

Engineering News



ALTEC Lansing Corporation

1515 S. Manchester Avenue,

Anaheim, California

A SUBSIDIARY OF LING-A-LTEC ELECTRONICS, INC.

TECHNICAL LETTER NO. 102
MAY 16, 1960

AMPLIFIERS IN PARALLEL

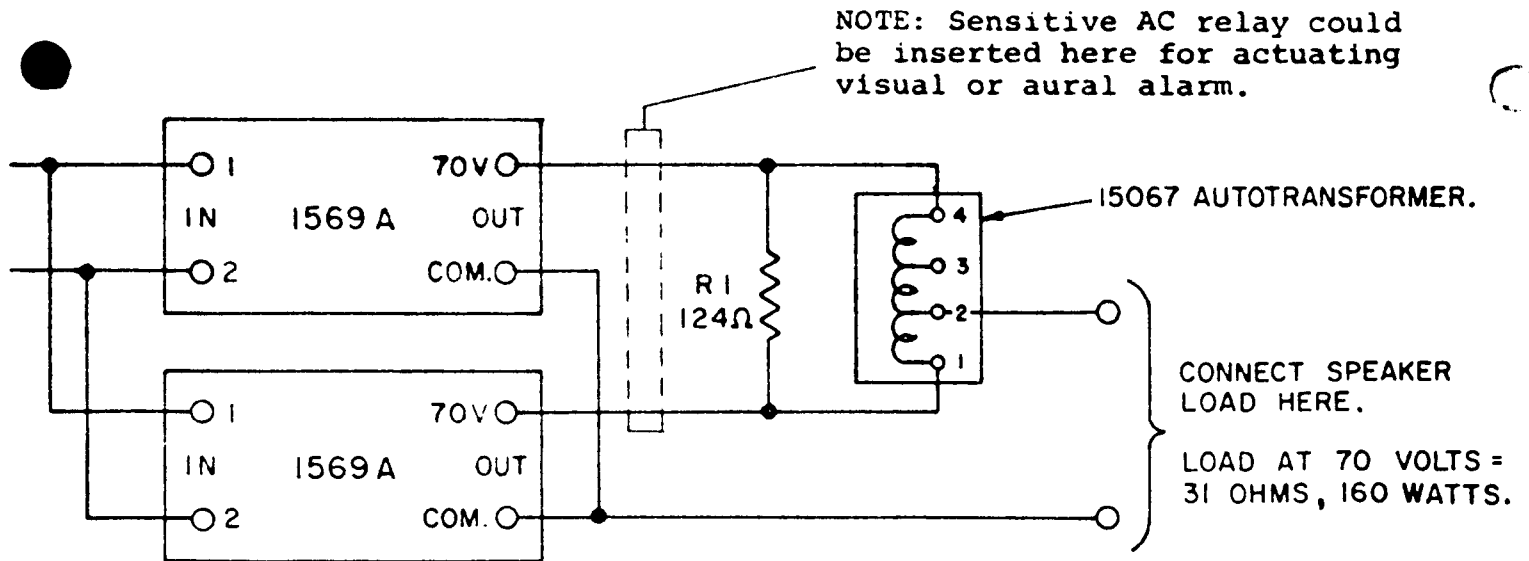
The circuit shown below provides a safe method of paralleling two amplifiers. As indicated, the 15067 ALTEC Autotransformer is suitable to handle the power of a pair of 1568A, 1569A or 1570B Power Amplifiers.

With this circuit, either amplifier may develop a short or open circuit in the output stage, or at any other point, without effecting in any way the output of the other amplifier. When the outputs of the amplifiers are identical, no power is lost in the supplementary resistor (R-1). When one amplifier develops either a short or an open in its internal output circuit, the other amplifier is unaware of a change in load and continues to deliver its normal power.

In the example below, if in the balanced condition each amplifier sees a load of 62 ohms (see amplifier specifications), then when one shorts or opens the survivor still sees 62 ohms. Under this condition, however, half of the output of the survivor is delivered to the load and the other half is lost in the balancing resistor (R-1). In consequence, the power in the load will drop 6 db when one amplifier fails, this being sufficient to produce aural evidence that the system is down somewhat in efficiency and thereby lead to correction of the trouble. The loss in volume is not sufficient, however, to cause serious malfunction of the system.

The amplifier gain controls should be set for equal gain and locked. The easiest way to establish this condition is to observe whether a signal exists across the supplementary resistor. The check can be made with a meter using an oscillator as a test source, or it can be made during performance with a program signal of any kind using either a sensitive voltmeter or a set of earphones. The check can easily be repeated at any time without disturbing the transmission of paging calls or other program. If signal appears across the resistor one or the other gain control should be adjusted until it disappears.

IMPORTANT - The principle to consider is that the supplementary resistor (R-1) must have a resistance value of double the nominal load for a single amplifier. Power capacity of this resistor should be half the power capacity of a single amplifier if it is to handle steady state oscillator type signals for a substantial period of time. To handle program, the resistor's power capacity may be less.



NOTE: When paralleling two 1568A ALTEC Power Amplifiers, Resistor R-1 becomes 248 ohms and the load at 70 volts equals 62 ohms, 80 watts.

1570B
When paralleling two [REDACTED] ALTEC Power Amplifiers, Resistor R-1 becomes 64 ohms and the load at 70 volts equals 16 ohms, 350 watts.