

## MONITOR TUBE

The M38-121 is a 38 cm-diagonal rectangular television tube with metal backed screen and integral protection primarily intended for use as a monitor or display tube.

| QUICK REFERENCE DATA |               |       |       |
|----------------------|---------------|-------|-------|
| Deflection angle     | 110°          |       |       |
| Focusing             | electrostatic |       |       |
| Resolution           | min.          | 650   | lines |
| Overall length       | max.          | 279,5 | mm    |

### SCREEN

Metal backed phosphor

Luminescence

white

Light transmission of face glass

50 %

Useful diagonal

min. 350 mm

Useful width

min. 290 mm

Useful height

min. 226 mm

### HEATING

Indirect by a.c. or d.c. ; parallel or series supply

Heater voltage

$V_f$  6,3 V

Heater current

$I_f$  300 mA

### FOCUSING

electrostatic

For focusing voltage providing optimum focus at screen centre at a beam current of 100  $\mu$ A see under "Typical operating conditions".

### DEFLECTION

magnetic

Diagonal deflection angle

110°

Horizontal deflection angle

93°

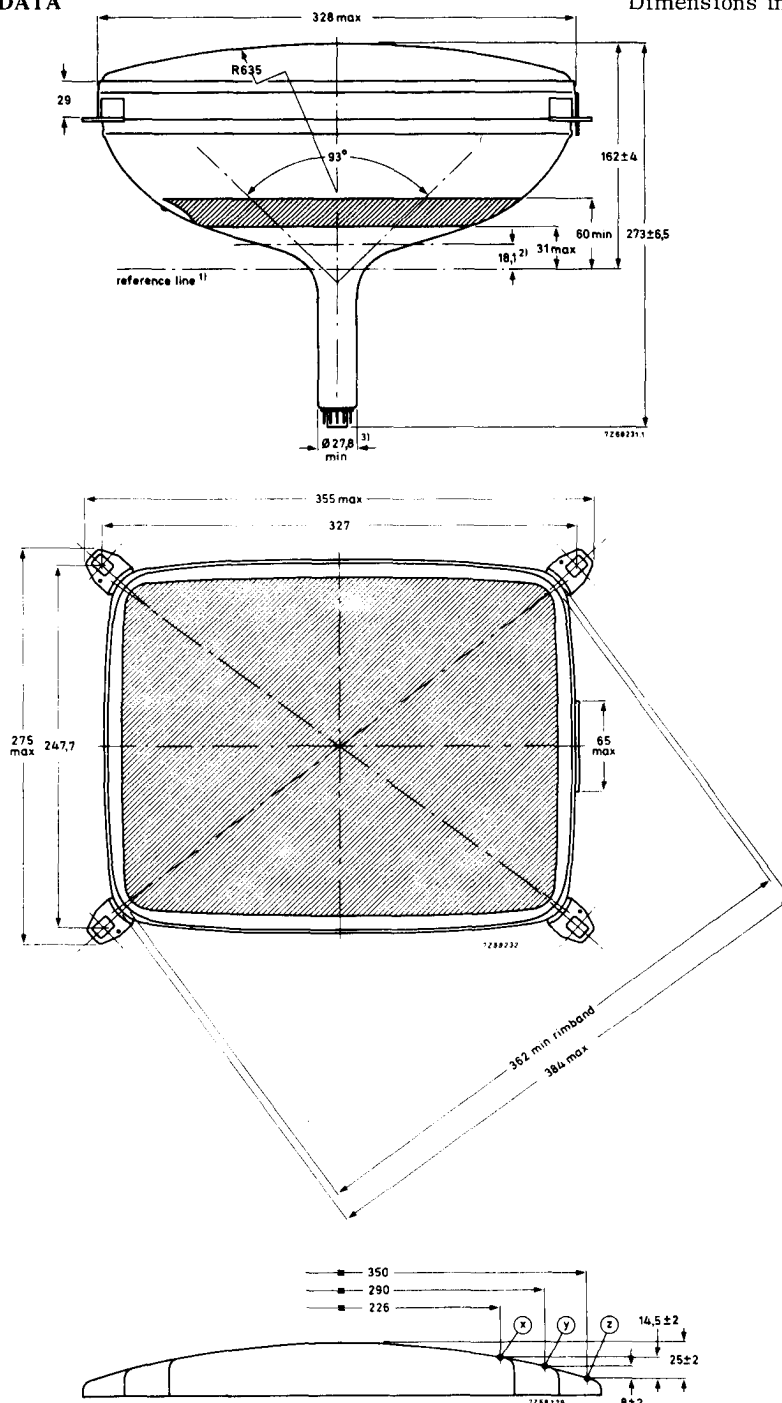
Vertical deflection angle

76°

Deflection coil AT1038/40A or AT1039/... is recommended.

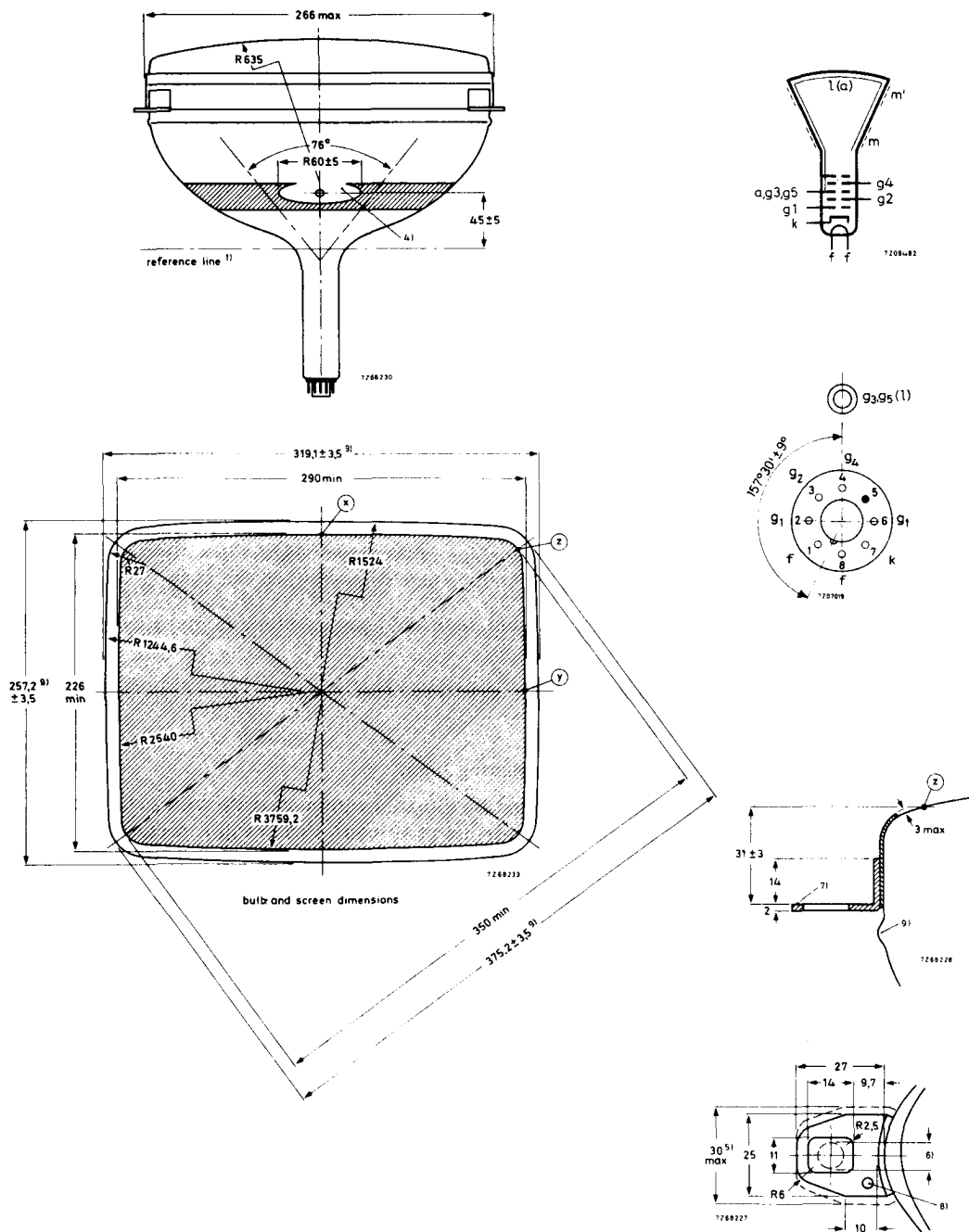
MECHANICAL DATA

Dimensions in mm



## MECHANICAL DATA (continued)

Dimensions in mm



**MECHANICAL DATA** (continued)Mounting position: anyBase

Neo eightar (B8H), IEC67-I-31a

Cavity contact

CT8, IEC67-III-2

Accessories

Socket

2422 501 06001

Final accelerator contact connector

type 55563

**PICTURE CENTRING MAGNET**

Field intensity perpendicular to the tube axis from 0 to 800 A/m (0 to 10 Oe). Adjustment of the centring magnet should not cause a general reduction in brightness or shading of the raster.

**NOTES TO OUTLINE DRAWING**

- 1) The reference line is determined by the plane of the upper edge of the flange of the reference line gauge, (JEDEC 126) when the gauge is resting on the cone.
- 2) End of guaranteed contour. The maximum neck and cone contour is given by the reference line gauge.
- 3) The maximum dimension is given by the reference line gauge.
- 4) This area must be kept clean.
- 5) Minimum space to be reserved for mounting lugs.
- 6) The mounting screws in the cabinet must be situated within a circle with a diameter of 7,5 mm drawn around the true geometrical positions (corners of a rectangle of 327 mm x 247,7 mm).
- 7) The maximum displacement of any lug with respect to the plane through the other three lugs is 2 mm.
- 8) The metal rimband must be earthed. Holes of 3 mm diameter in each lug are provided for this purpose.
- 9) The bulge at the pliceline seal may increase the indicated maximum value for envelope width, diagonal and height by not more than 6,4 mm, but at any point around the seal the bulge will not protrude more than 3,2 mm beyond the envelope surface.

**CAPACITANCES**

|                                                     |                     |            |    |
|-----------------------------------------------------|---------------------|------------|----|
| Final accelerator to external<br>conductive coating | $C_{g3, g5(l)/m}$   | 450 to 650 | pF |
| Final accelerator to metal band                     | $C_{g3, g5(l)9/m'}$ | 240        | pF |
| Cathode to all other elements                       | $C_k$               | 5          | pF |
| Control grid to all other elements                  | $C_{g1}$            | 6          | pF |

**TYPICAL OPERATING CONDITIONS**

|                                                                 |                 |          |                 |
|-----------------------------------------------------------------|-----------------|----------|-----------------|
| Final accelerator voltage                                       | $V_{g3, g5(l)}$ | 16       | kV              |
| Focusing electrode voltage                                      | $V_{g4}$        | 0 to 400 | V <sup>1)</sup> |
| First accelerator voltage                                       | $V_{g2}$        | 400      | V               |
| Grid No. 1 voltage for visual<br>extinction of a focused raster | $-V_{g1}$       | 40 to 85 | V               |

**RESOLUTION**

Resolution at screen centre, measured with the shrinking raster method ( non-interlaced raster), under typical operating conditions, a beam current of 100  $\mu$ A, and focusing voltage adjusted for optimum spot size

min. 650 lines

**LIMITING VALUES** (Absolute max. rating system)

Voltages are specified with respect to cathode unless otherwise stated.

|                                     |                 |           |    |
|-------------------------------------|-----------------|-----------|----|
| Final accelerator voltage           | $V_{g3, g5(l)}$ | max. 18   | kV |
|                                     |                 | min. 13   | kV |
| Focusing electrode voltage          | $V_{g4}$        | max. 1000 | V  |
|                                     | $-V_{g4}$       | max. 500  | V  |
| First accelerator voltage           | $V_{g2}$        | max. 550  | V  |
|                                     |                 | min. 350  | V  |
| Control grid voltage, negative      | $-V_{g1}$       | max. 150  | V  |
| positive                            | $V_{g1}$        | max. 0    | V  |
| positive peak                       | $V_{g1p}$       | max. 2    | V  |
| Cathode to heater voltage, positive | $V_{kf}$        | max. 250  | V  |
| positive peak                       | $V_{kfp}$       | max. 300  | V  |
| negative                            | $-V_{kf}$       | max. 135  | V  |
| negative peak                       | $-V_{kfp}$      | max. 180  | V  |

<sup>1)</sup> With the small change in focus spot size with variation of focus voltage the limit of 0 to 400 V is such that an acceptable focus quality is obtained within this range. If it is required to pass through the point of focus, a voltage range of at least -100 to +500 V will be required.

## CIRCUIT DESIGN VALUES

|                                      |           |      |    |         |
|--------------------------------------|-----------|------|----|---------|
| Focusing electrode current, positive | $I_{g4}$  | max. | 25 | $\mu A$ |
|                                      | $-I_{g4}$ | max. | 25 | $\mu A$ |
| Grid No.2 current, positive          | $I_{g2}$  | max. | 5  | $\mu A$ |
|                                      | $-I_{g2}$ | max. | 5  | $\mu A$ |

## MAXIMUM CIRCUIT VALUES

|                                                        |          |      |     |           |
|--------------------------------------------------------|----------|------|-----|-----------|
| Resistance between cathode and heater                  | $R_{kf}$ | max. | 1   | $M\Omega$ |
| Impedance between cathode and heater<br>( $f = 50$ Hz) | $Z_{kf}$ | max. | 500 | $k\Omega$ |
| Resistance between grid no. 1 and earth                | $R_{g1}$ | max. | 1,5 | $M\Omega$ |
| Impedance between cathode and earth<br>( $f = 50$ Hz)  | $Z_k$    | max. | 100 | $k\Omega$ |

## WARNING

X-ray shielding is advisable to give protection against possible danger of personal injury arising from prolonged exposure at close range to this tube when operated above 16 kV.

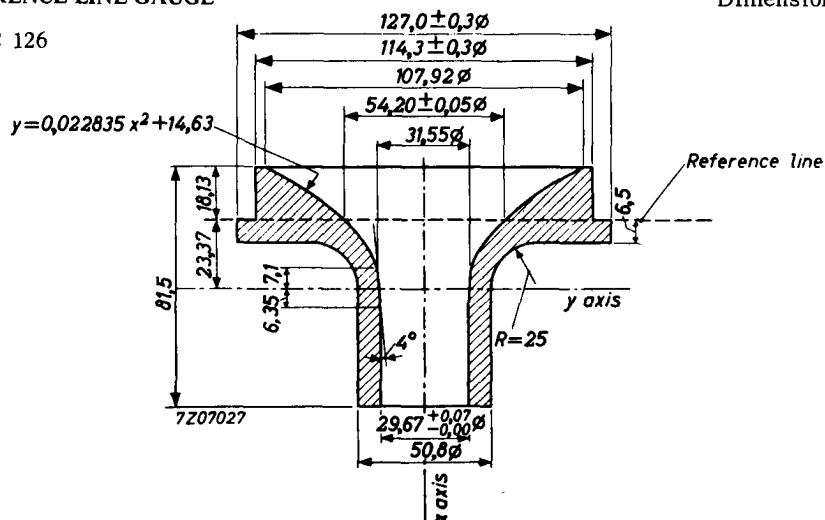
## EXTERNAL CONDUCTIVE COATING

This tube has an external conductive coating (m), which must be earthed and capacitance of this to the final electrode is used to provide smoothing for the EHT supply. The tube marking and warning labels are on the side of the cone opposite the final electrode connector and this side should not be used for making contact to the external conductive coating.

## REFERENCE LINE GAUGE

Dimensions in mm

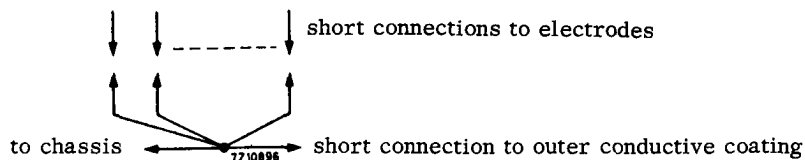
JEDEC 126



**REMARK.**

With the high voltage used with this tube internal flash -overs may occur. These may destroy the cathode of the tube. Therefore it is necessary to provide protective circuits, using spark gaps.

The spark gaps must be connected as follows:



No other connections between the outer conductive coating and the chassis are permissible.

On request the tube can be supplied with spark traps mounted in the base (ring trap base).