

TRANSFORMER INSERTION LOSSES

Davis line transformers have insertion losses of about 1dB. This translates into a power loss of 1.3 times the rated power of the transformer. Thus, a Davis 4-watt transformer tapped at the 5-watt tap will consume around 6.5 watts of power. The same transformer tapped at the 2.5 watt tap would consume 3.25 watts (1.3 X 2.5 watts).

Lower quality transformers typically have much higher insertion losses ranging from 2 dB to 2.5 dB despite the standard manufacturer's claim of 1.5 dB. The table below provides a guide for estimating insertion losses. Note that a 10-watt transformer with 2.5 dB of insertion loss would consume almost 18 watts of amplifier power (10 X 1.770).

Insertion Loss	Power Consumption
1.0 dB	1.259x
1.5 dB	1.413x
2.0 dB	1.580x
2.5 dB	1.770x

The combination of line losses and transformer insertion losses are major consumers of amplifier power. For example, a 25-volt system with an average line distance of 200 feet and using 18-gauge wire would have about 30 watts of line loss. This would leave some 70 watts of available power from a 100-watt amplifier.

Assuming the use of lower quality 5-watt speaker-transformer combinations with transformer insertion loss of 1.5 dB, each speaker would consume 7 watts if tapped at the 5-watt tap. Therefore, a maximum of 10 speakers could be connected before overloading the 100-watt amplifier (7 watts X 10 speakers = 70 watts).

To provide minimum power loss and the best low frequency transfer, Davis transformers are made using grain oriented steel for core material. The result is "quality you can hear."