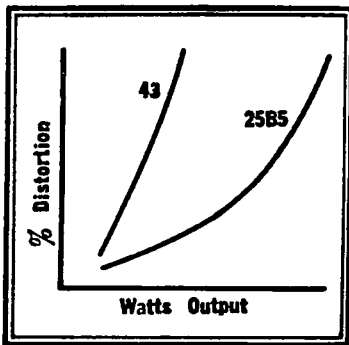


#88

TRIADYNE 25B5 - 25N6 G

TECHNICAL BULLETIN 106

TRIAD MANUFACTURING COMPANY, INC., PAWTUCKET, R.I.



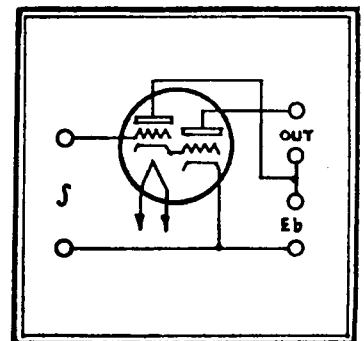
Relative Overall Audio Performance
Of A Typical AC-DC Receiver Using
A 43 Tube Converted For 25B5

In the development of ac-dc receivers, the stumbling block has been for years the power output tubes available. The 43 tube rated at 0.9 watts no longer fills the requirements for high quality audio in the better ac-dc lines. With this in mind, a new member of the Triadyne Family has been added, the 25B5 and its octal base counterpart 25N6 G. This tube operates on the "dynamic coupling" principle which has been commercially tested and approved by the now famous Triadyne 6B5.

When used as a single ended Class A amplifier with a 110 volts d-c supply, the 25B5 will develop 2 watts of audio at 9% total harmonic distortion; this being almost twice the power obtainable from other available popular pentodes at any distortion level. Experimental work on various pentode adaptations in our laboratory has indicated that it is possible, by extremely close spacings and by design methods not fully approved by our Engineering Staff, to produce ac-dc pentodes somewhat approaching the 25B5 in total power. However, in each attempt it was found that the distortion was higher and the factor of safety in design was far too low. Moreover, with any pentode the distortion rise on overload was found to be intolerable when compared to the new Triadyne 25B5.

Where price is the sole factor, it is not believed that the new ac-dc Triadyne will fully supersede the 43 any more than the latter type has replaced the 38. However, the simplicity of the circuit (no grid bias required), and the subsequent reduction in parts cost, make it possible for a manufacturer to use the new tube in conjunction with a better speaker suitable for its use at a slight increase in overall cost, which will result in a true high quality ac-dc job. In large receivers where even greater power is desired, the new tube may be operated in the conventional push-pull manner. The tube's excellent performance at 180 volts suggest its use for other fields than 110 ac-dc lines; for example, it should fit nicely in medium size a-c receivers.

The radio set division of Triad Mfg. Co. is at the present time making set conversions to use the 25B5. From the information thus gained, bulletins will be issued from time to time. To those manufacturers desiring our cooperation in rushing conversion work, a laboratory fully equipped for set measurements is available. The performance curve of a typical conversion is shown on this page. The set was originally designed by one of the leading manufacturers and it represents the best of the ac-dc sets on the market using a single output tube.





DISTORTION VERSUS POWER OUTPUT

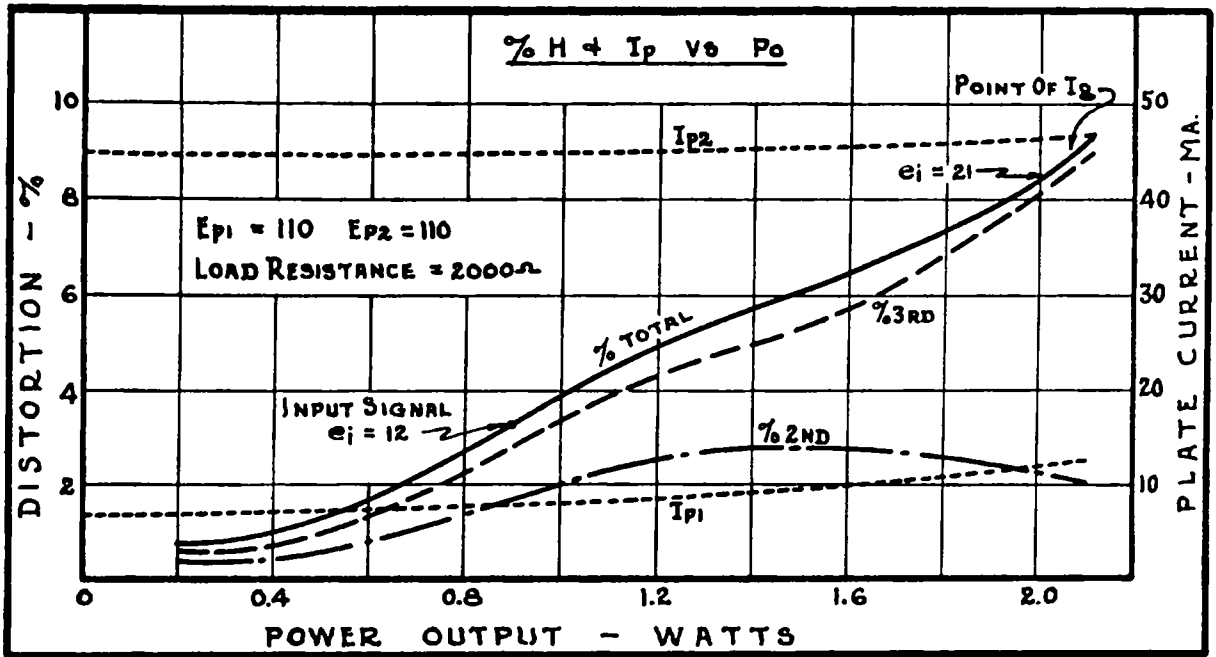


Figure NO. 1

DISTORTION VERSUS LOAD RESISTANCE

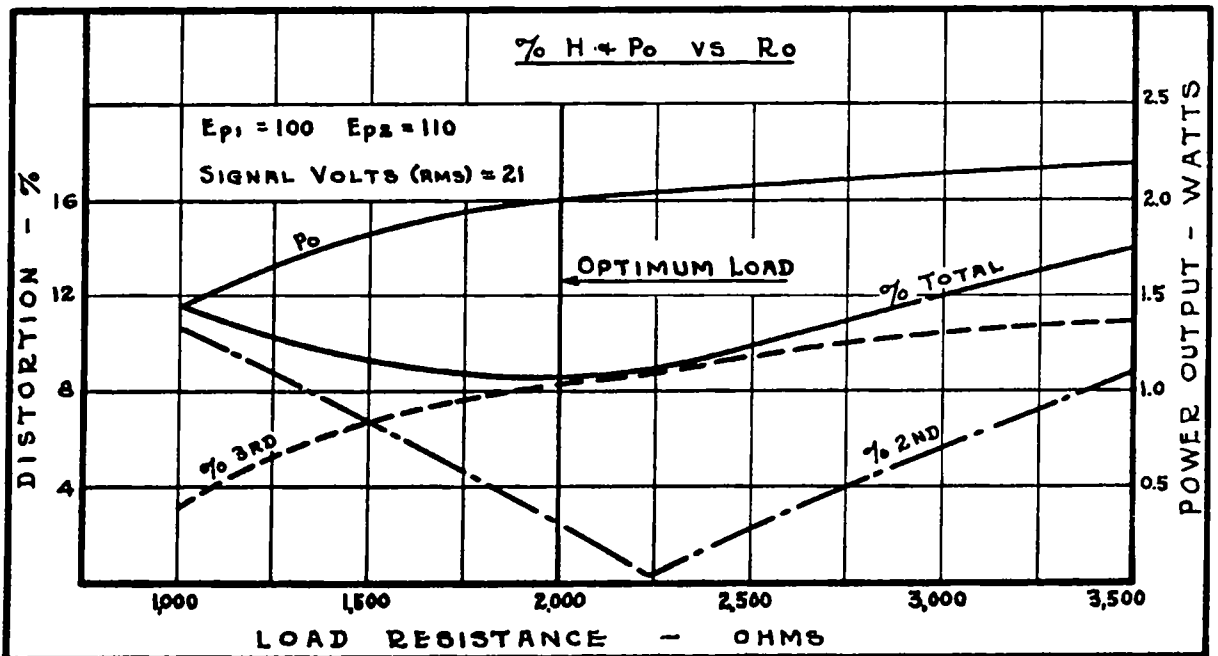


Figure NO. 2



AVERAGE PLATE CHARACTERISTICS

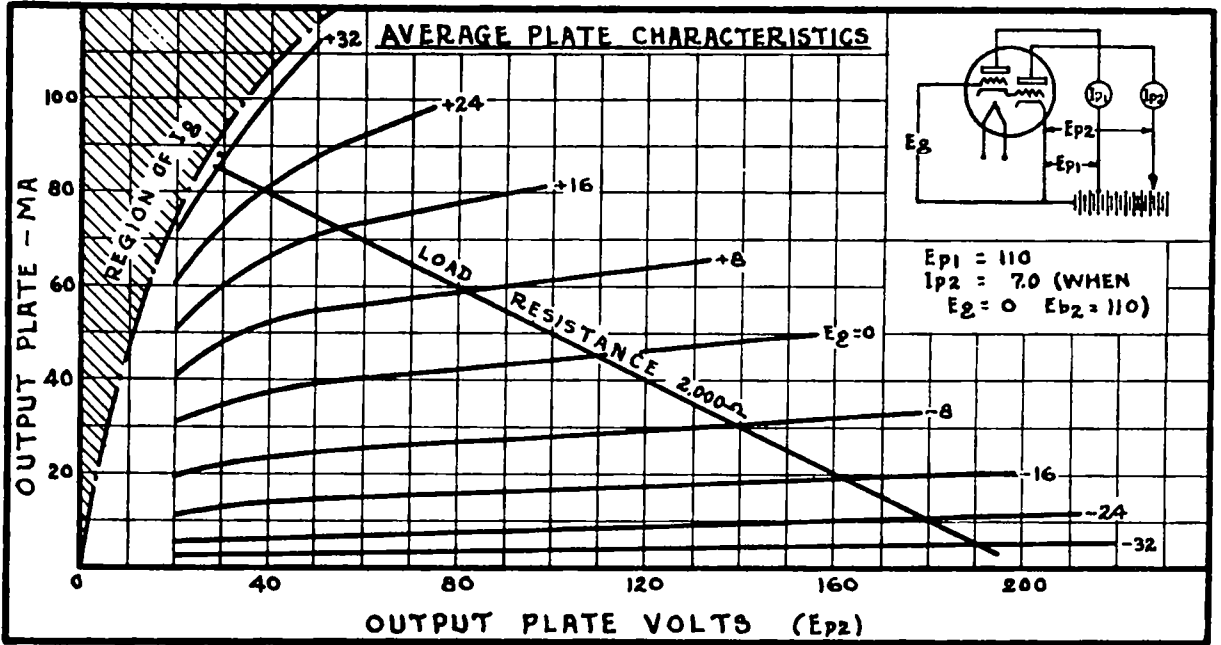


Figure NO. 3

To assist in preliminary work a table of recommended values for detector and voltage amplifier circuits is shown below. For the better receivers, we recommend using diode detection and we have found that the 6Q7 is the most satisfactory tube.

Diode Detector & First Audio - 100 Volt Operation

Tube	Grid Volts	*Cathode Res. Ohms	Plate Res. Megohms	Screen Volts	Screen Res. Megohms	Approx. Audio Gain
6Q7	-1.05	6000	0.25	—	—	40
6R7	-3.5	8000	0.1	—	—	11
6B7	-2.0	10000	0.25	30	—	45

Plate Detector - 100 Volt Operation

**6C6	—	25000	0.5	40 or 1.0	—
-------	---	-------	-----	-----------	---

NOTE - For the above data, the grid resistor of the following tube is assumed to be 1.0 megohm and the grid coupling condenser between this resistor and the plate resistor, 0.02 mfd.

* If the tube is operated self-biased, the cathode resistor must be shunted by suitable capacity to avoid degeneration effects.

** Other combinations of resistors for operating the 6C6 as a plate detector may give slightly higher gain but these values were selected as being the best compromise between gain and maximum audio output from a 36% modulated RF signal.

TRIADYNE 25B5 - 25N6 G

AVERAGE ELECTRICAL CHARACTERISTICS

Heater	Coated uni-potential cathode
Voltage	25.0 a-c or d-c
Current	0.3 amperes

AMPLIFIER (CLASS A)*

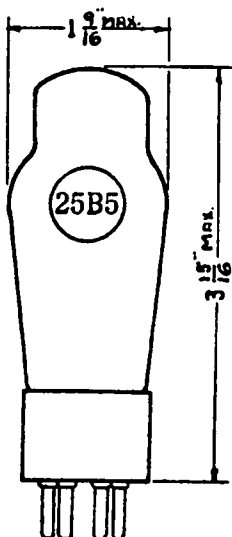
Output Plate (P ₂)	110**	180 max.	volts
Input Plate (P ₁)	110	100+	volts
Grid	0	0	volts
Plate Current (P ₂)	45	46	ma.
Plate Current (P ₁)	7	5.8	ma.
Amplification Factor	25	35	
Plate Resistance	11,400	15,200	ohms
Mutual Conductance	2,200	2,300	umhos
Load Resistance	2,000	4,000	ohms
Power Output	2.0	3.8	watts
Harmonic Distortion	9	9	%
Signal Volts For Rated Power	21	21	r. m. s.

*Grid current does not flow during any part of the cycle of the input signal.

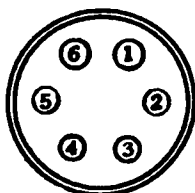
**Since no bias voltage is required, the full 110 volts necessary for plate and grid voltage on a 43 tube is available for plate voltage with this tube.

+Both plates may be operated at 180 volts provided that the grid is biased to 20 volts. Either fixed bias or self-bias (400 ohm cathode resistor) may be used.

The total resistance introduced into the grid circuit by the input coupling device should not exceed 1.0 megohm.

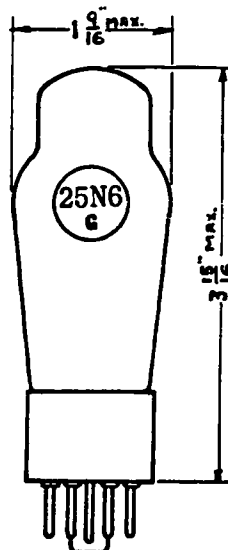


25B5 BASE CONNECTIONS

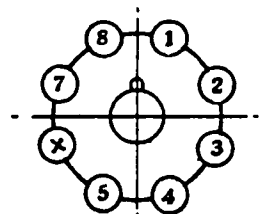


Bottom View of Base

- Pin 1 - Heater
- Pin 2 - Output Plate (p₂)
- Pin 3 - Input Plate (p₁)
- Pin 4 - Input Grid
- Pin 5 - Cathode
- Pin 6 - Heater



25N6 G BASE CONNECTIONS



Bottom View of Base

- Pin 1 -
- Pin 2 - Heater
- Pin 3 - Output Plate (p₂)
- Pin 4 - Input Plate (p₁)
- Pin 5 - Input Grid
- Pin 7 - Heater
- Pin 8 - Cathode