

OPERATING INSTRUCTIONS AND WARRANTY



# THE FISHER

**X-1000**

STUDIO-STANDARD SERIES

**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-five 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!

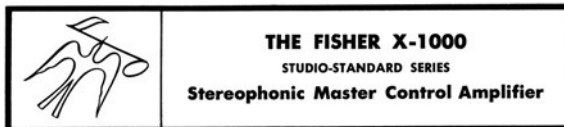
*Avery Fisher* Founder and President

## 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.
- 1938 First 3-Way Speaker in a high fidelity system.
- 1939 First Center-of-Channel Tuning Indicator.
- 1945 First Pre-amplifier-Equalizer with selective phonograph equalization.
- 1948 First Dynamic Range Expander with feedback.
- 1948 First FM-AM Tuner with variable AFC.
- 1952 First 50-Watt, all-triode amplifier.
- 1952 First high 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 Cascade 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 Pre-amplifier-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 Cascade 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 759J 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 Space Expander.
- 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.



**T**HE FISHER *X-1000* introduces an entirely new group of Fisher instruments, identified as the Studio Standard Series. All models in this series have been designed to the very highest technical specifications without restriction on cost—for use in every type of professional application, as well as those home installations where nothing less than the ultimate is acceptable.

The Fisher *X-1000* is a stereophonic master control amplifier of precisely such quality. It consists of a dual-channel amplifier with 110 watts of music power output and a stereo master audio control that will provide every presently known, or future, mode of operation for your listening enjoyment. The *X-1000* also incorporates a new circuit design that permits *direct* connection of a center channel speaker without the need for an additional amplifier. Despite the remarkable flexibility of the *X-1000*, you will find it quite simple to operate because of the convenient functional grouping of the controls on the front panel. The *X-1000* is built to last, not for years, but literally for decades; its many features defy obsolescence. We are certain that you will find the *X-1000* a superlative and reliable means of enhancing your music listening enjoyment.

#### THE FISHER X-1000

STUDIO-STANDARD SERIES

Stereophonic Master Control Amplifier

#### A NOTE ON STEREOPHONIC SOUND

**S**TEREOPHONIC SOUND is a giant step forward in the history of high fidelity music reproduction. This unique dual-channel system offers a distinct advantage over monophonic (single-channel) systems because 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, positioned at the left and right sections of the orchestra. In this arrangement, the microphones detect 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.

To reproduce stereophonic realism in the home, two separate sound

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channels are required to achieve the stereophonic effect. 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 side of the orchestra are heard predominantly in the speaker to your left; instruments on the right side of the orchestra are heard predominantly in the speaker to your right; while instruments located in the center appear to be heard midway 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-1000 provides a stereo Dimension control, which, when turned toward the MIN 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-1000 provides Center Speaker terminal jacks on the rear panel, and a Center Power Level control on the front panel, to help establish the proper volume level of the center speaker. The Center Power Level control should be placed at a position that makes the center speaker volume roughly one-half that of the left and right speakers. This should be done to prevent the center speaker from overpowering the others, and to give the center speaker the proper perspective in the stereo sound pattern.

The X-1000 also provides two separate output jacks for connection to a separate center channel amplifier. One jack (CENTER CHANNEL) provides an output that is controlled by the X-1000, and the other jack (RCRDR CENTER CH) 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

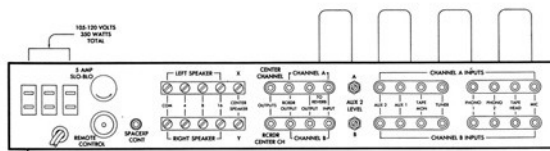


FIGURE 1. Rear panel of the X-1000

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* such as is normally experienced only at a live orchestral performance.

### INSTALLING THE X-1000

**A**FTER DECIDING on the physical location of the X-1000 and the associated equipment, the electrical connections can be made with a minimum of effort and time. Certain precautions must be taken, however, when positioning the X-1000. Because of the relatively great amount of heat generated by its high power amplifier section, the X-1000 should not be placed too near any heat generating or heat sensitive equipment or materials. If it is placed in a custom installation or specially designed cabinet, the rear should be left open for ventilation. A space of at least three inches should be left on each side and five inches above the X-1000, for proper ventilation. *Serious damage to the equipment may result if these precautions are not taken.* The X-1000 should be mounted on a horizontal surface only, *never* installed vertically.

#### Connecting the Loudspeakers

The loudspeakers should be located so that the distance between

them is approximately two-thirds the distance to the normal listening area. It is preferable to use two identical speaker systems. Most speakers give increased bass response when placed in the corner of the room, but, because of the relatively unpredictable effects produced by stereophonic sound (resulting from furniture arrangement and irregularities in the room dimensions) it would be best to experiment with several locations before making a final decision. When a satisfactory location has been selected, make the following connections, using ordinary double-conductor electric wire (or heavy-duty, 300-ohm TV antenna twinlead, if you prefer).

**SINGLE SPEAKER:** If you wish to connect only one speaker to the X-1000 temporarily, connect one of the speaker leads to the Left Speaker terminal lug marked COM (See Figure 1), and the other speaker lead to the 4, 8, or 16 terminal lug, depending on the impedance of your loudspeaker. Then connect an 8 to 10-ohm resistor, rated at a minimum of 10 watts between the "COM" and "4" lugs of the Right Speaker terminal strip, and turn the balance control fully counter-clockwise.

**TWO SPEAKERS:** Connect the speaker on your left (as viewed from the listening area) to the Left Speaker terminal strip. One lead should be connected to COM and the other to the terminal lug which matches the impedance of your loudspeaker. The speaker to your right should be connected to the Right Speaker terminal strip in the same manner.

(See page 5 for the correct method of phasing your two speakers.)  
CAUTION: None of the speaker leads should be connected to ground. Also make certain that the two COM terminal lugs are never shorted together. Either condition will result in serious damage to the equipment.

**THREE SPEAKERS:** Because of a revolutionary new circuit development, the Fisher X-1000 permits the connection of a center channel speaker (with a blended signal from Channels A and B) directly to the amplifier, without the need of an additional amplifier. You will find this feature of inestimable value in filling the center portion of the sound pattern, especially when the left and right speakers must be placed far apart in your room, or when listening to records or broadcasts with exaggerated separation between the two channels. After connecting the left and right speakers as described in the preceding section, simply connect the center speaker between the X and Y lugs designated CENTER SPEAKER. (See page 6 for instructions on speaker phasing.)

#### Tuners

If you are using an FM-AM stereophonic tuner, the FM output should be connected to the Channel A TUNER input jack on the X-1000 and the AM output should be connected to the Channel B TUNER input jack. FM-AM monophonic tuners and FM-only tuners should be connected to the Channel A input jack marked TUNER. FM-Stereo-Multiplex Tuners should be connected to Channel A and Channel B TUNER input jacks. (See Figure 1.)

#### Record Players

Magnetic cartridges are connected to the input jacks on the rear panel marked PHONO 1 and 2, and a ceramic cartridge may be connected to the jacks marked AUX 1. The following connections should be made in each case:

1. *Magnetic stereo cartridge:* If you own records released prior to 1955, you will want to use the PHONO 1 inputs, for only these inputs

will permit you to select the proper equalization (COL) for such recordings. In this case, connect the Channel A plug from the cartridge to the Channel A PHONO 1 input jack on the X-1000, and the Channel B cartridge plug to the Channel B PHONO 1 input jack. Twist the two phono leads together to minimize hum. If all or most of your records were released during or since 1955, you may wish to use the PHONO 2 input jacks, for this will make switching between your tuner and record player more convenient. After twisting the two leads together, simply connect the Channel A cartridge plug to the Channel A PHONO 2 input jack, and the Channel B cartridge plug to the Channel B PHONO 2 input jack.

2. *Magnetic monophonic cartridges:* The plug from the cartridge should be connected to the Channel A PHONO 1 input jack.

NOTE: The input impedance for all Phono input jacks is 47,000 ohms. This value is correct for most magnetic cartridges in use today.

3. *Ceramic stereo cartridge:* The Channel A plug from the cartridge should be connected to the Channel A, AUX 2 input jack, and the Channel B plug to the Channel B, AUX 2 input jack.

4. *Ceramic monophonic cartridge:* Connect the cartridge plug to the AUX 2 input jack for Channel A.

#### Tape Recorders (with preamplifiers)

1. *Three-head tape recorders:* The Channel A output from the tape recorder should be connected to the Channel A, TAPE MON input jack on the X-1000. The Channel B tape recorder output should be connected to the Channel B, TAPE MON input jack. Then connect the Channel A RCRDR OUTPUT on the X-1000 to the Channel A input on your tape recorder, and the Channel B RCRDR OUTPUT of the X-1000 to the Channel B tape recorder input.

2. *Two-head tape recorders:* The Channel A and B outputs of your tape recorder should be connected to the corresponding AUX 1 input jacks on the X-1000. The Channel A and B RCRDR OUTPUT jacks are connected to the Channel A and B tape recorder input jacks

respectively. By setting the Input Selector switch to the AUX 1 position during the playing of pre-recorded tapes, full use of all front panel controls is available. You will also be able to monitor tapes while they are being recorded, even though the recorder inputs are connected to the TAPE MON jacks. However, do not connect any input to the AUX 1 jacks as they are electrically connected to the TAPE MON jacks. During ordinary playback the Tape Monitor switch should always be in the OFF position.

#### Tape Decks (without preamplifiers)

A tape deck, without any internal preamplifiers, may be connected directly to the X-1000 for playback. This is done by connecting the Channel A and B outputs from the tape deck to the corresponding TAPE HEAD input jacks on the rear panel.

#### Microphones

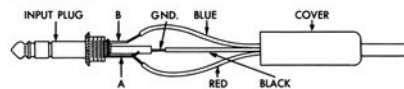
Two microphones, for making stereophonic recordings on your tape recorder, may be connected to the MIC input jacks. High impedance microphones should be used. NOTE: Crystal microphones should be connected to either pair of AUX jacks.

#### Spacexpander

The FISHER Dynamic Spacexpander, Model K-10, may be connected to the X-1000 and operated directly from the front panel. This is done by making the following connections:

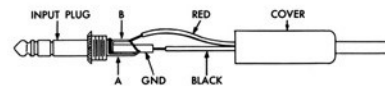
1. The Channel A and B jacks on the X-1000 marked TO REVERB OUTPUT are connected to the corresponding jacks on the Spacexpander.
2. The Channel A and B jacks on the X-1000 marked TO REVERB INPUT are connected to the corresponding jacks on the Spacexpander.
3. The jack designated SPACEXP CONT is connected to the control cable jack on the Spacexpander. This is done by rewiring the control cable supplied with the Spacexpander. First remove the Spacexpander

control by reheating the connections with a soldering iron. Unscrew the sleeve from the plug at the opposite end of the cable and observe the connections. Connect the special plug (supplied in the X-1000 accessories bag) to the cable in the same manner as the plug already wired to the cable. The control cable has been color-coded to facilitate this operation.



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 use with Stereo and Mono Earphones

#### Earphones

Stereo or Mono earphones may be connected to the X-1000 by using the two PHONES jacks on the front panel of the unit. Low or high impedance phones may be used. One set of phones can be plugged into each jack. The wiring of the plug, for either Stereo or Mono earphones, is shown in Figure 2. In order to check that Stereo phones are operating properly, turn the BALANCE control fully clockwise to hear only the B channel output in the right ear-

piece, and fully counter-clockwise to hear only the A channel in the left earpiece. Reverse the headset if the correct channel is not present at each earpiece.

#### **Remote Control**

The FISHER RK-1 Remote Control available from your FISHER dealer will permit you to adjust the volume and to balance the left and right channels, without leaving the listening area. The RK-1 is simply plugged into the REMOTE CONTROL jack on the rear panel. Retain the plug for possible future use. The X-1000 will not operate unless either the plug or Remote Control is inserted in the Remote Control jack.

#### **Center Channel**

If you have an additional amplifier and wish to use it in conjunction with a loudspeaker for a center channel, you can obtain the center channel signal by connecting the amplifier to the jack on the rear panel of the X-1000 marked CENTER CHANNEL. This will enable you to adjust the volume of the center channel with the MASTER VOLUME control on the front panel of the X-1000. In addition, a RCRDR CENTER CH jack (supplying a monophonic blend of both channels) is provided on the rear panel for making monophonic recordings of stereo programs. This jack may also be connected to a monophonic high fidelity system in another location. It provides a monophonic blend of both channels that is not affected by the volume or tone controls.

#### **Electric Power Connections**

Three AC-switched auxiliary outlets are provided on the rear panel of the X-1000 for connection of associated equipment such as tuners, turntables, tape recorders and the Spacepander. The total power requirements of these components should not exceed 350 watts. The X-1000 may be connected to any convenient wall outlet that supplies 105-120 volts, at 50-60 cycles. The X-1000 draws 340 watts (or 380 VA).

#### **Preliminary Adjustments**

**SPEAKER PHASING:** Turn the set ON by rotating the Volume Control clockwise. Set the Input Selector to RIAA-1 (or AUX-1 for a ceramic cartridge) and the Mode Selector switch to MONO PHONO. Play a record with prominent bass tones and while listening, slide the Phase Reverse switch back and forth between OFF and ON. If the bass sounds fuller in the ON position, reverse the leads to the Left Speaker system on the rear panel of the X-1000. If the bass sounds fuller with the switch in the OFF position, no changes in the connections should be made. You may find it helpful to turn the Bass control temporarily to the MAX and the Treble to MIN positions while making this listening test. Return the Phase Reverse switch to the OFF position.

**CENTER SPEAKER PHASING:** If you are using a center speaker connected to the CENTER SPEAKER terminal lugs on the rear panel, this speaker may now be phased to match the left and right speakers. As described above, a definite difference in the bass response should be apparent when the leads to the center speaker are reversed. (Do not use the Phase Reverse switch for this adjustment.) Connect the speaker permanently in the manner which results in the fullest bass response. The same method should be employed if you are using the CENTER CH OUTPUT jack and an additional amplifier, except that this amplifier should be turned off each time the speaker leads are reversed to avoid damage to the equipment.

**LOW LEVEL INPUT BALANCING:** If you are using a stereo magnetic cartridge, the Sonic Null method may be used to balance the Low Level inputs as follows:

Turn the Input Selector to RIAA-1 (or RIAA-2 if your cartridge is connected to the PHONO 2 jacks), the Mode Selector switch to STEREO, and the Dimension control to MIN. Play a monophonic record after first turning the LOW LEVEL controls fully counter-clockwise (to MIN), and then the MASTER VOLUME control fully clockwise (to MAX). Now bring up the volume by turning the inner



(left) Low Level control until the point is reached where the sound is at the loudest level you will ever wish to hear under normal conditions. Now turn the outer (right) Low Level control until the same setting has been reached. Decrease the volume to a more moderate level by turning the Master Volume control (*not* the Low Level control) counter-clockwise. Slide the Phase Reverse switch to ON. Now turn the outer (right) Low Level control clockwise until a null or minimum in the total sound volume is reached. This sonic null will be quite sharp and distinct under most conditions. When this point is reached, your two phonograph inputs are exactly balanced. The Low Level controls have been indexed so that you can make a note of their positions for further reference in case you wish to use more than one low level source. Return the Phase Reverse switch to OFF, and the Dimension control to MAX for normal operation.

If you wish to balance the AUX 2 inputs, follow the above procedure and use the two AUX 2 Level Controls on the rear panel. Sonic Null balancing may also be achieved with any stereo component that has level controls by using the level controls in the manner described above.

#### OPERATING THE X-1000

**Y**OUR X-1000 is now ready for operation, but like any other fine piece of electronic equipment, it must be operated correctly in order to deliver its full capabilities. We urge you to read these instructions carefully in order to achieve optimum results.

#### Master Volume Control

The Master Volume control regulates the total volume of sound from the speakers. The AC Power switch is combined with this control and the power is clicked off at the extreme left. The Master Volume control changes the sound level from both channels simultaneously thus making it *unnecessary* to balance the channels each time you change the volume. This control is also operative for the Center Speaker and Center Channel outputs.

#### Input Selector

The Input Selector is for selection of the particular program source desired, and at the same time provides the correct equalization for each source. Its nine positions perform the following functions:

**MIC:** Selects a microphone, or microphones, connected to the MIC input jacks. Provides the correct amplification for high-impedance dynamic, ribbon and similar microphones.

**3¾:** This position provides correct equalization for a tape deck operating at a speed of 3¾ inches per second.

**7½:** This position provides correct equalization for a tape deck operating at a speed of 7½ inches per second.

**COL:** Provides equalization for all Columbia records made prior to 1955.

**RIAA-1:** Provides equalization for records of all manufacturers pressed since 1954.

**RIAA-2:** Provides RIAA equalization for a cartridge connected to the PHONO-2 input jacks.

**TUNER:** Selects the tuner, either monophonic or stereo.

**AUX-1:** Selects any component connected to the AUX 1 input jacks.

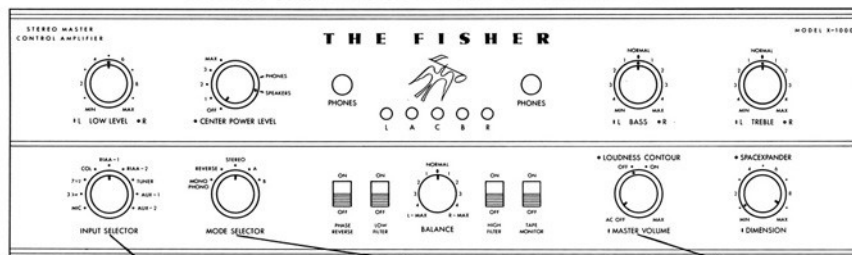
**AUX-2:** Selects any component connected to the AUX 2 input jacks.

Note: AUX-2 has level controls on the rear panel.

#### Balance Control

This control is used to equalize the sound levels from both speaker systems to achieve the optimum stereo effect. If the Channel A and Channel B inputs are exactly balanced, you will hear equal sound levels from the left and right speakers with the control in the NORMAL position. If, however, there is an imbalance in the program levels fed to the channel inputs, you can re-balance the sound levels by turning the Balance control either clockwise (to boost the sound level on the right) or counter-clockwise (to boost the level on the left).

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



8

**STEP 2**

Set **INPUT SELECTOR** Switch to program source you wish to hear.  
**3 $\frac{3}{4}$**  or **7 $\frac{1}{2}$**  to play tapes on a tape deck at either **3 $\frac{3}{4}$**  or **7 $\frac{1}{2}$**  speeds.  
**COL** to play Columbia records made before 1955 on a player connected to the **PHONO 1** jacks.  
**RIAA-1** to play all other records on a player connected to the **PHONO 1** jacks.  
**TUNER** to listen to a radio broadcast.

**STEP 3**

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

**STEP 1**

Set all switches and controls as shown. Turn on power by turning **MASTER VOLUME** Control slightly clockwise until it clicks. Adjust later for volume.

FIGURE 3. FOR THE 'MAN IN A HURRY'

**Mode Selector Switch**

This switch permits the choice of any one 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.

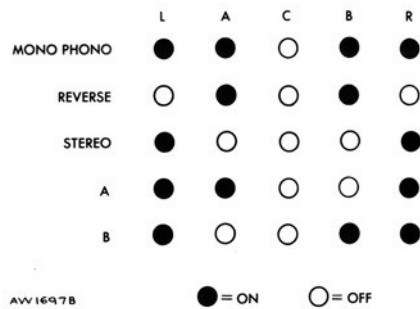
**STEREO:** This position is normally used for all stereo programs, whether on records, tape or radio. The Channel A signal is directed to the Left Speaker system and the Channel B signal to the Right Speaker system.

**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.

**Channel Indicator Lights**

The five colored jewels provide a visual indication of the position at which the Mode Selector switch is set and will light in different sequences depending upon the type of circuit operation. The L and R jewels represent the left and right speakers; while the A and B jewels represent Channel A and B inputs. The C jewel will brighten when the center speaker is used. Figure 4 is a guide to the different light sequences. For example: for B, the L, B and R jewels will light. This means that the signals at the Channel B input will appear at the right and left speakers.



NOTE: "C" BRIGHTENS WHEN CENTER SPEAKER IS USED

FIGURE 4. Channel indicator lights

**Bass Controls**

The Bass controls increase or decrease the amount of bass tones heard in the sound output. With the Bass controls in the NORMAL position, the bass tones will sound exactly as they were recorded at the program source. If you wish to increase the bass emphasis because of a bass deficiency in the record, tape or radio broadcast you have selected, simply turn the Bass controls the desired amount toward the MAX position. To decrease the prominence of the bass tones, turn the Bass controls toward MIN. Normally, the Bass controls for

Left and Right Speaker systems rotate together, but if you wish to adjust the Bass separately for each channel, hold one of the knobs while turning the other.

#### **Treble Controls**

The Treble controls adjust the intensity of the treble tone heard in the sound output. As with the Bass controls, the NORMAL position will result in the same degree of treble tone as exists in the program source. The relative amount of treble tone can be increased, resulting in a more brilliant and crisp sound, by turning the Treble controls toward MAX; and it can be decreased, resulting in a more mellow and intimate tone, by turning the control toward MIN. The Treble controls may also be adjusted individually for each channel by holding one knob while rotating the other.

#### **Dimension Control**

10 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 MAX position, the full channel separation of the program source is maintained. As the control is rotated toward MIN, the separation is decreased until, at MIN, the two channels are completely blended, resulting in a monophonic signal.

#### **High and Low Filters**

The High Filter is a sharp cut-off circuit designed to remove annoying record scratch, hiss and other high frequency noise without dulling the treble portion of the musical program. The Low Filter is similarly designed to remove low frequency noise such as turntable rumble, without weakening bass tone in the musical signal.

#### **Tape Monitor**

If a three-head tape recorder has been connected to the X-1000 as described on page 4, tapes can be monitored while being made, without disturbing the recording process. To listen to the tape recorder, either for monitoring purposes or during ordinary playback, simply place the Tape Monitor switch in the ON position. Because of the unique design of the tape monitor circuit in the X-1000, the full range of audio controls (with the Input Selector in the AUX-1 position for playback) can be used to adjust the output of the tape recorder even during playback.

**CAUTION:** Be sure to return the Tape Monitor switch to the OFF position when not listening to the tape recorder, or the X-1000 will be completely inoperative.

#### **Loudness Contour**

The Loudness Contour switch provides compensation for the decreased bass sensitivity of the human ear at low volume levels. Scientific tests by Fletcher and Munson have established certain average amounts of bass that should be added to the musical signal at low volumes. When the Loudness Contour switch is turned ON, this compensation is automatically added to the signal and automatically varied, according to the setting of the Volume control. For the correct compensation, the input levels should be set as described on page 6.

#### **Spacexpander Control**

The Spacexpander control of the X-1000 parallels the control supplied with the Spacexpander. As the control is turned clockwise the amount of reverberation added to the signal is increased. With the control at MIN, no reverberation is added. For a more detailed explanation of the operation of this unique device, consult the Spacexpander Operating Instructions.

#### **Center Power Level Control**

The Center Power Level control varies the volume in 4 steps

### AT-A-GLANCE OPERATING GUIDE

To Listen To:	Make Connections To:	Turn Mode Selector Switch To:	Turn Input Selector To:	Remarks
1. FM-AM Stereo Tuner	FM Output to Ch A TUNER jack; AM output to Ch B TUNER jack	STEREO for stereo broadcast; A for FM; B for AM	TUNER	
2. FM-AM Mono Tuner or FM Tuner, or FM-Stereo Multiplex	Ch A TUNER jack, Ch A and Ch B TUNER jacks	A for MONO, STEREO for FM multiplex	TUNER	Multiplex adapter output same as Stereo Tuner
3. Stereo Record (Magnetic cartridge)	Ch A & Ch B PHONO 1 jacks	STEREO	RIAA-1 or COL	Use RIAA-1 for all records made since 1954
4. Stereo Record (Ceramic cartridge)	Ch A & Ch B AUX-1 jack	STEREO	AUX-2	
5. Monophonic Record (Stereo cartridge)	Same as 3 or 4	MONO PHONO	RIAA-1 or COL (mag. cartridge); AUX-2 (Ceramic cartridge)	
6. Stereo Tape Recorder (3-head)	RCRDR outputs; TAPE MON inputs	STEREO		Tape Monitor switch to ON
7. Stereo Tape Recorder (2-head)	RCRDR outputs; AUX-1 inputs	STEREO	AUX-1	

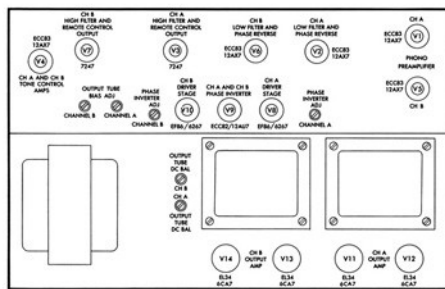


FIGURE 5. Tube layout of the X-1000

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and acts as an ON/OFF switch for a center channel speaker connected to the CENTER SPEAKER terminals. 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 Power Level control should be adjusted so that the sound level from the center speaker blends most perfectly with the two outer speakers. In most cases, the best effect will be obtained with the center speaker at a somewhat lower volume than the left and right speakers. If you desire to place the center channel speaker in a remote location in another room of your home, you can adjust the sound level of the speaker independently of the two channel speakers with the Center Power Level control. The Master Volume control will be effective for all three speakers. If the center channel facilities are not used, the Center Power Level control should be left in the OFF position. The front portion of the Center Power Level control acts as a switch to

select between sound from the earphones and the Channel A and B speakers. When the switch is in the SPEAKERS position there will be no output present at either PHONES jack, so earphones can be left connected without fear of damage.

#### Phase Reverse

If the stereo program to which you are listening does not seem to produce a full, solid tone, especially in the bass region, slide the Phase Reverse switch to ON and compare the sound output. Leave the switch in the position that yields the richest bass tone, but be sure to return the switch to OFF after the program is completed. The Phase Reverse switch at the same time will also correct the phase of the REC outputs connected to a tape recorder, to produce the properly phased signal. Always return the Phase Reverse switch to the OFF position when not required.

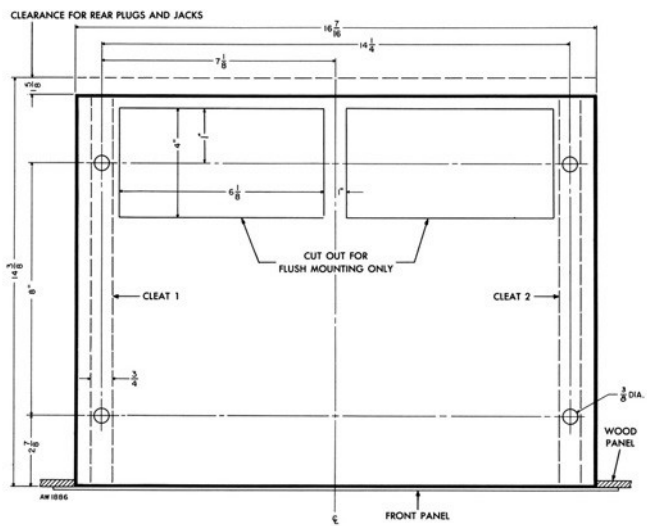


FIGURE 6. Custom cabinet installation

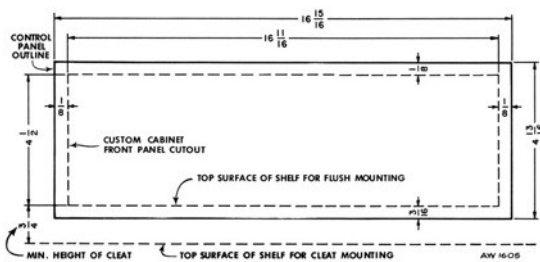


FIGURE 7. Front Panel cutout

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### CUSTOM INSTALLATION

A SPECIAL custom cabinet, the TA-10, designed to accommodate the X-1000, is available from your FISHER dealer. The X-1000 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-1000 in a totally enclosed space, or too close to other heat-producing equipment. Also, do not install the X-1000 in a vertical position.

The X-1000 may be installed in two ways: with cleats, to raise it above the shelf of the cabinet to provide ventilation; or, without

cleats, in which case cut-outs must be made in the cabinet shelf. The two types of installation follow.

#### Installing With Cleats

- 1—Obtain a strip of wood  $\frac{3}{4}$  inches square and 25 inches long. Cut this strip in half to form two  $12\frac{1}{2}$  inch cleats.
- 2—Fasten the two cleats to the top of the mounting board with wood screws, in the positions shown in Figure 6. Then locate and drill four  $\frac{3}{8}$ -inch holes through the mounting board and cleats as indicated.
- 3—Saw a cutout through the front panel of your cabinet as shown in Figure 7. The bottom edge of the cutout should be on a level with the top of the two cleats.
- 4—Remove all knobs from the front panel of the X-1000. Then remove the two hexnuts holding the brass panel to the chassis. Lift off the front panel.



5—Remove the four plastic feet from the X-1000 and insert the chassis through the panel cutout *from the rear*. Then replace the front panel, hexnuts and knobs.

6—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.

#### **Installing Without Cleats**

1—Cutouts must be made in the mounting board beneath the ventilation holes in the bottom cover of the X-1000, as shown in Figure 6. The back of the cabinet must remain open.

2—Locate and drill four ⅜-inch holes in the mounting board as shown in Figure 6.

3—Saw a rectangular cutout through the front panel of the cabinet as shown in Figure 7. Note that the bottom edge of the cutout is flush with the top of the mounting board.

4—Remove the knobs from the front panel of the X-1000. Then remove the two hexnuts holding the brass panel to the chassis. Lift off the front panel.

5—Remove the four plastic feet from the X-1000 and insert the chassis through the panel cutout *from the rear*. Then replace the front panel, hexnuts and knobs.

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

#### **SERVICE NOTES**

##### **At Your Service**

It is our desire that your FISHER equipment operate to your complete satisfaction. We solicit your correspondence on any special problems that may arise. After you have had an opportunity to familiarize yourself with THE FISHER, we would appreciate hearing from you on how it is meeting your requirements.

##### **Your Fisher Dealer**

Be sure to consult your FISHER dealer promptly if any defect is indicated. Your FISHER dealer stands ready to assist you at any time.

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**TECHNICAL SPECIFICATIONS**  
(measured at a line voltage of 117V)

16	<b>Music Power Output (both channels, IHFM rating)</b>	110 watts	<b>MIC (at 1 kc)</b>	1.3 mv
	<b>Power Response (at rated output)</b>	18-20,000 cps	<b>TAPE HEAD (3¼ IPS, at 1 kc)</b>	1.5 mv
	<b>Harmonic Distortion (at rated output, 1 kc)</b>	0.5%	<b>TAPE HEAD (7½ IPS, at 1 kc)</b>	1.8 mv
	<b>Intermodulation Distortion (at 50 watts RMS per channel)</b>	0.8%	<b>High Level Inputs</b>	230 mv
	<b>Frequency Response:</b>		<b>Input Impedance:</b>	
	<b>Over-all</b>	20-20,000 cps ± ½ db	<b>PHONO 1 and 2</b>	47K ohms
	<b>Power amplifier section (at 10 watts RMS per channel)</b>	5-50,000 cps +0, -2 db	<b>High Level</b>	450K ohms
	<b>Hum and Noise (below 50 watts RMS per channel):</b>		<b>Bass Boost (at 50 cps)</b>	+17 db
	<b>Power amplifier section</b>	-95 db	<b>Bass Cut (at 50 cps)</b>	-17 db
	<b>AUX input (450 mv reference level)</b>	-80 db	<b>Treble Boost (at 10 kc)</b>	+16 db
	<b>Low Level (RIAA, 6 mv reference level)</b>	-66 db	<b>Treble Cut (at 10 kc)</b>	-16 db
	<b>Channel Separation (at 1 kc)</b>	better than 55 db	<b>Speaker Impedances</b>	4, 8, 16 ohms
	<b>Sensitivity (for 50 watts RMS per channel):</b>		<b>Damping Factor</b>	16.5
	<b>RIAA (at 1 kc)</b>	3.3 mv	<b>Low Filter Slope</b>	12 db/octave below 50 cps
			<b>High Filter Slope</b>	16 db/octave above 5 kc
			<b>Power Consumption</b>	300 Watts (340 VA)
			<b>Weight</b>	44 lbs.