MAZDA

CRM 92

CATHODE RAY TUBE

RATING.

Heater Voltage	2.0
Heater Current (Amps.)	1.4
Maximum Anode Voltage	6,000

TYPICAL OPERATION.

Anode Voltage	5,000
Grid Bias for Cut-off of Raster (Volts)	30-55
Average Peak to Peak Modulating Voltage for Modulation up to 150 *HF*	23
Maximum Peak to Peak Modulating Voltage for Modulation of limit C.R. tube up to 150 μA	26.5

INTER-ELECTRODE CAPACITIES.

Grid 1 to all other electrodes	5.0 $\mu\mu$F.
Cathode to all other electrodes	5.0 $\mu\mu$F.

NOTE.—These capacities include a Benjamin Type Wafer Octal Holder.

DIMENSIONS.

Maximum Overall Length	374 mm.
Maximum Diameter	228 mm.

GENERAL.

The CRM 92 is a magnetically focussed and deflected cathode ray tube designed for reproduction of television pictures. The screen, measuring approximately 9″, is coated with a compound giving substantially a black and white picture. The tube is fitted with a British Octal base, the connexions to which are given overleaf. By increasing the overall length by 13 mm. over that of the CRM.91 and modifying the ratio of the bulb length to the neck length, the deflecting power required by the CRM.92 has been materially reduced. A deflecting coil length 2¼″ overall is recommended as the best compromise between reduced power consumption and picture quality.

APPLICATION.

It is recommended that the tube should be operated with an anode voltage of the order of 5,000 volts, although the actual voltage employed depends to a large extent upon the brilliance of the picture required, as well as the scanning power available. The scanning power required is directly proportional to the anode voltage on the tube. It is recommended that in any case the tube should not be operated at a mean anode voltage of less than 4,500 volts, when screen colour considerations are of importance. A protective resistance of the order of 25,000 ohms should be connected between the anode terminal of the tube and the H.T. supply.

The heater supply should be provided by a separate winding on the transformer, and one end of this heater winding should be permanently connected to the cathode of the tube.

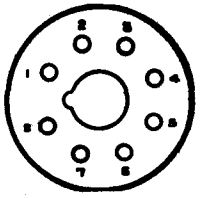
The associated equipment of the television receiver, particularly power transformers, must be adequately screened, or suitably positioned within the cabinet, so that stray fields will not cause distortion of the spot or a pattern on the screen. It is recommended that the tube should be mounted so that the rubber support for the bulb is at least 2" from the screen end of the black coating on the inside of the bulb. If a rubber mask is employed, this should be mounted on the bulb and should not be allowed to touch any component from which leakage may occur. Alternatively, if the mask is fixed to the cabinet, an air gap should be provided between the bulb and the mask.

The position of the focusing coil which acts as a lens depends upon the size of the spot required. The spot size required is determined by the viewing distance chosen, as it is desirable that with the normal viewing distance employed a "flat field" should be obtained, i.e. that the individual lines of the raster should not be discernible. It is recommended that for a normal viewing distance of the order of six times the picture height, the distance between the modulator grid aperture and the centre of the focusing coil gap should be of the order of 32 mm. The neck length of the CRM.92 being rather shorter than that of the CRM.91 an "end gap" focusing coil should be employed having a gap of $\frac{1}{8}$". Under these conditions approximately 580 ampere turns will be required for focusing. The actual value of the ampere turns required will depend to a certain extent on the shape of the iron circuit and the permeability of the iron. Moving the focusing coil closer to the grid aperture will increase the spot size and the ampere turns required for focusing, and, conversely, moving the focusing coil further away from the grid aperture will reduce the spot size and also reduce the ampere turns required for focusing. The above positions and ampere turns are given for an anode voltage of 5,000 volts. The deflecting coils should be mounted as close as possible to the bulb shoulder.

The high voltages at which the CRM 92 tube is operated are very dangerous. Great care should be taken in the design of the equipment to prevent the user coming into contact with these high voltages. Precautions should include the enclosing of high potential terminals ; the use of interlocking switches to break the primary circuit of the high voltage power supply when access to the apparatus is required ; and provision for discharging the high voltage condenser.

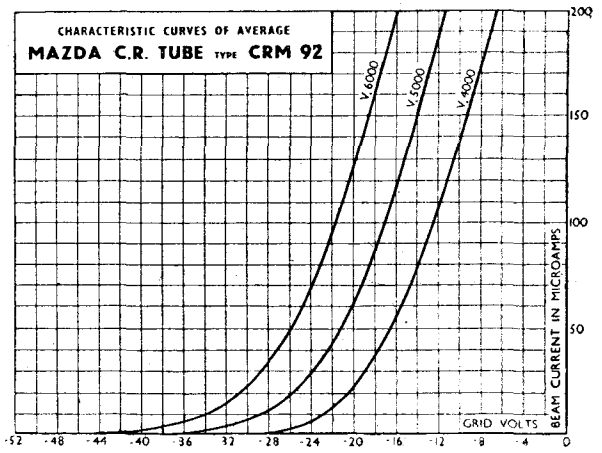
The handling of the CRM 92 tube in transportation, storage and use requires care, because the tube may be broken if subjected to sudden jars, scratches, or excessive strains or, if abused, the tube may be weakened so that it may subsequently implode owing to the pressure on the tube due to the vacuum within. The equipment in which the cathode ray tube is utilised should be designed to prevent the bulb from being damaged, and to protect the user from the effects of an implosion if the bulb is damaged or has been weakened in prior handling. The screen of the tube should be covered with a plate of safety glass, and goggles worn when handling the tube.

BASING.



Pin No. 1. Heater.
2. Omitted.
3. Cathode.
4. Omitted.
5. Control Grid.
6. Omitted.
7. Omitted.
8 Heater.
Cap. Anode.

Viewed from the free end of the base.



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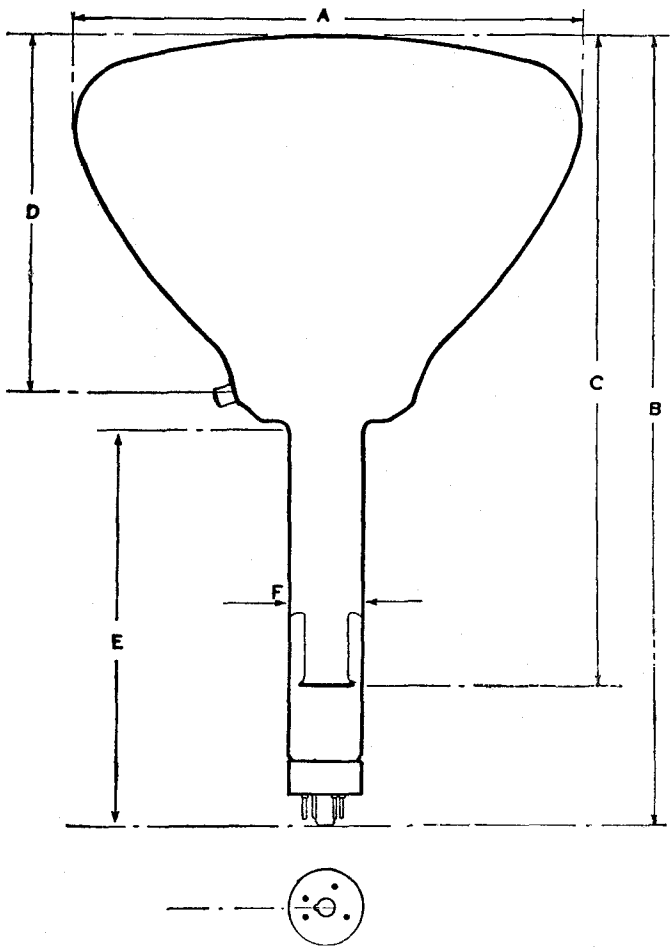
OUTLINE DRAWING OF CRM 92



All dimensions in millimeters.

A 228. Max. B. 369±5 C. 309±2 D. 190 Max. E. 164 Nom. F. 35.0 Max

Mazda Cathode Ray Tubes are manufactured in Great Britain for the British Thomson-Houston Co., Ltd., London and Rugby, and distributed by

THE EDISON SWAN ELECTRIC CO., LTD.
155, CHARING CROSS ROAD. LONDON, W.C.2