OPERATING INSTRUCTIONS AND WARRANTY

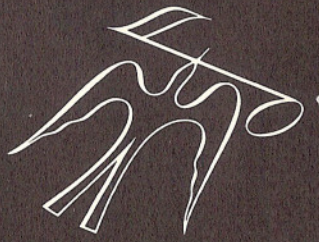
THE FISHER®

Electra VII

MODEL E-49

Stereophonic Radio-Phonograph

WORLD LEADER IN HIGH FIDELITY



CONGRATULATIONS!

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

But the end step—your purchase—is merely a beginning. A door has now opened, for you and your family, on virtually unlimited years of musical enjoyment. Recognizing that one of the keys to pleasurable ownership is reliability, we have designed this instrument to give long and trouble-free service. In fact, instruments we made over twenty-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.
1937 First exclusively high fidelity TRF tuner, featuring broad-tuning 20,000 cycle fidelity.
1937 First two-unit high fidelity system with separate speaker enclosure.
1938 First coaxial speaker system.
1938 First high fidelity tuner with amplified AVC.
1939 First 3-Way Speaker in a high fidelity system.
1939 First Center-of-Channel Tuning indicator.
1945 First Preamplifier-Equalizer with selective phonograph equalization.
1948 First Dynamic Range Expander with feedback.
1949 First FM-AM Tuner with variable AFC.
1952 First 50-Watt, all triode amplifier.
1952 First self-powered Master Audio Control.
1953 First self-powered electronic, sharp-cut-off filter system for high fidelity use.
1953 First Universal Horn-Type Speaker Enclosure for any room location and any speaker.
1953 First FM-AM Receiver with a Cascode Front End.
1954 First low-cost electronic Mixer-Fader.
1954 First moderately-priced, professional FM Tuner with TWO meters.
1955 First Peak Power Indicator in high fidelity.
1955 First Master Audio Control Chassis with five-position mixing facilities.
1955 First correctly equalized, direct tape-head master audio controls and self-powered preamplifier.
1956 First to use Power Monitor in a home amplifier.
1956 First All-Transistorized Preamplifier-Equalizer.
1956 First dual dynamic limiters in an FM tuner for home use.
1956 First Performance Monitor in a high quality amplifier for home use.
1956 First FM-AM tuner with TWO meters.
1956 First complete graphic response curve indicator for bass and treble.
1957 First Golden Cascode FM Tuner.
1957 First MicroRay Tuning Indicator.
1958 First Stereophonic Radio-Phonograph with Magnetic Stereo Cartridge.
1959 First high-quality Stereo Remote Control System.
1959 First complete Stereophonic FM-AM Receiver (FM-AM tuner, audio control, 40-watt amplifier).
1959 First high-compliance plus high-efficiency free-piston speaker system.
1960 First to use MicroRay for FM tuning and as a Recording Audio Level Indicator.
1960 First complete stereo FM-AM receiver with 60-watt power amplifier and new 7591 output tubes.
1960 Smithsonian Institution, Washington, D.C. accepts for its collection America's first commercially manufactured high fidelity radio-phonograph, made by Avery Fisher in 1937.
1960 First reverberation device, for use in high fidelity equipment—The Fisher Dynamic Spacexpander.
1960 First stereo tuner with MicroTune.
1960 First FM tuner with six IF stages.
1960 First FM tuner with five limiters.
1960 First front panel antenna selector switch, 72-300 ohm, Local-Distant positions.
1961 First Multiplex units with STEREO BEACON and automatic switching, mono to stereo.
1961 First complete receivers with Multiplex.
1961 First FM-Stereo-Multiplex tuners with STEREO BEAM.
1961 First loudspeaker system with frameless woofer cone, eliminating all parasitic resonance.
1961 First internal switching system to permit immediate tape playback with use of all controls and switches.
1962 First simplified-operation Control-Amplifier, with infrequently used controls behind a front-panel cover, yet immediately accessible.
1962 First loudspeaker with eddy-current-damped voice coil.
1962 First bass speaker with combined serrated-aluminum and fiber cone.
1962 First FM Tuner Kit with separate d'Arsonval meter for tuning and separate cathode ray stereo broadcast indicator (STEREO BEAM).
1962 First Stereophonic FM Tuner with TUNE-O-MATIC Motor Tuning.
1962 First Supersonic Wireless Remote Control in a high fidelity component.
1963 First to use 8417 tubes with unique cavity-anode design.
1963 First power amplifier to use oscilloscope-type, frequency compensated input circuit.
1963 First amplifier kit with STRATABALANCE, visual dynamic balancing system.
1964 First multiplex adaptor with 'flywheel synchronization.' Closely approaches theoretical limit of noise rejection, and of all spurious responses.
1964 First AFC with strong locking on weak signals, with no pull-in from adjacent strong signals.

PRINTED IN U.S.A.

THE FISHER ELECTRA VII

MODEL E-49

Stereophonic Radio-Phonograph

ADVANCED ELECTRONIC ENGINEERING has been combined with old-world cabinet craftsmanship to create the new FISHER *Electra*—a musical instrument that meets the most exacting criteria. Each unit in the *Electra* has been designed to meet the laboratory standards that distinguish all FISHER components. The unusually sensitive tuner section can be used for AM, FM and multiplexed FM stereo reception; the multiplex circuits are fully integrated, and not merely added on. The tuning indicator makes precise tuning virtually automatic for anyone. Eight controls enable you to select any program source instantly and to adjust volume and tonal characteristics to your taste. The renowned Garrard record changer and the Pickering cartridge convey faithfully every musical nuance of monophonic or stereophonic records. Special connections are provided for the FISHER SPACEXPANDER® and WS-1 WIDE-SURROUND® speakers. An automatic shut-off feature turns off the entire instrument after the last record has played. Forty-five watts of music power, free of all audible distortion, is supplied by a dual-channel stereophonic Power Amplifier which reproduces a complex orchestral passage as easily as the delicate tones of an oboe. Two acoustically-balanced three-way speaker systems provide the dynamic range the modern orchestra demands and only stereophonic sound makes a reality.

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 over a quarter-century, created the worldwide FISHER reputation.

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 extension of high fidelity sound into three dimensions. In fact, it offers the closest approach to true high fidelity (faithfulness to the original) that

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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 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 ELECTRA

PLEASE READ these instructions carefully before you begin using your *Electra*. 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 *Electra*.

The *Electra* 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 Record Changer

During transit, the Record Changer is held firmly to its mounting board by two flat-head screws — one in the left rear corner of the Changer baseplate, the other near the right front corner, just behind the control levers. To prepare the Changer for use, these screws should both be turned *clockwise* as far as they will go without using force. When this is done, the Changer baseplate will "float" about a half inch above the mounting board, and should bounce freely up and down under hand pressure. The purpose of this shock mounting is to prevent cabinet vibrations and jolts from causing the stylus to skip around the record grooves.

Remove the rubber bands used to secure the pickup arm and record overarm.

To place the cartridge in operation, follow the instructions on the separate sheet enclosed.

The Antennas

There are two antennas already built into the *Electra:* 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 10 of this manual.

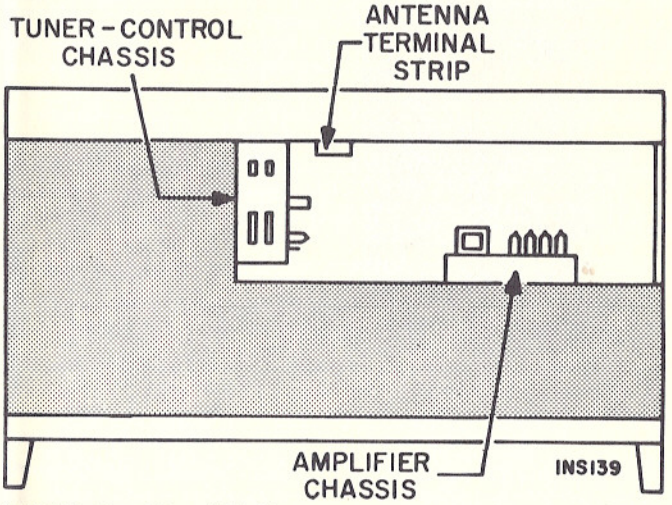

FIGURE 1. Rear View of the Electra

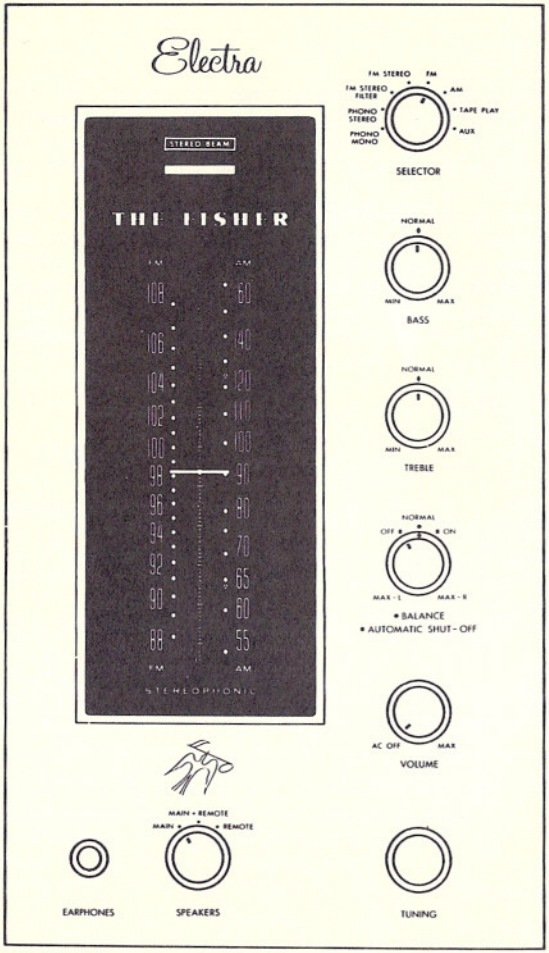

FIGURE 2. Dress Panel of the Electra

THE CONTROLS

ON THIS PAGE there is an illustration of the dress panel of your *Electra*, with all markings and controls shown. The controls have been set at the factory to the positions shown so that you can use your *Electra* 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 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 AM and FM stations you want to receive. The single knob operates both the AM and FM sections of the *Electra'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), your *Electra* has a tuning indicator located at the rear of the tuning dial. This indicator is labelled STEREO BEAM and serves also to indicate when a multiplexed FM stereo broadcast is in progress. Suppose we leave an explanation of this second function until later and concentrate for the moment on how this device acts as a tuning indicator.

With the Selector switch in either the AM or FM positions, watch the STEREO BEAM 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 portion is smallest. The degree to which the bright bands close will depend on the strength of the received signal.

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 *Electra* 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 *Electra* 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 *Electra* are turned on or off solely by the power switch on the volume control, mentioned above. The Changer will turn itself off after the last record has played. In the ON position, the automatic switch in the Changer 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 Changer, but if you do not plan to use it, be sure to turn the Automatic Shut-Off switch to OFF. Otherwise the entire *Electra* 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 *Electra*, 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 towards 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 *Electra* 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 Changer, 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 *Electra*. Below are the positions and their uses.

PHONO MONO. Use this position to play monophonic records on the *Electra's* Changer. 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 Changer. You will hear the left channel on the left speaker system, and the right channel on the right speaker system. The

Balance 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 position. We will return immediately afterward to the positions we omitted. Their function will be more readily apparent then.

FM. In this position, your *Electra* 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. Use the STEREO BEAM to help you tune.

FM STEREO. When the Selector is set here, your *Electra* is prepared to receive multiplexed FM stereo broadcasts stereophonically, and the STEREO BEAM indicator shows whether or not the station to which you are tuned is broadcasting stereo.

To use the STEREO BEAM, tune in an FM station with the Selector switch in the FM position, using the STEREO BEAM as a tuning indicator. Then switch to FM STEREO. If the bright bands of the STEREO BEAM stay closed, or overlap, eliminating the shadow, a stereo broadcast is in progress. If the bright bands fall apart, leaving the dark space between them, the signal you are receiving is monophonic.

If the program is stereophonic, you may leave the Selector in the FM STEREO position to enjoy stereo. (Or switch back to FM, where you will receive the stereophonic broadcast monophonically.)

Should you find that the program is not being transmitted stereophonically, return the Selector to the FM position and listen to the program, or continue tuning until you find an FM stereo station.

Note: To find a multiplex broadcast quickly, switch to FM STEREO and tune from one end of the FM scale to the other. Watch the STEREO BEAM as you tune. When you tune to a station which is broadcasting a multiplexed FM stereo program, the STEREO BEAM bright bands will close as described above, and remain closed. (Disregard any random flutterings of the STEREO BEAM as you tune from station to station.) Now switch back to FM and rotate the tuning knob for maximum closure of the STEREO BEAM. Return the Selector switch to FM STEREO and enjoy a stereo broadcast.

If you should decide on a monophonic FM broadcast after exploring the band by the method above, remember to switch back to FM, otherwise there may be an irritating background hiss present.

A few days' experience with your *Electra* and with FM stations in your area will tell you which ones broadcast stereophonic programs regularly. Your local newspaper will also be a useful guide in planning your FM listening, and will often provide a list of stations in your vicinity which are equipped to broadcast stereo.

FM STEREO FILTER. In this position of the Selector, a filter is placed into operation to reduce hiss and other noise sometimes heard on weak multiplex signals. It does this without substantially reducing the high notes of the program material. If you are troubled with noisy stereo reception, try the FM STEREO FILTER position. In the event that the FM stereo signal you wish to hear is so weak that even the FILTER setting does not provide satisfactory results, turn the Selector to FM and listen to the broadcast monophonically.

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 from 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 or FM STEREO FILTER positions, since there may be a noticeable hiss present in the background. For monophonic FM reception, switch to FM.

Let's continue now, in order, around the switch and look at the remaining three positions.

AM. Use this position to receive standard AM broadcasts between 540 and 1600 kilocycles. Tune according to the AM portion of the tuning dial, or use the logging scale. The STEREO BEAM 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 PLAY. In this position of the switch, your *Electra* will accept signals from a stereophonic tape recorder or playback unit with internal preamplification and equalization. See "ACCESSORIES" on this page before you make the connection.

AUX. When the Selector switch is set here, the *Electra* 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" first.

We still have one switch left unexplained. It is located directly in front of the tuning dial glass on the panel of the *Electra*.

Speakers Switch and Earphones Jack

This switch is used only if you have added a set of external speakers to your *Electra* as described on page 10 or if you wish to listen through a pair of earphones without having the speakers in operation. If neither condition applies, leave the Speakers switch in the MAIN position. To listen through earphones, simply turn the Speakers switch to the REMOTE position. This will silence the internal speakers of the *Electra* thus permitting you to listen through earphones without disturbing others.

For operation with external speakers, the MAIN + REMOTE position turns on both the internal speakers of the *Electra* and the external speakers you have added; the REMOTE position silences the internal speakers of the *Electra* but the external speakers continue to operate. The MAIN position silences the external speakers while the internal speakers of the *Electra* continue to operate.

NOTE: If you have connected external speakers and wish to silence them when listening with earphones, a switch should be added to the external speaker line. For special instructions write to Fisher Radio Corporation, Technical Service Dept., 21-21 44 Drive, L.I.C. 1, N.Y.

The Earphones jack will accommodate any standard stereo earphones plug. In order to prevent overloading and possible damage to the earphones, we recommend that you unplug them when not using them and that you turn the Volume control to a relatively low level before connecting the earphones.

Fisher Earphones

If you wish to add earphones to your *Electra*, we strongly recommend that you obtain Fisher Earphones, Model HP-50, which are precisely matched for operation with the *Electra*. These earphones are available from your Fisher Dealer.

ACCESSORIES

YOUR ELECTRA 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 SPACEXPANDER® 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 *Electra*. 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, labeled 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 pro-

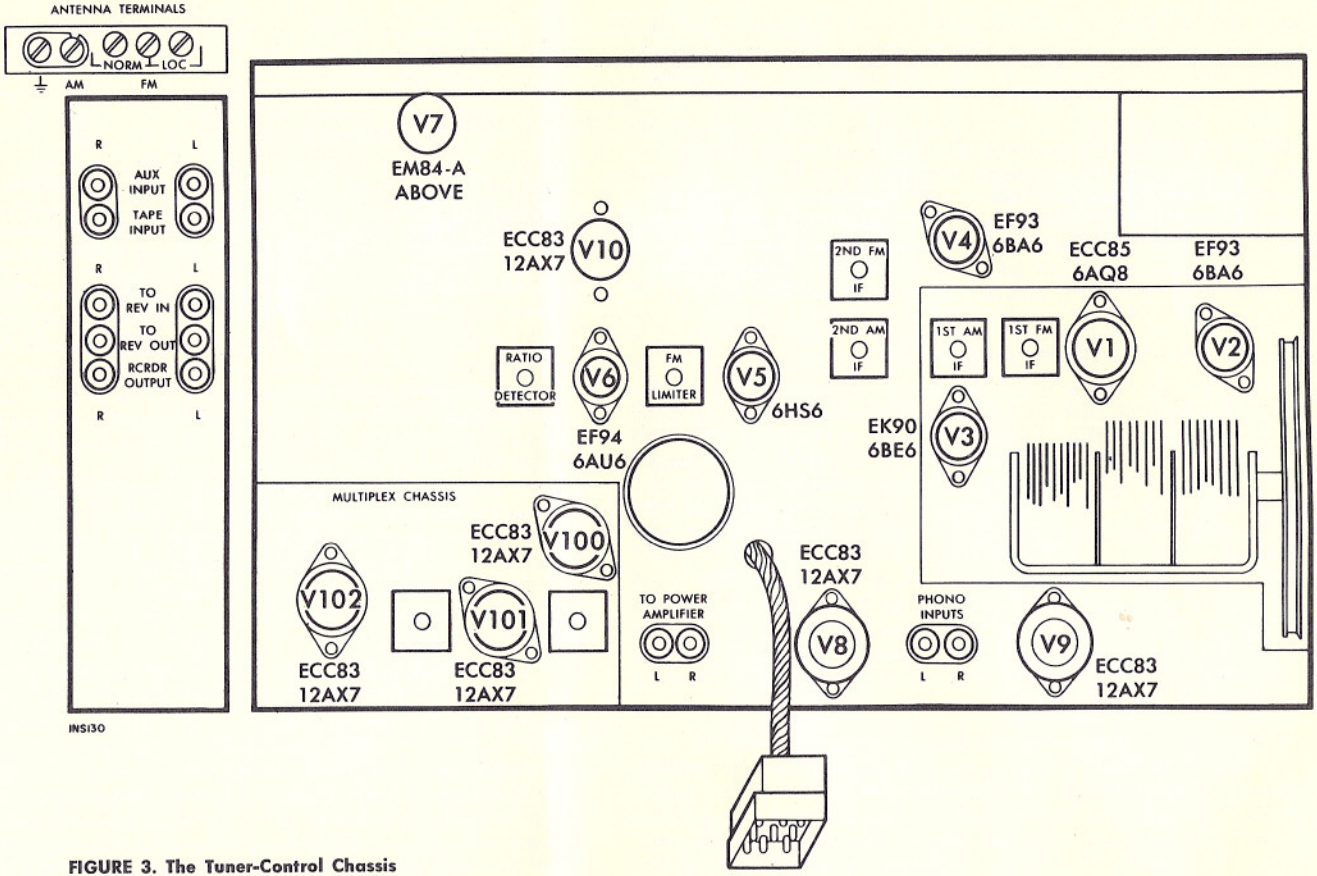

FIGURE 3. The Tuner-Control Chassis

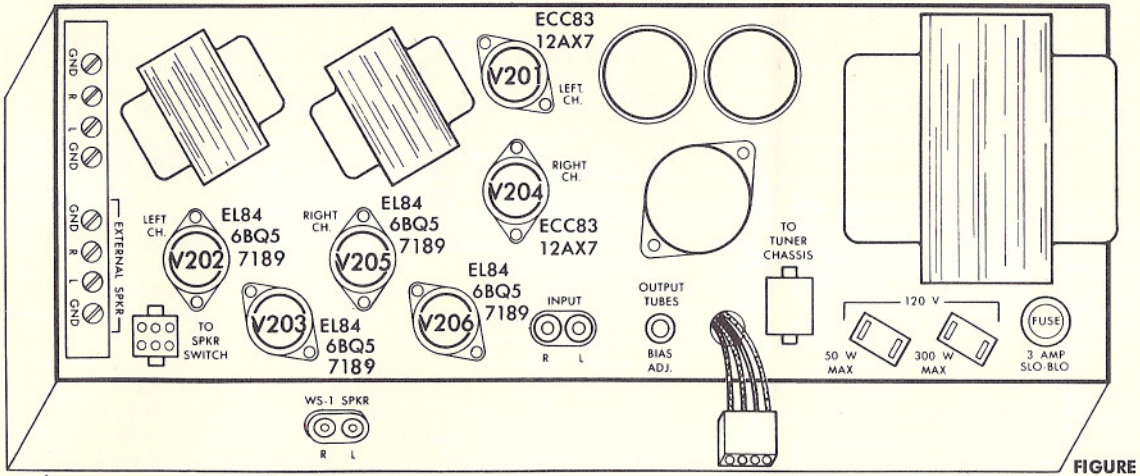

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FIGURE 4. The Power Amplifier Chassis

gram source selected by the Selector switch is fed to these jacks, but the volume and tone controls have no effect on the signals at the jacks. Thus you can record in complete silence, if you wish, by turning the *Electra'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 *Electra*. This can be done by using a "Y-connector", about which your dealer or TV repairman can advise you.

SPACEXPANDER®

Special SPACEXPANDER® 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* SPACEXPANDER® *or these jumpers must be connected to the jacks, or the Electra will be completely inoperative.*

The proper connections are as follows:

1—TO REV OUT L jack on *Electra* to Channel A Output jack on SPACEXPANDER.®

2—TO REV OUT R jack on *Electra* to Channel B Output jack on SPACEXPANDER.®

3—TO REV IN L jack on *Electra* to Channel A Input jack on SPACEXPANDER.®

4—TO REV IN R jack on *Electra* to Channel B Input jack on SPACEXPANDER.®

Remember that if the SPACEXPANDER® is not connected, the jumper plugs must be in place or the *Electra* will not operate.

WS-1 Wide-Surround® Speakers

Jacks for connecting two FISHER WS-1 speakers (one for each channel) are provided on the side 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 *Electra*. 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 *Electra* 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

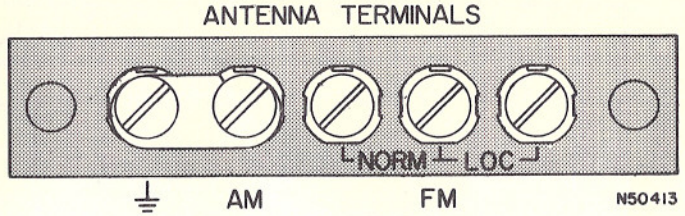


FIGURE 5. The Antenna Terminal Strip

Speaker-Selector switch (see "CONTROLS") allows you to select the *Electra's* built-in speakers, the remote speakers, or both sets together.

Remove the two resistors between the GND. R and L terminals. 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 GND and R 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 L and GND and placed at the left of your second listening area. Do not disturb the yellow and black wires connected to the terminal strip at the left of the EXTERNAL SPKR strip.

ANTENNAS

YOUR ELECTRA has two built-in antennas, one for AM and 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 *Electra'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 *Electra*.

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.

REPLACING THE DIAL LAMPS

To replace the tuning dial lamps, pull off all the control knobs and remove the two screws from the side wall of the tuner compartment facing the record changer. Lift this side of the front panel upward a short distance until the blocks clear the side wall; then pull the control panel toward the record changer and upward. 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 Fisher Radio Corporation, 21-21 44th Drive, Long Island City 1, New York. The part number is I50082-7.

FOR THE TECHNICALLY-MINDED LISTENER

The Fisher Electra VI is a high fidelity stereophonic radio-phonograph console, incorporating a tuner capable of receiving AM, FM, and multiplexed FM stereo broadcasts; a Garrard Record Changer; 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 wideband 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.

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 455 kc IF is accomplished in an EK90/6BE6 mixer-oscillator.

In the Control portion of the Tuner-Control chassis we find the switching center of the *Electra*. 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. Two 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. 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 *Electra*, supplies the audio power necessary to drive the two three-way speaker systems. Contained in the same chassis is the DC power supply, which provides operating voltages for the tubes. There are actually two amplifiers here, built on one chassis, since the left and right stereo signals must be amplified independently. The output stages of the amplifiers each use a push-pull pair of EL84/6BQ5 tubes operated class AB-1 with self-bias. The power amplifier provides 45 watts, both channels (IHFM Music Power standards). Each output stage is driven by a split-load phase inverter, which in turn is fed by a triode voltage amplifier. Negative feedback is taken, in each channel, from the output transformer secondary to the cathode of the voltage amplifier.

TECHNICAL SPECIFICATIONS

Music Power Output (IHFM standard, both channels)	45 watts
Harmonic Distortion at Rated Music Power Output	0.8%
Frequency Response	Uniform throughout audible range as an integrated system
FM-multiplex Stereo Separation	Better than 30 db at 1 kc
Amplifier Channel Separation	50 db at 1 kc
Sensitivity (AUX and TAPE inputs) for Rated Output	320 millivolts
FM Tuner Sensitivity (IHFM standards)	2.3 microvolts
AM Tuner Sensitivity	5.0 microvolts
Speaker Complement (each channel)	One 10″ woofer One 5″ midrange unit One 3½″ tweeter. Crossovers at 1 kc and 5 kc
Record Changer	Garrard AT-6
Total Power Consumption (including Changer)	180 watts, 210 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

No Postage Stamp Necessary If Mailed in the United States

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

Postage Will be Paid by Addressee

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

USER'S LAST NAME	FIRST NAME	INITIAL
USER'S HOME ADDRESS		
CITY		STATE

MODEL NO.	DATE OF PURCHASE	SERIAL NO.
	• •	

Name of Dealer_____

City_____ State_____

I *first* heard of THE FISHER through (check one box only)

☐ Advertising ☐ Friend

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

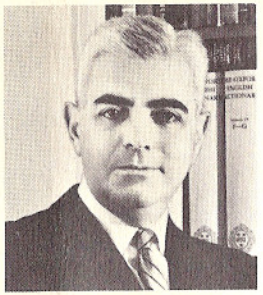
I chose THE FISHER because: _____

What I think of my FISHER equipment: _____

☐ You may quote me.

I 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.