

**PART**  
**3**

**Osram**

**PHOTOGRAPHIC  
AND  
PROJECTOR  
LAMPS**

***S.E.C.***  
**PHOTOFLASH  
BULBS**





Regd. Trade Mark

## PHOTOGRAPHIC AND PROJECTOR LAMPS

The General Electric Co. Ltd. guarantees that OSRAM lamps and tubes are made only from the best materials as scheduled hereunder, are manufactured throughout in England, and comply in every respect with the appropriate British Standard.

### SCHEDULE

TUNGSTEN FILAMENTS	Manufactured at the OSRAM-G.E.C. Lamp Works, Hammersmith, Wembley and Shaw (Manchester).
MOLYBDENUM SUPPORTS	Manufactured at the OSRAM-G.E.C. Lamp Works, Hammersmith, Wembley and Shaw (Manchester).
GLASS BULBS, TUBING AND STEM RODS	Manufactured at the OSRAM-G.E.C. Glass Works, Wembley, Middlesex, Lemington-on-Tyne and at a G.E.C. allied works at Harworth, Yorks.—Glass Bulbs Ltd. The Pearl finish (inside frosting of the Pearl OSRAM bulb) is also executed at these works by a special acid etching process.
LEAD-IN WIRES	Manufactured at the OSRAM-G.E.C. Lamp Works, Shaw (Manchester) and Wembley.
CAPS	Manufactured at the G.E.C. allied works, Lamp Caps Ltd., Chesterfield.
ARGON GAS	Manufactured at the OSRAM-G.E.C. Lamp Works, Hammersmith.
FLUORESCENT POWDERS	Made by Lumifax Ltd., Wembley, a subsidiary company of the G.E.C.
WORKMANSHIP	OSRAM lamps are the product of the finest workmanship, and the equipment at the OSRAM Lamp Works represents the latest developments in the science of lamp manufacture.
RESEARCH	To ensure that the high and consistent quality of OSRAM lamps is maintained, the product is submitted to innumerable tests—some to destruction—by the Research Laboratories of The General Electric Co. Ltd., Wembley, Middlesex.

*A G.E.C. Product*

# CONTENTS

	Page		Page
<b>Studio Lighting</b>		<b>Projectors</b>	22
General lighting service ..	5	Class A1. Ciné, filmstrip, slide and spotlight ..	25-31
Spotlight reflector ..	5	Class B. Floodlighting ..	33
Photoflood series 1 and 2 ..	7	Class E. Epidiascopes ..	35
Colour Temperature Photoflood	7	Class T. Theatre Spotlights ..	35
Photographic series " B " ..	7	Class F. Micro-projectors ..	37
		Class FL. Theatre and aerodrome floodlights ..	39
<b>Enlarging</b>		Class G. Film sound reproduction ..	41
High intensity photo-enlarger ..	9	Class S. Studio spotlight ..	43
Mercury discharge ..	11	Colour temperature studio lamps ..	43
		Care of Osram projector lamps	44
<b>Photoprinting</b>		Burning positions ..	45
Mercury discharge ..	13	<b>Projector Guide</b>	
Fluorescent tubes ..	15	Ciné projectors ..	46-48
Cold cathode tubes ..	15	Spotlights, film strip, slide and micro projectors ..	49, 50
		Equivalents ..	51
<b>Flash Photography</b>		Standard filaments ..	52
Photoflash Nos. 22 and 22B ..	17	Standard caps ..	53
Photoflash Nos. 5 and 5B ..	19	Standard packages ..	54
Photoflash No. 3 and S.M. ..	21	Index for Osram Class A1 projector lamps ..	55
		Gear table for mercury discharge	55

Purchase Tax tables—inside back cover.

The other sections of the OSRAM lamp catalogues are

## OS. SECTION (PART 1)

OSRAM lamps and tubes for general and special lighting purposes.

## OS. SECTION (PART 2)

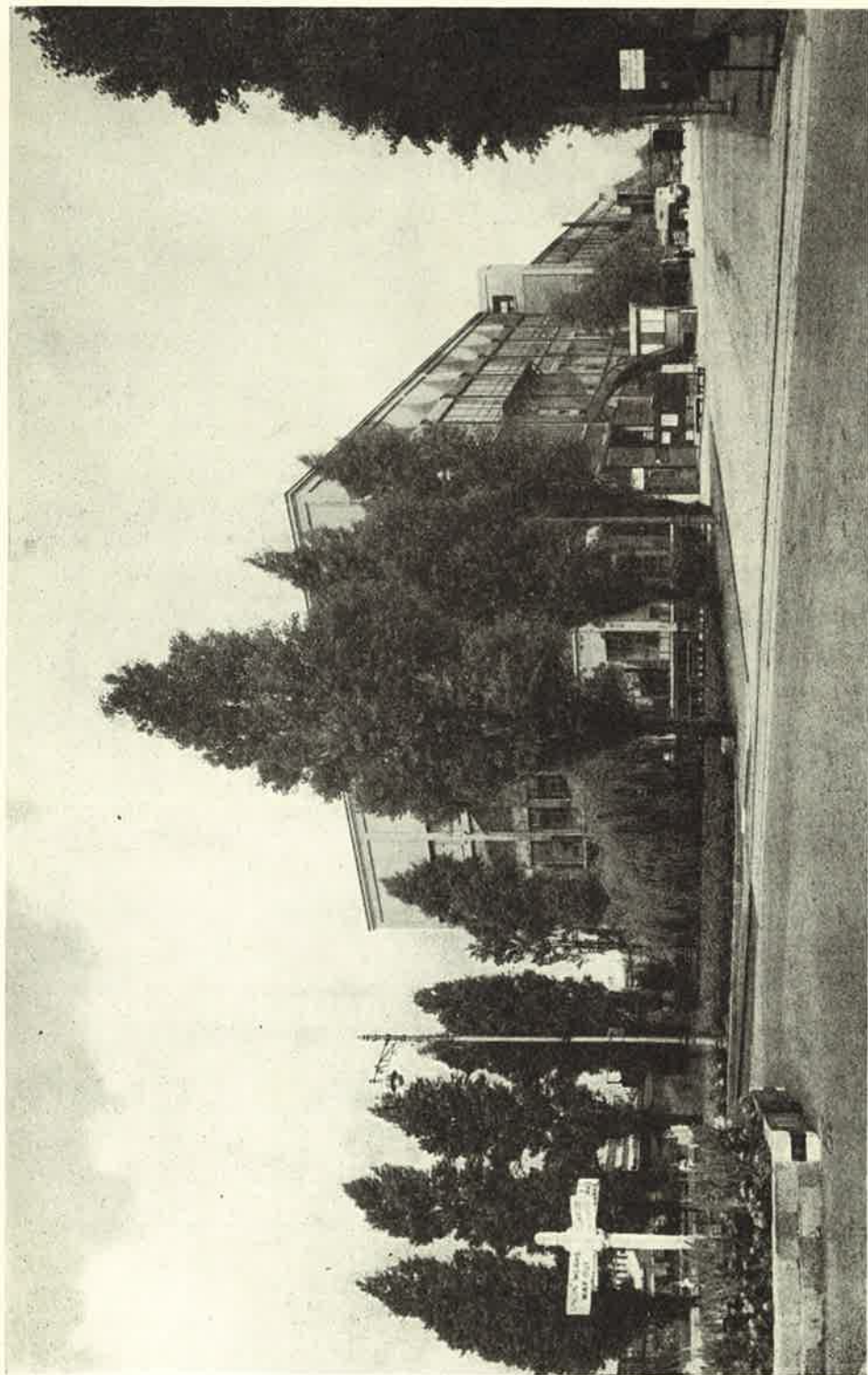
OSRAM car bulbs and other battery types.

*The material listed in this publication is offered subject to the Company's Terms of Business and Conditions of Sale, a copy of which may be obtained on request. Prices apply only in Great Britain and Northern Ireland.*

Manufacturers, Wholesale only:—

**THE GENERAL ELECTRIC CO. LTD.**

Head Office: Magnet House, Kingsway, London, W.C.2.



The Oram-G.E.C. Lamp Works, Wembley, Middlesex. One of the factories engaged in the production of Oram lamps.

This publication provides immediate reference to all types and ratings of OSRAM lamps and tubes for photographic and projection work. Both suppliers and users thus have at hand not only complete technical details of the lamps themselves, but also a wide variety of recommendations on the application of the lamps to particular needs and circumstances, including exposure tables for G.E.C. photoflash bulbs. In addition, a series of notes and diagrams affords an accurate guide to the types and dimensions of lamp filaments and caps.

The range of OSRAM lamps and G.E.C. photoflash bulbs covers every requirement and is backed by many years of experience in the manufacture of the highly specialised types described. Some of these call for extreme accuracy in production, others test the skill of the lamp maker by working at such high efficiencies that the filaments must operate very near the melting-point of tungsten. It is in the design of these types particularly that the long experience of the OSRAM Lamp Works and the resources of the G.E.C. Research Laboratories play such an important part. In this connection, the fact that the G.E.C. produces in its own factories not only the finished lamp but all the components thereof enables quality control to be applied to the basic raw materials and to every subsequent operation.

Among the major developments that have taken place are the introduction of the coiled coil filament, the biplane filament, and extra hard glass which, when used in certain projector lamps, enables the overall size to be considerably reduced without any reduction in the wattage. The pre-focus cap, too, eliminates the need for refocusing, as the lamp is correctly positioned merely by placing it in the holder. One of the chief characteristics of OSRAM projector lamps is the high concentration of their filaments, which operate at a very high temperature. General lighting service lamps have a nearly uniform candle power distribution, while OSRAM projector lamps give their main intensity at right angles to the plane or axis of the filament. The diameter of the glass bulb is kept as small as possible, so that the filament can be brought nearer to the optical condenser, thereby ensuring that the maximum amount of light is collected and projected on to the screen. Another recent development is the high-intensity photo-enlarger lamp. This incorporates a 150 W filament run at very high efficiency in a compact 60 W-size bulb coated internally with finely divided particles of silica, and is suitable for many types of enlarger.

Good stocks of the types of lamp described are carried by all G.E.C. Branches and Depots and can be obtained through the usual trade channels. The G.E.C. also maintains a technical advisory service, to enable problems to be investigated and new types of lamps to be developed when necessary.

## CLASSIFICATION

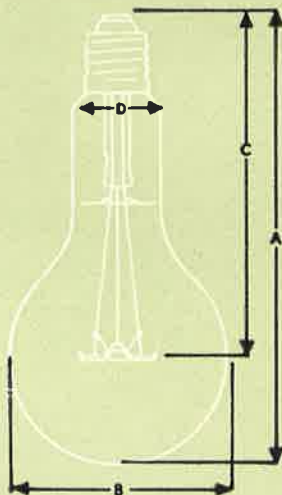
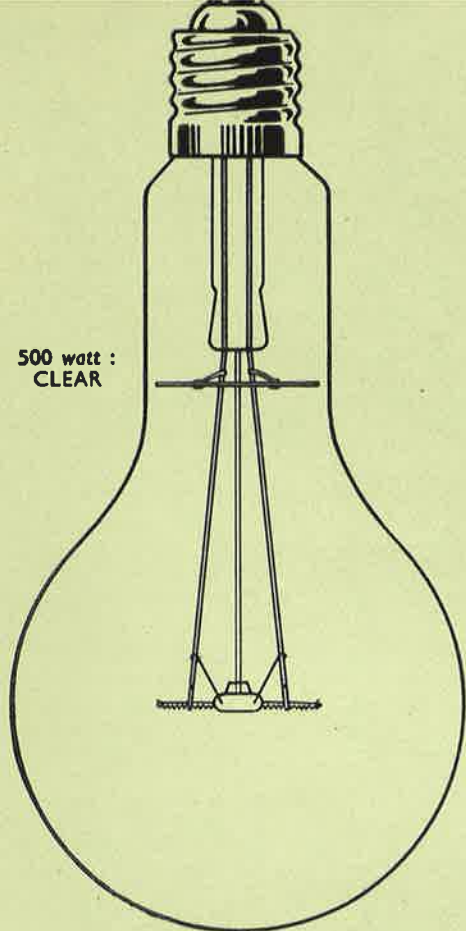
Below are given the Groups under which OSRAM lamps in this publication are classified.

GROUP 1. Tungsten filament lamps for general lighting and special purposes.

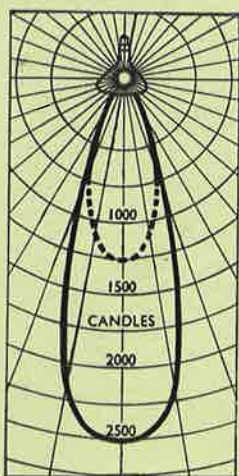
GROUP 9. Fluorescent tubes and other electric discharge lamps.



500 watt :  
CLEAR



Dimensional diagram :  
150-1500 watts



Spotlight reflector  
Average light distribution  
75W  
150W



150 watt : SPOTLIGHT REFLECTOR.

**Osram**

# GENERAL LIGHTING SERVICE (clear gas-filled)

Recommended burning position :

Up to 500 W, any position.

Over 500 W, angle burning must be specified if lamps are to burn other than vertical cap up.

Watts	Cap	Voltages and price per lamp		
		200, 210, 220, 230, 240, 250 and 260 volts	100, 110, 120 and 130 volts	35, 50, 55, 60, 65 and 75 volts
150	B.C. E.S.	s. d. <b>2 7</b>	s. d. <b>2 9</b>	s. d. <b>6 0</b>
200		<b>3 9</b>	<b>4 3</b>	<b>9 0</b>
300	} G.E.S.	<b>7 6</b>	<b>8 0</b>	<b>12 0</b>
500		<b>10 0</b>	<b>10 6</b>	<b>16 0</b>
750		<b>16 0</b>	<b>16 0</b>	—
1000		<b>17 6</b>	<b>17 6</b>	—
1500		<b>25 0</b>	<b>25 0</b>	—

## DIMENSIONS AND LIGHT OUTPUT

Watts	Voltage range	Approx. lumens (initial)	Length		Bulb diameter		Cap contact to filament centre		Neck diameter	
			A		B		C		D	
			mm.	in.	mm.	in.	mm.	in.	mm.	in.
150	100/130	2360	160±4.5	6½	80±1	3½	120±4	4¾	39±1	1½
200	200/260	2150								
	100/130	3280	178±5.5	7	90±1	3 ⅞	133±5	5¼	39±1	1½
300	200/260	2960								
	100/130	5250	233±7	9½	110±1.5	4 ⅝	178±6	7	50±1	1 ⅞
500	200/260	4690								
	100/130	9500	267±8	10½	130±1.5	5½	202±7	7 ⅞	52±1	2
750	200/260	8410								
	100/130	15150	300±9	11¾	150±1.5	5¾	225±8	8¾	55±1	2 ⅞
1000	200/260	13500								
	100/130	20900	300±9	11¾	150±1.5	5¾	225±8	8¾	55±1	2 ⅞
1500	200/260	18900								
	100/130	32200	335±9	13¼	170±1.5	6 ⅞	250±8	9 ⅞	60±1	2½
	200/260	30100								

## SPOTLIGHT REFLECTOR with internally silvered bulb

These lamps may be used as a spotlight without requiring a separate reflector. They give a soft-edged spot and are therefore ideal for lighting backgrounds, etc. The angle of their light beam is 60°. These lamps can be burned in any position.

Watts	Cap	Dimensions				Price per lamp
		Length		Diameter		
75	B.C. or E.S.	mm. 129±3	in. 5 1/10	mm. 95±1	in. 3 3/4	s. d. 7 0
150	E.S.	mm. 175±5	in. 6 3/4	mm. 126±1.5	in. 5	s. d. 15 6

Voltages : 75 W : 100, 200, 210, 220, 230, 240 and 250.

150 W : 110, 210, 230, 240 and 250.

For Purchase Tax, where applicable, see inside back cover.

# lamps for studio lighting



275 watt :  
SERIES 1



500 watt :  
SERIES 2



500 watt :  
SERIES B

**Osram**



## PHOTOFLOOD

(SERIES 1 and 2)

The Series 1 lamp has a life of some 2 hours compared with the 6 hours of the Series 2. The life of these lamps can be materially extended if two or more are connected in series while the lighting is being set up, and are only switched in parallel when the photograph is being taken.

The Series 1 photoflood is fitted with a standard bayonet cap and is no larger than the 60 W OSRAM pearl lamp, so that it can be used in an ordinary electric light fitting. A safety fuse is incorporated in the cap for protection in the case of accidental breakage.

These lamps can be burned in any position.

Voltages	Watts	Series	Stand- ard cap	Eff lm/W	Dimensions				Price per lamp
					Length Tolerance ±3.5 mm.		Diameter Tolerance ±1 mm.		
100-110 200-210 220-230 240-250	275	1	B.C.	29	mm. 117.5	in. 4 $\frac{5}{8}$	mm. 65	in. 2 $\frac{9}{16}$	s. d. <b>2 6</b>
	500	2	E.S.*	30	160±4.5	6 $\frac{5}{16}$	80	3 $\frac{1}{8}$	<b>6 6</b>

\* Also available with B.C. cap in 200/250 V range.

## COLOUR TEMPERATURE PHOTOFLOOD

These lamps are designed at an initial colour temperature of 3250°K and are for use with colour film balanced at 3200°K.

Voltage	Watts	Series	Stand- ard cap	Eff. lm/W	Dimensions				Price per lamp
					Length Tolerance ±3.5 mm.		Diameter Tolerance ±1 mm.		
230	275	1	B.C.	29	mm.	in.	mm.	in.	s. d.
	500	2	E.S.*	30	117.5 160±4.5	4 <sup>5</sup> / <sub>8</sub> 6 <sup>5</sup> / <sub>16</sub>	65 80	2 <sup>9</sup> / <sub>16</sub> 3 <sup>1</sup> / <sub>8</sub>	<b>3 0</b> <b>7 6</b>

\* Also available with B.C. cap.

## PHOTOGRAPHIC

(SERIES B)

These are high efficiency lamps made on similar lines to the photoflood lamps described above. To meet the exacting requirements of professional photographers, for which they are especially suitable, they give a brilliant yet soft light and last for approximately 100 hours. This lamp can be burned in any position.

Voltages	Watts	Cap	Eff. lm/W	Dimensions				Price per lamp
				Length Tolerance ± 3.5 mm.		Diameter Tolerance ± 1.5 mm.		
110, 210 230, 250	500	E.S.	21	mm.	in.	mm.	in.	s. d.
				172	6 $\frac{3}{4}$	90	3 $\frac{9}{16}$	<b>22 0</b>

Details of special reflectors for use with Osram photoflood and photographic lamps are available on application.

These lamps are not subject to Purchase Tax.

# lamps for studio lighting



**Osram**

## HIGH INTENSITY PHOTO-ENLARGER

The 150 W filament is enclosed in a 60 W-size G.L.S. bulb. By a special process the inside of the bulb is coated with minute particles of silica, which ensures that the light from the high-intensity filament is evenly distributed over the whole of the bulb surface.

The printing speed of this lamp with most sensitive materials is equivalent to a tungsten filament lamp of 400 W.

Recommended burning position—vertical, cap up.

Watts	Voltages	Cap	Life (hr.)	Dimensions				Price per lamp
				Length		Diameter		
150	110, 210, 230 and 250	B.C. or E.S.	100	mm. 117.5±3.5	in. 4 $\frac{5}{8}$	mm. 65±1	in. 2 $\frac{1}{8}$	s. d. <b>3 9</b>

Standard general lighting service lamps of all ratings are made with the inside of the bulbs specially coated for enlarging purposes—details on application.

For Purchase Tax, see inside back cover.

## lamps for enlarging



125 watt : MB/U



80 watt : MB/U

**Osram**

# MERCURY TYPE MB/U

For use in industrial enlargers, where their high efficiency and the large amount of blue and blue-green light in their spectra—to which most bromide papers are particularly sensitive—result in considerable reduction in printing times as compared with tungsten lamps of equivalent wattage. The 80 W pearl lamp is equivalent in printing speed to a G.L.S. lamp of 800 W and the 80 W heavy white sprayed lamp is equivalent in speed to a G.L.S. lamp of 400 W. These lamps can be burned in any position.

Type	Watts	Dimensions						Cap	*Price per lamp
		Overall length		Diameter		Distance from contact on cap to the centre of discharge			
MB/U Pearl	80	mm. 160±4.5	in. 6 <sup>3</sup> / <sub>16</sub>	mm. 80±1	in. 3 <sup>1</sup> / <sub>8</sub>	mm. 113±4	in. 4 <sup>1</sup> / <sub>2</sub>	3 pin B.C.	s. d. 39 6
	125	178±5.5	7	90±1	3 <sup>9</sup> / <sub>16</sub>	128±5	5 <sup>1</sup> / <sub>16</sub>	3 pin B.C.	45 0

\*With a special sprayed white finish, 1/2 per lamp extra for 80 W size and 1/9 per lamp extra for 125 W size.

Voltage ranges : 200/220, 230/240, 250.

## Light output and running characteristics

Type	Watts	*Nominal average output throughout life (lumens)	P.F. capacitor	Approximate mains starting current at 230 volts		Average mains current when burning at full brightness at 230 volts	
				Without capacitor	With G.E.C. capacitor	Without capacitor	With G.E.C. capacitor
MB/U Pearl	80	2320	m.f.d. 8	amp 1.35	amp 0.8	amp 0.75	amp 0.45
	125	3875	10	1.7	1.15	1.10	0.70

For particulars of chokes and capacitors for use with OSRAM mercury lamps, see page 55.

\* This value is associated with an extended life.

These lamps are not subject to Purchase Tax.

# lamps for enlarging

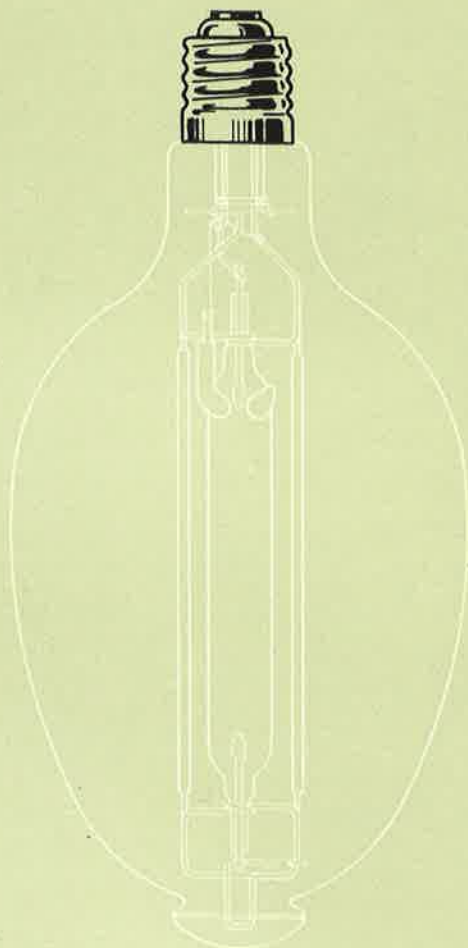




250 watt : MA/V



400 watt : MA/V



1 kW : MB/V

OSRAM mercury lamps types MA and MB are manufactured under one or more of the following British patents : 491179, 525965, 559824, 577599, 585282, 594059 and other patents granted or pending.

**Osram**

## MERCURY TYPE MA/V

The spectral energy distribution from high pressure mercury vapour lamps agrees admirably with the spectral sensitivity of dye line papers, resulting in an energy conversion which is more efficient than the already high visual efficiency. This class of lamp is much used in plan reproduction apparatus.

Recommended burning position—vertical, cap up. Special lamps are available for horizontal burning—details on application.

Type	Watts	Dimensions						Cap	Price per lamp
		Overall length		Overall diameter		Distance from contact on cap to the centre of discharge			
MA/V Clear {	250	mm.	in.	mm.	in.	mm.	in.	G.E.S.	s. d.
	400	290±8	11 <sup>3</sup> / <sub>8</sub>	48±3	1 <sup>7</sup> / <sub>8</sub>	170±8	6 <sup>3</sup> / <sub>4</sub>	G.E.S.	54 0
		330±8	13	48±3	1 <sup>7</sup> / <sub>8</sub>	190±8	7 <sup>1</sup> / <sub>2</sub>	G.E.S.	59 0

Voltage ranges : 200/220, 230/240, 250

### Light output and running characteristics

Type	Watts	Nominal average output throughout life (lumens)	P.F. capacitor	Approximate mains starting current at 230 volts		Average mains current when burning at full brightness at 230 volts	
				Without capacitor	With capacitor	Without capacitor	With capacitor
MA/V Clear {	250	7750	m.f.d. 15	amp 3.5	amp 2.5	amp 2.0	amp 1.4
	400	13600	20	5.5	4.5	3.0	2.3

For particulars of chokes and capacitors for use with OSRAM mercury lamps, see page 55.

\* This value is associated with an extended life.

## 1 kW MERCURY HIGH BAY TYPE MB/V

The 1 kW high bay MB mercury lamp has been widely adopted for photoprinting work. It has a much higher visual efficiency than the MA/V lamp. What is more important, the inner envelope is made from quartz, transmitting an appreciably greater percentage of the useful non-visible ultra-violet radiations than will the hard glass inner envelope of the 400 W lamp.

Recommended burning position—vertical, cap up.

Watts	Nominal average output through-out life (lumens)	Dimensions				Cap	Price per lamp
		Overall length		Overall diameter (maximum)			
1000 Clear	50000	mm. 335±7.5	in. 13¼	mm. 165	in. 6½	G.E.S.	s. d. 160 0

Voltage ranges : 350/370, 370/410, 410/450.

Details of appropriate control gear and G.E.C. fittings suitable for use with this lamp are available on application.

These lamps are not subject to Purchase Tax.

# lamps for photoprinting



5 ft., 80 watt :  
FLUORESCENT



9 ft. 6 in.  
COLD CATHODE

OSRAM fluorescent tubes are  
manufactured under one or more of  
the following British patents :  
520759, 521110, 523528, 530531,  
533451, 535897, 537901, 563185,  
578192, 580363, 610025, 635545  
and other patents granted or pend-  
ing.

**Osram**

For di-azo material some equipment manufacturers prefer to construct their "slower" machines around a bank of "blue" fluorescent tubes, either hot cathode or tailor-made cold cathode.

Blue or colour-matching fluorescent tubes are much used in exposing bichromate emulsions, through printed, silk or metal screens.

Copy board illumination for photographic or process copying and any photo-chemical process which involves the exposure of a large area uniformly can be performed more efficiently with large light sources. Fluorescent tubes, in consequence, have often been able to undertake the work of many times their own wattage of carbon arc illumination.

Details will be given on application of other tubes to suit special requirements.

## FLUORESCENT TYPE MCF/U (Group 9)

Tube	Cap	Diameter	Colour	Price per tube	
				Switch start	Instant start
5 ft., 80 W	B.C.	in. 1½	Blue Colour matching	s. d. 17 6 13 0	s. d. 18 6 14 0

Details of control gear are available on application.

For Purchase Tax see inside back cover.

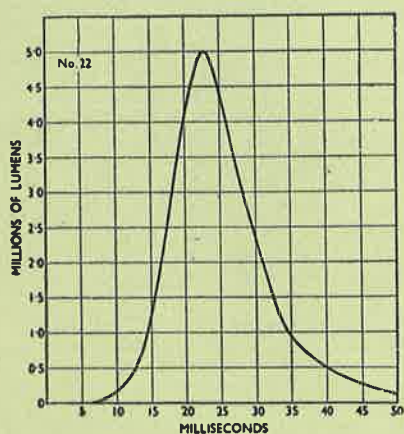
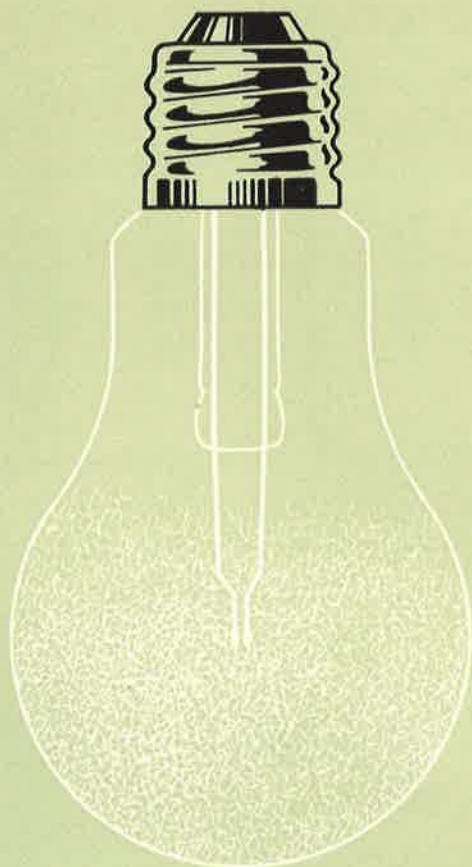
## COLD CATHODE

Type of tube	No. 29 Blue	Colour matching
Standard 8 ft. 6 in. lighting length, 9 ft. 6 in. overall length	s. d. 41 3	s. d. 41 3

Prices for special lengths and details of control gear are available on application.

Cold cathode tubes are not subject to Purchase Tax.

# tubes for photoprinting



G.E.C. photoflash bulbs are manufactured under one or more of the following British patents: 538676, 540846, 545948, 548297, 553840, 550085.

**G.E.C.**



## PHOTOFLASH No. 22 and No. 22B (Class M)

These bulbs, the most powerful in the G.E.C. range, are of the shredded foil type and are unexcelled for press and commercial work.

The No. 22B has a blue coated bulb which raises the effective colour temperature of the light to 6000°K. This type may therefore be successfully used with daylight colour film.

Type	No. 22	No. 22B
Length	116.5±3.5 mm.	116.5±3.5 mm.
Diameter	60±1 mm.	60±1 mm.
Colour temp.	3800°K.	6000°K.
Time to half peak	17 milliseconds	17 milliseconds
Time to peak of flash	23 milliseconds	23 milliseconds
Effective duration of flash	20 milliseconds	20 milliseconds
Peak flux	5 million lumens	2 million lumens
Total light output	75,000 lumen secs.	30,000 lumen secs.
Cap	E.S.	E.S.
Volts	3-30 volts	3-30 volts
List price, each	1s. 8d.	1s. 10d.

### EXPOSURE GUIDE NUMBERS

The appropriate guide number divided by the distance in feet from the bulb to the subject will give the recommended F. number.

These figures are based on the use of efficiently designed reflectors in a large room with medium coloured walls and furnishings, giving a moderate degree of reflected light. Departure from such environment must be taken into account. In a small room with brightly coloured walls, the diaphragm should be closed down one stop and out of doors it should be opened up one stop on the calculated F. number.

Note also that where tungsten film speeds are indicated, these ratings are generally 2°-3° lower than the daylight rating normally marked on film cartons.

Type	No. 22				No. 22B
	Tungsten film speed				Daylight colour film
	32° BS	29° BS	26° BS	23° BS	21° BS
Open flash }					
1/25th sec. }	425	300	210	150	60
1/50th sec.	405	285	200	140	50
1/100th sec.	328	232	164	116	50

### EXPOSURE TABLE No. 22

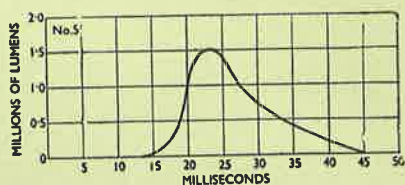
Shutter speed	Open flash, 1/25th sec. and 1/50th sec.				1/100th sec.			
Tungsten film speed	32° BS	29° BS	26° BS	23° BS	32° BS	29° BS	26° BS	23° BS
60 feet	f/7	f/5	f/3.5	f/2.5	f/5.5	f/4	f/2.8	f/2
40 "	f/11	f/7.5	f/5.5	f/4	f/8	f/5.6	f/4	f/2.8
30 "	f/14	f/10	f/7	f/5	f/11	f/8	f/5.6	f/4
20 "	f/22	f/15	f/11	f/7.5	f/16	f/11	f/8	f/5.6
15 "	f/28	f/20	f/14	f/10	f/22	f/16	f/11	f/8
10 "	f/42	f/30	f/21	f/15	f/32	f/22	f/16	f/11

These bulbs are not subject to Purchase Tax.

**bulbs for flash photography**



No 5



No. 5

**G.E.C.**

## PHOTOFLASH No. 5 and No. 5B (Class M)

These bulbs are primarily designed for close-up work and their small size makes them ideal for the press photographer.

The No. 5B has a blue coated bulb which raises the effective colour temperature of the light to 6000°K. This type may therefore be successfully used with daylight colour film.

Type	No. 5	No. 5B
Length	63 mm.	63 mm.
Diameter	34 mm.	34 mm.
Colour temp.	3800°K.	6000°K.
Time to half peak	18 milliseconds	18 milliseconds
Time to peak of flash	23 milliseconds	23 milliseconds
Effective duration of flash	20 milliseconds	20 milliseconds
Peak flux	1.5 million lumens	600,000 lumens
Total light output	18000 lumen seconds	8000 lumen seconds
Cap	A.S.C.C.	A.S.C.C.
Volts	3-30 volts	3-30 volts
List price, each	1s. 1d.	1s. 3d.

### EXPOSURE GUIDE NUMBERS

The appropriate guide number divided by the distance in feet from the bulb to the subject will give the recommended F. number.

These figures are based on the use of efficiently designed reflectors in a large room with medium coloured walls and furnishings, giving a moderate degree of reflected light. Departure from such environment must be taken into account. In a small room with brightly coloured walls, the diaphragm should be closed down one stop and out of doors it should be opened up one stop on the calculated F. number.

Note also that where tungsten film speeds are indicated, these ratings are generally 2°-3° lower than the daylight rating normally marked on film cartons.

Type	No. 5				No. 5B	
	Tungsten film speed				Daylight colour film	
	32° BS	29° BS	26° BS	23° BS	21° BS	
Open flash } 1/25th sec.	216	153	108	76	30	
1/50th sec.	204	144	102	72	25	
1/100th sec.	171	118	85	59	25	

### EXPOSURE TABLE No. 5

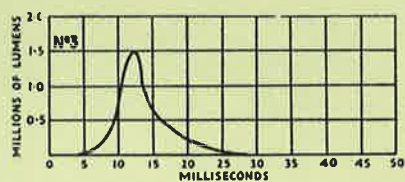
Shutter speed	Open flash 1/25th and 1/50th sec.				1/100th sec.			
	32° BS	29° BS	26° BS	23° BS	32° BS	29° BS	26° BS	23° BS
30 feet	f/7	f/5	f/3.5	f/2.5	f/5.6	f/4	f/3	f/2
20 "	f/10	f/7	f/5	f/3.5	f/8	f/5.6	f/4	f/3
15 "	f/14	f/10	f/7	f/5	f/11	f/8	f/5.6	f/4
10 "	f/20	f/14	f/10	f/7	f/16	f/11	f/8	f/5.6
5 "	f/40	f/28	f/20	f/14	f/32	f/22	f/16	f/11

These bulbs are not subject to Purchase Tax.

**bulbs for flash photography**



No. 3



SPEED MIDGET



**G.E.C.**

## PHOTOFLASH No. 3 and SPEED MIDGET (Class F)

Either of these bulbs will provide an extremely brief flash, which reaches peak value sufficiently early to suit the timing of synchronised shutters fitted to the majority of simple cameras.

Type	No. 3	Speed Midget
Length	61 mm.	63 mm.
Diameter	24 mm.	34 mm.
Colour temp.	3800°K.	3300°K.
Time to half peak	10 milliseconds	7 milliseconds
Time to peak of flash	12 milliseconds	9 milliseconds
Effective duration of flash	7 milliseconds	10 milliseconds
Peak flux	1.5 million lumens	850,000 lumens
Total light output	6500 lumen seconds	4500 lumen seconds
Cap	A.S.C.C.	A.S.C.C.
Volts	3-30 volts	3-30 volts
List price, each	10d.	1s. 3d.

### EXPOSURE GUIDE NUMBERS

The appropriate guide number divided by the distance in feet from the bulb to the subject will give the recommended F. number.

These figures are based on the use of efficiently designed reflectors in a large room with medium coloured walls and furnishings, giving a moderate degree of reflected light. Departure from such environment must be taken into account. In a small room with brightly coloured walls, the diaphragm should be closed down one stop and out of doors it should be opened up one stop on the calculated F. number.

Note also that the film speeds shown are those which apply with tungsten illumination, NOT daylight, since the colour of the flash agrees better with that of the former. The tungsten rating of the film is generally 2°-3° lower than its daylight rating.

Type	No. 3				Speed Midget			
Tungsten film speed	32° BS	29° BS	26° BS	23° BS	32° BS	29° BS	26° BS	23° BS
Open flash } 1/25th sec. } 1/50th sec. }	120	85	60	42	100	70	50	35

### EXPOSURE TABLE

Type	No. 3				Speed Midget			
Shutter speed	Open flash, 1/25th sec. and 1/50th sec.				Open flash, 1/25th sec. and 1/50th sec.			
Tungsten film speed	32° BS	29° BS	26° BS	23° BS	32° BS	29° BS	26° BS	23° BS
30 feet	f/4	—	—	—	f/3.5	—	—	—
20 "	f/6	f/4	—	—	f/5	f/3.5	—	—
15 "	f/8	f/5.6	f/4	—	f/7	f/5	f/3.5	—
10 "	f/12	f/8	f/6	f/4	f/10	f/7	f/5	f/3.5
5 "	f/24	f/17	f/12	f/8	f/20	f/14	f/10	f/7

These bulbs are not subject to Purchase Tax.

No. 3 Photoflash bulb is made in Germany.

# bulbs for flash photography





## PROJECTOR LAMPS

Osram projector lamps are manufactured to the highly exacting specification necessary to ensure that they are consistent and reliable light sources for projecting films and slides, lighting studios and theatre stages and providing ground approach aids for aircraft.

Research on Osram projector lamps conducted over the course of many years in the search for increased optical efficiency has resulted in the incorporation of features such as coiled coil and biplane filaments and bulbs of specially high melting-point glass. Maximum filament brightness consistent with reasonable life has been obtained according to the applications for which lamps are required. Bulb diameters are kept small enough to permit collection of as much light as possible by the condenser lens and backing mirror, and yet sufficiently large to prevent undue heating and early blackening of the glass.

There is an Osram projector lamp available for every well-known British, Continental and American sub-standard cinema projector at present on the market. Lamps shown on the following pages are those that can be supplied either from stock or at short notice but enquiries are welcomed for other types and ratings.

### DIFFERENTIAL SPACING OF BIPLANE FILAMENTS

The introduction of this feature, which is designed to make screen illumination more even, marks a new step forward in lamp-making technique. Closer spacing of the outside sections of the filament counteracts the cooling due to conduction through lead wires, etc.

### STANDARD LAMPS

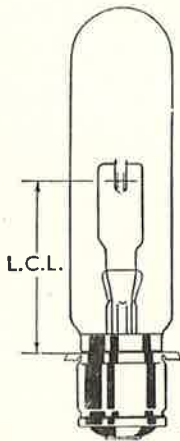
Where voltages are printed in heavy type, the lamps in these voltages are included in British Standards 1522 or 1015. Interchangeability of lamps is greatly facilitated if new apparatus is designed to use standard lamps.

### HOW TO ORDER

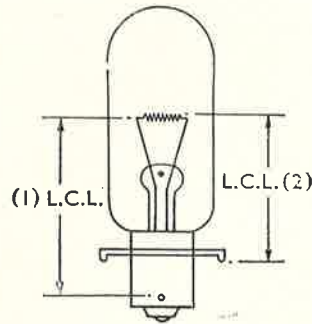
By using the recently introduced catalogue numbering system it is possible to order Osram lamps by specifying the catalogue number and voltage only. For example, if an Osram projector lamp rated at 115 volts 500 W with 64 mm. bulb and medium prefocus cap as shown on page 25, is required, the order should read :—Osram projector lamp A1/8, 115 volts.

## ACCURACY OF PREFOCUSING

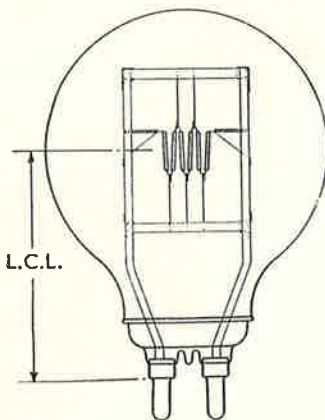
It is the practice to fit medium prefocus caps to Class A1 projector lamps of the standard types from 100 W to 750 W size. This ensures that no re-alignment of the optical system is necessary when a new lamp is fitted into a projector. All Osram projector lamps that are fitted with P15, P28, P40, 3 Fin, 3 Pin and BH caps are prefocused by hand in a special jig to ensure that the centre of the filament lies within 0.5 mm. of the axis of the cap and also within plus or minus 0.5 mm. of the objective light centre length (see diagrams below for points between which the light centre length is measured).



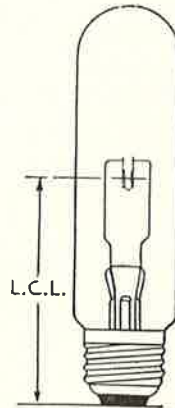
Prefocus cap  
(P28/25 and P40/41)



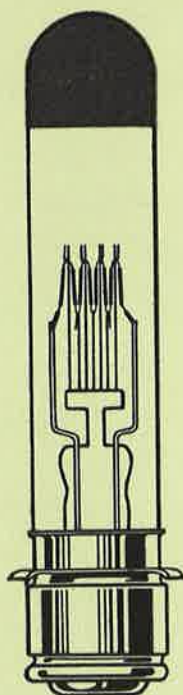
(1) Small bayonet (B15) cap  
(2) Prefocus ring (P15) cap



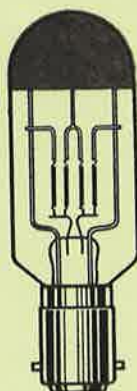
Bipost base



G.E.S., E.S. and S.E.S. cap  
(E40/45, E27/25 and E14/23)



A1/4



A1/167



A1/1

**Osram**

# CLASS A1

Lamps with voltages in bold type are made to B.S. 1522

Cinematograph, Film Strip and Slide Projection.

Recommended burning position—see page 45.

All lamps on this page with the exception of A1/1 have the bulb crown sprayed black.

Cat. No.	Volts	Watts	Efficiency lumens per watt	Objective average life(hours)	Cap	List price per lamp
A1/1	<b>50</b>	25	18	50	B15s/21	s. d. <b>4 9</b>
A1/2	100, 110, <b>115</b>	50	17	50	B15s/21	<b>7 3</b>
A1/19	100, 110, 115	50	17	50	B15d/21	<b>7 3</b>
A1/3**	<b>30</b>	100	23	50	P28/25	<b>12 9</b>
A1/4	<b>12</b>	100	24	50	P28/25	<b>12 9</b>
	100, 110, <b>115</b>	100	18.5	50	P28/25	
	<b>200, 210, 220</b>	100	15	50	P28/25	
	<b>230, 240, 250</b>	100	15	50	P28/25	
A1/21	12	100	24	50	B15s/21	<b>13 9</b>
	100, 110, 115	100	17	50	B15s/21	<b>12 9</b>
	12	100	24	50	E27/25	<b>11 9</b>
A1/23	100, 110, 115	100	18.5	50	E27/25	
	200, 210, 220	100	15	50	E27/25	
A1/121	230, 240, 250	100	17	50	B15d/21	<b>12 9</b>
	100, 110, 115	100	16	50	B15s/17	<b>13 9</b>
A1/166	210, 230	100	16	50	B15s/17	<b>13 9</b>
A1/169	240, 250	100	1	50	B15d/17	<b>13 9</b>
	210, 230	100	1	50	B15s/17	<b>18 0</b>
A1/167	240, 250	150	—	50	B15s/17	<b>18 0</b>
	115	150	—	50	B15d/17	<b>18 0</b>
A1/168	210, 230	150	16	50	B15d/17	<b>18 0</b>
	240, 250	150	16	50	B15d/17	<b>18 0</b>

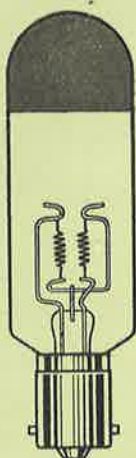
\*\* Filament offset 3 mm.

Cat. No.	Volts	Filament***			Lamp dimensions		
		Shape	Height	Width	Diameter	Overall length	Light centre length
A1/1	<b>50</b>	Hc/c	mm. 1	mm. 5	mm. 16±1	mm. 57±3	mm. 29 ±2
A1/2	100, 110, <b>115</b>	F2	6	3	25±1	76±3	34.5±2
A1/19	100, 110, 115	F2	6	3	25±1	76±3	34.5±2
A1/3	<b>30</b>	A4	4.5	6	25±1	133±7	55.5±0.5
A1/4	<b>12</b>	A2	5	3	25±1	133±7	55.5±0.5
	100, 110, <b>115</b>	F3	5	7	25±1	133±7	55.5±0.5
	<b>200, 210, 220</b>	B8	8	13	25±1	133±7	55.5±0.5
	<b>230, 240, 250</b>						
A1/21	12	A2	5	3	25±1	76±5	34.5±2
	100, 110, 115	F3	5	7	25±1	76±5	34.5±2
	12	A2	5	3	25±1	128±7	75 ±5
A1/23	100, 110, 115	F3	5	7	25±1	128±7	75 ±5
	200, 210, 220	B8	8	13	25±1	128±7	75 ±5
	230, 240, 250						
A1/121	100, 110, 115	F3	5	7	25±1	76±5	34.5±2
A1/166	210, 230, 240, 250	F4	9	9	25±1	76±5	34.5±2
A1/169	210, 230, 240, 250	F4	9	9	25±1	76±5	34.5±2
A1/167	115	—	—	—	25±1	76±5	34.5±0.5
	210, 230, 240, 250	F4	7	8	25±1	76±5	34.5±0.5
	115	—	—	—	25±1	76±5	34.5±0.5
A1/168	210, 230, 240, 250	F4	7	8	25±1	76±5	34.5±0.5

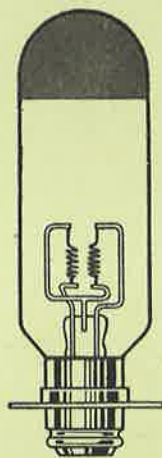
\*\*\* Dimensions are nominal objectives only.

These lamps are not subject to Purchase Tax.

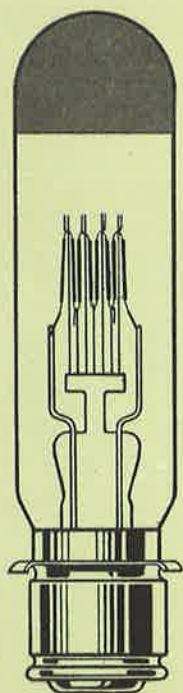
## lamps for projectors



A1/26



A1/127



A1/5

**Osram**



## CLASS A1

Lamps with voltages in bold type are made to B.S. 1522.

Cinematograph, Film Strip and Slide Projection.  
Recommended burning position—see page 45.

All lamps on this page have the bulb crown sprayed black.

Cat. No.	Volts	Watts	Efficiency lumens per watt	Objective average life (hours)	Cap	List price per lamp
AI/151††	50	200	24	50	B15s/17	s. d. 23 0
AI/12	50	200	24	50	E27/25	23 0
	110	200	22	50	E27/25	18 6
AI/13	50	200	24	50	P28/25	24 0
	110	200	22	50	P28/25	19 6
AI/25††	100	200	23	25	B15d/17	18 6
AI/26††	100	200	23	25	B15s/17	18 6
AI/27††	100, 110	200	23	25	P15s/19	19 6
AI/127††	100, 110	200	23	25	P15d/19	19 6
AI/15**	50	250	24	50	P28/25	24 0
AI/85	50	250	24	50	BH38	24 0
	50, 55	250	24	50	P28/25	24 0
AI/5	100, 110, 115	250	22	50	P28/25	23 0
	200, 210, 220					
	230, 240, 250	250	21	50	P28/25	23 0
	50	250	24	50	E27/25	23 0
AI/14	100, 110, 115	250	22	50	E27/25	22 0
	200, 210, 220					
	230, 240, 250	250	21	50	E27/25	22 0

\*\* Filament offset 4 mm.

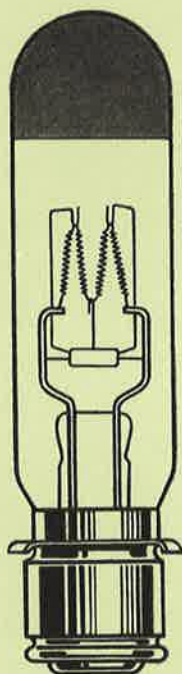
†† Forced cooling necessary so that the wall of the bulb does not exceed 400° centigrade.

Cat. No.	Volts	Filament***			Lamp dimensions		
		Shape	Height	Width	Diameter	Overall length	Light centre length
AI/151	50	A3	mm. 7	mm. 6	mm. 25±1	mm. 87±5	mm. 34.5±2
AI/12	50	A3	7	6	32±2	128±7	75 ±5
	110	F2	7	6	32±2	128±7	75 ±5
AI/13	50	A3	7	6	32±2	133±7	55.5±0.5
	110	F2	7	6	32±2	133±7	55.5±0.5
AI/25	100	F2	6	6	25±1	87±5	34.5±2
AI/26	100	F2	6	6	25±1	87±5	34.5±2
AI/27	100, 110	F2	6	6	25±1	87±5	31.5±0.5
AI/127	100, 110	F2	6	6	25±1	87±5	31.5±0.5
AI/15	50	A4	7	7	32±2	133±7	55.5±0.5
AI/85	50	A4	7	7	32±2	128±7	59 ±0.5
	50, 55	A4	7	7	32±2	133±7	55.5±0.5
AI/5	100, 110, 115	F2	7	7	32±2	133±7	55.5±0.5
	200, 210, 220						
	230, 240, 250	B8	12	14	32±2	133±7	55.5±0.5
	50	A4	7	7	32±2	128±7	75 ±5
AI/14	100, 110, 115	F2	7	7	32±2	128±7	75 ±5
	200, 210, 220						
	230, 240, 250	B8	12	14	32±2	128±7	75 ±5

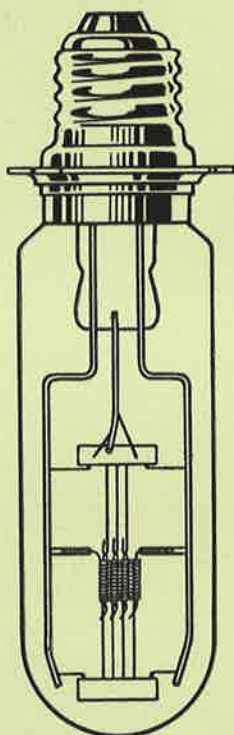
\*\*\* Dimensions are nominal objectives only.

These lamps are not subject to Purchase Tax.

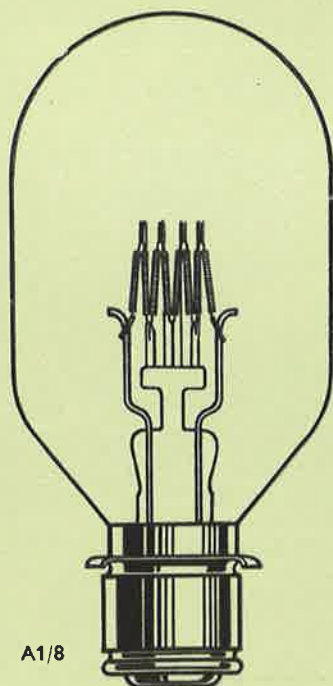
# lamps for projectors



A1/154



A1/153



A1/8

**Osram**

**CLASS A1**

Lamps with voltages in bold type are made to B.S. 1522.

**Cinematograph, Film Strip and Slide Projection.** Recommended burning position—see page 45.All lamps on this page with the exception of **A1/8**, **A1/42**, **A1/43**, **A1/46** and **A1/153** have the bulb crown sprayed black.

Cat. No.	Volts	Watts	Efficiency lumens per watt	Objective average life (hours)	Cap	List price per lamp
<b>A1/6*</b>	100, 110, <b>115</b>	300	23	25	P28/25	<b>28 6</b>
<b>A1/33*</b>	100, 115	300	23	25	B15d/21	<b>27 6</b>
<b>A1/37*</b>	100, 115	300	23	25	B15s/21	<b>27 6</b>
<b>A1/38</b>	100, 115	300	23	25	P15s/19	<b>28 6</b>
<b>A1/154</b>	{ 210 } 230, 240, 250	300	21	50	P28/25	<b>28 6</b>
<b>A1/39*</b>	100, 110, 115	400	23	25	P28/25	<b>35 0</b>
<b>A1/87*</b>	110	400	23	25	BH 38	<b>35 0</b>
<b>A1/159*</b>	110	400	23	25	BH 46	<b>35 0</b>
<b>A1/7*</b>	110, <b>115</b>	500	24	25	P28/25	<b>37 0</b>
	100, 110, <b>115</b>	500	25	50	P28/25	
<b>A1/8</b>	{ <b>200, 210, 220</b> } <b>230, 240, 250</b>	500	23	50	P28/25	<b>27 6</b>
	100, 110, 115	500	25	50	E27/25	
<b>A1/42</b>	{ 200, 210, 220 } 230, 240, 250	500	23	50	E27/25	<b>26 6</b>
	100, 110, 115	500	25	50	E40/45	<b>26 6</b>
<b>A1/43</b>	{ 200, 210, 220 } 230, 240, 250	500	23	50	E40/45	<b>26 6</b>
<b>A1/46*†</b>	100, 110	500	24	25	B22 3-pin	<b>37 0</b>
<b>A1/47*</b>	110	500	24	25	BH 38	<b>37 0</b>
<b>A1/153*†</b>	110, 115	500	24	25	E27 3-fin	<b>38 0</b>
<b>A1/160*</b>	110	500	24	25	BH 46	<b>37 0</b>
<b>A1/162</b>	{ 200, 210, 220 } 230, 240, 250	500	22.5	25	P28/25	<b>37 0</b>

\* Forced cooling necessary so that wall of bulb does not exceed 500° centigrade.

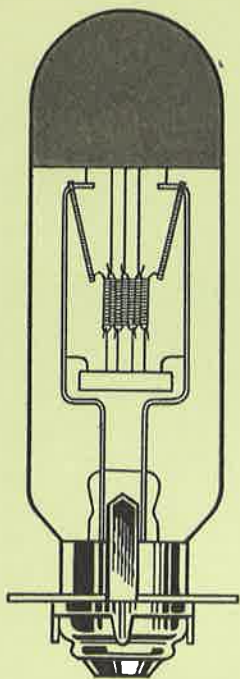
† Designed for burning in cap up position.

Cat. No.	Volts	Filament ***			Lamp dimensions		
		Shape	Height mm.	Width mm.	Diameter mm.	Overall length mm.	Light centre length mm.
<b>A1/6</b>	100, 110, <b>115</b>	F2	7	7	32±2	133±7	55.5±0.5
<b>A1/33</b>	100, 115	F2	6	6	25±1	100±5	34.5±2
<b>A1/37</b>	100, 115	F2	6	6	25±1	100±5	34.5±2
<b>A1/38</b>	100, 115	F2	6	6	25±1	100±5	31.5±0.5
<b>A1/154</b>	{ 210 } 230, 240, 250	F4	8	13	32±2	133±7	55.5±0.5
<b>A1/39</b>	100, 110, 115	E8	9	8	32±2	133±7	55.5±0.5
<b>A1/87</b>	110	E8	9	8	32±2	128±7	59±0.5
<b>A1/159</b>	110	E8	9	8	32±2	128±7	59±0.5
<b>A1/7</b>	110, <b>115</b>	E8	8	9	32±2	133±7	55.5±0.5
	100, 110, <b>115</b>	F3	10	12	64±2	133±7	55.5±0.5
<b>A1/8</b>	{ <b>200, 210, 220</b> } <b>230, 240, 250</b>	C8	12	16	64±2	133±7	55.5±0.5
	100, 110, 115	F3	10	12	64±2	128±7	75±5
<b>A1/42</b>	{ 200, 210, 220 } 230, 240, 250	C8	12	16	64±2	128±7	75±5
	100, 110, 115	F3	10	12	64±2	135±10	90±5
<b>A1/43</b>	{ 200, 210, 220 } 230, 240, 250	C8	12	16	64±2	135±10	90±5
<b>A1/46</b>	100, 110	E8	8	9	37±1	137±5	95±0.5
<b>A1/47</b>	110	E8	8	9	32±2	128±7	59±0.5
<b>A1/153</b>	110, 115	E8	8	9	37±1	145±8	81±0.5
<b>A1/160</b>	110	E8	8	9	32±2	128±7	59±0.5
<b>A1/162</b>	{ 200, 210, 220 } 230, 240, 250	E12	11	11	32±2	133±7	55.5±0.5

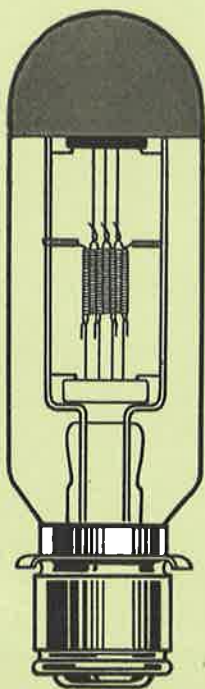
\*\*\* Dimensions are nominal objectives only.

These lamps are not subject to Purchase Tax.

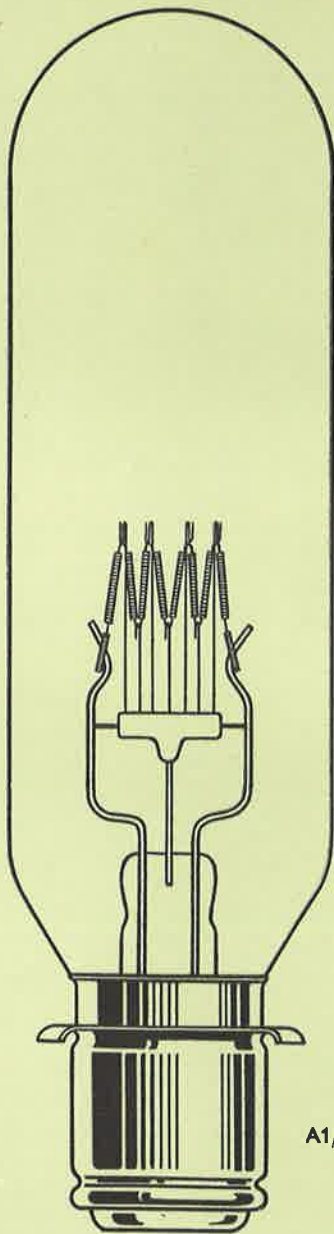
**lamps for projectors**



A1/53



A1/59



A1/11

**Osram**

## CLASS A1

Lamps with voltages in bold type are made to B.S. 1522.

Cinematograph, Film Strip and Slide Projection.  
Recommended burning position—see page 45.

Lamps A1/9, A1/53, A1/59, A1/91, and A1/163 have the bulb crown sprayed black.

Cat. No.	Volts	Watts	Efficiency lumens per watt	Objective average life (hours)	Cap	List price per lamp
A1/9*†	110, 115	750	26	25	P28/25	s. d. 42 6
A1/52*††	110, 115	750	26	25	E27 3-fin	43 6
	100, 110	750	26	25	BH 46	42 6
A1/53*†	200, 210, 220 230, 240, 250	750	24	25	BH 46	42 6
A1/163	200, 210, 220 230, 240, 250	750	24	25	P28/25	42 6
A1/10	30	900	28	50	P40/41	41 0
A1/111	24	900	27	50	E40/45	38 6
	30	900	28	50	E40/45	38 6
A1/11	100, 110, 115 200, 210, 220 230, 240, 250	1000	26	50	P40/41	35 6
	100, 110, 115	1000	26	50	E40/45	
A1/57	200, 210, 220 230, 240, 250	1000	24.5	50	E40/45	
A1/58*	110	1000	27	25	P28/25	49 6
A1/59*	110, 115	1000	27	25	P28/25	49 6
A1/60	110	1000	27	25	P40/41	52 0
A1/91*	110, 115	1000	27	25	BH46	49 6
A1/164	200, 210, 220 230, 240, 250	1000	24.5	25	P28/25	49 6

\* Forced cooling necessary so that wall of bulb does not exceed 500° centigrade.

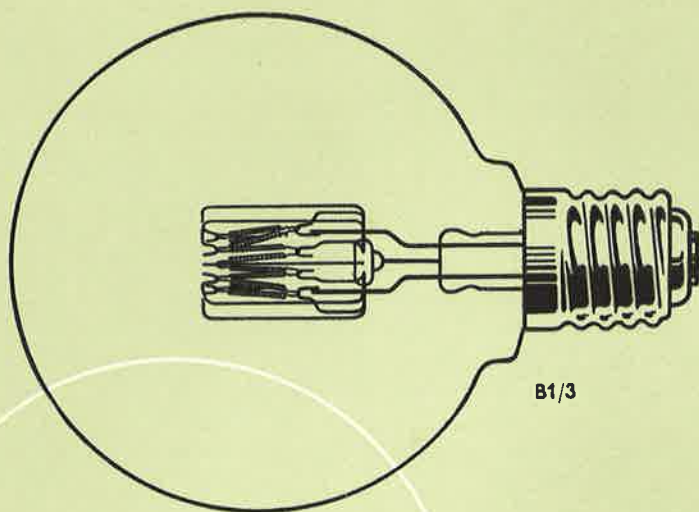
† Designed for burning in cap up position. ‡ Differentially spaced filament sections.

Cat. No.	Volts	Filament***			Lamp dimensions		
		Shape	Height	Width	Diameter	Overall length	Light centre length
A1/9	110, 115	E8	mm. 9.75	mm. 9.75	mm. 38±2	mm. 133±7	mm. 55.5±0.5
A1/52	110, 115	E8	9.75	9.75	37±1	145±8	81 ±0.5
	100, 110	E8	9.75	9.75	38±2	128±7	59 ±0.5
A1/53	200, 210, 220	E12	12	12	38±2	128±7	59 ±0.5
	230, 240, 250						
	200, 210, 220						
A1/163	230, 240, 250	E12	12	12	38±2	133±7	55.5±0.5
A1/10	30	E4	10	14	64±2	235±10	84 ±0.5
A1/111	24	E4	10.5	14	64±2	230±10	120 ±5
	30	E4	10	14	64±2	230±10	120 ±5
	100, 110, 115	A6	12	17	64±2	235±10	84 ±0.5
A1/11	200, 210, 220	D8	16	22	64±2	235±10	84 ±0.5
	230, 240, 250						
	100, 110, 115						
A1/57	200, 210, 220	D8	16	22	64±2	230±10	120 ±5
	230, 240, 250						
	110						
A1/58	110, 115	E8	14	12	64±2	133±7	55.5±0.5
A1/59	110	E8	14	12	38±2	133±7	55.5±0.5
A1/60	110, 115	E8	14	12	64±2	235±10	84±0.5
A1/91	200, 210, 220	E8	14	12	38±2	128±7	59 ±0.5
A1/164	230, 240, 250	E12	12	13	64±2	133±7	55.5±0.5

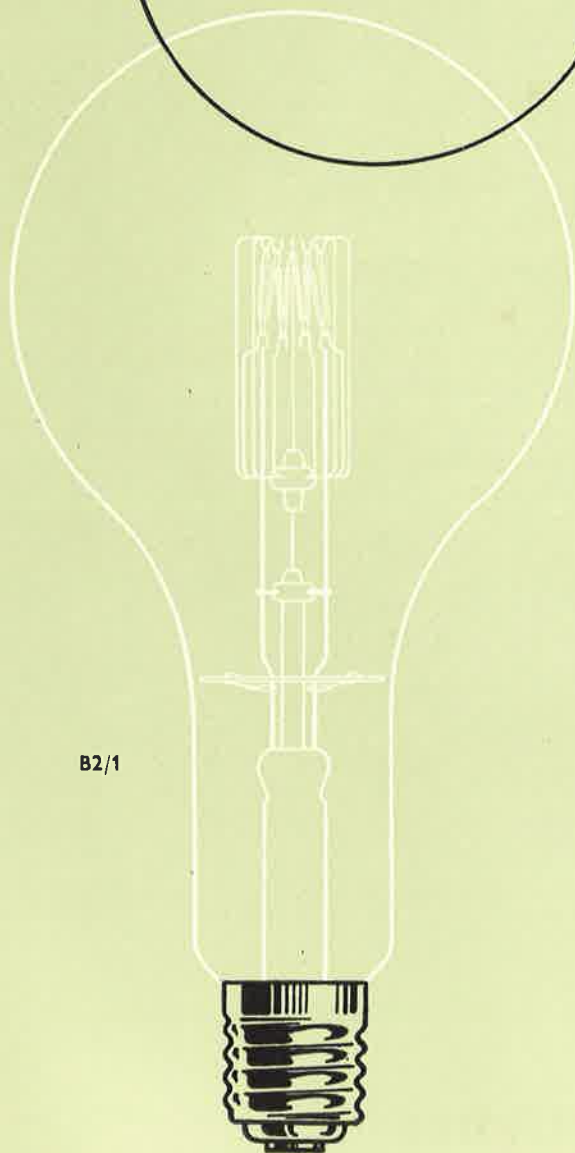
\*\*\* Dimensions are nominal objectives only.

These lamps are not subject to Purchase Tax.

# lamps for projectors



B1/3



B2/1

**Osram**



## CLASS B1 & B2

These lamps are made to  
British Standard No. 1522.

Floodlights, Theatre Spots and Floods, Shop  
Window and Display Lighting.

Recommended burning position for class B1—see  
page 45. Class B2—any position.

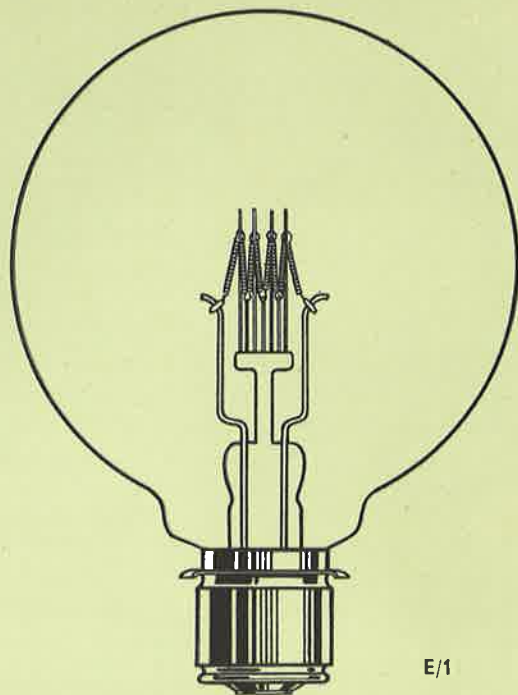
Cat. No.	Volts	Watts	Efficiency lumens per watt	Objective average life (hours)	Cap	List price per lamp
B1/1	115	100	12	800	E27/25	s. d.
	200, 210, 220	100	9.2	800	E27/25	10 0
	230, 240, 250	250	14.5	800	E27/25	
B1/2	115	250	14.5	800	E27/25	
	200, 210, 220	250	12.5	800	E27/25	19 3
	230, 240, 250	500	16	800	E40/45	
B1/3	115	500	16	800	E40/45	
	200, 210, 220	500	14.5	800	E40/45	25 3
	230, 240, 250	1000	17.5	800	E40/45	
B1/4	115	1000	17.5	800	E40/45	
	200, 210, 220	1000	16	800	E40/45	33 0
	230, 240, 250	500	16	800	E40/45	
B2/1	115	500	16	800	E40/45	
	200, 210, 220	500	14.5	800	E40/45	25 3
	230, 240, 250	1000	17.5	800	E40/45	
B2/2	115	1000	17.5	800	E40/45	
	200, 210, 220	1000	16	800	E40/45	33 0
	230, 240, 250					

Cat. No.	Volts	Filament ***			Lamp dimensions		
		Shape	Height	Width	Diameter	Overall length	Light centre length
B1/1	115	G6	mm. 10	mm. 11	mm. 80±2	mm. 115±10	mm. 75±5
	200, 210, 220	G8	10	10	80±2	115±10	75±5
	230, 240, 250	G8	8	11	95±2	125±10	75±5
B1/2	115	G10	11	10	95±2	125±10	75±5
	200, 210, 220	G10	11	14	130±5	180±10	115±5
	230, 240, 250	G10	13	15	130±5	180±10	115±5
B1/3	115	G10	18	23	130±5	180±10	115±5
	200, 210, 220	G10	20	25	130±5	180±10	115±5
	230, 240, 250	G10	11	14	130±5	267±8	202±7
B2/1	115	G10	13	15	130±5	267±8	202±7
	200, 210, 220	G10	18	23	150±5	300±9	225±8
	230, 240, 250	G10	20	25	150±5	300±9	225±8

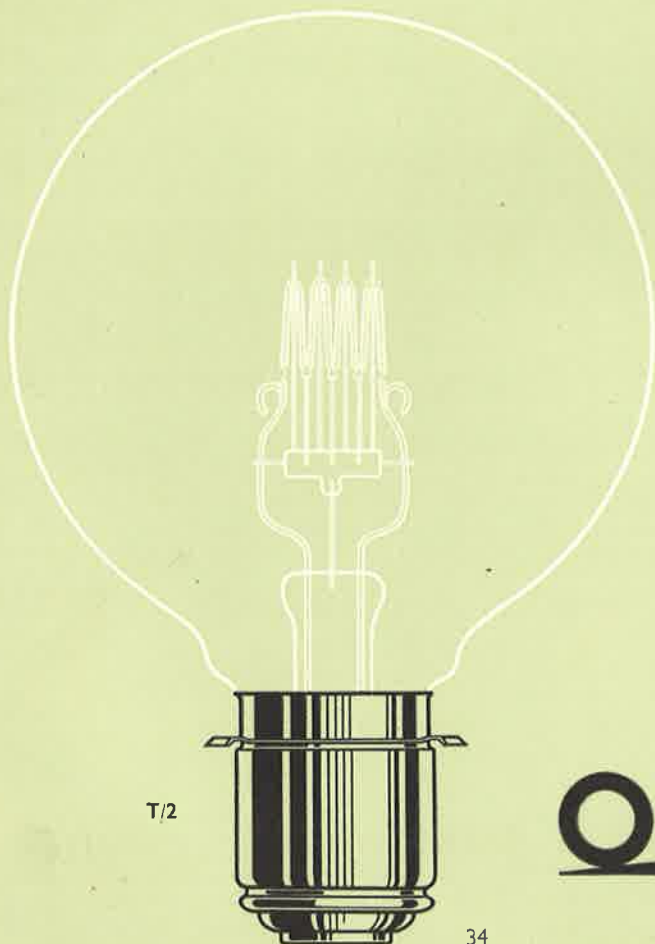
\*\*\* Dimensions are nominal objectives only.

For Purchase Tax, where applicable, see inside back cover.

# lamps for floodlights



E/1



T/2

**Osram** lamps

## CLASS E

Lamps with voltages in bold type are made to B.S. 1522.

**Specially designed for Epidiascopes.**

Recommended burning position—see page 45.

Cat. No.	Volts	Watts	Efficiency lumens per watt	Objective average life (hours)	Cap	List price per lamp
E/1	{ 115 200, 210, 220 230, 240, 250 }	500	23	100	P28/25	s. d.
		500	22	100	P28/25	31 3
		500	22.4	100	E27/30	
E/3	{ 110 200, 210, 220 230, 240, 250 }	500	20.6	100	E27/30	30 3

Cat. No.	Volts	Filament***			Lamp dimensions		
		Shape	Height	Width	Diameter	Overall length	Light centre length
E/1	{ 115 200, 210, 220 230, 240, 250 }	C8	mm. 13	mm. 16	mm. 100±2	mm. 135±10	mm. 60±0.5
		C8	15	18	100±2	135±10	60±0.5
		C8	13	16	100±2	135±10	85±5
E/3	{ 110 200, 210, 220 230, 240, 250 }	C8	15	18	100±2	135±10	85±5

\*\*\* Dimensions are nominal objectives only.

## CLASS T

**Theatre Spotlights**

Recommended burning position—see page 45.

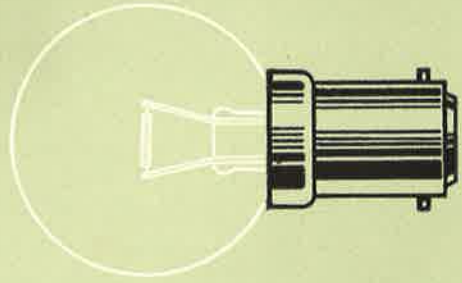
Cat. No.	Volts	Watts	Efficiency lumens per watt	Objective average life (hours)	Cap	List price per lamp
T/1	230, 240, 250	500	18	200	P28/25	s. d.
T/2	210, 230, 240, 250	1000	20	200	P40/41	28 0 35 6

Cat. No.	Volts	Filament***			Lamp dimensions		
		Shape	Height	Width	Diameter	Overall length	Light centre length
T/1	230, 240, 250	C8	mm. 12	mm. 16	mm. 95±5	mm. 130±10	mm. 55.5±0.5
T/2	210, 230, 240, 250	D8	16	22	130±5	190±10	84 ±0.5

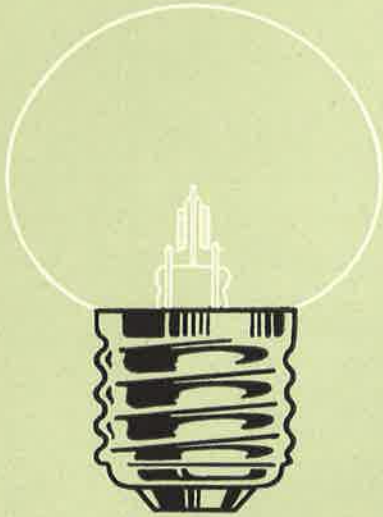
\*\*\* Dimensions are nominal objectives only.

These lamps are not subject to Purchase Tax.

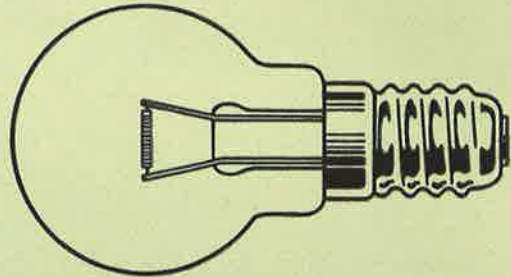
**for epidiascopes and theatre spotlights**



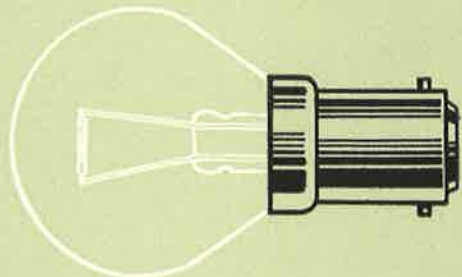
F/2



F/13



F/26



F/3

**Osram**

## CLASS F

Lamps with voltages in bold type are made to B.S. 1522.

Micro-Projection, Microscope Illumination.  
Recommended burning position—see page 45.\*

Cat. No.	Volts	Watts	Efficiency lumens per watt	Objective average life (hours)	Cap	List price per lamp
F/8	12	12	15	100	B15d/24 × 17	s. d. 4 6
F/10	6	24	18	100	E14/23 × 15	4 0
F/24	6	24	18	100	E27/25	4 0
F/3	12	24	19	100	B15d/24 × 17	4 0
F/10	12	24	19	100	E14/23 × 15	4 0
F/11	12	24	19	100	E14/23 × 15	4 0
F/1	6	30	21	25	E14/23 × 15	6 6
F/23	6	30	15.5	200	E27/35 × 30	6 6
F/25	6	30	21	25	E27/35 × 30	6 6
F/26	6	30	15.5	200	E14/23 × 15	6 6
F/2	6	48	16.5	100	B15d/24 × 17	8 3
F/7	8	48	16.5	100	E14/23 × 15	8 3
F/4	12	48	21	100	E14/23 × 15	6 0
F/13	12	48	21	100	E27/25	6 0
F/42	12	48	21	100	P28/25	6 0
F/14	12	100	21	100	E27/25	13 3

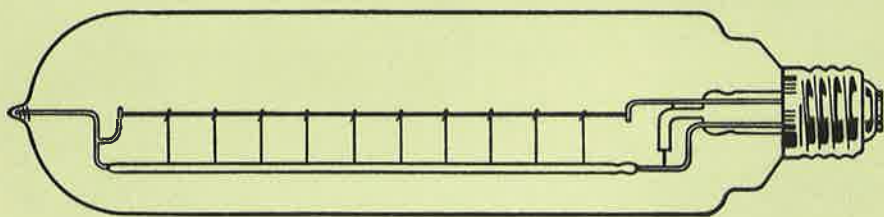
Cat. No.	FILAMENT ***			LAMP DIMENSIONS		
	Shape	Length	Width	Diameter	Overall length	Light centre length
F/8	Hs/c	mm. 5	mm. 0.5	mm. 35±2	mm. 57±5	mm. 40±3
F/10 (6V)	Hs/c	5	0.7	38±2	60±5	50±5
F/24	Hs/c	5	0.7	38±2	57±5	47±5
F/3	Hs/c	5.5	0.7	38±2	60±5	44±5
F/10 (12V)	Hs/c	5.5	0.7	38±2	60±5	50±5
F/11	Hs/c	5.5	0.7	38±2	60±5	41±3
F/1	Hs/c	3	2	35±2	57±5	47±5
F/23	Hs/c	4	1.5	35±2	63±5	53±5
F/25	Hs/c	3	2	35±2	63±5	53±5
F/26	Hs/c	4	1.5	35±2	65±5	47±5
F/2	Hs/c	2.5	2.25	35±2	60±5	40±3
F/7	Hs/c	3	2.5	40±3	60±5	41±3
F/4	A2	3	4	50±2	70±5	40±3
F/13	A2	3	4	50±2	68±7	38±5
F/42	A2	3	4	50±2	75±5	18.5±0.5
F/14	Hc/c	4	3.5	60±2	85±5	55±5

\* Axis of H filament should preferably be horizontal.

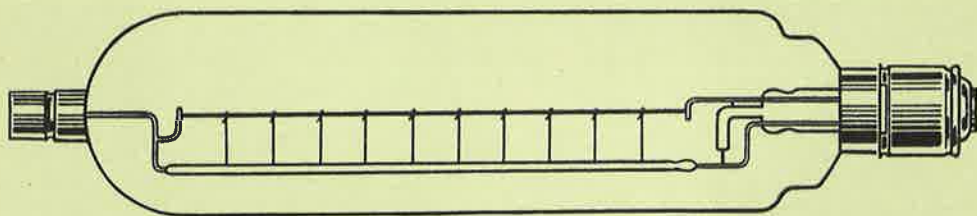
\*\*\* Dimensions are nominal objectives only.

For Purchase Tax, see inside back cover.

# lamps for micro-projectors



FL/1



FL/3

**Osram**



## CLASS FL

## Theatre and Aerodrome Floodlights

Recommended burning position—horizontal

Cat. No.	Volts	Watts	Efficiency lumens per watt	Objective average life (hours)	Cap	List price per lamp
FL/1	{ 115 200, 210, 220, 230, 240, 250 }	500	15.5	1,000	E40/45	s. d.
		500	14.5	1,000	E40/45	<b>38 6</b>
FL/2	{ 115 200, 210, 220, 230, 240, 250 }	1,000	16.5	1,000	E40/45	
		1,000	16.0	1,000	E40/45	<b>49 6</b>
FL/3	230	2,000	22.5	200	P40 and Centralising	<b>90 0</b>

Cat. No.	Volts	FILAMENT***		LAMP DIMENSIONS	
		Shape	Length	Diameter	Overall length
FL/1	{ 115 200, 210, 220, 230, 240, 250 }	Axial	mm. 145	mm. 90±2	mm. 355±10
		Axial	145	90±2	355±10
FL/2	{ 115 200, 210, 220, 230, 240, 250 }	Axial	194	90±2	390±10
		Axial	210	90±2	390±10
FL/3	230	Axial	220	90±2	425±5

\*\*\* Dimensions are nominal objectives only.

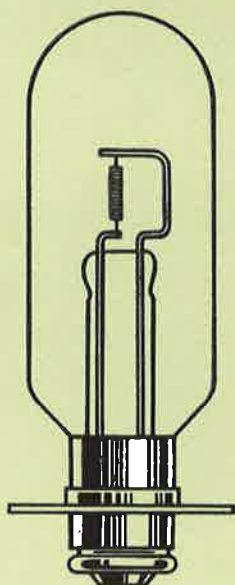
These lamps are not subject to Purchase Tax.

lamps for floodlights

G/8



G/23



G/29



**Osram**

## CLASS G

Lamps with voltages in bold type are made to B.S. 1015 or 1522.

## Film Sound Reproduction.

Recommended burning position—see page 45.

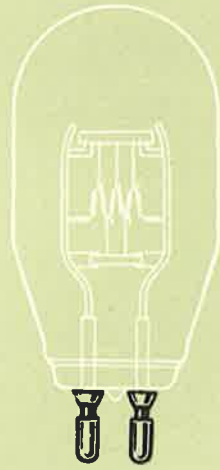
B.S. No.	Cat. No.	Volts	Amp	Efficiency lumens per watt	Objective average life (hours)	Cap	List price per lamp
E.L.10A	G/1	<b>4</b>	0.75	12	50	P15s/19	s. d. <b>7 0</b>
—	G/2	4	0.75	12	50	B15s/21	<b>6 0</b>
—	G/19	4	0.75	10	50	B15s/17	<b>6 0</b>
—	G/29	4	0.75	12	50	P15s/19	<b>7 0</b>
E.L.9	G/4	<b>6</b>	1	12	100	B15s/15	<b>6 0</b>
—	G/5	6	1	12	100	P15s/19	<b>6 0</b>
E.L.8	G/16	<b>27</b>	1	18	100	B15s/21	<b>9 0</b>
E.L.1A	G/7	<b>8</b>	4	21	100	P15s/19	<b>7 0</b>
E.L.1	G/8	<b>8</b>	4	21	100	B15s/21	<b>6 0</b>
E.L.2	G/9	<b>8.5</b>	4	21	100	B15s/21	<b>6 0</b>
E.L.4A	G/10	<b>10</b>	5	23	100	P15s/19	<b>9 0</b>
E.L.4	G/11	<b>10</b>	5	23	100	B15s/21	<b>8 0</b>
E.L.5	G/12	<b>10</b>	5	23	100	B15s/21	<b>8 0</b>
—	G/22	4	6	18	100	B15s/21	<b>6 6</b>
—	G/23	5	6.5	18	50	P15s/19	<b>8 0</b>
E.L.6A	G/13	<b>10</b>	7.5	24	100	P15s/19	<b>9 0</b>
E.L.6	G/14	<b>10</b>	7.5	24	100	B15s/21	<b>8 0</b>
E.L.7	G/15	<b>10</b>	7.5	24	100	B15s/21	<b>8 0</b>

Cat. No.	FILAMENT***		LAMP DIMENSIONS		
	Shape	Length	Diameter	Overall length	Light centre length
G/1	Hs/c	mm. 1.75	mm. 25±1	mm. 48±3	mm. 28.5±0.5
G/2	Hs/c	1.75	25±1	48±3	32±1.5
G/19	Hs/c	1.75	15.5±0.5	48±3	31.75±0.5
G/29	Hs/c	1.75	16±0.5	57±3	28.5±0.5
G/4	Al (Axial)	3.25	18±1	40±2	21.5±0.5
G/5	Al (Axial)	3.25	16±1	57±3	28.5±0.5
G/16	Hs/c	3.5	25±1	75±3	41±1
G/7	Hs/c	7	25±1	75±3	37.3±0.5
G/8	Hs/c	7	25±1	75±3	44±1
G/9	Hs/c	8	25±1	75±3	44±1
G/10	Hs/c	5	25±1	75±3	37.3±0.5
G/11	Hs/c	5	25±1	75±3	41±1
G/12	Hs/c	5	25±1	75±3	44±1
G/22	Hs/c	2	25±2	49±3	31.5±1
G/23	Al (Axial)	4	25±1	75±3	41±0.5
G/13	Hs/c	4.5	25±1	75±3	37.3±0.5
G/14	Hs/c	4.5	25±1	75±3	41±1
G/15	Hs/c	4.5	25±1	75±3	44±1

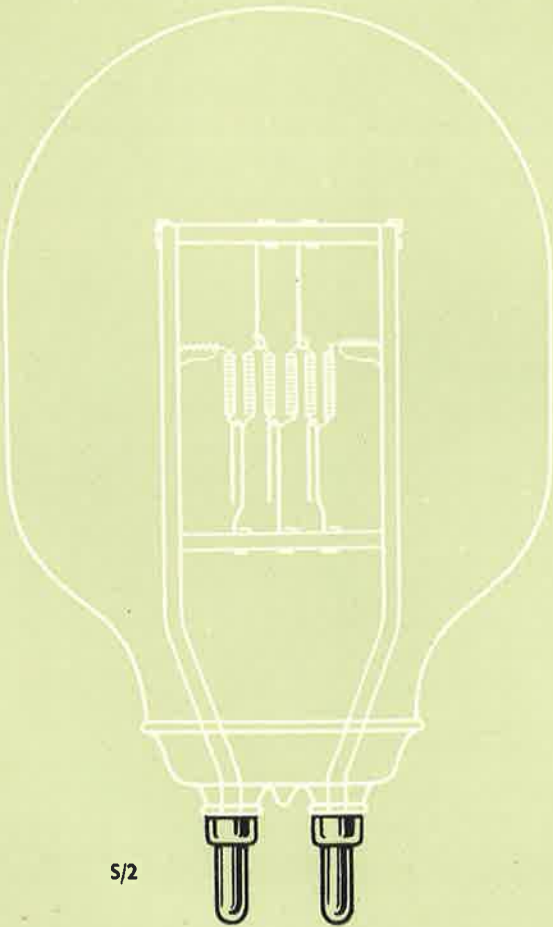
\*\*\* Dimensions are nominal objectives only.

These lamps are not subject to Purchase Tax.

# lamps for film sound reproduction



S/6



S/2

**Osram**

## CLASS S

Lamps with voltages in bold type are made to B.S. 1522.

Film Studio Lighting, Large Spots and Floods.  
Recommended burning position—see page 45.

Cat. No.	Volts	Watts	Efficiency lumens per watt	Objective average life (hours)	Cap*	List price per lamp
S/6	230	750	—	100	Medium Bipost	s. d. <b>77 0</b>
S/4	115	1000	23	100	Bipost	<b>71 6</b>
	210, 230 240, 250	1000	21.5	100	Bipost	<b>71 6</b>
S/1	210, 230 <b>240</b> , 250	2000	24	100	Bipost	<b>93 6</b>
S/5	230, 240, 250	2000	24	100	E40/45	<b>93 6</b>
S/2	230, <b>240</b> , 250	5000	26.5	100	Bipost	<b>300 0</b>

\* Medium Bipost (Bi 22) pin centres  $22.23 \pm 0.3$  mm.  
Bipost (Bi 38) " "  $38.1 \pm 0.25$  mm.

Cat. No.	Volts	Filament ***			Lamp dimensions		
		Shape	Height	Width	Diameter	Overall length	Light centre length
S/6	230	—	mm.	mm.	mm.	mm.	mm.
S/4	115	A6	14	20	$63 \pm 1$ $152.5 \pm 2$	$165 \text{ max.}$ $232 \pm 6$	$63.5 \pm 2$ $127 \pm 2$
	210, 230 240, 250	A8	13	26	$152.5 \pm 2$	$232 \pm 6$	$127 \pm 2$
S/1	210, 230 <b>240</b> , 250	B8	16	37	$152.5 \pm 2$	$232 \pm 6$	$127 \pm 2$
S/5	230, 240, 250	A5	16	37	$150 \pm 2$	$220 \pm 10$	$134 \pm 5$
S/2	230, <b>240</b> , 250	A5	27	55	$203 \pm 2$	$335 \pm 6$	$165 \pm 2$

\*\*\* Dimensions are nominal objectives only.

## COLOUR TEMPERATURE STUDIO LAMPS

These lamps are designed at an initial colour temperature of  $3250^\circ\text{K}$ . and are for use with colour film balanced at  $3200^\circ\text{K}$ .

Watts	Volts	Cap	Lamp dimensions			List price per lamp
			Diameter	Overall length	Light centre length	
750	115	Medium Bipost	mm. $63 \pm 1$	mm. $165 \text{ max.}$	mm. $63.5 \pm 2$	s. d. <b>77 0</b>
2000		Bipost	$152.5 \pm 2$	$232 \pm 6$	$127 \pm 2$	<b>93 6</b>
5000		Bipost	$203 \pm 2$	$335 \pm 6$	$165 \pm 2$	<b>300 0</b>
10000		Bipost	$300 \pm 2$	$490 \text{ max.}$	$254 \pm 2$	<b>660 0</b>

These lamps are not subject to Purchase Tax.

# lamps for studio spotlights

# CARE OF **Osram** PROJECTOR LAMPS

## SURGE LIMITATION

To ensure maximum service from OSRAM projector lamps the following points should be noted.

With a mains or transformer operated lamp, a series resistor, preferably in the form of a rheostat, should be incorporated in the circuit in order to protect the lamp from damage by the surge of current which takes place when switching on. The value of the resistor should be such that it will limit the surge to approximately three times the normal running current and it may be calculated from the following formula :—

$$R = \frac{V^2}{3W} \quad \text{Where } R = \text{Resistance in Ohms.}$$

$$V = \text{Supply or transformer output voltage.}$$

$$W = \text{Lamp wattage.}$$

Examples :

1. For a 115 volt 750 watt lamp
2. For a 230 volt 500 watt lamp

$$R = \frac{(115)^2}{3 \times 750} = 6 \text{ ohms.}$$

$$R = \frac{(230)^2}{3 \times 500} = 35 \text{ ohms.}$$

The resistor may be short circuited within a few seconds of switching-on.

## APPLIED VOLTAGE

The voltage applied to the lamp contacts should not exceed that marked on the lamp. An idea of the importance of this point may be gathered from the fact that, although one per cent excess voltage will result in four per cent increase in light output, there will also be a twelve per cent decrease in life. A check may be carried out by means of a voltmeter, and control exercised by use of a variable resistor which will also serve as a surge limiting unit as described above.

## OPERATING PRECAUTIONS

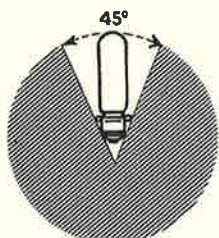
While the machine is in operation :—

- (1) Take care not to move the projector with the lamp alight more than is necessary to centre the picture on the screen, since mechanical shock may result in premature failure, particularly when a lamp has been in service for some hours.
- (2) Do not run the projector unless the motor and mechanism are working smoothly. The filament of a high-efficiency lamp, due to its high operating temperature, is particularly susceptible to the effects of vibration.
- (3) Ensure that there is a plentiful flow of air past the lamp in the apparatus. Whether you have forced or convection cooling there should be no undue obstruction to the entry and exit of air to and from the lamphouse.
- (4) If the apparatus is fitted with speed control, take care not to overheat the lamp by allowing the motor to run slowly. This is particularly applicable where a lamp, of higher wattage than that originally intended by the makers, is in use.
- (5) Always burn the lamp in the recommended position, otherwise premature blackening and failure may result.



# RECOMMENDED BURNING POSITION OF **Osram** PROJECTOR LAMPS

The shaded portions of these diagrams show the positions in which the lamps **must not** be mounted.

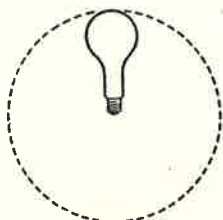


Class A1

(Except A1/46, A1/52 and A1/153 which are designed for vertical cap up burning)



Class B1



Class B2

Designed for burning  
in any position



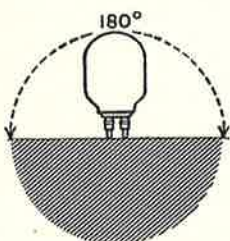
Class E



Class F



Class G



Class S



Class T

# PROJECTOR GUIDE

The following is a list of still and motion picture projectors showing the type of Osram projector lamp with which they can be operated.

## CINÉ PROJECTORS

Make	Model	PROJECTOR LAMP				EXCITER LAMP			
		Volts	Watts	Cap	Cat. No.	Volts	Amp	Cap	Cat. No.
Actina	Ditmar	110	500	P28/25	A1/7				
	Agfa	110	200	B15s	A1/26				
Agilux Ampro	Billy	115	100	B15s	A1/21				
	SS50	100	100	B15s	A1/21				
	SS100	100	200	B15s	A1/26				
	—	110	750	P28/25	A1/9				
	A8	115	500	P28/25	A1/7				
	J, JS & JD	115	500	P28/25	A1/7				
	K, KS & KD	115	500	P28/25	A1/7				
		115	750	P28/25	A1/9				
	NC & UC	115	500	P28/25	A1/7				
		115	750	P28/25	A1/9				
	YC	115	500	P28/25	A1/7				
		115	750	P28/25	A1/9				
	Imperial	115	1000	P28/25	A1/59				
		110	750	P28/25	A1/9				
	Y	115	500	P28/25	A1/7				
		115	750	P28/25	A1/9				
	M	115	1000	P28/25	A1/59				
		115	500	P28/25	A1/7				
	N, U & L	115	500	P28/25	A1/7				
		115	750	P28/25	A1/9				
	UA & UAB	115	500	P28/25	A1/7				
		115	750	P28/25	A1/9				
	XA, YA & YSA	115	500	P28/25	A1/7				
		115	750	P28/25	A1/9				
	Premier 10	115	1000	P28/25	A1/59				
		100	750	P28/25	A1/9				
	Premier 20	110	500	P28/25	A1/7				
		110	750	P28/25	A1/9				
	Repeater	110	1000	P28/25	A1/59				
		110	750	P28/25	A1/9				
	Stylist :								
	Universal	115	500	P28/25	A1/7				
	Standard		750	P28/25	A1/9				
	Convertible		1000	P28/25	A1/59				
	Major								
	Arc		Arc						
	PA 2 Amplifier								
	PA 3 Amplifier								
Autocrat Bell & Howell	One	50	250	P28/25	A1/15				
	57A, B, C, D, E, F	50	250	BH38	A1/85				
		110	400	BH38	A1/87				
	57G & H	50	250	BH38	A1/85				
		110	400	BH38	A1/87				
	57MM & NN	110	400	BH38	A1/87				
	57JL	110	400	BH38	A1/87				
	57JS 57LS & 57JJ	110	750	BH46	A1/53				
	57R & S	110	500	BH38	A1/47				
	57ST & RT,								
	129C & A	110	750	BH46	A1/53				
	57SU & RU,								
	129D, B, E	110	750	BH46	A1/53				
	130	100	1000	BH46	A1/92				
	122B	110	400	BH38	A1/87				
	Filmomaster 400	110	500	BH46	A1/160				

# CINÉ PROJECTORS—continued.

Make	Model	PROJECTOR LAMP				EXCITER LAMP			
		Volts	Watts	Cap	Cat. No.	Volts	Amp	Cap	Cat. No.
Bell & Howell	602	{ 110	750	BH46	A1/53	4	0.75	B15s	G/19
	Vocational	{ 110	1000	BH46	A1/91				
	Diplomat and 173	{ 110	500	BH38	A1/47				
	Showmaster	{ 110	750	BH46	A1/53				
	Filmosound 138	{ 110	750	BH46	A1/53				
	" 120A, B & C	{ 110	500	BH46	A1/160				
	" 120D & K	{ 110	750	BH46	A1/53				
	" 130	{ 100	1000	BH46	A1/91				
	" Commercial	{ 110	750	BH46	A1/53				
	" Academy	{ 110	750	BH46	A1/53				
	" Utility	{ 110	750	BH46	A1/53				
	" Victory	{ 110	750	BH46	A1/53				
	" Master	{ 110	750	BH46	A1/53				
	" Auditorium	{ 100	1000	BH46	A1/92				
	156, 179	{ 110	750	BH46	A1/53				
		{ 110	1000	BH46	A1/91				
		{ 110	500	BH46	A1/160				
	601	{ 110	750	BH46	A1/53				
		{ 110	1000	BH46	A1/91				
	606	{ 110	400	BH38	A1/87				
B.T.H. Carpenter	609	—	Arc	—	—	4	0.75	B15s	G/19
	613	{ 110	750	BH46	A1/53	4	0.75	P15s	G/29
	185, 202, 285,	{ 110	750	BH46	A1/53				
	621	{ 110	1000	BH46	A1/91				
	301	{ 115	750	P28/25	A1/9	4	6	B15s	G/22
	Standard	{ 110	750	P28/25	A1/9	6	1	P15s	G/5
	Junior	{ 110	750	P28/25	A1/9				
	De Luxe	{ 110	750	P28/25	A1/9				
		{ 110	1000	P28/25	A1/59	6	5	B15s	G/30
	D23	{ 110	300	P28/25	A1/6				
Danson	540	{ 110	500	P28/25	A1/7				
		{ 110	750	P28/25	A1/9				
Debie	D16	{ 110	500	3 Fin	A1/153	4	6	B15s	G/22
		{ 110	750	3 Fin	A1/52				
Dekko	9.5 mm.	{ 50	25	B15S	A1/1				
	48	{ 115	50	B15S	A1/2				
	8 mm.	{ 110	500	P28/25	A1/7				
	118, 119 & 126	{ 110	500	P28/25	A1/7				
	16 mm.	{ 110	750	P28/25	A1/9				
		{ 115	750	P28/25	A1/9				
Durnos	16 mm.	{ 115	1000	P28/25	A1/59				
		{ 115	500	P28/25	A1/7				
E.L.M.O.	9.5 mm.	{ 115	500	P28/25	A1/7				
Ensign	16 mm. Universal	{ 115	500	P28/25	A1/7				
Eumig	16 mm.	{ 110	750	P28/25	A1/9				
	Super	{ 110	400	P28/25	A1/39				
Gebescope	K16	{ 110	200	3-pin B.C.	A1/80	8	4	B15s	G/8
		{ 110	500	3-pin B.C.	A1/46				
	L516	{ 110	750	3-pin B.C.	—				
Guild-Arc	Oehmichen	{ 110	750	P28/25	A1/9				
	A82	{ 115	750	P28/25	A1/9				
	C18	{ 110	300	B15s	A1/37				
	K160	{ 115	750	P28/25	A1/9				
Kodak	B	{ 50	200	P28/25	A1/13				
		{ 50	250	P28/25	A1/5				
	Kodatoy	{ 115	50	B15s	A1/2				

# CINÉ PROJECTORS—continued.

Make	Model	PROJECTOR LAMP				EXCITER LAMP			
		Volts	Watts	Cap	Cat. No.	Volts	Amp	Cap	Cat. No.
Kodak	C	115	100	P28/25	A1/4				
		100	400	P28/25	A1/39				
	D	100	300	P28/25	A1/6				
		100	400	P28/25	A1/39				
	E & EE	100	300	P28/25	A1/6				
	G	110	750	P28/25	A1/9				
	K	100	300	P28/25	A1/6				
	L	115	750	P28/25	A1/9				
	Eight—30	100	100	B15s	A1/21				
	Eight—35, 40 & 46	100	200	B15s	A1/26				
	Eight—45	100	300	B15s	A1/37				
	Sixteen—10&20	110	500	P28/25	A1/7				
		110	750	P28/25	A1/9				
	70	100	300	P28/25	A1/6				
Nizo	Familia 60	Mains	250	P28/25	A1/5				
	Lucia 120	110	500	P28/25	A1/7				
Noris	8 and 9.5 mm.	Mains	100	B15s	A1/166				
		110	250	P28/25	A1/5				
Paillard— Bolex	M8R	110	400	P28/25	A1/39				
		110	500	P28/25	A1/7				
		110	500	P28/25	A1/7				
	63, 16, 816, 916	110	750	P28/25	A1/9				
Pathescope	Ace	20	10	E10	A1/131				
		19	19	E10	A1/158				
	Gem	12	100	Pathe	A1/156				
	Home Movie	20	10	Pathe	A1/72				
	Lux & H	80	100	Pathe	A1/79				
	Pax	110	400	P28/25	A1/39				
	Son	12	100	Pathe	A1/156				
	200B	110	200	Pathe	A1/81				
Pearson	16 mm.	110	500	P28/25	A1/7				
Revere Ross	8 mm.	110	750	P28/25	A1/9				
	B	115	500	P28/25	A1/7				
	B1					10	7.5	B15s	G/14
	B2					8	4	B15s	G/8
Siemens	MC					8	4	P15s	G/7
	Home 16 mm.	50	200	P28/25	A1/113				
		115	500	P28/25	A1/7				
	Standard 16mm.	50	200	P28/25	A1/113				
		50	250	P28/25	A1/15				
	Dual	50	250	P28/25	A1/15				
Sofil	H8	50	200	P28/25	A1/113				
		50	250	P28/25	A1/15				
Specto	Minor	50	200	B15s	A1/151				
	De Luxe	50	200	B15s	A1/151				
	Analysing	50	250	P28/25	A1/15				
	Standard Dual	30	100	P28/25	A1/3				
	Educational	50	250	P28/25	A1/15				
		115	250	P28/25	A1/5				
	Specto 500	115	500	P28/25	A1/7				
	Spectone	115	500	3 Fin	A1/153				
	Standard	110	200	P28/25	A1/13				
		30	100	P28/25	A1/3				
U.C.C.	8 mm.	115	400	P28/25	A1/39				
Victor	Greyline	115	750	P28/25	A1/9				
		115	1000	P28/25	A1/59				
Zeiss Ikon	16 mm.	100	100	B15s	A1/21				
		100	200	B15s	A1/26				

# SPOTLIGHT, FILM STRIP, SLIDE and MICRO PROJECTORS

Make	Model	Volts	Watts	Cap	Cat. No.
Acton Equipments	Mulberry	Mains	250	P28/25	A1/5
Adiescope	Universal	12 or Mains	100	P28/25	A1/4
Agfa	Karator U	Mains	250	P28/25	A1/5
Aldis	Epidiascope	Mains	500	P28/25	A1/8
	Epivisor	Mains	500	P28/25	A1/8
	" with blower	115	1000	P28/25	A1/58
	Minor	Mains	100	P28/25	A1/4
	Universal	Mains	250	P28/25	A1/5
	300	Mains	300	P28/25	A1/154
		{ Mains	250	P28/25	A1/5
	750	115	750	P28/25	A1/9
	1000	115	1000	P28/25	A1/59
Beck	Microscope	6	30	E14/23 x 15	F/1 or F/26
Bell & Howell	177	110	300	BH46	A1/86
Bolco	—	Mains	250	P28/25	A1/5
Briggs Kinescope	Ray Master	Mains	100	P28/25	A1/4
Brit. Indust. Films	E.D.P.	12 or Mains	100	P28/25	A1/4
Broomfield	Automatic	10	75	B15s	G/14
Corfield	—	{ Mains	250	P28/25	A1/5
		{ Mains	300	P28/25	A1/154
Dufay Chrome	Standard	Mains	100	P28/25	A1/4
	" with resistor	115	100	P28/25	A1/4
E.S.A.	A.M.P.	{ Mains	250	P28/25	A1/5
		{ Mains	300	P28/25	A1/154
Eduscope	Super Universal	Mains	250	P28/25	A1/5
	Super 500	110	500	P28/25	A1/7
Elite	HJ250	{ Mains	250	P28/25	A1/5
		{ Mains	300	P28/25	A1/154
	HJ500	110	500	P28/25	A1/7
	HJ750	110	750	P28/25	A1/9
	Epidiascope	{ 110	750	P28/25	A1/9
		{ 110	1000	P28/25	A1/59
		{ Mains	500	E40/45	B1/3
Furse	SS12, 13 and 15	{ Mains	1000	E40/45	B1/4
		{ Mains	1000	E40/45	A1/57
	SS21	Mains	250	E27/25	B1/2
Gnome	2 x 2	Mains	300	P28/25	A1/154
G.B.	38	12	100	P28/25	A1/4
	Kershaw 250	Mains	250	P28/25	A1/5
G.E.C.	Z96	Mains	2000	Bipost	S/1
	Z104	Mains	500	P28/25	A1/8
	Z140	Mains	5000	Bipost	S/2
	Z300	{ 115	100	B15d	A1/121
		{ Mains	100	B15d	A1/169
Hunter	—	Mains	100	P28/25	A1/4
Johnsons	Autoscope	{ 110	500	P28/25	A1/7
		{ 110	750	P28/25	A1/9
	Fafix I	110	50	B15s	A1/2
	Fafix II	Mains	100	B15s	A1/166
	Optiscope	{ Mains	250	P28/25	A1/138
		{ Mains	500	P28/25	A1/8
Kodak	Kodaslide 5	Mains	250	P28/25	A1/5
	Reader C, AH & 9	100	200	P15d	A1/127
	16 mm. Reader	40	24	B15d	M/3
Leech	Microscope	10	75	B15s	G/15
	" 1952 Model	110	100	B15d	A1/121
Leitz	Prado 100	Mains	100	P28/25	A1/4
	Prado 250	Mains	250	P28/25	A1/5
	Type F	6	30	E14/23 x 15	F/1 or F/26
Mole Richardson	Midget 404	115	200	B15d	A1/83
	Baby Solarspot 406	Mains	500	P28/25	A1/8

Note.—Where the voltage is given as "Mains" the lamp is generally operated without a transformer or resistor other than that used for limitation of the surge current—see page 44.



# SPOTLIGHT, FILM STRIP, SLIDE AND MICRO PROJECTORS—cont.

Make	Model	Volts	Watts	Cap	Cat. No.
Mole Richardson	Junior Solarspot 410	Mains	1000	Bipost	S/4
		Mains	2000	Bipost	S/1
	Senior Solarspot 414	115	2000	Bipost	Col. Temp.
		Mains	5000	Bipost	S/2
		115	5000	Bipost	Col. Temp.
		Rifle lamp 45	Mains	1000	E40/45
	Mains		1500	E40/45	
	Broadside 21	Mains	500	E40/45	Angle burning G.L.S.
		Broadside 20	Mains	1000	
			Mains	1500	E40/45
		Basher 316	Mains	500	E27/25
	Mains		500	E27/25	Photo-graphic
	5-lightstrip 305	Mains	500	E27/25	Photoflood
		Mains	500	E27/25	
M.P.P. Neokon Newton	No. 3	Mains	100	P28/25	A1/4
	Fireside	Mains	100	P28/25	A1/4
	Diascope	Mains	500	P28/25	A1/8
	Lightmaster	Mains	250	P28/25	A1/5
		Mains	300	P28/25	A1/154
	Microscope Series I	100	100	B15d	A1/121
		" " II	100	100	B15d
	100		200	B15d	A1/25
	N.A.50	110	750	P28/25	A1/9
	New Hand Episcopo	Mains	500	P28/25	A1/8
	W.G. and W.F. 50	Mains	500	P28/25	A1/8
	Wigmore Junior	Mains	250	P28/25	A1/5
	2 x 2	Mains	100	P28/25	A1/4
		Micro-Senior	6	30	B15d
Micro-Junior	6		30	B15d	F/41
Pullin	PP1/A	Mains	250	P28/25	A1/5
	PP2/A	12	100	P28/25	A1/4
	PP3	110	500	P28/25	A1/7
Rigby	Premier 500	Mains	500	E27/25	A1/42
	" 1000	Mains	1000	E40/45	A1/57
	" 2000	Mains	2000	E40/45	S/5
Ross	Epidiascope	Mains	1000	E40/45	A1/57
		Mains	500	E27/25	A1/42
	" Junior	Mains	500	P28/25	A1/8
" Classroom	Mains	500	E27/25	A1/42	
	Pattern 27	Mains	100	E27/25	B1/1
		Mains	250	E27/25	B1/2
Pattern 45	Mains	250	E27/25	B1/2	
	Pattern 44	Mains	500	E40/45	B1/3
		Pattern 43	Mains	1000	E40/45
	Mains		1000	E40/45	B1/4
		Mains	1000	P40/41	A1/11
Pattern 73		Mains	1000	P40/41	B1/15
		Mains	1000	E40/45	A1/57
		Mains	1000	E40/45	B1/4
	Pattern 83	Mains	1000	P40/41	A1/11
		Mains	1000	E40/45	A1/57
	Pattern 50	Mains	1000	E40/45	A1/57
		Mains	1000	E40/45	B1/4
	Pattern 51	Mains	1000	E40/45	A1/57
Pattern 76	Mains	500	E40/45	B1/3	
	Mains	1000	E40/45	B1/4	
Pattern 102	Mains	2000	Bipost	S/1	
Voigtlander	Baby Zett 35	115	100	B15s	A1/21
		Mains	100	B15s	A1/166

Note.—Where the voltage is given as "Mains" the lamp is generally operated without a transformer or resistor other than that used for limitation of the surge current—see page 44.



# FOREIGN EQUIVALENTS to **Osram** CLASS A1 PROJECTOR LAMPS

Considerable progress has been made during recent years with international standardisation of lamps used for projection purposes. The following table has been designed to show which lamps are interchangeable in apparatus though not necessarily identical in every respect.

Volts	Watts	Cap	CATALOGUE OR REFERENCE NUMBERS				
			Osram	American	Dutch	French	German
Low	50	B15d	A1/19	50T8/22DC†	—	—	—
Low	50	B15s	A1/2	50T8/47SC	S.I. 1/1	—	—
30	100	P28	A1/3‡‡	100T8½/6*	{ S.I. 19/1‡ S.I. 20/1‡	—	58.8130 St E‡‡
Low	100	P28	A1/4	100T8½/8*	S.I. 5/1	A2/1	58.8180 E
High	100	P28	A1/4	—	S.I. 5/1	A2/1	58.8190 E
Low	100	B15s	A1/21	100T8SC	S.I. 2/1	A4/2	58.8175 St
High	100	B15s	A1/166	—	—	—	58.8192/I
Low	100	B15d	A1/121	100T8/108DC	—	—	—
Low	150	P28	A1/4	200T10P nearest*	S.I. 6/1	A2/1	58.8280 E
High	150	P28	nearest A1/4	—	S.I. 6/1	nearest A2/1	58.8290 E
Low	150	B15s	nearest A1/167	150T8/70	S.I. 16/1	A4/2	58.8175 St nearest
High	150	B15s	A1/167	150T8/70	—	—	—
High	150	B15d	A1/168	150T8/79	—	—	—
50	200	P28	A1/113‡‡	200T10P*	S.I. 23/1‡‡	—	58.8358 St E‡‡
Low	200	P28	A1/13	200T10P*	S.I. 6a/1	A2/2	—
Low	200	B15s	A1/26	200T8SC	S.I. 3/1	A4/3	58.8371 St
Low	200	B15d	A1/25	200T8DC	—	—	—
50	250	P28	A1/5	200T10/56* }	S.I. 24/1	—	58.8450 St E
50	250	P28	A1/15‡‡		S.I. 25/1‡‡	—	58.8349 St E‡‡
Low	250	P28	A1/5	250T14/2*‡‡	S.I. 7/1	A2/3	58.8480 E
High	250	P28	A1/5	250T10/99*	S.I. 7/1	—	58.8490 E
Low	300	P28	A1/6	300T10P†*	{ S.I. 8/1 S.I. 9/1 }	A2/4	58.8581/IE
Low	300	B15s	A1/37	300T8½/10	S.I. 4/1	—	—
Low	400	P28	A1/39	400T10P*	S.I. 10/1	A2/5*	—
Low	500	P28	A1/8	500T20P*	K.I. 2/1	A1/2	57.7580 E
High	500	P28	A1/8	500T10P	K.I. 2/1	A1/2	57.7590 E
Low	500	E27	A1/42	500T20†	K.I. 1/1	A1/2	57.7580 A
High	500	E27	A1/42	500T20	K.I. 1/1	A1/2	57.7590 A
Low	500	P28	A1/7	500T10P*	S.I. 11/1	A2/6*	58.8880 E*
Low	500	BH38	A1/47	500T10/3SR	—	—	58.8880/IC
Low	500	BH46	A1/160	500T10/3LR	—	—	—
Low	750	P28	A1/9	750T12P*	S.I. 12/1	A2/7*	58.8980 E*
Low	750	BH46	A1/53	750T12/3LR	—	—	58.8980/IC
30	900	E40	A1/111	900T20	K.I. 11/1	—	57.7730 D
Low	1000	P28	A1/59	1M/T12P*	S.I. 13/1	—	58.8985/IE
Low	1000	P28	A1/58	1M/T20MP*	—	—	—
Low	1000	BH46	A1/91	1M/T12/3LR	—	—	58.8985/IC
Low	1000	E40	A1/57	1M/T20	K.I. 3/1	A1/3	57.7880 D
High	1000	E40	A1/57	1M/T20	K.I. 3/1	A1/3	57.7890 D

Notes.—\* = Maximum overall length 5/6 mm. more than Osram figure.

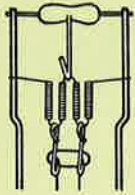
† = Burning position—any.

‡ = Bulb diameter 45 mm.

‡‡ = Offset filament.

Low voltage lamps generally 100, 110 or 115 volts.

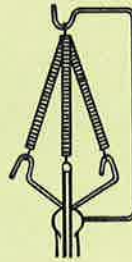
High voltage lamps generally 200, 210, 220, 230, 240 or 250 volts.



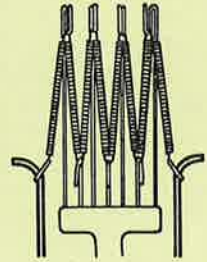
A.—Single coil flat  
Grid parallel



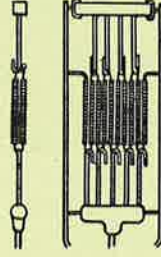
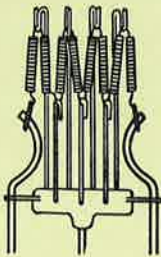
B.—Single coil flat  
Grid Vee



C.—Single coil, 4 Vee. 3 staggered



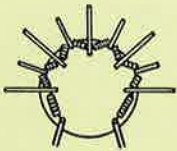
D.—Single coil, 4 Vee. 2 staggered



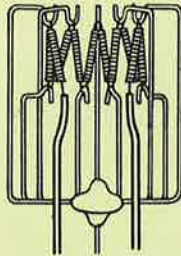
E.—Single coil  
Biplane



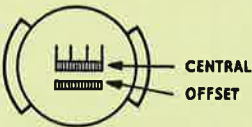
F.—Coiled coil  
flat Grid



G.—Bunch



H.—Coiled coil. H.—Single coil



Relation of filament  
and supports to large  
flange of P28/25 cap



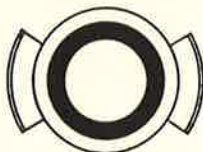
Relation of filament  
to cap pins



Relation of filament  
to pre-focus slots on  
cap disc

## STANDARD FILAMENTS

The above drawings illustrate the standard filaments used in Osram projector lamps. On the appropriate pages of this catalogue the type of filament is indicated by an initial letter followed by a figure which represents the number of filament sections, e.g., filament shape A4 is a type A filament having 4 sections.



Mogul Pre-focus  
P40/41



Medium Pre-focus  
P28/25



Small Pre-focus  
Single contact P15s/19  
Double contact P15d/19



Small Edison Screw  
(S.E.S.) E14/23 x 15



Edison Screw (E.S.)  
E27/25



Goliath Edison Screw (G.E.S.)  
E40/45



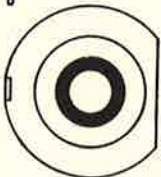
Bayonet (B.C.)  
B22/25 x 26



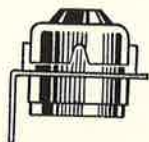
Bayonet (3-pin B.C.)  
B22/25 x 26 (3-pin)



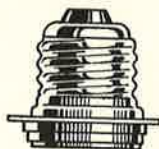
Small Bayonet  
Single contact B15s[(A) S.C.C.]  
Double contact B15d  
[(A) S.B.C.]



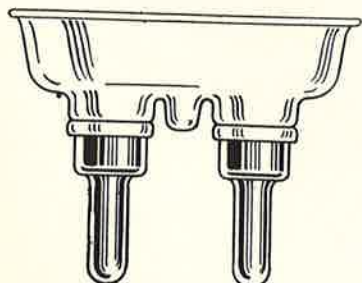
Large Bell & Howell  
(BH 46)



Small Bell & Howell  
(BH 38)



3-Fin E.S.  
E27/35 x 30. 3-fin

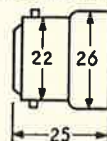


Bi 38 Bipost

## STANDARD CAPS

The illustrations above show the types of cap to which reference is made in this catalogue. The letters in brackets are the recognised abbreviations by which these caps may be described and the figures indicate dimensions.

e.g., Cap B22/25 x 26 has a diameter of 22 mm., an overall length of 25 mm. and a skirt 26 mm. in diameter.



# STANDARD PACKAGES

The ordering of lamps and tubes in standard packages cannot be recommended too strongly as it expedites delivery and reduces transit breakages. All lamps are stocked ready packed in the quantities shown in the accompanying schedule, so that they can be despatched at a moment's notice.

## SCHEDULE OF STANDARD PACKING

### GROUP 1

	Standard packing quantity
G.L.S. 150 W and 200 W	50
300 W	25
500, 750, 1000 and 1500 W	12
Spotlight Reflector 75 W and 150 W	12
Photoflood 275 W	100
500 W	50
Photographic 500 W	50
High intensity photo-enlarger 150 W	100

### GROUP 9

Fluorescent Tubes	25 (Also available in containers of 6 and 12)
Mercury MA 250 and 400 W	25
MB 80 W	25
MB 125 W	50
MB 1 kW	4

### PHOTOFLASH

No. 22	50
S.M. and No. 5	144 and 4-way pack
No. 3	400 and 5-way pack

## PACKING, DELIVERY AND BREAKAGES IN TRANSIT

Packing and delivery of lamps and tubes is free.

Transit breakages, which will be replaced or credited at G.E.C. option, must be returned carriage paid within seven days, and G.E.C. advice note numbers quoted.

The Company does not accept responsibility for the safe custody of, or undertake to return, lamps and tubes forwarded for examination.

# NUMERICAL INDEX for CLASS A1 PROJECTOR LAMPS

Lamp Ref. No.	Page No.	Lamp Ref. No.	Page No.
A1/1	}	A1/46	}
A1/2		A1/47	
A1/3		A1/52	
A1/4		A1/53	
A1/5	}	A1/57	}
A1/6		A1/58	
A1/7	}	A1/59	
A1/8		A1/60	
A1/9	}	A1/85	}
A1/10		A1/87	
A1/11		A1/91	}
A1/12		A1/111	
A1/13	}	A1/121	}
A1/14		A1/127	
A1/15	}	A1/151	}
A1/19		A1/153	
A1/21		A1/154	}
A1/23		A1/159	
A1/25	}	A1/160	
A1/26		A1/162	}
A1/27		A1/163	
A1/33		A1/164	
A1/37	}	A1/166	
A1/38		A1/167	}
A1/39		A1/168	
A1/42		A1/169	
A1/43	}		}

## GEAR TABLE FOR OSRAM MERCURY LAMPS

Lamp rating	Choke coils				Capacitors		
	Protected type Cat. No.	Price	Solid filled type Cat. No.	Price	Cat. No.	Rating in m.f.d.	Price
80 W	Z1824	s. d.	Z1828	s. d.	Z1849	8	s. d.
125 W	Z1833	55 8	Z1838	58 8	Z1850	10	17 4
250 W	Z1863	94 0	Z1868	99 0	Z1852	15	24 4
400 W	Z1873	104 8	Z1878	111 4	Z1854	20	33 4
		119 8		128 0			40 4



# THE GENERAL ELECTRIC CO. LTD. OF ENGLAND

Known throughout the world as the



REGD. TRADE MARK

Head Office :

**MAGNET HOUSE, KINGSWAY, LONDON, W.C.2**

## HOME BRANCHES AND SALES DEPOTS :

	Address	Telephone No.
<b>SOUTHERN AREA :</b>		
<b>LONDON, W.C.2</b> ...	Magnet House, Kingsway ...	Temple Bar 8000
BOURNEMOUTH ...	63 Holdenhurst Road ...	5763
BRIGHTON, 1 ...	Regent Hill, Western Road ...	23277
CANTERBURY ...	Beer Cart Lane ...	2212
CROYDON ...	516 London Road ...	Thornton Heath 3246
IPSWICH ...	Electric House, Lloyds Avenue ...	3771
LUTON ...	39/43 John Street ...	3531
PLYMOUTH ...	Magnet House, Union Street ...	60226
READING ...	72/74 Castle Street ...	60251
SOUTHAMPTON ...	Magnet House, Commercial Road ...	3511
<b>NORTH-WEST AREA :</b>		
<b>MANCHESTER, 3</b> ...	Magnet House, Victoria Bridge ...	Blackfriars 3434
BLACKBURN ...	Magnet House, Mincing Lane ...	4141/2 and 5448
BLACKPOOL ...	Magnet House, 214 Church Street ...	20033
BRADFORD ...	109 Thornton Road ...	20461
LEEDS ...	Magnet House, Wellington Street ...	32171
LIVERPOOL, 1 ...	Magnet House, 82/86 Whitechapel ...	Royal 7282
SHEFFIELD, 1 ...	Magnet House, Fitzalan Square ...	25101
<b>MIDLANDS AREA :</b>		
<b>BIRMINGHAM, 4</b> ...	Magnet House, Moor Street ...	Midland 4421
LEICESTER ...	Queen's Buildings, Rutland Street ...	Granby 721
NORTHAMPTON ...	32a Newland ...	2958
NOTTINGHAM ...	Magnet House, 25 Stoney Street ...	45664
STOKE-ON-TRENT ...	Magnet House, South Wolfe Street ...	48575
<b>SOUTH-WEST AREA :</b>		
<b>CARDIFF</b> ...	Magnet House, Kingsway ...	28055
BRISTOL, 2 ...	18 Lawford Street ...	58491
GLOUCESTER ...	Magnet House, 2 St. Aldate Street ...	23017
SWANSEA ...	Magnet House, The Kingsway ...	55847
<b>NORTH-EAST AREA :</b>		
<b>NEWCASTLE-ON-TYNE</b> ...	Magnet House, Gallowgate ...	25160
HULL ...	Magnet House, 57 Beverley Road ...	Central 36740
MIDDLESBROUGH ...	Magnet House, 52/60 Corporation Road ...	3621
<b>SCOTLAND :</b>		
<b>GLASGOW, C.2</b> ...	Magnet House, 71 Waterloo Street ...	Central 9250
ABERDEEN ...	7 Willowdale Place ...	28343
DUNDEE ...	26/30 North Lindsay Street ...	5073
EDINBURGH, 2 ...	Magnet House, 8 George Street ...	Central 5081
INVERNESS ...	14 Falcon Square ...	830
<b>NORTHERN IRELAND :</b>		
<b>BELFAST</b> ...	Magnet House, Queen Street ...	25656
<b>IRELAND :</b>		
<b>DUBLIN</b> ...	Magnet House, 13 Trinity Street ...	71141
CORK ...	20 South Mall ...	20823

## OVERSEAS BRANCHES :

**ARGENTINA :**  
BUENOS AIRES  
ROSARIO

**AUSTRALIA :**  
SYDNEY  
ADELAIDE  
BRISBANE  
HOBART  
LAUNCESTON  
MELBOURNE  
NEWCASTLE  
PERTH  
TOWNSVILLE  
WEST GEELONG  
With Agency in  
NEW GUINEA

**BURMA :**  
RANGOON

**CANADA :**  
MONTREAL  
TORONTO  
With Agencies in  
ONTARIO,  
VANCOUVER and  
WINNIPEG

**CHINA :**  
HONG KONG

**INDIA :**  
CALCUTTA  
BANGALORE  
BOMBAY  
COIMBATORE  
KANPUR  
MADRAS  
NEW DELHI  
SECUNDERABAD

**NEW ZEALAND**  
WELLINGTON  
AUCKLAND  
CHRISTCHURCH  
DUNEDIN

**PAKISTAN :**  
KARACHI  
LAHORE  
With Agency in  
CHITTAGONG

**SOUTHERN RHODESIA :**  
BULAWAYO  
SALISBURY  
With Agency in  
N'DOLA  
(Northern Rhodesia)

**SINGAPORE AND THE FEDERATION OF MALAYA :**  
SINGAPORE  
KUALA LUMPUR  
MALACCA  
PENANG  
With Agencies in  
IPOH  
and Colony of  
North Borneo

**SOUTH AFRICA :**  
JOHANNESBURG  
BLOEMFONTEIN  
CAPETOWN  
DURBAN  
PORT ELIZABETH  
With Agencies in  
EAST LONDON  
WINDHOEK  
LOURENCO  
MARQUES

**AGENCIES THROUGHOUT THE WORLD**



# PURCHASE TAX

The table below gives the percentage of the list price to be charged as tax when selling lamps at a discount.

Group of Lamp	Description	Percentage of list price to be charged as Tax
1	Projector lamps in Classes A1 and G .. .. .	Nil
	Other filament lamps up to and including 250 watts .. .. .	18½
	Other lamps in Group 1 .. .. .	Nil
2	Automobile lamps .. .. .	16½
4	Cycle dynamo lamps .. .. .	16½
5	Miners' lamps approved by the Mines Dept. and marked "MFP" .. .. .	Nil
	Other lamps in Group 5 .. .. .	18½
6	Xmas tree lamps .. .. .	18½
9	Fluorescent tubular lamps up to and including 80 watts. . . . .	18½
	Other lamps in Group 9 .. .. .	Nil
10	Radio panel lamps .. .. .	16½

This table gives the fixed amounts (as agreed by the Central Price Regulation Committee) to be added to the list prices of lamps by Retailers when selling at list prices nett.

Where list price is		Addition to list price is	Where list price is		Addition to list price is
over	and not over		over	and not over	
Groups 1 and 9 lamps					
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1 1	1 2	2½	13 5	13 11	2 6
1 2	1 5	3	13 11	14 8	2 7
1 5	1 8	3½	14 8	14 11	2 8
1 8	1 11	4	14 11	15 6	2 9
1 11	2 2	4½	15 6	16 5	2 11
2 2	2 5	5	16 5	17 5	3 1
2 5	2 8	5½	17 5	18 5	3 3
2 8	2 11	6	18 5	19 8	3 5
2 11	3 2	6½	19 8	21 0	3 10
3 2	3 5	7	21 0	23 0	4 1
3 5	3 8	8	23 0	26 0	4 7
3 8	3 11	8½	26 0	29 0	5 0
3 11	4 2	9	29 0	32 0	5 6
4 2	4 4	9½	32 0	35 0	6 4
4 4	4 8	10	Groups 2, 4 and 10		
4 8	4 11	10½	s. d.	s. d.	s. d.
4 11	5 2	11	5	9	1½
5 2	5 5	11½	9	1 2	2
5 5	5 8	1 0	1 2	1 7	3
5 8	6 2	1 1	1 7	2 2	4
6 2	6 11	1 2	2 2	2 8	5
6 11	7 5	1 4	2 8	3 2	6
7 5	8 5	1 5	3 2	3 8	7
8 5	9 5	1 7	3 8	4 2	8
9 5	10 5	1 10	4 2	4 8	9
10 5	10 8	1 11	4 8	5 2	10
10 8	11 2	2 0	5 2	5 8	11
11 2	11 8	2 1	5 8	6 2	1 0
11 8	12 2	2 2	6 2	6 8	1 1
12 2	12 8	2 3	6 8	7 2	1 2
12 8	12 11	2 4	7 2	7 8	1 3
12 11	13 5	2 5			

# Osram

**the  
wonderful  
lamp**

A **G.E.C.** PRODUCT

THE GENERAL ELECTRIC CO LTD, OF ENGLAND

