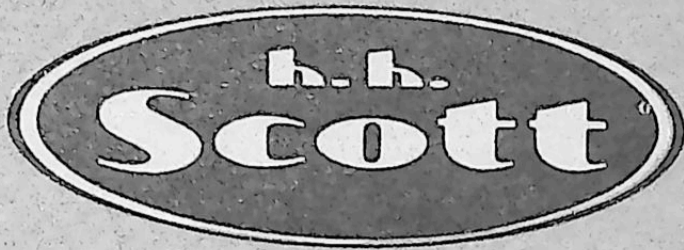


S/N 40381

Bought 12/28/59

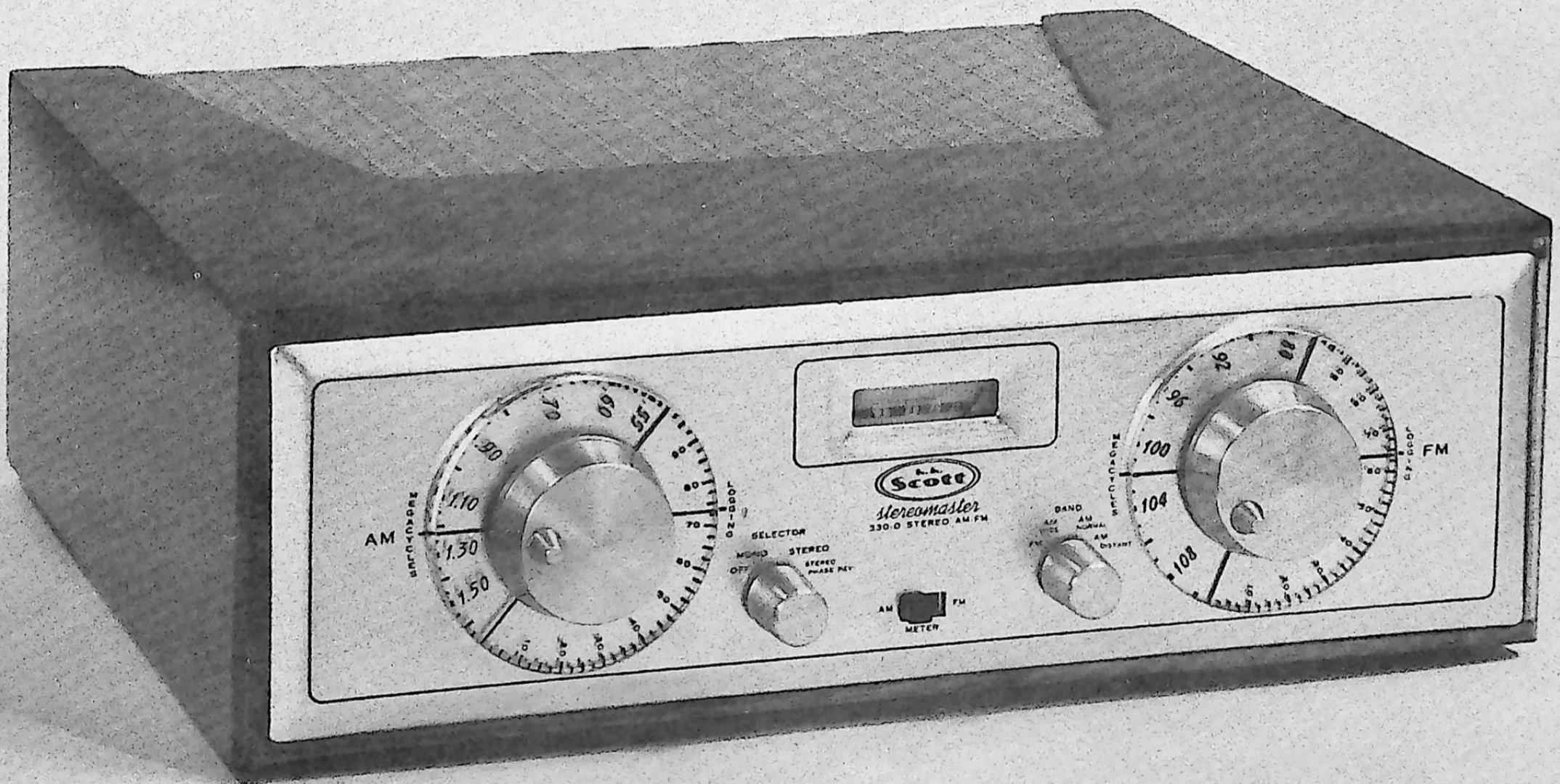
Walter Westchester

Registration sent in 12/28/59



111 POWDER MILL RD., MAYNARD, MASS.

OPERATING MANUAL



TYPE 330-D AM-FM STEREO TUNER

Since the Gold Bond Guarantee has been printed, there have been several changes and additions to the authorized service stations. Given below is a complete listing of all authorized repair stations:

California

Bills House of Natural Sound
3303 South Hoover
Los Angeles 7, Calif.

Hollywood Beverly Radio
7960 Melrose Avenue
Los Angeles 46, Calif.

Hi-Fi Equipment Service Co.
595 Potrero Street
San Francisco, Calif.

Colorado

Central Television Service, Inc.
1305 West 38th Ave.
Denver, Colo.

District of Columbia

National Radio and TV Co.
6902 Fourth St., NW
Washington, D.C.

Florida

Southern Authorized Factory
Service
62 N.W. 27th Ave.
Miami 35, Fla.

Southern Authorized Factory
Service
1506 Grand Central Ave.
Tampa, Fla.

Illinois

Electronic Engineers, Inc.
5615 W. Division
Chicago 51, Ill.

New York

Authorized Factory Serv. Co.
97-101 Reade St.
New York 13, N.Y.

Sigma Electric Co.
11 East 16th St.
New York 3, N.Y.

New York (cont.)

Sono-Vision Services, Inc.
153 Main St.
Hempstead, L.I., N.Y.

Sono-Vision Services, Inc.
167-03 Hillside Ave.
Jamaica 32, N.Y.

New Mexico

J and W Radio and TV Service
5900 Domingo Road, NE
Albuquerque, N.M.

Pennsylvania

Radio TV Doctor
532 W. Lehigh Ave
Philadelphia 23, Pa.

Texas

Home Music Associates
4518 No. Central Expressway
Dallas 5, Texas

Utah

Clyde W. Anderton
129 E. Shamrock Drive
Bountiful, Utah

Washington

Sound and Hi Fi Service Co.
11325 Roosevelt Way
Seattle 55, Wash.

H. H. SCOTT, INC.
111 Powder Mill Road
Maynard, Mass.

OPERATION MANUAL FOR THE 330-D AM-FM STEREOPHONIC TUNER

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NOTE: REFER TO PICTORIAL WIRING DIAGRAMS BEFORE INSTALLATION

H. H. Scott, Inc.
111 Powder Mill Road
Maynard, Mass.

OPERATION MANUAL FOR THE TYPE 330-D AM-FM
STEREOPHONIC TUNER

DESCRIPTION

The 330-D AM-FM Stereophonic Tuner is equipped for both monophonic or stereophonic reception. It also features a multiplex outlet jack so that the unit can be used with multiplex adaptor for FM multiplex stereophonic reception.

SPECIFICATIONS

FM SECTION

Usable Sensitivity (300 ohm input)	2.5 microvolts
Sensitivity for 20 db. Quieting (30% mod, 300 ohm)	2.0 microvolts
Capture Ratio for 30 db. Suppression	6.0 db.
Selectivity (30db Suppression of Alternate Channel)	35 db
AM Suppression	55 db
Harmonic Distortion	0.8%
IM Distortion	0.3%
Audio Hum and Noise (referred to 1 volt output)	-66 db
Total Hum and Noise (referred to 100% modulation)	-60db
Output for 100% Modulation	4-6 volts
Frequency Stability	$\pm 0.02\%$ of Carrier
Tuning Range	87-109 Mc

AM SECTION

Usable Sensitivity	20 microvolts
Volume Sensitivity	4 microvolts
Harmonic Distortion (90% modulation)	0.8%
IM Distortion (90% modulation,	0.3%
Audio Hum and Noise (referred to 1 volt output)	-66 db
Total Hum and Noise (referred to 100% modulation)	-50 db
Output for 100% modulation	4-6 volts
Tuning Range	530-1630 KC

ADDITIONAL SPECIFICATIONS

Rated output voltage for both FM and AM, high output	4-6 volts for 100%
Effective output impedance FM and AM, high output	3000 ohms
Effective output impedance FM and AM, low output	18,000 ohms
Rated output voltage AM and FM, outputs	0.8-1.2 volts for 100% modulation
Recommended Minimum Load Impedance	100,000 ohms

MEASUREMENTS ARE MADE ACCORDING TO IHFM-T-100 STANDARD

Range of line voltage and frequency
Power Consumption 117 volts at 60 cps

105-125 volts, 50-60 cps
60 watts

NOTE: THIS IS A TRANSFORMER OPERATED DEVICE. DO NOT ATTEMPT TO OPERATE ON DIRECT CURRENT.

INSTALLATION

1. Ventilation and Mounting

NOTE: FAILURE TO PROVIDE PROPER VENTILATION WILL CAUSE DRIFT AND, UNDER CERTAIN CONDITIONS, MAY SHORTEN THE LIFE OF THE TUNER.

This tuner may be mounted in either horizontal or vertical positions. The tuner must never be mounted directly above a power amplifier or complete amplifier where the convection of warm air will heat the tuner. This warm air may cause drift or shorten the life of the unit. If the tuner is mounted in an enclosed cabinet, have the back or one side open so that the heated air may escape. If the tuner is mounted in an accessory cabinet, be sure the cabinet is kept 1" away from the wall and the ventilation grille is not covered on top. Never stack the tuner on top of a complete amplifier.

In order to make a panel mounting in a custom installation, refer to the mounting template. Support and mount tuner using the mounting holes. Do not support by front panel alone.

2. Electrical Connections:

A. AM Antenna Connection:

For most limited range AM reception, an external antenna will not be necessary. If long distance AM reception is desired or if the tuner is used in all steel building, an external antenna must be used.

If the loop antenna is to be used alone, the AM antenna terminal and ground are connected by a shorting link. The loop may be removed from the chassis and oriented for best reception. Both the loop and its twin lead wires should be kept away from metal objects.

When the tuner is to be used with an external antenna, the antenna is attached to the AM terminal of the antenna terminal strip, a good ground connection made to the G terminal, and lightning arrestors used. For areas of moderate signal intensity, this may consist of a wire at least 10 ft. in length or longer. Generally, the longer the antenna, the better the tuner will perform. If the tuner is used in an all steel building, the antenna wires should be placed outside. An outside FM antenna can be used as well. Here, wrap the FM lead-in wires 3 - 6 times around the AM loop and then connect to FM and G terminals and leave shorting link connected to AM and G terminals.

For reception in fringe areas where the AM signal is extremely low, the attention of the owner of the tuner is directed to the ARRL Antenna Book published by the American Radio Relay League. This book gives a full discussion of antenna systems. Investigate non-resonant long wire antennas for this condition.

B. Connections for the FM antenna:

If the tuner is located within a few miles of the FM station, the small dipole antenna enclosed with the unit or a TV "Rabbit Ear" antenna may be used. It should be connected to the terminals labeled G and FM. When the received signals are weak (as indicated by a low reading on the meter), rotation of the antenna may improve reception.

When the tuner is used at greater distances from stations, an outdoor antenna should be used. Those that work well in weak signal areas are the folded dipole, stacked folded dipole, Yagi, and stacked multiple element Yagi array. These antennas are directional, and on very weak signals a slight movement in position may give a substantial improvement in reception. The antenna should be rotated to the point where the meter reads a maximum.

These antennas are similar to TV antennas, which may also be used. However, it may not be as satisfactory as a separate FM antenna, particularly when the TV set remains connected to the antenna. A switch or two-set coupler should be provided so that either or both the TV set or the tuner may be selected according to which set is in operation. Several high quality 300 ohm antenna arrays are also available for roof or tower installation. These arrays will give the best performance at great distances.

C. Audio Connections:

When the tuner is connected to a monophonic amplifier, a shielded cable should be connected between the jacks labeled "FM CH A" or "AM CH B" and the "TUNER" or other high level jack of the amplifier. Both pair of jacks, the "FM CH A" and "AM CH B", will reproduce the channel indicated by the "BAND" switch when the "SELECTOR" switch is in the "MONO" position.

The "HIGH" outputs of the 330-D have low output impedance, and connecting cables up to 70 feet in length (of low capacitance cable or a maximum of 1000 mmfds of shunt capacitance) may be used. The outputs from these jacks may overload sensitive amplifiers in which case the "LOW" outputs should be used.

When the tuner is connected to a stereophonic amplifier, two shielded cables should be connected between the tuner and the amplifier.. One cable should be wired from the "FM CH A" jacks in the tuner to the "CHANNEL A TUNER" jack of the amplifier. The other cable should be wired between the "AM CH B" jacks of the tuner and the "CHANNEL B TUNER" jack of the amplifier.

When the 330-D is to be used with H. H. Scott preamplifiers, the following outputs level settings are suggested:

H. H. Scott Preamp.	330-D* Output	Preamp. Input	330-D ** Level Setting	Preamp. ** Level Setting
120-CP	LOW	TUNER	FULL CW	1/2 CW
121-A, B, C	LOW	TUNER	FULL CW	1/2 CW
130	LOW	TUNER	1/3 CW	1/4 CW

* Either "FM CH A" or "AM CH B" may be used for monophonic systems.

** Given in fractions of full clockwise rotation from the extreme counter-clockwise position. Level controls are on the rear of the tuner.

When the 330-D is to be used with H. H. Scott complete amplifiers, the following output settings are suggested:

H. H. Scott Amplifier	330-D* Output	Amplifier Input	330-D ** Level Setting
99 B, C, D, 209	LOW	TUNER	2/3 CW
210 C,F	LOW	TUNER	4/5 CW
210 D,E	LOW	TUNER	1/2 CW
222	LOW	TUNER	1/2 CW
299	LOW	TUNER	1/2 CW

* Either "FM CH A" or "AM CH B" may be used for monophonic systems.

** Given in fractions of full clockwise rotation from the extreme counter clockwise position. Level controls are on rear of tuner

NOTE: THE MAXIMUM CABLE LENGTHS MUST BE RESTRICTED TO 70 FEET ON THE "HIGH"OUTPUTS AND 15 FEET ON THE LOW OUTPUTS.

For FM multiplex reception, a multiplex adaptor is necessary. The input of the multiplex adaptor is connected through a shielded cable to the "FM MULTIPLEX" output that is located near the FM RF sub-chasses, slightly forward of center, on the top of the tuner. At the present moment, the Federal Communications Commission has not set standards for multiplex stereophonic broadcasting. When such standards are set and are adopted by the radio industry, H. H. Scott, Inc. will produce a multiplex adaptor.

NOTE: MULTIPLEX BROADCASTS CANNOT BE RECEIVED ON THIS TUNER WITHOUT A MULTIPLEX ADAPTOR.

D. Connections to Tape Recorders:

The jacks marked "FM CH A" AND "AM CH B" can be used for "Off the air" recording. Most tape recorders have a sufficiently high input impedance so that both the tape recorder and the amplifier may be left connected at the same time. The connections are made in a manner similar to those described above.

E. Power Connections:

The 330-D is designed for an AC line voltage between 105 and 125 volts/50 to 60 cycles. The unit is turned on or off by the "SELECTOR" on the front panel. There is an auxiliary AC power outlet at the rear of the tuner which also is switched on and off. This is for connecting an accessory such as a tape recorder. This tuner may also be plugged into the auxiliary power switch of associated preamplifiers or power amplifiers and may be turned on or off by them. Under these connections, the front panel "SELECTOR" should remain on.

NOTE: THIS IS A TRANSFORMER OPERATED DEVICE. DO NOT ATTEMPT TO OPERATE ON DIRECT CURRENT.

OPERATION OF THE TUNER

1. The "BAND" Switch.

This switch should be set to the type of reception you require. Four positions are available to meet varying problems of AM reception.

A. FM

This position is used for reception of FM broadcasts. As stated in the audio connections above, monophonic reception is achieved when the "SELECTOR" switch is in the "MONO" position.

B. AM WIDE

This setting is used for reception of high quality AM broadcasts especially in areas where there are no serious electrical disturbances. In general, it will be found that this position is most used when the broadcast stations are a short distance away from the receiver, the electrical environment is quiet, and the quality of the transmission high.

C. AM NORMAL

This position is suited for reception of average AM broadcasts especially if there are moderate electrical disturbances present. It will be found that this position is most useful for radio stations located at greater distances from the tuner.

D. AM DISTANCE

This position is useful for AM receptions in the evening when it is desired to separate stations that are close to each other in frequency or when electrical interferences are particularly severe. It is also used for day-time reception when there is strong local interference present. This position is most useful for listening to distant AM stations.

2. The "SELECTOR" Switch.

This switch has three functions. It turns the tuner on or off, it chooses either monophonic or stereophonic operation, and it reverses the phase of the AM Channel.

A. OFF

This position turn off the tuner and the auxiliary AC outlet. The tuner is turned on by setting on any other position.

B. MONO (monophonic Reception)

This position places the same program material on both pair of outputs. It permits the playing of single channel material through both channels of a stereophonic system consisting of two separate amplifiers that do not have the switching facilities of stereo amplifiers. The program material is selected by the "BAND" switch.

C. STEREO

This position separates the signal placing AM program material on the "AM CH B" outputs and FM program material on the "FM CH A" outputs. When "BAND" switch is in the FM or AM wide position the AM channel is operating at widest frequency response. Greater AM selectivity is obtained in the AM normal or AM distant positions of the "BAND" switch.

D. STEREO PHASE REV

This reverses the phase of the AM channel. There are no standards for phasing in the broadcast industry, and this feature is necessary to prevent "hole in the middle" effects when the phase is improper.

NOTE: THE TUNING DIAL LIGHTS WILL INDICATE MONOPHONIC OR STEREOPHONIC OPERATION

3. Tuning and Station Selection

There are separate tuning dials for FM and AM. The tuning knob can be used for extremely accurate station setting or for tuning rapidly from one end of the band to the other. The frequencies of both AM and FM stations are given in megacycles. A logging scale has been provided.

The tuning dials of the 330-D Tuner are rigidly attached to the shaft of the tuning capacitor. This permits the maintenance accurate tuning calibration over the instrument's life.

4. The Tuning Meter and "METER" Switch

The tuning meter indicates the relative strength of the input signal. The channel indicated is selected by the "METER" switch. When this switch is set to the FM position, the meter indicates the relative signal strength of FM stations. The tuning control should be adjusted until the indicator either reads the maximum and until the signal sounds clearest.

On FM the meter is also particularly helpful for proper antenna orientation. Rotate the antenna until the meter reads maximum. This position of the antenna is the one proper for the station.

The meter was designed for sensitive action, but it will not be damaged if it moves rapidly or deflects off scale. The meter indicates a large difference in signal level for signals of small strength but very little in signal level for signal levels of great strength. Signals which cause a very small deflection of the meter are usually marginal and may be improved by selecting proper antenna positioning.

5. The Level Controls

There are two controls labeled "FM LEVEL" and "AM LEVEL" on the back of the chassis of the tuner. These controls enable you to switch between the tuner and other inputs to your amplifier without having to readjust the volume. The level control should be set so that the audible volume of the tuner is the same as that

of other inputs for which the volume has been previously set. If either the "FM LEVEL" control must be set in a position that is less than 1/5 the total clockwise rotation of the control, then the cable connecting the amplifier with the tuner should be placed in the "LOW" output jacks. See the section on Audio Connections (Pages 4 and 5) to set the controls with H. H. Scott equipment.

Automatic gain control of the FM section and automatic volume control of the AM section reduce frequent readjustments of Level controls.

SERVICE OF THE TUNER

Service, other than replacement of either pilot lights or vacuum tubes, is usually not required. If the tuner is not operating properly, all external connections should be checked to make sure that the difficulty is actually in the tuner. Generally, it is advisable to replace the connection to the tuner input of the amplifier with a tape recorder or amplifier or similar device to check out the amplifier performance.

If the difficulty appears to be located in the tuner, the level controls should be first checked to insure that they are rotated away from their extreme counter-clockwise position. Then, the vacuum tubes should be checked by replacing them one by one with new ones. The tubes should be tight in their sockets and provided with shields where applicable. Tube defects frequently do not show up in a tube tester. Only operation in the tuner will insure the proper working of a vacuum tube.

The pilot light may be simply replaced by the following procedure:

1. First set the tuning dial so that the heavy white lines line up with the pointers on the dial and the logging scale is toward the top of the panel. In this position, the tuning condensers are closed.
2. Loosen set screw of tuning knob and remove knob. Repeat with dial. This will permit access to the pilot light which is a #47 bulb.

After the bulb has been replaced, use the following procedure:

1. Close the condenser plates by rotating the condenser to the extreme counter-clockwise position.
2. Replace the dial, lining up the heavy white lines of the dial with the pointers and keeping the logging scale towards the top of the front panel. Tighten set screw.
3. Replace the tuning knob and tighten set screw.
4. If the tuner still fails to operate, or does not seem to be working properly, write to the Service Department of H. H. Scott, Inc., 111 Powder Mill Road, Maynard, Massachusetts, giving all details. We have a number of authorized service stations located throughout the country and we will notify the set owner whether it should be taken to the station or returned to us.

NOTE: NO ATTEMPT SHOULD BE MADE TO ALIGN THE TUNER OR REPAIR IT UNLESS THE PERSON SO DOING HAS HAD EXTENSIVE EXPERIENCE IN TUNER ALIGNMENT AND REPAIR PROCEDURE AND HAS ALL THE NECESSARY LABORATORY EQUIPMENT. WITHOUT PROPER EXPERIENCE OR EQUIPMENT, A REPAIRMAN MAY SERIOUSLY DAMAGE THE TUNER.

FIGURE 1 - TYPICAL CONNECTIONS OF THE 330-D TO STEREOPHONIC AMPLIFIERS

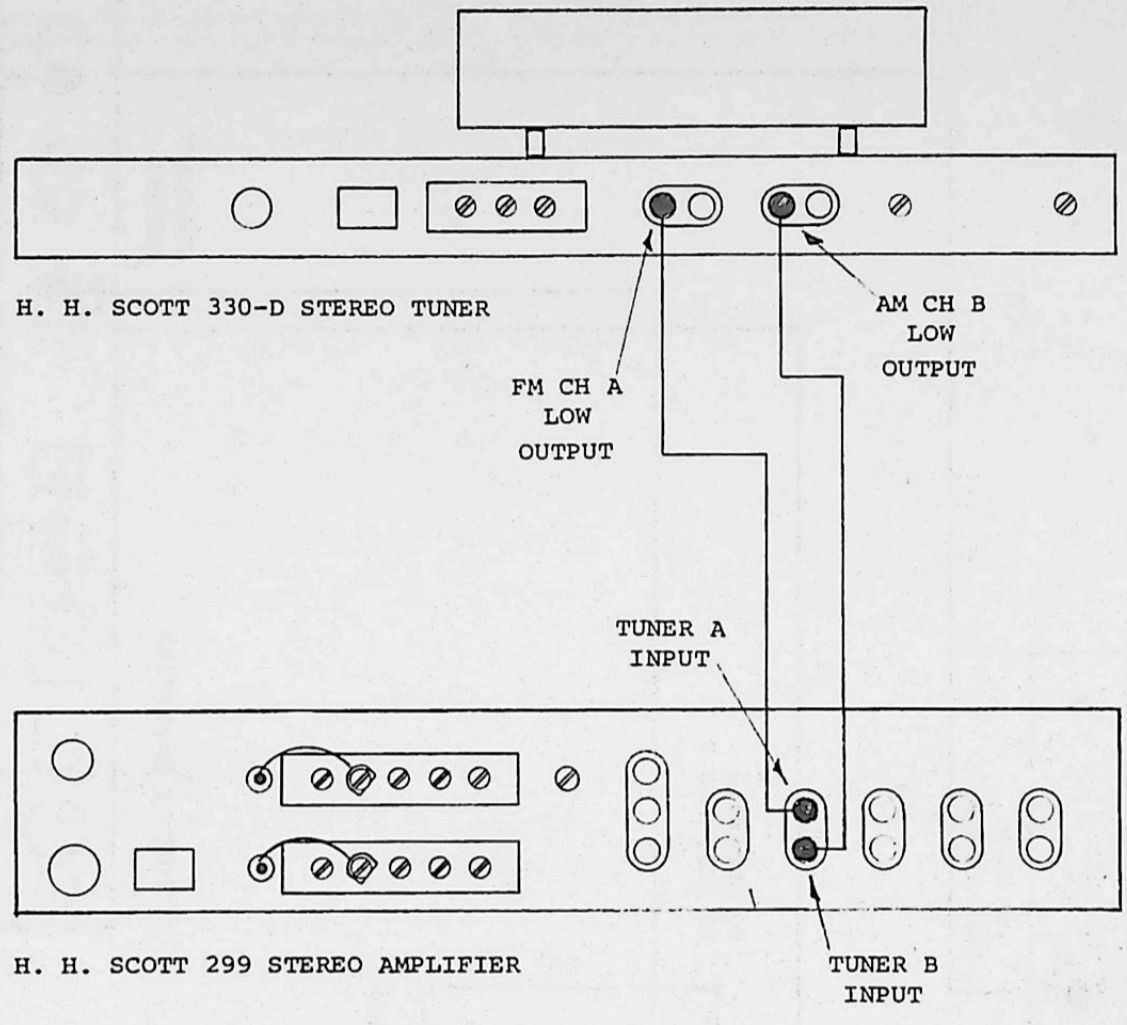


FIGURE 2 - TYPICAL CONNECTIONS OF THE 330-D TO MONOPHONIC AMPLIFIERS

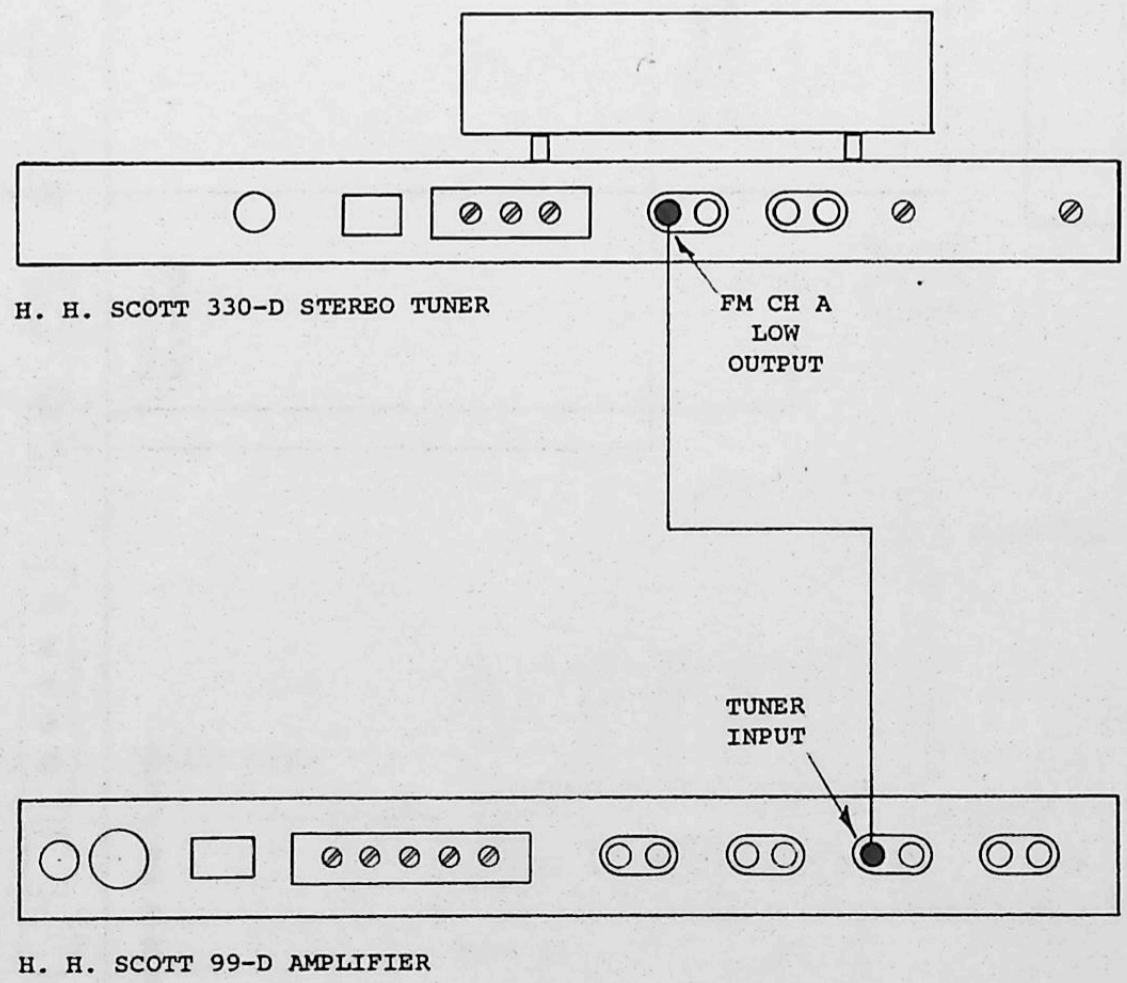
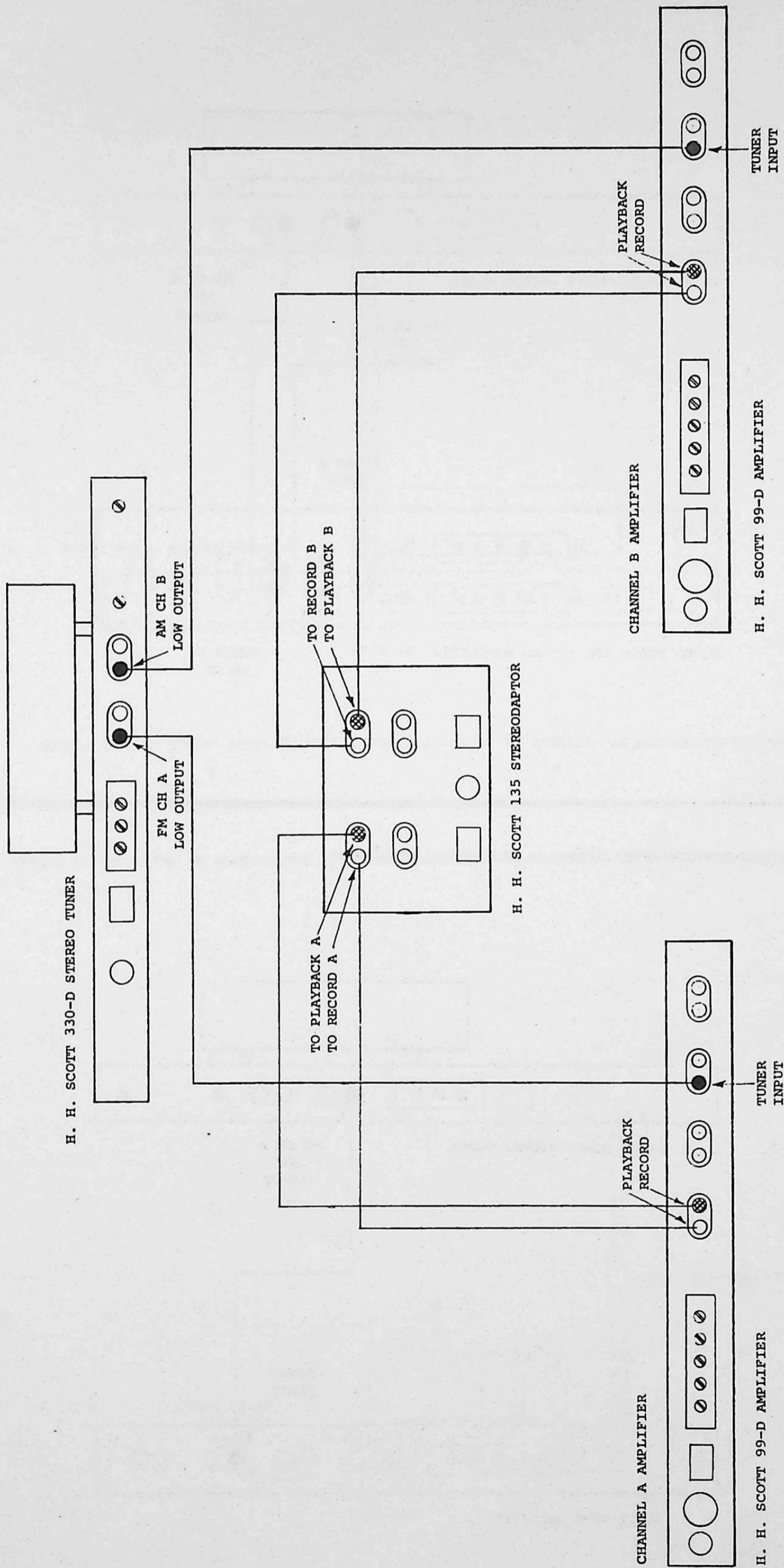
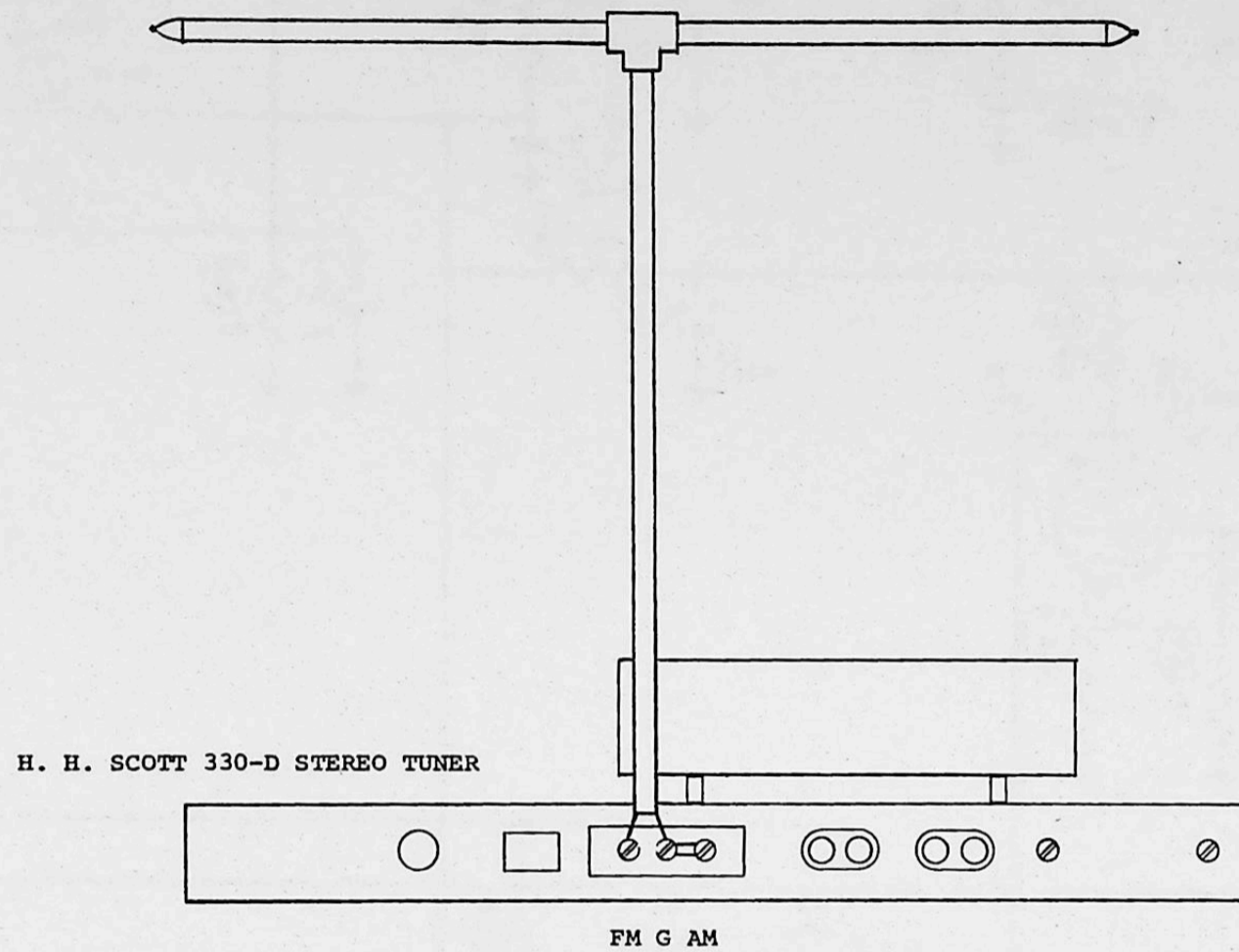


FIGURE 3 - TYPICAL CONNECTIONS OF 330-D TO A STEREOPHONIC SYSTEM MAKING USE OF THE H. H. SCOTT STEREODAPTOR



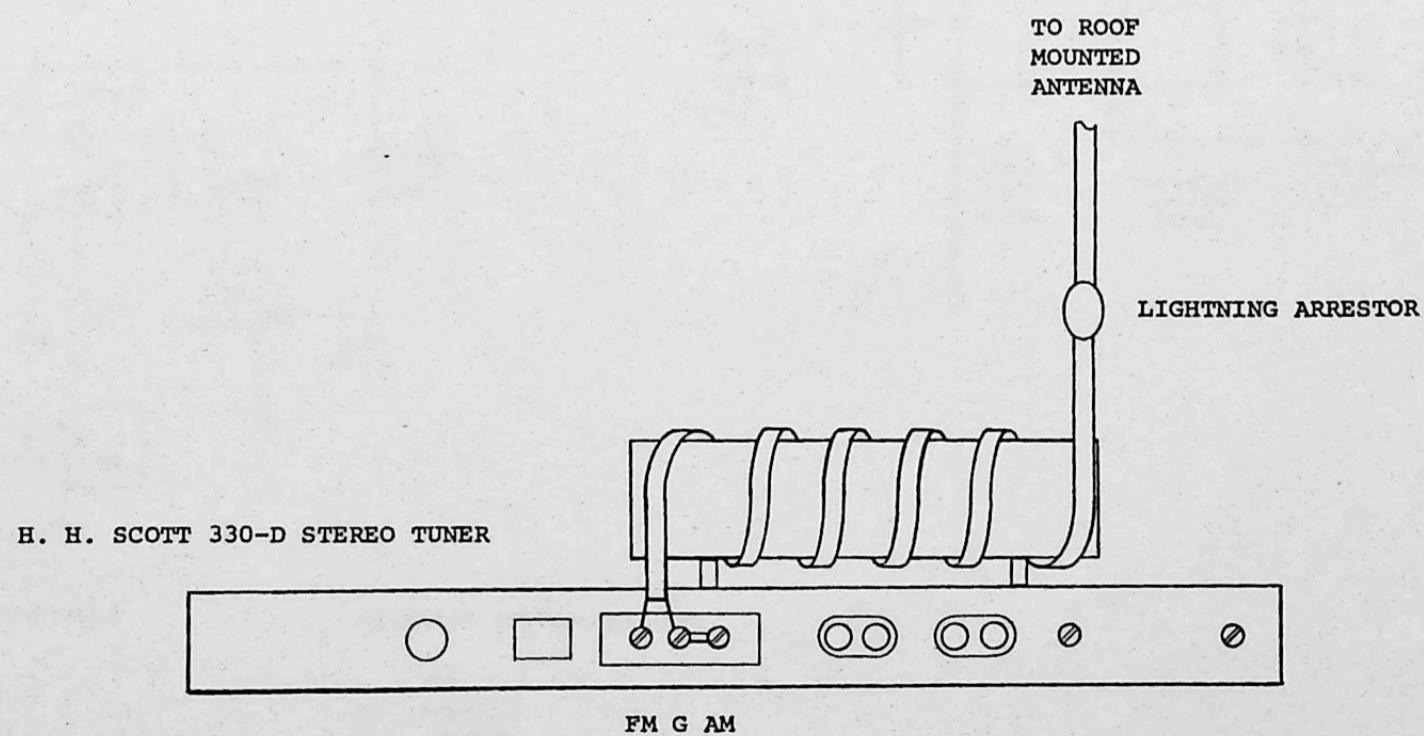
C

FIGURE 4 - CONNECTION OF INDOOR FM ANTENNA.

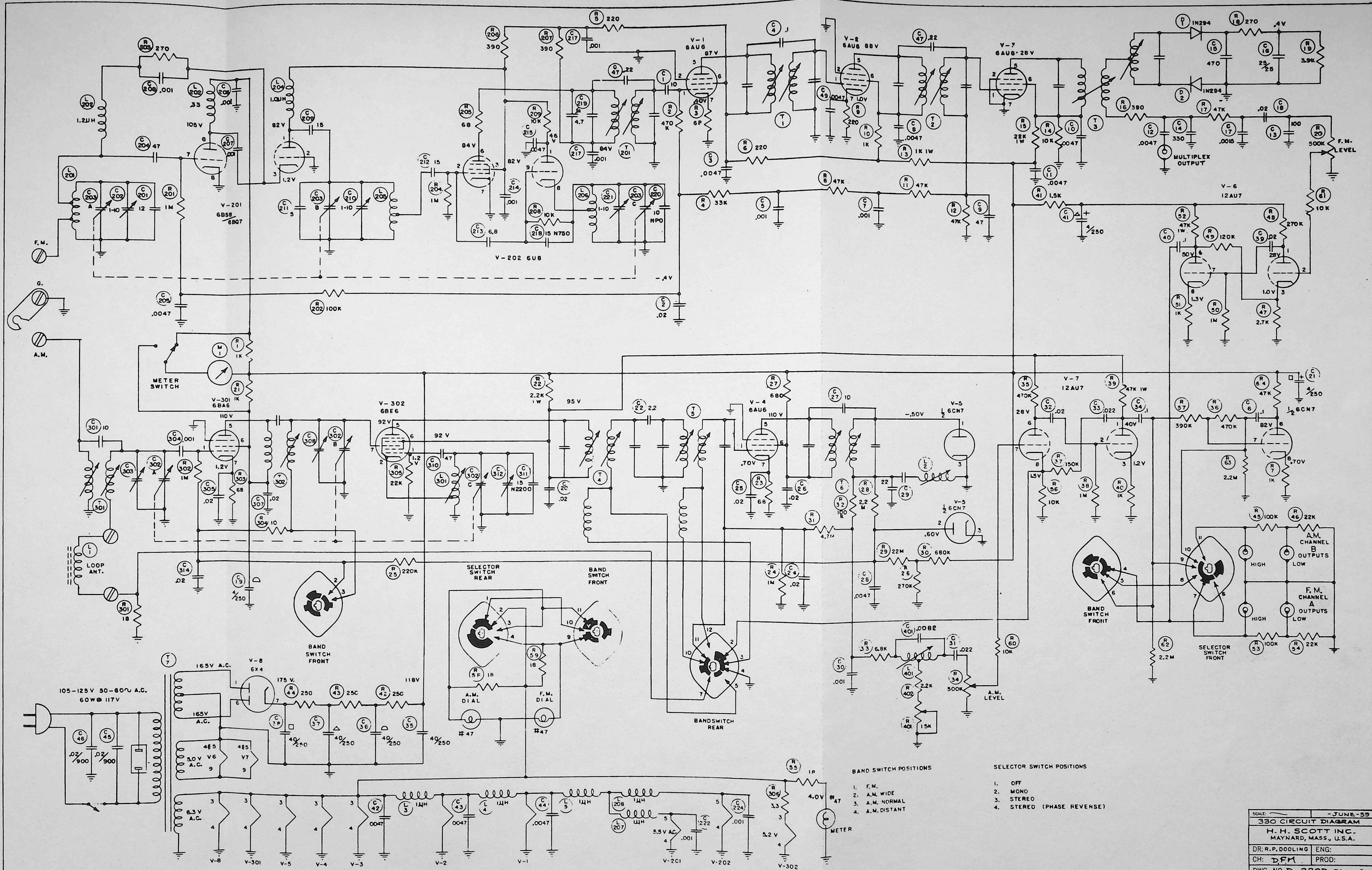


NOTE: DO NOT REMOVE SHORTING LINK BETWEEN G AND AM IF EXTERNAL AM ANTENNA IS NOT USED.

FIGURE 5 - A METHOD OF IMPROVING AM SENSITIVITY IF AN EXTERNAL FM BUT NO EXTERNAL AM ANTENNA IS USED.



NOTE: LIGHTNING ARRESTORS MUST BE USED WITH ALL EXTERNAL ANTENNAS.
NOTE: DO NOT REMOVE SHORTING LINK BETWEEN G AND AM FOR THESE CONNECTIONS.
NOTE: THE TWIN LEAD USED FOR FM SHOULD BE WRAPPED ABOUT THE AM LOOP STICK FOUR OR MORE TIMES.



- BAND SWITCH POSITIONS**
1. F.M.
 2. A.M. WIDE
 3. A.M. NORMAL
 4. A.M. DISTANT

- SELECTOR SWITCH POSITIONS**
1. OFF
 2. MONO
 3. STEREO
 4. STEREO (PHASE REVERSE)