

## TENTATIVE DATA

### QUICK REFERENCE DATA

28cm (11in) rectangular direct viewing television tube with metal back-  
ed screen and reinforced envelope. A separate safety screen is not  
required. Especially for use in portable receivers with push-through  
presentation.

Deflection angle	90	deg
Focusing	Electrostatic	
Light transmission	55	%
Maximum overall length	25	cm

This data should be read in conjunction with  
GENERAL OPERATIONAL RECOMMENDATIONS - CATHODE RAY TUBES

### HEATER

$V_h$	11	V
$I_h$	68	mA

The heater supply circuit should provide a nominal voltage of 11V, either  
d.c. or a.c.

For supply from a.c. mains, see General Operational Recommendations -  
Cathode Ray Tubes.

For supply direct from a battery, the heater voltage cycle must be within  
the limits of the graph on page C1. In any discharge cycle, the time of  $V_h$   
above 13V must not exceed 30 minutes.

### OPERATING CONDITIONS

$V_{a2+a4}$	11	kV
$V_{a3}$ (focus electrode control range)	0 to 350	V
$V_{a1}$	250	V
$V_g$ for visual extinction of focused raster	-35 to -69	V
* $V_k$ for visual extinction of focused raster	approx. 45	V

\*For cathode modulation, all voltages are measured with respect to grid.

## SCREEN

Metal backed		
Fluorescent colour	White	
Light transmission (approx.)	55	%
Useful screen area	see page D7	

## FOCUSING

Electrostatic

The range of focus voltages shown in 'OPERATING CONDITIONS' results in optimum overall focus at a beam current of 100 $\mu$ A.

## DEFLECTION

Double magnetic

The deflection coils should be designed so that their internal contour is in accordance with the reference line gauge shown on page D10.

## CAPACITANCES

$c_{g-all}$	7.0	pF
$c_{k-all}$	3.0	pF
$c_{a2+a4-M}$	550 to 850	pF
$c_{a2+a4-B}$	150	pF

## EXTERNAL CONDUCTIVE COATING

This tube has an external conductive coating, M, which must be connected to chassis, and the capacitance of this coating to the final anode is used to provide smoothing for the e.h.t. supply. The electrical connection to this coating must be made within the area specified on the tube outline drawing.

## RASTER CENTRING

See notes under this heading in 'General Operational Recommendations - Cathode Ray Tubes'.

Centring magnet field intensity	0 to 10	Gs
Maximum distance of centre of centring field from reference line	55	mm

Adjustment of the centring magnet should not be such that a general reduction in brightness of the raster occurs.

## REFERENCE LINE GAUGE

see page D10

### QUICK REFERENCE DATA

28cm (11in) rectangular direct viewing television tube with metal backed screen and reinforced envelope. A separate safety screen is not required. Especially for use in portable receivers with push-through presentation.

Deflection angle	90	deg
Focusing	Electrostatic	
Light transmission	50	%
Maximum overall length	250	mm

This data should be read in conjunction with GENERAL OPERATIONAL RECOMMENDATIONS - TELEVISION PICTURE TUBES

### HEATER

$V_h$	11	V
$I_h$	68	mA

The heater supply circuit should provide a nominal voltage of 11V, either d.c. or a.c.

For supply from a.c. mains, see General Operational Recommendations - Television Picture Tubes.

For supply direct from a battery, the heater voltage cycle must be within the limits of the graph on page 11. In any discharge cycle, the time of  $V_h$  above 13V must not exceed 30 minutes.

### OPERATING CONDITIONS

$V_{a2+a4}$	11	kV
$V_{a3}$ (focus electrode control range)	0 to 350	V
$V_{a1}$	250	V
$V_g$ for visual extinction of focused raster	-35 to -69	V
* $V_k$ for visual extinction of focused raster	approx. 45	V

\*For cathode modulation, all voltages are measured with respect to grid.

## SCREEN

Metal backed		
Fluorescent colour	White	
Light transmission (approx.)	50	% ←
Useful screen area	see page 7	

## FOCUSING

Electrostatic

The range of focus voltages shown in 'OPERATING CONDITIONS' results in optimum overall focus at a beam current of  $100\mu\text{A}$ .

## DEFLECTION

Magnetic

Diagonal deflection angle	90	deg
Horizontal deflection angle	80	deg
Vertical deflection angle	63	deg

The deflection coils should be designed so that their internal contour is in accordance with the reference line gauge shown on page 10.

## CAPACITANCES

$c_{g\text{-all}}$	7.0	pF
$c_{k\text{-all}}$	3.0	pF
$c_{a2+a4\text{-M}}$	550 to 850	pF
$c_{a2+a4\text{-B}}$	150	pF

## EXTERNAL CONDUCTIVE COATING

This tube has an external conductive coating, M, which must be connected to chassis, and the capacitance of this coating to the final anode is used to provide smoothing for the e.h.t. supply. The electrical connection to this coating must be made within the area specified on the tube outline drawing.

## RASTER CENTRING

See notes under this heading in 'General Operational Recommendations - Television Picture Tubes'.

Centring magnet field intensity	0 to 800	A/m
Maximum distance of centre of centring field from reference line	55	mm

Adjustment of the centring magnet should not be such that a general reduction in brightness of the raster occurs.

## REFERENCE LINE GAUGE

see page 10

## MOUNTING POSITION

Any

The tube socket should not be rigidly mounted but should have flexible leads and be allowed to move freely.

This tube is fitted with a pin protector in order to avoid damage to the glass base due to bending of the base pins whilst handling the tube.

It is advisable to keep this pin protector on the base until it can be replaced by the socket after the installation of the tube in any equipment.

## RATINGS (DESIGN CENTRE SYSTEM unless otherwise stated)

$V_{a2+a4}$ max. (at $I_{a2+a4} = 0$ ) (see note 1)	12	kV
$V_{a2+a4}$ min. (absolute limit)	7.5	kV
$+V_{a3}$ max.	500	V
$-V_{a3}$ max.	50	V
$V_{a1}$ max.	350	V
$V_{a1}$ min.	200	V
$-v_g$ max. (see note 2)	350	V
$-V_g$ max. (see note 3)	100	V
$\pm I_{a3}$ max.	25	$\mu A$
$\pm I_{a1}$ max.	5.0	$\mu A$
$V_{h-k}$ d.c. max.	110	V
pk max.	130	V
$R_{h-k}$ max.	1.0	$M\Omega$
$Z_{k-e}$ max. ( $f = 50\text{Hz}$ )	100	k $\Omega$
$R_{g-k}$ max.	1.5	$M\Omega$
$Z_{g-k}$ max. ( $f = 50\text{Hz}$ )	500	k $\Omega$

## Notes

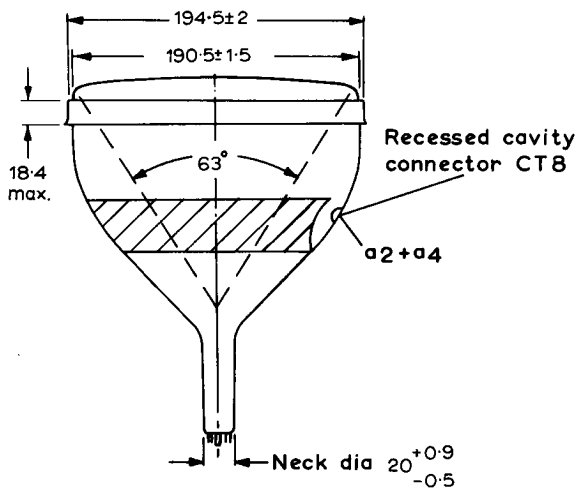
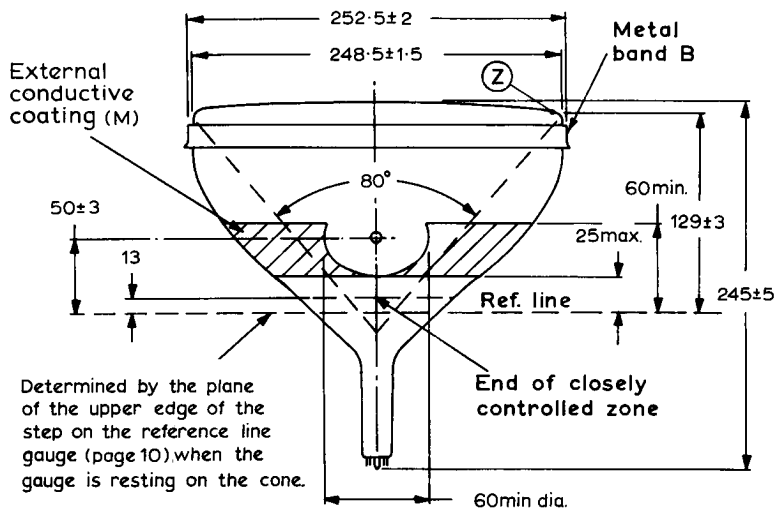
1. Adequate precautions should be taken to ensure that the receiver is protected from damage which may be caused by a possible high voltage flashover within the tube.
2. Maximum pulse duration 22% of one cycle with a maximum of 1.5ms.

3. The d.c. value of bias must not be such as to allow the grid to become positive with respect to the cathode, except during the period immediately after switching the receiver on or off when it may be allowed to rise to +1.0V. It is advisable to limit the positive excursion of the video signal to +5V(pk) max. This may be achieved automatically by the series connection of a 10k $\Omega$  resistor.
4. The metal band (B) should be connected directly to the chassis in an a.c. receiver operating from an isolating transformer, or via a suitable leakage path in an a.c./d.c. receiver, for example 2M $\Omega$ .

The mounting lugs will be in electrical contact with the metal band.

#### WEIGHT

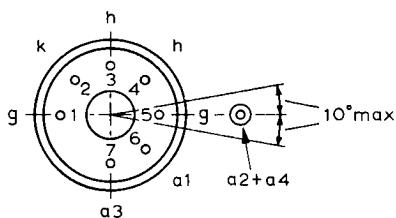
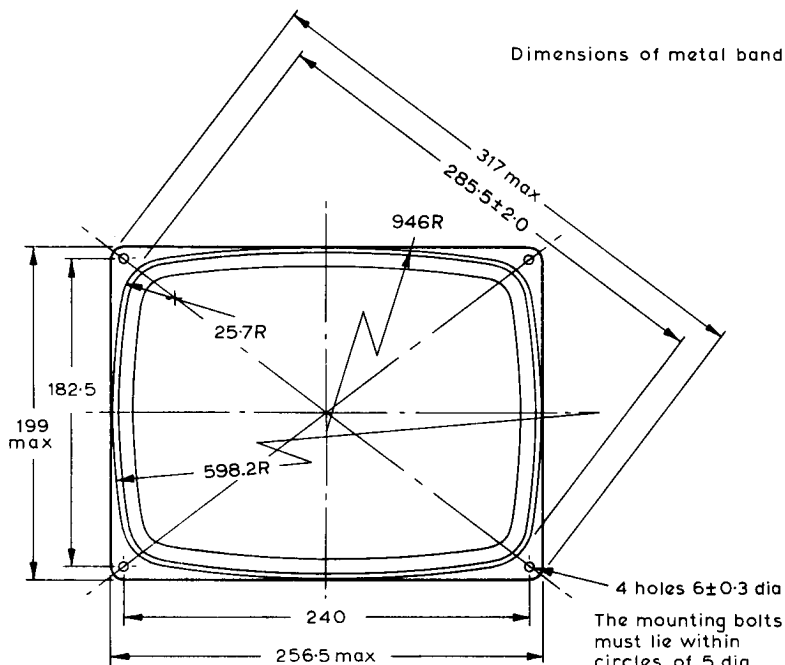
Tube alone (approx.)	2.2	kg
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All dimensions in mm

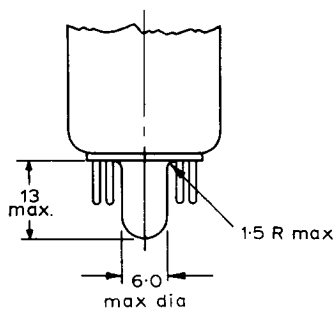
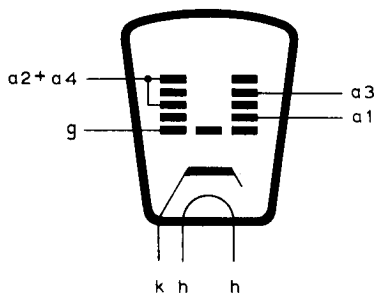
B7707

Dimensions of metal band



Pin dimensions as in B7G base.

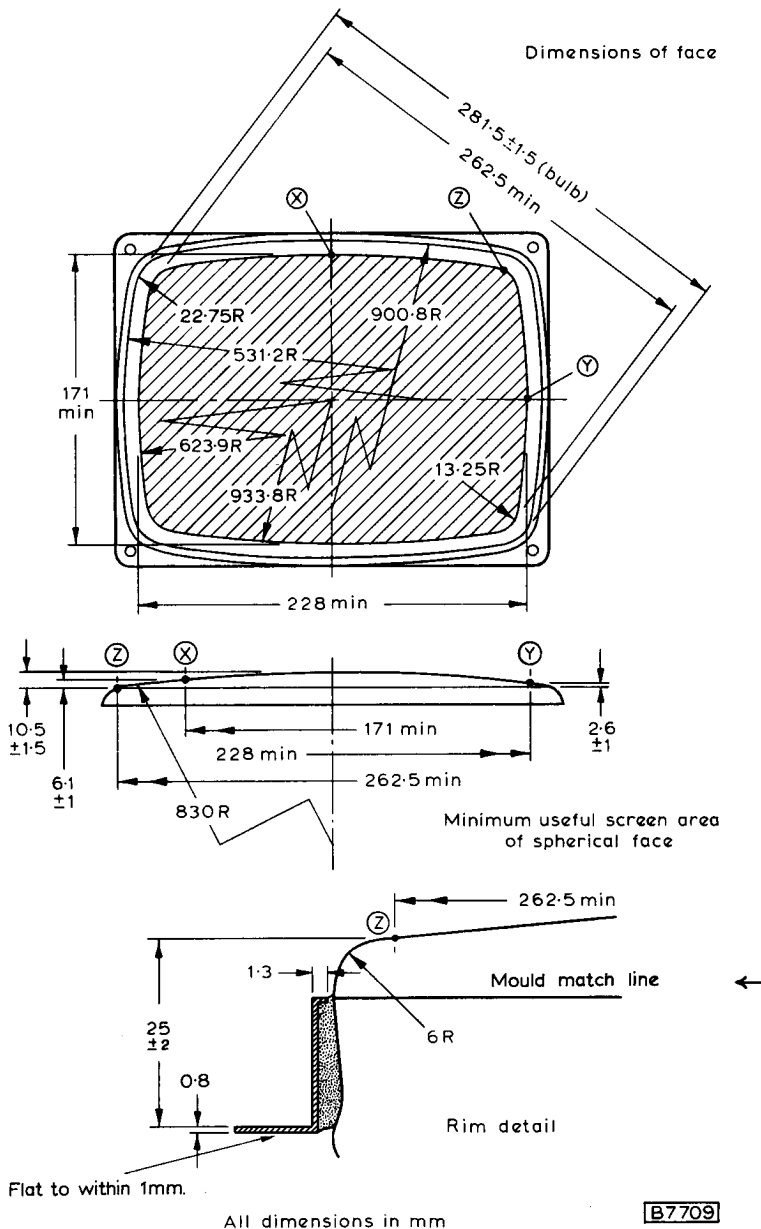
The centre of the socket must allow entry of the pump stem.



All dimensions in mm

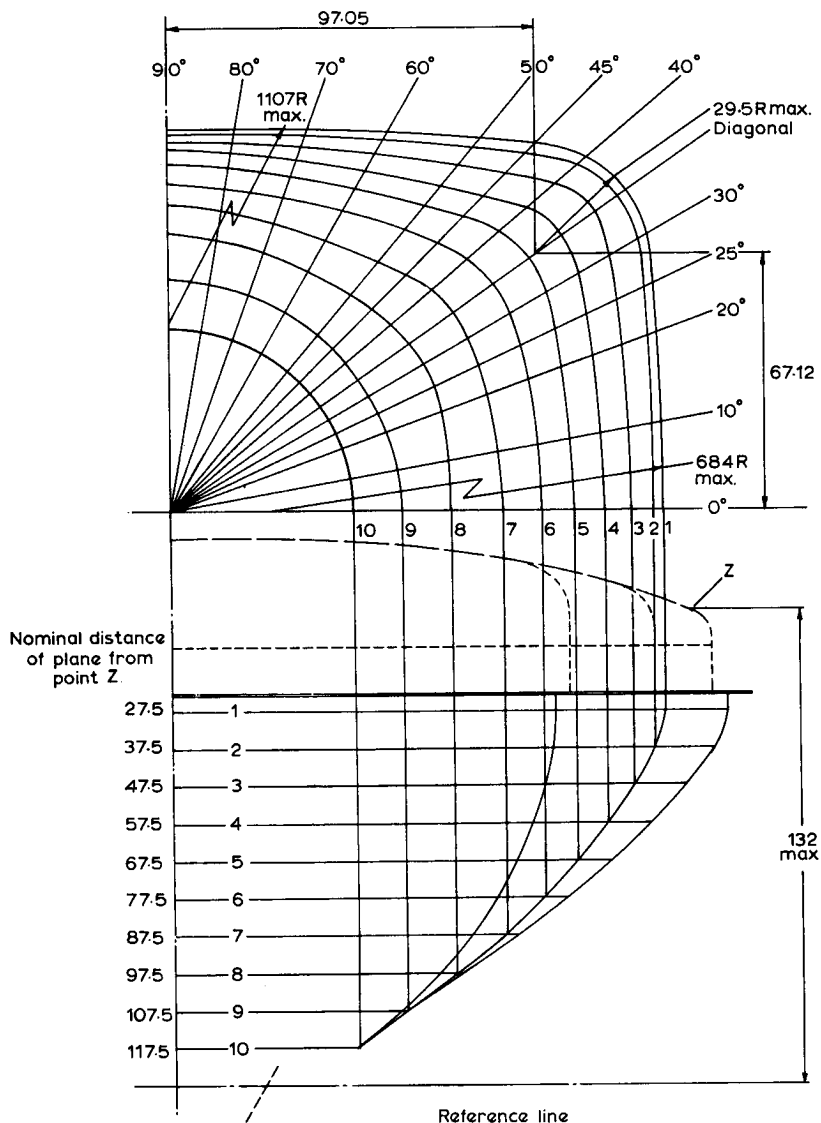
**B7708**





MAXIMUM CONE CONTOURS

B5793



All dimensions in mm.

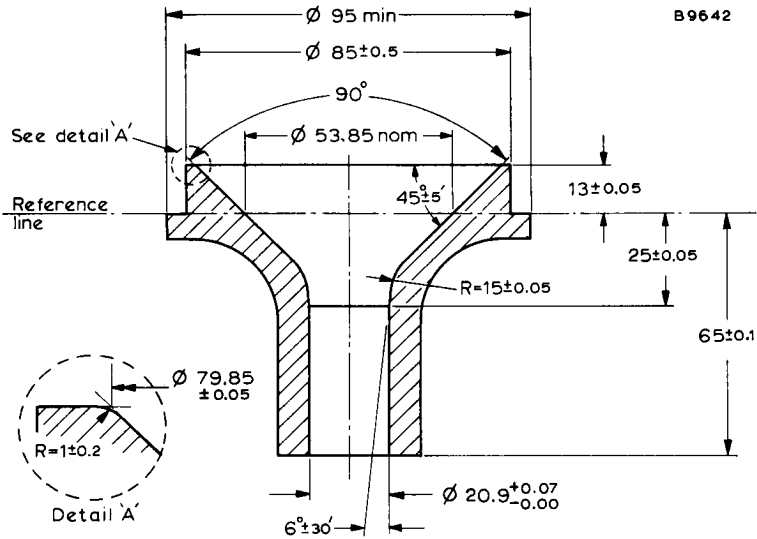


### DIMENSIONS FOR MAXIMUM CONE CONTOUR DRAWING

Section	Distance from centre										90° short		
	0° long	10°	20°	25°	30°	34° 40'	40°	45°	50°	60°		70°	80°
1	130.0	131.6	136.6	140.6	145.5	147.5	144.9	136.8	127.9	114.9	106.8	102.4	101.0
2	127.4	128.9	133.8	137.7	142.4	144.9	141.8	133.3	124.8	112.6	105.2	101.2	99.9
3	121.1	122.6	126.8	130.4	134.7	137.6	133.9	125.6	118.4	108.2	102.0	99.0	97.9
4	114.0	115.2	118.7	121.6	125.2	127.3	124.5	117.5	111.6	103.1	98.1	95.8	95.2
5	106.4	107.2	110.0	112.2	114.8	116.4	114.2	108.8	104.0	97.2	93.5	92.0	91.8
6	97.6	98.2	100.0	101.4	103.3	104.4	102.8	98.8	95.1	90.0	87.4	86.8	87.0
7	87.4	87.8	88.8	89.7	90.7	91.4	90.2	87.7	85.2	81.7	80.4	80.5	81.0
8	75.0	75.4	76.2	76.7	77.0	76.8	76.0	74.9	73.8	72.4	72.2	72.8	73.4
9	60.6	60.6	60.6	60.6	60.6	60.6	60.6	60.6	60.4	60.2	60.6	61.0	61.4
10	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0

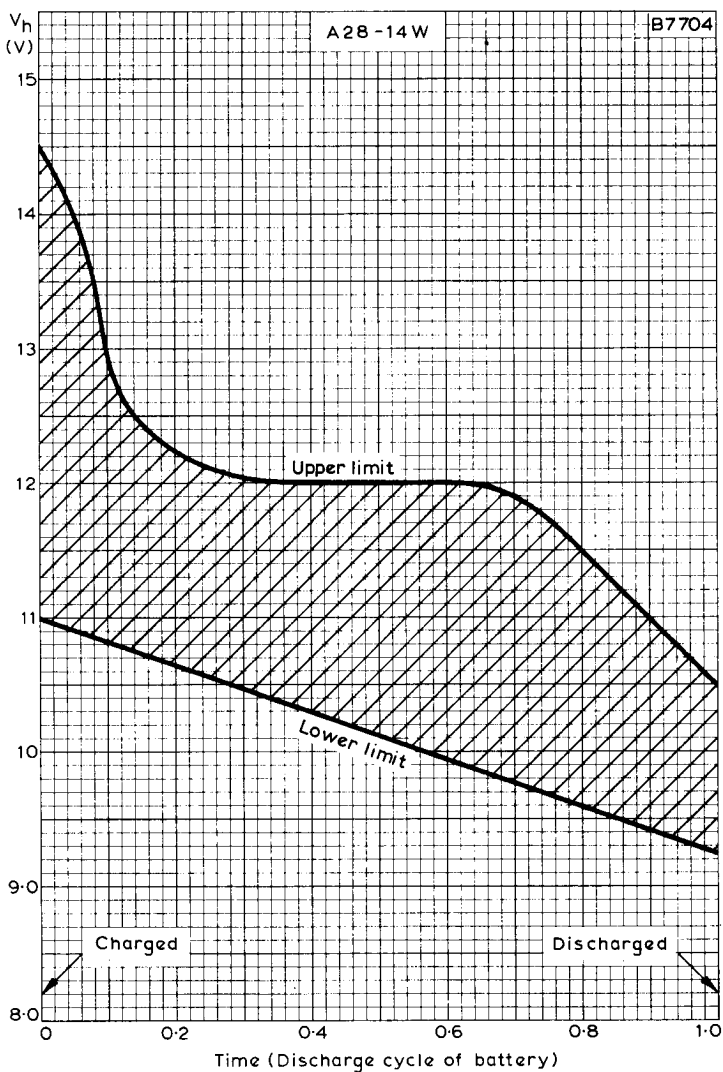
All dimensions in mm

B9642

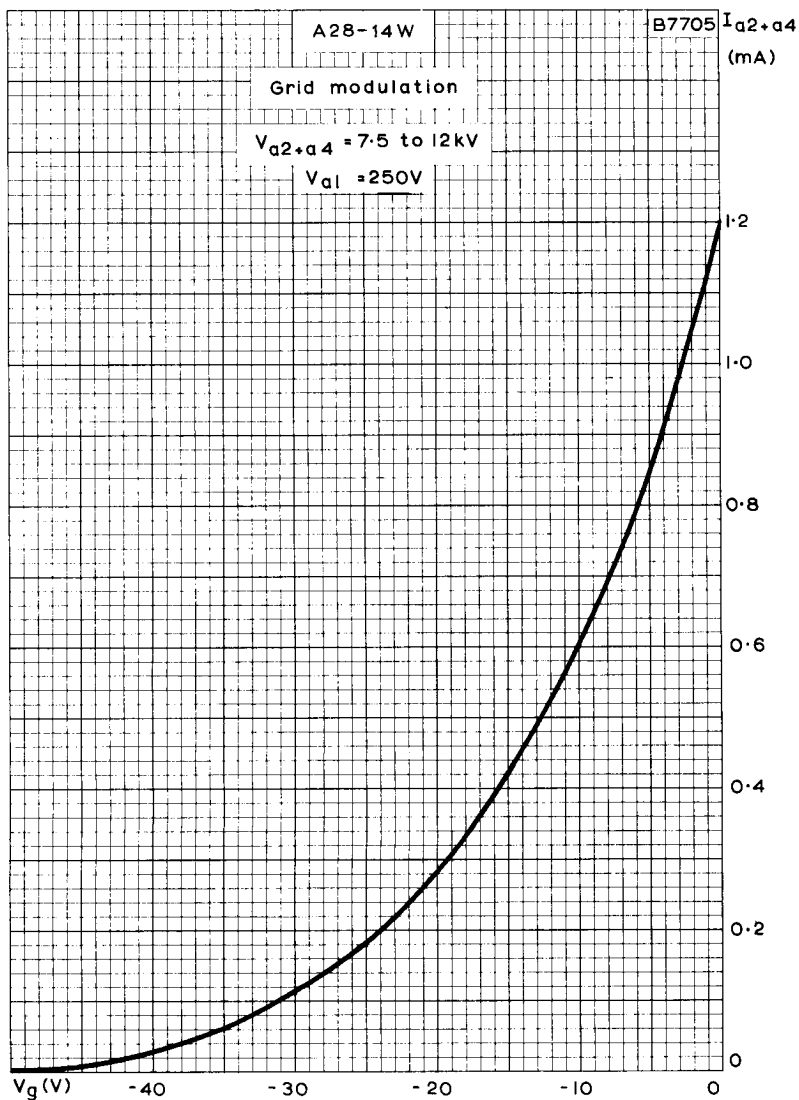


REFERENCE LINE GAUGE

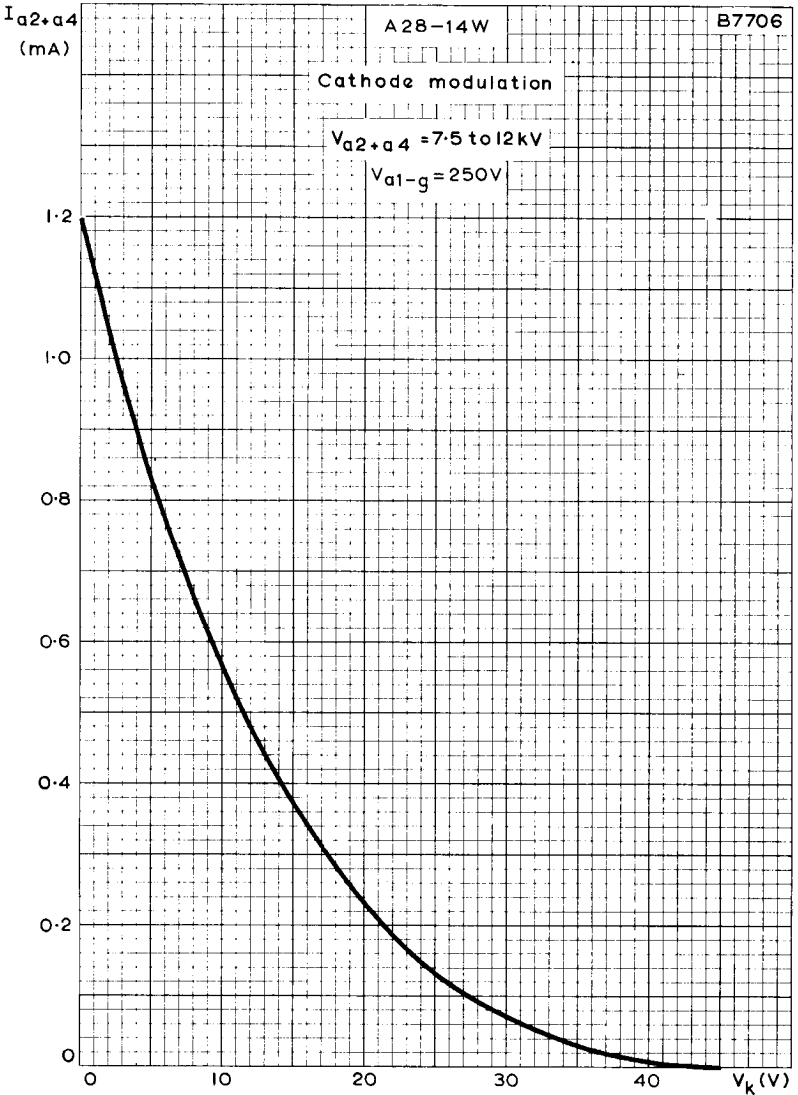
All dimensions in mm



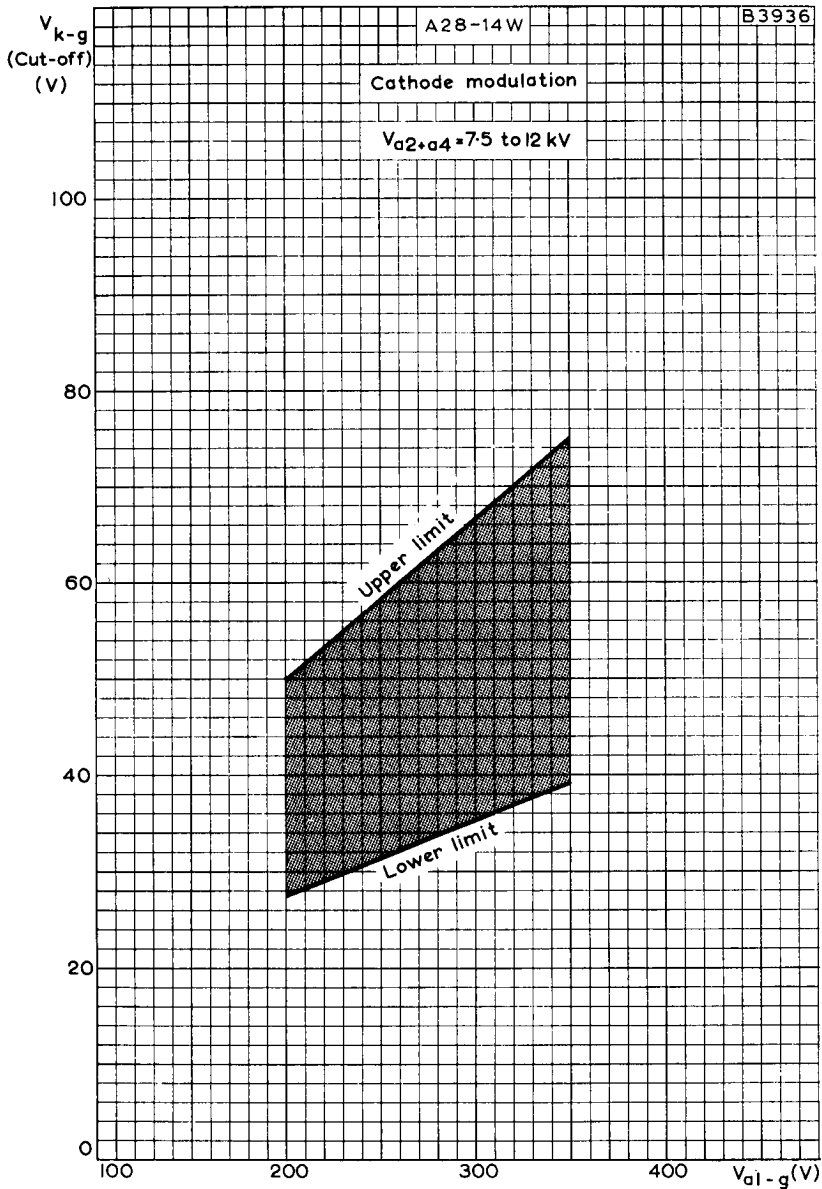
HEATER VOLTAGE PLOTTED AGAINST BATTERY DISCHARGE CYCLE



FINAL ANODE CURRENT PLOTTED AGAINST GRID VOLTAGE  
GRID MODULATION



FINAL ANODE CURRENT PLOTTED AGAINST CATHODE-TO-GRID VOLTAGE, CATHODE MODULATION



LIMITS OF CATHODE-TO-GRID CUT-OFF VOLTAGE PLOTTED AGAINST FIRST ANODE-TO-GRID VOLTAGE, CATHODE MODULATION.