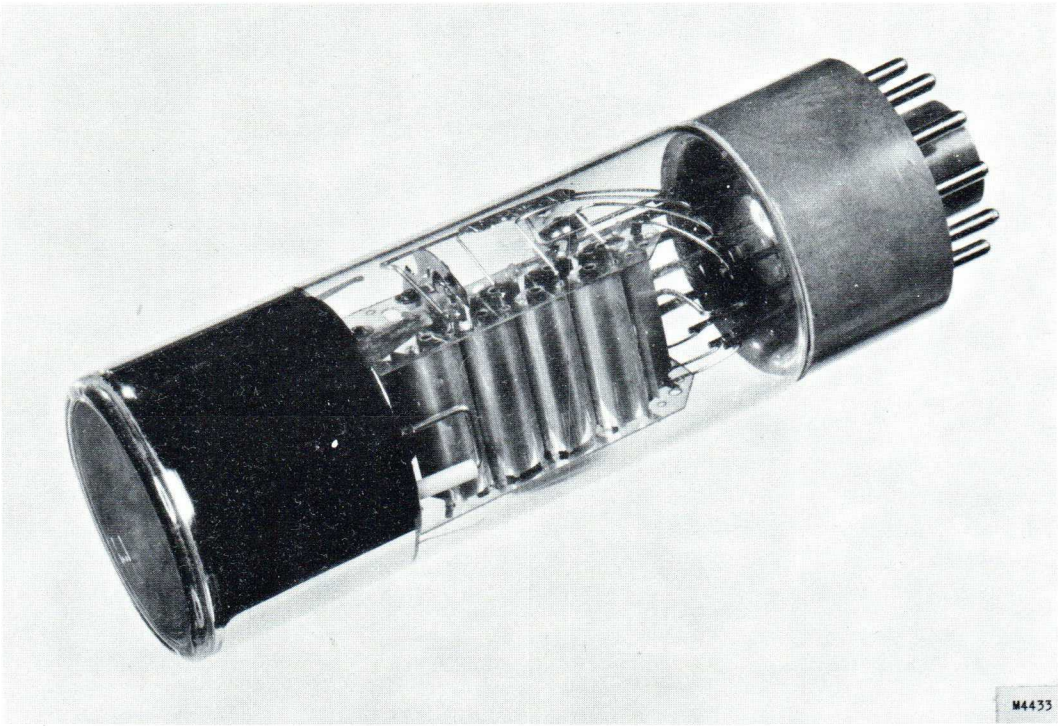
PHILIPS

150CVP

TENTATIVE DATA

PHOTOMULTIPLIER



The 150CVP is a 10–stage photomultiplier tube, provided with a caesium–on-oxidized silver, semi-transparent flat cathode having a diameter of 32 mm. The sensitive uniform photocathode has a typical sensitivity of 30 μA/lm and a spectral response curve lying mainly in the red and near infra-red region, with a maximum at 8000 Å, as shown in Fig.1.

The tube is intended for use in such applications as infra-red telecommunication and ranging, and in optical instruments operating in the far red and near infra-red region (astronomical measurements, spectrometry, optical pyrometry, infra–red radiation intensity control instruments).

The total gain of the tube is about 3.10^6 at a total voltage of 1800 V.

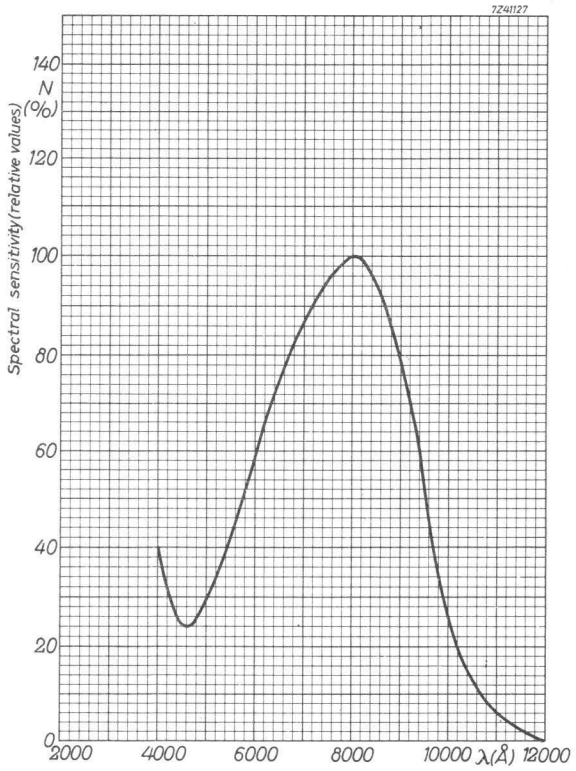
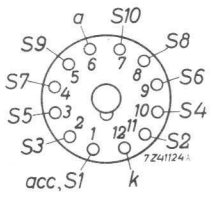


Fig. 1. Spectral response "C".

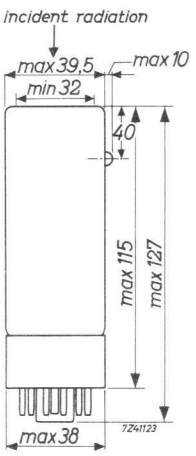
PHOTOCATHODE

semi-transparent, head-on, flat surface	
cathode material	*AgOCs*
minimum useful diameter	32 mm
wavelength of maximum response	8000 ± 1000 Å
luminous sensitivity [1])	
average	30 μA/lm
minimum	20 μA/lm
radiant sensitivity [2])	
average	3 mA/W
dark current [3])	$0.5 \cdot 10^{-12}$ A/cm^2



12-pin socket
type No. B8 700 42

Fig. 2.



μ metal screening cylinder type 56 127; length 90 ± 1 mm; diameter 42^{+1}_{-0} mm.

---

[1]) Measured with a tungsten ribbon lamp, having a colour temperature of 2850 °K.

[2]) At a wavelength of 8000 Å.

[3]) At an ambient temperature of 25 °C.

MULTIPLIER SYSTEM

number of stages		10
dynode material		*AgMgOCs*
capacitance anode to final dynode		3 pF
capacitance anode to all other electrodes		5 pF

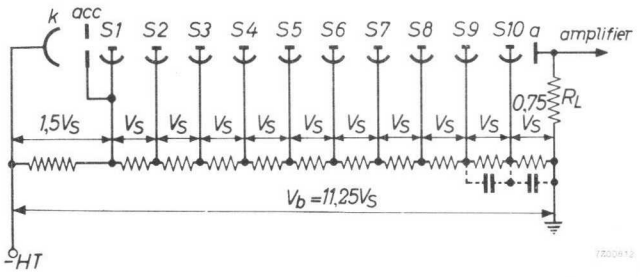
TYPICAL CHARACTERISTICS (voltage divider type A)

anode sensitivity (at a total voltage of 1800 V)	avg.	100 A/lm
	min.	20 A/lm
anode dark current (at an anode sensitivity of 20 A/lm)	max.	5 μA
linearity between anode pulse amplitude and input light flux		
with voltage divider type *A*		up to 30 mA
with voltage divider type *B*		up to 100 mA

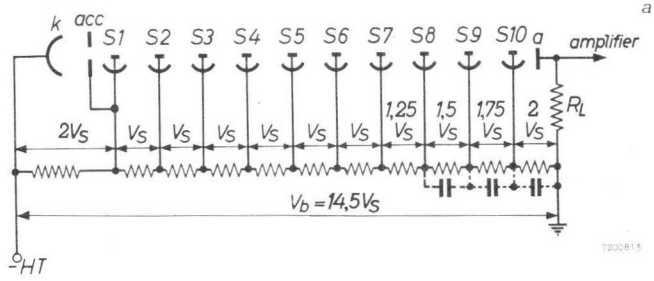
LIMITING VALUES

max. total voltage		1800 V
max. anode current at continuous operation (in order not to overload the tube)		1 mA
max. anode dissipation		0.5 W
voltage between cathode and S_1	min.	120 V
	max.	500 V
voltage between dynodes	min.	80 V
	max.	300 V
voltage between S_{10} and anode	min.	80 V[1])
	max.	300 V

OPERATING CHARACTERISTICS



voltage divider type A [1])



voltage divider type B [1])

k = cathode
acc = accelerating electrode
S_n = dynode No. n
a = anode

---

[1]) When calculating the anode voltage the voltage drop in the load resistance should not be overlooked.

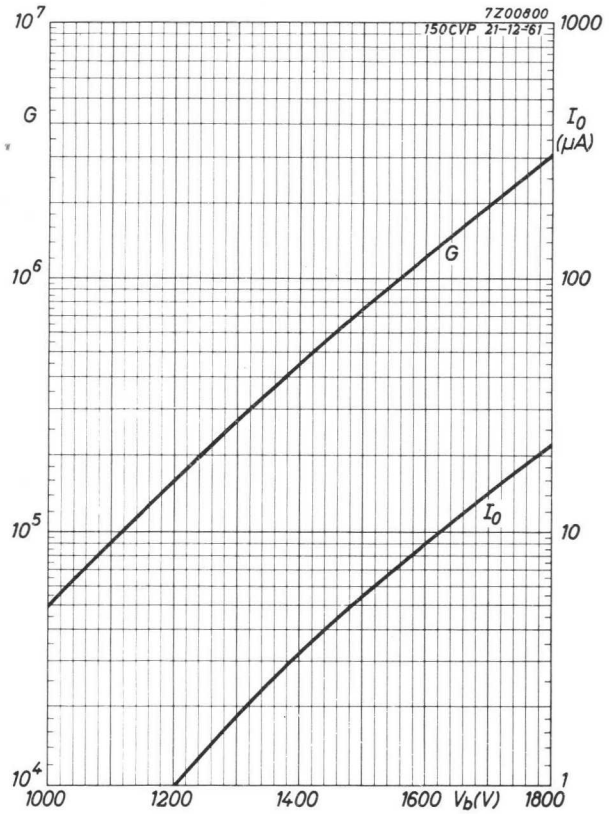


Fig. 3. Gain (G) and dark current (I_o) as a function of the total voltage (V_b).

OPERATIONAL CONSIDERATIONS

To achieve a stability of about 1 % the ratio of the current through the voltage-divider bridge to that through the heaviest loaded stage of the tube should be approx. 100

For moderate intensities of radiation a bridge current of approx. 0.5 mA will be sufficient.

Different kinds of voltage dividers are possible. A circuit of type A results in the highest gain of the tube at a given total voltage; a circuit of type B gives higher currents in the last stages, but the total gain is less at the same total voltage.

When pulses with high amplitudes are taken from the anode, it is useful to decouple the last stages as indicated in the circuit by means of capacitors of a few hundred pF, to avoid a voltage drop between these stages.

When the tube has been exposed to full daylight just before mounting, it will probably show an increased dark current, which will be back at its normal value after several hours of operation.

It is advisable to screen the tube with a mu-metal cylinder against the influence of magnetic fields.

Printed in Holland

23/038/B/E