

A black and white portrait of a young man with light-colored, wavy hair, wearing a dark suit jacket, white shirt, and a patterned tie. He is looking directly at the camera with a neutral expression. The background is dark and textured.

AVERY FISHER
*Founder and President,
 Fisher Radio Corporation*

The engineering achievements of Avery Fisher and the world-wide reputation of his products have been the subject of descriptive and biographical articles in *Fortune*, *Time*, *Pageant*, *The New York Times*, *Life*, *Coronet*, *High Fidelity*, *Esquire*, *The Atlantic*, and other publications. Benefit concerts for the National Symphony Orchestra in Washington and the Philadelphia Orchestra, demonstrating recording techniques, and the great advances in the art of music reproduction, used FISHER instruments both for recording and playback, to the enthralled audiences. FISHER equipment formed the key part of the high fidelity demonstration at the American National Exposition in Moscow, July 1959.

The FISHER instrument you have just purchased was designed to give you many years of pride and enjoyment. If you should desire information or assistance on the performance of your FISHER, please do not hesitate to write directly to Avery Fisher, President, Fisher Radio Corporation, Long Island City 1, New York.

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OPERATING INSTRUCTIONS AND WARRANTY



THE FISHER

X-101A

STEREOPHONIC MASTER CONTROL AMPLIFIER

WORLD LEADER IN HIGH FIDELITY

CONGRATULATIONS!

WITH your purchase of a FISHER instrument you have completed a chain of events that began many months ago, in our research laboratories. For it is there that the basic concept of the equipment you have acquired came into being—its appearance, its functions, its quality of performance.

But the end step—your purchase—is merely a beginning. For you and your family, it will provide years of musical pleasure. The FISHER is from its inception designed to give long and trouble-free service. Some of the instruments we made twenty-two years ago are still in use today!

It is our continuing desire that your FISHER give you always the best performance of which it is capable. If you need our assistance at any time toward that objective, we are always at your service.

IN CLOSING...

Many hours have been spent by our engineers and technical writers to create this instruction book for your guidance and enjoyment. If you want the most out of your FISHER, there is only *one* way to obtain it. With the equipment before you, *please read this booklet carefully*. It will be time well-spent.

Avery Fisher

FISHER 'FIRSTS' — Milestones In Audio History

- | | |
|---|---|
| 1937 First high fidelity sound systems featuring a beam-power amplifier, inverse feedback, acoustic speaker compartments (infinite baffle and bass reflex) and magnetic cartridges. | 1954 First moderately-priced, professional FM Tuner with TWO meters. |
| 1937 First exclusively high fidelity TRF tuner, featuring broad-tuning 20,000 cycle fidelity. | 1955 First Peak Power Indicator in high fidelity. |
| 1937 First two-unit high fidelity system with separate speaker enclosure. | 1955 First Master Audio Control Chassis with five-position mixing facilities. |
| 1938 First coaxial speaker system. | 1955 First correctly equalized, direct tape-head master audio controls and self-powered preamplifier. |
| 1938 First high fidelity tuner with amplified AVC. | 1956 First to incorporate Power Monitor in a home amplifier. |
| 1939 First Dynamic Range Expander. | 1956 First All-Transistorized Preamplifier-Equalizer. |
| 1939 First 3-Way Speaker in a high fidelity system. | 1956 First dual dynamic limiters in an FM tuner for home use. |
| 1939 First Center-of-Channel Tuning Indicator. | 1956 First Performance Monitor in a high quality amplifier for home use. |
| 1945 First Preamplifier-Equalizer with selective phonograph equalization. | 1956 First FM-AM tuner with TWO meters. |
| 1948 First Dynamic Range Expander with feedback. | 1956 First complete graphic response curve indicator for bass and treble. |
| 1949 First FM-AM Tuner with variable AFC. | 1957 First Gold Cascade FM Tuner. |
| 1952 First 50-Watt, all-triode amplifier. | 1957 First MicroRay Tuning Indicator. |
| 1952 First self-powered Master Audio Control. | 1958 First Stereophonic Radio-Phonograph with Magnetic Stereo Cartridge. |
| 1953 First self-powered, electronic sharp-cut-off filter system for high fidelity use. | 1959 First high-quality Stereophonic Remote Control System. |
| 1953 First Universal Horn-Type Speaker Enclosure for any room location and any speaker. | 1959 First complete Stereophonic FM-AM Receiver (FM-AM tuner, audio control, 40-watt amplifier). |
| 1953 First FM-AM Receiver with a Cascade Front End. | |
| 1954 First low-cost electronic Mixer-Fader. | |



THE FISHER "X-101"

Stereophonic

Master Control Amplifier

In monophonic high fidelity systems, the reproduced sound has all the qualities of the original performance — with two exceptions. These are *direction* and *distance*. With the advent of stereophonic sound systems, *all* the characteristics of live sound are now capable of being reproduced in the home or auditorium. THE FISHER X-101 serves as the central component of the stereophonic installation. It is still another example of the excellence in design, construction, and performance which has earned for THE FISHER an international reputation in the field of high fidelity.



HOW STEREOPHONIC SOUND WORKS

In stereophonic reproducing systems, the live sound characteristics of direction and distance are made possible by the use of *two* sound sources and *two* sound channels. For example, two microphones are placed before an orchestra so that they "hear" the music as we would, with two ears. What is picked up by each microphone is then recorded separately and independently on record or tape, or broadcast as a stereo radio program. The stereo program is then reproduced through two separate sound channels. The sound picked up by the microphone on the left drives a speaker system on your left, and the sound picked up by the microphone on the right drives a speaker system on your right.

The effectiveness of stereophonic sound in achieving realism is much greater than might be imagined on the basis of the simple explanation just given. The stereo system actually spreads out the orchestral sound in the same manner as it would emanate from the stage. In other words, instruments located at center stage appear to be heard at a point midway between the speakers. The other orchestral instruments can be located accordingly from left to right. This results in a realism and clarity never before possible in high fidelity systems.

The following stereophonic program sources are already in use, or will be available in the very near future: FM-AM, FM-FM, and FM Multiplex radio broadcasts; commercial and home tape recordings; commercial disc recordings.

Facilities for handling all these sources are provided in **THE FISHER X-101**. In addition, the *X-101* can handle all standard monophonic program material. For stereophonic reproduction, two complete and separate sound channels must be set up. Electrically, this is equivalent to having two separate monophonic systems. **THE FISHER X-101** has two such channels with complete preamplification, equalization and audio control facilities for each, plus two power amplifiers, all on one chassis. In fact, with the *X-101*, all that is needed is to connect your speakers, plug in your program sources, and you have a complete high fidelity stereophonic music system.



OPERATING INSTRUCTIONS

The few moments you spend reading these instructions will bring you far greater enjoyment of the *X-101* than would be possible if you plunged right in. You will find the information that follows concise, yet complete. Keep it handy, particularly during the first few weeks of operating your **FISHER**, and you will rapidly become familiar with its outstanding performance and flexibility.

The *X-101* can be placed in any location convenient to its use; for example, on a table top or shelf near your favorite chair. It has also been designed for installation in a custom cabinet, and complete directions and mounting diagrams have been provided in the last section of this manual. If you intend to keep the *X-101* on a table top or shelf, custom-crafted wood cabinets are available from **FISHER**, enabling you to convert the unit into an attractive member of your furniture group.

For the time being, place it in its approximate final location. Allow yourself room to get at the bottom and rear of the chassis. This arrangement permits you to determine the cable lengths necessary for the various connections to associated high fidelity equipment, as described in the following paragraphs.



THE FISHER AND YOUR HIGH FIDELITY SYSTEM

When properly connected, the *X-101* becomes the electronic brain in your high fidelity installation. Speaker terminal boards for two speaker systems are provided on the rear panel, and 12 input jacks are provided on a bracket underneath the chassis. In addition, record and monitor jacks are provided at the rear of the chassis. Do not make AC powerline connections to any of your equipment until the entire system has been properly connected.

the speakers . . .

It is desirable to have the two speaker systems in a stereo installation as nearly alike as possible. Careful consideration should also be given to the position which they will occupy in your room. The correct distance between the speaker units is determined by the dimensions of the room and other acoustical factors. Position the units so as to obtain the most desirable stereophonic effects. As a rule of thumb, the best listening area will be located at a distance about twice as great as the separation between the speaker systems.

If you own two corner-type speaker systems, try placing one in a corner and the other against a flat wall, comparing this arrangement with both in corners to determine the best stereo arrangement. Wall-type speaker systems placed in the room corners may introduce undesirable effects; therefore, try placing them on the same wall a short distance from the corners of the room. If your installation is to be set up in a long narrow room, an arrangement placing the speakers along the long wall may be preferable to one placing them along the short wall.

speaker connections . . .

Important! Do not attempt to operate **THE FISHER** without first connecting the speakers.

Each channel of the *X-101* has output terminals for connecting speakers with a voice-coil or system impedance of 4, 8, or 16 ohms. Ordinary insulated two-wire lamp cord can be used for this purpose.

Connect a 3 to 5-ohm speaker to the com (common) and "4" terminals on each of the *X-101* speaker terminal boards. If you have 6 to 10-ohm speakers, use the com and "8" terminals. 13 to 19-ohm speakers are connected to the com and "16" terminals.

In the event that you have not yet completed your stereophonic system and are using your *X-101* monophonically to drive a single speaker, it is necessary to connect a load across the un-

used speaker terminals. Mount a wire-wound 7-watt 20 to 40 ohm resistor across the 16-ohm terminals.

input connections . . .

Six input jacks are provided on each channel for connecting your various program sources. These are located on a sloping panel underneath the chassis. Two cable securing brackets provide strain relief for the connectors, and keep them neatly arranged. See the next section on how to connect the recording and monitor jacks.

FROM RECORD PLAYERS: If you are using a *magnetic stereo* cartridge, connect the leads from the cartridge to the RIAA-1 or RIAA-2 jacks in the Channel A and Channel B inputs. The RIAA-1 jack has an input impedance of 50,000 ohms, the RIAA-2 jack an impedance of 100,000 ohms. Check the rating of your stereo cartridge and use the appropriate input to provide optimum results.

A magnetic monophonic cartridge may be connected to the RIAA 1 or the RIAA 2 input jack in either channel. However, if you intend to play 78-rpm or pre-1955 LP records, use the input jack marked RIAA 1-LP 78 which provides proper equalization for these records.

If you are using a record player with a *ceramic stereo* cartridge, connect the leads from the cartridge to the AUX 2 jacks in the Channel A and Channel B inputs. A *ceramic monophonic* cartridge may be connected to either of the AUX 2 input jacks.

FROM TAPE DECK: A tape deck, or tape transport, is a device for direct tape head playback only. Connect the output cables of a stereo tape deck to the Tape Input Jacks, *A* and *B*, on the *X-101*. A monophonic tape deck can be connected to either the *A* or *B* Tape Input Jack. The Tape Input channels of the *X-101* provide both preamplification and tape equalization.

CAUTION! If your tape equipment incorporates playback preamplifiers, do NOT use these inputs. Instead, use the same connections as you would for tape recorders, as described in the next section.

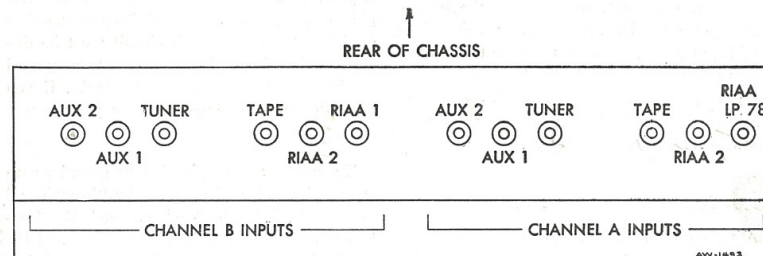


Fig. 1. Input Jacks, Bottom Panel

FROM TUNERS: The X-101 is equipped for making connections with various combinations of tuner inputs including monophonic FM, monophonic AM, FM-AM stereo, FM-FM stereo and the new multiplex FM Stereo broadcasts. If you are using only a single FM or AM tuner or an FM-AM tuner equipped to receive only monophonic FM or AM programs, connect the output of this tuner to the *Channel A* or *Channel B* Tuner Input jack. The program will be heard in either your left-hand or your right-hand speakers, or in both speakers, depending on the setting of the Output Selector on the X-101.

However, if you have separate FM and AM tuners or an FM-AM stereo tuner, connect the output of the FM tuner to the *Channel A* Tuner Input jack and the output of the AM tuner to the *Channel B* Tuner Input jack. This will permit you to listen to FM-AM stereo broadcasts as well as to standard FM or AM monophonic programs. The FM portion of stereo broadcasts will be heard in the speakers on your left and the AM portion on your right, recreating the position in which the program was originally broadcast.

Two separate tuners are required to receive FM-FM stereo broadcasts, available in some areas. Connect one tuner to the *Channel A* Tuner Input, the other to the *Channel B* Tuner Input. Determine from your newspaper which FM station is transmitting the left channel of a stereo broadcast, and set the tuner connected to the channel A input to this station.

A multiplex adaptor, such as the Fisher MPX-10, is required to receive the new Crosby multiplex stereo broadcasts, and your tuner must also be equipped with a multiplex output jack. Connect your FM tuner and multiplex adaptor to the X-101 as described in the operating instructions furnished with the adaptor.

FROM OTHER SOURCES: If you desire, you may connect a shortwave tuner or the sound portion of your TV set to any of the X-101 Aux Input Jacks. Be sure to consult an authorized service agency as to the best method for connecting the sound portion of a TV set. Any other additional high-level program sources can also be connected to the Aux Inputs.

recorder connections . . .

A tape recorder normally contains both recording and playback preamplifiers with tape equalization. In addition, it may contain moni-

toring and feedthrough facilities, with a bridging input. Read the following instructions carefully, or you may find it impossible to operate your installation properly. If you are in doubt about the facilities available on your tape recorder, read the manufacturer's instructions thoroughly, before proceeding.

TO RECORDER: If you have a stereophonic recorder, connect the two X-101 Rcrdr Output Jacks, *A* and *B*, to the high-level inputs on your recorder. Connect the high-level input of a monaural recorder to *Channel A* or *B* Rcrdr Output Jack, depending on the source from which you wish to record. The Rcrdr Outputs are of the low-impedance type, permitting connecting leads up to 30 feet long. Use low-capacitance (25 uuf per foot) shielded cable for this purpose.

The X-101 supplies an ideal signal for recording purposes which in no way interferes with normal listening. You may continue to set the volume, tone, loudness contour, channel balance, and output selector controls to suit your listening tastes without affecting the signals at the Rcrdr Output Jacks. On the other hand, you may use the rumble filter to eliminate low-frequency disturbances from low-level inputs appearing at the Rcrdr Output and the speaker outputs. The equalization circuits are also in use to assure a recording signal with uniform frequency response regardless of program source.

FROM RECORDER: If your tape recorder is equipped for stereophonic playback and has no monitor facilities, connect the outputs to either pair of Aux 1 or Aux 2 Input Jacks. Bear in mind that these connections can be made permanently *only* if the recorder has no feedthrough and monitor circuit arrangement. If you have a monophonic recorder with stereophonic playback and feed-through monitor facilities, the feedthrough circuit must be disconnected and the playback outputs connected to the Aux 1 or Aux 2 Input Jacks, if you wish to leave the tape recorder permanently connected.

If you have a stereophonic tape recorder with stereo playback and *separate* feedthrough and monitor facilities for each channel, the feed-through circuits must be disconnected and the playback outputs connected to the X-101 Aux 1 or Aux 2 Inputs, for permanent connections.

If you have a monophonic tape recorder with monophonic playback and without monitor facilities, connect the playback output to the Aux 1 or Aux 2 Input Jack, on whichever channel is available. If your recorder has monophonic record and playback, plus feedthrough and monitor facilities, connect the playback output to the *Channel A* Monitor Input Jack, with the recorder input connected to the *Channel A* Rcrdr Output Jack on the X-101.

cable securing brackets . . .

The purpose of the cable securing brackets on the bottom cover is to relieve mechanical strain on the input cables and prevent accidental loosening of the plugs. They also add to the neatness of your installation. If, however, there are connections which you intend to remove and replace frequently, we suggest you leave the particular cables involved outside the brackets.

For placement of the brackets when using THE FISHER Custom Cabinets, see the instructions provided with these cabinets. For use of the brackets in custom cabinet or shelf installation, see the last section of this manual, on custom installation.

ac receptacles . . .

There are three auxiliary AC receptacles on the rear panel of the X-101. The first receptacle on the left can supply up to 175 watts. The pair on the right can furnish up to a combined total of 350 watts. Be careful not to exceed these ratings. Use these receptacles to furnish AC power to your associated equipment. Power is supplied to all three receptacles when the X-101 AC switch is turned on.

ac power . . .

After you have made the connections described above, connect the AC power cord of the X-101 to your house current receptacle, first making certain it supplies AC between 105 and 125 volts, and from 50 to 60 cycles. If you have 50-cycle current, be sure your record player and tape equipment have been adapted for this frequency. The X-101 can also be used at other voltages with a step-up or step-down transformer.

caution . . .

If you have read this far, you have now reached a dilemma — should you plunge into using the equipment right off and trust to luck, or should you read on. Based on long experience, we urge you to resist the temptation to stop here. The next paragraphs are *the most important of all*.

USING THE CONTROLS

A glance at the front panel of the X-101 discloses a number of control knobs and switches. These have been carefully designed for clarity and ease of operation. Nevertheless, a fuller understanding of each item on the panel will increase your listening pleasure considerably.

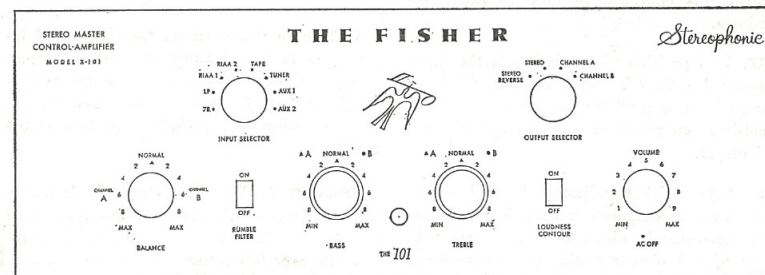


Fig. 2. Front Panel X-101

ac off . . .

This switch is part of the Volume Control. When you have turned the knob to its extreme counterclockwise position, you will note a click which signifies that AC power has been turned off. Leave the knob in this position until you are ready to operate the *X-101*. Do *not* turn on the *X-101* until you have connected the speakers. When the knob is rotated clockwise from the AC OFF position, it not only supplies AC power to the *X-101*, but also to the three auxiliary AC receptacles located on the rear panel of the chassis.

The red-jeweled pilot lamp at the center of the front panel lights when AC power is switched on. To replace the bulb, first remove the front panel and the sheet metal screw holding the bracket. *First be sure to disconnect the AC cord of the X-101 from the power line.* Remove all the knobs, then carefully remove the two hex nuts on the Channel Balance and Volume Control shafts. Lift away the control panel, and remove the sleeve over the bulb. Unscrew and replace the bulb with the new one. Replace the sleeve, panel, and knobs.

input selector . . .

The Input Selector is an eight-position switch for selecting any of the stereophonic or monophonic program sources you have connected to the *X-101*. It is also used to select the proper equalization on low-level channels. Preamplification is provided automatically for all low-level inputs.

78: This position switches in the *Channel A* 78-LP-RIAA 1 Input Jack, and provides equalization for 78 r.p.m. shellac records. If you are using a stereo record player, be sure your cartridge is equipped to play 78 r.p.m. recordings.

LP: This position also switches in the input connected to the *Channel A* 78-LP-RIAA 1 Input Jack. It is used for playing pre-1955 LP recordings on your stereo or monophonic record player.

RIAA 1: RIAA equalization is used for all present-day phonograph records, including the new stereophonic discs. It is identical with the ORTHO characteristic. In this position, the RIAA 1 input jacks in both *Channels A* and *B* are connected, permitting either or

both inputs to be used in monophonic or stereophonic operation.

RIAA 2: This position is used in the same manner as RIAA 1, except that it switches in the RIAA 2 Input Jacks, *Channels A* and *B*, and provides RIAA equalization only.

TAPE: Switch to this position to use the tape deck connected to the Tape Input Jacks, stereo or monophonic. Both preamplification and equalizations are automatically provided.

TUNER: This position is used to switch in the tuners, stereo or monophonic, you have connected to the Tuner Input Jacks on the *X-101*.

AUX 1: To use the equipment, stereo or monophonic, connected to the Aux 1 Input Jacks, switch to this position.

AUX 2: Switch to this position to use any equipment, stereo or monophonic, connected to the Aux 2 Input Jacks.

output selector . . .

The Output Selector, located on the upper right-hand side of the front panel, controls the outputs heard from the speaker systems. The four selector positions provide a convenient means for obtaining the proper stereo or monophonic outputs, in conjunction with your choice of inputs.

STEREO REVERSE: When listening to a stereo program source, the *Channel A* input is connected to the *Channel B* speaker output, with the *Channel B* input going to the *Channel A* speaker output. This position provides a way for switching the speaker outputs so that the spatial arrangement of sound — from left to right — is what you desire.

STEREO: In this position, the *Channel A* input goes to the *Channel A* speaker output, and the *Channel B* input to the *Channel B* speaker output. Use this, or the STEREO REVERSE position, whichever provides the best stereo results.

CHANNEL A: With the Output Selector in this position, any *Channel A* input can be heard over both the *Channel A* and *Channel B* speakers. Thus, the full power of both channel amplifiers and the panoramic effect of two speaker systems is available for monophonic listening.

CHANNEL B: This position of the Output Selector permits any *Channel B* input to be heard over both the *Channel A* and *Channel B* speaker systems.

audio controls . . .

The audio controls on the *X-101* allow you to vary the volume and characteristics of program material.

VOLUME CONTROL: Listening level at your speakers is controlled by the setting of the Volume Control. This is the master volume control for your entire sound system. Turning the knob from MIN to MAX results in increasing sound from both speaker systems.

LOUDNESS CONTOUR: Playing a program more softly than the original performance has a definite effect on what we hear, and scientific testing has established just what this effect is. As the relative volume of sound is reduced, our natural hearing sensitivity drops off more rapidly in the bass and upper treble than it does in the middle frequency range. A great deal of the bass and some of the high frequencies seem to be missing from the music. The lower the relative volume on reproduction, the more we notice this effect. In order that we can listen at low levels without being deprived of a part of the music, a Loudness Contour Control is provided. The circuit operated by this control automatically compensates for low-level loss of hearing sensitivity in accordance with well-established test curves, or 'contours'.

Switching the Loudness Contour Control to the ON position permits the circuit to work automatically. It increases the amount of loudness compensation as you lower the volume, and decreases the compensation as you increase the volume.

RUMBLE FILTER: Turn this switch to the ON position if you encounter rumble or other low-frequency disturbances when using your tuner, record player or tape deck.

BASS TONE CONTROL: The Bass Control, located at the mid-left position on the *X-101* panel, consists of a dual knob. The smaller knob, marked with a triangle, controls the bass response in *Channel A*. The larger knob, marked with a dot, regulates the bass tone in *Channel B*.

When the marker of either knob is at the NORMAL position, the bass response in the corresponding channel is uniform. Turning the control clockwise from this position towards MAX increases the bass output. Rotating the control counterclockwise towards MIN decreases the bass tone. It is not advisable to provide a large degree of bass output at high levels as this may overload the system and produce acoustic feedback.

The *X-101* is shipped from the factory with the Bass Control knobs ganged by means of a pin which locks the small *Channel A* knob to the large *Channel B* knob. This permits the user to conveniently regulate the bass output in both channels simultaneously. When it is desired to control the bass response in each channel separately, the two control knobs must first be unlocked. This is done by sliding the small inner knob off the shaft, removing the holding pin and replacing the inner knob on the shaft. Separate bass controls permit added flexibility in each channel and also allow you to make use of the crossover facilities of the *X-101* as outlined below.

TREBLE TONE CONTROL: The Treble Tone Control, located at the mid-right position of the *X-101* panel, is also a dual-knob control. It is used to control the treble response in each channel in exactly the same manner as described above for the Bass Tone Control. The Treble control is also shipped with the holding pin in place for ganged operation. If separate operation is required for each channel, remove this pin as indicated for the Bass Control.

The Bass and Treble controls on the *X-101* can be used to achieve a crossover network with monophonic program material, feeding high frequencies to one set of speakers and the lows to the other. This tone separation produces, from monophonic sources, an effect which is similar to stereo. To provide crossover operation, set the Bass control on the *X-101* so that the smaller knob is at NORMAL and the larger knob is at MIN. Set the Treble Control so that the small knob is at MIN and the large knob at NORMAL.

If your monophonic program source has been plugged into a *Channel A* input on your *X-101*, then set the Output Selector to CHANNEL A. If the program is being fed through *Channel B*, the Output Selector is turned to CHANNEL B.

balance . . .

The use of two sound channels, whether from a stereophonic or monophonic program source, can result in a slight imbalance in the volume from one channel speaker system and the other. This can be due to a slight difference in level between the two sources of a stereo program, a slight difference in the amplification on each channel, a difference in speaker efficiency, or a difference in room acoustics for each speaker.

The BALANCE control is set by ear. Turning the control to the left increases the volume from the speaker on *Channel A*, while simultaneously decreasing the relative volume of sound coming over the speaker on *Channel B*. Turning the control to the right increases the volume on *Channel B*, while simultaneously decreasing it on *Channel A*. Set the control so you obtain equivalent volume from the two speaker systems.

input level adjustments . . .

Four Input Level Adjustments are provided on the *X-101*, two on *Channel A* and two on *Channel B*. One pair is for the Phono-Tape Inputs, the other pair for the Aux 1 Inputs. Looking at the front panel, the four adjustments are on the left-hand side of the chassis just behind the front panel.

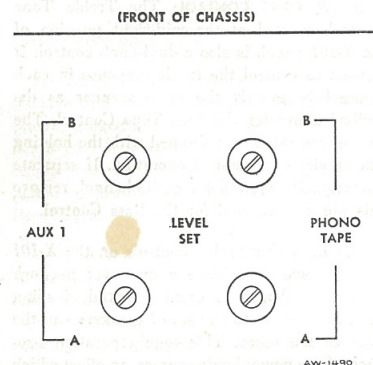


Fig. 3. Input Level Set Adjustments

SHORT GUIDE TO OPERATING THE X-101

Please bear in mind that this section is intended only as a guide, not as a substitute, for the detailed instructions preceding it. Its purpose is to serve as a checklist of the steps to follow when operating your high fidelity system.

ONE: Turn on the AC switch. This supplies power to the *X-101* chassis, and also to any equipment connected to the auxiliary receptacles on the rear panel.

TWO: Set the Input Selector to the correct position for connecting the input channel desired. If you are using the *Channel A* monitor facility with your monophonic recorder-repro-

ducer, it is not necessary to set the Input Selector for straight tape playback. Simply operate the tape recorder in accordance with instructions supplied with it.

THREE: Switch the Output Selector to the position supplying the speaker outputs desired.

FOUR: Set the audio controls, as necessary, to obtain the sound characteristics desired. Make these adjustments in the following order: Volume, Loudness Contour, Rumble Filter, Bass and Treble Tone.

FIVE: Set the Channel Balance Control, if necessary, for proper volume balance between *Channel A* and *Channel B* in the listening area.

If it appears necessary to adjust any of the input level settings to avoid overloading the *X-101*, proceed as follows: Turn the Input Level Adjustment all the way down (counterclockwise.) Connect the lowest-level program source which you expect to use with this particular input. Set the VOLUME control on the front panel fully clockwise to maximum. Then slowly turn the Input Level Adjustment until the maximum desired volume is heard in the loudspeakers.

After adjusting the input level for the first program source, make the same adjustments for the other program sources you expect to use. Proceed in the same manner as outlined above. In those cases where there is no input level set for a particular program source on the *X-101*, use the output level adjustment on the associated equipment.

If one of the input levels of *Channel A* differs noticeably from the corresponding *Channel B* level, the Input Level Adjustments may be used to equalize the input levels. Make certain first, however, that the BALANCE control on the front panel is in NORMAL position. This control should be in NORMAL whenever Input Level Adjustments are made.

phase inverter balance . . .

Phase inverter balance adjustments for both *Channel A* and *Channel B* are located on the top surface of the chassis. These adjustments have been carefully pre-set at the factory. Do not try to reset these adjustments without proper equipment. If a defect is suspected in the phase inverter stage, consult your FISHER Dealer.

tube location and function . . .

CHANNEL A: V1, two-stage preamplifier. V2-A, 1st voltage amplifier. V2-B, tone control amplifier. V3-A, 2nd voltage amplifier. V3-B, phase inverter. V4-V5, push-pull power amplifier.

CHANNEL B: V6, two-stage preamplifier. V7-A, 1st voltage amplifier. V7-B, tone control amplifier. V8-A, 2nd voltage amplifier. V8-B, phase inverter. V9-V10, push-pull power amplifier.

CHANNELS A AND B: V11, rectifier.

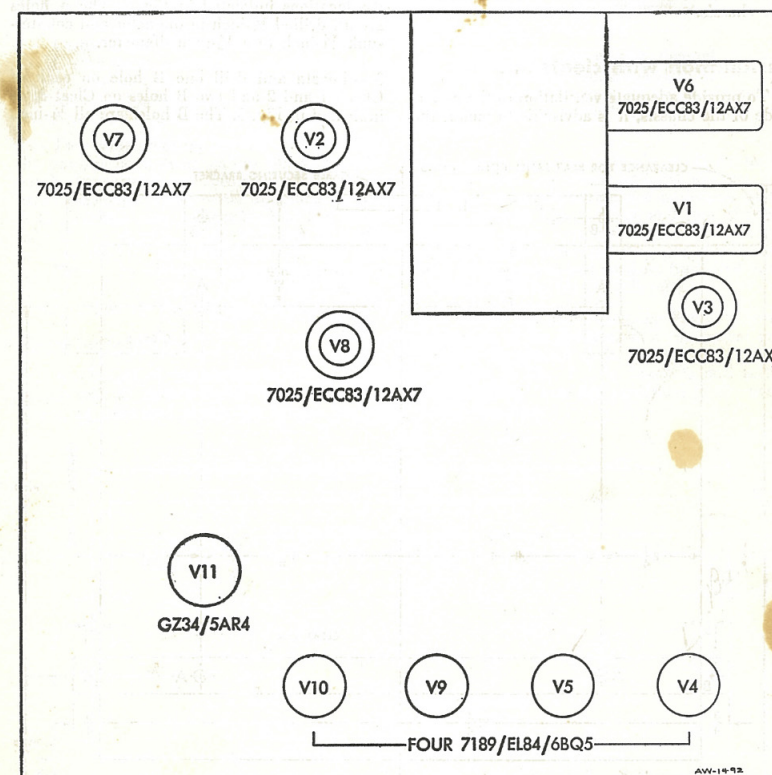


Fig. 4. Tube Location Diagram

CUSTOM INSTALLATION

The directions and illustrations in this section enable you to carry out a neat and attractive mounting of your FISHER in your own custom installation. Adequate ventilation is absolutely necessary. Never install the chassis in a totally enclosed space nor place it too close to other heat-producing equipment.

The Fisher X-101 is shipped with the four plastic mounting feet screwed to the bottom of the chassis. If it is desired to use this unit on an open shelf or table top, no additional installation is required. The mounting feet raise the chassis so that the front panel clears the surface on which the unit rests and also provide the unit with proper ventilation.

To install the X-101 in a custom cabinet, however, the mounting feet must first be removed. This is done by loosening the mounting screws which fasten the feet to the underside of the chassis.

installation with cleats . . .

To provide adequate ventilation to the underside of the chassis, it is advisable to mount the

X-101 on wooden cleats and then fasten the cleats to the bottom of the custom cabinet. For this installation, proceed as follows:

1—Fashion three cleats from a strip of wood 25½ inches long with a cross section of at least ¾" by ¾". For Cleat 1 and 2, cut two pieces of 5⅝ inches each off this length. The remaining piece, approximately 14¼ inches long, is used for Cleat 3.

2—Locate and drill one A hole on each of Cleats 1 and 2 and two A holes on Cleat 3, at the locations indicated in Fig. 5. The A holes are all drilled $\frac{1}{4}$ -inch in diameter and counter-sunk $\frac{1}{4}$ -inch to a $\frac{1}{2}$ -inch diameter.

3—Locate and drill one B hole on each of Cleats 1 and 2 and two B holes on Cleat 3, as indicated in Fig. 5. The B holes are all $\frac{1}{4}$ -inch

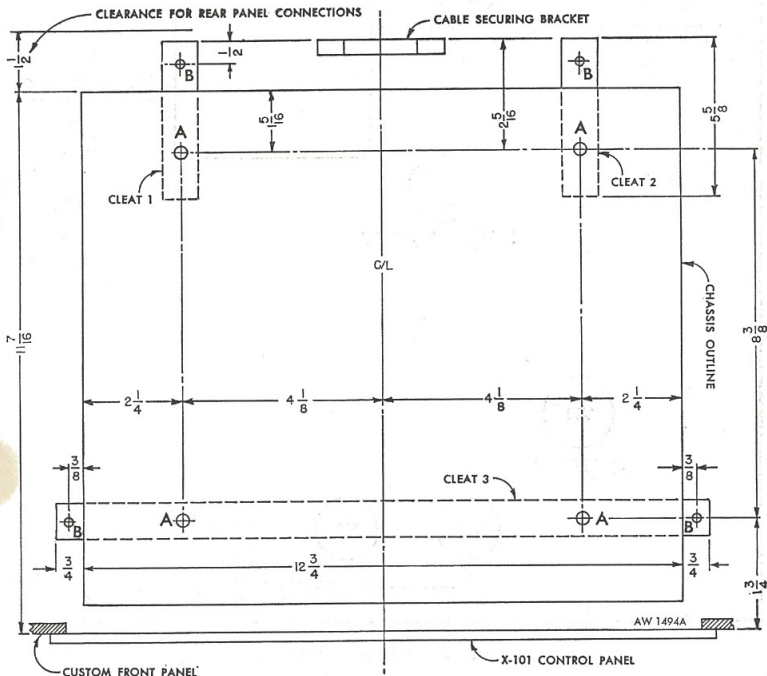


Fig. 5. Top View Custom Cabinet Installation with Cleats

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in diameter and need not be countersunk.

4—Attach Cleats 1, 2 and 3 to the underside of the *X-101* as shown in Fig. 5, utilizing the mounting holes formerly employed in mounting the four plastic legs. You may use the four 1-inch mounting screws and flat washers, furnished in the accessories envelope with the *X-101*, for mounting the cleats to the chassis.

5 — Saw a rectangular cutout through the front panel of your custom cabinet to the dimensions shown in Fig. 6. The distance between the top surface of the mounting shelf and the bottom of the cutout must be the same as the height of the cleat.

6—Insert the *X-101* chassis, with the cleats mounted in place, through the custom front panel cutout. Slide the chassis as far into the cabinet as possible so that the rear of the *X-101* control panel butts up tightly against the front of the custom panel. It is *not* necessary to remove the control panel of the *X-101* from the chassis.

7—Fasten the *X-101* chassis to the cabinet shelf with four mounting screws inserted through the B holes in Cleats 1, 2 and 3, as indicated in Fig. 5. Use No. 10 by 1½-inch wood screws for this purpose.

8—Two cable-securing brackets, for gathering the various connecting cables together underneath the chassis, are furnished in the accessories envelope along with attaching screws. Both brackets may be mounted to the underside of the chassis, using the four mounting holes on the bottom cover of the *X-101*. In some cases it may be advisable to mount one of these brackets to the custom cabinet shelf instead, at approximately the position shown in Fig. 5.

flush installation . . .

If the height of the custom cabinet will not permit you to mount the X-101 by means of cleats, as described above, the chassis may be

mounted directly on the cabinet shelf. If the chassis is mounted in this way, however, it is essential that cutouts be made in the shelf as outlined below and that the back of the cabinet remain completely open, in order to provide proper ventilation. For a flush-mounted installation, proceed as follows:

1—Locate and drill the four A holes in the bottom shelf of the custom cabinet as indicated in Fig. 7. The holes are all drilled $\frac{1}{4}$ -inch in diameter.

2—Saw cutouts in the bottom shelf following the outlines shown in Fig. 7. It is absolutely essential that these cutouts be made as indicated so that the necessary ventilation will be supplied to the X-101 chassis.

3 — Saw a rectangular cutout through the front panel of your custom cabinet to the dimensions shown in Fig. 6. Note that the bottom of the cutout coincides with the top of the mounting shelf, since cleats are not used in this installation.

4—Insert the *X-101* chassis through the custom front panel cutout. Slide the chassis in all the way so that the rear of the *X-101* control panel fits tightly against the front of the custom panel.

5 — Fasten the chassis to the shelf by means of four mounting screws and flat washers. The screws are inserted from the underside of the shelf, through the A holes and into the four mounting holes formerly employed for attaching the plastic mounting feet. You may use the four 1-inch screws and washers furnished in the accessories envelope for this purpose.

6—Mount the cable securing brackets to the underside of the X-101 or to a convenient position on the cabinet shelf. A suggested location is shown in Fig. 7. The brackets and screws for mounting them are furnished in the accessories envelope.

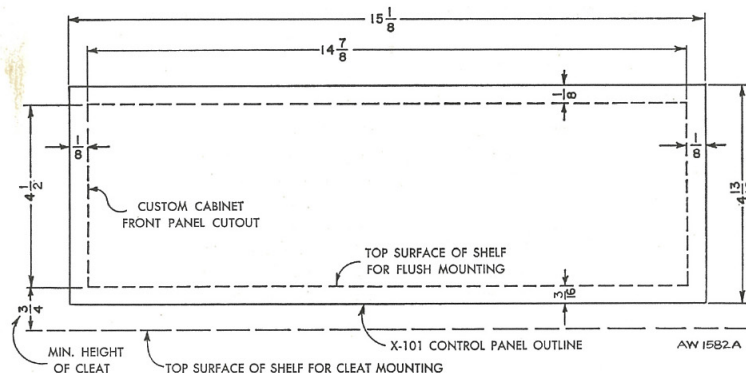


Fig. 6. Front Panel Cutout for Mounting X-101 in Custom Cabinet



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