

STEREOPHONIC SOUND



INSTALLATION

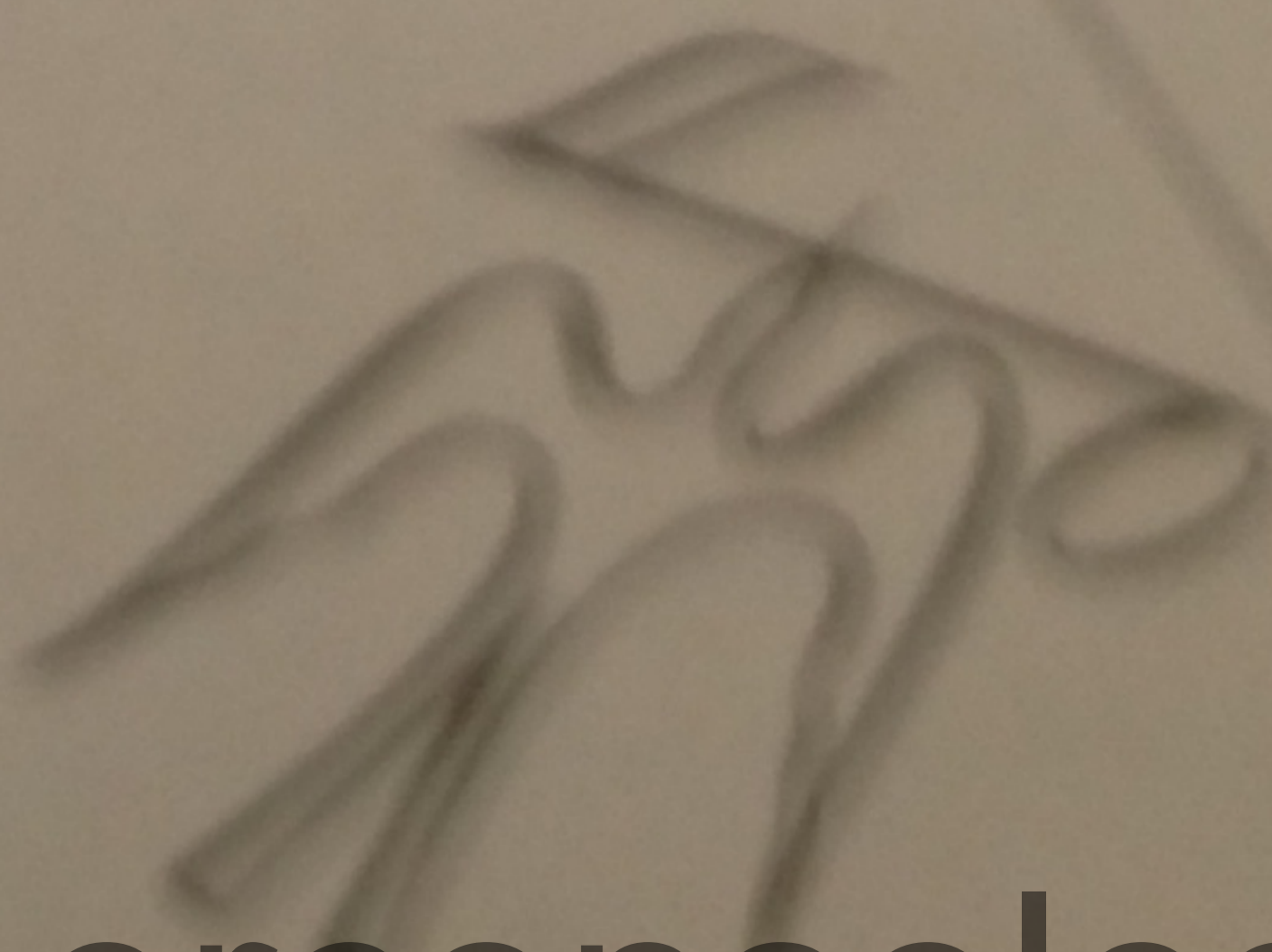
OPERATING  
INSTRUCTIONS



FM-AM Tuner

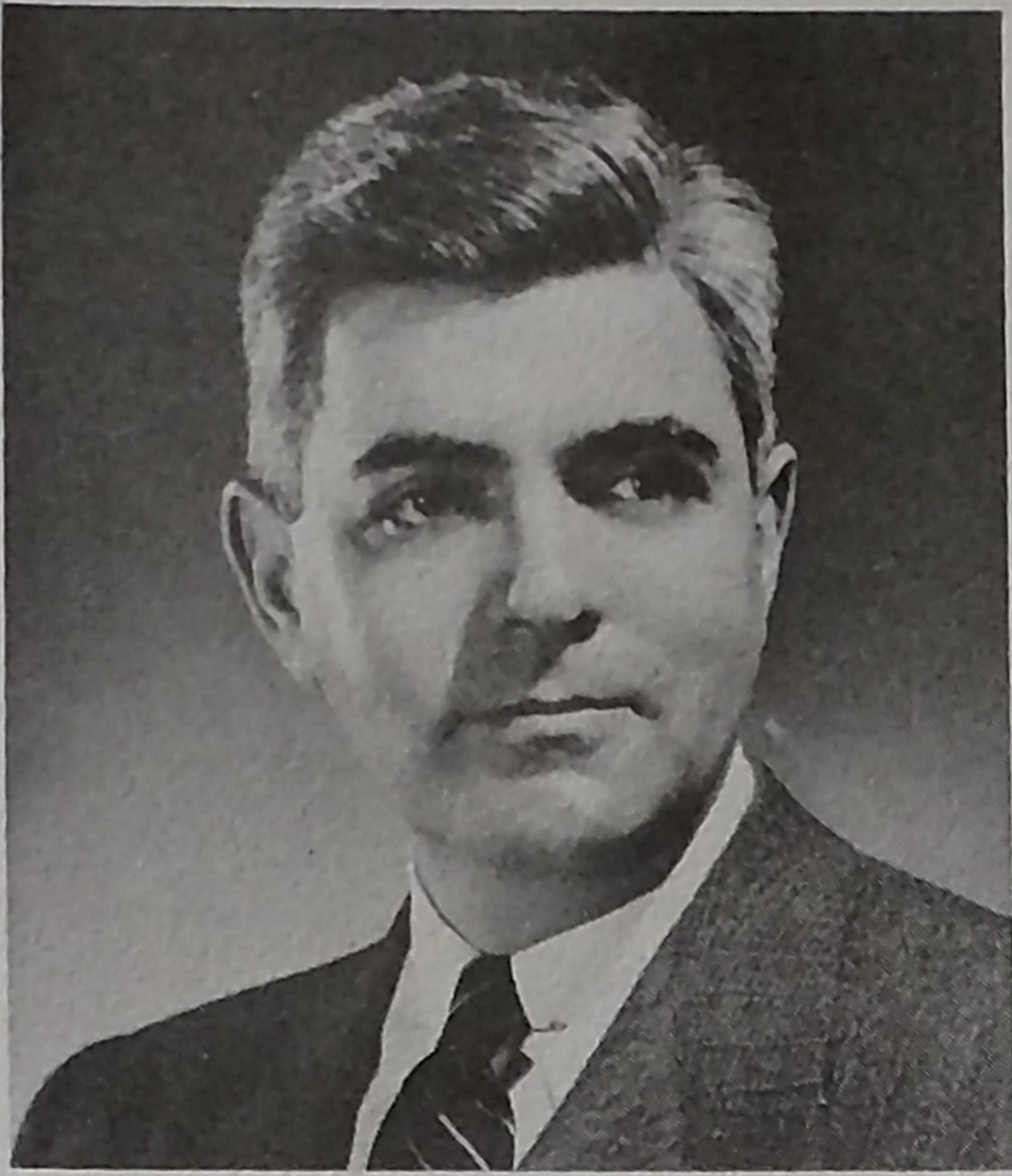
Model **101-R**

**THE FISHER**



(c) [www.fisherconsoles.com](http://www.fisherconsoles.com)





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

## The Man Behind the Product

**O**VER 20 YEARS AGO, Avery Fisher introduced America's first high fidelity radio-phonograph. That instrument attained instant recognition as heralding a new era in the enjoyment of reproduced music. A number of the features of that early high fidelity radio-phonograph were so basic that they are used to this day in all high fidelity equipment. The engineering achievements of Avery Fisher and the world-wide reputation of his products have been the subject of articles in *Fortune*, *Time*, *Pageant*, *The New York Times*, *Coronet*, *Life*, *High Fidelity*, *Esquire*, and other publications.

Benefit concerts for the National Symphony Orchestra in Washington and the Philadelphia Orchestra, demonstrating the great advances in reproducing equipment, used FISHER instruments to play back the recordings that had just been made in the presence of the audience. "Fascinating evening, acoustically and musically," was the *Philadelphia Inquirer's* comment, "the reproduction had remarkable fidelity." *TIME* magazine stated, "Listeners could hardly tell the difference between real and electronic."

The FISHER instrument you have just purchased has been designed to give you many years of pride and enjoyment. It is the product of a company dedicated to bringing reproduced music in its finest form, to the homes of America. If at any time you should desire information or assistance regarding the performance of your FISHER instrument, please do not hesitate to write directly to Avery Fisher, President, Fisher Radio Corporation, Long Island City 1, New York. Your communications will be welcome.

### FISHER 'FIRSTS' – Milestones In Audio History ...

- 1937 First high fidelity sound systems featuring a beam-power amplifier, inverse feedback, acoustic speaker compartments (infinite baffle and bass reflex) and magnetic cartridges.
- 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 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-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 incorporate 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 Gold Cascode FM Tuner.
- 1957 First MicroRay Tuning Indicator.
- 1958 First Stereophonic Radio-Phonograph with Magnetic Stereo Cartridge



# THE FISHER "101-R"

## *Stereophonic*

### **Gold Cascode FM-AM Tuner**

The *101-R* high fidelity stereophonic tuner displays in every detail of its outstanding design the reasons which have earned for THE FISHER a world-wide reputation. Even on first acquaintance, the dazzling performance of the *101-R* will amply demonstrate what true stereophonic high fidelity means in terms of your personal enjoyment.

### **OPERATING INSTRUCTIONS**

The few moments you spend reading the instructions will bring you far greater enjoyment of the *101-R* than would be possible if you plunged right in! You will find the information that follows concise, yet complete. Keep it handy, particularly during the first few weeks of operating your FISHER, and you will rapidly become familiar with its performance and fabulous flexibility.

The *101-R* can be placed in nearly any location convenient to its use; for example, on a table top or shelf near your favorite chair. It has also been designed for simple installation in a custom cabinet, for which complete directions and diagrams have been provided in the last section of these instructions. If you intend to keep the *101-R* on a table top or shelf, custom-crafted cabinets are available from FISHER, enabling you to convert the unit into an attractive member of your furniture group.

For the time being, simply place it in its approximate final location, allowing yourself room to get at the rear apron of the chassis. This arrangement permits you to determine the cable lengths necessary for the various connections to the associated high fidelity equipment. The following sections describe the proper methods for installing the antennas, and connecting the cables.

### **HOW TO CONNECT THE ANTENNAS**

The antenna plays an important role in reception. Its purpose is to pick up a portion of the signal sent out by the broadcasting station, then pass it on to the circuits of the receiver. Different types of antennas and antenna connections must be available, in order to cope with a variety of local conditions. The FM antenna supplied with the *101-R* and the five possible types of installation have been designed to assure you of the flexibility necessary for the best possible reception. Read the following paragraphs carefully before proceeding.



### fm antenna . . .

The astonishing sensitivity of the 101-R FM Tuner may even bring in stations *before* you have connected the FM antenna. Please bear in mind, however, that an antenna should be used for optimum performance and the reception of the maximum possible number of available stations. First try the FM folded dipole antenna supplied with the tuner. You will find that it operates satisfactorily at such distances from the broadcasting centers that only in rare circumstances will an external, or roof, antenna be required at all. If you do live in an extreme fringe area, be sure that the external antenna used is designed specifically for FM reception. On the other hand, if you live relatively near high-powered stations, the danger of overloading this sensitive tuner exists. To obviate this possibility, special FM antenna connections are provided.

The 101-R provides for three types of FM antenna installation. Having read the previous paragraph carefully, you will find the three installations below self-explanatory.

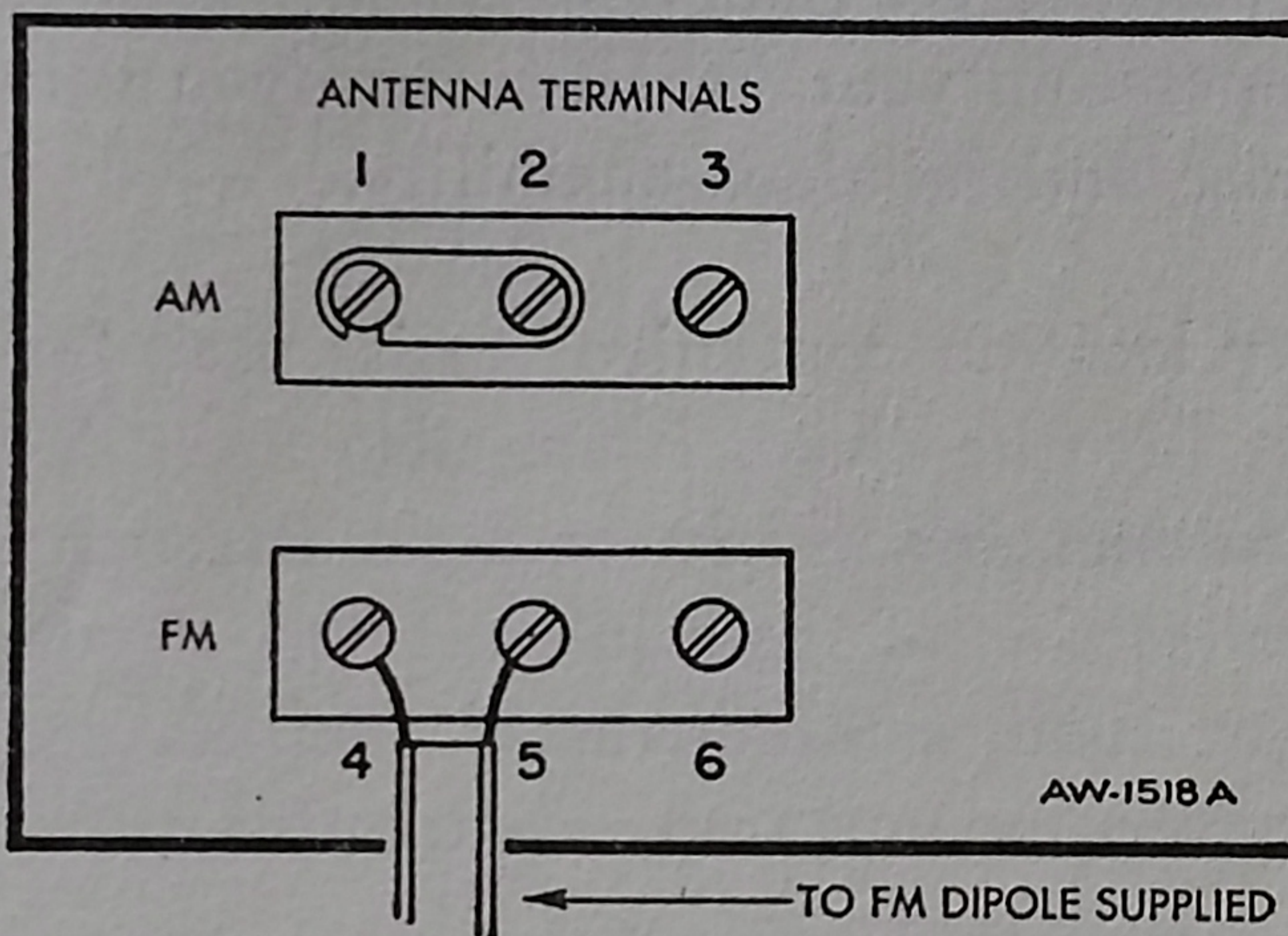


FIGURE 1. Installation of the FM dipole antenna supplied. Use in normal signal areas. Place antenna wherever convenient. Extend lead-in with 300-ohm line.

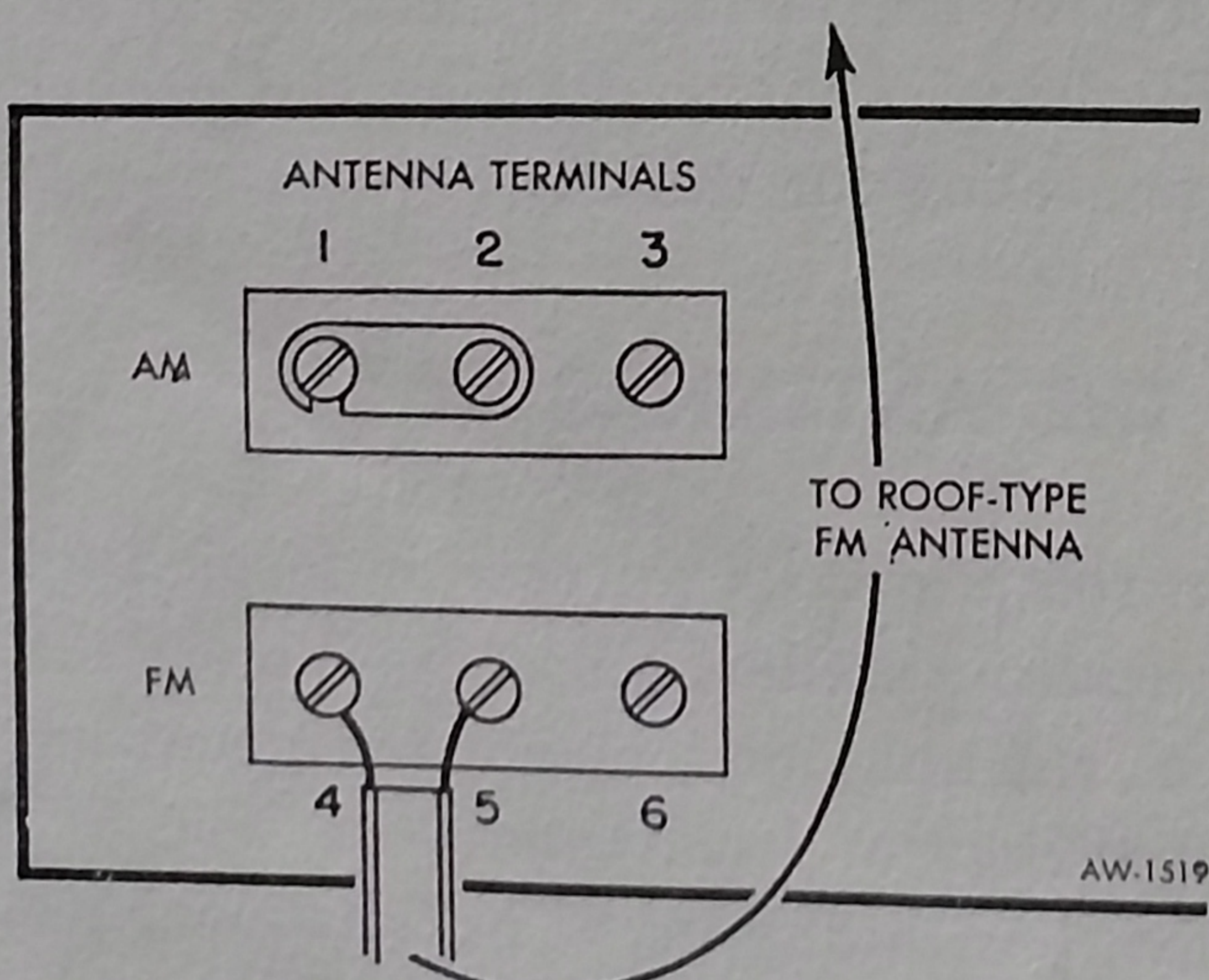


FIGURE 2. Installation of a roof-type antenna. Use in weak-to-normal signal areas.

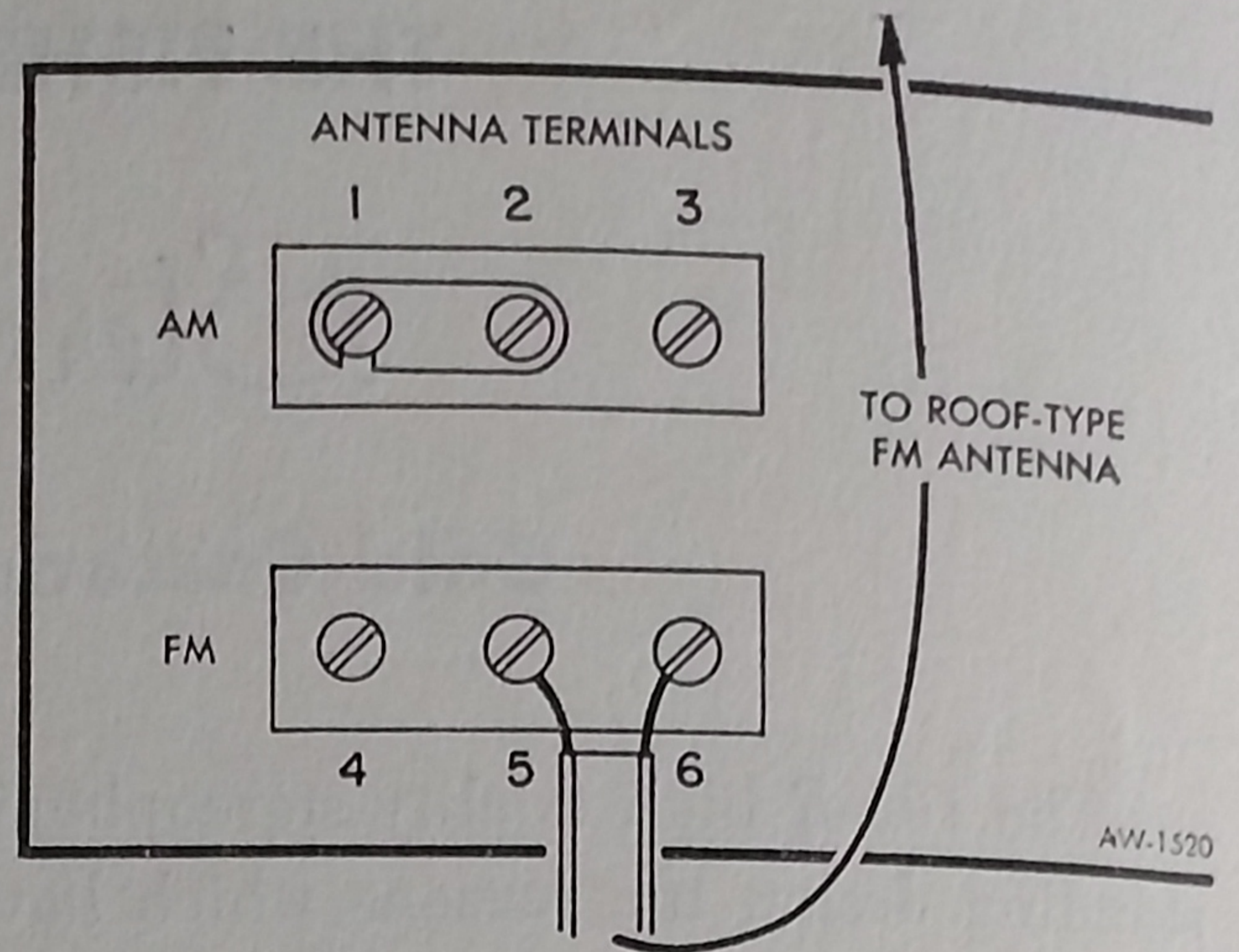


FIGURE 3. Installation of a roof-type FM antenna to prevent overloading of the tuner input circuits. Use in strong signal areas.

### am antenna . . .

The 101-R AM Tuner is designed to operate from the FM antenna, even in stereophonic operation. Unless you wish to reach out for especially weak or distant stations, use the arrangements shown in Figure 4. For installation of a separate AM antenna, use the arrangement shown in Figure 5. The antenna itself is simply a conventional aerial.

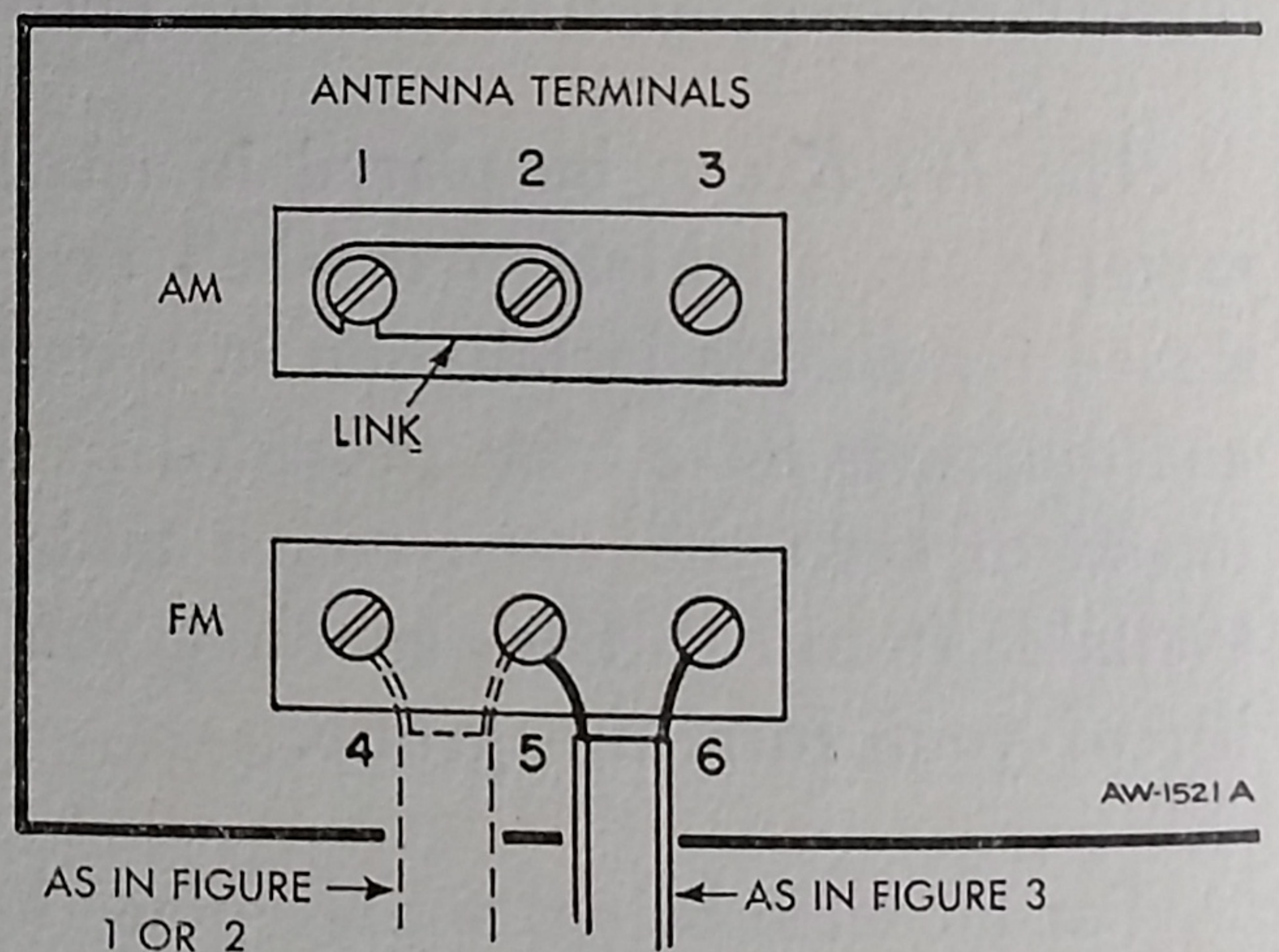


FIGURE 4. Using the FM antenna for AM reception. Link between terminals 1 and 2.

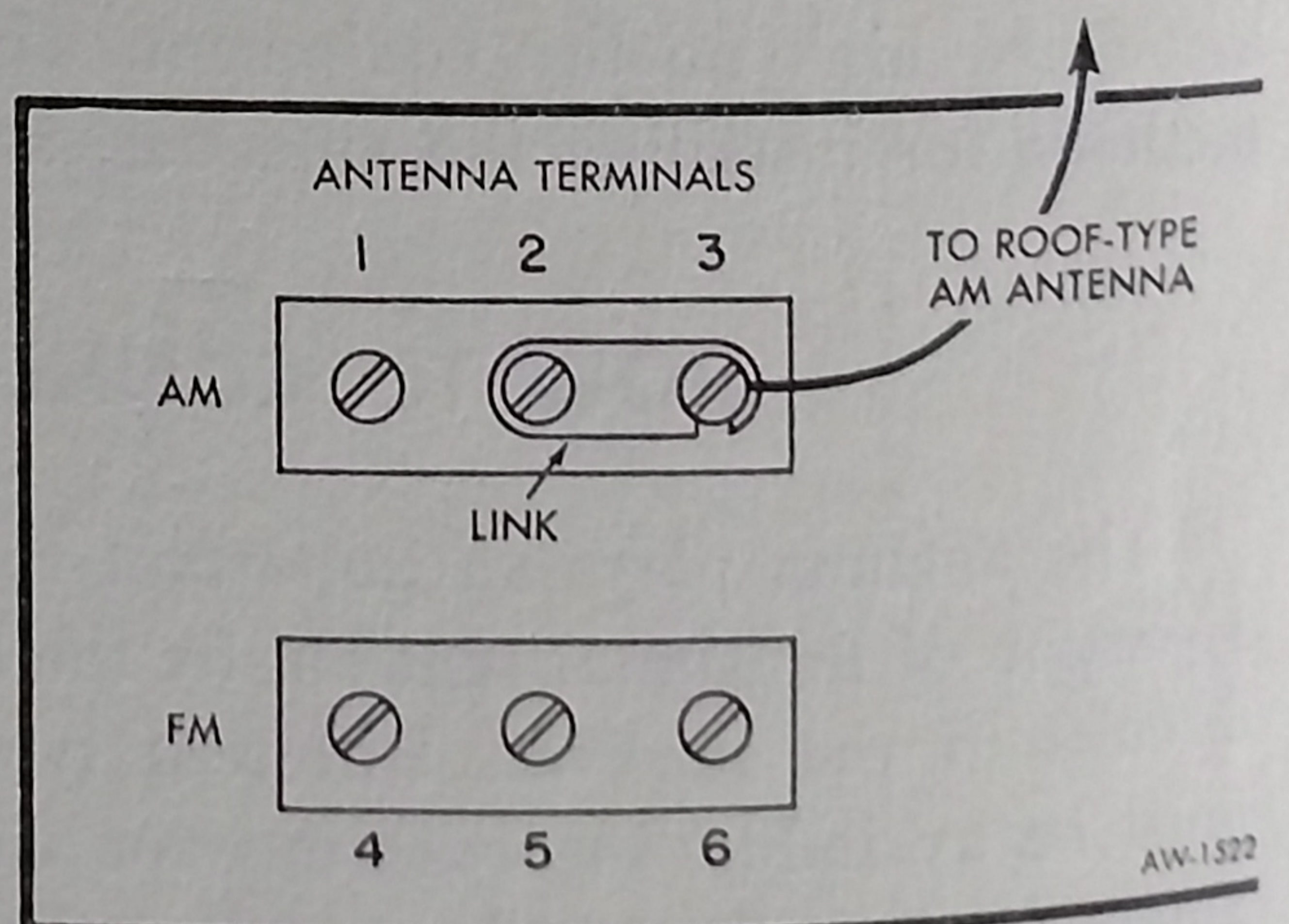


FIGURE 5. Installation of a roof-type AM antenna. Link between terminals 2 and 3. Antenna lead-in to terminal 3.



## THE FISHER AND YOUR HIGH FIDELITY SYSTEM

Having connected the FM and AM antennas, the next step is to make all the necessary cable connections for operating the 101-R in your stereophonic or monaural high fidelity system. The right side of the rear panel, illustrated in Figure 6, has six output jacks plus level adjustments for both the FM and AM channels. For the time being, make no AC connections to any of your equipment.

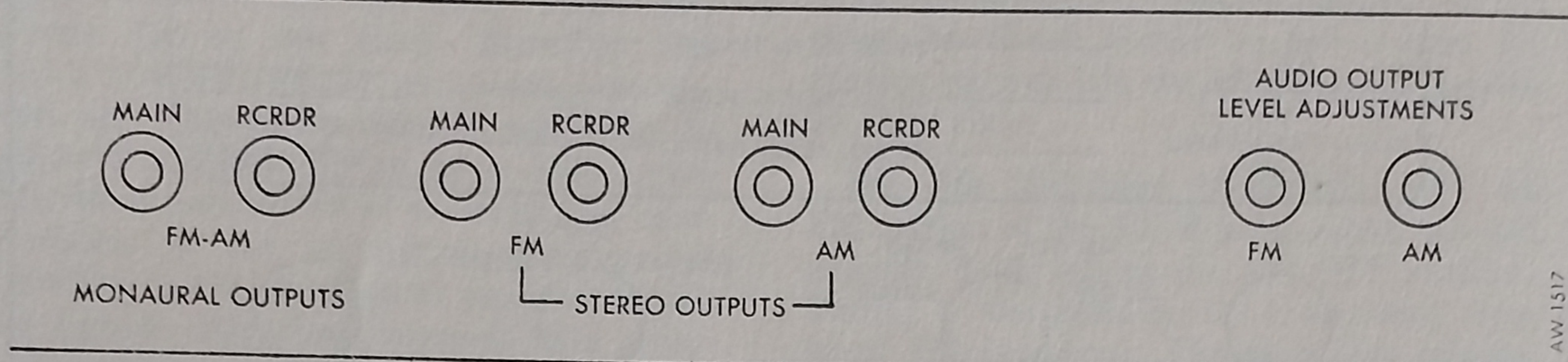


FIGURE 6. MODEL 101-R REAR PANEL, RIGHT SIDE

### output connections . . .

The six output jacks on the rear panel are divided into three pairs. One pair is for use in monaural installations, while the other two are provided for connecting the 101-R in a stereo system. In addition, a seventh output jack is provided on the chassis top for obtaining an FM Multiplex broadcast.

**MONAURAL:** Use the FM-AM Monaural Output Jacks. Use the shielded cables supplied for making these connections. Plug one end of a cable into the Main Output Jack, and the other end into the tuner or other high-level input on your audio control chassis. For recording directly from the 101-R, connect the other cable supplied from the Rcrdr Output Jack to the tuner or other high-level input on your recording equipment.

**STEREO:** For stereo systems, use the Stereo Output Jacks on the rear panel and the Multiplex Output Jack on the chassis top. In conjunction with FM Multiplex, where no FM-AM stereo broadcasts are available, it is possible also to use the FM-AM Monaural Output Jacks.

The following arrangement provides for receiving FM-AM stereo broadcasts, or standard FM or AM monaural broadcasts using one pair of permanent connections. In FM-AM stereo, the FM portion of the broadcast should be heard from the speaker on your left, and the AM portion from the speaker on your right. Using the two cables supplied,

connect the FM and AM Main Output Jacks to a corresponding pair of inputs, designated for tuner or high-level use, on your audio control. Connect the FM and AM Rcrdr Output Jacks to a pair of high-level inputs on your stereo recorder.

For receiving FM multiplex stereo broadcasts, a multiplex adaptor is required. The connections will depend on the facilities available on the adaptor you use. A multiplex adaptor will be available from FISHER when the multiplex system receives final approval from the Federal Communications Commission. In the meantime, do not use the Multiplex Output Jack for regular FM broadcasts, as distortion will be introduced.

### ac power . . .

After you have made the signal connections described above, connect the AC power cord of the 101-R to a line receptacle capable of furnishing 70 watts at from 105 to 125 volts, and 50 to 60 cycles. The 101-R can also be used at other voltages with a step-up or step-down transformer.

### caution . . .

If you have read this far, you have now reached a dilemma — should you plunge into using the equipment right off, or should you read on. Based on long experience, we urge you to resist the temptation to stop here. The next few paragraphs are *the most important of all*.



## HOW TO USE THE CONTROLS

There are four control knobs on the front panel of the *101-R*, plus a window which incorporates a three-scale dial and two MicroRay Tuning Indicators. Each item on the panel has been carefully designed for ease of operation. Nevertheless, a fuller understanding of each item will increase your listening pleasure considerably. Use Figure 7 as a guide while you read.

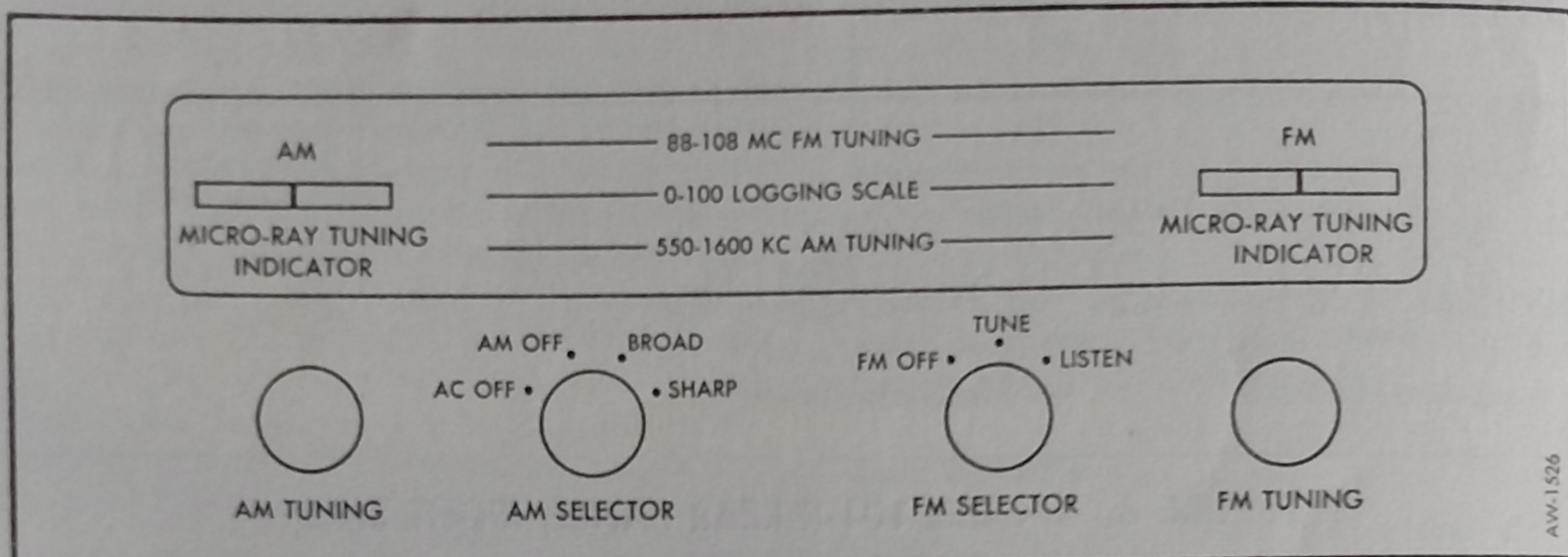


FIGURE 7. MODEL 101-R FRONT CONTROL PANEL

### ac on-off . . .

The AM Selector, the second knob from the left, serves as the AC switch for the entire chassis. With the AM Selector in the AC OFF position, both the FM and AM sections of the *101-R* are turned off. When the AM Selector is switched to the AM OFF position, and with the FM Selector in the FM OFF position, AC power is furnished to the *101-R*. This is actually a stand-by condition which permits the tubes to warm up.

If the *101-R* power cord has been plugged into a switched AC receptacle on your audio control chassis, then the AC OFF position need not be used. Simply leave the selector switches on the *101-R* in the AM OFF and FM OFF positions. This permits instant tuner operation, when desired, without waiting for the tubes to warm up.

### am selector . . .

As described above, the AC OFF position of the AM Selector turns off power to the entire *101-R* chassis, and the AM OFF position puts the chassis in a stand-by condition. The tube heaters may warm up, but no plate voltage is being applied. The AM tuner is put into operation when the AM Selector is switched to the BROAD position. Use this position where there is no interference from neighboring channels, since it provides the optimum in bandwidth and the best tonal fidelity. For maximum selectivity and mini-

mum interference in receiving distant or weak stations, or where there is adjacent-channel interference, switch the AM Selector to SHARP.

### am tuning . . .

The AM Tuning knob on the left is used to select AM stations in the 550 to 1600 kilocycle standard broadcast band. Turning this knob moves the pointer across the AM dial scale, and also operates the AM MicroRay Tuning Indicator. Easy and accurate tuning is achieved by running the dial pointer to the approximate frequency of the AM station desired, then tuning in precisely with the MicroRay Tuning Indicator.

### fm selector . . .

The FM tuner in the *101-R* is put into operation by switching the FM Selector from the FM OFF to the TUNE position. Use the TUNE position while locating the FM station desired, as it provides the minimum of interstation noise while tuning across the FM dial. After you have tuned to the station desired, switch to the LISTEN position of the FM selector.

### fm tuning . . .

The FM Tuning knob on the right is used to select FM stations in the 88 to 108 megacycle band. Turning this knob moves the pointer across the FM dial scale, and also operates the FM MicroRay Tuning Indica-



tor. Easy and accurate tuning is achieved by turning the FM Tuning knob until the dial pointer is at the approximate frequency of the FM station desired, then tuning in with the MicroRay Tuning Indicator.

### micro-ray tuning indicator . . .

THE FISHER 101-R is equipped with two of the world's most advanced cathode-ray tuning indicators, the MicroRay. Unlike any previous tuning eye used, MicroRay features a newly-developed phosphorescent material in a specially constructed tube to achieve a brilliant display never before possible. Most remarkable of all its unique characteristics is the logarithmic response of MicroRay to the strength of received broadcast signals. MicroRay responds with *greatest* sensitivity on *weak* signals — where sensitivity is needed. It has its minimum sensitivity on strong signals, thus automatically protecting the indicator against overload. The FISHER owner thus has the finest facilities for tuning to the exact center of channel (for minimum distortion) even on the weakest FM or AM station. Because of MicroRay, easy and accurate tuning is within the reach of even the unskilled user.

The MicroRay Tuning Indicator display is a bright bar of light divided into two sections by a small, clearly defined, dark area. When you turn the tuning knob to the vicinity of a station, either FM or AM, the gap between the two sections of the bar of light becomes smaller. You are tuned to the exact center of channel when you have made the gap in the bar of light as small as possible. This point has been reached when turning the knob in either direction widens the gap.

### logging scale . . .

In addition to the scales for locating FM and AM stations, the 101-R dial glass includes a Logging Scale numbered from 0 to 100. With its aid your favorite stations can be tuned in more easily, since only a two-digit number need be remembered. The scale can be used for both FM and AM.

### monaural operation . . .

For listening to a standard FM broadcast, turn the AM Selector to the AM OFF position, and use the FM Selector and FM Tuning controls to obtain the station you desire. For listening to a standard AM broadcast, leave the FM Selector in the FM OFF posi-

tion, and use the AM Selector and AM Tuning controls to tune into the AM station desired.

### stereo operation . . .

To listen to FM-AM stereo broadcasts, both the FM and AM sections of the 101-R are used. Tune to the station desired on each channel, using the FM and AM controls as described above. The FM portion of the stereo broadcast should be heard from the speaker on your left, the AM from the speaker on your right.

For FM Multiplex broadcasts, only the FM section of the 101-R is operated, the AM Selector being left in the AM OFF position. Tuning is the same as for a standard monaural FM broadcast. The multiplex adaptor is operated in accordance with the instructions supplied with it, and supplies the necessary stereo channels to your audio control. As mentioned previously, a multiplex adaptor will be made available by FISHER when final approval of multiplex broadcasting standards is given by the Federal Communications Commission.

### audio output level . . .

As shown in Figure 6, there are two audio output level adjustments on the rear panel of the tuner, one for FM and one for AM. If the audio control in your installation has input level adjustments, then simply set the 101-R level adjustments to maximum, which is the extreme clockwise direction of rotation. Level between FM and AM, and your other program sources, can then be set at your audio control, obviating the necessity of going to the back of the tuner. If there is no way of setting the level at the inputs to your audio control, then use the two on the 101-R to establish channel balance, and to prevent overload and consequent distortion in the equipment following the 101-R.

### tube location and function . . .

V1, GOLD-CASCADE FM-RF amplifier. V2, FM oscillator and mixer. V3, 1st FM-IF amplifier. V4, 2nd FM-IF amplifier. V5, 3rd FM-IF amplifier and limiter. V6, 4th FM-IF amplifier and limiter. V7, AM-RF amplifier. V8, AM converter. V9, 1st AM-IF amplifier. V10, 2nd AM-IF amplifier, AM detector, AM AVC diode. V11, AM MicroRay tuning Indicator. V12, FM MicroRay tuning indicator. V13, rectifier. V14, AM audio output tube. V15, FM audio output tube.



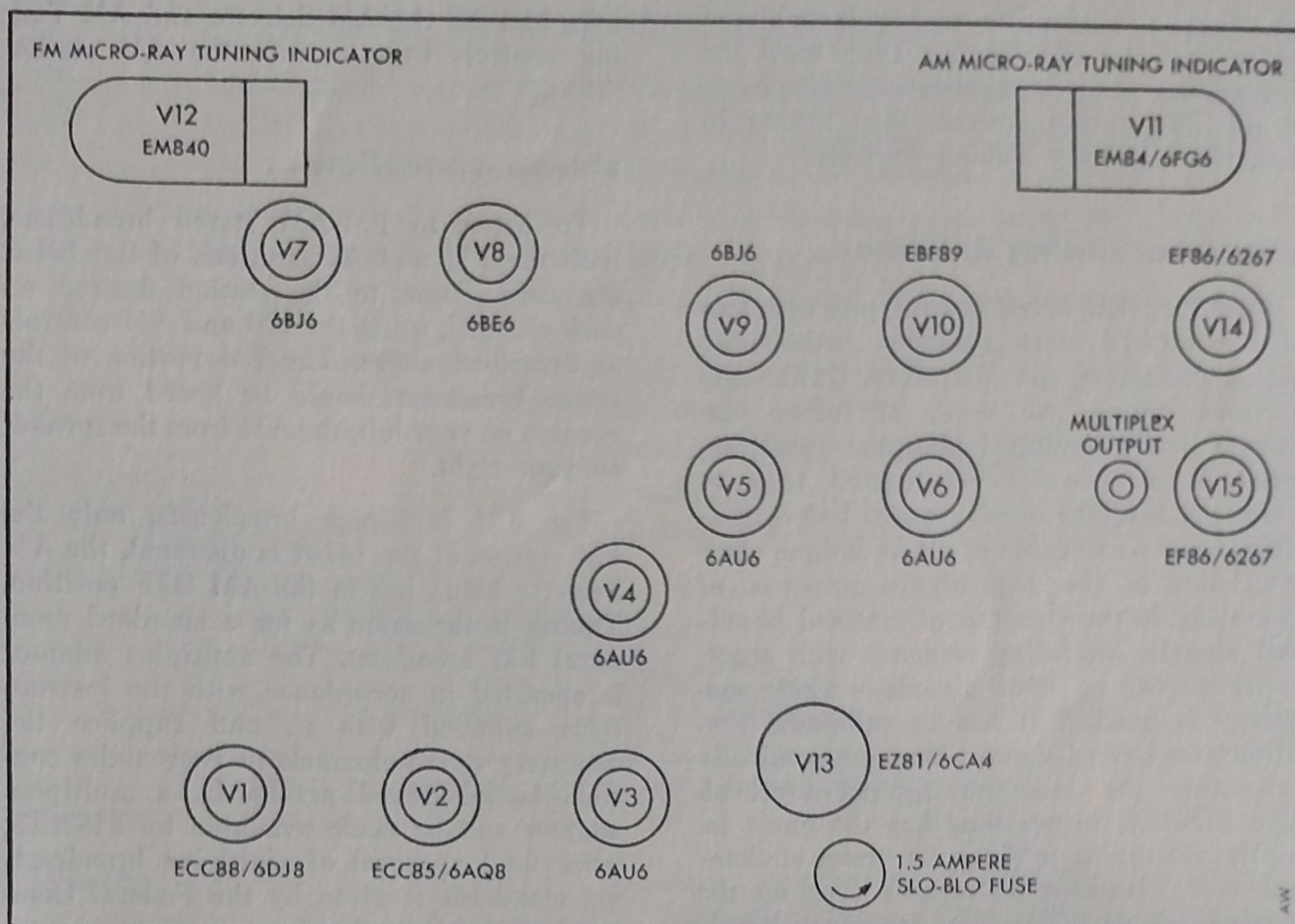


FIGURE 8. MODEL 101-R TUBE LOCATION DIAGRAM

### CUSTOM INSTALLATION

The directions and illustrations in this section enable you to carry out a neat and attractive mounting of your FISHER in your own custom installation. Adequate ventilation is a necessity. The chassis must never be installed in a totally enclosed space, nor should it be located too close to other heat-producing equipment.

The mounting hardware supplied with the 101-R consists of four mounting screws, four flat mounting washers, and four plastic legs. The plastic legs are supplied if you wish to place the 101-R on a shelf, table top, or other flat surface without using a special cabinet or other mounting. If this is the case, attach the four legs to the bottom of the chassis using the four mounting screws. The legs raise the chassis sufficiently so that the front panel is clear of the mounting surface being used.

For custom installation, use the shelf mounting diagram, Figure 9, for locating the mounting holes, of which there are four, and the two clearance holes. (The two clearance holes enable a serviceman to make one tuner adjustment without removing the chassis from its cabinet. These adjustment screws should not be touched except by a

qualified technician.) The four mounting holes are marked "A" and are to be  $\frac{1}{4}$ " in diameter. The two clearance holes are marked "B" and are to be  $\frac{5}{8}$ " in diameter. Front-to-back measurements, as indicated, are made from the front edge of the custom panel, in which the cutout for installation is made.

After drilling the mounting and clearance holes and making the custom panel cutout, shown in Figure 10, temporarily remove the connections made to the 101-R. Slide the chassis in through the cutout from the front. The rear edge of the 101-R control panel should be flush with the front of the custom panel. Secure the chassis to the shelf using the mounting screws and flat washers supplied. Note that it is not necessary to dismantle the 101-R in any way to make the installation. All cables can now be connected to the 101-R rear panel.



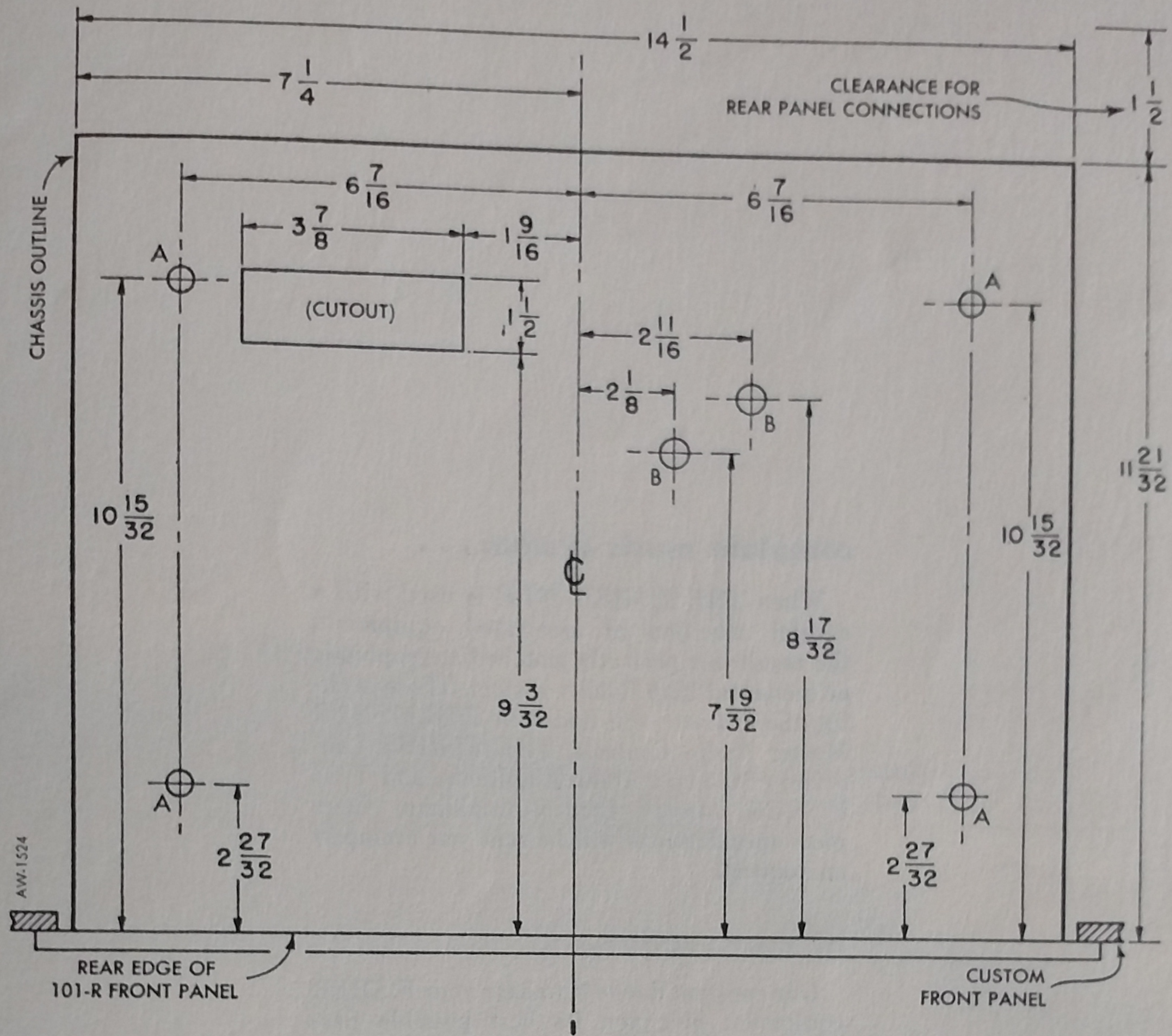


FIGURE 9. MODEL 101-R SHELF MOUNTING DIAGRAM

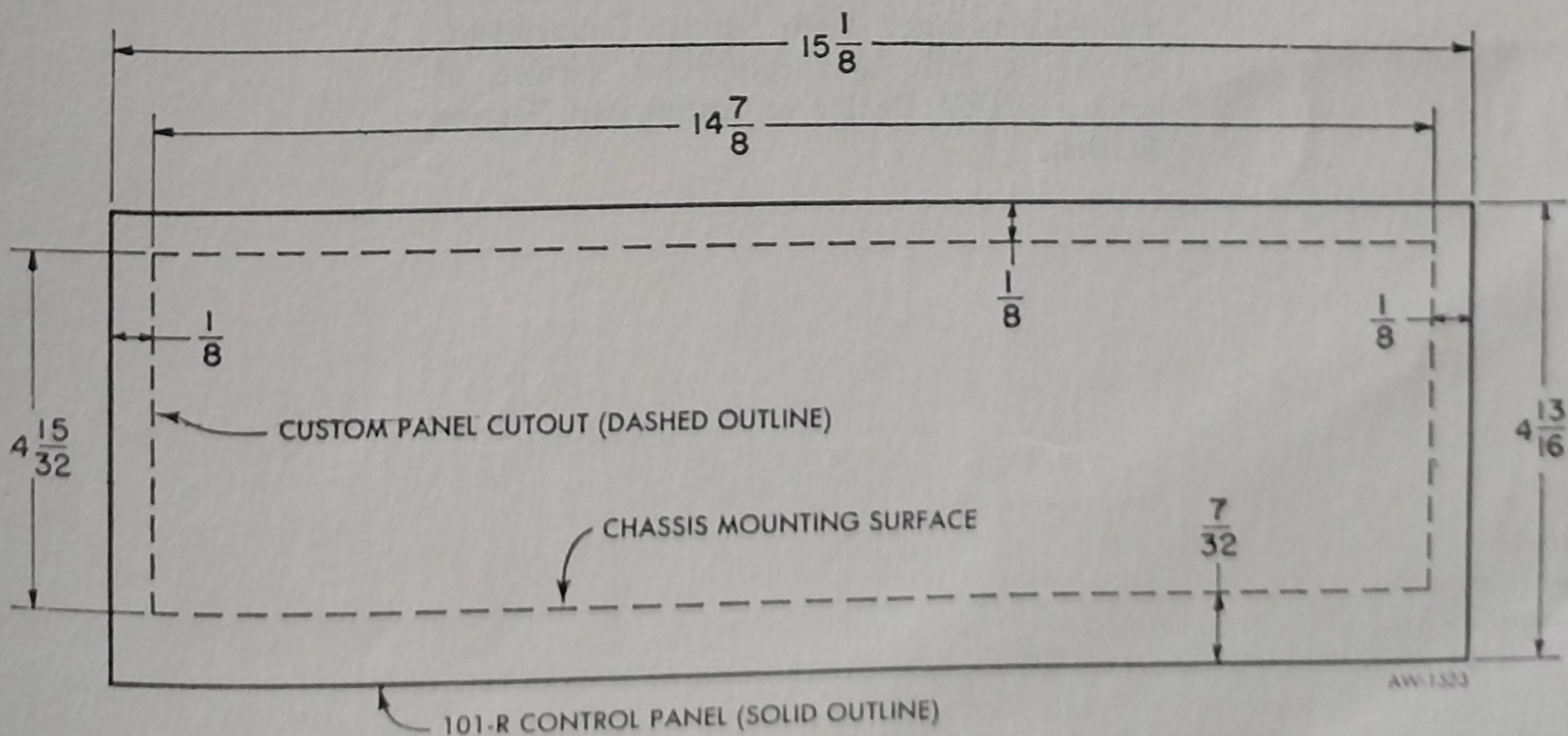


FIGURE 10. MODEL 101-R CUSTOM FRONT-PANEL



**complete music system . . .**

When THE FISHER 101-R is used with a careful selection of associated equipment, the result is a perfectly matched stereophonic or monaural high fidelity system. Those seeking the ultimate will find it in THE FISHER Master Audio Controls, THE FISHER Laboratory Standard Audio Amplifiers, and THE FISHER Master Control-Amplifiers. Complete specifications will be sent you promptly on request.

**at your service . . .**

Our constant desire is to have your FISHER equipment give you its best possible performance. After you have had an opportunity to familiarize yourself with THE FISHER, we would appreciate your letting us know how it is meeting your requirements.

To keep your FISHER at peak performance over the years, may we suggest you avail yourself of the facilities and factory-trained personnel of our Service Department, or the friendly and competent service of your FISHER Dealer or Authorized Service Station.



**a final word . . .**

Have this booklet handy while you get acquainted with your new FISHER , then keep it in a safe place as a valuable reference to which you can turn.

If any question arises to which you cannot find the answer, please do not hesitate to write us. We'll be glad to hear from you, and a prompt reply will follow.

*Avery Fisher*

AVERY FISHER,  
PRESIDENT





FISHER RADIO CORPORATION • 21-21 44th DRIVE • LONG ISLAND CITY 1, N. Y.



PRINTED IN U.S.A.

(c) [www.fisherconsoles.com](http://www.fisherconsoles.com)

4104RFI-108