

**THIRD  
EDITION**



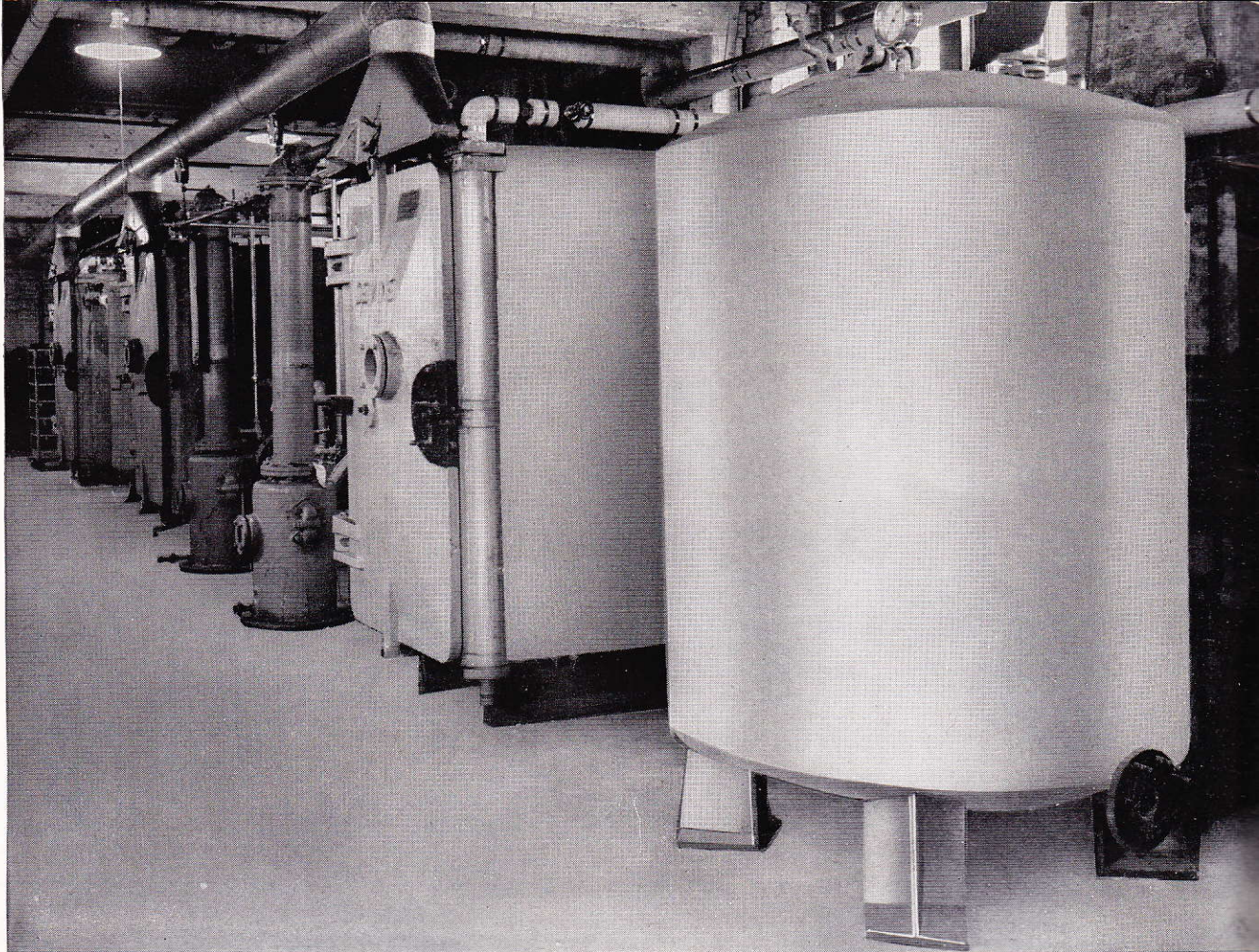
# **AMPLIMANUAL**

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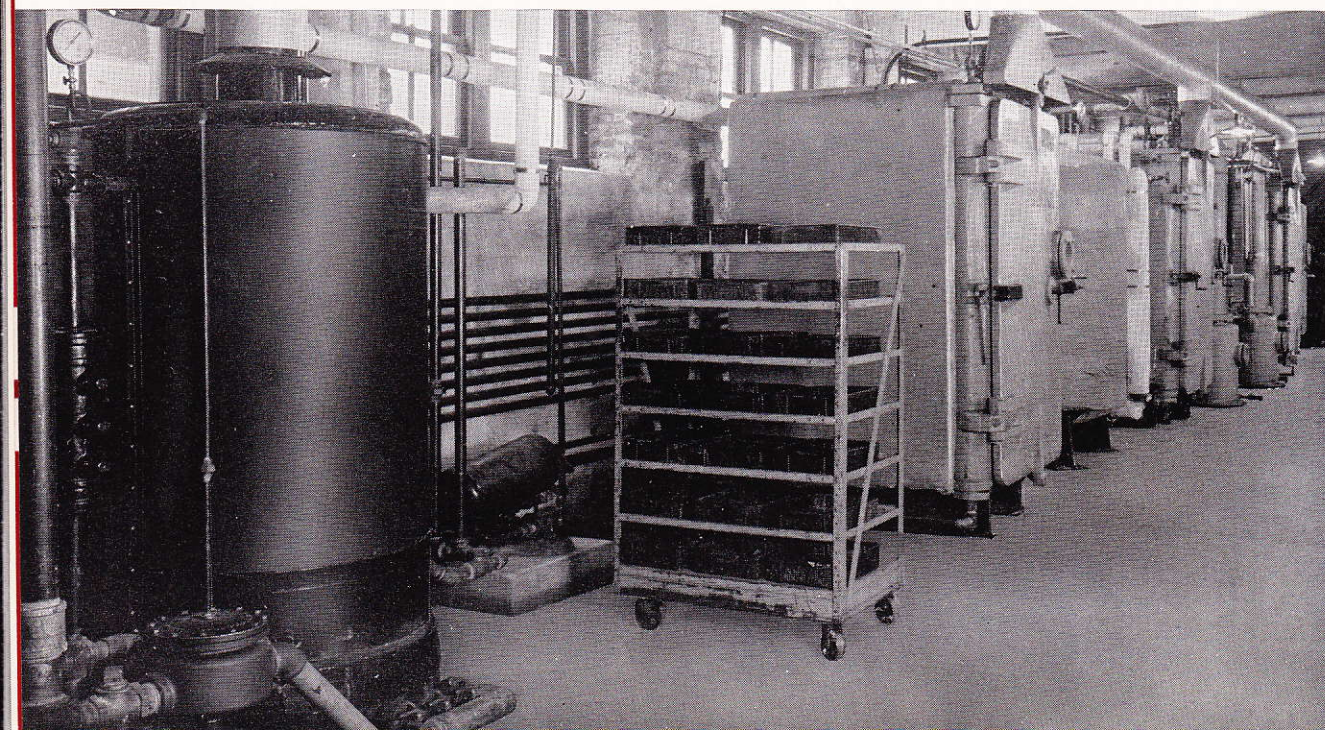
**AUDIO  
AMPLIFIER  
CIRCUITS**







Thorough impregnation to STANCOR means a quality product. These pictures show you a portion of our impregnating department. It is the finest in the country. All STANCOR units are both pre-heated and impregnated under vacuum. This is our assurance to you of a trouble-free transformer. We have no name, nor do we make any fancy claims for this service. This is just another step in building quality into STANCOR transformers. We take care in building our units. Are you as particular when buying? Demand STANCOR and get it!



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# **STANCOR**

## **Presents**

# **10 AMPLIFIERS**

Carefully chosen because of their extreme dependability, comparative simplicity and easy construction, STANCOR takes pride in presenting these ten audio amplifiers, ranging from three to sixty watts, to suit every purse and purpose.

In presenting these ten audio amplifiers, STANCOR has literally scooped this year's market in the public address field, and maintained its leadership.

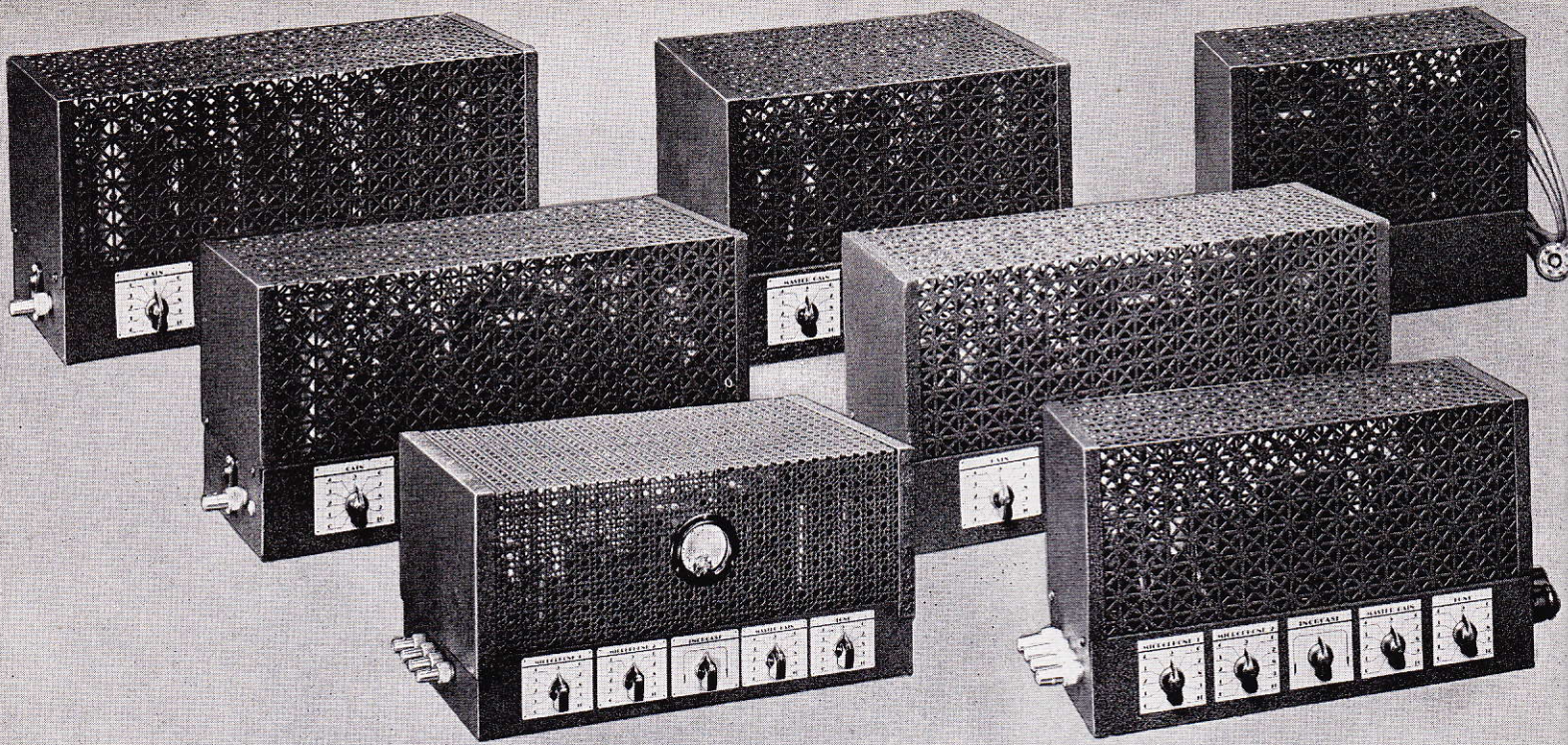
It is the most complete line of its kind available from one source, with no dead items to cause increased prices on the more popular units. All present day circuits, tubes and applications, were analyzed and ten circuits were selected as being most representative. All were built in the laboratory, and tested to insure their working. They are presented to you in their completed form. You will find every amplifier listed an outstanding value in its class.



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**STANCOR, THE COMPLETE LINE!**





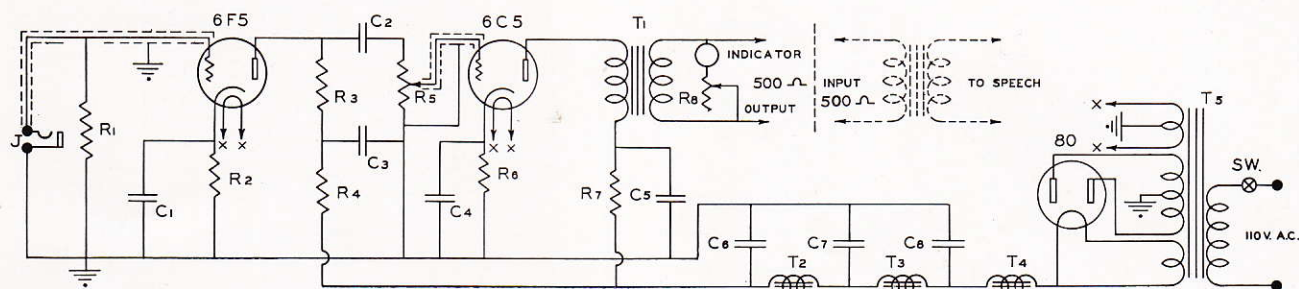
STANCOR engineered amplifiers may be constructed with a minimum of effort; the circuits were chosen to give you the utmost value for each dollar spent in their construction.

We have eliminated the possible "bugs" encountered in present day amplifiers. Only regular stock chassis and covers were used in the original construction. They are available from your regular jobber at a very attractive price. Drilling templates which may be pasted to the blank chassis are available at the factory; thus any serviceman or experimenter with a minimum number of tools may complete the amplifier. We are confident that you will appreciate the effort we have expended to give you all of this, so that the final result cannot be surpassed by even a factory built article.

**STANCOR, THE COMPLETE LINE!**



# STANCOR "303" AUDIO AMPLIFIER



Tubes: 6F5; 6C5; 80. Microphone input level: -55 DB. Output level: +26 DB. (3 watts).

A self powered pre-amplifier unit in a small cabinet, making possible the use of a crystal microphone or pick-up with the older type, high level input Public Address Systems.

With the increasing advent of crystal microphones and high impedance (low level) type inputs, the need of a pre-amplifier to lower the input level of the older public address systems has become more acute. Most of these older P. A. systems are designed for use with a double button microphone. It was to overcome the necessity of discarding or rebuilding these amplifiers that this unit was engineered.

Featuring only two tubes, and an output level of 3 watts, this little self powered unit will permit the use of the ordinary crystal or high impedance type, low output level device with the high level input P. A. system.

A volume indicator in the form of a DB meter or AC voltmeter is mounted in the front of the panel as can be seen in the figure to the left. It is connected directly across the output in series with a resistor. This resistor is for adjustment of a ready reference point of operation, and to prevent the destruction of the meter when used with excessive input. The meter does not read the output level.

No particular difficulty should be experienced in the construction or operation of the amplifier, and extreme satisfaction will be realized from the use of a crystal microphone or pick-up. The line from the output can be any reasonable length.

The Stancor "303" is a cheap means of matching the newer equipment with the older P. A. Systems.

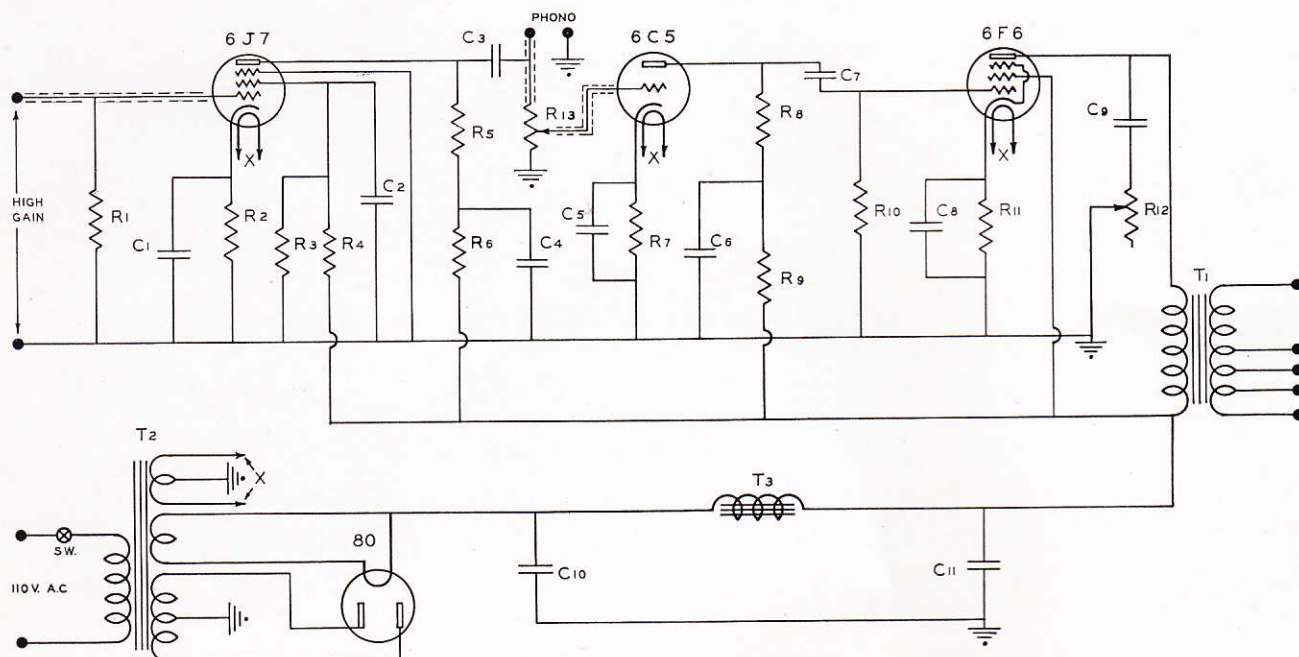
## COMPONENT PARTS LIST

C <sub>1</sub> —4 mfd. electro. 50 v. cond.	R <sub>6</sub> —2,000 ohms, 1 watt resistor
C <sub>2</sub> —.01 mfd. paper 400 v. cond.	R <sub>7</sub> —5,000 ohms, 3 watt resistor
C <sub>3</sub> —2 mfd. electro. 450 v. cond.	R <sub>8</sub> —250,000 ohms, potentiometer
C <sub>4</sub> —4 mfd. electro. 50 v. cond.	J—open circuit jack
C <sub>5</sub> —2 mfd. electro. 450 v. cond.	SW—AC-s.p.s.t. toggle switch
C <sub>6</sub> —16 mfd. electro. 450 v. cond.	Indicator—+6, -10 D. B. meter or AC voltmeter
C <sub>7</sub> —16 mfd. electro. 450 v. cond.	T <sub>1</sub> —STANCOR A-3315
C <sub>8</sub> —16 mfd. electro. 450 v. cond.	T <sub>2</sub> —STANCOR C-1515
R <sub>1</sub> —2 megohms, ½ watt resistor	T <sub>3</sub> —STANCOR C-1515
R <sub>2</sub> —2,000 ohms, 1 watt resistor	T <sub>4</sub> —STANCOR C-1515
R <sub>3</sub> —250,000 ohms, 1 watt resistor	T <sub>5</sub> —STANCOR P-5058
R <sub>4</sub> —250,000 ohms, 1 watt resistor	
R <sub>5</sub> —250,000 ohms, potentiometer	





# STANCOR "305" AUDIO AMPLIFIER



Tubes: 6J7; 6C5; 6F6; 80. Microphone input level: -55 DB. Output level: +29 DB. (5 watts).

A compact amplifier using metal tubes, suitable for office call system or hearing aid; self powered; two channel input with gain and tone controls.

The Stancor "305" audio amplifier presents a 5 watt output public address system of compact dimensions for use in a small space.

Designed primarily for use either as a hearing aid, with an electric guitar, or to reinforce one or two instruments in an orchestra, this small unit has many uses where a larger unit would be a waste of power and money.

Mounted on the top of the chassis are the tubes, the output transformer, and the power transformer; while beneath the chassis are all of the other component parts. Sufficient filtering is obtained by means of a single choke and double condenser net work. Tone and gain control are from the front of the panel by

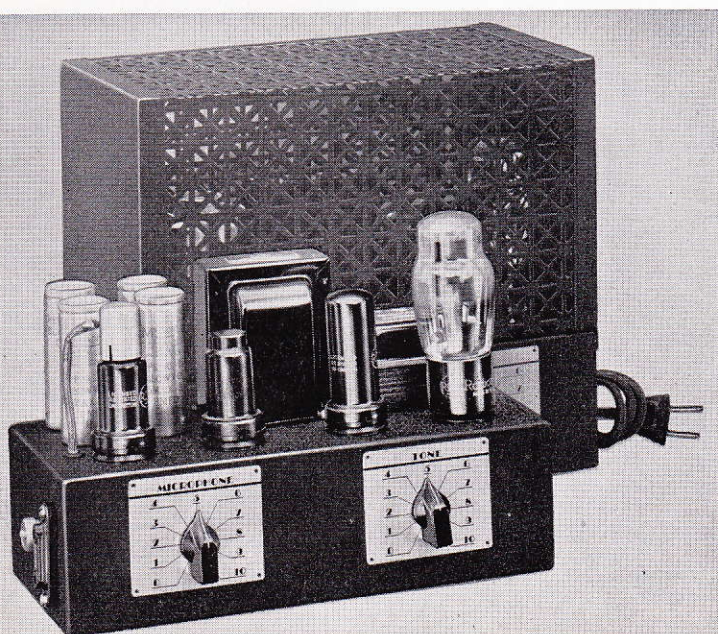
means of potentiometers inserted in the grid and output circuits. Phonograph input is provided into the second tube, and it is possible to mix recordings with voice inputs providing both are at somewhat the same level.

Construction is extremely simple and straight forward, and because there are only two transformers which are mounted at right angles to each other, (as can be seen from the picture) no hum pick-up should be experienced. It is essential, however, to shield the 6J7 and its grid lead entirely, so as to avoid oscillation.

With the metal cane cover, the unit presents an attractive appearance which, coupled with simplicity of operation, makes it ideal for the uninitiated to use.

## COMPONENT PARTS LIST

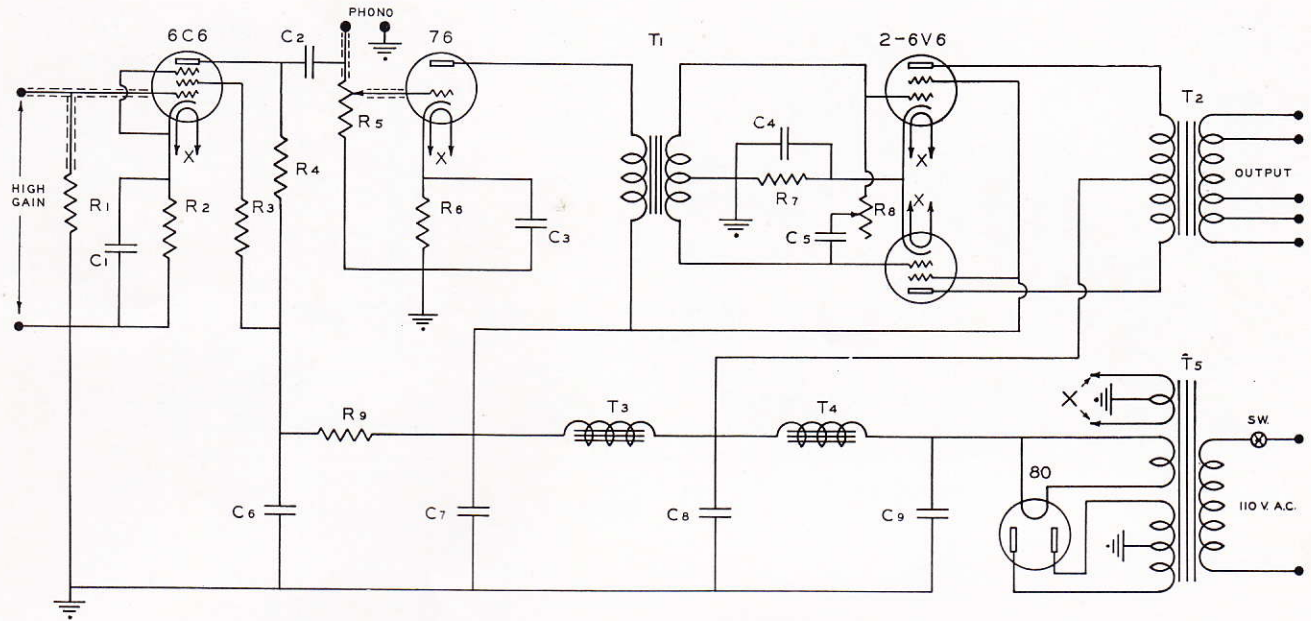
$R_1$ — 500,000 ohms, 1 watt resistor	$C_2$ — .5 mfd. paper 450 v. cond.
$R_2$ — 3,000 ohms, 1 watt resistor	$C_3$ — .01 mfd. paper 400 v. cond.
$R_3$ — 100,000 ohms, 2 watt resistor	$C_4$ — 8 mfd. electro. 450 v. cond.
$R_4$ — 150,000 ohms, 1 watt resistor	$C_5$ — 10 mfd. electro. 50 v. cond.
$R_5$ — 250,000 ohms, 1 watt resistor	$C_6$ — 8 mfd. electro. 450 v. cond.
$R_6$ — 50,000 ohms, 1 watt resistor	$C_7$ — .1 mfd. paper 400 v. cond.
$R_7$ — 3,000 ohms, 1 watt resistor	$C_8$ — 20 mfd. electro. 50 v. cond.
$R_8$ — 50,000 ohms 1 watt resistor	$C_9$ — .002 mfd. paper 400 v. cond.
$R_9$ — 10,000 ohms, 1 watt resistor	$C_{10}$ — 8 mfd. electro. 450 v. cond.
$R_{10}$ — 500,000 ohms, 1 watt resistor	$C_{11}$ — 8 mfd. electro. 450 v. cond.
$R_{11}$ — 500 ohms, 5 watt resistor	SW — AC-s.p.s.t. toggle switch
$R_{12}$ — 250,000 ohms, potentiometer	$T_1$ — STANCOR A-3310
$R_{13}$ — 250,000 ohms, potentiometer	$T_2$ — STANCOR P-5058
$C_1$ — 30 mfd. electro. 50 v. cond.	$T_3$ — STANCOR C-1003



DEMAND STANCOR!



# STANCOR "306" AUDIO AMPLIFIER



Tubes: 6C6; 76; 2-6V6's; 80. Microphone input level: -50 DB. Output level: +30 DB. (6 watts).

An audio amplifier, encased in a walnut cabinet, most particularly adapted for phonograph or reinforcement of speakers' voices in classrooms, etc.; entirely self contained and powered.

The Stancor "306" audio amplifier enables the user to enjoy recordings with a unit which will fit into the surroundings of the average home. Designed primarily for home use or for the small classroom, this unit presents a departure in its appearance from the standardized form of public address systems.

On the top of the chassis is mounted the power transformer furnishing the current, while on the speaker itself is mounted the voice coil and the coupling transformer. All the component parts are mounted beneath the chassis. Input stage must be completely shielded as is indicated in the picture.

The 6V6 tube, in effect a small type 6L6 tube, will be found to

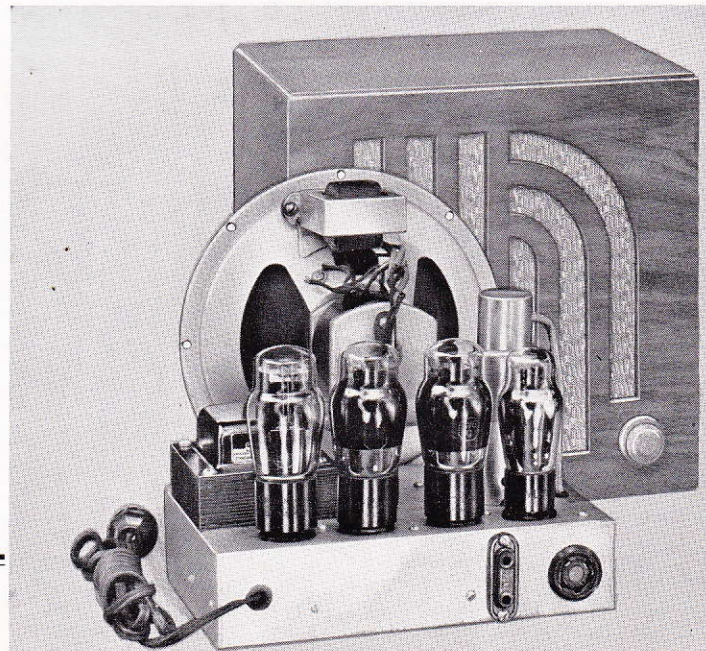
give excellent frequency response for the average recordings, although no claim is made for high fidelity reproduction.

The input of the microphone, if one should be used, can be mixed together with that of the phonograph, providing that the level of the latter is not too high. A 250,000 ohm potentiometer placed across the output terminals of the phonograph will cut down its output, and enhance the quality of the reproduction by preventing the 6C6 tube from being overloaded.

The sound engineer will find much to recommend this audio amplifier for home use, especially where black crackle type of construction is undesirable.

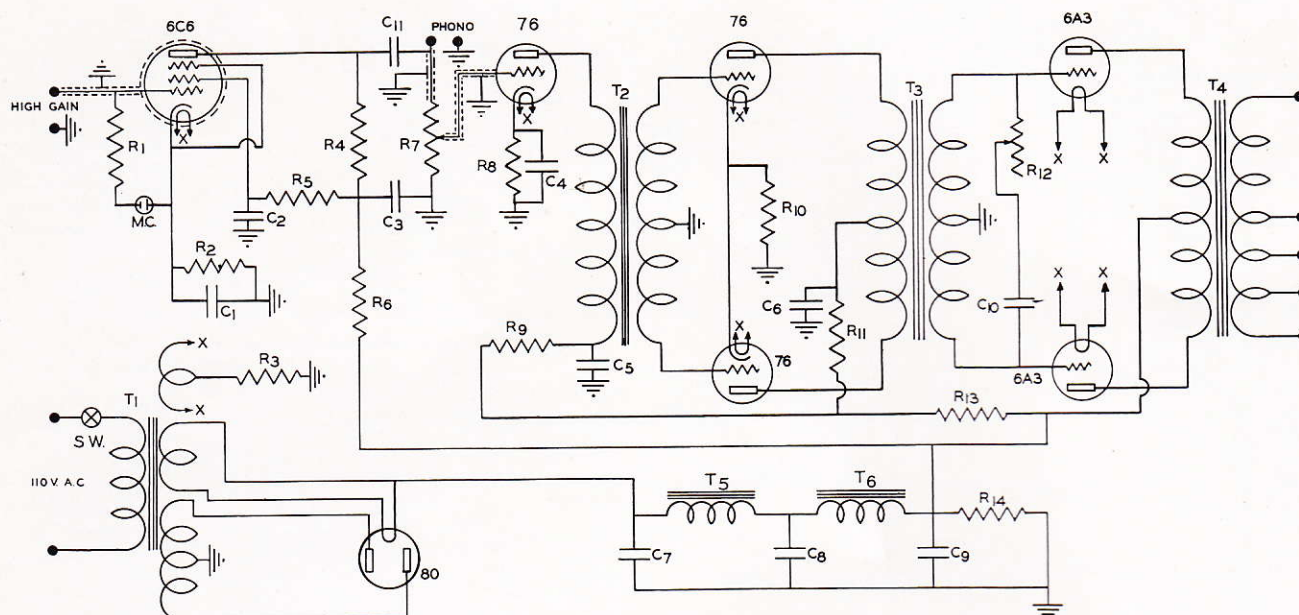
## COMPONENT PARTS LIST

C <sub>1</sub> —20 mfd. electro. 50 v. cond.	R <sub>4</sub> —250,000 ohms, 1 watt resistor
C <sub>2</sub> —.01 mfd. paper 400 v. cond.	R <sub>5</sub> —250,000 ohms, potentiometer
C <sub>3</sub> —20 mfd. electro. 50 v. cond.	R <sub>6</sub> —2,000 ohms, 1 watt resistor
C <sub>4</sub> —5 mfd. electro. 50 v. cond.	R <sub>7</sub> —200 ohms, 2 watt resistor
C <sub>5</sub> —.01 mfd. paper 400 v. cond.	R <sub>8</sub> —250,000 ohms, potentiometer
C <sub>6</sub> —.1 mfd. paper 450 v. cond.	R <sub>9</sub> —50,000 ohms, 5 watt resistor
C <sub>7</sub> —8 mfd. electro. 450 v. cond.	SW—AC-s.p.s.t. toggle switch
C <sub>8</sub> —8 mfd. electro. 450 v. cond.	T <sub>1</sub> —STANCOR A-73C
C <sub>9</sub> —8 mfd. electro. 450 v. cond.	T <sub>2</sub> —STANCOR A-3800
R <sub>1</sub> —2 megohms, ½ watt resistor	T <sub>3</sub> —Speaker Field, 1000 ohms
R <sub>2</sub> —2,500 ohms, 1 watt resistor	T <sub>4</sub> —STANCOR C-1002
R <sub>3</sub> —250,000 ohms, 1 watt resistor	T <sub>5</sub> —STANCOR P-948





# STANCOR "312" AUDIO AMPLIFIER



Tubes: 6C6; 3-76's; 2-6A3's; 80. Microphone input level: -55 DB. Output level: +33 DB. (12 watts).

A two channel unit with sufficient output for a medium sized hall or small outdoor gatherings in quiet surroundings; self powered, with gain and tone controls.

The Stancor "312" audio amplifier with double the output power of the Stancor 306 audio unit, provides a medium low powered amplifier for voice or phonograph input.

In construction, transformers are all mounted on the top of the chassis at right angles to each other, while chokes T5 and T6 are mounted beneath, together with the balance of the component parts. The input tube must be completely shielded as well as its grid lead to avoid oscillation, and the bottom cover must be firmly affixed and grounded electrically to the chassis.

The hum pick-up is negligible and excellent quality can be expected from the 6A3's if they are not driven too hard.

Gain control is by means of a potentiometer in the grid input circuit of the second tube, while the tone is controlled by means of

a potentiometer and condenser across the grids of the output tubes. Cathode bias on the output tubes is provided so that no batteries are needed.

The amplifier is designed to work from a crystal high gain phonograph pick-up or from a crystal diaphragm type microphone. The output impedance taps will match the average voice coils. If a magnetic speaker is contemplated, a line matching transformer such as the Stancor A-3818 or the Stancor A-3819 may be used by coupling the 15 ohm tap of the output of the amplifier to the corresponding 15 ohm tap on this transformer and then coupling the magnetic speaker to the 1500 or 2000 ohm tap of the transformer.

With the metal cane cover in place, this audio amplifier presents a finished, trouble-free appearance and should not give special difficulty in either construction or operation.

## COMPONENT PARTS LIST

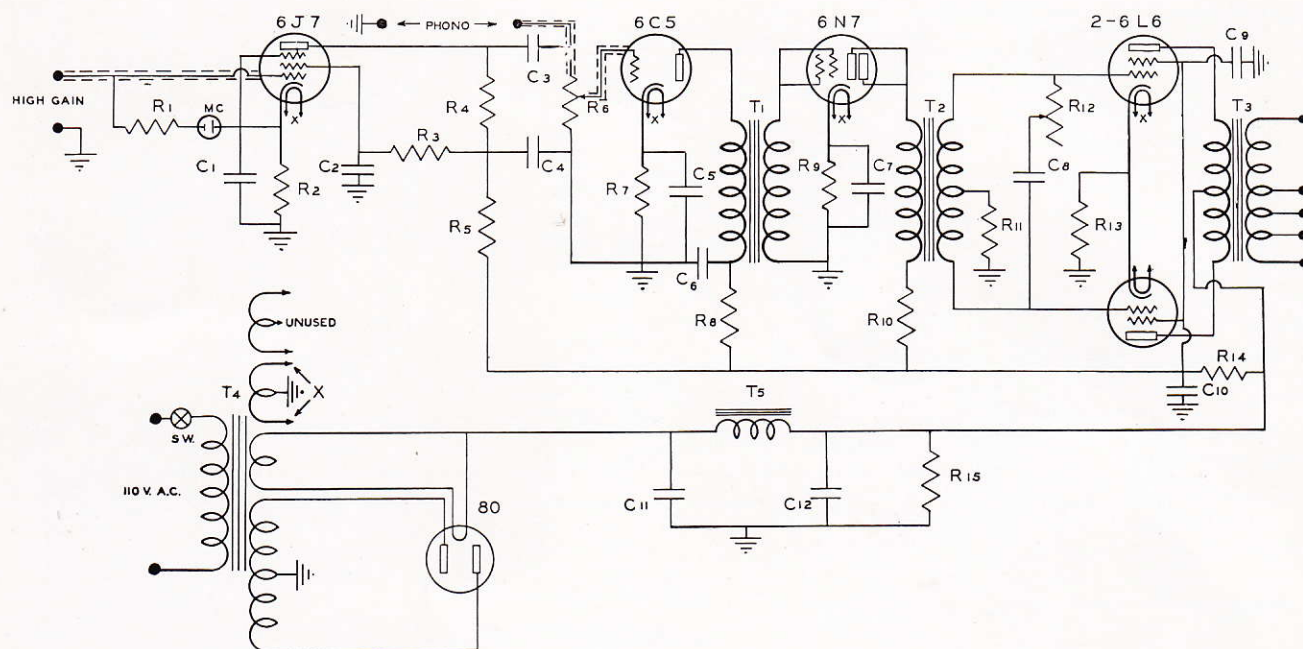
C <sub>1</sub> —10 mfd. electro. 50 v. cond.	R <sub>7</sub> —250,000 ohms, potentiometer
C <sub>2</sub> —.5 mfd. paper 400 v. cond.	R <sub>8</sub> —2,000 ohms, 1 watt resistor
C <sub>3</sub> —2 mfd. electro. 450 v. cond.	R <sub>9</sub> —5,000 ohms, 1 watt resistor
C <sub>4</sub> —10 mfd. electro. 50 v. cond.	R <sub>10</sub> —1,750 ohms, 1 watt resistor
C <sub>5</sub> —.5 mfd. paper 400 v. cond.	R <sub>11</sub> —3,000 ohms, 1 watt resistor
C <sub>6</sub> —.5 mfd. paper 400 v. cond.	R <sub>12</sub> —250,000 ohms, potentiometer
C <sub>7</sub> —8 mfd. electro. 450 v. cond.	R <sub>13</sub> —5,000 ohms, 10 watt resistor
C <sub>8</sub> —8 mfd. electro. 450 v. cond.	R <sub>14</sub> —25,000 ohms, 25 watt resistor
C <sub>9</sub> —8 mfd. electro. 450 v. cond.	SW—AC-s.p.s.t. toggle switch
C <sub>10</sub> —.1 mfd. paper 600 v. cond.	MC—Mallory Bias Cell
C <sub>11</sub> —.01 mfd. paper 400 v. cond.	T <sub>1</sub> —STANCOR P-4049
R <sub>1</sub> —2 megohms, ½ watt resistor	T <sub>2</sub> —STANCOR A-4206
R <sub>2</sub> —2,000 ohms, 1 watt resistor	T <sub>3</sub> —STANCOR A-4208
R <sub>3</sub> —600 ohms, 5 watt resistor	T <sub>4</sub> —STANCOR A-3301
R <sub>4</sub> —250,000 ohms, 1 watt resistor	T <sub>5</sub> —STANCOR C-1001
R <sub>5</sub> —2 megohms, 1 watt resistor	T <sub>6</sub> —STANCOR C-1001
R <sub>6</sub> —50,000 ohms, 1 watt resistor	



DEMAND STANCOR!



# STANCOR "315" AUDIO AMPLIFIER



Tubes: 6J5; 6C5; 6N7; 2-6L6's; 80. Microphone input level: -55 DB. Output level: +34 DB. (15 watts).

An amplifier using 6L6 beam power tubes in Class A, providing a reasonably undistorted output of 15 watts. A good unit for outdoor work and easily adaptable as a small modulator.

The Stancor "315" audio amplifier features the use of 6L6 tubes in Class A, providing an output of 15 watts from an input delivered by a diaphragm type crystal microphone, or a phonograph pick-up. Two channels, with electronic mixing, are provided.

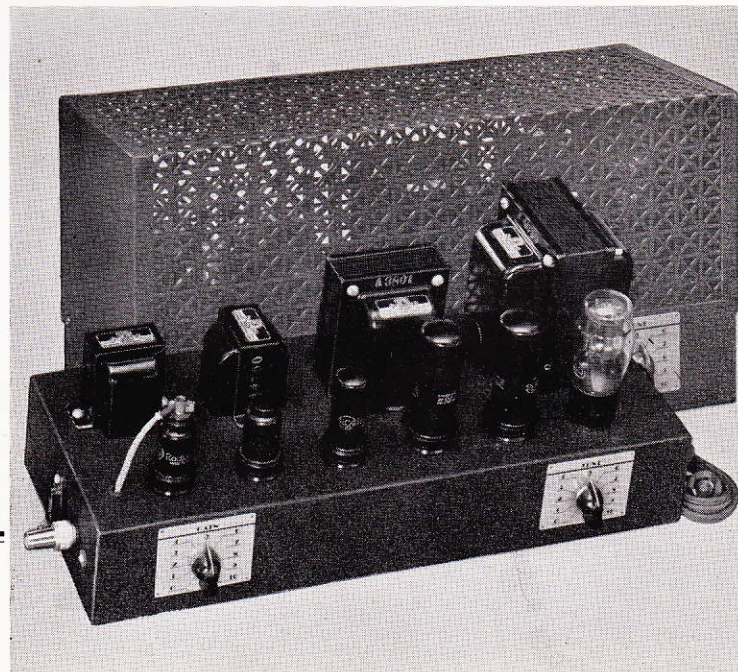
The transformers are mounted at right angles to each other on the top of the chassis, while beneath is the single choke and filter condenser system. Metal tubes are used throughout with the exception of the rectifier which is an 80.

Care must be taken to shield the input to the first tubes, as well as being sure to ground the bottom cover to the chassis. At 15 watts output, the 6L6's are not being driven sufficiently hard to draw any positive grid current, therefore, a resistor in the return circuit has sufficient regulation for distortion-free operation.

The unit, while compact, represents a medium low powered audio amplifier which is readily transportable and should not present any difficulty in either construction or operation by even the inexperienced.

## COMPONENT PARTS LIST

C <sub>1</sub> —10 mfd. electro. 50 v. cond.	R <sub>6</sub> —250,000 ohms, potentiometer
C <sub>2</sub> —.5 mfd. paper 400 v. cond.	R <sub>7</sub> —2,000 ohms, 1 watt resistor
C <sub>3</sub> —.01 mfd. paper 400 v. cond.	R <sub>8</sub> —5,000 ohms, 1 watt resistor
C <sub>4</sub> —2 mfd. electro. 450 v. cond.	R <sub>9</sub> —2,000 ohms, 1 watt resistor
C <sub>5</sub> —10 mfd. electro. 50 v. cond.	R <sub>10</sub> —3,000 ohms, 1 watt resistor
C <sub>6</sub> —.5 mfd. paper 400 v. cond.	R <sub>11</sub> —100,000 ohms, 1 watt resistor
C <sub>7</sub> —10 mfd. electro. 50 v. cond.	R <sub>12</sub> —250,000 ohms, potentiometer
C <sub>8</sub> —.25 mfd. paper 200 v. cond.	R <sub>13</sub> —150 ohms, 10 watt resistor
C <sub>9</sub> —16 mfd. electro. 450 v. cond.	R <sub>14</sub> —5,000 ohms, 5 watt resistor
C <sub>10</sub> —.5 mfd. paper 400 v. cond.	R <sub>15</sub> —15,000 ohms, 25 watt resistor
C <sub>11</sub> —8 mfd. electro. 450 v. cond.	SW—AC-s.p.s.t. toggle switch
C <sub>12</sub> —8 mfd. electro. 450 v. cond.	MC—Mallory Bias Cell
R <sub>1</sub> —2 megohms, ½ watt resistor	T <sub>1</sub> —STANCOR A-4414
R <sub>2</sub> —2,000 ohms, 1 watt resistor	T <sub>2</sub> —STANCOR A-4700
R <sub>3</sub> —2 megohms, 1 watt resistor	T <sub>3</sub> —STANCOR A-3800
R <sub>4</sub> —250,000 ohms, 1 watt resistor	T <sub>4</sub> —STANCOR P-4050
R <sub>5</sub> —50,000 ohms, 1 watt resistor	T <sub>5</sub> —STANCOR C-1410



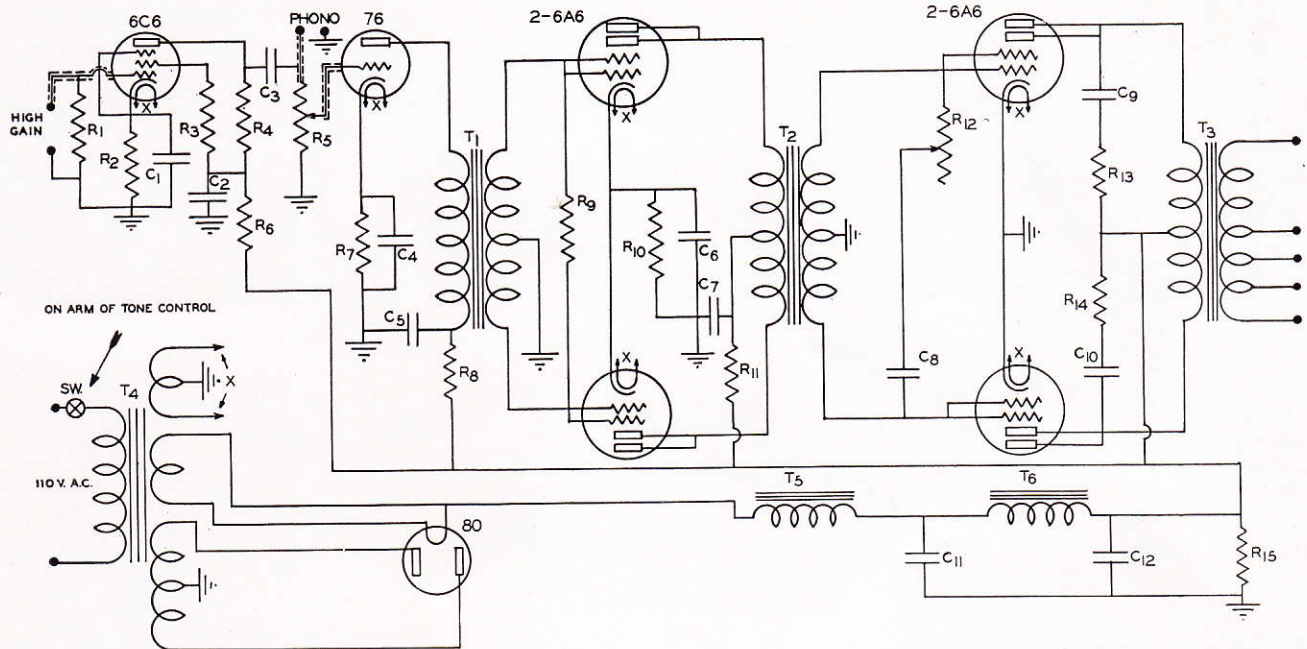
IT'S A STANCOR YEAR!







# STANCOR "320" AUDIO AMPLIFIER



**Tubes:** 6C6; 76; 4-6A6's; 80. **Microphone input level:** -55 DB. **Output level:** +35.5 DB. (20 watts).

A medium powered two channel Public Address System, self powered; suitable for large halls, factory call systems, and small outdoor gatherings.

The Stancor "320" audio amplifier with its all glass tube components furnishes an extremely simple unit of 20 watts output.

The transformers are mounted at right angles to each other on the top of the chassis, while the chokes, filter condensers, and other component parts are mounted beneath. The input tube with its grid lead must be shielded and the bottom plate must be grounded to the chassis. Controls are provided for input gain and tone; the former being a potentiometer in the second tube grid circuit and the latter a potentiometer and condenser across the output grids.

Simple and clean-cut construction beneath the chassis should be followed, care being taken to keep

the input and output leads of the respective stages apart, at the same time making them as short as possible.

When operating this amplifier to obtain undistorted output, the first tube should not be overloaded and even when using a crystal input phonograph attachment, the input power should be kept at a minimum commensurate with the volume anticipated in the output section.

When the amplifier is completed and assembled with the cover, the unit will at once present an extremely handsome appearance, coupled with such simplicity of operation that no particular technical knowledge is necessary to obtain the maximum results.

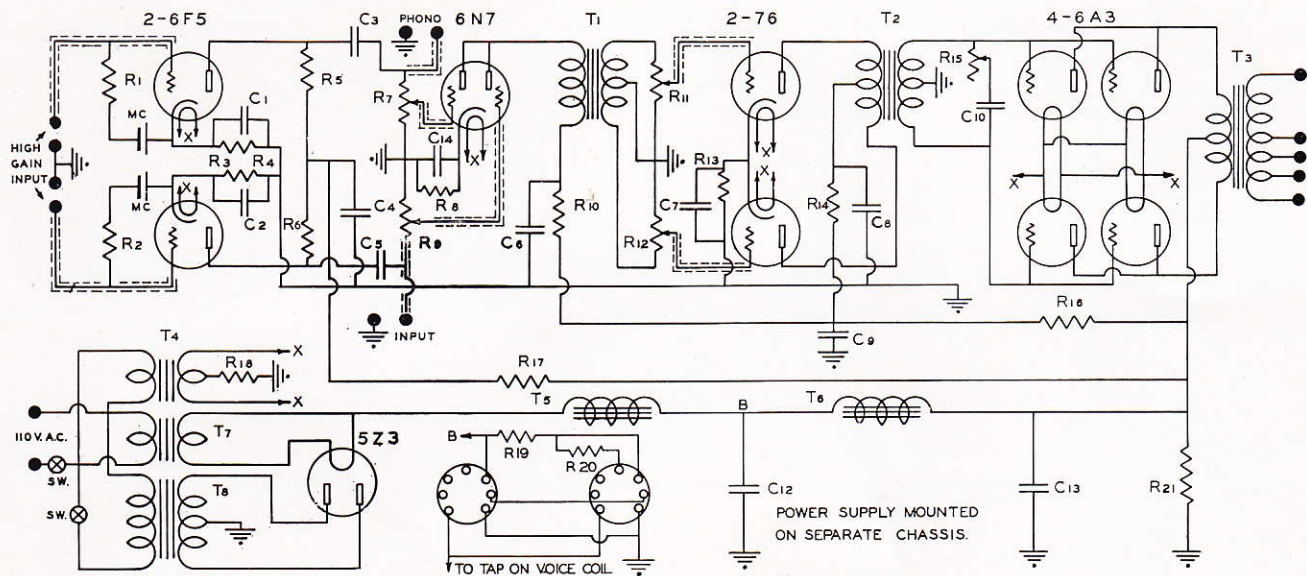
## COMPONENT PARTS LIST

C <sub>1</sub> —10 mfd. electro. 50 v. cond.	R <sub>5</sub> —50,000 ohms, 1 watt resistor
C <sub>2</sub> —.5 mfd. paper 450 v. cond.	R <sub>7</sub> —3,000 ohms, 1 watt resistor
C <sub>3</sub> —.01 mfd. paper 400 v. cond.	R <sub>8</sub> —10,000 ohms, 1 watt resistor
C <sub>4</sub> —4 mfd. electro. 50 v. cond.	R <sub>9</sub> —10,000 ohms, 2 watt resistor
C <sub>5</sub> —.5 mfd. paper 450 v. cond.	R <sub>10</sub> —500 ohms, 2 watt resistor
C <sub>6</sub> —4 mfd. electro. 50 v. cond.	R <sub>11</sub> —1,000 ohms, 2 watt resistor
C <sub>7</sub> —2 mfd. electro. 450 v. cond.	R <sub>12</sub> —250,000 ohms, potentiometer
C <sub>8</sub> —.5 mfd. paper 450 v. cond.	R <sub>13</sub> —3,700 ohms, 1 watt resistor
C <sub>9</sub> —.2 mfd. paper 450 v. cond.	R <sub>14</sub> —3,700 ohms, 1 watt resistor
C <sub>10</sub> —.2 mfd. paper 450 v. cond.	R <sub>15</sub> —25,000 ohms, 25 watt resistor
C <sub>11</sub> —8 mfd. electro. 450 v. cond.	T <sub>1</sub> —STANCOR A-4415
C <sub>12</sub> —8 mfd. electro. 450 v. cond.	T <sub>2</sub> —STANCOR A-4207
R <sub>1</sub> —1 megohm, ½ watt resistor	T <sub>3</sub> —STANCOR A-3306
R <sub>2</sub> —2,000 ohms, 1 watt resistor	T <sub>4</sub> —STANCOR P-3005
R <sub>3</sub> —2 megohms, 1 watt resistor	T <sub>5</sub> —STANCOR C-1400
R <sub>4</sub> —250,000 ohms, 1 watt resistor	T <sub>6</sub> —STANCOR C-1420
R <sub>6</sub> —250,000 ohms, potentiometer	





# STANCOR "325" AUDIO AMPLIFIER



Tubes: 2-6F5's; 6N7; 2-76's; 4-6A3's; 5Z3. Microphone input level: -55 DB. Output level: +36.1 DB. (25 watts).

A compact two unit amplifier featuring electronic mixing, four channels, individual channel gain control, master gain and tone control, field coil supply.



The Stancor "325" audio amplifier presents a conventional unit of 25 watts output, multiples of which can be used to produce 50, 75, 100 watts, etc., output. Two crystal microphones of diaphragm type can be utilized together with two phonograph inputs at one time and all of these four inputs mixed and controlled electronically in groups of two.

On the amplifier chassis itself, are mounted the tubes, the output and interstage transformers, while on the power supply chassis are found the power supply and filter net works. Connection between the two chassis is by means of a plug and line arrangement. The input circuits are all carefully shielded and the shielding grounded, and care must be taken to avoid the input and output leads from being placed in close proximity, causing oscillation and feed-back.

The power supply need not be located close to the audio amplifier providing that the connecting wires are of sufficient size to insure freedom from line losses.

The field coil supply will handle either; a 2500 ohm field, 5000 ohm field, 2—5000 ohm fields in parallel, or 2—2500 ohm fields in series.

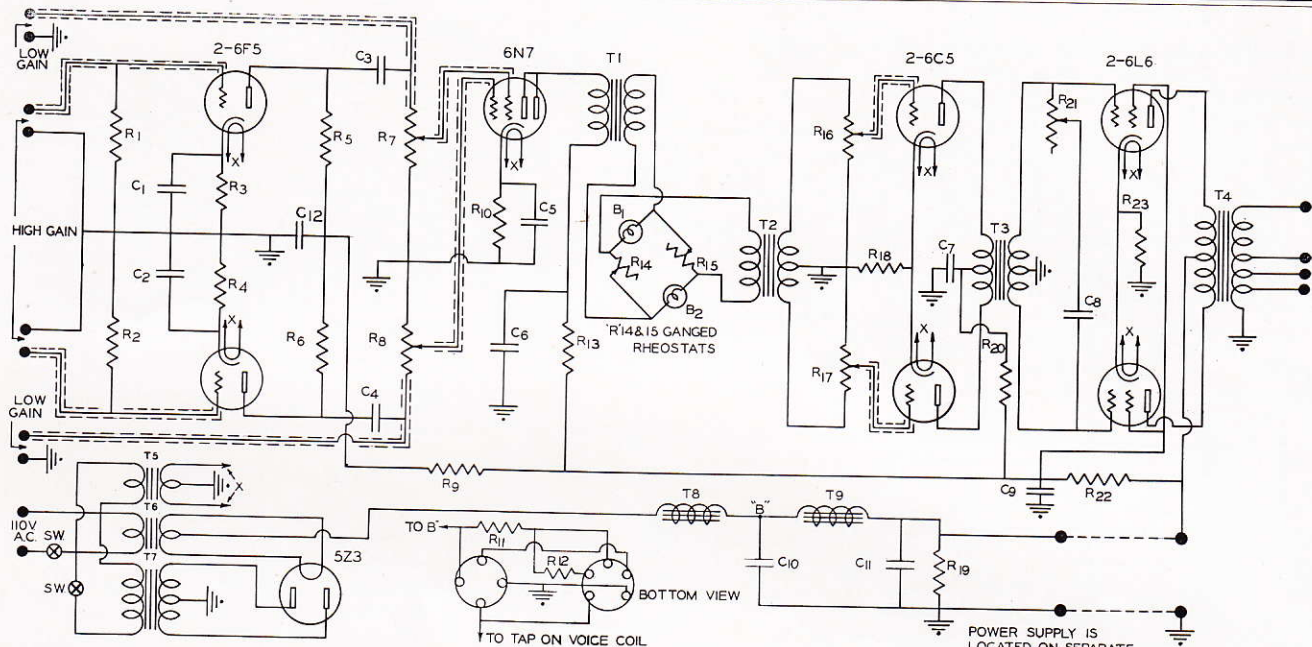
While the construction is somewhat more complicated than the other amplifiers heretofore described, it should not present any difficulty to the public address system builder. Its operation is simple but should be restricted to the more experienced operator.

## COMPONENT PARTS LIST

C <sub>1</sub> —10 mfd. electro. 50 v. cond.	R <sub>10</sub> —5,000 ohms, 1 watt resistor
C <sub>2</sub> —10 mfd. electro. 50 v. cond.	R <sub>11</sub> , R <sub>12</sub> —500,000 ohms, dual pot.
C <sub>3</sub> —.01 mfd. paper 450 v. cond.	R <sub>13</sub> —1,750 ohms, 5 watt resistor
C <sub>4</sub> —2 mfd. electro. 450 v. cond.	R <sub>14</sub> —3,000 ohms, 5 watt resistor
C <sub>5</sub> —.01 mfd. paper 450 v. cond.	R <sub>15</sub> —250,000 ohms, potentiometer
C <sub>6</sub> —2 mfd. electro. 450 v. cond.	R <sub>16</sub> —5,000 ohms, 10 watt resistor
C <sub>7</sub> —4 mfd. electro. 50 v. cond.	R <sub>17</sub> —50,000 ohms, 2 watt resistor
C <sub>8</sub> —.5 mfd. paper 450 v. cond.	R <sub>18</sub> —200 ohms, 10 watt resistor
C <sub>9</sub> —2 mfd. electro. 450 v. cond.	R <sub>19</sub> —5,000 ohms, 10 watt resistor
C <sub>10</sub> —.015 mfd. paper 400 v. cond.	R <sub>20</sub> —5,000 ohms, 10 watt resistor
C <sub>11</sub> —8 mfd. electro. 450 v. cond.	R <sub>21</sub> —50,000 ohms, 10 watt resistor
C <sub>12</sub> —8 mfd. electro. 450 v. cond.	SW—AC-s.p.s.f. toggle switch
C <sub>13</sub> —10 mfd. electro. 50 v. cond.	MC—Twin Mallory Bias Cells
C <sub>14</sub> —10 mfd. electro. 50 v. cond.	T <sub>1</sub> —STANCOR A-4206
R <sub>1</sub> —2 megohms, ½ watt resistor	T <sub>2</sub> —STANCOR A-4208
R <sub>2</sub> —2 megohms, ½ watt resistor	T <sub>3</sub> —STANCOR A-3306
R <sub>3</sub> —400 ohms, 1 watt resistor	T <sub>4</sub> —STANCOR P-3064
R <sub>4</sub> —400 ohms, 1 watt resistor	T <sub>5</sub> —STANCOR C-1402
R <sub>5</sub> —250,000 ohms, 1 watt resistor	T <sub>6</sub> —STANCOR C-1412
R <sub>6</sub> —250,000 ohms, 1 watt resistor	T <sub>7</sub> —STANCOR P-3026
R <sub>7</sub> —250,000 ohms, potentiometer	T <sub>8</sub> —STANCOR P-4024
R <sub>8</sub> —3,000 ohms, 1 watt resistor	
R <sub>9</sub> —250,000 ohms, potentiometer	



# STANCOR "335" AUDIO AMPLIFIER



Tubes: 2-6F5's; 6N7; 2-6C5's; 2-6L6's; 5Z3. Four channels. Microphone input level: -55 DB. Output level: +37.5 DB (35 watts).

This unit features the inclusion of automatic volume expansion and compression (sometimes termed automatic volume control); power supply on separate chassis.

The Stancor "335" audio amplifier provides the operator with a higher powered unit including the use of automatic volume expansion for recordings and automatic volume control for voice. Four channels are provided, two high gain and two low. Electronic mixing permits use of all or any combination at one time.

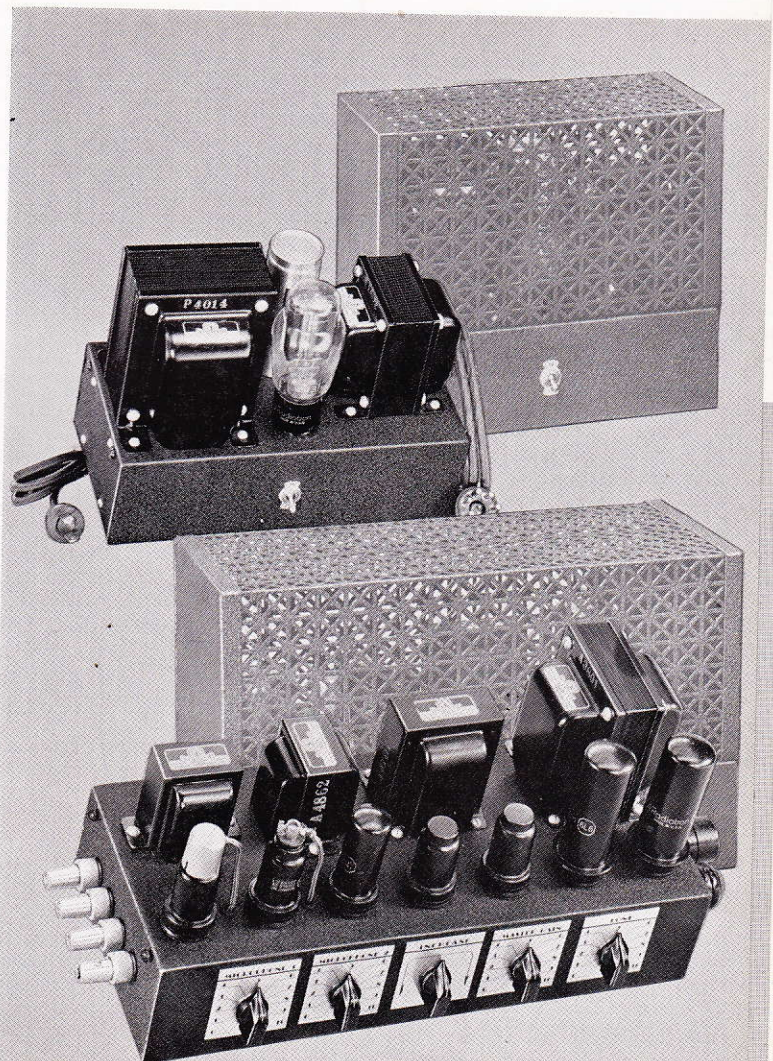
The construction and operation of the amplifier is simple. The AVC-AVE is by means of a bridge circuit utilizing two light bulbs together with the proper matching transformers and resistors. As the resistor arms of R14 and 15 are moved from one side to the other, either automatic volume control or automatic volume expansion is obtained. In the automatic volume expansion, the louder and heavier notes of recording are accentuated giving a more realistic effect, while with automatic volume control, the speaker's voice into the crystal microphone is brought up to level should he move slightly away from the microphone.

The field coil supply will handle either; a 2500 ohm field, 5000 ohm field, 2-5000 ohm fields in parallel, or 2-2500 ohm fields in series.

In presenting this amplifier, laboratory tested, Stancor believes it gives the public address serviceman at once a simple, yet effective, AVE-AVC audio amplifier.

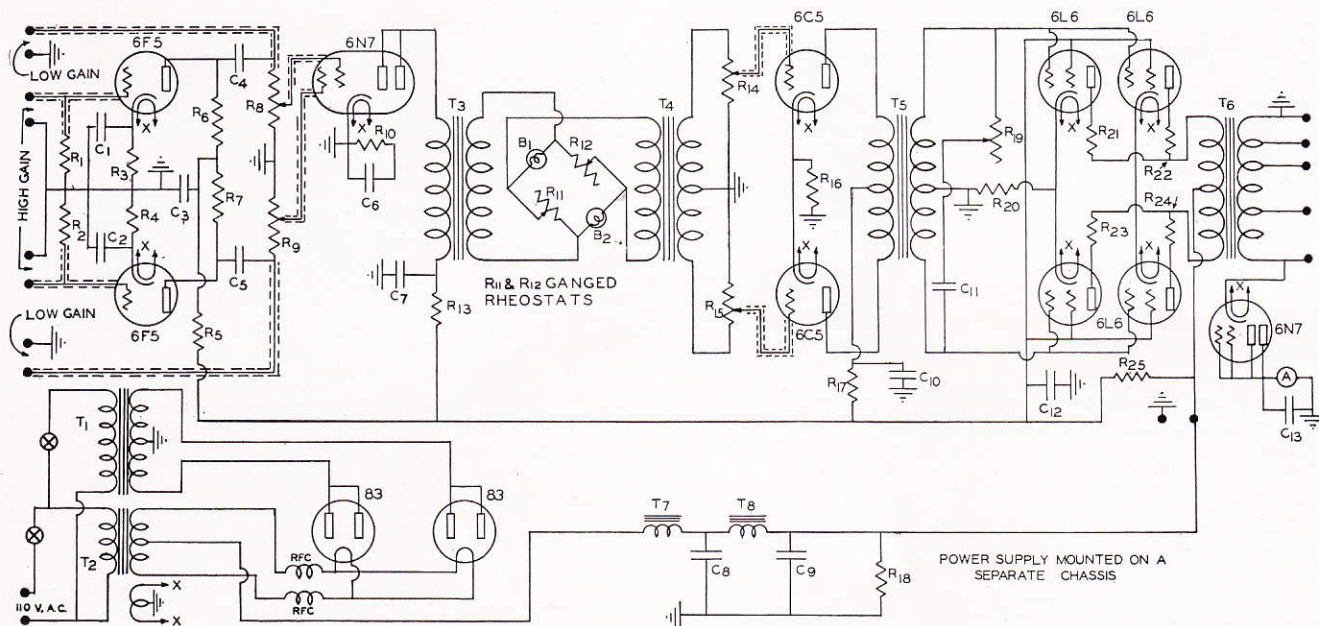
## COMPONENT PARTS LIST

C <sub>1</sub> — 10 mfd. electro. 50 v. cond.	R <sub>11</sub> — 5,000 ohms, 15 watt resistor
C <sub>2</sub> — 10 mfd. electro. 50 v. cond.	R <sub>12</sub> — 5,000 ohms, 15 watt resistor
C <sub>3</sub> — .01 mfd. paper 400 v. cond.	R <sub>13</sub> — 6,500 ohms, 1 watt resistor
C <sub>4</sub> — .01 mfd. paper 400 v. cond.	R <sub>14</sub> , R <sub>15</sub> — 1 twin 10 ohms rheostat
C <sub>5</sub> — 10 mfd. electro. 50 v. cond.	R <sub>16</sub> , R <sub>17</sub> — 1 twin 500,000 ohms, pot.
C <sub>6</sub> — 2 mfd. electro. 450 v. cond.	R <sub>18</sub> — 1,000 ohms, 1 watt resistor
C <sub>7</sub> — 2 mfd. electro. 450 v. cond.	R <sub>19</sub> — 50,000 ohms, 10 watt resistor
C <sub>8</sub> — .02 mfd. paper 400 v. cond.	R <sub>20</sub> — 10,000 ohms, 10 watt resistor
C <sub>9</sub> — 8 mfd. electro. 450 v. cond.	R <sub>21</sub> — 250,000 ohms, 2 watt resistor
C <sub>10</sub> — 8 mfd. electro. 450 v. cond.	R <sub>22</sub> — 5,000 ohms, 10 watt resistor
C <sub>11</sub> — 8 mfd. electro. 450 v. cond.	R <sub>23</sub> — 100 ohms, 20 watt resistor
C <sub>12</sub> — 2 mfd. electro. 450 v. cond.	B <sub>1</sub> , B <sub>2</sub> — 6-volt 15 cp. auto. lights
R <sub>1</sub> — 1 megohm, 1/2 watt resistor	SW — AC-s.p.s.t. toggle switch
R <sub>2</sub> — 1 megohm, 1/2 watt resistor	T <sub>1</sub> — STANCOR A-4710
R <sub>3</sub> — 400 ohms 1 watt resistor	T <sub>2</sub> — STANCOR A-3821
R <sub>4</sub> — 400 ohms 1 watt resistor	T <sub>3</sub> — STANCOR A-4701
R <sub>5</sub> — 250,000 ohms, 1 watt resistor	T <sub>4</sub> — STANCOR A-3801
R <sub>6</sub> — 250,000 ohms, 1 watt resistor	T <sub>5</sub> — STANCOR P-3064
R <sub>7</sub> — 250,000 ohms, potentiometer	T <sub>6</sub> — STANCOR P-3026
R <sub>8</sub> — 250,000 ohms, potentiometer	T <sub>7</sub> — STANCOR P-4024
R <sub>9</sub> — 50,000 ohms, 1 watt resistor	T <sub>8</sub> — STANCOR C-1402
R <sub>10</sub> — 1,000 ohms, 1 watt resistor	T <sub>9</sub> — STANCOR C-1412





# STANCOR "360" AUDIO AMPLIFIER



**Tubes:** 2-6F5's; 2-6N7's; 2-6C5's; 4-6L6's; 2-83's. Microphone input level: -55 DB. Output level: +40 DB. (60 watts).

A two unit, four channel, electronic mixing amplifier, including AVE-AVC together with a meter reading the response, suitable for large halls, outdoor gatherings.

The Stancor "360" amplifier features the use of AVE-AVC by means of a trouble-proof bridge circuit. It also has a meter in the output circuit which reads the response of the amplifier so that by adjusting the various gain controls, a uniform peak value may be obtained.

The input channels are each separately gain-controlled in the electronic mixing 6N7 tube, and a master gain is provided for the control of the volume of the entire amplifier. Tone control in the grid circuits of the output tubes, gives excellent frequency response adjustment.

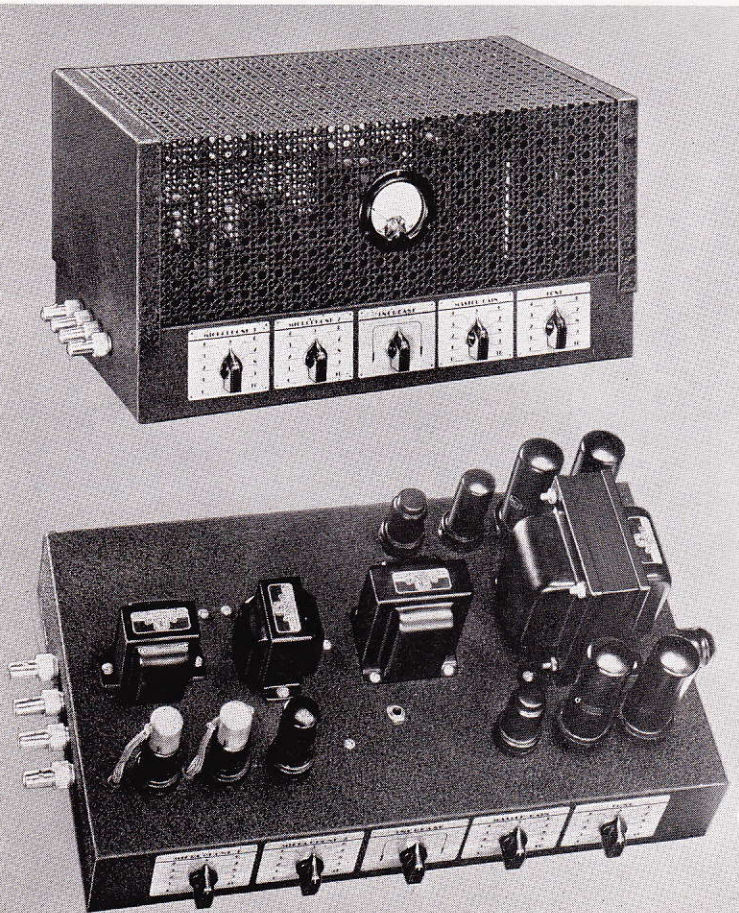
The four 6L6's are operated in Class AB-1, with self-bias, enabling their output to be undistorted and substantially free from harmonics.

Construction is extremely simple; the transformers being mounted on the top of the amplifier chassis, while the balance of the component parts are to be found underneath. On the power chassis, the transformers and chokes are mounted above the chassis, while condensers and chokes are mounted beneath. Connection between the two units is by means of a plug and line arrangement and the amplifier can be turned on or off at the amplifier panel.

(Continued bottom Page 13)

## COMPONENT PARTS LIST

- |   |  |
|---|--|
| C <sub>1</sub> —10 mfd. electro. 50 v. cond.                | R <sub>13</sub> —6,500 ohms, 1 watt resistor               |
| C <sub>2</sub> —10 mfd. electro. 50 v. cond.                | R <sub>14</sub> , R <sub>15</sub> —500,000 ohms, dual pot. |
| C <sub>3</sub> —2 mfd. electro. 450 v. cond.                | R <sub>16</sub> —1,000 ohms, 1 watt resistor               |
| C <sub>4</sub> —.01 mfd. paper 600 v. cond.                 | R <sub>17</sub> —10,000 ohms, 1 watt resistor              |
| C <sub>5</sub> —.01 mfd. paper 600 v. cond.                 | R <sub>18</sub> —25,000 ohms, 25 watt resistor             |
| C <sub>6</sub> —10 mfd. electro. 50 v. cond.                | R <sub>19</sub> —250,000 ohms, potentiometer               |
| C <sub>7</sub> —2 mfd. electro. 450 v. cond.                | R <sub>20</sub> —100 ohms, 20 watt resistor                |
| C <sub>8</sub> —8 mfd. electro. 450 v. cond.                | R <sub>21</sub> & R <sub>22</sub> —100 ohms, center tapped |
| C <sub>9</sub> —8 mfd. electro. 450 v. cond.                | R <sub>23</sub> & R <sub>24</sub> —100 ohms, center tapped |
| C <sub>10</sub> —2 mfd. electro. 450 v. cond.               | R <sub>25</sub> —5,000 ohms, 10 watt resistor              |
| C <sub>11</sub> —.02 mfd. paper 400 v. cond.                | SW—AC-s.p.s.t. toggle switch                               |
| C <sub>12</sub> —8 mfd. electro. 450 v. cond.               | RFC—"Hash" chokes—18 T. of                                 |
| C <sub>13</sub> —.1 mfd. paper 450 v. cond.                 | No. 18E. wire ½ diameter                                   |
| R <sub>1</sub> —1 megohm, ½ watt resistor                   | A—0-100 milliammeter                                       |
| R <sub>2</sub> —1 megohm, ½ watt resistor                   | B <sub>1</sub> , B <sub>2</sub> —6v., D.C. 15 cp. lights   |
| R <sub>3</sub> —400 ohms, 1 watt resistor                   | T <sub>1</sub> —STANCOR P-4024                             |
| R <sub>4</sub> —400 ohms, 1 watt resistor                   | T <sub>2</sub> —STANCOR P-5009                             |
| R <sub>5</sub> —50,000 ohms, 1 watt resistor                | T <sub>3</sub> —STANCOR A-4710                             |
| R <sub>6</sub> —250,000 ohms, 1 watt resistor               | T <sub>4</sub> —STANCOR A-3821                             |
| R <sub>7</sub> —250,000 ohms, 1 watt resistor               | T <sub>5</sub> —STANCOR A-4701                             |
| R <sub>8</sub> —250,000 ohms, potentiometer                 | T <sub>6</sub> —STANCOR A-3802                             |
| R <sub>9</sub> —250,000 ohms, potentiometer                 | T <sub>7</sub> —STANCOR C-1403                             |
| R <sub>10</sub> —1,000 ohms, 1 watt resistor                | T <sub>8</sub> —STANCOR C-1413                             |
| R <sub>11</sub> , R <sub>12</sub> —1 twin 10 ohms, rheostat |  |





# STANCOR INFORMATION PAGE

## OHMS LAW

If I = the current in amperes, and  
E = the voltage, and  
R = the resistance in ohms, then

$$E = I R; \quad I = \frac{E}{R}; \quad R = \frac{E}{I}.$$

If to the above you add that  
W = watts of power, then

$$W = E I; \quad W = I^2 R; \quad W = \frac{E^2}{R}.$$

### RMA Standard Resistor Color Code

All standard resistors are color coded. The body color (A), the end (B) and a dot (C) in the center of the resistor are the means of discerning the resistance. It is read as follows:

A—(Body color) represents 1st figure of resistance value;

B—(End color) represents the 2nd figure, and

C—(Center Dot) represents the number of ciphers following the first two figures; using the following chart:

Figure	Color	Figure	Color
0	Black	5	Green
1	Brown	6	Blue
2	Red	7	Violet
3	Orange	8	Gray
4	Yellow	9	White

Thus, for example, a brown bodied resistor with a green end and a red dot would represent a 1500 ohm resistor.

### Resistors in series

$$R_T = R_1 + R_2 + R_3.$$

For example: The total resistance ( $R_T$ ) of resistor  $R_1$ , + resistor  $R_2$ , + resistor  $R_3$  is the sum of all three resistors.

### Resistors in parallel

$$R_T = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}}$$

In the above formula,  $R_T$  is total resistance of the three resistances  $R_1$ ,  $R_2$ , and  $R_3$ , in parallel.

### Condensers in parallel.

The total capacity ( $C_T$ ) of condensers ( $C_1$ ,  $C_2$ ,  $C_3$  etc.) in parallel is the sum of their capacities.

$$C_T = C_1 + C_2 + C_3$$

The formula for total capacity ( $C_T$ ) of condensers  $C_1$ ,  $C_2$ ,  $C_3$ , etc., in series, is expressed by the formula:

$$C_T = \frac{1}{\frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3}}$$

If each of two condensers of equal capacity have the same **break-down voltage**, connecting them in series, their capacity is halved, but the **breakdown voltage** of the total is doubled.

### Power Supply Filter Choke Formulae

If L is the inductance of a filter choke in henrys, and C the capacity of the condenser in mfd.; then the percentage of ripple of a single choke and condenser is expressed by the formula:

$$\frac{100}{L C}$$

For a two section choke and condenser filter, the percentage ripple is:

$$\frac{100}{650 L_1 L_2 (C_1 + C_2) (C_1 + C_2)}$$

This formula holds for 60 cycle power supplies only. For 50 cycle power, multiply the result by 1.2; for 25 cycle by 2.40.

## STANCOR "360" AUDIO AMPLIFIER—Continued

Shielding, where indicated in the diagram must be carefully and consistently followed, because the high gain stages without this have a tendency to oscillate.

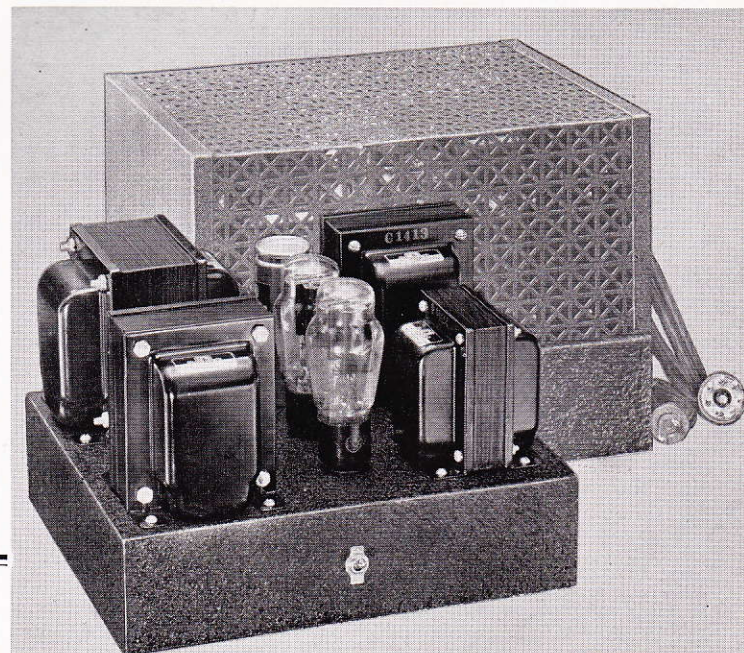
The resistors R-21 through R-24 are inserted in the plate leads of the 6L6's to overcome oscillation and feed-back. The RF chokes in the 83 rectifier filament tube leads are to prevent mercury "hash" from feeding back into the amplifier itself.

If the constructor will carefully follow the diagram and the pictures in building up this amplifier, he will be rewarded with a public address system which will satisfy the most discriminating customer or engineer by its performance and appearance.

## Decibels—Watts Output Levels

DB.	Watts	DB.	Watts
-20	0.00006	20	0.600
-19	0.00007	21	0.759
-18	0.00009	22	0.948
-17	0.00011	23	1.185
-16	0.00015	24	1.518
-14	0.00023	26	2.371
-13	0.00030	27	3.036
-12	0.00039	28	3.795
-11	0.00047	29	4.743
-10	0.0006	30	6.000
-9	0.00076	31	7.590
-8	0.00095	32	9.487
-7	0.00119	33	11.859
-6	0.00152	34	15.180
-5	0.00190	35	18.975
-4	0.00237	36	23.718
-3	0.00303	37	30.360
-2	0.00397	38	37.950
-1	0.00474	39	47.43
0	0.006	40	60.00
1	0.0076	41	75.90
2	0.0095	42	94.87
3	0.0119	43	118.59
4	0.0153	44	151.8
6	0.0237	46	237.18
7	0.0305	47	303.60
8	0.0380	48	379.50
9	0.0474	49	474.37
10	0.060	50	600.00
11	0.0759	51	759.00
12	0.0948	52	948.75
13	0.1187	53	1185.94
14	0.1518	54	1518.00
15	0.1898	55	1897.50
16	0.2372	56	2371.88
17	0.3037	57	3036.00
18	0.3795	58	3795.00
19	0.4744	59	4743.75
		60	6000.00

## THE STANCOR "360" POWER SUPPLY







**RADIO ELECTRIC SERVICE CO.**

**3145 N. BROAD STREET**

**PHILADELPHIA, PENNSYLVANIA**