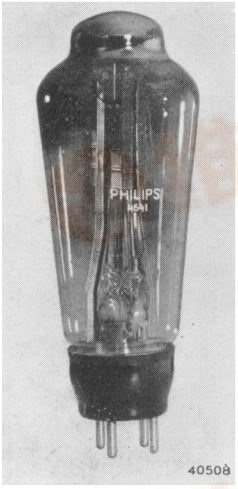
PHILIPS "Miniwatt" SPECIAL VALVES

TRIODE FOR POWER AMPLIFIERS 4641



CHARACTERISTICS

Heater voltage	V_f	=	4	V
Heater current	I_f	=	21	A
Anode voltage	V_a	=	1500	V
Grid bias	V_g	=	-140	V
Anode current	I_a	=	15	mA
Slope	S	=	2	mA/V
AC resistance	R_i	=	4.6	kΩ

The following characteristics relate to a pair of valves in Class AB push-pull, with fixed grid-bias:

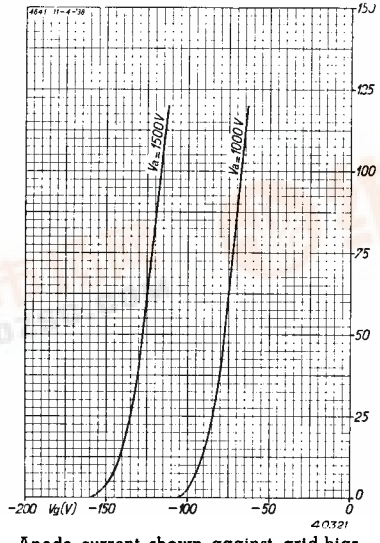
Anode voltage	V_a	=	1500	V
Grid bias	V_g	=	-144	V
Standing anode current	I_{ao}	=	2×10	mA
Anode current at peak input	$I_{a\,max}$	=	2×41	mA
Optimum load (anode to anode)	R_{aa}	=	40	kΩ
Maximum output	W_o	=	68	W
Total distortion	d_{tot}	=	1.9	V
Input required for full output	V_i	=	105	V rms

SPECIAL ADVANTAGES

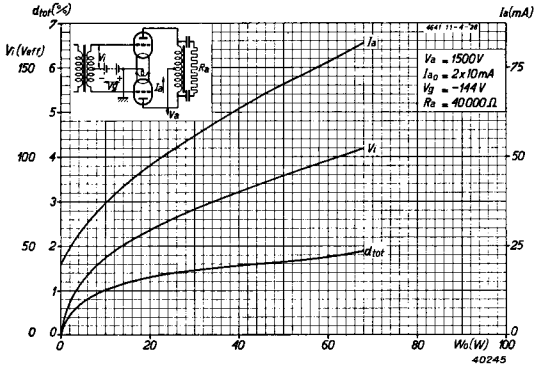
1. Very low distortion
2. High efficiency

DESCRIPTION

The 4641 is a directly heated output triode with a maximum anode dissipation of 25 W; it has been designed especially for amplifiers with class AB push-pull output. The rated output is obtained only when fixed grid-bias is used. With an anode potential of 1500 V grid bias of -144 V and 105 V (RMS) input to the grids, the output power of a Class AB push-pull stage reaches 68 W, at only 1,9% total distortion. The anode current in the absence of a signal is 10 mA per valve, rising to 41 mA per valve when the stage is fully loaded; the optimum anode-to-anode load is 40 kΩ. The same circuit, but with 1000 V on the anodes and grid bias fixed at -93 V, provides an output of 40 W at 2,35% total distortion, for an

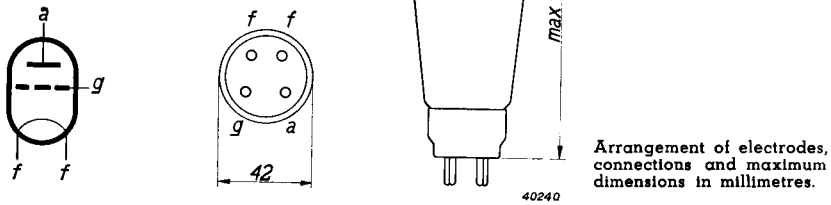


Anode current shown against grid bias for anode potentials of 1000 V and 1500V.



Anode current Ia, required grid input Vi, (Veff = RMS) and total distortion d tot, as function of output power; for 2 valves in class AB push-pull with 1500 V on the anodes and fixed grid bias.

input of 65 V (RMS); in this case the optimum load is 20 kΩ.
When using automatic bias, maximum output will be less. With an anode voltage of 1000 V and a self-bias resistance of 1700 Ω, in the lead between the mid-tap of the heater transformer and earth, the power developed across an anode-to-anode load of 3500 Ω is 29 W, the distortion amounting to 4,5%. The grid input required is 28 V (RMS) per valve, and the anode current varies between 25 and 28 mA.
Owing to the high anode voltage, a special 4-pin base is used, and the internal layout of the valve has been designed to avoid risk of arcing.



Arrangement of electrodes, connections and maximum dimensions in millimetres.