OPERATING INSTRUCTIONS AND WARRANTY

THE FISHER

X-101-B

STEREOPHONIC

Master Control-Amplifier

PRICE $1.00

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 just acquired came into being—its appearance, its functions, its quality of performance, its convenience of use.

But the end step—your purchase—is merely a beginning. A door has now opened, for you and your family, on virtually unlimited years of musical enjoyment. Recognizing that one of the keys to pleasurable ownership is reliability, we have designed this instrument to give long and trouble-free service. In fact, instruments we made over twenty-three years ago are still in use today.

Remember always that we want this equipment to give you the best performance of which it is capable. Should you at any time need our assistance toward that objective, please write me personally.

AN IMPORTANT SUGGESTION

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 *Founder and President*

Fisher Firsts – Milestones In the History of High Fidelity Reproduction

1937 First high-fidelity sound systems featuring a beam-power amplifier, inverse feedback, acoustic speaker compartments (infinite baffle and bass reflex) and magnetic cartridges.
1937 First exclusively high fidelity TRF tuner, featuring broad-tuning 20,000 cycle fidelity.
1937 First two-unit high fidelity system with separate speaker enclosure.
1938 First coaxial speaker system.
1938 First high fidelity tuner with amplified AVC.
1939 First 3-Way Speaker in a high fidelity system.
1939 First Center-of-Channel Tuning indicator.
1945 First Preamplifier-Equalizer with selective phonograph equalization.
1948 First Dynamic Range Expander with feedback.
1949 First FM-AM Tuner with variable AFC.
1952 First 50-Watt, all-triode amplifier.
1952 First self-powered Master Audio Control.
1953 First self-powered, electronic sharp-cut-off filter system for high fidelity use.
1953 First Universal Horn-Type Speaker Enclosure for any room location and any speaker.
1953 First FM-AM Receiver with a Cascode Front End.
1954 First low-cost electronic Mixer-Fader.
1954 First moderately-priced, professional FM Tuner with TWO meters.
1955 First Peak Power Indicator in high fidelity.
1955 First Master Audio Control Chassis with five-position mixing facilities.
1955 First correctly equalized, direct tape-head master audio controls and self-powered preamplifier.
1956 First to use Power Monitor in a home amplifier.
1956 First All-Transistorized Preamplifier-Equalizer.
1956 First dual dynamic limiters in an FM tuner for home use.
1956 First Performance Monitor in a high quality amplifier for home use.
1956 First FM-AM tuner with TWO meters.
1956 First complete graphic response curve indicator for bass and treble.
1957 First Golden Cascode FM Tuner.
1957 First MicroRay Tuning Indicator.
1958 First Stereophonic Radio-Phonograph with Magnetic Stereo Cartridge.
1959 First high-quality Stereo Remote Control System.
1959 First complete Stereophonic FM-AM Receiver (FM-AM tuner, audio control, 40-watt amplifier).
1959 First high-compliance plus high-efficiency free-piston speaker system.
1960 First to use MicroRay for FM tuning and as a Recording Audio Level Indicator.
1960 First complete stereo FM-AM receiver with 60-watt power amplifier and new 7591 output tubes.
1960 Smithsonian Institution, Washington, D.C., accepts for its collection America's first commercially manufactured high fidelity radio-phonograph, made by Avery Fisher in 1937.
1960 First reverberation device, for use in high fidelity equipment – The Fisher Dynamic Spacexpander.
1960 First stereo tuner with MicroTune.
1960 First FM tuner with six IF stages.
1960 First FM tuner with five limiters.
1960 First front panel antenna selector switch, 72-300 ohm, Local-Distant positions.
1961 First Multiplex units with Stereo Beacon and automatic switching, mono to stereo.
1961 First complete receivers with Multiplex.
1961 First FM-Stereo-Multiplex tuners with Stereo Beam.
1961 First loudspeaker system with frameless woofer cone, eliminating all parasitic resonance.
1961 First internal switching system to permit immediate tape playback with use of all controls and switches.

THE FISHER X 101-B

STEREOPHONIC

Master Control-Amplifier

THE FISHER *X-101-B* was designed to provide maximum circuit flexibility with operational simplicity at moderate cost, while maintaining the Laboratory Standards that distinguish all FISHER components. This has been achieved on a single superbly engineered chassis combining a stereophonic Preamplifier-Equalizer and Tone Control circuit, a dual-channel 56-watt Power Amplifier, and a self contained Power Supply.

The preamplifier section contains 14 input jacks to which may be connected every type of monophonic or stereophonic cartridge, tape deck, tape recorder and tuner on the market. Located on the front panel are 19 controls and switches which permit the selection of any program source for either monophonic or stereophonic operation, and the adjustment of volume, balance, and tonal characteristics through every nuance of the audio spectrum. Advanced electronic circuitry, and the careful selection of parts, reduce hum, noise and distortion below the threshold of audibility. The power amplifier section, equipped with matched pairs of 7591 tubes operating well below their rated power value, for extended life, has excellent overload characteristics and a very short recovery time, resulting in performance that is superior to amplifiers with a higher power rating. The *X-101-B* features a new type of center channel output for the direct connection of a center speaker, without the need of an additional amplifier. A low level center channel output is also provided; it may be used either with a center channel amplifier and speaker or with a remote installation. (In another room.)

Once you have operated the *X-101-B* you will realize why FISHER products have achieved a world-wide reputation. The quality underlining this reputation will assure you of years of trouble-free operation and unsurpassed listening pleasure.

A NOTE ON STEREOPHONIC SOUND

THE DEVELOPMENT of stereophonic sound has brought us close to achieving "Concert Hall" realism in the home. This dual-channel system offers a distinct advantage over monophonic (single-channel) systems by virtue of two important audio characteristics: the dimensions of *direction* and *depth*. These live sound qualities are for the most part missing in monophonic systems because recordings are made and reproduced over a single channel. This is somewhat analogous to listening to music with one ear. Stereophonic recording techniques, however, utilize two separate banks of microphones which are positioned in the left and right sections of the orchestra. In this arrangement, the microphones receive the musical sounds in much the same manner as the two ears of a listener. The sound picked up by each bank of microphones is then fed to independent channels and recorded on disks or tape, or transmitted over separate channels of a stereophonic broadcast.

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That is why two separate sound channels are required to reproduce a stereophonic recording or broadcast in the home. The stereo sound output of a record player, tape recorder or tuner is fed to two separate amplifier channels, which in turn drive two separate speaker systems. Thus, instruments located on the left and right sides of the orchestra are heard predominantly in the left and right speakers, heard mid-way between the two speaker systems. If the sounds which should normally appear midway between the left and right speakers are lost in the middle of the stereo sound pattern, (usually caused by wide placement of the speakers), various methods can be used to fill in the middle.

With two speakers, the *X-101-B* provides a stereo Dimension control, which, when turned toward the MONO position will decrease the stereo separation between left and right speakers. This decreased separation between the speakers will appear to fill in tones to cover the middle.

A second method of solving this problem, is the addition of a center speaker, either independently driven by a center channel amplifier, or derived from the left and right channel amplifiers. The *X-101-B* provides Center Speaker terminal jacks on the top of the chassis.

The *X-101-B* also provides two separate output jacks for connection to a separate center channel amplifier. One jack (CENTER CHAN OUT), provides an output that is controlled by the *X-101-B*, and the other jack (RCRDR OUTPUT) provides an output that allows independent control of the signal by the additional amplifier.

If the center speaker method, of "filling in the hole of the stereo pattern," is chosen, it is recommended that the FISHER-WS-1 speaker be used and the other speakers be placed a bit further apart. This increased width will add greater spread to the stereo pattern. The result is a startling sense of *presence* realized only at a live orchestral performance.

INSTALLING THE X-101-B

WARNING: The FISHER *X-101-B* must *not* be operated before connecting loudspeakers, or equivalent load resistors, to the Speaker Terminals in each channel; otherwise, serious damage to the equipment may result. If you have not yet completed your stereophonic system, and are temporarily using only one channel of the *X-101-B*, use Channel A and be sure to connect an equivalent load resistor to the Speaker Terminals of the unused channel. See "Speaker Connections."

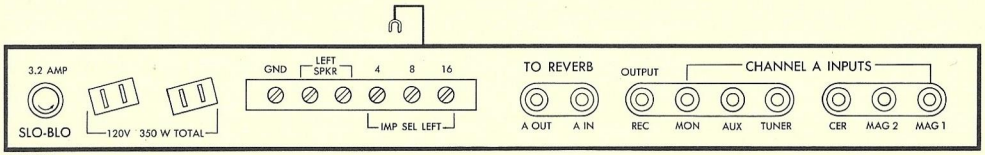

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FIGURE 1. Rear panel of X-101-B

This unit may be installed in any convenient location receiving *adequate* ventilation. This is important since excessive heat will shorten the life of any electronic instrument. Do not install the *X-101-B* above other heat-producing equipment or in a totally enclosed area. If you install it in a cabinet, leave the back open and at least one inch away from the wall, and leave at least one inch on each side of the chassis. If the cabinet is made of wood, and not provided with ventilation grilles on top leave *at least* 3 or 4 inches of space between the top of the tubes and the cabinet.

Should you wish to install the *X-101-B* in your own cabinet, directions and diagrams are provided in the last section of this booklet. (Two FISHER cabinets are available from your FISHER dealer. These are the Model MC-2, in metal, and the 10-U in walnut and mahogany. Either will convert the *X-101-B* into an attractive part of your room decor.) Temporarily, place the unit in its approximate location to permit an estimate of cable lengths to associated components.

Location of Loadspeakers

To obtain optimum stereophonic performance from your FISHER equipment, use two loudspeakers, or speaker systems, as nearly alike as possible. Stereophonic sound utilizes the left and right speakers to coincide with the music originating on the left and right sides of an orchestra, respectively. To recreate the original orchestral placement in your room, connect the speaker on your left (as viewed from the listening area) to the Left speaker terminals, and the speaker on your right to the right speaker terminals. Certain precautions should be observed in the final location of these speakers.

Where possible, speakers should be placed against a flat wall and separated by a *minimum* of five feet. As a rule of thumb, the best listening area will be at a distance about 1½ times as great as the separation between the speakers. For example: if the speakers are six feet apart, listening will be best in an area about nine feet from, and opposite, the two systems. Because of varying acoustical conditions, however, the speakers may have to be repositioned to achieve the best stereophonic results.

If you place wall-type speaker systems in the room corners, undesirable effects may be introduced. Try placing them, instead, on the same wall, a short distance from the corners.

If you own two corner-type speaker systems, experiment by leaving one in a corner and placing the other against a flat wall. Then compare this arrangement with the original one.

In a long narrow room, placing the speakers on the long wall may bring better results than placing them on the short one.

Speaker Connections

The Left speaker terminal strip is located on the rear panel, as shown in Figure 1. (The terminal markings are on the top chassis directly above.) The speaker system to your left (as viewed from the listening area) should be connected to the terminals marked LEFT SPKR. Use ordinary lamp cord for distances up to 50 feet. Heavier wire should be used for greater lengths. In order to select the proper

impedance for your loudspeaker, the wire protruding from the chassis directly above the terminal strip should be connected to the 4, 8 or 16 ohm terminal lug on the rear panel, marked IMP. SEL. LEFT. The speaker impedance should be indicated in the instruction booklet provided with the speaker.

ONE SPEAKER: If you are temporarily using only one channel, you must connect a resistor rated at 8 to 10 ohms and 10 watts to the COM and 4-ohm terminal lugs of the Right speaker terminal strip located on the top chassis (see Figure 3). Then turn the Balance control on the front panel fully counter-clockwise. *If this is not done, serious damage to the amplifier may result.*

TWO SPEAKERS: The speaker system to your right (as viewed from the listening area) should be connected to the Right speaker terminal strip on the top chassis. One wire from the speaker should be connected to the COM terminal lug and the other to the 4, 8 or 16 ohm lug, depending on the impedance of your loudspeaker. *Speaker leads should never be allowed to touch each other or the GND terminal lug.* This lug is used solely to ground the record player or other equipment to the *X-101-B* to reduce any possible hum.

THREE SPEAKERS: After connecting the Left and Right speakers, the Center Channel speaker should be connected to the CENT terminal lugs (on the top of the chassis). If you wish to vary the volume of the center speaker independently of the other speakers, an L-pad with twice the impedance of your center speaker, should be added between the speaker and the terminal strip.

THREE SPEAKERS WITH CENTER AMPLIFIER: If you possess an additional amplifier which you wish to use for your center channel, connect a shielded coaxial cable between the CENT CHAN jack on the top chassis of the *X-101-B* and the input jack of the additional amplifier. This amplifier need not have tone controls, since these are provided by the *X-101-B*, but it should include a volume control or input level control so that you can adjust the center volume to the proper level.

This connection can also be used to supply a monophonic blended signal (Channel A + Channel B) to a high fidelity installation in an adjoining room or some other remote location.

CONNECTING ASSOCIATED COMPONENTS

ON THE REAR PANEL and top chassis of the *X-101-B* are 14 input jacks and 5 output jacks to which can be connected tuners, tape recorders, tape decks, and record players with ceramic and magnetic cartridges. (See Rear Panel, Figure 1.) The Channel A jacks are located directly on the rear panel, while the Channel B jacks are located on top of the chassis just above the rear panel. Information for connecting the various types of components are contained in this section. At the conclusion of this section, a table is provided listing all inputs, their impedances, and the components that may be connected to them, in addition to those outlined here.

Auxiliary AC Receptacles

The two auxiliary receptacles on the rear panel may be used as power outlets for your associated components. The combined power consumption of these components may not exceed 350 watts. Power to the receptacles is supplied only when the power to the *X-101-B* is turned on.

Record Players and Changers

MAGNETIC STEREO CARTRIDGE: Connect the A and B output cables from the record player to the Channel A and B, MAG 2 input jacks, (or to MAG 1 if these jacks are not occupied.)

MAGNETIC MONOPHONIC CARTRIDGE: Connect the output cable from the record player to the Channel A *or* B, MAG 2 input jack; (or to MAG 1 if these jacks are not occupied.)

MAGNETIC HIGH LEVEL CARTRIDGE: Make connections to the Channel A and B, CER input jacks for the stereophonic type. Use Channel A *or* B for the monophonic type.

IMPORTANT: Because the impedance of these cartridges may vary with different manufacturers, a resistor may have to be strapped across the output erminals to insure the correct impedance match. Tables 1 and 2 will serve as a guide for using magnetic *high* level and magnetic *low* level cartridges. Remember to strap a resistor across *each output* of a *stereophonic* cartridge.

CERAMIC STEREO CARTRIDGE: Connect the A and B output cables from the record player to the Channel A and B, CER input jacks. If these are occupied, you can use AUX input jacks, but you will lose some bass response. (This loss can be compensated somewhat with the Bass controls.)

CERAMIC MONOPHONIC CARTRIDGE: Connect the output cable from the record player to the Channel A *or* B, CER input jack. If these are occupied, use AUX input jacks.

Cartridge Loading impedance required	47K	39K	33K	27K	22K
Value of resistor to be added	none required	470K	150K	82K	47K

TABLE 1. Matching low level magnetic cartridges to MAG 2 inputs.

Cartridge Loading impedance required	100K	82K	62K	56K	47K	39K	33K	27K	22K
Value of resistor to be added	none required	680K	220K	120K	100K	68K	47K	39K	27K

TABLE 2. Matching low level magnetic cartridge to MAG 1 inputs and high level magnetic or ceramic cartridge to CER inputs.

IMPORTANT: Do not connect components to *both* the MAG 2 and CER input jacks at the same time. These jacks are electrically paralleled and the input circuit will be overloaded.

Tape Decks

A tape deck is the tape transport mechanism minus the preamplifier and audio controls. To provide playback for recorded tapes, it must be connected to a control amplifier. These facilities are provided by the *X-101-B*.

STEREOPHONIC TAPE DECK: Connect the A and B (left and right) output cables from the tape deck to the Channel A and B, MAG 1 input jacks on the *X-101-B*.

MONOPHONIC TAPE DECK: Connect the output cable from the tape deck to the Channel A *or* B, MAG 1 input jack.

Tape Recorders

A standard stereophonic or monophonic tape recorder (equipped with its own preamplifier) may be used with the *X-101-B* in two ways. First, it can be used to record the output of any component being played through the *X-101-B*. Secondly, it can play through the *X-101-B* previously recorded program material. Permanent connections between the recorder and the *X-101-B* can be made to carry out these functions.

RECORDING CONNECTIONS:

STEREOPHONIC RECORDER: Connect cables from the Channel A and B, REC OUTPUT jacks on the *X-101-B* to the A and B (left and right) recording input jacks on the recorder.

MONOPHONIC RECORDER: Connect a cable from the Channel A *or* B REC OUTPUT jack on the *X-101-B* to the recording input jack on the recorder.

NOTE: Any program source connected to the Channel A *or* B input jacks of the *X-101-B* can be fed to *either* or *both* REC OUTPUT jacks, depending on the position of the Mode Selector swtich .

PLAYBACK CONNECTIONS:

STEREOPHONIC RECORDER: Connect cables from the Channel A and B (left and right) output jacks on the recorder to the Channel A and B MON input jacks on the *X-101-B*.

MONOPHONIC RECORDER: Connect a cable from the output jack on the recorder to the Channel A *or* B MON input jack on the *X-101-B*.

Spacexpander

These are two possible methods of connecting the FISHER *Dynamic Spacexpander*, Model K-10. If your high fidelity system includes a tape recorder which is connected to the tape monitor facilities of the *X-101-B* (see preceding section), you should use the special jacks on the *X-101-B* chassis for the connection of the *Spacexpander*. In this case, you will be able to add reverberation directly to your tape recordings, but you will not be able to add additional reverberation during playback. If you wish to add reverberation during playback, switch the Input Selector to the Tape Play position. On the other hand, the *Spacexpander* should be connected to the tape monitor facilities if they are not being used with a tape recorder, since this will permit you to use the Tape Monitor switch as a reverberation on-off switch.

Connections When Using A Three-Head Tape Recorder:

1—Locate the special *Spacexpander* jacks on the top of the *X-101-B* chassis ; remove the shorting bars and store them in a safe place for possible future use.

2—Make the following connections:

a) CHANNEL A OUT jack on *X-101-B* to CHANNEL A OUTPUT jack on *Spacexpander*.

b) CHANNEL A IN jack on *X-101-B* to CHANNEL A INPUT jack on *Spacexpander*.

c) CHANNEL B OUT jack on *X-101-B* to CHANNEL B OUTPUT jack on *Spacexpander*.

d) CHANNEL B IN jack on *X-101-B* to CHANNEL B INPUT jack on *Spacexpander*.

CAUTION: The shorting bars must be inserted as shown in Figure 3 when the *Spacexpander* is not connected to the *X-101-B*. Otherwise, the *X-101-B* will be completely inoperative.

Connections When Not Using A Three-Head Tape Recorder:

1—Channel A REC output jack on *X-101-B* to CHANNEL A INPUT jack on *Spacexpander*.

2—Channel A MON input jack on *X-101-B* to CHANNEL A OUTPUT jack on *Spacexpander*.

3—Channel B REC output jack on *X-101-B* to CHANNEL B INPUT jack on *Spacexpander*.

4—Channel B MON input jack on *X-101-B* to CHANNEL B OUTPUT jack on *Spacexpander*.

Tuners

The *X-101-B* is equipped to accommodate various combinations of Tuner outputs. These include monophonic FM, monophonic AM, monophonic FM-AM, *stereophonic* FM-AM, and stereophonic FM-Multiplex.

MONOPHONIC FM AND/OR AM: Connect an output cable from the FM tuner to Channel A TUNER input jack, and a cable from the AM Tuner to Channel B TUNER input jack.

MONOPHONIC FM-AM: Connect an output cable from the Tuner to Channel A *or* B TUNER input jack.

INPUT JACK	IMPEDANCE	LEVEL	COMPONENTS TO CONNECT
MAG 1†	100K	Low	Tape Deck (or low level Magnetic Cartridge, if MAG 2 is occupied.)
MAG 2*†	42K	Low	Magnetic Cartridge (low level.)
CER*†	100K	Medium	Magnetic Cartridge (high level.) Ceramic Cartridge.
AUX	560K	High	Tape Recorder (with *common* playback and recording head.) FM, AM, and FM-AM Tuner. Short-Wave Tuner. TV sound output.
TUNER	560K	High	FM, AM, and FM-AM Tuner.
MON	260K	High	Tape Recorder (with *separate* playback and recording heads.) Other high level signal sources (as in the AUX inputs.)

*Do not connect components to the MAG 2 and CER input jacks at the same time. These jacks are electrically paralleled and input circuit will be overloaded.

†The impedance of these jacks (MAG 1 and MAG 2) can be changed, to accommodate cartridges of different impedances, by strapping a resistor across the cartridge or the input jack. See Tables 1 and 2.

TABLE 3. Component Connections to Input Jacks.

STEREOPHONIC FM-AM: Connect a cable from the FM section of the Tuner to Channel A TUNER input jack, and a cable from the AM section to the Channel B TUNER input jack.

NOTE: The FM portion of an FM-AM stereophonic broadcast is heard on Channel A (left speaker), while the AM portion of the broadcast is heard on Channel B (right speaker.) If you are using a *monophonic* FM-AM Tuner you must connect an additional AM or FM Tuner to the *X-101-B* to listen to FM-AM stereo broadcasts.

STEREOPHONIC FM-MULTIPLEX: To receive the FM-Multiplex signal, your FM tuner must be equipped with an adaptor such as the FISHER MPX-100. Connect the adaptor and Tuner to the *X-101-B* as described in the operating instructions for these units.

Other Program Sources

If you wish to connect a short-wave tuner or the audio output from your TV set to the *X-101-B*, use Channel A or B, AUX input jacks WARNING: Consult with your serviceman before you make connections from your TV set.

HOW TO USE THE CONTROLS

AFTER YOU HAVE MADE all necessary connections, plug the power cable extending from the rear panel into a wall outlet supplying 105 to 120 volts AC *only*, at 50 to 60 cycles. (Where line voltage is lower or higher, a step-up or step-down transformer will be necessary.) Total power consumption for this unit, *not including associated components*, is 160 watts. All operating controls are on the front panel as illustrated on page 9. An explanation of the function of each control is provided in the following section. *NOTE:* A simplified At-a-Glance Operating Guide is furnished at the conclusion of this section. This Guide will enable you to select any program source you wish to hear and to set all necessary controls in a matter of seconds.

AC Off and Master Volume

The AC Off switch supplies power to the *X-101-B* and is combined with the Master Volume control. Turning this switch slightly clockwise until it clicks will supply power to the unit, as well as to any components connected to the Auxiliary-AC receptacles, and light the green jewel. The Master Volume control varies the level of sound simultaneously on both channels. Turning this control in a clockwise direction increases the sound level at both speaker systems.

Selector Switch

This five-position switch is used to select any component connected to the input jacks of the *X-101-B*. The positions have the following purpose:

MAG 1: selects a tape deck (or a record player equipped with a low-level magnetic cartridge,) connected to the MAG 1 input jacks.

MAG 2: this position selects a record player equipped with a low-level magnetic cartridge, or a high level magnetic or ceramic cartridge connected to the MAG 2 or CER input jacks.

TUNER: use this position to select a tuner, or tuners, connected to the TUN input jacks.

AUX : in this position, you can select any component connected to the AUX input jacks, whether a tape recorder, or any other high level component.

TAPE PLAY: This position was especially designed for use with a tape recorder since it will enable you to use the full range of audio controls during playback in addition to providing complete tape monitoring facilities.

Tape Monitor Switch

IMPORTANT: The Tape Monitor switch (the third slide switch from the right) is used in the ON position only to play back recorded material from a tape recorder equipped with *separate recording and playback heads*, or to monitor this type of recorder while making a tape recording. This switch must remain in OFF position *at all other times*, otherwise the *X-101-B* will be inoperative. (Of course, if this type of recorder is connected to the AUX input jacks instead of the MON input jacks, the Tape Monitor switch should also be in OFF position.)

Equalization Switch

The Equalization switch is effective *only* when the Selector switch is in either MAG 1 or MAG 2 position; that, when you are playing either records, or tape (from a tape deck.) Its purpose is to provide RIAA equalization on PHONO position, and NARTB equalization on TAPE position. Set this switch to either PHONO or TAPE position, depending upon which type of program source you are playing. (This switch does *not* provide equalization for tape from a tape recorder, since this unit is connected to the AUX inputs.)

Mode Selector Switch

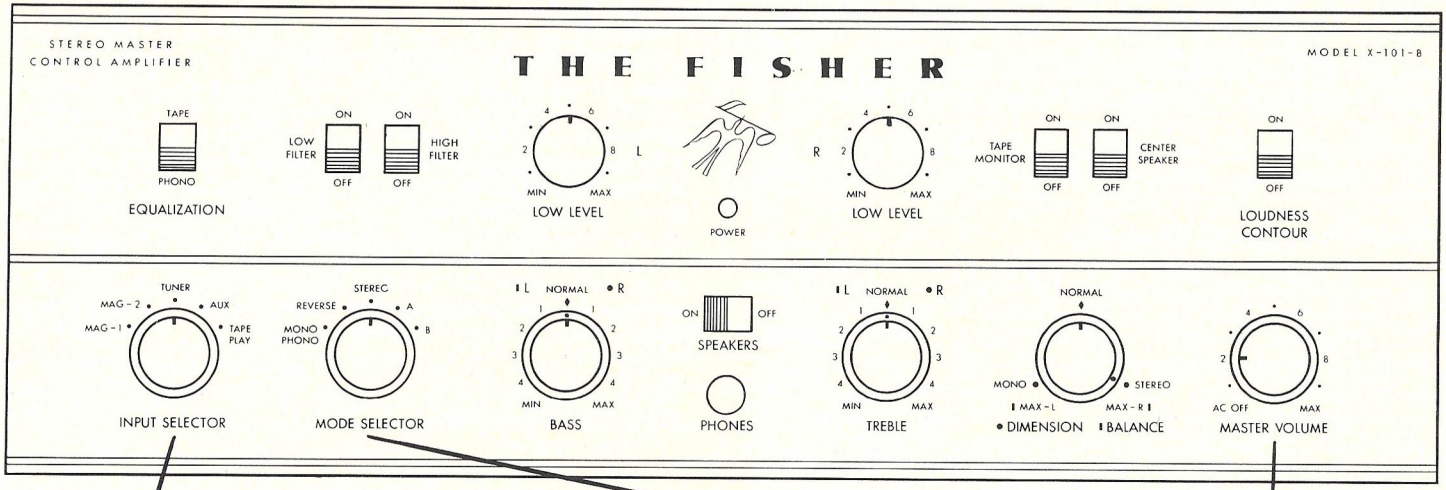
This switch permits the choice of any of five different modes of operation. These modes are as follows:

MONO PHONO: This position is used for playing all monophonic records with a stereo cartridge, and for all other program sources when it is desired to blend the signals from Channels A and B and send this blended signal to both the Left and Right Speaker systems. Vertical rumble and noise is cancelled by using this position.

REVERSE: Sends the Channel A signal to the Right Speaker system and the Channel B signal to the Left Speaker system. Since normal operation is just the opposite of this, the REVERSE position should only be used if the channels are crossed at the source (record or stereo radio) during a particular performance.

STEREO: This position is normally used for all stereo programs, whether on records, tape or radio. The Channel A signal is directed

A SHORT OPERATING GUIDE FOR THE 'MAN IN A HURRY'



STEP 2

Set ***INPUT SELECTOR*** to the program source you wish to hear.
MAG-1 or **MAG-2** to listen to a record.
TUNER to listen to a radio broadcast.
AUX to listen to any program source connected to the AUX jacks.
TAPE PLAY to listen to a tape recorder.

STEP 3

Set ***MODE SELECTOR*** switch to type of operation required.
MONO-PHONO to play monophonic record with a stereo cartridge.
STEREO to listen to *all* stereo program material (phono, radio or tape).
A for FM broadcast, or any program source connected to Channel A.
B for AM broadcast, or any program source connected to Channel B.

STEP 1

Turn on power by turning ***MASTER VOLUME*** control slightly clockwise until it clicks. Adjust later for desired volume.

NOTE: *Set all other switches and controls in the position shown.*

to the Left Speaker system and the Channel B signal to the Right Speaker system.

A: By selecting this position, one can listen to any monophonic program connected to a Channel A input jack through both speaker systems.

B: Any monophonic program connected to a Channel B input jack may be heard through both speaker systems by selecting this position.

Magnetic Input Level Controls

In a fully clockwise position, these controls will permit the full signal level from any components connected to the MAG 1, MAG 2, and CER input jacks to be fed to the amplifiers in Channel A and B. Use the numerical markers around each control as reference points.

Because the signals from the different program sources connected to the *X-101-B* may vary in strength, the sound level at the speakers may vary in intensity as you turn the Selector switch from one program source to another. This may require the readjustment of the Master Volume control each time a change is made. To minimize this condition, it is advisable to equalize the signal level from your associated components.

Most components are equipped with Level or Volume controls. These have the same function as the Magnetic Input Level controls. The signal level from each component can be adjusted by ear in the following manner:

1—Turn all Level controls on your components (including the Magnetic Input Level controls) to *minimum.*

2—Turn the Master Volume control on the *X-101-B* to *maximum.*

3—Adjust the Magnetic Input Level controls until the volume at the speakers is as loud as you will ever wish to hear it.

4—Turn the Selector switch to each position in turn and adjust the Level controls on the other components until the sound at the speakers is approximately equal to that of the MAG positions.

Balance Control

This control permits you to obtain equal sound levels at both speaker systems — an important consideration for achieving the optimum stereophonic effect. (This is also advantageous for monophonic operation where two channels are used.) With the Balance control pointing to NORMAL, the volume at the left and right speakers should be the same, theoretically. However, an imbalance may occur due to room acoustics, record characteristics, listener position, different speaker efficiencies etc. This imbalance can be corrected easily by turning the control slightly toward MAX-A or MAX-B to increase the volume level at the left or right speaker, as required. It should be pointed out that this is not a volume control; for, as the level of sound is increased on one speaker, it is decreased on the oher, maintaining the same overall sound output.

NOTE: It is possible to cut off the sound entirely from the left or right speaker system by advancing the Balance control to the extreme MAX-B or MAX-A position.

Bass and Treble Controls

These controls enable you to adjust the tonal qualities of sound to your personal listening requirements. The Bass controls vary the intensity of the low frequency bass tones, while the Treble controls vary the intensity of the high frequency treble tones. Each set of controls consists of dual knobs mounted one behind the other. The smaller knobs, with the gold triangle markers, are the controls for Channel A; the large outer knobs, with the dots, control Channel B. Turning either knob, will turn the other, thus permitting simultaneous adjustment for both channels. However, if you wish to adjust the tones for each channel separately, hold one knob while turning the other. To increase or decrease bass or treble intensity, turn these knobs toward MAX or MIN, as required.

The numbered positions around each set of controls may be used as reference points. To listen to program material exactly as it origi-

AT-A-GLANCE OPERATING GUIDE

Program You Wish To Hear	Required Connections To Associated Components	Set Selector Switch To	Set Mode Selector Switch To	• Other Required Control Settings •
FM Broadcast	FM Tuner to Channel A TUNER input jack.	TUNER	A	
AM Broadcast	AM Tuner to Channel B TUNER input jack.	TUNER	B	
FM-AM Stereo Broadcast	FM Tuner section connected to Ch. A TUNER input jack; AM Tuner section connected to Ch. B TUNER input jack.	TUNER	STEREO	
FM-Multiplex Stereo Broadcast	Multiplex Adaptor connected to FM Tuner. See instructions accompanying Adaptor.	TUNER	STEREO	
Stereo Record	Low Level Magnetic Cartridge to MAG 2 input jacks (or MAG 1 jacks, if these are not occupied). High Level Magnetic and Ceramic Cartridge to CER input jacks. NOTE: Do *not* connect components to *both* MAG 2 and CER jacks.	MAG 2 or MAG 1 depending on inputs used.	STEREO	Set Equalization switch to PHONO.
Monophonic Record	Same as above.	MAG 2 or MAG 1 depending on input used.	MONO PHONO	Set Equalization switch to PHONO. *NOTE:* If you are using a monophonic cartridge, set Mode Selector switch to A or B, depending on channel used.
Tape from stereo Tape Recorder	Cables from A and B output jacks on Recorder to Ch. A and B MON jacks. *Recording Connections:* Cables from Ch. A and B REC jacks on the X-101-B to the recording inputs on the Recorder.	TAPE PLAY	STEREO	Set Tape Monitor switch to ON for monitoring tape while recording with three-head machine.
Tape from monophonic Tape Recorder	Cable from output jack on Recorder to Channel A or B MON jack. *Recording Connections:* Cable from recording jack to Channel A or B REC jack.	TAPE PLAY	A or B depending on channel used.	Set Tape Monitor switch to ON for monitoring tape while recording with three-head machine. Turn Blend control to MIN for sound from both channels when monitoring.

nates from a broadcasting studio, set these controls to NORMAL. This is "flat" position, and is equivalent to RIAA equalization. When you are listening to a record, or tape from a tape deck, you will maintain the equalization established by the Equalization switch by leaving these controls in NORMAL position. It should be emphasized, however, that the Bass and Treble controls may be set to any position dictated, by personal listening preference.

Dimension Control

The Dimension control permits the blending of varying proportions of each of the two channels, thus decreasing the separation or apparent "distance" between the two channels. This is especially important when the program source appears to have an exaggerated separation between the two channels, resulting in a "ping-pong" effect; or when the speakers must be placed far apart in the listening room, causing a 'hole-in-the-middle' effect. With the control in the STEREO position, the full channel separation of the program source is maintained. As the control is rotated toward MONO, the separation is decreased until, at MONO, the two channels are completely blended, resulting in a monophonic signal.

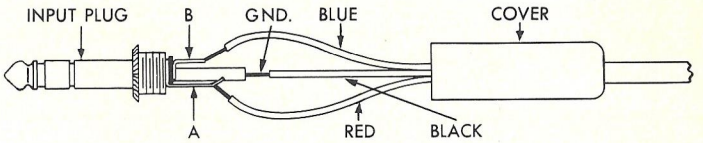
Loudness Contour Switch

As the over-all volume of sound is reduced, our hearing efficiency drops off more rapidly at the extreme ends of the tonal spectrum (deep bass and upper treble.) The Loudness Contour switch automatically compensates for this natural hearing loss.

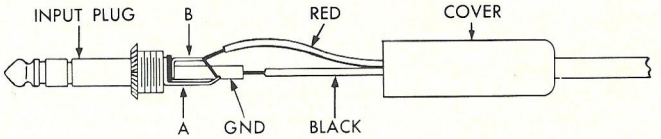
If you wish to listen at low volume, set the Loudness Contour switch to ON. Compensation will be introduced to restore the highs and lows to a level with your middle-frequency hearing sensitivity. This compensation will increase or decrease automatically as the volume is lowered or raised. In general, it is suggested that this switch be used only with medium-low to low volume; otherwise, unrealistic sound will result.

Center Speaker Switch

The CENTER SPEAKER Switch acts as an ON-OFF switch for a center speaker connected to the terminals on the top of the chassis marked CENT SPKR. If you are using a center channel speaker to fill in the middle of the stereophonic sound pattern (as described on page 4) the center speaker can be turned on and off by the Center Speaker Switch. If a center channel speaker is not being used the Center Speaker Switch must be left in the OFF position.



FOR STEREO, WIRE: RED TO A, BLUE TO B, BLACK TO GND.
AW # 1982



FOR MONO, WIRE: RED TO A AND B, BLACK TO GND.
AW # 1983

FIGURE 2. Wire connections for Stereo or Mono Earphones.

Earphones

Stereo or Monoral earphones may be connected to the *X-101-B* by using the PHONES jack on the front panel of the unit. Low or high impedance phones may be used. One set of phones can be plugged into the jack. The wiring of the plug, for either Stereo or Monoral earphones, is shown in figure 2. In order to check that the Stereo phones are operating properly, turn the BALANCE control fully clockwise to hear only the B channel in the right earpiece, and then turn it fully counter-clockwise to hear only the A channel in the left earpiece. Reverse the headset if the proper channel is not present at each earpiece.

High Filter Switch

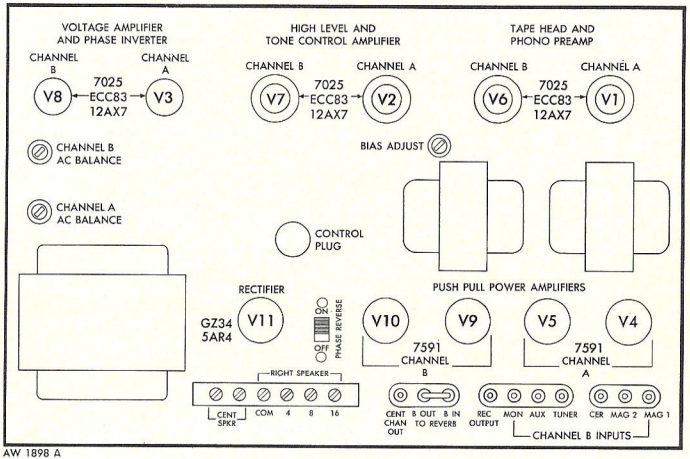
Use the High Filter Switch in the ON position to eliminate record surface noise, distant AM or FM station interference, and other undesirable high frequency noises originating in your record player or tape recorder. Keep this switch in OFF position at all other times.

Low Filter Switch

Use the Low Filter switch in the ON position to eliminate turntable rumble, or other low frequency interference. Leave this switch in OFF position at all other times.

Phase Reverse Switch

The Phase Reverse switch, located on the top of the chassis, is used to place both channels "in phase" so that the speaker cones "push" and "pull" in unison rather than in opposition. After completing the installation of your *X-101-B*, play a record or tape with prominent bass material. Slide the Phase Reverse switch back and forth and listen for a change in the fullness of the bass register. (It may be helpful to increase the bass and decrease the treble during this test.) If the bass sounds richer with the Phase Reverse switch ON, turn off the power to the *X-101-B* and reverse the leads to the Channel A speaker. If the bass sounds best with the switch in the OFF position, your speakers are already in phase and no further adjustments are necessary. If you are using a center speaker, it should be properly phased by reversing the leads with the Phase Reverse switch in the OFF position.



AW 1898 A

FIGURE 3. Tube layout for X-101-B

CUSTOM INSTALLATION

TWO SPECIAL custom cabinets, designed to accommodate the *X-101-B*, are available from your FISHER dealer. These are he Model MC-2 metal cabinet, and the Model 10-U wood cabinet, in wal-

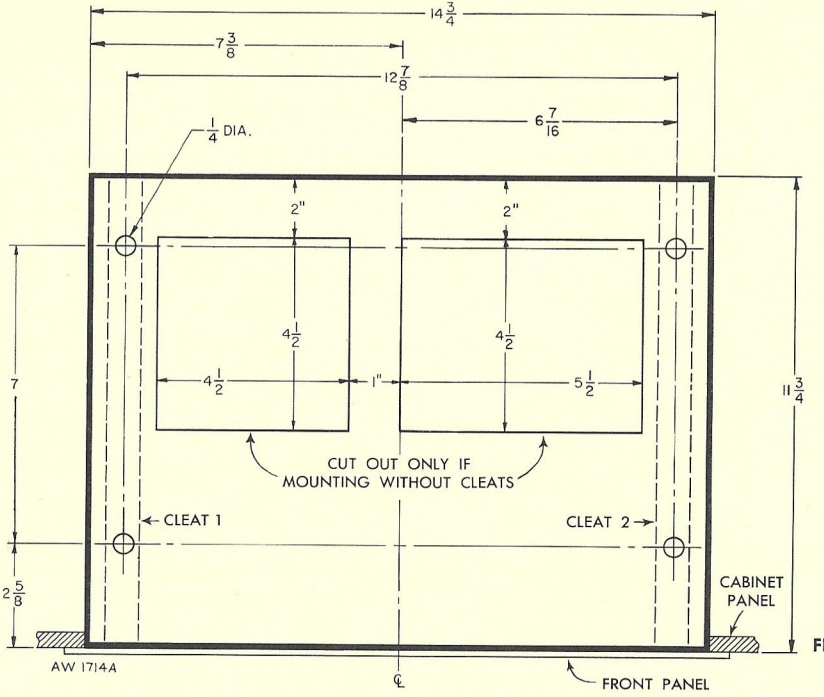


FIGURE 4. Top view of custom cabinet installation

nut and mahogany. Both are attractively designed to enhance your room decor. The *X-101-B* may also be mounted in your own custom cabinet. Directions and illustrations are provided in this section.

Because adequate ventilation is an absolute essential for trouble-free operation, never install the *X-101-B* in a totally enclosed space, on top of another amplifier, or too close to other heat-producing equipment. If it is installed in a cabinet, the back should remain open and not be flush with the wall. If the cabinet is equipped with ventilation grilles on top, do not block the passage of air with books or other articles.

The *X-101-B* may be installed in two ways: with cleats, to raise it above the floor of the cabinet to provide ventilation through the perforated chassis cover; or, without cleats, in which case cut-outs must be made in the cabinet floor. The two types of installation follow:

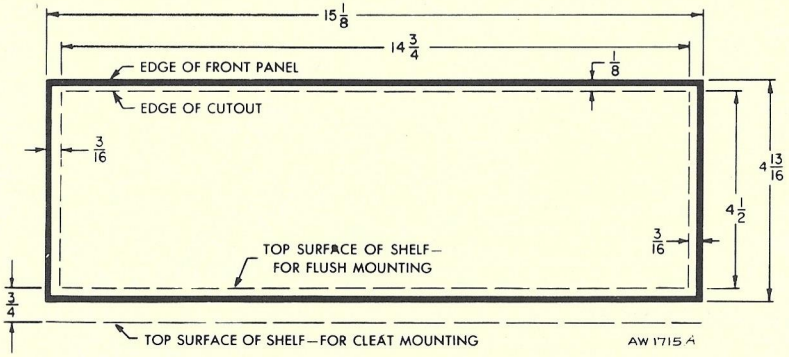


FIGURE 5. Front panel cutout

Installation with Cleats

1—Obtain a strip of wood ¾ inches square and 22 inches long. Cut this strip in half to form two 11-inch cleats.

2—Fasten the two cleats to the top of the mounting board with wood screws in the position shown in Figure 4. Then locate and drill four ¼-inch holes through the mounting board and cleats as indicated.

3—Saw a cutout through the front panel of your cabinet (4½ inches by 14¾ inches) as shown in Figure 5. The bottom edge of the cutout should be on a level with the top of the two cleats.

4—Remove the four plastic feet from the bottom cover of the *X-101-B* and insert the chassis through the *front* of the panel cutout. Slide the chassis into the cabinet until the back of the control panel is tight against the panel of the cabinet.

5—Insert the four 1½ inch screws supplied in the accessories bag through the holes in the bottom of the mounting board and fasten the chassis into place.

Installation Without Cleats

1—Cutouts must be made in the mounting board beneath the ventilation holes in the bottom of the *X-101-B*, as shown in Figure 4.

2—Locate and drill four ¼-inch holes in the mounting board as shown in Figure 4.

3—Saw a rectangular cutout through the front panel of the cabinet (4½ inches by 14¾ inches) as shown in Figure 5. IMPORTANT: Note that the bottom edge of the cutout is flush with the top of the mounting board.

4—Remove the four plastic feet from 'the *X-101-B* and insert the chassis through the *front* of the panel cutout. Slide the chassis in all the way until the back of the control panel fits tightly against the panel of the cabinet.

5—Insert the four 1-inch screws supplied with the accessories bag through the holes in the bottom of the mounting board and fasten the chassis into place.

TECHNICAL SPECIFICATIONS

Music Power Output: 56 watts both channels (IHFM Standard.)

Harmonic Distortion: 0.5% at 24 watts (RMS.)
0.8% at 28 watts (Music Power.)

Frequency Response: ± 1 db from 20 to 20,000 CPS.

Hum and Noise: *With volume control at minimum:* more than 90 db below rated output.
High Level Inputs: (volume control at maximum) more than 80 db below rated output (0.5 volt reference level.)
Low Level Inputs: (RIAA, with volume control at maximum) more than 65 db below rated output (6 millivolts reference level.)

Channel Separation: Better than 50 db.

Sensitivity: PHONO MAGNETIC: 3.5 millivolts for rated output (at 1 KC.)
TAPE: 2.3 millivolts for rated output (at 1 KC.)
PHONO CERAMIC: 13 millivolts for rated output (at 1 KC.)
TUNER: 0.28 volts for rated output.
AUX: 0.28 volts for rated output.
MONITOR: 0.6 volts for rated output.

Rumble Filter: Slope is more than 15 db per octave (—3 db at 50 cps.)

Scratch Filter: Cut-off slope is more than 12 db per octave (—3 db at 5 KC.)

Subsonic Filter: Roll-off below 20 cps.

Bass Controls: Boost: 15 db Cut: 15 db at 50 cps.

Treble Controls: Boost: 15 db Cut: 17 db at 10 KC.

Power Requirements: 105-20 volts AC, 50-60 cycles.

Power Consumption: 160 watts.

N849-103AXA

190GR1322

Warranty To Owner

THE FISHER equipment you purchased was carefully tested and inspected before leaving our laboratories. If properly installed and operated in accordance with the instructions furnished, it should give you the finest results of which it is capable. This equipment is unconditionally guaranteed against all defects in material and workmanship for ninety days from date of sale to the original purchaser. Any part of the equipment which under normal installation and use, discloses such a defect, will be adjusted or replaced by the dealer from whom purchased. To protect your warranty, be sure to mail this card *within 10 days* from date of purchase.

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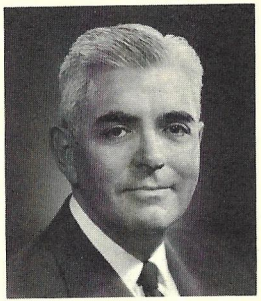

The Man Behind the Product

AVERY FISHER
Founder and President,
Fisher Radio Corporation

TWENTY-FOUR YEARS AGO, Avery Fisher introduced America's first high fidelity radio-phonograph. That instrument attained instant recognition, for it opened a new era in the faithful reproduction of records and broadcasts. Some of its features were so basic that they are used in all high fidelity equipment to this day. One of these models is now in the permanent collection of the Smithsonian Institution as an example of the earliest high fidelity instruments commercially available in this country.

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 high fidelity 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. FISHER FM and FM-AM tuners are the most widely used by broadcast stations for monitoring and relay work, and by research organizations—under conditions where absolute reliability and maximum sensitivity are a 'must.'

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 installation or performance of your FISHER, please write directly to Avery Fisher, President, Fisher Radio Corporation, Long Island City 1, New York.