

3BYP2
3BYP7
3BYP11
3BYP31

DESCRIPTION

Cathode-ray tube with flat face and post deflection acceleration by means of a helical electrode. The tube is intended for use in transistorized oscilloscopes.

ELECTRICAL DATA

Heating

Heater voltage

6.3 V

Heater current

0.095 A

Focusing method

electrostatic

Deflection method

double electrostatic

D_1D_2 symmetrical

D_3D_4 symmetrical

$90^\circ \pm 1$

Angle between D_1D_2 and D_3D_4 traces

Direct interelectrode capacitances

D_1 to all other electrodes except D_2

4.0 μF

D_2 to all other electrodes except D_1

4.0 μF

D_3 to all other electrodes except D_4

3.5 μF

D_4 to all other electrodes except D_3

3.5 μF

D_1 to D_2

1.9 μF

D_3 to D_4

1.7 μF

Grid No.1 to all other electrodes

5.7 μF

Cathode to all other electrodes

3.0 μF

OPTICAL DATA

P2

P7

P11

P31

Fluorescent colour

yell. green

purplish blue

blue

green

Phosphorescent colour

yell. green

yell. green

blue

green

Persistence

med. short

long

med. short

med. short

Useful screen diameter

68 mm

MECHANICAL DATA

Cathode

coated, unipotential

Outline

see drawing

Base

14 pin base, see drawing

Bulb contact

recessed cavity button

Socket

is supplied with the tube

Mounting position

any¹⁾

LINE WIDTH (measured with shrinking raster method)

Grid No.6 voltage

1200

V

Grid No.4 voltage

300

V

Grid No.2 voltage

1200

V

Beam current

10

μA

Line width

0.65

mm

HELIX RESISTANCE

Post deflection acceleration factor

resistance min. 40

MO

May 1963

¹⁾ see foot-notes on page 3.

MAXIMUM RATINGS (design centre values)

Post accelerator (grid No.6) voltage	{ max.	2500	V
	{ min.	1200	V
Isolation shield (grid No.5) voltage	max.	2200	V
Accelerator (grid No.4) voltage	{ max.	2100	V
	{ min.	300	V
Ratio grid No.6 voltage/grid No.4 voltage	max.	4	
Focusing (grid No.3) voltage	max.	1000	V
Grid No.2 voltage	{ max.	1600	V
	{ min.	800	V ²⁾
Grid No.1 voltage { negative	max.	200	V
positive	max.	0	V
Peak voltage between grid No.4 and any deflection plate	max.	500	V
Voltage between cathode and heater			
cathode positive	max.	100	V
cathode negative	max.	15	V
Screen dissipation	max.	3	mW/cm ²
Cathode current	max.	200	μA_{rms}

MAXIMUM CIRCUIT VALUES

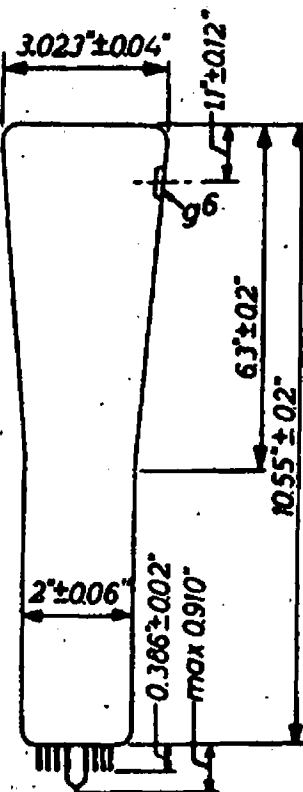
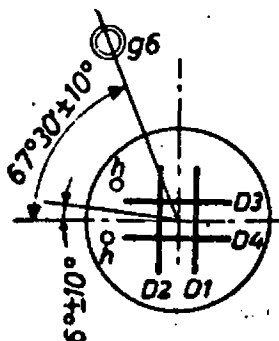
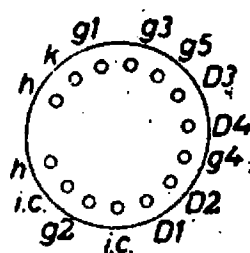
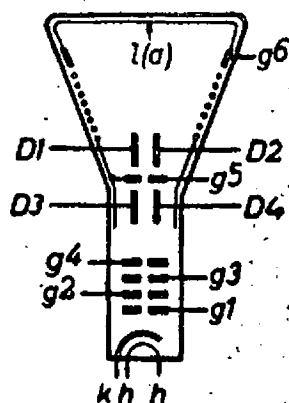
Grid No.1 circuit resistance	max.	1.5	M Ω
Deflection plate resistance	max.	50.000	$\Omega^3)$

TYPICAL CHARACTERISTICS

Grid No.6 voltage		1200	V
Grid No.5 voltage		300 $\pm$ 30	V
Grid No.4 voltage		300 $\pm$ 40 -15	V
Grid No.3 voltage		20 to 150	V
Grid No.2 voltage		1200	V
Neg. grid No.1 voltage		30 to 80	V ⁴⁾
Deflection factor { vertical $D_3 - D_4$		3.2 to 4.1	V/cm
horizontal $D_1 - D_2$		9.4 to 12	V/cm
Deviation of the linearity of deflection	max.	2	% ⁵⁾
Spot position (undeflected)		4 mm radius ⁶⁾	
Pattern distortion	max.	2	% ⁷⁾
Useful scan		45 x 60	mm

CIRCUIT DESIGN VALUES

Neg. grid No.1 voltage		30 to 60	V ⁸⁾
Deflection factor for grid	vertical	6.9 to 8.8	V/cm ⁹⁾
No.6 voltage/grid No.4 voltage	horizontal	17.9 to 22.8	V/cm ⁹⁾
Deflection factor for grid	vertical	10.7 to 13.7	V/cm ⁹⁾
No.6 voltage/grid No.4 voltage = 4	horizontal	31.3 to 40.0	V/cm ⁹⁾
Grid No.3 current		-15 to +10	$\mu A^{10)}$



NOTES

- 1) The socket should under no circumstances be used to support the tube.
- 2) In order to obtain satisfactory focus quality and maximum screen current it is recommended not to apply to this electrode a voltage less than the indicated value.
- 3) If use is made of the full deflection capabilities of the tube, the deflection plates will intercept part of the electron beam near the edge of the scan; a low impedance deflection plate drive is desirable in this case.
- 4) For visual extinction of the focused spot.
- 5) The sensitivity (for both D_1D_2 and D_3D_4 plate pairs) for a deflection of less than 75% of the useful scan will not differ from the sensitivity for a deflection of 25% of the useful scan by more than the indicated value.
- 6) With the tube shielded the spot will be within a circle of 4 mm radius that is centered with respect to the tube face.
- 7) With a raster pattern the size of which is adjusted so that the widest points of the pattern just touch the sides of a square 40.6 mm on a side, no point of these pattern sides will be within an inscribed square of 39.2 mm on a side.
- 8) Per kV of grid No. 2 voltage.
- 9) Per kV of grid No. 4 voltage.
- 10) For calculating of the grid No. 3 potentiometer a grid No. 3 current of min. $-15 \mu A$ and max. $+10 \mu A$ must be taken into account.