

Studio Standard Series

L-5

SOLID STATE STEREO DC INTEGRATED AMPLIFIER

The L-5 Integrated Amplifier offers power output of 60 watts minimum continuous per channel both channels driven into 8-ohm loads, at any frequency from 20Hz to 20,000Hz with no more than 0.03% total harmonic distortion.



LUX CORPORATION, JAPAN

OWNER'S MANUAL

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

Thank you for purchasing the L-5.

The LUXMAN L-5 is an integrated amplifier, employing DC amp configuration at the power amp section. The power output is mighty 60 watts minimum continuous per channel both channels driven into 8-ohm loads, from 20Hz to 20,000 Hz with no more than 0.03% total harmonic distortion. Although built with extremely sophisticated engineering, it's concept is quite simple.

At the power amp section, LUX's innovative concept of "Realtime Processed DC Amp" is featured, which contributes to perfectly remove such transient and phase distortion as is triggered by time lag. While at the preamplifier section, the equalizer circuit employs a 3-stage direct coupled circuit, which permits perfect linearity and high phono overload voltage of 150mV (RMS, 1kHz).

The L-5 represents the finest standards of design and craftsmanship, but the proof is in the handling – and in the listening. As you proceed to connect the amplifier, may we suggest that you read all the instructions carefully before turning the unit on? A few moments invested now can eliminate doubts or delays later. If you have any question, please do not hesitate to consult your dealer.

SWITCHES & TERMINALS

SWITCHES & TERMINALS

1. Input Selector Switch

These 3 buttons permit proper selection of desired program sources (phono, tuner, aux). As so called "see-saw" switch is employed, when one of these buttons is depressed, the others protrude automatically. When 2 or 3 buttons are depressed compulsorily at the same time, only the right-hand one is operative. The L-5 is provided with dual phono input terminals "PHONO-1" and "PHONO-2". Select either of the inputs by use of the Phono Input Selector provided just below the "phono" button.

2. Volume Control

This knob controls volume. Clockwise turn boosts volume, while counter-clockwise rotation decreases and finally cuts off volume.

3. Balance Control

The volume balance between right and left channels can be adjusted by this control. Turn it in the clockwise direction from the center click position, and the volume level of the left channel is reduced. Conversely, a counter-clockwise turn causes decrease of volume at the right hand channel. When the volume of both channels is balanced, monaural playback sound comes from the center of right and left speakers. Usually this point is obtained at the center click point.

4. AC Power Switch

Press alternately for ON or OFF. When the switch is depressed, the Pilot Lamp (5) begins to blink for approx. 8 seconds, then it lights up to show the amplifier is in operational condition.

5. Pilot Lamp

Press in the AC Power Switch (4) and this lamp lights up after blinking for approx. 8 seconds, which shows that the amplifier is in operational condition.

The L-5 is provided with the speaker protection circuit by sensing DC. In case the blinking does not stop after the power is turned

on, or it begins to blink during the normal operation, DC voltage exceeding $\pm 3V$ will be at the output circuit which activates the protection circuit. When this occur, the amplifier itself should be checked, therefore it is advisable to consult your LUXMAN dealer.

6. Mode Selector Button

Use this button to select reproduction modes such as Stereophonic or Monaural. When the button is depressed reproduction is made in monaural mode. For further details, refer to Mode Selection.

7. Bass Control

A clockwise turn of the control boosts the bass response, and a counter-clockwise turn decreases the bass. It yields a flat frequency response when set to the center position. The turnover (roll-off) frequency can be selected either to 200Hz or 400Hz by the selector switch (8).

8. Bass Frequency Selector Switch

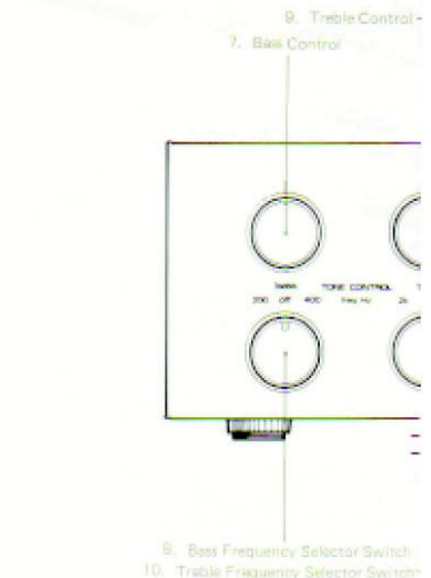
Bass turnover (roll-off) frequencies can be selected with this switch. When the desired frequency (200Hz or 400Hz) is set by this switch, tone control starts to function at the selected frequency with the Bass Control (7). At the "off" position, a flat frequency response is obtained regardless of the position of the Bass Control.

9. Treble Control

A clockwise turn of this knob boosts the treble response, while a counter-clockwise turn decreases the treble. The flat frequency response is obtained in the center of rotation angle. The turnover (roll-off) frequency can be selected either to 2kHz or 4kHz by the selector switch (10).

10. Treble Frequency Selector Switch

Function-wise, it is the same as the Bass Frequency Selector Switch described in (8). Treble turnover (roll-off) frequencies can be selected



at 2kHz or 4kHz. At the "off" position, a flat frequency response is obtained regardless of the position of the Treble Control. See the further details in the "Operation of Tone Controls".

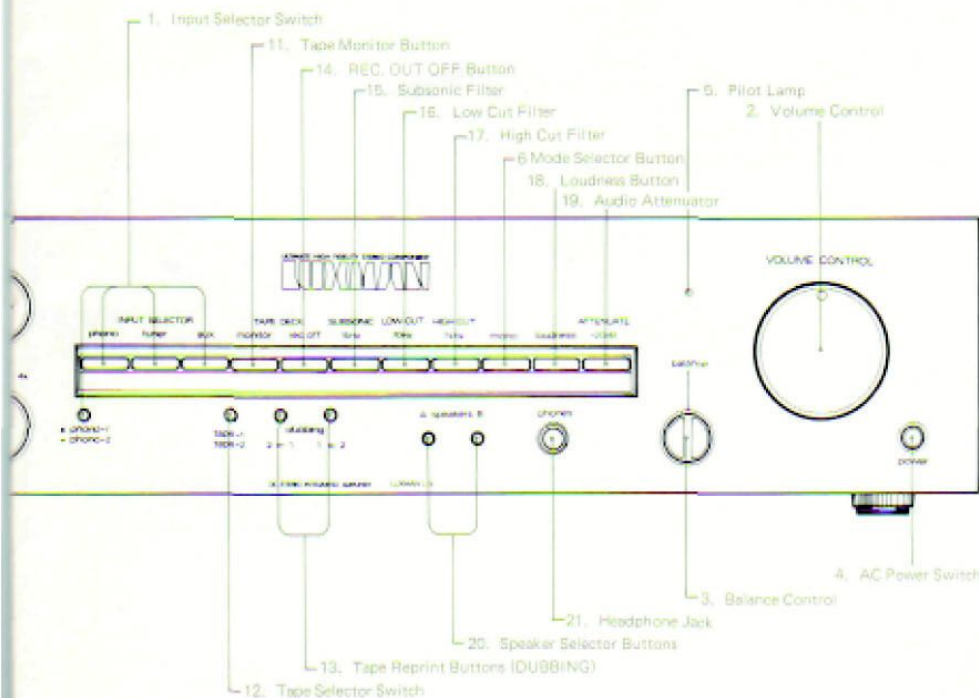
11. Tape Monitor Button

When this button is depressed, playback is possible either from "tape-1" or "tape-2". The tape connector (36) is also functional when the switch is set to the "ON" position (depressed). This is coupled to the Tape Selector Button, and for the tape monitoring, it is necessary to select the deck by the Tape Selector.

Caution: If this switch is unpressed in the "protruded" position, no playback is possible from tape recorder.

12. Tape Selector Switch

This switch is provided to select two tape decks connected. When the button is kept unpressed in the "protruded" position (tape-1), reproduction of a tape deck is feasible



from TAPE-1 Monitor Terminal (27).

When it is depressed (tape-2), reproduction from TAPE-2 Monitor Terminal (29). This is coupled to the Tape Monitor Button (11). Therefore when reproduction from tape deck is required, it is necessary to depress the Tape Monitor Button.

13. Tape Reprint Buttons (DUBBING)

Tape dubbing is possible with these buttons. When the button "2-1" is depressed, the playback signals for DECK-2 terminal can be copied on DECK-1, and vice versa when the buttons "1-2" is depressed. While in the dubbing process, it is possible to monitor with the Tape Monitor Button. These two switches are independent push-ON/OFF type, and it is advisable to depress only the required button. When both of them are depressed simultaneously, the left "2-1" button operates. Except when reprinting a tape, it is recommended that these buttons should be kept unpressed at the "protruded" position.

This reprinting circuit is independent and reproduction of other sources as record or tuner is possible during tape dubbing.

14. REC. OUT OFF Button

This button shuts off the recording output signals when depressed. In the "unpressed" position, signals are available at the two REC. OUT terminals (28)(30), that is to say, the program source selected by the Input Selector Switch (1) can be recorded on the TAPE-1 and the TAPE-2 decks. Depress this button for the optimum listening except when the tape deck is operated. Note the tape dubbing operation is feasible irrespective of this switch.

15. Subsonic Filter

When this button is depressed, a bass roll-off occurs at 15Hz at the rate of -6dB/oct . This filter eliminates ultra low frequency noises. For further details, refer to "Subsonic Filter".

16. Low Cut Filter

When this button is depressed, the amount of low frequencies is reduced at the rate of -6dB/oct . at 70Hz. For further details refer to "Low Cut Filter".

17. High Cut Filter

When this button is depressed, the amount of high frequencies is reduced at the rate of -6dB/oct . at 7kHz. Convenient to remove tape hiss, disc scratch noise, etc. For further details, refer to "High Cut Filter".

18. Loudness Button

When this button is depressed, compensation of low frequency and high frequency is realized according to the reproduction level. This is useful when listening at low level. Refer to the "Operation of Loudness" for further details.

19. Audio Attenuator

When this switch is depressed, the reproduction level is reduced to -20dB (1/10). This function is

useful in the case of mid-night listening or during phone-call. Usually the volume control is set at a high level when the attenuator is in the "ON" condition. Therefore, in this state, when it is reset to "OFF", loud sound may be suddenly reproduced. To avoid this, an indicator is provided just below this switch to show that the Audio Attenuator is in the "ON" position.

20. Speaker Selector Buttons

This amplifier offers convenient use of 2 speaker systems, A and B. You can choose independent or simultaneous driving of 2 systems by the two switch buttons. In the "protruded" position, the speakers are disconnected from the amplifier, and you can enjoy private listening by headphone. Note that simultaneous driving of when two speaker systems are driven simultaneously should be avoided unless the imped-

21. Headphone Jack

Connection of a stereophonic headphone to this jack allows private listening. Output signal is always available regardless of the position of the Speaker Selector Buttons (20). For private listening, however, keep both of the Speaker Selector Buttons unpressed in the "protruded" position.

22. PHONO-1 Terminal

Output of a magnetic cartridge (MM, MI, MC, type) can be reproduced through this terminal when the "phono" button of the Input Selector Buttons is depressed and the phono input selector switch is set in the "protruded" position. Input sensitivity is 2.5mV. Input impedance is 50k ohms.

Except for very low output MC type cartridge (output voltage, 0.01 mV - 0.3mV), almost all cartridges can be used. For such MC type cartridge of very low output level, it is necessary to boost the voltage up to the specified level by use of step-up transformers or a head-amplifier.

23. PHONO-2 Terminal

Same as the PHONO-1 terminal (22). Output of a cartridge can be reproduced through this terminal when the "phono" button of the Input Selector Buttons and the phono input selector switch are depressed.

24. TUNER Terminal

This terminal is for playback of a tuner (AM/FM/LW/SW). Input sensitivity is 150mV. Input impedance is 50k ohms.

25. AUX Terminal

This is an auxiliary input terminal for playback of flat frequency response sources such as AM/FM stereo-tuner, line output of a tape deck, or the audio output of a television receiver etc. Input sensitivity is 150mV. Input impedance is 50k ohms.

26. Earth Terminal (GND)

Connect the earth (ground) lead wire of the record player (from motor or pick-up arm) to ground the amplifier. Especially, when making A/B listening test, common earthing is effective for elimination of thump noises at the time of selecting amplifiers.

27. Monitor-1 Terminal

Playback of the line output of a tape deck is possible from this terminal. It is put into operation when the Tape Selector Switch is in the "protruded" position and the Monitor Switch is depressed. In case a 3-head tape deck is used, simultaneous playback monitoring is possible while recording. Input sensitivity is 150mV. Input impedance is 50k ohms.

28. REC. OUT-1 Terminal

A signal for recording is taken out from this terminal (always available when an input signal is given to any of the input terminal). Note that output signals are not available when the REC. OUT OFF Switch (14) is in the "depressed" position.

In case the Dubbing Switch "2-1" is depressed, the recording signals

come from the DECK-2 monitor terminals.

29. Monitor-2 Terminal

This terminal offers the same function as the Monitor-1 terminal (27). It is put into operation when the Tape Selector Switch and the Monitor Buttons are depressed.

30. REC. OUT-2 Terminal

This terminal offers the same function as the REC. OUT-1 terminal (28). If the Dubbing Switch "1-2" is depressed the signal from the DECK-1 terminal is available.

31. PRE. OUT Terminal

The whole output in the pre-amplifier section can be taken out from this terminal. Output voltage is 1.25V against the rated input. This terminal is for independent use of the preamplifier, as well as for a multi-amplifier system using an electronic crossover. Usually, this terminal and the MAIN IN terminal (32) are coupled by jumper pins. CAUTION: Whenever the jumper are removed or connected, the AC power should be turned off otherwise extremely big noises may be caused which may damage the speaker units.

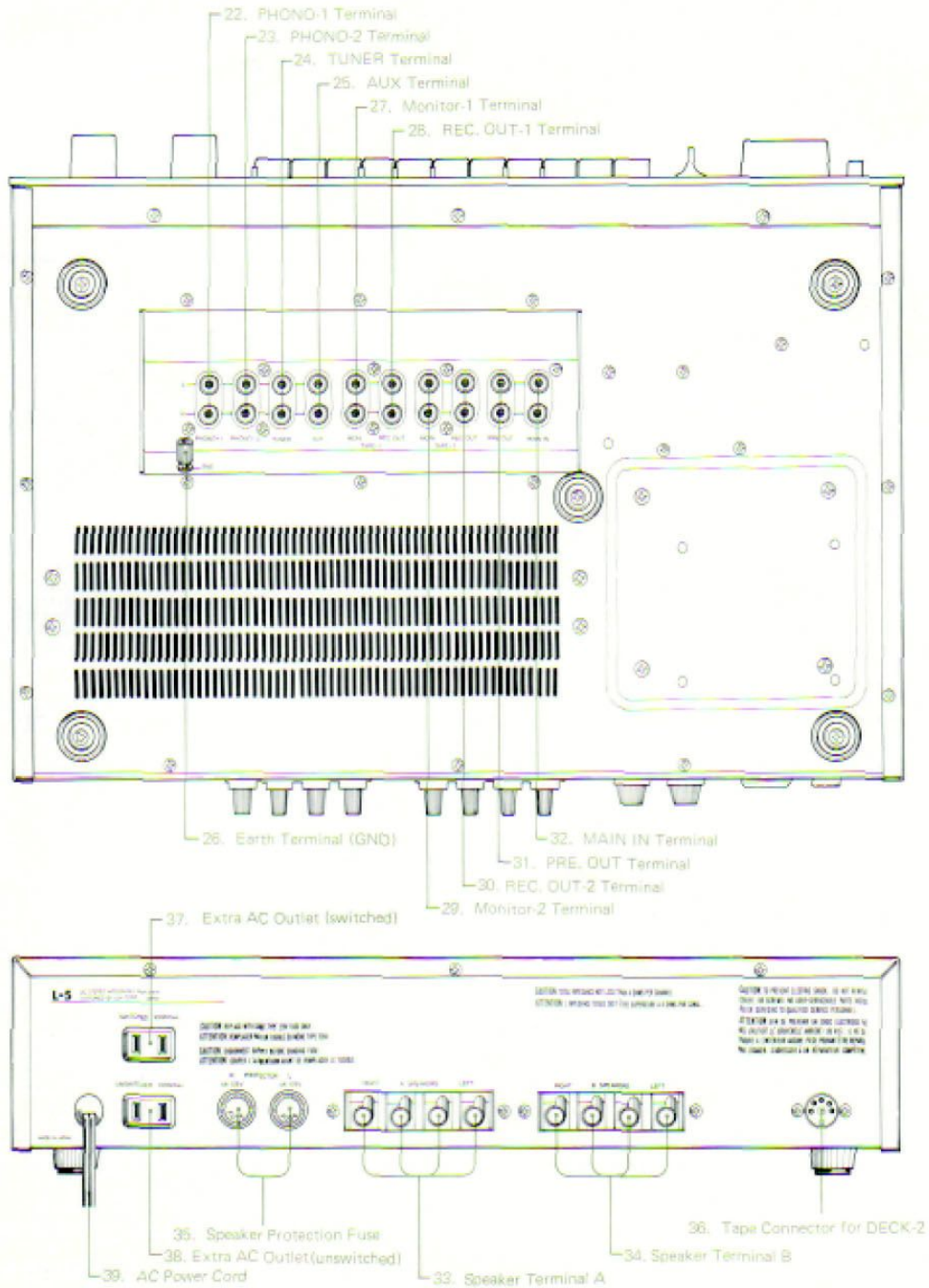
32. MAIN IN Terminal

The main-amplifier section can function independently when the signal is given through this terminal. The input sensitivity is 1.25V and the input impedance is 50k ohms.

33.34. Speaker Terminal (A & B)

The speaker systems should be connected to these terminals. Turn the cap of the terminal counter-clockwise and insert the bare speaker cord into the terminal hole, then fasten the cap tight. These terminals are coupled with the speaker selector buttons, and select the correct one corresponding to the terminal to which the speaker systems are connected. (33) is for the A speaker, and (34) is for the B speaker. The red terminal is for (+) and the black for (-). For further details,

SWITCHES & TERMINALS



CONNECTION

refer to Connection of Speakers.

35. Speaker Protection Fuse

This fuse protects the speaker from abnormal large current triggered by malfunction of the L-5. Also it safeguards the amplifier itself in such case that the speaker terminals are short-circuited.

The fuse holder at the left is for the right channel and the one at the right is for the left channel. In case reproduction is suddenly impossible, this fuse must be suspected first. In this case, first disconnect the AC plug from the AC socket and check it. When it is blown, replace it with the one provided after ascertaining the cause. The fuse is fast-blow 4-amp type.

For use in CANADA, you cannot replace it by yourself according to the CSA standard, therefore consult your LUXMAN dealer when it is blown.

36. Tape Connector for DECK-2

This fuse protects the speaker dard. With the recording output terminal (REC. OUT) and the tape monitor terminal in it, connection for recording and playback is feasible with a single patch cord with DIN plug provided that the tape deck has the same connector. For playback through this connector, both the Monitor and Tape Selector Buttons have to be depressed, since this connector is coupled to the DECK-2 terminal.

Note that this connector is not available on those models for U.S.A. and CANADA.

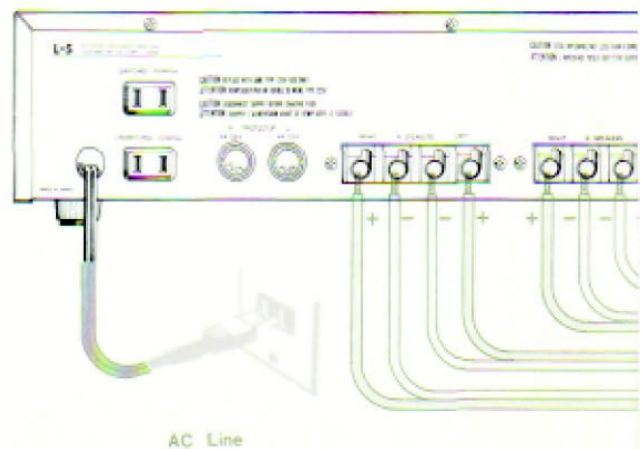
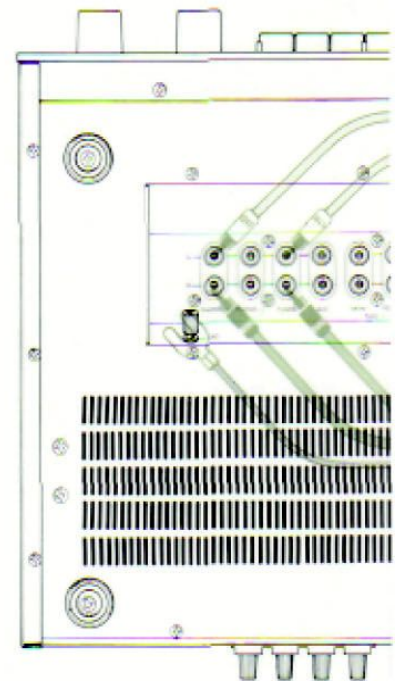
37.38. Extra AC Outlets

AC power supply to other audio equipment can be made through these outlets. The terminal (37. UNSWITCHED) is independent of the AC power switch of this amplifier, while the other (38. SWITCH-ED) is coupled to the power switch. The maximum capacity for the outlets is 100W respectively.

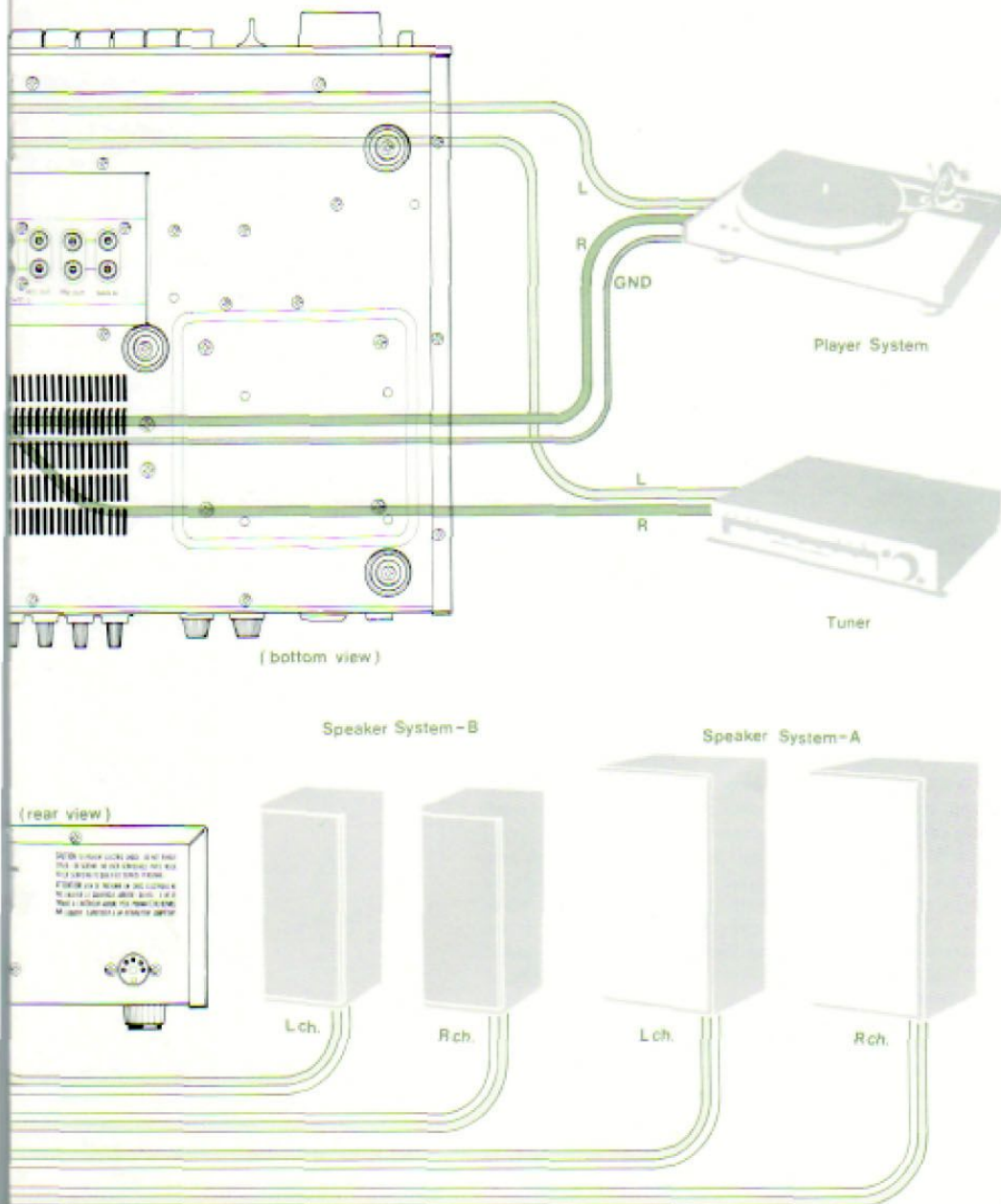
Note that in some countries these outlets are not allowed by law and that they are not provided.

39. AC Power Cord

Connect the AC plug at the end of this cord to the AC power supply source in your listening room.



OPERATION OF RECORD PLAYER & TUNER



Connection of Record Player

A 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 (PHONO-1 or PHONO-2). The player's earth lead can be connected to the GND terminal (26). The player's power flex can be connected either to the two extra AC outlets of the amplifier.

Two sets of record players can be connected to the L-5. These two can be selected by the Phono Selector Switches provided on the front panel.

Connection of Tuner

Connect the tuner's output terminals (left and right) to the Tuner terminals (24) or to either of the amplifier's AUX terminals (25). The Input Selector Buttons (1) must be set at the corresponding position. Connect the AC cord of a tuner to the Extra AC Outlet (SWITCHED) (38) of this amplifier, and leave the power switch of the tuner turned on. In this case, when the AC power switch (4) is turned on, the AC power of the tuner is turned on at the same time.

Connection of Speakers

Stereophonic playback is made with a pair of speaker systems for right and left channels. This amplifier is provided with 2-channel terminals for main and remote speakers. Connection can be made in the same manner. 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 this amplifier, and the (-) terminal to the (-) one (black cap). Do the same with the left speaker. If mismatched for some reason (e.g. misconnection of speakers), the low frequency range is subdued and stable playback

cannot be realized.

Speaker cord is not supplied with the L-5. However, special speaker cables are available from LUX as optional accessories. Six variations are available in LUXMAN speaker cable, for general use WA103 (3m), WA105 (5m) and WA110 (10m), while for high output use WB103 (3m), WB105 (5m) and WB110 (10m). Coaxial type which suppresses the amplitude distortion caused by the surface effect and the inductance of cable itself, of course each type is of low impedance type and accepts large current drive.

It is advisable to use speaker cords of big and good quality and make them as short as possible even in case you use other speaker cords.

Connection of AC Power Supply Source:

As the final step of preparation, connect the amplifier to the AC power supply source. The end of the AC power cord should be plugged into the power supply outlet. Then press the power switch.

"Operation Procedure"

- (1) Depress the AC Power Switch (4) to turn the power on, and the Pilot Lamp (5) begins to blink for approx. 8 seconds. Then it lights up to show the unit is put into perfect operational condition. Operation of each control should be done after this condition is established.
- (2) Press in one of the Input Selector Buttons to which the program source you are going to reproduce is connected. When reproduction from disc is required, depress the "phono" button and the phono selector switch, while for that from tuner, depress the "tuner" button, etc.
- (3) Press in either of the two Speaker Selector Buttons. When the speaker system is connected to the "A" terminal (33), depress the "A" button, while when it is connected to the "B" terminal (34), depress the "B" button. It is easy to select system-A or

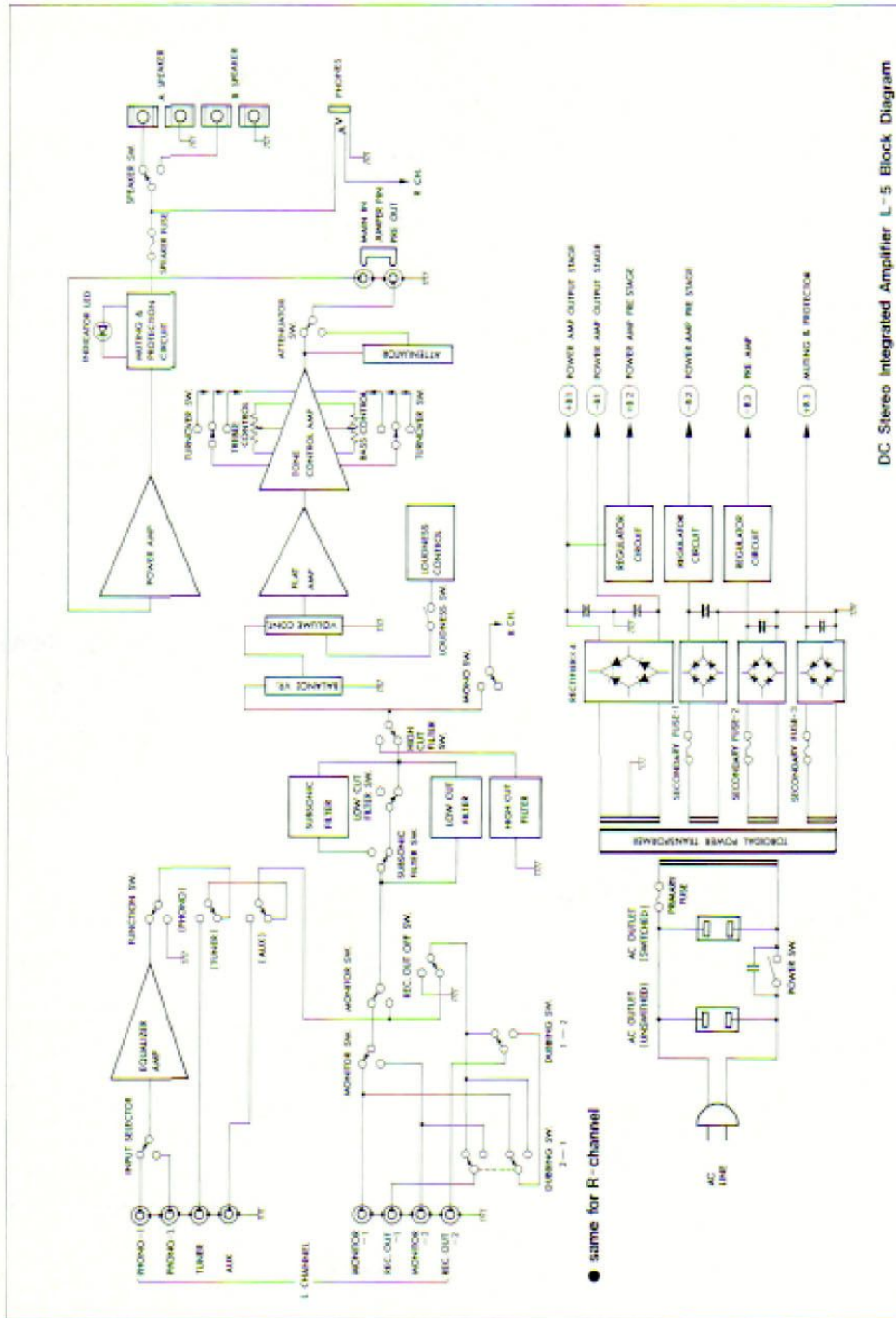
system-B when two pairs of speaker systems are connected. Also, in case both of the buttons are depressed, "A+B" operation of the speaker system is feasible. At this time, note that the impedance of each system should exceed 8 ohms.

If reproduction is not possible, check above mentioned (2) and (3). The input selector (1) or the Speaker Selector (20) may not be correctly selected. Also, check if the Monitor Button (11) is in the "protruded" position.

Now, check both of the right and left speaker system are all right, and the balance of reproduced sound. If reproduction is possible only from a single channel, check the position of the Balance Control (3). Normally, this control should be in the center click position. Also connection of the input-side equipment or the output-side equipment should be rechecked.

Remember to set the Mode Selector Button to the "protruded" (stereo) position, otherwise stereophonic reproduction is not feasible even if the program source is in stereo mode.

BLOCK DIAGRAM



DC Stereo Integrated Amplifier L-5 Block Diagram

CONNECTION & OPERATION OF TAPE DECK

Playback from Tape Monitor Terminals:

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

Connect the output terminal (LINE OUT) to a Tape Monitor terminal (27) or (29). Depress either of the two Tape Selector Buttons to which the required tape deck is connected. Then, also depress the Tape Monitor Button.

This amplifier can be divided into two sections; one before the Recording Output terminals (REC. OUT) and the other after the Tape Monitor Button. A 3-head tape recorder makes it possible to make recordings with the former section and simultaneously make playback with the latter section.

Note that a normal function cannot be expected if 2 sets of tape recorders for playback are connected to the terminals of Monitor-2 Terminal (29), and Tape Connector (36) 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 Monitor-1 terminals (27) (with the Tape Selector button in the "depressed" position) and to the Tape Connector for DECK-2.

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 terminal of this amplifier by use of a pin-jack lead, and the Input Selector Button "aux" is depressed. All operations in this case are the same as those for the playback from tuner (page 7).

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

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 to the line input terminals (AUX input) of the tape deck and the Tape Monitor terminals to the output terminals (LINE OUT) of the tape deck.

Repetition of switching between "protruded" position and "depressed" position of the Tape Monitor Button makes it feasible to compare the original sound with recorded one. Thus possible recording error can be prevented in case of 3-head tape recorder. Incidentally note that reproduction of recorded sound becomes a little bit delayed as compared with that of original sound since there is a gap between recording head and playback head. Simultaneous playback monitoring can be made through the Tape Connector (36) as well. A single DIN patch cord ensures connection for recording and playback.

Playback from Tape Connector:

This is a DIN connector and is convenient for simple connection with a patch cord between the tape recorder and recording/playback connectors of this amplifier. Playback from the Tape connector is possible if both of the Tape Monitor Button and the Tape Selector Button is depressed.

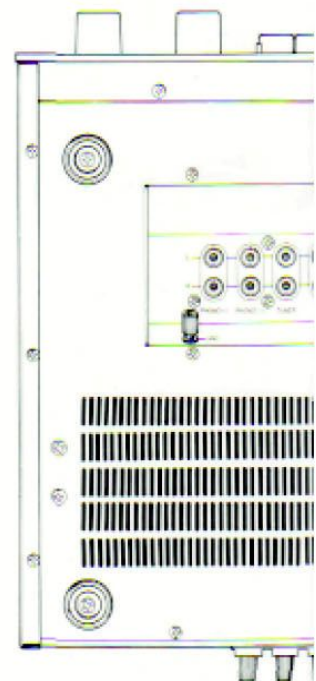
Recording on Tape:

In case of playback of various program sources through input terminals of this amplifier, the same signals as those reproduced in the speakers are always available at the REC. OUT terminals and the Tape Connector. By connecting these terminals to the input terminals (AUX or LINE IN) of the tape recorder, you can enjoy simultaneous recording and playback. These recording signals are taken out

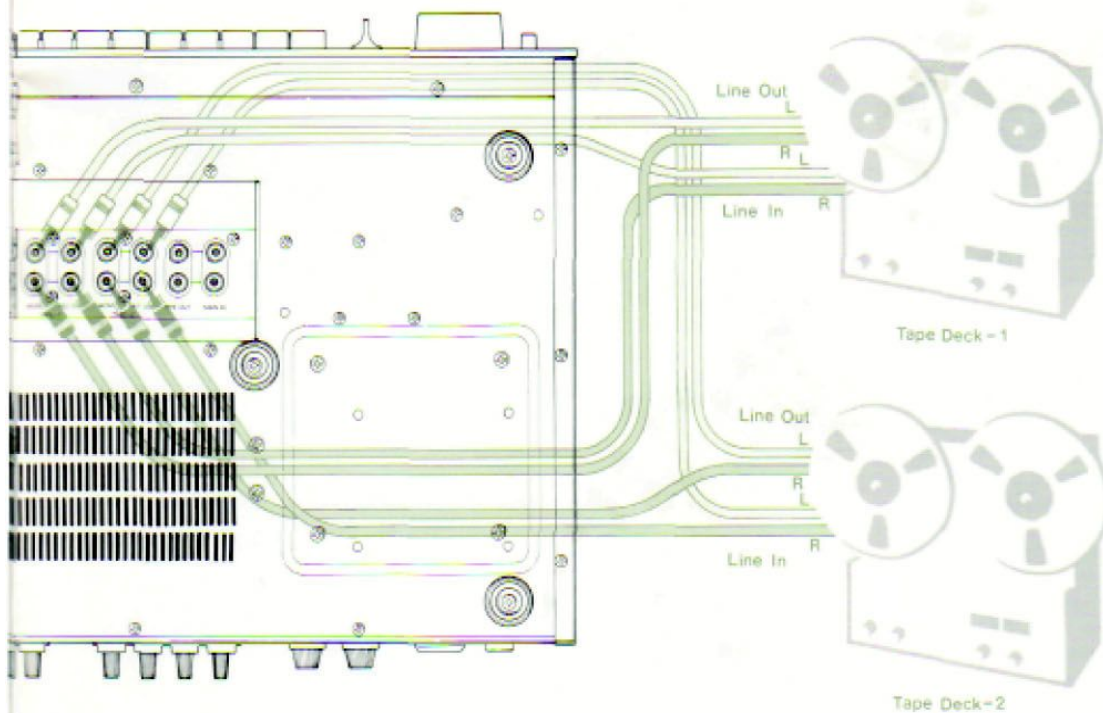
before the tape monitoring stage, and there is no influence on the filters, volume or tone controls, etc., as far as the quality of the recorded signals is concerned.

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 TAPE-1 Monitor and REC.



CONNECTION & OPERATION OF TAPE DECK



OUT terminals of the amplifier respectively. Likewise, connect the line input and output of the other tape-recorder to the TAPE-2 Terminals.

For reprinting from tapedeck-1 to tapedeck-2, depress the "1-2" button of the Tape Dubbing Switch while for that from tapedeck-2 to tapedeck-1, the "2-1" button should be depressed. At this time, switching of tape selector switch (12) between "tape-1" and "tape-2" makes it

possible to compare the master tape and the reprinted tape recording.

The dubbing circuit is independent of the main signal paths, and disc or tuner reproduction is feasible in the course of tape dubbing operation when the Tape Monitor Switch is in the "source" position.

Simultaneous Recording:

This amplifier is provided with 2 sets of Recording Output terminals (28, 30) enabling to record simul-

taneously on 2 tape-recorders. In this case connection should be made in the same manner as that described in the "Recording on Tape"

Note that when the "1-2" button is depressed, the recording output is available only at the REC. OUT-2 terminal. While when the "2-1" is depressed, output is available only at the REC. OUT-1 terminal.

OPERATION OF CONTROLS

Volume Control:

This knob controls volume. Clockwise turn boosts volume, while counter-clockwise decreases until it is inaudible. 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), the dB value and the volume audible to human ears are in 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 in the clockwise direction.

It will sometimes be hard to make fine adjustment of the volume control in the case of midnight listening at extreme low level or the overated input. In such occasion, depress the Audio Attenuator, and it is easier to control the sound level by the Volume Control since the level is reduced down to -20dB(1/10). When the attenuator is used, however, it is advisable to release it in the "off" position after setting the Volume Control in the counter-clockwise position.

Balance Control:

In case deviation is felt between the volume levels of right and left channels, adjust the unbalanced volume level with this control (3). 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 throughout all playback stages. If a program source is unbalanced (or the speakers are placed in an oblique position), establish the correct balance with this control.

Tone Controls:

The purpose of the audio system is to make high fidelity reproduction of program sources. The reproduction and acoustic conditions 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 with turnover (roll-off) frequency selector for subtle and minute control of the reproduced sound. Tone controls

include Bass Control, Bass Frequency Selector, Treble Control, and Treble Frequency Selector. If the Frequency Selectors are set at the "off" position, flat frequency response is obtained regardless of the position of the level controls. After setting the Frequency Selectors at the appropriate position and controlling the levels as desired, you can again obtain flat frequency response by resetting the Frequency Selector Switch at the "off" position. Controlled tone and flat tone can be easily recognized.

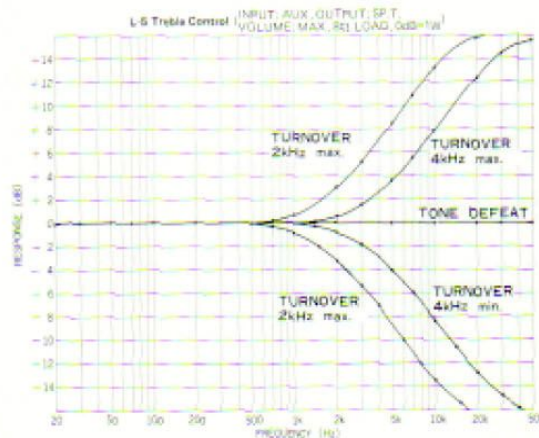
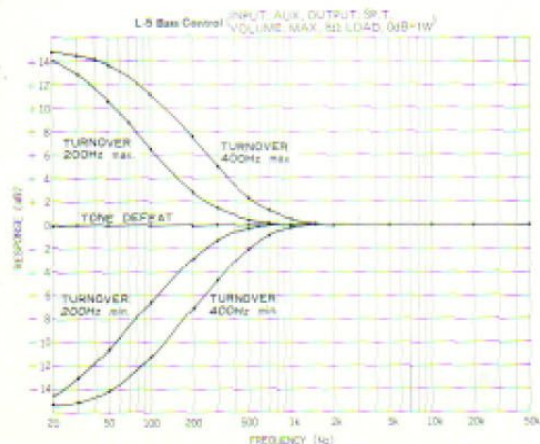
The Bass Frequency Selector has 2 position of 200Hz and 400Hz. Turnover (roll-off) of a lower frequency range below the frequency which has been selected can be controlled by the Bass Control.

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

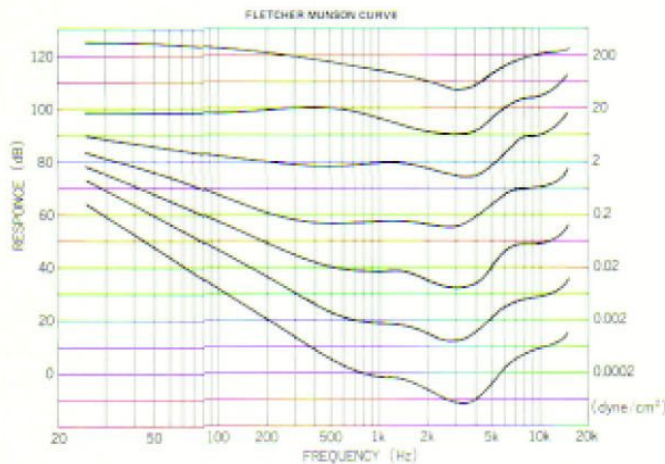
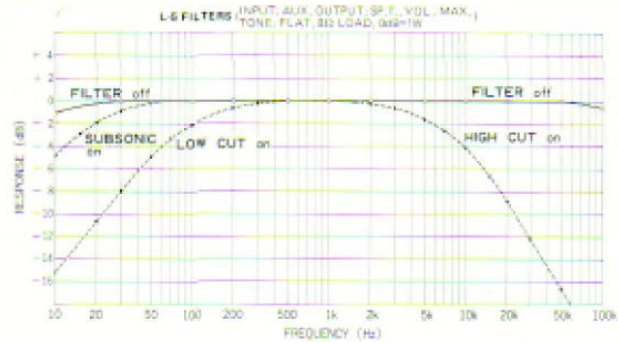
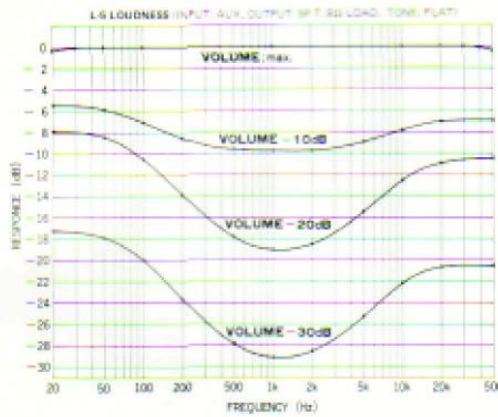
The Treble Frequency Selector has 2 positions of 4 kHz and 2kHz. The Treble Control begins to function from the position that is selected. A clockwise turn boosts the high frequency range, while a counter-clockwise turn yields attenuation.

Operation of Loudness:

Because loudspeakers and ears



OPERATION OF CONTROLS



generally respond less to extreme high and low (treble and bass) frequencies as volume levels are reduced, the Loudness button is included to boost these frequencies and thereby provides tonal compensation. Whether or not you use this switch depends upon the levels at which you generally listen, the kind of speakers you have, the room acoustics and a number of other variables. Experimentation is the best guide to using the Loudness button.

High Cut Filter:

When this filter (17) is depressed the amount of high frequency range over 7kHz is cut off at the attenuation rate of -6 dB/oct. This filter is useful for removal of scratch noise, hissing noise of tape etc. Also this can be used as an auxiliary control for Treble Control.

Low Cut Filter:

When this filter (16) is depressed the amount of low frequency range below 70Hz is cut off at the attenuation rate of -6 dB/oct. This filter is useful for removing low frequency noise such as rumbling of the phono motor. Also this can be used as an auxiliary control for Treble Control.

Subsonic Filter:

Ultra low frequency noises (5 – 50Hz) caused by record warps, tonearm's resonance, phonomotor's rumble and acoustic feedback etc., are harmful in reproduction even if they are out of audible range as they produce intermodulation distortion by vibrating the cones of loudspeakers.

To remove such harmful ultra low frequency noises with the least effect on the audible frequency range, this unit is provided with the Subsonic Filter.

BEFORE CONSULTING SERVICE SHOP



The L-5 integrated amplifier is classified into the "component" category, where one finds interest of making combination of the equipments. Therefore, to make the most of this system, firm and correct connection between the equipments, namely, record player, tuner, amplifier, or speaker systems etc., is absolutely indispensable. Further, desired reproduction of the program source may not be obtained unless correct operation of each equipment is done.

It may be possible that some knobs or switches are accidentally operated, or some connections are detached. In some cases, these are liable to be taken as troubles. Therefore, it is advisable to make fundamental check by use of the "Trouble Shooting" listed below.

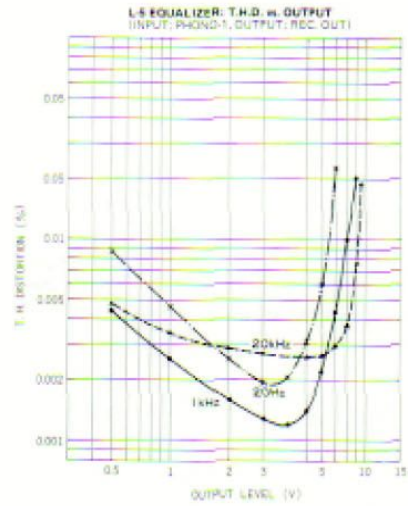
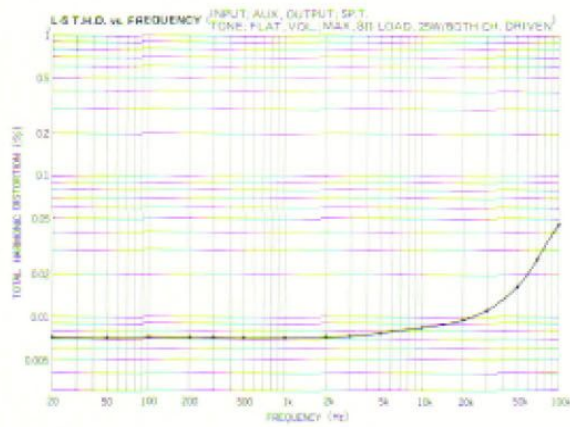
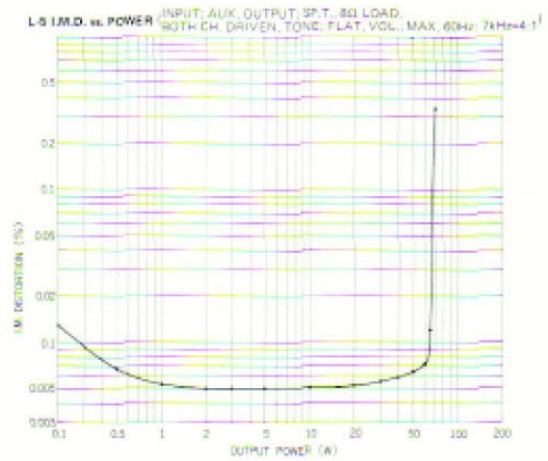
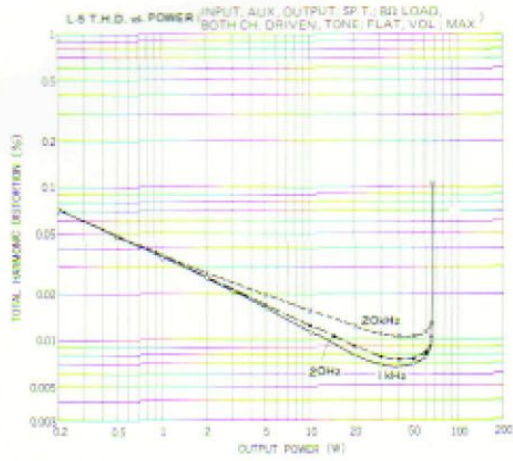
When you find the trouble is not cured by this procedure, contact your nearest service shop.

SYMPTOM	CAUSE	MEASURES
	Pilot lamp does not light up when AC Power Switch is turned on.	<ul style="list-style-type: none"> AC plug is not connected to the AC socket, or may be loose at the socket.
Pilot lamp lights up, but both channels are silent.	<ul style="list-style-type: none"> Speaker Selector Buttons are "OFF" (protruded). Speaker Protection Fuses (both channels) are blown. Short-pins are inserted to the REC. OUT terminals. Monitor Button is depressed. Output level volume at tuner or deck are set in the "min." position. Input Selector Button is misselected. Firm connection of speaker cord, input or output pin-plugs etc. is not obtained. Volume Control is set in the "min" position. 	<ul style="list-style-type: none"> Depress a Speaker Selector Button. Of course speaker should be connected to the corresponding point. Check the Speaker Protection Fuse Holder, and replace the fuse when blown. Remove the short-pins, and keep them. Set the Monitor Switch at the "protruded" position. Set the Output Level Control to an appropriate level. Reset the Input Selector Button. Check all the connections among audio equipments, and make it firm. Rotate the Volume Control until the desired level is obtained.
One channel is silent.	<ul style="list-style-type: none"> Balance Control is set either in the extreme clockwise or counterclockwise position. One channel of the speaker cord is detached, or short-circuited. One of two Speaker Fuses is blown. One channel of the connection cord of input equipment is detached. 	<ul style="list-style-type: none"> Set the Balance Control in the center click-stop position. Make a firm connection of the speaker cord at the mute channel. Replace the fuse with the spare one provided. Connect the pin-plug firmly.
One channel is silent at the time of TUNER reproduction.	<ul style="list-style-type: none"> Pin-plug cord is connected to the Multipath detection terminal. 	<ul style="list-style-type: none"> Connect the pin-plug to the output terminal of the tuner.
Hum noises are notable.	<ul style="list-style-type: none"> Ground-side of the pin-plug does not firmly contact the terminal. Shielded wire is not used for the connection cable among equipments. Ground lead from the record player is not connected to the Ground Terminal of the L-5. Installation of the cartridge to the shell, or that of the shell to the tonearm is insufficient. 	<ul style="list-style-type: none"> Check connection among cartridge, shell and tonearm, and instal firmly. Use the pin-plug cord of shielded wire. Connect the earth lead wire of the record player firmly to the GND terminal. Check connection among cartridge, shell, and tonearm, and install firmly.
Sound level does not increase when the VR is increased.	<ul style="list-style-type: none"> Attenuator is depressed. 	<ul style="list-style-type: none"> Reduce the volume control first, and set the Attenuator to OFF. Then re-adjust the volume level.

Note: The short-pins provided should be inserted to the PHONO input terminal unless the record player is connected to the terminal, otherwise following phenomena might occur.

- Noises are remarkable when the "phono" Input Selector Button is depressed.
- Click-noise will be triggered at the time of switching the Input Selector Button from "tuner" or "aux" to "phono".
- Reproduction sound of tuner is heard even when the "phono" Input Selector Button is depressed.

STANDARD CURVES



SPECIFICATIONS

- **Power Output:** 60 watts minimum continuous per channel both channels driven into 8-ohm loads from 20Hz to 20,000Hz with no more than 0.03% total harmonic distortion.
- **Rated I.M.:** no more than 0.03%
(8 ohms, 60W/ch, 60Hz : 7kHz = 4 : 1)
- **Frequency Response:**

PHONO	20Hz ~ 20kHz (±0.5dB)
TUNER	10Hz ~ 90kHz (+0, -1dB)
AUX	10Hz ~ 90kHz (+0, -1dB)
MONITOR	10Hz ~ 90kHz (+0, -1dB)
MAIN IN	5Hz ~ 100kHz (+0, -1dB)
- **Input Sensitivity & Input Impedance:**

PHONO-1, -2	2.5mV	50k ohms
AUX	150mV	50k ohms
TUNER	150mV	50k ohms
MONITOR-1, -2	150mV	50k ohms
MAIN IN	1.25V	50k ohms
- **Signal-to-Noise Ratio:** (input short-circuited)

PHONO	better than 92dB (IHF-A weighted, 10mV)
TUNER, AUX, MONITOR-1, -2, MAIN IN	better than 100dB (IHF-A weighted)
- **Damping Factor:** 80 (8 ohms, 1kHz)
- **Residual Noise:** no more than 1mV
- **Tone Control:**

Bass:	±12dB max, (turnover frequency 200Hz, 400Hz)
Treble:	±12dB max, (turnover frequency 2kHz, 4kHz)
- **Channel Separation:**

PHONO	better than 60dB
TUNER, AUX, MONITOR-1, -2	better than 78dB
MAIN IN	better than 90dB
- **Filters:**

High Cut	7kHz (-6dB/oct.)
Low Cut	70Hz (-6dB/oct.)
Subsonic	15Hz (-6dB/oct.)
- **Power Consumption:** 280 W (8 ohms, full power)
300VA (CSA rated)
- **Additional Features:** Headphone Jack, Tape Dubbing Circuit, Tape Monitor Circuit, High and Low Cut Filters, Subsonic Filter, Speaker Protection Circuit, Extra AC Outlets, Over-current Protection, REC. OFF Switch, Time-delay Muting, Muting, Audio Attenuator (-20dB), Loudness Control, Speaker Selector, Mode Selector, DIN Connector (S-type, E-type only)
- **Dimensions:** 438(W) x 289(D) x 105(H) mm
(17-1/4" x 11-3/8" x 4-1/8")
(including Legs, Rear Protrusions and Knobs)
- **Weight:** Net 9.5 kgs(20.9 lbs.) Gross 11.5 kgs (24.2 lbs.)

Specifications and appearance design subject to change without notice.