ULTIMATE HIGH FIDELITY STEREO COMPONENT

LUXMAN

L-80

OWNER'S MANUAL

SOLID STATE INTEGRATED AMPLIFIER

L-80

OPERATION OF CONTROLS

Mode Selector:

This amplifier is for stereophonic reproduction and incorporates independent amplifiers for two channels (right and left). The Mode Selector is placed between the two amplifiers to change the mode of reproduction.

(Stereophonic Reproduction)

When Mode Selector is set at the "stereo" position, amplifier for two channels (right & left) operates independently and stereophonic reproduction can be made. The signals fed to the right channel terminal are reproduced at the right channel speaker only.

(Stereophonic Reverse Reproduction)

When mode Selector is set at "reverse", amplifier for two channels operates independently, but connection between input and output becomes reverse. The signals fed from right channel are thus reproduced at the left channel speaker.

(Monaural Reproduction)

When Mode Selector is set at "mono", signals for two channels are mixed and reproduction is made in monaural.

Volume Control:

The variable resistor of this control yields an A type curve. In the characteristics of A type, the turning angle is proportionate to the attenuation degree (dB); the dB value and the volume audible to human ears, 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 naturally as the control is turned in the clockwise direction.

Balance Control:

In case deviation is felt between the volume levels of right and left channels, adjust the unbalanced volume level with this control (8). 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 centre of the right and left channels. 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 program source is unbalanced (or the speakers are placed in an oblique position), establish the correct balance with this control.

Tone Controls:

The ulutimate 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 impossble 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 listner 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 turnover (Roll-off) frequency selector for subtle and minute control of the reproduced sound. This turnover (roll-off) frequency is set at 300Hz for the Bass and 3KHz for the Treble. The level controls for treble and bass are provided independent for the right and the left channel. Therefore set both knobs of the right channel and the left channel at the same position in case compensation of the program source or the audio system is necessary. When the reproductive circumstances are different by left and right, independent compensation is possible by these tone controls.

TREBLE LEVEL ADJUSTMENT

Treble Level Control (1) (2) is a tone control on frequency response of high frequency range. It is designed so that response is flat at the centre click point, and a clockwise turn of the knob boosts high frequency range above 3KHz while counter-clockwise turn yields attenuation. This characteristics is available in the "Standard Curves".

BASS LEVEL ADJUSTMENT

Bass Level Control (3) (4) is a tone control on frequency response of low frequency range. It is designed so that response is flat at the center click point, and clockwise turn of the knob boosts low frequency range below 300Hz while counter-clockwise turn yields attenuation. This characteristics are available in the "Standard Curves".

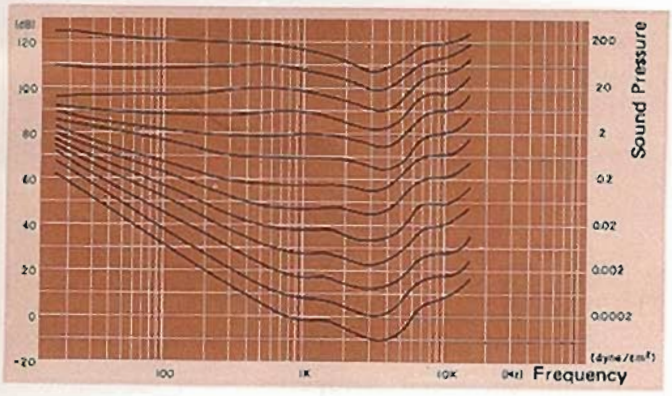
Regarding Low-Boost

When the Low-Boost & Loudness Switch (9) is set at the "low freq. only" position, low frequency range below 150Hz is boosted in proportion to the sound level between the extreme counter-clockwise position and the centre 12-o'clock position of the volume control. The low-boost circuitry will not be operated for the position of the volume control over centre rotation angle. This operates in addition to other tone controls, therefore probable rise-up in a small room of approximately $10m^2$ in the neighbourhood of 200Hz can be subdued with this control by lowering the bass level with the Bass Level Control. This process can suppress such unnecessary rise-up without spoiling the response at the extreme low frequency range.

Operation of Loudness

Because human ears and loud speakers generally respond less to extreme high and low (treble and bass) frequencies as volume levels are reduced, the Loudness switch is provided to boost these frequencies and thereby offers tonal compensation. For the operation of the Loudness circuitry, set the Low-boost & Loudness Switch at "loudness in" position. Now at the extreme clockwise position of the volume control, the frequency response is flat, and as the volume level is reduced, the loudness characteristics compendated in proportion to the position of the Volume Control is obtained.

Fletcher Munson Curve



Low Cut Filter:

When this switch is set at "subsonic" position, the low frequenies belwo 20Hz are cut off at the rate of – 6dB/Octave. When at "70Hz" the low frequencies below 70Hz are cut off. Thus, it is useful for removing low frequency noise such as rumbling of the phono motor. It can be used as an auxiliary control for Bass Level Control. At the "normal" position, a flat frequency response is obtained.

High Cut Filter:

When this switch is set at "12KHz" position, the high frequency range over 12KHz is cut off at the attenuation rate of – 6dB/Octave. When at "7KHz", the high frequencies over 7KHz are cut off. Thus, it is useful for removing scratch or hissing noise and can also be used as an auxiliary control for Treble Level Control. At the "normal" position, a flat frequency response is obtained.

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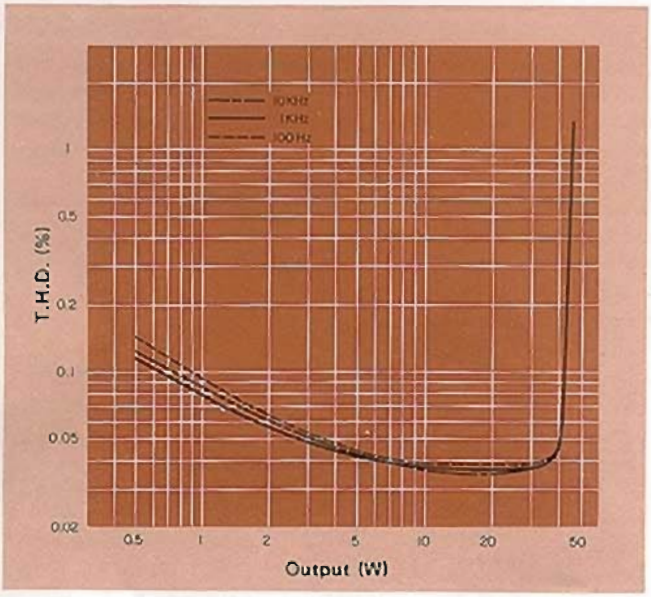
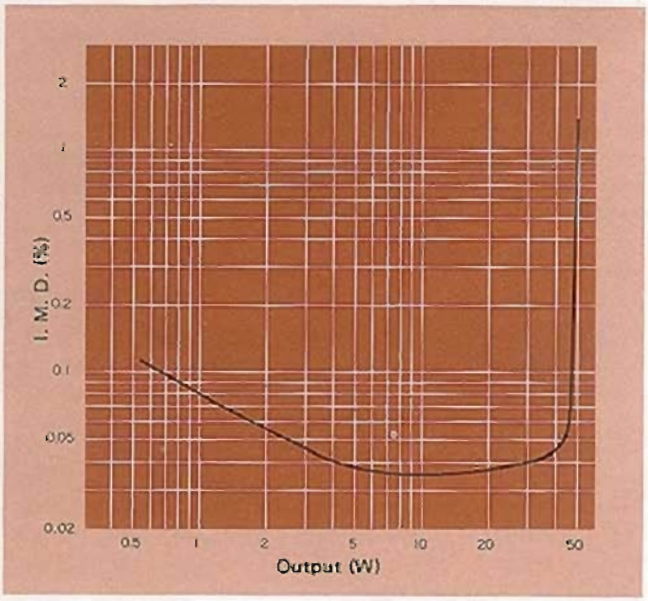
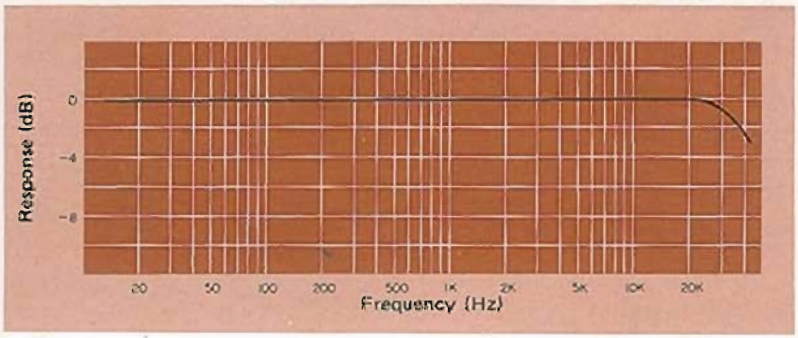
STANDARD CURVES



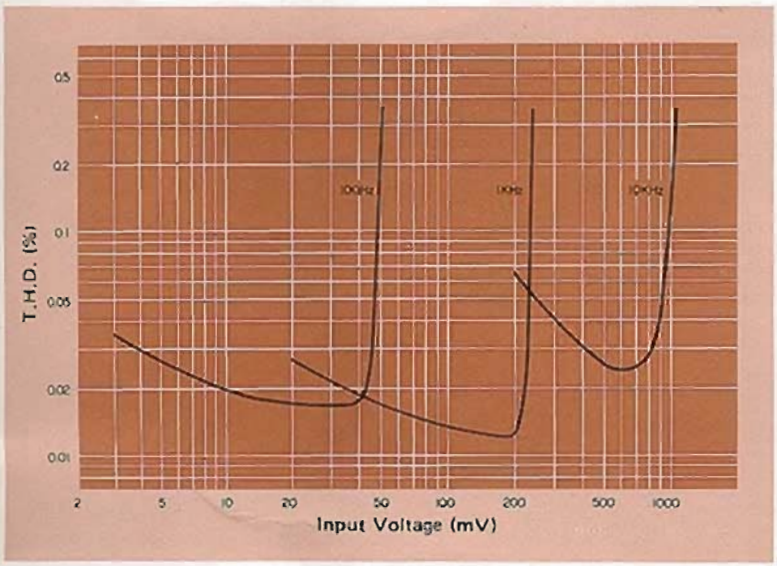
T.H.D. Vs. POWER
Input: AUX-1, Output: 8Ω load



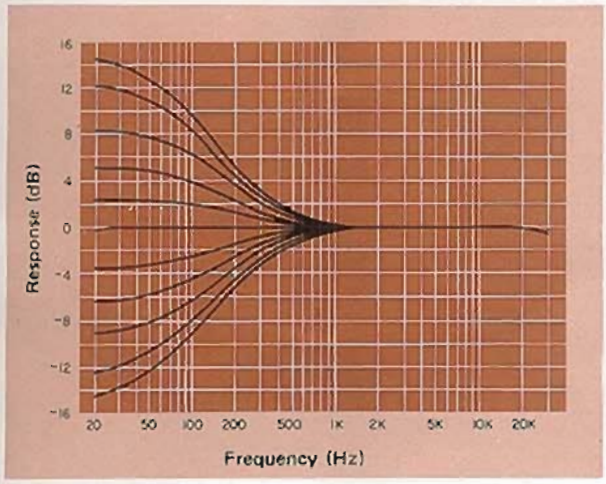
I.M.D. Vs. POWER
Input: AUX-1, Output: 8Ω load,
Requency and Modulation Ratio: 60Hz : 7KHz = 4 : 1



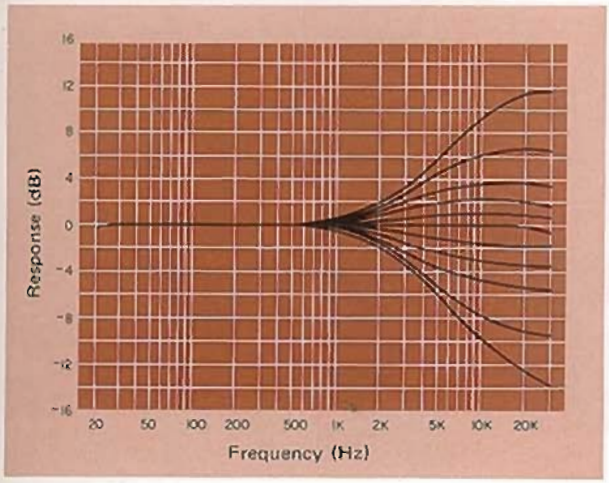
POWER BANDWIDTH
Input: AUX-1, Output: 8Ω load, 0 dB = 40W,
Distortion: within 0.1%



PHONO INPUT VOLTAGE Vs. T.H.D.
Input: PHONO-1, Output: REC. OUT



BASS TONE CONTROL
Turnover (Roll-off) Frequency: 300Hz



TREBLE TONE CONTROL
Turnover (Roll-off) Frequency: 3KHz

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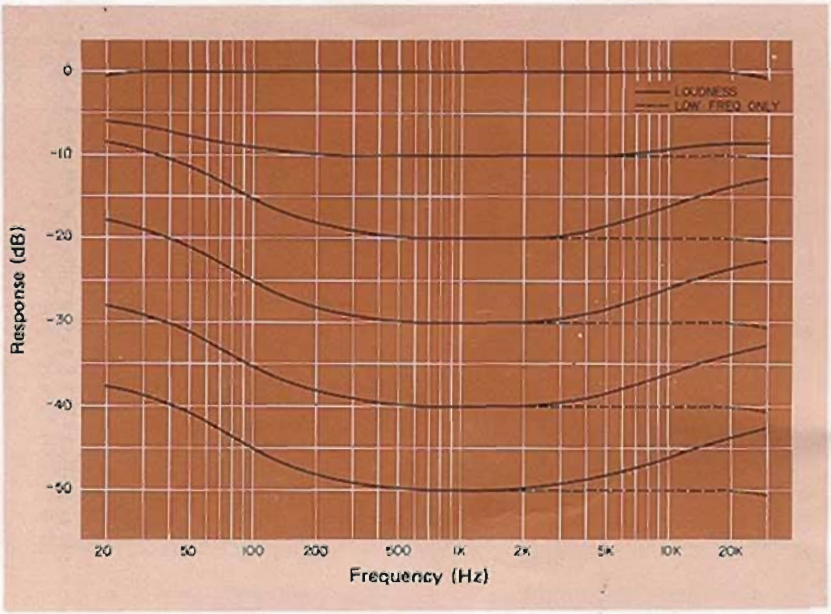
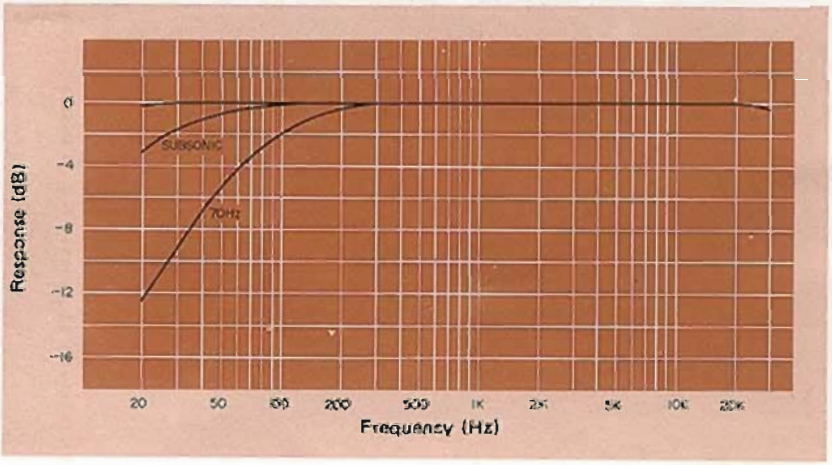
STANDARD CURVES

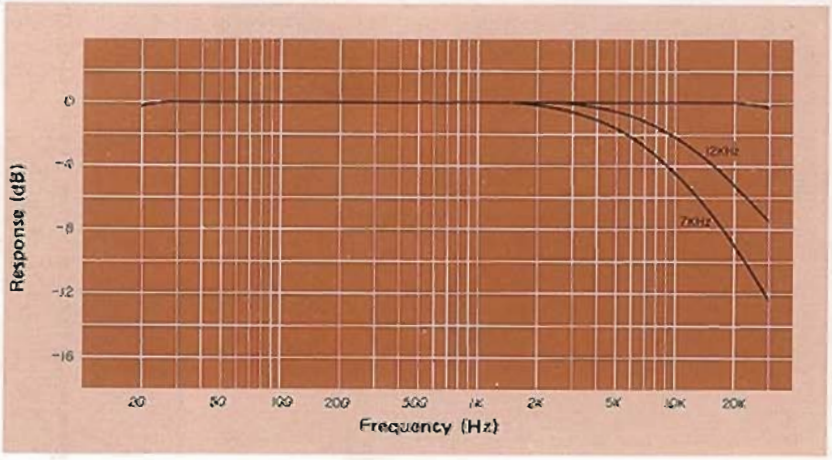
LOUDNESS/LOW BOOST
Input: AUX-1, Output: 8Ω load



LOW CUT FILTER
Input: AUX-1, Output: 8Ω load



HIGH CUT FILTER
Input: AUX-1, Output: 8Ω load



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SPECIFICATIONS

Power Output:	40 W per channel into 8-ohm loads, both channels driven, at any frequency from 20 – 20,000 Hz, with no more than 0.05% (total harmonic distortion).
I.M.D.:	No more than 0.05% (8 ohm, 40 W, 60 Hz : 7 KHz=4 : 1)
Frequency Response:	10 Hz – 50,000 Hz (within –1 dB)
Input Sensitivity:	phono–1, phono–2: 2.5 mV tuner: 120 mV aux–1, aux–2: 120 mV monitor–1, monitor–2: 120 mV
Input Impedance:	phono–1, phono–2: 65 K ohms tuner: 50 K ohms aux–1, aux–2: 50 K ohms monitor–1, monitor–2: 50 K ohms
S/N Ratio:	phono–1, phono–2: 63 dB tuner: 78 dB aux–1, aux–2: 78 dB monitor–1, monitor-2: 78 dB
Crosstalk:	phono–1, phono–2: –60 dB tuner: –65 dB aux–1, aux–2: –65 dB monitor–1, monitor–2: –65 dB
Tone Controls:	LUX NF type Bass Turnover Frequency ; 300 Hz Treble Turnover Frequency ; 3KHz
Filters:	Low cut: 20 Hz (sub-sonic), 70 Hz High cut: 7 KHz, 12 KHz
Damping Factor:	35 (8-ohm loads)
Residual Noise:	No more than 1.5 mV
Accessories:	Low Boost/Loudness Switch (low freq. only: 150 Hz) Tape Monitor Circuits (deck-1, source, deck-2) Tape Dubbing Switch (1 to 2, source, 2 to 1) Tape Connector (DIN standard) Mode Selector Switch (reverse/stereo/mono) Speaker Switches (A speakers / B speakers) Headphone Jack AC Outlets (Unswitched/Switched)
Semiconductors:	Transistors (33), Diodes (8) Varistors (4), Zener Diodes (2) I.C. (1)
Power Consumption:	150 W (Maximum output 8-ohm loads, both channels driven)
Power Source:	AC 100/120/220/240V, 50/60 Hz
Dimensions:	450 mm(W) x 300 mm(D) x 160 mm(H) 17-3/4"(W) x 11-13/16"(D) x 6-5/16"(H)
Weight:	Net 9.5 kgs (21 lbs) Gross 11.5 kgs (25.3 lbs)

Specifications and appearance design subject to possible change without notice.

INPUT & OUTPUT TERMINALS

18. 22. AUX-1/AUX-2 Terminal

These are 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 sensivility, 120mV. Input impedance, 50K ohms.

19. Tuner Terminal

For reproduction of AM/FM Tuner. Input sensitivity is 120mV. Input impedance is 50K ohms.

20. 21. Phono-1/Phono-2 Terminal

For playback through magnetic cartridge (MM,MI,MC Type). Input sensitivity, 2.5mV. Input impedance, 65K ohms. Except for very low output MC type cartridges (output voltage, 0.01 - 0.1mV), almost all cartridges can be used. For such MC type cartridges of very low output level, it is necessary to boost voltage up to the specified level by use of step-up transformers or a head-amplifier.

23. Tape Connector

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 (10) must be at the "deck-1" position. Recording output signal is always available from this connector, except when the dubbing switch is set at the "2 to 1" position.

24. DECK-1 REC.OUT Terminal

A signal for recording is taken out from this terminal (always available when an input signal is given to any of the input terminals). In case the Dubbing Switch (11) is set at the "2 to 1" position, the recording signals do not come from this terminal from the DECK-2 recording output terminal.

25. "DECK-1" Monitor Terminal

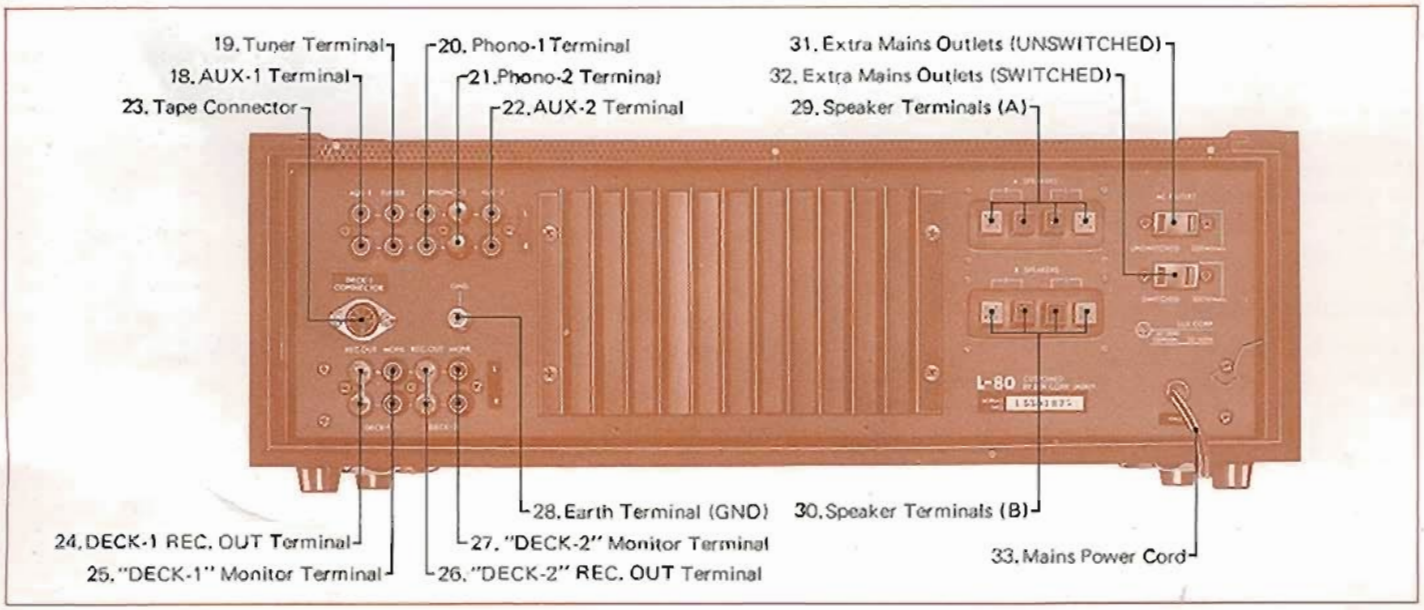
Playback of the line output of a tape recorder is possible from this terminal. It is put into operation when the Monitor Switch (10) is set at the "deck-1" position. In case a 3-head tape recorder is used, simultaneous playback monitoring is possible while recording.

26. "DECK-2" REC.OUT Terminal

Offers the same function as Deck-1 REC. OUT Terminal (24). Except when the Dubbing Switch (11) is set at the "1 to 2" position, the recording signals are available. from this terminal.

27. "DECK-2" Monitor Terminal

Offers the same Function as DECK-1 Monitor Terminal (25). Tape playback is possible if the Monitor Switch (10) is set at the DECK-2 position. In case 2 sets of tape decks are connected with Monitor Terminals (25) & (27) playback of either of tape decks is possible by selecting "deck-1" or "deck-2" with the Tape Monitor Switch.



28. Earth Terminal (GND)

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

29.30. Speaker Terminals (A & B)

The speaker systems should be connected to these terminals. Press the cap for the terminal and insert the bare speaker cord into the terminal hole, then release it. Firm connection is now made. These terminals are coupled with the Speaker Selector Switches (14), and press in either of the Speaker Switches corresponding the terminal to which the spaker systems are connected, The red terminal is for (+) and the black is for (–). For further details, refer to Connection of Speakers (Page 00).

31.32. Extra Mains Outlets (AC OUTLET)

Convenient for supplying mains power to other equipment such as AM/FM tuner or record player. The terminal (31 UNSWITCHED) is independent of the mains switch of the amplifier, while the other (32 SWITCHED) is coupled with the power switch. The supply of the mains power depends on the mains switch. The total capacity for the UNSWITCHED (31) terminal is 200W. The rated capacity for the SWITCHED (32) terminal is 100W.

33. Mains Power Cord

One end with plug should be connected to the mains power supply.

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CONNECTION PROCEDURE

Basic Connection:

This amplifier is composed of a pre-amplifier section, which controls playback equipment, and a power amplifier section, which amplifies the siginal to the extent that it drives the speaker systems. It functions as the stereophonic reproduction system when player, tuner, etc.are connected to the input terminals and the speakers or a headphone to the output terminals. Thus it is basically necessary to connect this amplifier with the input source. output loads and, naturally, the mains current.

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 sections on Playback of Disc, Tuner and Tape-Recorder.

Connection Cable (Cord Wire):

For connection of record-player, tuner, and tape-recorder, shield wire is used for protection from external noise or inductance noise Usually, this shield wire has the capacitance of approx. 200pf/meter, 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) and causes an unnecessary attennation 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 with the high impedance equipment like MM type cartridge. Nowadays in general output impedance of tuner or tape deck is so designed as to be sohiciently low, and the effect is not much, since parallel composite impedance becomes lower and cut-off frequency will be shifted out of the audible range.

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 A and B 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.

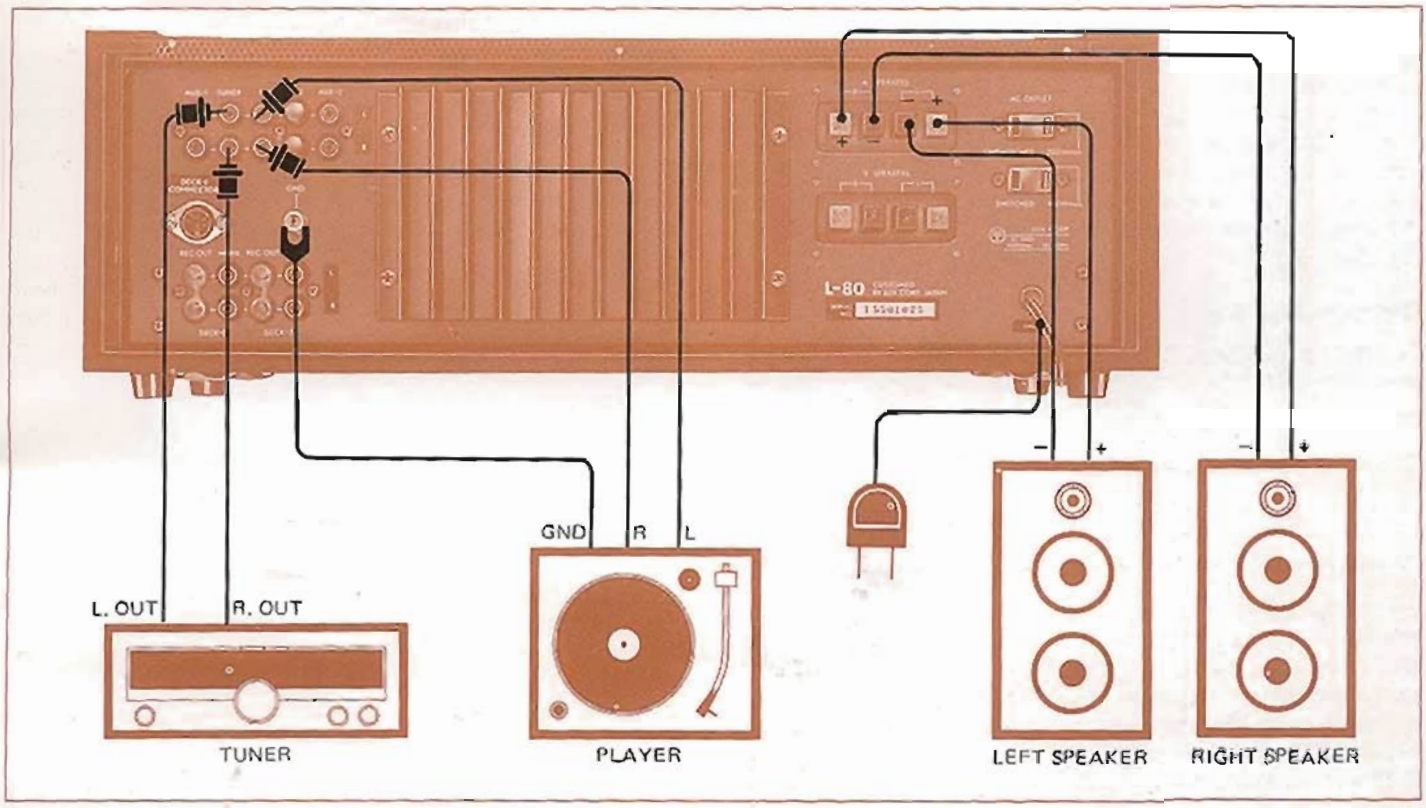
To firmly connect the speaker terminals, strip off the end of the shield wire by 10mm and insert it into the terminal hole by pressing terminal head, and then release it.

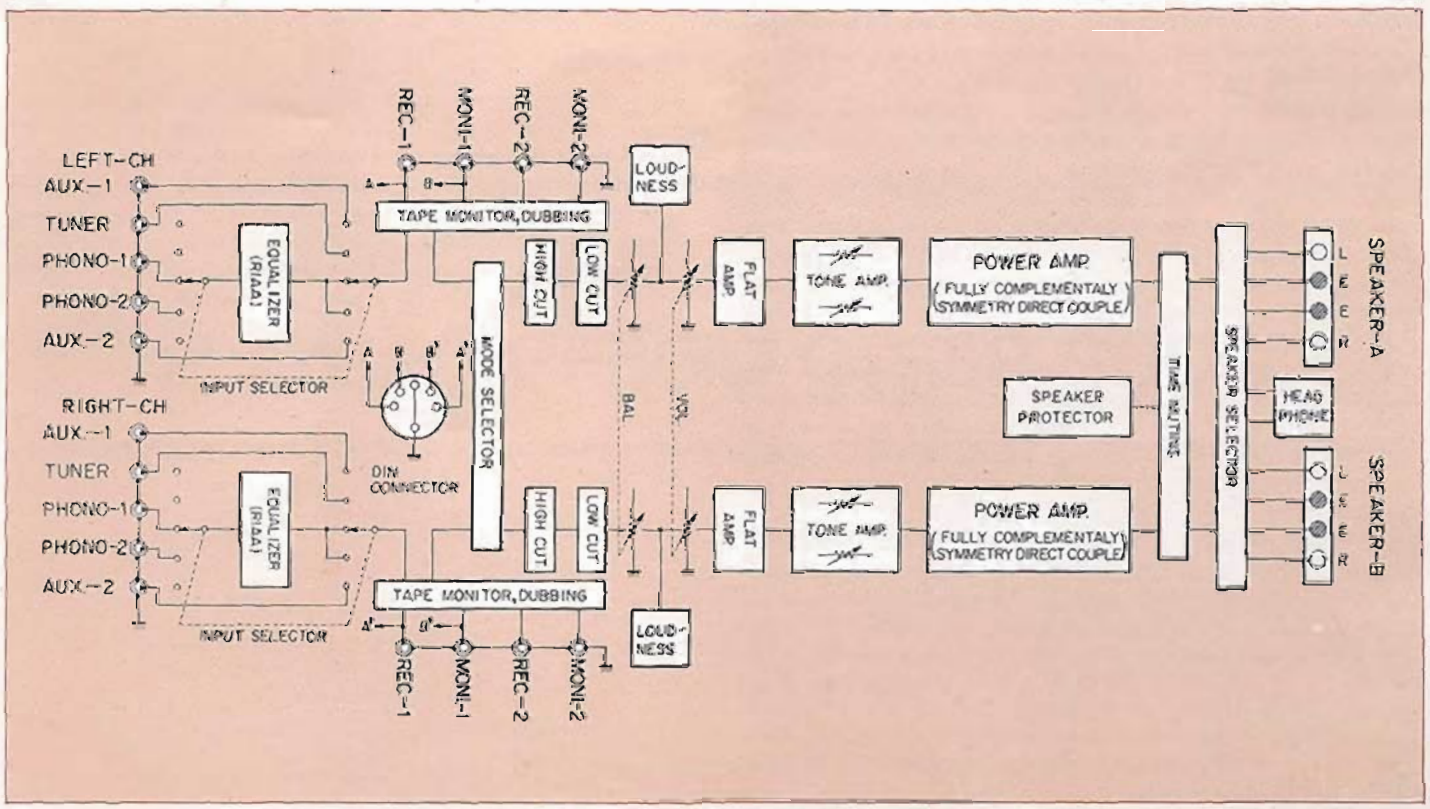
After connection of the speakers, press the Speaker Selector Switch (14) so that 2 pairs of speaker systems can be simutaneously or independently driven.

Connection of Mains Power Supply Source:

As the final step of preparation, connect the amplifier to the mains power supply source. Ths end of the flex with plug should be connected to the power supply outlet. When the power switch is pressed the pilot lamp lights up and the amplifier will function in about 5-10 seconds.

The power for other audio equipment used in combination with this amplifier can be obtained from the extra mains outlet (SWITCHED) of the amplifier. In this case, the on/off switching of. the amplifier is common to other annexed audio equipment, i.e. if the power switch of the amplifier is switched on, the power switch of the other audio unit works simultaneously.


L-80
GND
R
L
L. OUT
R. OUT
TUNER
PLAYER
LEFT SPEAKER
RIGHT SPEAKER


LEFT-CH
AUX-1
TUNER
PHONO-1
PHONO-2
AUX-2
RIGHT-CH
AUX-1
TUNER
PHONO-1
PHONO-2
AUX-2
INPUT SELECTOR
EQUALIZER (RIAA)
DIN CONNECTOR
MODE SELECTOR
REC-1
MONI-1
REC-2
MONI-2
TAPE MONITOR, DUBBING
HIGH CUT
LOW CUT
LOUD-NESS
BAL
VOL
FLAT AMP.
TONE AMP.
POWER AMP.
(FULLY COMPLEMENTALY SYMMETRY DIRECT COUPLE)
SPEAKER PROTECTOR
TIMER MUTTING
SPEAKER SELECTOR
HEAD PHONE
SPEAKER-A
SPEAKER-B

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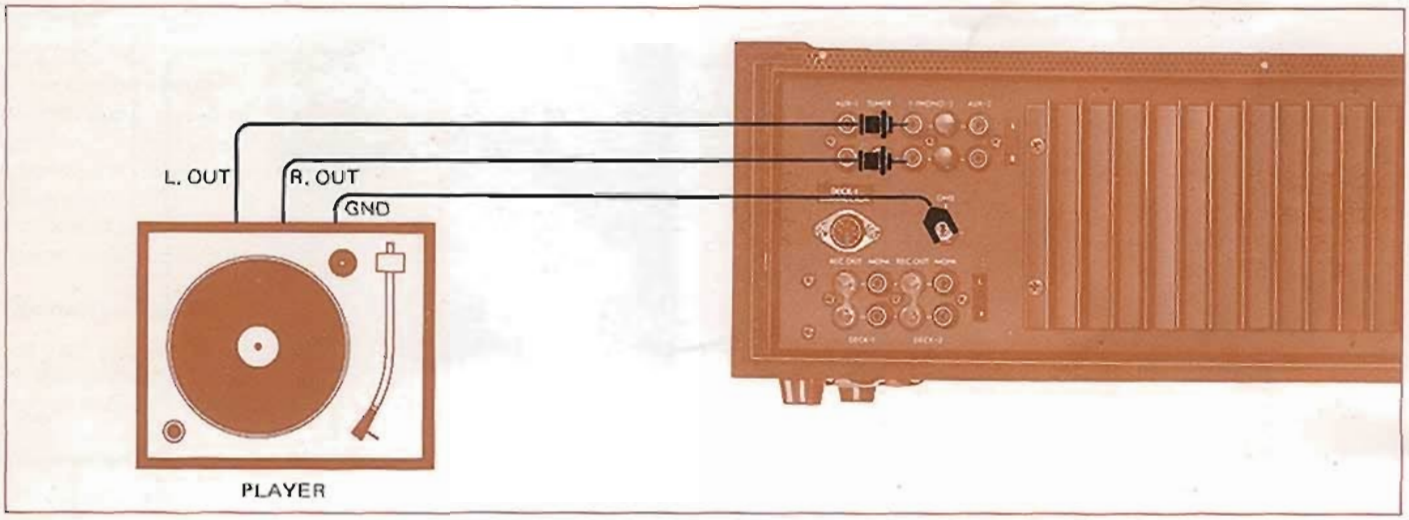
PLAYBACK FROM RECORD DISC



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 [PHONO-1 (20) or PHONO-2 (21)]. The player's earth lead can be connected to the GND terminal (22), and the power flex to the extra power outlet (31) of the amplifier. This amplifier is provided with 2 sets of input terminals (PHONO-1 & PHONO-2) to be selected by the input selector switch (13). This is useful for comparison or using two record players. For use of one player, either of the two sets of input terminals can be selected.

Signal Paths:

Put the disc on the turn-table, switch on the phono motor, and set the stylus on the groove of the disc. Then recorded signals begin to be fed to the amplifier. First, the signals fed to the amplifier through PHONO terminals are brought to the equalizer stage, where recorded signals are restored to the original frequency curve. Incidentally, this equalizer curve has been standardized to the RIAA curve. The equalized signals are then fed to the input selector switch (function switch (13)). If this switch is not set at PHONO position to which the record player is connected, the signals are blocked here and no amplification is possible. After equalization, the signals are divided into two channels,which are kept in sufficiently low impedance (to prevent possible high frequency attenuation caused by long cables or floating capacitance) by the push-pull circuitry provided at the final portion of the equalizer stage. From here, one line goes to the REC. OUT terminal, and the other to the Tape Monitor Switch. If the Monitor Switch (10) 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 blocked here. Except during tape playback, the Monitor Switch (10) must be kept at the "source" position. But when the input signals are fed to PHONO, TUNER, 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 Low-cut filter, High-cut filter, Low-Boost & Loudness switch and Tone controls are for flexible and diversified adjustment of playback sound and do not block the signals completely.

The signals reach the speaker selector switch amplified by the main amplifier. Sound reproduction from speaker system is thus realized if the Speaker Selector Switch, corresponding to the speaker terminals to which the speakers are connected, is pressed in. It is recommended to make use of the block diagram for your full understanding of this amplifier.

Playback:

Put a dise on the turn-table for playback. Switch a the phono motor, and put the stylus on the groove of disc Then recorded signals begin to be fed to the amplifier. As the volume control is turned clockwise, playback sound comes from the speakers. Input Selector Switch (13), Moniotr Switch (10), Speaker Selector Switch (14) and Volume Control (7) 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 at the "stereo" position.

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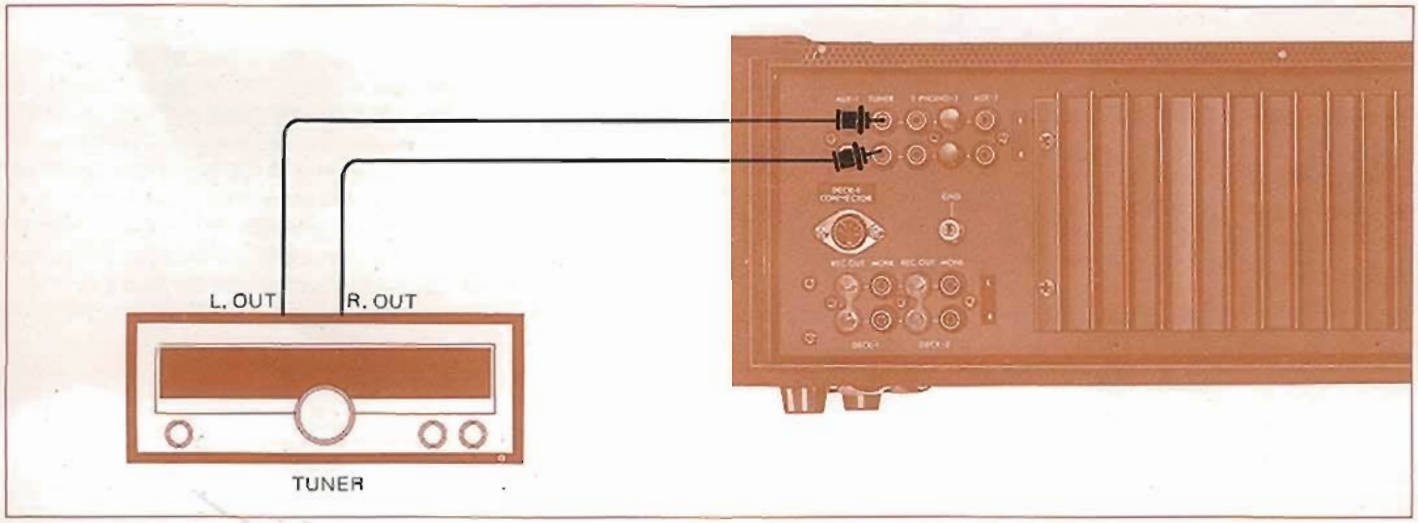
PLAYBACK OF AM/FM PROGRAM



Playback from Tuner:

Connect the tuner's output terminals (Right and Left) to either of the amplifier's the Tuner terminals AUX terminals (18 or 22) or to (19).

The Input Selector Switch must be set at the corresponding 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 (12) 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.

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PLAYBACK FROM OTHER SOURCES

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 those of a tuner.

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PLAYBACK FROM TAPE

Playback from Tape Monitor Terminals:

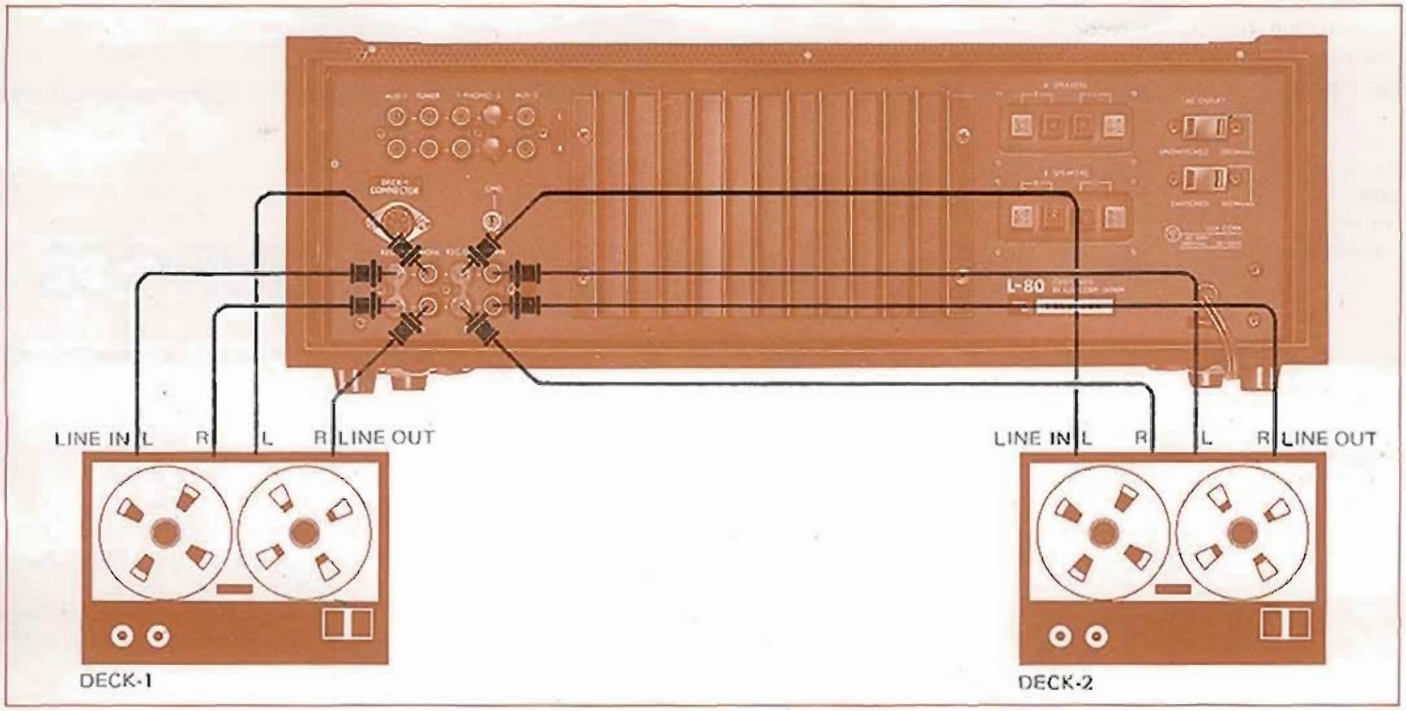
Almost all Tape-recorders and tape-decks currently marketed include an equalizer amplifier in their circuitry, and some tape-players are made exclusively for playback.
Connect the output terminal (LINE OUT) to the Tape Monitor terminals (25) & (27). Then set the monitor Switch (10) at the corresponding position to which the tape-recorder is connected. If two tape-recorders are connected to the Monitor terminals (25) and (27), selection between 2 units is possible by the Tape Monitor Switch.
This amplifier can be divided into two section: one before the Recording Output terminals (REC. OUT) and the other after the Tape Monitor Switch. A 3-head taperecorder makes it feasible 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 Monitor terminals (25) of DECK-1, and Tape Connector (23) 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, one tape-recorder should be connected to the DECK-2 Monitor terminals (27) (with the Monitor Switch at the Deck-2 position) while the other to the Tape Connector.

Playback from Tape Connector:

This is a connector of DIN standard and is convenient for simple nection with a patch cord between the tape-recorder and ording/playback connectors of this amplifier. Playback from Tape Connecotr is possible if the Monitor Switch (10) is set at "deck-1" position

Playback from AUX Terminals:

Playback of tape is also possible if the line output of a tape-recorder on tape-deck is connected to the AUX terminals of this amplifier by use of a pin-jack cord, and the Input Selector Switch is set at the position corresponding to the AUX terminals. All operation in this case are the same as those for the playback from tuner (Page 9).
Note that when tape playback is made through the AUX terminals or the TUNER terminals, the line input terminals 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.



RECORDING ON TAPE

Recording on Tape:

In the 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 (24, 26) and the Tape Connector (23) when the Tape Dubbing Switch is set at the "source" position. By connecting these terminals to the input terminals (AUX or LINE IN) of a 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 tape monitoring stage, and there is no influence by the filters, 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 respecively. Likewise, connect the line input and output of the other tape-recoreder to the DECK-2 terminals. Dubbing is now possible by use of the Dubbing Switch. At the "1 to 2" position, the tape of DECK-1 terminals can be reprinted on the tape of the DECK-2 terminals, 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 that the Dubbing Switch be set at the "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 (24, 26) to the line input terminals (AUX Input) of a tape-recorder, and the Tape Monitor terminals (25 or 27) to the output terminals (LINE OUT) of the tape-recorder. Set the Tape Monitor Switch (10) 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 and recording can be made through the Tape Connector (23) 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" is sufficient.

Simultaneous Recording:

This amplifier is provided with two sets of REC OUT terminals (24, 26) enabling recording on one or two tape-recorders. If desired, a combination of recording on open-reel recorders and/or cassette recorders can be accomplished. When the Dubbing Switch (11) is set at "source" position with the same connection for tape dobbing, comparison of sound is possible between the original and the 2 reocorded ones by selecting "deck-1", "source" and "deck-2" while simultaneous recording. As the impedance at the REC. OUT terminals is kept sufficiently low (about 100ohms) mutual interference will be almost nil among the recorders under parallel conneciton.