Mazda 140W Linear Sodium

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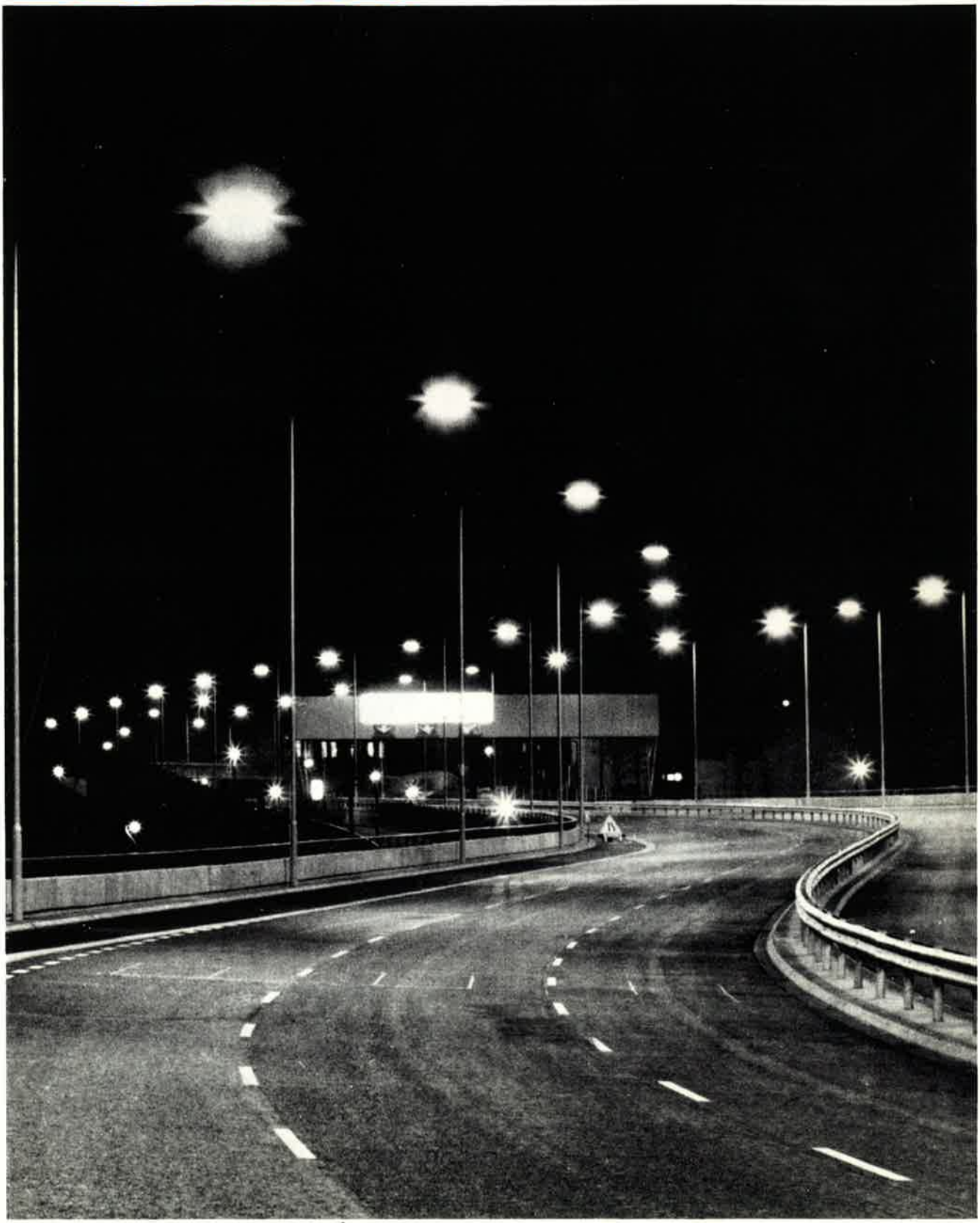
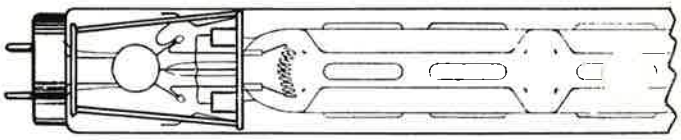


Southern Approach to the Blackwall Tunnel lit by Atlas Alpha Six lanterns with Mazda linear sodium lamps.

- 20,000 lumen output, constant throughout life
- Outstanding reliability and freedom from early failures
- Unique construction gives better light control

140W LINEAR SODIUM LAMP

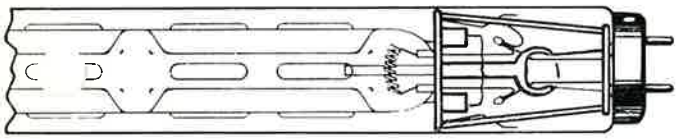


- Meets Group A Streetlighting requirements
- Electrical characteristics allow simple control gear giving best value for money

A cross-section of the lamp showing the cruciform inner tube, a cathode and the sodium retention sinks

Quality and Reliability

Since the introduction of the 140W linear sodium lamp by B.L.I. in 1966, it has achieved an unrivalled record of reliability. Installations throughout the country (including the first motorway lighting on the M4) have given fewer failures before relamping than any other type of sodium lamp to date. Statistical records show lamp survival to be more than 95% at the end of the rated life of 6,000 hours.



Research and Development

Intense study of the fundamental principles of sodium lamps has resulted in exceptionally high efficiency and reliability.

The shape of the inner tube, in particular, shows considerable ingenuity and contributes materially to the success of this lamp. In order to minimise energy losses due to atomic collisions, etc., and absorption of light by the sodium atoms themselves the cross-section must be kept as small as possible, but its surface must be large in order to achieve a high light output. By making the discharge-tube cross-shaped these apparently diametrically opposed conditions are satisfied and in addition there is a direct linear path between the electrodes of the lamp which helps to achieve a low starting voltage.

The tube is made with eighty sodium retention sinks, each of these is a few degrees lower in temperature than other parts of the discharge tube wall and small quantities of sodium condense in them to ensure an even distribution of sodium vapour throughout the life of the lamp. This helps to achieve 100% lumen maintenance throughout life, and to control lamp watts. The lamp requires a sodium reservoir temperature of approximately 250°C to give optimum vapour pressure for efficient light radiation and a considerable portion of the power in the tube is used to achieve this.

An important design feature is the use of an infra-red reflecting film on the inside of the outer bulb. This film, which is composed of the oxides of metals such as tin and indium, conserves the thermal energy of the arc, thus increasing the proportion of energy available to produce light. The thickness of this film is strictly controlled to give optimum transmission of the visible D-line sodium radiation ensuring maximum light output. Its electrical resistance is such that by connecting it on to one cathode, it acts as a secondary starting electrode. Initially the 140W lamp absorbs about 135 watts which through life may rise by a maximum of less than 4% higher in 6,000 hours.

Special Advantages

Due to its electrical characteristics and low starting voltage, the 140W lamp is ideally matched to the standard control gear for the 140W and 90W "U" shaped lamps, giving completely reliable operation under normal and adverse conditions.

The small source size and uniform distribution conform to the design requirements of modern street lighting lanterns. 20,000 lumens are emitted uniformly from an arc 78 cm long and only 2.9 cm wide.

The compact and light-weight construction make it easy to handle during relamping. The lamp is 3' 0" long and $1\frac{1}{2}$" diameter and weighs less than 1 lb. Transport and installation are further simplified by a 25-way pack which can easily be stored in service trucks or tower wagons.

LAMP DATA Dimensions

Diameter	Max. overall length	Max. length excl. pins	Cap
37.5 mm. · 1.5 ins.	*908.8 mm. · 35.78 ins.*	*894.6 mm. · 35.22 ins.*	*G13/10 × 35 Bipin*

NOMINAL ELECTRICAL CHARACTERISTICS

Supply Volts	Rated Watts	Lamp Operating Voltage	Lamp Operating Current	Lamp Power Factor
200/250	*140*	*175*	*0.9 amp*	*0.9*

LIGHT OUTPUT

20,000 lumens. 100% lumen maintenance throughout life.

LIFE

Rated life 6,000 hours. Individual guaranteed life 4,000 hours.

OPERATING CONDITIONS

Burning position—horizontal ±20°.

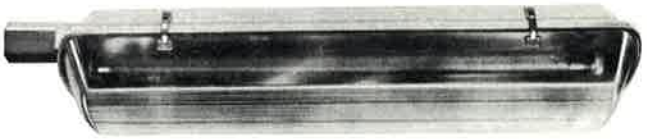
Lamps should be adequately protected against the possibility of condensed moisture or rain falling on them during operation. Time to reach full brightness is approx. 10 minutes, but there is no delay in re-starting if lamps are switched off when hot.

ALPHA FIVE

This semi-cut-off lantern accommodates the well-proven 140W Linear Sodium lamp operating through economic control gear to provide a low cost lighting unit for trunk and principal roads illuminated to levels required by the code of practice CP 1004 1963 for groups A1, A2, and A3.

The LMG-M aluminium alloy canopy, acrylic bowl with sealed-on refractor plates and overlamp reflector provide semi-cut-off distribution with high efficiency.
Many thousands are in use on trunk and principal roads throughout the country and with the 100% lumen maintenance through life facility of the 140W Linear Sodium lamp, provide low maintenance lighting most suitable for this application.

ALPHA SIX

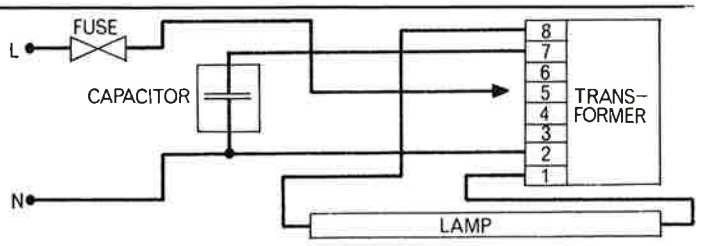


Following the very successful lantern used on the M4, 3-lane motorway, this subsequent development of the design accommodates the well-proven, highly efficient 140W Linear Sodium lamp giving 20,000 lumens output and cut-off distribution to BS 1788 1964.

The glass-fibre reinforced polyester canopy, acrylic bowl and LMG-M aluminium alloy end support, combine to provide a high strength/weight ratio lantern suitable for mounting on 10, 12, or 15 metre columns of small cross-sectional area and light construction.
The lantern fulfills all requirements demanded by groups A1, A2, C, D and F of the code of practice CP 1004 1963.

CIRCUIT DIAGRAM

Lamp — 140W SLI/H
Voltage — 220/250
Transformer Cat. No. — AME 53232.4
Capacitor Cat. No. — AMEC 2218



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