

OPERATING INSTRUCTIONS AND WARRANTY



# THE FISHER

FUTURA V

MODEL F-59

Stereophonic Radio-Phonograph

PRICE \$1.00

WORLD LEADER IN HIGH FIDELITY  
(c) [www.fisherconsoles.com](http://www.fisherconsoles.com)

# CONGRATULATIONS!

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

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

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

## AN IMPORTANT SUGGESTION

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

*Avery Fisher* Founder and President

## FISHER FIRSTS—Milestones in the History of High Fidelity Reproduction.

- |      |  |      |  |      |   |
|------|--|------|--|------|---|
| 1937 | First high-fidelity sound systems featuring a beam-power amplifier, inverse feedback, acoustic speaker compartments (infinite baffle and bass reflex) and magnetic cartridges. | 1956 | First to use Power Monitor in a home amplifier.  | 1960 | First front panel antenna selector switch, 72-300 ohm, Local-Distant positions.   |
| 1937 | First exclusively high fidelity TRF tuner, featuring broad-tuning 20,000 cycle fidelity.   | 1956 | First All-Transistorized Preamplifier-Equalizer.   | 1961 | First Multiplex units with STEREO BEACON and automatic switching, mono to stereo.   |
| 1937 | First two-unit high fidelity system with separate speaker enclosure.   | 1956 | First dual dynamic limiters in an FM tuner for home use.   | 1961 | First complete receivers with Multiplex.  |
| 1938 | First coaxial speaker system.  | 1956 | First Performance Monitor in a high quality amplifier for home use.  | 1961 | First FM-Stereo-Multiplex tuners with STEREO BEAM.  |
| 1938 | First high fidelity tuner with amplified AVC.  | 1956 | First FM-AM tuner with TWO meters.   | 1961 | First loudspeaker system with frameless woofer cone, eliminating all parasitic resonance.   |
| 1939 | First 3-Way Speaker in a high fidelity 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.                            |
| 1939 | First Center-of-Channel Tuning indicator.  | 1957 | First Golden Cascade FM Tuner.   | 1962 | First simplified-operation Control-Amplifier, with infrequently used controls behind front-panel cover, yet immediately accessible. |
| 1945 | First Preamplifier-Equalizer with selective phonograph equalization.   | 1957 | First MicroRay Tuning Indicator.   | 1962 | First loudspeaker with eddy-current-damped voice coil.  |
| 1948 | First Dynamic Range Expander with feedback.  | 1958 | First Stereophonic Radio-Phonograph with Magnetic Stereo Cartridge.  | 1962 | First bass speaker with combined serrated-aluminum and fiber cone.  |
| 1949 | First FM-AM Tuner with variable AFC.   | 1958 | 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).     |
| 1952 | First 50-Watt, all-triode amplifier.   | 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.   |
| 1952 | First self-powered Master Audio Control.   | 1959 | First high-compliance plus high-efficiency free-piston speaker system.   | 1962 | First Supersonic Wireless Remote Control in a high fidelity component.  |
| 1953 | First self-powered, electronic sharp-cut-off filter system for high fidelity use.  | 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.  |
| 1953 | First Universal Horn-Type Speaker Enclosure for any room location and any speaker.   | 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 FM-AM Receiver with a Cascade Front End.   | 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.  |
| 1954 | First low-cost electronic Mixer-Fader.   | 1960 | First reverberation device, for use in high fidelity equipment—The Fisher Dynamic Spaceexpander.   |      |   |
| 1954 | First moderately-priced, professional FM Tuner with TWO meters.  | 1960 | First stereo tuner with MicroTune.   |      |   |
| 1955 | First Peak Power Indicator in high fidelity.   | 1960 | First FM tuner with six IF stages.   |      |   |
| 1955 | First Master Audio Control Chassis with five-position mixing facilities.   | 1960 | First FM tuner with five limiters.   |      |   |
| 1955 | First correctly equalized, direct tape-head master audio controls and self-powered preamplifier.   |      |  |      |   |



**THE FISHER FUTURA V**  
MODEL F-59  
**Stereophonic Radio-Phonograph**

**Y**OUR new *Futura V* is a product of the world's most highly regarded manufacturer of high fidelity components. Fisher units, long favored by music lovers of discriminating taste, have also proven themselves in the demanding environments of laboratories, broadcast studios and government agencies. Professional musicians, comprising a significant number of Fisher patrons, join with musical connoisseurs from all walks of life in praise of the verisimilitude created by Fisher component-quality consoles.

All modes of high fidelity, 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: its multiplex circuits are fully integrated; not merely electronic add-ons. The famous STEREO BEACON shows whether or not a station is broadcasting in FM stereo and automatically switches the instrument between stereophonic and monaural modes of operation, as needed. The MICRO-RAY tuning indicator makes precise tuning virtually automatic for anyone. Ten controls, including a Speaker Selector, AM bandwidth switch, and Loudness Contour switch, enable you to select any program source instantly, and to adjust volume and tonal characteristics to your taste. Special connections are provided for the FISHER SPACEEXPANDER® and WS-1 Wide-Surround® speakers. An 'automatic shut-off' feature turns off the entire instrument after the last record has been played. The new transistorized 75-watt stereo power amplifier represents an important

advance in the design of high fidelity components. By eliminating the output transformers and matching the output circuits to the characteristics of the two three-way speaker systems, a remarkably true and clean reproduction of the most complex orchestral passages is achieved.

Flawless circuitry, the use of costly, durable materials, and unhurried manufacture—essential constituents of quality which are too often lost in mass production—all of these will contribute to years of trouble-free operation and to your greater listening pleasure. These are the attributes which have, for twenty-five years, created the world-wide FISHER reputation.

### WHAT IS STEREOPHONIC SOUND?

**S**TEREOPHONIC 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 extension of high fidelity sound into three dimensions. In fact, it offers the closest approach to true high fidelity (faithfulness to the original) that modern technology has yet achieved. Thus, good stereophonic sound is high fidelity in the best sense of the term.

This feeling of dimension is lost with monophonic (single channel) reproduction, because our ears help determine direction only if each

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hears a slightly different version of the sound; that is, if one ear hears the sound a little weaker or a little later than the other. Merely using two or more speakers on 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 original to your ears, kept separate at all times during recording, transmission and reception. In this way, your ears hear the sound as they would have heard it at the original performance, but one ear hears that sound differently from the other by a small amount. This is just what would have happened during the original. Thus, our faculty of being able to determine the size and location of a sound source is not lost in the reproducing process, and we can have in our living rooms a realistic reproduction of the original.

This requires the use of two separate microphones during recording, 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.

Taking an orchestral performance as an example, sounds coming from the left side of the orchestra (violins, for instance) are picked up primarily by the left microphone and heard again chiefly in the left speaker; music toward the right side of the orchestra (like the low strings) is recorded through another microphone and heard ultimately from the right speaker. The separation of the two channels is, intentionally, not complete. In a live performance, your left ear does hear many of the sounds on your right, and vice versa. Thus, keeping the channels totally apart from the microphones to your ears 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. You will hear this as a strikingly realistic impression of actual presence at the original performance.

## INSTALLING THE FUTURA

**P**LEASE READ these instructions carefully before you begin using your *Futura*. This booklet was prepared with you in mind, to help you become familiar with the controls. Correct installation and an understanding of what each control does is important in obtaining the fullest enjoyment from your FISHER *Futura*.

The *Futura* operates on *AC only*. Plugging it into a DC outlet will result in serious damage. The power cord extending from the back of the cabinet should be connected to a wall outlet supplying 105 to 120 volts AC at 50 or 60 cycles. The 60-cycle current is available in almost all areas of the United States; but if you are in any doubt about your power source, we suggest you call your 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 Record Changer will revolve at the correct speed. Check with your FISHER dealer.

## The Automatic Turntable

During transit, the Automatic Turntable is held in place by a large wooden retaining bracket. This bracket and its two mounting screws should be removed after the *Futura* has been placed in its final location. The small wooden blocks under the metal motor board can be removed by loosening the screws holding the Automatic Turntable to the wooden shelf. Once this is done, the Automatic Turntable will ride freely on springs which act as shock absorbers and prevent cabinet vibrations from causing the stylus to skip around the record grooves. Depress each side of the Turntable to see whether it moves freely on its spring mounts. If it does not move downward and back under hand pressure, consult your FISHER dealer. For detailed information about operating the Turntable, see the separate Turntable instruction booklet.

## 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 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 extreme fringe areas. If you have difficulty with FM reception, consult "ANTENNAS" on page ten of this manual.

## Location of Cabinet

Cabinet location may be varied to suit your acoustic and decorative requirements. The *Futura* is suitable for corner installation, 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 one and one-half 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.

## THE CONTROLS

ON PAGE FOUR there is an illustration of the dress panel of your *Futura*, with all markings and controls shown. The controls have been set at the factory to the positions shown so that you can use your *Futura* as soon as it is installed. We urge you, though, to read the following section in a careful and leisurely way so that you will know

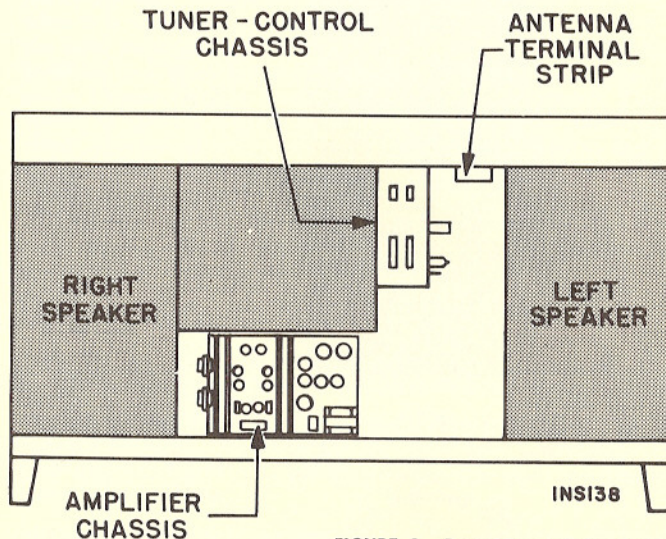


FIGURE 1. Rear View of the Futura

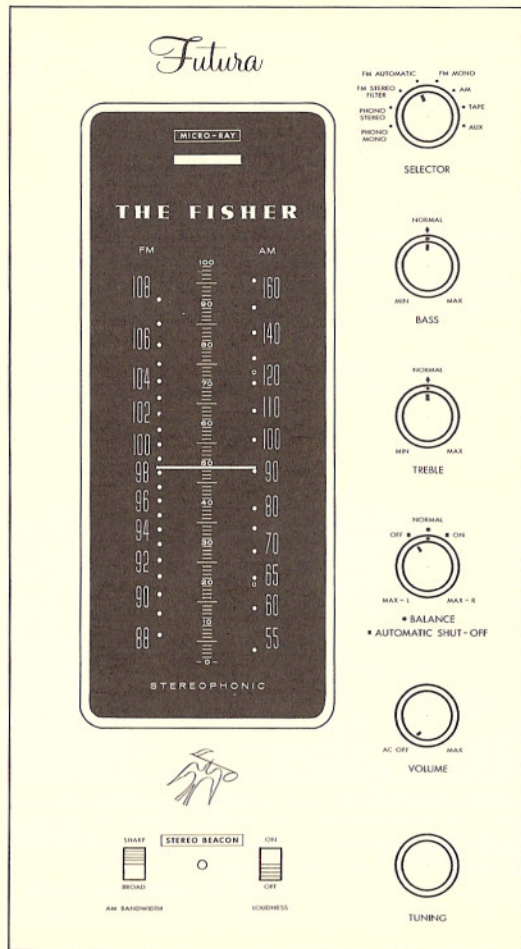


FIGURE 2. Dress Panel of the Futura

what each control does and how to use it to your benefit. You will find it helpful to refer to Figure 2 as you read, or, better still, to operate the controls themselves and become familiar with them.

## Tuning

This control selects the AM and FM stations you want to receive. The single knob operates both the AM and FM sections of the *Futura's* tuner; which mode you receive depends upon the setting of the Selector switch, which we will explain below.

On the dial glass, you will find the FM markings on the left, and the AM calibration on the right. Between them is a "logging" scale, calibrated in linear fashion from 0 to 100, which you may use to locate either AM or FM stations by noting the position of the dial pointer along the logging scale. Many people find this more convenient than remembering exact station frequencies.

To help you tune accurately (especially important on FM), we have incorporated a MICRO-RAY tuning indicator, which functions on both AM and FM. Observe the indicator (located at the back edge of the dial glass) as you tune to a station: the two bright bands of light will converge toward the center. Exact "on the beam" tuning is achieved when the two bands are as close together as they will go—that is, when the dark shadow portion is smallest. The degree to which the bright bands close will depend on the strength of the received signal.

If you tune to a station which is at the moment broadcasting a multiplexed FM stereo program, the STEREO BEACON jewel (at the front of the panel) will light, and the *Futura* will switch automatically to the stereophonic mode. 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 revert to the monophonic mode.

*Note:* 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 when the tubes warm up.

## Power On-Off and Volume

This control combines the functions of power switching and volume. 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. You will see the tuner dial light up, and the jewel indicator at the base of the *Futura* will also be illuminated. Wait about 30 seconds for the tubes to reach operating temperature. Turning the control further clockwise increases the total sound volume from both speakers.

*Note:* If the *Futura* appears to be inoperative when you switch it on as described above, see that the Automatic Shut-Off switch is in its OFF position. The function of this control is described below.

## Automatic Shut-Off and Balance

These are two independent controls operated by two concentric knobs. The inner, solid knob controls the Automatic Shut-Off feature. In the OFF position, the tuner and amplifier portions of the *Futura* are turned on or off solely by the power switch on the volume control, mentioned above. The Turntable will turn itself off after the last record has played. In the ON position, the automatic switch in the Turntable will also control the tuner and amplifier. This way, when the last record has played, the entire set will be shut off automatically. The set will be turned on again the next time you use the Turntable, but if you do not plan to use it, be sure to turn the Automatic Shut-Off switch to OFF. Otherwise the entire *Futura* will be inoperative.

The outer, ring knob is the Balance control. You can use this to obtain equal volume from both speaker systems in the *Futura*, and, in general, to vary the volume of the right speaker system relative to the left. For a natural stereo effect, balanced separation is important: neither side should predominate over the other any more than it did during the original performance. Normally, this control will be in the center, or NORMAL position, although small variations to either side are to be expected because of differences in room acoustics or imbalance in the program material. Turning the control toward MAX-R will increase the volume of the right speaker relative to the left;

turning it toward MAX-L will increase the left speaker volume over the right.

## Treble and Bass Controls

With these controls you can adjust the tone quality of the sound to suit your tastes, or to compensate for deficiencies in the program material. The Bass control affects the low-frequency portion of the sound spectrum, leaving the midrange and treble unchanged. Turning this control toward MAX boosts the bass; turning it to MIN attenuates it. Any intermediate degree is available. The Treble control boosts the high frequencies relative to the middle and lower notes when it is turned toward MAX, and attenuates them toward MIN, in the same manner as the Bass control. Both controls have NORMAL positions, and when they are set there, the *Futura* will reproduce the entire frequency range exactly as transmitted or recorded. This is where the controls should generally be set, but since their use is chiefly a matter of taste, we suggest that you experiment to find the settings which suit you best. The controls vary treble and bass in both channels simultaneously.

*Note:* Try to avoid extreme bass boost when using the Turntable, since this can cause acoustic feedback. You will hear this as a low growling or rumbling sound or sometimes a loud howl.

## Selector Switch

This is the switch you will use to select the various functions of your *Futura*. Below are the positions and their uses.

**PHONO MONO.** Use this position to play monophonic records on the *Futura's* Turntable. You will hear the sound from both speaker systems together, but it will not be stereophonic, since the program source is monophonic.

**PHONO STEREO.** Use this position for stereophonic records played on the Turntable. You will hear the left channel on the left speaker system, and the right channel on the right speaker system. The Bal-

ance control (above) can be used to adjust balance between right and left channels.

Suppose we break off for a moment and skip ahead to the FM MONO position. We will return immediately afterward to the positions we omitted. Their functions will be more readily apparent then. **FM MONO.** In this position, your *Futura* will tune from 88 to 108 megacycles to receive monophonic FM broadcasts, and also stereophonic FM broadcasts monophonically. In both cases, the same sound will be heard from both speakers.

**FM AUTOMATIC.** When the Selector is set here, monophonic FM broadcasts will be received monophonically as always. When you tune to a station which is broadcasting a multiplexed FM stereo program, the green STEREO BEACON jewel at the front of the panel will light, and the *Futura* will switch automatically to the stereophonic mode. If the FM station to which you are listening begins multiplexing, here again the STEREO BEACON will light and the switching will take place. When you tune to a monophonic station, or when multiplex operation ceases, the STEREO BEACON light will go out and the circuits will be restored to the monophonic mode. You will not need to leave your chair.

**FM STEREO FILTER.** In this position of the Selector, the STEREO BEACON light will remain on continuously, regardless of the station to which you are tuned, the *Futura* will function stereophonically only, and a high-frequency filter will be put in operation. The purpose of this setting is to allow continuous stereophonic reception of weak FM stereo stations by preventing intermittent "dropouts" caused by a weak, fluctuating signal, or by erratic signal reflections from passing aircraft. Since such signals will also have a high noise content, the filter is switched in to reduce the noise. If the stereo multiplex signal you wish to hear is so weak and noisy in your location that the FM STEREO FILTER position does not provide acceptable listening, switch to FM MONO. With the switch in this position you will hear the stereo program monophonically, but with a much lower noise level. It is quite likely that a change in the location of your external antenna, if you have one, or installing one if you do not, will

improve reception of a weak FM stereo station tremendously. See "ANTENNAS," on page 10 of this manual.

*Note:* We suggest that you do not try to receive monophonic FM broadcasts with the Selector in the FM STEREO FILTER position, since there may be a noticeable hiss present in the background.

Let us continue now, in order, around the switch and consider the remaining three positions.

**AM.** Use this position to receive standard AM broadcasts (540 to 1600 kilocycles). When tuning, follow the AM calibration on the tuning dial, or use the 0-100 logging scale. The Micro-Ray tuning indicator will help you tune accurately to the center of the channel. Use it in the same way you do for FM, watching for maximum closure of the two bright bands.

**TAPE.** In this position of the switch, your *Futura* will accept signals from a stereophonic tape recorder or playback unit with internal preamplification and equalization. Use the jacks marked TAPE on the back of the *Futura's* Tuner-Control chassis. See "ACCESSORIES" on page 7 of this manual before you make the connection.

**AUX.** When the Selector switch is set here, the *Futura* will reproduce an external high-level audio source fed into the AUX input jacks on the Tuner-Control chassis. Such a source might be an additional tuner, audio from a TV set, an electronic organ, or a similar device. Again, see "ACCESSORIES" on page 7 first.

We have three switches still left unexplained. Two of these are in front of the *Futura's* tuning dial, all the way forward, on either side of the STEREO BEACON jewel. The third is located in the Turntable compartment.

## AM Bandwidth

This is a slide switch with two positions, located to the left of the STEREO BEACON. It is effective only when the Selector, above, is in the AM position. Normally, you will use the SHARP position of the Bandwidth switch, since here the tuner will do its best to eliminate interference from adjacent stations, hiss, and objectionable noise from



other sources. But if you are tuned to a strong, nearby station, you will find that "presence" and naturalness increase when you slide the switch to the BROAD position. The setting you choose is purely a matter of personal taste.

### Loudness

With this switch ON, automatic compensation is provided for the natural decreased sensitivity of the human ear to very low and very high frequencies heard at low volume levels. This compensation is not in effect when the Volume control is set at MAX, but comes more and more into play as the volume level is reduced. Sliding the Loudness switch to OFF removes this automatic compensation entirely.

### Speaker Selector

You will find this switch located at the front of the Automatic Turntable in your *Futura*, next to the Earphone jack. It has four positions: OFF, MAIN, REMOTE, and MAIN + REMOTE. When the Speaker Selector switch is set to OFF, all speakers associated with the console (main and remote) are disabled, enabling the listener to utilize the privacy of earphone listening. When the switch is in the MAIN position, only the built-in left and right speaker systems operate. In the remote position, only speakers which have been attached to the EXTERNAL SPKR. terminals on the amplifier chassis will function. (See "ACCESSORIES" for information about additional speakers, which may be added for increased stereo separation or to provide stereo in another room.) When the switch is turned to MAIN + REMOTE, the built-in and additional speakers play simultaneously.

## ACCESSORIES

**Y**OUR FUTURA is provided with jacks and terminals for connecting several 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 source, or monophonic TV sound

if the two AUX jacks are tied together electrically; the FISHER K-10 SPACEPANDER® reverberation amplifier; a pair of FISHER WS-1 Wide-Surround® speakers; and external, remote speakers for stereo elsewhere in your home.

All these connection points are accessible from the back of the *Futura*. You will find it helpful to refer to Figures 1, 3 and 4 while you read what follows.

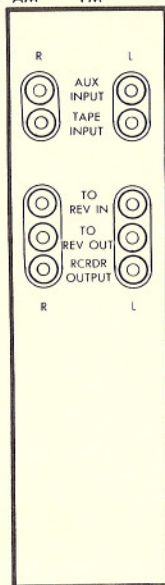
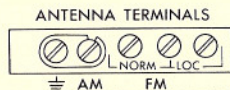
### Tape Player or Recorder

On the Tuner-Control chassis, there are two jacks marked TAPE INPUT. These are high-impedance, high-level inputs, one for each channel, left and right. Into them you can feed a signal from any tape recorder or playback machine as long as it already contains the necessary preamplifiers and equalization. If you are in doubt, consult the instruction manual which accompanies your tape recorder.

A pair of jacks, labelled RCRDR OUTPUT and located on the rear skirt of the Tuner-Control chassis, will feed high-level, independent right and left stereo signals to a stereo tape recorder. Any program source selected by the Selector switch is fed to these jacks, but the volume and tone controls have no effect on the signal at the jacks. Thus, you can record in complete silence, if you wish, by turning the *Futura's* volume control all the way down, or set the volume control anywhere you like for pleasant listening, using the tone controls, too, without any effect on the recording. Recording volume is controlled only by the appropriate knob on the tape recorder.

### Auxiliary Sources

A pair of auxiliary input jacks, labelled AUX INPUT, one for each channel, is located directly above the tape inputs on 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, the right and left channel inputs (marked R and L) must be fed together with the same signal, otherwise the sound will be heard from only one side of your *Futura*. This can be done by using a "Y-connector," about which your dealer or TV repairman can advise you.



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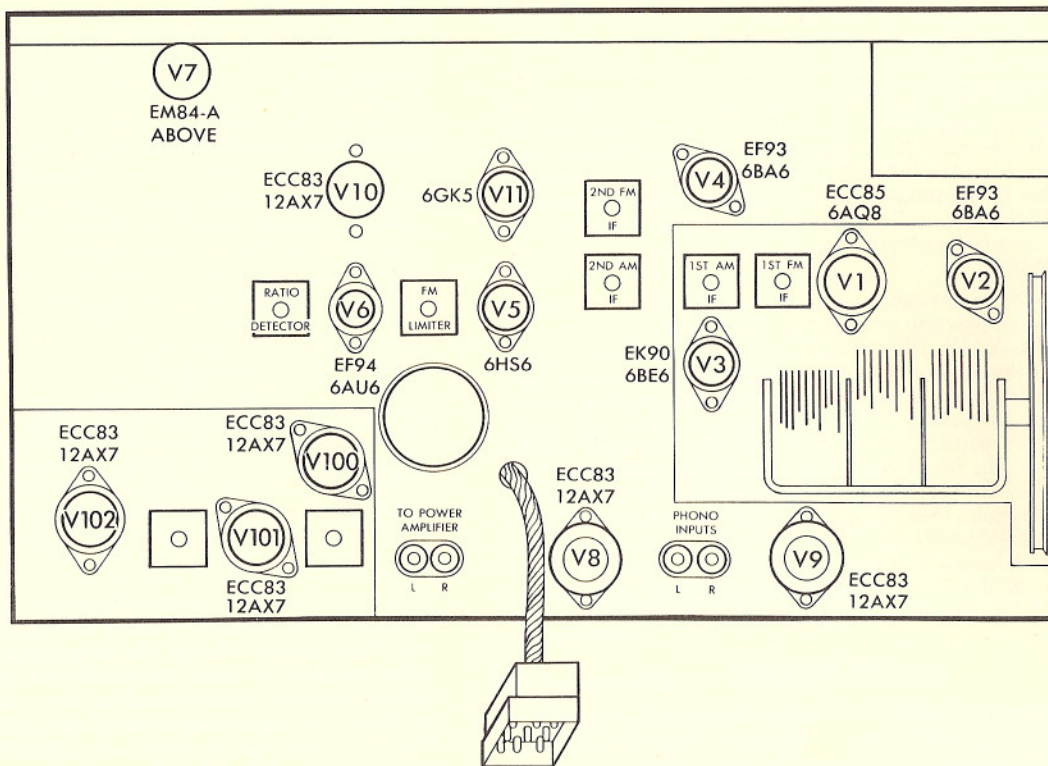


FIGURE 3. The Tuner-Control Chassis

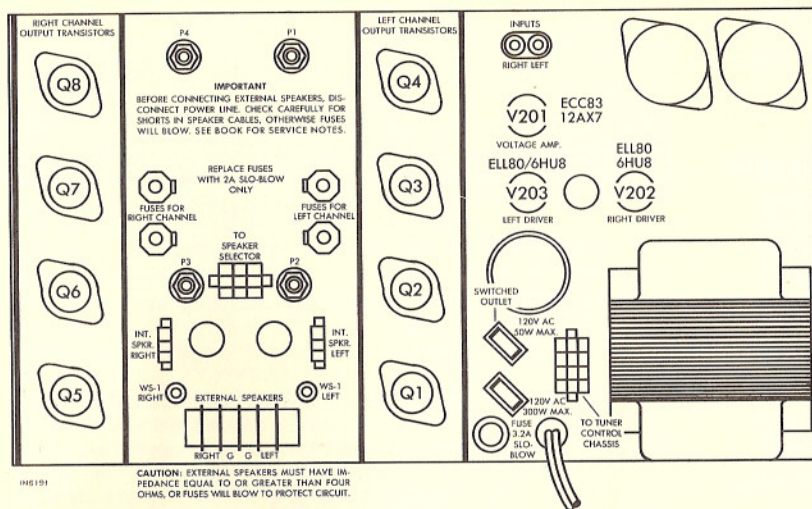


FIGURE 4. The Power Amplifier Chassis

## SPACEPANDER®

Special SPACEPANDER® jacks are located on the rear skirt 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:

- 1—TO REV OUT L jack on *Futura* to Channel A Output jack on SPACEPANDER®.
- 2—TO REV OUT R jack on *Futura* to Channel B Output jack on SPACEPANDER®.

## SPACEPANDER®

- 4—TO REV IN R jack on *Futura* to Channel B Input jack on SPACEPANDER®.
  - 3—TO REV IN L jack on *Futura* to Channel A 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.

## WS-1 Wide-Surround® Speakers

Jacks for connecting two FISHER WS-1 speakers (one for each channel) are provided on the top surface of the 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. 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.

## Remote Speakers

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

Either 8-ohm or 16-ohm speakers will work satisfactorily, but as with any other stereo speakers, they should be identical for best results.

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.

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 should an accidental short occur during wiring.

Be sure extension speakers have an impedance greater than four ohms, since a lower speaker impedance will overload the output stage and blow the fuses.

## Earphones

Your *Futura* has provision for connecting a pair of stereo earphones. The jack labelled EARPHONES, located in front of the Turntable next to the Speaker Selector switch, permits connection of a pair of FISHER earphones, which are engineered to precisely

## ANTENNA TERMINALS

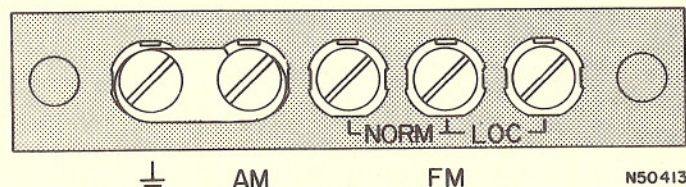


FIGURE 5. The Antenna Terminal Strip

complement the excellent acoustic characteristics of your console. These earphones are available from your dealer, who will assist you in the installation of more than one pair of phones, should you desire.

To use your earphones, plug the connector on the end of the phone cable into the Earphone jack. Turn the Speaker Selector switch to OFF and adjust the Volume control to suit your requirements.

## ANTENNAS

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 very unusual conditions: 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 multiplexed FM stereo reception. If you wish, you can also experiment with an external AM antenna.

Figure 5 is a copy of the Antenna Terminal Identification Strip pasted on the back of the *Futura's* cabinet. It will be helpful to refer to it as you read.

### 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 from the built-in FM antenna from the terminal screws, and then connect the wires from the new antenna to the terminals marked NORM. 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. To reduce this effect, connect your FM antenna to the terminals marked LOC. In areas near an extremely strong FM station, this may even be necessary when using the built-in antenna.

Often a TV antenna will serve very well for FM reception, both mono and stereo. Since the relative success or failure of an attempt to use a TV antenna for FM is subject to many unpredictables, all we can say definitely is that it is worth a try. If it appears to improve reception, purchase a good-quality two-set coupler so that you can use the same antenna for your TV set and for the *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 a rotator for your antenna.

## AM Antenna

A suitable 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, loosen the screw marked AM and the one marked with a ground symbol, both on the antenna terminal strip. The "jumper" link should swing free. Tighten the ground screw to keep the link from

rattling, and make sure that the link is not touching the AM terminal screw. This AM terminal is now free for the connection of an AM antenna wire.

## HOME MAINTENANCE

### REPLACING THE DIAL LAMPS

**T**O REPLACE the tuning dial lamps, pull off all the control knobs, remove the four screws in the corners of the panel, and lift the panel off. The lamps, tubular in shape, are held in spring clips at either end of the dial glass. They can be removed by lifting them out of the clips. When you install a new lamp, first see that the white, painted side is *away* from the glass. Then lay the lamp on the clips and press it down gently until it snaps into place. Replace the panel, screws and knobs.

Lamps can be ordered from the Fisher Radio Corporation, 21-21 44th Drive, Long Island City 1, New York. The part number is 150082-7.

### REPLACING THE FUSES

To protect against line surges and other adverse conditions sometimes encountered by electronic equipment, your *Futura* is fused at strategic circuit locations.

If your set does not play, check to see if the dial lights. If it does, see the following paragraph for the appropriate procedure. If not, remove power from the set by unplugging the power cord from the wall socket. Replace the power fuse, located in a black fuseholder on the rear of the Amplifier chassis, by pushing in on the fuseholder cap and twisting it counterclockwise. Replace the fuse with a type 3AG Slo-Blo fuse, rated 3.2 amperes, Fisher part no F3319. Restore power to your set. If your dial remains unlit, or lights momentarily, do not attempt further repair. Call your authorized Fisher Service Station.

If your dial is lit and the set does not play, it may be the result of a blown fuse in the output stage. Power transistors could easily be

destroyed if the speaker terminals were shorted to each other or to ground. To prevent this, as well as to protect the speakers, each output stage uses two fuses located on the top of the amplifier chassis (see figure 4), which are precisely rated and manufactured to function within extremely narrow tolerances. To protect the user, the fuse receptacle will only accept fuses of the type supplied with the unit (the use of other types is not permissible, since damage to the set might result). Failure to comply with the instructions for fuse replacement may result in permanent damage to your unit, and voids the warrantee. If either channel (or both) is inoperative, pull the power plug from the wall receptacle and remove both fuses used in that channel by pushing each fuse down, rotating it counterclockwise, and lifting it from its receptacle. Replace the fuses with a known good fuse (two spare fuses are supplied in a plastic bag, attached to the rear of the cabinet. Additional fuses are available from your dealer as Fisher part No. F-50512-1 [2 amp] or from your local radio supplier as Bussmann type N2). Next, turn the set 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 in the same fashion described above. If distortion is still apparent after restoring power to the set, replace the other fuse in the channel with the fuse just removed. If restoration of power after the second replacement is not accompanied by cessation of the distortion, consult your dealer or authorized Fisher Service Station.

## FOR THE TECHNICALLY-MINDED LISTENER

**T**HE FISHER *Futura V* 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 portion uses an ECC85/6AQ8 in its "front end," with the first half of this dual triode tube used as a grounded-grid RF

amplifier, and the second half as a local oscillator and mixer. The mixer produces the 10.7 megacycle intermediate frequency (IF) which is amplified by three IF stages. The final IF stage also behaves as a limiter, effectively clipping off any spurious amplitude variations that may have affected the FM signal, and thus providing the noise-free reception which contributes so much to the popularity of FM. A wide-band, low-distortion ratio detector follows the limiter, using two matched semiconductor diodes.

The multiplex decoder of the FM tuner is the device which extracts separate left and right channels from the multiplexed signal transmitted by the radio station. In all FISHER tuners, decoding is accomplished by the far superior time-division switching technique, resulting in better separation than available with other methods, less noise, and greater long-term stability.

The unique STEREO BEACON indicates by means of a light when a multiplexed FM stereo program is being broadcast, and automatically switches the *Futura's* audio circuits, with a relay, to stereophonic operation.

Turning to the AM portion of the tuner, we find a tuned RF amplifier stage (EF93/6BA6), which puts the sensitivity and selectivity of this tuner far above most conventional AM radios. Conversion to the 455kc IF is accomplished in an EK90/6BE6 mixer-oscillator. The IF amplifier features a choice of sharp or broad selectivity.

In the Control portion of the Tuner-Control chassis we find the switching center of the *Futura*. Here are the Tone controls, providing 17 db total variation of Bass and Treble; the Volume and Balance controls; and the Selector switch, which selects any one of eight possible program sources or modes of operation. A pair of dual-triode preamplifiers (ECC83/12AX7), one for each channel, supply the gain and RIAA equalization needed for magnetic phonograph cartridges. Equalization is accomplished by frequency-selective feedback, resulting in reduced noise and distortion together with accurate characteristics.

A Loudness Contour switch gives you the option of using the Volume control as a Loudness control by switching in a circuit which provides an increasing bass and treble boost as the volume level is

lowered, to compensate for normal low-level hearing deficiencies. Output jacks are provided for feeding a tape recorder with a signal unaffected by Tone or Volume control settings.

The Power Amplifier chassis, located in the base of the *Futura*, contains the DC power supply, which provides operating voltages for the tubes on both the Amplifier and Tuner-Control chassis, as well as for the transistors on the Amplifier chassis. There are actually two distinct amplifiers here, each channel being amplified independently by a separate power amplifier. The power amplifiers provide superior power bandwidth (output power at extremely high and low frequencies) and improved transient response, due to the lack

of output transformers, and the incorporation of transistors *only where their characteristics are superior to vacuum tubes*. Each amplifier consists of a two-stage vacuum tube voltage amplifier-driver circuit, feeding four 2N2147 transistors in a single-ended push-pull configuration. The power amplifiers provide 75 watts, both channels (IHF Music Power Standards). Each amplifier is double-fused to prevent overloading of its output stage and destruction of the transistors by accidental shorts, and to protect the speaker from DC overload due to shorted transistors. Feedback is obtained directly from the hot side of the load in the output stage, and fed back to the cathode of the voltage amplifier.



## TECHNICAL SPECIFICATIONS

<b>Music Power Output (IHFM standard, both channels)</b>	75 watts
<b>Peak Power Output</b>	130 watts
<b>Harmonic Distortion</b>	
<b>At normal listening levels</b>	less than 0.2%
<b>At maximum rated Music Power Output</b>	1.0%
<b>Frequency Response</b>	Uniform throughout audible range as an integrated system
<b>FM-multiplex Stereo Separation</b>	Better than 30 db at 1 kc
<b>Amplifier Channel Separation</b>	50 db at 1 kc
<b>Sensitivity (AUX and TAPE inputs) for Rated Output</b>	320 millivolts

<b>FM Tuner Sensitivity (IHFM standards)</b>	2.3 microvolts
<b>AM Tuner Sensitivity (IHFM standards)</b>	5.0 microvolts
<b>Speaker-Complement (each channel)</b>	One 12" woofer One 5" midrange unit One 3½" tweeter Crossovers at 1500 cps and 3500 cps
<b>Automatic Turntable</b>	Garrard Type A
<b>Cartridge</b>	Pickering 380-C
<b>Total Power Consumption including Turntable Idling</b>	100 watts, 117 va
<b>Full Power</b>	200 watts, 235 va





## 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. Any defects in workmanship will be adjusted without charge for ninety days from the date of sale to the original purchaser. Defective parts will be replaced without charge for one year from the date of sale to the original purchaser. During the first ninety days there will be no charge for replacement labor. 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, be sure to mail this card within 10 days from date of purchase.

**FOR WARRANTY SERVICE, CONSULT YOUR DEALER**



## The Man Behind the Product

**AVERY FISHER**  
*Founder and President,*  
*Fisher Radio Corporation*

**T**WENTY-FIVE 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.