



PHILIPS *FOR* **LIGHT**



PHILIPS lighting 1962/63



GENERAL INDEX

SHEETS

TUNGSTEN, FLUORESCENT and DISCHARGE LAMPS and
INFRA RED AI - A64

MOTOR CAR, VEHICLE, MOPED, SCOOTER and CYCLE
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FITTINGS FOR TUNGSTEN, FLUORESCENT and ELECTRIC
DISCHARGE LAMPS D9 - DI19

CONDITIONS OF SALE and HOW TO ORDER DI20

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**TUNGSTEN,
FLUORESCENT
and
DISCHARGE LAMPS,
INFRA RED**



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TUNGSTEN AND INFRA RED LAMPS

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GENERAL LIGHTING SERVICE LAMPS

CLEAR AND PEARL



Watts	Volts Range	Cap	Dia. mm.	Length mm.	Filament	Av. Lms. at 240v thr. life
15	100-130, 200-260	B.C.	60	105		
25	110, 120, 200-260	B.C.	60	105		200
40	200-260	B.C.	60	105	Coiled Coil	390
40	110, 120, 200-260	B.C.	60	105	Single Coil	325
60	200-260	B.C.	60	105	Coiled Coil	665
60	110, 120, 200-260	B.C.	60	105	Single Coil	575
75	200-260	B.C.	60	105	Coiled Coil	880
75	200-260	B.C.	68	125	Single Coil	780
75	110, 120	B.C.	60	105	Single Coil	
100	200-260	B.C.	60	105	Coiled Coil	
100	200-260	B.C.	68	125	Coiled Coil	1,260
100	200-260	B.C.	68	125	Single Coil	1,160
100	110, 120	B.C.	60	105	Single Coil	
150	110, 120, 200-260	B.C.	80	160		1,960
200	110, 120, 200-260	E.S.	80	170		2,720

HIGH WATTAGE						
Watts	Volts Range	Cap	Dia. mm.	Length mm.	Finish	Av. Lms. at 240v thr. life
300	200-260	G.E.S.	90	178	Clear	4,300
300	110, 120, 200-260	G.E.S.	110	233	Clear	4,300
300	110, 120, 200-260	G.E.S.	110	233	Pearl	
500	110, 120, 200-260	G.E.S.	130	267	Clear	7,730
750	100-130, 200-260	G.E.S.	150	300	Clear	12,400
1000	100-130, 200-260	G.E.S.	150	300	Clear	17,300
1500	100-130, 200-260	G.E.S.	170	335	Clear	27,500

Philips General Lighting Service Lamps comply with British Standard 161:1956 and all subsequent amendments.

Philips Coiled Coil Lamps give up to 20% more light than the equivalent single coil lamps.

Made in Great Britain.



'K' TYPE MUSHROOM LAMPS

Use the new 'K' type lamps to obtain greater freedom in planning lighting for shops, factories, homes and wherever small incandescent lamps would be used.

ARGENTA 'K'

Watts	Volts Range	Cap	Dia. mm.	Length mm.	
60	200-250	B.C.	55	93	Coiled Coil
100	200-250	B.C.	65	107	Coiled Coil
150	200-250	B.C.	75	120	Coiled Coil



PEARL 'K'

Watts	Volts Range	Cap	Dia. mm.	Length mm.	
150	200-250	B.C.	75	120	Coiled Coil

ARGENTA 'SUPERLUX'

Developed for use with Philips 'Gala' range of domestic lighting fittings. These lamps give approximately 30% more light on a working surface. They are ideal for sewing, reading, writing and model making etc.

Watts	Volts Range	Cap	Dia. mm.	Length mm.	
150	200-250	B.C.	75	122	Coiled Coil



ARGENTA LAMPS

ARGENTA WHITE

Philips Argenta lamps are ideal for home, office, and shop lighting. The internal coating has a very low light absorption and provides soft, evenly distributed light, reducing glare and shadows.

Watts	Volts Range	Cap	Dia. mm.	Length mm.	
40	200-260	B.C.	60	105	Coiled Coil
60	200-260	B.C.	60	105	Coiled Coil
100	200-260	B.C.	68	125	Coiled Coil
150	200-260	B.C.	80	160	Coiled Coil



ARGENTA ROSE

Argenta Rose lamps give a soft pleasant light that will enhance the appearance of furnishings and create a relaxing atmosphere.

Watts	Volts Range	Cap	Dia. mm.	Length mm.	
60	200-260	B.C.	60	105	Coiled Coil
100	200-260	B.C.	68	125	Coiled Coil



Made in Great Britain and Holland

SPECIAL PURPOSE LAMPS



ROUGH SERVICE LAMPS

Watts	Volts Range	Caps	Dia. mm.	Length mm.	Finish
40 60 100 }	110, 120, 200-260	B.C., E.S.	60 60 68 }	105 105 125	Pearl Pearl Pearl

Rough Service lamps are constructed to withstand vibration, movement, and other conditions of severe usage.

DAYLIGHT BLUE LAMPS

(Natural colour glass)

Watts	Volts Range	Cap	Dia. mm.	Length mm.
60 100 }	200-260	B.C. B.C.	60 68	110 125

TRAFFIC SIGNAL LAMPS

Watts	Volts Range	Cap	L.C.L. mm.	Dia. mm.	Length mm.	Finish
65	110, 120, 200-260	B.C.	85	60	115	Clear
65	110, 120, 200-260	E.S.	62	60	107	Clear

TUBULAR LAMPS—Single Cap

Watts	Volts Range	Caps	Dia. mm.	Length mm.
15	110, 220/230 240/250	B.C.	25	51
		S.B.C.	25	57
25	110, 220/230 240/250	B.C.	25	86
		S.B.C.	25	94



Made in Great Britain



DECORATIVE LAMPS

FANTASIE LAMPS

Philips 'Fantasie' Lamps—the new bright idea for simple and effective lighting. Two appealing and attractive shapes that need no lamp shade to enhance them. For use throughout the home and in offices, shops and public buildings.

Type	Volts Range	Watts	Cap	Dia. mm.	Length mm.	Finish
'A'	210-250	60	B.C.	90	260	White
'B'	210-250	60	B.C.	94	215	White



ARGENTA LUSTRE LAMPS

Watts	Volts Range	Caps	Dia. mm.	Length mm.	Finish
25 40	200-250	B.C., S.B.C.	45	74	White



ARGENTA CANDLE LAMPS

Watts	Volts Range	Caps	Dia. mm.	Length mm.	Finish
25 40	200-250	B.C., S.B.C.	35	97	White



PLAIN CANDLE LAMPS

Watts	Volts Range	Caps	Dia. mm.	Length mm.	Finish
25 25	110, 230, 240, 250	B.C., S.B.C.	35	97	Clear
35			35	97	Frosted, Coloured
40			35	97	Clear
40			35	97	Frosted, Coloured
60			45	126	Clear
60			45	126	Frosted, Coloured



TWISTED CANDLE LAMPS

Watts	Volts Range	Caps	Dia. mm.	Length mm.	Finish
25 25	110, 230, 240, 250	B.C., S.B.C.	35	102	Clear
35			35	102	Frosted, Coloured
40			45	127	Clear
40			45	127	Frosted, Coloured
60			45	127	Clear
60			45	127	Frosted, Coloured



Made in Great Britain and Holland

DECORATIVE LAMPS



PHILINEA — ARCHITECTURAL TUBULAR LAMPS STRAIGHT

Watts	Volts Range	Cap	Dia. mm.	Length mm.	Length ins.	Finish
35 40 53 60 75 110 150	110, 210-250	Peg	30	305	12	White
			30	500	20	White
			30	457	18	White
			30	500	20	White
			30	610	24	White
			30	915	36	White
			30	1220	48	White



The caps are placed 38mm. ($1\frac{1}{2}$ ins.) from the ends of the lamp.

PHILINEA — ARCHITECTURAL TUBULAR LAMPS CURVED $\frac{1}{8}$, $\frac{1}{4}$ or $\frac{1}{2}$ -CIRCLE

Watts	Volts Range	Cap	Dia. mm.	Length mm.	Length ins.	Finish
60	110, 210-250	Peg	300	500	20	White



COLORENTA—OPAL TUBULAR LAMPS

Watts	Volts Range	Cap	Dia. mm.	Length mm.	Length ins.	Finish
40	110, 210-250	B.C., E.S., B.C., E.S.	38	302	12	White
60	110, 210-250	B.C., E.S., B.C., E.S.	38	302	12	White



STRIPLITES—DOUBLE CAPPED

Watts	Volts Range	Caps	Dia. mm.	Length mm.	Length ins.	Finish
30	110	Centre Contact Centre Contact Centre Contact Centre Contact	25	221	$8\frac{7}{8}$	Clear
30	200/210		25	284	$11\frac{1}{8}$	Clear
60	220/230		25	221	$8\frac{7}{8}$	Clear
60	240/250		25	284	$11\frac{1}{8}$	Clear

Frosted striplites are available. Coloured to order

Made in Great Britain and Holland.





NON STANDARD VOLTAGE LAMPS

GENERAL LIGHTING SERVICE LAMPS— SINGLE COIL, CLEAR AND PEARL

Watts	Volts	Cap	Dia. mm	Length mm.
40 60 100	25, 50	B.C.	60	105
		B.C.	60	105
		B.C.	60	105
150 200	50	B.C.	80	160
		E.S.	80	170



Watts	Volts	Cap	Dia. mm.	Length mm.	Finish
40 60 75 100 150 200	100, 130	B.C.	60	105	Clear or Pearl
		B.C.	60	105	
		B.C.	60	105	
		B.C.	60	105	
		B.C.	80	160	
		B.C.	80	170	
300 500	100, 130	G.E.S.	110	233	Clear
		G.E.S.	130	267	Clear



SIGN LAMPS

Watts	Volts	Cap	Dia. mm.	Finish
15	25, 50	B.C.	28	Clear



SINGLE CAPPED TUBULAR LAMPS

Watts	Volts	Cap	Dia. mm.	Finish
25	25, 50	B.C., S.B.C.	25	Clear



PLAIN CANDLE LAMPS

Watts	Volts	Cap	Finish
25 40	25, 50	B.C., S.B.C.	Clear



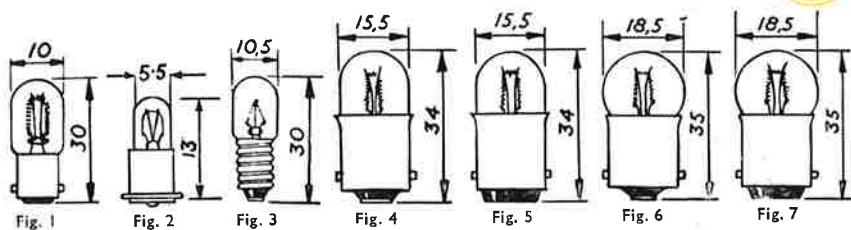
TWISTED CANDLE LAMPS

Watts	Volts	Cap	Finish
25 40	25, 50	B.C., S.B.C.	Clear



Made in Great Britain.

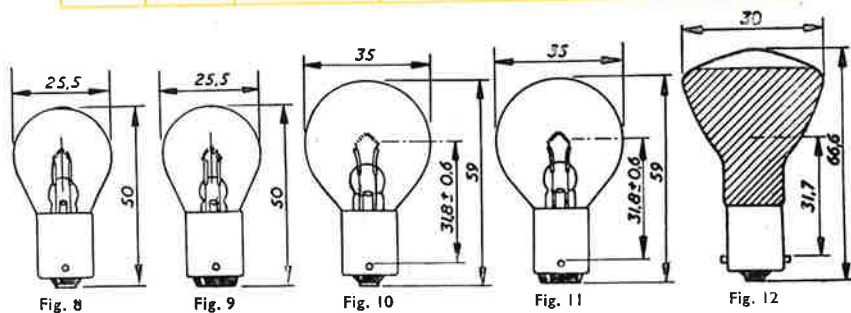
AIRCRAFT INTERIOR LAMPS



All dimensions in millimetres

Equivalent to:

Volts	Amps	Cap	Philips Type No.	VAAS 2 Equiv.	American GE Equiv.	Fig.
28	0.035	BA9s	12005N	VI 10	1819	1
28	0.04	S6/8	—	VI 11	327	2
28	0.17	BA9s	12006N	—	313	1
28	0.17	E10	12006D	—	—	3
28	0.1	BA9s	12003N	VI 350	1820	1
28	3 CP	BA15s	12000N	—	301	4
28	3 CP	BA15d	12000W	—	302	5
28	6 CP	BA15s	12001N	VC 7	303	6
28	6 CP	BA15d	12001W	VB 7	304	7
28	15 CP	BA15s	12100N	—	305	8
28	15 CP	BA15s	12100N/02	—	305SB	8
28	15 CP	BA15d	12100W	—	306	9
28	21 CP	BA15s	12101N	VS 21	307	8
28	21 CP	BA15s	12101N/02	VC 21S	307SB	8
28	21 CP	BA15d	12101W	—	308	9
28	32 CP	BA15s	12102N	VC 24	309	10
28	32 CP	BA15s	12102N/02	VC 24S	309SB	10
28	32 CP	BA15d	12102W	VB 24	310	11
28	50 CP	BA15s	12103N	VC 36	311	10
28	50 CP	BA15s	12103N/02	—	311SB	10
28	50 CP	BA15d	12103W	VB 36	312	11
28	20W	BA15s	12105N/13	VCR 20	1385	12



All dimensions in millimetres
Made in Great Britain and Holland



AIRCRAFT INTERIOR LAMPS



Fig. 1

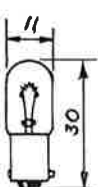


Fig. 2

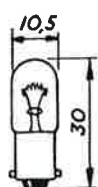


Fig. 3

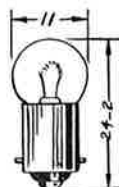


Fig. 4

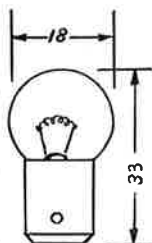


Fig. 5

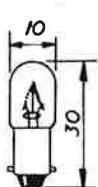


Fig. 6

All dimensions in millimetres

Equivalent to:

Volts	Watts	Cap	Philips Type No.	Inter-Service No.	American GE Equiv.	Fig
6	0.24	E10	4679D	995-1110	—	1
6.3	0.15A	BA9s	8008N	—	47	2
6.3	0.25A	BA9s	8009N	—	44	3
6	1.8	E10	4684D	995-1208	—	1
6	1.8	BA9s	4684N	995-1204	—	4
6	6	BA15d	4418W	995-2241	—	5
12-16	0.1A	BA9s	12002N	—	1813	6
12	2.2	E10	4650D	995-3247	—	1
12	2.2	E10	4691D	995-1219	—	7
12	2.2	BA9s	4691N	995-1223	—	8
12	3.6	E10	4693D	995-1246	—	1
12	6	BA15d	4429W	995-2248	—	5
15	0.2A	BA9s	8004N	—	1488	9
24	2.8	E10	4695D	995-1230	—	10
24	2.8	E10	4697D	995-1232	—	11
24	2.8	BA9s	4697N	995-1233	—	9
24	4	S.B.C. Sp.	13210X/45	—	F 5000	12
24	6	BA15d	4437W	995-2254	—	4



Fig. 8



Fig. 9

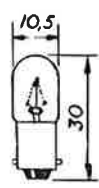


Fig. 10



Fig. 11



Fig. 12

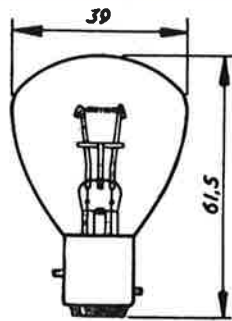


Fig. 13

All dimensions in millimetres

Made in Great Britain and Holland

REFLECTOR LAMPS—SPOT



Spotlamps are particularly suitable for accentuating the details of goods displayed in shop windows, showrooms, etc. By using "Attralux" 24v 150w lamps a narrower beam of still higher intensity can be obtained. For these lamps step-down transformers are required.

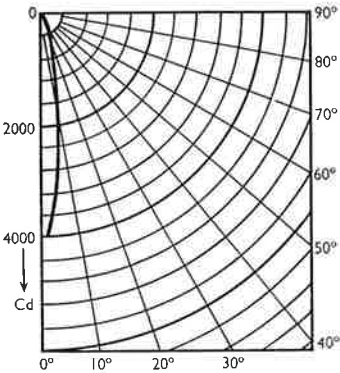


Watts	Volts Range	Cap	Dia. mm	Length mm.	Type
150	110 200-250	E.S.	126	178	—
150	24	E.S.	125	165	Attralux

110, 200-250v 150 w			24v 150w Attralux		
Suspension height in feet	Illumination in beam centre (Lm. per sq./ft.)	Beam,* width in feet	Suspension height in feet	Illumination in beam centre (Lm. per sq./ft.)	Beam,* width in feet
3	440	2	3	2,800	1
6	110	4½	6	700	2
10	40	7	10	250	3½

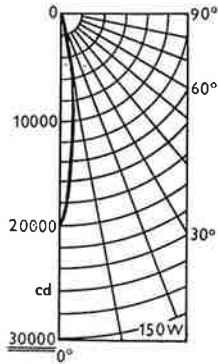
*Width at which the illumination is at least 20% of that at the centre of the beam.

110, 200-250v 150w



Beam Angle = 2 x 10°

24v 150w



Beam Angle = 2 x 5°

Made in Great Britain and Holland.



REFLECTOR FLOODLAMPS



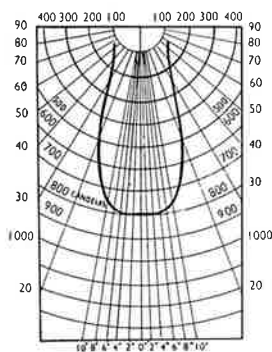
This is the general purpose lamp of display lighting and is especially useful for counter and shop window illumination.

Watts	Volts Range	Cap	Dia. mm.	Length mm.
100	110 200-250	B.C., E.S.	95	130
150	110 200-250	E.S.	126	178

100w			150 w		
Suspension height in feet	Illumination in beam centre (Lm. per sq./ft.)	Beam,* width in feet	Suspension height in feet	Illumination in beam centre (Lm. per sq./ft.)	Beam,* width in feet
3	80	4	3	110	4
6	20	8	6	30	8
10	7	14	10	10	14

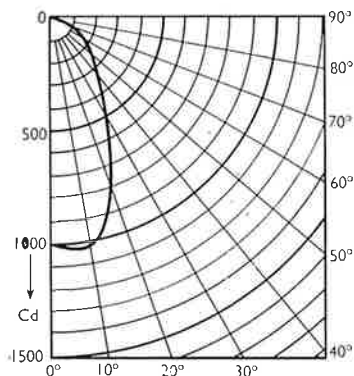
*Width at which the illumination is at least 20% of that at the centre of the beam.

240v 100 w



Beam Angle = $2 \times 25^\circ$

240v 150 w



Beam Angle = $2 \times 25^\circ$

Made in Great Britain.

REFLECTOR LAMPS
PAR-38 PRESSED GLASS



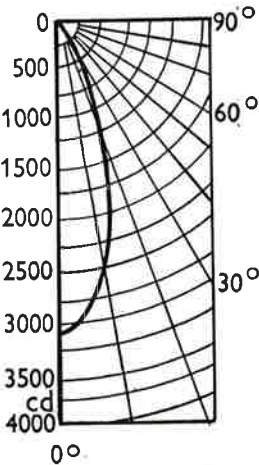
PAR-38 bulbs are formed of heat resistant glass, and have sealed-in parabolic reflectors which, in conjunction with the cover plate, or lens system incorporated in the face of the lamp, accurately control the beam pattern, and give a spot or floodlight beam of very high intensity. Mounted in watertight lampholders these lamps are suitable for outdoor flood-lighting of buildings, statues, advertising signs, service stations, sports grounds, car parks, etc.

Watts	Type	Volts Range	Cap	Dia. mm.	Length mm.
150	Spot	110 200-250	E.S.	122	135
150	Flood	110 200-250	E.S.	122	135

150w Flood			150w Spot		
Suspension height in feet	Illumination in beam centre (Lm. per sq./ft.)	Beam* width in feet	Suspension height in feet	Illumination in beam centre (Lm. per sq./ft.)	Beam* width in feet
3	340	3	3	825	1½
6	85	6	6	200	
10	30	10½	10	75	5½

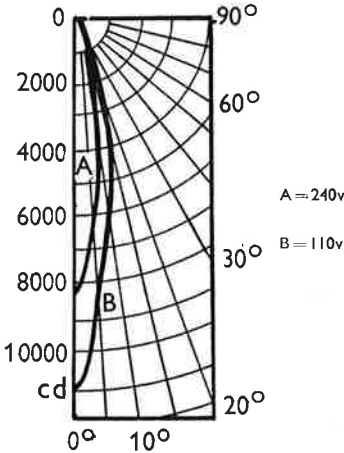
*Width at which the illumination is at least 50% of that at the centre of the beam.

150W Flood



Beam Angle = 2 × 20°

150W Spot



Beam Angle = 2 × 6°

Made in Holland.



REFLECTOR LAMPS HIGH MOUNTING

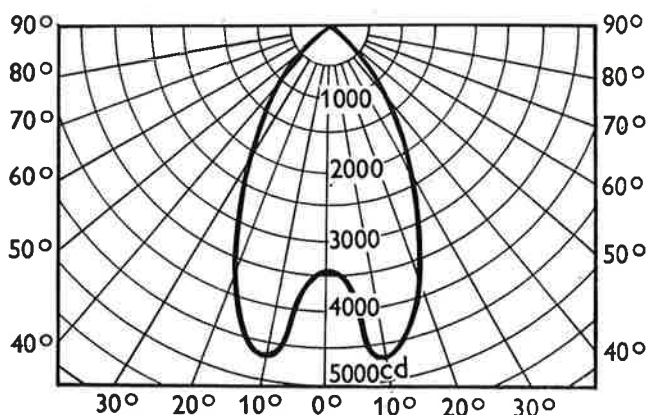


These lamps have been specially designed for general lighting in industrial plants with high ceilings. The internal reflector enables lighting levels to be maintained without the necessity for frequent servicing.

Suspension height in feet	Illumination in beam centre (Lm per sq./ft.)	Beam width* in feet
20	10	20
25	7	25

*Width at which the illumination is 50% of that at the centre of the beam.

Watts	Volts Range	Cap	Dia. mm	Length mm.
375	110, 200-250	G.E.S.	125	185



Made in Holland.

REFLECTOR LAMPS

"CORNALUX"

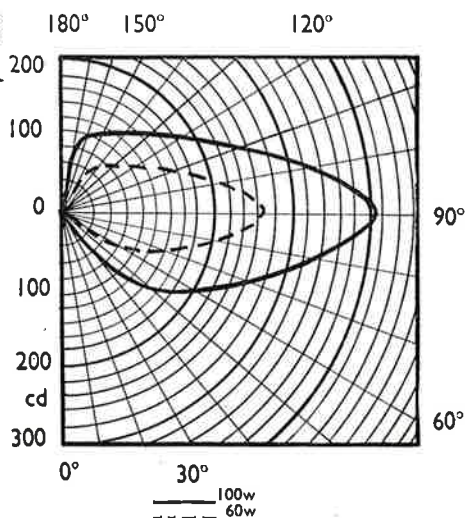
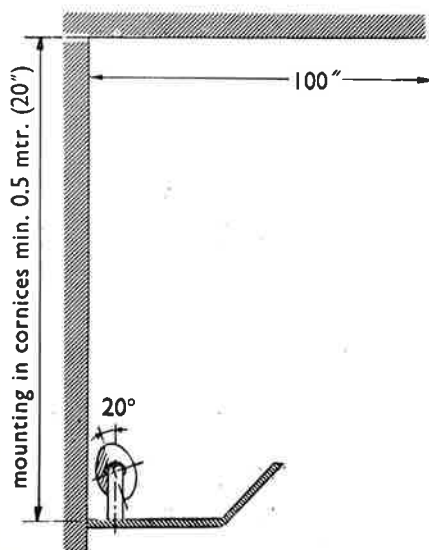


The Cornalux lamp has been designed principally for cornice lighting; however, its convenient size and light distribution characteristics make it suitable for many other forms of display or feature lighting.

The polar curve shows the light distribution in the vertical plane when the lamp is mounted horizontally. The ratio of ceiling width illuminated to mounting height below the ceiling is 5 to 1, and the recommended spacing between lamps is five feet.



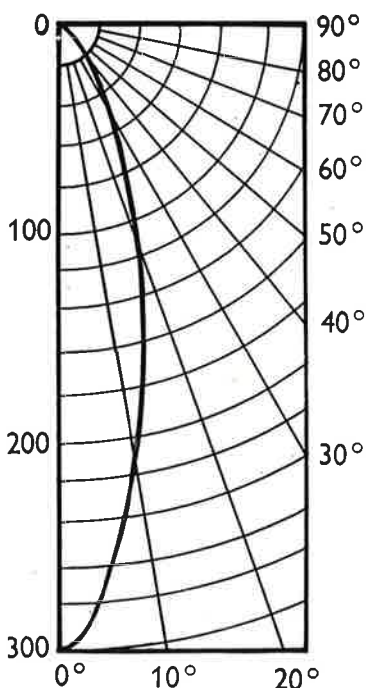
Watts	Volts Range	Cap	Dia. mm.	Length mm.
60	110 200-250	B.C.	83 × 64 ovoid	119
100	110 200-250	B.C.	83 × 64 ovoid	119



Made in Holland



REFLECTOR LAMP—SMALL DISPLAY



The 20w reflector lamp although originally designed for aircraft cabin lighting now has many other uses. Its small size and low heat dissipation enables it to be placed near to objects to be high-lighted in displays. It is also used in industry, e.g. for operating photoelectric cells, and as a medical or industrial examination lamp.



20W

Suspension height in feet	Illumination in beam centre (Lm. per sq./ft.)	Beam width* in inches
2	75	12
3	33	18
5	12	30

*Width at which the illumination is 50% of that at the centre of the beam.

Watts	Volts	Cap	Dia. mm.	Length mm.	Type No.
20	24/23	S.C.C.	38	67	12105N/13

HIGH INTENSITY SPOTLIGHT



Bowl Silvered Reflector Lamp with W9230 Fitting.

These lamps are for use in conjunction with the Philips display lighting fittings W9230—9233.

Watts	Volts Range	Cap	Dia. mm.	Length mm.	Beam Intensity (candelas)
100	24	3-pin B.C.	70	120	80,000
100	200-250	3-pin B.C.	70	120	18 000

Made in Great Britain and Holland.

BOWL MIRRORED LAMPS

GENERAL LIGHTING SERVICE



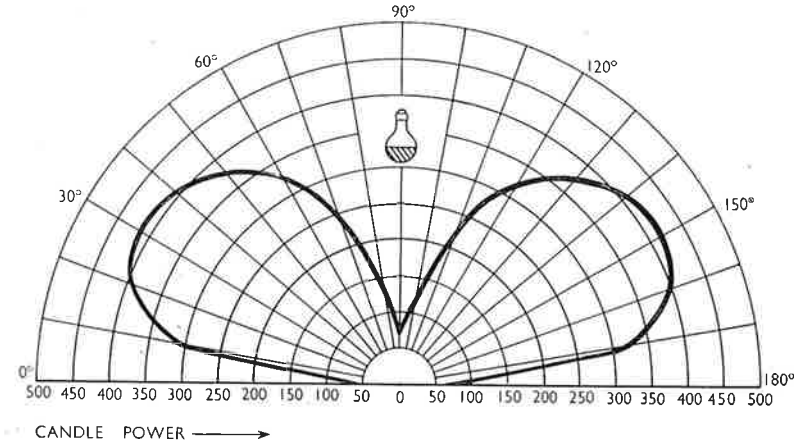
Bowl mirrored lamps give efficient indirect lighting for commercial, industrial or domestic use.

The silvered bowl completely obscures the filament from view.

Watts	Volts Range	Cap	Dia. mm	Length mm.
60*	200-250	B.C.	60	110
100*	200-250	B.C.	70	120
200	110, 200-250	E.S., B.C.	80	170
300	110, 200-250	G.E.S.	110	233

* Used in Philips 'Gala' range of domestic lighting fittings.
Made in Great Britain

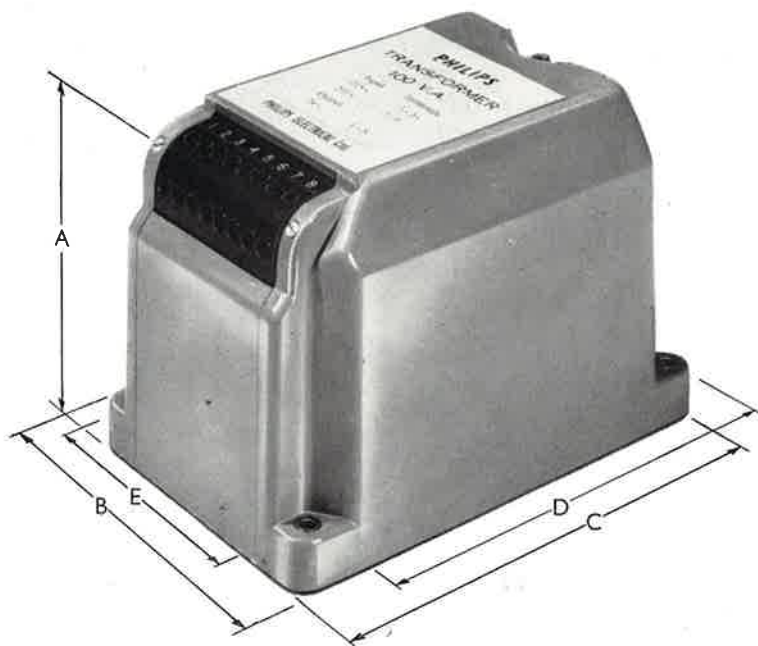
Light Distribution
For 240v, 200w Bowl Mirrored Lamp.



240v 200w BOWL MIRRORED LAMPS.



TRANSFORMERS FOR LOW VOLTAGE DISPLAY LAMPS



The *L4501* transformer is used in conjunction with Philips 24v 100w Bowl Mirrored lamps, utilized in the W9230 narrow beam spotlight fittings. One transformer per lamp.

The *L4502* transformer has been designed for use with one Philips 24v 150w Attralux Reflector Spotlight.

Where lighting schemes include the Philips 20w reflector lamp, up to 5 lamps may be operated safely with the *L4501* transformer and up to 7 lamps with the *L4502*.

Both transformers are of the solid filled type and are completely metal encased. They can be operated both indoors and out and not affected by humid conditions. The mounting position is universal.

Cat. No.	Rating	Input Volts	Output volts (on load)	Dim. ins.			F.C. ins.		Wt. lbs.
				A	B	C	D	E	
L4501	100vA	215, 245	24	4 $\frac{9}{16}$	4 $\frac{1}{2}$	6 $\frac{3}{8}$	6 $\frac{1}{8}$	3 $\frac{1}{8}$	9
L4502	150vA	215, 245	24	4 $\frac{9}{16}$	4 $\frac{1}{2}$	6 $\frac{3}{8}$	6 $\frac{1}{8}$	3 $\frac{1}{8}$	9

Made in Great Britain.

SPECIAL PURPOSE LAMPS



APPLIANCE LAMPS—TUBULAR

Watts	Volts Range	Cap	Dia. mm.	Length mm.	Finish
25	110, 210-260	B.C., E.S.	28	61 max.	Clear

Suitable for domestic ovens.



ROUND

Watts	Volts Range	Cap	Dia. mm.	Length mm.	Finish
25 40	{ 110 210-260	{ E.S. B.C. }	45	73	Pearl

Suitable for refrigerators.



PEAR

Watts	Volts Range	Cap	Dia. mm.	Length mm.	Finish
40	210-260	E.S.	44	90	Pearl

BAKERS' OVEN LAMPS

Watts	Volts Range	Caps	Dia. mm.	Length mm.	Max. ambient temp
60	200-260	B.C., E.S.	60	105	500°F



NEON NIGHTLIGHT

Watts	Volts Range	Caps	Dia. mm.	Length mm.	Finish
5	200-260	B.C., E.S.	60	105	Pearl

The nightlight gives a subdued orange light suitable for bedrooms, corridors, hospitals, etc.



NEON CRUCIA

Watts	Volts Range	Cap	Dia. mm.	Length mm.
5	200-260	B.C.	28	98





INDICATOR LAMPS

SIGN LAMPS

Watts	Volts Range	Caps	Dia. mm.	Length mm.
15	110/120 200/210 220/230 240/250	B.C., E.S.	28	56
15		S.B.C., S.E.S.	28	62

SWITCHBOARD INDICATORS

Volts Range	Caps	Dia. mm.	Length mm.
100-130 200-260	B.C.	28	56

CURRENT INDICATORS—TUBULAR

Amps	Volts	Caps	Dia. mm.	Length mm.
0.18-0.31 0.28-0.45 0.40-0.65	1-3	B.C.	27	60

Current indicator lamps may be wired in series with appliances on mains voltages, provided the current consumption of the appliance falls within the limits of the lamp rating.

PILOT LAMPS

Watts	Volts Range	Caps	Dia. mm.	Length mm.
6	110-120, 230-250	S.B.C., S.E.S., E.12	19	48
10		S.B.C., S.E.S., E.12	19	48

These small light sources are especially suitable for incorporation in apparatus where lamp space is limited.

NEON INDICATORS—A.C. D.C.

Type No.	Current mA.	Volts Range	Caps	Dia. mm.	Length mm.
—	3-5	100/130 200/260	B.C. E.S.	28	56
—	3-5	100/130 200/260	S.B.C. S.E.S.	18	54
GL42	2	100-130	S.B.C. S.E.S.	15	54
GL41	1	100-130	S.B.C. S.E.S.	12	30
GL40	0.5	100-130	M.C.C. M.E.S.	10	26

All lamps have built-in current limiting resistors.

High Brightness Neons, A. C. Only

GL42	3-4	220/230 230/250	S.B.C. S.E.S.	15	54
GL41	2-3		S.B.C. S.E.S.	12	30
GL40	1-1.5		M.C.C. M.E.S.	10	26

All lamps have built-in current limiting resistors.

Miniature Neon Indicators*

GL 8	0.25	65/300 A.C. 90/100 D.C. 65/300 A.C. 90/300 D.C. 220/230 230/250	Wire Ended	6	18
GL10	0.40		M.C.C. M.E.S.	10	26
GL12†	1-1.5		M.C.C. M.E.S.	10	26

† High brightness, A.C. only. * These lamps have no built-in resistor.

Made in Great Britain and Holland.



MINIATURE LAMPS

ROUND TORCH BULBS



Volts	Amps	Cap	Dia. mm.	Length mm.	Fig.
1.25	0.25	M.E.S.	11	23	1
1.5	0.11	M.E.S.	11	23	1
1.5	0.11	M.E.S.	15	29	2
1.5	0.2	M.E.S.	11	23	1
1.5	0.25	M.E.S.	11	23	1
2.2	0.25	M.E.S.	11	23	1
2.5	0.2	M.E.S.	11	23	1
2.5	0.3	M.E.S.	11	23	1
3.5	0.3	M.E.S.	11	23	1
4.0	0.3	M.E.S.	11	23	1
4.5	0.3	M.E.S.	11	23	1
4.5	0.3	M.E.S.	15	29	2
5.0	0.15	M.E.S.	15	29	2

Fig. 1



Fig. 2



Round bulbs are suitable for torches from which an even spread of light is required, or which have a focusing arrangement.

LENS END TORCH BULBS

Volts	Amps	Cap	Dia. mm.	Length mm.	Fig.
1.2	0.22	M.E.S.	9.5	23	3
2.2	0.25	M.E.S.	9.5	23	3

Fig. 3



The lens end bulbs are commonly used for pencil type torches and produce a concentrated spot of light.

PREFOCUS TORCH BULBS

Type No.	Volts	Amps	Dia. mm.	Length mm.	Fig.
PR 8	1.9	0.6	11	30.5	4
PR 2	2.4	0.5	11	30.5	4
PR 6	2.5	0.3	11	30.5	4
PR 9	2.7	0.15	11	30.5	4
PR 3	3.6	0.5	11	30.5	4
PR 7	3.8	0.3	11	30.5	4
—	5.5	0.3	11	30.5	4
PR 12	6.0	0.5	11	30.5	4

Fig. 4



A beam of high intensity may be obtained by using a prefocus bulb in conjunction with a parabolic reflector. The filament of the lamp will be automatically positioned in the focal point of the reflector by the focusing ring on the lamp cap.



MINIATURE LAMPS

RADIO PANEL LAMPS

Bulb No.	V	Amps	Cap	Overall Length	Dia. mm
4605	6	·04	MES (E10/13)	23	11
4607	6	·06	MES (E10/13)	23	11
4610	6·2	·3	MES (E10/13)	23	11
4612	6·2	·3	MES (E10/13)	29	15
4615	6·3	·11	MES (E10/13)	23	11
4620	6·3	·3	MES (E10/13)	23	11
4622	6·5	·3	MES (E10/13)	23	11
4608	6	·1	MES (E10/13)	29	10·5
4609	6·2	·3	MES (E10/13)	29	10·5
4614	6·3	·11	MES (E10/13)	29	10·5
4621	6·5	·3	MES (E10/13)	29	10·5
4632	10	·1	MES (E10/13)	29	10·5
4637	19	·097	MES (E10/13)	29	10·5

Fig.



Fig. 1



Fig. 2



Fig. 3

Manufactured in both round and tubular bulbs, these small lamps are used extensively throughout the radio industry for panel lighting and indication on radios, radiograms, tape recorders and electronic assemblies.

Made in Holland & British made

SUB-MINIATURE LAMPS

Volts	Amps	Cap	Dia. mm.	Length mm.	Fig.
1.25	0.15	L.E.S.	7.5	15.5	4
2.5	0.3	L.E.S.	5	14	5
2.5	0.3	L.E.S.	7.5	15.5	4
6.5	0.15	L.E.S.	5	14	5
6.5	0.15	L.E.S.	7.5	15.5	4
14	0.75w	L.E.S.	5	14	5
14	1.0w	None	5	12	6



Fig. 4



Fig. 5



Fig. 6

Philips sub-miniature indicator lamps have the two-fold advantage of being remarkably small and providing an excellent light source. Designed originally for model train and village layouts, the use has now been extended to include personal radios, electronic equipment and industrial and domestic electrical apparatus.

British and Foreign

INFRA-RED LIVESTOCK REARING UNITS

The Units listed on this page are constructed of Aluminium or Fibreglass for lightness and durability and are fitted with Z 9528 E.S. skirted drip-proof porcelain lampholders.

Philips Infra-Red Heating Units are supplied complete with Infra-Red lamps. Because of this the Catalogue Number of the Unit will vary with the type and wattage of lamp fitted.

The explanation of the Catalogue Numbers of the Units is as follows:—

The prefixes A or F indicate Aluminium or Insulated canopy. S or D indicating Frosted, Clear or Red (‘ Infraglo ’) finish of the lamps and the figures indicate the total wattage of the Agricultural Heating Unit.

The Philips ‘ Infraglo ’ Infra-Red lamps have been developed for poultry farmers who wish to obtain all the advantages of bright emitter heaters without the full amount of light.

In the interests of safety we recommend that the wiring and connections to the mains supply should be carried out by a qualified electrician. This will ensure that all local electrical and safety regulations are observed.

For further information please send for leaflet.



ASR/150



ASF/250 ASR/250 ASR/300
ASC/250 ASC/300



ADF/500 ADC/600
ADC/500 ADR/600
ADR/500

SPARE LAMPS FOR PHILIPS LIVESTOCK REARING UNITS

Cat. No.	Total Wattage	Cat. No. of Lamps Fitted
ASR/150	150	*150E/479
ASF/150	150	†150E/44
FSF/150	150	‡150E/44
FSR/150	150	*150E/479
ASR/250	250	*250E/479
ASF/250	250	‡250E/44
ASC/250	250	†250E/99
ASR/300	300	*300E/479
ASC/300	300	†300E/99
FSF/250	250	‡250E/44
FSR/300	300	*300E/479
FSC/300	300	†300E/99
ADR/300	300	*150E/479
ADF/500	500	‡250E/44
ADR/500	500	*250E/479
ADC/500	500	†250E/99

FULLY INSULATED UNIT			
FSR 150		FSR 300	
FSF 150		FSC 300	



* Philips ‘ INFRA GLO ’
Infra-Red Lamps

† Philips ‘ HARD GLASS ’
Infra-Red Lamps

‡ Philips Frosted front
Infra-Red Lamps

Philips Infra-Red Lamps are made in Holland.



INFRA-RED AREA WARMING UNITS

There are many situations in which it is difficult to supply adequate heating with normal convection heating methods. Persons working under these conditions can now be kept reasonably warm at a very economical cost. A few examples of these situations are as follows:—

Garage Pay Kiosks, Tobacco and Confectionery Kiosks, Receptionists' Offices, Ticket Collectors' Boxes, Fitting Cubicles, Newspaper Stalls, Vestibules, Entrance Halls, Gatekeepers' Huts, Open Snack Bars, Waiting Rooms, Coffee Stalls, Corridors, Passage Ways, Market Stalls, Hotel, Theatre and Cinema Canopies, Workshops.

With the exception of the Units incorporating the 250 watt 'Infraglo' (250E/479) Red fronted Infra-Red lamp, which is for interior use only, they may be used in the open but under cover. The 250 watt 'Infraglo' (250E/479) Infra-Red lamp in normal glass incorporates a filter and emits a pleasing red glow. The 250E/99, 300E/99 and 375E/99 Infra-Red lamps are constructed of Special Heat Resisting 'Hard Glass' which is more resistant to thermal shock. The 300 watt 'Infraglo' lamp (300E/479) is also made with 'Hard Glass' and incorporates a red filter on the front face of the bulb. All Infra-Red Heating Units are supplied complete with Infra-Red lamps. Philips Infra-Red Area Warming Units are constructed from High Grade Aluminium and are fitted with porcelain lampholders.

Philips Infra-Red Heating Units are supplied complete with Infra-Red lamps. Because of this the Catalogue Number of the Unit will vary with the type and wattage of lamp fitted. The explanation of the Unit Catalogue Numbers is as follows:— The prefix A indicates an aluminium canopy; S, D, T, or R, indicate Single, Double, Triple or Recessed Units, and the letter C or R immediately before the figures indicate Clear or Red ('Infraglo') finish of the lamps. The figures given after the oblique stroke constitute the total wattage of the Unit.



SIC/250/B
SIR/250/B
SIC/300/B
SIR/300/B
SIC/375/B



TIC/750
TIC/750
TIC/900

TIR/900
TIC/1125



RSC/250
RSR/250
RSC/300
RSR/300
RSC/375

*For full details regarding Area Warming
please send for leaflet.*

INFRA-RED AREA WARMING UNITS



SPARE LAMPS FOR HEATING UNITS

Cat. No. of Unit	Total Wattage of Unit	Cat. No. of Lamp
SIC/250/B	250	†250E/99
SIR/250/B	250	*250E/479
SIC/300/B	300	†300E/99
SIR/300/B	300	*†300E/479
SIC/375/B	375	†375E/99
TIC/750	750	†250E/99
TIR/750	750	*250E/479
TIC/900	900	†300E/99
TIR/900	900	*†300E/479
TIC/1125	1125	†375E/99
RSC/250	250	†250E/99
RSR/250	250	*250E/479
RSC/300	300	†300E/99
RSR/300	300	*†300E/479
RSC/375	375	†375E/99
ASC/250	250	†250E/99
ASR/250	250	*250E/479
ASC/300	300	†300E/99
ASR/300	300	*†300E/479
ASC/375	375	†375E/99
FSC/250	250	†250E/99
FSR/300	300	*†300E/479
FSC/300	300	†300E/99
ADC/500	500	†250E/99
ADR/500	500	*250E/479
ADC/600	600	†300E/99
ADR/600	600	*†300E/479
ADC/750	750	†375E/99
TSC/750	750	†250E/99
TSR/750	750	*250E/479
TSC/900	900	†300E/99
TSR/900	900	*†300E/479
TSC/1125	1125	†375E/99



ASC/250
ASR/250
ASC/300
ASR/300
ASC/375



ADC/500
ADR/500
ADC/600
ADR/600
ADC/750



TSC/750
TSR/750

TSC/900
TSR/900

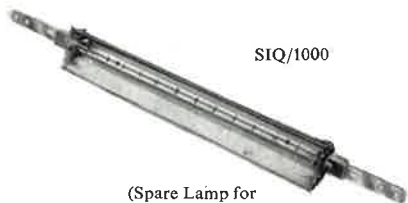
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* Fitted with Philips 'INFRAGLO' Infra-Red Lamps
† Fitted with Philips 'HARD GLASS' Infra-Red Lamps

INDUSTRIAL HEATING UNIT

Philips Infra-Red lamps offer many advantages for all production processes requiring heat treatment such as:—Baking, Drying, Degreasing, Preheating, Dehydrating.

Full details of the lamps used for normal production processes are given on A24.



SIQ/1000

(Spare Lamp for
SIQ/1000)
Cat. No. 1000/Q

This industrial heating unit has been designed for industrial applications where higher intensities are required than can normally be obtained with 250 watt, 300 watt and 375 watt Infra-Red lamps. The unit is compact and light in weight and can easily be fitted on to a framework to suit any shape or size of oven. The reflector is made of super-purity aluminium electrolytically polished and anodised.

For further details of industrial applications please send for leaflet.



PHILIPS INFRA-RED LAMPS



150E/479



250E/44



250E/479
300E/479



250E/99 375E/99
300E/99

INTERNAL REFLECTOR TYPE

Watts	Dimensions (mm.)		Cap	Philips Type No.	Catalogue No.	Finish
	Diameter ± 1.5	Overall Length				
150	111	150 ± 4.5	E.27	13346E/44	150E/44	Frosted Front
150	111	150 ± 4.5	E.27	13346E/479	150E/479	Red Front
250	125	180 ± 5	E.27	13352E/44	250E/44	Frosted Front
250	125	180 ± 5	E.27	13352E/479	250E/479	Red Front
250	125	180 ± 5	E.27	13372E/06	250E/99	Clear Front*
300	125	180 ± 5	E.27	13374E/06	300E/99	Clear Front*
300	125	180 ± 5	E.27	13374E/479	300E/479	Red Front*
375	125	180 ± 5	E.27	13344E/06	375E/99	Clear Front*

NOTE: * indicates Heat Resisting Hard Glass.

The above lamps are available in the following voltage ranges:— 110/120, 200/210, 240/250.

QUARTZ INFRA-RED HEATERS



500/Q



1000/Q

Watts	Volts	Approximate Dimensions (mm.)				Cat. No.	Philips Type No.
		Dia.	Lighted Length	Fixing Centres	End Connection		
500	110-120	10	152	241 ± 5	Flexible Strip	$\Delta 500/Q$	13169X
500	110-120	10	152	132 ± 5	Flexible Wire	$\Delta 500/W$	13169Y
1000	230-240	10	271	368 ± 5	Flexible Strip	$\Delta 1000/Q$	13195X
1000	230-240	10	271	251 ± 5	Flexible Wire	$\Delta 1000/W$	13195Y

Δ Bulb made of pure fused quartz.

E.S. Porcelain Lampholder
Type Z 9528
Made in Great Britain



Holder for 500/Q and 1000/Q Lamps
Type Z 9570



'INFRAPHIL' MEDICAL I-R LAMP

Watts	Volts	Approximate Dimensions (mm.)		Cap	Philips Type No.
		Diameter ± 1.5	Overall Length		
150	115, 200, 210, 220 230, 240, 250	125	180 ± 5	3-Pin B.C.	13373F/479
150	115, 200, 210, 220	122 ± 1	121 ± 2	3-Pin B.C.	13979F/479



13373F/
479

Unless otherwise stated all items are made in Holland.

COLOURED LAMPS

COLOUR SPRAYED G.L.S AND SIGN LAMPS G.L.S.

WATTS	VOLTS RANGE	CAP
15	100, 130, 200/260	BC
25	100/130, 200, 260	BC
40	110, 120, 200/260	BC
40	100, 130	BC
60	110, 120, 200/260	BC
60	100, 130	BC
75	110, 120, 200/260	BC
75	100, 130	BC
100	110, 120, 200/260	BC
100	100, 130	BC
150	110, 120, 200/260	BC
150	100, 130	BC
200	110, 120, 200/260	ES
200	100, 130	ES
300	110, 120, 200/260	GES
300	100, 130	GES
500	110, 120, 200/260	GES
500	100, 130	GES

SIGN

WATTS	VOLTS	CAPS
15	100-130 200-260	BC, ES, SBC, SES

INTERNALLY COLOURED LAMPS G.L.S.

WATTS	VOLTS RANGE	CAP
15	200-250	BC
25	200-250	BC

SIGN

WATTS	VOLTS RANGE	CAP
15	200-250	BC

Internally coloured lamps are ideal for outside decorative use, the colours cannot chip, scratch or fade, and are unaffected by weathering.

COLOUR GLOW INDICATORS

WATTS	VOLTS	CAP	Dia. mm	LENGTH mm
0.5	200/260	SBC	18	54
0.5	200/260	SES	18	56
0.5	100/130 200/260	BC, ES	28	56

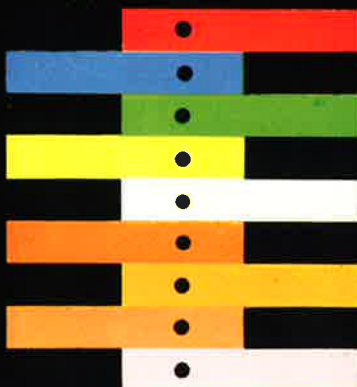
Except when ordered otherwise, these indicators are supplied with built-in resistances.



G.L.S



SIGN



G.L.S

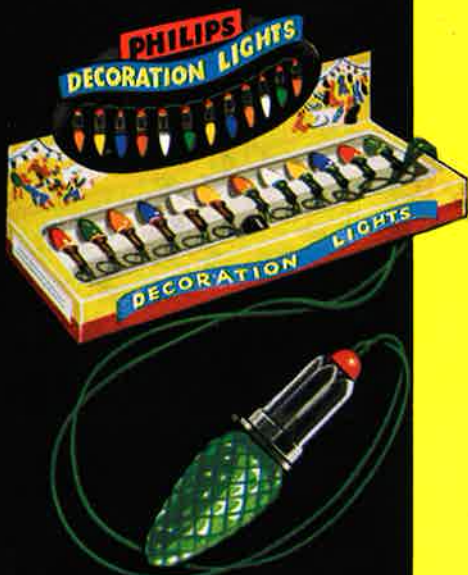


SIGN

BOTH COLOUR SPRAYED LAMPS AND INTERNALLY COLOURED LAMPS ARE OFFERED IN THE ABOVE COLOUR RANGE.



DECORATION SETS



STANDARD SET

Comprising: 12 (plus 1 spare)
20V 3W M.E.S. pine cone
decoration lamps, transparent
lacquered in assorted colours,
wired in series for 200/260V
mains, with skirted lampholders,
berry beads, and B.C. adaptor.



ILLUMINATED CHRISTMAS TREE

Comprising:
20 miniature lamps in golden
colour complete with
transparent stars, arranged
on branches of golden
coloured imitation fir tree.
The tree stands 2' 6" high.

DECORATION SETS

PINE CONE SET

Comprising: 16 (plus 1 spare)
14V 3W M.E.S. pine cone
decoration lamps, with incor-
porated short circuiting device,
transparent lacquered in
assorted colours, wired in series
for 200/260V mains, with
coloured plastic lampholders,
deep skirted, and B.C. adaptor.



MINIATURE DECORATION SET

Comprising: 20 or 35 L.E.S.
Sub Miniature lamps,
transparent lacquered in
red, yellow, green, blue and
cyclamen, with short-
circuiting device incor-
porated, wired in series for
200/260V mains supply.
Complete with transparent
stars in attractive colours
and B.C. adaptor.



DECORATION SETS

Type	List Price	P.T.	Total Price
	s. d.	s. d.	s. d.
Standard Set	16 7	1 7	18 2
Pine Cone Set	23 0	2 2	25 2
20 Lamp Miniature	23 8	2 3	25 11
35 Lamp Miniature	34 6	3 3	37 9
Illuminated Christmas Tree	46 0	4 4	50 4

SPARE LAMPS

Type	List Price	P.T.	Total Price
	s. d.	s. d.	s. d.
Standard	1 0	2	1 2
Pine Cone	1 0	2	1 2
Miniature	8½	1½	10

Standard Box quantities for Spare Lamps are 25 lamps (Standard and Pine Cone) and 50 lamps (Miniature).

Philips Decoration Sets are made in Great Britain. Lamps for Miniature Sets are foreign made.

PHILIPS FLUORESCENT LAMPS



Philips manufacture a wide range of fluorescent lamps for general lighting service, together with others for specialized applications. It is only possible to give here an outline of the lamps and gear available, but most types are described in greater detail in individual leaflets. Philips manufacture fluorescent lamps to B.S. 1853 where applicable, and are holders of Licence No. 3296 under the B.S.I. Kitemark scheme.

WHITE COLOURS

	High Eff.	Deluxe
Cool 4000°K	Cool White 33	Colour 34
Intermediate 3500°K	White 35	—
Warm 3000°K	Warm White 29	Colour 32

High Efficiency. Grain-size selected phosphors ensure high lumen output, well maintained over life. For all lighting tasks where efficiency is the chief criterion, e.g. for factories, store-rooms, and loading bays.

White 35 An intermediate colour for all lighting applications where a specific tone is not required.

Cool White 33 (Brit. "Daylight.") Mixes well with outside daylight. Popular in the heavy industries and for street lighting.

Warm White 29 A warm tone usually preferred for the lighter industries.

Deluxe. In these lamps the efficiency (though still high) has been partly sacrificed to obtain better colour rendering especially of reds. Deluxe lamps should be specified for shops, offices and the home. Philips Deluxe lamps are made by special techniques and are established leaders for high quality colour rendering.

Colour 32 The fluorescent lamp *par excellence* for the lighting of food. Colour 32 is double-coated—a second layer of phosphor absorbs the residual distorting component and converts it to extra red light. Colour 32 blends well with tungsten and is kind to the female complexion.

Colour 34 A companion to Colour 32 but of cooler appearance. Especially popular for the lighting of clothing stores. Colour 34 is a standard lightsource in the Graphic Arts, and for colour transparencies and paintings. It supersedes the earlier "Natural".

Additional to the Deluxe lamps quoted is Colour Matching 55, a lamp of high Colour Temperature (6500°K) for critical appraisal tasks in the paint and dye industries. For other purposes it is tending to be superseded by Colour 34.

The book "Fluorescent Lamps and Lighting" (pub. Cleaver-Hume Press) by members of Philips staff, is a recognized authority on fluorescent lamps, control gear, circuits, fittings and lighting practice.



STANDARD FLUORESCENT LAMPS

STANDARD 1½" dia. FLUORESCENT LAMPS

The basic range for Switch Start or Switchless Start.
15W.-80W. have both Earth strip and silicone coating.

Type and Rating	Colours	
	High Eff.	Deluxe
* MCFE 125W. 8ft. (Bipin only)	W.W.29 C.W.33	Col.32 Col.34 C.M.55
TLA 80W. 5ft. (Bipin or B.C.)	W.W.29 C.W.33 W.35	Col.32 Col.34 C.M.55
TLA 40W. 4ft.	W.W.29 C.W.33 W.35	Col.32 Col.34 C.M.55
TLAK 40W. 2ft.	W.W.29 C.W.33 W.35	Col.32 Col.34 C.M.55
* TLA 30W. 3ft.	W.W.29 C.W.33 W.35	Col.32 Col.34
* TLA 20W. 2ft.	W.W.29 C.W.33 W.35	Col.32 Col.34 C.M.55
* TLA 15W. 1½ft.	W.W.29 C.W.33	

For 80W. Bipin cap is standard. Adaptor available for B.C. fittings.



Bipin Cap
G13/35
for 1½" dia.



Bayonet Cap
B22/27 x 35
for 1½" dia.

STANDARD 1" dia. FLUORESCENT LAMPS

For Switch Start or Switchless Start.
With both Earth strip and silicone coating.

Type and Rating	Colours	
	High Eff.	Deluxe
* TLAD 30W. 3ft.	W.W.29 C.W.33 W.35	Col.32 Col.34 C.M.55
* TLAD 15W. 1½ft.	W.W.29 C.W.33 W.35	Col.32 Col.34 C.M.55

*Made in Holland.



Bipin/B.C. Adaptor
H1120



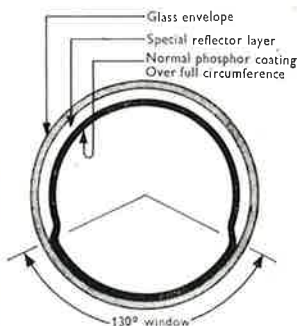
Bipin Cap
G13/23
for 1" dia.

Reflectalite FLUORESCENT LAMPS



Reflectalite lamps have an internal reflector not affected by the normal tarnishing and accumulation of dust. Especially valuable in industrial lighting. The maximum intensity is up to 1.8 times standard. Earth strip/silicone coating: as for corresponding non-reflector lamps.

Type and Rating	Colours
* TLFE 125W. 5ft. (Bipin only)	W.W.29 C.W.33
TLFA 80W. 5ft. (Bipin or B.C.)	W.W.29 C.W.33 W.35
TLFA 40W. 4ft.	W.W.29 C.W.33 W.35
* TLFA 20W. 2ft.	W.W.29 C.W.33



Reflectalite construction
Tube dia. 1 1/8"

For 80W. Bipin cap is standard: adaptor available for B.C. fittings.

STANDARD LAMP

"REFLECTALITE"



Intensity Distribution
(bare lamps).

HIGH LOADED Reflectalite

A lamp for special applications when lumens/foot are of more importance than lumens/watt. Despite the high loading, efficiency is held at a reasonable level by the pressure-control dome. With Earth strip and silicone coating.

Type and Rating	Colours
* TLFA/H 125W. 5ft.	C.W.33

Cap: Bipin. Electrodes: 3V. Position: horizontal.

Further details of this lamp and its control gear on request. A non-reflector version is also available.

*Made in Holland.



Pressure-control dome.
Tube dia. 1 1/8".



GEARLESS AND T.B.L.

GEARLESS FLUORESCENT LAMPS

Gearless fluorescent lamps have an *internal* starting strip, making possible simple circuits and quick starting. Operated in series with a tungsten ballast lamp in applications where low initial cost, lightness in weight or admixture of tungsten are of importance.

Type and Rating	Colours	
	High Eff.	Deluxe
TLS 40W. 4ft.	W.W.29 C.W.33	Col.32 Col.34 C.M.55
* TLS 20W. 2ft.	W.W.29 C.W.33	Col.32

Min. volts: 200V. (20W.), 220V. (40W. or $2 \times 20W.$), A.C. only.
In twin fittings place lamp brandings at opposite ends.

TUNGSTEN BALLAST LAMPS

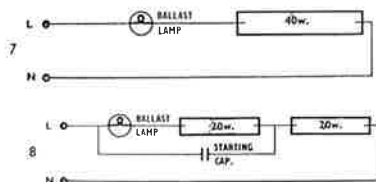
Nine types are available, in a choice of finishes, and to suit the more common mains voltages.

Type	Rating
T.B.L. Argenta	$\left. \begin{array}{l} 140V. 70W. \text{ for } 230V. \\ 150V. 75W. \text{ for } 240V. \\ 160V. 80W. \text{ for } 250V. \end{array} \right\}$
T.B.L. Bowl-silvered	
T.B.L. Spotlight	

Lampholder: B.C. 3 slot. Several makes of B.C. holders are available from their manufacturers in 3 slot form.

CIRCUIT DIAGRAMS

No P.F.C. capacitor needed: R.I.S. capacitors may be added if required. Suitable for 50-60c/s. Starting capacitor is H1706.



*Made in Holland.



Single-contact cap.
Tube dia. $1\frac{1}{2}$ ".



Tungsten Ballast Lamp.
Argenta.



Tungsten Ballast Lamp.
Bowl-silvered.



Tungsten Ballast Lamp
Spotlight.

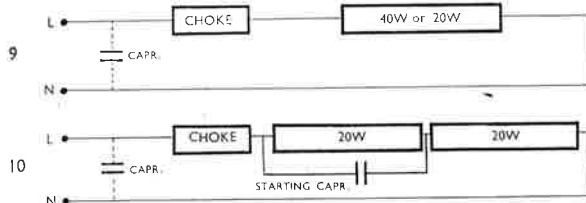
"GEARLESS ON GEAR"



A Gearless tube may also be operated in series with a choke. This arrangement gives Switchless Start advantages at the Switch Start price. Ballast watts are less and no Earth is required. For embodiment in fittings and equipment, and for tailored lighting schemes.

CIRCUIT DIAGRAMS

Normal P.F.C. and R.I.S. capacitors may be added if required.



COMPONENTS

Normal Switch Start gear is used, as for the corresponding bipin lamps.

	40W.	20W.	2 × 20W.
Choke	H2240	H2220	H2240
St. Capr.	—	—	H1706
No. of L/H	2	2	4
(P.F.C. Capr.)	(3.25mfd.)	(4.7mfd.)	(3.25mfd.)

LAMP HOLDERS FOR GEARLESS

A typical S.C. lampholder for a Gearless tube may be held in clips and contact made by an S.C. socket. The lampholder and socket shown incorporate a switch and the tube must be rotated through 90° after insertion.

STARTING CAPACITOR

Two 20W. Gearless lamps in series are sequence-started, for which a 0.9mfd. capacitor H1706 is required. This is small in size and may be held by a clip.



S.C. Lampholder A7225.
Base A7204 (optional).*



S.C. Socket A7240.



Lampholder for T.B.L.
R8312.



Starting Capacitor.
H1706.

*Made in Holland.



MINIATURE

MINIATURE FLUORESCENT LAMPS

Short fluorescent lamps with tubes of $\frac{3}{8}$ " diameter. Among their advantages are long life, small consumption, slim shape, resistance to vibration, low heat. Their applications are manifold, including bulkhead lighting fittings, street bollards, signs, machine lighting units, vending and amusement machines.

Type and Rating	Colour
TL 13W. 21"	W.W.29 C.W.33
TL 8W. 12"	W.W.29 C.W.33
TL 6W. 9"	W.W.29 C.W.33
TL 4W. 6"	C.W.33

For Switch Start operation only.

CHOKES: 47 × 38mm

Enclosed chokes with polyester filling. They are small in size, quiet in operation, and the filling cannot melt.

Cat. No.	Voltage Range	Application
H2206	230-250	4/6/8W. 2 × 4W.
H2207	200-220	
H2213	230-250	13W.
H2212	230-250	2 × 6W.
H2216	230-250	2 × 8W.

Length 110mm. F.C. 90 × 30mm. For 50c/s. Advice on other frequencies and voltages on request.

CIRCUIT AND ACCESSORIES

Miniature fluorescent lamps are operated in the normal Switch Start circuits, either singly or two-in-series. The glow starters and their holders are exactly as for larger lamps. P.F. correction, if required, is at approx. 2.0mfd. per circuit, e.g. one H1211 per two circuits.

Lampholders may be of the pillar type (e.g. A7229). Alternatively, a push-on socket may be used (e.g. A7251), together with spring clips to hold the tube.

*Made in Holland.



Min. Bipin Cap
G5/15.



Min. Bipin Lampholder
A7229*.



Min. Bipin Socket
A7251.



Choke for Miniatures.

CIRCULAR



CIRCULAR FLUORESCENT LAMPS

A group of fluorescent lamps of rapidly increasing popularity. Particularly suited for lighting reception areas, restaurants, small shops, hotels, private offices. Also for corridor and staircase lighting and for embodiment in equipment.

Type and Rating	Colour	
	High Eff.	Deluxe
* TLEM 40W. 16"	W.W.29 C.W.33	Col.32 Col.34
* TLE 32W. 12"	W.W.29	Col.32 Col.34
* TLE 22W. 8"	W.W.29	



Four-pin cap.

TLEM 40W. has 3v. electrodes and external starting strip: it will ignite even if the strip is not connected to Earth.

CIRCUIT AND ACCESSORIES

For use on Switch Start gear and circuits as for 40W. 4ft., 30W., 20W. straight tubes. (TLEM 40W. may be operated in Switchless Start on semi-resonant ballast only.) The lamps may be held by spring clips and contact made by a push-on socket (e.g. A7230). Sprung plastic holders A7231 and A7232 are also available.

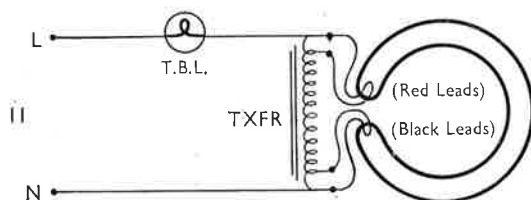


*Socket A7230.

CIRCULAR 40W. ON T.B.L.

TLEM 40W. may also be operated in series with a Tungsten Ballast Lamp, with a saving in cost and weight. For incorporation in lighting fittings, or for loose installation especially in shopfitting and display work.

The T.B.L. and its holder are as in Gearless circuits. A small preheat transformer is required, e.g. H1926C. P.F.C. capacitor is not needed: R.I.S. capacitor may be added if required. The circuit is shown below and is for A.C. 50-60c/s.



*Made in Holland.



Preheat Transformer
H1926C.



SPECIAL FLUORESCENT LAMPS

TLC/TLR Lamps for D.C. Special 20W. 2ft. and 15W. 1½ft. fluorescent lamps for operation on 72V., 110V., 220V. D.C. with one/two stabilizers and a relay. These circuits, which are simple and light in weight, are in use throughout the world on ships, aircraft and trains.

Actinic 5. A U.V. phosphor (long wavelength) for use in the printing industry, especially in the making of diazo photo-copies. Available in several lengths and ratings. Replacements for printing machines are normally obtained through the machine maker.

Fluorescent Blacklamps (Colour 8). A phosphor similar to Actinic 5 but in a tube of black filter glass (to remove visible radiation). Available in 40W. 4ft. and 20W. 2ft. for Switch Start only. For excitation of fluorescent pigments in display work or for industrial grading.

Fluorescent Sunlamp (Colour 12). A phosphor emitting in the erythema U.V. band, in a tube of special glass. Available in 40W. 4ft. and 20W. 2ft for Switch Start only. An extended source for U.V. irradiation. To be used with proper precautions under medical instruction.

Decorative Colours. Red (15), Yellow (16), Green (17), Blue (18) fluorescent lamps in several ratings. Switch Start only. The use of white colours with external filters is suggested as an alternative.

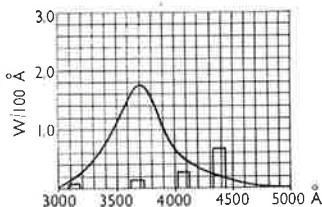
Electroluminescent Panels. Thin, rugged and even lightsources of long life and negligible consumption. Connected to an A.C. supply without control gear. Various shapes, sizes and colours are possible. Chiefly for embodiment in indicating equipment. Electro luminescent panels are normally available to special order only.

T.U.V. tubes: see under Discharge Lamps.

Made in Holland.



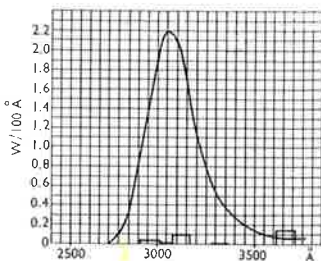
Stabilizer.



Spectrum
Actinic 5.



Fluorescent
Blacklamp.



Spectrum
Fluorescent Sunlamp.

CHOKES



POLYSLIM CHOKES

Enclosed chokes with polyester filling, and of slim shape. Cross-section is $47 \times 38\text{mm.}$, making possible lighting fittings of elegant proportions. Polyslim chokes are also easy to tuck away in equipment and in tailored lighting schemes. Filling with polyester under pressure leads to reduced size and weight, limits acoustic noise, and the filling cannot melt. Made in Great Britain to B.S. 2818 (where applicable).

Cat. No.	Voltage Range	For Lamps	Length mm.
H2280	230–250†	80W. 2 × 40W. 2ft.	253
H2281	200–220†		
H2240	230–250	40W. 4ft. & Circ. 2 × 20W.(22W.) 30W.(32W.) 2 × 15W. 20W.(22W.) 15W.	153
H2241	200–220		
H2230	230–250		
H2220	230–250		
H2215	230–250		



Polyslim choke.

†In a „leading“ branch use H2281 on 230–250V. and H2280 on 200–220V.: series capacitor 7.2mfd. 440V.

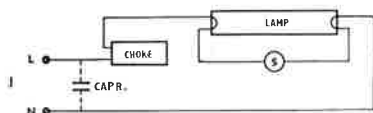
OTHER CHOKES

Above chokes are for 50c/s: advice on other frequencies and voltages on request. Polyslim Control Units have wiring tails and starter-holder attached.

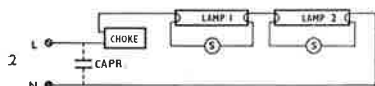
Some chokes with $64 \times 45\text{mm}$ sections may still be available.

Chokes for Miniature fluorescent lamps—see lamp page.

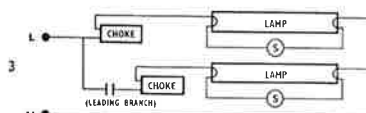
SWITCH START CIRCUITS



Single lamp operation.



Two lamps in series.



Lead/lag circuit.



SWITCHLESS START

POLYSLIM BALLASTS

Switchless Start ballasts in Polyslim construction (section $47 \times 38\text{mm.}$). Additional to the advantages of polyester filling are those of the Semi-Resonant circuit—equal treatment of lamp electrodes and reduction of harmonic currents. The capacitor is separate to the windings and is a separate Catalogue item.

Cat. No.	Voltage Range	Lamp and Capacitor	Length mm.
H2288	230–250	} 80W. GA/B 8M	303
H2287	200–220		
H2248	230–250	} 40W. 4ft. GA/B 5M5	203
H2247	200–220		
H2238	230–250		

An R.I.S. capacitor is not included.



Polyslim Ballast.

POLYSLIM BALLASTS, series operation

Switchless Start ballasts, in Polyslim construction for two lamps in series. The circuit in conventional and the normal external P.F.C. capacitor may be used. An R.I.S. capacitor is incorporated.

Cat. No.	Voltage Range	For Lamp	Length mm.
H2278	230–250 230–250	$2 \times 40\text{W. 2ft.}$ $2 \times 20\text{W.}$	— —

POLYESTER BALLASTS $64 \times 45\text{mm.}$

Switchless Start ballasts with polyester filling and of medium section. The circuit is the Semi-Resonant, and the ballasts incorporate capacitor and R.I.S. capacitor.

	Cat. No.	Voltage Range		For Lamp		Length mm.
	H2086	230–250	}	80W.	}	330
	H2085	200–220				
	H2046	230–250				
*	H2045	200–220	}	40W. 4ft.	}	262
*	H2036	230–250				
*	H2128	230–250				
	H2129		125W. 8ft.	330 106		

H2128 (ballast) and H2129 (choke) are used together.



Polyester Ballast.

*Made in Holland.

CAPACITORS



CAPACITORS FOR POLYSLIM

Capacitors of small cross-section ($43 \times 26\text{mm.}$) for use with Polyslim Switchless Start ballasts. These capacitors are made to 5% tolerance and can be operated in ambients up to 80°C. at 250V. With discharge resistor and wiring tails, but without fixing bracket. Made to B.S. 2818:1961 where applicable.

Cat. No.	mfd.	For Lamp	Length mm.
* GA/B 8M	8.0	80W. 5ft.	168
* GA/B 5M5	5.5	40W. 4ft.	119
* GA/B 5M1	5.1	30W. 3ft.	119

Capacitors of this section for Switch Start circuits are at present only available in complete lighting fittings.



Capacitor for Polyslim.

CAPACITORS, P.F.C. AND SERIES

Capacitors for parallel correction, and for lead-lag. With discharge resistor and wiring tails. Fixing brackets can be supplied by special arrangement.

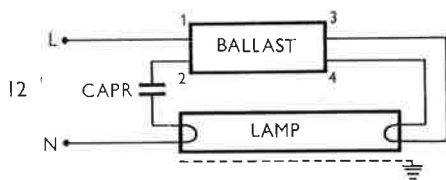
Cat. No.	mfd.	Application	Length mm.	Width mm.
H1828	7.5	P.F.C. 80W. $2 \times 40\text{W.}$	127	45
H1714	3.25	P.F.C. 40W. 4ft., 30W., $2 \times 20\text{W.}$ $2 \times 15\text{W.}$	91	38
H1211	4.7	P.F.C. Single 20W., 15W.	89	53
H1831	7.2	Series for 80W. leading	182	55



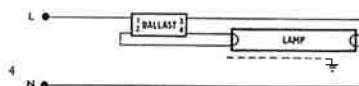
H1828
H1714

H1211
H1831

SWITCHLESS START CIRCUITS



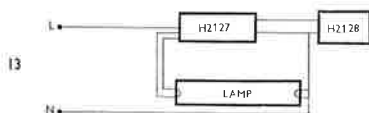
Polyslim Switchless Start.



H2086/5

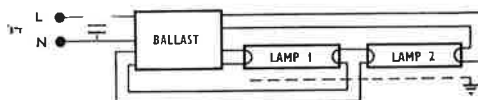
H2046/5

H2036



125W. 8ft.

*Made in Holland.



Two 20W. or two 40W. 2ft. in series.



STARTERS AND HOLDERS

MINIATURE STARTERS

Miniature glow type, in a metal canister and having two contacts. An R.I.S. capacitor is incorporated. Only two starters are required to cover the full range. A.C. only, 50-400 c/s.

Cat. No.	Application
* K3001	Any one-lamp circuit on 200-250V.
* K3002	Two lamps in series on 200-250V. (or single lamp on choke on 100-125V.).



Two-contact starter.

STARTER K3080

A glow starter in the larger canister and having four contacts. For A.C. 50-60c/s. to replace four-contact glow or thermal starters. In new installations the smaller contacts need not be in circuit. This starter is fitted with thermal reservoirs for controlled-delay action. An R.I.S. capacitor is incorporated.

Cat. No.	Application
K3080	One 80W./40W. 4ft./30W. lamp on 200-250V.



Four-contact starter.

STARTER HOLDERS

The holders shown below are typical of types available.



A7217
*Two-contact starter holder.



A7223
*Two-contact starter holder
with solder lugs and earth contact.



A7236
Starter holder
for K3080.

*Made in Holland.

FLUORESCENT LAMP ACCESSORIES



BIPIN LAMPHOLDERS AND SOCKETS



*Lampholder A7221E
Sprung rotor, base
fixing.
(A7221 has no Earth tag.)



*Lampholder A7222
Sprung rotor, back
fixing.
(Earth tag A7248 is extra.)



*Lampholder A7253
14-position adjustable.
(Earth tag not available.)



Socket A7256E
Push-on.
(Not available
without Earth tag.)

LAMPHOLDER SELECTION

- (1) Many types of lampholders are on the market, and only a few can be shown here. Lampholders and sockets for Gearless, Miniature and Circular fluorescent lamps are on earlier pages, as are holders for T.B.L.s and for starters.
- (2) In Switchless Start circuits at least one lampholder (or socket) should be Earthed type: alternatively, Earth by a separate clip around the cap.
- (3) With sockets, clips are required (preferably around the caps) to hold the tube: these may also make the Earth contact for Switchless Start.



HI705 R.I. Suppressor
Across-mains type.



HI708M R.I. Suppressor
Across-lamp type.



HI120 Bipin/B.C. Adaptor
with Earth tag.



A7246 Weatherproof
sleeve for $1\frac{1}{2}$ " dia.
tubes.



FLUORESCENT CIRCUIT SETS

A check-list for ordering components. For Gearless and Circular lamp arrangements see under lamp pages.

Circuit No.	Lamp	50c/s. Ballast 230-250V. 200-220V.		Starter	St. Holder	Lamp Holders	Capacitor mfd.
SWITCH START							
I	80W.	H2280	H2281	K3001	I	2	7.5
I	40W. 4ft.	H2240	H2241	K3001	I	2	3.25
I	30W.	H2230		K3001	I	2	3.25
I	20W.	H2220		K3001	I	2	4.7
I	15W.	H2215		K3001	I	2	4.7
I	13W.	H2213		K3001	I	2	2.0
I	8/6/4W.	H2206	H2207	K3001	I	2	2.0
SWITCH START (Circuits 2 and 3)							
3	2 × 80W.	H2281 and H2280		2 × K3001	2	4	(H1831)
2	2 × 40W. 2ft.	H2280	H2281	2 × K3002	2	4	7.5
2	2 × 20W.	H2240	H2241	2 × K3002	2	4	3.25
2	2 × 15W.	H2230		2 × K3002	2	4	3.25
2	2 × 8W.	H2216		2 × K3002	2	4	2.0
2	2 × 6W.	H2212		2 × K3002	2	4	2.0
2	2 × 4W.	H2206	H2207	2 × K3002	2	4	2.0
SWITCHLESS START							
13	125W. 8ft.	H2128 } H2129 }		—	—	2E	—
4	80W.	H2086	H2085	—	—	2E	—
4	40W. 4ft.	H2046	H2045	—	—	2E	—
4	30W.	H2036		—	—	2E	—
SWITCHLESS START (Polyslim)							
12	80W.	H2288	H2287	—	—	2E	(GA/B 8M)
12	40W. 4ft.	H2248	H2247	—	—	2E	(GA/B 5M5)
12	30W.	H2238		—	—	2E	(GA/B 5MK)
14	2 × 20W.	H2278		—	—	4E	3.25

STARTERS AND HOLDERS see page F12. K3080 starter is an alternative in some circuits.

LAMPHOLDERS see page F13. Suffix E here indicates Earthing required in Switchless Start circuits.

CAPACITORS see page F11. Parallel P.F. correction across the mains is often in bulk, at the rate shown per circuit.

MISCELLANEOUS APPARATUS



TRANSFORMERS

H1823 (bitumen-filled) and H2023 (polyester filled) are in ballast canisters. H1922 and H1923 are of open construction.

Cat. No.	Description
H1823	Primary 100-120v Secondary 230-250v Max. Loading 220VA Autotransformer for 50-60 c/s.
H2023	Primary 200-220v Secondary 230-250v Max. Loading 170VA Autotransformer for 50-60 c/s (Supersedes H1723).
H1922	Preheat transformer for two 20w 2ft or 15w 1½ft in series. For compensated connection with choke or T.B.L.
H1923	Primary 240v Two secondaries 8v 0.5 amp Electrode heating transformer for flashing/dimming.

H1926C: See under Circular fluorescent lamps

REPLACEMENT BALLASTS

The following L.P.F. non-polyester ballasts may be current on publication, but are due to be superseded by the polyester-filled versions listed earlier. All are for 50 c/s.

Cat. No.	Description
H1931	Switchless Start ballast for 125w 8ft 200-250v
H1900-3	Switchless Start ballasts for 2 × 40w 2ft 220-250v
H1904-7	Switchless Start ballasts for 2 × 20w 2ft 220-250v
H1574	Choke for 15w 1½ft 200-250v
H1654	Switchless Start ballast for 30w 3ft 240-250v

Polyester Chokes 64 × 45mm.: this earlier range of chokes (and control units) have Cat. Nos. 200 less than the Polyslim versions listed earlier (e.g. H2080 relative to Polyslim H2280). It is expected that they will gradually be superseded by Polyslim chokes.

* TRANSISTOR BALLASTS

Transistorized control gear permitting the operation of normal fluorescent lamps on low voltage D.C. supplies. For trains, vehicles, boats, aircraft and other installations having a battery supply.

*Made in Holland



LAMPS CHARACTERISTICS

LAMPS CHARACTERISTICS

Length refers to Bipin lamps only. Lumens quoted do not apply to Reflectalite.

Lamp	Lamp V	Lamp A	Face/Face in.	H.E.	A.T.L. Lumens at 25°C		
					Col. 32	Col. 34	C.M.
125w 8ft	149	0.94	93.50	7875	5125	—	—
80w 5ft	102	0.87	59.01	4640	3200	2720	3360
40w 4ft	103	0.43	47.22	2600	1720	1560	1880
40w 2ft	45	0.88	23.22	1680	1120	1000	1280
30w 3ft 1½ in.	85	0.39	35.22	1770	1200	1180	1320
30w 3ft 1 in.	96	0.36					
20w 2ft	58	0.37	23.22	980	660	640	740
15w 1½ ft 1½ in.	48	0.37	17.22	720	480	465	540
15w 1½ ft 1 in.	54	0.33					
13w 2 1 in.	98	0.17	20.42	611	—	—	—
8w 12 in.	58	0.165	11.35	320	—	—	—
6w 9 in.	45	0.155	8.35	192	—	—	—
4w 6 in.	30	0.15	5.35	72	—	—	—

Voltage and Current. Values quoted apply to Switch Start operation at 25°C, with inductive control on 50 c/s.

Face/Face Length. This measurement is a maximum, and does not include pins. Pin length 0.287 in. max. each end.

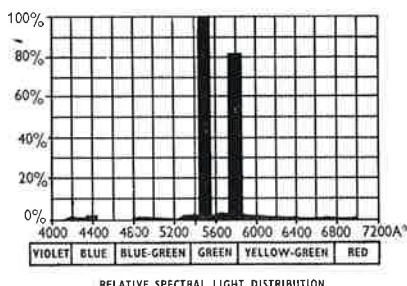
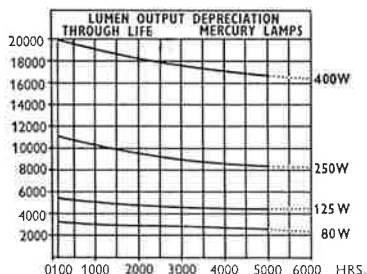
Lumens. Measured at 2000 hours on a Reference ballast at 25°C. H.E. = high efficiency colours. All values subject to continuous improvement.

MERCURY LAMPS



The extension of the use of quartz discharge tubes to the 250w and 400w ratings makes the Philips Mercury Lamp range even more suitable for public and industrial lighting applications. A 25 per cent. increase in efficiency combined with universal burning position for the entire range is now possible. Recent progress and new techniques have made voltage grading outdated. All lamps are suitable for 200/250v.

The new 250w and 400w ratings make magnetic arc deflectors obsolete. Twin auxiliary electrode construction ensures reliable starting—even at -40°C . Use only on A.C. mains supplies with apparatus supplied or approved by Philips.



Class and Rating	Lumens		Dimensions (mm.)			Lamp Cap	Ballast Cat. No.	P.F.C. Capacitor Cat. No.
	Initial	A.T.L.†	O.A.L.	Dia.	L.C.L.			
80w MB/U	3100	2850	160	80	113	3-pin B.C.	L4080*	L4008
125w MB/U	5400	4950	178	90	128	3-pin B.C.	L4125*	L4010
250w MB/U	11500	10600	290	48	170	G.E.S.	L4250*	L4020
400w MB/U	20500	18800	330	48	190	G.E.S.	L4400*	L4020
1000w MB/U	52000	48000	372	65	240	G.E.S.	L3779	L4620

All lamps suitable for 50 c.p.s. A.C. mains, 200/250v.

L.C.L. = Light Centre Length.
1000w made in Holland.

MB/U may be operated in any position.

† The "Average Through Life" values are for the first 5000 hours of life and are intended to provide practical guidance for lighting design purposes.

Ballasts above are for 200/250v 50 cycles.
For full details please see sheet A54.

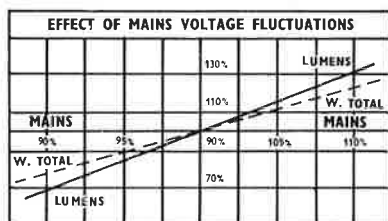
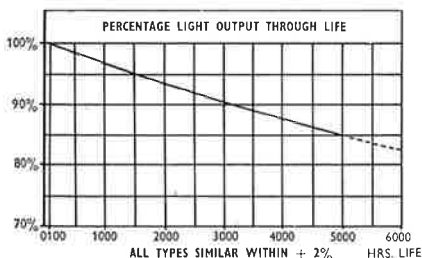
* With Polyester filling.



MERCURY FLUORESCENT LAMPS

A comprehensive range including reflectorised types. The standard lamps are all in isothermal envelopes internally coated with a newly developed phosphor giving maximum efficiency combined with optimum colour correction.

The lamps are ideally suited to both industrial and street lighting applications where improved colour is of relative importance.



Class and Rating	Lumens		Dimensions (mm.)		Lamp Cap	Ballast Cat. No.	P.F.C. Capacitor Cat. No.
	Initial	A.T.L.†	O.A.L.	Dia.			
50w MBF/U	1600	1400	125	55	E.S.	L4050*	L4008
80w MBF/U	3100	2850	152	70	3-pin B.C.	L4080*	L4008
125w MBF/U	5400	4950	172	75	3-pin B.C. or G.E.S.	L4125*	L4010
250w MBF/U	11500	10600	220	90	G.E.S.	L4250*	L4020
400w MBF/U	20500	18800	282	120	G.E.S.	L4400*	L4020
700w MBF/U	36000	32000	320	140	G.E.S.	L4700*	L4616
1000w MBF/U	52000	48000	400	165	G.E.S.	L3779	L4620

All lamps suitable for 50 c.p.s. A.C. mains, 200/250v. No voltage grading.

700w and 1000w made in Holland.

MBF/U lamps may be operated in any position.

† The "Average Through Life" values are for the first 5000 hours of life, and are intended to provide practical guidance for lighting design purposes.

Ballasts above are for 200/250v, 50 cycles. For full details please see sheet A54.

* With Polyester filling.

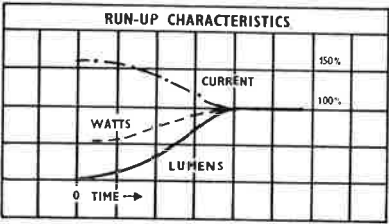
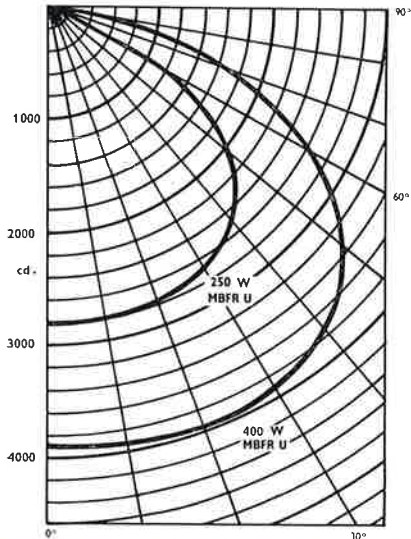
MERCURY FLUORESCENT REFLECTOR LAMPS



The internally reflectorised mercury fluorescent lamp is ideally suited for high bay mounting where maintenance is a problem. The reflector surface, being inside the lamp, is independent of atmospheric pollution, and maintains its high efficiency throughout the long life of the lamp. The fluorescent phosphor is applied to the reflector and not the front of the lamp.



LIGHT DISTRIBUTION DIAGRAM



These characteristics also apply to MBFR/U & MBFR/U lamps

Class and Rating	Lumens		Dimensions (mm.)		Lamp Cap	Ballast Cat. No.	P.F.C. Capacitor Cat. No.
	Initial	A.T.L.†	O.A.L.	Dia.			
MBFR/U 250w	9000	8000	263	183	G.E.S.	L4250*	L4020
MBFR/U 400w	16000	14000	263	183	G.E.S.	L4400*	L4020

Made in Holland.

Illumination level with reflector lamps will be higher than lumen value suggests.
 MBFR/U lamps can be operated in any position.
 † The "Average Through Life" values are those for the first 5000 hours life and are intended to provide practical guidance for lighting design purposes.
 No voltage grading—all lamps suitable for 200/250v supplies.
 Ballasts detailed above are for use in conjunction with the lamps recommended on 200/250v 50 cycles supplies. For other mains voltages, please see Sheet A55.

* With Polyester filling.



BLENDED LAMPS

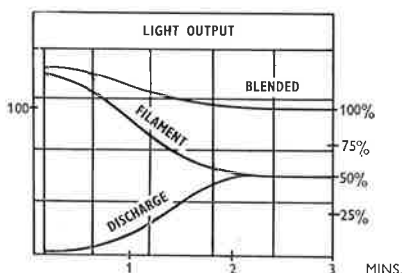
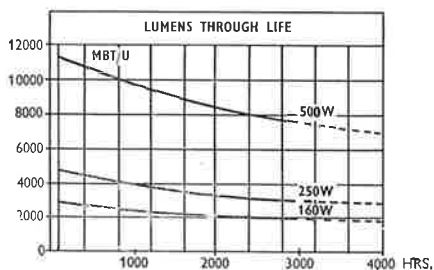


Philips Blended Lamps are modern light sources combining long life with a high lumen output. Each of these lamps contains a quartz mercury discharge tube with a series connected filament which acts both as a light source and as a ballast-resistance controlling the discharge tube current.

The combination of mercury light with its excess of blue green and tungsten filament light with its excess of red results in a crisp white light. The lamps themselves resemble 200w, 300w and 500w G.L.S. lamps in size, shape and caps.

They are suitable for use in all applications where 200/250v A.C. mains are available, i.e. industrial, commercial and public lighting where their long life and independence of external ballasts is an advantage.

After switching off there will be a short restarting delay of two to three minutes.



Class and Rating		Lumens		Dimensions (mm.)		Lamp Cap
		Initial	A.T.L.	O.A.L.	Dia.	
MBT/U	160w	2900	2550	178	90	B.C. or E.S.
MBT/U	250w	4800	4400	243	110	G.E.S.
MBT/U	500w	11000	9500	267	130	G.E.S.

160w and 250w lamps graded for 200/250v in 10v steps (40-60 c/s) (200 to 250v).

Please state operating voltage when ordering.

500w made in Holland.

MBT/U lamps can be operated in any position. The "Average Through Life" values are those for the first 3000 hours life, and are intended to provide practical guidance for lighting design purposes.

Not suitable for D.C. mains.

INTEGRAL JACKETED SODIUM LAMPS



The Philips range of integral jacketed lamps incorporates a special form of construction which ensures maximum performance is maintained. The "dimple" construction of the discharge tube ensures the correct distribution of metallic sodium throughout the long useful life of the lamp, whilst permitting a wider tolerance in operating position. These lamps may be operated up to 20° from the horizontal either cap "up" or "down".

They are physically and electrically interchangeable with sodium lamps with separate vacuum jackets and great progress has been made in producing these lamps which hold an unrivalled position as the most efficient lamps available on the market.

A relative newcomer to the range is the 200w rating which has an average through life output of 20,000 lumens, and operates from a standard H.P.F. leak-transformer without the necessity for any other apparatus.



Rating and Class		Lumens		Dimensions		Lamp Cap	Ballast Cat. No.	P.F.C. Capacitor Cat. No.
		Initial	A.T.L.	O.A.L.	Dia.			
45w	S01/H	3300	3100	257	52	} B.C. }	L4045*	L4015
60w	S01/H	4900	4700	310	52			L4013
85w	S01/H	7900	7400	424	52			L4013
140w	S01/H	13000	12200	525	62		L4140*	L4018
200w	S01/H	21500	20000	785	62		L4200*	H.P.F. unit. No capacitor necessary

NOTES.

1. Operating Position. 45w/60w from 20° to horizontal "cap down" to vertical "cap up". 85w/140w/200w up to 20° from horizontal "cap up" or "cap down".
2. Ballasts above are for use in conjunction with lamps specified on 200/250v 50 cycle supplies. For other mains voltages please see Sheet A55.

The "Average Through Life" are those for the first 4000 hours life and are intended to provide practical guidance for lighting design purposes.

* With Polyester filling

Made in Holland.



SODIUM LAMPS



Philips Sodium lamps are well known and extensively used for public lighting, floodlighting and some types of industrial lighting where colour discrimination is not required. They give up to five times more light than ordinary lamps of similar consumption and have long useful lives. Excellent visibility is obtained under the monochromatic yellow sodium light, due to the increased visible acuity, enhanced contrasts, and freedom from glare.

A new technique of triple coil electrodes has led to improved lives and even greater reliability. This is an exclusive feature to Philips SO/H lamps.

Class and Rating		Lumens		Light mm. Centre Length	Lamp Cap	Ballast Cat. No.	P.F.C. Capacitor
		Initial	A.T.L.				
SO/H	45w	2610	2250	140	B.C.	L4045*	L4015
SO/H	60w	4020	3420	170			L4013
SO/H	85w	6200	5525	230			L4013
SO/H	140w	10250	9100	280		L4140*	L4018

NOTES.

1. OPERATING POSITION. 85w/140w horizontal to 20° below—cap uppermost 45w/60w from horizontal to vertical cap up.
2. MAINS VOLTAGE. Ballasts detailed above are for use in conjunction with the lamps recommended from 200/250v 50 cycles A.C. supplies. For other mains voltages please see Sheet A55.

The "Average Through Life" values are those for the first 4000 hours life and are intended to provide practical guidance for lighting design purposes.

* With Polyester filling

VACUUM JACKETS FOR SODIUM LAMPS



The purpose of the double-walled vacuum jacket is to maintain the temperature of the sodium vapour in an operating lamp at approximately 280°C. to ensure maximum performance.

The practical life of the jacket is approximately equal to that of 4-6 sodium lamps. After a period of time, the vacuum becomes "soft" and results in an increasing inability to maintain the temperature within the required limits, as a result of which the lamp tends to "burn red" with consequent reduction of efficiency and hence light output.

It is recommended that each vacuum jacket be replaced after use with a maximum of six lamps to ensure optimum performance from the installation.



Class and Rating		Dimensions (mm.)	
		O.A.L.□	Dia.
V.J.	45w	238	50
V.J.	60w	300	50
V.J.	85w	415	50
V.J.	140w	518	65

□ "Overall Length" includes SO/H lamps in jackets.



ULTRA-VIOLET MERCURY LAMPS

TYPE MBW/U



Philips Ultra-Violet mercury filter lamps emit practically no visible light and are intended only for the production of fluorescence by the irradiation of fluorescent materials with 3650 Å U.V. radiation. Fluorescent paints and materials are supplied by specialist manufacturers (names on request). Among their applications, these lamps are employed in forensic science for detection of forgeries, stains examination in laboratories, for examination or analysis of various substances, and in industry for crack detection or oil leaks.

Class and Rating	Near Ultra-Violet Radiation	Dimensions (mm.)		Cap	Ballast Cat. No.	P.F.C. Capacitor Cat. No.
		O.A.L.	Dia.			
MBW/U 125W	At 3023 Å less than 2% At 3130 Å less than 6% At 3650 Å not less than 40%	178	90	3 pin B.C.	L4125*	L4010



TYPE ML 'U'

The ML 'U' lamp is similar to the Philips MBT/U lamps in that the outer envelope contains a mercury discharge tube operated in series with a tungsten filament. Therefore no external apparatus is required.

The envelope has an internally silvered reflector and is made of special glass which cuts off all radiation below 2800 Å. The radiations above this figure are most useful for photo-chemical processes.

Class	Rating	Dimensions (mm.)		Cap
		O.A.L.	Dia.	
† ML 'U'	300w	174	125	3-pin B.C.

* With Polyester filling

† Made in Holland.

DISCHARGE LAMP APPARATUS

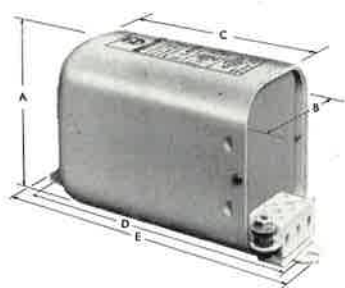


Fig. 1. Polyester Filled 50/80/125w (Mercury)

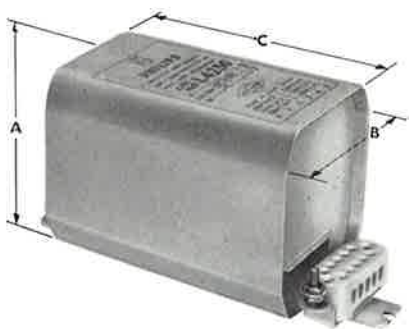


Fig. 2. Polyester Filled 250/400/700w (Mercury)



Fig. 3. Polyester Filled 45/60/85w and 140w Sodium

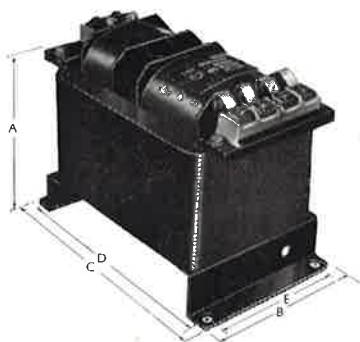


Fig. 4. Open Type Low Voltage

Ballasts are tapped, low power factor "single lamp" type. In many cases the ballast with power factor correction capacitor is housed in a box and installed close to the lighting fittings. Details of suitable boxes supplied on application.



DISCHARGE LAMP APPARATUS

All discharge lamps require some form of control gear to limit the current flowing in the circuit. For long lamp life and trouble-free performance it is essential that the ballast characteristics meet the lamp requirements. The Philips range of control gear is designed with this end in view and is made to ensure that this performance is maintained over a long and useful life. In the case of normal mercury and mercury fluorescent lamps operated from a 200/250V. A.C. supply a choke suffices. In the case of sodium lamps, however, and of mercury lamps when operated from a 100/130V. A.C. supply, it is necessary for the supply voltage to be raised to the required value, a leak-transformer being used for this purpose.

In discharge lamp circuits it is necessary to improve the circuit power factor and for this improvement the appropriate capacitor should be used. Details are given in the tables on sheet A00.

The following details relate to the illustrated figures on sheet A00.

Philips new technique of Polyester filling is being applied to the whole range of ballasts for discharge lamps. Ballasts thus filled are marked*.

Cat. No.	Type as Fig. No.	Total Watts	Volts Range	Capacitor Recommended	Dimensions (ins.)			Fixing Centres (ins.)		Weight (lbs.)
					A	B	C	D	E	
For 50W. MBF/U										
L4050*	1	59	220/250	L4008	2 $\frac{3}{4}$	2 $\frac{21}{32}$	4 $\frac{1}{4}$	5 $\frac{5}{8}$	6 $\frac{1}{2}$	4 $\frac{1}{4}$
For 80W. MB/U and MBF/U										
L3909†	4	95	110/125	L4010	3 $\frac{1}{2}$	3 $\frac{1}{2}$	5 $\frac{5}{8}$	5	5 $\frac{21}{32}$ †	6 $\frac{1}{4}$
L4080*	1	90	200/250	L4008	3 $\frac{1}{2}$	2 $\frac{11}{16}$	4 $\frac{1}{4}$	5 $\frac{5}{8}$	6 $\frac{1}{2}$ †	5 $\frac{1}{4}$
For 125W. MB/U, MBF/U, MBW/U, MBL/U and MBR/U										
L3949†	4	145	110/125	L4010	4	3 $\frac{1}{2}$	5 $\frac{5}{8}$	5 $\frac{1}{8}$	5 $\frac{1}{16}$ †	8
L4125*	1	138	200/250	L4008	3 $\frac{1}{2}$	2 $\frac{11}{16}$	5	6 $\frac{3}{8}$	6 $\frac{3}{4}$ †	7 $\frac{1}{4}$
For 250W. MB/U, MBF/U, and MBFR/U										
L3830†	4	272	110/125	L4020	4 $\frac{5}{16}$	4 $\frac{1}{8}$	7	6 $\frac{1}{4}$	× 3 $\frac{1}{2}$	13
L4250*	2	265	200/250	L4020	4	3 $\frac{1}{2}$	5 $\frac{3}{8}$	7 $\frac{1}{2}$	7 $\frac{11}{16}$ †	10 $\frac{3}{4}$
For 400W. MB/U, MBF/U, and MBFR/U										
L3762†	4	438	110/125	L4020	5 $\frac{7}{16}$	5 $\frac{7}{16}$	8 $\frac{1}{2}$	7 $\frac{11}{16}$	× 4 $\frac{9}{16}$	24 $\frac{1}{2}$
L4400*	2	420	200/250	L4020	4 $\frac{13}{16}$	4 $\frac{13}{16}$	4 $\frac{5}{8}$	6 $\frac{3}{8}$	6 $\frac{3}{4}$ †	12 $\frac{3}{8}$
For 700W. MBF/U										
L4700*	2	730	220/250	L4616	5 $\frac{3}{16}$	4 $\frac{17}{32}$	6 $\frac{11}{16}$	7 $\frac{11}{16}$	8 $\frac{9}{32}$ †	23
For 1000W. MB/U and MBF/U										
L3779(a)	—	1040	220/250	L4620	5 $\frac{5}{8}$	5 $\frac{3}{4}$	6 $\frac{1}{4}$	5 $\frac{5}{16}$	× 4 $\frac{9}{16}$	21
For 45W., 60W., 85W. SO/H and SOI/H										
L3609†	67-107	115/125	L4020	4	4 $\frac{1}{8}$	6 $\frac{7}{8}$	6 $\frac{1}{4}$	× 3 $\frac{1}{2}$		11 $\frac{3}{8}$
L4045*	65-105	200/250	L4013(b)	3 $\frac{7}{16}$	3 $\frac{9}{16}$	5 $\frac{1}{4}$	6 $\frac{7}{8}$	7 $\frac{5}{16}$ †		9 $\frac{1}{4}$
For 140W. SO/H and SOI/H and Spectral										
L3629†	4	167	115/125	L4020	5 $\frac{1}{8}$	4 $\frac{1}{8}$	6 $\frac{7}{8}$	6 $\frac{1}{4}$	× 3 $\frac{1}{2}$	17 $\frac{3}{8}$
L4140*	3	165	190/260	L4018	4 $\frac{5}{8}$	4 $\frac{5}{16}$	6 $\frac{5}{8}$	8 $\frac{3}{8}$	8 $\frac{3}{4}$ †	17 $\frac{3}{4}$
For 200W. SOI/H										
L4200*	3	236	190/260	Not Req'd.	4 $\frac{7}{16}$	4 $\frac{3}{8}$	8 $\frac{3}{4}$	10 $\frac{9}{16}$	10 $\frac{15}{16}$ †	20

† Low voltage ballasts made in Holland.

† Base fixing strap length.

* With Polyester Filling.

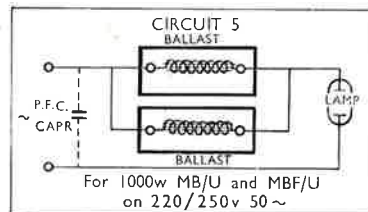
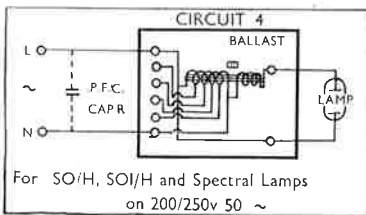
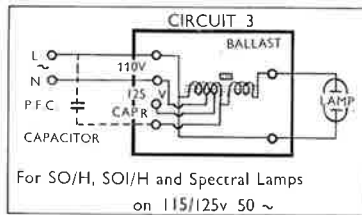
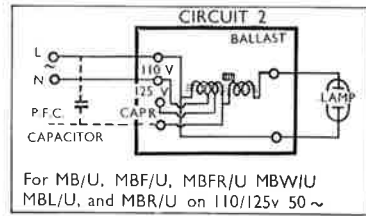
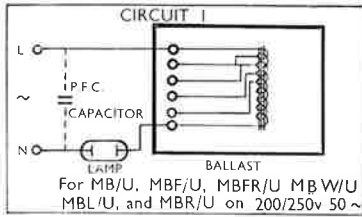
(a) Two ballasts with dimensions as tabled connected in parallel comprise L3779.

(b) Use L4013 for 60W and 85W. Use L4015 for 45W.



BASIC CIRCUITS

For Tapping Details and Supply Voltages see Ballast Labels before connecting





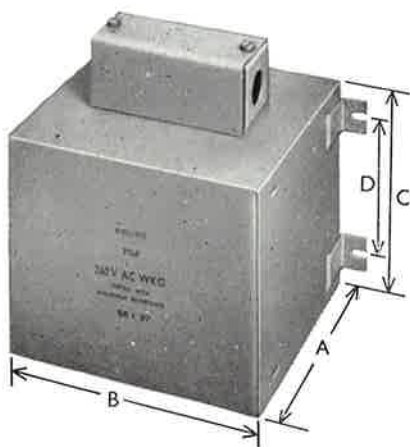
DISCHARGE LAMP APPARATUS

CAPACITORS FOR DISCHARGE LAMP CIRCUITS—275V. A.C. MAX.

A new range of capacitors from 8–20mfd. incorporates many special design features with greatly improved reliability. Special low loss paper and super-purity chlorinated hydrocarbons ensure extra long life even under very strenuous service conditions.

Cat. No.	Capacity mfd.	Conduit Entry or Leads	Dimensions (ins.)			Fixing Centres (ins.) D	Weight (lbs.)
			Width A	Height B	Length C		
L4008	8	P.V.C. Leads	2 $\frac{3}{16}$	1 $\frac{1}{16}$	4 $\frac{1}{8}$ *	Fitted with M10 stud on base and supplied with F.O.C. 'L' shape bracket	5 $\frac{5}{8}$
L4010	10		2 $\frac{3}{16}$	1 $\frac{1}{16}$	4 $\frac{9}{16}$ *		1 $\frac{11}{16}$
L4013	13		2 $\frac{3}{16}$	1 $\frac{1}{16}$	5 $\frac{19}{32}$ *		7 $\frac{7}{8}$
L4015	15		2 $\frac{3}{16}$	1 $\frac{1}{16}$	5 $\frac{7}{16}$ *		1 $\frac{3}{8}$
L4018	18		2 $\frac{15}{16}$	1 $\frac{1}{16}$	5 $\frac{7}{16}$ *		1 $\frac{1}{2}$
L4020	20		2 $\frac{15}{16}$	1 $\frac{1}{16}$	5 $\frac{7}{16}$ *	Supplied with F.O.C. 'U' shape bracket	1 $\frac{9}{16}$
L4612	25	Leads	3 $\frac{9}{16}$	4 $\frac{1}{4}$	2 $\frac{9}{16}$	4 $\frac{3}{8}$	3
L4614	30	Leads	2 $\frac{5}{8}$	5 $\frac{1}{4}$	4 $\frac{3}{4}$	6	3 $\frac{1}{2}$
L4615	30	Conduit Entry	2 $\frac{5}{8}$	5 $\frac{1}{4}$	6 $\frac{3}{8}$	6	3 $\frac{1}{2}$
L4616	40	Leads	2 $\frac{3}{4}$	6 $\frac{1}{2}$	4 $\frac{3}{4}$	7 $\frac{1}{4}$	5 $\frac{1}{4}$
L4617	40	Conduit Entry	2 $\frac{3}{4}$	6 $\frac{1}{2}$	6 $\frac{3}{8}$	7 $\frac{1}{4}$	5 $\frac{1}{4}$
L4618	50	Leads	3 $\frac{3}{4}$	6	4 $\frac{3}{4}$	6 $\frac{3}{4}$	5 $\frac{3}{4}$
L4619	50	Conduit Entry	3 $\frac{3}{4}$	6	6 $\frac{3}{8}$	6 $\frac{3}{4}$	5 $\frac{3}{4}$
L4620	60	Leads	4 $\frac{1}{4}$	6	4 $\frac{3}{4}$	6 $\frac{3}{4}$	6 $\frac{3}{4}$
L4621	60	Conduit Entry	4 $\frac{1}{4}$	6	6 $\frac{3}{8}$	6 $\frac{3}{4}$	6 $\frac{3}{4}$
L4622	70	Leads	5 $\frac{1}{4}$	6	4 $\frac{3}{4}$	6 $\frac{3}{4}$ × 4	9
L4623	70	Conduit Entry	5 $\frac{1}{4}$	6	6 $\frac{3}{8}$	4 × 6 $\frac{3}{4}$	9
L4624	80	Leads	6	6	4 $\frac{3}{4}$	6 $\frac{3}{4}$ × 4	10 $\frac{1}{4}$
L4625	80	Conduit Entry	6	6	6 $\frac{3}{8}$	4 × 6 $\frac{3}{4}$	10 $\frac{1}{4}$
L4626	90	Leads	6 $\frac{3}{4}$	6	4 $\frac{3}{4}$	6 $\frac{3}{4}$ × 4	11 $\frac{1}{4}$
L4627	90	Conduit Entry	6 $\frac{3}{4}$	6	6 $\frac{3}{8}$	4 × 6 $\frac{3}{4}$	11 $\frac{1}{4}$
L4628	100	Leads	5 $\frac{1}{2}$	9	4 $\frac{3}{4}$	9 $\frac{3}{4}$ × 4	12 $\frac{1}{4}$
L4629	100	Conduit Entry	5 $\frac{1}{2}$	9	6 $\frac{3}{8}$	9 $\frac{3}{4}$ × 4	12 $\frac{1}{4}$
L4630	120	Leads	6	9	4 $\frac{3}{4}$	9 $\frac{3}{4}$ × 4	13
L4631	120	Conduit Entry	6	9	6 $\frac{3}{8}$	9 $\frac{3}{4}$ × 4	13
L4633	140	Conduit Entry	6 $\frac{3}{4}$	9	6 $\frac{3}{8}$	9 $\frac{3}{4}$ × 4	14 $\frac{3}{4}$

L4008—L4020 Made in Holland. * Does not include $\frac{1}{2}$ " long stud on L4008/10/13 or terminals and discharge resistor on range L4008—L4020.



The capacitors above are for shunt connection on 50/60 ~. supplies of up to 275V. only.

MERCURY PRINTING LAMPS



Mercury vapour lamps have many applications in photo-chemical processes, diazo printing being one of the most familiar.

For high speed continuous printing, Philips tubular mercury vapour lamps type HOGK, having a quartz envelope or type HOKI, having a quartz burner with integral jacket, are most suitable.

The HOGK lamps satisfy many requirements but HOKI lamps are in demand where their higher wattage loading per unit length leads to higher efficiency.

A new development is the "Q" type quartz, which allows higher speeds than glass lamps, but being non-ozone forming means that no jackets are necessary. These have the same dimensions as the equivalent rating HOGK type.

For photocopying, plate making, and photolitho processes, the Philips Repro lamp type MBR/U, specifically designed for the printing industry, is particularly suitable. The bulb is specially shaped, the combination of internally silvered reflector and granulated front resulting in a uniformly even beam of light. In addition to its high efficiency in the visible range there is copious emission of long wave Ultra Violet radiation to which photographic and reproduction materials are most sensitive.



Lamp Type and Rating	Dimensions (mm.)		Circuit Watts	*Life (Hrs.)	Lamp Cap	Finish	Wt. (Ozs.)
	O.L.	Dia.					
HOG 400w	422	26	425	1000	Special Contact each end	Glass	4½
HOGK 700w	573	27	768	"		Quartz	7½
HOGK 2000w	1367	27	2120	"		Quartz	12½
HOK 400w	390	16	425	"		Quartz	5
HOKI 1200w	520	35	1260	"	"	†	13
HOKI 2000w	590	50	2120	"	"	†	34½
HOKI 3000	1490	35	3170	"	"	†	47½
HOK 700	573	27	768	"	"	† Quartz	8
HOK 2000	1367	27	2120	"	"	"	13½
MBR/U 125	232	108	138	1500	E.S.	Internal Reflector Granular Front	6½

* Based on 4-hour switching cycle.

† Special quartz. Does not allow ozone formation.

‡ Quartz burner with integral special glass jacket.

Notes.—The general lighting lamps MB/U 400w and MB/U 1000w are sometimes used for printing.

Made in Holland.



PRINTING LAMP AUXILIARY EQUIPMENT

Philips Mercury Vapour Printing Lamps are operated on A.C. mains supplies in conjunction with the ballasts detailed below. These units are all of the tapped, low power factor type, and power factor correction to 0.85 lagging or higher, is obtained by the use of the appropriate capacitor. Ballasts listed below are for 50 c/s. Details for other supplies on request.

Cat. No.	Lamp Type and Rating	Voltage Range	*Mains Running Current Amps	Capacitor Required	Dimensions (ins.)			Fixing Centres (ins.)
					Length	Width	Height	
L4125	125w MBR/U	200/250	0.6	L4008	5	2 $\frac{11}{16}$	3 $\frac{1}{2}$	6 $\frac{3}{8}$
L4400	400w MB/U	200/250	3.2	L4020	6 $\frac{3}{4}$	4 $\frac{17}{32}$	—	6 $\frac{3}{8}$ x 6 $\frac{3}{4}$ †
	or 400w HOG				—	—	—	—
L4180	400w HOK	200/250	—	—	—	—	—	—
L4198	700w HOG	200/250	4.1	L4625	12 $\frac{5}{8}$	7 $\frac{1}{4}$	5 $\frac{3}{8}$	11 $\frac{1}{8}$ x 5 $\frac{3}{8}$
L4199	700w HOGK							
	700w HOQ	200/250	4.1	L4625	10 $\frac{5}{8}$	5 $\frac{3}{8}$	7 $\frac{1}{4}$	7 $\frac{1}{2}$ x 4 $\frac{1}{8}$
‡L4220	700w HOG			2 x L4645	9 $\frac{5}{8}$	6 $\frac{3}{10}$	6 $\frac{9}{16}$	8 $\frac{7}{16}$ x 3 $\frac{3}{4}$
	or 700w HOQ	200/250	4.0					
L4206	1200w HOK	200/230	6.8	L4625	12 $\frac{1}{4}$	6 $\frac{1}{2}$	9 $\frac{1}{8}$	11 $\frac{1}{2}$ x 10 $\frac{3}{4}$
‡L4230	1200w HOK	200/250	6.6	L4644	10 $\frac{3}{4}$	6 $\frac{5}{8}$	7 $\frac{7}{8}$	9 $\frac{1}{8}$ x 4 $\frac{1}{2}$
L4201	2000w HOG	200/250	11	L4633	16 $\frac{3}{4}$	8 $\frac{1}{2}$	7 $\frac{1}{4}$	9 $\frac{7}{8}$ x 11 $\frac{3}{4}$
L4203	or 2000w HOK							
	or 2000w HOGK	200/250	11	L4633	13 $\frac{3}{8}$	7	9	5 $\frac{3}{4}$ x 10 $\frac{3}{4}$
‡L4240	2000w HOG							
	or 2000w HOGK	200/250	10.5	2 x L4643	13 $\frac{13}{16}$	10 $\frac{13}{16}$	8 $\frac{3}{16}$	10 $\frac{1}{4}$ x 9 $\frac{13}{16}$
L4211	3000w HOK							
	or 2000w HOK	200/230	17	{ L4629† L4633 }	17 $\frac{1}{2}$	12 $\frac{1}{4}$	11	11 $\frac{1}{2}$ x 11 $\frac{1}{4}$
‡L4249	3000w HOK	200/250	16	2 x L4644	15 $\frac{9}{16}$	11 $\frac{7}{8}$	8 $\frac{3}{16}$	12 x 10 $\frac{9}{16}$

* Note.—Running currents at mains voltages of 225v with power factor correction.

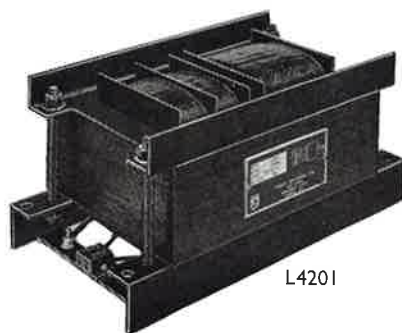
† Length of fixing strap.

‡ CONSTANT WATTAGE TRANSFORMERS.

Constant wattage circuits are special and the capacitors are essential in the circuitry. Advice gladly given.

CAPACITORS FOR CONSTANT WATTAGE CIRCUITS

Cat. No.	Capacitance Mfd.	Maximum Voltage	Dimensions (ins.)		
			L.	W.	H.
L4643	7.6 ± 5%	875	5 $\frac{1}{8}$	3 $\frac{1}{2}$	10
L4644	8.6 ± 5%	875	5 $\frac{1}{8}$	3 $\frac{1}{2}$	10
L4645	23 ± 5%	250	5 $\frac{1}{8}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$



Prices on application.

It should be noted that no responsibility can be taken for lamps which are operated on gear other than that specified above or on gear that has not previously been approved.

SPECTRAL LAMPS



Philips spectral lamps have been developed for laboratory use, and they are generally employed in refractometry, polarimetry, spectroscopy, etc.

The extensive range of lamps which are interchangeable give a wide choice of spectral lines.

The average life of spectral lamps is 100 hours except for mercury and sodium types where the average life is 1000 hours.

Operating position—Vertical, cap down.

Lamp cap—E.S.



Lamp Cat. No.	Watts	Element	Dimensions (mm.)			Arc Length	Envelope
			O.A.L.	Dia.	L.C.L.		
93098E/He	45	Helium	170	30	110	30-40	Glass
93099E/Ne	25	Neon					
93100E/Ar	15	Argon					
93101E/Kr	15	Krypton					
93102E/Xe	10	Xenon					
93103E/K	10	Potassium					
93104E/Rb	15	Rubidium					
93105E/Cs	10	Caesium					
93122E/Na	15	Sodium					
93123E/Hg	15	Mercury— low pressure	170	30	110	30-40	Glass
93136E/Hg	90	Mercury— high pressure					
93145E/Hg/ Cd/Zn	90	Mercury, Cad- mium, Zinc					
93162E/Cd	25	Cadmium					
103137E/Zn	25	Zinc					
93106E/Zn	25	Zinc	170	30	110	30-40	Quartz
93107E/Cd	25	Cadmium					
93109E/Hg	15	Mercury— low pressure					
93110E/Hg	90	Mercury— high pressure					
93146E/Hg /Cd/Zn	30	Mercury, Cad- mium, Zinc					
103778E/In	25	Indium					

The lamps are used in conjunction with a standard 140w sodium leak-transformer.

For transformer details please see sheets A54 & A55.

Made in Holland.



NEON VOLTAGE INDICATORS

Q.5005

This indicator, fitted with the appropriate neon lamp, is suitable for 100-750V. supplies A.C. or D.C., and indicates polarity on D.C.

It consists of two insulated casings connected by a 39" length of tough cable and fitted with safety collars. The larger casing houses a neon indicator which has a resistor built into each cap; one electrode is stamped + and is connected to the flex, while the other is connected to the probe.

To use, bring each probe into contact with one side of the supply. If the supply points are "live," the neon lamp will glow. On D.C., the + sign glows red if the probe is in contact with the positive side of the supply; if negative, the unstamped electrode glows.

	<i>For Supplies</i>	<i>Cat. No.</i>
*Replacement neon lamps	110-240V.	4017 T
	200-750V.	4021 T



*Cat. No. Q.5005 Neon Voltage and Polarity Indicator.



Q.5002
Screwdriver
Indicator.

Q.5002

This screwdriver indicator, fitted with a clip for pocket carrying, is for use on A.C. or D.C. 90/380V.

A screwdriver blade of high grade nickel plated vanadium steel is incorporated in a transparent plastic body which houses a replaceable neon lamp, one terminal of which is connected to the eyelet on the cap. The other terminal is connected (through a high resistance) to the screwdriver blade.

To use, bring the blade into contact with the part of the circuit to be tested, and place finger or thumb on the eyelet. If the test point is "live" the neon lamp will glow.

Note that the indicator signifies potential above earth, so that there will be no result if it is brought into contact with the earthed side of the supply: *both* conductors should be tested.

T.U.V. GERMICIDAL TUBES

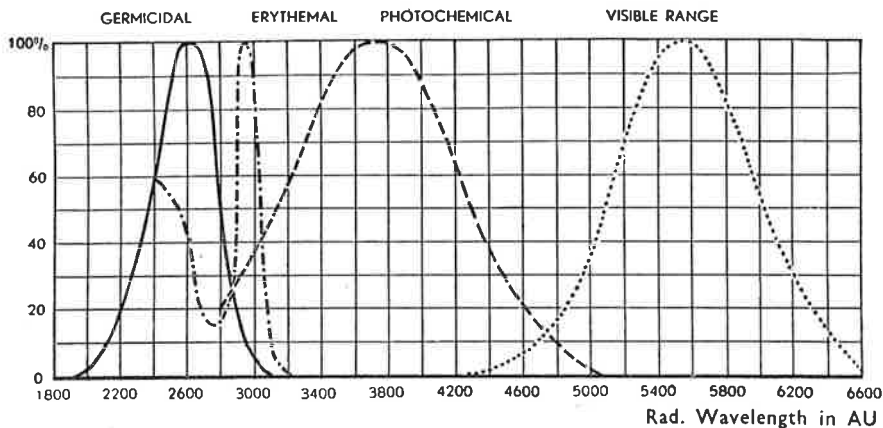


Philips T.U.V. Germicidal Tubes are low pressure mercury vapour lamps resembling standard 15 and 30W. fluorescent tubes. They do, however, have no phosphor and are made from a special glass which transmits freely the 2537 Å line (close to the peak of germicidally effective wavelengths). These wavelengths effectively control moulds, yeasts, viruses and bacteria. Special fittings are available for the application of these tubes and are listed in the Fittings section. Technical advice on the countless uses of this equipment is always available without obligation from Philips.



Micro-organisms vary in the amount of U.V. necessary to prevent their reproduction. A generalised table is given below, showing their susceptibility to the energy emitted from T.U.V. tubes:—

Bacteria	0.5–200mw seconds/cm ² (most species inactivated by 10–12mw seconds/cm ²).
Yeasts	4.3–27mw seconds/cm ² (Brewers' yeast least susceptible).
Moulds (Fungi)	100–1000mw seconds/cm ² .
Protozoa	190–300mw seconds/cm ² .
Algæ	1000–2000mw seconds/cm ² .
Viruses	Susceptibility usually comparable to commoner bacteria.



Made in Holland.



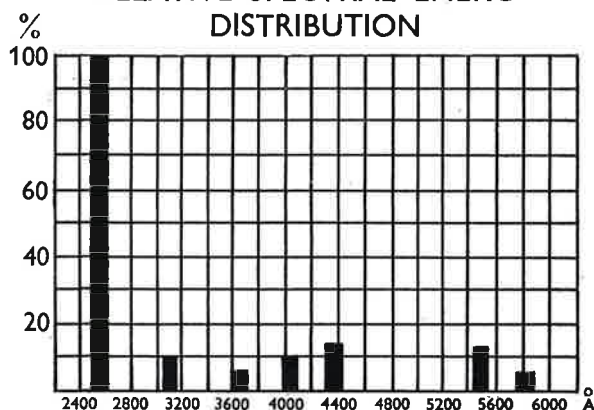
T.U.V. GERMICIDAL TUBES

LAMP DATA				6w	15w	30w
Lamp Voltage	...	...	V	200/250*	53	100
Lamp Current	...	...	A	0.027	0.33	0.37
Output 2537 Å	...	...	W	0.085	3.5	8.0
Intensity $\mu\text{w}/\text{cm}^2$ at 1m.	...	...		0.85	37	83
Life	...	...	Hrs.	2500	2500	2500
Depreciation	...	...		See Curves		
Ozone Formation	...	...		Nil		
Weight	...	...	Gm.	36	75	185
Spectrum	...	...		See Graph		
Burning Position	...	...		UNIVERSAL		
Caps	...	...		E.S.	Med. Bi-pin	
Operating Gear	...	...		None	See 15 & 30w MCF/U	

CAUTION ! These lamps should not be viewed directly.

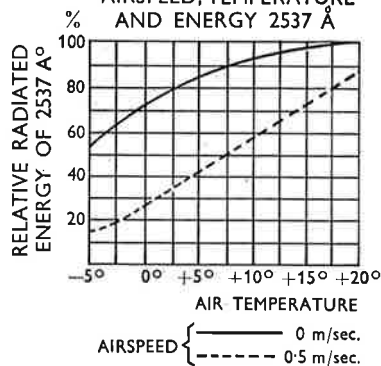
* No Ballast required.

RELATIVE SPECTRAL ENERGY DISTRIBUTION



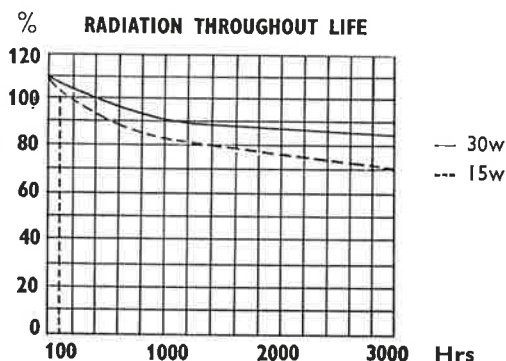
ABSOLUTE SPECTRAL ENERGY DISTRIBUTION	2537	3130	3655	4047	4358	5461	5770	Å°
TUV 6 W	0.085	NO BACTERICIDAL EFFECT						W
TUV 15 W	3.5							W
TUV 30 W	8.0							W

RELATION BETWEEN : AIRSPEED, TEMPERATURE AND ENERGY 2537 Å



Made in Holland.

T.U.V. GERMICIDAL TUBES



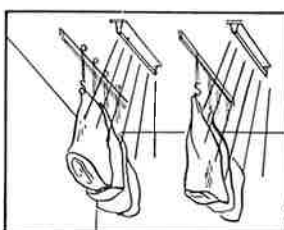
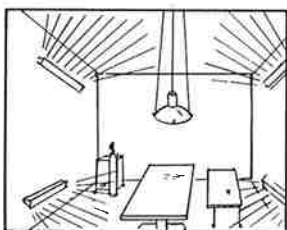
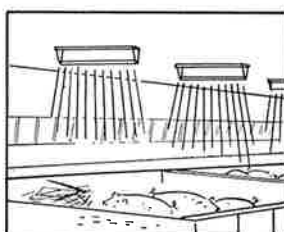
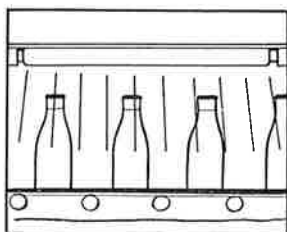
RADIATION INTENSITY RELATED TO DISTANCE

Distance in cm. from tube		20	30	40	50	100	200	300	400	500
Radiation intensity in microwatts/cm ²	T.U.V. 30w	745	484	337	250	83	20.5	9.1	5.1	3.9
	T.U.V. 15w	464	348	232	148	37	9.2	4.1	2.3	1.5
		Approx.					Approx.			

Two main methods of application are used: upper air irradiation and direct irradiation. Specialised advice should be sought before installation. Amongst the countless applications are the following:—

- * Operating Theatres.
- * Doctors' Waiting Rooms.
- * Antibiotic Plants.
- * Meat Cold Stores.
- * Butchers' shops.
- * Bottling plants.
- * Breweries.
- * Pig Farms.
- * Pie Factories.
- * Bakeries.
- * Sterile Cabinets.
- * Canning Factories, etc., etc.

SKETCHES OF TYPICAL APPLICATIONS





OZ4 w OZONE LAMP

This small lamp is a special germicidal type having an envelope designed to transmit the 1850 Å line. This produces ozone, which is a powerful deodoriser.

Small in size and economical, this U.V. source is ideal for incorporation in equipment.

LAMP DATA

Lamp Watts	w	4
Starting Volts	v	24
Running Volts	v	10/12
Running Current	a	0.35
Life	Hrs.	4000
Ozone Life	Hrs.	1500
Weight	gm.	10
Cap		SES
Ozone Output		
	mg/hr.	3
2537 Å	w	0.1

BALLAST DATA

Mains Voltage	v	200/250
Mains Current	a	0.05
Watts Losses	w	7
Total Watts	w	11
Power Factor		0.95
Weight	gm.	500
Cat. No. (inc. Lampholder)		L4000

NOTE.—For detail of multiple circuits seek Philips' advice.



APPLICATIONS

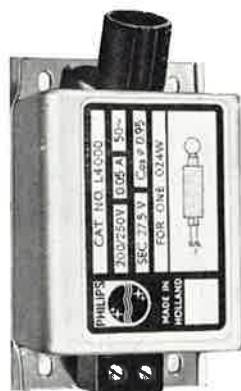
- * Toilets.
- * Kitchens.
- * Bathrooms.
- * Tumbler Dryers.
- * Air Conditioners.
- * Fan Heaters.
- * Butchers, etc., etc.

LAMP Dimensions

O.A. Length	59 mm.
Max. Diameter	34 mm.

BALLAST Dimensions

O.A. Length	118 mm.
Width	64 mm.
Depth	45 mm.



CAUTION! Like TUV Tubes this lamp should not be viewed directly.

Made in Holland.

**MOTOR CAR,
VEHICLE,
MOPED, SCOOTER,
and
CYCLE BULBS**



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MOTOR CAR BULBS



HEADLAMPS (SINGLE FILAMENT) GASFILLED

Bulb No.	V	W	Cap	Filament
7008†*	6	15	S.C.C.	Axial S.C.
109	6	24	S.B.C.	Axial S.C.
106	6	24	S.C.C.	Axial S.C.
111	6	36	S.B.C.	Axial S.C.
108	6	36	S.C.C.	Axial S.C.
611	6	48	S.B.C.	Axial S.C.
610	6	48	S.C.C.	Axial S.C.
4	12	24	S.B.C.	Axial S.C.
4215B	12	36	B.C.	Axial S.C.
5	12	36	S.B.C.	Axial S.C.
2	12	36	S.C.C.	Axial S.C.
27	12	48	S.B.C.	Axial S.C.
23	12	48	S.C.C.	Axial S.C.
122	24	24	S.B.C.	Axial C.C.
622	24	36	B.C.	Axial C.C.
123	24	36	S.B.C.	Axial C.C.
140	24	48	S.B.C.	Axial C.C.
128	24	60	S.B.C.	Axial C.C.



* Made in Holland

† For Diana and Bella Combinette.

First item in Standard Packs of 10 ,remainder standard packs of 12.



MOTOR CAR BULBS

ORDINARY DOUBLE FILAMENT HEADLAMPS

Bulb No.	V	W	Cap	Filament
168	6	24/24	S.B.C.	Inverted 'V'
169	6	30/30	S.B.C.	Inverted 'V'
170	6	36/36	S.B.C.	Inverted 'V'
672	6	36/36	3-pin D.C.	Transverse S.C.
171	12	36/36	S.B.C.	Transverse S.C.
194	24	36/36	S.B.C.	Transverse C.C.



Standard pack of 12 bulbs.

GASFILLED SIDE AND TAIL LAMPS

Bulb No.	V	W	Cap	Diameter mm.	Filament
204	6	3	S.B.C.	18	Bow
200	6	3	S.C.C.	18	
988	6	3	M.C.C.	15	
206	6	6	S.B.C.	18	
205	6	6	S.C.C.	18	
951	6	6	M.C.C.	15	
222	12	4	M.C.C.	15	
209	12	6	S.B.C.	18	
207	12	6	S.C.C.	18	
989	12	6	M.C.C.	15	
637	16	6	S.B.C.	18	
638	24	6	B.C.	18	
150	24	6	S.B.C.	18	
149	24	6	S.C.C.	18	
4435N	24	6	M.C.C.	15	
4440W*	24	6	S.B.C.	18	
4440N*	24	6	S.C.C.	18	



* Specially reinforced construction to withstand severe vibration.

Standard pack of 12 bulbs.

BRITISH PREFOCUS HEADLAMPS—Single Filament

Bulb No.	V	W	Cap Contact	Filament
172	6	36	Single	Axial S.C.
173	6	36	Single	Transverse S.C.
162	12	36	Single	Axial S.C.
177	12	36	Double	Axial S.C.
323	12	48	Single	Transverse S.C.
185	12	48	Single	Axial C.C.
331	24	44	Double	Axial C.C.
330	24	44	Double	Transverse C.C.
606	24	44	Single	Transverse C.C.



Standard pack of 12 bulbs.

MOTOR CAR BULBS



BRITISH PREFOCUS HEADLAMPS—Double Filament

Bulb No.	V	W	Cap Contact	Filament
166	6	24/24	Double	Vertical Dip S.C.
312	6	30/24	Double	Vertical Dip S.C.
373	6	30/24	Double	Left Dip S.C.
306	6	36/36	Double	Left Dip S.C.
356	6.4	45/35	Double	Left Dip S.C.
354	12	42/36	Double	Left Dip S.C.
358	12	44/38	Double	Left Dip
302	12	48/48	Double	Left Dip S.C.
414	12	50/40	Double	Left Dip (a)
404	12	60/36*	Double	Left Dip S.C.
359	24	44/38	Double	Left Dip C.C.
332	24	44/38	Double	Right Dip C.C.



Standard pack of 12 bulbs.

(a) With screened dip filament.

Left Dip=Right Hand Drive for U.K. and Sweden.

Right Dip=Left Hand Drive for Continental Countries excepting Sweden.

* 38 mm. bulbs only.

STOP LAMPS—Single Filament

Bulb No.	V	W	Cap	Dia. mm.	Filament
4304W	6	18	S.B.C.	25	Transverse
317	6	18	A.S.C.C.	25	
4311X	12	21	S.B.C. (Stagg)	25	
335	12	21	A.S.B.C.	25	
382	12	21	A.S.C.C.	25	
4314X	24	18	S.C.C.	25	
338	24	18	S.B.C.	25	
333	24	24	A.S.B.C.	25	
339	24	24	A.S.C.C.	25	



Stop and Tail

Bulb No.	V	W	Cap	Dia. mm.	Filament
383	6	6/18	S.B.C.	25	Double Transverse
384	6	6/18	S.B.C. (Stagg)	25	
361	12	6/18	S.B.C. (Stagg)	25	
381	12	6/21	S.B.C.	25	
380	12	6/21	S.B.C. (Stagg)	25	
692	24	6/24	S.B.C.	25	
334	24	6/24	S.B.C. (Stagg)	25	

Standard pack of 12 bulbs.



INDICATOR LAMPS

Bulb No.	V	W	Cap	Dia. mm.	Filament
640	6	1.8	M.C.C.	11	Bow
990	6	3	M.E.S.	11	
641	6	3	M.C.C.	11	
4687	8	1.6	M.E.S.	11	
280	12	1.5	E.5/8	7.5	
987	12	2.2	M.E.S.	11	
643	12	2.2	M.C.C.	11	
984	12	3.6	M.E.S.	11	
985	16	3	M.E.S.	15	
647	16	3	M.C.C.	15	
993	24	2.8	M.E.S.	15	
651	24	2.8	M.C.C.	15	
650	24	2.8	M.E.S.	11	
13875*	24	3*	M.E.S.	11	
4702D	32	6	M.E.S.	15	

Bulb No. 13875 in standard packs of 10 bulbs.

Remainder in standard packs of 12 bulbs.

* Made in Holland.

Remainder British Made.





BULBS FOR SCOOTERS & MOPEDS

Bulb No.	Eind No.	V	W	Cap
391	7030	6	15/15	S.B.C. (1 long, 1 short pin)
389	7032	6	15/15	S.B.C. (Staggered Pins)
388	6708	6	15/15	Bosch
—	6715	6	25/25	3-pin D.C.
392	6718	6	25/25	Bosch
393	6728	6	35/35	Bosch
—	12715	12	25/25	3-pin D.C.
394	12718	12	25/25	Bosch



All Made in Holland.

Indicators

Bulb No.	Eind No.	V	W	Cap
—	6913	6	2	M.C.C. BA9S
—	12913	12	2	M.C.C. BA9S
—	6875	6	2	M.E.S. E10
955	6876*	6	2	M.E.S. E10/19
956	12876*	12	3	M.E.S. E10/19



* For Bella Scooter,

All Made in Holland.

Stop and Rear—Festoons

Bulb No.	Eind No.	V	W	Length	Diameter
—	6855	6	1.5	Festoon 31	× 6 mm.
—	6914	6	3	Festoon 38	× 7.5 mm.
262	6842	6	3	Festoon 31	× 8 mm.
263	12842	12	3	Festoon 31	× 8 mm.
264	6866	6	10	Festoon 44	× 15 mm.
265	12866	12	10	Festoon 44	× 15 mm.
—	12854	12	10	Festoon 39	× 11 mm.
266	6850	6	15	Festoon 44	× 15 mm.
267	12850	12	15	Festoon 44	× 15 mm.



All Made in Holland.

Standard pack of 10 bulbs, except 6855 which is in standard pack of 5 bulbs.

Bulbs for Troublelite No. 7916

Eind No.	V	W	Cap	Diameter
6826	6	5	M.E.S.	15 mm.
12826	12	6	M.E.S.	15 mm.
13826	24	6	M.E.S.	15 mm.

British Made and Made in Holland.

Standard packs of 10 bulbs.

Made in Holland.

Standard packs of 12 bulbs.

British Made.

VEHICLE INTERIOR LIGHTING—VACUUM

(Suitable for Buses, Coaches, Yachts, etc.)



V	W	Cap	Dia. mm.	Shape	Finish
12	12	B.C. or S.B.C.	38	Round	Clear
12	12	S.B.C.	18	Tubular	Clear
24	12	S.B.C. or B.C.	38 or 50	Round	Clear
24	12	S.B.C.	18	Tubular	Clear
24	15	S.B.C. or B.C.	38	Round	Clear
24	20				
12	12	S.B.C. or B.C.	38	Round	Pearl
12	12	B.C.	50	Round	Pearl
12	24	S.B.C. or B.C.	38	Round	Pearl
24	12	S.B.C. or B.C.	38 or 50	Round	Pearl
24	15	B.C.	38	Round	Pearl
24	20	S.B.C. or B.C.	38	Round	Pearl
24	12*	S.B.C. or B.C.	35	Round	Daylight



* For illuminating Destination Boards on Buses.
Standard packs of 12 bulbs.

CYCLE HEADLAMPS—VACUUM

V	Amps	Cap	Diameter mm.
6	.3	S.C.C.	18
6(a)	.2	M.E.S.	15
6(a)	.25	M.E.S.	15
6(a)	.3	M.E.S.	15
6(a)	.45	M.E.S.	15
6(a)(G.F.)	.5	M.E.S.	15(c)
6(b)(Vac.)	.5	M.E.S.	15(d)
6	.5	S.C.C.	18



CYCLE REARLAMPS

6	.05	M.E.S.	11(c)
6	.1	M.E.S.	11(c & d)



(a) In Clear Glass and Granulated.

(c) For the Miller Dynamo Set.

(b) In Granulated Glass only.

(d) For the Lucas Dynamo Set.

All British Made.

Standard packs of 10 bulbs.



AUXILIARY LIGHTING

Bulb No.	Eind No.	V	W	Cap	Length mm.	Dia. mm.	Use
282	6828	6	.6	M.C.C. with Side Contacts	20	7½	Speedometer Ignition & Indicator Lighting
281	6829	6	1.2				
283	12829	12	2				
	13829	24	3				



All Made in Holland.
Standard packs of 10 bulbs.

CADMIUM YELLOW HEADLAMPS

Single Filament

Bulb No.	V	W	Cap	Filament
685	12	48	Prefocus S.C.	Axial C.C.
600	12	48	Prefocus S.C.	Transverse C.C. or C.C.
661	12	48	Bosch S.C.	Axial S.C.



Double Filament

602	6	30/24	Prefocus	Vertical Dip
603	12	42/36	Prefocus	Left Dip
604	12	42/36	Prefocus	Right Dip



Left Dip=Right Hand Drive for U.K. and Sweden.

Right Dip=Left Hand Drive for Continental Countries excepting Sweden.

Made in Holland and British Made.

Standard packs of 12 bulbs.

MARCHAL BULBS



Bulb No.	Marchal No.	V	W	Cap	Filament	Finish
675	682B	6	48	3-pin Centre Contact	Axial	Clear
676	682J	6	48	3-pin Centre Contact	Axial	Cadmium Yellow
616	1282B	12	48	3-pin Centre Contact	Axial	Clear
683	1282J	12	48	3-pin Centre Contact	Axial	Cadmium Yellow
684	2482B	24	48	3-pin Centre Contact	Axial	Clear



All Made in Holland.
Bulbs approved by Marchal Distributors.
Standard pack of 10 bulbs,

HOODED FILAMENT HEADLAMPS—DUPLO

Bulb No.	Eind No.	V	W	Cap	Finish
—	6728/86	6	35/35	Bosch	Cad. Yellow
—	6725	6	35/35	3-pin D.C.	Clear
—	6725/86	6	35/35	3-pin D.C.	Cad. Yellow
378	6741	6	45/40	Prefocus	Clear
679	6745	6	45/40	3-pin D.C.	Clear
395	12728	12	35/35	Bosch	Clear
—	12728/86	12	35/35	Bosch	Cad. Yellow
—	12748	12	45/40	Bosch	Clear
—	12748/86	12	45/40	Bosch	Cad. Yellow
681	12745	12	45/40	3-pin D.C.	Clear
682	12745/86	12	45/40	3-pin D.C.	Cad. Yellow
370	12741	12	45/40	Prefocus	Clear
371	12741/86	12	45/40	Prefocus	Cad. Yellow
336	13741	24	45/40	Prefocus	Clear
341	13741/86	24	45/40	Prefocus	Cad. Yellow



All Made in Holland.

Standard pack of 10 bulbs.



DUPLO-D ASYMMETRIC BEAM

Bulb No.	V	W	Cap	Marchal No.	Finish
423	6	45/40	3-lug P45	663B	Clear
424	6	45/40	3-lug P45	663J	Cadmium Yellow
410	12	45/40	3-lug P45	1263B	Clear
411	12	45/40	3-lug P45	1263J	Cadmium Yellow
429	24	50/50	3-lug P45	2463B	Clear
428	24	50/50	3-lug P45	2463J	Cadmium Yellow



Standard packs of 10 bulbs.
Made in Holland.

FESTOON LAMPS—TUBULAR

Bulb No.	V	W	Length ± 1 mm.	Diameter ± 1 mm.
255	6	3	35.5	7.5
253	6	6	38	11
256	12	3	35.5	7.5
254	12	6	38	11
653	24	6	38	11
260	24	6	44	11



Made in Holland and British Made.

Standard pack of 12 bulbs.

AMERICAN PREFOCUS HEADLAMPS—Clear (for use in Notek equipment)

Bulb No.	V	W	Cap	Filament	Type
667	6	36	S.C.	Transverse	Nearlite
669	6	36	S.C.	Axial	Farlite
668	12	36	S.C.	Transverse	Nearlite
670	12	36	S.C.	Axial	Farlite



Standard packs of 12 bulbs.

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'PHOTOFLUX' FLASHBULBS



Class M flashbulbs are for use with blade shutters at up to 1/30th sec. with 'F' or 'X' synchronization or at all faster speeds with 'M' synchronization.

Class S (PF 100) is for open-flash or slow-speed synchronization where maximum lighting is required.

Class F.P. are for use with fully synchronized focal plane shutters. Blue-coated flashbulbs are for use with daylight type reversal colour materials.

All flashbulbs incorporate the Blue safety-spot. Bulbs in which this has turned Pink should not be used.

FIRING CIRCUIT. 'Photoflux' flashbulbs will fire in a circuit of 3v 0.4a, but for accurate synchronization a minimum of 4.5v 1a is required. If batteries are used it is important to ensure that they are fresh or reasonably fresh, as deterioration may cause late firing or failure. The most reliable method is a battery-capacitor circuit.

FLASHBULB SPECIFICATIONS

PF TYPE	PF 1	PF 5	PF 38	PF 60	PF 100	PF 24	PF 45	PF 1B	PF 60/97	PF 100/97	PF 24/97	PF 45/97
Class	M	M	M	M	S	FP	FP	M	M	S	FP	FP
Colour of Bulb ...	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Blue	Blue	Blue	Blue	Blue
Total output (lumen secs.)	7,500	18,000	30,000	62,000	95,000	15,000	45,000	7,500	38,000	57,000	9,000	27,000
Total duration(m. sec.)	20	24	30	35	40	—	—	20	35	40	—	—
Time to Peak (m. sec.)	18	18	20	20	30	—	—	18	20	30	—	—
Duration above half-peak (m. sec.) ...	8	12	16	20	22	25	30	8	20	22	25	30
Colour temp. °Kelvin	3,800	3,800	3,800	3,800	3,800	3,800	3,800	5,500	5,500	5,500	5,500	5,500
Voltage range ...	3-30	3-30	3-30	3-30	3-30	3-30	3-30	3-30	3-30	3-30	3-30	3-30
Cap	Cap-less	Cap-less	E.S.	E.S.	E.S.	S.C.C.	E.S.	Cap-less	E.S.	E.S.	S.C.C.	E.S.
Bulb diam. (mm.) ...	16	22	50	60	70	30	60	16	60	70	30	60
Overall length (mm.)	45	45	102	115	122	73	115	45	115	112	73	115
List Price	8d.	1/0	1/6	1/8	2/6	1/5	1/10	9d.	1/10	2/9	1/7	2/0

5245 Adaptor—1/6 each.



PF 1

PF 24

PF 60

PF 100

PF 1/B

5245 Adaptor

PF 1 Capless Flashbulbs made in Great Britain, remainder made in Holland.



'PHOTOFLUX' FLASHBULBS

GUIDE NUMBERS FOR MONOCHROME PHOTOGRAPHY

(i.e. f no. \times flash/subject distance in feet)

Type	Shutter Speed in secs.	Tungsten Film Speed					
		ASA	12-20	25-40	50-80	100-160	200-320
		BS°	22-24	25-27	28-30	31-33	34-36
PFI	1/25-1/30 (X)	75		110	150	220	300
	1/50-1/125 (M)	55		75	110	150	220
	1/200-1/300 (M)	40		55	75	110	150
	1/400-1/500 (M)	30		40	55	75	110
PF5	1/25-1/30 (X)	115		165	230	330	460
	1/50-1/125 (M)	85		115	165	230	330
	1/200-1/300 (M)	55		85	115	165	230
	1/400-1/500 (M)	42		55	85	115	165
PF38	1/25-1/30 (X)	150		215	300	430	600
	1/50-1/60 (M)	125		180	250	360	500
	1/100-1/125 (M)	90		125	175	250	350
	1/200-1/300 (M)	65		90	125	175	250
	1/400-1/500 (M)	45		65	85	125	175
PF60	1/25-1/30 (X)	215		300	430	600	860
	1/50-1/60 (M)	180		250	360	500	720
	1/100-1/125 (M)	125		175	250	350	500
	1/200-1/300 (M)	90		125	175	250	360
	1/400-1/500 (M)	65		85	125	175	250
PF24	1/50-1/60	70		100	140	200	280
	1/100-1/125	50		70	100	140	200
	1/200-1/300	35		50	70	100	140
	1/400-1/500	25		35	50	70	100
	1/800-1/1000	18		25	35	50	70
PF45	1/50-1/60	100		140	200	280	400
	1/100-1/125	70		100	140	200	280
	1/200-1/300	50		70	100	140	200
	1/400-1/500	35		50	70	100	140
	1/800-1/1000	25		35	50	70	100
PF100	1/25-1/30 (X)	270		380	540	760	1080
	1/50-1/60 (M)	215		300	430	600	860

'PHOTOFLUX' FLASHBULBS



FLASH AND COLOUR PHOTOGRAPHY

Reversal colour materials: Artificial light types are balanced for 'Argaphoto' or 'Photolita' lamps and the daylight type for average sunlight and do not allow for any great variations in colour temperature of the light source. With daylight type reversal material the blue flashbulbs are used, or when supplementing daylight with flash. Clear flashbulbs can be used with Type A reversal film with the manufacturers' recommended filter over the camera lens, or with Type F film without a filter.

GUIDE NUMBERS

for Colour Photography with Blue flashbulbs.

Type	Exposure time in secs.	Speed Index						
		ASA10-12 BS° 21-22 DIN° 11-12 Sch° 22-23	16-20 23-24 13-14 24-25	25-32 25-26 15-16 26-27	40-50 27-28 17-18 28-29	64-80 29-30 19-20 30-31	100-125 31-32 21-22 32-33	160-200 33-34 23-24 34-35
PF1B	1/25-1/30 (X)	42	52	65	85	105	130	170
	1/50-1/125 (M)	32	42	52	65	85	105	130
	1/200-1/300 (M)	—	30	38	48	60	75	95
	1/400-1/500 (M)	—	—	26	32	42	52	70
PF60/97	1/25-1/30 (X)	95	125	155	190	250	310	380
	1/50-1/60 (M)	80	105	125	160	210	250	320
	1/100-1/125 (M)	55	75	90	110	150	180	220
	1/200-1/300 (M)	40	52	62	80	105	125	160
	1/400-1/500 (M)	28	37	45	55	75	90	110
PF24/97	1/50-1/60	30	40	50	65	80	100	130
	1/100-1/125	25	30	40	50	65	80	100
	1/200-1/300	—	25	30	40	50	65	80
	1/400-1/500	—	—	25	30	40	50	60
PF45/97	1/50-1/60	45	55	75	90	100	150	180
	1/100-1/125	40	45	55	75	90	110	150
	1/200-1/300	25	40	45	55	75	90	110
	1/400-1/500	—	25	40	45	55	80	90
PF100/ 97	1/25-1/30 (X)	120	150	180	240	300	360	480
	1/50-1/60 (M)	95	120	145	190	240	290	380



'PHOTOFLUX' FLASHBULBS

FLASH AND COLOUR PHOTOGRAPHY

Negative colour materials: These are made in artificial and daylight types but permit greater exposure tolerance and colour correction at the positive stage. Type A film can be used with clear flashbulbs without a filter and the daylight type with clear or blue flashbulbs. Mixtures of different colour temperatures cannot be corrected. All guide numbers for colour photography are computed for an average reflector. Actual exposure may vary as much as one *f* stop depending upon the reflector used.

GUIDE NUMBERS

for Colour Photography with clear flashbulbs

Type	Exposure time in secs.	ASA BS° DIN° Sch°	Speed Index							
			10-12	16-20	25-32	40-50	64-80	100-125	160-200	
			21-22	23-24	25-26	27-28	29-30	31-32	33-34	
			11-12	13-14	15-16	17-18	19-20	21-22	23-24	
			22-23	24-25	26-27	28-29	30-31	32-33	34-35	
PF1	1/25-1/30 (X)		42	52	65	85	105	130	170	
	1/50-1/125 (M)		32	42	52	65	85	105	130	
	1/200-1/300 (M)		—	30	38	48	60	75	100	
	1/400-1/500 (M)		—	—	26	32	42	52	65	
PF5	1/25-1/30 (X)		65	80	100	125	170	200	250	
	1/50-1/125 (M)		50	65	80	100	125	170	200	
	1/200-1/300 (M)		30	50	60	65	100	110	130	
	1/400-1/500 (M)		—	30	40	50	65	80	100	
PF38	1/25-1/30 (X)		80	105	120	160	200	240	320	
	1/50-1/60 (M)		70	90	100	140	180	200	280	
	1/100-1/125 (M)		60	70	90	105	140	180	210	
	1/200-1/300 (M)		45	60	80	90	105	140	180	
PF60	1/400-1/500 (M)		35	45	60	70	80	105	140	
	1/25-1/30 (X)		120	160	195	235	310	390	470	
	1/50-1/60 (M)		100	130	150	200	260	310	400	
	1/100-1/125 (M)		70	100	125	170	200	260	340	
PF24	1/200-1/300 (M)		50	70	100	125	170	200	250	
	1/400-1/500 (M)		35	50	80	100	125	170	200	
	1/50-1/60		40	50	65	80	100	125	160	
	1/100-1/125		30	40	50	65	80	100	130	
PF45	1/200-1/300		—	—	30	50	60	65	100	
	1/400-1/500		—	—	—	30	40	50	60	
	1/50-1/60		55	75	90	110	130	180	220	
	1/100-1/125		45	55	75	90	100	130	180	
PF100	1/200-1/300		35	45	55	75	85	100	150	
	1/400-1/500		—	40	45	55	65	80	110	
	1/25-1/30 (X)		170	195	235	340	380	470	680	
	1/50-1/60 (M)		150	160	195	300	340	380	600	

PHOTOGRAPHIC LAMPS

(for Monochrome and Colour photography)



'PHOTOLITA' (PHOTOFLOODS)

Type	Watts	Volts	Approximate Dimensions (mm.)		Cap	Obj. Av'ge. Life (Hours)	Price (No. P.T.)	
			Diameter	Overall Length			s.	d.
No. 1	275	110/115, 200/210 220/230, 240/250	60	105	B.C. or E.S.	3	3	—
No. 2	500	110, 115, 200, 210, 220, 230, 240, 250	80	160	*B.C. or E.S.	6	7	6
No. 4	1000	115, 230, 240	110	233	G.E.S.	10	16	6
Reflector Type PF 216 (S.M.)	275	110, 115, 210, 230,	80±1	120±3.5	*B.C. or E.S.	3	12	6
PF 218 (N.M.)	500	240, 250	110±1	153±3.5		6	17	6

* BC caps high voltage only

'ARGAPHOTO' (PHOTOPEARL)

Type	Watts	Volts	Approximate Dimensions (mm.)		Cap	Obj. Av'ge. Life (Hours)	Price (No. P.T.)	
			Diameter	Overall Length			s.	d.
PF 308	500	110, 115, 210, 230, 240, 250	100	175	E.S.	100	22	0
PF 210	1000	115, 230, 240, 250	130	267	G.E.S.	100	30	0
Reflector Type PF 318 (B.M.)	500	115, 210, 230, 240, 250	125±1	165-9	E.S.	100	32	6

Items 1 & 2 made in Great Britain, remainder made in Holland.



PHOTOLITA' No. 1

'PHOTOLITA' N.M.

'ARGAPHOTO' 500w

'ARGAPHOTO' B.M.



EXPOSURE GUIDE FOR BLACK AND WHITE PHOTOGRAPHY

The lamps should be used in a suitable external reflector, the size, shape and surface of which will affect the level of illumination produced. Exposure may be measured with a meter, but when using guide numbers the exposure is based on the distance of the nearest main, or modelling light.

'PHOTOLITA' LAMPS

Tungsten Speed		'PHOTOLITA' No. 1 PHOTOFLLOOD (exposure in seconds)						
ASA	BS°	1/50	1/25	1/10	1/5	1/2	1	2
12- 20	22-24	10	14	20	28	40	56	80
25- 40	25-27	14	20	28	40	56	80	110
50- 80	28-30	20	28	40	56	80	110	150
100-160	31-33	28	40	56	80	110	150	210
220-300	34-36	40	56	80	110	150	210	300

Tungsten Speed		'PHOTOLITA' No. 2 PHOTOFLLOOD (exposure in seconds)						
ASA	BS°	1/50	1/25	1/10	1/5	1/2	1	2
12- 20	22-24	14	20	28	40	56	80	110
25- 40	25-27	20	28	40	56	80	110	150
50- 80	28-30	28	40	56	80	110	150	210
100-160	31-33	40	56	80	110	150	210	300
200-300	34-36	56	80	110	150	210	300	420

'ARGAPHOTO' LAMPS

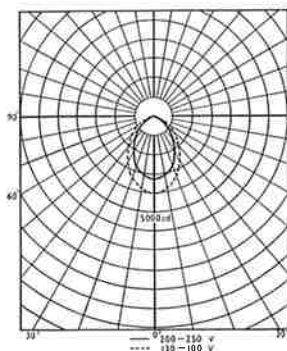
Tungsten Speed		Exposure in Seconds						
ASA	BS°	1/50	1/25	1/10	1/5	1/2	1	2
10- 16	21-23	10	15	20	30	40	60	80
20- 32	24-26	15	20	30	40	60	80	120
40- 64	27-29	20	30	40	60	80	120	160
80-125	30-32	30	40	60	80	120	160	240
160-250	33-35	40	60	80	120	160	240	320

NOTES. (1) The appropriate guide number is found in the column under the shutter speed and on the same horizontal line as the speed group of the film in use, e.g. No. 1 Photoflood, shutter speed 1/10th sec.; film speed 32°; guide number 56.

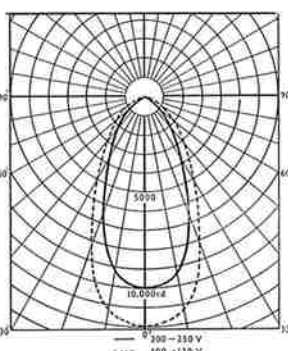
(2) The guide number is the product of the distance in feet between the lamp and the subject, multiplied by the aperture number. Using the combination in (1) above with lamp 10 feet from the subject the aperture is $56/10 = f5.6$.

REFLECTOR TYPE LAMPS

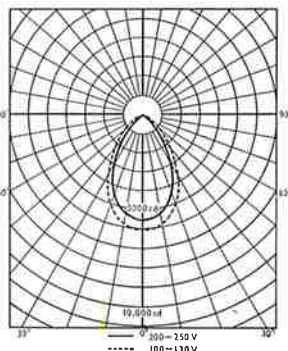
Because of the high efficiency of the internal reflector, these lamps give over twice the illumination of the ordinary lamps used in the average external reflector. If the table above is used for these lamps the exposures should be reduced by one *f* stop.



'PHOTOLITA' S.M.



'PHOTOLITA' N.M.



'ARGAPHOTO' B.M.

EXPOSURE GUIDE FOR COLOUR PHOTOGRAPHY



The light from all 'Photolita' lamps, run at their stated voltage, is balanced for the following reversal colour films:

Kodachrome A

Raycolor A

Exposure calculation must be made with more accuracy than for black and white. An exposure meter should be used by either the 'white card' or incident-light method, rather than a direct reading. The following guide number system can also be used, although the type of external reflector will materially affect exposures.

'PHOTOLITA' No. 1

Speed Index		Exposure in Seconds					
BS°	ASA	1/25	1/10	1/5	1/2	1	2
21	10	10	14	20	28	40	56
23	16	12	17	25	34	50	68
25	25	16	22	32	44	64	88
27	40	20	28	40	56	80	112

'PHOTOLITA' No. 2

Speed Index		Exposure in Seconds					
BS°	ASA	1/25	1/10	1/5	1/2	1	2
21	10	14	20	28	40	56	80
23	16	17	25	34	50	68	100
25	25	22	32	44	64	88	125
27	40	28	40	56	80	112	160

'ARGAPHOTO'

The light from these lamps is balanced for the following reversal type colour materials:

Afagacolor CK

Ferraniacolor A

Ektachrome B

Exposures will be affected by the type of external reflector, but the following guide number table may be used as a basis for average equipment.

Speed Index		Exposure in Seconds					
BS°	ASA	1/25	1/10	1/5	1/2	1	2
20	8	10	14	20	28	40	56
22	12	12	17	25	34	50	98
24	20	16	22	32	44	64	88
26	32	20	28	40	56	80	112
28	50	25	34	50	68	100	135

When using the above tables with the reflector type lamps the exposure should be reduced by one *f* stop.

CINE PHOTOGRAPHY IN COLOUR

The light weight and compactness of the reflector type lamps make them ideal for small portable units, as in indoor cine photography. Using two N.M. lamps on the camera the following exposures have been found for Kodachrome A at 16 f.p.s.

Lamps/Subject Distance	10½ feet	7½ feet	6 feet	5 feet	4 feet	3 feet	2 feet
Aperture	<i>f</i> 1.9	<i>f</i> 2.8	<i>f</i> 3.0	<i>f</i> 3.5	<i>f</i> 4.5	<i>f</i> 5.6	<i>f</i> 8



DARKROOM LAMPS

SAFELIGHTS

These lamps can be used for darkroom illumination without any additional filters or screens. Except for the yellow-green PF 732, which has a ceramic glaze, they are made in natural-coloured glass, and have been scientifically designed to confine the light output to the respective waveband that can be permitted during the handling and processing of modern sensitised materials. Their safety level is high enough to enable them to be used for local illumination in the darkroom with every confidence.



Type	Colour	
PF 704	Dark Red	Handling and processing of Orthochromatic negative material.
PF 744	Dark Green	Handling and processing of Panchromatic negative material.
PF 701	Light Red	Handling and processing of Bromide and Chlorobromide during printing and enlarging. Also suitable as a Pilot light for contact printers.
PF 723	Yellow	Printing and processing of Chloride (Gaslight) contact paper and other less sensitive materials, including Wet Plates.
†PF 732	Yellow-Green	For those who prefer this colour light in processing of Bromide and Chlorobromide papers. Also suitable for X-Ray film.

These lamps are all fitted with B.C. Caps and are available in the following Voltages: 200, 210, 220, 230, 240, 250.

List Price: 6/6 plus P.T. 1/3.

Dimensions. Bulb diameter 60mm. Overall Length 105mm.

† Made in Holland, remainder made in Great Britain.

‘PHOTOCRESCENTA’

(HIGH INTENSITY ENLARGER LAMPS)

The envelope is made by the Flush Opalizing process to give absolutely even lighting. The high intensity filament operating at maximum efficiency produces an ideal light source for photographic enlargers. The printing speed is over three times that given by ordinary lamps of the same wattage.



Watts	Volts	Cap	Approximate Dimensions (mm.)		Obj. Av go. Life (Hours)	PHILIPS Type No.	List Price s. d.	P.T. s. d.
			Diameter	Overall Length				
75	110, 210, 230, 240, 250	B.C.	60	105	100	PF 603B	3 6	8
75	do.	E.S.	60	105	100	PF 603E	3 6	8
150	do.	B.C.	65	117.5	100	PF 605B	4 5	10
150	do.	E.S.	65	117.5	100	PF 605E	4 5	10
275	do.	B.C.	65	117.5	3	PF 607B	5 6	—
275	do.	E.S.	65	117.5	3	PF 607E	5 6	—

Approximate Colour Temperature 75w, 150w, = 3100°K. 275w = 3300°K.

PROJECTOR and STUDIO LAMPS





PROJECTOR LAMPS

Class A.I Lamps are for use in Cinematograph Projectors, Home Cinemas, Film Strip and Slide Projectors, etc.

CLASS A.I

Watts	Volts	Base or Cap	Dimensions (mm.)			Obj. Av'ge Life (Hours)	Notes	Filament Shapes	Lamp Ref.	PHILIPS Type No.	LIST PRICE each s. d.
			Dia. \pm 1	Max Overall Length	L.C.L.						
10	20	Pathé	15	63-6	25 \pm 0.5	50	—	C	A1/72	390C	6 9
10	20	E10	15	63-6	36 nom.	50	—	C	A1/131	390D	6 6
20	20	E10	15	63-6	35.5 \pm 2	100	—	C	A1/158	—	7 6
25	25	B15s	18	54-4	20 \pm 0.5	50	—	C	A1/165	392N	12 6
50	8	P15s	47	96-8	47 \pm 0.5	25	*	S	A1/185	13113C/04	32 0
50	100/115	B15s	25	79-8	35 \pm 1	50	—	O	A1/2	6156N	20 0
50	100/115	B15d	25	79-8	35 \pm 1	50	—	O	A1/19	6156W	21 0
75	200/250	B15s	25	79-8	35 \pm 1	50	—	N	A1/204	6157N	20 0
100	12	P35s	49	95-6	44 nom.	25	*	S	A1/203	13116C/04	38 0
100	30	P28	25	140-14	55.5 \pm 0.5	50	d	H	A1/3	7223C	25 0
100	12	P28	25	140-14	55.5 \pm 0.5	50	—	C	A1/4	6067C	25 0
100	100/115	P28	25	140-14	55.5 \pm 0.5	50	—	O	A1/4	6067C	25 0
100	200/250	P28	25	140-14	55.5 \pm 0.5	50	—	N	A1/4	6067C	25 0
100	100/115	E27	25	135-14	75 \pm 3	50	—	O	A1/23	6067E	25 0
100	200/250	E27	25	135-14	75 \pm 3	50	—	N	A1/23	6067E	25 0
100	12	Pathé	25	90-6	30 \pm 0.5	25	—	C	A1/156	7238X	25 0
100	100/115	B15s	25	81-10	35 \pm 1	50	—	H	A1/21	6158N	20 0
100	200/250	B15s	25	81-10	35 \pm 1	50	—	N	A1/21	6158N	20 0
100	12	B15s	25	81-10	35 \pm 1	25	—	R	A1/186	7238N	18 3
100	12	BA21s 4 pin	25	80-7	29.5 \pm 0.5	25	—	R	A1/193	7909J	18 3
100	100/115	B15d	25	81-10	35 \pm 1	50	—	O	A1/121	6158W	20 0
100	200/250	B15d	25	81-10	35 \pm 1	50	—	N	A1/121	6158W	20 0
100	32	Pathé	25	90-6	30 \pm 0.5	25	—	H	A1/150	7238X	25 0
100	200/250	B22	25	135-14	75 \pm 5	50	—	N	A1/133	6067B	25 0
100	12	B20s	25	90-7	35 nom.	25	—	C	A1/157	7238U	25 0

VOLTAGE RATINGS

Where voltage ranges of 100/115, 200/250 or 100/250 are given under the heading "Volts" lamps are made in the following ratings within the range specified: 100, 110, 115, 200, 210, 220, 230, 240, and 250. In some cases other voltages can be supplied to special order.

Removable Aluminium cups are fitted to lamps having bulb diameters up to and including 38mm., which are for operation vertical base down.

Note.—(d) Indicates filament offset from axis of lamp.

* This lamp is only supplied with silvered finish.

BULB SHAPE—Tubular, with the exception of A1/185 and A1/203 which are mirror/condenser types.

FILAMENT SHAPES. See Sheet C46

OPERATING POSITION—Vertical, base down unless otherwise stated.

BASES AND CAPS illustrated on Sheet C47

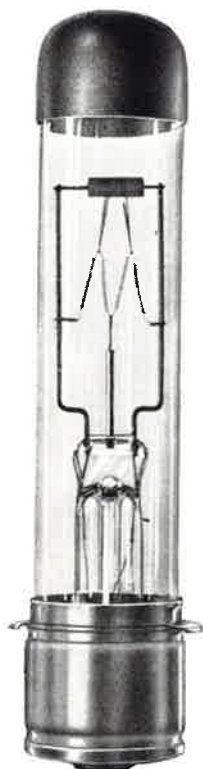
No P.T. on above lamps.

Made in Holland.

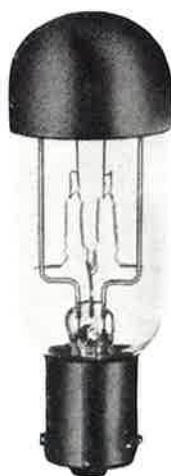
PROJECTOR LAMPS



A1/165 392N
25v 25w



A1/4 6067C
H.V 100w



A1/21 6158 N
H.V. 100w



A1/203 13116C/04
12v 100w



A1/186 7238N
12v 100w



A1/185 13113C/04
8v 50w



PROJECTOR LAMPS

Class A.I Lamps are for use in Cinematograph Projectors, Home Cinemas, Film Strip and Slide Projectors, etc.

CLASS A.I—Contd.

Watts	Volts	Base or Cap	Dimensions (mm.)			Obj. Av'ge Life (Hours)	Notes	Filament Shapes	Lamp Ref.	PHILIPS Type No.	LIST PRICE each s. d.
			Dia. ± 1	Max. Overall Length	L.C.L.						
150	200/250	G17q	29	76-7	33.5 ± 1	25	—	N	A1/182	6284C	30 0
150	115	G17q	29	76-7	33.5 ± 1	25	—	O	A1/182	6284C	30 0
150	115	B15s	25	92-10	35 ± 1	50	—	O	A1/167	13141N	21 9
150	200/250	B15s	25	92-10	35 ± 1	50	—	N	A1/167	13141N	21 9
150	115	B15d	25	92-10	35 ± 1	50	—	O	A1/168	13141W	22 9
150	200/250	B15d	25	92-10	35 ± 1	50	—	N	A1/168	13141W	22 9
150	115	P28	25	140-14	55.5 ± 0.5	50	—	O	A1/175	13140C	25 0
150	200/250	P28	25	140-14	55.5 ± 0.5	50	—	N	A1/175	13140C	25 0
200	100/115	B15s	25	92-10	35 ± 1	25	a	O	A1/26	6166N	27 6
200	200/250	B15s	25	92-10	35 ± 1	25	a	N	A1/26	6166N	27 6
200	100/115	P15d	25	92-10	31.5 ± 0.5	25	a	O	A1/127	6166C	30 0
200	110	Pathé	32	140-14	58 ± 0.5	50	a d	O	A1/81	6132C	30 0
200	15	Pathé	32	130-8	75 ± 0.5	50	a b d	—	A1/105	7201C	35 0
200	115	B15d	25	92-10	35 ± 1	50	—	O	A1/83	133W	30 0
200	200/250	B15d	25	92-10	35 ± 1	50	—	N	A1/83	133W	30 0
250	50	E27	32	135-14	75 ± 3	50	—	J	A1/14	7217E	31 6
250	100/115	E27	32	135-14	75 ± 3	50	—	O	A1/14	6070E	31 6
250	200/250	E27	32	135-14	75 ± 3	50	—	N	A1/14	6070E	31 6
250	50	P28	32	140-14	55.5 ± 0.5	50	a d	J	A1/15	7230C	31 6
250	50	P28	32	140-14	55.5 ± 0.5	50	—	J	A1/5	7217C	31 6
250	100/115	P28	32	140-14	55.5 ± 0.5	50	—	O	A1/5	6070C	31 6
250	200/250	P28	32	140-14	55.5 ± 0.5	50	—	N	A1/5	6070C	31 6

VOLTAGE RATINGS

Where voltage ranges of 100/115, 200/250 or 100/250 are given under the heading "Volts" lamps are made in the following ratings within the range specified: 100, 110, 115, 200, 210, 220, 230, 240, and 250. In some cases other voltages can be supplied to special order.

Removable Aluminium cups are fitted to lamps having bulb diameters up to and including 38mm., which are for operation vertical base down.

BULB SHAPE—Tubular.

OPERATING POSITION—Vertical, base down unless otherwise stated.

BASES AND CAPS illustrated on Sheet C47

Note. —(a) Indicates that forced cooling is necessary for these lamps so that no part of the wall of the bulb exceeds a temperature of 500°C.

(b) Indicates for inverted burning.

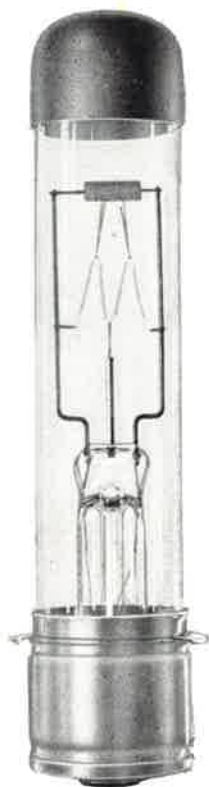
(d) Indicates filament offset from axis of lamp.

FILAMENT SHAPES. See Sheet C46

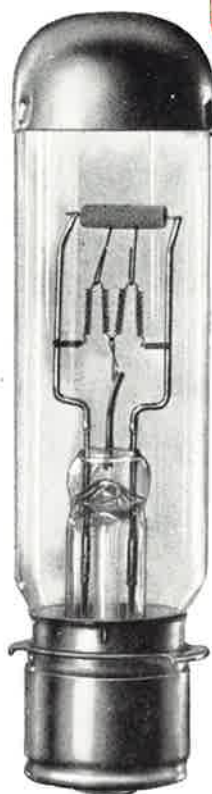
No P.T. on above lamps.

Made in Holland.

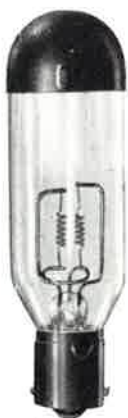
PROJECTOR LAMPS



Al/175 13140C
H.V. 150w



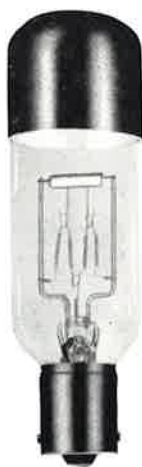
Al/5 6070C
H.V. 250w



Al/26 6166N
L.V. 200w



Al/182 6284C
H.V. 150w



Al/167 13141N
H.V. 150w



PROJECTOR LAMPS

Class A.I Lamps are for use in Cinematograph Projectors, Home Cinemas, Film Strip and Slide Projectors, etc.

CLASS A.I—Contd.

Watts	Volts	Base or Cap	Dimensions (mm.)			Obj. Av'ge Life (Hours)	Notes	Filament Shapes	Lamp Ref.	PHILIPS Type No.	LIST PRICE each s. d.
			Dia. \pm 1	Max. Overall Length	L.C.L.						
300	115	B15s	32	80-8	35 \pm 1	25	a	O	A1/183	7066N	33 0
300	200/250	B15s	32	80-8	35 \pm 1	25	a	N	A1/183	7066N	33 0
300	100/115	G17q	32	103-8	39.7 \pm 1	25	a	O	A1/178	6280C	37 6
300	200/250	G17q	32	103-8	39.7 \pm 1	25	a	N	A1/178	6280C	37 6
300	100/115	B15s	26	105-10	35 \pm 1	25	a	O	A1/37	7212N	33 0
300	200/250	B15s	26	105-10	35 \pm 1	25	a	N	A1/37	7212N	33 0
300	100/115	P46s	32	130-7	59 \pm 0.5	25	a	O	—	6131X	42 0
300	100/115	P28	32	140-14	55.5 \pm 0.5	25	a	O	A1/6	6131C	34 3
300	200/250	P28	32	140-14	55.5 \pm 0.5	25	a	N	A1/6	6131C	34 3
400	31	Pathé	38	130-8	75 \pm 0.5	50	abd	—	A1/108	7204C	60 9
400	100/115	P28	32	140-14	55.5 \pm 0.5	25	a	M	A1/39	6117C	45 0
400	110	P38s	32	135-14	59 \pm 0.5	25	a	M	A1/87	6117H	45 0
500	115/250	G17q	32	104-10	39.7 \pm 1	25	a	M	A1/180	6282C	55 0
500	100/250	P28	32	140-14	55.5 \pm 0.5	25	a	M	A1/7	6152C	46 0
500	100/115	P39s	36	153-5	81 \pm 0.5	25	abd	M	A1/153	6169C	50 0
500	100/250	E27	65	135-14	75 \pm 5	50	—	K	A1/42	375E	33 0
500	100/250	P28	65	140-14	55.5 \pm 0.5	50	—	K	A1/8	375C	33 0
500	100/115	B22 3-pin	36	142-12	95 \pm 1	25	abd	M	A1/46	6169F	48 3
500	200/250	B15s	29	105-10	35 \pm 1	25	a	N	A1/176	7065N	42 0
500	100/250	P38s	32	135-14	59 \pm 0.5	25	a	M	A1/47	6152H	47 0

VOLTAGE RATINGS

Where voltage ranges of 100/115, 200/250 or 100/250 are given under the heading "Volts" lamps are made in the following ratings within the range specified: 100, 110, 115, 200, 210, 220, 230, 240, and 250. In some cases other voltages can be supplied to special order.

Removable Aluminium cups are fitted to lamps having bulb diameters up to and including 38mm., which are for operation vertical base down.

BULB SHAPE—Tubular.

OPERATING POSITION—Vertical, base down unless otherwise stated.

BASES AND CAPS illustrated on Sheet C47

No P.T. on above lamps.

Made in Holland.

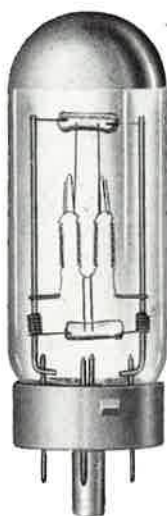
Note.—(a) Indicates that forced cooling is necessary for these lamps so that no part of the wall of the bulb exceeds a temperature of 500°C.

(b) Indicates for inverted burning.

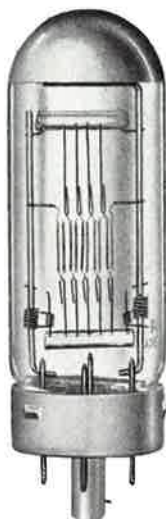
(d) Indicates filament offset from axis of lamp.

FILAMENT SHAPES. See Sheet C46

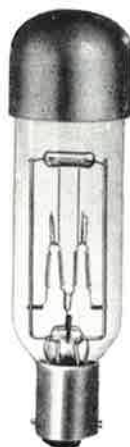
PROJECTOR LAMPS



A1/178 6280C
H.V 300w



A1/180 6282C
H.V 500w



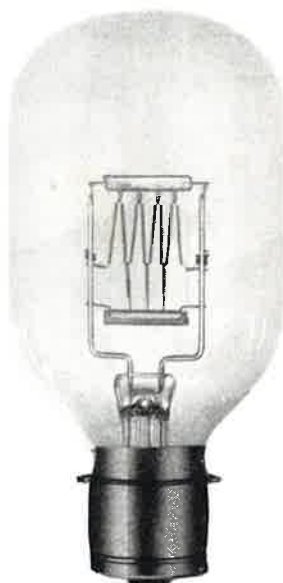
A1/37 7212N
H.V 300w



A1/6 6131C
H.V 300w



A1/7 6152C
L.V 500w



A1/8 375C
H.V 500w



PROJECTOR LAMPS

Class A.I Lamps are for use in Cinematograph Projectors, Home Cinemas, Film Strip and Slide Projectors, etc.

CLASS A.I—Contd.

Watts	Volt.	Base or Cap	Dimensions (mm.)			Obj. Av'ge Life (Hours)	Notes	Filament Shapes	Lamp Ref.	PHILIPS Type No.	LIST PRICE each s. d.
			Dia. ± 1	Max Overall Length	L.C.L.						
750	100/115	P28	38	140-14	55.5 \pm 0.5	25	a	M	A1/9	6153C	53 0
750	200/250	P28	38	140-14	55.5 \pm 0.5	25	a	M	A1/9	6153C	53 0
750	100/115	P39s	36	155-7	81 \pm 0.5	25	a b d	M	A1/52	6170C	55 0
750	200/250	P39s	36	155-7	81 \pm 0.5	25	a b d	M	A1/52	6170C	55 0
750	15	P40	63	245-12	84 \pm 0.5	100	—	F	A1/90	382C	70 0
750	15	E40	63	240-12	120 \pm 5	100	—	F	A1/89	382G	70 0
750	15	E40	44/95	257-10	222 \pm 5	100	a b	F	A1/139	6001G	75 9
750	15	Special	44/95	272-10	207 \pm 1	100	a b	F	A1/140	6001C	84 9
750	110	P28	38/50	140-10	55.5 \pm 0.5	25	a c	M	A1/187	7079C	72 0
750	100/115	P46s	38	135-14	59 \pm 0.5	25	a	M	A1/53	6153H	53 0
750	200/250	P46s	38	135-14	59 \pm 0.5	25	a	M	A1/53	6153H	53 0
900	30	E40	63	240-20	120 \pm 5	100	—	J	A1/111	75G	65 0
900	30	P40	63	245-20	84 \pm 0.5	100	—	J	A1/10	88C	65 0
1000	100/115	P28	65	140-14	55.5 \pm 0.5	25	—	M	A1/58	6185C	62 0
1000	200/250	P28	65	140-14	55.5 \pm 0.5	25	—	M	A1/58	6185C	62 0
1000	100/250	P40	63	245-20	84 \pm 0.5	50	—	K	A1/11	293C	55 0
1000	100/250	E40	63	240-20	120 \pm 5	50	—	K	A1/57	297G	50 0
1000	200/250	P40	63	245-14	87 \pm 0.5	50	—	K	A1/188	297C	55 0
1000	100/115	P28	38	140-14	55.5 \pm 0.5	25	a	M	A1/59	7242C	62 0
1000	200/250	P28	38	140-14	55.5 \pm 0.5	25	a	M	A1/59	7242C	62 0
1000	100/250	P46s	38	135-14	59 \pm 0.5	25	a	M	A1/91	7242H	62 0
1000	110	P36s	38	155-10	81 \pm 0.5	25	a b d	M	A1/149	7240C	79 6

VOLTAGE RATINGS

Where voltage ranges of 100/115, 200/250 or 100/250 are given under the heading "Volts" lamps are made in the following ratings within the range specified: 100, 110, 115, 200, 210, 220, 230, 240, and 250. In some cases other voltages can be supplied to special order.

Removable Aluminium cups are fitted to lamps having bulb diameters up to and including 38mm., which are for operation vertical base down.

BULB SHAPE—Tubular.

OPERATING POSITION—Vertical, base down unless otherwise stated.

BASES AND CAPS illustrated on Sheet C47.

Note.—(a) Indicates that forced cooling is necessary for these lamps so that no part of the wall of the bulb exceeds a temperature of 500°C.

(b) Indicates for inverted burning.

(c) Indicates that these lamps are only supplied with an internal mirror.

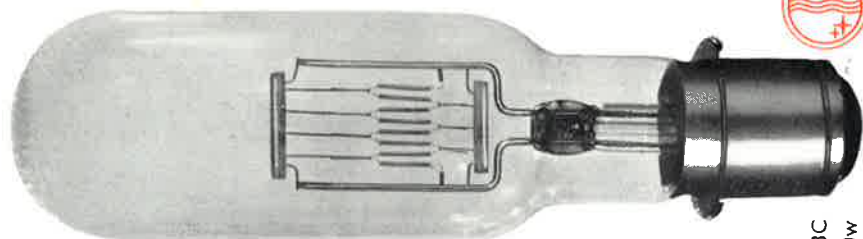
(d) Indicates filament offset from axis of lamp.

FILAMENT SHAPES. See Sheet C46.

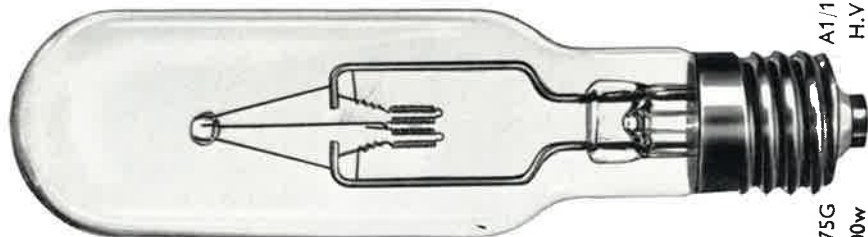
No P.T. on above lamps.

Made in Holland.

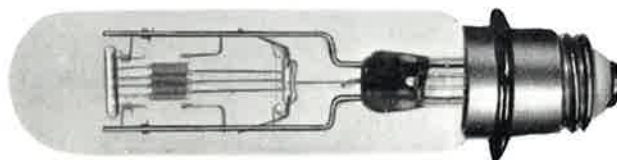
PROJECTOR LAMPS



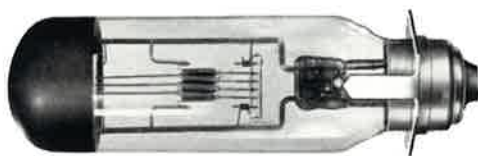
A1/11 293C
H.V 1000w



A1/111 75G
30v 900w



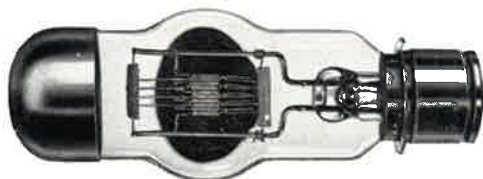
A1/52 6170C
L.V 750w



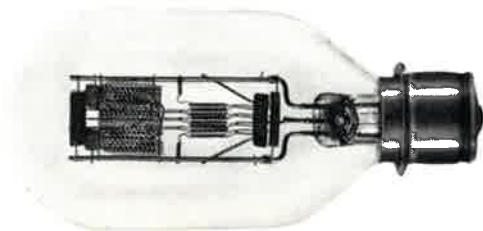
A1/53 6153H
L.V 750w



A1/9 6153C
H.V 750w



A1/187 7079C
L.V 750w



A1/58 6185C
H.V 1000w



PROJECTION LAMPS

CLASS A.2. Lamps are used in specialised Spotlights and Scientific Equipment.

Watts	Volts	Base or Cap	Dimensions (mm.)			Obj. Av'ge Life (Hours)	Filament Shapes	Lamp Ref.	PHILIPS Type No.	LIST PRICE each s. d.
			Dia. ± 2	Max. Overall Length	L.C.L.					
100	200/250	E27	70	125-20	80 ± 3	300	N	A2/1	106E	21 0

BULB SHAPE—Spherical with neck.

OPERATING POSITION—Vertical, Base Down $\pm 45^\circ$ or Vertical, Base Up $\pm 45^\circ$.

CLASS A.3. Lamps are used in horizontal burning wide angle Floodlights In Photographic and Film Studio and for Stage lighting.

100	100/250	E27	70	120-6	95 ± 3	300	L	A3/1	107E	21 0
250	100/250	E27	90	160-10	120 ± 5	300	K	A3/2	432E	26 6

BULB SHAPE—Spherical with neck.

OPERATING POSITION—Horizontal or within 15° thereof.

CLASSES B.1 and B.2. Lamps are used for Theatre and Studio Spot and Floodlighting, where long life and reliability are required.

100	100/250	E27	80	125-10	75 ± 5	800	P	B1/1	120E	16 0
250	100/250	E27	90	125-10	75 ± 5	800	P	B1/2	123E	25 0
500	100/250	E40	120	175-10	108 ± 3	800	P	—	125G	34 0
1000	100/250	E40	130	190-20	115 ± 5	800	P	B1/4	504G	52 6
1000	200/250	P40	130	200-20	84 ± 0.5	800	P	B1/15	553C	52 6

BULB SHAPE—Spherical.

OPERATING POSITION—Any, except within 45° of vertical base-up position.

CLASS B.2.

1000	200/250	E40	130	252-14	180 ± 5	800	P	B2/5	6115G	52 6
1000	200/250	E40	130	211-12	140 ± 4	800	P	B2/6	6036G	52 6
1500	200/250	E40	170	343-16	235 ± 6	800	P	B2/7	6011G	70 0

CLASS E Lamps are principally for use in Epidiascopes and for some Spotlights.

250	100/250	E27	80	115-6	70 ± 3	100	K	E/5	422E	31 3
500	100/250	E27	100	140-8	85 ± 3	100	K	E/3	437E	36 6
500	100/250	P28	100	135-8	55.5 ± 0.5	100	K	E/4	437C	37 6
1000	200/250	E40	110	180-10	120 ± 4	100	K	E/6	457G	45 0

CLASS T Lamps are for use in Theatre Spotlights.

250	200/250	P28	76	124-10	55.5 ± 0.5	200	K	T/3	558C	25 0
500	200/250	P28	95	140-20	55.5 ± 0.5	200	K	T/1	559C	35 0
1000	200/250	P40	110	200-25	84 ± 0.5	100	K	T/2	457C	45 0

BULB SHAPES—Spherical.

OPERATING POSITION—Vertical, base down, $\pm 45^\circ$. BASES AND CAPS illustrated on Sheet C 47.

FILAMENT SHAPES. See Sheet C 46.

Note.—Classes B.1, B.2, E and T Projection Lamps can be supplied with special mirror finish, denoted by suffix /01, at an extra charge of 10/- each list.

VOLTAGE RATINGS—Where voltage ranges of 100/115, 200/250 or 100/250 are given under the heading "Volts" lamps are made in the following ratings within the range specified: 100, 110, 115, 200, 210, 220, 230, 240, and 250. In some cases other voltages can be supplied to special order.

All lamps on this Sheet, up to and including 250w, are subject to P.T.

Made in Holland.

PROJECTION LAMPS



A2/I 106E
H.V. 100w



A3/I 107E
H.V. 100w



T/I 559C
H.V. 500w



E/5 (silvered) 422E/01
H.V. 250w



BI/4 504G
H.V. 1000w



PROJECTION LAMPS

Class F Lamps are for use in Micro-projection and microscope illumination, and have a very wide range of applications.

CLASS F

Watts	Volts	Base or Cap	Dimensions (mm.)			Obj. Av'ge Life (Hours)	Notes	Filament Shapes	Lamp Ref.	PHILIPS Type No.	LIST PRICE each s. d.
			Dia. ± 1	Max Overall Length	L.C.L.						
24	6	E14	35	65-4	* 8 ± 1	100	—	A	—	6100M	8 0
24	12	E14	38	65-10	50nom.	100	—	C	F/10	6163M	8 0
24	12	E10	40	66-7	44 ± 2	25	d	G	—	6007D/04	19 0
24	12	E14	40	69-7	46 ± 2	25	d	G	—	6007M/01	19 0
24	12	S10	40	66-7	44 ± 2	25	d	G	—	6007R/04	19 0
30	6	E14	40	67-4	45 ± 2	100	c	A	—	6164M	11 6
30	6	E27	40	68-10	38 ± 3	100	—	A	—	6164E	11 6
30	6	E27	40	65-7	* 8 ± 1	100	—	A	—	397E	11 6
30	6	E14	35	63-4	45 ± 1.5	100	—	A	—	6106M	11 6
40	12	B15s	40	66-7	37 ± 3	100	d	G	—	415N/01	15 0
48	8	E14	40	68-6	45 ± 2	100	—	A	—	6019M	12 6
48	12	E27	48	75-10	38 ± 1	100	c	C	F/13	6143E	12 6
48	6	B15d	48	72-7	41 ± 1	100	c	C	—	6143W	12 6
48	6	E14	48	74-10	50 ± 1	100	c	C	—	6143M	12 6
100	6	B22	60	95-10	55 ± 5	50	c	C	F/40	13105B	20 0
100	12	E27	60	93-13	55 ± 5	100	c	C	F/14	6031E	20 0
100	12	S20s	60	83-7	—	100	c	C	—	6031Y	20 0

BULB SHAPES—Various. OPERATION POSITION—According to type. BASE AND CAPS illustrated on Sheet C47.

Note.—(c) Indicates that these lamps may be supplied with a mirror finish, denoted by suffix/01, at extra charge of 10/- each list.

(d) Indicates that these lamps are only supplied with a mirror finish. -/04 indicates mirror finish with externally applied obscuring paint. -/01 indicates a silvered disc internally applied. Remainder of bulb clear. The prices indicated for these lamps include the cost of silvering.

* Indicates in this case L.C.L. is distance from filament to crown of bulb. FILAMENT SHAPES. See Sheet C46.

Class FL Lamps are for use in stage lighting, shop window lighting, and floodlighting.

CLASS FL

Watts	Volts	Base or Cap	Dimensions (mm.)		Obj. Av'ge Life (Hours)	Filament Shapes	Lamp Ref.	PHILIPS Type No.	LIST PRICE each s. d.
			Diameter ± 1.5	Max. Overall Length					
500	100/250	E40	90	360-16	1000	A	FL/1	6013G	65 0
1000	100/250	E40	100	405-20	1000	A	FL/2	6014G	70 0

BULB SHAPE—Tubular.

OPERATING POSITION—Any BASES AND CAPS illustrated on Sheet C47. FILAMENT SHAPES. See Sheet C46.

VOLTAGE RATINGS—Where voltage ranges of 100/115, 200/250 or 100/250 are given under the heading "Volts" lamps are made in the following ratings within the range specified: 100, 110, 115, 200, 210, 220, 230, 240, and 250. In some cases other voltages can be supplied to special order.

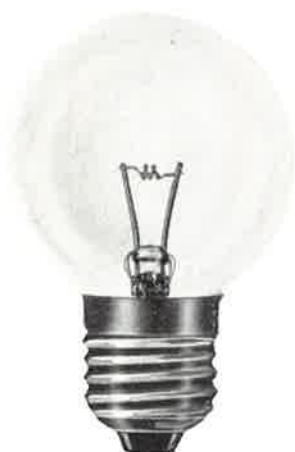
All lamps on this Sheet, up to and including 250w, are subject to P.Tax.

Made in Holland.

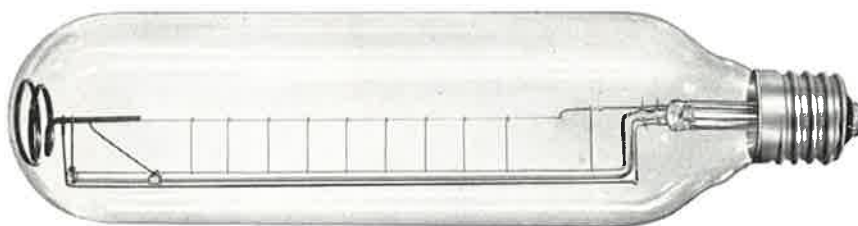
PROJECTION LAMPS



F/14 6031E
12v 100w



F/40 13105B
6v 100w



FL/1 6013G
H.V. 500w



F/64 6007D/04
12v 24w



F/65 6007M/01
12v 24w



PROJECTOR LAMPS

Class G Lamps are for use with Film Sound Reproduction and Recording Units.

CLASS G

Amps	Volts	Base or Cap	Dimensions (mm.)			Obj. Av'ge Life (Hours)	Filament Shapes	Lamp Ref.	PHILIPS Type No.	LIST PRICE each s. d.
			Dia. ± 1	Max. Overall Length	L.C.L.					
0.2	7	P15s	16	60-4	28.5 ± 0.5	100	B	G/18	7252C	11 0
0.75	4	P15s	25	51-4	28.5 ± 0.5	50	A	G/1	7250X	11 0
0.75	4	P15s	16	50-6	28.5 ± 0.5	50	A	G/29	7253C	10 0
0.75	4	B15s	16	50-6	31.75 ± 0.75	50	A	G/19	7253N	10 0
0.75	4	P15s	16	50-6	28.5 ± 0.5	50	B	G/27	7090C	10 0
0.75	4	B15s	25	51-4	32 ± 1	50	A	G/2	7250N	11 0
0.8	6	PX28s	18	74-6	31.5 ± 0.5	100	St. Wire	G/33	3873C	24 0
1.0	6	P15s	16	50-6	28.5 ± 0.25	100	B	G/5	7210C	11 0
1.0	6	B15s	16	42-4	22 ± 0.25	100	B	G/4	6142N	11 0
1.0	27	B15s	26	78-6	41 ± 1	100	C	G/16	6139N	14 6
1.48	6.5	PX28s	18	74-6	31.5 ± 0.5	100	B	G/35	3874C	19 6
2.0	8	B15s	26	78-6	44.5 ± 0.5	100	A	G/6	13008N	11 0
3.0	2.5	P15s	15	50-4	28.5 ± 0.25	100	B	G/39	6218C	16 0
4.0	5	PX28s	18	74-6	31.5 ± 0.25	1000	B	G/41	7251C	12 9
4.0	8	B15s	26	75-6	49.5 ± 0.5	100	A	G/26	6114N	12 9
4.0	8	B15s	26	78-6	44 ± 1	100	A	G/8	6055N	11 0
4.0	8.5	B15s	26	78-6	44 ± 1	100	A	G/9	6058N	11 0
5.0	6	B15s	18	54-4	28 ± 1	100	A	G/30	6213N	13 0
5.0	6	PP29	18	54-4	27 ± 0.5	100	A	G/36	6112Z	13 0
5.0	10	P15s	26	75-6	37.25 ± 0.25	100	A	G/10	6057C	13 9
5.0	10	B15s	26	78-6	41 ± 1	100	A	G/11	6057N	12 9
5.0	10	B15s	26	78-6	43 ± 0.5	100	A	G/12	6138N	12 9
6.5	5	P15s	26	78-6	41 ± 0.5	100	B	G/23	7255C	12 9
7.5	10	B15s	26	78-6	41 ± 1	100	A	G/14	6056N	12 9
7.5	10	P15s	26	78-6	37.3 ± 0.5	100	A	G/13	6056C	13 9

BULB SHAPE—Tubular.

OPERATING POSITION—Vertical, base down. BASES AND CAPS illustrated on Sheet C 47.

FILAMENT SHAPES. See Sheet C46.

No P.T. on above lamps.

PROJECTION LAMPS

Class R Lamps, having Tungsten Ribbon elements instead of filaments, are used in pyrometry and other scientific instruments.

CLASS R

Amps	App. Volts	Base or Cap	Dimensions (mm.)			Element Position	Obj. Av'ge Life (Hours)	Lamp Ref.	PHILIPS Type No.	LIST PRICE each s. d.
			Dia. ± 1	Max. Overall Length	L.C.L.					
16	6	P28	32	123-6	55.5 ± 0.5	Axial	50	R/5	—	47 6
16	6	E27	32	118-6	76 ± 3	Axial	50	R/6	—	47 6
16	6	P28	32	123-6	55.5 ± 0.5	Horiz.	50	R/7	6002C	47 6
16	6	E27	32	118-6	76 ± 3	Horiz.	50	R/8	6002E	47 6

BULB SHAPE—Tubular.

OPERATING POSITION—Vertical base down $\pm 30^\circ$. BASES AND CAPS illustrated on Sheet C 47.

No P.T. on Class R lamps.

Philips also manufacture a range of special Tungsten Ribbon lamps which can be calibrated for element temperature/current. Full details on application.

Made in Holland.

PROJECTOR LAMPS



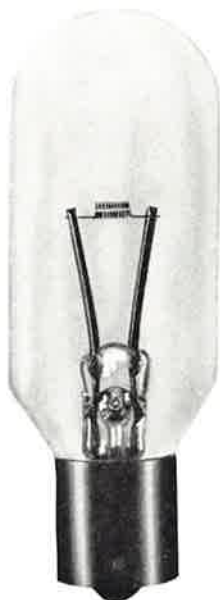
G/29 7253C
4v 0.75A



G/39 6218C
2.5v 3.0A



G/30 6213N
6v 5A



G/14 6056N
10v 7.5A



R/8 6002E
6v 16A



G/33 3873C
6v 0.8A



STUDIO LAMPS

The Studio Lamps listed below are specially designed for use with Colour Film Balanced for 3200°K. They are also suitable for Black and White photography and Television Studio lighting.

Watts	Volts	Base or Cap	Dimensions (mm.)			Lamp Ref. No.	PHILIPS Type No.	LIST PRICE each s. d.
			Dia. ± 2	Max Overall Length	L.C.L.			
500	115/250	Bi22	.64	166-12	63.5 ± 2	CP/9	13191P	92 6
750	115/250	Bi22	76	166-12	63.5 ± 2	CP/10	13173P	100 0
750	115/250	P28	64	140-14	55.5 ± 0.5	CP/11	—	70 0
1000	115	E40	150	306-12	—	Pearl	PP2413G	21 6
1000	230/250	E40	150	306-12	—	Pearl	PP2414G	21 6
2000	115/250	Bi38	150	238-16	127 ± 2	CP/12	13177P	150 0
5000	115/250	Bi38	200	341-20	165 ± 2	CP/13	13185P	400 0
10000	115/250	Bi38	270	445-20	254 ± 2	CP/14	13111P	760 0
10000	115/250	Cable	270	477-24	305 ± 10	—	6225K	760 0
20000	115/250	Cable	380	625-30	420 ± 10	CP/15	13013K	1800 0

OPERATING POSITION—Vertical, base down, $\pm 45^\circ$. BI-POST BASES illustrated on Sheet C47

The following Lamps are for use for Black and White photography and Television Studio lighting.

CLASS S

Watts	Volts	Base or Cap	Dimensions (mm.)			Obj. Av'ge Life (Hours)	Lamp Ref.	PHILIPS Type No.	LIST PRICE each s. d.
			Dia. ± 2	Max Overall Length	L.C.L.				
500	115/250	Bi22	95	143-12	63.5 ± 2	100	S/3	13176P	92 6
750	115/250	Bi22	76	166-12	63.5 ± 2	100	S/6	13174P	100 0
1000	115/250	Bi38	150	238-16	127 ± 2	100	S/4	6045P	130 0
2000	115/250	E40	150	220-14	133 ± 5	100	S/5	6046G	140 0
3000	115/250	E40	170	247-14	150 ± 4	100	—	6039G	180 0

OPERATING POSITION—Vertical, base down $\pm 45^\circ$.

BI-POST BASES are illustrated on Sheet C47

Made in Holland.

Note: Where the voltage range is specified as 115/250 this indicates that lamps are made in the following voltages: 115, 210, 230, 240, 250 volts.

No P.T. on above lamps.

MISCELLANEOUS LAMPS

Watts	Volts	Base or Cap	Approx. Dimensions (mm.)			Type	Lamp Ref.	PHILIPS Type No.	LIST PRICE each s. d.
			Dia.	O/L	L.C.L.				
15	6	PX22d	18	53	46	Micro Projector	M/10	13347C	18 0
15	6	BI5d	18	53	46	Micro Projector	—	13347W	15 0
300	115	BHT	32	141	89	Film Printing	M/7	—	42 0
1000	115	Bi38	65	242	102 ± 2	Airway Beacon	M/5	311P	130 0
100	32	PI5d	50	70	28.5	Film Reader	M/12	—	20 0
100	12 or 24	E40P	120	215	—	{ Op. Theatre Double Fil.	—	13279G/88	35 0
150	210/240								

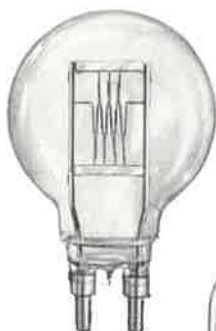
Made in Holland.

Subject to P.T.

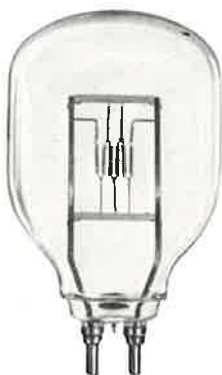
PROJECTOR LAMPS



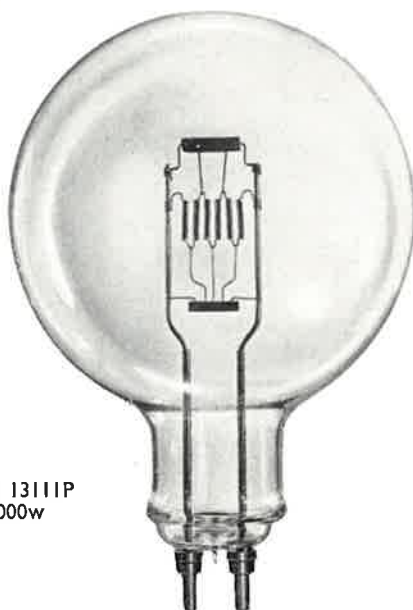
CP/9 13191P
500w



CP/12 1317P
2000w



CP/13 13185P
5000w



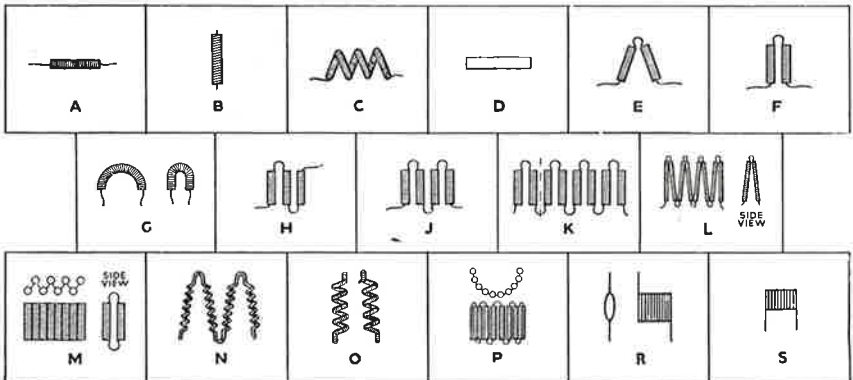
CP/14 13111P
10000w



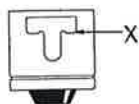
PHILIPS PROJECTOR GUIDE

LAMPS FOR PHOTOGRAPHIC, TELEVISION, FILM STUDIO AND STAGE LIGHTING EQUIPMENT

Manufacturer	Equipment and Model	Volts	Watts	Base	Lamp Ref.	PHILIPS Type No.
WALTER CO., LTD. (DE WALCO)	Baby Focussing Spotlight	100/250	250	E27	B1/2	I23E
	500w Focussing Spotlight	110/250	500	E27	E/3	437E
	1000w Focussing Spotlight	100/250	500	E40	—	I25G
	Overhead Batten Focussing Spotlights	100/250	1000	E40	B1/4	504G
	Overhead Batten Focussing Spotlights	100/250	500	E40	—	I25G
	Portable Floodlights (Swivelite)	100/250	1000	E40	B1/4	504G
	Portable Floodlights (Swivelite)	100/250	500	E27	Photolita	No. 2
	Single, Twin, Triple, Fourlite	100/250	500	E27	Argaphoto	PF308
	Spectrola	100/250	500	E40	—	I25G
	Spectrola	100/250	1000	E40	B1/4	504G

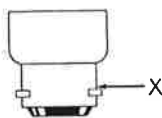


PHILIPS PROJECTOR LAMP BASES



PATHÉ

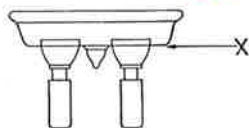
Only two types are illustrated.



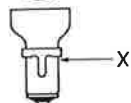
B22 3-pin
(B.C. 3-pin)



B15s
(S.C.C.)



Bi22
(Medium Bi-post)



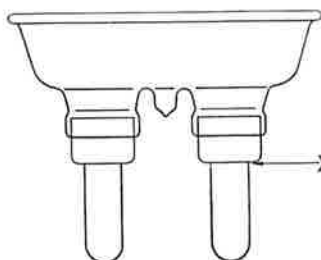
PATHÉ



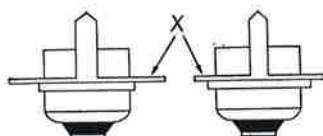
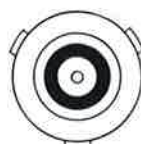
B22
(B.C.)



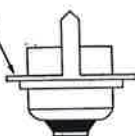
B15d
(S.B.C.)



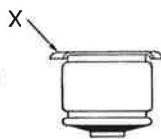
Bi38
(Bi-post)



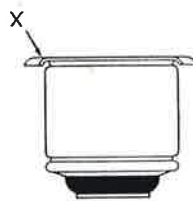
P46s



P38s



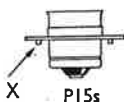
P28
(Medium Prefocus)



P40
(Large Prefocus)



P39s
(Debrie)



P15s



P15d



E40
(G.E.S.)



E27
(E.S.)



E14
(S.E.S.)

X indicates the point on the cap from which the L.C.L. is measured to the geometrical centre of the filament.

HOW TO ORDER

Customers are urged to order in standard packages to expedite despatch and reduce transit breakages.

STANDARD PACKAGES:

“ Photoflux ”—

PF 1, PF 1B, PF 38, PF 24 and PF 24/97	200
PF 5, PF 60, PF 60/97, PF 45 and PF 45/97	100
PF 100 and PF 100/97	50

“ Photolita ”—

No. 1	50
No. 2	25
No. 4	16
SM and NM	32

“ Argaphoto ”

PF 308E	6
PF 318E	18
PF 210	6

“ Photocrescenta ”—

75w, 150w and 275w	50
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It will also expedite despatch and prevent possible confusion if full information is provided when ordering. As a general guide, this will usually be required under the following headings:

“ Photoflux ”	<i>Photographic Lamps</i>	<i>Projector Lamps</i>
Type	Voltage	Voltage
	Wattage	Wattage or Amperage
	Cap	Cap
	Type	Philips Type No. or Lamp Reference No.

All Projector Lamps up to and including 250W are subject to purchase tax with the exception of Class A1 G and R Types.

All Darkroom and “ Photocrescenta ” Lamps are subject to purchase tax.

CONDITIONS OF SALE

1. GENERAL. All orders accepted are contingent upon strikes, fires or other causes beyond our control and are subject to the following terms and conditions:—

- (a) The Company reserve the right to alter prices, discounts and conditions of sale without notice.
- (b) All orders will be executed at the prices ruling at the date of despatch.

2. RESALE PRICES AND DISCOUNTS. All goods are sold on the condition that they shall not be offered for sale or sold by the purchaser or by any subsequent purchaser, other than at the Company's published list prices less discounts where permitted as set out in the schedules of discounts published by the Company from time to time; and that the purchaser shall make this condition known to any subsequent purchaser from him at the time of or prior to the sale.

3. VALIDITY OF QUOTATIONS. Unless previously withdrawn all quotations are open for acceptance within 30 days only from the date thereof, and are subject to confirmation at the time of acceptance.

4. PAYMENT. All accounts are payable on demand, and must be paid not later than the end of the month following date of despatch, and are subject to 2½% cash discount unless quoted otherwise, only if paid within that period. No receipt valid except on the Company's official form.

5. DESPATCH. The time given for despatch is to date from receipt by the Company of a written order to proceed, and of all the necessary information and drawings to enable the Company to put the work in hand.

The Company will use its best endeavours to despatch on the date given, but will accept no liability for failure to do so, unless a guarantee shall have been given in writing under an agreed sum, as liquidated damages, for late despatch, and the customer shall have suffered loss by the delay. Should despatch be hindered or delayed by the Customer's instructions or lack of instructions, or by any cause whatsoever beyond the Company's reasonable control, a reasonable extension of time shall be granted.

6. PACKING. Packing cases and/or packing material when charged for will be credited in full if returned in good condition, duly advised and carriage paid, within one month of date of despatch by the Company.

7. TRANSIT DAMAGE AND SHORT DELIVERY. Transit damage and shortage claims will be considered only if the Company and its carriers receive written notification of the damage, suspected pilferage or shortage within three days of delivery. Fulllest possible particulars of advice note number, package condition, etc., should be given and the package and contents should be returned for examination by the carriers.

8. DELIVERY. All goods will be despatched carriage paid, but the Company reserves the right to charge for any special delivery arrangements requested and for delivery of any orders (except for lamps only) for consignments of less than £10 nett value.

9. NON-DELIVERY. Failure to advise the Company of non-delivery of goods within ten days of date of invoice will be held to free the Company from any responsibility.

10. RETURNS. Returned goods will not be accepted unless accompanied or preceded by an advice note, giving the reason for return and the date and number of the Company's invoice. All goods returned must be consigned carriage paid and reasonably packed.

11. DESCRIPTIVE MATTER AND ILLUSTRATIONS. All descriptive and forwarding specifications, drawings and particulars of weights and dimensions issued by the Company are approximate only, and are intended only to present a general idea of the goods to which they refer and shall not form part of a contract.

12. EXPORT. Goods purchased from the Company must not be exported directly or indirectly without its previous consent.

13. PATENTS. In the event of any claim being made or action brought against the purchaser on the ground that any goods supplied by the Company infringe any letters patent, the Company will indemnify the purchaser to the extent of refunding any costs and damages awarded against the purchaser by the Court provided that the purchaser shall immediately inform the Company of any such claim or action and shall authorise the Company, but at its own expense, to conduct all negotiations for the settlement of the same, and to defend compromise submit to judgment or otherwise dispose of any proceedings as it may think fit. This indemnity shall not apply if the goods, or any part thereof, shall have been used for any purpose other than that for which the Company shall have supplied them.

PHILIPS PRODUCTS

RADIO AND TELEVISION RECEIVERS, RADIOGRAMS AND RECORD PLAYERS. STEREO AND HI-FI EQUIPMENT. TAPE RECORDERS. DICTATION MACHINES. GRAMOPHONE RECORDS. TUNGSTEN, FLUORESCENT, BLENDED AND DISCHARGE LAMPS AND LIGHTING EQUIPMENT. "PHOTOFLUX" FLASH BULBS. "PHILISHAVE" ELECTRIC SHAVERS. HEALTH LAMPS. HEARING AIDS. ELECTRIC BLANKETS. DOMESTIC ELECTRICAL APPLIANCES. X-RAY EQUIPMENT. HIGH-FREQUENCY HEATING GENERATORS. ELECTRO-MEDICAL APPARATUS. ARC WELDING PLANT AND ELECTRODES. ELECTRONIC MEASURING INSTRUMENTS. MAGNETIC FILTERS. SOUND AMPLIFYING INSTALLATIONS. CINEMA PROJECTORS.

