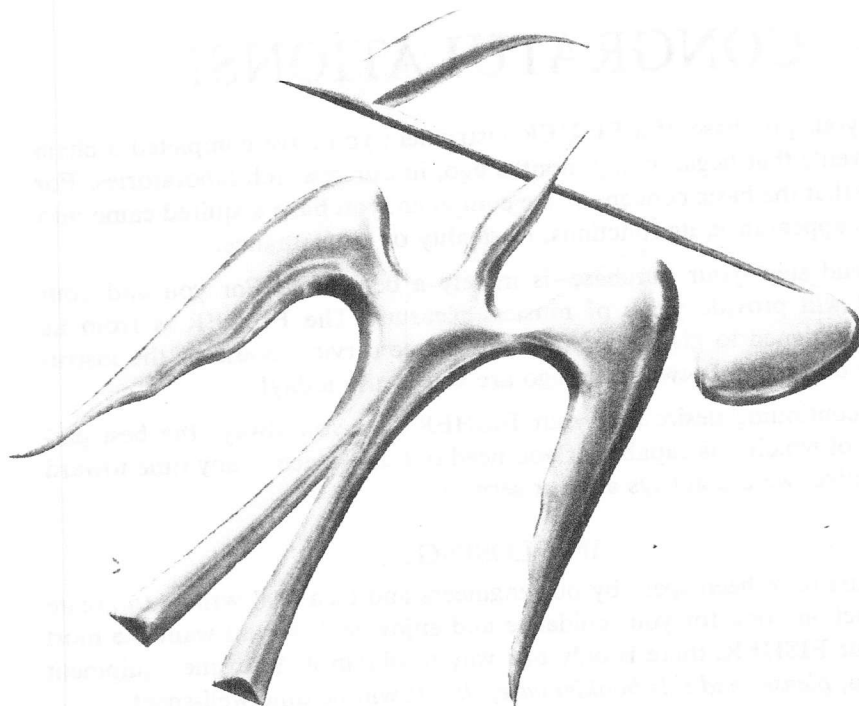


OPERATING INSTRUCTIONS AND WARRANTY

PRICE \$1.00



THE FISHER

400-CA

STEREOPHONIC MASTER AUDIO CONTROL

WORLD LEADER IN HIGH FIDELITY

[illegible]

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 Cascode 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 Cascode Front End. | | |
| 1954 | First low-cost electronic Mixer-Fader. | | |

THE FISHER "400"

Stereophonic

Master Audio Control

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 400 serves as the central component of the stereophonic installation. It is another outstanding example of the excellence in design, construction, and performance which has won for THE FISHER an international reputation in the field of high fidelity.

STEREOPHONIC SOUND

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.

Stereophonic program sources already in use include FM-AM, FM-FM, and FM Multiplex radio broadcasts; commercial and home tape recordings; commercial disc recordings; and live microphone pick-ups.

Facilities for handling all these sources are provided in THE FISHER 400. In addition, the 400 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 400 has two such channels with complete preamplification, equalization, and audio control facilities for each, all on one chassis. For convenience,

all audio controls except Bass and Treble are mechanically ganged to operate both channels simultaneously. Bass and Treble are dual controls which may be operated either ganged or as separate controls.

OPERATING INSTRUCTIONS

The few moments you spend reading these instructions will bring you far greater enjoyment of the 400 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 400 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 400 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 rear of the chassis. This arrangement permits you to determine the cable lengths necessary for the various connections to associated equipment, as described in the following paragraphs.

INSTALLING YOUR HIGH FIDELITY SYSTEM

When properly connected, the 400 becomes the electronic brain in your high fidelity installation. For standard monophonic operation, one amplifier-speaker combination is connected at the 400 output. For combined stereophonic monophonic operation, two separate amplifier-speakers are connected to the 400. For monophonic crossover operation, the 400 is connected to supply bass to one amplifier-speaker, and treble to a second amplifier-speaker. There are also jacks for stereo or monophonic recording and monitoring. Do not make AC connections to any of your equipment until the entire system has been properly connected.

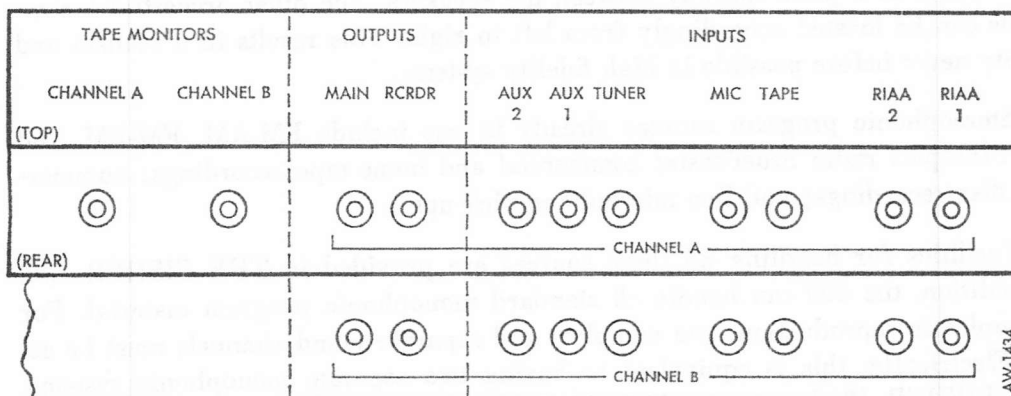


FIGURE 1: Rear Panel, Right Side

amplifiers . . .

Each of the two 400 channels has its own audio output for connection to the input of an amplifier. The amplifiers used for this purpose are of the basic power type. They require no audio controls, although input level adjustments are desirable, since all necessary operating controls are already incorporated in the 400 itself. The power rating of the amplifiers should be equal for stereo installations. The actual power used will depend on the size and characteristics of the listening area and on the speaker systems used.

If you are assembling a complete stereo installation, you may choose either THE FISHER SA-300 Stereo Amplifier or a matching pair from THE FISHER line of quality audio amplifiers, in any of several power ratings. If you are assembling a monophonic crossover-type installation, it is still best to add matching audio amplifiers. This permits you to convert to stereo easily by adding one matching speaker system and the necessary electrical crossover networks. If, for the time being, you intend to use the 400 in a standard monophonic installation, only one basic audio amplifier is needed. Choose that FISHER audio amplifier which affords you the best features for easy conversion to stereo at a later date.

speakers . . .

For stereo installations, an effort should be made to obtain two speaker systems as nearly alike as possible. In arranging them in the room, the speakers should be placed about five feet apart, the amount of separation depending on the dimensions of the room and its furnishings. As a rule-of-thumb, the distance to the best listening area will be approximately equal to the distance 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 effect. Some manufacturers of corner-type systems have made available instructions for adapting their speakers for stereo use; write directly to the speaker manufacturer for this information.

Wall-type speaker systems placed in the

room corners may also introduce undesirable effects. Instead, try placing them against the same wall, a short distance from the corners. 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 against the short wall.

With regard to speaker placement, always bear in mind that no two rooms are alike in their acoustical qualities; and even the same room will vary its response with a change in its furnishings. Therefore, do not hesitate to try different arrangements to obtain the best listening.

output connections . . .

TO AMPLIFIERS: Two shielded cables, with male plugs at each end, are supplied with the 400. In stereophonic installations, connect these cables from the *Channels A* and *B* Main Output Jacks to the high-level input jacks on the amplifiers. For convenience in both installation and operation, connect the *Channel A* Main Output Jack to the speaker-amplifier on your left when you are facing the speakers. In a monophonic installation, connect one cable from the *Channel A* Main Output Jack to the high-level input on the amplifier. In crossover operation, connect the *Channel A* Main Output Jack to the bass range amplifier-speaker, and connect the *Channel B* Main Output Jack to the treble range amplifier-speaker.

TO RECORDER: If you have a stereo recorder, connect the two 400 Rcrdr Output Jacks, *A* and *B*, to the two high-level inputs on the recorder. For simple orientation, connect the *Channel A* Rcrdr Output Jack to the recorder input channel representing the sound track that should be on your left as you face the speakers. Consult the instructions supplied with the recorder to determine which input channel this is. If you have a monophonic recorder, connect it to either the *Channel A* or the *Channel B* Rcrdr Output Jack, depending on the input channel from which you wish to record. Both Rcrdr Output Jacks are of the cathode-follower type, and the connecting leads may be up to 100 feet long, using low-capacitance (25 uuf per foot) shielded cable. For tape recorders with monitoring facilities, see the next section, on input connections to the 400.

The 400 supplies an ideal signal for recording 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 both the Main and Rcrdr Outputs, thus preventing them from appearing in the recorded sound or the speaker outputs. The equalization selector is also in use, to assure a recording signal with uniform frequency response regardless of program source.

input connections . . .

There are seven pairs of input jacks on the rear panel of the 400, which you may use to connect a variety of stereophonic and monophonic program sources, in addition to Tape Monitor inputs in *Channel A* and *Channel B*. The jacks accept standard RETMA plugs. Lead length depends on the output stage of the equipment being connected; therefore, consult the instructions supplied with that equipment to determine the maximum permissible cable length.

FROM RECORD PLAYERS: If you are using a magnetic-type stereo cartridge, connect the leads from the cartridge to the RIAA 1 Input Jacks, *Channels A and B*, on the 400. If you have a second record player with a magnetic-type cartridge, connect the leads to the RIAA 2 Input Jacks, *A and B*. Stereo discs are recorded so that the left-hand channel is on the inner side of each groove, with the right-hand channel on the outer side of the groove. For convenience, determine which cartridge lead represents the left-hand channel, and connect it to the *Channel A* input jack. *Note:* Monophonic LP and 78 equalization are available only when using the RIAA 1 Input Jack, *Channel A*, either with a stereo cartridge or a monophonic magnetic-type cartridge. In addition, a monophonic cartridge of the magnetic type may be connected to any of the RIAA Input Jacks available.

If you are using a ceramic stereo cartridge, connect the leads from the cartridge to the Aux 2 Input Jacks, *A and B*, with the lead representing the left-hand stereo channel going

to the *Channel A* input jack. A monophonic ceramic cartridge can be connected to either of the Aux 2 Input Jacks *A or B*, whichever is available. *Note:* Ceramic cartridges already incorporate equalization, the curve used being described normally in the cartridge specifications.

FROM TAPE DECK: A tape deck, sometimes called a tape transport, is a device for direct tape head playback only. Connect the outputs of a stereo tape deck to the 400 Tape Input Jacks, *A and B*. Determine from the tape deck instructions which output represents the left-hand channel, and connect it to the *Channel A* Tape Input Jack. A monophonic tape deck can be connected to either of the Tape Input Jacks. The tape input channels on the 400 provide both the required preamplification and tape equalization. *Caution:* If your tape equipment already has preamplifiers, do NOT use the Tape Input Jacks. Instead, use the Aux 1 or Aux 2 Input Jacks as you would for tape recorder playback, described below.

FROM MICROPHONES: One or two standard high-impedance microphones can be connected to the Mic Input Jacks on the 400. Where the microphone has an impedance switch, it must be set in the high-impedance position. An impedance transformer for use with a low-impedance microphone should have a secondary impedance of 20,000 ohms or higher.

FROM TUNERS: If you have an FM-AM stereo tuner, or separate FM and AM tuners, connect the FM tuner to the *Channel A* Tuner Input Jack on the 400, and the AM tuner to *Channel B*. Standard practice is to broadcast the sound to be heard on your left over the FM channel, that on your right over the AM channel. If, at present, you have a monophonic tuner only, it may be connected to either of the Tuner Input Jacks. The other Tuner Input Jack can then be used for another high-level program source, until such time as you complete your stereo tuner installation.

The same jacks may also be used for connecting two FM tuners for FM-FM stereo reception. It is necessary to ascertain which FM station is broadcasting the left-hand channel; use the tuner connected to *Channel A* to receive this station. Also, an FM or FM-AM monophonic tuner can be connected on *Chan-*

nel A and an FM tuner on Channel B for FM-FM stereo reception. Standard FM or AM monophonic broadcasts can then be received on Channel A, and the additional FM tuner is used only for receiving the right-hand channel of an FM-FM stereo broadcast.

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 400 as described in the operating instructions furnished with the adaptor.

FROM TAPE RECORDER: If your tape recorder has stereophonic playback, connect the outputs to either pair of Aux 1 or Aux 2 Input Jacks. However, these connections can be made permanently *only* if the tape recorder has no feed-through and monitor circuit arrangement. If you have a monophonic recorder with stereophonic playback and feed-through monitor facilities disconnect the feed-through circuit, and connect the playback outputs to Aux 1 or Aux 2 Input Jacks, if you wish to make permanent connections.

If you have a stereophonic tape recorder with stereo playback and *separate* feed-through and monitor facilities for each channel, connect the playback outputs to the Tape Monitor Jacks on the 400. This enables you to monitor the tape or listen to the program source, and also to switch the tape recorder out of the circuit by turning it off. In other words, both the input and output connections can be made permanently.

If you have a monophonic tape recorder with monophonic playback and no feed-through or monitor circuit, connect the playback output to the Aux 1 or Aux 2 Input Jack on the same channel as you connected the Rcrdr Input Jack. If the tape recorder has a feed-through and monitor facility, connect to the Tape Monitor Jack on the same channel as you used for the recorder input.

FROM OTHER SOURCES: If you desire, you may connect a shortwave tuner output or the sound portion of your TV set to any of the Aux Input Jacks on the 400. 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.

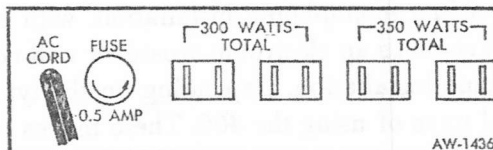


FIGURE 2: Rear Panel, Left Side

ac receptacles . . .

There are four auxiliary AC receptacles on the rear panel of the 400. The pair of outlets on the left can supply a combined total of 300 watts. The pair on the right can furnish a combined total of 350 watts. Be careful not to exceed these ratings.

If you are using two separate amplifiers, connect one to the left-hand pair and one to the right-hand pair of receptacles. Use the remaining two outlets to connect your record player and another piece of associated equipment, being careful to stay within the ratings given above. If you have a single amplifier chassis, stereo or monophonic, connect it to one of the right-hand receptacles. Use the remaining outlets for your other equipment.

Power is furnished by the four auxiliary AC receptacles when the 400 AC Switch is turned on.

ac power . . .

After you have made all the connections described above, connect the AC power cord of the 400 to your house current receptacle, first making certain that it supplies AC current between 105 and 120 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 AC frequency. The 400 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.

TYPES OF OPERATION

Three basic types of installation are covered in the previous section. The 400 can be utilized as the master audio control in a stereophonic installation. It can be used in a monophonic installation, with conversion to stereo at a later date. Or it can serve as an electronic crossover and control instrument in a two-channel monophonic installation. Depending on the type of installation you have, there are several ways of using the 400. These modes of operation are described below for each type of use.

stereo installation . . .

If you have installed the 400 as part of a complete stereophonic system, then the 400 controls permit you to choose either stereo or monophonic programs.

monophonic installation . . .

If the 400 has been made part of a monophonic installation, using one amplifier and one speaker system, then your facilities include

a monophonic program choice from sixteen inputs.

crossover installation . . .

A crossover installation is a two-channel monophonic system. It uses one amplifier-speaker for the bass tones, and a second amplifier-speaker for the treble tones. The crossover effect is produced by setting the Bass and Treble controls on the front panel as indicated under Bass and Treble Tone Controls.

HOW TO USE THE "400" CONTROLS

The front panel of the 400, shown in Fig. 3, contains all the controls and indicators, except the Input Level Adjustments which are located just behind the front panel. Each is described below. A careful reading of this section will result in a fuller understanding of the facilities available to you and increase your listening enjoyment.

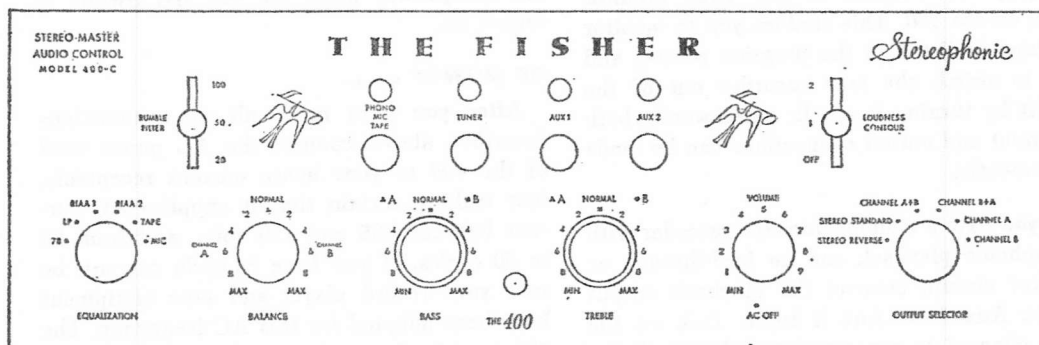


FIGURE 3: Front Panel Diagram

ac on-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 your sys-

tem. *Do not turn on AC power unless speakers are connected to your power amplifiers.*

When the knob is rotated clockwise from the AC OFF position, it not only supplies AC power to the 400 chassis, but also to the four auxiliary AC receptacles on the rear panel. After switching on AC power, the knob acts

as the Volume Control, described below. Also, when AC power is switched on, the red-jeweled pilot lamp at the center of the control panel goes on. See the last paragraph in this section for instructions on bulb replacement.

program pushbuttons . . .

The four pushbuttons on the front panel of the 400 constitute the Program Selector. Depressing one of the pushbuttons puts into operation one of the four main input channels, and lights the corresponding green-jeweled channel indicator lamp above it. (For bulb replacement, see the end of this section.) Both stereophonic and monophonic program sources are selected with the same pushbuttons.

PHONO-MIC-TAPE: Depress this pushbutton to use equipment connected to the RIAA 1, RIAA 2, Tape, or Mic Input Jacks. Which of these inputs is then used depends on the settings of the Equalization Selector and Output Selector, as described below.

TUNER: Depress this pushbutton to use equipment connected to the 400 Tuner Input Jacks.

AUX 1: To use equipment connected to the Aux 1 Input Jacks, depress this pushbutton.

AUX 2: This pushbutton is used for program sources connected to the Aux 2 Input Jacks.

equalization selector . . .

As noted above, depressing the Phono-Mic-Tape pushbutton is only the first step in selecting a low-level program source. The second step is to set the Equalization Selector, located at the left-hand side of the 400 control panel, for the specific input channel desired.

78 (PHONO): This position switches in the *Channel A* RIAA 1 Input Jack, and provides equalization for 78 r.p.m. shellac records. If you have a stereo record player connected to the RIAA 1 Input Jacks, be sure the cartridge is equipped to play the 78 r.p.m. records.

LP (PHONO): This position also switches in the *Channel A* RIAA 1 Input Jack. Use this position to play all pre-1955 monophonic LP recordings at 33 r.p.m. on your stereo or monophonic record player.

RIAA 1 (PHONO): RIAA equalization is used for all stereo and monophonic LP (33 r.p.m.) records made since 1955, and also for all 45 r.p.m. discs. RIAA is identical to the ORTHO characteristic. Switch to this position to obtain RIAA equalization with a record player connected to the RIAA 1 Input Jacks, stereo or monophonic.

RIAA 2 (PHONO): This position switches in a second record player connected to the RIAA 2 Input Jacks, stereo or monophonic, and provides RIAA equalization.

TAPE: When the Equalization Selector is switched to the TAPE position, it connects the tape deck, stereo or monophonic, that you have connected to the Tape Input Jacks. Both the required preamplification and equalization are provided.

MIC: With the Equalization Selector in this position, the Mic Input Jacks may be used. For live monophonic pick-up, use one microphone in either jack. For stereo, use two microphones. The microphone on your left, when you are facing the sound source, should be on *Channel A* for convenient stereo operation. The required preamplification, with uniform (flat) frequency response, is provided on both microphone input channels. If you are using this position for recording only, be sure the Volume Control is at its MIN position to prevent acoustic feedback and distortion.

output selector . . .

The Output Selector, on the right-hand side of the 400 front panel, controls the signals which are available at the Main Output Jacks. The six selector positions provide a convenient means for obtaining stereo, monophonic and crossover outputs.

REVERSE (STEREO): In a stereophonic installation, this position connects the *Channel A* input to the *Channel B* output, with the *Channel B* input going to the *Channel A* output. This position provides a way for switching the speaker outputs, so that the spatial arrangement of sound — from right to left — is what you desire.

STANDARD (STEREO): This is the normal stereo listening position. In this setting of the

Output Selector, the *Channel A* input is connected through to the *Channel A* output, and the *Channel B* input to the *Channel B* output.

CHANNEL A+B (MONAURAL): With the Output Selector in this position, any *Channel A* input is connected to both the *Channel A* and *Channel B* outputs. This enables both amplifier-speakers in a stereophonic installation to be used with a monophonic program source on *Channel A*.

CHANNEL B+A (MONAURAL): With the Output Selector in this position, any input to *Channel B* is connected to both the *Channel B* and *Channel A* outputs. This enables you to hear a monophonic program on *Channel B* through both the amplifier-speakers in a stereophonic installation.

CHANNEL A (MONAURAL): Switch to this position if you wish to use only *one* amplifier-speaker in your stereo installation, while listening to either a monophonic program on *Channel A*, or to one channel (*A*) of a stereo program.

CHANNEL B (MONAURAL): Switch to this position if you wish to use only *one* amplifier-speaker in your stereo installation, while listening to either a monophonic program on *Channel B*, or to one channel (*B*) of a stereo program.

audio controls . . .

VOLUME CONTROL: The 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. It is the second knob from the right on the front panel of the 400. Turning the knob clockwise from MIN to MAX results in an increasing volume of sound from the speakers.

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

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

The balance between the speakers in your high fidelity installation may also be set by remote control with the Model RK-1 Remote Control Unit, available from your FISHER dealer. This permits you to set the volume and balance in your speakers at the point where you are listening to the music. For information on connecting and operating the RK-1 Remote Control in conjunction with the 400-C, see the Installation and Operating Instructions furnished with the remote control.

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 is reduced, our 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."

The right-hand lever switch on the 400 front panel is the Loudness Contour Control. It has three positions, marked OFF, 1, and 2. Raising the lever from OFF to 1 or 2 brings into play an increasing amount of compensation for the loss of hearing sensitivity described above. Select the position you feel accords with your personal needs. The circuit then operates automatically to increase the amount of compensation as you lower the volume, and to decrease the compensation as you increase the volume.

In general, it is recommended that the Loudness Contour Control be used only at medium-low to low volume. The degree of compensation available with the lever at 2 should be utilized only when the volume is fairly low. Otherwise, unrealistic reproduction will result.

RUMBLE FILTER: The rumble filter circuit is operated by the lever switch on the left-hand side of the Control Panel. The three positions—20, 50, and 100—represent the cut-off frequencies in cycles per second at which the Rumble Filter operates. When set for one of these three cut-off points, the filter circuit sharply suppresses all tones *below* the selected frequency, but has no discernible effect on tones above this point.

The 20-cycle setting eliminates certain low-frequency disturbances present at times between 8 and 12 cycles, but has no effect at any audible frequency. In all normal applications, the Rumble Filter should be left in the 20-cycle position. For low-frequency disturbances between 20 and 50 cycles, use the 50-cycle position. This affects only the lowest portion of the audio spectrum, and has virtually no effect on actual listening. For low-frequency disturbances between 50 and 100 cycles, switch to the 100-cycle position.

BASS TONE CONTROL: The Bass Control, located at the mid-left position on the 400-C panel, consists of a dual knob. The small 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 400-C 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 400-C as outlined below.

TREBLE TONE CONTROL: The Treble Tone Control, located at the mid-right position of the 400-C 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 a separate operation is required for each channel, remove this pin as indicated for the Bass control.

The Bass and Treble controls on the 400-C can be used to achieve a crossover network with monophonic program material, feeding high frequencies to one amplifier-speaker and the lows to the other. This tone separation produces, from a monophonic source, an effect which is similar to stereo. To provide crossover operation, set the Bass control on the 400-C 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 400-C, then set the Output Selector to Channel A + B. If the program is being fed through Channel B, the Output Selector is turned to Channel B + A.

input level adjustments . . .

Four Input Adjustments are provided on the 400, two on Channel A and two on Channel B. One pair is for the low-level Phono-Mic-Tape Inputs, the other pair for the Aux 1 Inputs. All four are accessible from the top of the chassis and are located just behind the front panel of the 400. (See Figure 4, page 10).

The Input Level Adjustments can be used for two purposes. If the input signals are of

a level high enough to overload the 400, the adjustments can be turned to the left so that only a portion of the input signal is used. If the input levels differ considerably from each other on these channels, then the Input Level Adjustments can be used to equalize them.

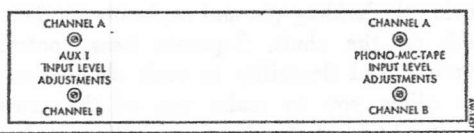


FIGURE 4: Top View Showing Level Adjustments

Turning any of the Input Level Adjustments completely to the right (clockwise), means that the full strength of the input signal is being utilized by the 400. We recommend that the adjustments be set in this position before the system is placed in operation. They

can then be varied, if necessary, for the reasons given above.

bulb replacement . . .

The red-jeweled pilot lamp and the four green-jeweled channel indicator lamps on the front panel are all replaceable without removing the 400 chassis. Replacement bulbs are available from your FISHER Dealer. *First be sure to disconnect the AC cord of the 400 from the power line.* Remove all the knobs, including those on the lever controls, then carefully remove the two hex nuts on the Balance Control and Volume Control shafts. Lift away the front panel, and remove the sleeve on the defective bulb. Unscrew the old bulb and replace it. Replace the sleeve, the panel, the two hex nuts, and the knobs.

SHORT GUIDE TO OPERATING THE "400"

Below is a step-by-step summary of 400 operation. Please bear in mind, however, that it is not intended as a substitute for the detailed instructions in the foregoing sections. Its purpose is to serve as a convenient checklist of the steps to follow when placing your high fidelity system into operation.

THE FISHER 400		GUIDE TO INPUT CONNECTIONS		
S/M	CHANNEL B EQUIPMENT	INPUT JACKS	CHANNEL A EQUIPMENT	S/M
		RIAA1		
		RIAA2		
		TAPE		
		MIC		
		TUNER		
		AUX 1		
		AUX 2		
		MONITOR		
Write "S" for Stereo or "M" for Monaural Equipment				

FIGURE 5: Check list of output connections

ONE: Turn the Volume Control knob from AC OFF to the MIN position. AC power is now being furnished to the 400 chassis, and also to any equipment connected to the auxiliary AC receptacles on the 400 rear panel.

TWO: Depress one of the four front-panel pushbuttons to connect the input channel desired. If the Phono-Mic-Tape pushbutton is depressed, it is also necessary to set the Equalization Selector for the particular low-level input desired. If you are using the Tape Monitor Inputs, it is not necessary to use the 400 input selectors for straight tape recorder playback. Simply operate the tape recorder in accordance with the instructions supplied with it.

THREE: Set the 400 Output Selector for the amplifier-speaker output you desire to use. Set the Balance Control at mid-position and the

Volume Control part-way clockwise so that you can hear the program.

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

input connection guide . . .

In order to have a handy method for checking on the way you have connected your equipment to the rear panel of the 400, a convenient form is provided in Figure 5. Enter the equipment and jack names next to the names of the input jacks in the appropriate channel column. Mark "S" or "M" in the outer columns to indicate whether the program source is stereophonic or monophonic.

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 a necessity. THE FISHER must *never* be installed in a totally enclosed space, nor should it be placed too close to other heat-producing equipment.

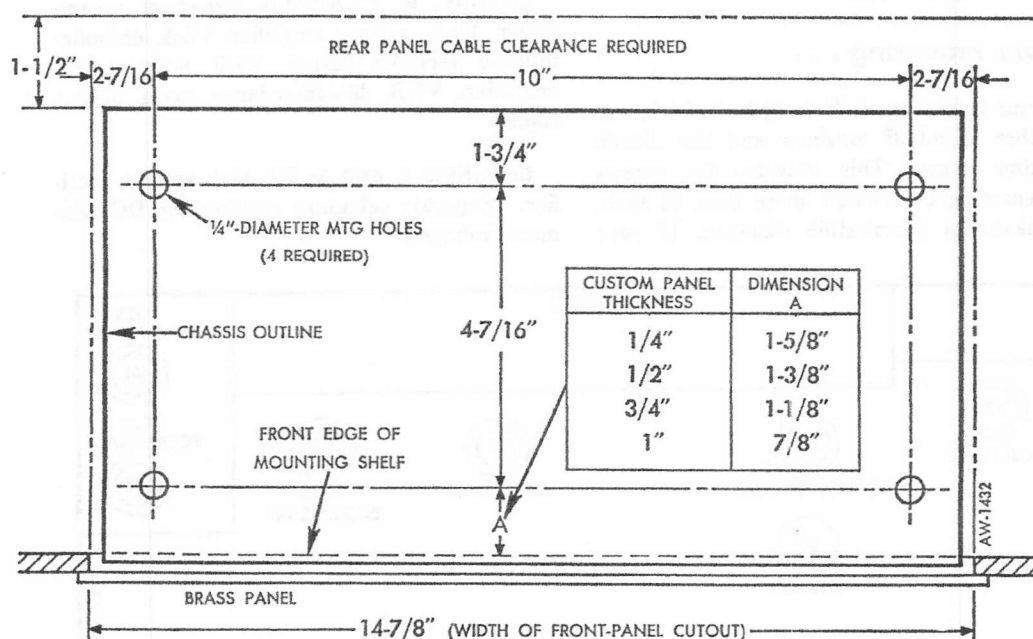


FIGURE 6: Custom Shelf Mounting Diagram

mounting hardware . . .

The mounting hardware supplied with the 400 includes 4 1-inch mounting screws, 4 1/2-inch mounting screws, 4 fibre stand-off washers, 4 flat washers and 4 plastic feet.

plastic feet . . .

The plastic feet are supplied if you desire to place the 400 on a shelf or cabinet top without a cabinet or special mounting. If this is the case, attach the four plastic feet to the bottom cover, using the 1/2-inch screws supplied. The small end of the feet faces down. The feet raise the chassis sufficiently so that

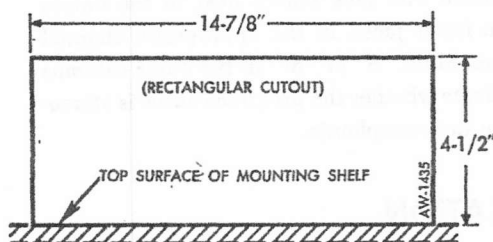


FIGURE 7: Custom Front Panel Cutout Diagram

the front panel is clear of the surface being used. *Caution! Do not use the 1-inch screws to attach the plastic feet, or severe damage to the chassis may occur.*

custom mounting . . .

If your mounting shelf is 1/2-inch thick, use the fibre stand-off washers and the 1-inch mounting screws. This prevents the screws from entering the chassis more than 1/4 inch, the maximum permissible distance. If your

mounting shelf is 3/4-inch thick, substitute the flat washers for the stand-off type. For thicker shelves, counterbore down to 3/4 inch, and use the flat washers with the 1-inch screws, or obtain longer 8-32 machine screws. The length of the longer screws should be 1/4-inch plus the thickness of the mounting shelf, and should be used with the flat washers.

The shelf mounting holes and the front-panel cutout should be made in accordance with Figure 6 and 7. Slide the 400 in through the front panel. Note that it is not necessary to dismantle the 400 to make this installation.

tube location and function . . .

There are seven tubes in the 400, plus a selenium bridge rectifier for DC filament voltage to the tubes. The double circles in the Tube Location Diagram indicate tube shields. Those tubes described below which have A and B sections are dual-triodes.

CHANNEL A: V1-A/V1-B, two-stage preamplifier. V2-A, voltage amplifier. V3-A, cathode-follower recorder output. V2-B, tone control amplifier. V3-B, low-impedance main output stage.

CHANNEL B: V4-A/V4-B, two-stage preamplifier. V5-A, voltage amplifier. V6-A, cathode-follower recorder output. V5-B, tone control amplifier. V6-B, low-impedance main output stage.

CHANNELS A AND B: V7, high voltage rectifier. (Separate selenium rectifier for DC filament voltage.)

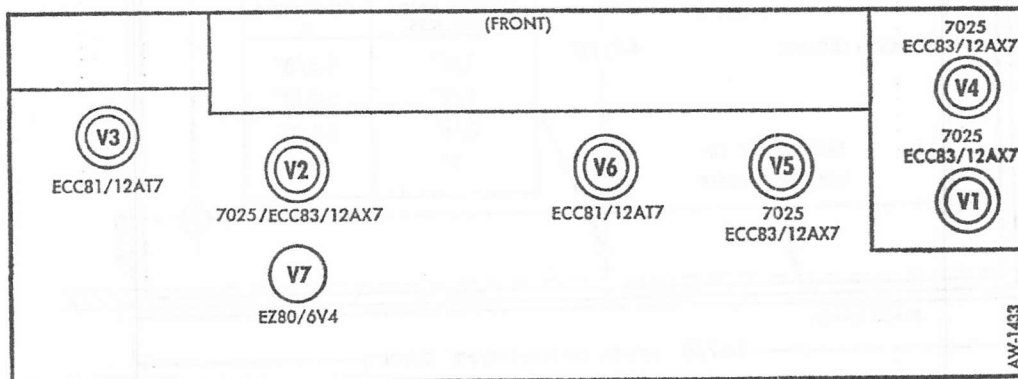


FIGURE 8: Tube Location Diagram

The Man Behind the Product

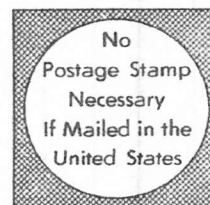
AVERY FISHER
Founder and President,
Fisher Radio Corporation



TWENTY-TWO 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.

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.



BUSINESS REPLY CARD

FIRST CLASS PERMIT No. 45377, NEW YORK, N. Y.

FISHER RADIO CORPORATION

21-21 44th Drive

Long Island City 1, N. Y.



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. This guarantee is void if the equipment has been altered, or if the purchaser has failed to return the Warranty Card *within 10 days*.

FOR WARRANTY SERVICE, CONSULT YOUR DEALER



Please fill out and return this
WARRANTY CARD

PLEASE PRINT

USER'S LAST NAME	FIRST NAME	INITIAL
USER'S HOME ADDRESS		
CITY	STATE	
DATE OF PURCHASE • •	MODEL NO.	SERIAL NO.

Name of Dealer _____

City _____ State _____

I first heard of THE FISHER through: ☐ Friend ☐ Dealer

☐ Advertising _____ (Name of publication)

I chose THE FISHER because: _____

What I think of my FISHER equipment: _____

I also own these additional hi-fi units: _____

WARRANTY VOID UNLESS COMPLETED AND RETURNED
WITHIN 10 DAYS AFTER DATE OF PURCHASE