

Engineering News



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A Division of *LSV* LING ALTEC, INC.

1515 S. Manchester Avenue,

Anaheim, California

Technical Letter No. 165

THE ALTEC 'TRUTH BOX' TRANSFORMER DEMONSTRATION BOARD

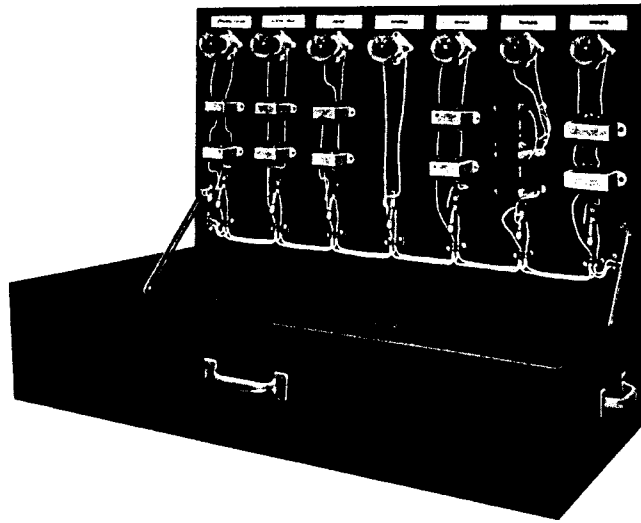


Figure 1: Altec 'Truth Box'

INTRODUCTION

The Altec 'Truth Box' is used to prove the greater efficiency of Altec line transformers as compared with other types. In demonstrations before Architects, Engineers and Consultants, and before every Altec Sound Contractor from coast to coast, the 'Truth Box' has shown that Altec 70-volt transformers fulfill every need in the distribution of electrical energy to loudspeakers for sound system applications.

The demonstration illustrates clearly that ~~some~~ ^{SOME} line transformers have 3 to 6 db less insertion loss; therefore, the amplifier power may be reduced by one-half or more when ~~some~~ ^{SOME} line transformers are used. Conversely, this means that twice as many (or more) loudspeakers may be operated from the power amplifier.

MATERIALS NEEDED

The following material is required:

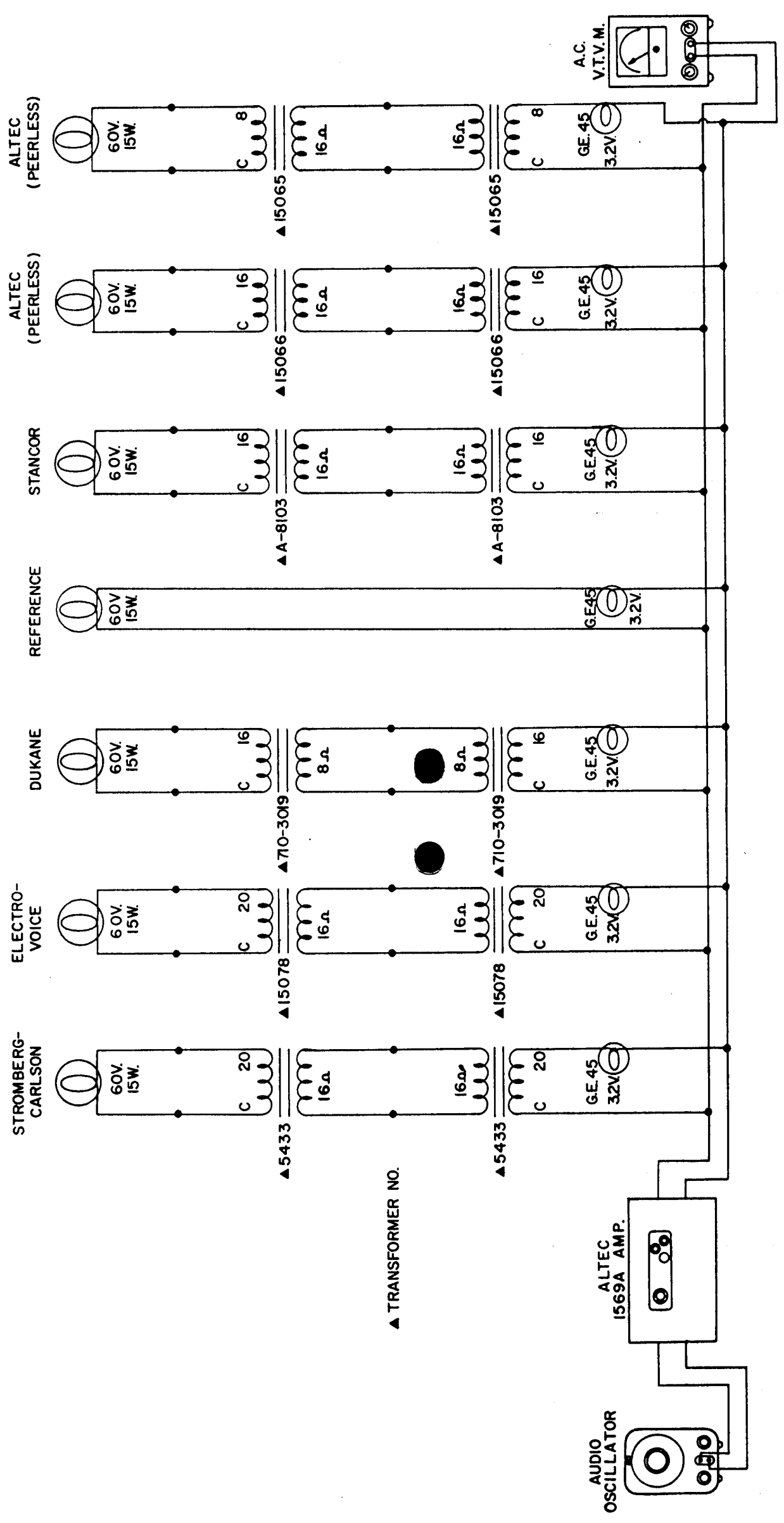
- 7 - electric light bulb sockets (with a 15-watt bulb for each)
- 7 - bayonet sockets (with a GE #45, 3.2-volt bulb for each)
- 2 - terminal boards (if terminal board connections are preferred to direct wire connections, 7 additional boards will be required (a total of 9)).

Adequate #14 electrical wire (the amount will depend upon the size of the board or box to be used).

Six pairs of transformers also are required:

- Stromberg-Carlson model 5433
- Electro-Voice model 15078
- Dukane model 710-3019
- Stancor model A-8103

(Text continued on Page 4.)



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Figure 2: Schematic, 'Truth Box'

Altec 15066
Altec 15065

The box may be constructed as shown in Figure 1, or as a single board. The Altec 'Truth Box' measures 36-inches wide by 20-inches high, and is 6-1/2-inches deep (to provide storage space for extra bulbs, etc.).

CONSTRUCTION (See Figure 2.)

A two-terminal board should be mounted at the lower left side of the board to serve as input terminals. A pair of lines should extend across the board to a second two-terminal board (output) at the lower right hand side of the board. Each of the various transformer branches should be connected in parallel to this pair of lines (either by direct connection or by the use of a two-terminal board).

Each of the transformer branches is identical except for the pair of transformers used. At the bottom of the branch, a bayonet socket should be wired in series as indicated in the schematic (Figure 2). A pair of transformers, mounted back-to-back above the bayonet socket, should have connections made to the taps as indicated on the schematic, and in Table I. Output from the top transformer is connected to the large light bulb socket.

The Altec 'Truth Box' consists of (from left to right) the following transformer pairs: Stromberg-Carlson, Electro-Voice, Dukane, Reference (no transformers), Stancor, Altec 15066, and Altec 15065.

CONNECTIONS

After connections are made and checked against the schematic, and both large and small bulbs are installed, three additional pieces of equipment are required: an audio oscillator, an Altec 1569A Power Amplifier, and an AC voltmeter. The oscillator should be connected to the input of the 1569A Amplifier, and the output of the amplifier, in turn, to the input of the 'Truth Box'. The AC voltmeter should be connected to the output of the demonstration unit.

TABLE I: Transformer Tap Connections

TRANSFORMER	POWER TAPS	IMPEDANCE TAPS
Stromberg-Carlson 5433	C & 20 W	C & 16 Ω
Electro-Voice 15078	C & 20 W	C & 16 Ω
Dukane 710-3019	C & 16 W	C & 8 Ω
Stancor A-8103	C & 16 W	C & 16 Ω
Altec 15066	C & 16 W	C & 16 Ω
Altec 15065	C & 8 W	C & 16 Ω

OPERATION

With the oscillator and the amplifier turned on, adjust the gain of the amplifier for a reading of 70 volts on the AC voltmeter. (This reading should be maintained throughout the demonstration of the 'Truth Box'.) Starting from approximately 1000 cycles, sweep the audio range.

RESULTS

Using the middle light as a point of reference, it will be noted that the large bulbs will glow at different intensities. The insertion loss of each transformer pair will be indicated by the intensity of the bulb. The brighter the bulb, the less will be the insertion loss.

The small bulbs will indicate the efficiency of the various transformers. The brighter the small bulb, the greater the amount of inductive reactance.