Thorn Radio Valves and Tubes Limited

Applications Laboratory
Brimsdown, Enfield, Middlesex.

DATE: 17th January, 1964
T.D.S. No. 6-SE5F-0-1

SUBJECT General

SE5F	GENERAL	Oscilloscope Tube

This short general purpose 5 in. diameter tube has a large screen area coupled with good performance and the added facility of beam blanking at anode potential. The standard phosphor for this tube is P31, but P2, P7 and P11 can be supplied to special order.

Heater Voltage V_h 6.3 V — RATINGS* — Heater Current I_h 0.3 A

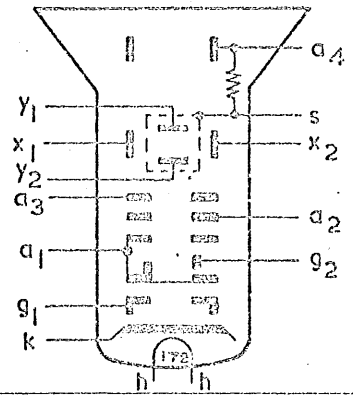
Maximum Fourth Anode Voltage	$V_{a4(max)}$	5.0	kV
Minimum Fourth Anode Voltage	$V_{a4(min)}$	1.5	kV
Maximum First Anode Voltage	$V_{a1(max)}$	2.5	kV
Maximum Second Anode Voltage	$V_{a2(max)}$	500	V
Maximum Third Anode Voltage	$V_{a3(max)}$	2.5	kV
Minimum Negative Control Grid Voltage	$-V_{g1(min)}$	1.0	V
Maximum Negative Control Grid Voltage	$-V_{g1(max)}$	300	V
Maximum X Plate to Third Anode Voltage	$V_{x-a3(max)}$	500	V
Maximum Y Plate to Third Anode Voltage	$V_{y-a3(max)}$	500	V
Maximum Peak Heater to Cathode Voltage	$V_{h-k(pk)max}$	250	V
Maximum X Plate to Third Anode Resistance	$R_{x-a3(max)}$	5.0	MΩ
Maximum Y Plate to Third Anode Resistance	$R_{y-a3(max)}$	100	kΩ
Maximum Control Grid to Cathode Resistance	$R_{g1-k(max)}$	1.5	MΩ
Minimum Spiral Resistance		15	MΩ
Maximum P.D.A. Ratio		2:1	

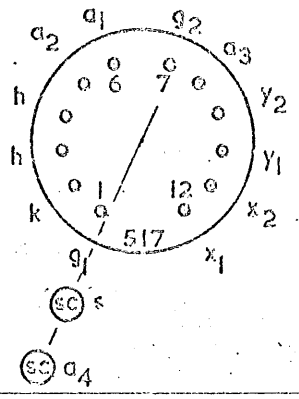
All voltages referred to Cathode

* Absolute Values.

CAPACITANCES	pF
g_1/all	8.0
k/all	4.75
X_1/X_2	2.75
Y_1/Y_2	1.5
$X_1,X_2/Y_1,Y_2$	0.75
X_1/all, less X_2	6.0
X_2/all, less X_1	6.0
Y_1/all, less Y_2	6.5
Y_2/all, less Y_1	6.5
$g_1,k/X_1,X_2$	0.9
$g_1,k/Y_1,Y_2$	0.5
g_2/all	10

BASE B12F — CAP CT6





O/D No. 172
B/D No. 517

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Thorn Radio Valves and Tubes Limited

Applications Laboratory
BRIMSDOWN, ENFIELD, MIDDLESEX.

Date: 28th September, 1967.
T.D.S. No. 6-SE5F-O-2A

SUBJECT: Typical Operation

Black 3a

TYPICAL OPERATION - All voltages with respect to cathode.

Fourth Anode Voltage	V_{a4}	2.0	3.0	4.0	kV
Mean Deflector Plate Potential		1000	1500	2000	V
Third Anode Voltage for astigmatism correction	V_{a3}	1000*	1500*	2000*	V
Second Anode Voltage for focus	V_{a2}	50 to 200	75 to 250	80 to 360	V
First Anode Voltage	V_{a1}	1000	1500	2000	V
Interplate Shield Voltage for optimum raster shape	V_s	1000*	1500*	2000*	V
Beam Blanking Voltage for cut-off	V_{g2}	950†	1430†	1900†	V
Control Grid Voltage for cut-off	V_{g1}	-30 to -55	-45 to -80	-56 to -100	V
X Plate Sensitivity	S_x	18.6 to 23.5	28 to 35	37 to 47	V/cm
Y Plate Sensitivity	S_y	7.4 to 10.0	11 to 15	14.5 to 20	V/cm
Maximum Second Anode Current	$I_{a2(max)}$	10	10	10	μA
Maximum Fourth Anode Current	$I_{a4(max)}$	150	200	300	μA
Minimum Screen Area (Corners cut-off)		8 x 10	8 x 10	8 x 10	cm^2
Line Width		0.6	0.5	0.4	mm

* The required voltage will not differ from the quoted value by more than ± 50V.
† The beam is unblanked when $V_{g2} = V_{a1}$. This grid 2 electrode should not be used as a brilliance control.

Raster Distortion.

At the recommended P.D.A. ratios, over a screen area of 6 cm x 10 cm raster distortion will not be greater than 2%. Raster geometry can be adjusted by varying the interplate shield voltage (V_s) with respect to the mean deflector plate potential. The interplate shield voltage (V_s) for optimum raster shape will be within ± 50V of the mean deflector plate potential, though differing from the third anode voltage (V_{a3}). It is essential to ensure that the correct raster shape has been achieved by this means before adjusting for optimum focus.

For an 8 cm x 10 cm raster the corners will be cut to 120 mm minimum diameter.

Rectangularity of X and Y axes is 90° ± 1°.

The Deflector System

Both X and Y plates are designed for symmetrical operation. Should the tube be required to operate asymmetrically, some degradation of focus and trace geometry will result.

If the mean plate potentials for both X and Y plates are the same, the third anode voltage for astigmatism correction will be within ± 50V of the mean plate potential.

If the X plate mean potential differs considerably from that of the Y, greater variation of the third anode voltage (V_{a3}) and the interplate shield voltage (V_s) will be required, and the X and Y sensitivities will decrease.

The Y plate mean potential should not be allowed to become greater than that of the X or severe deflection defocusing will result.

The deflector system is designed to intercept part of the beam, so that low impedance deflector plate drive is desirable.

Magnetic Shielding

Adequate magnetic shielding is required. In addition due attention should be paid to the position of the tube relative to transformers and chokes.

Tube Weight (approx) - Net 2 1/4 lb (1.0 kg)

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Thorn Radio Valves and Tubes Limited

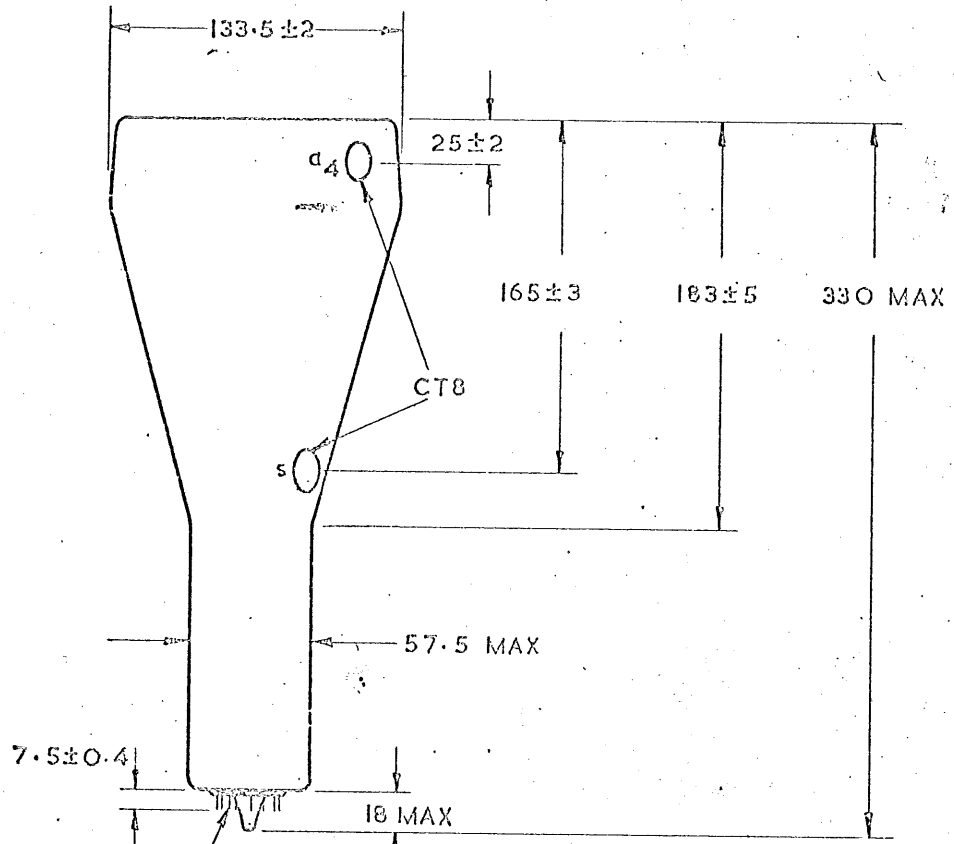
Applications Laboratory
BRIMSDOWN. ENFIELD. MIDDLESEX.

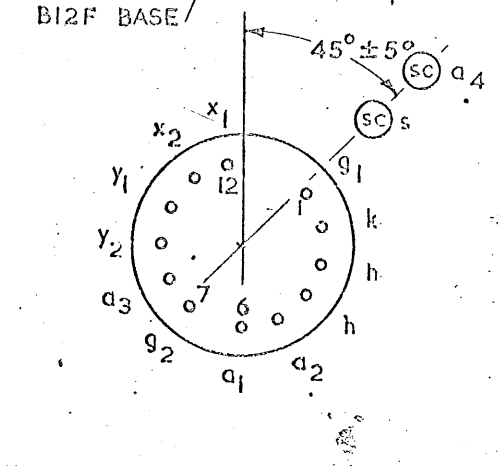
Date: 21st June, 1966.
T.D.S.No. 6-SE5F-90-1A

SUBJECT: Outline Drawing.

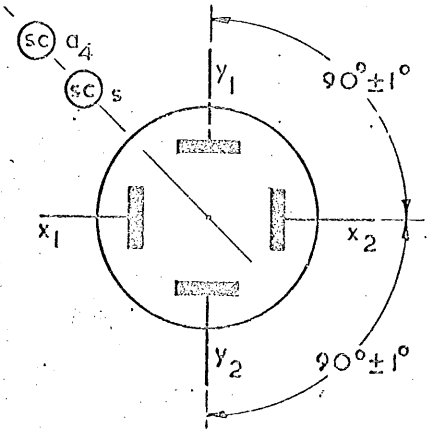
Black 3a

0206





VIEWED FROM PINS FREE END



VIEWED FROM SCREEN END
PIN 6 AT BOTTOM

Mounting Position - Unrestricted

It is advisable to support the tube near the screen and at a second point on the parallel neck near the base. The tube should not be subjected to any stress from the use of clamps and should not be suspended by the base.

Connecting leads should not be soldered directly to the tube pins.

All dimensions in mm

Not to be scaled