

OPERATING INSTRUCTIONS AND WARRANTY



THE FISHER[®]

200-T[™]
STEREOPHONIC
FM Receiver

WORLD LEADER IN
STEREOPHONIC 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 20-20,000 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 dynamic range expander.
- 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-cutoff 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 preamplifier with self-powered master audio control.
- 1956 First all-transistor preamplifier-equalizer.
- 1956 First dual dynamic limiters in an FM tuner for home use.
- 1956 First performance monitor in a high-quality amplifier.
- 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 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 loudspeaker system.
- 1960 First to use MicroRay for FM tuning and as a recording audio level indicator.
- 1960 Smithsonian Institution, Washington, D. C., receives 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 Spaceexpander®.
- 1960 First stereo tuner with MicroTune.
- 1960 First front-panel antenna selector switch, 72-300 ohm, Local-Distant positions.
- 1961 First FM-Stereo multiplex adapter with STEREO BEACON and automatic switching, mono to stereo.
- 1961 First complete FM-multiplex stereo receivers.
- 1961 First FM-stereo tuners with STEREO BEACON and STEREO BEAM.
- 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 front-panel cover, yet immediately accessible.
- 1962 First loudspeaker with eddy-current-damped voice coil.
- 1962 First FM tuner kit with separate d'Arsonval meter for tuning and separate cathode ray stereo broadcast indicator (STEREO BEAM).
- 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 adapter with 'flywheel synchronization.' Closely approaches theoretical limit of noise rejection, and of all spurious responses.
- 1964 First FM Stereo Tuner with STEREOSCAN®.
- 1964 First peripherally-driven tweeter with cotton, soft dome.
- 1964 First to use TUNE-O-MATIC® circuitry in an FM tuner.
- 1965 First All-in-One, All-Transistor 4-Gang Front-End.
- 1966 First F.E.T. front-end design with over 40 db of Automatic Gain Control (more than ten times that of the best prior solid-state techniques.)
- 1966 First FM tuner with Automatic FM Antenna Signal Attenuator.
- 1966 First FM tuner to achieve 0.6 db capture ratio—three times better than the best previous achievement.
- 1966 First FM Tuner to use a 10-megacycle-wide Counter Detector, eliminating all distortion for the life of the tuner.
- 1966 First FM Tuner with Clear Signal Indicator.
- 1966 First FM Tuner to incorporate a Power Amplifier Circuit for high-quality, low-impedance headphones.
- 1966 First time-division multiplex circuit to incorporate a Four-Diode Coincidence Circuit.
- 1966 First all-transistor FM Receiver to use Overload Protection.

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Your new FISHER 200-T is a fully transistorized receiver that houses the electronics of a complete high-fidelity stereo system in one compact, elegantly styled unit. It is actually a no-compromise combination of three separate FISHER components: a sensitive, wideband FM-stereo tuner (with a revolutionary new FET front end, an integrated-circuit IF section, and a multiplex decoder with exclusive STEREO BEACON*), a versatile, low-noise preamp-control unit, and a wideband, low-distortion power amplifier.

The 200-T's inherent flexibility makes it the ideal control center of a complete home entertainment system. For example, you may play FM and FM-stereo broadcasts, mono and stereo phonograph records, and any one of a wide variety of auxiliary program sources through the receiver while listening to the selected program through your main speakers, stereo extension speakers, conveniently connected stereo headphones, or any combination of these. Whatever the program, you may shape its sound characteristics to suit your personal tastes and listening conditions with the receiver's versatile array of controls. Special facilities are included for adding reverberation with the FISHER Model K-10 DYNAMIC SPAC-EXPANDER®, for tape-recording the selected program while listening, and for playing *back* the recording (or any prerecorded tape) through the receiver at your convenience. Above all, the 200-T's advanced design and superior performance assure you of sensitive, noise-free FM reception, excellent separation on all stereo sources, and that effortless 'transparent' sound that has become the hallmark of FISHER transistorized components.

Reliability is another traditional FISHER hallmark. The superb performance of this instrument will last for years to come because of its inherently conservative design. All parts are rated for operating conditions that far exceed any likely to be encountered in normal use. As an extra precaution, the output transistors are electronically protected against possible short-circuit or overload damage by the unique *Transist-O-Gard*** circuit.

A final word — the 200-T, like any precision electronic instrument, will realize its full performance capabilities only when permitted to do so by the user. Even if you've had previous experience with other high-fidelity components, we urge you to follow the first two sections of this manual *carefully* while installing the receiver and operating it for the first time. Their contents are extremely important and can save you time and disappointment.

*The trademark STEREO BEACON**, signifies this model has the exclusive convenience feature that automatically switches to the stereo mode, signals the presence of the stereo broadcast, and automatically switches back to mono again — according to the type of program being received.

**Patent Pending

(for stereo listening in another room). Please refer to the *HEADPHONES AND EXTENSION SPEAKERS* section.

6 ADDITIONAL COMPONENTS

The *ADDITIONAL COMPONENTS* section provides instructions for connecting a record player or changer to the receiver as well as an auxiliary program source, a tape recorder, deck or player, and the FISHER Model K-10 DYNAMIC SPACEEXPANDER® reverberation unit.

We recommend, however, that you complete this section first, go on to *OPERATING THE RECEIVER*, and familiarize yourself with basic operations before connecting any such components.

7 FINAL CHECK

Recheck all connections made to the receiver. Plug the power cord into a standard electrical outlet and proceed to *OPERATING THE RECEIVER*.

OPERATING THE RECEIVER

This section — keyed to Figure 2 — describes the receiver's controls in the order in which you would normally use them. Follow the instructions in step-by-step sequence and you'll find that, in a very short time, you will have mastered complete operation of the unit.

1 AC POWER SWITCH AND VOLUME CONTROL

Turn this control clockwise (towards 10) until it clicks. The tuning dial and tuning meter will light to indicate that the receiver is on. After selecting the program source you want (item 2), adjust the VOLUME control for a comfortable listening level. To shut off the unit, turn the control to AC OFF until it clicks.

NOTE: If the unit does not go on under the conditions described above, or if it suddenly goes off during normal operation, refer to *REPLACING THE POWER FUSE* in the *MAINTENANCE* section of this manual.

2 SELECTOR SWITCH

Select the program source you want (except tape; covered in item 3) by setting the SELECTOR switch to the appropriate position:

PHONO — To play phonograph records through the receiver if you connect a record player having a magnetic cartridge (as described in the *ADDITIONAL COMPONENTS* section). This position automatically provides standard RIAA equalization (tonal correction) for proper playback of modern stereo and mono LP records.

FM — to listen to most FM radio programs. (Refer to item 6 for tuning instructions.) Broadcasts in the 88-108 MHz (Mc) FM band are high-fidelity and in many cases stereophonic, and are relatively immune to natural and man-made electrical noise. They are therefore widely used for symphonic concerts, operas, and other musical and cultural programs.

FM LOCAL — only when listening to a very strong, nearby FM-stereo station that sounds objectionably noisy and distorted and appears at more than one point on the dial (and setting the MODE switch to MONO doesn't reduce interference). You shouldn't need this position very often, but when you do, please remember to switch back to FM when listening to normal-strength stations.

AUX — to play a stereo or mono auxiliary device (AM broadcast or AM short-wave tuner, TV set, sound-movie projector, etc.) through the receiver. Refer to the *ADDITIONAL COMPONENTS* section before connecting any such devices.

NOTE: While listening to the selected program source, you may simultaneously record it on an external tape

recorder or deck connected to the receiver. Refer to the *ADDITIONAL COMPONENTS* section for details.

3 MONITOR SWITCH

Normally, keep this switch OFF; otherwise, any program source chosen with the SELECTOR switch will be silenced. Set it ON only when playing or monitoring tapes through the receiver from a tape recorder, deck or player connected to the MON IN jacks. (Refer to the *ADDITIONAL COMPONENTS* section for details.)

4 SPEAKERS SWITCH

Normally, keep this switch set at MAIN to hear the selected program source through your main speakers. To hear the same program through optional remote speakers, set the switch to REMOTE. If you want to hear the program through both sets of speakers, set the switch to MAIN + REMOTE. When listening through headphones, you may silence all speakers by setting the switch OFF. (If you don't connect headphones to the set, the OFF position is a convenient way to silence the music system momentarily without shutting off the receiver or changing its VOLUME control setting.) For further information, refer to the *HEADPHONES AND EXTENSION SPEAKERS* section.

5 MODE SWITCH

This switch determines whether you will hear mono or stereo sound from your speakers or headphones. **When listening to FM broadcasts (either mono or stereo), always keep the switch set at STEREO; in most cases, the set will automatically switch between mono and stereo reproduction for you to match the type of program received.** (The STEREO BEACON indicator at the right of the tuning dial will light whenever the set is in the FM-stereo mode.) For the rare exception to this rule, refer to *TUNING* (item 6).

When listening to records, tapes, or auxiliary program sources, set the switch to STEREO if the program is stereophonic (so that you actually hear stereo sound) and to MONO if the program is monophonic (to ensure that you always hear the program through both channels — though monophonically — and to minimize objectionable rumble and distortion from older mono records).

NOTE: When temporarily using only one speaker (as described in *INSTALLING THE RECEIVER*), always keep

this switch set at MONO until you connect a second speaker.

8 BASS AND TREBLE CONTROLS

In most cases — especially with modern recordings and FM broadcasts — keep both controls set at their normal mid-positions (marked 0) for natural tonal quality of speech and music. If, however, a particular record, broadcast, tape, or other program source has poor tone, or if the acoustical properties of your listening room, speakers, or headphones affect the sound unnaturally, adjust the controls as follows:

To correct for thinness in the bass-baritone voice, lower-pitched solo or orchestral instruments, low pedal notes of the organ, etc., turn the BASS control the desired amount towards +. If bass tones sound 'boomy' (or if the program material is marred by rumble, hum, or other low-pitched noise), turn the controls towards -.

If speech sibilants, the soprano voice, and higher-pitched instruments (violin, piccolo, cymbals, etc.) sound 'muddy' or unclear, turn the TREBLE control the desired amount towards +. If these sound too harsh or 'wiry' (or if the program is marred by objectionable hiss, scratch, or clicks), turn the controls towards -.

Each of these controls has two parts; the outer segment of the knob for the left channel and the inner segment for the right channel. Normally, both parts of each knob turn together as one unit, but you may adjust the tonal quality of each channel *separately* by holding one part of the knob and turning the other. You may use this feature to compensate for tonal imbalances (when using a different type of speaker in each channel) or to create a synthetic 'stereo' effect when playing a monophonic program. For the latter, simply turn the left-channel BASS and right-channel TREBLE all the way to -. The receiver will then act like an electronic crossover, feeding only the higher-pitched tones to the left channel and the lower-pitched tones to the right channel. While this is *not* true stereo, it does produce a directional effect and imparts added clarity to older program material. Please remember to return the controls to their normal settings for conventional mono and stereo reproduction.

6 TUNING

Turn the TUNING control *slowly* until the dial pointer indicates either the desired station on the main FM scale or a coinciding number on the small logging scale at the bottom of the dial. (The large numbers indicate the actual broadcasting frequencies of stations in the 88-108 MHz FM-broadcast band; the logging scale comprises numbers ranging from 0 through 100. Use **which-ever scale is more convenient, but always tune each station for the highest possible reading on the tuning meter at the right of the dial.** This will assure clear, undistorted reception, minimum interference from adjacent stations, and maximum left-right separation during FM-stereo broadcasts. The actual value of the meter reading in each case will depend on the signal strength of the station.

If the STEREO BEACON indicator starts to blink on and off during an FM-stereo broadcast, or if the program sounds noisy, distorted, or erratic in quality, the station signal might be weak or marred by transmission or reception problems. In this case, set the MODE switch to MONO; the blinking and interference should stop and you can listen to the program monophonically. If this doesn't help, the interference may be caused by a strong nearby station; try setting the SELECTOR switch to FM LOCAL. Should you encounter this problem with many stations, you may be in a locality that requires a different antenna for reliable reception. Please refer to the ANTENNAS section of this manual.

7 MUTING SWITCH

Normally, keep this switch ON to silence between-station noise and extremely weak stations on the FM band. (These stations are difficult to tune in, almost impossible to listen to in stereo, and do not provide the noise-free reception possible only with stronger signals.) However, should you want to search for and listen to such stations (even under high noise conditions), set the switch OFF.

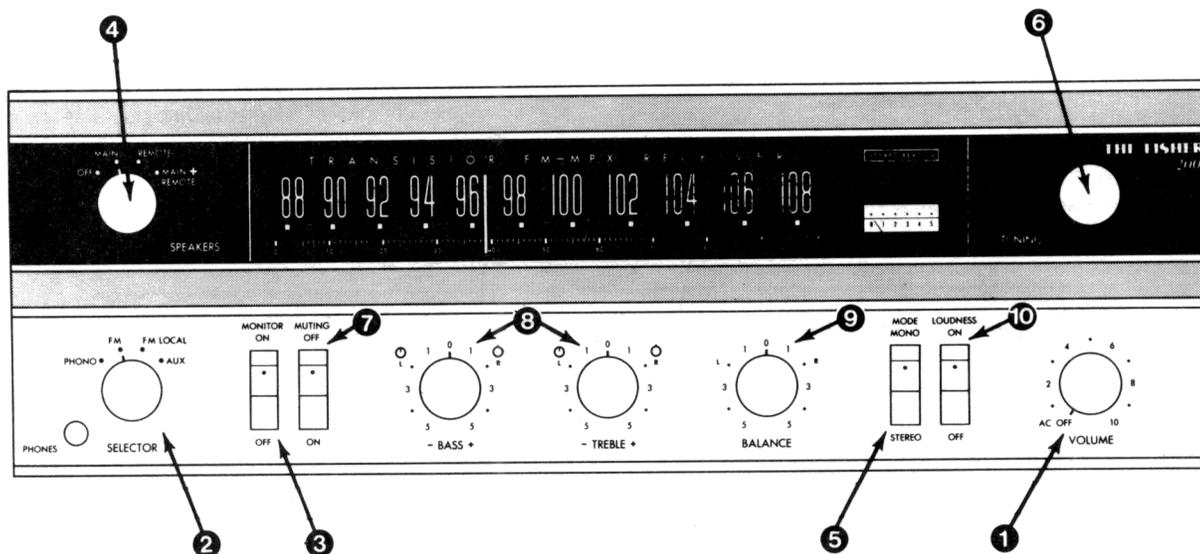


Figure 2. Control Panel of the Receiver

9 BALANCE CONTROL

Adjust the **BALANCE** control so that the volume levels from both channels sound about equal from your listening position. Ideally, this should occur with the control set at its normal mid-position (marked 0). However, imbalances in the program source, unusual room layout, or your position with respect to the speakers may make it necessary to turn the control either towards R (to emphasize the sound on your right) or towards L (to emphasize the sound on your left). At the extreme settings of this control, only one channel or the other will be heard: *Do not use the BALANCE control as a substitute for the VOLUME control.*

NOTE: When temporarily using only one speaker (as

described in *INSTALLING THE RECEIVER*), always keep this control turned fully counterclockwise (at the left-hand 5) until you connect a second speaker.

10 LOUDNESS CONTOUR SWITCH

Use this switch only at low VOLUME control settings to compensate for the apparent 'thinning out' of music and speech. (This effect is caused by the ear's naturally reduced sensitivity to low- and high-pitched tones at low listening levels.) With the switch ON, these tones are automatically emphasized by a predetermined amount to restore body and brilliance to the program material. At normal and high VOLUME settings, keep the switch OFF to prevent boominess or overload on some speakers.

ANTENNAS

The following paragraphs provide instructions for replacing the dipole antenna with other indoor or outdoor antennas to suit local reception conditions:

REDUCING MULTIPATH INTERFERENCE

In some strong-signal localities, pronounced signal reflections from surrounding buildings, towers, or hills may cause severe multipath interference. (This phenomenon is similar to 'ghosts' encountered in TV pictures and can cause objectionable distortion and reduce left-right separation in FM-stereo broadcasts.) In such cases, it may be necessary to replace the dipole antenna with a *directional* indoor antenna that can be rotated for best reception of the desired signal and maximum rejection of the unwanted reflections. This type of antenna (known as a 'rabbit-ears' or telescoping-dipole type) is available at most electronic-parts dealers. When connecting such an antenna to the FM ANT. terminals (Figure 1), make sure that the antenna lugs or wires do not touch each other, adjacent terminals, or the receiver chassis. Tune in a number of FM stations while rotating the antenna for best reception in each case.

IMPROVING FRINGE-AREA RECEPTION AND REDUCING ELECTRICAL INTERFERENCE

In weak-signal 'fringe' areas, an outdoor antenna may be necessary, especially for effective FM-stereo reception. Though an omnidirectional antenna may sometimes

be satisfactory, directional antenna arrays are usually preferable. In localities where FM-broadcast signals come from several different directions, a remote-control antenna rotator is a useful accessory with a directional array. If you already have an outdoor VHF television antenna, and most FM signals in your area come from the same general direction as the TV signals, the antenna may prove suitable for FM reception as well. Connect the TV antenna temporarily to the receiver's FM ANT. terminals (Figure 1). If the results are satisfactory, obtain a two-set coupler so that you can operate both the TV set and the receiver from the antenna simultaneously. In any event, make sure that the antenna lugs or wires do not touch each other, adjacent terminals, or the receiver chassis.

If you live near a busy thoroughfare or industrial area, and the outdoor antenna is connected to the set with conventional 300-ohm twin-lead, interference from automotive ignition systems or electrical machinery may radiate into the long lead-in, causing objectionable noises throughout the FM band. In such cases, replace the conventional lead-in with *shielded* 300-ohm twin-lead (available at major electronic-parts dealers). Connect the lead-in's two signal conductors to the receiver's FM ANT. terminals in the usual manner; connect the shield to the GND terminal next to the FM ANT. terminals.

HEADPHONES AND EXTENSION SPEAKERS

HEADPHONES

For private listening from all program sources, you may plug a pair of FISHER headphones (or other similar high-quality low- or medium-impedance devices) into the PHONES jack on the control panel. Almost all commercial stereo headphones are equipped with the proper type of plug to fit this jack. In the rare event that yours are not, obtain a standard ¼-inch three-pole phone plug and connect it to the phones as shown in Figure 3.

When using the headphones for the first time, turn the VOLUME control to minimum and set the SPEAKERS

switch OFF *before* plugging in the phones. Readjust the VOLUME control for a comfortable *headphone* listening level and use this setting for future reference.

CAUTION: Do not leave the headphones plugged in when playing the speakers at high volume levels. The large amounts of audio power required by the speakers at these levels can overload and damage the phones.

STEREO REMOTE SPEAKERS

The REMOTE and adjacent COM terminals on the LEFT SPKRS and RIGHT SPKRS terminal strips (Figure 1)

provide convenient means for connecting a pair of remote extension speakers. This arrangement will enable you to enjoy stereo sound in another room of your home when you set the SPEAKERS switch to REMOTE or MAIN + REMOTE.

CAUTION: Before connecting extension speakers to this unit, check the rated impedances of the main and extension speakers. If each speaker is rated at 8 or 16 ohms, you may safely connect the extension speakers as described in the following instructions. In the rare event that each main or extension speaker (or both) is rated at 4 ohms, have a qualified technician add a protective resistor in series with the lower-impedance speaker in each channel (or both speakers in the channel, if necessary). The resistance value must be such that the net parallel impedance per channel remains at least 4 ohms. Failure to observe this precaution may cause severe overload and distortion when the main and extension speakers are played simultaneously (SPEAKERS switch set to MAIN + REMOTE).

- (1) Turn off the receiver and disconnect its power cord from the electrical outlet.
- (2) Place both speakers against a wall or on a shelf in the remote listening area so that they face your selected listening position. Make sure that they are equidistant from you, no more than 10 to 15 feet apart (to prevent exaggerated stereo effects) and as close as possible to ear level (for maximum clarity). Later on, you can determine optimum locations on the basis of listening tests.
- (3) If the speakers are each 50 feet or less from the receiver, use the cables supplied with the speakers or ordinary No. 18 two-conductor lamp cord or antenna twin-lead for the connections. For longer distances, use

heavy-duty cable (at least No. 16). Cut two cables to the desired length but leave some slack in case you want to change speaker locations slightly. Strip about half an inch of insulation from both ends of each conductor and twist the bare wires to gather up loose strands. Look for some sort of marking on each cable that distinguishes one conductor from another: a distinctive color, stripe, or raised ridge on one of the insulators, a thread under one of the insulators, or a different color for each wire. This will help you to 'phase' the speakers in step 4.

- (4) Connect the speakers to the receiver as shown in Figure 1. Make sure that the speaker to the left of your listening position goes to the LEFT SPKRS terminal strip. Also, make sure that each speaker's COM, GND, C, G, or black terminal goes to the receiver's appropriate COM terminal while its 4 OHMS, 8 OHMS, 16 OHMS, or red terminal goes to the appropriate REMOTE terminal. **Both speakers must be connected the same way ('in phase') for correct stereo perspective and good bass response.** Check that the bare wires at the ends of the cables do not touch each other, adjacent terminals, or the chassis.
- (5) Connect the power cord to the electrical outlet and turn on the receiver. Set the SPEAKERS switch to REMOTE and the MODE switch to MONO and play a record or FM program through the receiver. If the deep bass tones sound normal, the speakers are in phase. If they sound weak or 'tinny', the speakers are out of phase; in this case, turn off the receiver and carefully reverse the connections at one of the speakers. Turn on the receiver and listen for normal bass.
- (6) Set the MODE switch to STEREO and play a stereo record or FM program. Experiment with speaker placement until you find the permanent location that best suits your personal tastes and listening conditions.

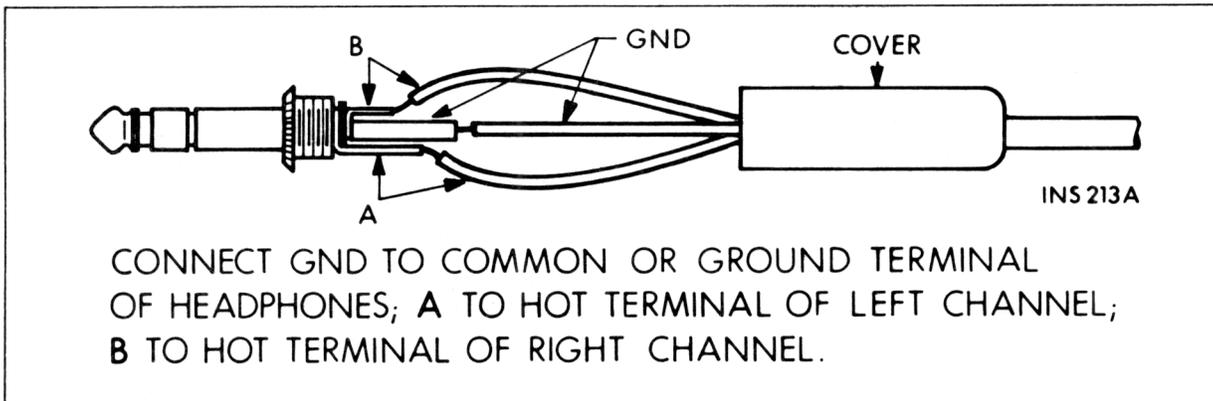


Figure 3. Headphone Plug Connections

ADDITIONAL COMPONENTS

RECORD PLAYERS AND CHANGERS

To connect a record player or changer having a magnetic cartridge, use Figure 1 and the following instructions. **Make sure that the PHONO switch at the rear of the receiver is set to LOW.**

(1) If the record player or changer has a ground wire (often green in color, with a spade lug at the free end), connect the lug to the GND terminal next to the FM ANT. terminals. *This is important for hum-free sound.*

(2) Connect the record player's shielded cables to the receiver's PHONO jacks. Usually, the record player's Instruction Manual will tell how to distinguish the left- and right-channel cables. If you cannot determine which cable is for which channel, temporarily connect them at random; you can check for correct left-right stereo placement in step 4.

(3) Connect the record player's power cord to a standard electrical outlet or to the switched outlet at the rear of the receiver. In either case, keep the power cord as far as possible from all shielded cables.

(4) Set the receiver's SELECTOR switch to PHONO and the MODE switch to STEREO. Play a *stereo* symphonic or orchestral recording and adjust the VOLUME control for a comfortable listening level. Listen to the placement of the violins; if they seem to come from — or near — the left speaker (please remember, left as viewed from your *listening* position), the phono cables are properly connected. If they seem to come from the right, switch the right- and left-channel cables at the receiver.

NOTE: In the rare event that you hear only weak and distorted sound from the record, the phono leads at the rear of the pickup cartridge may have been inadvertently connected to the wrong terminals, causing the left- and right-channel signals to be out of phase with each other. To correct this, remove the cartridge shell from the tone arm, if possible, and use a pair of tweezers or long-nose pliers to switch the connections at the cartridge terminals for *one* stereo channel only. (Almost all stereo cartridges identify the left-channel terminals with an "L" and the right-channel terminals with an "R".) Plug the cartridge shell back into the tone arm.

(5) Set the SELECTOR switch to FM and tune in an FM broadcast having music similar to that on the record. Turn the SELECTOR back and forth between FM and PHONO and compare the relative volume levels of the two sources: they should be approximately equal *without you having to readjust the VOLUME control drastically each time you switch*. If PHONO volume is much higher than that of FM or sounds distorted on loud passages, set the PHONO switch (at the rear of the set) to HIGH. Turn the SELECTOR back and forth between FM and PHONO; the volume levels should now be almost equal.

(6) During normal operation with the record player, remember to set the MODE switch to STEREO when playing stereo records and to MONO when playing mono records. All other controls may be adjusted in the usual manner to suit your personal tastes.

AUXILIARY PROGRAM SOURCES

You may increase the versatility of the receiver by playing an additional mono or stereo program source through

its AUX LOW or AUX HIGH jacks (Figure 1). Moreover, if the extra source normally plays through its own low-fidelity speakers and amplifiers, playing it through the receiver instead will improve its sound quality noticeably.

The auxiliary source may be an AM broadcast or AM multiband (medium-wave, long-wave, short-wave) tuner or receiver, the audio output of a TV set or sound-movie projector, an electronic organ, or any other similar device *so long as it has at least one medium- or high-impedance output jack providing about 200 mV to 2 volts of signal*. This type of jack is often marked CATHODE FOLLOWER, LINE OUTPUT, EXTERNAL AMPLIFIER (*not* EXTERNAL SPEAKER), TAPE RECORDER, or the like. If the device does not have the required jack, a qualified service technician can install one and, if necessary, add provisions for switching off its built-in speakers. **If the device is an AC/DC or 'transformerless' type, make sure that the technician eliminates shock hazard and hum caused by a 'hot' (electrically unisolated) chassis. If you are in doubt about the safety characteristics of the device, do not connect it to this receiver.**

Please note that you may use the AUX LOW or AUX HIGH jacks but not both sets of jacks at the same time. The following procedure gives instructions for determining which set of inputs to use:

(1) If the auxiliary device is monophonic (single channel) connect its single output jack to the receiver's AUX LOW L jack; use a shielded cable with the appropriate connector at each end. If the auxiliary device is stereophonic, it will have two such output jacks, one with the additional marking LEFT, L, A, or 1 and the other with the marking RIGHT, R, B, or 2. Using two shielded cables, connect the left output to the receiver's AUX LOW L jack and the right output to the AUX LOW R jack.

(2) Connect the auxiliary device's power cord to a standard electrical outlet. Keep the power cord as far as possible from all shielded cables.

(3) Turn on the auxiliary device. Set the receiver's SELECTOR switch to AUX. If the auxiliary device is monophonic, set the receiver's MODE switch to MONO; if the device is stereophonic, set the switch to STEREO. Adjust the VOLUME control for a comfortable listening level.

(4) Turn the receiver's SELECTOR switch back and forth between AUX and FM and compare the relative volume levels of the two program sources: they should be approximately equal *without you having to readjust the VOLUME control drastically each time you switch*. If the auxiliary device has any controls that affect auxiliary volume as heard through the *receiver*, adjust them, if necessary, to equalize the volume levels.

(5) If you can't reduce auxiliary volume sufficiently in step 4, or if the auxiliary program sounds distorted on loud passages, switch the connection(s) at the rear of the receiver from AUX LOW to AUX HIGH. (Make sure that the left and right cables go to the correct jacks.) Once again, turn the SELECTOR switch back and forth between AUX and FM and make any possible adjustments on the auxiliary device until the volume levels are about equal. Adjust all other receiver controls as usual.

TAPE RECORDERS, DECKS, AND PLAYERS

Your receiver has provisions for connecting an external

tape recorder or tape deck so that you may record any program source to which you are listening and then play back the recording (or any previously recorded tape) through the receiver at your convenience. If you wish playback *only* (of commercially prerecorded tapes), you may connect a tape player (having self-contained preamplifiers) instead of the recorder or deck. In any event, the tape unit may be a conventional reel-to-reel type or a new 4- or 8-track cartridge or cassette type.

CONNECTING THE TAPE UNIT — Use the following instructions and Figure 1 to connect the tape unit to the receiver. *When connecting a player, ignore step 1.*

(1) If the recorder or deck is monophonic (single channel), it may have a single high-level recording input marked HIGH LEVEL, LINE INPUT, PHONO, P.U., GRAM, or the like. Using a shielded cable with the appropriate connector at each end, connect this input to the receiver's RCDR L jack. If the recorder or deck is equipped to make stereo recordings, it will have two such high-level inputs, one with the additional marking LEFT, L, A, or 1 and the other with the marking RIGHT, R, B, or 2. Using two shielded cables, connect the left input to the receiver's RCDR L jack and the right input to the receiver's RCDR R jack. **Never connect the receiver to any input(s) on the tape unit marked MIC., MICROPHONE, RADIO, or DIODE; the resultant recordings will be severely overloaded and distorted.**

(2) If the recorder, deck, or player is monophonic (single channel), it may have a single playback output marked CATHODE FOLLOWER, LINE OUTPUT, MONITOR, EXTERNAL AMPLIFIER (*not* EXTERNAL SPEAKER), or the like. Using a shielded cable with the appropriate connector at each end, connect this output to the receiver's MON IN L jack. If the tape unit is equipped for stereo playback, it will have two such playback outputs, one with the additional marking LEFT, L, A, or 1 and the other with the marking RIGHT, R, B, or 2. Using two shielded cables, connect the left output to the MON IN L jack and the right output to the MON IN R jack.

(3) Connect the tape unit's power cord to a standard electrical outlet. Keep the power cord as far as possible from all shielded cables that connect to the receiver.

RECORDING AND MONITORING — Use the following instructions as a general guide to recording (and — if your recorder is properly equipped as described in step 3 — to monitoring the tape while recording). The tape unit's Instruction Manual will provide specific recording instructions.

(1) As usual, choose the desired program source with the receiver's SELECTOR switch; *the source to which you are listening is the source that will be recorded.* If both the program source and the tape unit are stereophonic (and you intend to make a stereo recording), set the receiver's MODE switch to STEREO. If the program source or tape unit (or both) are monophonic, or if you want to record a stereo source on a stereo machine *monophonically*, set the MODE switch to MONO. This will blend the signal from a stereo source into a complete, balanced mono signal; it will also assure that signals from a mono source are heard through both channels.

(2) Follow the tape unit's Instruction Manual for specific recording instructions. The SELECTOR and MODE switches are the only receiver controls that have any effect on the recording; you may therefore adjust all other controls in the usual manner to suit your personal tastes and listening conditions.

(3) If you are absolutely certain that your tape unit has *true* tape-monitor facilities (different circuits and heads for recording than for playback), you may monitor the tape — while recording — to compare its sound quality with that of the original program material from which it is being derived. To do this, alternate the receiver's MONITOR switch between OFF (to hear the original program material as usual) and ON (to hear the same material, a fraction of a second later, as *it sounds on tape*). You may repeat this as often as you like without affecting or interrupting the recording process in any way. **When you've finished recording, remember to set the MONITOR switch OFF; otherwise, any program chosen with the SELECTOR will be silenced.**

PLAYBACK — To play back tapes from your recorder, deck, or player, simply set the receiver's MONITOR switch ON. If the tape is stereophonic, set the receiver's MODE switch to STEREO; if either the tape or tape unit is monophonic, set the switch to MONO. Adjust all other receiver controls in the usual manner to suit your personal tastes. **When you've finished playing tapes through the receiver, remember to set the MONITOR switch OFF; otherwise, any other program source chosen with the SELECTOR switch will be silenced.**

NOTE: If the tape unit is stereophonic and you wish to listen to a monophonic tape that has more than one track recorded on it, the tape unit must have track-selection facilities (to prevent playback of more than one track at a time); otherwise, an external track-selector switch must be used. To obtain a diagram of such a switch, write to: Mr. Richard Hamilton, Customer Relations Department, Fisher Radio Corporation, 11-40 45 Road, Long Island City, New York 11101.

DYNAMIC SPACEEXPANDER®

The FISHER Model K-10 DYNAMIC SPACEEXPANDER® is a unique reverberation device that can be used in conjunction with this receiver to recreate the acoustical environment of a large concert hall or theater in your listening room. Further details about this device may be obtained at your dealer. To connect a SPACEEXPANDER to the receiver, proceed as follows:

(1) Install the SPACEEXPANDER in a suitable location as described in its Instruction Manual.

(2) Connect *one* of the SPACEEXPANDER's channel A INPUTS to the receiver's RCDR L jack.

(3) Connect *one* of the SPACEEXPANDER's channel B INPUTS to the receiver's RCDR R jack.

NOTE: If you had to disconnect a tape recorder or deck from the receiver in steps 2 and 3 to accommodate the SPACEEXPANDER, reconnect the recorder's high-level inputs to the SPACEEXPANDER's *extra* channel A and B INPUTS. This will permit you to record from the receiver while still using the SPACEEXPANDER. (The recordings, however, will not have reverberation since this effect is added *after* the point at which the recorder is connected.) Refer to the SPACEEXPANDER manual for details.

(4) Connect the SPACEEXPANDER's channel A OUTPUT to the receiver's MON IN L jack.

(5) Connect the SPACEEXPANDER's channel B OR C OUTPUT to the receiver's MON IN R jack.

NOTE: If you had to disconnect a tape recorder, deck, or player from the receiver in steps 4 and 5 to accommodate the SPACEEXPANDER — and you still wish to play tapes through the receiver — connect the output(s)

of the tape unit to the receiver's AUX jacks (if they are presently not in use) and use the AUX position of the SELECTOR switch; this will permit tape playback but not monitoring. As an alternative, you may obtain a switchbox that will permit you to feed the outputs of either the tape unit or the SPACEPANDER to the receiver's MON IN jacks. This type of switch is available at many electronic-parts dealers.

(6) Set the receiver's MONITOR switch ON and keep it in this position whenever you use the SPACEPANDER. **When the SPACEPANDER is turned off or disconnected, set this switch OFF; otherwise, all program sources (except tape) played through the receiver will be silenced.** Adjust all other receiver controls in the usual manner and operate the SPACEPANDER as described in its Instruction Manual.

CUSTOM INSTALLATION

This receiver may be installed in a custom cabinet or console of your own choice provided that you follow the general precautions and detailed installation instructions included in this section. Remember that heat is the greatest enemy of electronic equipment; heat from a nearby component or a radiator could be great enough to degrade the performance of the receiver or cause premature parts failure. For this reason, as well as for the sake of electrical and mechanical safety, it is absolutely essential that you observe the following precautions:

(1) Do not place the custom cabinet near a radiator, warm-air duct or other source of heat. To permit cooling air to circulate around and *through* the receiver chassis, keep the rear of the cabinet open and at least a few inches away from a wall or other obstruction; also, raise the receiver chassis from the mounting shelf with wood cleats (as specified in the installation instructions that follow). If another heat-producing component, such as an amplifier, is installed in the same cabinet, mount it *above* the receiver. If you install the receiver vertically, you *must* use a fan capable of delivering at *least* 65 cubic feet of air per minute. In any event, the ambient air temperature in the area of the receiver chassis should not exceed 40° Centigrade or 104° Fahrenheit.

(2) *Before* installing the receiver, unscrew the four plastic feet from its bottom cover, but keep them for re-use in case you decide to remove the receiver from the cabinet and place it on an open shelf or table at some later date. These feet *must* be re-installed in such cases.

(3) You will need two flat-head wood screws to fasten the cleats to the mounting shelf in your custom cabinet. Depending on the thickness of the mounting shelf, you will also need four 1½-inch or 1¾-inch 8-32 machine screws with washers to fasten the receiver chassis to the cleats and mounting shelf; these items are available at any hardware store. In any event, the machine screws *must not* protrude more than ¼ inch above the cleats; greater lengths may damage delicate parts or cause short circuits inside the receiver chassis. *Before* installing the receiver, compare the length of a sample screw with the combined thickness of the mounting shelf and one of the ¾-inch cleats to make sure that the screw meets this requirement; use the washers, if necessary, to take up any excess length.

NOTE: If you intend to install the receiver vertically you will need at least 14 No. 8, 1¼-inch round-head wood screws in addition to the hardware mentioned above.

FAILURE TO OBSERVE THESE PRECAUTIONS WILL VOID ALL WARRANTIES ON THIS UNIT.

HORIZONTAL INSTALLATION

(1) Figure 4a is an overall view of the completed horizontal installation, showing the relationship of the custom cabinet, receiver chassis, mounting shelf, and cleats. Study it carefully so that you get a clear idea of the general requirements of the installation.

(2) Figure 4b is a top view of the installation, showing optional vent holes (represented by shaded areas) in the

mounting shelf that provide additional ventilation to the underside of the receiver chassis. If you choose to use them, measure the locations and dimensions of vent holes 2, 3, and 4 *only* and saw them out.

(3) Cut two cleats 12 inches long from a piece of ¾-inch square wood stock.

(4) Fasten the cleats to the mounting shelf with the two flat-head wood screws at the points marked A in Figure

4b. If possible, insert the screws from the underside of the mounting shelf; if you must drive the screws from above, make certain that the screw heads are countersunk below the top surfaces of the cleats.

(5) Locate and drill four $\frac{5}{16}$ -inch holes as shown at the points marked B in Figure 4b.

(6) Saw a cutout through the front panel of your custom cabinet to the dimensions shown in Figure 4c. Make certain that the bottom edge of the cutout is the same height above the mounting shelf as the tops of the cleats.

(7) Make sure that the plastic feet have been removed from the receiver. Slide the receiver chassis into the custom-cabinet cutout until the receiver's front panel is tight against the cabinet's front panel and hides the rough edges of the cutout.

(8) Insert the four appropriately sized machine screws (with washers, if necessary) into the holes on the underside of the mounting shelf and fasten the receiver chassis into place. Remember, make certain that the screws do not penetrate more than $\frac{1}{4}$ -inch.

VERTICAL INSTALLATION

CAUTION: Once again let us remind you not to attempt to install this receiver vertically unless you use both an open-back cabinet and a fan capable of providing a minimum of 65 cubic feet of air per minute and unless you install the chassis and the fan exactly as specified in the following instructions. OUR WARRANTY DOES NOT COVER DAMAGE CAUSED BY EXCESSIVE HEAT.

(1) Figure 5a is an overall view of the completed vertical installation, showing the relationship of the custom cabinet, receiver chassis, mounting board, cleats, and the fan. Study it carefully so that you get a clear idea of the general requirements of the installation.

Measure the inside height of the cabinet and compare this height with the overall depth (front panel to fuse post) of the receiver chassis; the cabinet must be high enough to provide at least the 4-inch clearance shown between the chassis and the bottom of the cabinet. Also, make sure that there will be enough room in front of the mounting board for the fan.

(2) Determine where in the cabinet you want to install the receiver and check beneath the top panel of the cabinet for obstructions. Saw a cutout in the top panel to the dimensions shown in Figure 5b. Make a pencil mark at the mid-point of one of the long sides of the cutout.

(3) Measure the inside width of the cabinet (or mounting compartment) as shown in Figure 5b. Cut a chassis-mounting board from $\frac{3}{4}$ -inch plywood so that it is $\frac{1}{4}$ -inch narrower than the inside width of the cabinet; this will provide the necessary $\frac{1}{8}$ -inch clearance at each edge as shown. The other dimension of the board should be an inch or two greater than the overall depth (front panel to fuse post) of the receiver chassis.

(4) Hold the mounting board horizontally so that it is flat against the underside of the cabinet's top panel. Position the board so that it clears each side wall of the cabinet (or mounting compartment) by the required $\frac{1}{8}$ -inch. Extend the pencil mark at the edge of the cutout across the exposed part of the mounting board. Using this pencil mark as one of the necessary references, lay out the locations and dimensions of vent holes 2, 3, and 4 *only* (shown in Figure 4b) and saw them out. **These holes are mandatory for vertical installation.**

(5) Cut two cleats 12 inches long (cleats 1 and 2) from a piece of $\frac{3}{4}$ -inch square wood stock. Lay out the locations of the cleats on the mounting board as shown in Figure 4b. Fasten the cleats to the board with the two flat-head wood screws at the points marked A in the illustration. If you drive the screws through the cleats from above, make sure that the screw heads are countersunk below the top surfaces of the cleats.

(6) Locate and drill four $\frac{3}{16}$ -inch holes through the cleats and board as shown at points B in Figure 4b.

(7) To determine the locations of cleats 3 and 4, place the mounting board in the cabinet *vertically* so that cleats 1 and 2 line up with the forward edge of the cutout as shown in Figure 5b. Measure the distance between this edge of the cutout and the forward edge of the mounting board as shown in the illustration; do this on both side walls of the cabinet (or mounting compartment) and make pencil marks at the appropriate points.

(8) Cut two cleats 12 $\frac{7}{8}$ inches long (cleats 3 and 4) from a piece of 1-inch square wood stock. Drill four $\frac{3}{16}$ -inch pilot holes, spaced about four inches apart, through cleat 3. Turn the cleat 90 degrees and drill three more $\frac{3}{16}$ -inch holes; space the holes about four inches apart so that each hole is about midway between any two holes that are at right angles to it. Repeat this for cleat 4.

(9) Hold cleat 3 at its appropriately marked location on one of the inside walls of the cabinet (or mounting compartment). Make sure that the cleat is perpendicular to the top panel and about $\frac{1}{2}$ inch below it. Using the three $\frac{3}{16}$ -inch holes as guides, locate and drill three $\frac{1}{16}$ -inch pilot holes in the side wall of the cabinet, about $\frac{1}{4}$ inch deep. Repeat this procedure with cleat 4. Mount both cleats inside the cabinet with six No. 8, 1 $\frac{1}{4}$ -inch round-head wood screws.

(10) Mount the fan as shown so that its axis will point at the center of the cutout areas on the mounting board when the board is placed in the correct position. You may fasten the fan to a separate mounting board or to standoffs on the receiver mounting board but make sure that it is no more than 4 inches from the main board and that it is oriented to blow air *towards* the chassis.

(11) Make sure that the plastic feet have been removed from the receiver. Gently remove the receiver's control knobs and the hex nuts (on the control-shaft bushings) that hold the front panel to the rest of the receiver chassis; lift off the front panel.

(12) Insert four 1 $\frac{3}{4}$ -inch 8-32 machine screws (with washers, if necessary) into the holes on the underside of the mounting board and fasten the receiver chassis into place. Remember, make certain that the screws do not penetrate more than $\frac{1}{4}$ inch into the chassis.

(13) Fasten the mounting board to cleats 3 and 4 using eight No. 8 1 $\frac{1}{4}$ -inch roundhead wood screws; support the mounting board while doing this and make sure that the top edge of the board is tight against the underside of the cabinet's top panel. Replace the receiver's front panel, hex nuts and control knobs.

(14) The fan *must* be connected to the outlet on the rear panel of the receiver; if the outlet is presently in use, disconnect a component from it and connect the fan in its place. This will ensure that the fan is on whenever the receiver is switched on. If the fan has its own power switch, make sure that it is permanently ON.

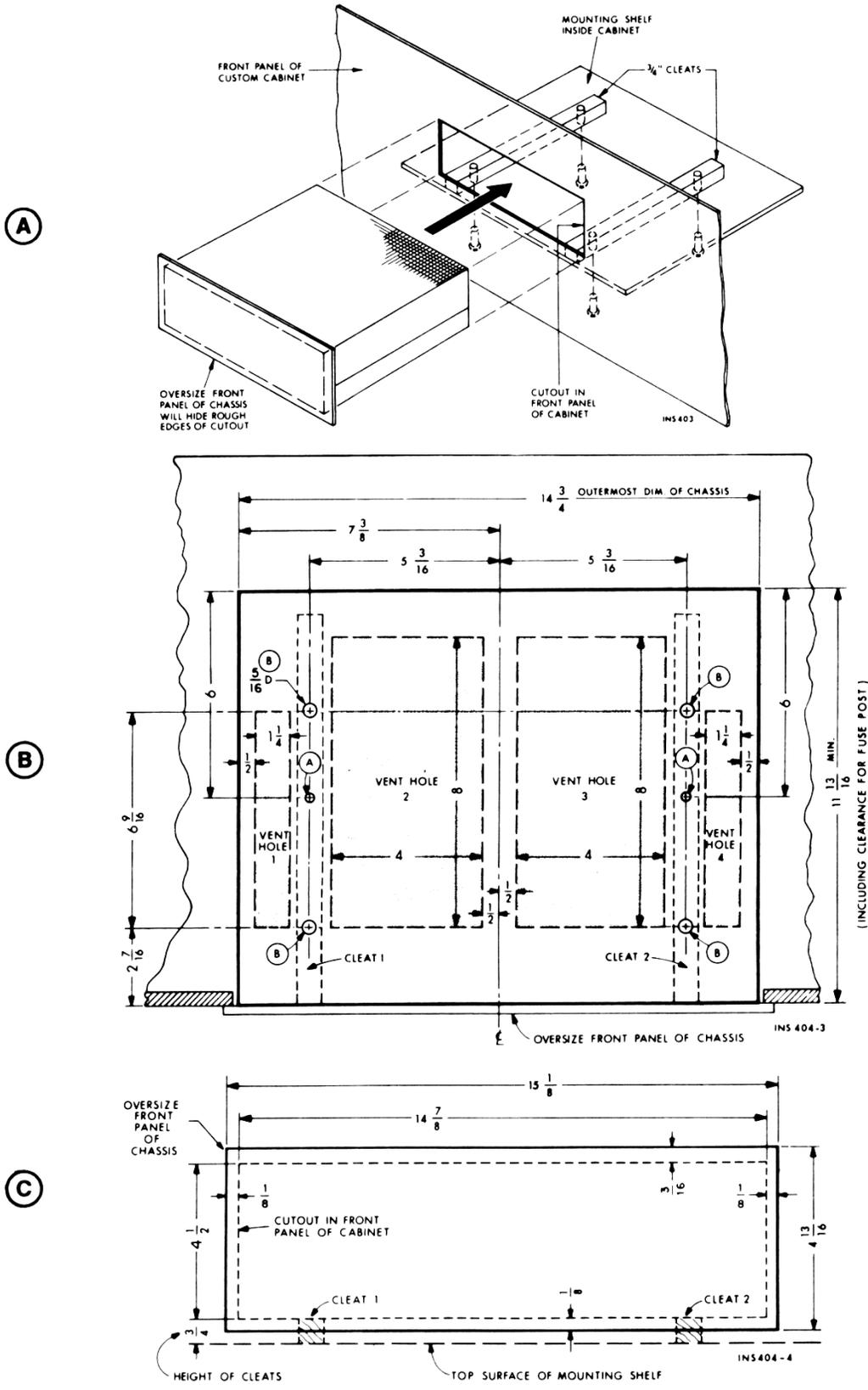


Figure 4. Horizontal Installation

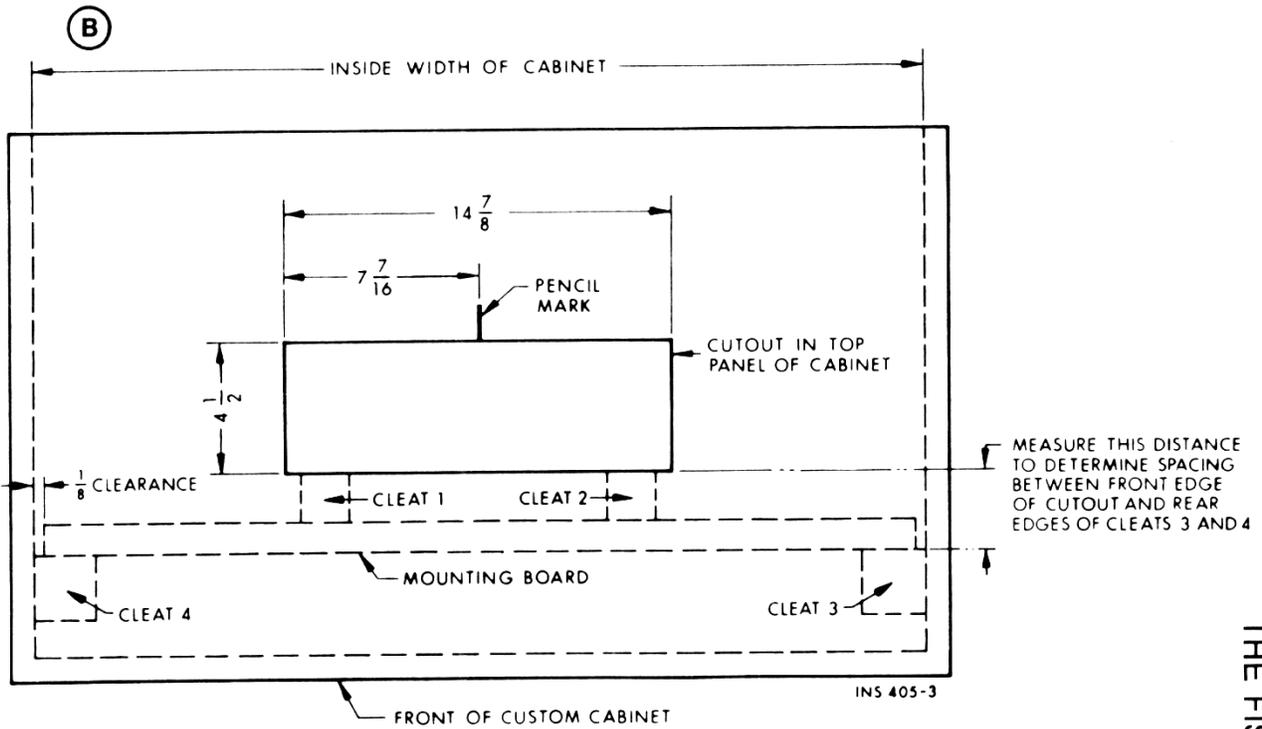
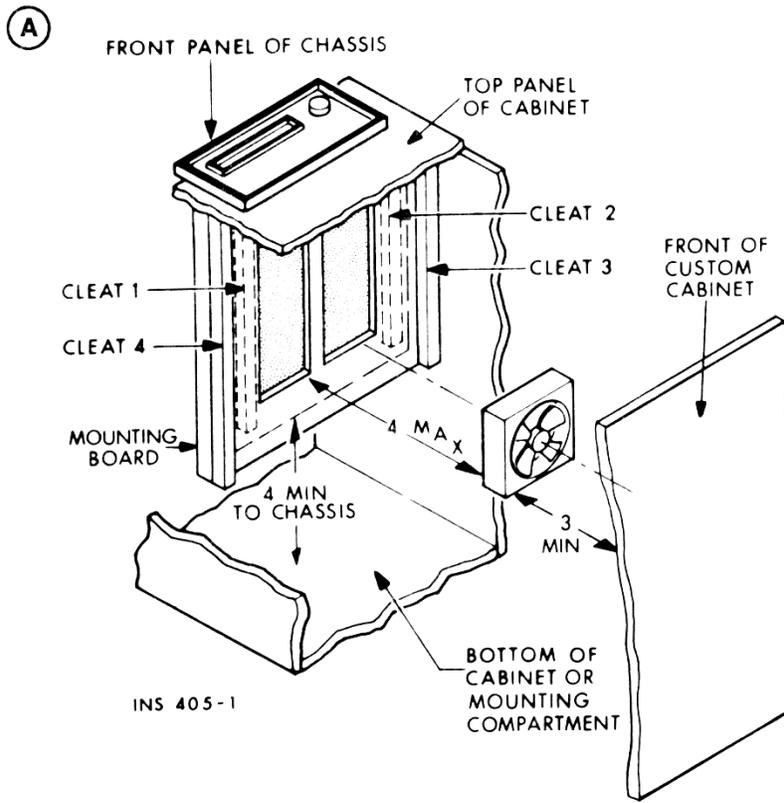


Figure 5. Vertical Installation

MAINTENANCE

CAUTION: Turn off the receiver and disconnect its power cord from the electrical outlet whenever instructed to do so in the following procedures. Do not attempt any maintenance not listed in this section. For further service, consult your dealer, local FISHER Service Center, or: Service Department, Fisher Radio Corporation, 11-40 45 Road, Long Island City, New York 11101. (If returning a set for service, please do not include this manual, the Service Manual, or the dipole antenna.)

CLEANING THE CONTROL PANEL

The receiver's beautiful multitone control panel will retain its color and brilliance permanently. However, it is possible that, over a period of time, a film from atmospheric contamination may dull the surfaces. Simply use a soft, *freshly laundered* cloth moistened with *plain lukewarm water* and the panel will look new again. **Do not use any household or industrial cleaning agents or any cloth that has been used to apply such agents.**

CLEANING THE DIAL GLASS

- (1) Turn off the receiver and disconnect its power cord from the electrical outlet.
- (2) *Gently* pull each control knob towards you and off its control shaft. **Do not attempt to remove the four rocker switches.**
- (3) The control panel is held to the rest of the receiver by hex nuts on some of the control-shaft bushings. Remove the hex nuts and lift off the panel.
- (4) If there are two foam-cushion strips fastened to the retaining clips at the ends of the dial glass, remove them from the clips.
- (5) Loosen (do not remove) the screws that hold the dial-glass retaining clips, swing the clips aside, and lift off the dial glass. (The glass is held from behind by adhesive rubber strips; it may therefore be necessary to apply a gentle prying force at the ends.)
- (6) Remove dust with a soft, dry, lint-free cloth. If you wish to clean more thoroughly, moisten the cloth with *plain lukewarm water* and gently wipe the glass back and forth until it is clean and free of streaks. **Do not use any household or industrial cleaning agents; they may damage the markings on the glass.**
- (7) Replace the dial glass. Make sure to reset it in its original position by placing it firmly against the *lower left-hand* corner of the plastic end frame. Swing the retaining clips back into place and tighten the screws.
- (8) Replace the foam-cushion strips (if removed previously), control panel, hex nuts, and control knobs by reversing the procedures in steps 2 through 4. Connect the power cord to the electrical outlet and turn on the receiver.

REPLACING DIAL LAMPS

The tubular dial lamps are spring-clip mounted at the ends of the dial glass behind the control panel. Should they burn out, you may obtain exact replacements (Part No. I-50441-1) from your authorized FISHER dealer or from: Parts Department, Fisher Radio Corporation, 11-40 45 Road, Long Island City, New York 11101. Remove the control panel and replace the lamps as follows:

- (1) Turn off the receiver and disconnect its power cord from the electrical outlet.
- (2) *Gently* pull each control knob towards you and off

its control shaft. **Do not attempt to remove the four rocker switches.**

- (3) The control panel is held to the rest of the receiver chassis by hex nuts on some of the control-shaft bushings. Remove the hex nuts and lift off the panel.
- (4) Gently pull the burned-out lamp out of its clip and snap the replacement lamp into place. Make sure that the *unpainted* side of the lamp faces *towards* the edge of the dial glass.
- (5) Replace the control panel, hex nuts, and control knobs by reversing the procedures in steps 2 and 3. Connect the power cord to the electrical outlet and turn on the receiver.

SERVICING OTHER LAMPS

The STEREO BEACON and tuning-meter lamps behind the dial glass are both long-life devices that should not require replacement in normal use. However, in the rare event that they should, *do not* attempt to replace them yourself; they are *not* customer serviceable. Consult your dealer, local FISHER Service Center, or Fisher Radio.

REPLACING THE POWER FUSE

The power fuse at the rear of the unit protects it against abnormal power-line surges and overloads. If the set fails to operate when plugged in and turned on or if it suddenly becomes completely inoperative while playing (i.e., all dial and meter lamps go off and both channels are silent regardless of program source, speakers, or headphones selected), the fuse may have blown. Replace it as follows:

- (1) Turn off the receiver and disconnect its power cord from the electrical outlet.
- (2) The fuse is in the black receptacle marked SLO-BLO at the rear of the receiver (Figure 1). Turn the fuseholder cap counterclockwise (in the direction of the arrow on the cap) until it disengages from the receptacle and remove the fuse from the cap.
- (3) The spare fuse supplied with the set has a short spiral coil of wire inside its glass envelope (identifying it as a slow-blow type). Depending on the AC voltage for which your set is wired, one of its metal ends will be marked either **1.5 (1½) A** (for any voltage between 100 and 138 volts) or **0.75 (¾) A** (for any voltage between 200 and 256 volts). Use only this fuse (or an exact commercial equivalent) as a replacement.
- (4) Insert the replacement fuse in the fuse cap. Push the cap into the receptacle and turn it clockwise (against the direction of the arrow) until it is firmly in place. Connect the power cord to the electrical outlet and turn on the receiver.

CAUTION: If the unit still does not operate, or if it becomes inoperative within a short time, do not attempt to replace the fuse again. Consult your dealer, local FISHER Service Center, or Fisher Radio Corporation.

TECHNICAL SPECIFICATIONS

FM TUNER SECTION

Usable Sensitivity (IHF Standard)	2.0 μ V
Harmonic Distortion (at 400 Hz, 100% Modulation)	0.5%
Signal-to-Noise Ratio (at 100% modulation and 1 mV input)	65 db
Selectivity, Alternate Channel	40 db
Spurious Response Rejection (at 100 MHz)	90 db
Image Frequency Rejection (at 100 MHz)	60 db
IF Frequency Rejection (at 100 MHz)	90 db
FM Stereo Separation (at 1 kHz)	greater than 35 db
Capture Ratio, IHF	2.5 db

AMPLIFIER SECTION

Music Power, IHF (at 1 kHz)	
Speaker impedance 4 ohms	70 watts
Speaker impedance 8 ohms	50 watts
RMS Power (at 1 kHz)	
Speaker impedance 4 ohms	25/25 watts
Speaker impedance 8 ohms	20/20 watts
Harmonic Distortion (at 1 kHz)	0.8%
IM Distortion (60/7000 Hz, 4:1; SMPTE)	1.0%
Power Bandwidth, IHF (at 8 ohms)	22 to 30,000 Hz
Sensitivity (for rated output at 4 ohms)	
Phono Low	3.5 mV
Phono High	11 mV
Auxiliary Low	220 mV
Auxiliary High	440 mV
Monitor	260 mV
Recorder Output	250 mV
Hum and Noise (below rated output)	
Volume at minimum	-80 db

Phono Low (6-mV reference)	-55 db
Auxiliary High (400-mV reference)	-65 db
Frequency Response	
Phono Low	30 to 15,000 Hz + 1, - 2 db
Auxiliary High	25 to 20,000 Hz \pm 2 db
Power Amplifier Section	20 to 25,000 Hz + 0, - 2 db
Maximum Input Signal (at 1% THD)	
Phono Low	30 mV
Auxiliary High	2.8 volts
Input Impedance	
Phono Low	50 k ohms
Auxiliary High	200 k ohms
Damping Factor	
Speaker impedance 8 ohms	greater than 10
Control Tracking Error (0 to -50 db)	Less than 2 db
Separation (at 1 kHz, L to R, R to L)	
Phono	greater than 45 db
Auxiliary High	greater than 45 db
Bass Control Range (at 50 Hz)	17 db
Treble Control Range (at 10 kHz)	16 db
Subsonic Filter	12 db per octave below 20 Hz
GENERAL	
Dimensions (including dress panel and fuse post)	15 $\frac{1}{8}$ " wide 4 $\frac{13}{16}$ " high 11 $\frac{1}{2}$ " deep
Weight	22 lbs.
Power Consumption, Maximum	130 watts/140 VA

Hertz (Hz), Kilohertz (kHz), and Megahertz (MHz) have been used in this material to conform to the standards established by the IEEE. They replace cycles per second (cps), kilocycles (kc), and Megacycles (Mc), respectively.

BECAUSE ITS PRODUCTS ARE SUBJECT TO CONTINUOUS IMPROVEMENT, FISHER RADIO CORPORATION RESERVES THE RIGHT TO MODIFY ANY DESIGN OR SPECIFICATION WITHOUT NOTICE AND WITHOUT INCURRING ANY OBLIGATION.

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, N. Y.

FISHER RADIO CORPORATION
LONG ISLAND CITY 1 • NEW YORK

