IDENTIFYING POWER TRANSFORMER LEADS

It is necessary to identify the leads or terminals of a transformer before it can be tested or properly installed. Incorrectly connecting a transformer generally causes serious damage to it, and quite often, to other parts.

There are several windings on a power transformer, which are the primary, high voltage secondary, and the low voltage secondary windings used to supply heater power. Transformers used to supply power to radio apparatus will have at least two windings, a primary and a secondary.

The first step is to relate the leads to their respective windings. There are at least two leads for each winding. Some windings are tapped, which means there will be as many leads or terminals as there are taps plus the ones for the beginning and end of the coil.

The high voltage winding has the greatest number of turns, hence will most likely have the highest resistance because of the greater length and smaller diameter of the wire used.

The primary is the next highest voltage winding, and probably will have the next highest resistance. The filament windings have only a few turns of heavy wire and thus have the lowest resistance. Therefore, the various windings may be located with the aid of an ohmmeter. This is done by first using the ohmmeter as a continuity checker to group the leads. Any leads showing continuity are grouped as belonging to the same winding. The leads of any group are next checked to determine the resistance for comparing with that of the other windings when trying to decide which winding is the primary, high voltage, or low voltage winding. When checking windings that are tapped, remember that the leads that have the highest resistance are the beginning and ending of the winding. If a winding is center tapped, it will have approximately the same resistance for either half.

As an additional check on transformers already installed, the power may be turned on and voltage measurements made on the windings. Before installing transformers, the same test can be made by temporarily connecting to the a-c line. Voltmeter readings will definitely identify the various windings.

Unless the transformer is known to have high voltage and filament windings, it is best to apply the a-c power to the winding having the highest resistance. Measurement of the voltages on the other windings will indicate whether the winding connected to the a-c is actually the primary. This is an extremely valuable precaution when testing a transformer having only a primary and secondary of unknown voltage.

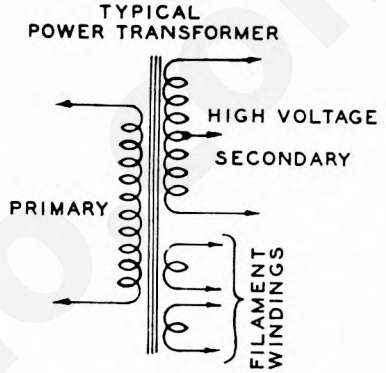

FIGURE 1

Making a mistake in the identity of the leads of a power transformer might result in any of the following:

1. Burned out line fuse due to excessive current.
2. Burned out transformer winding.
3. Burned out filaments of one or more tubes.
4. Shorted or open coils and resistors.

To prevent such trouble, take every precaution to properly identify the leads before installing any part.

IDENTIFYING RECTIFIER SOCKETS AND "B" SUPPLY TERMINALS

Since the rectifier is the next link in the a-c power supply, it is important to know the makeup of the rectifier and the connections of socket terminals and rectifier tube elements.

The rectifier tube socket may be located visually by observing where the power transformer is located, since the high voltage leads will connect to the rectifier socket. The terminals to which they connect will be the plate terminals of the rectifier socket. In tracing the transformer leads, bear in mind that the filament leads as well as the high voltage leads will connect to the same socket. Also, the rectifier may be the half-wave or the full-wave type. In the former case, only one high voltage lead from the transformer will connect to the socket. The power supply may be of the full-wave type using two separate half-wave rectifier tubes such as is done in high voltage high power supplies. Again, only one high voltage lead from the transformer will connect to each socket.

Naturally, a rectifier socket will not be found in equipment designed to receive plate supply voltage directly from a dynamotor, batteries, or from the power supply of another piece of equipment. A piece of equipment so designed will have at least four power input terminals; two for the low voltage filament power, and two for the high voltage plate supply.

After the rectifier socket has been located, the various terminals may be identified by a combined visual inspection and voltage check. By removing