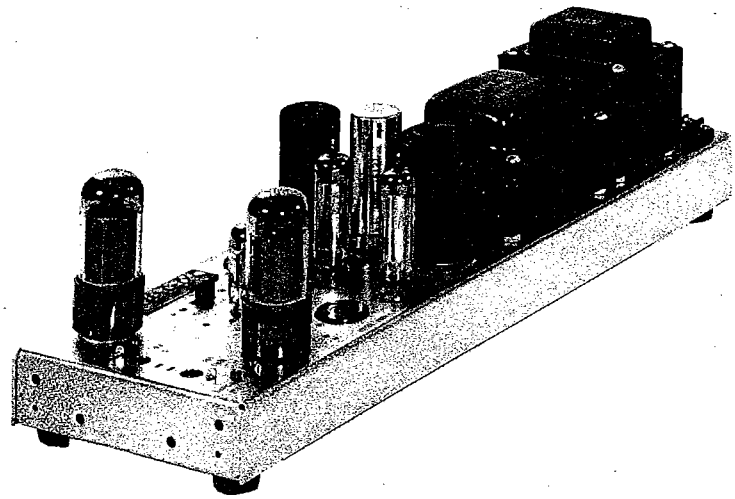
STROMBERG-CARLSON®

model *APH-1030*

30 watt audio power amplifier



SPECIFICATIONS

OUTPUT POWER - 30 watts with less than 5% harmonic distortion from 50-15,000 cps. 15 watts with less than 2% harmonic distortion from 40-20,000 cps.

FREQUENCY RESPONSE - 20-30,000 cps ± 1db, high pass filter "out" 10-70,000 ± 4db, high pass filter "out".

IM DISTORTION - 2% maximum with 4:1 ratio of 60 cps and 7KC

INPUT SENSITIVITY - 1 volt into 250,000 ohms unbalanced; .5 volts into 10,000 ohms balanced line.

HUM AND NOISE - 80db below 30 watts

REGULATION - Full load to no load less than 2db

INPUTS - One input; amplifier may be operated with a 250K ohm unbalanced input or, when an input transformer is used, with a 10K ohm balanced input.

OUTPUT IMPEDANCE - 4, 8 and 16 ohms. 70V and 25V center tapped constant voltage line.

CONTROLS - Input level control, DC balance and bias adjustment controls, power switch

POWER SOURCE - 105-125 volts AC, 50-60 cps

POWER CONSUMPTION - 90 watts

TUBE AND DIODE COMPLEMENT

1 - 7199	Voltage amplifier and phase splitter
2 - 7355	Power Outputs
2 - OA2	Voltage Regulators
2 - 1N3195	Rectifier Diodes
1 - 1N1763	Rectifier Diode

ACCESSORIES

Standby Relay - 172000-015 Model No. RS-1012
Input Transformer - 172000-065, Model No. TB-1011
Hinge Kit - SC-1037
Amplifier Panel - SCP-1036

installation and service

GENERAL DYNAMICS | ELECTRONICS
ROCHESTER

146011-202 (Rev. 1)

GENERAL DESCRIPTION

The APH-1030 is a high quality, 30 watt audio power amplifier designed for use in school systems and in commercial rack and shelf mounted applications. Rack mounting of this unit may be facilitated by the use of an accessory bracket kit (SC-1037) containing a hinged bracket for use in providing the amplifier with a "swing out for service" feature. An amplifier panel with pilot light opening (SCP-1036) is also available for rack mounting.

A standby relay, Model No. RS-1012 (part no. 172000-015) can be accomodated by the relay socket provided on the amplifier chassis. Twenty four volts DC (24VDC) applied to terminals K1 and K2 will energize the relay and ground the cathodes of the output tubes, placing the amplifier in its "ready" mode of operation.

The APH-1030 has a high impedance (250K ohm) unbalanced input, with provision for the installation of an input matching transformer, Model TB-1011 (part no. 172000-065). This accessory will provide isolation from the input source and permit balanced operation from a source of 10K ohms or less.

SERVICE INFORMATION

Power Transformer

The power transformer of the APH-1030 features a tapped primary winding for either 117V or 125V operation. Connections for the two voltage ranges are as follows - White lead common, Black and White lead, 117V tap, Black lead 125V tap. All amplifiers shipped from the factory will be connected for 125 volt operation. Should the line voltage in your locality be consistently below 125 volts reconnect to the 117V tap.

Input Transformers

Inputs with an impedance of 10K ohms may be impedance matched to the amplifier by the addition of an input transformer 172000-065 which plugs into the socket provided on the amplifier chassis.

NOTE: Before installing this transformer remove the plug in jumper between pins 3 and 4 of the socket. If an unbalanced high impedance input is to be connected to the amplifier the transformer is to be removed and the jumper reinserted.

As many as four (4) APH-1030 amplifiers may be operated in parallel from either the Stromberg-Carlson SCP-1003 or SCP-1005 preamplifier.

Standby Relays

A standby relay, 172000-015, available as an accessory, may be used as an output tube cut-off to place the amplifier in its "standby" mode.

Before installing the Standby Relay the plug-in jumper buss between pins 5 and 6 of the relay socket (on amplifier) must be removed. If, at any time, the Standby Relay is removed this jumper must be reinserted.

Once the relay is installed twenty four (24) volts DC applied to terminals K1 and K2 on the amplifier terminal strip will energize the relay and apply a ground to the cathodes of the output tubes, placing the amplifier in its "ready" mode.

CONTROL AND ADJUSTMENTS

Power Output Stage Bias Adjustment — DC Balance Controls

The Bias Adjustment Control provides a sufficient degree of adjustment to allow the employment of unmatched output tubes in the Power Output Stage. The use of matched pairs of output tubes however, will aid in bias adjustment and provide the optimum conditions for high fidelity output and peak power. Occasionally, it will be found that some tubes cannot be balanced regardless of the Bias Adjustment Control setting; when this occurs replace one or both of the tubes until a balance is obtained.

The DC Balance Control is provided to allow readjustment of the amount of Plate Current in the output stages of the amplifier.

The Bias Adjustment and DC Balance Control have been adjusted at the factory. Should further adjustment become necessary they should be adjusted as indicated below.

1. Prior to switching the amplifier ON, turn the Bias Control to its full counter clockwise position.
2. Switch ON the power and adjust line voltage to 125 volts.

   NOTE: The source voltage must be exactly 125 V. A. C. at 60 cps and provided by a variable voltage AC source.
3. With no signal applied to the amplifier input connect a voltmeter (use a meter with a DC scale capable of accurately indicating .4 volts DC) between the amplifier chassis and test points A and B. Adjust the DC Balance Control until equal voltages are measured between each test point and the chassis. If a zero center meter is available connect it between test points A and B and adjust the DC Balance for a zero reading on the meter.
4. Reconnect meter to test point A or B and chassis. Adjust bias control for .4 volts DC.
5. If necessary, readjust the DC Balance Control until a .4 V. D. C. reading is measured from either test point to chassis.

Input Level Control R3 is a 500K ohm potentiometer which regulates the amplifier output by attenuating the input signal.

NOTE: Removal of V4, the OA2 Voltage Regulator tube, removes screen voltage from the 7355 output tubes. Should either V4 or V5 (OA2's) become defective the screen voltage applied to the 7355 output tubes will increase and raise plate dissipation.

This condition will eventually necessitate the early replacement of the output tubes.

Rated Load Impedance for 30 Watts Output

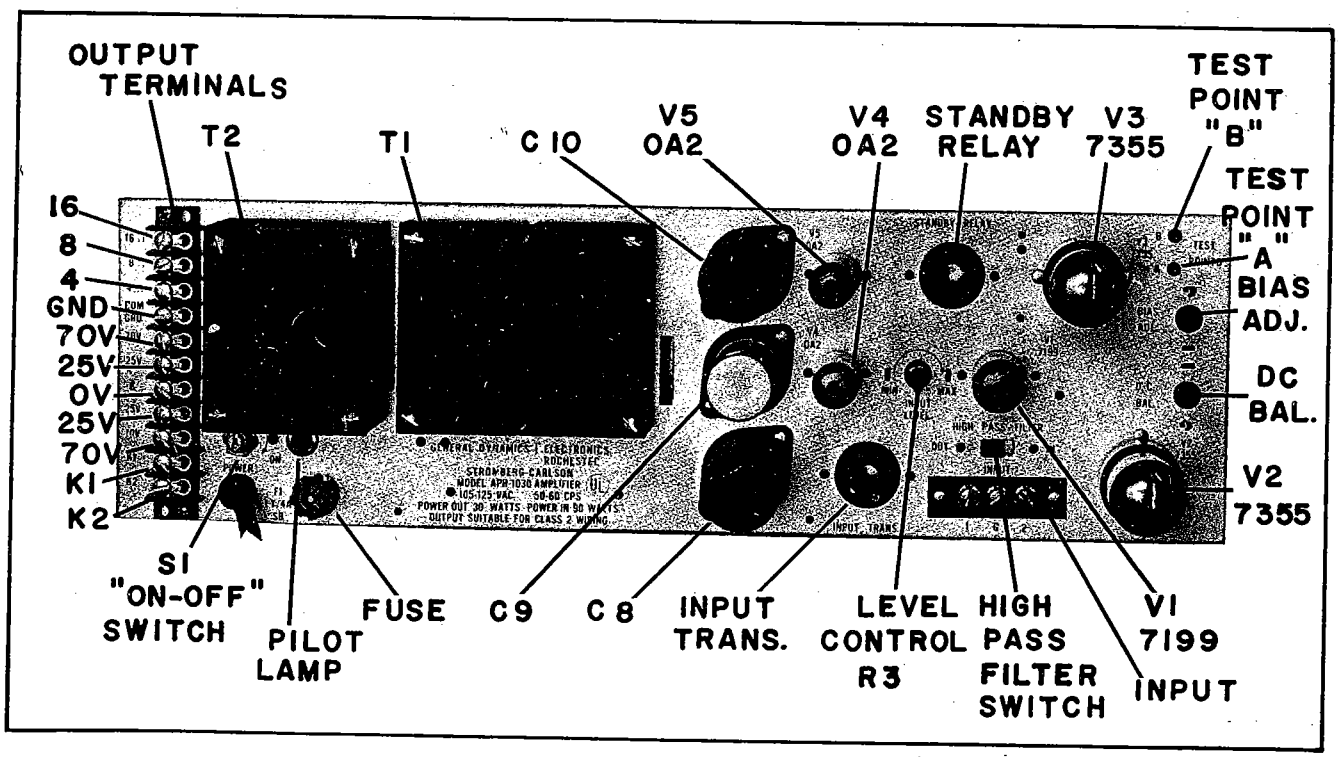
Rated Load - ohms	Rated Output - voltage
165 ohms	70V
21 ohms	25V
16 ohms	20V
8 ohms	14V
4 ohms	10V

LOAD IMPEDANCE

The use of line matching transformers is not required when the amplifier output feeds a single speaker or is divided equally among a few speakers spaced along a relatively short line. The accompanying chart, based on a 1db loss, indicates the maximum length of wire to be used with a specific wire size and impedance. When two or more separate speaker lines are brought to an amplifier choose the minimum wire size for each line separately, using the impedance which terminates that line.

Wire Gauge	Line Impedance in Ohms			
	4	8	16	45
22	20	40	80	220
20	30	65	130	350
19	40	80	160	425
18	50	100	200	550
16	80	160	320	900
Wire Gauge	78	156	312	625
22	400	800	1600	3200
20	500	1000	2000	4000
19	650	1300	2600	5200
18	800	1600	3200	6400
16	1200	2400	4800	- -

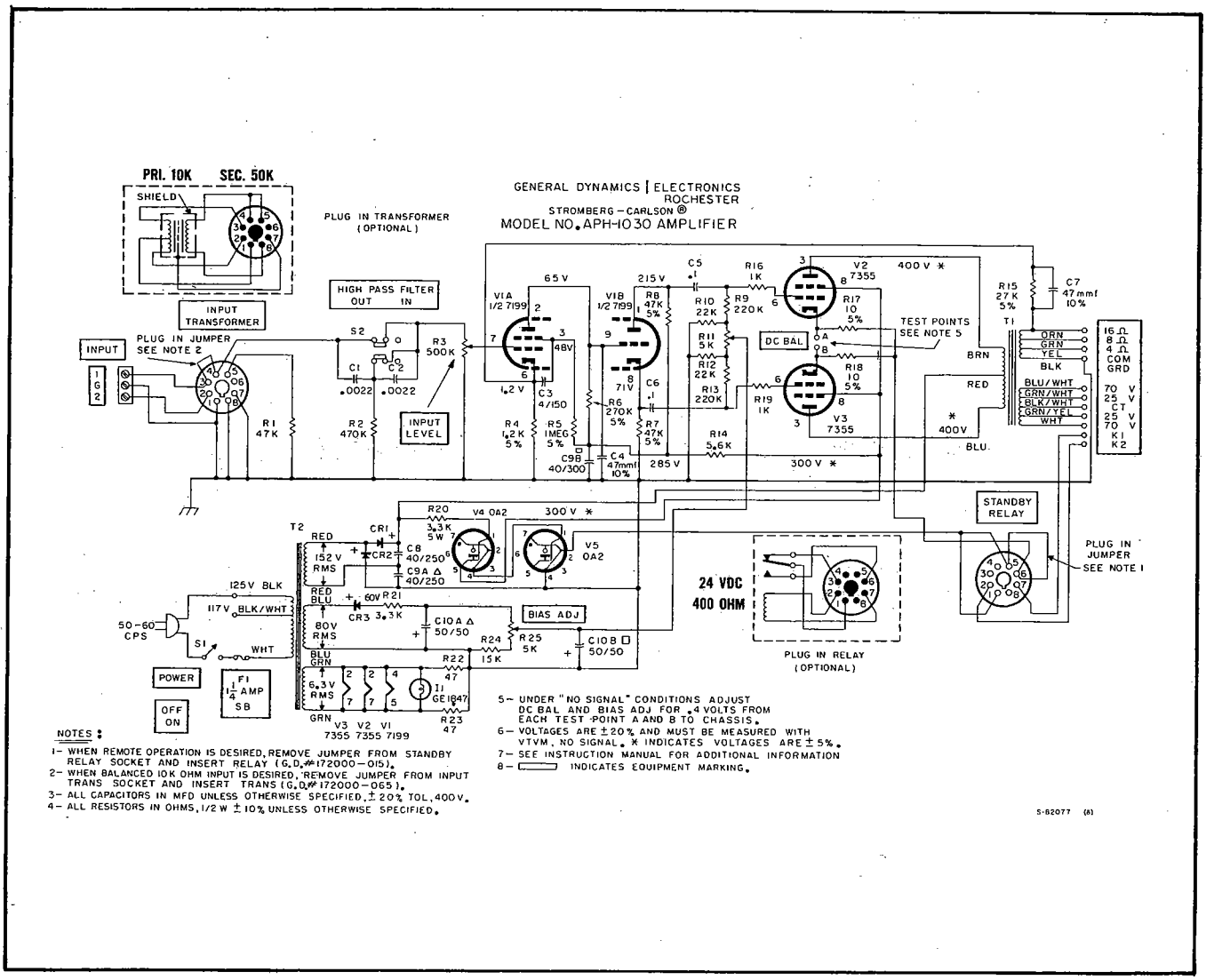
Should it prove necessary to provide an uneven distribution of audio power to a number of speakers, the constant voltage line taps (70 and 25 volts) of the amplifier are to be used. By connecting line matching transformers to each speaker it is possible to provide the desired power to each speaker position. The total power drawn, however, is not to exceed the rated power output of the power amplifier.



REPLACEMENT PARTS

	Resistors	
R3	Control, Vol., 500K	145000-136
R25, R12	Control Dual Bias, 5K	145000-137
	Capacitors	
C3	Elec., 4uf/150V	111000-050
C4	Elec., 50uf/3V	553088-500
C9	Elec., 100uf/250V	111000-117
C10	Elec., 30uf/350V/100uf/250V/ 40uf/250V	111000-112
C11	Elec., 40uf/250V	111000-110
C12	Elec., 50uf/50V/50uf/50V	111000-118
	Diodes	
CR1, CR2 CR3, CR4	Rectifiers	162000-063
CR5	Rectifier, 1N1763	162000-052
	Miscellaneous	
T1	Transformer, Output	161000-187
T2	Transformer, Power	161000-239
	Fuse Holder	559996-102
	AC Cord	117000-026
	Jumper, Plug-in	120000-115
	Foot, Chassis	131000-001
	Socket, Pilot Lamp	152000-072
	Socket, Octal GP	152014-000
	Socket, Octal LL	152668-000
S1	Switch, Power	158000-183
S2	Switch, DPDT	158000-058
	Pilot, Lens	559996-071
	Socket, 9 Pin	559999-028

SCHEMATIC



NOTES:

1- WHEN REMOTE OPERATION IS DESIRED, REMOVE JUMPER FROM STANDBY RELAY SOCKET AND INSERT RELAY (G.D.# 172000-015).
2- WHEN BALANCED 10K OHM INPUT IS DESIRED, REMOVE JUMPER FROM INPUT TRANS SOCKET AND INSERT TRANS (G.D.# 172000-065).
3- ALL CAPACITORS IN MFD UNLESS OTHERWISE SPECIFIED, ± 20% TOL., 400V.
4- ALL RESISTORS IN OHMS, 1/2 W ± 10% UNLESS OTHERWISE SPECIFIED.
5- UNDER "NO SIGNAL" CONDITIONS ADJUST DC BAL AND BIAS ADJ FOR .4 VOLTS FROM EACH TEST POINT A AND B TO CHASSIS.
6- VOLTAGES ARE ± 20% AND MUST BE MEASURED WITH VTVM, NO SIGNAL. * INDICATES VOLTAGES ARE ± 5%.
7- SEE INSTRUCTION MANUAL FOR ADDITIONAL INFORMATION
8- ▭ INDICATES EQUIPMENT MARKING.

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