Attenuator Volume.

Position (clockwise)  
vs. Attenuation in dB's

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Attenuation (dB)	∞	-50	-42	-37	-34	-32	-30	-28	-26	-24	-22	-20	-18	-16	-14	-12	-10	-8	-6	-4	-2	0

## Balance Control:

In case deviation is felt between the volume levels of right and left channels, adjust the unbalanced volume level with this control (17). A complete turn of the control to either the clockwise or counter-clockwise direction causes a cut off of the volume of the other speaker. The volume balance of both channels can be adjusted so that monaural disc sound reproduced by the stereo cartridge comes from the center of the right and left speakers. At mid position, the volume of both channels is adjusted to the same level. Thus, a proper balance is established through all playback stages. If a programme source established throughout all playback stages is unbalanced (or the speakers are placed in an oblique position), establish the correct balance with this control.

## The Linear Equalizer:

Although recordings are equalized in accordance with R.I.A.A. standards, it is quite common to encounter variations in overall tonal balance from one recording to the next. In addition, differences in listening environment and room acoustics often require subtle degrees of tonal compensation that conventional tone controls cannot correct because of their wide range and overlapping crossover characteristics.

The Linear Equalizer control provides a new form of tonal compensation specifically intended for subtly augmenting regular tone controls. With the control in its mid-position, flat frequency response is achieved. Switched to either of the two "up-tilt" positions, the entire response curve is rotated at about a 1KHz fixed axis so as to linearly increase treble response while simultaneously decreasing bass response.

Conversely, selection of one of the "down-tilt" positions rotates the response curve in a clockwise direction, providing a gradual decrease of treble response and simultaneous increase of bass response. Degree of slope for either positive or negative settings has been carefully preset, and the overall response curve maintains complete linearity from 50Hz to above 10KHz, unlike the curvature in response normally associated with ordinary tone controls.

Specifically, when the control is turned to the first "up-tilt" position, it will decrease bass and increase treble by 1dB at 100Hz and 10KHz respectively, while selection of the second "up-tilt" position will result in a 2 dB cut and boost at these same frequencies. Selection of the first "down-tilt" position will decrease treble and increase bass by 1 dB at the same reference frequencies, while the second "down-tilt" position provides 2dB of boost (at 100Hz) and cut (at 10KHz).

Combined use of the Linear Equalizer and conventional tone controls provides a degree of tonal flexibility which cannot be achieved with any other tone control arrangement presently available. Because of the inherently linear nature of this new circuit, it introduces no increase of harmonic distortion at any of its settings.

## Tone Controls:

The ultimate purpose of the audio system is to make high fidelity reproduction of programme sources. The reproduction and acoustic condition do not always match with recording conditions, and it is impossible to reproduce the same sound as the original. Also, there is no objective standard to judge a good sound from an inferior one. The only possible solution is for every listener to create his favorite sound according to his own taste. It is therefore very important that the audio system offers a facility to permit flexible controls for creation of the best sound.

This amplifier is equipped with the LUX original NF type tone controls with turn-over (roll-off) frequency selector for subtle and minute control of the reproduced sound. As for the Level Controls, the detent-volume of the same type as the high-grade attenuator is used which yields negligible gang error between both Right and Left channels. Tone Controls includes Bass Level Control (3), Bass Frequency Selector (4), Treble Level Control (5), Treble Frequency Selector (6) and Tone Control Switch (7).

If the Tone Control Switch is set at the "off" position, the tone control circuitry is thoroughly by-passed, that is, regardless of the position of the Level Control or the Frequency Selector, flat frequency response is obtained. To operate the tone control circuitry, it is necessary to set the Tone Control

Switch at the "tone cont." position.

The Bass Frequency Selector has three positions: 150Hz, 300Hz and 600Hz. From the position selected, Bass Level Control begins to function. In other words, turn-over (roll-off) of a lower frequency range below the frequency which has been selected can be controlled by the Bass Level Control. The controllable range is wider by 150Hz, 300Hz and 600Hz respectively.

The Bass Level Control, which functions in conjunction with the Bass Frequency Selector, is a tone control of the lower range of the frequency response. It is designed so that response may be flat at the mid-position. A clockwise turn intensifies the low frequency range, while a counter-clockwise turn yields attenuation.

These same descriptions are applicable to the Treble Level Control (5) and the Treble Frequency Selector (6). The Treble Frequency Selector has 3 positions: 6KHz, 3KHz and 1.5KHz (controllable range is wider in this respective order). Treble control begins to function from the position that is selected. A clockwise turn boosts the high frequency range.

## Operation of Low Booster:

The Tone Control Switch (7) has three positions; "tone cont. & low boost", "off" and "tone cont.". When this switch is set at "tone cont. & low boost", low boost function and tone control function operate at the same time, and the low frequency range below 70Hz is boosted up to +8dB at 15Hz in addition to other tone controls. This circuit, effective only on the extreme low frequency range, allows flexible and versatile tone adjustment. For instance, probable rise-up in a small room of approximately 10m<sup>2</sup> in the neighbourhood of 150 to 200Hz can be subdued with this control together with slight attenuation of bass level by Bass Level Control selecting the 300Hz position on the Bass Frequency Selector. This process can suppress such unnecessary raise-up without spoiling the response at the extreme low frequency range.

Moreover, when the human voice sounds unnaturally stout, it can be adjusted to a clear, natural voice by switching on this booster and cutting the low frequency range to a small extent with the Bass Level Control.

## Low Cut Filter:

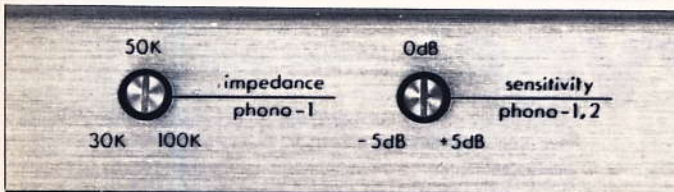
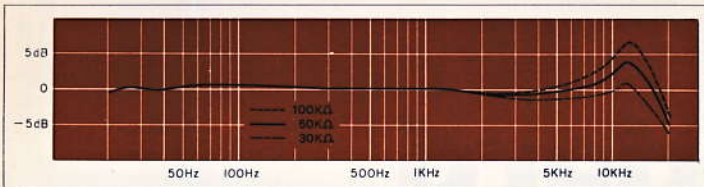
When this filter (8) is moved up from the center "off" position, the low frequencies you hear are cut off below 70Hz at the rate of -12dB/oct. When it is moved down, the low frequencies are cut off below 10Hz at the rate of -18dB/oct. Thus, it is useful for removing low frequency noise such as rumbling of the phono motor. It can also be used as an auxiliary control for Bass Level Control. At "off" position, signals will by-pass this circuitry.

## High Cut Filter:

When this filter (9) is moved up from the center "off" position, the high frequency range over 7KHz is cut off at the attenuation rate of -12dB/Oct. When moved down, the high frequencies over 12KHz are cut off at the rate of -12dB/oct. Thus, it is useful for removing scratch or hissing noise and can also be used as an auxiliary control for Treble Level Control. At "off" position, signal will by-pass this circuitry.



## Effect of the Load Impedance on the frequency response on a typical cartridge



### Input Sensitivity Adjust:

There are various types of cartridges: magnetic type, photo-electric type, electro-static type and piezo-electric type. Most predominant is the magnetic type which includes MM (Moving Magnet), MI (Moving Iron), IM (Induced Magnet) and MC (Moving Coil). The PHONO terminals of this amplifier are designed to match with these types of magnetic cartridges, but a cartridge of low output level (output voltage 0.01 to 0.1mV) cannot be directly connected.

Input Sensitivity adjustment is feasible both at PHONO-1 terminals (34) and PHONO-2 terminals (35). Adjustment of  $\pm 5$ dB is possible in case the input sensitivity of 3mV is regarded as 0dB. That is, the most suitable sensitivity to the cartridge can be obtained between some 1.4mV and 4.4mV in view of the fact that the sensitivity at +5dB is some 1.4mV and at -5dB is 4.4mV.

For the adjustment work, use a small  $\ominus$  driver and 0dB point can be easily identified by the click stopper.

### Input Impedance Adjust:

The PHONO-1 input terminals (34) are coupled with Impedance Adjuster (10). Except for a special low impedance type cartridge, almost all currently marketed cartridges of MM-type specify recommended load impedance of about 50Kohms. It is known that variation of the load impedance value affects the frequency response to a great extent.

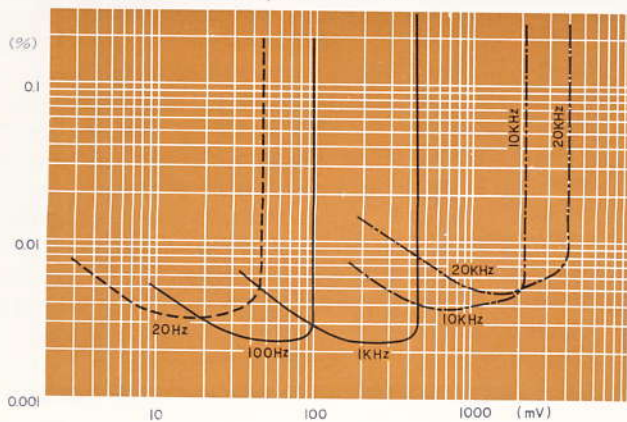
Note that a low load impedance cuts treble output, while a high load impedance causes a peak in the treble range. The degree of such effect is not the same with different cartridges, but generally a cartridge having a higher output impedance tends to be more delicately influenced. It is therefore necessary that selection of a proper input impedance is made with this adjustor.

The adjustment of Input Sensitivity is done by a potentiometer, and free adjustment is feasible between 30Kohms to 100Kohms. Each position of the 30Kohms, 50Kohms and 100Kohms has click stopper for easy identification.

# Standard Curves

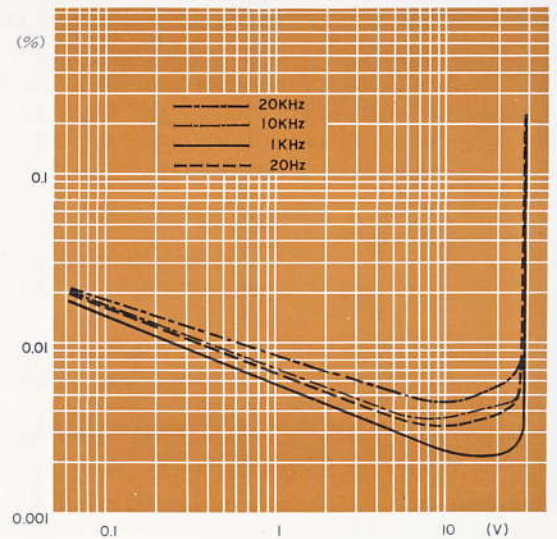
**PHONO Input Voltage vs. Distortion**

(Output: REC. OUT)



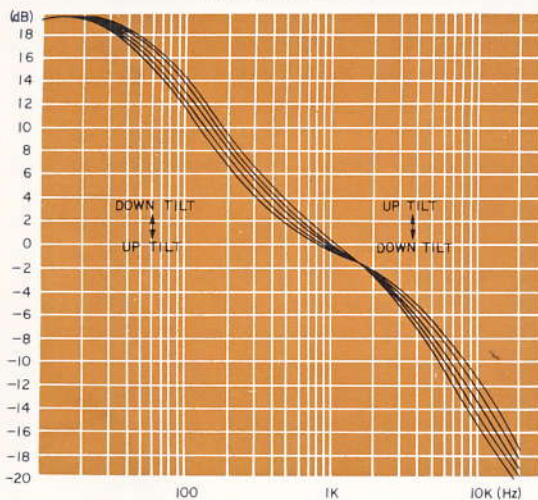
**PHONO Output Voltage vs. Distortion**

(Output: REC. OUT)



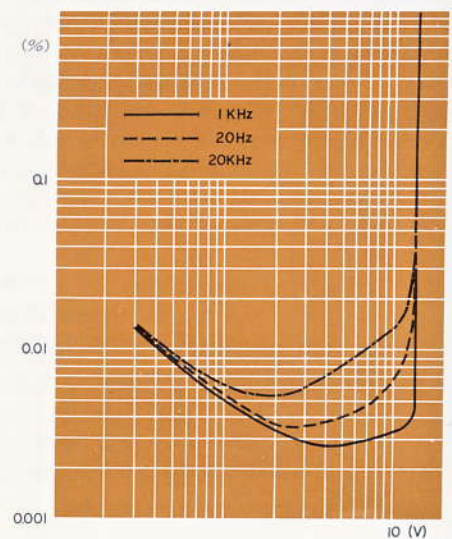
**LINEAR EQUALIZER**

(Output: PRE. OUT)



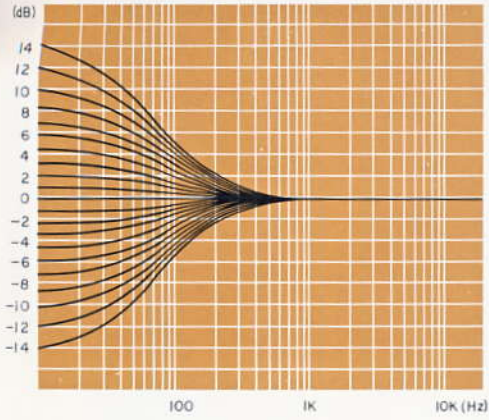
**AUX Output Voltage vs. Distortion**

(Output: PRE. OUT)



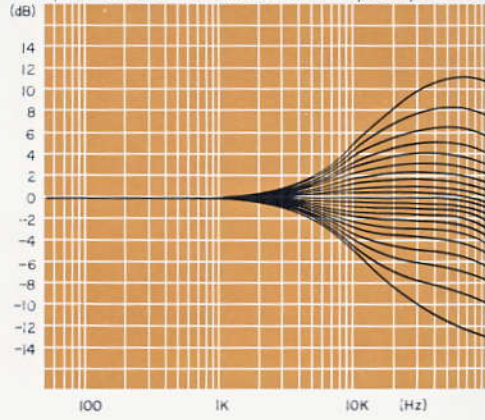
### BASS TONE CONTROL

(Output: PRE. OUT) (Turn-over Frequency: 150Hz)



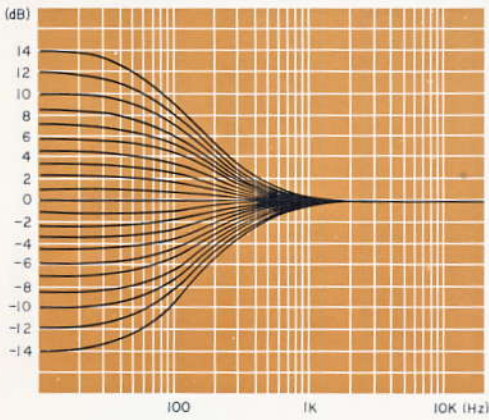
### TREBLE TONE CONTROL

(Output: PRE. OUT) (Turn-over Frequency: 6KHz)



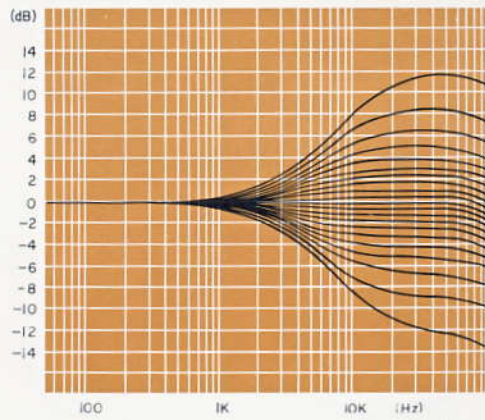
### BASS TONE CONTROL

(Output: PRE. OUT) (Turn-over Frequency: 300Hz)



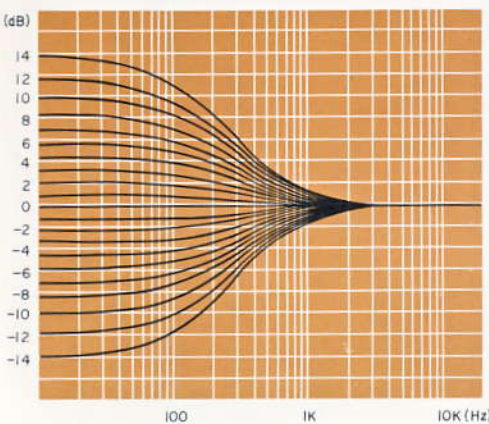
### TREBLE TONE CONTROL

(Output: PRE. OUT) (Turn-over Frequency: 3KHz)



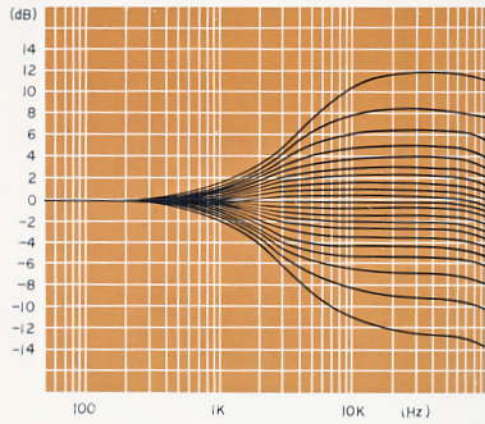
### BASS TONE CONTROL

(Output: PRE. OUT) (Turn-over Frequency: 600Hz)



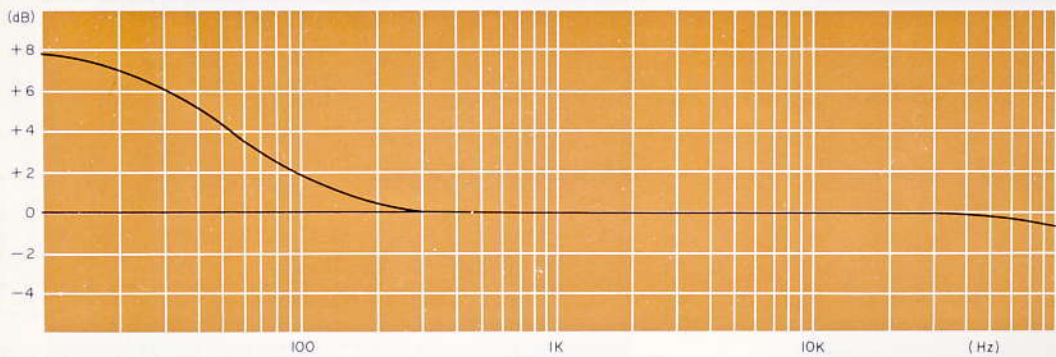
### TREBLE TONE CONTROL

(Output: PRE. OUT) (Turn-over Frequency: 1.5KHz)

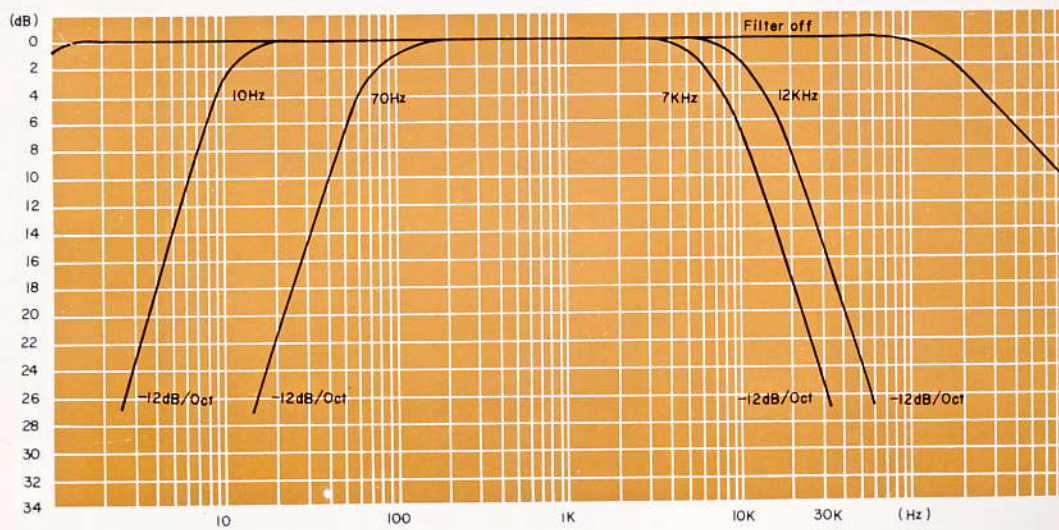


# Standard Curve

## LOW-BOOST (Output: PRE. OUT)



## FILTERS (Output: PRE. OUT, TONE: DEFEAT)



## C-1000 Owner's Manual

SPECIFICATIONS OF APPEARANCE DIFFERS BY THE MODELS AS FOLLOWS.

**\*U-type (For U.S.A. and CANADA)**

AC Mains Power 120V  
Equipped with Power Cord of UL standards.

**\*E-type (For Europe)**

AC Mains Power 220V  
Equipped with Interchangeable Connector for AC Mains Power and Power cord of Europe type

**\*S-type (For Northern Europe)**

AC Mains Power 220V  
Equipped with Power Cord of Europe type  
Extra AC outlets are not available.

THE EXPLANATION STATED IN THIS MANUAL IS BASED ON THE U-TYPE, BUT E-TYPE AND S-TYPE ARE THE SAME EXCEPT THE ABOVE ITEMS.

### SPECIFICATIONS

Semiconductors:	Transistors(92) Diodes(59)
Output Voltage:	Max. 13V, Typ. 1V
Total Harmonic Distortion:	No more than 0.007% (Rec. out 2V, 20-20KHz)
Frequency Response:	2 - 80,000Hz (-0.5dB)
Input Sensitivity:	2.5mV (phono-1 & 2, Gain 0dB) 150mV (aux-1 & 2, tuner, tuner & aux-1 variable)
Input Impedance:	Phono-1 30 - 100 variable (Kohms) Phono-2 50 " Aux-1 70 " Tuner 70 " Aux-2 25 "
S/N Ratio:	Phono-1: better than 65dB
Phono Overload Voltage:	No less than 450mV (1KHz, RMS, Gain cont; 0dB)
R.I.A.A. Equalization:	Within $\pm 0.2$ dB
Tone Control:	Improved LUXMAN NF type Turnover freq. selection; Low - 150Hz, 300Hz, 600Hz High - 1.5KHz, 3KHz, 6KHz
Filters:	Low cut: 10Hz, 70Hz (-18dB, -12dB) High cut: 7KHz, 12KHz (-12dB)
Additional Features:	Touch muting function, Attenuator, Output signal muting, Linear equalizer, Phono gain control, Tape dubbing & monitor function, Speaker system selector (Remote control) Military class potentiometer, muting indicator
Dimensions:	485(W) x 245(D) x 175(H)mm (19-1/8" x 9-5/8" x 6-7/8")
Weight:	Net 10kgs (22 lbs.) Gross 12kgs (26 lbs.)

Specification and appearance design subject to possible change without notice.



## **LUX CORPORATION, JAPAN**

1-2-66 NAGAHASHI, NISHINARI-KU, OSAKA

PHONE: 652-0051 - CABLE: LUXELECT OSAKA - TELEX: J60004