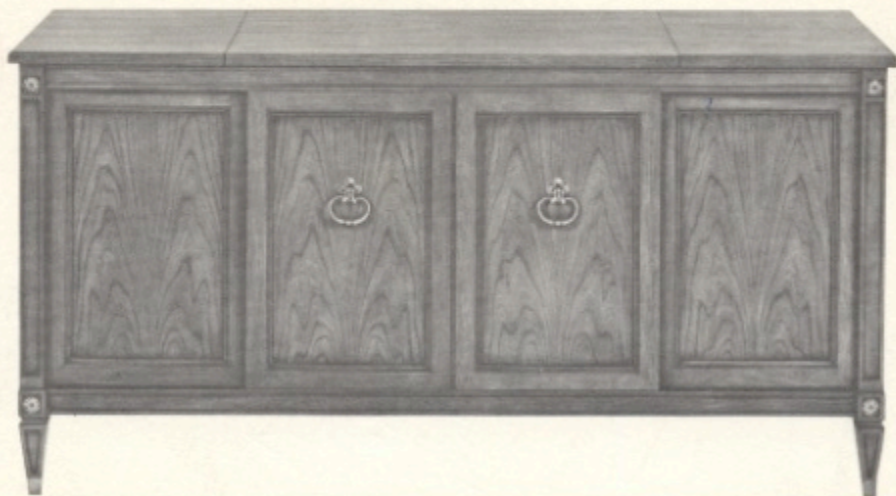


OPERATING INSTRUCTIONS AND WARRANTY



THE FISHER®

Futura VI

MODEL F-590

Stereophonic Radio-Phonograph

WORLD LEADER IN HIGH FIDELITY

PRICE \$1.00



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-seven 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. | 1956 | First dual dynamic limiters in an FM tuner for home use. | 1961 | First complete receivers with Multiplex. |
| 1937 | First exclusively high fidelity TRF tuner, featuring broad-tuning 20,000 cycle fidelity. | 1956 | First Performance Monitor in a high quality amplifier for home use. | 1961 | First FM-Stereo-Multiplex tuners with STEREO BEAM. |
| 1937 | First two-unit high fidelity system with separate speaker enclosure. | 1956 | First FM-AM tuner with TWO meters. | 1961 | First loudspeaker system with frameless woofer cone, eliminating all parasitic resonance. |
| 1938 | First coaxial speaker system. | 1956 | First complete graphic response curve indicator for bass and treble. | 1961 | First internal switching system to permit immediate tape playback with use of all controls and switches. |
| 1938 | First high fidelity tuner with amplified AVC. | 1957 | First Golden Cascade FM Tuner. | 1962 | First simplified-operation Control-Amplifier, with infrequently used controls behind a front-panel cover, yet immediately accessible. |
| 1939 | First 3-Way Speaker in a high fidelity system. | 1957 | First MicroRay Tuning Indicator. | 1962 | First loudspeaker with eddy-current-damped voice coil. |
| 1939 | First Center-of-Channel Tuning indicator. | 1958 | First Stereophonic Radio-Phonograph with Magnetic Stereo Cartridge. | 1962 | First bass speaker with combined serrated-aluminum and fiber cone. |
| 1945 | First Preamplifier-Equalizer with selective phonograph equalization. | 1959 | First high-quality Stereo Remote Control System. | 1962 | First FM Tuner Kit with separate d'Arsonval meter for tuning and separate cathode ray stereo broadcast indicator (STEREO BEAM). |
| 1948 | First Dynamic Range Expander with feedback. | 1959 | First complete Stereophonic FM-AM Receiver (FM-AM tuner, audio control, 40-watt amplifier). | 1962 | First Stereophonic FM Tuner with TUNE-O-MATIC Motor Tuning. |
| 1949 | First FM-AM Tuner with variable AFC. | 1959 | First high-compliance plus high-efficiency free-piston speaker system. | 1962 | First Supersonic Wireless Remote Control in a high fidelity component. |
| 1952 | First 50-Watt, all triode amplifier. | 1960 | First to use MicroRay for FM tuning and as a Recording Audio Level Indicator. | 1963 | First to use 8417 tubes with unique cavity-anode design. |
| 1952 | First self-powered Master Audio Control. | 1960 | First complete stereo FM-AM receiver with 60-watt power amplifier and new 7591 output tubes. | 1963 | First power amplifier to use oscilloscope-type, frequency compensated input circuit. |
| 1953 | First self-powered electronic, sharp-cut-off filter system for high fidelity use. | 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. | 1963 | First amplifier kit with STRATABALANCE, visual dynamic balancing system. |
| 1953 | First Universal Horn-Type Speaker Enclosure for any room location and any speaker. | 1960 | First reverberation device, for use in high fidelity equipment—The Fisher Dynamic Spaceexpander. | 1964 | First multiplex adaptor with 'flywheel synchronization.' Closely approaches theoretical limit of noise rejection, and of all spurious responses. |
| 1953 | First FM-AM Receiver with a Cascade Front End. | 1960 | First stereo tuner with MicroTune. | 1964 | First AFC with strong locking on weak signals, with no pull-in from adjacent strong signals. |
| 1954 | First low-cost electronic Mixer-Fader. | 1960 | First FM tuner with six IF stages. | | |
| 1954 | First moderately-priced, professional FM Tuner with TWO meters. | 1960 | First FM tuner with five limiters. | | |
| 1955 | First Peak Power Indicator in high fidelity. | 1960 | First front panel antenna selector switch, 72-300 ohm, Local-Distant positions. | | |
| 1955 | First Master Audio Control Chassis with five-position mixing facilities. | 1961 | First Multiplex units with STEREO BEACON and automatic switching, mono to stereo. | | |
| 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. | | | | |



FUTURA VI

MODEL F-590

Stereophonic Radio-Phonograph

Your new Futura VI is a prime example of the bold imagination, sound design and old-world craftsmanship which have made the FISHER name synonymous with leadership in high fidelity for over a quarter-century. Equipment built by FISHER, long-favored by music lovers of discriminating taste, has also proven itself in the demanding environments of laboratories, broadcast studios, and government agencies. Professional musicians, who comprise a significant number of our patrons, join with musical connoisseurs from all walks of life in praising FISHER radio-phonographs as truly *musical* instruments, whose faithful reproduction virtually removes the barriers between the performance and the listener.

All sources of high-fidelity music, both stereo and monophonic, are provided for in the circuits of your Futura. The unusually sensitive tuner can be used for the reception of AM, FM, and multiplexed FM stereo broadcasts. The multiplex section, which incorporates the exclusive FISHER STEREO BEACON[™], shows you whether or not a station is broadcasting stereophonically, and automatically switches the instrument into the correct mode of operation. The electron-ray Station Indicator makes precise tuning virtually automatic for anyone, and a switchable, solid-state muting circuit ensures interstation silence. Ten controls and switches, including Input Selector, Mode Selector and Speaker Selector switches, enable you to select any program source instantly, to

adjust the volume and tonal characteristics to your taste, and even to silence the speakers, if you wish, for private listening. Special facilities are provided for the connection of the FISHER SPACEEXPANDER[®] and the WS-1 Wide-Surround[®] speakers. If you desire, the automatic shut-off circuit will turn the entire radio-phonograph off after the last record in a stack has been played.

The new, transistorized 65-watt power amplifier represents a significant advance in the art of high fidelity component design. By eliminating the output transformers and precisely matching the output circuits to the characteristics of the two three-way speaker systems, a remarkably faithful reproduction of the most delicate of solo passages and the most thunderous and complex of orchestral crescendos is achieved.

The most important ingredients of *any* FISHER component, however, are not so obvious. These are the careful design, the use of costly, durable materials, the craftsmanship in construction, and the rigid test procedures behind every FISHER unit which receives the final stamp of approval. Before leaving the factory, your Futura had to pass a comprehensive series of stringent examinations. In this way we endeavor to maintain our long-established, world-wide reputation for the very highest standards in performance and reliability.

TABLE OF CONTENTS

FOR THE 'MAN IN A HURRY'	3
INSTALLATION	3
Power Requirements/Readying for Operation	
OPERATION	5
ACCESSORIES	9
ANTENNAS	12
HOME MAINTENANCE	13
Cleaning Dial Glass/Replacing Lamps and Fuses	
FOR THE TECHNICALLY-MINDED LISTENER	14
TECHNICAL DATA	16

WHAT IS STEREOPHONIC SOUND?

Stereophonic sound (stereo) is a method of reproducing sound by means of two independent channels, left and right, so that a spatial feeling of direction and depth is recreated. It is the exten-

sion of high fidelity sound into three dimensions. In fact, it offers the closest approach to true high fidelity yet achieved because it comes closest to the ultimate aim of all high fidelity systems — a perfect recreation of the original live sounds. Thus, good stereophonic sound *is* high fidelity in the truest sense of the term.

This feeling of dimension is lost with monophonic (single channel) reproduction, because our ears help determine the relative position of separate instruments in an ensemble only if each hears a slightly different version of the sound, just as visual depth perception depends on the two separate, slightly different pictures received by the eyes. Merely using two or more speakers connected to a single amplifier does not solve the problem; it only spreads the single sound source without providing the all-important different 'aural viewpoints.'

True stereo sound, then, requires the use of two independent sound paths from the origin to your ears, kept separate at all times during recording, transmission and reception. This requires the use of two separate sets of recording amplifiers, a means of keeping the channels apart during recording and radio broadcasting, and finally, two independent amplifier and speaker systems in the home. For optimum stereo, it is best to have the equipment used in each channel as alike as possible. In a stereo record, each wall of the groove contains a separate signal, and the stereo cartridge is designed to pick up each of these two channels separately. The new system of FM stereo broadcasting (known as "multiplex") utilizes a separate supersonic signal, in addition to the main signal. By combining these two signals in a multiplex converter, the original left and right channels are recovered. Stereo tape recordings are made by impressing the two channels on separate parallel tracks running along the length of the tape.

No attempt is made to keep the two channels completely separate acoustically. In a live performance, your left ear hears many of the sounds on your right, and vice versa. Thus, keeping the channels totally apart from the original recording session to the final playback in your home would result in an unnatural effect.

But enough separation is maintained so that a definite feeling of direction occurs as you listen to the reproduced sound. The result is a remarkably vivid illusion of great depth and spaciousness, such as is normally obtained only at a live performance.

FM MULTIPLEX STEREO

FM broadcasting has a frequency range far in excess of the normal hearing range. For example, Fisher wide-band tuners have a frequency range which extends to 75 kc, while the normal hearing range does not exceed 17 kc. This extra "space" in the frequency range has now been put into service for the transmission of a second and third signal simultaneously with the main signal. The third (and highest frequency) signal is used in commercial applications (for background music) and will not be received on home high fidelity equipment. The other two signals, however, are used for the reception of stereo programs. During stereo multiplex broadcasts, the main signal, which can be received by any FM tuner or receiver, contains the sum or blended signal from both stereo channels (left plus right). The second, supersonic signal contains the additional information necessary to recreate the stereophonic sound. This "compatible" system makes it possible for an ordinary FM set to receive a fully balanced monophonic program even during a stereo multiplex broadcast. At the same time, however, the multiplex circuits of the Futura derive both stereo channels from the main and supersonic signals, providing you with all the added realism of full stereo sound. Because FM stereo multiplex broadcasts require new equipment and new techniques at FM stations, it is to be expected that not all programs will be of the same technical calibre during the first few months of their operation. Such occasional problems as may arise initially will no doubt be solved quickly, as the stations gain experience with the new procedures.

FOR THE MAN IN A HURRY

It is not difficult to guess that right now you are most anxious to connect your new Futura, turn the set on, and *then* read the instructions as you listen to your favorite programs and records. Although this method seems a pleasant one, we advise against it, since there are certain precautions of which you should be aware before installing the set. *Please read the entire INSTALLATION section — reading time is only a few minutes — before connecting the Futura's power cord to the wall socket and turning the set on.*

After reading this section, the 'man in a hurry' can then operate the Futura with the information contained in Table 1, on page 6. In spite of its convenience, Table 1 should not be considered a complete operating guide. Since maximum pleasure can only be derived from a unit through full knowledge of its capabilities, we urge you to carefully read the entire section on operation at your earliest convenience.

INSTALLATION OF THE FUTURA VI

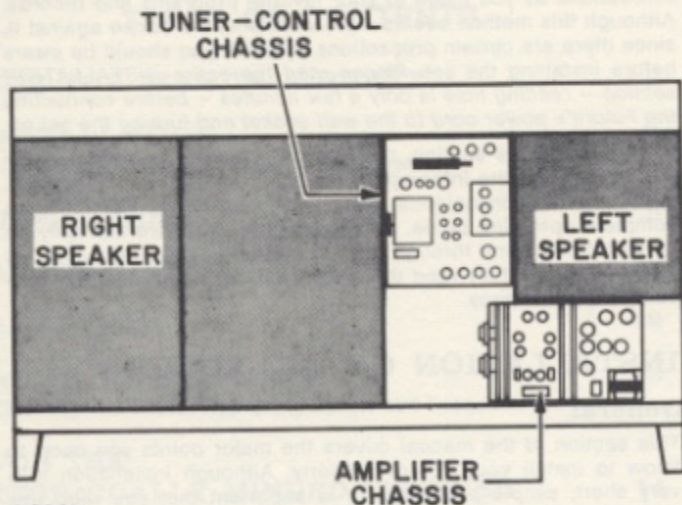
1. General

This section of the manual covers the major points you need to know to install your Futura properly. Although installation is a very short, simple procedure, it is important that you read this section before connecting the power plug to the wall outlet and turning the set on.

The Futura operates on AC *only*. Plugging it into a DC outlet will result in serious damage. The power cord extending from the rear of the cabinet should be connected to a wall outlet supplying 105 to 120 volts AC at 50 or 60 cycles. Power consumption at maximum output is 252 watts (285 VA).

The 60-cycle current is available in almost all areas of the United States, but if you are in any doubt about your local power source, we suggest you check with your dealer, or local utilities company.

to make sure. In the rare case that you have 50-cycle AC in your location, you will need a special adaptor pulley so that the Automatic Turntable will revolve at the correct speed. This pulley can be obtained from your FISHER dealer.



INS241

FIGURE 1. Rear View

2. The Automatic Turntable

The heavy, precisely balanced platter of the Automatic Turntable is protected from damage during shipment by a foam plastic filler, which also contains the spindles. To prepare the FISHER Automatic Turntable for operation, the following steps should be taken:

1 - Remove the two large machine screws from the wooden

bracket holding the foam plastic and platter in place. Then lift off the wooden bracket.

2 - While holding the platter within the plastic filler, lift the filler straight upward until clear of the compartment walls, and place on a horizontal surface.

3 - Remove the two screws holding the metal brackets, and discard the brackets. The turntable is now ready for final installation as described on page 5 of the turntable instruction booklet.

3. The Antennas

There are two antennas already built into the Futura: one for AM and one for FM. The AM antenna is a ferrite-core loop, mounted on the Tuner-Control chassis. It will provide excellent reception of AM stations in almost all cases, without the aid of an additional external antenna.

The FM antenna is made of 300-ohm "twin lead"—the same material used for TV antenna lead-in wire—cut and wired especially for use as an FM antenna. You will find it stapled to the back of the cabinet. It will give excellent results on both stereophonic and monophonic FM broadcasts, except possibly in fringe areas. If you have difficulty with FM reception, consult the *ANTENNAS* section, on page 12 of this manual.

4. Location of Cabinet

Cabinet location may be varied to suit your acoustic and decorative requirements. The Futura is suitable for installation in a corner, along a wall, or as part of a room divider. Whichever location you prefer, be sure the cabinet is away from heat-producing radiators and ducts. Transistors are heat-sensitive components which, contrary to popular belief, *do* generate heat. Because of this, you should allow a minimum of two inches between the rear of the cabinet and the nearest wall, to permit circulating air to cool the transistors. This provides the optimum environment for transistor operation.

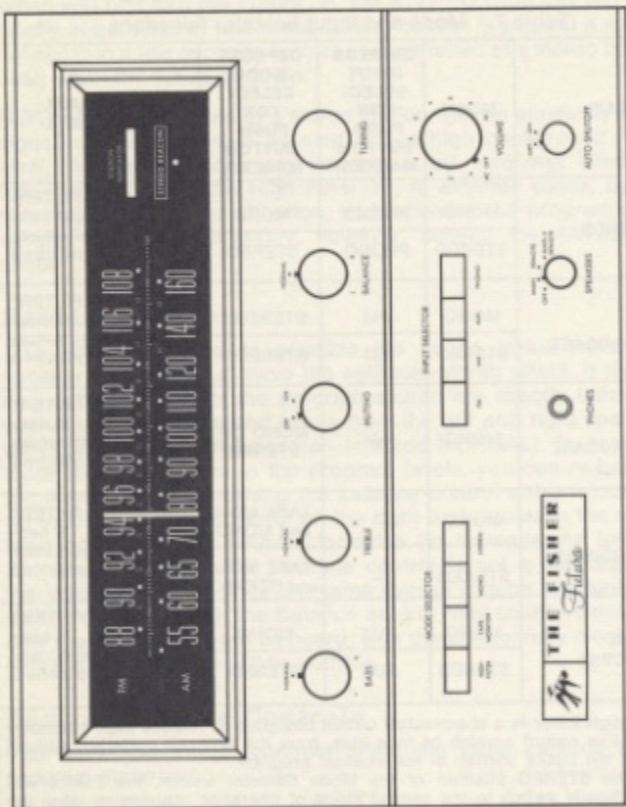


FIGURE 2. Dress Panel and Dial Glass

OPERATING THE FUTURA VI

Your Futura VI is now ready for operation, but like any fine electronic instrument, it must be operated correctly to deliver its best performance. We urge you to read the following instructions carefully, so that you may achieve optimum results. Figure 2 is an illustration of your Futura's dress panel, with all markings and controls shown. The controls have been set at the factory to the positions shown. You will find it helpful to refer to Figure 2 as you read, or, better still, to operate the controls themselves, in order to familiarize yourself with them.

1. Input and Mode Selector Switches

These switches consist of four pushbuttons each. The Input Selector, located on the right side of the control panel, permits you to choose among the various program sources of the Futura. Depressing one pushbutton releases any other which may be pushed in at the time. The Mode Selector, which also consists of four pushbuttons, enables choice of the mode of operation (mono or stereo), and also contains the High Filter and Tape Monitor switches. The functions of the Input and Mode Selector switches are shown in Table 1.

2. Volume Control and Power Switch

This control combines the functions of power switching and volume control. In the AC OFF position, power to the entire set is shut off. Turning the control slightly clockwise until it clicks turns the power on. The tuner dial will then light, and the jewel indicator at the base of the Futura will also be illuminated. Wait about 30 seconds for the tubes in the Tuner-Control chassis to reach operating temperature before setting the volume level for the first time. Turning the control further clockwise increases the total volume level from both speakers; turning the control in the opposite direction has the opposite effect.

NOTE: If the Futura appears to be inoperative after you have switched it on as described above, check to see that the Automatic Shutoff switch (described below) is in the OFF position.

3. Tuning

This control enables you to select AM stations in the 550- to 1600-kilocycle band and FM stations in the 88- to 108-megacycle band. The single knob controls both sections of the Futura's tuner; which mode you receive depends upon the position of the Selector switch, which is explained above. The FM markings are uppermost on the dial glass, and the AM calibration at the bottom. Between them is a 'logging' scale, which is calibrated in linear fashion from 0 to 100. This scale may be used to locate either AM or FM stations, by noting the position of the dial pointer on the logging scale when you are tuned to these stations. Many people find this method more convenient than remembering exact station frequencies. To help you tune more accurately (especially important on FM), we have incorporated an electron-ray tube Station Indicator, which functions on both AM and FM. Observe the indicator (located at the right side of the dial glass) as you tune to a station: the two bright bands of light will converge toward the center. Exact center-of-station tuning is achieved when the two bands are as close together as they will go—that is, when the dark portion at the center is the smallest. The amount of the dark portion which is eliminated by the two bright bands will depend upon the strength of the received signal.

If the stereo button of the Mode Selector switch is depressed, and you tune to a station which is broadcasting a multiplexed FM stereo program, the STEREO BEACON jewel (below the Station Indicator) will light, and the Futura will switch automatically into the stereophonic mode of reception. When the station stops multiplexing, or when you tune to another station which is broadcasting monophonically, the STEREO BEACON light will go out, and the Futura will switch itself back into the monophonic mode.

Table 1. Mode and Input Selector Functions

TO PLAY	MODE	DEPRESS INPUT SELECTOR PUSH-BUTTON MARKED:	DEPRESS MODE SELECTOR PUSH-BUTTON MARKED:	ADDITIONAL COMMENTS
RECORDS	MONO	PHONO	MONO	Use HIGH FILTER* push-button, if necessary, to eliminate any high-pitched noise.
	STEREO	PHONO	STEREO	
FM BROADCAST	MONO	FM	STEREO**	Use HIGH FILTER* push-button, if necessary, to eliminate any high-pitched noise.
	STEREO	FM	STEREO**	
AM BROADCAST	MONO	AM	MONO OR STEREO	Use HIGH FILTER* push-button, if necessary, to eliminate any high-pitched noise.
TAPE RECORDINGS†	MONO	—	TAPE MON and MONO	Use HIGH FILTER* push-button, if necessary, to eliminate any high-pitched noise.
	STEREO	—	TAPE MON and STEREO	
OTHER SOURCES†	MONO	AUX	MONO	Use HIGH FILTER* push-button, if necessary, to eliminate any high-pitched noise.
	STEREO	AUX	STEREO	

* The High Filter is a sharp-cutoff circuit designed to remove high-frequency noise, like record scratch or tape hiss, from the program material, without dulling the treble portion of the musical program.

** In the STEREO position of the Mode Selector switch, the Futura will automatically switch to the correct mode of operation, depending upon the FM signal received. For unusually weak or noisy signals, see Paragraph 3, below.

† For information on the connection of tape recorders and other auxiliary sources, see the ACCESSORIES section, which begins on page 9.

When you first turn the Futura on, the STEREO BEACON will light briefly, regardless of where the Tuning control is set, but it will go out again in a few seconds (unless you are tuned to a stereo broadcast) when the tubes warm up.

NOTE: If you are tuned to a stereo station with an unusually weak signal, or are located in an area with a high background noise level, the stereo signal may become noisy. You may eliminate this noise by using the High Filter, or, in extreme cases, by depressing the MONO pushbutton, and receiving the program monaurally. If this is necessary, however, consult the *ANTENNAS* section, on page 12.

4. Balance Control

This control is used to equalize the sound levels from both speaker systems, to achieve the optimum stereo effect. If the left and right channels of the program source are exactly balanced, you will hear equal sound levels from the left and right speakers with the control in mid-position (marked NORMAL). If, however, there is an imbalance in the program levels, you can re-balance the sound levels by turning the balance control either clockwise (to increase the sound level on the right and decrease the sound level on the left) or counterclockwise (to increase the left and decrease the right). The Balance control is not a substitute for the Volume control, since the same overall volume is maintained as it is adjusted. With the Balance control fully counterclockwise, only the left speaker will be heard; with the control fully clockwise, only the right speaker will be audible.

5. Bass and Treble Controls

The Bass and Treble controls affect the tonal balance of the program material.

The Bass control increases the amount of bass tones (such as those of a tuba or bass viol) that you hear. With the Bass control in the mid-position (marked NORMAL), the bass tones will sound

exactly as they did when they were recorded or picked up for broadcast. If you wish to emphasize the bass, simply turn the Bass control clockwise. To decrease the prominence of the bass tones, turn the Bass control counterclockwise.

The Treble control adjusts the intensity of the treble tones (such as the highest notes of the violin or piccolo) that you hear. As with the Bass control, the mid-position (marked NORMAL) will result in the reproduction of treble tones exactly as they appear in the program source. The relative strength of the treble tones (with respect to the rest of the program material) can be increased by rotating the Treble control clockwise. Turning the control counterclockwise decreases the relative amount of treble tones.

NOTE: The tone control settings have no effect upon recordings made from the Futura through the recorder output jacks.

6. Automatic Shut-Off Switch

The Automatic Shut-Off switch should be used only when the PHONO pushbutton of the Input Selector is depressed. In the OFF position, the Tuner and Amplifier portions of the Futura are turned off and on solely by the power switch on the Volume control, mentioned above. The Automatic Turntable will turn itself off after the last record has played, but the rest of the Futura will remain on. In the ON position, the automatic switch in the Turntable will also control power to the Tuner and Amplifier. Thus, after the last record has been played, the entire set will shut off automatically. The set will be turned on again the next time you use the Turntable, but if you do not plan to play records when the Futura is next turned on, be sure to *turn the Automatic Shutoff switch to OFF. Otherwise, the entire Futura will be inoperative.*

7. Speakers Switch

The *Speakers* switch has four positions, whose functions are as follows:

OFF — In this position, all speakers are silent. Use this position for

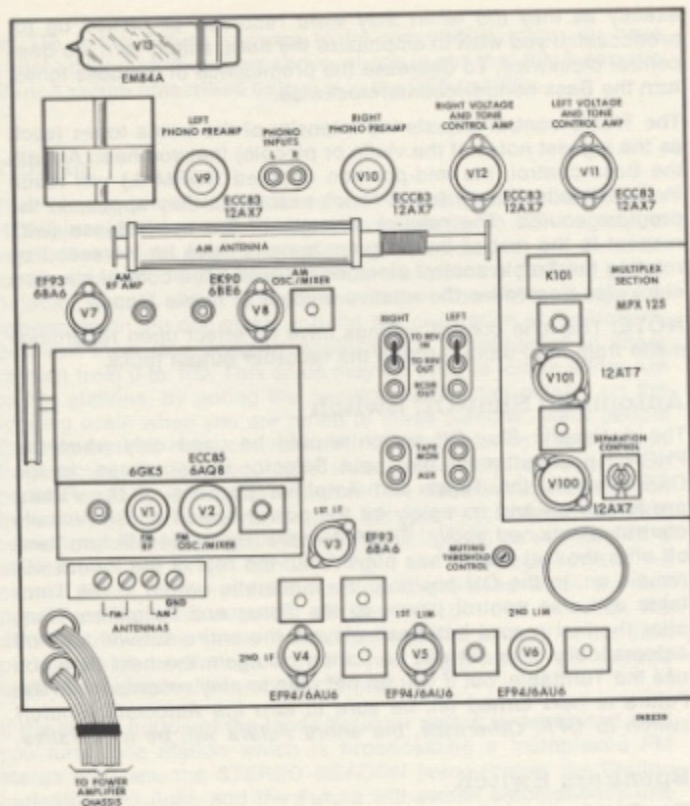


FIGURE 8. Chassis Layout of Tuner-Control Section

private listening with headphones, or silent tape recording (the signal at the RCDR OUT jacks is not affected by this switch or the setting of the Volume control). See the **ACCESSORIES** section for details of how to connect one or more pairs of headphones.

MAIN – This position is used for listening with the Futura's built-in speakers.

REMOTE – This position selects additional speakers which are connected to the **EXTERNAL SPKR** terminals on the Power Amplifier chassis. The Futura's built-in speakers are silent in this position.

MAIN + REMOTE – This position selects both the built-in and additional speakers.

NOTE: When extension speakers are used with the Futura, and the *Speakers* switch is in the **MAIN + REMOTE** position, power is divided between two pairs of speakers. As a result, some decrease in volume will be apparent in the main speakers when both pairs of speakers are used together. You may compensate for this effect by using a more clockwise (higher) setting of the Volume control.

8. Muting Switch

The Muting switch activates the muting circuitry. See paragraph 9 for a complete explanation of muting.

9. Muting Threshold Control

The Muting threshold control adjusts the signal level below which the muting circuitry will become active. *It is factory-set to silence interstation noise only.*

If you wish to silence weaker stations in addition to interstation noise, contact your dealer, who will adjust this control for you. However, you may perform this adjustment yourself, if you desire,

as follows: turn the muting threshold control to the maximum counterclockwise position and tune in a weak, noisy station. Next, turn the control until this station can no longer be heard. Do not turn the control too far clockwise, since you will prevent the reception of stations which are weak, but not objectionably noisy.

NOTE: If you wish to remove muting completely, turn the Muting switch OFF. If the Muting switch is ON, some degree of muting will still be present, even in the maximum counterclockwise position of the Muting Threshold control.

ACCESSORIES

1. General

Your Futura is provided with jacks and terminals for connecting additional high fidelity components: a tape player or tape recorder, for playback and recording of either mono or stereo tapes; an additional high-level stereophonic or monophonic source. The FISHER K-10 SPACEEXPANDER® reverberation amplifier; a pair of FISHER WS-1 Wide Surround® speakers; and external, remote speakers for stereo elsewhere in your home can all be quickly and easily connected to the Futura.

These connection points are all accessible from the back of the Futura. You will find it helpful to refer to Figures 1 through 4 while you read what follows.

2. Tape Player or Recorder

Tape recorders and decks with built-in preamplifiers can be connected to record from and play back through the Futura, as shown in Table 2. If the tape unit only has facilities for playback of pre-recorded tapes, you will find instructions for connection to the Futura under "Playback Deck". Instructions for the connection of all other types of tape recorders and tape decks will be found under the heading Tape Recorder or Record-Playback Deck.

Table 2. Tape Recorder Connections

Tape Mechanism	Type of Mechanism	Connections
Playback Deck	Monaural	Connect deck output to left channel TAPE MON input jack.
	Stereo	Connect left channel (A) output of deck to left channel TAPE MON input jack, and right channel (B) output of deck to right channel TAPE MON input jack.
Tape Recorder or Record-Playback Deck	Monaural	Connect output of deck or recorder to left channel TAPE MON input, and high-level deck input to left channel RCDR OUT jack.
	Stereo	Connect left channel (A) output of tape deck to the left channel TAPE MON input, and the right channel (B) output of the tape deck to the right channel TAPE MON input. Connect the left channel high-level input of the deck to the left RCDR OUT jack, and the right channel high level input to the right channel RCDR OUT jack.

NOTE: Because the TAPE MON inputs have less gain than the other inputs, you may prefer to utilize the AUX inputs for playback. If the AUX inputs are connected in this manner, the circuit cannot be set to monitor the tape during the recording process by using the TAPE MONITOR pushbutton.

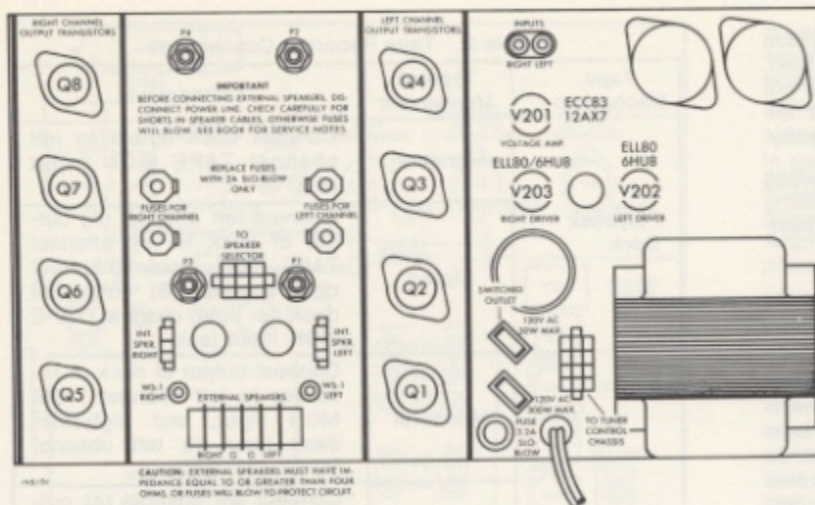


FIGURE 4. Chassis Layout of Power Amplifier Section

NOTE: Tape recorders which do not have separate record and playback heads should not be connected to the TAPE MON inputs, because of feedback possibilities.

3. Auxiliary Sources

A pair of auxiliary input jacks, labeled AUX INPUT (one for each channel) is located directly below the tape inputs in the rear skirt of the Tuner-Control chassis. These are high-impedance, high-level inputs, suitable for audio from a TV set, electronic organ, or other stereo or mono high-level source. If the source is monophonic, connect it to the left channel AUX jack and depress the MONO pushbutton on the MODE switch when the AUX button is depressed.

4. SPACEPANDER®

Special SPACEPANDER jacks are located on the top of the Tuner-Control chassis for connecting this exciting reverberation device. To make the connections, you will have to remove the jumper plugs which are presently inserted in the jacks. But be sure to store them in a safe place for possible future use. *Either the SPACEPANDER or these jumpers must be connected to the jacks, or the Futura will be completely inoperative.*

The proper connections are as follows:

- a. — TO REV OUT L jack on Futura to Channel A Output jack on SPACEPANDER.
- b. — TO REV OUT R jack on Futura to Channel B Output jack on SPACEPANDER.

c. — TO REV IN L jack on Futura to Channel A Input jack on SPACEPANDER.

d. — TO REV IN R jack on Futura to Channel B Input jack on SPACEPANDER.

Remember that if the SPACEPANDER is not connected, the jumper plugs must be in place or the Futura will not operate.

5. WS-1 Wide-Surround® Speakers

Jacks for connecting a pair of FISHER WS-1 speakers (one for each channel) are provided on the Power Amplifier chassis. These speakers will augment the stereo sound pattern to a startling degree, and they are equally effective in monophonic operation. They work in conjunction with the speaker systems built into the Futura. Simply plug the WS-1 speaker cords into the WS-1 jacks on the Power Amplifier. Place the speaker connected to the L jack on the left side of the room (as viewed from your listening area), and the one connected to the R jack on the right side of the room.

NOTE: When a pair of WIDE SURROUND speakers is used with the Futura, install them as described above. If the volume of the WS-1 speakers appears to be too great, cut the wire link on the back of each speaker. This will reduce the volume level.

6. Remote Speakers

Your Futura has terminal screws (located on the top of the Power Amplifier chassis and marked EXTERNAL SPKR) for connecting two external speakers or speaker systems, one in each channel. These can be used for stereo or mono listening in another room. The *Speakers* switch (see Paragraph 7 on page 7) allows you to select the Futura's built-in speakers, the remote speakers, or both sets together.

Any 4- to 16-ohm speakers will work satisfactorily, but as with any other stereo speakers, they should be identical for best performance. However, when extension speakers are used with the

Futura, and the *Speakers* switch is in the MAIN+REMOTE position, power is divided between two pairs of speakers. As a result, some decrease in volume will be apparent in the main speakers when both pairs of speakers are used together. You may compensate for this effect by using a more clockwise (higher) setting of the Volume control. In addition, we recommend that extension speakers have an impedance of 8 to 16 ohms, to minimize this change in volume.

Connect one of the speakers to G and RIGHT on the EXTERNAL SPKR terminal strip, and place it on the right side of your second listening area. The other speaker should be connected to the terminals (on the same strip) marked LEFT and G and placed at the left of your second listening area.

CAUTION: Take the following precautions before connecting remote speakers:

- Disconnect the power cord from the wall socket *before* connecting remote speakers. This will prevent the fuses which protect the power output transistors from blowing, in the event that the set is on, and an accidental short occurs during wiring.
- Be sure extension speakers have an impedance greater than four ohms, since a lower speaker impedance could overload the output stage and blow the fuses.

7. Headphones

Your Futura has provision for connecting a pair of stereo headphones. The jack labelled PHONES, located in front of the control panel, next to the *Speakers* switch, permits connection of a pair of FISHER headphones Model HP-50, which are engineered to precisely complement the excellent acoustic characteristics of your console. These headphones are available from your dealer, who will assist you in the installation of several pairs, should you desire.

To use your headphones for private listening, plug the connector on the end of the headphone cable into the PHONES jack. Turn the

Speakers switch to the OFF position and adjust the Volume control to suit your requirements.

NOTE: Headphones plugged into the PHONES jack on the front panel are connected to the amplifier output in all positions of the Speakers switch.

ANTENNAS

1. General

Your Futura has two built-in antennas; one for AM and one for FM. These will suffice for all monophonic and stereophonic reception except under unusual conditions, such as those encountered in an extreme "fringe" area, or one where a great deal of interference prevails. In such cases, an outdoor or attic antenna may be required, especially for FM stereo reception. If you wish, you can also connect an external AM antenna.

Figure 5 is a copy of the antenna terminal strip on the top of the Futura's Tuner-Control chassis. It will be helpful to refer to as you read what follows.

2. FM Antenna

An outdoor or attic antenna will often make a world of difference in the quality and reliability of reception. We suggest you see your dealer or TV serviceman for detailed information about makes and types. If you use an external antenna, first disconnect the two lugs of the built-in FM antenna from the terminal screws, and then connect the wires from the new antenna to the terminals marked FM. If you find that you are receiving a strong local FM station at more than one point on the tuning dial, it is overloading the FM Tuner section. If this occurs, simply reconnect the Futura's own antenna.

Often a TV antenna will serve very well for FM reception, both mono and stereo. Since the relative success or failure of an

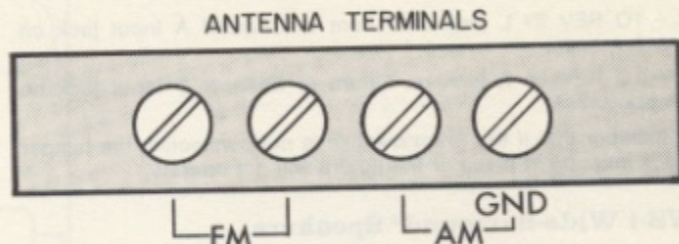


FIGURE 5. Antenna Terminal Strip Detail

attempt to use a TV antenna for FM is subject to many unpredictable, all we can say definitely is that it is worth a try. Temporarily connect your television antenna to the Futura. If it appears to improve reception, purchase a good-quality two-set coupler so that you can use the same antenna for both TV and Futura.

Since multiplexed FM reception requires more signal at the antenna terminals than monophonic FM, you may find that stereophonic broadcasts are noisy even though monophonic programs from the same station are quiet. If this is the case, you may need to relocate your FM antenna, reorient it, or use one with higher gain or directional properties.

When you use a directional antenna (many TV antennas are of such a design) you will often obtain good reception from one compass direction only; if this is true in your case, you may need to use a rotator with your antenna.

3. AM Antenna

A suitable external AM antenna can be anything from a few feet of wire strung behind a picture molding or draped behind the cabinet, to an elaborate "long-wire" array on poles outdoors. A complicated system is generally unnecessary, however, and it may cause overload and distortion of the sound. If you wish to

use an external antenna for AM reception, connect the antenna to the leftmost AM terminal. If you wish to further increase the Futura's AM sensitivity, connect a wire from a steampipe or other grounded conductor to the AM terminal marked GND.

HOME MAINTENANCE OF THE FUTURA

1. Cleaning The Dial Glass

Before cleaning the dial glass, disconnect the power plug from the wall socket, as a precaution. Next, proceed as follows:

- (1) Remove all control knobs from their shafts by gently pulling them away from the dress panel. Do not remove the pushbuttons.
- (2) Remove the nuts from the shafts of the Bass and Balance controls.
- (3) Lift off the dress panel, to expose the chassis.
- (4) Loosen the screws that fasten down the dial glass retaining clips. (When you replace the dial glass, make certain to reset it by placing it firmly against the lower left-hand corner.) Swing the clips aside, and then lift off the glass.
- (5) Remove dust with a dry cloth. If you wish to clean more thoroughly, use a soap and water solution only; if you use any stronger cleaning agent, you may damage the markings on the glass.
- (6) Replace the dial glass, dress panel and knobs by reversing the procedure outlined in steps (1) through (4), above.

2. Replacing Dial Lamps

In order to replace the dial lamps, it is necessary to remove the knobs and dress panel. Disconnect the power plug from the wall socket as a precaution, before proceeding.

(1) Remove the dress panel, as outlined in Paragraph 1, steps (1) through (3).

(2) The lamps, tubular in shape, are held in place at either end of the dial glass by spring clips, and can be removed by lifting gently.

(3) Install a new lamp, making sure that the white, painted side faces away from the dial glass. Press the lamp down until it snaps into place.

(4) Replace the dress panel by reversing steps (1) through (3) of Paragraph 1.

Replacement lamps are available from the Parts Department of Fisher Radio Corporation, Long Island City 1, N. Y., as Part No. 150441-5.

3. Replacing Stereo Beacon Lamp

Before replacing the STEREO BEACON lamp, disconnect the power plug from the wall outlet. The lamp assembly is accessible from the rear of the cabinet. It is housed in a white cylinder on the chassis, near the Station Indicator tube (V13), and directly below the dial. Replace the lamp as follows:

- 1 - Locate the white cylinder described above. Follow the two leads which protrude from the rear of the cylinder to the chassis.
- 2 - Slide the clips, located on the other ends of the leads, off the terminal strip contacts by moving them gently away from the chassis.
- 3 - Remove the white, flexible band which secures the bulb leads to the cylinder. Remove the bulb from the cylinder by pulling gently on the leads.
- 4 - Place the new bulb in the cylinder, and secure it with the flexible band removed in the previous step.
- 5 - Slide the clips on the bulb leads over the terminal strip contacts.

Replacement STEREO BEACON lamps can be ordered from Fisher Radio Corporation, Long Island City 1, New York. Please send all requests for parts to the attention of the Parts Department. The part number is I50461-3.

4. Replacing Fuses

a. POWER FUSE — To protect against line surges and other adverse conditions sometimes encountered by electronic equipment, the Futura is fused at strategic locations. If the unit appears to be inoperative, check to see if the dial lamps light when the Volume control is turned clockwise from the AC OFF position. If the lamps do not light, the unit may have a blown power fuse.

To replace the fuse, which is located in a black receptacle on the lower right-hand side of the Power Amplifier, proceed as follows:

1. Turn the Volume control to the AC OFF position.
2. Disconnect the power cord from the wall receptacle.
3. Push the cap of the fuseholder in, and turn it counterclockwise. The cap will disengage, and you can pull it out, with the fuse remaining in its clip. Replace the fuse with a 3.2-amp Slo-Blo fuse only. Return the cap and fuse to the receptacle, and restore power to the set.

NOTE: If the power fuse replacement fails to restore normal operation, or if a replaced fuse blows immediately, call your authorized FISHER serviceman.

b. SPEAKER FUSES — If the dial is lit, yet one or both channels of the set does not play, *no matter what program source* (e.g., tuner, turntable, tape recorder, etc.) *is used*, it may be the result of a blown fuse in the output stage of the Power Amplifier. Power transistors could easily be destroyed if the EXTERNAL SPEAKER terminals were accidentally shorted to each other, or to the chassis. To protect the transistors, as well as the speakers, each output stage uses two fuses, which are contained in receptacles labelled FUSES FOR LEFT CHANNEL and FUSES FOR RIGHT CHANNEL.

These fuses are precisely rated, and manufactured to function within extremely narrow tolerances. These fuses must be replaced only with fuses rated at 2 amperes. Replacement with any other type of fuse, or with Slo-Blo fuses of the same value may result in damage to the unit, and voids the warranty. If either channel (or both) is inoperative, pull the power plug from the wall receptacle and remove both fuses used in that channel. Simply push the cover of each fuseholder down, rotate it counterclockwise, and lift it from its receptacle. Replace the fuse(s) with a known good fuse (two spare speaker fuses are supplied with your set). Additional fuses are available from your dealer as Fisher part No. F755-145 (2 amp), or from your local radio supplier. Next, plug the set in, and turn it on. If the channel(s) remain inoperative, consult your dealer or authorized Fisher Service Station.

Should distortion become apparent in either channel, replace one of the fuses in that channel as described above. If distortion is still apparent after restoring power to the set, replace the other fuse in the channel with the fuse removed. If restoration of power after the second replacement is not accompanied by cessation of distortion, consult your dealer or authorized Fisher Service Station.

FOR THE TECHNICALLY-MINDED LISTENER

The Fisher Futura VI is a high fidelity stereophonic radio-phonograph console, incorporating a tuner capable of receiving AM, FM, and multiplexed FM stereo broadcasts; an automatic turntable, a power amplifier, and two matched speaker systems.

The FM Tuner section uses the famous FISHER GOLDEN SYNCHRODE® circuit, with a 6GK5 low-noise tetrode RF amplifier, and an ECC85/6AQ8 RF amplifier. The 10.7-megacycle intermediate frequency (IF) is then amplified by four IF stages. The last two IF stages clip off virtually all amplitude variations in the signal, providing the noise-free reception which has contributed so much to the popularity of FM. A wide-band, low-distortion ratio detector,

which uses two matched semiconductor diodes, furnishes additional limiting. An EM84A electron-ray tube is used for precise center-of-channel indication, and a solid-state muting circuit silences interstation hiss.

The Multiplex Demodulator of the FM Tuner extracts separate left and right channels from the multiplex signals transmitted by radio stations. As in all FISHER tuners, decoding is accomplished by the far-superior time-switching technique, resulting in better separation, less noise, and greater long-term stability than that obtainable with other methods.

The unique STEREO BEACON indicates (with a light) when a multiplex stereo broadcast is tuned, and automatically switches the Futura's multiplex and audio circuits to stereophonic operation, by means of a relay.

In the AM portion of the tuner, we find a specially-designed ferrite-loop antenna, with a unique electrostatic shield, which greatly reduces background noise, and a tuned RF stage (EF93/6BA6), which gives the tuner a sensitivity far above that of most conventional AM radios. Conversion to the 455 kc IF is accomplished in the oscillator-mixer stage, which employs an EK90/6BE6.

In the Control portion of the Tuner-Control chassis, we find the preamplifier and switching section of the Futura. The filaments of all preamplifier tubes are DC-heated, resulting in minimum hum and noise. Here are the tone controls, providing 23 db of bass and treble variation; the Volume and Balance controls, and the Input and Mode Selector switches, which provide any one of ten

program sources and modes of operation, including provisions for tape monitoring.

A pair of dual-triode 'low-level' tubes, one for each channel, supply gain and equalization for the magnetic phonograph cartridge. Equalization is accomplished by frequency-selective feedback, resulting in a combination of reduced noise and distortion, and accurate playback characteristics. Output jacks are provided for feeding a tape recorder with a signal which is unaffected by Volume or tone control settings.

The Power Amplifier chassis, located behind the left-channel speaker system, contains the DC power supply, which provides operating voltages for the tubes on both the Power Amplifier and Tuner-Control chassis, as well as for the transistors on the Power Amplifier chassis. There are actually two distinct power amplifiers here, each channel being amplified independently. The output stages provide superior power bandwidth (a measure of output power at extremely high and low frequencies) and improved transient response, due to the lack of output transformers. Each amplifier consists of a two-stage vacuum tube voltage-amplifier-driver circuit, feeding four transistors in a single-ended push-pull configuration. The power amplifier has a 65-watt (IHF) music power output (both channels). Each amplifier is double-fused to prevent overloading of its output stage and destruction of the transistors by accidental shorts, and to protect the speakers from the possibility of DC overload. Feedback is obtained directly from the 'hot' side of the loads, and introduced into the cathode circuit of the voltage amplifier tubes.

TECHNICAL DATA

Music Power Output (IHF standard both channels)	65 watts	FM Tuner Sensitivity (IHF standard)	1.8 microvolts
Peak Power Output	120 watts	AM Tuner Sensitivity (IHF standard)	5.0 microvolts
Harmonic Distortion		Speaker Complement (each channel)	One 12" woofer One 5" midrange unit One 2 1/2" tweeter Crossovers at 400 cps and 2500 cps
At normal listening levels	less than 0.2%		
At maximum rated Music Power Output	1.0%	Automatic Turntable	Fisher 10F
Frequency Response	Uniform throughout audible range as an integrated system	Cartridge	Pickering V-15F/AT
FM-Multiplex Stereo Separation	Better than 35 db at 400 cps	Total Power Consumption including Turntable	
Amplifier Channel Separation	50 db at 1 kc	At Low Levels	125 watts, 145 VA
Sensitivity (AUX and TAPE inputs) for Rated Output	200 millivolts	At Full Power	252 watts, 285 VA

WARRANTY TO OWNER

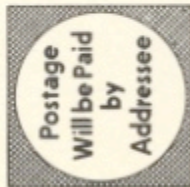
The warranty on a product fully reflects the confidence of its maker in the validity of the design, and the quality of materials and workmanship that go into that product. The truest index to the reliability of the FISHER instrument you have just purchased will be found in the unique FISHER warranty:

This equipment is unconditionally guaranteed against all defects in materials and workmanship. All semiconductor devices are guaranteed for two years from the date of sale to the original purchaser. Tubes and parts are guaranteed for one year (four times the industry practice). There will be no charge for part replacement or warranty labor, on all factory-wired units, during the first ninety days. Parts replacement and labor, under the above warranty, will be supplied by the dealer from whom the purchase was made. To protect your warranty, and to register your ownership, please be sure to mail this card within 10 days from date of purchase.

IMPORTANT NOTE:

This warranty is void, for the equipment it covers, unless the equipment has been installed and used in accordance with our Operating Instruction Manual. If the owner chooses to use a cabinet other than the standard FISHER cabinet available for this equipment, the former must meet all of the ventilation requirements as outlined in the Operating Instruction Manual.

FOR WARRANTY SERVICE, CONSULT YOUR DEALER



BUSINESS REPLY MAIL
FIRST CLASS PERMIT No. 493, LONG ISLAND CITY, N. Y.

FISHER RADIO CORPORATION

21-21 44th Drive

Long Island City, N.Y. 11101

PROTECT YOUR PURCHASE!

Please complete and return this
WARRANTY CARD

PLEASE PRINT

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

Name of dealer _____

City _____ State _____

How did you first hear of THE FISHER through (check one box only)

Advertising Friend

If you purchased because of advertising, please give name of publication: _____

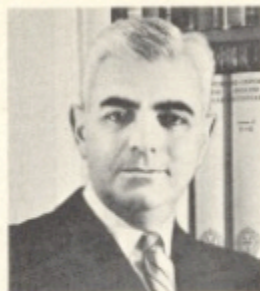
Why did you choose THE FISHER because: _____

What do you think of my FISHER equipment: _____

You may quote me.

Do you also own these additional hi-fi units and speakers: _____

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



THE MAN BEHIND THE PRODUCT

AVERY FISHER
Founder and President,
Fisher Radio Corporation

Twenty-seven 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.