

Introduction

Thorn Lighting has the widest range of discharge lamp sources available in this country. Exclusive use of the Kolorlux phosphor and a wider range of Kolorarc and high pressure sodium lamps have made this a high quality, high efficiency range.

Highlights include the linear sodium lamps now renowned for reliability; metal halide Kolorarc lamps giving excellent colour rendering; and the increasingly important high pressure sodium KolorSON lamp with its extremely high luminous efficacy. Additionally, mercury tungsten and mercury reflector lamps have benefitted from an extension of the Kolorlux phosphor to improve colour and give high light output. In the HYTEK section that follows (pages 7:12 on) will be found the CSI sealed beam and MBIL/H floodlighting lamps which have recently been used effectively for lighting football stadiums for colour television.

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Kolorarc MBIF and MBI metal halide lamps

Description

High pressure discharge in mercury with metallic additives operating in a quartz arc tube. Kolorarc (MBIF) lamps have hard glass elliptical bulbs coated on the interior surface with fluorescent phosphor increasing the light output, improving the colour and diffusing the arc.

MBI lamps have clear hard glass elliptical bulbs.

The special additives in the arc help provide a more continuous spectral power distribution throughout the visible spectrum. At the same time the mercury resonance lines are reduced in comparison with ordinary mercury lamps, giving a light source with excellent colour rendering properties comparable to a Natural fluorescent tube.

Application

In any situation where high light output must be combined with good colour rendering, Kolorarc lamps are ideal. They can be used indoors for offices, shops, supermarkets and stores, where colour is of primary importance, and are finding increasing application for illuminating interior sports halls, gymnasias and swimming pools.

The excellent colour rendering of Kolorarc makes it suitable for museums and exhibitions where skilled lighting design can enhance the beauty of the exhibits.

Industrially, Kolorarc lamps can be used in area and high-bay lighting where good colour qualities, coupled with high output efficiency, are required; Kolorarc lamps are 30% more efficient than MBF lamps. The high lumen output is of primary importance where the weight of fittings on the ceiling is a serious consideration.

MBI lamps, with clear outer bulbs, are suitable where precise optical control is required, such as floodlighting. Kolorarc and MBI lamps have proved suitable light sources for use with colour television cameras. Other varieties of metal halide lamps are being increasingly used for stadia floodlighting, especially that of football grounds.

Supply Voltage

200/250V.

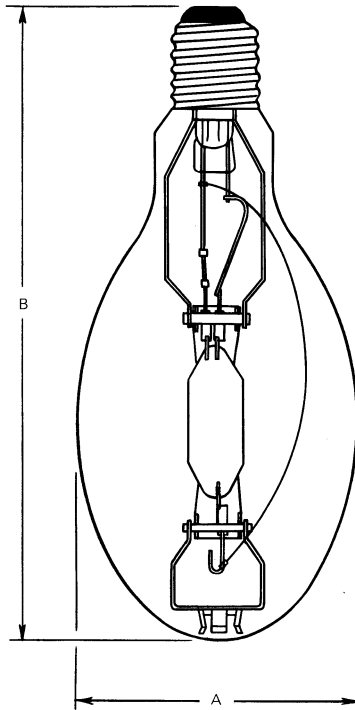
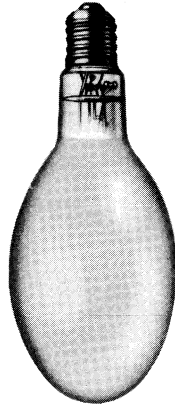
Rated Life

7500 hours.

Burning Position

BU: Base up lamps must not be operated with cap more than 15° below horizontal.

BD: Base down lamps must not be operated with cap more than 15° above horizontal.



Range

	Burning position	Cap	Lighting design lumens*	Standard pack
400W MBIF Kolorarc	BU†	E 40	27000	9
400W MBI	BU†	E 40	24000	9
1000W MBIF Kolorarc	BU†	E 40	85000	1
1000W MBI	BU†	E 40	78000	1

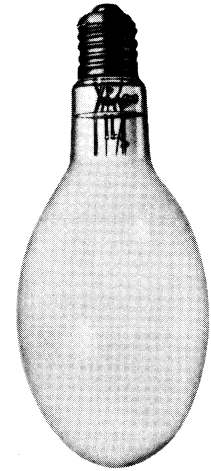
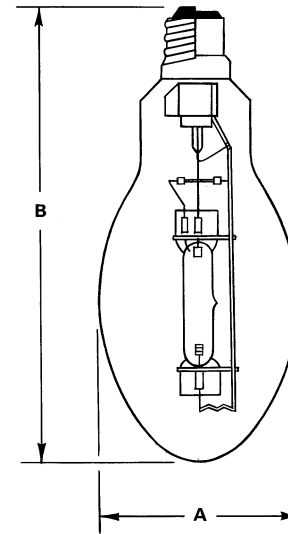
†BD available to order

*Applies to vertical operation. There will be a reduction of 10% when operated horizontally.

Maximum dimensions

	A mm	B mm
400W	122	292
1000W	167	410

Kolorlux MBF mercury fluorescent lamps



Description

High pressure mercury vapour discharge operating in a quartz arc tube. The interior surface of the elliptical bulb is coated with a fluorescent phosphor which converts ultra-violet radiation from the discharge into visible light.

Kolorlux lamps employ a new phosphor giving up to 10% higher light output than standard MBF lamps together with improved colour at the red end of the spectrum.

Applications

MBF lamps are widely used in industrial lighting and streetlighting. The improved colour of Kolorlux has extended the applications to commercial and display lighting, shopping centre and concourse lighting, and area floodlighting.

Burning Position

Universal: lamps may be operated in any position.

Supply Volts

200/250V

RANGE

Watts	Cap	Lighting design lumens	Maximum dimensions		Standard pack
			A mm	B mm	
50	ES	1800	56	129	50
80	ES*	3350	71	154	24
125	ES*	5550	76	175	24
250	GES	12000	91	227	9
400	GES	21500	122	286	9
700	GES	38000	143	328	1
1000	GES	54000	167	410	1

*3 pin BC cap also available.

For further information see page 7:7.

Kolorlux MBFR mercury reflector lamps

Description

High pressure mercury vapour discharge operating in a quartz arc tube. A shaped outer bulb forms an integral reflector. The upper portion of the bulb is coated with a reflecting layer which directs most of the light downward but allows some upward light. This internal reflector is unaffected by atmospheric corrosion and dirt collection so that the lamp requires the minimum maintenance. The introduction of Kolorlux phosphor into the range of reflector lamps gives a greatly improved colour and up to 10% higher output than previously available with standard MBFR lamps.

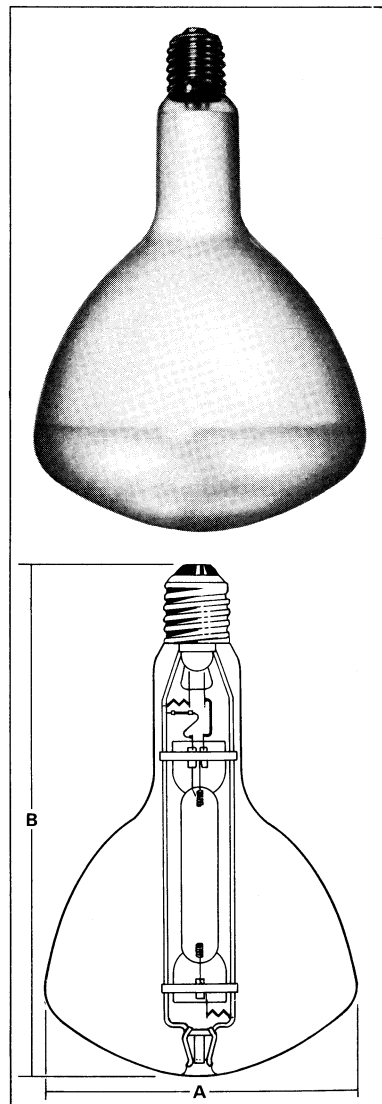
Application

Kolorlux reflector lamps are particularly suitable for medium and high bay lighting. The hard glass outer bulb allows the lamps to be used in exposed conditions for area lighting. The improved colour of Kolorlux has widened the use of reflector lamps into commercial applications such as display lighting.

Burning Position

Universal : lamps can be operated in any position.

Supply Voltage 200/250V

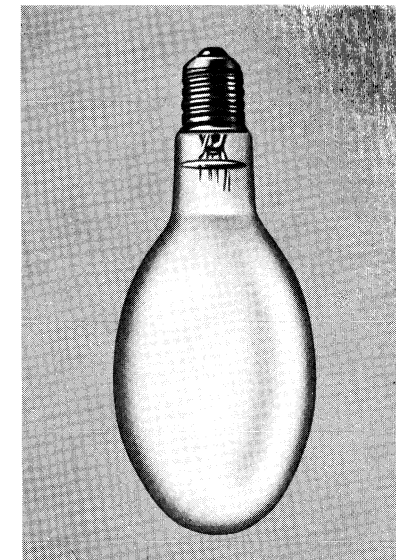
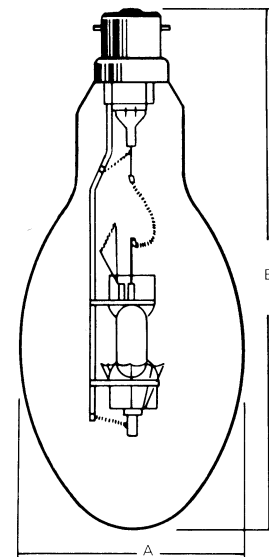


RANGE

Watts	Cap	Lighting design lumens	Dimensions		Standard pack
			A (mm)	B (mm)	
250	GES	10500	165±1	253±7	1
400	GES	18000	180±1	293±7	1
700	GES	32500	200±2	320±8	1
1000	GES	48000	220±2	370±10	1

For further information see page 7:7

Kolorlux MBTF mercury tungsten lamps



Description

Mercury tungsten lamps consist of a high pressure mercury discharge in a quartz arc tube. Mounted coaxially with the arc tube and connected in series with it, is a coiled tungsten filament which provides light and colour correction to the output of the mercury discharge and acts as a ballast to the arc.

No control gear is needed. Mercury tungsten lamps operate direct from the supply. All ratings have elliptical outer bulbs.

Kolorlux MBTF lamps have an outer bulb coated with a new phosphor giving higher light output and improved colour in comparison with previous MBTL and MBTF types.

Application

Mercury tungsten lamps can be used as direct replacements for tungsten filament lamps giving higher light output and longer life. They are particularly suitable where labour costs are high and access is difficult. Applications include shop windows, garages, warehouses, streetlighting and in wellglass, bulkhead and flameproof fittings.

Advantages

- offer six times the life of GLS lamps
- plug directly into the mains : no need for control gear
- give a large proportion of their light output immediately after switch-on
- give greater lumen output than equivalent GLS lamps
- save labour costs on replacement.

Burning Position

Mercury tungsten lamps are designed for operation in the cap up position : 250 and 500W ratings may be operated in other positions provided there is negligible fluctuation in the supply voltage.

Rated Life

6000 hours.

Supply Volts

Two voltage ratings of lamps are available, 220/230V and 240/250V, and lamps must be operated on the correct supply. Sudden reductions in voltage will cause lamps to extinguish.

RANGE

Watts	Cap	Lamp current (amps)		Lighting design lumens	Maximum dimensions		
		220/230V	240/250V		A mm	B mm	Standard pack
160	BC or ES	0.70	0.65	2700	76	175	12
250	GES	1.10	1.05	4840	91	227	12
500	GES	2.20	2.10	11500	122	286	6

MB mercury lamps

Description

High pressure mercury vapour discharge operating in a quartz arc tube. The 80 and 125W sizes have elliptical pearl bulbs, the 250 and 400W ratings have clear tubular hard glass bulbs.

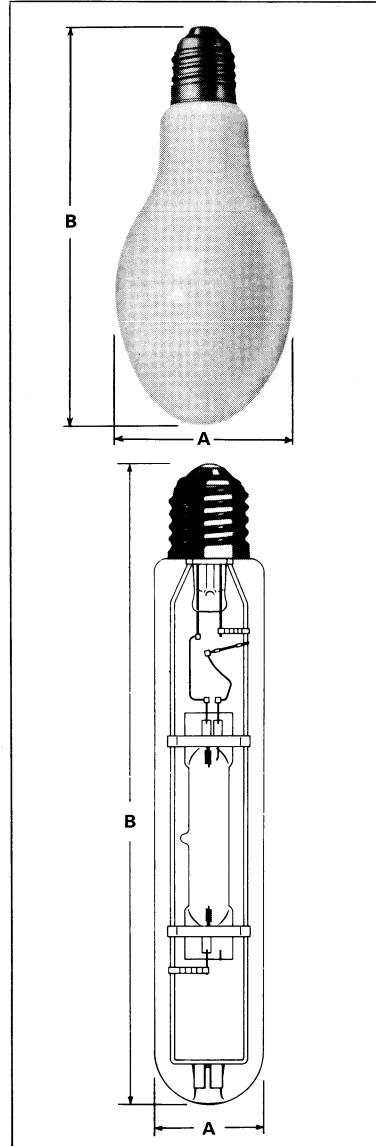
Application

MB lamps have been largely superseded for industrial and streetlighting by MBF Kolorlux with its higher light output and improved colour. MB lamps are still used, however, for general illumination where colour is not important and also where the typical characteristics of mercury spectral power distribution are advantageous, e.g. for graphic arts, laboratory and scientific purposes, plant growth, floodlighting.

Supply Voltage 200/250V

Burning Position

Universal: lamps can be operated in any position.



RANGE

Watts	Cap	Lighting design lumens	Dimensions A (mm)	B (mm)	Standard pack
80	ES*	3200	70±1	150±4	24
125	ES*	5200	75±1	170±5	24
250	GES	11500	51±1	290±8	12
400	GES	19600	51±1	330±8	12

*3 pin B.C. cap also available.

Mercury lamp information

Lighting Design Lumens

The Lighting Design Lumens quoted are the lamp outputs at 2000 hours and are recommended as a guide to lighting engineers planning scheme lay-outs. Lumen output beyond 2000 hours decreases by 2-4% per 1000 hours use according to type.

Striking Voltage

Mercury lamps are provided with an auxiliary electrode to initiate starting. Diagram 1 shows that the lamp will start readily under all normal operating temperatures. The striking voltage of MBI and MBIF lamps is not affected by ambient temperature.

Mains Voltage Variation

Diagram 2 shows the effect of mains voltage variation on lumens, lumens per watt and lamp watts.

Run-up Characteristics

These are shown in diagram 3. The time taken will vary slightly depending on the location and the type of fitting housing the lamp. Curves for metal halide lamps are shown in diagram 4.

Nominal Electrical Characteristics for MB, MBF and MBFR lamps

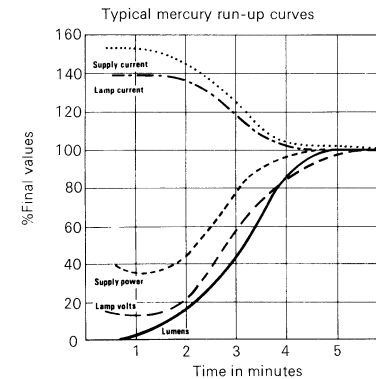
Watts	Rating Volts	Lamp Operating Volts	Lamp Operating current Amps
50	200/250	85/105	0.61
80	200/250	105/130	0.80
125	200/250	110/140	1.15
250	200/250	115/145	2.15
400	200/250	120/150	3.20
700	200/250	125/155	5.60
1000	200/250	130/160	7.50

Nominal Electrical Characteristics for Kolorlux and MBI lamps

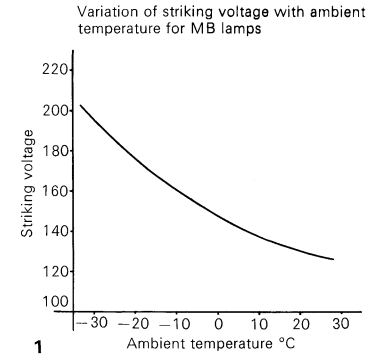
Watts	Rating Volts	Lamp Operating Volts	Lamp Operating current Amps
400	200/250	120/150	3.3
1000	200/250	235/265	4.2

British Standards

Lamps conform to the following standards where applicable:
BS.3677: 1963 Schedule for Electric Discharge Lamps for General Purposes.
BS.98: 1962 Screw Caps and Holders.

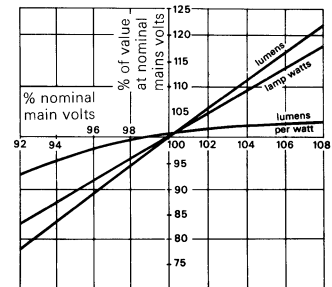


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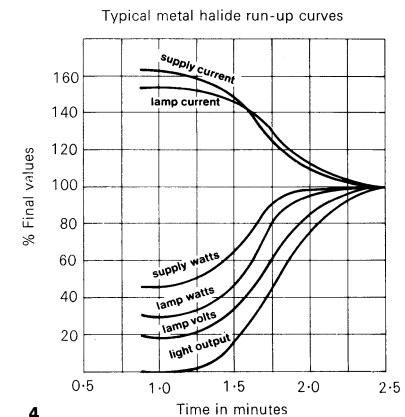


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Effect of variation of mains voltage on the lamp characteristics of mercury discharge lamps



2



4

KolorSON high pressure sodium lamps

Construction

The high-pressure sodium lamp differs from other discharge lamps in that it employs an arc tube made of sintered aluminium oxide. This material is necessary to withstand the intense chemical activity of sodium vapour at high temperature and pressure. Metal caps are sealed to its ends and support the electrodes, and the tube is mounted in a robust frame which locates on a depression in the crown of the bulb to give great strength and optical control.

The elliptical hard glass outer tube has a diffusing coating and the GES cap is locked on to the moulded neck to eliminate any possibility of the lamp becoming detached from the cap during life. The lamp has the same dimensions and luminance ratio as an MBF mercury lamp so that it can be used in the same fittings (different control gear is required). Tubular 250 and 400W versions are also available with a clear bulb for floodlighting purposes.

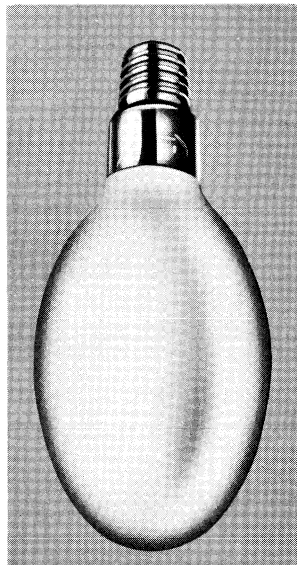
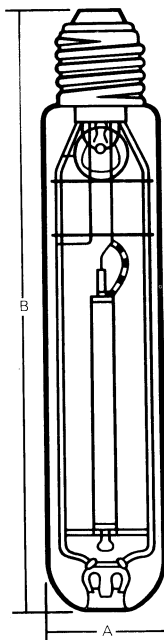
Starting and Operation

The lamp is started by a high-voltage pulse applied by an ignitor which ceases to function once the arc has struck. The ignitor may be mounted up to 13.5 m/44ft from the lamp.

External starting simplifies lamp construction, ensures immediate striking and is very reliable. The lamp takes four or five minutes to run up to full brightness. KolorSON lamps will normally restrike within one minute of extinction and rapidly regain full light output. This is a most important feature for interior use and a considerable improvement on the restriking times of mercury lamps.

Burning Position

Universal: lamps may be operated in any position.



Colour

The colour appearance of the lamp resembles that of a black body at 2100°K – a pleasant golden white. When the arc is run up the monochromatic yellow characteristic of low-pressure sodium lamps disappears and is replaced by a broader distribution across the visible spectrum. This gives acceptable colour rendering with a warm appearance and, although blues and greens are somewhat subdued, reds and yellows are enhanced and all colours are easily distinguishable.

Applications

Public lighting: traffic routes, city centres, shopping areas.
Area lighting: airports, dockyards, car parks, forecourts.
Floodlighting: stadiums, buildings, marshalling yards, sports grounds.
Interior lighting: high-bay lighting for factories, warehouses, hangars, halls.

QUALITY AND RELIABILITY

Since the introduction of the 140W linear sodium lamp by Thorn 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 lamps to date. Statistical records show lamp survival to be more than 95% at the end of the rated life of 6000 hours.

Thorn now offers an improved 200W linear sodium lamp with higher lumen output and characteristics suitable for instant start circuits. The lamp is dimensionally and electrically interchangeable with the previous 200W lamp. Light output is increased by 10% to 27500 lumens. This is achieved by the incorporation of a redesigned arc tube and a new improved reflective coating based on indium.

Braided cathodes, as used in the 140W linear sodium lamp, are embodied to give reliable life and freedom from early failures.

RESEARCH AND DEVELOPMENT

Intense study of fundamental principles has resulted in sodium lamps of exceptionally high efficacy 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 careful design of the discharge tube cross section 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 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.

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. Light is emitted uniformly from an arc 780mm long and only 29mm wide.

The compact and lightweight construction makes it easy to handle during relamping. The lamp is 908.8mm/3ft long and 39.5mm/1.5in in diameter and weighs less than 0.45kg/1lb. Transport and installation are further simplified by a 25-way pack which can easily be stored in service truck or tower wagon.

GENERAL DESCRIPTION

A low pressure sodium lamp incorporating the following essential factors:

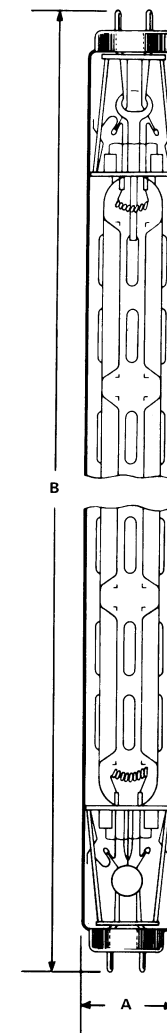
- 1 A discharge tube of unique cross section containing metallic sodium in an inert gas.
- 2 An electrode sealed into each end terminating in bi-pin caps.
- 3 An outer envelope containing the discharge tube, with the intervening space evacuated to maintain thermal insulation, thus keeping the sodium in a fully vaporised condition.
- 4 A heat reflecting coating on the inside surface of the outer envelope to provide further thermal insulation.

APPLICATION

The primary application for linear sodium lamps is street lighting where the construction of the lamp materially assists the design of lanterns and the light outputs are eminently suitable to meet MoT requirements for major road lighting schemes.

BURNING POSITION

The lamps must operate in a horizontal position ± 20°.



RANGE

Watts	Type	Nominal lamp Volts	Lamp current Amps	Lighting design lumens	Maximum Dimensions		Standard pack
					A mm	B mm	
250	Tubular Clear	100	3.0	21000	53	256	12
250	Elliptical Coated	100	3.0	19500	91	227	9
400	Tubular Clear	105	4.4	38000	53	286	12
400	Elliptical Coated	105	4.4	36000	122	286	9

Supply Volts 200/250

Rated Life 6000 hours

Guaranteed Life 4000 hours

For further information see TLL leaflet 0053

RANGE

Watts	Nominal volts	Lamp current (amps)	Lighting design lumens	Dimensions		Standard pack
				A mm (max.)	B mm (max.)	
140	175	0.9	20000	39.5	908.8	25
200	135	1.6	25000	39.5	908.8	25
200(HO)	145	1.55	27500	39.5	908.8	25

Supply voltage 200/250V
Rated life 6000 hours
Guaranteed life 4000 hours
For further information see page 7:11

SOX sodium lamps

Description

Low pressure sodium discharge operating in a U-shaped arc tube. The U-tube is enclosed in a tubular outer bulb which has a reflector coating on the inside surface to provide thermal insulation. This construction provides a lamp of considerably higher efficacy than the integral type which is now obsolete. A BC cap is fitted.

Application

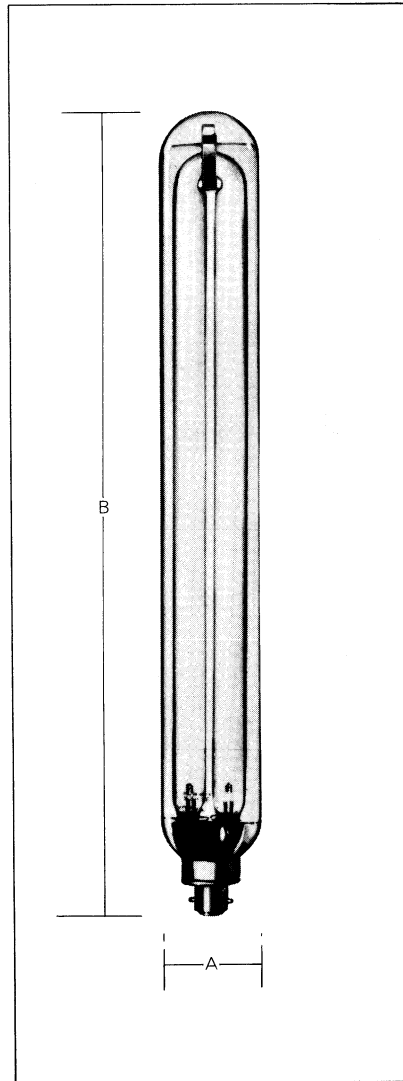
The primary application for SOX lamps is for streetlighting where their higher efficacy has superseded earlier types as follows:

- 1 The 90W SOX lamp replaces the 140W SOI/H integral lamp and the 140W SO/H lamp and jacket. All three lamps have the same dimensions and can be operated from the same control gear.
- 2 The 55W SOX lamp replaces the 85W SOI/H integral lamp and 85W SO/H lamp and jacket. All three lamps have the same dimensions and can be operated from the same control gear.
- 3 The 35W SOX lamp replaces the 60W SOI/H integral lamp and the 60W SO/H lamp and jacket. All three lamps have the same dimensions and can be operated from the same control gear.

Burning Position

Horizontal $\pm 20^\circ$
The 35W and 55W ratings may also be operated in the vertical cap up position.

Supply Volts 200/250
Rated Life 6000 hours
Guaranteed Life 4000 hours



RANGE

Watts	Nominal lamp volts	Lamp current (amps)	Lighting design lumens	Maximum dimensions		Standard pack
				A mm	B mm	
35	70	0.6	4300	53	311	9
55	104	0.59	7150	53	425	9
90	112	0.94	12250	67	528	9
135	164	0.95	21200	67	775	9
180	245	0.90	31500	67	1120	9

Sodium lamp information

Lighting Design Lumens

The Lighting Design Lumens quoted are the lamp outputs at 3000 hours* and represent an average over the first 6000 hours* life.

* SON lamps are quoted at 2000 hours representing an average over the first 5000 hours.

Mains Voltage Variation

Diagrams 1 and 2 show the effect of the variation of mains voltage on lumens, lumens per watt, total watts and mains current.

Spectral Distribution of Low Pressure Lamps

The discharge has a characteristic yellow colour, almost all the visible energy being concentrated at 589/589.6 nm.

Run-up time for Low Pressure Lamps

This varies between 10 and 20 minutes according to type but there is no delay in starting if the lamp is switched on while hot. Typical run-up curves for linear lamps are shown in diagram 3.

Colour Appearance and Rendering of SON Lamps

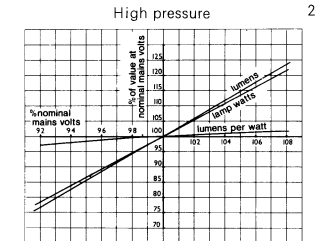
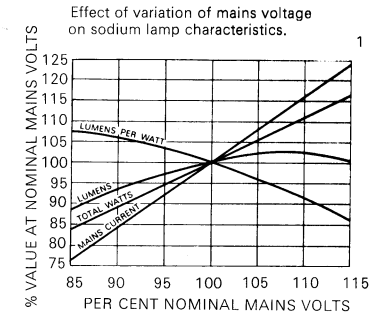
The colour appearance of the lamp resembles that of a black-body at 2100°K—a pleasant golden white. When the arc is run up, the monochromatic yellow characteristic of low-pressure sodium lamps disappears and is replaced by a broader distribution across the visible spectrum. This gives acceptable colour rendering with a warm appearance, and, although blues and greens are somewhat subdued, reds and yellows are enhanced and all colours are easily distinguishable.

Run-up characteristics of SON Lamps

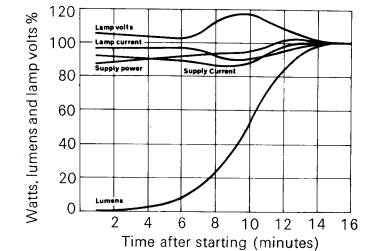
are shown in diagram 4.

British Standard

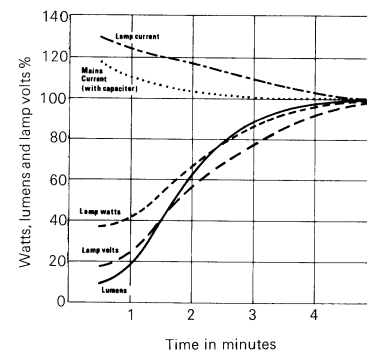
Lamps described in this catalogue conform to the following standard where applicable:
BS.3767: 1964 Schedule of Sodium Discharge Lamps.



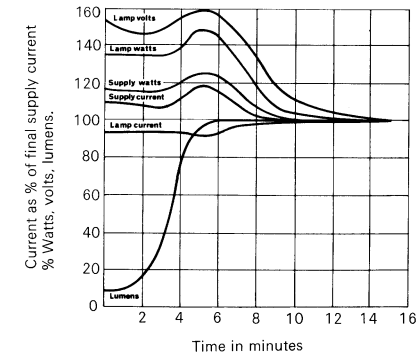
Typical Linear Sodium run-up curves 3



Typical SON run-up curves 4



Typical SOX run-up curves 5



Hytek lamps are specialised discharge lamps manufactured to meet the needs of research and industry for advanced compact and high brightness light sources.

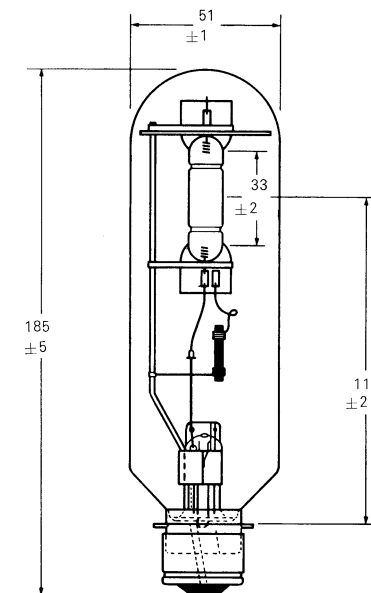
There is also a variety of ultra-violet sources.

These proven ranges of discharge lamps are used for inspection and development projects in many locations and they undoubtedly have done much to maintain the superior quality and advanced design of much British industrial and engineering equipment.

The lamps are manufactured to exacting specification with advanced or high techniques – hence the name Hytek.

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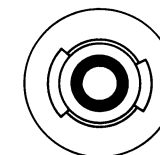
Supply voltage 200/250 a.c.

DESCRIPTION

Mercury vapour discharge lamps with quartz arc tubes loaded below 100W/cm of arc length and operating at pressures of 8/10 atmospheres.

The arc tubes are mounted in tubular outer bulbs, and the lamps are designed for vertical burning cap down. Restrictions in the arc tube ensure a stabilized and accurately focused linear light source for projection purposes.

The lamps require control gear consisting of a choke and power factor correction capacitor.



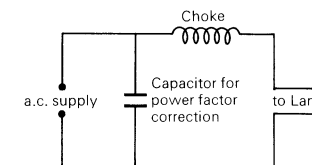
All dimensions in mm

TYPICAL APPLICATION

Optical instruments requiring accurate optical control, e.g. spectroscopes, comparators and other 'slit' instruments.

CIRCUIT DIAGRAM

a.c. operation



CONTROL GEAR 240V 50Hz.

Rating	Choke Catalogue no.	Capacitor Catalogue no.	Mfd rating
125W	AME 53159.4	AME C2234	8

LAMPS

Reference no.	Watts	Arc length	Cap	Lamp operating Volts	Amps	Starting current	Design average Lumens	Life Hours
91-1159	125	33 ± 2	P28/25	110/140	1.15	1.5/2	4000	1500

Mercury lamps for projector purposes-Type ME/D

Supply voltage 200/250.

DESCRIPTION

Mercury vapour discharge lamps with quartz arc tubes loaded above 100W/cm of arc length and operating at a pressure of about 30 atmospheres.

The arc operates between solid tungsten electrodes providing a compact light source of high brightness. In the 250W ratings the quartz arc tube is enclosed in a metal case with clear apertures or with a quartz window to enable short wave u-v to be utilised from the lamp, or with a glass window where short wave u-v is not required. Alternatively, the quartz arc tube is enclosed in a tubular glass outer bulb.

The 1000W rating is a bare quartz arc tube. Lamps may be operated on d.c. or a.c. supplies in conjunction with appropriate control gear. For a.c. supplies this consists of a choke and power factor correction capacitor. In addition, the 1000W lamp utilises a starting capacitor in series with a pushbutton switch. For d.c. operation of 250W lamps a choke and series resistance are required, the choke being retained for starting purposes. The 1000W lamp on d.c. operation requires a series resistance, the lamp being started by means of a Tesla coil.

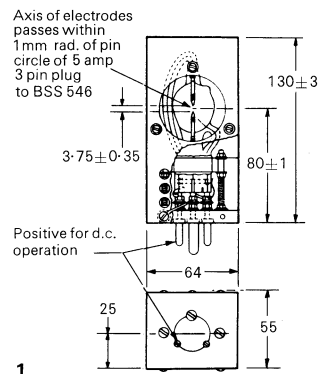
The lamps are designed for burning in the vertical position.

TYPICAL APPLICATIONS

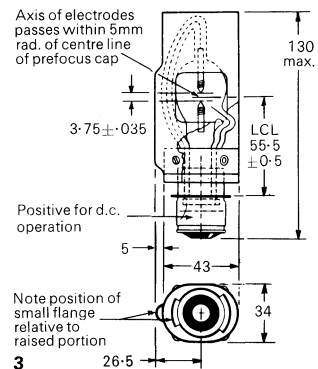
Monochrome slide and film projectors, film printing, projection microscopes, profile projectors.

All dimensions in mm unless otherwise indicated

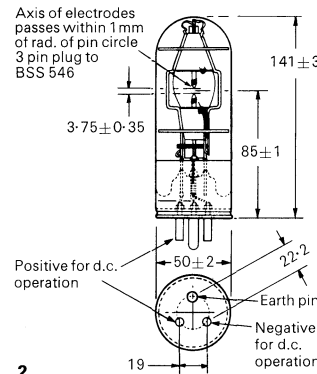
3-PIN BOX TYPE LAMP 250W



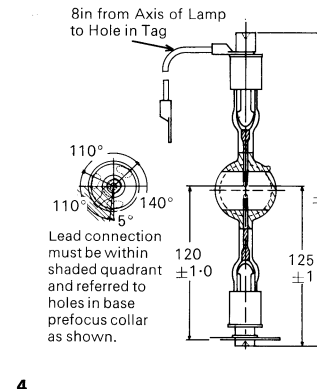
PREFOCUS LAMP 250W



LAMP WITH TUBULAR GLASS ENVELOPE 250W



LAMP WITH TAG/LEAD CONNECTION 1000W



Mercury lamps for projector purposes-Type ME/D

CONTROL GEAR a.c. operation

Rating	Supply Volts a.c.	Choke Catalogue no.	Capacitor Catalogue no.	Mfd rating	Starting Capacitor
250W	200/250	AME 53235	AME C2275	60	—
1000W	200/250	4 x AME 53235	3 x AME C2276	3 x 80	0.5 mfd*

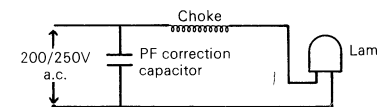
* FCC type CP142W-1,000V working-70°C max. working temperature or equivalent

CONTROL GEAR d.c. operation

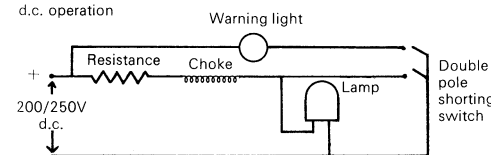
Supply Volts d.c.	250W		1000W	
	Series Resistance Ohms	Choke	Series Resistance Ohms	Current Rating Amps
200	35.2	AME C53235	8.9	22.5
210	37		9.5	22
220	40.6		10.2	21.6
230	43.3		10.9	21
240	46		11.5	20.8
250	48.7	12.2	20.4	

CIRCUIT DIAGRAMS 250W LAMPS

a.c. operation

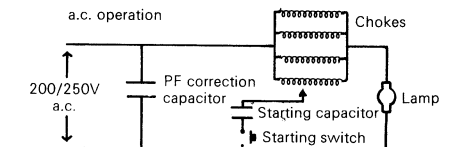


d.c. operation

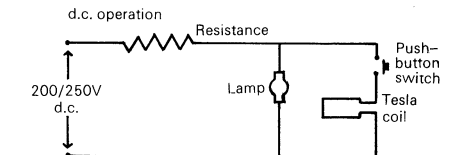


CIRCUIT DIAGRAMS 1000W LAMPS

a.c. operation



d.c. operation



LAMPS

Reference no.	Watts	Arc length mm	Cap	Outer Casing	Illus.	Lamp operating		Starting current Amps	Maximum brightness Stilbs	Mean HCP	Life Hours.
						Volts	Amps				
94-0001	250	3.75	3-pin	Metal Box Glass Window	1	60/75	3.7/4.6	4/5	20000	1300	500
94-0006	250	3.75	3-pin	Metal Box Quartz Window	1	60/75	3.7/4.6	4/5	20000	1300	500
94-0051	250	3.75	3-pin	Tubular Glass Bulb	2	60/75	3.7/4.6	4/5	20000	1300	500
94-0101	250	3.75	P28/25	Oval Metal Case	3	60/75	3.7/4.6	4/5	20000	1300	500
94-0151	1000	6.5	Cylindrical with disc	—	4	60/75	16/18	20/22	40000	7000	500

Mercury lamp for long wave u-v— Type MBW (blacklight)

Supply voltage 200/250 a.c.

DESCRIPTION

Mercury vapour discharge lamps with quartz arc tubes loaded below 100W/cm of arc length and operating at pressures of 8/10 atmospheres. The quartz arc tube is enclosed in a pear shaped outer bulb of Woods glass which absorbs virtually all radiation from the arc tube other than that in the long wave u-v of predominantly 365 nanometres; little visible light is emitted.

The lamp is thus eminently suitable as a source of long wave u-v radiation to excite fluorescence in susceptible substances.

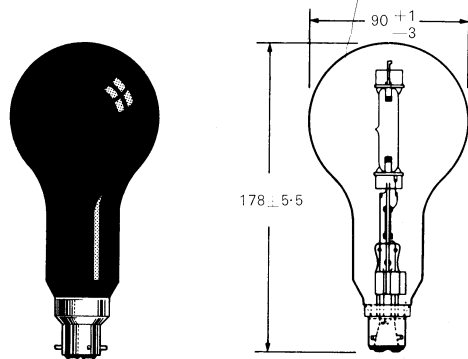
The lamp is designed for operation on 200/250W a.c. supplies with suitable control gear in the form of a series choke and power factor correction capacitor. It will operate in any position.

TYPICAL APPLICATIONS

As a source of long wave u-v for bacteriological, mineralogical and forensic investigations; in connection with fluorescent pigments for various detection methods; and for special effects in entertainments and shop window lighting.

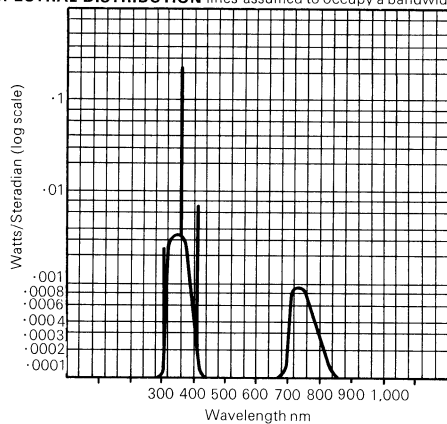
CONTROL GEAR

Choke Rating no.	Capacitor Catalogue no.	Mfd rating
125W AME 53159.4	AME C2234	8

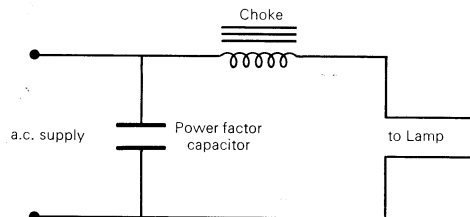


All dimensions in mm

SPECTRAL DISTRIBUTION lines assumed to occupy a bandwidth of 5 nm



CIRCUIT DIAGRAM



LAMPS

Reference no.	Watts	Cap	Lamp operating Volts	Amps	Starting current Amps	Life Hours
91-6217	125	B22/31 x 30 3-pin	110/140	1.15	1.5/2	1500

Mercury lamps for long wave u-v—Types M1 and M2

DESCRIPTION

Low pressure discharge in mercury vapour between electrodes in a tubular glass envelope. These lamps provide both u-v and visible radiation especially useful in providing excitation of fluorescent materials at low illumination levels. The M1 lamp is designed for operation on 24V d.c. supplies with suitable series resistances, and the M2 type for 200/250V a.c. supplies with suitable control gear either in the form of a choke or series resistance.

The lamps operate in any position.

TYPICAL APPLICATION

As a source of long wave u-v for the excitation of low lumen levels of fluorescent pigments in display work.

CONTROL GEAR

M1 LAMPS d.c. operation

Supply Rating	Series Volts	Resistance †	Heater Resistance †
4.5W	24 d.c.	24 Ohms	30 Ohms

†Supplied by installer

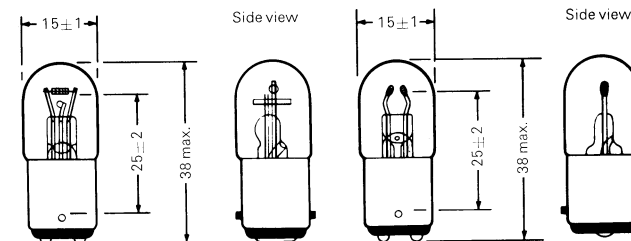
M2 LAMPS

Supply	Series
200/250	0.9 Amps
Operating Current	AME 62830.4
Chokes in series	AME 62825

Alternatively, series resistors of values between 480 and 160 ohms may be used in place of the series chokes to give operating currents ranging from 0.5 to 1.5 amps.

MERCURY DISCHARGE TUBE M1

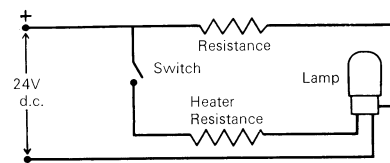
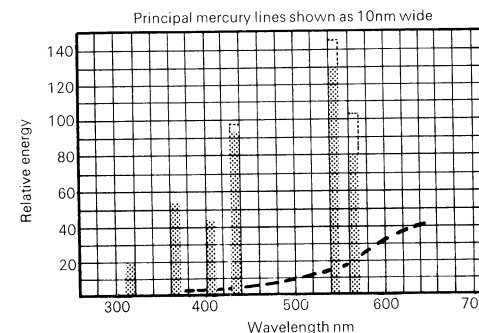
MERCURY DISCHARGE TUBE M2



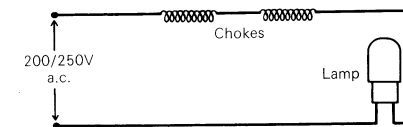
All dimensions in mm

APPROXIMATE SPECTRAL ENERGY DISTRIBUTION

for M1 and M2 mercury discharge tubes



M1 Lamps—24V d.c. operation



M2 Lamps—200/250V a.c. operation

LAMPS

Type	Reference no.	Rating *	Supply Volts	Cap	Filament current Amps	Max. arc current Amps	Life Hours
M1	98-9001	4.5W	22 d.c. min.	SBC	0.8	0.75	200
M2	98-9002	4.5W	200/250 a.c.	SBC	—	0.5/1.5	200

*At 0.75 Amp

Mercury lamp for short wave u-v—Type MBL/D

Supply voltage 200/250

DESCRIPTION

Mercury discharge lamps with bare quartz arc tubes loaded below 100W/cm of arc length and operating at a pressure of 8/10 atmospheres. The lamp transmits both long wave and short wave u-v as well as visible light. Perforated diaphragms mounted above the electrodes ensure a stabilized and accurately focused linear light source for optical purposes.

The lamp is designed to operate in the vertical cap down position on 200/250V a.c. and d.c. supplies with suitable control gear. For a.c. operation this consists of a series choke and power factor correction capacitor. For d.c. operation a series choke and a series resistor are required together with a quick-break switch for starting purposes.

TYPICAL APPLICATION

As a source of short wave u-v in measuring instruments, e.g. spectral photometers.

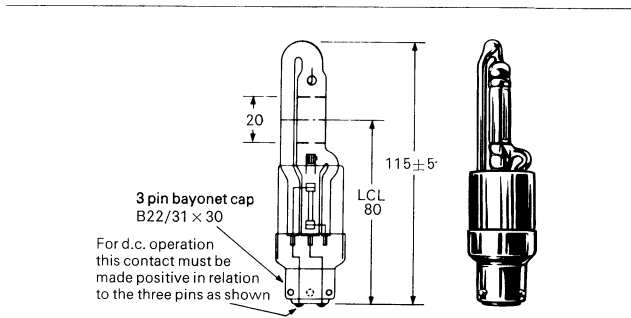
CONTROL GEAR a.c. operation

Rating	Choke Catalogue no.	Capacitor Catalogue no.	Mfd rating
125W	AME 53159.4	AME C2234	8

CONTROL GEAR d.c. operation

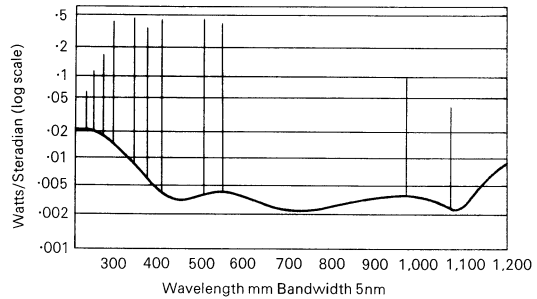
Rating	Supply Volts d.c.	Resist- ance* Ohms	Cur- rent Rating Amps	Choke Reference no.
200	79			
210	87			
125W	220	95	2.3	AME 53159.4
	230	105		
	240	112		
	250	123		

*Supplied by installer



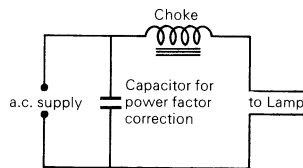
All dimensions in mm

SPECTRAL DISTRIBUTION

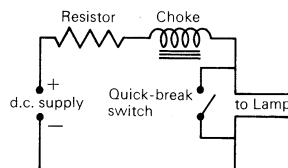


CIRCUIT DIAGRAMS

a.c. operation



d.c. operation



LAMPS

Reference no.	Watts	Arc length mm	Cap	Lamp operating Volts	Amps	Starting current Amps	Max. brightness Stilbs	Life Hours
91-9006	125	20	B22/31 x 30 3-pin	110	1.25	3	800	1000

Compact source metal halide lamp for projector purposes 400W CSI

DESCRIPTION

The 400 watt compact source iodide lamp is a new design of projector lamp giving white light of good colour rendering properties at an efficiency of 80 l/w for 100 hours. The source size is approximately 9 x 5 mm and the brightness is about 8000 candelas per square cm.

The high efficiency is obtained by the use of an arc discharge. The iodide technique has been used to introduce additional elements into the arc and to keep the bulb wall clean throughout life.

The lamp is somewhat unconventional in appearance. It is extremely rugged. The small total physical size and the ability to operate it in any position ensure that the lamp can be readily fitted into existing equipment and simplifies the design of new equipment. The single ended construction and the degree of prefocusing provided means that lamp replacement is straightforward.

APPLICATIONS

The major advantage of this lamp is its high efficiency, combined with its robustness, simplicity, small size and relatively low power consumption.

In general, considerations of source size, lamp size, lamp rating and efficiency indicate that it can be used in applications which at present use 100V-240V hard glass filament projector lamps of 250W-1000W rating to give a substantial advantage in terms of either increased light output or a reduction in input power and heat.

CONTROL GEAR

The lamp is designed for operation with control gear consisting of a choke, capacitor and starter switch which gives a high-voltage, high frequency pulse.

Control gear in box: Catalogue no. AME 53196.4

LAMPHOLDER

A lampholder, Catalogue no. L1101, is available for use with this lamp.

DIMENSIONS

Arc length	9 ± 1
Arc size	9 × 5
Overall length (max.)	55
LCL	34 ± 1
Diameter (max.)	30
Pin length (min.)	8.5
Pin spacing	9.0 ± 0.5
Pin diameter	7.6

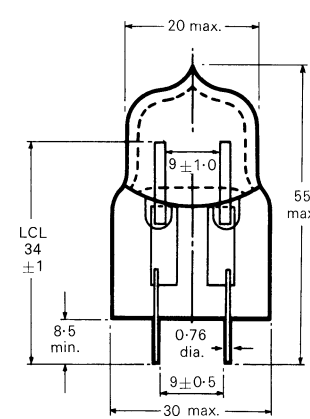
LIFE

Nominal objective: 500 hrs

OPERATING POSITION

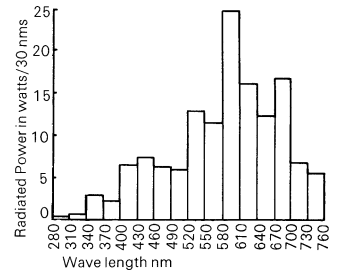
Universal

LAMP REFERENCE NUMBER 99-0201



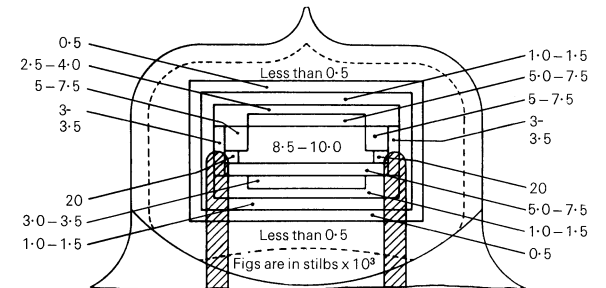
TYPICAL SPECTRAL POWER HISTOGRAM

for the 400W compact source iodide lamp



All dimensions in mm

TYPICAL BRIGHTNESS DISTRIBUTION DIAGRAM



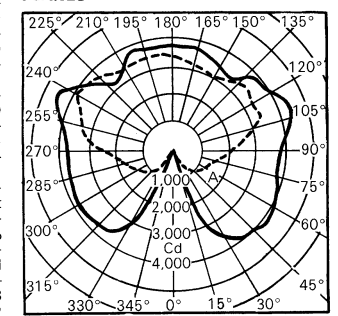
ELECTRICAL CHARACTERISTICS

Supply volts a.c.	240
Arc watts	400
Arc volts	100
Arc current (amps)	5
Run up time (secs)	30
Re-starting time (mins)	3/5

LUMINOUS CHARACTERISTICS

Initial lum. eff. (min)	80 lumens/watt
Lumen maintenance	85%
Colour rendering	Good
Chromaticity co-ordinates	X = -433 Y = -382

TYPICAL CANDLEPOWER DISTRIBUTION IN VERTICAL PLANES



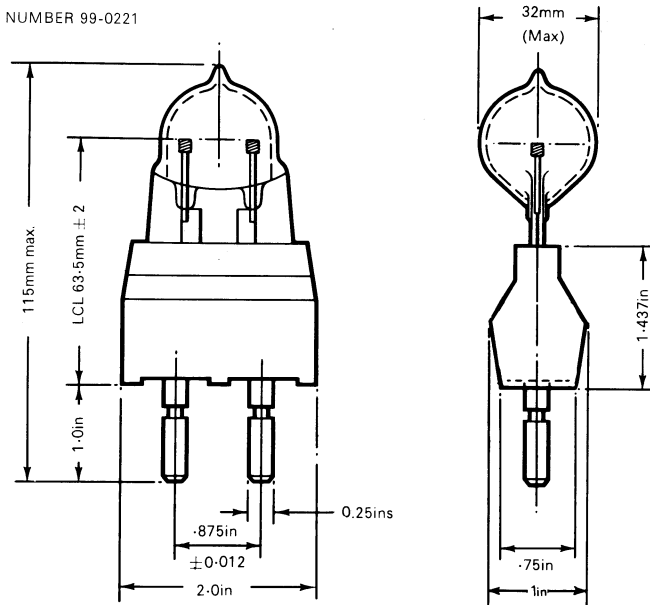
A - through electrodes

B - normal to electrodes

Plan view of lamp

Compact source metal halide lamp for projector purposes 1000W CSI

LAMP REFERENCE NUMBER 99-0221



DESCRIPTION

The 1000W compact source iodide lamp gives white light of good colour rendering at an efficiency of 93 l/w for 200 hours.

APPLICATIONS

The high efficiency, robustness and small size of this lamp make it eminently suitable for projector purposes such as for follow spotlights.

ELECTRICAL CHARACTERISTICS

Supply volts	240
Arc watts	1000
Arc volts	70-85
Arc current (amps)	15
Run-up time (secs)	30
Re-start-time (mins)	5

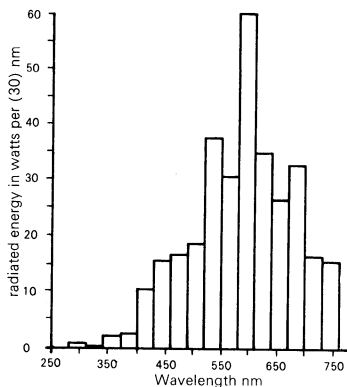
DIMENSIONS (in millimetres)

Arc length	14 ± 1
Overall length (max.)	115
Light centre length	63.5 ± 2
Diameter (max.)	32
Cap	Medium Bipost—G22

LUMINOUS CHARACTERISTICS

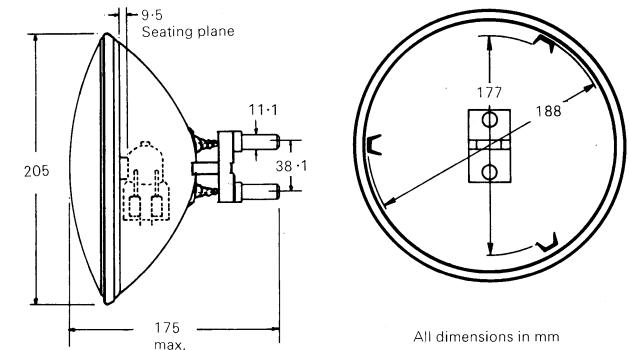
Initial efficiency	93 lumens/watt
Lumen maintenance	80%
Colour rendering	Good
Chromaticity coordinates	X=0.424 Y=0.402

TYPICAL SPECTRAL POWER HISTOGRAM



Compact source sealed beam metal halide lamp 1000W

LAMP REFERENCE NUMBER 99-1222



All dimensions in mm

DESCRIPTION

The 1kW sealed beam compact source iodide lamp consists of the standard 1kW CSI lamp 99-0221 (see previous page) enclosed in a 205mm/8in diameter sealed beam reflector envelope. This results in a beam intensity of 1.5 million candelas with a beam spread of 18° (to 0.1 peak intensity).

APPLICATIONS

Floodlighting, especially for filming TV outside broadcasts; also as a general replacement for carbon arcs.

ELECTRICAL CHARACTERISTICS

Supply voltage	220, 240 a.c.
Arc watts	1000
Arc volts	70/85
Arc current (amps)	15 approx.
Run-up time (secs)	30
Restart time (mins)	5

DIMENSIONS (in millimetres)

Diameter	205
Overall length (max.)	175
Cap	Bi-post G38

LUMINOUS CHARACTERISTICS

Initial beam candlepower (peak)	1.5 million candelas
Beam spread 1/2 peak 1/3 peak 1/5 peak 1/10 peak	± 3° ± 4° ± 6° ± 9°
Colour rendering	Good
Chromaticity co-ordinates	X=0.424 Y=0.402

LIFE

Nominal objective 1000 hours

OPERATING POSITION

Universal

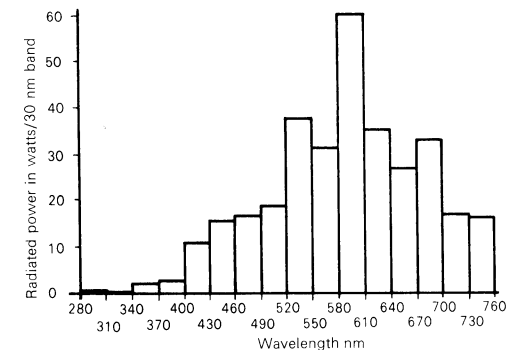
CONTROL GEAR

Control gear and box, AME 53255, consisting of series ballast circuit and high voltage pulse starter unit. The starter unit is mounted on a detachable chassis and may be removed and fixed separately. This enables the starter unit to be mounted on the lamp housing ensuring a short, totally enclosed HT lead.

LAMP FITTINGS

Suitable fittings, COM 1000 series, are available for use with this lamp, giving a variety of light distributions and incorporating the starter unit in the fitting housing.

SPECTRAL ENERGY HISTOGRAM



Metal halide lamp—Type MBIL/H 750W

Supply voltage 200/250 a.c.

Lamp Reference no. 91-7461

DESCRIPTION

A mercury iodide lamp with a quartz tube loaded below 100W/cm arc length at a pressure of 8/10 atmospheres.

The lamp is for use in ON 1600 floodlight fitting and the data for the lamp in this fitting is as below:

CONTROL GEAR (see circuit diagram)

Supply volts 220/240 50Hz
 Rating 750W
 Choke/Transformer AME 53254.4
 Capacitors 4 × AME 2236

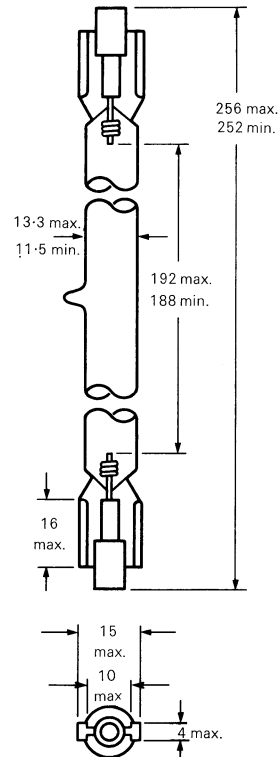
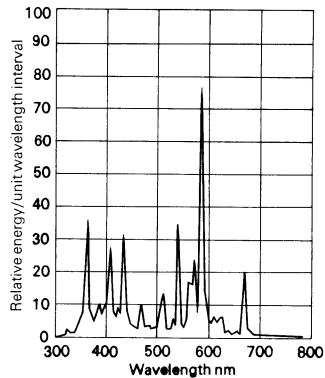
LAMP CHARACTERISTICS

Rating 750W
 Arc volts 450
 Operating current 1.75 amp
 Run-up time 2½ mins
 Light output: initial 67000 lumens
 throughout life 60000 lum
 Nominal life 3000 hours
 Bulb finish frosted
 Operating position horizontal

APPLICATION

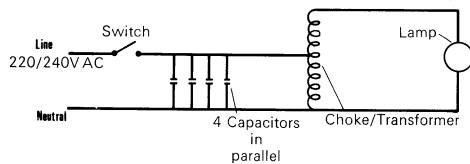
Outdoor Floodlighting.

SPECTRAL DISTRIBUTION



All dimensions in mm

CIRCUIT DIAGRAM



Metal halide lamp—Type MBIL/H 1600W

DESCRIPTION

A mercury iodide lamp with quartz arc tube loaded below 100W/cm at a pressure of 8/10 atmospheres. The lamp is for use in ON 1600 floodlighting fitting.

CONTROL GEAR

(See circuit diagram)

Supply volts 220, 240, 50Hz
 Rating 1600W
 Chokes/Transformers 2 × AME 53254.4
 Capacitors 8 × AME 2236

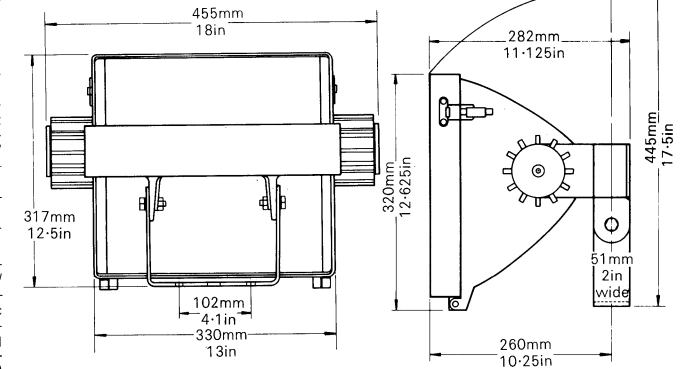
LAMP CHARACTERISTICS

Rating 1600W
 Caps Ceramic
 Bulb finish Frosted
 Operating volts 450
 Operating amps 3.75
 Nominal lumens (initial) 135000
 Nominal lumens (throughout life) 115000
 Life 3000 hours
 Run-up time 2½ mins
 Operating position Horizontal

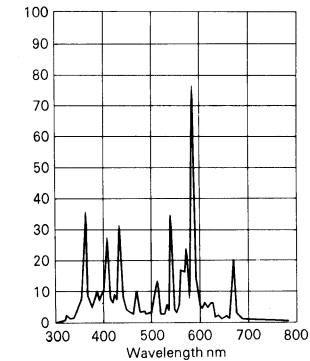
SAFETY PRECAUTIONS

The light emitted by the lamp should not be observed with the naked eye for it has a u-v content normally filtered out by the projector. The lamp (arc tube) should not be touched with the bare hand but, if this is unavoidable, it should be cleaned with a methylated spirit damped cloth before operation.

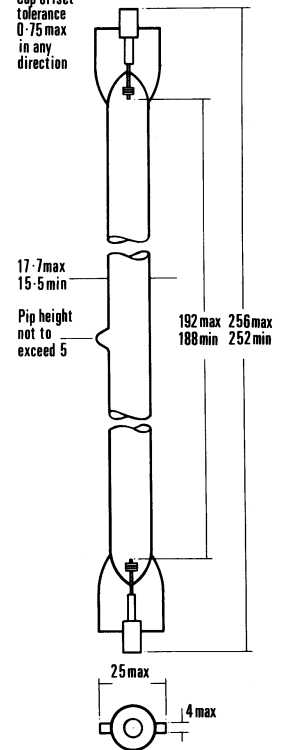
LAMP REFERENCE NUMBER 91-7475
 ON 1600 750/1600W FLOODLIGHT



TYPICAL SPECTRAL DISTRIBUTION CURVE

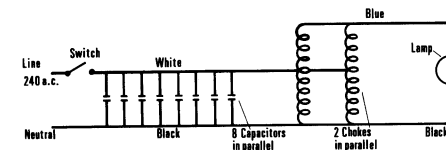


Cap offset tolerance 0-75 max in any direction



All dimensions in mm

CIRCUIT DIAGRAM



Metal halide lamp—Type MBIL/H 1200W

GENERAL DESCRIPTION

This 1200W MIBL lamp consists essentially of an arc burning between tungsten electrodes in an atmosphere of mercury vapour and additional metallic halides enclosed in a tubular quartz bulb. The halides are chosen to ensure maximum radiation in the 360 to 450 nanometre region. It is designed to operate in an enclosure in still air. The lamp will only remain stable in operation providing the quartz wall temperature operates between 600 °C and 750 °C.

GENERAL APPLICATION

For photoprinting purposes in the graphic arts industry—this encompasses diazo printing, photo-resists, etc. The u-v output enables faster printing speeds than those obtained from conventional carbon arc lamps. It is particularly recommended by Agfa-Gevaert as an exposure source for use with their colour proofing system "Gevaproof".

CONTROL GEAR

(see circuit diagram)

Supply volts	240V 50Hz
Rating	1200W
Chokes	2 x AME 53254.4
Capacitors	8 x AME C2236

LAMP CHARACTERISTICS

Rating	1200W
Cap	Ceramic
Operating volts	350 ± 30
Operating amps	4

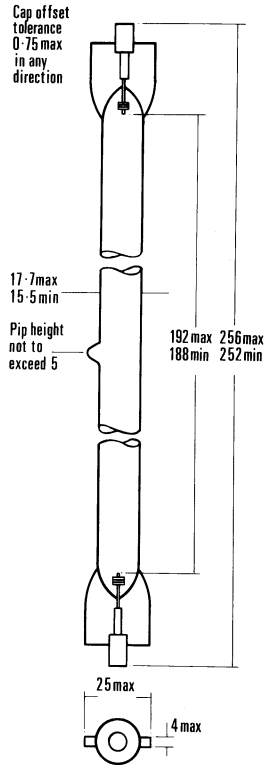
LIFE

500 hours

BURNING POSITION

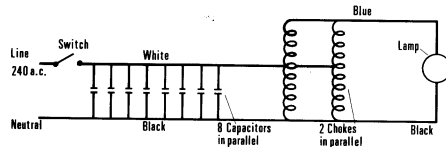
Horizontal

LAMP REFERENCE NUMBER 91-7470

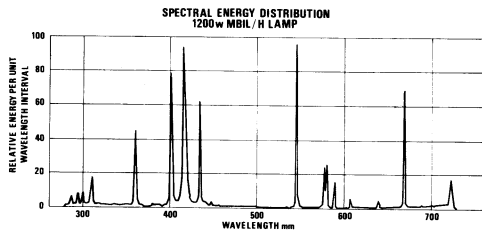


All dimensions in mm

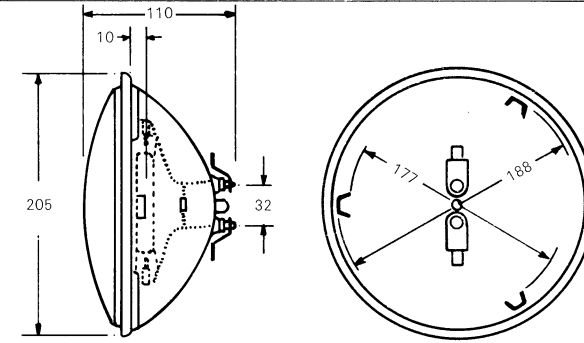
CIRCUIT DIAGRAM



TYPICAL SPECTRAL DISTRIBUTION CURVE



400W Metal halide sealed beam photoprinting lamp MBI PAR 64



All dimensions in mm

Description

A 400W high pressure metal halide quartz arc lamp enclosed in a sealed beam envelope with internal reflector, providing radiation primarily in the 360–450 nanometer wave bands. The unit is fitted with a spreader lens to give an elliptical light distribution capable of giving reasonably uniform radiation over a 36in x 24in area at a distance of 2 — 3ft.

Application

In the photoprinting field, especially for diazo and photo resist printing as replacement for carbon arcs. By using this unit printing times can be reduced by factors of 4 to 1 or more with a reduction in electrical power.

Electrical characteristics

Arc Watts	400
Arc Volts	105 ± 15
Arc Current	4.4 amps
Run-Up time	2 minutes
Restrike time	7/10 minutes

Dimensions

Overall width	205mm
Caps	Two lug flat

Life

1000 hours nominal.

Operating Position

Universal
Lamp reference no. 91-9826

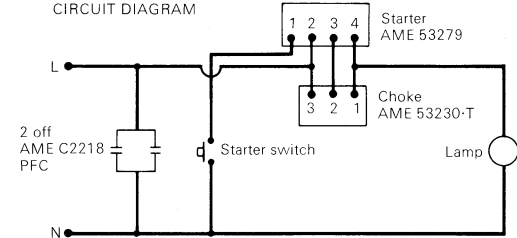
Control Gear

Choke AME 53230T with starter unit AME 53279, and two capacitors AME C2218. See circuit diagram.

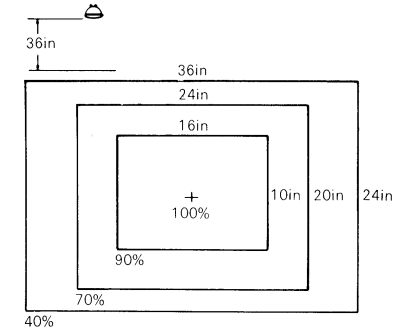
Lamp Fitting

A special fitting has been designed for use with this lamp. Full details on application.

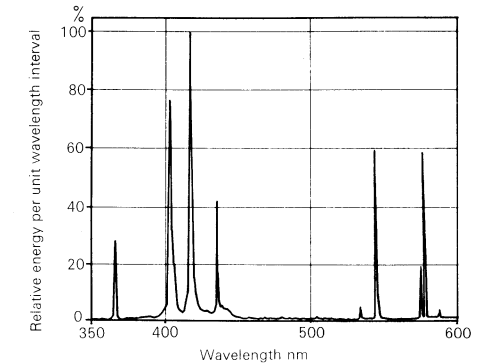
CIRCUIT DIAGRAM



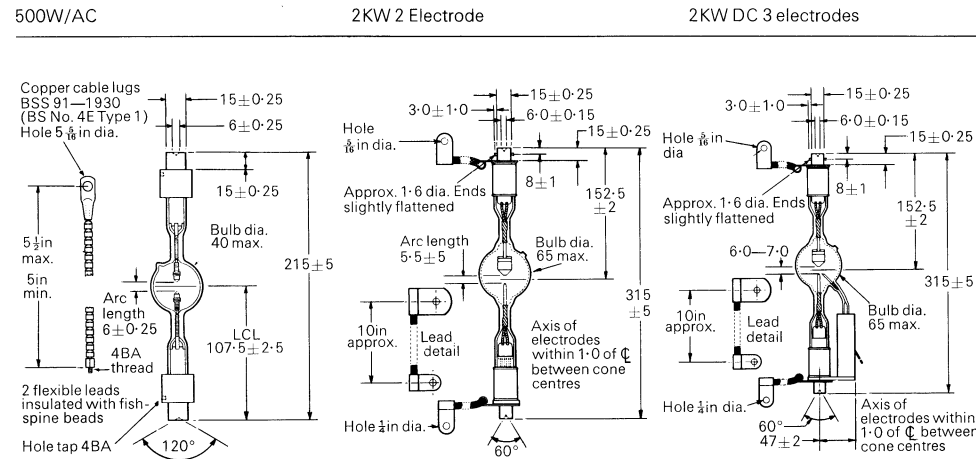
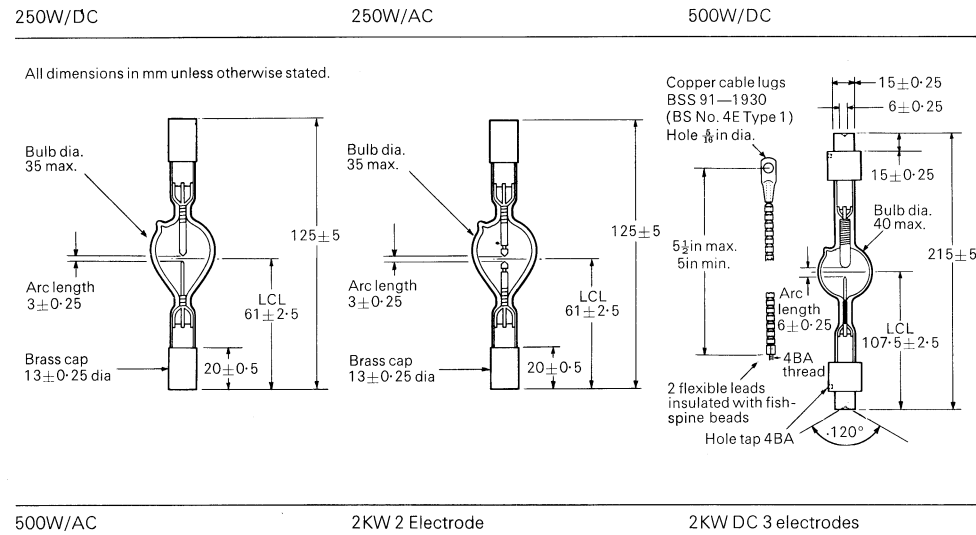
TYPICAL LIGHT DISTRIBUTION AT 36in FROM UNIT FACE



SPECTRAL ENERGY DISTRIBUTION CURVE



Compact source xenon lamps—Type XE/D



Description

Xenon compact source discharge lamps consist of an arc burning between electrodes of tungsten in a high pressure atmosphere of pure xenon contained in a quartz bulb. The high brightness light source emits virtually continuous radiation, extending from the ultra-violet through the visible into the infra-red. The approximate colour temperature is 5,600°K, similar to noon sunlight. All lamps require a starter unit to strike the arc. In addition AC lamps require control gear in the form of a series inductance and a power

factor correction capacitor, while DC lamps require series resistances. Alternatively the DC lamps may be run off AC supplies using a rectifier ballast unit. All starters require a 200/250V 50c/s 2 amp supply. Where maximum control of arc stability is essential it is recommended that 250w—500w DC types are used with Thorn Bendix supply unit 703. Details from Thorn Bendix Industrial Electronics Division, High Church Street, New Basford, Nottingham.

Application

High speed photography and

cinematography
Colour matching
Fadeometer testing
Graphic arts
Optical instruments
Laboratory and general scientific purposes.

Position of Burning

Vertical ±15° except for 2KW 3 electrode lamp which burns vertically or horizontally +15°.

Caps

All lamps are fitted with special cylindrical caps. Lamps of 500W and 2KW have a cone centre for mounting, and a flexible lead.

Compact source xenon lamps—Type XE/D

LAMPS

Rating Watts	Reference no.	Supply Volts	Arc size mm	Lamp operating Volts	Amps	Lumens	Luminance*	Life Hours
250	98-0352	65 min. d.c.	3×2	16.5	15	5000	11000	1500
250	98-0351	200/250 a.c.	3×2	16	17	5000	10000	500
500	98-1002	65 min. d.c.	5×3	22	23	12000	20000	1000
500	98-1001	200/250 a.c.	5.5×3	20	27	11000	11000	500
2kW	98-1506	65 min. d.c.	4.5×4	25	80	70000	120000	1000
2kW	98-1503	35 min. d.c.	6×4	23	87	64000	80000	1000

*Luminance=Average luminance of brightest circle of 2mm dia. in candelas/cm²

CONTROL GEAR for a.c. lamps on 200/250V/50Hz supplies

Rating	Starter		Chokes		Capacitors		Mains Current Amps
	Catalogue no.	Catalogue no.	Watts loss	Mfd	Catalogue no.		
250W	AME 53239	4 × AME 53235	100	160 or 200	2 × AME C2276 2 × AME C2275 + AME C2276	5 2	
500W	AME 53239	6 × AME 53235	150	240 or 300	3 × AME C2276 3 × AME C2275 + AME C2276	8½ 4½	

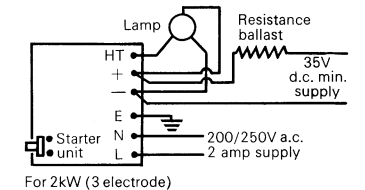
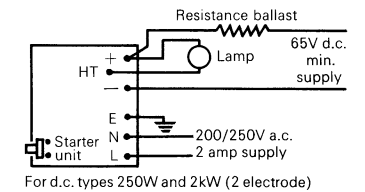
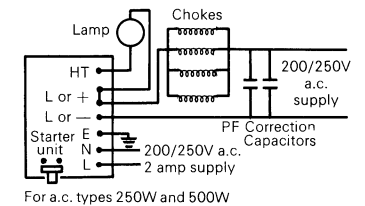
CONTROL GEAR for d.c. lamps on 35/65V d.c. supplies

Rating	Supply Volts d.c.	Starter		Series Resistance	
		Catalogue no.	Ohms	Current Amps	
250W	65V min.	AME 53239	V—16.5 15	15	
500W	65V min.	AME 53239	V—25 23	23	
2kW	65V min.	AME 53233	V—25 80	80	
2kW 2 Electrodes	35V min.	AME 53234	V—23 87	87	

CONTROL GEAR for d.c. lamps on 200/250V 50Hz supplies

Rating	Starter		Rectifier Ballast	
	Catalogue no.	Catalogue no.	Catalogue no.	Catalogue no.
250W	AME 53239	AME 53236	AME 53236	AME 53236
500W	AME 53239	AME 53236	AME 53236	AME 53236
2kW 2 Electrodes	AME 53233	AME 53237	AME 53237	AME 53237
2kW 3 Electrodes	AME 53234	AME 53238	AME 53238	AME 53238

CIRCUIT DIAGRAMS



Linear source xenon lamps—Type XB

DESCRIPTION

Linear source xenon lamps consist of an arc burning between tungsten electrodes operating in an atmosphere of pure xenon contained in a tubular quartz bulb. The spectrum of the radiation is virtually continuous extending from the ultra-violet through the visible into the infra-red. The colour of the visible radiation is very similar to noon sunlight with a colour temperature of approximately 5600° K. Light output may be modified over a wide range, without appreciably altering the colour of the light, by adjusting the power input.

The lamps require a starter unit to initiate the arc, and a series inductance and power factor connection capacitor are also required. For further details see Section 10.

APPLICATION

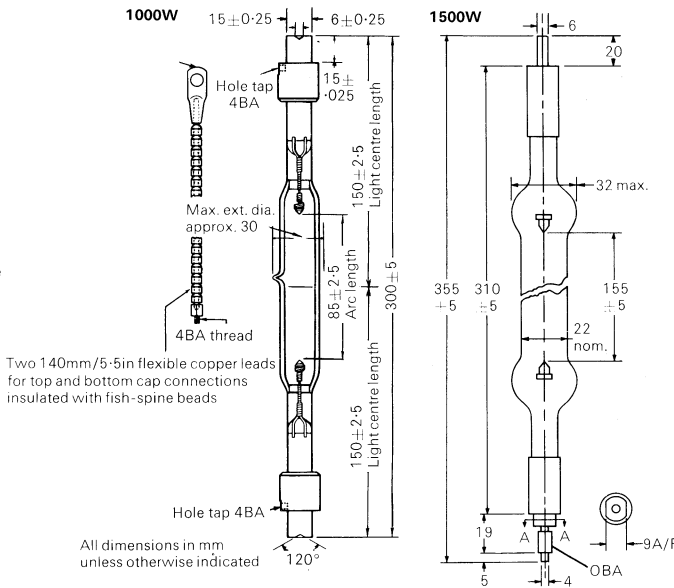
High speed photography and cinematography
Colour matching
Fadeometer testing
Graphic arts
Optical instruments
Laboratory and general scientific purposes

BURNING POSITION

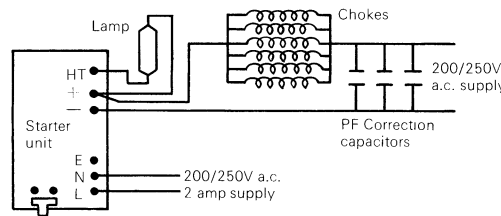
Vertical $\pm 15^\circ$

CAPS

Special cylindrical



CIRCUIT DIAGRAM



LAMPS

Rating	Reference no.	Supply Volts	Arc Length (mm)	Lamp operating		Lumens	Life Hours
				Volts	Amps		
1000W	98-0125	200/250V 50Hz	85 ± 2.5	42	25	22000	500
1500W	98-0150	200/250V 50Hz	155	65/80	20/25	33000	1500

CONTROL GEAR

Rating	Starter Reference no.	Chokes Reference no.	Capacitors MFD	Reference no.	Mains Current Amps
1000W	AME 53239	6 × AME 53235	240 or 300	3 × AME C2276 3 × AME C2276 + AME C2275	7.5 5
1500W	AME 53239	3 × AME 53230 T + 2 × AME 53251 T	200	2 × AME C2275 + AME C2276	9.3

Standard xenon lamp '4 in 1' housings

GENERAL SPECIFICATION

The '4 in 1' system Four optical systems each 90° apart, can be illuminated by a single xenon lamp. The '4 in 1' range of two standard lamp housings has been designed to accommodate 250W or 500W-2KW xenon lamps.

Construction and finish Both lamp-housings are in 16 SWG mild steel welded construction and finished in grey synthetic stoving enamel.

Lamp mounts and shields The mount is a unit assembly, is fully adjustable and retains the xenon lamp between spring loaded retention cups. The lamp is surrounded by a metal box type heat shield which also provides mechanical protection. The lamp housings are supplied with four plastic feet for free standing operation.

Mechanical adjustments All mechanical adjustments are carried out by varying the position of the lamp mount assembly.

Electrical connections Provision for three cable inlets has been made, in addition to an earth connection.

250W HOUSING CATALOGUE No. AME 6078

Dimensions	
Base	6in x 6in
Overall height	10 1/2 in
Optical centre line height from table surface	5in
Weight	10lbs

Optical features Provision is made for mounting a standard 2in x 2in heat filter to the lamp shield.

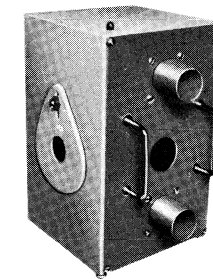
Cooling Under normal operating conditions, convection cooling only is necessary. For continuous operation or for operation in confined spaces, forced air cooling may be necessary.

Safety The front panel is retained by four screws and cannot be accidentally opened. The housing must be effectively earthed before switching on. Unauthorised persons should not have access to the housing interior once electrical connection has been made.

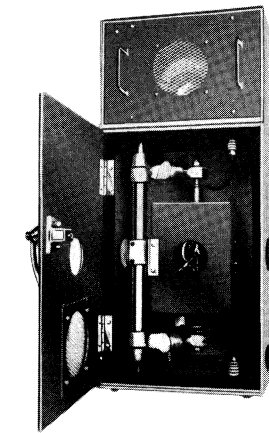
500W/2KW HOUSING CATALOGUE No. AME 6077

Dimensions	
Base	12in x 12in
Overall height	26in
Optical centre line height from table surface	9 1/2 in
Weight	50lbs

Optical features Provision is made for the attachment of a rear aluminised spherical mirror by means of an adjustable mount



AME 6078



AME 6077

attached to the lamp shield. On the opposite face provision is made for mounting a standard 2in x 2in heater filter. The aluminised reflector is supplied as part of the standard unit, but heat filters are not included.

SAFETY REQUIREMENTS

Ventilation Xenon lamps when in operation, generate ozone. Adequate room ventilation or the use of a ducted system where necessary, must be provided.

U.V. radiation The radiation from a xenon lamp is rich in ultra-violet, and when the eyes and skin are exposed directly to the radiation, harmful effects such as conjunctivitis and skin irritation may be experienced. A completely sealed lamp housing system will ensure maximum safety.

ADDITIONAL FACILITIES

The standard housings are designed for free standing use. However, to ensure precise registration of the housing in one or more

optical systems, provision has been made for Kinematic mounting. A special Kinematic base plate suitable for either housing, providing location for P.T.I. standard optical benches is available.

Other available accessories include—

Heat filters.
Special lens mounts to accept a range of standard lenses, condensers and other proprietary optical systems.
Fan cooling units for 250W housing ducts.

Enquiries for these additional features should be made to—
Goulding & Partners (Consultant Engineers)
Ltd, 1a Essex Road, Acton, London W.3.

Pulsed xenon arc lamps (linear types)

DESCRIPTION

These pulsed xenon arc lamps consist of an arc between tungsten electrodes operating in an atmosphere of pure xenon contained in a tubular quartz bulb.

The spectrum of the radiation is virtually continuous extending from the ultra-violet through the visible into the infra-red. The colour of the visible radiation is very similar to noon sunlight having a colour temperature of 5,600°K. Light output is controlled by the gear which pulses the lamp for a specific period.

APPLICATION

Photo reproduction

Until recently the standard light source for copy board illumination has been the open carbon arc. Over the last two or three years special discharge lamps have been used, particularly pulsed Xenon lamps.

CONTROL GEAR

Light output is controlled by the gear which pulses the lamp for a specific period. The lamps are designed to operate at a 100 cycle per second pulse rate for pulse width of 1 millisecond at half peak.

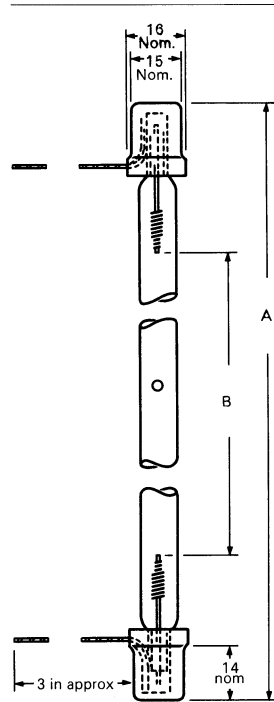
Suitable gear for operating the lamp is manufactured by Theimer Ascorlux and Littlejohn. Other companies have gear under development.

LAMP SPECIFICATION

Type	Pulsed Xenon Arc
Cap	Ceramic with flexible leads.
Operating Position	Universal. Forced cooling essential
Arc Voltage	110±5
Supply Voltage	200/250V 50Hz
Pulsed Frequency	100Hz
Design Wattage	1,500 and 3,000
Efficacy	25 lumens per watt
Life	500 hours.

LAMPS

Rating	Lamp Reference No.
1,500W	98-2015
3,000W	98-2030



Rating	A	B
1,500W	392±3	310 approx.
3,000W	695±3	615 approx.

All dimensions in mm unless otherwise stated

Pulsed xenon arc lamps—helical

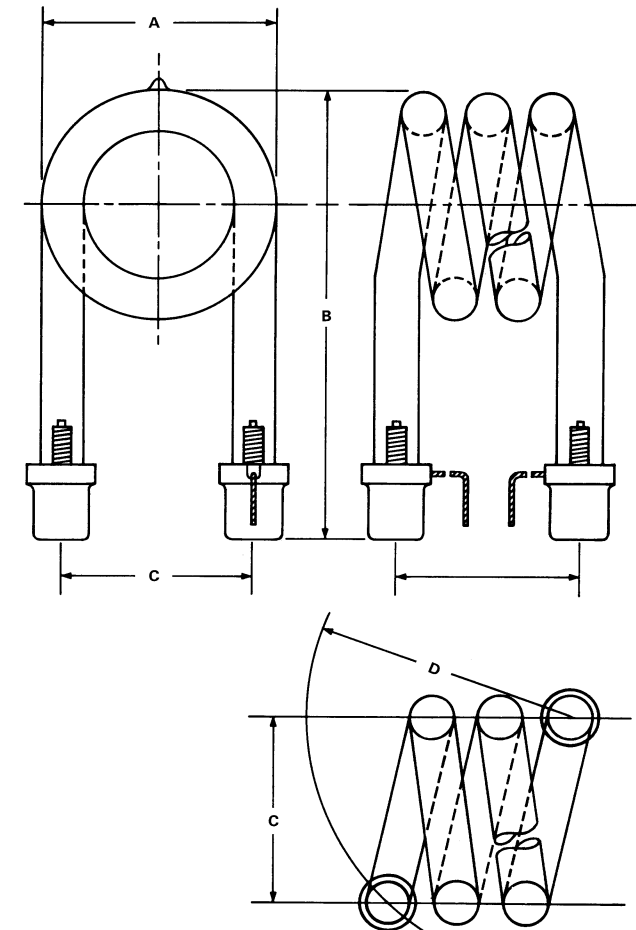
LAMP SPECIFICATION

Caps	Ceramic with flexible leads
Supply volts	200/250V 50Hz
Pulse frequency	100Hz
Design wattage	4kW, 8kW
Efficacy	30 lumens/watt
Life	200 hours
Lamp references	98-2050; 98-2070

DESCRIPTION

These pulsed xenon lamps are higher wattage versions of the linear type (shown on the previous page). They are designed to operate on control gear providing 100 cps pulses. In order to provide a more concentrated source the quartz tube is formed into a helix.

For some equipment it is necessary to include a striker starting device on the 4KW lamp. Lamps can be supplied with this addition as lamp ref. No. 98-2049.



	4kW	8kW
A	60 max	60 max
B	118 max	118 max
C	48	48
D	64.5	102

All dimensions in mm

Short and long wave u-v and germicidal lamps

FLUORESCENT TYPE GERMICIDAL TUBES

These lamps are in standard fluorescent lamp sizes. The lamps are made without phosphors, and the tube is a special glass which transmits short wave u-v. Approximately 95% of the radiated energy is in the 253.7 nanometres band which is near the maximum for germicidal effectiveness. The lamps are useful for the irradiation of airborne bacteria or moulds, and for the irradiation of surfaces on which bacteria and/or mould spores have collected.

A publication, Germicidal Radiation and its Application, is available on request.

TYPICAL APPLICATION

For hospitals, etc., for sterilising purposes.

TUBES

Rating no.	Lamp Reference	Nominal Dimensions mm	in	Standard pack
15W	92-2013	457 x 25	18 x 1	25
30W	92-4540	914 x 25	36 x 1	25

LONG WAVE ULTRA-VIOLET FLUORESCENT TYPE TUBES

The germicidal tubes described above are short wave ultra-violet sources. Long wave ultra-violet fluorescent type tubes are also available as below.

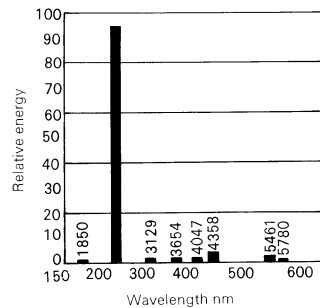
Type	Ratings
Ultra-violet (non-filter)	1500mm/5ft 65/80W; 1200mm/4ft 40W; 600mm/2ft 20W; 450mm/18in 15W; 300mm/12in 8W
Blacklight blue u-v	1200mm/4ft 40W; 450mm/18in 15W; 300mm/12in 8W; 225mm/9in 6W; 150mm/6in 4W

FITTINGS AND CONTROL GEAR

All tubes listed on this page go into standard fittings and operate on standard fluorescent control gear.

The 30W tube operates on 200/250V a.c. and the 15W on 100/250V a.c. Alternatively, two 15W tubes may be run as a series pair on 200/250V a.c.

SPECTRAL ENERGY DISTRIBUTION GERMICIDAL TUBE



Linear neon high intensity obstruction lights

DESCRIPTION

The 160W linear neon high intensity obstruction Light is designed to give red light at high efficiency, with long life and low power consumption. The main spectral energy line is at 640 nanometres, and the lamp is designed to operate either as a static burning source or, by means of an electronic switching unit, to operate as an occulting beacon which flashes up to 180 per minute.

APPLICATIONS

For use on masts, chimneys or buildings which constitute a hazard or obstruction to military and civil aviation.

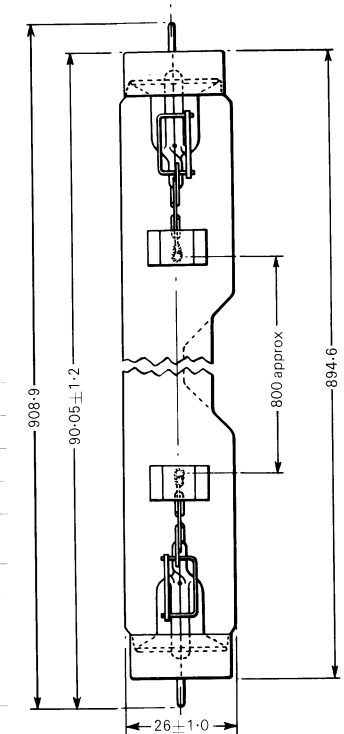
FITTINGS AND CONTROL GEAR

Details of a specially designed fitting unit including control gear, are available on request. Details of a separate flashing control unit are also available.

LAMP DATA

Watts 160
Nominal arc current 1.33 amps
Nominal arc voltage 157
Initial light output 2,000 lumens
Minimum light output at 4,000 hours 1,850 lumens
Rated life continuous burning 4,000 hours
Rated life flashing 30 million flashes
DIMENSIONS
Diameter 26mm ± 1mm
Overall length 35.78in maximum
Caps G 13/10 x 24 - bi-pin

LAMP REFERENCE NUMBER 98-4501



dimensions in mm

160W LINEAR NEON LAMP Spectral energy diagram

