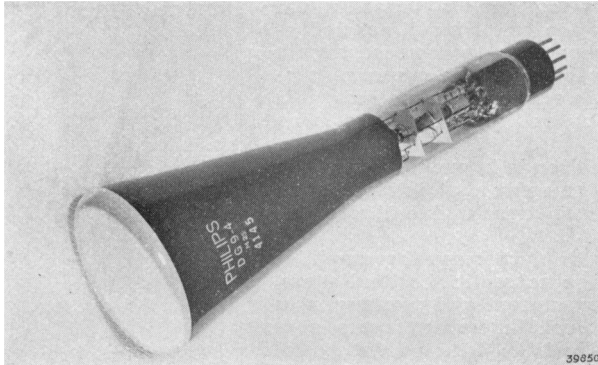


# "Miniwatt" SPECIAL VALVES

ELECTRON-RAY TUBE

**DG 9-4**



### CHARACTERISTICS

Heater voltage . . . . .	$V_f$	= 4.0	V
Heater current . . . . .	$I_f$	= 1.0	A
Anode voltage . . . . .	$V_{a_2}$	= 1000	V
Auxiliary anode voltage . . . . .	$V_{a_1}$	= 400	V
Grid bias . . . . .	$V_g$	= 0 to -40	V
Sensitivity of first pair of plates . . . . .	$N_1$	= 0.40	mm/V
Sensitivity of second pair of plates . . . . .	$N_2$	= 0.31	mm/V
Grid to cathode capacity . . . . .	$C_g$	= 7.5	pF
Capacity between plates of first pair . . . . .	$C_{D_1D_1'}$	= 2.6	pF
Capacity between plates of second pair . . . . .	$C_{D_2D_2'}$	= 2.8	pF
Maximum writing speed . . . . .		= 0.5	km/second
Colour of spot . . . . .		green	

### SPECIAL ADVANTAGES

1. High deflection sensitivity
2. Very clear spot
3. Very bright trace
4. Convenient size

### DESCRIPTION

The screen diameter of the DG 9-4 is 10 centimetres; thus the tube is not too large for use in portable oscillographs, yet the oscillograms obtained are big enough to show every detail distinctly. The beam is focused by electrostatic means. The electron lens comprises several potential drops arranged one behind the other; thus during their transit the electrons are repeatedly con-

# PHILIPS "MINIWATT" SPECIAL VALVES

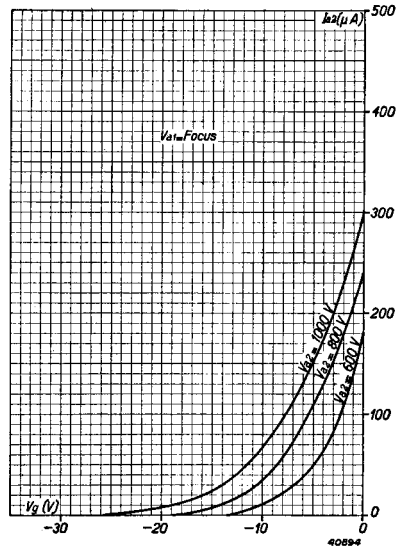
centrated, and as a result a very sharp spot is obtained. Deflection is also electrostatic. The sensitivity of the deflecting plates, which are intended to be symmetrically fed, is very high:  $N_1 = 0.40 \text{ mm/V}$ ,  $N_2 = 0.31 \text{ mm/V}$ .

The advantage of high sensitivity is particularly evident when the voltages under examination are too small for direct deflection of the beam; it is then necessary to employ an amplifier with a response uniform over a wide range of frequencies, if a faithful picture of the input voltage is to be secured.

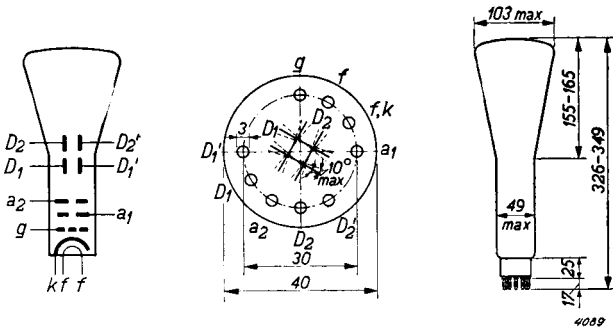
The anode-circuit loads in such an amplifier must be small, in order that interelectrode capacities shall not cause undue attenuation of high frequencies.

If a high output is necessary, the amplifier must include large valves in the final stage, drawing a heavy current and working at a high potential. Such, however, is the sensitivity of the tube DG 9-4 that a voltage of only about 100 V (RMS) suffices for full deflection; two normal AF valves in push-pull will easily provide this voltage across a load of a few thousands of Ohms.

The green colour of the spot is convenient both for visual examination and for photographic applications.



Anode current shown against negative grid bias.



Arrangement of electrodes; connections and maximum dimensions in millimetres