

Mazda LAMP DATA SHEET

Sodium Discharge Linear Type SO/H

General Description

The linear sodium lamp incorporates the following essential features.

- (1) A discharge tube of special glass and of special formation with regard to both shape and cross section, containing metallic sodium and inert gas.
- (2) An electrode sealed into each end.
- (3) An outer envelope containing the discharge tube, with the intervening space evacuated to provide the necessary thermal insulation to maintain the sodium in a fully vaporised condition.
- (4) Means of connection to the supply.

The inert gas filling is for the purpose of initiating the discharge prior to the vapourisation of the sodium.

As the lamp operates at a low vapour pressure, there is no delay in starting, even in the event of the lamp being switched on while still warm from previous operation. The brightness of the lamp under the latter condition will depend upon the amount the lamp has cooled since being switched off.

The starting and running of the lamp is unaffected by ambient temperature.

The luminous radiation is concentrated at 5890\AA° - 5896\AA° and the colour may be described as monochromatic yellow.

The entirely new design of this lamp makes best use of the following features:

- (a) a discharge tube shaped to provide a large surface area with small volume content,
- (b) optimum metal temperature,
- (c) controlled sodium location,

all of which combine to provide high luminous efficiency and life maintenance.

The advantages of the linear sodium lamp over existing types may be briefly summarised as follows :

- (1) a 25% gain in efficiency for comparable wattage ratings.
- (2) a more convenient light source shape for many applications.
- (3) robust construction and compact dimensions for storage and handling.
- (4) high lumen output capable of giving higher lighting intensities with greater economy

General Applications

Street Lighting, and the lighting of other large areas where colour discrimination is of no importance.



Physical Characteristics

Rated Watts	dimensions						Cap	Bulb Shape
	Bulb diameter (mm.)	overall length (ins.)	length excluding pins at one end (ins.)	length excluding pins at both ends (ins.)	arc length (mm.)	arc diameter (mm.)		
200	38 ± 1.5	$35 \frac{25}{32} - \frac{1}{4} + 0$	$35 \frac{1}{2} - \frac{1}{4} + 0$	$35 \frac{7}{32} - \frac{1}{4} + 0$	720 Nom.	23.5-26	G13/35 (Medium Bi-pin)	Tubular

Electrical Characteristics

Rated Watts	supply volts	lamp operating volts	lamp current (amps.)		apparent power factor	open circuit control gear voltage ϕ
			starting	operating		
200	200/250	136	1.6	1.6	0.93	320

ϕ for thermal relay operation.

Initially, the lamp dissipates between 185-190 watts, increasing to 200 during the first 100-500 hours operation, whereafter the overall increase of watts throughout life is of the order of 5%.

Light Source Characteristics and Performance

Rated Watts	lumens per watt		
	@ 100 hrs.	average thro' life	@ 4000 hrs.
200	100	92	88

The time taken for the lamp to reach full light output is of the order of 15 minutes.

Operating Position

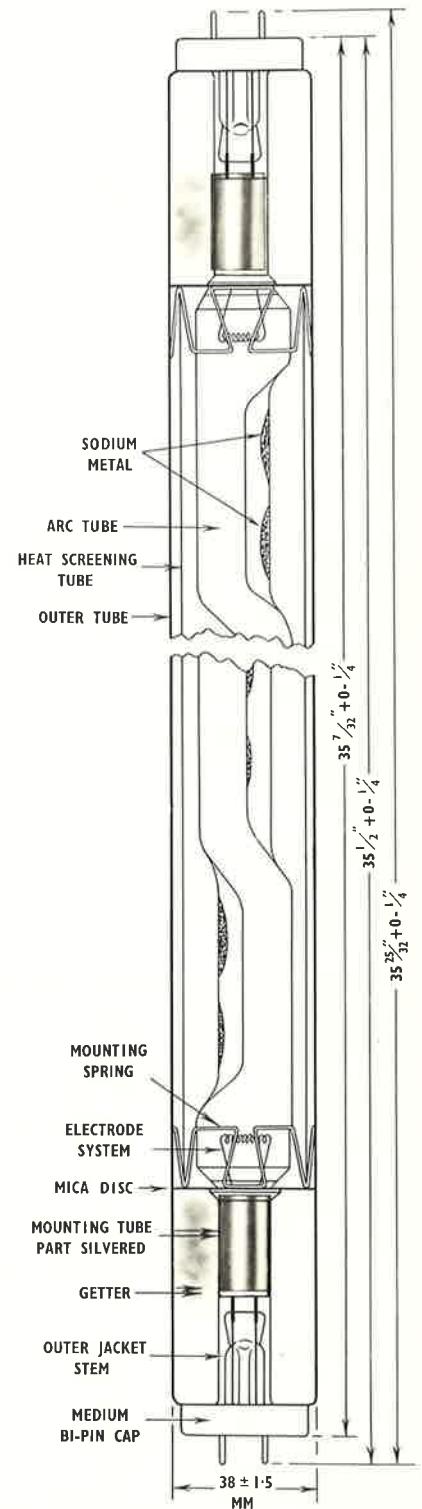
Horizontal. Maximum permissible deviation $\pm 20^\circ$

Operating Conditions

The lamp should be adequately protected against the possibility of condensed moisture or rain falling on it during operation.

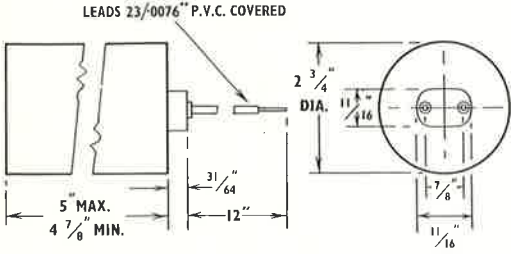
Circuit and Control Gear

The 200 watt sodium linear lamp is used in conjunction with appropriate control gear. For A. C. 50 cps circuits this takes the form of a high reactance transformer, thermal relay, and also a capacitor for power factor correction, as shown in the circuit diagram.



Lamp rating		total circuit watts	transformer cat. no.	thermal relay cat. no.	relay holder cat. no.	capacitor		working volts
Watts	Volts					cat. no.	capacitance	
200	200-250	235	MCG 116	ST 42	C 77592 ⁺	PL 28A/2	20 μ F	250

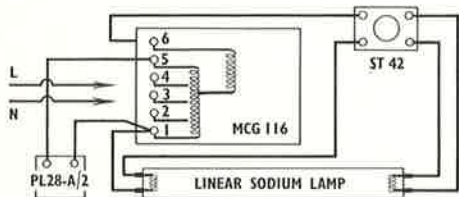
+ it is essential that a piece of insulating material be placed between the relay holder and the fixing surface.



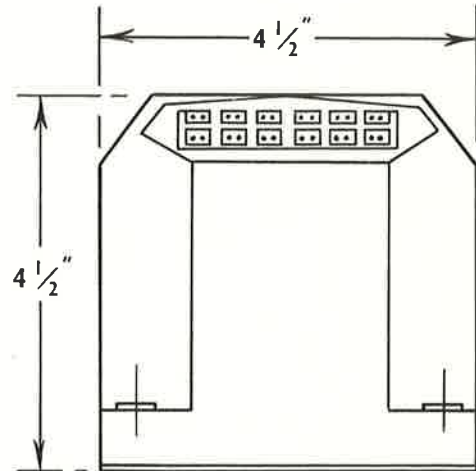
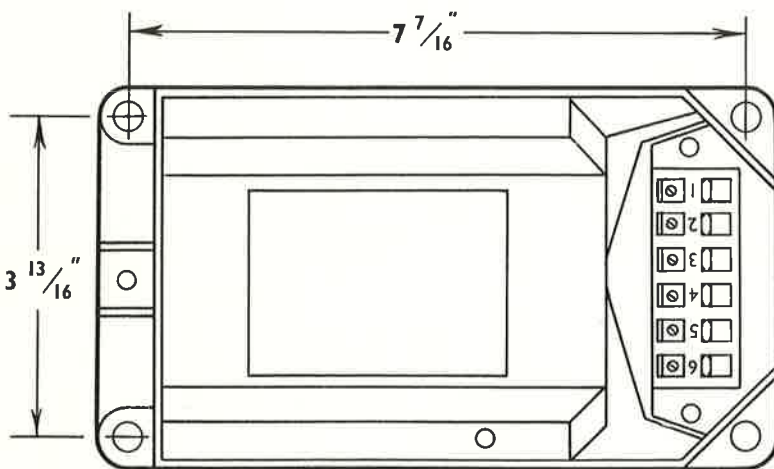
CAPACITOR PL28-A/2

supply volts	Transformer	lamp terminals
	use tappings	
200	3 and 4	1 - 6
210	2 and 4	
220	1 and 4	
230	3 and 5	
240	2 and 5	
250	1 and 5	

rated watts	A. E. I. L. L. No.
200	96-8026



CIRCUIT DIAGRAM



TRANSFORMER MCG116