

Transformer Substitutions

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When choosing a substitute, make sure that its secondary voltage specifications are the same and that its current ratings equal or exceed those of the original.

For example, a transformer with a 250-0-250 volt, 60-ma. secondary may be used as a satisfactory replacement for a unit rated at 250-0-250 volts, 40 ma. Similarly, a filament transformer rated at 6.3 volts, 3 amperes, is a satisfactory substitute, electrically, for a unit rated at 6.3 volts, 1.5 amperes.

A 5% difference in secondary voltage ratings will usually not affect circuit operation. Thus, if a project calls for a transformer rated at, say, 360-0-360 volts, substitutes with ratings of either 375-0-375 or 350-0-350 generally will be satisfactory.

Where a special transformer having several secondary windings is required, and an exact duplicate is unobtainable, separate transformers can be used in place of the single multi-winding unit, provided that adequate mounting space is available. The transformer's 117-volt primary windings are connected in parallel.

If special filament or bias voltages are required, two (or more) windings can be connected in series to supply the necessary voltages, as shown in Fig. 4 (A). Connect adjacent winding leads together temporarily and check the output voltage obtained between the "free" leads, using your a.c. voltmeter. If the output voltage is less than expected, the windings may be "bucking." In this case, interchange the connections to one winding.

It may be necessary to reduce the circuit's B+ voltage after installing a substitute transformer. There are several ways of doing this. A small resistor (5 to 25 ohms, 10 watts) can be connected in series with one of the primary leads, or the effective turns ratio of the transformers can be reduced by connecting one of the filament windings in series with the primary, as shown in Fig. 4(B). The preferred methods would be to substitute a rectifier tube with a larger internal voltage drop or lower the value of the input filter capacitor (C1 in Fig. 1). If the hum level in the d.c. output goes up, raise C2's value.

Often, a center-tapped filament winding may be needed, but may not be available on the substitute transformer. In such a

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