ALTEC ENGINEERING NOTES

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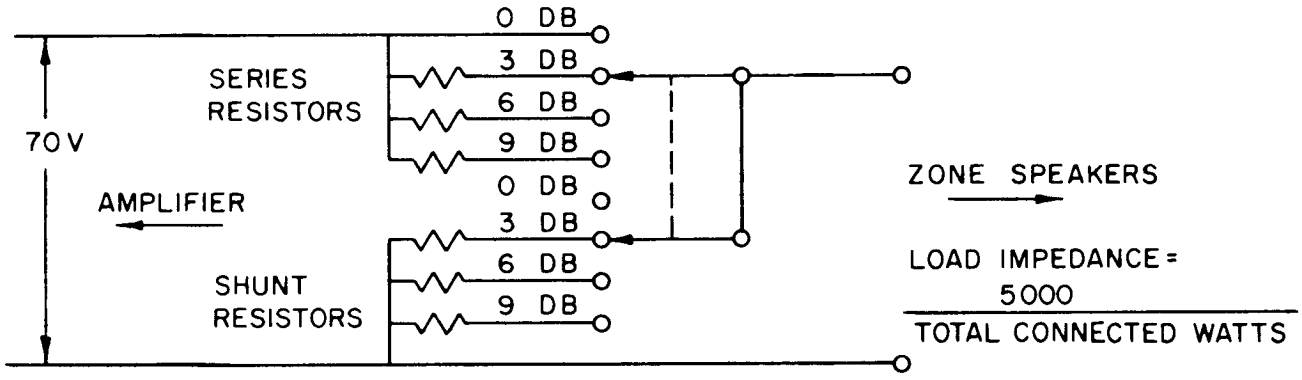
ZONE VOLUME CONTROL

The usual method for controlling the sound level in a zone is to introduce a loss in the circuit feeding the speakers in that area which can be varied in convenient steps from zero to some value depending upon circumstances. For modest load power, variable L pads are commercially available from Mallory and Clarostat. When these components do not meet the requirements, a control can be made up in accordance with Figure 1, the values of the resistors being determined from the following table by multiplying the listed values of series resistors and shunt resistors by the combined load impedance. The wattage ratings indicated apply for continuous signal of full power; and if it is certain that the program will be limited to speech or music, the power capacity of the resistors may be reduced to 1/2 or 1/3 of the listed values. Note that an L pad is preferred to a T pad as it does a better job of maintaining a low source impedance for the line beyond the control.

FIG. 1 VARIABLE L PAD



LITHO IN U.S.A. 981-1M

RESISTOR VALUES BASED ON LOAD IMPEDANCE OF 1 OHM

Loss	Series Res.	Wattage Rating	Shunt Res.	Wattage Rating
0	Zero(Strap)	- - -	Omit	- - -
3	.3 Ohm	30%*	2.3 Ohms	20%*
6	.5 Ohm	50%	1.0 Ohms	25%
9	.65 Ohm	65%	.54 Ohms	23%
12	.75 Ohm	75%	.33 Ohms	20%
15	.82 Ohm	82%	.21 Ohms	15%
18	.87 Ohm	87%	.14 Ohms	11%
21	.91 Ohm	91%	.10 Ohms	10%
24	.94 Ohm	94%	.07 Ohms	10%
Off	1.0 Ohm	100%	Zero(Strap)	

*Wattage ratings are expressed as % of total connected watts of the load controlled.

A less common requirement for a zone volume control is one which introduces no power loss but makes the power reduction of the one zone available for use in another zone. A control of this type is shown in Figure 2, made up from two (2) 15067 transformers and a two-circuit switch. It must be recognized that when the power to a given zone is increased by adjusting a control of this kind, the impedance presented to the amplifier by the circuit control is decreased. It is very undesirable to allow the impedance of the total load connected to the amplifier to be lower than the rated value for the amplifier, which is equivalent to saying that not more than rated power should be drawn from the 70 volt terminals. Therefore, in using a no-loss control, an increase in level for a given area might have to be accompanied by a simultaneous decrease in level to one or more other areas.

FIG. 2 LOSSLESS CONTROL