

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

SERVICE BULLETIN

FOR

MODEL 272 STEREO AMPLIFIER

SPECIFICATIONS

Maximum power output each channel (music waveforms)	44 watts
Maximum power output each channel (steady state)	36 watts
Maximum total harmonic distortion at rated output	0.8 %
Frequency response	* 20 to 20 kc. $\pm$ 1.0 db.
Power bandwidth at rated distortion (IHFM standards)	* 21 to 15 kc.
Intermodulation Distortion (DDIF method)	0.3 %
Signal for rated output -- NAB (NARTB) tape at 1 kc.	3.0 mv.
Signal for rated output -- RIAA equalization at 1 kc.	3.0 mv.
Signal for rated output -- Tuner, Extra, and Playback	0.50 volts
Hum and Noise -- high level inputs	80 db. below rated power
Hum and Noise -- low level inputs	10 microvolts equivalent
Scratch filter	Above 5 kc.
Treble boost and Treble cut (at 10 kc.)	12 db. $\pm$ 2 db.
Bass boost and cut (at 50 cycles)	12 db. $\pm$ 2 db.

(These characteristics are measured at a line voltage of 117 volts rms and line frequency of 60 cycles per second. No significant changes of characteristics should be experienced for normal variations of line voltages or a line frequency of 50 cycles per second).

Input impedance -- low level inputs	47 K. ohms
Input impedance -- high level inputs	500 k. ohms
Minimum recommended load resistance on tape outputs	200 k. ohms
Maximum recommended cable capacitance on tape outputs	200 mmfds.
Range of line voltage and frequency	105-125 volts, 50-60 cycles
Power consumption -- 117 volts at 60 cps (A.C. only)	250 watts

- \* All H. H. Scott amplifiers and preamplifiers incorporate a sharp cutoff filter (12 db. or sharper per octave) which becomes fully operative below 20 cycles. This is designed to prevent overload of the output stage and the loudspeaker due to subsonic rumble frequencies and record eccentricity. This means that the full power of the amplifier can be concentrated into the audible range.

## GENERAL SERVICE NOTES

1. Check the tubes, particularly those in the power output stage and the rectifier every year. If the tubes are outside the manufacturer's ratings or show gas, they should be replaced. Gassy tubes may damage other components of the circuit.
2. When the amplifier is being checked yearly, clean the tubes of dust so that they may radiate their heat more effectively.
3. If at any time the hum or noise increases noticeably, check the power tubes. This symptom is often an indication of gassy tubes.
4. If the amplifier blows fuses frequently, check the line voltage. If it rises above 125 volts, drop the line voltage by means of an auto-transformer or place a voltage regulator transformer between the amplifier and the line. If the line voltage is correct, check the amplifier itself. Do not use fuse sizes other than the fuse size specified.

SERVICE PROCEDURE - (Should only be performed by qualified, experienced service agency, employing adequate test instruments)

1. Equipment necessary:

Oscilloscope, audio oscillator, VTVM (AC and DC), milliammeter, 16 ohm resistive load of adequate wattage (some wirewound resistors have considerable residual inductance and these should be avoided), an adjustable 400 cycle null (schematic for making one of these simple, but extremely useful devices can be obtained by writing to the Engineering Department). For laboratory measurements, a wave analyzer may be necessary.

Instruments wired from kits generally have distortion far too high for servicing precision electronic components.

2. Bias Adjustment:

The bias adjusts are located between the output tubes. Disconnect the two straps on the meter terminal (back panel). Connect a milliammeter (120 to 150 ma range) between the center terminal and the Channel A terminal. Adjust the Channel A bias for a reading of 110 ma. on the **ammeter**. Connect the milliammeter between the center terminal and the Channel B terminal, and repeat the adjustment, with the Channel B bias pot. Reconnect the two straps.

3. D. C. Balance:

The control for each amplifier output stage is located on the back panel. These controls should be adjusted when the output tubes age appreciably or are replaced. To set these controls use the following procedure:

- (a) Connect the 16 ohm resistor across the output terminal of the amplifier under test.

- (b) Connect the oscilloscope across the resistor, and turn the horizontal selector of the scope to "LINE".
- (c) Remove the phase inverter tube (6BL3) of the amplifier under test.
- (d) Adjust the proper D.C. balance control for a minimum 120 cycle response on the scope.
- (e) Repeat the entire procedure for the other amplifier output stage.
- (f) Recheck the bias, as described on the preceding page, to insure it is still as specified.

4. A. C. Balance:

These controls should be adjusted when the output and phase inverter tubes age appreciably or are replaced. They are located between the output and power transformers. The simplest method of adjustment is as follows:

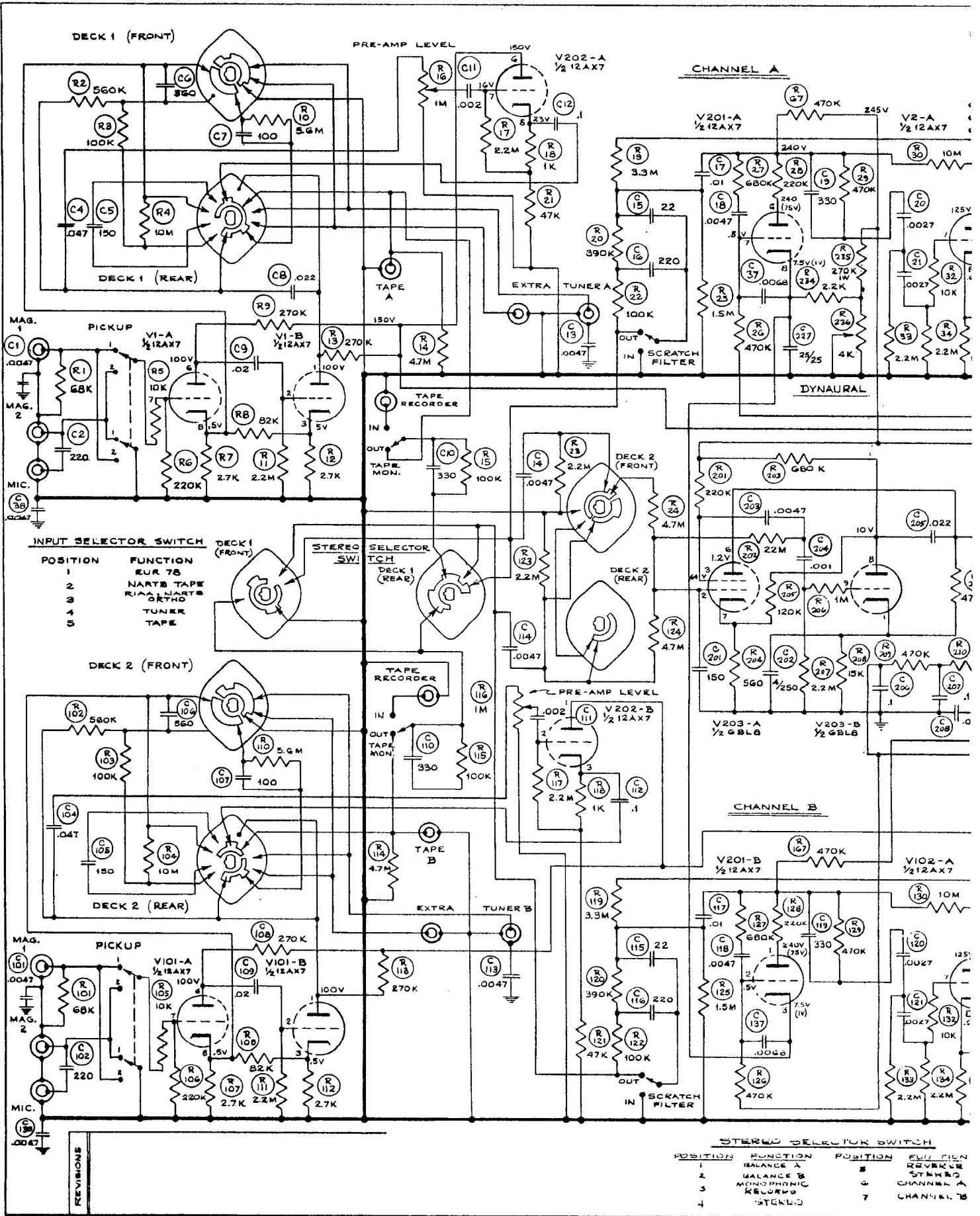
- (a) Connect 16 ohm resistor across output terminal of Channel A amplifier.
- (b) Connect a lead across the resistor and feeding into the null (the 400 cycle null referred to on preceding page).
- (c) From the null feed to the VTVM.
- (d) Feed into the amplifier the audio oscillator tuned to 400 cycles.
- (e) Make sure that the oscillator and the null are tuned to exactly the same frequency.
- (f) Adjust amplifier loudness for maximum output without clipping.
- (g) Adjust the A.C. balance control for minimum reading on the VTVM.
- (h) Repeat the entire procedure for Channel B.

An alternate method would be to use a distortion or wave analyzer in place of the null and the VTVM. Then the A.C. balance control would be adjusted for minimum second harmonic distortion on the analyzer. It is very important to emphasize that in the use of this method, distortion analyzers made from kits have far too much distortion themselves to be employed.

- 5. Other routine tests can be performed to insure that the unit meets or exceeds the specifications outlined previously. Only use parts and tubes specified by H. H. Scott. The use of non-standard parts or tubes will preclude obtaining the performance stated in the specifications.

If you have any further questions, write to:

Technical Services Dept.  
 H. H. Scott, Inc.  
 111 Powder Mill Road  
 Maynard, Massachusetts



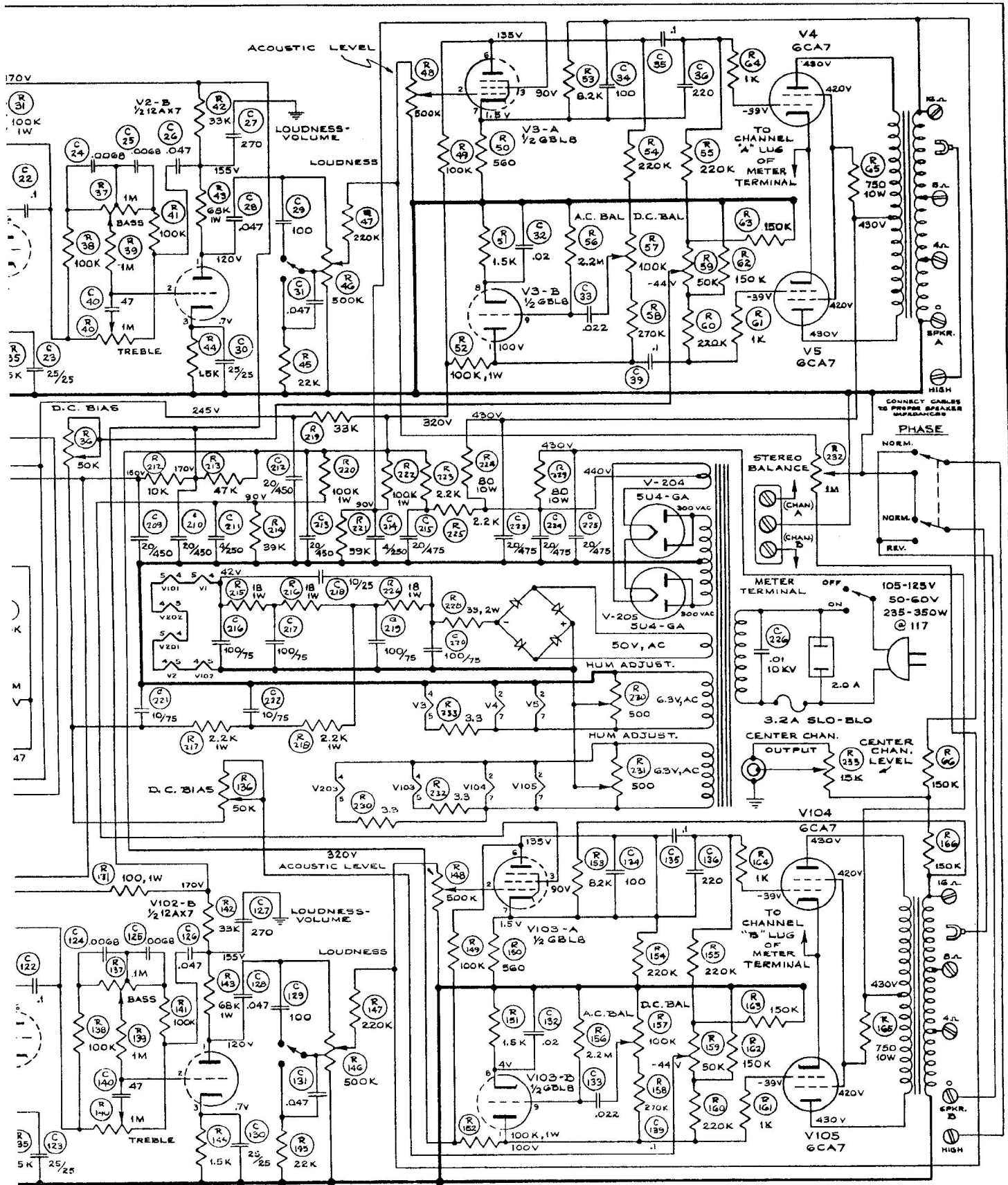
**INPUT SELECTOR SWITCH**

POSITION	FUNCTION
1	EUR 75
2	NARTS TAPE
3	RIAA NARTS
4	ORTHO
5	TUNER TAPE

**STEREO SELECTOR SWITCH**

POSITION	FUNCTION	POSITION	FUNCTION
1	BALANCE A	5	REVERSE
2	BALANCE B	6	CHANNEL A
3	MONOPHONIC	7	CHANNEL B
4	STEREO		

REVISIONS



**TYPE 272 DYNAURAL DUAL-CHANNEL LABORATORY AMPLIFIER**

THE FOLLOWING CONTROLS ARE GANGED WITH IDENTICAL CONTROLS IN EACH CH.  
 1. INPUT SELECTOR    3. RUMBLE FILTER    5. LOUDNESS  
 2. SCRATCH FILTER    4. LOUDNESS-VOLUME    6. DYNAURAL

1. VOLTAGES MEASURED WITH V.T.V.M.  
 2. NO INPUT SIGNAL ON 117 VOLT LINE.  
 3. SWITCHES SHOWN IN MAX. C.C.W. POS.

SCALE	JUNE 1950	ENG.
272 CIRCUIT DIAGRAM		PROD.
H. H. SCOTT, INC.		DR. BY DWM/lc
MAYNARD, MASS., U.S.A.		CH. BY
DWG. NO. D-272-C1		SUB NO.

272 SERVICE BULLETIN SUPPLEMENT

## PHONOGRAPH LEVEL SETTINGS.

The phono level control has been incorporated into the 272 Amplifier for several reasons: lowest distortion, proper equalization from the Loudness compensation, and correct operation of the Dynaural Rumble Suppressor.

The exact setting of the phono level control can be found by using any of the following three methods;

- (1) The cartridge manufacturers list which assigns exact values to the most frequently encountered pickups.
- (2) The Phono Level Chart which permits you to obtain the correct setting by having information about the cartridge.
- (3) The simplified method which gives good results when no information is available about the cartridge.

Cartridge Manufacturers List

	<u>Monophonic</u>	<u>Stereophonic</u>
Audio	-	4½
Dynaco	-	4
ESL	5	2 (with Transformer)
Fairchild	7	3
General Electric	3	5½
Grado	10	8
London-Scott	-	4½
Miratwin (Stereotwin) (Elac)	2½	3
Norelco	3	3
Pickering	3	3
Shure	4	5½
Weathers	-	4 (with Adaptor)

(over)

## The Phono Level Chart

The output of every magnetic cartridge is given in millivolts (mv.) for a certain velocity (cm/sec.). When a manufacturer specifies the output of his cartridge, he will indicate these two factors. For example: Brand X stereo cartridge has an output per channel of 6 mv. for 5 cm/sec. velocity. Refer to the chart below. The outputs are listed along the top, and the velocity down the left hand side. Look across the chart for 6 mv. output and then down to 5 cm/sec. At this point the level setting is 5. That means you set the Phono Level on the 272 to "5".

Another example, when velocity is not given in a standard value. Once in a great while a manufacturer will specify the output as follows: 8 mv. output per channel for 6 cm/sec. velocity. You note that on the chart velocity is only given for 5 cm/sec. and 7 cm/sec. To find it for 6 cm/sec. find the number that is exactly halfway between. In this case it would be halfway between "4" and "5" or in other words, "4½".

If the output and velocity are not indicated in the literature supplied with the cartridge, write to the CARTRIDGE MANUFACTURER for this information.

OUTPUT (in Millivolts - mv.)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VELOCITY cm/sec.	1	5½	3	2½	2½	2	2	2	----- use 2 ----->													
	3	*	8	5½	4½	3½	3	3	3	2½	2½	2½	2½	2½	2	2	----- use 2 ----->					
	5	*	*	10	6½	5½	5	4	4	3½	3	3	3	3	3	2½	---	→	use 2 for over 30 mv			
	7	*	*	*	10	7	6	5½	5	4½	4½	4	3½	3½	3	3	---	→	2½ over - 2 over 24 mv.      42 mv.			
	9	*	*	*	*	10	8	6½	6	5½	5	4½	4½	4	4	3½	---	→	3 over - 2½ over 18 mv.      38 mv.			
	10	*	*	*	*	*	10	7½	6½	6	5½	5	5	4½	4	4	---	→	3½ over - 3 over 18 mv.      20 mv. 2½ over 36 mv.			

\* Needs Transformer

### Simplified Method

If no information is available for a particular cartridge (this can usually be obtained from the dealer or by writing to the cartridge manufacturer), then the simplified method will give good results. Set the Acoustic Level Control on the 272 to "10" if you are using an inefficient loudspeaker (such as Bozak, AR, KLH, and certain bookshelf or infinite baffle speaker systems) or if you have a particularly large room which has carpeting and curtains. Set the Acoustic Level to "5" if you are using bass reflex or horn type speaker systems such as Klipsch, Electro-Voice, University, Lansing, Altec, etc., or if you have a small room with little curtains and rugs.

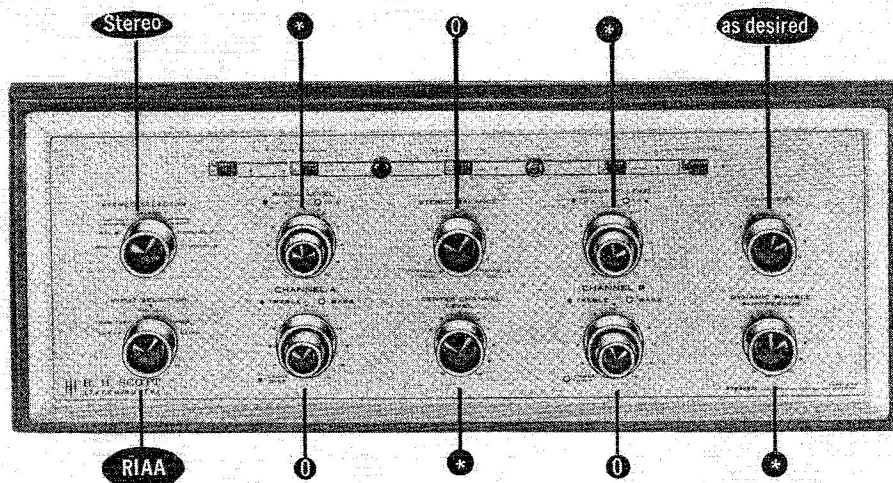
Turn the loudness control on the 272 to "4". Play a good orchestral record with a variety of loud and soft passages. Set the Phono Level controls to that position which gives you room filling volume, about the average you would ordinarily want. This is the setting to be used.

IT'S EASY TO PLAY YOUR NEW H. H. SCOTT  
STEREOMASTER 272 WITH THIS SPECIAL...

# PHOTO-GUIDE

To help you and your family learn to use the H.H.Scott 272, our engineers have pre-selected basic switch positions. To operate, you simply set the switches exactly as indicated in the photo-guides. As you use your new system you will find that varying the setting on some of the controls will give even better sound. Remember, you are the final judge! Set the controls where you like them best. **IMPORTANT:** To assure maximum enjoyment, be sure to study the complete operating manual before using your new 272.

## DIAL SETTINGS FOR PLAYING STEREO RECORDS UNDER NORMAL CONDITIONS



All Switches to the Right.

\*Do not readjust. To obtain proper initial settings see other side.

**To play monophonic records:** Set Stereo Selector to "Monophonic Records".

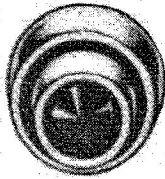
**To play AM-FM Stereo:** set input selector to "Tuner".

**To play FM only:** Set input selector to "Tuner", and Stereo Selector to "Channel A".

**To play AM only:** Set input selector to "Tuner", and Stereo Selector to "Channel B".

# EASY SETTING GUIDE FOR LEVEL CONTROLS

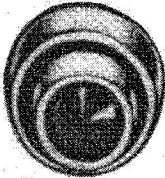
Phono Level



**Phono Level Controls:**

Set controls as shown on hangtag.

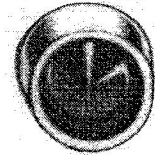
Acoustic Level



**Acoustic Level Controls:**

1. Set Loudness Control to 4. Make sure Stereo Balance Control is set to 0.
2. Adjust Acoustic Level Control to comfortable listening level.
3. Make sure volume is the same from both speakers. Equal volume is obtained by varying one of the Acoustic Level Controls.

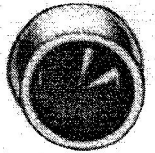
Center Channel  
Level



**Center Channel Level Control:**

1. (Use only if Center Channel Speaker is in operation.)
2. Adjust Center Channel so that it is no louder than right and left hand speakers.

Dynamic Rumble  
Suppressor



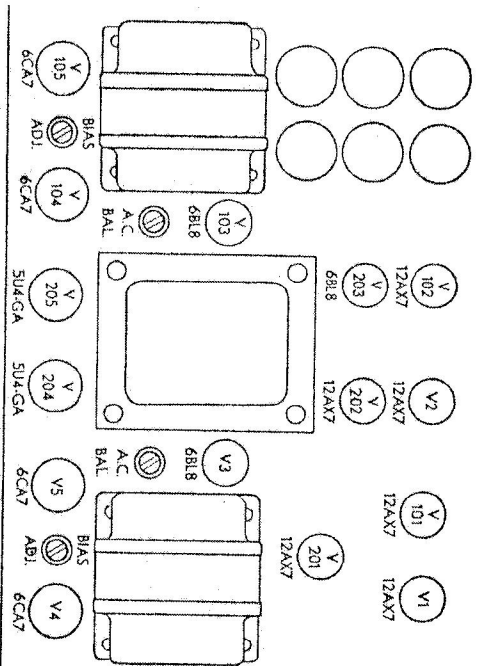
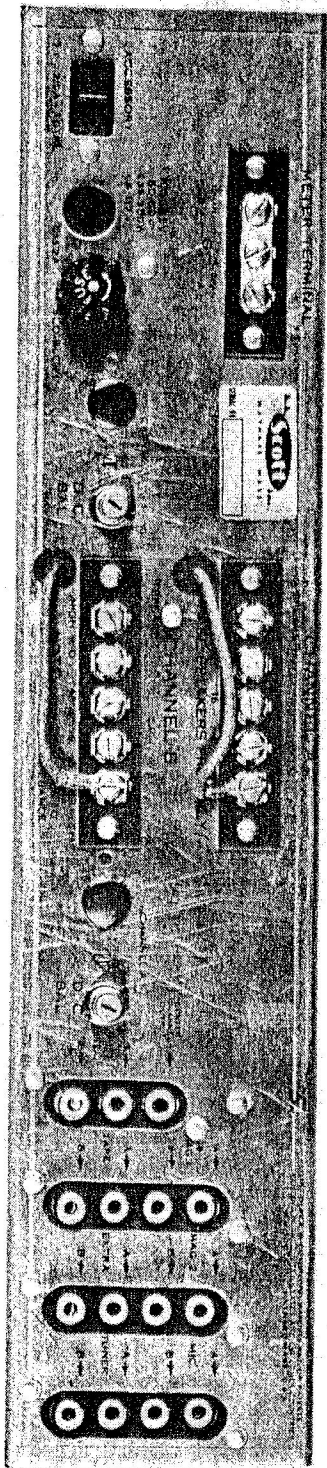
**Dynamic Rumble Suppressor:**

1. Play record with very soft passages.
2. Adjust Suppressor so that annoying rumble just barely disappears.



## H. H. SCOTT

111 POWDERMILL ROAD, MAYNARD, MASS.



V1-V5 CHANNEL A  
 V201-V203 CHANNEL B  
 V101-V105

V204, V205 RECEIVERS

N-272-TL