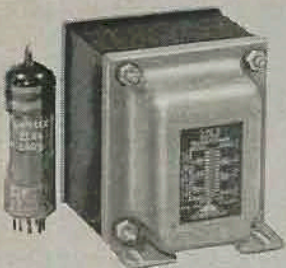


TRANSFORMER NEWS FROM TRIAD



High Fidelity Output Transformers For the 6BQ5 and 6CA7 Tubes



Triad Type No.	*Primary Impedance	Secondary Impedance	Max. Level Watts
FOR PP EL-84 (6BQ5)			
HSM-181	8000/2000 CT. Split Primary	16/8/4	15
HSM-182	8000/2000 CT. Split Primary	500/250/125	15
S-142A	8000 CT.	16/8/4	15
FOR PP EL-34 (6CA7)			
HSM-186	6600 CT.	16/8/4	25
HSM-187	6600 CT. Split Primary	500/250/125	25
S-146A	6600 CT.	16/8/4	25
FOR PP Par EL-34 (6CA7)			
HSM-192	4000 CT.	16/8/4	65
HSM-193	4000 CT. Split Primary	500/250/125	65
S-152A	4000 CT.	16/8/4	65

*Proper taps on Primary for tapped screen operation.

Ask your distributor for Triad's new catalog TR-58



A SUBSIDIARY OF LITTON INDUSTRIES

AUDIO

JOSEPH GIC

Transformer Impedance

Q. I was recently given what seems to be a fine output transformer, but I don't know its impedance. The wires are divided into two groups, the first of which contains those colored red, blue, and reddish yellow, while the second contains those colored black, brown, orange, and yellow. The first group is evidently the primary, and the second, the secondary, but how will I proceed from here? Al Kerper, Brooklyn, N. Y.

A. My first recommendation would be to locate the model number and the name of the manufacturer of the transformer, and then consult his catalogue for the desired information. If, for any reason, you are unable to follow this course, proceed as follows:

Assume first that you have correctly identified the groups of wires. Red goes to one plate, blue to the other, and reddish yellow to B plus. (proper phasing of the primary leads can be found only by trial & error. If the phase is reversed, the amplifier will oscillate. Black is probably the common on the secondary winding. It is probable that the brown is the 4-ohm tap, orange the 8-ohm tap, and yellow the 16-ohm tap. However, to be certain, measure the resistance of each lead with respect to black, or common, arrange the leads in order of ascending resistance values, and they will be in order of ascending impedance values, although the resistances do not equal the impedances. You will find that the lowest resistance you will come across will be less than one ohm, whereas the impedance represented by this resistance is 4 ohms.

You now have the probable impedances of the secondary and next you must find the impedance of the primary. This is done by connecting a resistor of appropriate value across the secondary, feeding in a signal from an audio oscillator at a given voltage, and then noting the voltage appearing across the primary. The square of the voltage ratio between the signal fed in and the voltage appearing across the primary gives the impedance ratio of the two windings.

Illustration: Start with the 8-ohm tap. Connect an 8-ohm resistor from this tap to common. Connect your audio generator across this resistor and feed the secondary with 1 volt of signal of approximately 400 cps. Measure the voltage appearing between the red and blue leads (primary). Be sure to use a fairly sensitive a.c. voltmeter for this purpose, so as not to load down the primary circuit. Let us assume that you get a reading of 30 volts. Since the ratio of the voltage fed in to that appearing across the primary is 30:1, the turns ratio is also 30:1. The impedance ratio is equal to the square of the turns ratio, so we find that the impedance of the primary is 30², or 900 times that of the secondary. Since the impedance of the

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secondary is 8 ohms, the primary impedance must be 7200 ohms. This primary impedance is correct only when the secondary is terminated in an 8-ohm load. Within limits, the transformer can be used to match a range of impedances. The only thing which is really constant is the turns ratio. Do not confuse the impedance of the transformer with that of the internal impedance of the amplifier. This latter is a function of the amount of negative feedback applied. A discussion of internal impedance can be found in an earlier **AUDIOCLINIC**.