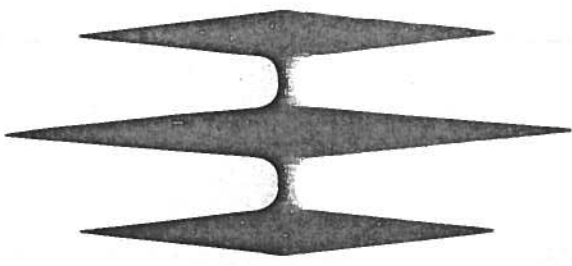


**OPERATING
MANUAL**



1-29-58
H.S.

MODEL 299B

H·H·SCOTT

LEADER IN AUDIO ENGINEERING AND DESIGN

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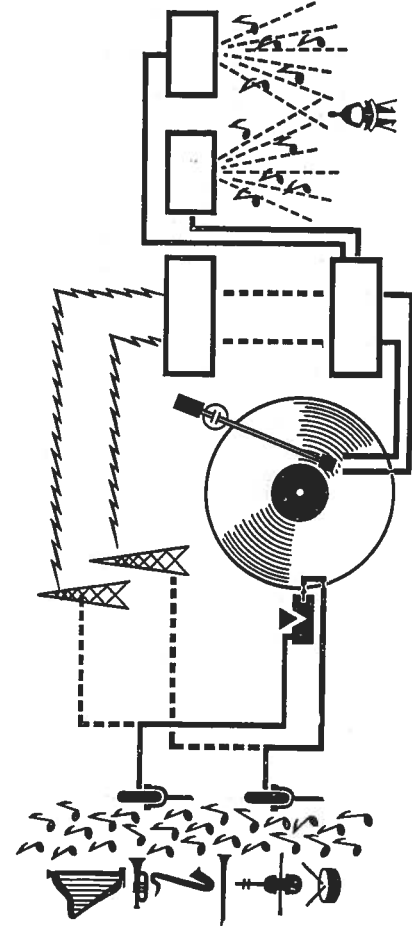
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HERMON SCOTT . . . AUDIO PIONEER

Hermon H. Scott received B.S. and M.S. degrees from M.I.T., inventor of the RC Oscillator, RC tuned circuits and filters, the Dynamic Noise Suppressor and other devices, he has many U. S. and foreign patents. His technical leadership was recognized by election as Fellow in the Institute of Radio Engineers, Acoustical Society of America, and Audio Engineering Society, and by numerous awards, including the Potts Medal. He is the author of many technical papers and articles.

IMPORTANT FIRSTS . . . by H. H. Scott

First high fidelity AM-FM Stereo tuner using wide range AM design.
First to successfully use wide-band circuitry in high-fidelity FM tuners. First to market The Stereo-Daptor, a stereo control unit that prevents obsolescence. First to provide center channel output on Stereo amplifiers for added realism in playback.



how

STEREO

works

- 1 Two separate microphones are placed at opposite sides of the orchestra.
- 2 The separate signals from the microphones are recorded on two separate sides of a record groove.
- 3 The stereo cartridge senses the two signals, separates them and feeds them into a dual stereo amplifier.
- 4 The amplifier strengthens the weak signal from the cartridge and provides you with controls to tailor the sound to your room and your ears.
- 5 The two separate signals are fed into two speakers placed at opposite sides of your room. This gives you 3-D sound . . . two slightly different sound pictures, one for each ear, that create a dimensional effect.
- 6 As an alternate system the sound can be fed from the two microphones to separate AM and FM stations.
- 7 These separate signals are then picked up by a dual stereo AM-FM tuner and fed to the stereo amplifier.

INSTRUCTIONS FOR THE MODEL 299 B 50 WATT COMPLETE STEREOPHONIC AMPLIFIER

The 299 B is a complete two-channel stereo amplifier consisting of dual 25 watt power amplifiers and dual preamplifiers on a single chassis. Conservatively designed and skillfully constructed, this amplifier will bring you years of trouble-free performance.

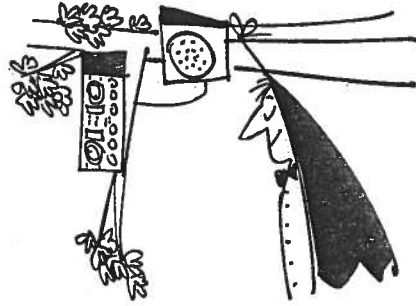
The 299 B is extremely flexible and offers a wide variety of operating features, yet it is easy to use. Careful reading of this booklet will enable any member of the family to operate the 299 B.

INSTALLATION

The 299 B can be placed on a table or bookshelf, in existing furniture like an end table, buffet, or room divider, or in a specially designed equipment cabinet. A handsome hand rubbed wood accessory case is available from your dealer in finishes to blend with your decor.

Wherever the 299 B is placed, adequate provision should be made for ventilation. If this is not done, the life of the internal components will be appreciably shortened. By adequate ventilation we mean some space above and behind the unit where air may circulate freely, or, if it is installed in a cabinet, an open back. Remember that this model draws about 150 watts of electricity, and if you placed a 150 watt bulb in a cabinet, you would need a fair amount of moving air to keep it from getting too warm.

To help disperse heat rapidly, the 299 B employs aluminum in the construction of the chassis and panel. Aluminum is an excellent conductor of heat. Therefore, the panel may seem warm to the touch. As long as the unit is adequately ventilated, this is not of any consequence.



CONNECTIONS

Power

(Refer to connection diagram at end of book illustrating all of the following connections)

The power cord should be plugged into any 105 to 125 volt, 50 to 60 cycle AC source. DO NOT attempt to use with DC.



Speakers

Terminal strips for making speaker connections are located on the back. . . The one marked Channel A Speaker is for connecting the left speaker (as you face them). The one marked Channel B Speaker is for the right speaker. Use standard twin lead lamp wire. Simply connect one end of the twin lead wire to the two terminals on the speaker or speaker enclosure, as the case may be. Connect the other end to the O and High screws respectively on the speaker terminal strip. When making the connections, be extremely careful to prevent any strands of wire from one screw accidentally touching a strand on the other screw, as the speaker will not perform properly.

Each speaker is rated by its manufacturer at a certain "impedance" either 4, 8, or 16 ohms. This information is either marked on the speaker or noted in the literature that comes with the speaker. The cable with the spade lug on the end should be connected to the proper terminal screw marked 4, 8, or 16.

After the speakers are connected, they should be properly phased to give a full stereo effect with good bass. Phasing instructions are to be found under **Phase Switch** operation.

How to Connect Your Record Player (with magnetic cartridge)

The shielded leads from your stereo changer or turntable should be connected to the inputs marked Mag 1 on the back of the 299 B. The lead carrying the left channel information should be inserted in the top (Channel A) jack; the lead carrying the right channel information should be inserted in the bottom (Channel B) jack. If you have both a turntable and a changer, one set of leads should go into Mag 1 inputs,

and the other into Mag 2 High inputs. By moving the Pickup switch on the front panel, you can select either of the two record players.

Virtually all magnetic stereo cartridges now on the market will have sufficient output to drive the 299 B amplifier stage to its full output. If the cartridge used has an extremely low output so that even with the volume control all the way up there is insufficient volume from the speakers, then insert the phono leads in Mag 2 Low. This will supply additional gain, but should not be done unless absolutely necessary. Either Mag 2 High or Mag 2 Low can be used, not both.

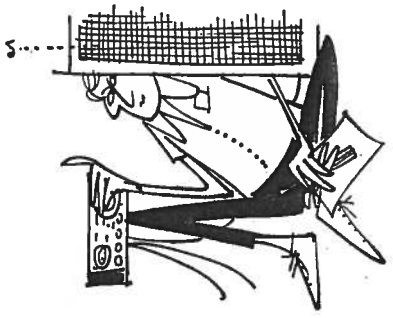
If only a monophonic cartridge is being used, the single shielded lead should be inserted in Mag 2 High, Channel A input. The Stereo Selector Control on the front panel should then be set to *Channel A*.

If the cartridge is not completely shielded against hum, it is suggested that the two leads be twined around each other. Also, because of the extremely powerful transformers used in the 299 B, it would be advisable in this case to keep the record player at least two feet away from the unit.

How to Connect Your Record Player (with crystal or ceramic cartridge)

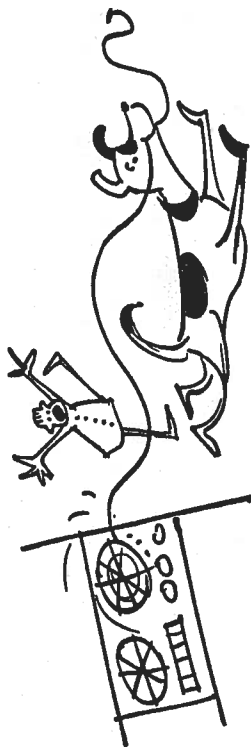
Magnetic cartridges produce low outputs. Crystal and ceramic cartridges produce stronger signals on the order of $\frac{1}{4}$ to over 1 volt. With record players using these cartridges, the shielded leads should be inserted in the Extra inputs. The lead carrying the left channel information should go into the A or top input, while the lead carrying the right channel information should go into the B or bottom input. The Input Selector on the front panel should, of course, be set to *Extra* whenever you want to listen to the phonograph.

Otherwise, the information given in the previous section is applicable here, too.



How to Connect Your Tape Recorder

For playback of pre-recorded tape on a regular tape recorder with stereo playback provisions, the shielded leads from the tape machine should be inserted in the Playback input jacks on the back of the 299 B. The lead containing the left channel information should be inserted into the Channel A or top jack, while the lead containing the right channel information goes to the Channel B or bottom jack. The **Tape Monitor Switch** on the front panel should be in the *In* position. It now will make no difference where the **Input Selector** is set; the pre-recorded tape will be heard through the speakers regardless. *Remember, unless you are listening to tape, the Tape Monitor Switch must be in the Out position.*



If the pre-recorded tape is to be played on a Tape Deck, a different system should be employed. A tape deck is a mechanism which consists simply of the tape transport and heads with no recording or playback amplifiers or preamplifiers whatsoever. Such a device produces a very small electrical signal similar to that obtained from a magnetic phonograph cartridge. Because of this, the connections are made to **Mag 2 Low*** on the back panel.

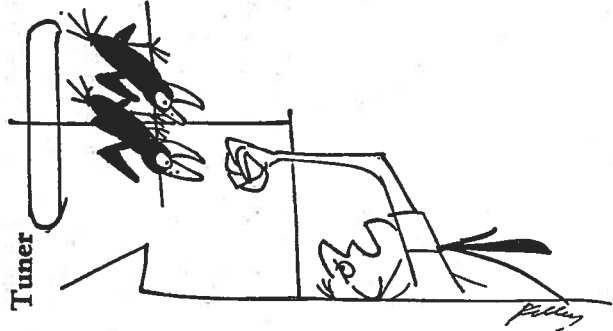
The system is then considered identical to a standard phonograph and the same rules apply as outlined before, with one exception. The **Input Selector** on the front panel should be placed in the **NARTB Tape Position**.

If monophonic tape is being played on a stereo tape recorder or tape deck, the connections described above still apply. The only change is that the **Stereo Selector** is set to either **Channel A** or **Channel B** as the case may be. If a monophonic tape deck or tape recorder is used there is only one shielded lead to connect, and this should go into the Channel A input.

* Mag 2 Low and Mag 2 High cannot be used at the same time. Use either one set or the other.

To record directly from the 299 B, a special set of outputs is available on the back panel. These are the **Tape Recorder jacks**. Connect a shielded wire from the Channel A or top jack to the Radio or high level input of the tape recorder. The tape recorder will automatically record directly from the 299 B, whatever is playing over Channel A of the system (be it FM, phonograph, etc.) completely unaffected by the loudness and tone controls. If the lead is connected from the Channel B or bottom jack of the **Tape Recorder Output**, then the recorder will receive whatever is on Channel B of the system (be it AM, phonograph, etc.). If a **stereo record** tape recorder is used, then a pair of leads will be required . . . one from Channel A and one from Channel B of the **Tape Recorder Output**. It is now possible to record stereophonically any program material being carried by the 299 B.

If your tape recorder has separate erase, record, and playback heads you can take advantage of the special monitoring provisions of the 222 B. This will be discussed under **TAPE MONITOR** operation.



To connect an AM or FM tuner, insert one end of a shielded lead into the audio output of the tuner and the other end into the **Tuner input, Channel A** on the back of the 299 B. The **Stereo Selector** switch should then be set for **Channel A**, in order for the FM signal to appear at both speakers. If the tuner has a level control, this should be adjusted so that the overall volume does not vary when rotating the **Input Selector** from **RIAA, NARTB, ORTHO** to **Tuner**.

With H. H. Scott tuners, Model 310 B and 311 A, B, and C, both a high level (or audio) output and a low level (or tape) output are present. It is advisable to use the low level (or tape output) on these models. In addition, on Models 310 C, 311 D, 314 and 320 there are sets of Channel A and Channel

B outputs. With these tuners, connect one shielded lead from the Channel A output to the Channel A tuner input on the 299 B. Connect another lead from the Channel B output to the Channel B tuner input on

the 299 B. With this exclusive H. H. Scott feature it is NOT necessary to turn the Stereo Selector to *Channel A* in order for the FM signal to appear at both speakers. The Stereo Selector switch can now be left in the *Stereo* position when using the tuner.

With stereo tuners, such as the H. H. Scott 330 or 331 series, the FM output is connected to the Channel A input, the AM is connected to the Channel B input. The same provisions concerning the high level and low level outputs on the tuner apply. If the tuner contains separate AM and FM level controls, these should be balanced with the phono input and with each other as well. With the H. H. Scott models 330 C and 330 D switching between AM and FM is controlled on the tuner. The 299 B Stereo Selector can be left in *Stereo* position. With other makes, you may have to turn the Stereo Selector to *Channel A* for FM monophonic or *Channel B* for AM monophonic.

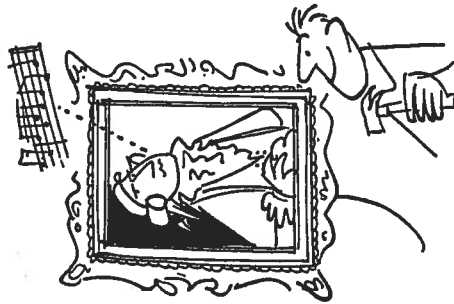
Extra

The extra input can be used for any high level source such as tape recorder, TV, crystal microphone, phonograph with crystal or ceramic cartridge, etc. Instructions for connections were given under the section for connecting a record player with crystal or ceramic cartridge.

Center Channel Output

One of the many exclusive stereo features pioneered by H. H. Scott is the derived third (or middle) channel. This extra output is used in conjunction with an auxiliary amplifier to fulfill several important needs: 1. It gives fuller sound, particularly in large rooms where it is desired to separate speakers by more than eight feet. 2. It allows ideal seating for full stereo in a much greater portion of your listening room giving you greater freedom in placement of speakers and furniture. 3. It lets you feed a full signal to extension speaker systems in other rooms like kitchen, den, porch, bedroom or bath.

With an ordinary two channel system you feed just half the signal to an extension speaker.

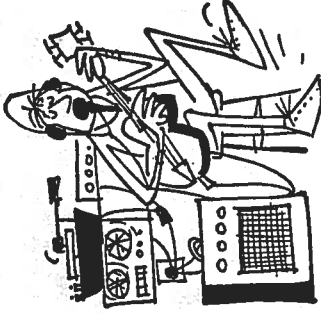


Connect the Center Channel Output jack to the input of the power amplifier. Use the 1.5 volt input on all H. H. Scott power amplifiers and a high level input (such as tuner, extra, etc.) on complete amplifiers. Set the level control so that the center channel loudspeaker's sound is equal in volume to the left and right stereophonic speakers. If the center channel is driving extension speakers, the individual loudspeakers can be equalized by using individual T pads on each speaker.

The center channel output is controlled by all the front panel controls, therefore, the auxiliary amplifier should have a volume or level control to be able to obtain the proper balance. It is essential that the center channel speaker be in phase with the right and left channel speakers for proper operation. The proper method will be described later.

Accessory Outlet

An accessory switched 117 volt output is available on the back panel to supply current for a phonograph or tape recorder motor. If more than one device is used, a 3-way plug should be inserted into the outlet, permitting the use of up to three devices. The outlet is rated at 2½ amperes so the total current drain of all the devices connected should not exceed this amount. When the 299 B is turned off, all items plugged into this outlet will also be turned off.



DESCRIPTION AND USE OF CONTROLS

On-Off Switch

The 299 B is turned on by rotating the Loudness Control clockwise. **IMPORTANT:** Unless the 299 B is being used to play back tape, Tape Monitor Switch must be in the *Out* position.

Input Selector

This control selects the sound source for your system.

Eur 78 — Use this position for playing all 78 rpm records made in Europe, as well as 78 rpm records made in this country before 1935. *NARTB Tape* — For playing a tape deck.

RIAA, NARTB, ORTHO — Use this position for playing all stereophonic or monophonic long playing records made since 1955.

For long playing records made before that date, use this position but adjust the tone controls to get the best sound.

Tuner — For FM or AM tuner.

Extra — For anything connected to the extra inputs.

Stereo Selector

Controls the mode of operation of the 299 B.

Bal A — Both channels coming into the 299 B are combined and sent only to the left speaker.

Bal B — Both channels coming into the 299 B are combined and sent only to the right speaker.

(Use of these positions for balancing output will be discussed under **Stereo Balance**.)

Monophonic Records — If a stereophonic cartridge is being used to play monaural (or, more properly, monophonic) records, use this position. It automatically combines the dual outputs of the stereo cartridge, effectively cancelling out any vertical rumble and noise in the signal.

Stereo — Whenever the 299 B is being used stereophonically, the control should be in this position.

Stereo Reverse — Basically this is identical with the above position except that it permits the user to “move the violins from the left side of the orchestra to the right, and the drums from the right side to the left” if he desires.

Channel A — When switch is in this position, the Channel A signal source you selected with the **Input Selector** switch will play over both power sections and speakers. In other words, if the **Input Selector** is set to phono, Channel A of the phono will go through both amplifiers and into both speakers.

Channel B — Same as above, except that now the Channel B input source will be transmitted to both amplifiers and speakers.

Channel A and B, Treble and Bass

These controls modify the sound to suit the user's taste, the room acoustics, and the program material being used. H. H. Scott provides a separate set of controls for each channel, permitting the operator to

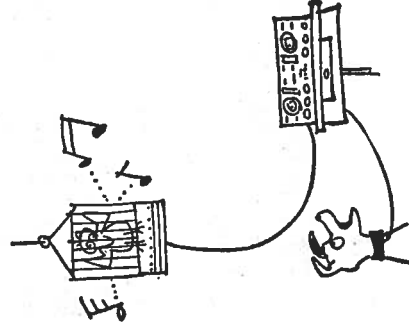
adjust for differences between speakers, and differences due to room placement. The bass control modifies the low frequencies, while the treble control modifies the high notes. Rotating the controls clockwise causes an increase in the amplitude of the frequencies, while rotating counter-clockwise causes a reduction.

Feel free to use these controls as you see fit. You are the one who must be satisfied with the over-all sound, and the tone controls are the principal way of seeing that you are. However, boosting the treble will accent surface noise on phonograph records and hiss on tapes, while boosting the bass will emphasize record player motor noise.

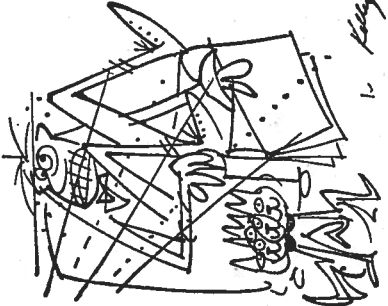
Stereo Balance

Whether the system is being used stereophonically or monophonically, it is important that the sound from the two speaker systems be of equal volume. They may sound different because of the following reasons: room acoustics, differences in speaker efficiencies, differences in output between the two channels of a stereo cartridge, speaker placement, slight discrepancies between the two channels of the source material, and a multitude of other possibilities. The **Stereo Balance** is designed to correct this. By rotating the knob clockwise, the right or B channel will be increased in volume in comparison to the left or A channel. Rotating counter-clockwise will have the opposite effect. By moving the control to its extreme position, it is possible to completely eliminate one channel if desired.

To simplify the balancing operation, the 299 B incorporates the unique H. H. Scott balancing circuit. Unlike other methods, this insures that you will *hear* equal sound level from each speaker system. Turn on any program material and rotate the **Stereo Selector** switch to *Bal A* and then to *Bal B*. Quickly switch back and forth between these two positions, while at the same time varying the **Stereo Balance**. At the position of the **Stereo Balance** where *Bal A* and *Bal B* sound equally loud, the system is in balance. Unless there are discrepancies introduced by faulty program material or cartridges, the control should not have to be varied appreciably.



Loudness and On/Off



Rotating this control clockwise will turn on the 299 B. This control also varies the volume of sound emanating from the system. As the knob is turned clockwise, the volume will increase. Ordinarily, the control should be pointing to 3 or higher at normal listening level. The actual position is not important as long as it is at least 3. If the control cannot be turned past 1 or 2 without the sound becoming too loud, it would be advisable to make sure that the proper inputs are being used (refer to the section on Connections), and that the FM and AM level controls on your tuner are set properly.

Pickup Switch

In position 1 this switch will select the record player that is connected to Mag 1 on the rear panel. In position 2 the switch will select the record player connected to Mag 2 High or the tape deck connected to Mag 2 Low (Mag 2 High and Mag 2 Low cannot be used simultaneously).

Tape Monitor Switch

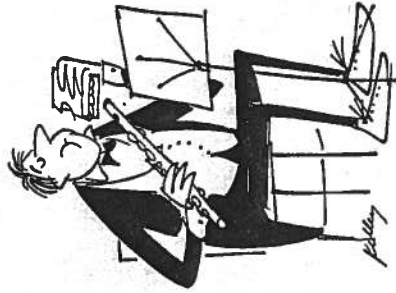
The switch should always be in the *Out* position except when you are listening to the playback of tape, in which case it would be moved to *In*.

If your tape recorder incorporates a separate playback head it is possible to listen to the recording a fraction of a second after it is made as a quality check. Let us assume that a recording is being made from an AM-FM tuner. The **Input Selector** will be in the *Turner* position. With the **Tape Monitor** switch in the *Out* position, the system will be playing the actual broadcast. With the switch moved to *In*, the system will now be listening to the tape recording of the broadcast as it is being recorded. By moving the switch back and forth it is possible to hear whether the recording is equivalent to the actual broadcast.

This method will work only for recorders with separate record and playback heads.

Rumble Filter

All turntable motors make some noise. If the noise is so prominent that it can be clearly heard through the speakers, move the rumble switch to *In*. Use of this switch will reduce the low frequencies.



Scratch Filter

If the surface noise of a phonograph record is particularly objectionable, move the scratch filter to *In*. It will reduce the high frequencies. On especially old records (such as 78's), it may be necessary to turn down the treble controls, too.

Phase Switch

A loudspeaker produces sound by moving back and forth, pushing the air in such a manner that our ears detect sound. When two loudspeakers are in operation in a stereo system, it is essential that the speakers move back and forth at the same time. If the right speaker is moving forward at the same instant that the left speaker is moving backward, there will be a noticeable reduction in bass response as well as a poor stereophonic effect.

To insure that the system is in phase at all times, the 299 B incorporates a phase reversal switch on the front panel. To set this switch properly, the following method is suggested:

Tune in a monophonic broadcast with a male voice speaking, or else play a monophonic record with a male singing voice. Set **Stereo Selector**

so that the program material is heard through both speakers. Turn the volume to full room level. Stand in front of the two speaker systems and midway between them. Have someone slide the Phase switch back and forth. In one position, the voice will sound full and appear to be coming from directly between the two speakers. In the other position, the voice will lose some of its bass response and will appear to be coming from both speakers. The first is the correct position, the second is the incorrect one. If the correct position occurs when the slide switch is in Rev position, reverse the speaker wire connections on one of the speakers. The correct phase position will now be Norm.

If a center channel speaker is used, the same procedure can be employed except that the Stereo Selector should be turned to *Bal A*. The lead to the center speaker is then reversed until the center and left speakers are in phase.

Once the speakers are properly phased, it should not be necessary to move the Phase switch for most records or broadcasts. Occasionally a phonograph record will be recorded out of phase accidentally, or an AM-FM stereo broadcast will be transmitted out of phase. This can be corrected by simply moving the Phase switch to *Rev*. After some experience in listening to stereo broadcasts it will not be hard to detect when the program material is in or out of phase. Having the control on the front panel makes it easier to keep your system in phase.

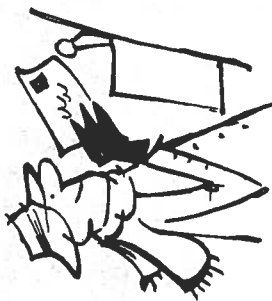
Loudness-Volume Switch

It is a phenomenon of the human hearing mechanism that when volume is low, the ear is less sensitive to extreme low notes and extreme high notes. Thus, whenever the system is being operated at a low level, the sound will not seem to be as good as it is at higher levels. To compensate for this deficiency, the 299 B incorporates a special circuit which automatically boosts the extreme lows and highs whenever the volume is reduced. To introduce this compensating network into the system, move the slide switch to *L*. When the sound level is increased, this compensation automatically decreases since it is no longer needed. When the switch is in the *V* position the compensation network is out of the circuit.

A FINAL WORD . . .

If you have any questions concerning the operation of this instrument, a letter to the following address will bring a prompt, personal reply.

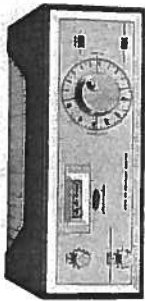
TECHNICAL SERVICES DEPT.
H. H. SCOTT, INC.
111 POWDERMILL ROAD
MAYNARD, MASS.



MAY WE SUGGEST . . .

You have purchased one of the very finest amplifiers made. When you want to expand your system to include a tuner, we are sure you will want one that matches your 299 B perfectly in both performance and appearance. Therefore we suggest one of the three H. H. Scott tuners shown here:

Model 330 Wide-Band AM/FM Stereo Tuner — Actually two tuners in one. It receives AM broadcasts, FM broadcasts, or simultaneously receives AM and FM for stereo. It includes H. H. Scott's famous Wide-Band FM design, along with a new Wide-Range AM tuner that sounds so good you'll think you are listening to FM.



Model 310 Wide-Band Broadcast Monitor FM Tuner — The finest FM tuner made. Higher sensitivity and selectivity than any other tuner on the market. ". . . a tuner that seems as close to perfection as is practical at this time." — *High Fidelity Magazine*

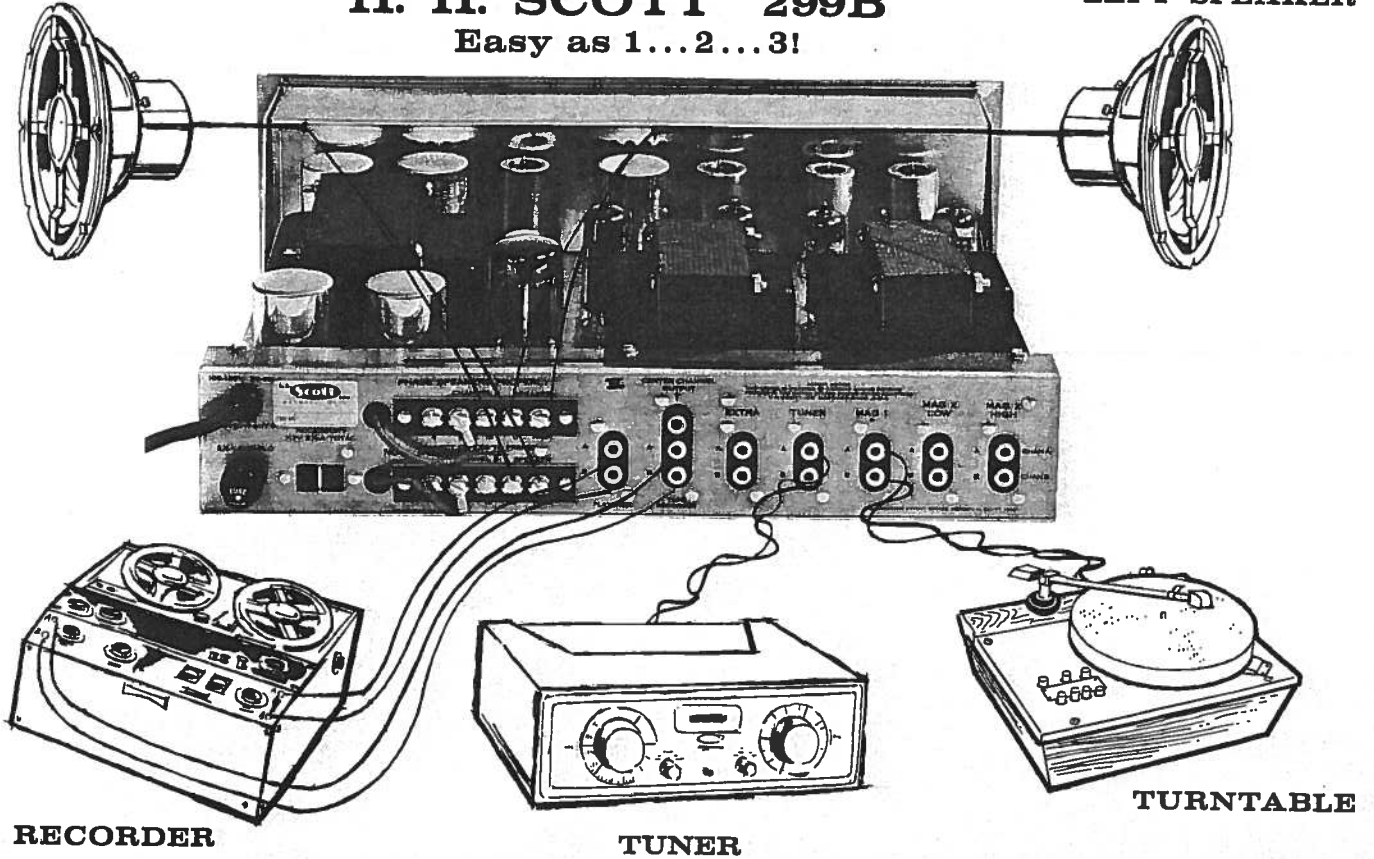
Model 314 Wide-Band FM Tuner — This fine FM tuner incorporates H. H. Scott's famous Wide-Band Design assuring high sensitivity, exceptional selectivity and absolute freedom from drift. Its modest price will surprise you.



RIGHT SPEAKER

**Connect Your New
H. H. SCOTT 299B
Easy as 1...2...3!**

LEFT SPEAKER



H. H. SCOTT . . . a history of leadership in the Acoustic field

To insure that every H. H. Scott component meets the highest standards of quality, H. H. Scott maintains this ultra modern plant for the design and manufacture of all its components.

This new plant, located in Maynard, Massachusetts, includes a machine shop, sheet metal facilities, coil and transformer department, electrical assembly department and fully equipped laboratories for design and research.

The engineering department is staffed by 12 graduate engineers who are primarily concerned with developing new and better components for high fidelity sound.

Every high fidelity component receives over 50 electrical and mechanical tests before it leaves the factory. Special electrically shielded "screen rooms" are used for aligning FM tuners. There are life test facilities where components are run for thousands of hours under strict controls to test their durability.

These extensive investments in facilities back up H. H. Scott's philosophy that there will never be any compromise with quality.

