

THORN LIGHTING



COMPREHENSIVE CATALOGUE 1975/76

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L.R.S.

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THORN LIGHTING

A MEMBER OF THE THORN GROUP

CONTENTS

This catalogue lists and describes all fittings, equipment, accessories, lamps and tubes normally manufactured by Thorn Lighting Limited. The catalogue is indexed by sections. An alphabetical index of catalogue numbers and the locations and addresses of Thorn Lighting order offices and regional headquarters are shown.

COMPLIANCE WITH STANDARDS

In general Thorn Lighting designs and manufactures products to meet British, International and other standards, as appropriate. Many products are listed by approvals bodies as meeting their requirements and Thorn factories and quality control systems are approved and/or licensed by many of these authorities, including the British Kitemark board. Details of such compliances are available on request.

Indoor luminaires in general are designed to BS 4533 Part 1 Section 1.4 and, except where otherwise stated, are "Luminaires for use in normal atmospheres." Where use in more onerous situations is contemplated, e.g. in part-completed buildings before drying out and made suitable for occupation, damp cellars, special processing plants, etc additional surface protection may be required. Special finishes for such applications can be agreed in consultation with your local Thorn Lighting Office.

Thorn Lighting Limited is constantly developing and improving its products. All descriptions, illustrations, drawings and specifications in this Catalogue present only general particulars of the goods to which they refer and shall not form part of any contract. The right is reserved to change specifications without prior notification or public announcement. The majority of the products in this catalogue are manufactured in the United Kingdom. Those products not so manufactured will bear an appropriate indication.

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Safety and quality with Thorn Lighting

On 19th February 1973 the European Communities Council issued a directive no. 73/23/EEC, which has subsequently become known as 'The Low Volt Directive'. In effect, Article 2 of this directive calls upon member states to ensure that all electrical appliances placed on the market are safe. Other articles call for the establishment of common safety standards throughout EEC member states so that free movement of goods within the community shall not be impeded for reasons of safety.

HM Government will implement this directive in the United Kingdom via the Factories Inspectorate and the Department of Prices and Consumer Protection. The Health and Safety at Work Act (1964) covers the industrial and commercial sectors. In the domestic sector, the Secretary of State has issued Regulations under the Consumer Protection Act (1961) to be enforced by local weights and measures inspectors.

Under this legislation it is now unlawful to make, or to hold in stock or to offer for sale, any electrical appliance which is unsafe. This applies at all points of sale, from manufacturer through to retail outlet.

As it affects lighting equipment, British Standard no. BS 4533 is accepted by HM Government as a 'safety' specification and the new BSI Safety Mark gives an independent guarantee to all concerned that a luminaire has been designed and made in accordance with good engineering practice, that it has been type tested and complies with BS 4533 and that its manufacturing quality is monitored regularly by inspectors of the Quality Assurance Department of the British Standards Institute.

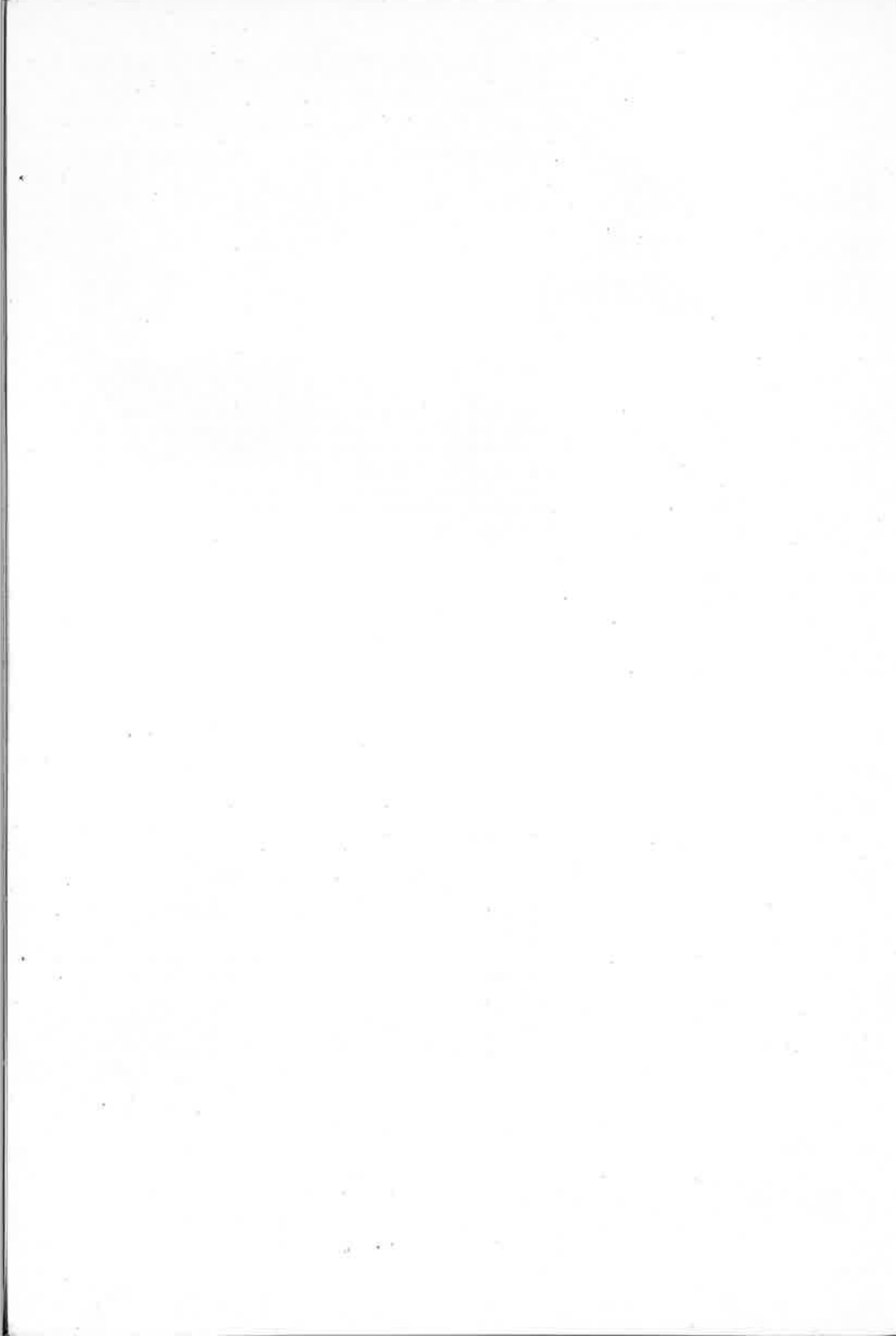
Thorn Lighting policy is to co-operate fully in the BSI Safety Mark scheme in order to give the best possible guarantees of safety and quality to all our customers. To this end, we are happy to announce that all luminaires offered in this catalogue to which BS 4533 applies are either already granted a BSI Safety Mark, which is displayed on the product, or are in process of application for a Safety Mark. This is necessarily an on-going process, but it is our firm intention that, as soon as the routine of testing is completed, all Thorn products will, where appropriate, bear the BSI Safety Mark.

Other Test House Approvals

As well as the BSI Safety Mark, a number of Thorn Lighting products are available with test house approvals of many other countries.

The standards adopted by various countries are not yet fully in accord with each other, nor with British Standards. Nevertheless, we point proudly to this fact as further evidence of our intention at all times to maximise quality and safety in our products.

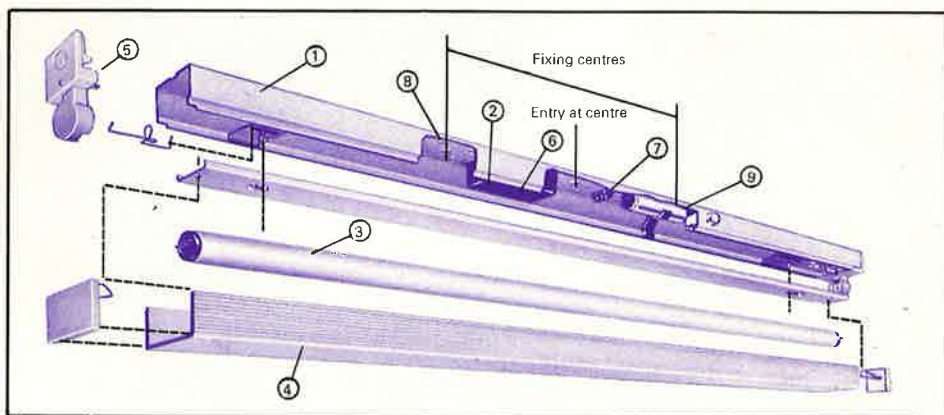




Industrial, Commercial and Domestic Fluorescent fittings

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Popular Pack



TOP FEATURES

- 1 Extensive range of 2400mm/8ft, 1800mm/6ft, 1500mm/5ft, 1200mm/4ft and 600mm/2ft single and twin tube fittings finished in white stoved enamel.
- 2 All fittings completely wired and fully tested to ensure reliable performance and quality.
- 3 Supplied complete with high efficiency white tube(s).
- 4 Diffusers and prismatic controllers in light stabilised polystyrene with spring-mounted and plates. Prismatic controller is also available in acrylic material.
- 5 Spring-mounted lampholders with knock-outs for end entry.
- 6 Control gear with long life and reliable operation.
- 7 Three-way mains terminal block.
- 8 Time and money saved by fast fixing features.
- 9 All fittings power factor corrected except the 600mm/2ft single. The 2400mm/8ft fittings operate at 0.66 leading power factor. The single 1800mm/6ft 75W Switchstart fittings are supplied in matched pairs to give near unity power factor.

FIXING CENTRES

- 2ft \varnothing or 500mm (19-7in)
 4ft 595mm-615mm
 5ft (600mm or 24in)
 6ft 1200mm-1220mm
 8ft (1200mm or 48in).

Five-year guarantee

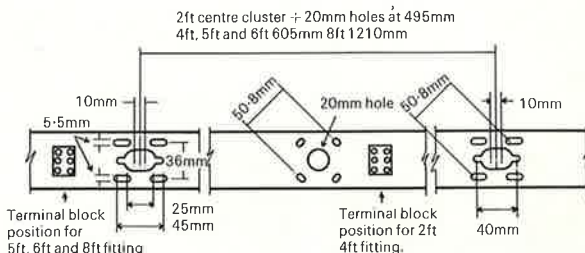
Popular Pack fittings are guaranteed against defects which under proper use appear within five years after they have been delivered and which arise from faulty design, materials or workmanship. This guarantee excludes the starter switch and fluorescent tube which are subject to separate guarantees. In the event of the fitting, or any

components thereof becoming faulty after installation and during the period of guarantee, the fitting or component (with the exception of the starter switch and fluorescent tube) will be repaired or replaced at the company's discretion at no charge, provided it has been used correctly and returned carriage paid and adequately packed to the nearest company depot.

Standards

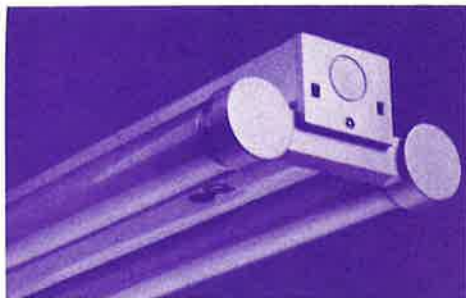
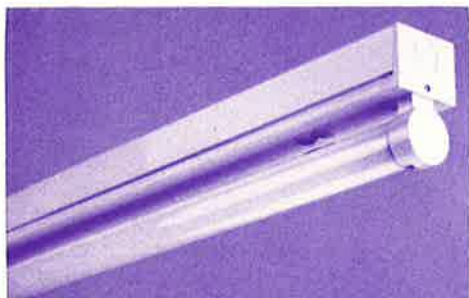
Fittings are manufactured to BS4533-1971 Part 2 Section 2-2 (IP 20).

POPULAR PACK FIXING CENTRES



Indoor luminaires in general are designed to BS 4533 Part 1 Section 1.4 and, except where otherwise stated, are "Luminaires for use in normal atmospheres." Where use in more onerous situations is contemplated, e.g. in part-completed buildings before drying out and made suitable for occupation; damp cellars, special processing plants, etc. additional surface protection may be required. Special finishes for such applications can be agreed in consultation with your local Thorn Lighting Office.

Popular Pack batten fittings



The Popular Pack batten is available in 600mm/2ft, 1200mm/4ft, 1500mm/5ft, 1800mm/6ft and 2400mm/8ft single tube and twin tube fittings. The batten is packed complete with tube(s) in the same carton which effectively reduces handling costs. Spring-loaded lampholders are incorporated which embrace the lamp cap to prevent any strain on the lamp pins. Relamping from either end is possible even on 2400mm/8ft fittings. The batten totally encloses the control gear and the cover plate is speedily detached. The starter switch is readily accessible through the side of the fitting. End conduit entry is through knock-outs in the ends of the lampholders and a bracket (Catalogue no. PP 4620) is available free of charge to secure the conduit into the fitting.

For continuous mounting a space of 12mm/0.5in between battens and trough reflectors and 50mm/2.0in between diffusers is essential so that correct maintenance can be performed. Fittings are finished in white stoved enamel for maximum reflection and efficiency.

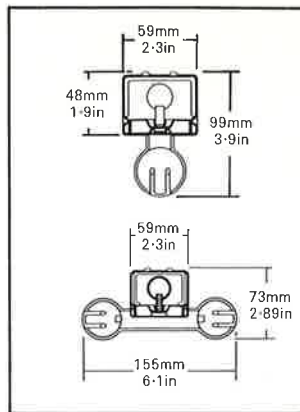
These fittings are suitable for use in ordinary indoor atmospheres, where ambient temperature does not exceed 25°C.

Supply voltage

Standard fitting 230/240V 50Hz. Fittings listed below can be supplied to order at the voltages shown at no extra charge:

20W 600mm/2ft } 220V 50Hz.
40W 1200mm/4ft }
65W 1500mm/5ft }

Fittings comply with BS4533-2-2 (IP 20).

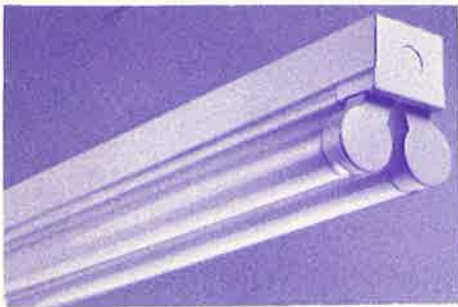


RANGE: Packed complete with White tube(s)

Nominal length		Rating	Circuit	Batten Catalogue no.	Length		Approx. weight (incl. tubes)		Fixing centres	
mm	ft				mm	in	kg	lb	mm	in
600	2	20W Single	Switchstart	PP 20	615	24.2	1.8	4	500	19.7
600	2	20W Twin	Switchstart	PP 220	615	24.2	2.16	4.64	500	19.7
1200	4	40W Single	Switchstart	PP 40	1224	48.2	2.6	5.75	600	or 24
1200	4	40W Twin	Switchstart	PP 240	1224	48.2	4.1	9	600	or 24
1500	5	65W Single	Switchstart	PP 65	1525	60.1	3.4	7.5	600	or 24
1500	5	65W Twin	Switchstart	PP 265	1525	60.1	5.45	12	600	or 24
1800	6	75W Single*	Switchstart	PP 675*	1788	70.4	3.7	8.14	600	or 24
1800	6	75W Twin	Switchstart	PP 2675	1788	70.4	6.12	13.46	600	or 24
1800	6	75W Single	Resonant Start	PPQ 675	1788	70.4	4.32	9.5	600	or 24
1800	6	75W Twin	Resonant Start	PPQ 2675	1788	70.4	6.7	14.75	600	or 24
2400	8	125W Single	Switchstart	PP 125	2398	94.4	5.23	11.5	1200	or 48
2400	8	125W Twin	Switchstart	PP 2125	2398	94.4	7.95	17.5	1200	or 48

*Note: Single battens are packed and sold in matched lead/lag pairs, but may be used independently on site.

Popular Pack slim twin batten fittings

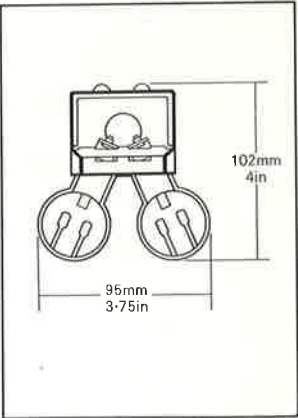


XPP 2675

This twin batten is designed with closely spaced lampholders and is the basis of a number of reflector fittings in the Popular Pack range. Since it is intended for industrial use, the ends of the fitting are provided with knock-outs permitting direct end-to-end mounting. Battens are made of sheet steel, bonderized and finished white

These fittings are suitable for use in ordinary indoor atmospheres, where ambient temperature does not exceed 25°C.

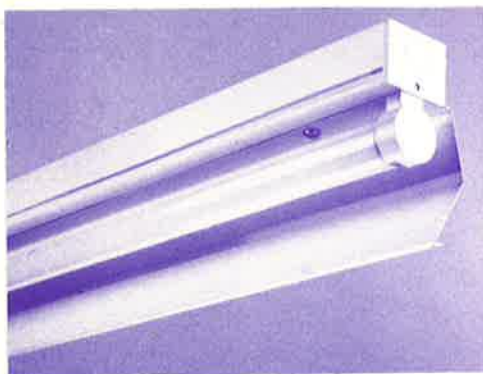
Supply voltage
Standard fitting 230/240V 50Hz.
Fittings comply with
BS 4533 – 2·2 (IP 20)



RANGE: Packed complete with White tube(s)

Nominal length		Rating	Circuit	Batten Catalogue no.	Length		Approx. weight (incl. tubes)		Fixing centres	
mm	ft				mm	in	kg	lb	mm	in
1800	6	75W Twin	Switchstart	XPP 2675	1806	71.1	6.12	13.46	600	or 24
1800	6	75W Twin	Resonant Start	XPPQ 2675	1806	71.1	6.7	14.75	600	or 24
2400	8	125W Twin	Switchstart	XPP 2125	2416	95.1	7.94	17.5	1200	or 48

Popular Pack PPA angle reflector fittings



PPA/Q 675

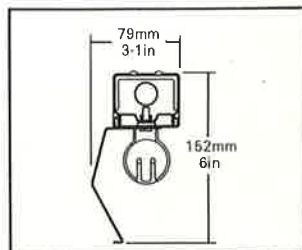
These are asymmetrical metal reflectors attached to the Popular Pack batten by means of screws fitted into slideable spring nuts retained in the batten. These screws engage into keyhole slots in the reflectors.

Applications include blackboards, wall charts, shop window lighting, etc. Reflectors are finished in white stoved enamel for maximum reflection and fittings may be close ceiling or conduit mounted.

These fittings are suitable for use in ordinary indoor atmospheres, where ambient temperature does not exceed 25°C.

Supply voltage

Standard fitting 230/240V 50Hz.
Fittings listed below can be supplied to order at the voltages shown at no extra charge:
40W 1200mm/4ft } 220V 50Hz
65W 1500mm/5ft }
Fittings comply with BS4533 - 2.2 (IP20).

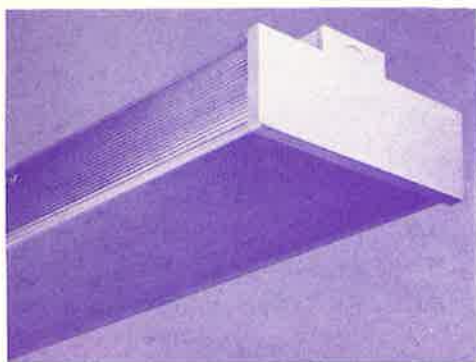


RANGE: Packed complete with White tube

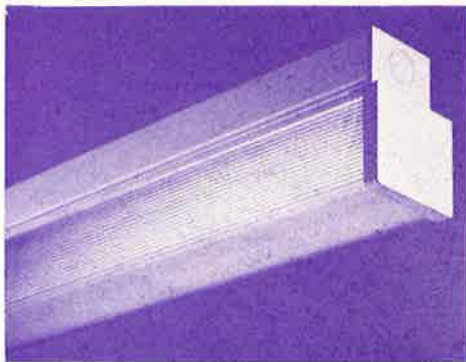
Nominal length			Rating	Circuit	Fitting Catalogue no.	Length		Approx. weight (incl. tubes)		Fixing centres		Reflector Catalogue no.	Batten Catalogue no.
	mm	ft				mm	in	kg	lb	mm	in		
1200		4	40W Single	SS	PPA/40	1224	48.2	3.97	8.75	600 or 24		PPA 4	PP 40
1500		5	65W Single	SS	PPA/65	1525	60.1	5.1	11.25	600 or 24		PPA 5	PP 65
1800		6	75W Single *	SS	PPA/675 *	1788	70.4	5.4	11.9	600 or 24		PPA 6	PP 675 *
1800		6	75W Single	SRS	PPA/Q675	1788	70.4	6	13.25	600 or 24		PPA 6	PPQ 675
2400		8	125W Single	SS	PPA/125	2398	94.4	7.85	17.25	1200 or 48		PPA 8	PP 125

*Note: Single battens are packed and sold in matched lead/lag pairs, but may be used independently on site.

Popular Pack PPC prismatic controller fittings



PPC/25

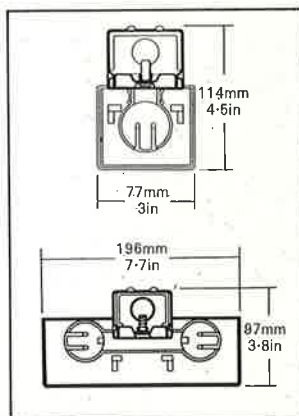


PPC/65

These attachments are made of transparent extruded plastic with side prisms, the base being embossed with a fine prismatic pattern. They are quickly attached or detached from the batten by the clip-on action of the end caps. These fittings are suitable for use in ordinary indoor atmospheres, where ambient temperature does not exceed 25°C.

Supply voltage

Standard fitting 230/240V 50Hz.
Fittings listed below can be supplied to order at the voltages shown at no extra charge:
20W 600mm/2ft } 220V 50Hz.
40W 1200mm/4ft }
65W 1500mm/5ft }
Fittings comply with BS4533-2.2 (IP20).

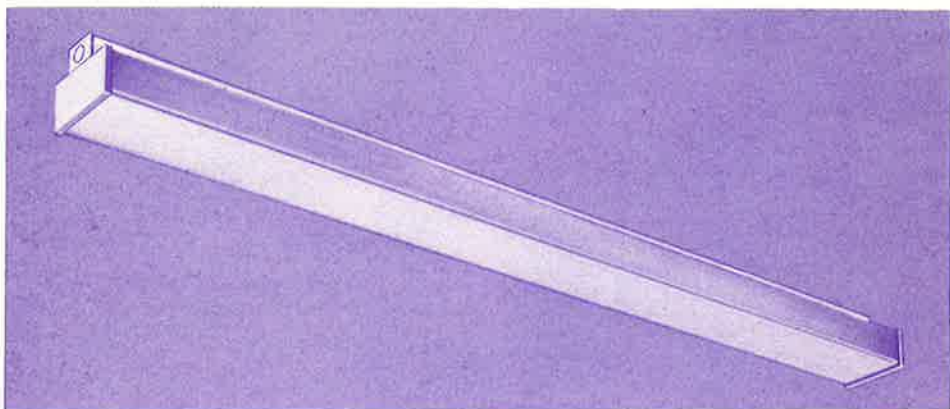


RANGE: Packed complete with White tube(s)

Nominal length		Rating	Circuit	Fitting Catalogue no.	Length		Approx. weight (incl. tubes)		Fixing centres		Diffuser Catalogue no.	Batten Catalogue no.
mm	ft				mm	in	kg	lb	mm	in		
600	2	20W Single	SS	PPC/20	638	25.1	2.1	4.64	500	19.7	PPC 2	PP 20
600	2	20W Twin	SS	PPC/220	638	25.1	2.84	6.25	500	19.7	PPC 22	PP 220
1200	4	40W Single	SS	PPC/40	1248	49.1	3.2	7	600 or 24		PPC 24	PP 40
1200	4	40W Twin	SS	PPC/240	1248	49.1	5.23	11.5	600 or 24		PPC 24	PP 240
1500	5	65W Single	SS	PPC/65	1550	61	4.2	9.2	600 or 24		PPC 5	PP 65
1500	5	65W Twin	SS	PPC/265	1550	61	6.2	13.5	600 or 24		PPC 25	PP 265
1800	6	75W Single*	SS	PPC/675*	1818	71.4	3.9	8.6	600 or 24		PPC 6	PP 675*
1800	6	75W Twin	SS	PPC/2675	1818	71.4	5.9	12.98	600 or 24		PPC 26	PP 2675
1800	6	75W Single	SRS	PPC/Q675	1818	71.4	4.5	10	600 or 24		PPC 6	PPQ 675
1800	6	75W Twin	SRS	PPC/Q2675	1818	71.4	6.49	14.3	600 or 24		PPC 26	PPQ 2675
2400	8	125W Single	SS	PPC/125	2428	95.4	6.63	14.4	1200 or 48		PPC 8	PP 125
2400	8	125W Twin	SS	PPC/2125	2428	95.4	9.8	21.5	1200 or 48		PPC 28	PP 2125

*Note: Single battens are packed and sold in matched lead/lag pairs, but may be used independently on site.

Popular Pack PPL prismatic controller fittings



PPL/675

This prismatic controller for single tube fittings is a larger version of the single PPC type described on the previous page.

The increased size makes possible a higher degree of light control and the attachment is designed to provide lower brightness lighting in situations where glare could present problems.

These diffusers are quickly attachable or detachable from the batten by the clip-on action of the end caps.

These fittings are suitable for use in ordinary indoor atmospheres, where ambient temperature does not exceed 25°C.

Supply voltage

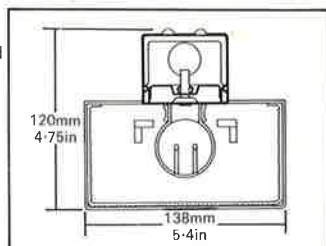
Standard fitting 230/240V 50Hz.

Fittings listed below can be supplied to order at the voltages shown at no extra charge:

40W 1200mm/4ft } 220V 50Hz.

65W 1500mm/5ft }

Fittings comply with BS4533 - 2.2 (IP20).

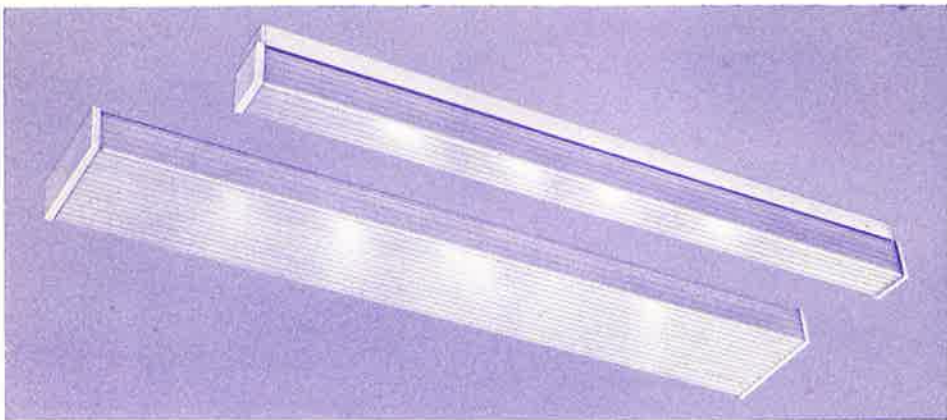


RANGE: Packed complete with White tube

Nominal length		Rating	Circuit	Fitting Catalogue no.	Length		Approx. weight (incl. tube)		Fixing centres		Reflector Catalogue no.	Batten Catalogue no.
mm	ft				mm	in	kg	lb	mm	in		
1200	4	40W Single	SS	PPL/40	1248	49.1	3.6	8	600 or 24		PPL 4	PP 40
1500	5	65W Single	SS	PPL/65	1550	61	4.7	10.25	600 or 24		PPL 5	PP 65
1800	6	75W Single*	SS	PPL/675*	1818	71.4	5.2	11.4	600 or 24		PPL 6	PP 675*
1800	6	75W Single	SRS	PPL/Q675	1818	71.4	5.8	12.75	600 or 24		PPL 6	PPQ 675
2400	8	125W Single	SS	PPL/125	2428	95.4	7	15.5	1200 or 48		PPL 8	PP 125

*Note: Single battens are packed and sold in matched lead/lag pairs, but may be used independently on site.

Popular Pack PPD plastic diffuser fittings



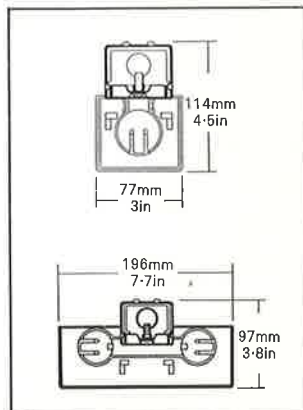
PPD/265

PPD/65

This white opal diffuser in extruded plastic with external reeding provides an extremely attractive and efficient fitting designed for general commercial use. The white plastic end plates are simply fitted to the batten and enable the diffuser to be quickly and easily removed for cleaning and general maintenance. These fittings are suitable for use in ordinary indoor atmospheres, where ambient temperature does not exceed 25°C.

Supply voltage

Standard fitting 230/240V 50Hz.
Fittings listed below can be supplied to order at the voltages shown at no extra charge:
20W 600mm/2ft } 220V 50Hz.
40W 1200mm/4ft }
65W 1500mm/5ft }
Fittings comply with BS4533-2.2 (IP20).

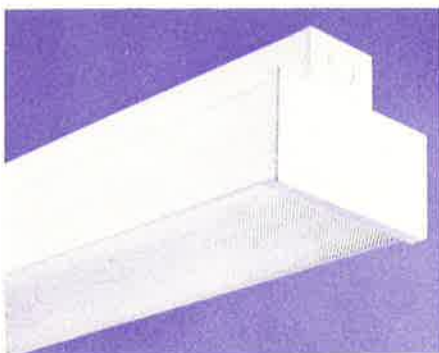


RANGE: Packed complete with White tube(s)

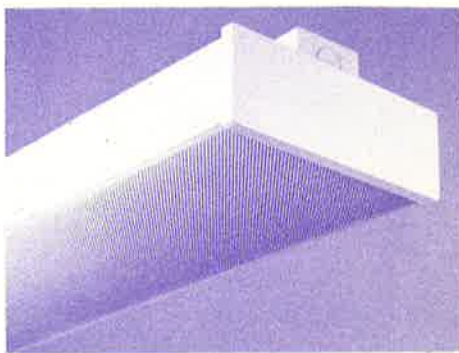
Nominal length		Rating	Circuit	Fitting Catalogue no.	Length		Approx. weight (incl. tubes)		Fixing centres		Diffuser Catalogue no.	Batten Catalogue no.
mm	ft				mm	in	kg	lb	mm	in		
600	2	20W Single	SS	PPD/20	638	25.1	2	4.5	500	19.7	PPD 2	PP 20
600	2	20W Twin	SS	PPD 220	638	25.1	2.6	5.75	500	19.7	PPD 22	PP 220
1200	4	40W Single	SS	PPD/40	1248	49.1	3	6.75	600 or 24		PPD 4	PP 40
1200	4	40W Twin	SS	PPD/240	1248	49.1	5	11	600 or 24		PPD 24	PP 240
1500	5	65W Single	SS	PPD/65	1550	61	4	8.75	600 or 24		PPD 5	PP 65
1500	5	65W Twin	SS	PPD/265	1550	61	6.6	14.5	600 or 24		PPD 25	PP 265
1800	6	75W Single*	SS	PPD/675*	1818	71.4	4.3	9.5	600 or 24		PPD 6	PP 675*
1800	6	75W Twin	SS	PPD/2675	1818	71.4	7.2	15.8	600 or 24		PPD 26	PP 2675
1800	6	75W Single	SRS	PPD/Q675	1818	71.4	4.9	10.75	600 or 24		PPD 6	PPQ 675
1800	6	75W Twin	SRS	PPD/Q2675	1818	71.4	7.8	17.25	600 or 24		PPD 26	PPQ 2675
2400	8	125W Single	SS	PPD/125	2428	95.4	5.9	13	1200 or 48		PPD 8	PP 125
2400	8	125W Twin	SS	PPD/2125	2428	95.4	9.6	21.25	1200 or 48		PPD 28	PP 2125

*Note: Single battens are packed and sold in matched lead/lag pairs, but may be used independently on site.

Popular Pack PPE opal sided prismatic controller fittings



PPE/65



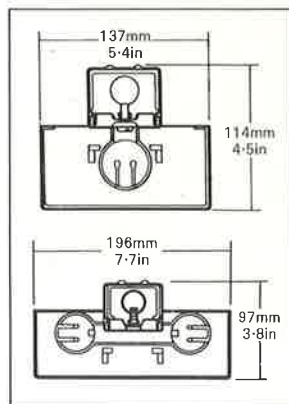
PPE/265

These attachments are for use in situations where visual comfort is of primary importance. The sides have an opal finish and the base is embossed with a fine prismatic pattern. They are quickly and easily attached or detached from the batten by the clip-on action of the end caps.

These fittings are suitable for use in ordinary indoor atmospheres, where ambient temperature does not exceed 25°C.

Supply voltage

Standard fitting 230/240V 50Hz.
Fittings listed below can be supplied to order at the voltages shown at no extra charge:
40W 1200mm/4ft } 220V 50Hz.
65W 1500mm/5ft }
Fittings comply with BS4533 - 2.2 (IP20).

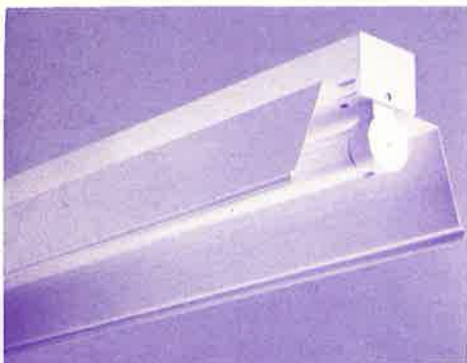


RANGE: Packed complete with White tube(s)

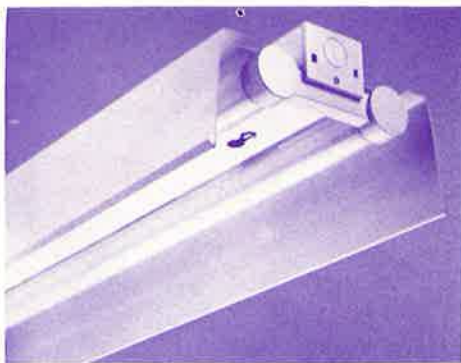
Nominal length		Rating	Circuit	Fitting Catalogue no.	Length		Approx. weight (incl. tubes)		Fixing centres		Diffuser Catalogue no.	Batten Catalogue no.
mm	ft				mm	in	kg	lb	mm	in		
1200	4	40W Single	SS	PPE/40	1248	49.1	3.4	7.5	600	or 24	PPE 4	PP 40
1200	4	40W Twin	SS	PPE/240	1248	49.1	5.23	11.5	600	or 24	PPE 24	PP 240
1500	5	65W Single	SS	PPE/65	1550	61	4.42	9.75	600	or 24	PPE 5	PP 65
1500	5	65W Twin	SS	PPE/265	1550	61	6.2	13.6	600	or 24	PPE 25	PP 265
1800	6	75W Single*	SS	PPE/675*	1818	71.4	5.0	11	600	or 24	PPE 6	PP 675*
1800	6	75W Twin	SS	PPE/2675	1818	71.4	6.9	15.2	600	or 24	PPE 26	PP 2675
1800	6	75W Single	SRS	PPE/Q675	1818	71.4	5.67	12.25	600	or 24	PPE 6	PPQ 675
1800	6	75W Twin	SRS	PPE/Q2675	1818	71.4	7.5	16.53	600	or 24	PPE 26	PPQ 2675
2400	8	125W Single	SS	PPE/125	2428	95.4	6.8	15	1200	or 48	PPE 8	PP 125
2400	8	125W Twin	SS	PPE/2125	2428	95.4	9.8	21.5	1200	or 48	PPE 28	PP 2125

*Note: Single battens are packed and sold in matched lead/lag pairs, but may be used independently on site.

Popular Pack PPR metal reflector fittings



PPR/65



PPR/265

These open-ended slotted metal trough reflectors give generous upward lighting. Finished in white stoved enamel, they are easily fitted by means of sliding captive screws, providing extremely attractive and efficient attachments. These reflectors are suitable for many industrial applications where high efficiency and easy maintenance are important features.

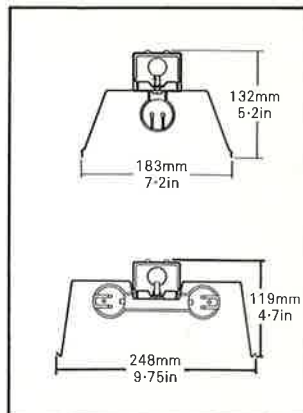
These fittings are suitable for use in ordinary indoor atmospheres, where ambient temperature does not exceed 25°C.

Supply voltage

Standard fitting 230/240V 50Hz.
Fittings listed below can be supplied to order at the voltages shown at no extra charge:

40W 1200mm/4ft } 220V 50Hz.
65W 1500mm/5ft }

Fittings comply with BS4533 - 2.2 (IP20).

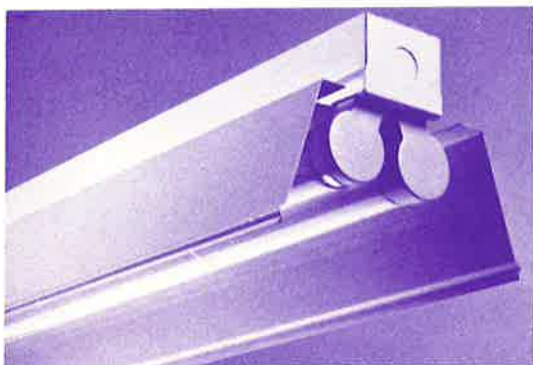


RANGE: Packed complete with White tube(s)

Nominal length		Rating	Circuit	Fitting Catalogue no.	Length		Approx. weight (incl. tubes)		Fixing centres		Reflector Catalogue no.	Batten Catalogue no.
mm	ft				mm	in	kg	lb	mm	in		
1200	4	40W Single	SS	PPR/40	1224	48.2	4.8	10.5	600	or 24	PPR 4	PP 40
1200	4	40W Twin	SS	PPR/240	1224	48.2	6.8	15	600	or 24	PPR 24	PP 240
1500	5	65W Single	SS	PPR/65	1525	60.1	6.3	13.75	600	or 24	PPR 5	PP 65
1500	5	65W Twin	SS	PPR/265	1525	60.1	8.3	18.3	600	or 24	PPR 25	PP 265
1800	6	75W Single*	SS	PPR/675*	1788	70.4	6.9	15.2	600	or 24	PPR 6	PP 675*
1800	6	75W Twin	SS	PPR/2675	1788	70.4	9.6	21.2	600	or 24	PPR 26	PP 2675
1800	6	75W Single	SRS	PPR/Q675	1788	70.4	7.5	16.5	600	or 24	PPR 6	PPQ 675
1800	6	75W Twin	SRS	PPR/Q2675	1788	70.4	10.2	22.5	600	or 24	PPR 26	PPQ 2675
2400	8	125W Single	SS	PPR/125	2398	94.4	9.2	20.25	1200	or 48	PPR 8	PP 125
2400	8	125W Twin	SS	PPR/2125	2398	94.4	14.0	30.8	1200	or 48	PPR 28	PP 2125

*Note: Single battens are packed and sold in matched lead/lag pairs, but may be used independently on site.

Popular Pack PPT Twindustrial twin reflector fittings



PPT/Q2675

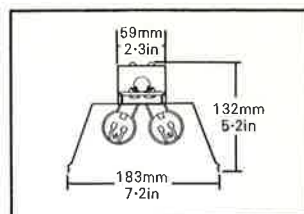
These twin open-ended slotted metal reflector fittings incorporate all the well-known design aspects of the Popular Pack types plus a number of additional features of maximum advantage in a fitting for industrial use.

Metal end plates incorporating knock-outs are used and the tube spacing enables a smaller reflector to be employed.

These fittings are suitable for use in ordinary indoor atmospheres, where ambient temperature does not exceed 25°C

Supply voltage

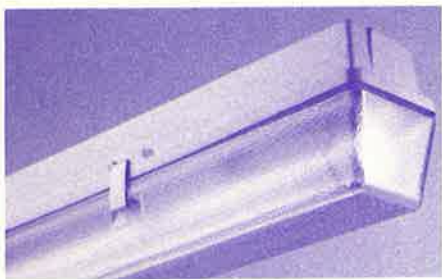
Standard fitting 230/240V 50Hz.
Fittings comply with BS4533 - 2.2 (IP20).



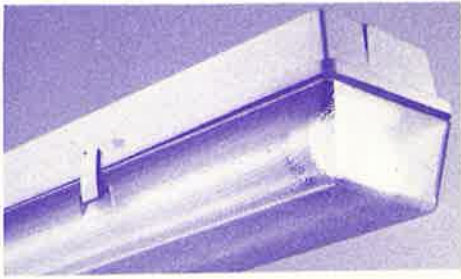
RANGE: Packed complete with White tubes

Nominal length		Rating	Circuit	Fitting Catalogue no.	Length		Approx. weight (incl. tubes)		Fixing centres		Reflector Catalogue no.	Batten Catalogue no.
mm	ft				mm	in	kg	lb	mm	in		
1800	6	75W Twin	SS	PPT/2675	1806	71.1	8.2	18	600 or 24		PPT 26	XPP 2675
1800	6	75W Twin	SRS	PPT/Q2675	1806	71.1	8.8	19.25	600 or 24		PPT 26	XPPQ 2675
2400	8	125W Twin	SS	PPT/2125	2416	95.1	11.8	26	1200 or 48		PPT 28	XPP 2125

Popular Pack PPU Sentinel fittings



PPUQ 675



PPUQ 2675

Sentinel enclosures combined with 1800mm/6ft Popular Pack fittings fulfil the protection needs for many under-canopy, open building and corrosive situations.

The construction is a simple but effective two-piece structure, formed by the combination of a grey glass fibre canopy and an acrylic clear stippled lower moulding. Although functional in design the canopy and and lower enclosure form a combination which is attractive in appearance and tough in use. Six captive clips provide easy, positive fastening and soft gaskets seal the enclosures from external environmental conditions.

The Sentinel is available in single and twin forms. Battens, tubes and enclosures are supplied complete in one pack.

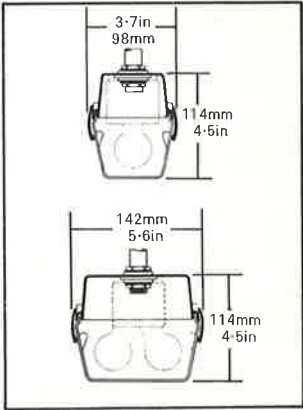
It is important to ensure that the entry points into these fittings are adequately sealed against the ingress of water.

These fittings when ceiling mounted resist rain and dust and are suitable for use outdoors and in chemically corrosive atmospheres.

Maximum ambient temperature 15°C.

Supply Voltage

Standard fitting 230/240V 50Hz.

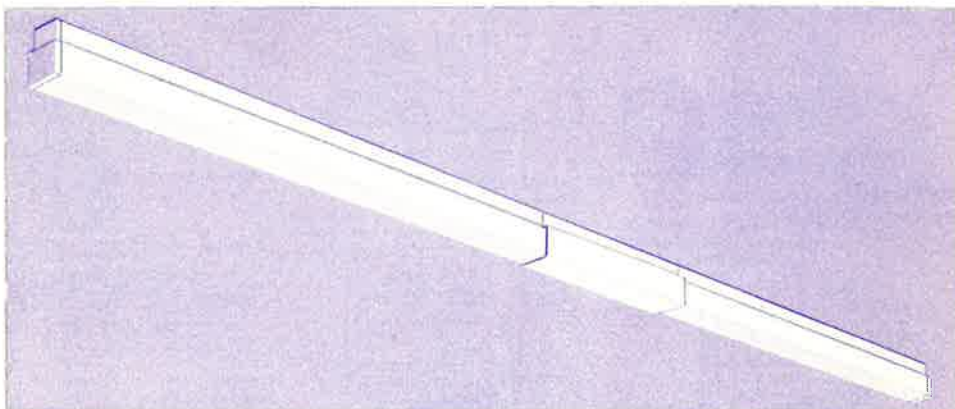


RANGE Packed complete with White tube(s)

Nominal length		Rating	Circuit	Catalogue no.	Description	Length		Fixing centres		Weight	
mm	ft					mm	in	mm	in	kg	lb
1800	6	75W Single	SRS	PPUQ 675	Single Sentinel fitting	1850	72-8	610	24	5-95	13
1800	6	75W Twin	SRS	PPUQ 2675	Twin Sentinel fitting	1850	72-8	610	24	9-1	20

Toggle clip PP 4609, single tube acrylic enclosure PP 4611 and twin-tube acrylic enclosure PP 4615 are available as replacement items.

Popular Pack One-Plus-One attachment



PPD/65+ PP4621+ PPD/65

The One-Plus-One fitting is formed from a combination of a central box housing and two individual Pop Pack fittings in tandem, an arrangement that can be extended to give a continuous structure. This is particularly suitable for schools, supermarkets, shops and all indoor establishments where a good general level of illumination is required.

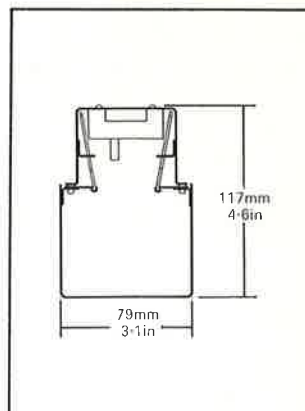
The One-Plus-One can be used to form combinations of various sizes, dependent only on the type of Pop Pack employed, with a choice of opal diffuser (PPD) or prismatic controller (PPC) single tube attachments.

It should be noted that the One-Plus-One is suitable for ceiling mounting only.

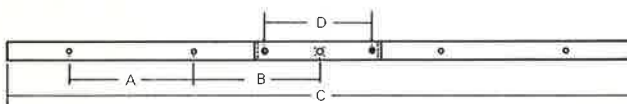
This attachment is suitable for use in ordinary indoor atmospheres, where ambient temperature does not exceed 25°C, when used in conjunction with Pop Pack fittings mentioned.

Arrangement data

Dimensions shown include various size fittings combined with the One-Plus-One attachment.



Details of single tube fittings for use with the One-Plus-One attachment are given on pages 16 and 18.



Nominal fitting size		A		B		C PPC or PPD		D	
mm	ft	mm	in	mm	in	mm	in	mm	in
600	2	500	or 19.7	357	14.1	1851	72.9	457	18
1200	4	600	or 24	609	24.0	3069	120.8	457	18
1500	5	600	or 24	759	29.9	3671	144.5	457	18
1800	6	600	or 24	891	35.1	4197	165.2	457	18
2400	8	1200	or 48	893	35.1	5419	213.3	457	18

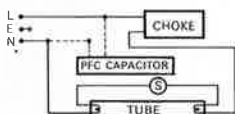
For other fitting combinations allow 16mm length reduction for each junction with PP 4621 (e.g. 4+5=1248+610+1550-32=3376mm)

Catalogue no.	Length		Approx. weight		Fixing centres	
	mm	in	kg	lb	mm	in
PP 4621	610	24	1.5	3.25	457	18

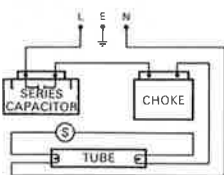
and centre BS box piercing

Popular Pack circuits data

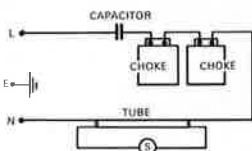
230/240V 50Hz CIRCUIT DIAGRAMS



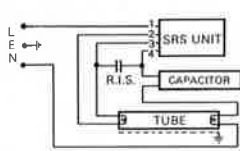
1 Standard starter switch circuit with optional PFC capacitor.



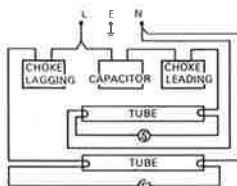
2 Leading power factor starter switch circuit.



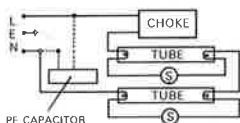
228 Leading power factor starter switch circuit.



7 Semi-resonant start circuit.



244 Lead/lag starter switch circuit



10 Starter switch circuit for series pair tube operation.

REPLACEMENT CONTROL GEAR

These items are selected from the extensive range of control gear for UK Regional stocking to give ready availability. The reference numbers quoted will be different from those marked on the control gear in the fitting, but the units are equally applicable to Popular Pack fittings.

			Choke	Capacitor	Starter Switch	Circ. diag
125W 8ft	SS	Single Tube	2-G.CUH/125	1-G C2344	1-155/800	228
		Twin Tube	4-G.CUH/125	2-G C2344	2-155/800	2 x 228
75W 6ft	SRS	Single Tube	1-G.BU/675	1-G C2220	—	7
		Twin Tube	2-G.BU/675	2-G C2220	—	2 x 7
75W 6ft SENTINEL	SRS	Single Tube	1-G. 69295 4	1-GC 2220	—	7
		Twin Tube	2-G. 69383 4	2-GC 2220	—	2 x 7
75W 6ft	SS	Single Tube (lead)	1-G.CU/65	1-G.C2226	1-155/800	2
		Single Tube (lag)	2-G.CUH/675	—	1-155/800	1
		Twin Tube	1-G.CU/65	1-G.C2226	2-155/800	244
			2-G.CUH/675	—	—	—
20W 2ft	SS	Single Tube	1-G.CU/20	—	1-155/200	1
		Twin Tube	1-G.CU/40	1-G C2224	2-155/200	10

ELECTRICITY SUPPLY VARIATIONS

		CCT	50Hz	60Hz
125W 8ft	Leading SS only	220V	—	—
65W 5ft	HPF or LPF, SS	200/210V, 220V, 230/240V, 250V	230/240V	—
65W 5ft	HPF, SRS	220V	—	—
40W 4ft	HPF or LPF, SS	110/120V, 200/210V, 220V, 230/240V, 250V	110/120V, 200/210V, 220V, 230/240V	—
20W 2ft	HPF or LPF, SS	110/120V, 200/210V, 220V, 230/240V, 250V	110/120V, 200/210V, 220V, 230/240V	—

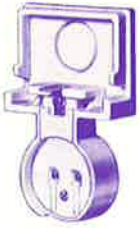
A The standard electricity supply in the UK is 230/240V 50Hz and fittings suitable for this supply are standard stock lines.

B Other voltage 50Hz fittings are available as shown below at no extra charge in UK. Delivery and details on application.

20W 2ft	} 220V
40W 4ft	
65W 5ft	

C Popular Pack fittings are also available outside the UK for the electricity supplies shown alongside. Price and delivery details on application.

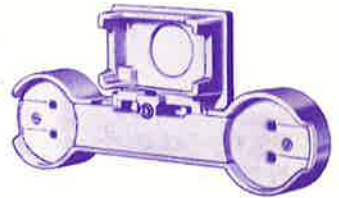
SS=Switchstart SRS=Semi Resonant Start



G B1562
Single bi-pin white plastic grip-pin
lampholder



G B1548/A3
Replacement lampholder for Slim Twin
fittings.



G B1563
Wide twin bi-pin white plastic
grip-pin lampholder



PP 4612
End cap for single tube PPC and PPD
diffusers. Complete with fixing spring.



PP 4613
End cap for twin tube PPC and PPD
diffusers. Complete with fixing spring.



PP 4617
End cap for single tube PPE E, P PPL
diffusers. Complete with
fixing spring.



PP 4601
Used with PP 4602 screw to fix single and
twin Popular Pack metal attachments.



PP 4602
Reflector and coverplate fixing screw.

Popular Pack accessories



G M8064/12 Loop Starter Socket

White PVC moulding enclosing starter switch contacts crimped to 12in loop of 0.5sq mm white PVC cable which can be cut at a point to suit wiring layout. For earlier Popular Pack fittings



G A5051

Current starter socket



G A5019/X Starter Socket

Used in earlier Popular Pack fittings, Fixed by clip **G Y5285**



G T1281/3

Three way terminal block, Each way will accept one 2.5sq mm cable or two 1.5sq mm cables together.



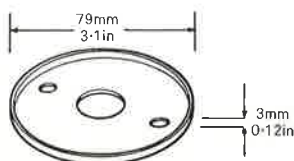
PP 4616

Clip-in fused terminal block assembly with 3A fuse, Primary use for Popular Pack fitting when used on Trakline, Encroaches on centre entry on 2ft 20W twin only. Standard quantity 5 per pack.

Also available:

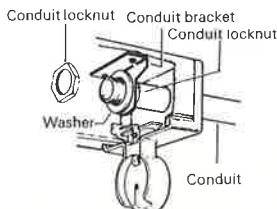
PP 4624

Clip-in three way terminal block complete with 760 mm silicone rubber insulated cable per way, Each way will accept three 2.5 square mm cable.



PP 4619: Free on request.

Patress block cover can be used to shield a conduit box or to cover marks left on the ceiling by original fitting or ceiling plate: 26 swg mild steel, white stoved enamel.



PP 4620: Free on request (bracket only)

End conduit bracket is used when single or wide twin fittings are installed on surface conduit systems or where conduit is required to enter at the end of the fitting. This component is not needed for slim twin fittings.



PP 4600

Lampholder tension spring for single and wide twin fittings.



G Y5283

Fixing clip for 1 1/2in dia. capacitors. **G Y5273** for 1 1/4in dia. capacitors.



PP 4609

Replacement plastic clip for Sentinel fittings.



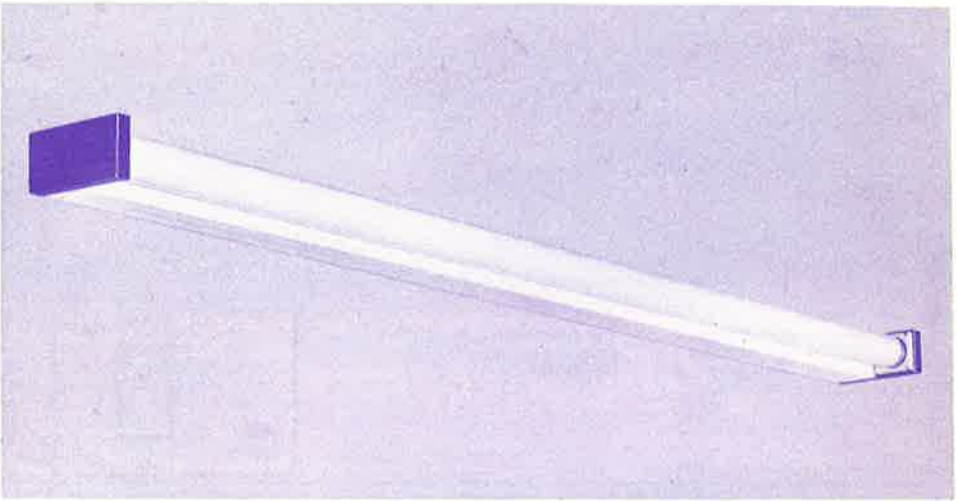
FUSE

BS 1362 dimensions

G T1299 3 amp single and twin tube 6ft 85W and earlier SRS fittings.

(Replacement use only)

Arrowslim AS batten fittings



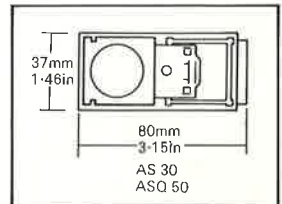
AS single batten fitting

The Arrowslim basic batten, with its three-position twist lampholder, can be used in any location where an unshielded fluorescent tube is acceptable. These batten fittings are available in 900mm/3ft 30W and 1500mm/5ft 50W sizes and are supplied ready packed complete with 26mm/1in diameter Warm White tubes.

Supply voltage

Standard fitting 230/240V 50Hz. Details of fittings for other supplies are available on application. In exceptionally quiet locations the small amount of noise emitted by these fittings should be considered. Noise can be limited by the use of rubber grommets to 'soften' the mounting.

Fittings comply with BS 4533 - 2:2 (IP 20)



RANGE: Packed complete with Warm White tube

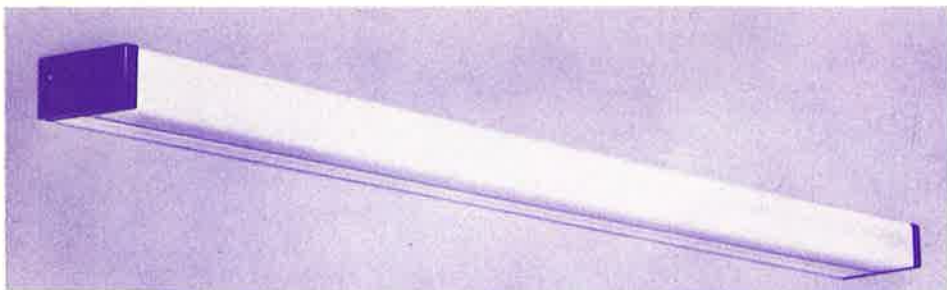
Rating	Circuit	Complete Fitting	Length		Approx. weight (incl. tubes)		Fixing centres	
		Catalogue no.						
30W Single	Switchstart	AS 30	914	36	1.82	4	600 or	24
50W Single	Resonant start	ASQ 50	1519	59.8	2.64	5.8	600 or	24

Push Switch

A push switch (Catalogue no. AS 4601) is available for wall-mounted fittings.

Indoor luminaires in general are designed to BS 4533 Part 1 Section 1.4 and, except where otherwise stated, are "Luminaires for use in normal atmospheres." Where use in more onerous situations is contemplated, e.g. in part-completed buildings before drying out and made suitable for occupation, damp cellars, special processing plants, etc additional surface protection may be required. Special finishes for such applications can be agreed in consultation with your local Thorn Lighting Office.

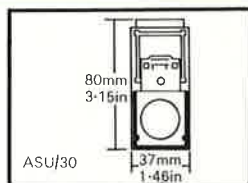
Arrow slim ASU and ASF attachments



ASU attachment

A closely fitting acrylic extrusion forming, in conjunction with the 900mm/3ft batten, an extremely slim diffuser fitting for many lighting purposes.

The attachment is fixed to the basic fitting by engagement with the lampholders.



RANGE: Packed complete with Warm White tube

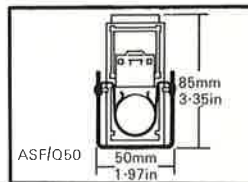
Rating	Circuit	Complete Fitting	Length		Approx. weight (incl. tube)		Fixing centres		Attachment Catalogue no.	Batten Catalogue no.
		Catalogue no.								
30W Single	Switchstart	ASU/30	914	36	2.03	4.46	600	or 24	ASU 3	AS 30



ASF two-tone diffuser

Extruded plastic diffuser with clear fine reeded base and opal sides which gives an even downward distribution of light, yet cuts fitting brightness to the minimum.

Fixing is by means of spring clips fitted to the end of the diffuser.



RANGE: Packed complete with Warm White tube

Rating	Circuit	Complete Fitting	Length		Approx. weight (incl. tube)		Fixing centres		Attachment Catalogue no.	Batten Catalogue no.
		Catalogue no.								
50W Single	Resonant start	ASF/Q50	1519	59.8	3.1	6.8	600	or 24	ASF 5	ASQ 50

A set of two clips and plastic studs for ASF attachments (Catalogue no. AS 4610) is available as a replacement item

Supply voltage

Standard fitting 230/240V 50Hz.
Details of fittings for other supplies are available on application.
In exceptionally quiet locations the

small amount of noise emitted by these fittings should be considered. Noise can be limited by the use of rubber grommets to 'soften' the mounting.

Push Switch

A push switch (Catalogue no. AS 4601) is available for wall-mounted fittings. Fittings comply with BS4533 - 2.2 (IP20).

Arrow slim ASD diffuser and ASC attachments



ASD diffuser

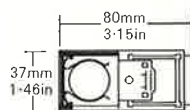
This diffuser is extruded from opal acrylic and is easily attached to the fitting. The diffuser may be used with a wall-mounted batten fitting to give unobstructed downward light and general diffused upward light.

Push Switch

A push switch (Catalogue no. AS4601) is available for wall-mounted fittings.

Supply voltage

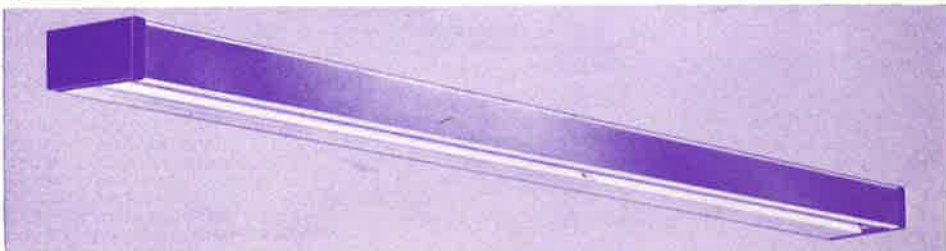
Standard fitting 230/240V 50Hz. Details of fittings for other supplies are available on application. In exceptionally quiet locations the small amount of noise emitted by these fittings should be considered. Noise can be limited by the use of rubber grommets to 'soften' the mounting. Fittings comply with BS4533 - 2.2 (IP20).



ASD/30
ASD/Q50 (Clips supplied with 1500mm/5ft only)

RANGE: Packed complete with Warm White tube

Rating	Circuit	Complete Fitting	Length		Approx. weight (incl. tubes)		Fixing centres		Diffuser	Batten
		Catalogue no.	mm	in	kg	lb	mm	in	Catalogue no.	Catalogue no.
30W Single	Switchstart	ASD/30	914	36	2	4.4	600 or 24		ASD 3	AS 30
50W Single	Resonant start	ASD/Q50	1519	59.8	2.9	6.4	600 or 24		ASD 5	ASQ 50



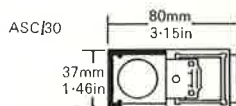
ASC attachment

This attachment is a slim acrylic extrusion with the front trim having the appearance of brushed copper.

Supply voltage

Standard fitting 230/240V 50Hz. Details of fittings for other supplies are available on application. In exceptionally quiet locations

the small amount of noise emitted by these fittings should be considered. Noise can be limited by the use of rubber grommets to 'soften' the mounting.



Push Switch

A push switch (Catalogue no. AS 4601) is available for wall-mounted fittings

RANGE: Packed complete with Warm White tube

Rating	Circuit	Complete Fitting	Length		Approx. weight (incl. lamp)		Fixing centres		Attachment	Batten
		Catalogue no.	mm	in	kg	lb	mm	in	Catalogue no.	Catalogue no.
30W Single	Switchstart	ASC/30	914	36	2	4.4	600 or 24		ASC 3	AS 30

Arrowslim ASA attachment



ASA attachment

Satin etched front baffles in extruded aluminium for upward and downward lighting and a sophisticated decorative appearance. These attachments are retained in position on the wall-mounted fittings by engagement with the lampholders.

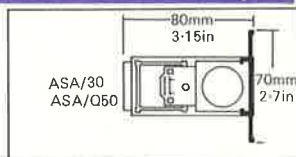
Push Switch

A push switch (Catalogue no. AS4601) is available for wall-mounted fittings.

Supply voltage

Standard fitting 230/240V Hz. Details of fitting for other supplies are available on application. In exceptionally quiet locations the small amount of noise emitted by these fittings should be considered. Noise can be limited by the use of rubber grommets to 'soften' the mounting.

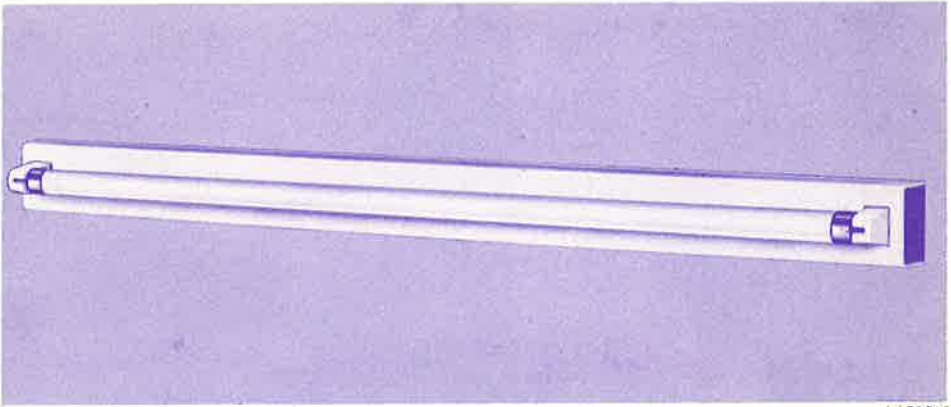
Fittings comply with BS4533 - 2.2 (IP20).



RANGE: Packed complete with Warm White tube

Rating	Circuit	Complete Fitting Catalogue no.	Length		Approx. weight		Fixing centres	Attachment Catalogue no.	Batten Catalogue no.
			mm	in	kg	lb			
30W Single	Switchstart	ASA/30	914	36	2.21	4.86	600 or 24	ASA 3	AS 30
50W Single	Resonant start	ASA/Q50	1519	59.8	3.28	7.24	600 or 24	ASA 5	ASQ 50

LJ Series Minipack fittings



LJ S1013

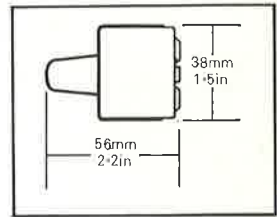
The Minipacks are the smallest fluorescent fittings offered for everyday use. They provide miniature fluorescent lighting for many purposes, including display cabinets, public notice signs and hotel mirrors. The attachments listed on the next page broaden the application even further. The 324mm/12.75in long version gives more light than a 40W tungsten lamp. Especially impressive, the 552mm/21.75in model gives a better output than three 30W tungsten striplights. The body assembly has two-tone colouring: the channel cover is white and the channel and end plates are black. To gain access to the control gear, the white moulded lampholders are rocked slightly forward to release the cover which can be completely removed for installation and servicing.

PULL SWITCH, Catalogue no. LJ 4600. A pull switch is an added convenience and is available for all models.

SHELF CLIPS, Catalogue no. LJ 4601. An elegant form of accent lighting is to use this fitting to illuminate objects on shelves. For this purpose two single clips are available which locate inside the batten and securely onto the shelf, accommodating shelf thickness up to 26mm/1in.

These fittings are suitable for use in ordinary indoor atmospheres, where ambient temperature does not exceed 25°C.

Supply voltage
Standard fitting 230/250V 50Hz.
Details of fittings for other supplies are available on application.
Fittings comply with BS4533 - 2.2 (IP20).



RANGE: Packed complete with Warm White tube

Rating	Circuit	Batten Fitting		Length		Approx. weight (incl. tube)		Fixing centres	
		Catalogue no.		mm	in	kg	lb	mm	in
8W Single	Switchstart	LJ S1008.H		324	12.75	0.85	2	305	12
13W Single	Switchstart	LJ S1013.H		552	21.75	1.1	2.5	457	18

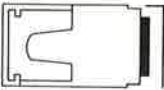
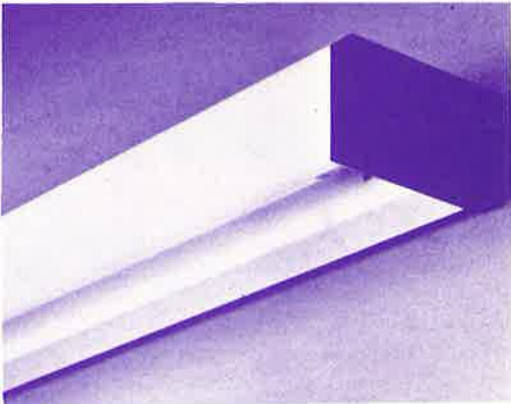
LJD, LJU Minipack attachments

LJD Opal angle diffuser attachment

Newly re-styled to match Arrowslim, this opal acrylic plastic attachment for wall fittings throws a strong flood of downlight and projects a pleasant glare-free light forwards.

RANGE

Catalogue no.	Length	
	mm	in
LJD 112	340	13.5
LJD 121	570	22.5



38mm 1.5in

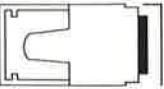
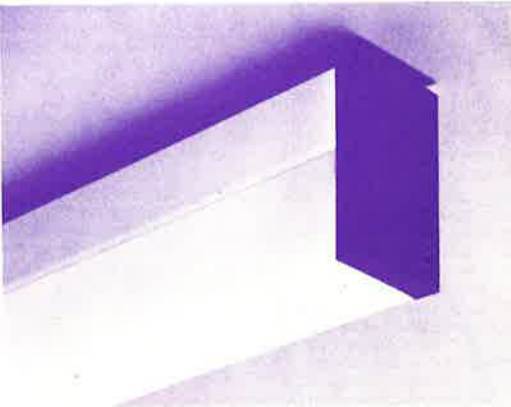
70mm 2.76in

LJU Diffuser attachment

An opal acrylic diffuser which is ideal for situations where an even distribution is required from the slimmest possible fitting. Newly re-styled to match the Arrowslim range.

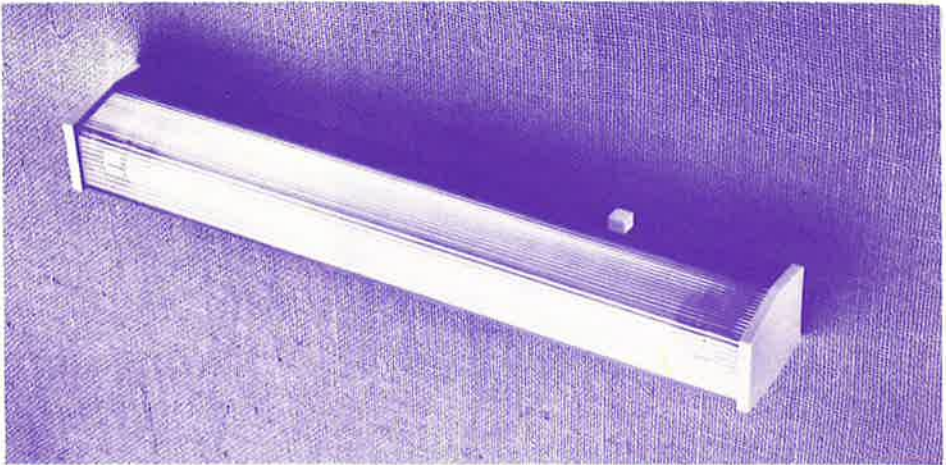
RANGE

Catalogue no.	Length	
	mm	in
LJU 112	340	13.5
LJU 121	570	22.5



38mm 1.5in

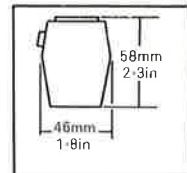
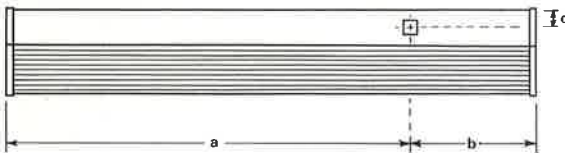
70mm 2.76in



This range of transistorised fluorescent fittings is designed to provide efficient battery operated lighting, independent of a mains supply. The olive green body and clear reeded prismatic controller are made of high impact and light stabilised polystyrene. An integral

push switch controls the fitting. The control gear operates the fluorescent tube at a high frequency so that the fitting is inaudible in use. Protection against accidental polarity reversal is incorporated within the fitting. 12V versions may be used in

conjunction with the GR 2463 emergency lighting unit
Registered design numbers:
NOM 1008 - 943061
NOM 1013 - 843063
These fittings are Class II items.



RANGE: Packed complete with Warm White tube

Rating	Volts (d.c. only)	Catalogue no.	Length mm	in	Approx. weight kg	(incl tubes) lb	Fixing centres mm	in
8W Single	12	NOM 1008.12	343	13.5	0.34	0.75	318	12.5
13W Single	12	NOM 1013.12	569	22.4	0.49	1.1	551	21.7
8W Single	24	NOM 1008.24	343	13.5	0.34	0.75	318	12.5
13W Single	24	NOM 1013.24	569	22.4	0.49	1.1	551	21.7

Other voltages: Transistorised fluorescent fittings suitable for operation on 6 volt supplies are also available. Details can be obtained on application.

Prismatic controller extrusions NOM 4600 (8W), NOM 4601 (13W) and end plate NOM 4602 are available as replacement items.

Dimensions

Rating	a mm	in	b mm	in	c mm	in
8W	262	10.3	79	3.1	10	0.4
13W	490	19.3	79	3.1	10	0.4

Battery Information

Rating	Supply current (amps)	Battery rating (amp/hours) 38	Number of hours of operation*	42	60
8W 12V	0.7	50	56		80
13W 12V	1.1	31	34		49
8W 24V	0.3	114	126		180
13W 24V	0.5	68	75		108

*Assuming the efficiency of the battery to be 90%

Arrowslim, Minipack and Nomad accessories



GB 1586 Arrowslim bi-pin lampholder, Black/white plastic.



AS 4611 Arrowslim lampholder tension spring.



AS 4601 Arrowslim push switch for wall mounted fittings.



AS 4612 Arrowslim capacitor clip.



G A5089 Starter socket for Arrowslim and Minipack fittings.



LJ 4600 Pull switch for wall mounted Minipack fittings.



GB 1598/3
Lampholder for Minipack fitting.



G T1281/3
Three way terminal block. Each way will accept one 2·5sq mm cable or two 1·5sq mm cables together.



AS 4600 Patress block cover for ceiling mounted Arrowslim fittings.

GB 1598
Lampholder for Nomad fitting.
(No Bracket)

Replacement control gear for 240V 50Hz supply

Tube size	Fitting	Choke	Capacitor	Starter Switch
8W 12in	Minipack	1—CD8	—	1—155/100
13W 21in	Minipack	1—CD13	—	1—155/100
30W 3ft	Arrowslim AS 30	1—CJ30	—	1—155/400
50W 5ft	Arrowslim AS 50	1—CJ50	1—G C2229	1—155/400
50W 5ft	Arrowslim ASQ50	1—BJ50	1—G C2368	—

Clipper is a new idea in fluorescent fittings, designed to combat ever-rising costs by being exceptionally quick and easy to install and maintain. Where Clipper differs most from other fittings is in the separation of the ceiling plate from the rest of the spine. Thus the only component to be mechanically fixed to the ceiling is a lightweight metal channel. Without the weight of control gear to contend with, one man will find it easy both to screw the channel into position and make the electrical connection to a simple terminal block. Once the ceiling plate is installed the screwdriver can be dispensed with. The spine, which contains the control gear and lampholders, merely plugs into the terminal block and clips into place. The same ceiling plate is suitable for both single and twin-lamp spines, which gives flexibility in use and helps the rationalisation of components.

The detachable spine makes maintenance a simple matter, and in critical locations a replacement can be easily installed without disturbing the rest of the lighting.

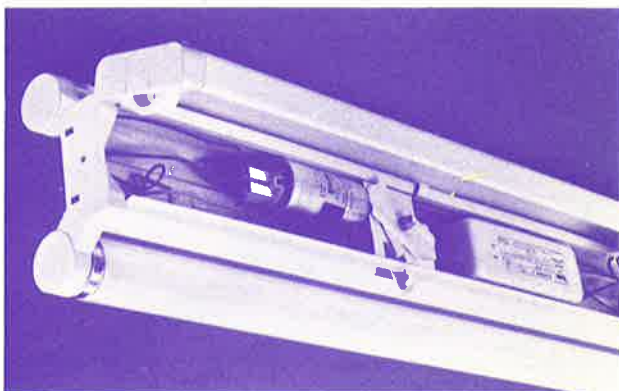
Clipper has been engineered to meet the new stringent safety mark requirements and complies with BS 4533.

A specially designed Clipper trunking is also available. This acts as a large capacity, continuous ceiling plate. The trunking aperture is of the same profile as the ceiling plate so that the spine can be clipped to it in exactly the same way. As the individual ceiling plates are no longer required there is a useful saving in cost.

Clipper has been styled with soft, curved edges to both the basic batten and the attachments. This helps create an attractively slim line and echoes the latest trends in interior design.

The highly efficient 1800mm/6ft 75W circuit when combined with Clipper performance provides one of the most economical light packages available today.

Lamp sizes are 1200mm/4ft 40W, 1500mm/5ft 65W and 1800mm/6ft 75W.



DESIGN FEATURES

1. Centre twist lampholders for easy lamp insertion and positive electrical contact also enable end-to-end mounting of batten and reflector versions.
2. Lampholder retaining spring. Simple location of end assembly carried out on the bench before the spine is installed.
3. Plastic end plate with knock-out for conduit entry.
4. Knock-out for cage nut (supplied with reflectors).
5. Finger latch which mechanically locks

spine and ceiling plate together.

6. Fixing centres suitable for metric and imperial conduit or BESA box.

7. Tags for cable cleat location where through-wiring passes over choke units.

8. Slim section semi-resonant start control gear for reliable operation, leaving adequate space for through wiring.

9. Spine plug and flying lead guide ribs to ensure correct polarity. Nylon catch to prevent plug accidentally working loose.

10. Terminal block and socket for mains connection.

11. Sighting holes for easy alignment.



Clipper build-up sequence

Clipper can be installed by one man and requires a minimum of tools.

Thanks to its two-piece construction the first, lightweight part of the luminaire can be fixed to the ceiling and connected to the lighting circuit while the second, major part can be left safely in its box until site conditions are favourable for completing the installation. Such ease of handling and flexibility of action will benefit the electrical contractor (and, later, the maintenance engineer) and will be appreciated by the other contractors on site.

1. The ceiling plate is installed first. It is pre-punched for both conduit and BESA boxes.

2. The cables enter either through the top fixing holes or via the end knock-outs if through-wiring is preferred. Connection is then made to the terminal block. The ceiling plate is now secure electrically and mechanically and the other trades can continue around it.

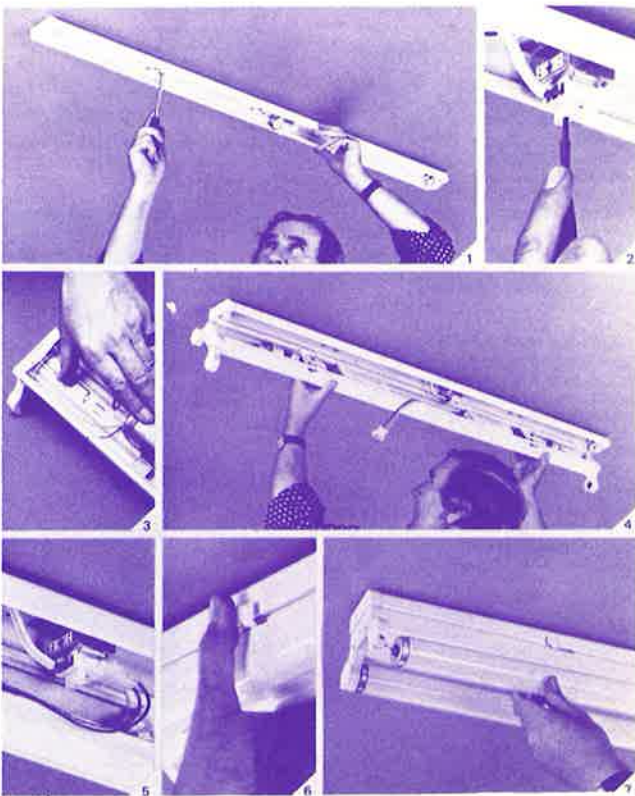
3. When the other trades are complete the electrical contractor returns, unpacks the spine and clips the lampholders into position. Reflectors or diffuser end plates are added at this stage if specified.

4. The latches are opened and the spine is hooked onto the ceiling plate. The ceiling plate is now fully supporting the weight of the spine, leaving the installer with both hands free.

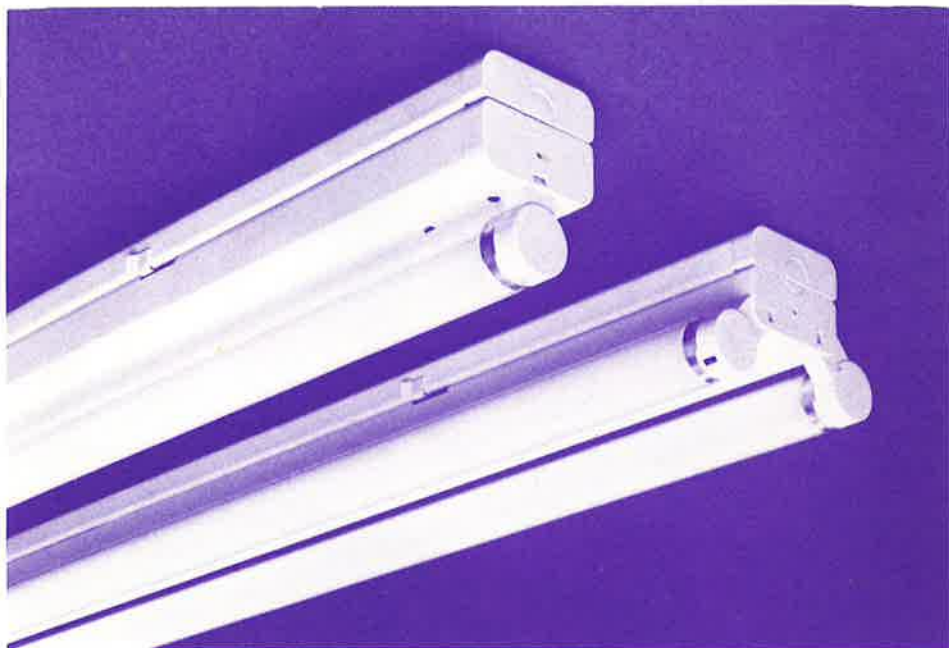
5. Electrical connection is made by inserting the plug from the spine into the ceiling plate terminal socket. Guide ribs prevent incorrect polarity and the plug clicks into position.

6. The spine and ceiling plate are now aligned by checking the central sighting holes, and the installation is completed by swinging up the spine and closing the two latches.

7. The fitting is ready to accept the appropriate Thorn fluorescent tube, which is fitted by slotting into the lampholders and twisting through 90°. For enclosed versions the diffuser or controller is added.



Clipper batten fittings



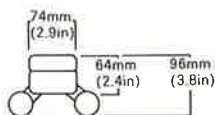
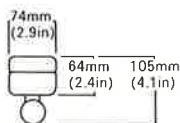
The basic batten is made up of two parts, the ceiling plate and the spine. The same ceiling plate is suitable for both single and twin lamp spines. The ceiling plate consists of a metal channel containing a central terminal block for mains connection and plastic end plates with knock-outs for end conduit entry.

The spine is a metal channel into which is fixed the control components pre-wired to the lampholders. The holders locate at the ends of the spine with a simple spring clip.

There is a flying lead with plug which locates in the socket of the ceiling plate terminal socket.

The spine incorporates two mechanical finger latches and hinges which locate and fix the spine to the ceiling plate. The spine is supplied with gear suitable for 230/240 volt 50Hz. Details of other voltages on application.

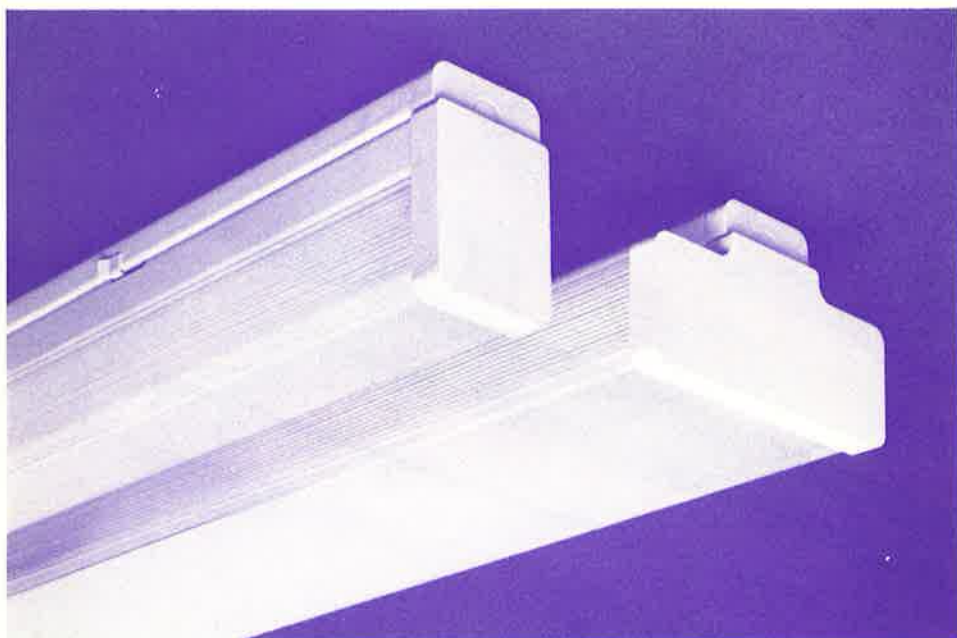
The luminaire complies with BS 4533-2.2 for normal interior applications (IP 20).



RANGE

Nominal length	Rating	Ceiling plate	Spine	Length	Weight
mm ft		Catalogue no.	Catalogue no.	(mm)	(kg)
1200 4	40W Single	FCMA.4	FCMQ.40	1229	4.6
1200 4	40W Twin	FCMA.4	FCMQ.240	1229	6.4
1500 5	65W Single	FCMA.5	FCMQ.65	1529	5.6
1500 5	65W Twin	FCMA.5	FCMQ.265	1529	7.7
1800 6	75W Single	FCMA.6	FCMQ.675	1793	6.1
1800 6	75W Twin	FCMA.6	FCMQ.2675	1793	8.3

Clipper diffuser fittings



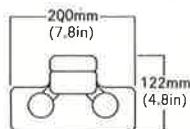
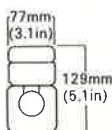
Plain opal diffusers extruded in acrylic are available for both single and twin Clipper battens. The diffusers are held by spring-loaded end caps which clip out the lampholder assemblies. When mounting the diffuser version end to end a space of 30mm between adjacent ceiling plates must be left to allow freedom of operation of the end plates.

The batten part of the luminaire is supplied as two separate components: the ceiling plate with mains terminal socket and

the spine containing the control gear and plug on a flying lead to connect to the terminal socket.

The spine incorporates two mechanical finger latches and hinges which locate and fix the spine to the ceiling plate.

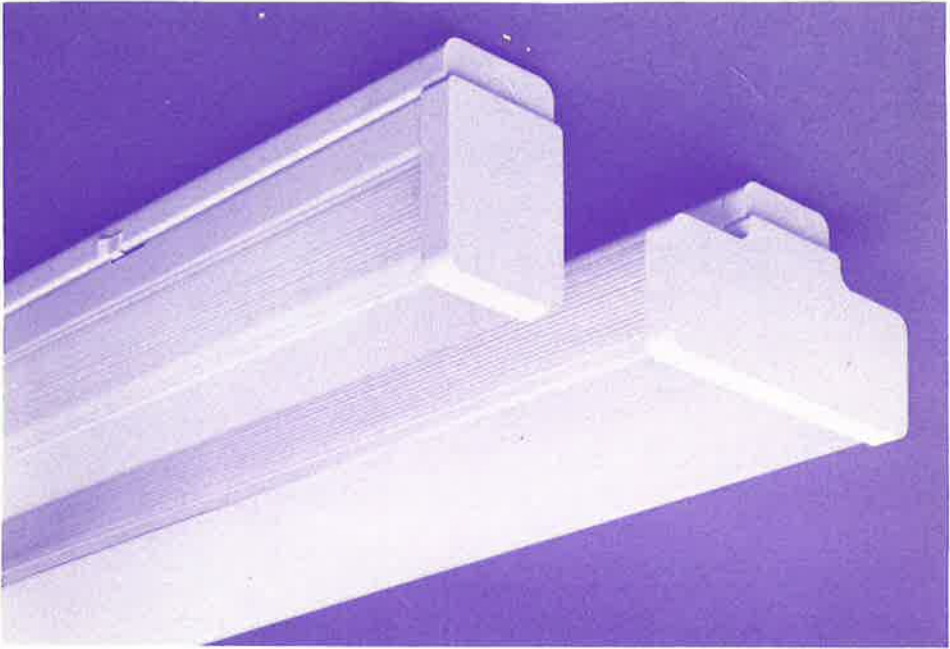
The spine is supplied with gear suitable for 230/240 volt 50Hz. Details of other voltages on application. The luminaire complies with BS 4533-2.2 for normal interior applications (IP 20).



RANGE

Nominal length mm	ft	Rating	Ceiling plate Catalogue no.	Spine Catalogue no.	Diffuser Catalogue no.	Length (mm)	Weight (kg)
1200	4	40W Single	FCMA.4	FCMQ.40	FCMD.4	1242	4.6
1200	4	40W Twin	FCMA.4	FCMQ.240	FCMD.24	1242	6.5
1500	5	65W Single	FCMA.5	FCMQ.65	FCMD.5	1544	5.6
1500	5	65W Twin	FCMA.5	FCMQ.265	FCMD.25	1544	7.8
1800	6	75W Single	FCMA.6	FCMQ.675	FCMD.6	1812	6.1
1800	6	75W Twin	FCMA.6	FCMQ.2675	FCMD.26	1812	8.5

Clipper prismatic controllers



Clear prismatic controllers extruded in acrylic are available for both single and twin Clipper battens.

The diffusers are held by spring-loaded end caps which clip out the lampholder assemblies.

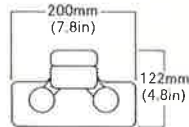
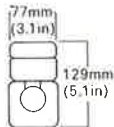
When mounting the prismatic version end to end a space of 30mm between adjacent ceiling plates must be left to allow freedom of operation of the end plates.

The batten part of the luminaire is supplied as two separate components: the ceiling plate with mains terminal socket and the spine containing the control gear and plug on a flying lead to connect to the terminal socket.

The spine incorporates two mechanical finger latches and hinges which locate and fix the spine to the ceiling plate.

The spine is supplied with gear suitable for 230/240 volt 50Hz.

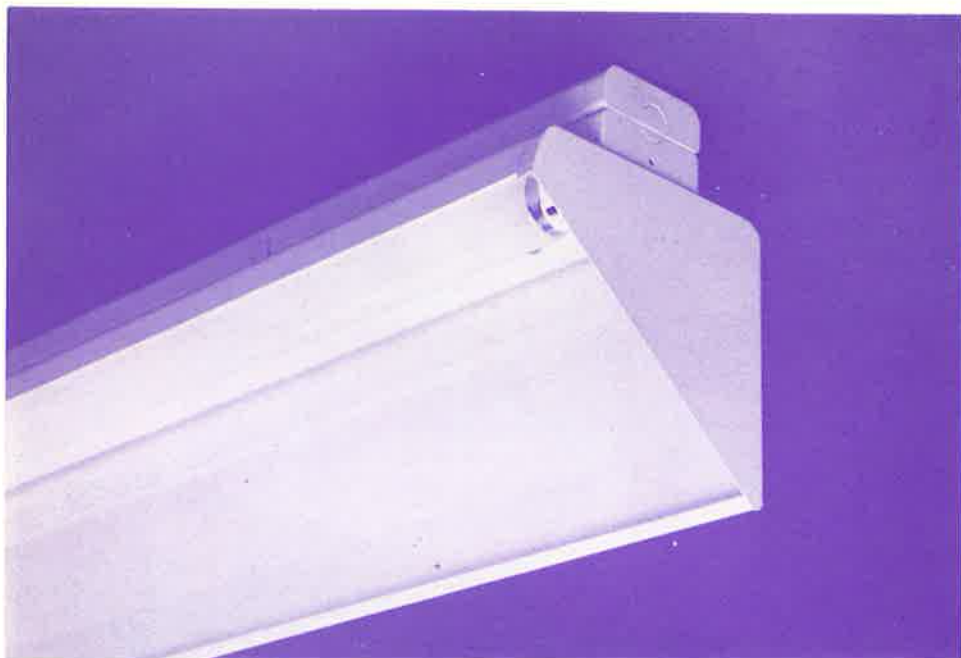
Details of other voltages on application. The luminaire complies with BS 4533-2.2 for normal interior applications (IP 20).



RANGE

Nominal length		Rating	Ceiling plate	Spine	Controller	Length	Weight
mm	ft		Catalogue no.	Catalogue no.	Catalogue no.	(mm)	(kg)
1200	4	40W Single	FCMA.4	FCMQ.40	FCMC.4	1242	4.6
1200	4	40W Twin	FCMA.4	FCMQ.240	FCMC.24	1242	6.5
1500	5	65W Single	FCMA.5	FCMQ.65	FCMC.5	1544	5.6
1500	5	65W Twin	FCMA.5	FCMQ.265	FCMC.25	1544	7.8
1800	6	75W Single	FCMA.6	FCMQ.675	FCMC.6	1812	6.1
1800	6	75W Twin	FCMA.6	FCMQ.2675	FCMC.26	1812	8.5

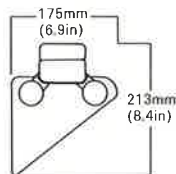
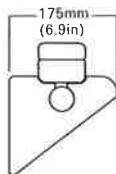
Clipper angle reflectors



The reflectors are manufactured from sheet steel and finished with high reflectivity white acrylic enamel. The same reflector is suitable for both single and twin lamp spines. The reflectors are simply fixed with two screws which engage cage nuts positioned in the knock-outs provided in the spine.

The batten part of the luminaire is supplied as two separate components: the ceiling plate with mains terminal socket and the spine containing the control gear and plug on a flying lead to connect to the terminal socket. The spine incorporates two mechanical finger latches and hinges which locate and fix the

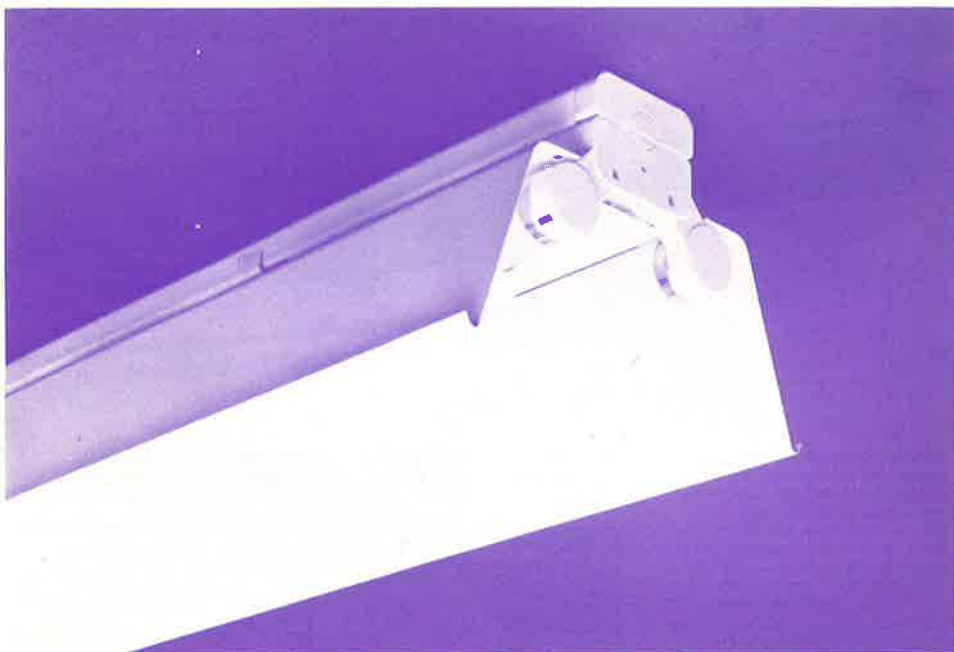
spine to the ceiling plate. The spine is supplied with gear suitable for 230/240 volt 50Hz. Details of other voltages on application. The luminaire complies with BS 4533-2.2 for normal interior applications (IP 20).



RANGE

Nominal length		Rating	Ceiling plate	Spine	Reflector	Length	Weight
mm	ft		Catalogue no.	Catalogue no.	Catalogue no.	(mm)	(kg)
1200	4	40W Single	FCMA.4	FCMQ.40	FCMY.4	1229	6.0
1200	4	40W Twin	FCMA.4	FCMQ.240	FCMY.4	1229	7.5
1500	5	65W Single	FCMA.5	FCMQ.65	FCMY.5	1529	7.3
1500	5	65W Twin	FCMA.5	FCMQ.265	FCMY.5	1529	9.2
1800	6	75W Single	FCMA.6	FCMQ.675	FCMY.6	1793	7.6
1800	6	75W Twin	FCMA.6	FCMQ.2675	FCMY.6	1793	9.7

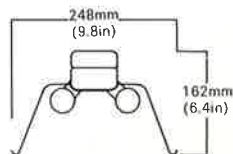
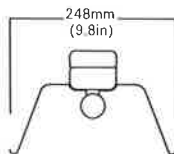
Clipper dispersive metal reflectors



The open-ended reflectors are manufactured from sheet steel and finished with high reflectivity white acrylic enamel. The same reflector is suitable for both single and twin lamp spines.

The reflectors are simply fixed with two screws which engage cage nuts positioned in the knock-outs provided in the spine. The batten part of the luminaire is supplied as two separate components: the ceiling plate with mains terminal socket and the spine containing the control gear and plug on a flying lead to connect to the terminal socket. The spine incorporates two mechanical finger latches and hinges which locate and fix the

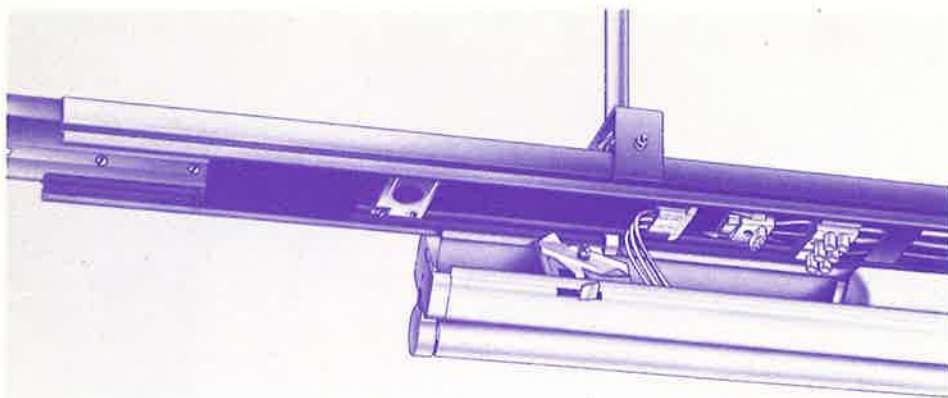
spine to the ceiling plate. The spine is supplied with gear suitable for 230/240 volt 50Hz. Details of other voltages on application. The luminaire complies with BS 4533-2.2 for normal interior applications (IP 20).



RANGE

Nominal length		Rating	Ceiling plate	Spine	Reflector	Length	Weight
mm	ft		Catalogue no.	Catalogue no.	Catalogue no.	(mm)	(kg)
1200	4	40W Single	FCMA.4	FCMQ.40	FCMR.4	1229	6.1
1200	4	40W Twin	FCMA.4	FCMQ.240	FCMR.4	1229	7.8
1500	5	65W Single	FCMA.5	FCMQ.65	FCMR.5	1529	7.4
1500	5	65W Twin	FCMA.5	FCMQ.265	FCMR.5	1529	9.5
1800	6	75W Single	FCMA.6	FCMQ.675	FCMR.6	1793	8.3
1800	6	75W Twin	FCMA.6	FCMQ.2675	FCMR.6	1793	10.4

Clipper trunking



Trunking combines ease of installation with lighting flexibility and is suitable for both commercial and industrial applications.

Clipper trunking is particularly advantageous as it saves the use of ceiling plates, giving benefits in terms of cost saving, and also makes the complete assembly shallower.

The spines with their attachments clip on to the trunking in the same manner as to the ceiling plate using the finger latches and thereby eliminating the cost and labour of tee bolts, nuts and washers used with conventional trunking systems. A simple accessory bracket enables other types of lighting and conduit to be easily connected to extend the flexibility of the trunking.

Clipper trunking is available in alternative finishes:

/P suffix P on the catalogue number indicates a light grey paint finish which is suitable for use in completed commercial or dry industrial buildings where standard interior lighting fittings are normally used.

/G suffix G indicates a hot dipped galvanised finish which is recommended for use in buildings where the trunking is installed during the construction stage or for humid interior applications. This galvanised finish with chromate wash can be painted on site to give additional protection and to match with interior colour schemes.

Maximum recommended trunking suspension centres are 4 metres.

When trunking is used in place of the ceiling plate the overall depth is increased by 16mm above that shown on the individual attachment pages.

FCM 4500
4.5 metre length
Clipper
Trunking



FCM 4502
Fibre Cable
Support



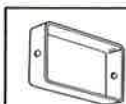
FCM 4503
Trunking
Coupler



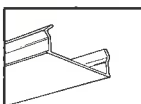
FCM 4504
Trunking
Suspension
Hanger



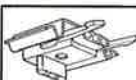
FCM 4506
Trunking
End Plate



FCM 4507
1.8 metre length
pvc Cover
Strip



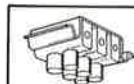
FCM 4508
Terminal
Socket
Assembly



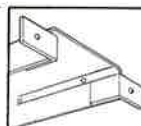
FCM 4509
Auxiliary
Suspension
Bracket



FCM 4510
30A Terminal
Block
Assembly



FCM 4511
Trunking
End Coupler



FCM 4512*
5A Fused
Terminal Block



FCM 4513
30A Fused
Terminal Block

* use FCM F

Clipper circuit data and accessories

Circuit data

Electrical data for 240V 50Hz single tube circuits. Average performance tested at 25°C to BS 2818.

Electrical Supply Variation

The standard electricity supply in the UK is 230/240V 50Hz and the luminaires are suitable for this supply as standard. Luminaires required for 220V 50Hz: delivery and details on application.

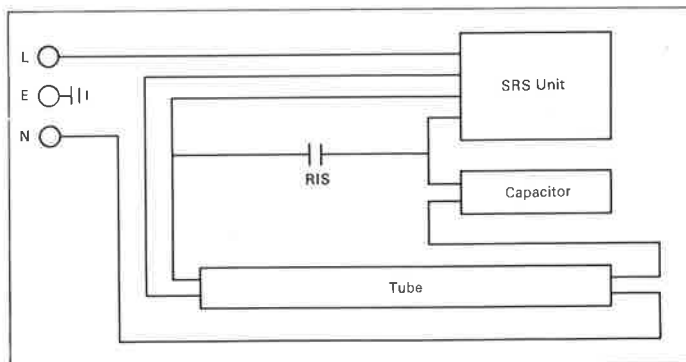
Nominal tube length	1200mm/4ft	1500mm/5ft	1800mm/6ft
Nominal tube watts	40	65	75
Circuit type	SRS	SRS	SRS
Total circuit watts	55	82	90
Average tube volts	104	115	130
Average tube amps	0.47	0.64	0.64
Mains current amps	0.24	0.37	0.42
Total volt amps	58	93	100
Lagging power factor	0.95	0.92	0.90
Minimum starting temperature	-5°C	-5°C	-5°C
% 3rd harmonics/phase	25	25	25

Replacement control gear

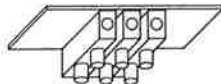
Nominal length mm ft	Rating	SRS unit	Capacitor
1200 4	40W	G BU40	G C2273
1500 5	65W	G BU65	G C2220
1800 6	75W	G BU675	G C2220

Circuit diagram

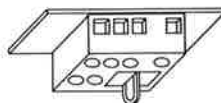
Switchless start



Accessories



FCMT
3 way terminal block with capacity of
3 x 2.5mm cable per terminal to clip into
ceiling plate.



FCMF
5A fused terminal block to clip into ceiling
plate.

Atlantic range

See new Clipper range – pages 35-43

Features

1. Battens : the cross section gives an exceptionally strong batten with very clean lines. The 5mm ceiling stand-off reduces the effect of ceiling unevenness against the straight batten edge. The impact resistant dark blue* plastic end plates are attached at the factory to give a smart modern appearance to the fitting.
**White ends are available as optional extras.*
2. Circuits : the latest ballast units are employed in switchless start circuits (no starter switch – reduces maintenance). Capacitors are of standard high quality. Wiring is of the latest metric solid conductor, single core type, insulated with high temperature PVC connected to the components by either push-in connector or pin connectors. The side entry fuse is accessible without touching any part of the fitting or most attachments.
3. Lampholders : spring loaded lampholders enable either-end relamping of the fitting.

They are mounted on bridge pieces which can be secured to the batten without the use of tools.

4. Installation : fittings are suitable for conduit, rod, chain or conduit box mounting at normal suspension centres. Alternative mains entry is provided in the centre back of the battens or by a cut-out in each end plate. A heavy duty, large capacity, terminal block is capable of accepting looped 2.5mm² cables.

5. Finish : high quality acrylic enamel white finish is applied to all spines and reflectors. All diffusers and prismatic controllers are of top quality light stabilised plastic.

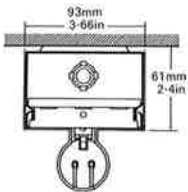
6. Attachments : two screws operating in sliding nuts secure the channel covers and reflectors to the spine through keyhole slots. Most commercial attachments then simply hook or spring on to channel covers or special brackets.

Index

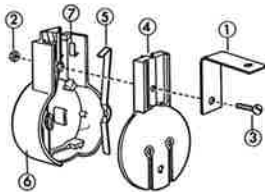
Atlantic features	45
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Atlantic A4E two-tone diffuser/controller	49
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Standards : Fittings comply with BS.4533-2.2 (IP 20)

Indoor luminaires in general are designed to BS 4533 Part 1 Section 1.4 and, except where otherwise stated, are "Luminaires for use in normal atmospheres." Where use in more onerous situations is contemplated, e.g. in part-completed buildings before drying out and made suitable for occupation, damp cellars, special processing plants, etc, additional surface protection may be required. Special finishes for such applications can be agreed in consultation with your local Thorn Lighting Office.

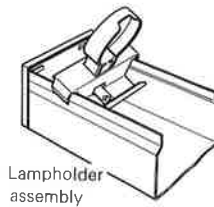


Cross section

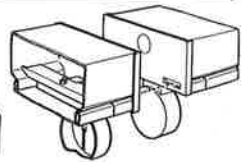


Lampholders

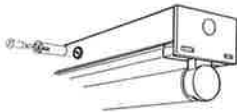
1. Spring bracket
2. Full nut
3. Panhead fixing screw
4. Cover moulding
5. Terminal contact
6. Body moulding
7. Contact backing plate



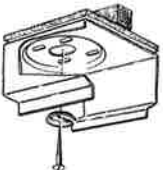
Lampholder assembly



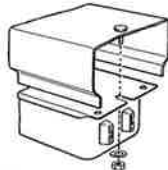
Interlocking plastic end caps



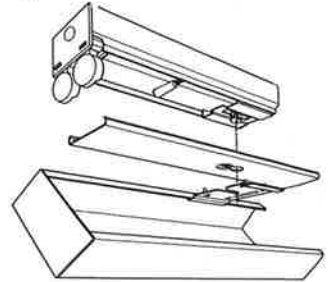
Side entry fuse



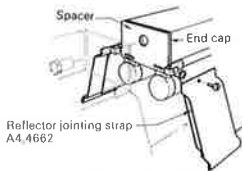
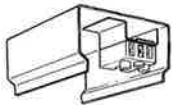
Slotted washers



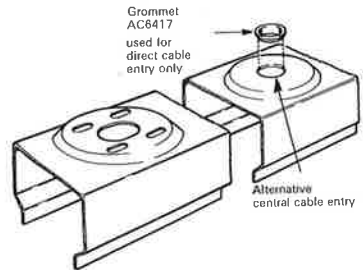
Welded-in screw studs



Fast positive attachment fixing



Reflector jointing strap assembly

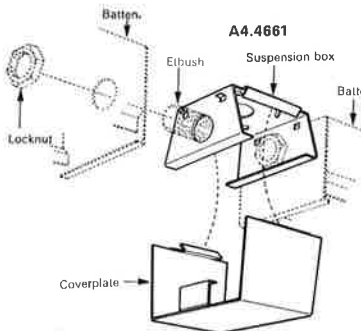


Grommet AC8417 used for direct cable entry only

Alternative central cable entry

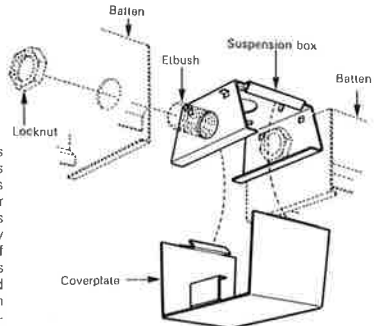
Mains terminal block

A4.4662 Reflector jointing strap: this attachment is for use when open-ended metal reflectors are being continuously mounted. It closes the gap between adjacent reflectors and ensures perfect alignment when battens are rigidly mounted.



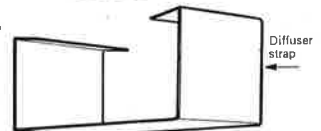
A4.4661

A4.4661: This spacer is available when continuous mounting of diffusers (except A4C and A4D) or closed-end reflectors is required but has no facility for the alignment of adjacent attachments which should be carried out by a manual operation on installation (space between battens: 52mm/2-05in).



A4.4660

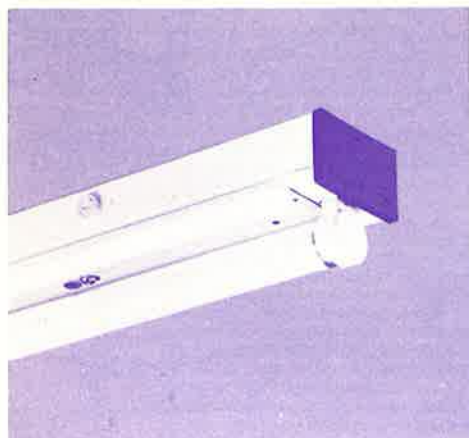
A4.4660: This spacer assembly is available when fixed-end diffuser A4C and A4D fittings are required to be mounted continuously (space between battens: 52mm/2-05in).



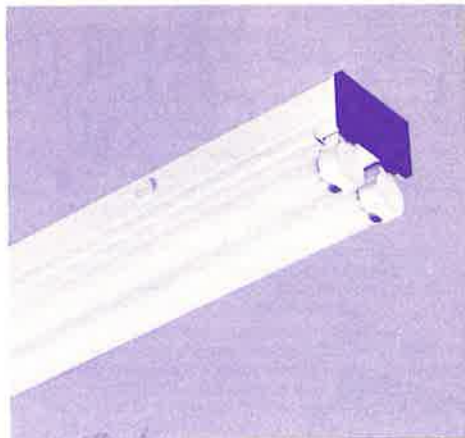
Diffuser strap

These items are provided with a suspension hole and small conduit box cluster to help minimize the number of suspension points required (except on 2400mm/8ft and four-tube fittings).

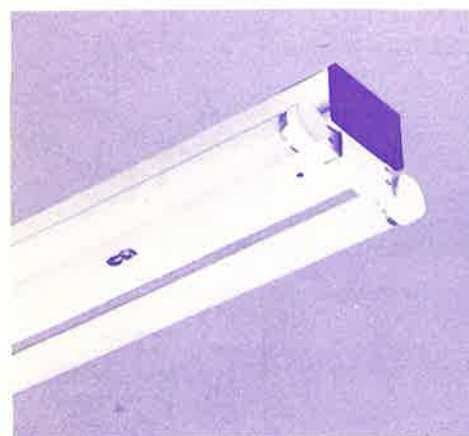
Atlantic basic battens



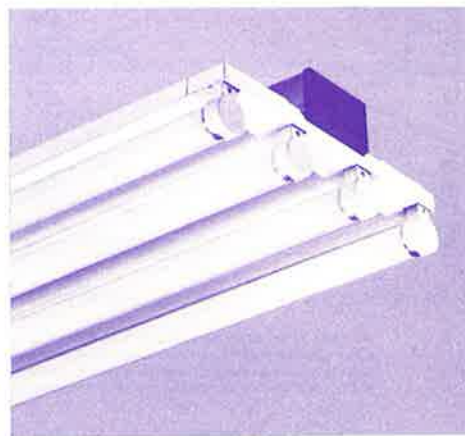
A4A/885



A4A/2885



A4A/B2885



A4B/4885

Atlantic basic battens

The basic spine plus the series "A" channel cover produces a range of single and twin tube batten fittings in 8ft. lengths,

The 4-tube spines plus the series "B" channel cover produce a range of 4-tube batten fittings which are eminently suitable for use with suspended luminous ceilings.

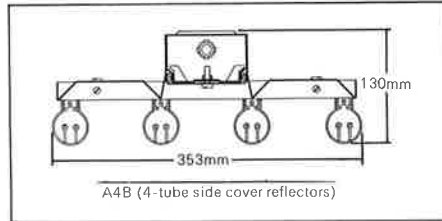
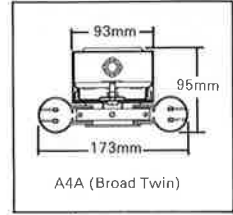
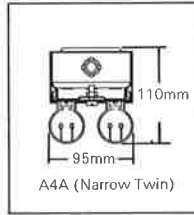
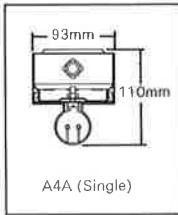
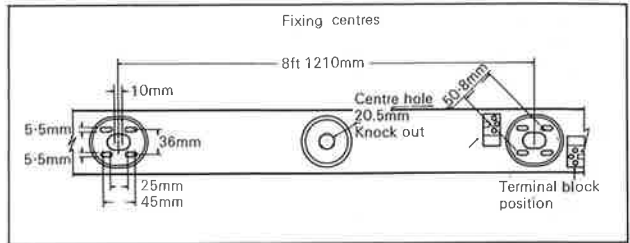
These general-purpose fittings can be used anywhere where an unshielded fluorescent tube is acceptable.

All fittings are suitable for use on 230/240V 50Hz supplies.

Details of fitting for other supplies are available on application.

The "A" channel cover may also be used with the twin "B" spine.

Fittings comply with BS4533-2-2 (IP20)

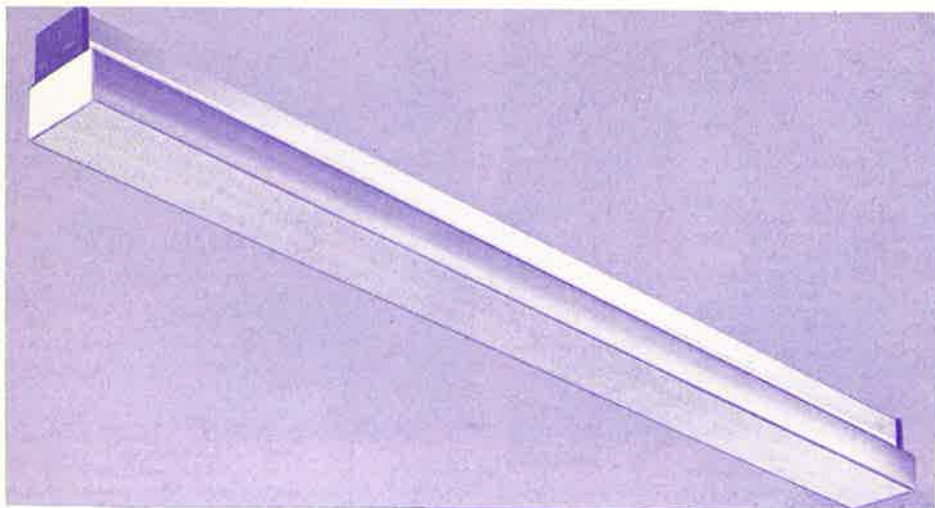


RANGE:

Nominal Tube Length					Components			Dimensions		Approx. weight (incl. tubes)
	mm	ft	Rating	Circuit	Fitting Catalogue no.	1st Attachment Catalogue no.	2nd Attachment Catalogue no.	Spine Catalogue no.	Overall length* mm in	
2400	8	85W	QS	A4A/885	A4A.28	—	—	A4.885	2416 95.1	8.5 18.1
2400	8	2 x 85W	QS	A4A/Q2885	A4A.28	—	—	A4.Q2885	2416 95.1	13.0 29.0
2400	8	2 x 85W	QS	A4A/B2885	A4A.28	—	—	A4.B2885	2416 95.1	13.7 29.5
2400	8	4 x 85W	QS	A4B/Q4885	A4B.48	—	—	A4.Q4885	2416 95.1	26.0 58.0
2400	8	125W	QS	A4A/125	A4A.28	—	—	A4.125	2416 95.1	9.7 21.4
2400	8	2 x 125W	QS	A4A/2125	A4A.28	—	—	A4.2125	2416 95.1	14.2 31.1

*Overall length 5mm/0.2in less without blue end-caps.

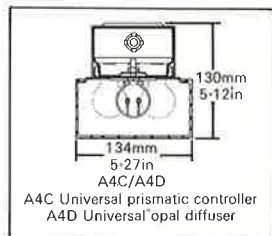
Atlantic A4C and A4D prismatic and opal diffusers



A4C/A/Q2885

A general purpose prismatic controller A4C and opal diffuser A4D are extruded from clear and opal plastic respectively. The controller has clear glare controlling linear prisms on each side and a fine prismatic pattern embossed in the base. The diffuser has smooth opal sides. Injection moulded white end plates are permanently attached and both the controller and diffuser are suitable for use with either single or

twin (close space) tubes. Brackets are supplied with the attachment to secure it to the batten; these are fixed by the channel cover fixing screws on the batten. Standard fittings are for 230/240V 50Hz. Details of fittings for other supplies are available on application. Fittings comply with BS4533 – 2.2 (IP20).



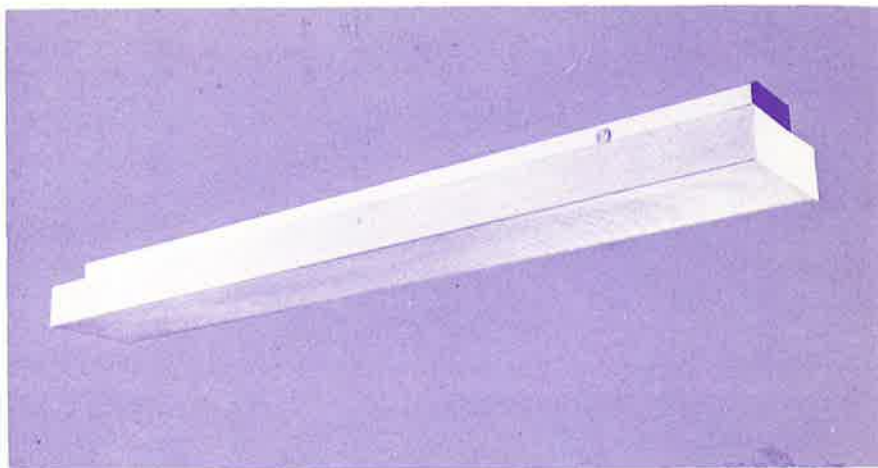
RANGE Prismatic Controller

Complete fitting				Components				Dimensions		Approx. weight	
Nominal tube length	Rating	Circuit	Catalogue no.	1st Attachment Catalogue no.	2nd Attachment Catalogue no.	Batten Catalogue no.	Overall length			(incl. tubes)	
mm ft.							mm	in		kg	lb
2400 8	85W	QS	A4C/A/885	A4C.28	A4A.28	A4.885	2429	95.6	10.1	22.3	
2400 8	2 x 85W	QS	A4C/A/Q2885	A4C.28	A4A.28	A4.Q2885	2429	95.6	15.3	33.7	
2400 8	125W	QS	A4C/A/125	A4C.28	A4A.28	A4.125	2429	95.6	11.4	25	
2400 8	2 x 125W	QS	A4C/A/2125	A4C.28	A4A.28	A4.2125	2429	95.6	15.7	34.7	

Opal Diffuser

2400 8	85W	QS	A4D/A/885	A4D.28	A4A.28	A4.885	2429	95.6	10.1	22.3	
2400 8	2 x 85W	QS	A4D/A/Q2885	A4D.28	A4A.28	A4.Q2885	2429	95.6	15.3	33.7	
2400 8	125W	QS	A4D/A/125	A4D.28	A4A.28	A4.125	2429	95.6	11.4	25	
2400 8	2 x 125W	QS	A4D/A/2125	A4D.28	A4A.28	A4.2125	2429	95.6	15.7	34.7	

Atlantic A4E two-tone diffuser/controller



A4E/A/Q 2885

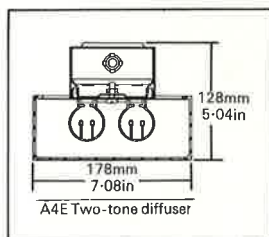
This compact two-tone extruded plastic diffuser/controller gives good light control. The sides are in opal to give adequate shielding and freedom from glare, while the base is embossed with a clear prismatic pattern for high efficiency.

The controller has permanently attached injection moulded ends and is supported by brackets, supplied with it, which are secured to the channel cover fixing screws onto the batten. For use with twin (close spaced) tubes (or single tube if required).

Standard fittings are for 230/240V 50Hz.

Details of fittings for other supplies are available on application.

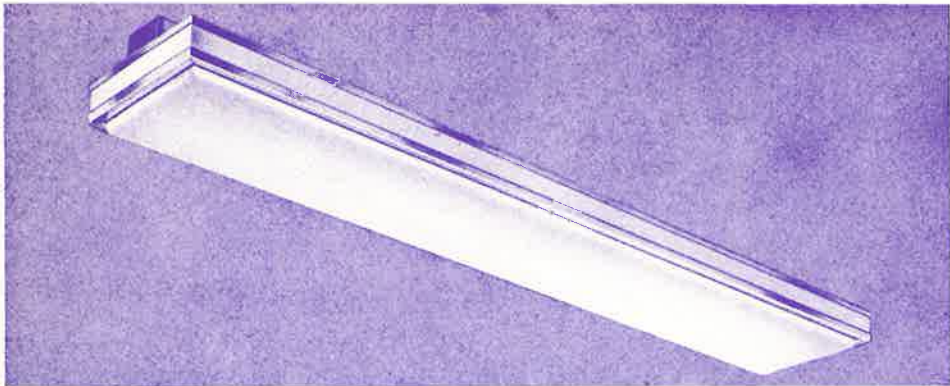
Fittings comply with BS4533 - 2.2 (IP20).



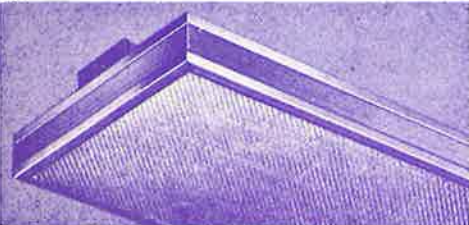
RANGE

Complete fitting				Components				Dimensions				Approx. weight (incl. tubes)
Nominal tube length	mm	ft.	Rating	Circuit	Catalogue no.	1st Attachment Catalogue no.	2nd Attachment Catalogue no.	Batten Catalogue no.	Overall length mm	in		
2400	8	2 x 85W	OS	A4E/A/Q2885	A4E.28	A4A.28	A4.O2885	2440	96	15.6	34.4	
2400	8	2 x 125W	QS	A4E/A/2125	A4E.28	A4A.28	A4.2125	2440	96	16	35.4	

Atlantic A4FA aluminium frame plain trim



A4FAD/B2885



A4FAC/B2885

The satin anodized extruded aluminium frame surrounding the fitting provides precise detailing and a crisp appearance to the fitting.

Into the base of this aluminium frame can be fitted either a metalised louver (L), opal dish (D) or prismatic controller (C) to provide the appearance or light control required.

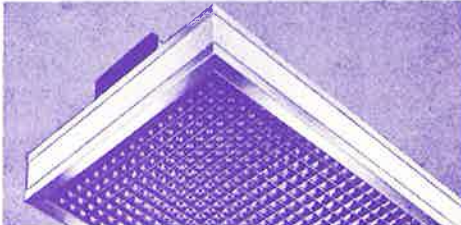
The attachment hooks onto a standard broad channel cover, using special clips provided, and allows a small percentage of upward light.

A larger version of this aluminium frame attachment is available, for use with four-tube battens, with a dropped prismatic panel framed in opal Z section extruded polystyrene.

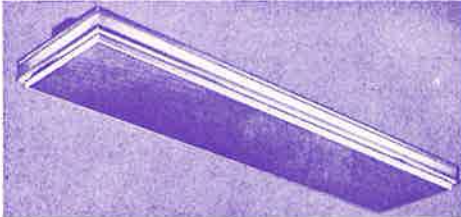
Standard fittings are for 230/240V 50Hz.

Details of fittings for other supplies are available on application.

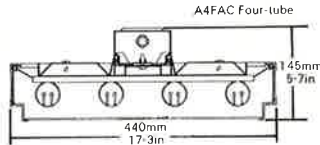
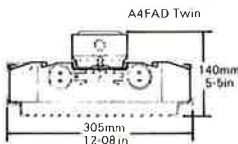
Fittings comply with BS 4533 – 2-2 (IP20)



A4FAL/B2885



A4FAC/B/Q4885



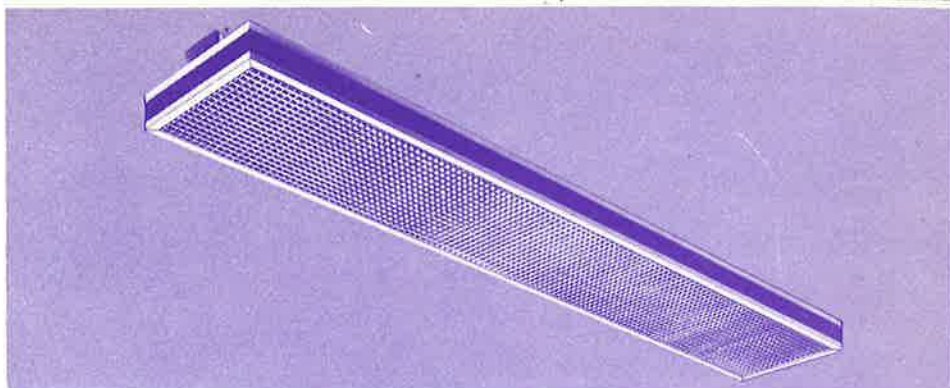
RANGE

Complete fitting				Components				Dimensions		
Nominal tube length					1st Attachment	2nd Attachment	Batten	Overall length	Approx. weight	
mm	ft.	Rating	Circuit	Catalogue no.	Catalogue no.	Catalogue no.	Catalogue no.	mm	in	(incl. tubes)
2400	8	2 x 85W	QS	A4FAC/B2885	A4FAC.28	*	A4.B2885	2439	96	19.3 42.5
2400	8	4 x 85W	QS	A4FAC/B/Q4885	A4FAC.48	A4B.48	A4.Q4885	2457	96.7	33.1 73
2400	8	2 x 85W	QS	A4FAD/B2885	A4FAD.28	*	A4.B2885	2439	96	19.3 42.5
2400	8	2 x 85W	QS	A4FAL/B2885	A4FAL.28	*	A4.B2885	2439	96	20 44.2

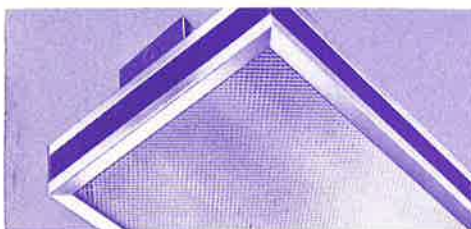
*Channel cover included with 1st attachment.

Overall depth of Twin FAC and FAL is 122mm/4.8in

Atlantic A4FH aluminium frame, black hide effect trim



A4FHL/B2885



A4FHC/B2885



A4FHD/B2885

The satin anodized extruded aluminium frame surrounding the fitting has a simulated black hide trim and provides precise detailing and a crisp appearance to the fitting.

Into the base of the aluminium frame can be fitted either a metallised louver (L), opal dish (D) or prismatic controller (C) as required.

The attachment hooks onto a standard broad channel cover, using special clips provided, and allows a small percentage of upward light.

A larger version of this aluminium frame attachment is available, for use with four-tube battens, with a dropped prismatic panel framed in opal Z section extruded polystyrene.

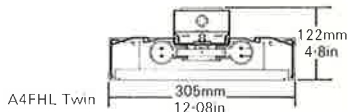
Standard fittings are for 230/240V 50Hz.

Details of fittings for other supplies are available on application.

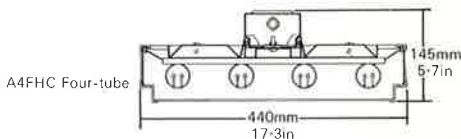
Fittings comply with BS4533 - 2.2 (IP20).



A4FHC/B/Q 4885



A4FHL Twin



A4FHC Four-tube

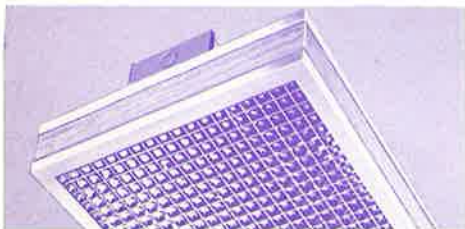
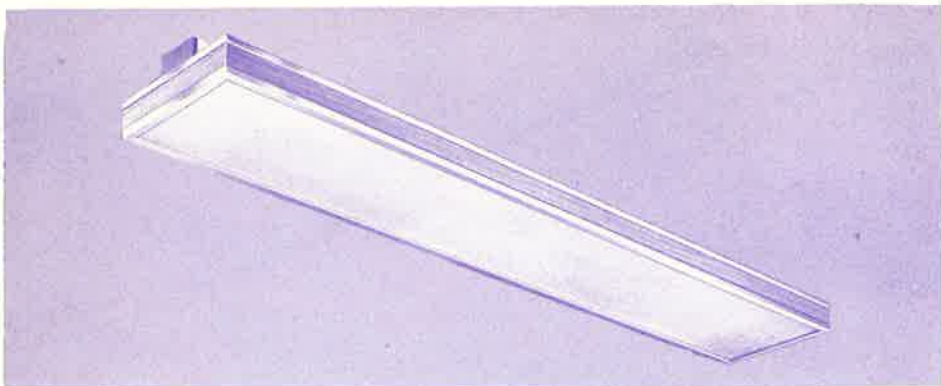
RANGE

Complete fitting					Components			Dimensions			Approx. weight (incl. tubes) kg lb	
Nominal tube length mm ft.	Rating	Circuit	Catalogue no.		1st Attachment Catalogue no.	2nd Attachment Catalogue no.	Batten Catalogue no.	Overall length mm in				
2400 8	2 x 85W	QS	A4FHC/B2885	A4FHC.28	*		A4.B2885	2439	96		19.3	42.5
2400 8	4 x 85W	QS	A4FHC/B/Q4885	A4FHC.48	A4B.48		A4.BQ4885	2467	96.7		33.1	73
2400 8	2 x 85W	QS	A4FHD/B2885	A4FHD.28	*		A4.B2885	2439	96		19.3	42.5
2400 8	2 x 85W	QS	A4FHL/B2885	A4FHL.28	*		A4.B2885	2439	96		20	44.2

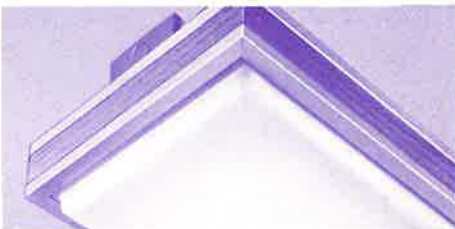
*Channel cover included with 1st attachment

Overall depth of Twin FHC is 122mm/4.8in and of FHD is 140mm/5.5in

Atlantic A4FT aluminium frame, timber effect trim



A4FTL/B2885



The anodized extruded aluminium frame surrounding the fitting has a simulated timber trim. A metalised louver (L), opal dish (D) or prismatic controller (C) can be fitted to provide the final appearance or light control required.

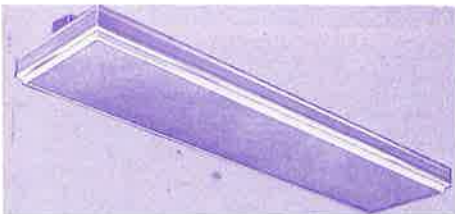
The attachment hooks onto a standard broad channel cover, using special clips provided, and allows a small percentage of upward light.

A larger version of this aluminium frame attachment is available, for use with four-tube battens, with a dropped prismatic panel framed in opal Z section extruded polystyrene.

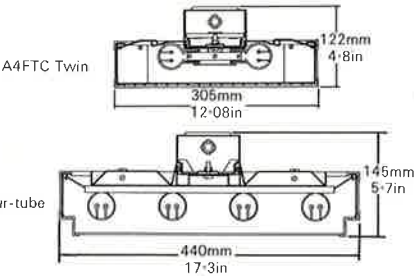
Standard fittings are for 230/240V 50Hz.

Details of fittings for other supplies are available on application.

Fittings comply with BS4533 – 2.2 (IP20)



A4FTC/B/Q 4885



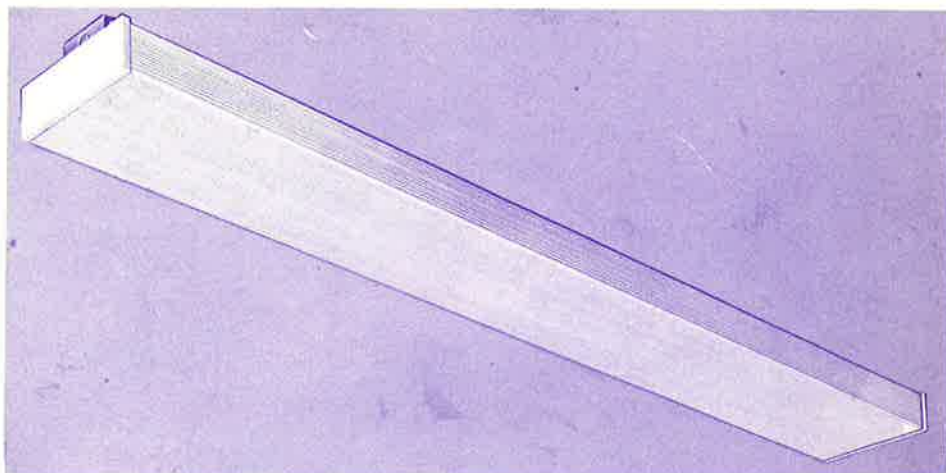
RANGE

Complete fitting				Components				Dimensions				Approx. weight (incl. tubes) kg lb
Nominal tube length												
mm	ft	Rating	Circuit	Catalogue no.	1st Attachment Catalogue no.	2nd Attachment Catalogue no.	Batten Catalogue no.	Overall length mm	in			
2400	8	2 x 85W	QS	A4FTC/B2885	A4FTC.28	*	A4.B2885	2439	96		19.3 42.5	
2400	8	4 x 85W	QS	A4FTC/B/Q4885	A4FTC.48	A4B.48	A4.Q4885	2457	96.7		33.1 73	
2400	8	2 x 85W	QS	A4FTD/B2885	A4FTD.28	*	A4.B2885	2439	96		19.3 42.5	
2400	8	2 x 85W	QS	A4FTL/B2885	A4FTL.28	*	A4.B2885	2439	96		20 44.2	

*Channel cover included with 1st attachment

Overall depth of Twin FTD is 140mm/5.5in and of FTL is 122mm/4.8in

Atlantic A4P prismatic controller



A4P/B2886

The broad prismatic controller has been specifically designed for use with twin (broad spaced) tubes and the configuration of batten, lamp position and prismatic controller allows a crisp, modern rectangular shape to be used.

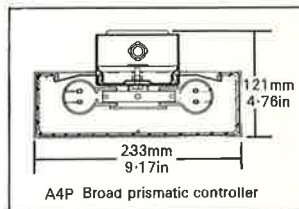
The controller is extruded in clear plastic with linear side prisms and pyramidal base prisms.

The function of the prisms is to re-direct light from the tubes either above the horizontal or up to 30° below it, thus ensuring the least amount of light being emitted in the zone most likely to give rise to discomfort glare. A wider version of the prismatic controller only has been designed for use on four-tube battens.

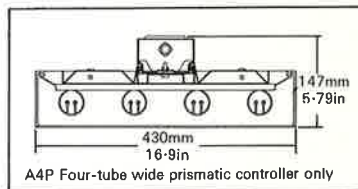
Injection moulded white end caps are supplied with the attachments and are simply attached by locating two pins at the top and one at the bottom of each end cap with corresponding holes in the ends of the attachment. Standard fittings are for 230/240V 50Hz.

Details of fittings for other supplies are available on application.

Fittings comply with BS4533-2.2 (IP20).



A4P Broad prismatic controller



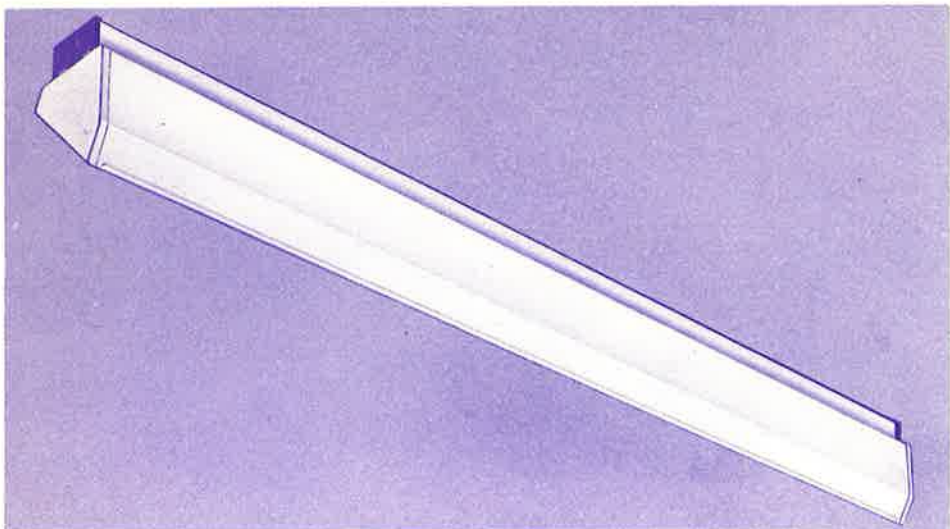
A4P Four-tube wide prismatic controller only

RANGE

Complete fitting				Components			Dimensions			Approx. weight (incl. tubes) kg lb
Nominal tube length				1st Attachment Catalogue no.	2nd Attachment Catalogue no.	Batten Catalogue no.	Overall length mm	in		
2400	8	2 x 85W	QS	A4P/B2885	A4P.28	*	A4.B2885	2452	96.6	15.8 35
2400	8	4 x 85W	QS	A4P/B/Q4885	A4P.48	A48.48	A4.Q4885	2452	96.6	29.5 65

*Channel cover included with 1st attachment

Atlantic A4Y angle reflector



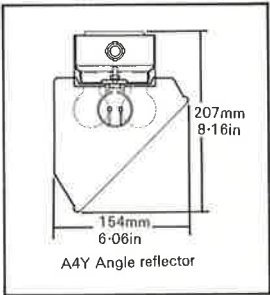
A4Y/O 2885

This angled reflector can be attached to either single or twin-tube batten to provide a general 'flow' of light in a required direction. It is particularly suitable for the lighting of chalk boards, work benches situated against vertical services, factory planning charts and for the general illumination of shop windows.

Standard fittings are for 230/240V 50Hz.

Details of fittings for other supplies are available on application.

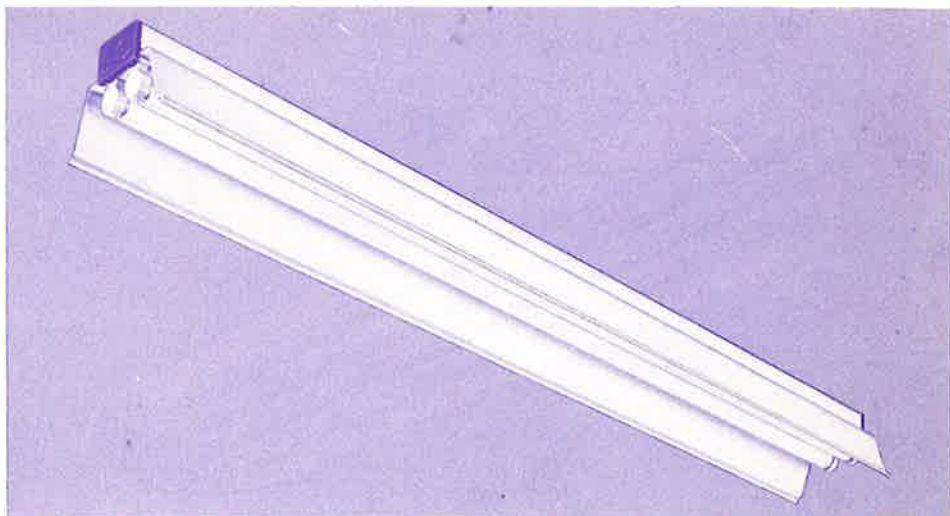
Fittings comply with BS4533 - 2.2 (IP20).



RANGE

Complete fitting					Components			Dimensions			Approx. weight (incl. tubes) kg lb
Nominal tube length	mm	ft	Rating	Circuit	Catalogue no.	1st Attachment Catalogue no.	2nd Attachment Catalogue no.	Batten Catalogue no.	Overall length mm	in	
2400	8		85W	QS	A4Y/885	A4Y.28	—	A4.885	2423	95.4	12 26.5
2400	8		2 x 85W	QS	A4Y/O2885	A4Y.28	—	A4.O2885	2423	95.4	17.3 38.1
2400	8		125W	QS	A4Y/125	A4Y.28	—	A4.125	2423	95.4	13.4 29.7
2400	8		2 x 125W	QS	A4Y/2125	A4Y.28	—	A4.2125	2423	95.4	17.7 39.1

Atlantic A4Z open-ended, slotted-top reflector



A4Z/2885

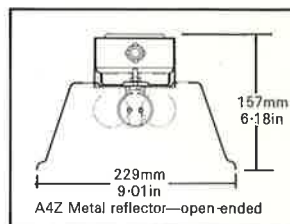
An open-ended metal reflector with large slots in its upper surface to give a generous proportion of upward lighting and reduce brightness contrast. Convection currents through the slots assist in reducing dirt accumulation on the reflector surfaces and help to maintain the efficiency of the installation.

A four-lamp version shown on the next page is also available.

Standard fittings are for 230/240V 50Hz.

Details of fittings for other supplies are available on application.

Fittings comply with BS4533 - 2.2 (IP20).

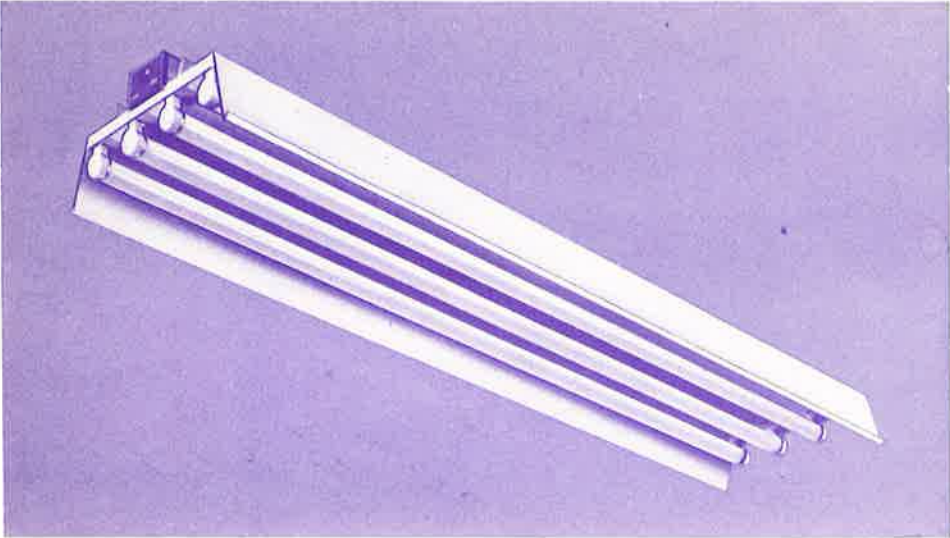


A4Z Metal reflector—open-ended

RANGE

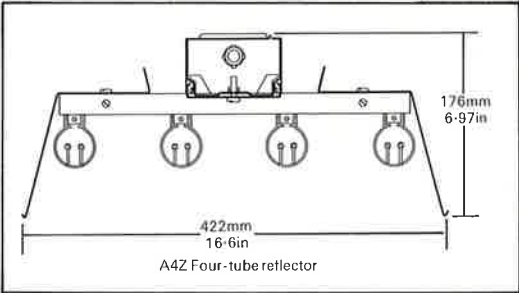
Complete fitting				Components				Dimensions		Approx. weight (incl. tubes)
Nominal tube length				1st Attachment	2nd Attachment	Batten		Overall length		
mm	ft	Rating	Circuit	Catalogue no.	Catalogue no.	Catalogue no.	Catalogue no.	mm	in	kg
2400	8	85W	OS	A4Z/885	A4Z.28	—	A4.885	2416	95.1	13.5
2400	8	2 x 85W	OS	A4Z/Q2885	A4Z.28	—	A4.Q2885	2416	95.1	18.8
2400	8	125W	OS	A4Z/125	A4Z.28	—	A4.125	2416	95.1	15
2400	8	2 x 125W	OS	A4Z/2125	A4Z.28	—	A4.2125	2416	95.1	19.2
										42.3

Atlantic A4Z four-tube slotted-top reflector



A4Z/Q4885

This is a four-lamp version of the A4Z fittings shown on the previous page. All fittings are for 230/240V 50Hz. Fittings comply with BS 4533 – 2·2 (IP 20)



RANGE

Complete fitting					Components			Dimensions		Approx. weight (incl. tubes) kg lb	
Nominal tube length	Rating	Circuit	Catalogue no.		1st Attachment Catalogue no.	2nd Attachment Catalogue no.	Batten Catalogue no.	Overall length mm in			
2400 8	4 x 85W	OS	A4Z/Q4885		A4Z.48	—	A4.Q4885	2416	95.1	30.8	68

Atlantic accessories and replacement control gear

For replacement use only: see new Clipper range—pages 35-43

Batten Accessories

Description	Catalogue no.
Lampholder	GB.1580/A4
Lampholder (broad twin)	GB.1580/A4T
Lampholder plate	
single	A4.4663
twin	A4.4664
broad twin	A4.4679
4-tube	A4.4665
Terminal block	GT.1338
Fuse-holder	GT.1334
Capacitor clip	GY.5288
End-cap	A4.4666
Cage screw	AC.5768
Cage nut	AC.5656
Slotted suspension washer	AC.4861

Attachment Accessories

Diffuser suspension bracket	
A4C, A4D attachments	A4.4667
4-tube attachment suspension bracket	A4.4672
Diffuser suspension bracket	
A4E attachment	A4.4673
5ft Broad cover-plate	A4.4690
6ft Broad cover-plate	A4.4691
8ft Broad cover-plate	A4.4692

Joining Pieces Accessories

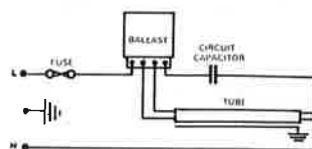
Description	Catalogue no.
Spacer for A4C, A4D diffusers	A4.4680
Spacer for closed-end reflectors and most attachments except A4C, A4D	A4.4661
Reflector jointing strap for A4Z (single/narrow twin)	A4.4662

Aluminium Frames Accessories

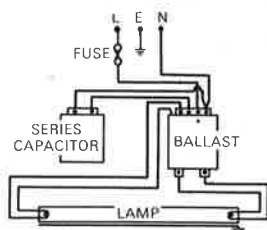
Description	Catalogue no.
Frame support clips (2-tube)	A4.4671
Attachment suspension bracket (4-tube)	A4.4672

CIRCUIT DIAGRAMS

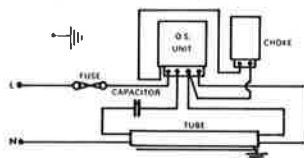
7 Semi-resonant start circuit with essential circuit capacitor



183 Quickstart circuit for combined choke and transformer with essential series capacitor



245 Quickstart circuit with separate choke and essential circuit capacitor

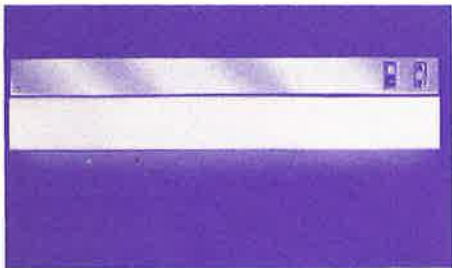


Replacement Control Gear

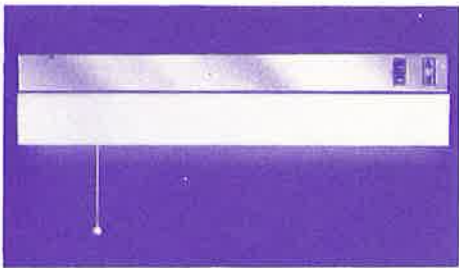
These items are chosen from the extensive range of control gear stocked in, and readily available from regional stores in the U.K. The reference numbers quoted differ from those marked on the control gear in the fitting, but the units are equally applicable to A4 fittings.

		Circuit	Choke(s) or ballast(s)	Quickstart Units	Capacitor(s)	Fuse
40W 4ft	Single	7	1 x GBI/40	—	1 x GC2273	1 x GT1299
	Twin	2 x 7	2 x GBI/40	—	2 x GC2273	1 x GT1299
65W 5ft	Single	7	1 x GBI/65	—	1 x GC2220	1 x GT1299
	Twin	2 x 7	2 x GBI/65	—	2 x GC2220	1 x GT1299
	Broad twin	2 x 7	2 x GBI/65	—	2 x GC2220	1 x GT1299
85W 6ft	Single	7	1 x GBI/685	—	1 x GC2220	1 x GT1299
	Twin	2 x 7	2 x GBI/685	—	2 x GC2220	1 x GT1299
	Broad twin	2 x 7	2 x GBI/685	—	2 x GC2220	1 x GT1299
	4-tube	4 x 7	4 x GBI/685	—	4 x GC2220	2 x GT1299
85W 8ft	Single	183	1 x GBQI/85	—	1 x GC2226	1 x GT1299
	Twin	2 x 183	2 x GBQI/85	—	2 x GC2226	1 x GT1299
	Broad twin	2 x 183	2 x GBQI/85	—	2 x GC2226	1 x GT1299
	4-tube	4 x 183	4 x GBQI/85	—	4 x GC2226	2 x GT1299
125W 8ft	Single	245	1 x GCQI/125	1 x GQS/125	1 x GC2228	1 x GT1299
	Twin	2 x 245	2 x GCQI/125	2 x GQS/125	2 x GC2228	1 x GT1299

Viewpoint combined light and shaver point



LS 15



LST 15

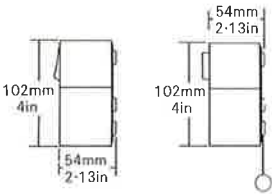
These fluorescent fittings are designed for use in hotels, hostels and homes. There is one model for bedroom and general purpose use and another for use in the bathroom. The fittings employ the 15W 450mm/18in (26mm/1in dia.) Warm White tube, the most efficient tube in the shorter sizes. Both models have a body of slate grey plastic fixed to a substantial steel backplate. The front panel has a trim with a brushed silver appearance.

The LS 15 is the general purpose type incorporating a shuttered mains voltage shaver socket and is suitable for use in all rooms *excluding the bathroom*.

The LST 15 is the bathroom model and this has a dual voltage output (115/230V) from the shaver socket from a double wound transformer to BS.3052 and a pull-switch. This fitting complies with IEE Regulations for bathroom equipment.

Supply voltage
Supply fitting 230/240V 50Hz. Details of fittings for other supplies are available on application.

Fittings comply with BS 4533-2.2.

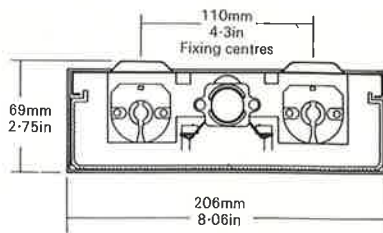
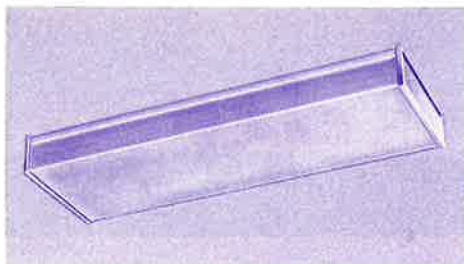


RANGE: Packed complete with 15W Warm White tube

Complete fitting

	Circuit	Catalogue no.	Length		Weight		Fixing centres	
			mm	in	kg	lb	mm	in
General purpose (bedroom) type	Switchstart	LS 15	470	18.5	2	4.5	279	11
Bathroom type	Quickstart	LST 15	470	18.5	3.23	7.13	279	11

Diffuser (Catalogue no. LS 4600) is available as a replacement item.



The shallow construction of the Au Pair Homelight is designed to meet the requirements of kitchens and similar locations but it has many other uses in the home. The enclosed structure excludes dust and flies and the prismatic controller reduces glare.

The body of the fitting is made of sheet steel, stove enamelled white. Suitable for ordinary, indoor, normal atmospheres. Registered design no. 943062.

Voltages: These fittings are suitable for 230/240V Hz. Details of fittings suitable for other supplies are available on application. End plate (Catalogue no. SK 4600) and prismatic controller (Catalogue no. SK 4610) are available as replacement items. Fittings comply with BS 4533 – 2.2 (IP 20)

RANGE: Packed complete with Warm White tubes

Complete fitting

Nominal length	Rating	Circuit	Catalogue no.	Length mm	in	Weight kg	lb	Fixing centres mm	in
600mm/2ft	20W Twin	Switchstart	SK 220	630	24.8	2.76	6.25	400	15.75

Home-lite

A range of domestic fluorescent LPF fittings, using standard Popular Pack components. Two sizes, supplied with or without opal diffuser, c/w Home-lite tube. Optional stick-on copper coloured trims supplied with diffuser versions. Batters fitted with radio interference suppressors.

1. a) Single tube 4ft 40W batten c/w Home-lite tube. (F.HL40)
- b) Single tube 4ft 40W c/w diffuser and Home-lite tube. (F.HL D40)
2. a) Single tube 5ft 65W batten c/w Home-lite tube. (F.HL65)
- b) Single tube 5ft 65W c/w diffuser and Home-lite tube. (F.HL D 65)

All cartons supplied with fixing screws (1 1/2 in no. 8 roundhead - black finish) and pattress block cover (PP4619).

Construction

Spine and channel cover: roll formed sheet steel, bonderized, and finished in stark white stoved enamel.

Lampholders: grip-pin type, moulded in white urea plastic.

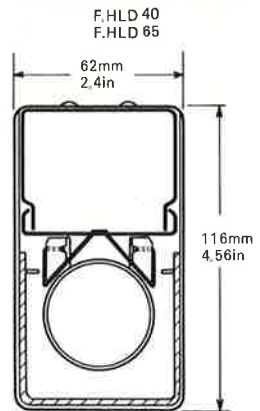
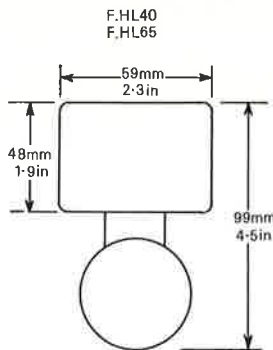
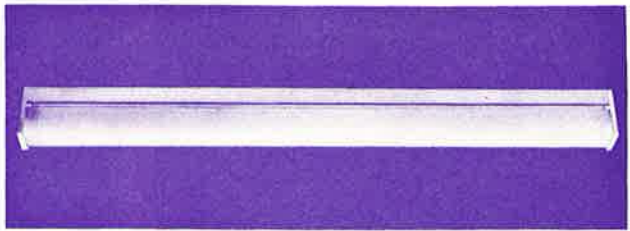
Diffusers: extruded white opal reeded styrene.

Diffuser end caps: moulded white ABS plastic.

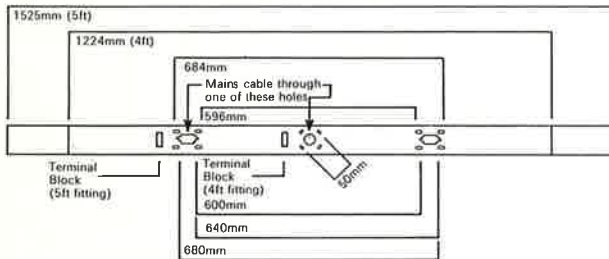
Operating conditions

Suitable for use in ordinary, indoor, normal atmospheres, maximum ambient 25°C.

Fittings comply with BS 4533 - 2.2 (IP20)



FIXING CENTRES



RANGE

Catalogue no.	Description	Length mm	in	Weight kg	lb	Lamp Nominal mm	Length ft	Rating	Colour
F.HL 40	4ft Batten only	1224	48.2	2.6	5.75	1200	4	40W	Home-lite
F.HL65	5ft Batten only	1525	60.0	3.4	7.5	1500	5	65W	Home-lite
F.HLD40	4ft Batten c/w diffuser	1228	48.3	3	6.75	1200	4	40W	Home-lite
F.HLD65	5ft Batten c/w diffuser	1529	60.1	4	8.75	1500	5	65W	Home-lite

Spares

Catalogue no.	Description
F.HLD 4	4ft Opal reeded diffuser extrusion
F.HLD 5	5ft Opal reeded diffuser extrusion

Circline fluorescent fittings

The range of 'Circline' fittings has been designed for use in both domestic and commercial applications.

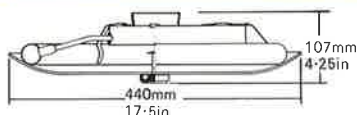
A triangular shaped gear tray containing 60W switchstart control gear is completely hidden from view by the wide range of attractive diffusers. These fittings blend with all decors and colour schemes.

The fittings shown on this page are for ordinary, indoor, normal atmospheres.

CF/LSG 60 Large Sparkle Glass diffuser fitting

This bowl diffuser is moulded in clear glass with a smooth upper surface for easy cleaning and a random embossed, patterned lower surface which sparkles even when the fitting is unlit. A radial pattern is silk screened in white on the upper surface of the glass which is attached to the fitting by a white plastic knob with an aluminium insert. The glass completely obscures the fluorescent tube from view.

Fittings comply with BS 4533 - 2-2 (IP 20)



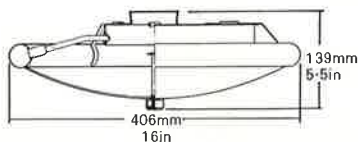
CF/SPG 60 Sparkle Glass fitting

The diffuser is moulded in clear glass with a smooth upper surface for easy cleaning. A pattern is silk screened in white on the upper surface of the glass which is held to the fitting by a white plastic knob with aluminium insert which holds the glass flush to the tube.

Supply voltage

Standard fitting 230/240V Hz.
Details of fittings for other supplies are available on application.

Fittings comply with BS 4533 - 2-2 (IP 20)

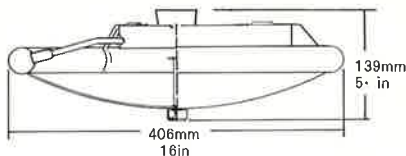
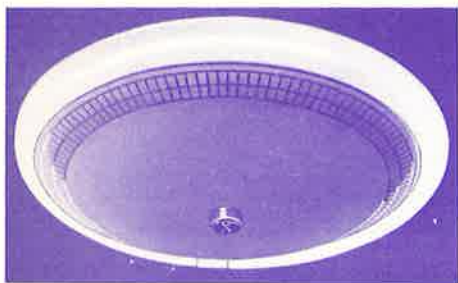


RANGE: Packed complete with Warm White tube

Rating	Circuit	Catalogue no.	Description
60W Single	Switchstart	CF/LSG-60	Large Sparkle Glass fitting
60W Single	Switchstart	CF/SPG-60	Small Sparkle Glass fitting

Large sparkle glass retaining knob (Catalogue no. CF 4607) and sparkle glass retaining knob (Catalogue no. CF 4606) are available as replacement items.

Circline fluorescent fittings

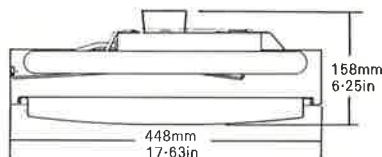


The fittings shown on this page are for ordinary, indoor, normal atmospheres.

CF/WHG.60 White Glass fitting

This fitting with its diffuser moulded in smooth glass for ease of cleaning is suitable where a relatively plain diffuser bowl is required. The diffuser bowl is held flush to the fluorescent tube by a white knob with an aluminium insert.

Fittings comply with BS 4533 - 2.2 (IP20)



CFA 60 Fitting

The anodized aluminium attachment is simply assembled by locating over the centre screw on the gear tray and securing in position. A white opal dish is then inserted.

This fitting is packed in one carton complete with gear tray, aluminium attachment and tube.

RANGE: Packed complete with Warm White tube

Fittings comply with BS 4533 - 2.2 (IP20)

Rating	Circuit	Catalogue no.	Description
60W Single	Switchstart	CF/WHG.60	White glass fitting
60W Single	Switchstart	CFA 60	Aluminium frame fitting

Voltages : These fittings are suitable for 230/240V 50Hz.

Details of fittings suitable for other supplies are available on application.

Aluminium frame (Catalogue no. CF 4601), and opal diffuser dish (Catalogue no. CF 4603) are available as replacement items.

Domestic fluorescent accessories

REPLACEMENT DIFFUSERS

Fitting	Diffuser	Diffuser end-cap	End-cap trim	Fixing knob
F.HLD40	F.HLD4	1700/2704	1700/2708	—
F.HLD65	F.HLD5	1700/2704	1700/2708	—
CF/LSG.60	LSG	—	—	CF 4607
CF/SPG.60	SPG	—	—	CF 4606
CF/WHG.60	WHG	—	—	CF 4606
CFA 60	CF 4601 (frame) CF 4603 (dish)	—	—	—
SK 220	SK 4610	SK 4600	—	—
LS 15/LST 15	LS 4600	—	—	—

REPLACEMENT CONTROL GEAR FOR 240V 50hz SUPPLY

Fitting	Ballast	Starter switch(es)	QS transformer	Other components
F.HL40	G.CU/40	155/400	—	GC.2300 (RIS capacitor)
F.HL65	G.CU/65	155/500	—	G.C2051 (RIS capacitor)
CF 60	G.CU/65	155/500	—	—
SK 220	G.CU/40	2 × 155/200	—	—
LS/15	G 69394.4	155/200	—	—
LST/15	G 69394.4	—	G 47045	G 47100 (double wound transformer)



G.A5051
Starter socket for
Home-lite fittings



G.A5019/X
Starter socket for Au Pair
fitting



G.A5089
Starter socket for LS/15 and
Circline fittings



G.B1562
Lampholder for
Home-lite fittings



G.B1582
Lampholder for Au Pair
fitting

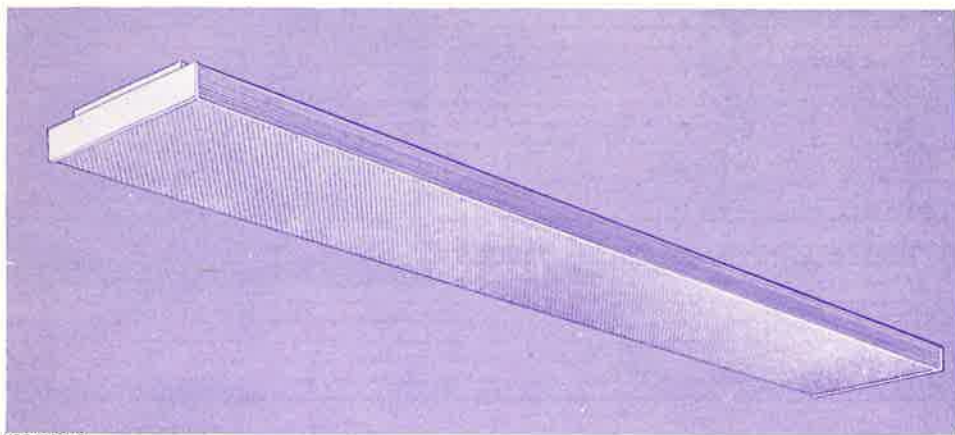


G.B1623
Lampholder for
Circline fittings



G.B1555/Z
Lampholder for
Viewpoint fittings

KSP London line luminaire



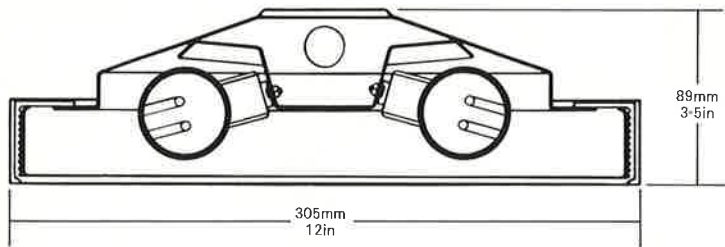
KSP/R2675

This 'Wafer Slim' fitting has a unique lightness and elegance of appearance. The complete ceiling mounted fitting projects only 89mm/3.5in from the ceiling which makes it ideal for modern low ceilings. These fittings provide a

high technical efficiency with a low glare index and also give rise to the impression of a panel of light due to the fact that from almost all normal angles of vision the batten is invisible.

All fittings are for 230/240V 50Hz. Details of fittings for other supplies are available on application.

Fittings comply with BS 4533-2.2 (IP20)



RANGE

Complete fitting					Components		Dimensions		Approx. weight		Fixing centres	
Nominal length	No. of tubes	Circuit	Catalogue no.	Batten Catalogue no.	Diffuser Catalogue no.	Overall length			(incl. tubes)			
mm ft Rating						mm in			kg lb		mm in	
1800 6 75W	2	SRS	KSP/R2675	KSP 26	KS R2675	1829 72			12.7 28		610 24	

This fitting is not suitable for chain suspension.

- Introduction** This section describes a range of luminaires and signs suitable for the majority of indoor and outdoor escape route lighting requirements.

Index	Definitions	66
	Central battery equipment	66
	Slave luminaires	66
	Self-contained escape lighting luminaires	66-67
	Self-contained exit signs	68

Emergency lighting

DEFINITIONS

Maintained emergency lighting

A lighting system in which all emergency lighting lamps are in operation at all material times.

Non-maintained emergency lighting

A lighting system in which all emergency lighting lamps are in operation only when the normal lighting fails.

Sustained luminaire

An emergency lighting luminaire containing at least two lamps, one of which is energised from the normal lighting supply and another from an emergency lighting supply. Such a luminaire is intended to sustain illumination at all material times.

Escape lighting

That part of emergency lighting which is provided to ensure that the means of escape can be safely and effectively used at all times.

Self-contained luminaire or sign

A luminaire or sign providing operation either maintained or non-maintained in which all the associated control units are housed within the luminaire or sign. A self-contained luminaire or sign only requires connection to the normal supply.

Slave luminaire or sign

A luminaire or sign providing operation either maintained or non-maintained which is operated by a central power system.

EMERGENCY LIGHTING CENTRAL SYSTEM

Battery charger

When used in conjunction with the G.R2463 battery charger and a 12V battery, transistorized fittings provide a non-maintained emergency lighting system. The G.R2463, when connected to a 240V 50Hz supply, will charge and keep charged a 12V lead-acid battery which can be used

to operate 12V inverters up to a total of 8A (e.g. 6 × 8W, 4 × 13W).

Transistorized fittings (slave luminaires)

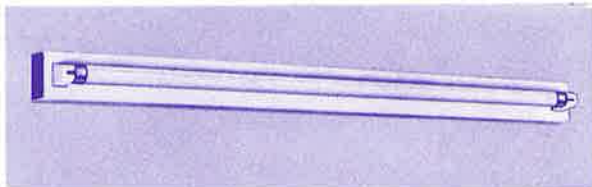
Fittings suitable for use on this system are 12V versions of the Minipack available for use with 525mm 13W or 300mm 8W fluorescent tubes (see Page 31 for constructional details).



G.R2463

RANGE: Packed complete with Warm White tube

Catalogue no.	Lamp	Length mm	Width mm	Depth mm
G.H2694	1 × 525mm 13W	552	38	56
G.H2693	1 × 300mm 8W	324	38	56



G.H2694/G.H2693

SELF-CONTAINED EMERGENCY LIGHTING LUMINAIRES

The Escort fluorescent bulkhead fitting (for full details of construction, see page 225) has been modified for emergency lighting use. This robust, but attractive fitting is suitable for use in any commercial application, indoors or out, where emergency lighting may be required in the event

of mains failure. The fitting is non-sustained, which means that no light is emitted during normal healthy mains conditions, but a standard 300mm (12in) 8W tube is instantaneously lit on mains failure. On mains recovery, the internal battery is recharged automatically. Two versions are available – a 3 hour and a 1 hour type.



FBS 18/FBL 18

RANGE: Packed complete with 8W White tube

Catalogue no.	Lamp	Duration	Length mm	Width mm	Depth mm
FBS 18	1 × 300mm 8W	1 Hour	368	102	92
FBL 18	1 × 300mm 8W	3 Hours	368	102	92

Self-contained escape lighting luminaires

The luminaires shown on this page are all self-contained luminaires providing a non-maintained three-hour duration emergency lighting system.

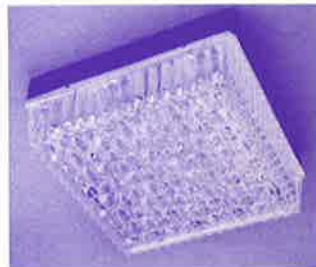
These luminaires, which have gained a reputation as satisfactory units for normal mains supply use when incorporating standard GLS lamps, have been modified for emergency lighting use by the inclusion of a control gear tray/reflector and a fluorescent tube.

The control gear comprises an emergency lighting control unit and the necessary batteries. The emergency lighting control unit consists of a circuit suitable to charge and keep in a charged state the batteries from a 240V 50Hz supply, a solid state hold-off device (no moving parts) and a ballast circuit for the fluorescent tube. A long life, light emitting diode (red) is incorporated into the control gear tray/reflector and indicates a charging current flowing into the batteries.

When the normal lighting power supply is present the luminaire will be unlit but the 150mm 4W fluorescent tube will give instant illumination upon mains failure and will give an emergency light for a duration of three hours. On mains recovery the batteries are recharged automatically. Details of fittings for other mains supply voltages are available on application.



FOY 3



FXJ 3



FXK 3



FLG 3

RANGE: Packed complete with 4W White tube

Catalogue no.	Lamp	Length mm	Width mm	Depth mm
FOY 3	1 x 150mm 4W	220	220	130
FXJ 3	1 x 150mm 4W	219	219	96
FXK 3	1 x 150mm 4W	230	230	86
FLG 3	1 x 150mm 4W	250	114	106

Emergency lighting



G.H2842



G.H2843



G.H2844



G.H2845



G.H2846



G.H2847



G.H2881/G.H2842

All exit, emergency exit and escape route signs should be illuminated so that they are legible at all material times. In the event of failure of the normal lighting such signs should be illuminated by the emergency lighting supply.

Exit sign basic box

The G.H2881 is a sustained emergency lighting luminaire containing both normal lighting and non-maintained emergency lighting. Under conditions of normal lighting power supply a 300mm 8W White fluorescent tube operates from a conventional mains ballast. When the normal supply fails a second 8W fluorescent tube operates for a duration of three hours from the control gear and battery pack contained within the luminaire. The G.H2881 basic box is constructed of folded sheet steel primed on outside surfaces and with a silver medium hammer finish. A white enamelled reflector behind the lamps hinges forward to give access to the rear surface on which all the components are mounted. Provided with each assembly is a white opal plastic panel and a stove-enamelled grey metal

blanking plate to fit the area lighting underside cut-out. The basic box may therefore be adapted to give area lighting in addition to illuminating the front panel, or the aperture may be blanked off, according to the requirement of a particular application.

The exit sign basic box is provided with 4 x 6mm diameter mounting holes on 345 x 145mm centres and a centrally positioned BESA box cable entry.

Front panels

A range of six front panels is available for use with the G.H2881 basic box, which are the standard legends required in almost all emergency lighting situations. These panels are of white opal plastics. All panels referring particularly to FIRE exits have red lettering and the rest have green lettering. The illuminated area of all front panels is 420 x 165mm.

Exit sign ordering

Complete signs comprise two components:

1. Exit sign basic box (G.H2881).
2. Front panel (G.H2842 – G.H2847).

RANGE

Catalogue no.	Description	Length mm	Height mm	Depth mm
G.H2881	Exit sign basic box c/w 240V 50Hz control gear and 2 x 300mm 8W white fluorescent tubes	430	195	120
G.H2842	Front panel EXIT			
G.H2843	Front panel EMERGENCY EXIT			
G.H2844	Front panel FIRE EXIT			
G.H2845	Front panel TO FIRE EXIT			
G.H2846	Front panel TO FIRE EXIT →			
G.H2847	Front panel ← TO FIRE EXIT			

Surface-mounted and recessed fluorescent and discharge fittings

Introduction

The fittings and systems illustrated in this section cover a very wide area of commercial uses ranging from simple potlensing to a variety of recessed fittings.

Index

Potlized panels	70-71
SM range	72-76
Sheerlume range	77-79
Pop-in troffer	80-82
New Format range	83-91
Kolor Format	92-94

Polrized diffuser and ceiling panels

POLRIZED panels represent a new concept in light control technique with a lighting system that ensures increased seeing ability and greater viewing comfort. The principle of polarization is used to help solve the problem of reflected glare.

Almost all viewing angles in office and school environments lie between 0° and 40° to the downward vertical. A typical viewing task may be that of reading typescript or writing on paper of varying degrees of gloss and/or reflectance.

In areas lit by conventional distribution luminaires, difficulty may be experienced in reading the text due to reflections of the light source on the paper reducing the contrast between the lettering and the background. Consequently, eye strain may be experienced. The contrast may be improved by carefully adjusting the viewing angle. The new approach to solving this problem is to use polarized light whereby contrast is improved without the need to adjust the viewing angle. With POLRIZED panels an

improvement in contrast equivalent to that attainable by increasing the illuminance can be achieved. As the viewing angle is increased a greater improvement is obtained. POLRIZED panels not only reduce reflected glare but control discomfort glare since they have a low brightness compared with an opal diffuser at high viewing angles. POLRIZED material for ceiling use transmits a countless number of cones of vertically polarized light. These cones are radially symmetrical, each cone overlapping its neighbour to ensure uniform lighting distribution. This increased visual effectiveness applies at all points in the room and at all viewing angles. It is the only system that at the same time effectively reduces veiling reflections

and direct glare. Moreover, colour and textures are seen in their true light. Veiling reflections inherent in conventional lighting systems dilute the subtleties of many colours and surface finishes.

POLRIZED attachments are available for the following fittings ranges and ceilings:

- New Format range
- Surface modular range (SM)
- Arena lighting/ceiling system
- Dome and Plaza ceiling panels

Polarization offers these advantages:

- *Greater visual effectiveness and contrasts for the same wattage.
- *Truer textures and colour rendition.
- *Reduction in eye fatigue with low brightness comfort.



An extreme example of veiling glare and its removal by polarization

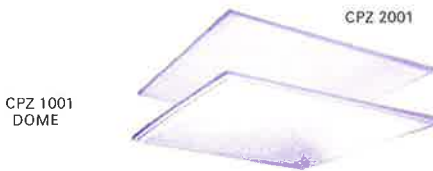


Polrized ceiling panels

Polrized ceiling panels are available in two patterns each with a nominal 2ft x 2ft panel size. Plaza is a flat dished panel and Dome, as its name suggests, is formed upwards into a small dome, rising approximately 2in in the centre. In addition, a softly textured surface combines both visual interest of the ceiling and improved control of reflected glare beneath.

Support Grid

These panels can be used with most 25mm lay-in grids.



CPZ 2001



CPZ 2002

CPZ 1001
DOME

CPZ 1002
PLAZA

RANGE

Nominal size ft.	Catalogue no.	Description	Approximate weight gms
2 x 2	CPZ 1001	Dome panel (Polrized) c/w dust cover	366
2 x 2	CPZ 1002	Plaza panel (Polrized) c/w dust cover	332
2 x 2	CPZ 2001	Spare dust cover for Dome panel	176
2 x 2	CPZ 2002	Spare dust cover for Plaza panel	156

SM range

The SM range combines reliability, strength and versatility with an elegant, visually pleasing appearance. The range comprises metric modular fittings in 100, 200, 300, 400 or 500mm widths, to take from 1-4 1200mm (4ft) or 1800mm (6ft) tubes. To complete the range, circular (60W) and square (4 x 20W) fittings are also available.

The SM luminaire consists of a sheet steel body finished in semi-matt black outside and white inside for maximum reflectivity. There is a choice of four plastic attachments. In addition, the 200mm wide, 1800mm (6ft) version can be fitted with an aluminium frame, low brightness, attachment.

'Wishbone' springs

A 'wishbone' attachment fixing has been introduced for all except the single tube (100mm) and circular sizes. 'Wishbones' provide a strong captive action, with the result that re-lamping has now become a one man operation.

Catalogue Numbers System

SM1. - 100mm wide
SM2. - 200mm wide
SM3. - 300mm wide
SM4. - 400mm wide
SM5. - 500mm wide
SMQ. - 698 x 698mm square
SMO. - 498mm diameter circular

D - Opal diffuser
O - Opal sided prismatic base diffuser
P - Prismatic controller
Z - Opal sided Polirized base diffuser
E - Aluminium frame with prismatic base
W - Wishbone attachment fixing
B - Body

1040 - 1 x 1200mm (4ft) tube
2040 - 2 x 1200mm (4ft) tube
3040 - 3 x 1200mm (4ft) tube
1060 - 1 x 60W Circular tube
1685 - 1 x 1800mm (6ft) tube
2685 - 2 x 1800mm (6ft) tube
3685 - 3 x 1800mm (6ft) tube
4685 - 4 x 1800mm (6ft) tube
4020 - 4 x 600mm (2ft) tube

Indoor luminaires in general are designed to BS 4533 Part 1 Section 1.4 and, except where otherwise stated, are "Luminaires for use in normal atmospheres." Where use in more onerous situations is contemplated, e.g. in part-completed buildings before drying out and made suitable for occupation, damp cellars, special processing plants, etc. additional surface protection may be required. Special finishes for such applications can be agreed in consultation with your local Thorn Lighting Office.

SM1 and SM2 fittings



SMD1.1675

A surface-mounted fitting with black metal body and a choice of three plastic attachments. The sheet steel body is bonderized and stove enamelled semi-matt black outside and white inside, in a hard alkylid paint.

SM1 fittings have spring clips for attachment fixing, and SM2 types use 'wishbone' fixing.



SMWP2.2675

Attachments seat against foam gaskets. Control gear and wiring are connected to a three-way fused terminal block: cable entry is at the centre or at fixing centres, or by 20mm dia. knock-outs at the end of the fitting.

Fittings should be ceiling mounted but can be suspended on 20mm conduits. If they are connected



SMO1.1675

end-to-end for continuous mounting by means of a 20mm conduit coupler, a 20mm full conduit nut should be used as a spacer to leave room for the expansion of attachments (see diagram).

Ambient temperatures at fitting level should not exceed 25°C. All fittings are suitable for 240V 50Hz supplies.



SMWB2.2675

SMB1.1040/SMB1.1675

Dimension A mm in	Dimension B mm in
610 24	— —
900 35-4	— —

SMWB2.2675

Dimension A mm in	Dimension B mm in
900 35-4	100 3-9

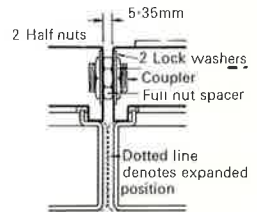
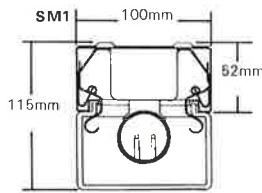
SMWB2.2040

Dimension A mm in	Dimension B mm in
610 24	100 3-9

RANGE

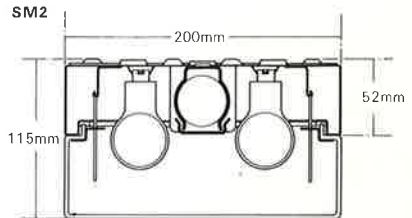
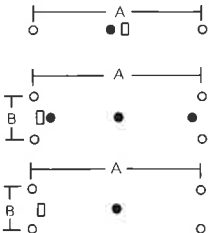
Complete fitting						Components			Dimensions			Approx. weight (incl. tubes)
	Nominal length mm ft	Rating	No. of tubes	Circuit	Catalogue no.	Diffuser Catalogue no.	Batten Catalogue no.		Length mm in		kg	
SM1	1200 4	40W	One	OS	SMD1.1040	SMD1.4	SMB1.1040	1300	51-2		5-1	11-2
SM1	1800 6	75W	One	SRS	SMD1.1675	SMD1.6	SMB1.1675	1850	72-8		6-6	14-7
SM2	1200 4	40W	Two	OS	SMWD2.2040	SMWD2.4	SMWB2.2040	1300	51-2		8-4	18-5
SM2	1800 6	75W	Two	SRS	SMWD2.2675	SMWD2.6	SMWB2.2675	1850	72-8		10-9	24
SM2	1800 6	75W	Two	SRS	SMWE2.2675	SMWE2.6	SMWB2.2675	1850	72-8		10-9	24

Note: SMWE2.6 is additional to the general range and is available at this size only.



- Suspension and wiring entry
- Wiring entry only
- Terminal block

CABLE AND SUSPENSION HOLE ARRANGEMENT



Diagrams are not to scale.

Attachments:

Information in the table is for 'D' (Opal Diffuser) version. The 'O' (opal sides, prismatic base) 'P' (prismatic), and 'A' (Polirized) versions are identical and data is obtained by substituting 'O', 'P', or 'A' for 'D' in the catalogue numbers.

SM3 and SM4 fittings



SMW04.3675



SMWD3.2675



Wider, two or three lamp versions of the SM1 and SM2 fittings with wishbone attachment fixing. The sheet steel body is bonderized and stove enamelled semi-matt black outside and white inside. Cable entry is by 20mm/25/32in dia. hole (for which a plastic grommet is provided) as shown in the diagrams. Fittings should be ceiling mounted but can be suspended on conduits. For diagram of end-to-end connection see previous page.

Ambient temperatures at fitting level should not exceed 25°C. All fittings are suitable for 230/240V 50Hz supplies.

Attachments : As specified in table below.

SMWB3.2675

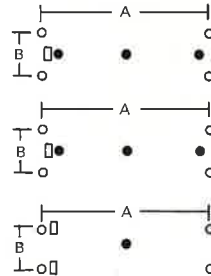
Dimension A	Dimension B
mm in	mm in
900 35-4	100 3-9

SMWB4.3675

Dimension A	Dimension B
mm in	mm in
900 35-4	200 7-9

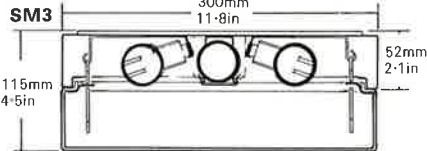
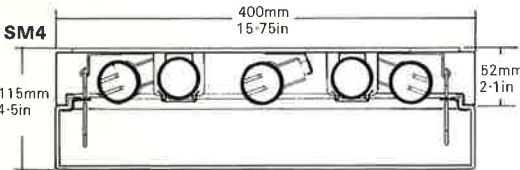
SMWB4.3040

Dimension A	Dimension B
mm in	mm in
610 24	200 7-9



CABLE AND SUSPENSION HOLE ARRANGEMENT

- Suspension and wiring entry
- Wiring entry only
- Terminal block



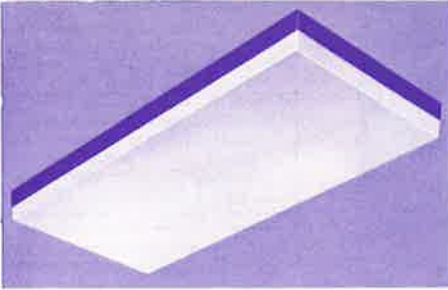
Diagrams are not to scale

RANGE

Complete fitting

	Nominal length		Rating	No. of tubes	Circuit	Catalogue no.	Components		Dimensions		Approx. Weight (incl. tubes)
	mm	ft					Diffuser Catalogue no.	Batten Catalogue no.	Length mm in		
SM3	1800	6	75W	Two	SRS	SMWD3/2675	SMWD3/6	SMWB3/2675	1850	72-8	13-4 29-5
SM3	1800	6	75W	Two	SRS	SMW03/2675	SMW03/6	SMWB3/2675	1850	72-8	13-4 29-5
SM3	1800	6	75W	Two	SRS	SMW23/2675	SMW23/6	SMWB3/2675	1850	72-8	13-4 29-5
SM4	1200	4	40W	Three	QS	SMWD4/3040	SMWD4/4	SMWB4/3040	1300	51-2	13-7 30-2
SM4	1800	6	75W	Three	SRS	SMWD4/3675	SMWD4/6	SMWB4/3675	1850	72-8	17-9 39-6
SM4	1800	6	75W	Three	SRS	SMW04/3675	SMW04/6	SMWB4/3675	1850	72-8	17-9 39-6
SM4	1800	6	75W	Three	SRS	SMWZ4/3675	SMWZ4/6	SMWB4/3675	1850	72-8	17-9 39-6

SM5, SMQ and SMO fittings



SMW05.4675



SMD0/60

Wider versions of the two previous fittings for use on modular ceilings, and a circular fitting of matching design.

Details of the rectangular fittings are shown on the previous page. The circular fitting is supplied in switch start only and the cable entry and conduit suspension slots are centrally placed.

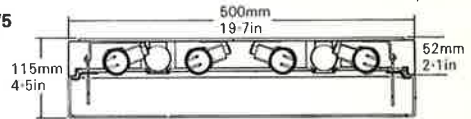
For details of continuous mounting see page 73

The cable entry of the square fitting is offset on the centre-line by 203mm/8in.

The circular fitting is designed for ceiling and wall mounting only. The circular fitting only is supplied complete with 60W Warm White tube.

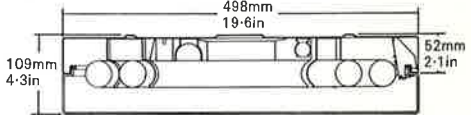
Ambient temperatures at fitting level should not exceed 25°C. All fittings are suitable for 230/240V 50Hz.

SMW5

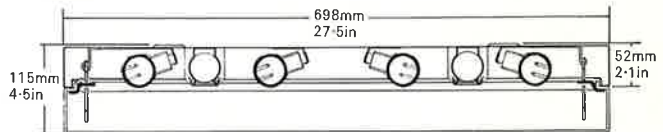


Diagrams are not to scale

SMO



SMQ

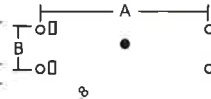


- Suspension and wiring entry
- Wiring entry only
- Terminal block
- ⊙ 19.8mm conduit box entry 2in PCD

CABLE AND SUSPENSION HOLE ARRANGEMENT

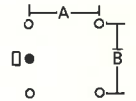
SMWB5.4040

Dimension A mm in	Dimension B mm in
610 24	200 7.9



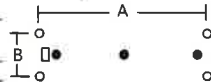
SMWBQ.4020

Dimension A mm in	Dimension B mm in
406 16	406 16



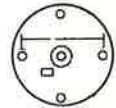
SMWB5.4675

Dimension A mm in	Dimension B mm in
900 35.4	200 7.9



SMD0.60

4.8mm/3/8in dia. on
305mm/12in PCD



RANGE

Complete fitting						Components		Dimensions		Approx. Weight (incl. tubes)
Nominal length	No. of					Diffuser	Batten	Length		
mm ft	Rating	tubes	Circuit	Catalogue no.		Catalogue no.	Catalogue no.	mm	in	kg lb
SM5 1200 4	40W	Four	QS	SMWD5/4040		SMWD5/4	SMWB5/4040	1300	51.2	17.9 39.5
SM5 1200 4	40W	Four	QS	SMW05/4040		SMWD5/4	SMWB5/4040	1300	51.2	17.9 29.5
SM5 1200 4	40W	Four	QS	SMWZ5/4040		SMWZ5/4	SMWB5/4040	1300	51.2	17.9 39.5
SM5 1800 6	75W	Four	SRS	SMWD5/4675		SMWD5/6	SMWB5/4675	1850	72.8	23.3 51.4
SM5 1800 6	75W	Four	SRS	SMW05/4675		SMW05/6	SMWB5/4675	1850	72.8	23.3 51.4
SM5 1800 6	75W	Four	SRS	SMWZ5/4675		SMWZ5/6	SMWB5/4675	1850	72.8	23.3 51.4
SMQ 600 2	20W	Four	QS	SMWDQ/4020		SMWDQ/2	SMWBQ/4020	698	27.5	13.3 29.3
SMQ 600 2	20W	Four	QS	SMW0Q/4020		SMDQ/2	SMWBQ/4020	698	27.5	13.3 29.3
SMO Circ.	60W	One	SRS	SMD0/60		SMD0*	SMD0/60	498	19.6	7.2 15.8

*Fitting packed complete with lamp and diffuser.

SM accessories

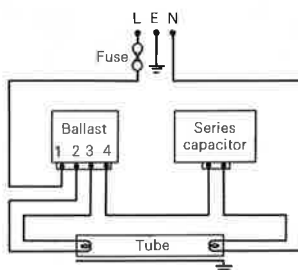
Accessories

	SM Accessory Catalogue no., (excluding SMDO.60)	SMDO.60 Accessory Catalogue no.
Lampholder	GB1580/LS (SMB1) GB1580/SM (all excl. SMB1)	GB1623
Fused terminal block	GT1265	GT1265
Fuse	GT1299	GT1299
Capacitor clip	GY5244	GY5244
Capacitor safety clip	GY5245	GY5245
Starter socket	—	GA5089
Cable cleat	AC 5363	AC 5363
Lamp clip	—	GY5294
Wiring grommet	AC 5297	AC 5297
Blind grommet	AC 5402	—
Gasket for sides/ mm length	SM 4600/—	—
Gasket for end/ mm length	SM 4601/—	—

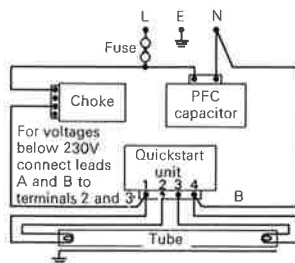
Replacement control gear

		OS Unit	Choke or Ballast	Capacitor	Starter Switch
75W 6ft	Single tube circuit	—	1—G.BU/675	1—GC2220	—
	Twin tube circuit	—	2—G.BU/675	2—GC2220	—
40W 4ft	Single tube circuit	1—G.QS/40	1—G.CU/40	1—GC2224	—
	Twin tube circuit	2—G.QS/40	2—G.CU/40	1—GC2222	—
20W 2ft	Twin tube circuit	1—G.QS/220	1—G.CU/40	1—GC2224	—
SMDO.60					
60W Circular	Single tube circuit	—	1—G.CU/65	1—GC2241	155/500

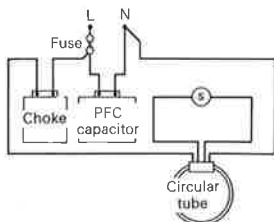
CIRCUIT DIAGRAMS



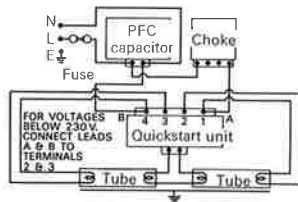
Semi-resonant start (SRS) circuit for 6ft 75W with essential circuit capacitor



Tapped quickstart (QS) transformer circuit with PFC capacitor for 4ft 40W



Starter switch (SS) circuit with PFC capacitor for 60W



Twin tube Quickstart (QS) circuit with PFC capacitor for 2ft 20W

A shallow surface fluorescent luminaire of totally enclosed design suitable for all modern commercial interiors. The slim gear tray with full wrap-round attachment produces excellent light distribution and output, permitting good spacing to height mounting ratios. Sealed against dust, the fitting is easy to clean yet simple to service, the attachments being held with quick-release thumb catches.

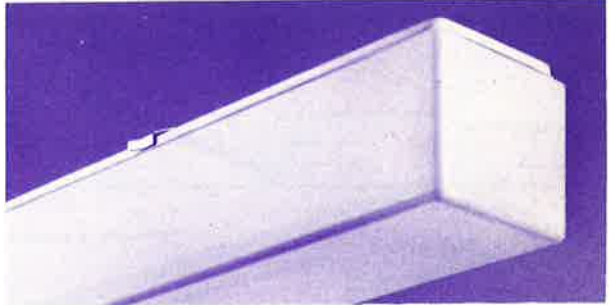
The fluorescent tubes fit securely in the twist centre lampholders.

The luminaire is available in two lengths, 1200 mm/4ft and 1500mm/5ft, and is supplied in single tube and twin tube versions. SRS control gear is standard.

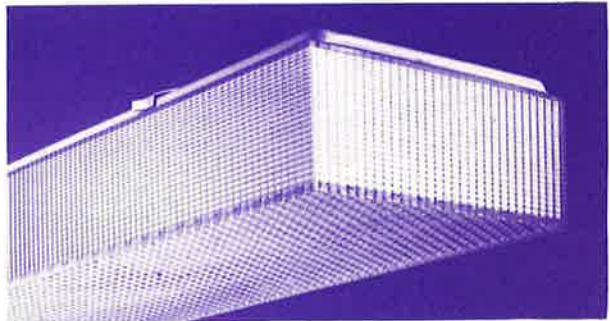
Two attachments are available for each luminaire:

- Acrylic blow-moulded opal diffuser.
- Acrylic injection-moulded prismatic controller.

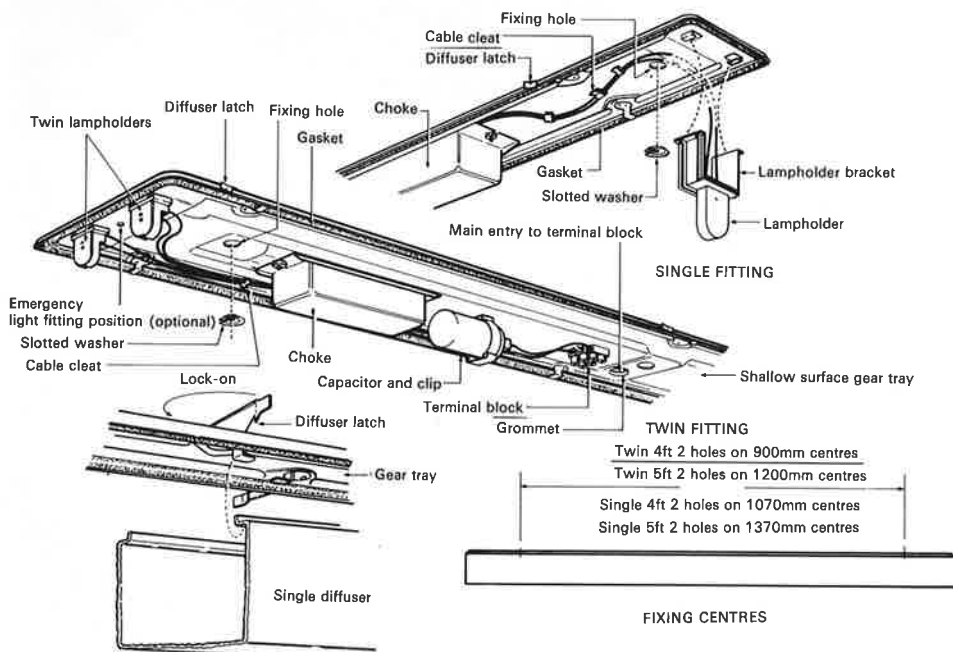
An auxiliary lighting kit (Catalogue no. FSS.1001) is available for all SRS versions enabling one or two 15W Pygmy lamps to be mounted at each end of the luminaire. This provides a low-level night light for security or, wired to a secondary supply, can serve as emergency lighting.



Opal diffuser



Prismatic controller



COMPONENTS

Catalogue no	Description	Approx Weight	
		Kg	lb
FSS1.1040	Shallow Surface Gear Tray 1 × 4ft 40W SRS	2.25	5.0
FSS1.1065	Shallow Surface Gear Tray 1 × 5ft 65W SRS	3.0	6.5
FSS2.2040	Shallow Surface Gear Tray 2 × 4ft 40W SRS	4.30	9.5
FSS2.2065	Shallow Surface Gear Tray 2 × 5ft 65W SRS	6.0	13.0
FSS0.112	Shallow Surface Opal Attachment 1260mm × 105mm	0.7	1.5
FSS0.115	Shallow Surface Opal Attachment 1560mm × 105mm	0.9	2.0
FSS0.212	Shallow Surface Opal Attachment 1260mm × 195mm	0.9	2.0
FSS0.215	Shallow Surface Opal Attachment 1560mm × 195mm	1.4	3.0
FSSH.112	Shallow Surface Prismatic Attachment 1260mm × 105mm	0.7	1.5
FSSH.115	Shallow Surface Prismatic Attachment 1560mm × 105mm	0.9	2.0
FSSH.212	Shallow Surface Prismatic Attachment 1260mm × 195mm	0.9	2.0
FSSH.215	Shallow Surface Prismatic Attachment 1560mm × 195mm	1.4	3.0

ACCESSORY

FSS.1001	Auxiliary Lighting Kit
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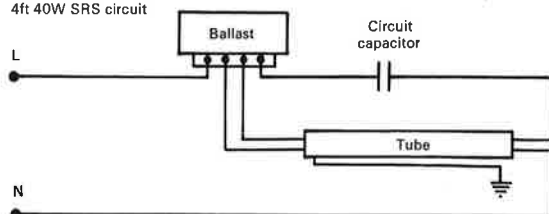
240V 50Hz SUPPLY

	1 × 4ft 40W	1 × 5ft 65W	2 × 4ft 40W	2 × 5ft 65W
SRS ballast	G.BU/40	G.BU/65	G.BU/40*	G.BU/65
Capacitor	G.C2273	G.C2220	G.C2273*	G.C2220
Lampholder	G.B1633	G.B1633	G.B1634	G.B1634
Lampholder	AC 6801	AC 6801		
Capacitor clip	G.Y5244	G.Y5244	G.Y5244	G.Y5244
Capacitor strap	G.Y5245	G.Y5245	G.Y5245	G.Y5245
Terminal block	G.T1281/3	G.T1281/3	G.T1281/3	G.T1281/3

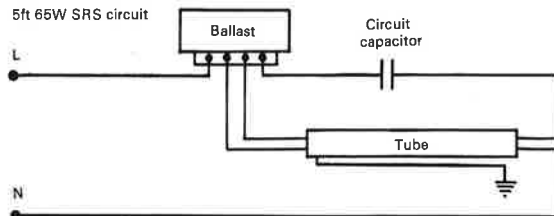
*One ballast, one capacitor per tube

CIRCUIT DIAGRAMS

4ft 40W SRS circuit



5ft 65W SRS circuit



Pop-In Troffer

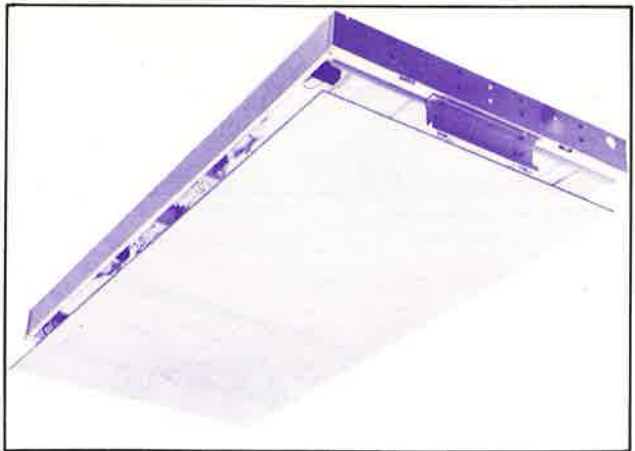
The Pop-In troffer is designed for use with both metric and imperial grid systems. Suitable for a wide range of commercial interiors, the troffer provides an economical four-tube recessed luminaire with the choice of two diffusers for 600mm×1200 mm or 2ft×4ft modular ceilings. The Pop-In troffer has one standard body size for use with suitably supported grids which conform to the following specification:

- Main tees: 38mm (1½in) high with 24mm (1⅝in) table to run across the ends of the luminaire at right angles to the fluorescent tubes.
- Cross tees: Between 32mm (1¼in) and 38mm (1½in) with 24mm (1⅝in) table spaced at 600mm or 2ft centres.

A minimum clearance of 150mm (6in) is required above the top of the main tees.

NOTE: The fitting is mounted on main tees which must be supported from the soffit with additional hangers within 150mm (6in) of each corner of the fitting. It is not recommended that cross tees are used to support the fittings. If the fitting is used in conjunction with a 600mm×600mm or 2ft×2ft module ceiling the centre cross tee should be omitted and any tongues protruding into the aperture removed.

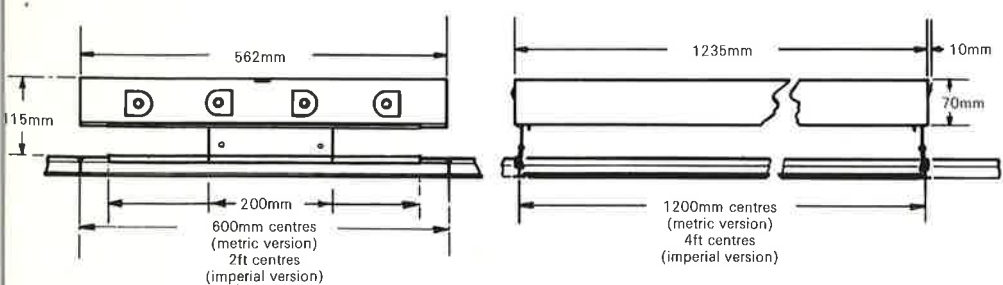
It is possible to mount the Pop-In Troffer above 600mm (2ft) apertures when the diffuser can be cut in half and the cross tee retained, thus giving the effect of two adjacently lit panels and retaining the overall square concept of the ceiling. In this case a clearance of 300mm (12in) minimum is required above the top of the main tee.



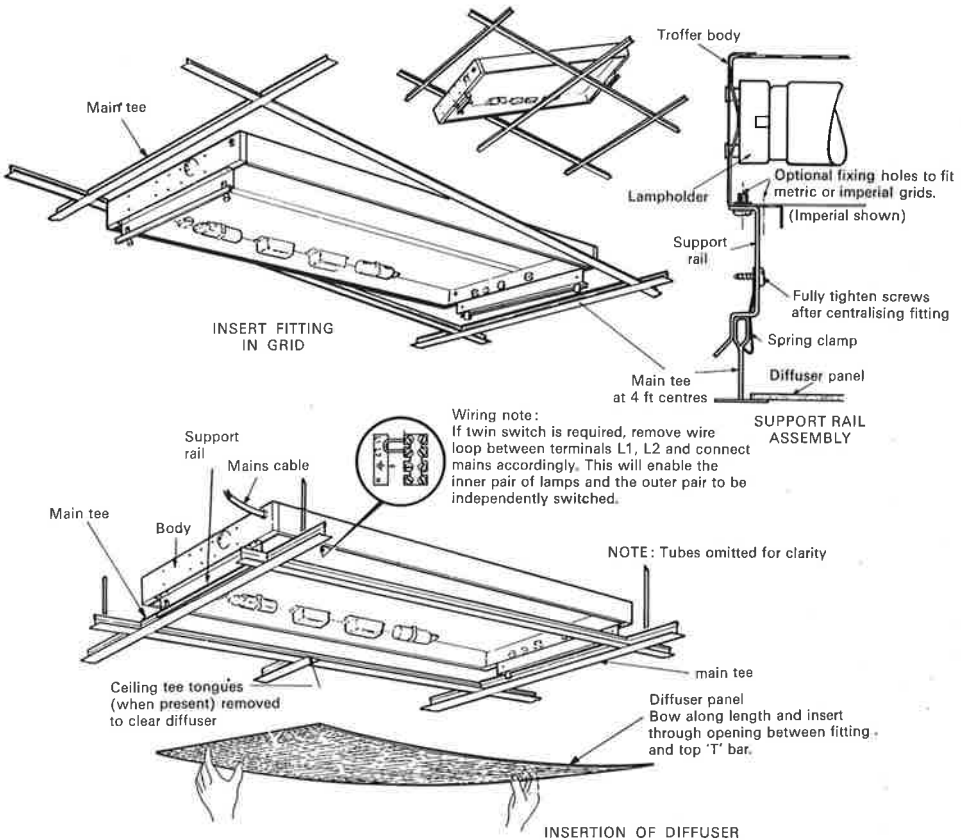
FPMW/P440 MkII MET

The Pop-In troffer mounts directly on the main tees, utilising brackets supplied with the fitting. The method of assembly permits all installation work to be carried out from beneath the grid and thus the luminaire can, in suitably supported grids, directly replace a lay-in ceiling board. Two types of diffuser are available: – Opal (Styrene) – Prismatic TL12 (Styrene) Each of these is available for either metric or imperial modules. When specifying using a composite catalogue number the letters MET or IMP as a suffix will ensure that the fitting is supplied with the correct size diffuser for the ceiling. Fittings are supplied complete with four 4ft 40W white fluorescent tubes.

Indoor luminaires in general are designed to BS4533 Pt. 1 Section 1.4 and, except where otherwise stated, are 'Luminaires for use in normal atmospheres'. Where use in more onerous situations is contemplated, e.g. part-completed buildings prior to drying out and made suitable for occupation, damp cellars, special processing plants, etc., additional surface protection may be required. Special finishes for such applications can be agreed in consultation with your local Thorn Lighting Office.



Insertion of fitting in 2 ft or 600mm square grid with intermediate tee left in place



It should be noted that the aperture along the length of the fitting above the cross tee should be clear of grid support wires to allow the diffuser to pass through to ease assembly and future maintenance, when the diffuser may be 'parked' and not moved completely from the fitting, lessening the possibility of damage.

POP-IN TROFFER FITTING

Nominal length mm	ft	Nominal width mm	ft	Rating	Number of tubes	Circuit	Catalogue no. c/w tubes	Approx weight c/w tubes kg	lb
1200	4	600	2	40	4	SRS	FPMW 440	15.4	32

DIFFUSERS

Metric

Nominal panel size mm	Actual panel size	mm	Composite Catalogue no.	Catalogue no.	Type
1200 600	1190	586	FPMW/O 440 Mk II MET	FPMO 612 Mk II	Opal
1200 600	1190	586	FPMW/P 440 Mk II MET	FPMF 612 Mk II	TL12, Prismatic

Imperial

Nominal panel size ft	Actual panel Size in	in	Composite Catalogue no.	Catalogue no.	Type
4 2	47.6	23.4	FPMW/O 440 Mk II IMP	FPMO 24 Mk II	Opal
4 2	47.6	23.4	FPMW/P 440 Mk II IMP	FPMF 24 Mk II	TL12, Prismatic

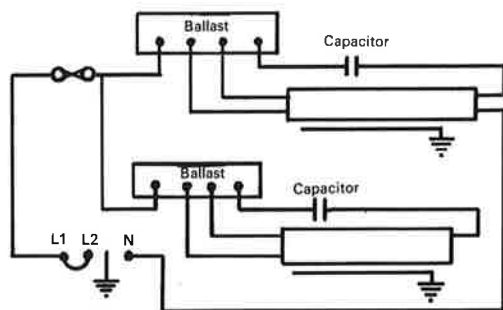
Maximum diffuser weight 2kg/4.5lb.

Pop-in Troffer accessories

240V 50Hz SUPPLY

SRS ballast	G.B1/40
Capacitor	G.C2273
Lampholder	G.B1583
Fuse (3A)	G.T1299
Fuseholder	G.T1265
Fitting Support Rail	2636/3018
Fitting Support Rail Spring	2630/5032
PK Screw No. 8 \times $\frac{1}{2}$ in Pan Head	
4ft 40W White fluorescent tube	Spec. no. 93-0625

CIRCUIT DIAGRAM

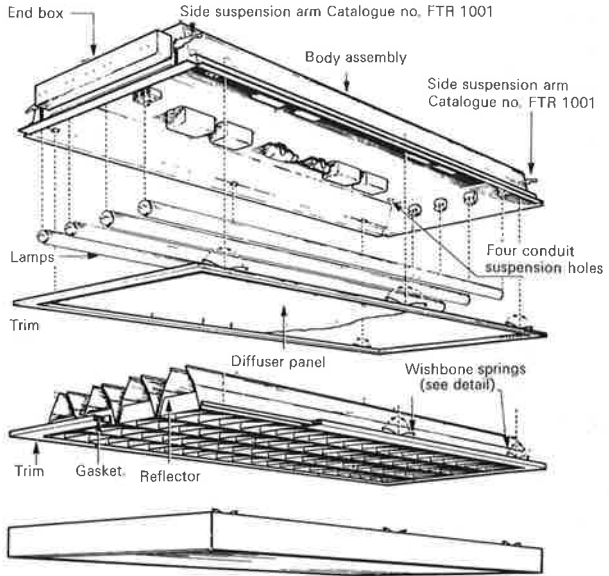


Introduction

New Format is a comprehensive range of modular recessed fluorescent luminaires offering a wide choice of framed and frameless attachments. Designed to suit commercial interiors where quality recessed fittings are specified, New Format offers excellent visual appeal with efficient optical performance. New Format fits practically every type of ceiling with recessed luminaire capability, three methods of suspension being available – 20mm dia conduit, an adjustable rod suspension set (Catalogue no. KL4601) and a side arm suspension set (Catalogue no. FTR1001) developed to allow the fitting to rest directly on the grid of a suitably supported ceiling. This latter method allows the ceiling to be fully installed before the lighting. The overall versatility makes possible the standardisation of New Format throughout a building, the variety of shapes and sizes integrating with most suspended ceilings. New Format accommodates metric and imperial grids with one body size but the appropriate metric or imperial attachment must be specified.

Modules

There is a choice of two basic module widths. The FTRA series is 300mm (1ft) wide and available in 1200mm (4ft), 1500mm (5ft) and 1800mm (6ft) lengths for either single or twin tube fittings. The FTRB series is 600mm (2ft) wide and is available in 600mm (2ft), 1200mm (4ft), 1500mm (5ft) and 1800mm (6ft) lengths. There is a choice of two, three or four tube fittings within the module. All circuits are fused semi-resonant start with the exception of the 1500mm (5ft) luminaires fitted with switch start gear.



Range of attachments

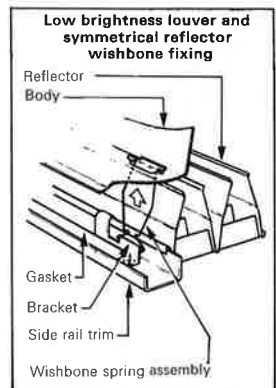
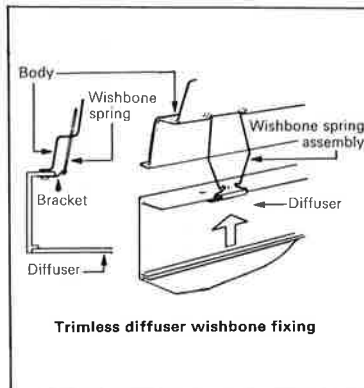
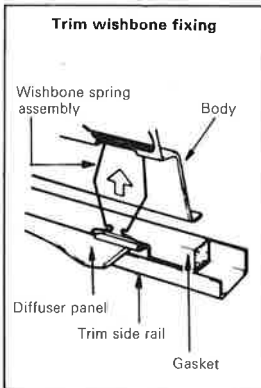
The FTRA series offers a choice of four attachments:

1. Opal flat panel in white metal trim.
2. Prismatic (TL12) flat panel in white metal trim.
3. Opal trimless.
4. Prismatic (TL12) base, Opal side trimless.

The FTRB body luminaire offers a more comprehensive range of metal trim attachments in addition to the two trimless types similar to the FTRA versions. In addition, the four-tube versions can also be used with low-brightness louvers and

symmetrical reflector system having a batwing light distribution.

All attachments are fixed to the fittings by wishbone springs. These springs have a two-stage release that makes attachment (and detachment for maintenance and re-lamping) quick, positive and easy.



New Format

Methods of suspension

For direct attachment to the structural ceiling 20mm diameter electrical conduit may be used or the standard adjustable rod suspension set (Catalogue no. KL 4601). A completely new design of side suspension arm has been developed to allow the fitting to rest directly on to the main tee grid sections of a suitably supported suspended ceiling (i.e. extra grid suspensions approximately 6in beyond corners of fitting). This new method permits the fitting to be installed from beneath the suspended ceiling surface. The suspension arms (Catalogue no. FTR 1001) are fully adjustable so that the fitting can be levelled relative to the ceiling.

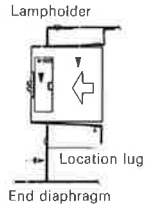
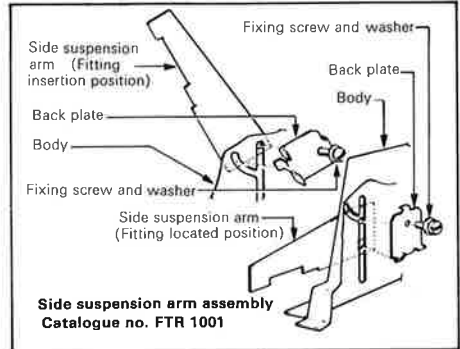
End boxes

The end box is an integral part of the fitting body. For ease of installation the end box is initially held inside the body by two securing screws. When the fitting has been installed in the ceiling opening, these screws are slackened, and this box can be pushed out from inside until it snaps into place.

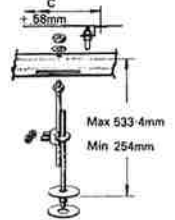
Air handling

All FTRB series bodies have air extract louvers as standard in the

back of the body. In instances where the air extract facility is not required and it is considered necessary to cover up the louvers, a blanking plate set (Catalogue no. FTR 1002) can be used. These fittings are suitable for negative plenum extract when used in conjunction with low brightness louvers or symmetrical reflector systems. An air volume control box* (Catalogue no. FTR 1003) can be used when ducted systems are appropriate. Should a diffuser attachment be required, then those with an air extract trim facility should be specified.



End elevation on end box



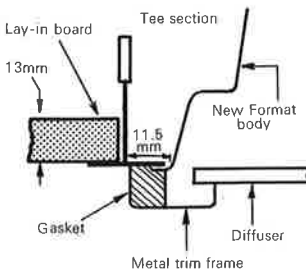
Rod suspension Catalogue no. KL 4601

Indoor luminaires in general are designed to BS 4533 Part 1 Section 1.4 and, except where otherwise stated, are "Luminaires for use in normal atmospheres." Where use in more onerous situations is contemplated, e.g. in part-completed buildings before drying out and made suitable for occupation, damp cellars, special processing plants, etc, additional surface protection may be required. Special finishes for such applications can be agreed in consultation with your local Thorn Lighting Office.

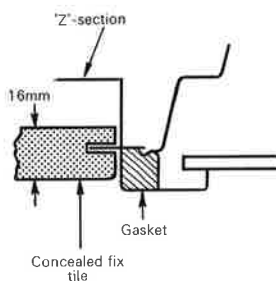
*Available to special order.

New Format: flange details with common suspended ceiling types

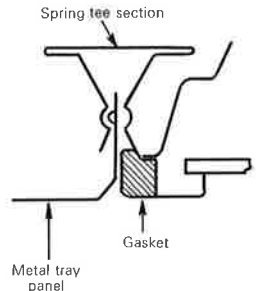
1. Exposed Tee (lay-in grid)



2. Concealed fix

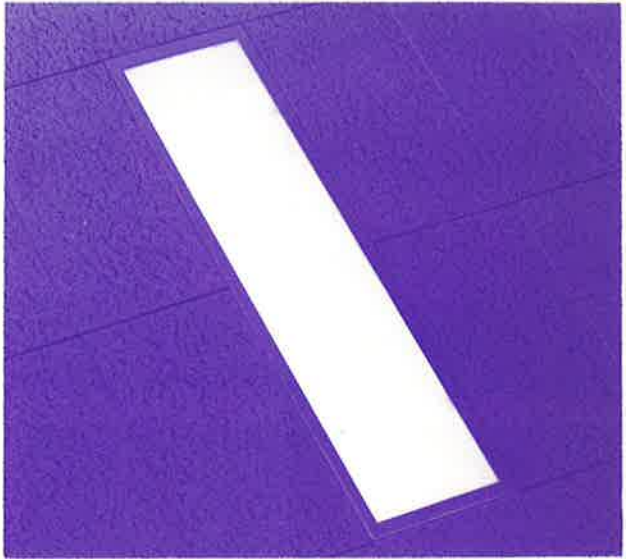


3. Spring Tee System



New Format – FTRA Series

The FTRA series of New Format is designed for use with metric (300mm) module width or imperial (1ft) module width. Fitting lengths are 1200mm/4ft, 1500mm/5ft and 1800mm/6ft with a choice of one lamp or two lamp fittings. Bodies are supplied wired complete with control gear for 240V 50Hz operation and are fused. Opal or Prismatic (TL 12) panels are available supplied mounted in a white finish metal trim frame complete with wishbone springs for direct attachment to the fitting body. Trimless varieties, again with either an opal or prismatic (TL 12) base, but both with opal sides are similarly available and use the same wishbone spring method of attachment. When specifying New Format, attention must be paid to establishing whether the ceiling module conforms to metric or imperial dimensions. Although the body is standard for either type, separate metric or imperial attachments are required. When using composite catalogue numbers for ordering, it is essential to state MET or IMP as appropriate at the end of the number to ensure that the correct attachment is supplied.



Opal FTRA/O 140 IMP

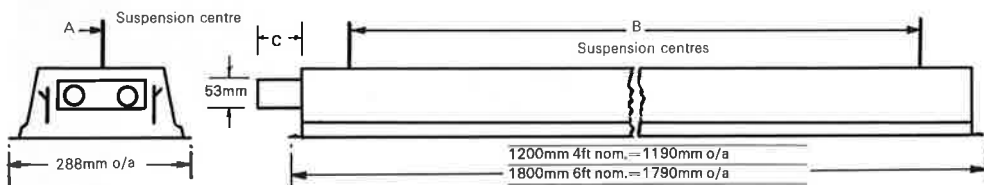


Prismatic base/opal sides FTRA/E 140 IMP

Note : 1500mm (5ft) size to special order only.

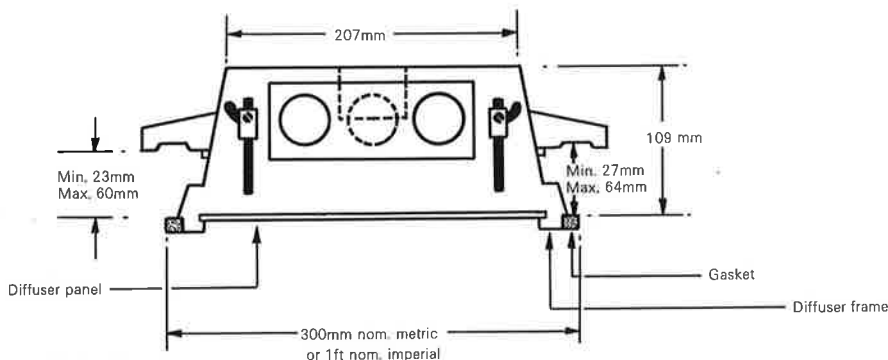
New Format – FTRA Series

FTRA series 300mm and 1ft wide modules: 1 and 2 tube



End box dimensions (1 and 2 tube)	
Fitting length	C dimension
1200mm/4ft	88mm
1800mm/6ft	52mm

Cross-section



Illustrated with metal trim type attachment—
FTRO and FTRP series.

RANGE DETAILS:

FTRA SERIES

Information in the table is based on the FTRD (Opal trimless) diffuser version. Other diffusers available in this range are FTRE (Prismatic TL12 base, Opal sides), FTRO (Opal flat panel in white metal trim) and FTRP (Prismatic TL12 flat panel in white metal trim). Substitute as required.

Nominal length	ft	No. of tubes	Circuit	Metric/Imperial* Catalogue no.	Housing c/w gear Catalogue no.	Metric attachment	Imperial attachment	Fixing centres	
								A mm	B mm
1200	4	1	SRS	FTRA/D140	FTRA 140	FTRD 34	FTRD 14	—	900
1500	5	1	SS	FTRA/D165	FTRA 165S	FTRD 35	FTRD 15	—	1125
1800	6	1	SRS	FTRA/D1675	FTRA 1675	FTRD 36	FTRD 16	—	1350
1200	4	2	SRS	FTRA/D240	FTRA 240	FTRD 34	FTRD 14	—	900
1500	5	2	SS	FTRA/D265	FTRA 265S	FTRD 35	FTRD 15	—	1125
1800	6	2	SRS	FTRA/D 2675	FTRA 2675	FTRD 36	FTRD 16	—	1350

*Quote MET = Metric or IMP = Imperial as suffix to suit requirement

New Format – FTRB Series

The FTRB series of New Format is designed for use with metric (600mm) or imperial (2ft) module width. Fitting lengths are 600mm/2ft, 1200mm/4ft, 1500mm/5ft* and 1800mm/6ft with a choice of two, three or four lamp fittings. Bodies are supplied wired complete with control gear for 240V 50Hz operation and are fused. The three and four lamp fittings also have twin switching facility. A loop wire is normally retained between terminals L1 and L2; for separate switching of inner and outer lamp pairs (in the case of the four tube fitting) this loop is removed and connections made separately to terminals L1 and L2. Opal, Prismatic (both TL12 and TL19 patterns) and Polirized panels are available supplied mounted in a white finish metal trim frame complete with wishbone springs for direct attachment to the fitting body. Trimless attachments with either Opal or Prismatic (TL12) base but both with Opal sides are similarly available and use the same wishbone spring method of attachment.

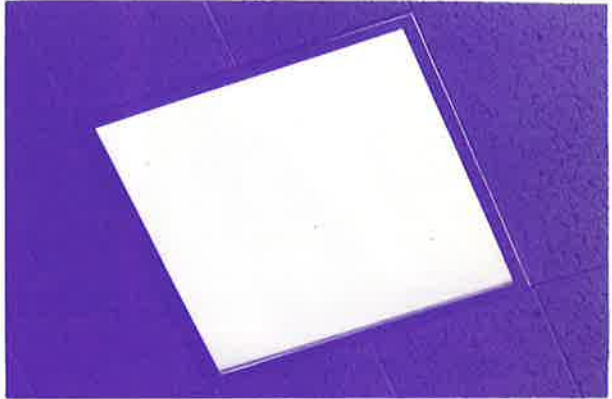
For four tube versions only, a low brightness louver attachment is available and also a symmetrical reflector system having a batwing distribution of light. Both systems use wishbone spring attachments to the fitting body.

When specifying New Format attention must be paid to establishing whether the ceiling module conforms to metric or imperial dimensions. Although the body is standard for either type, separate metric or imperial attachments are required. When using composite catalogue numbers for ordering, it is essential to state MET or IMP as appropriate at the end of the number to ensure that the correct attachment is supplied.

Air handling

All FTRB series (600mm/2ft wide) have air extract slots in the back of the bodies as standard. Fittings using low brightness or symmetrical (batwing) reflectors are immediately suitable for negative plenum extract systems. For ducted extract an air volume control box (Catalogue no. FTRA 1003)* should be used: this fits directly to the back of the fitting above the louver slots. For diffuser attachments, e.g. Opal, a separate air handling frame is required.

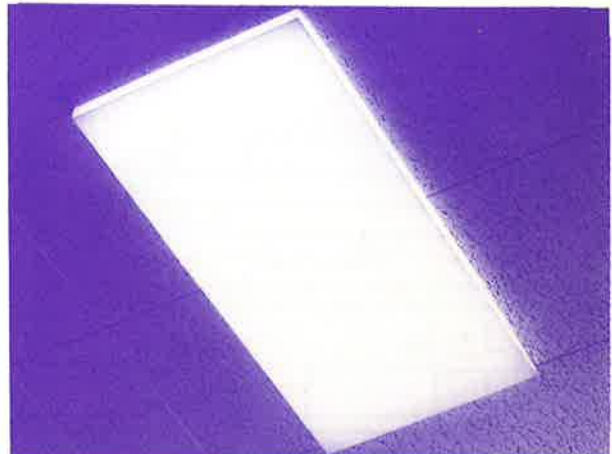
*Note 1500mm size to special order only.
FTR 1003 to special order only.



Metal trim 2ft x 2ft opal FTRB/O 420 IMP

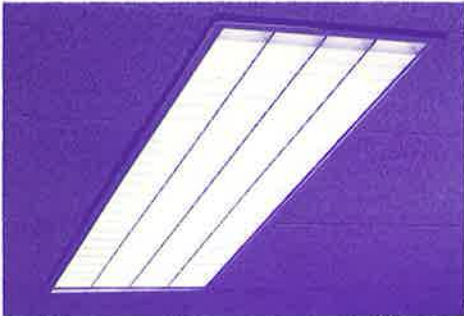


Metal trim 6ft x 2ft (TL12) FTRB/P 4685 IMP

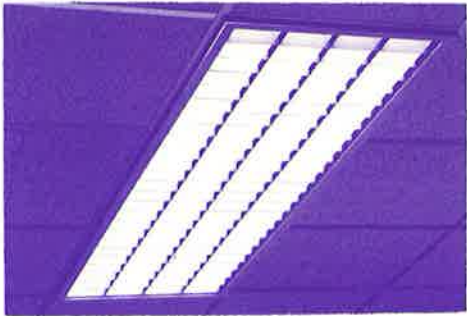


Trimless 4ft x 2ft opal FTRB/D 440 IMP

New Format – FTRB Series



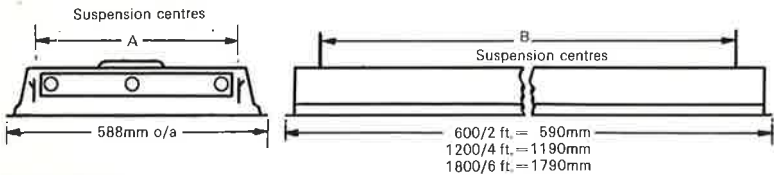
Low brightness FTRB/L 4685 IMP



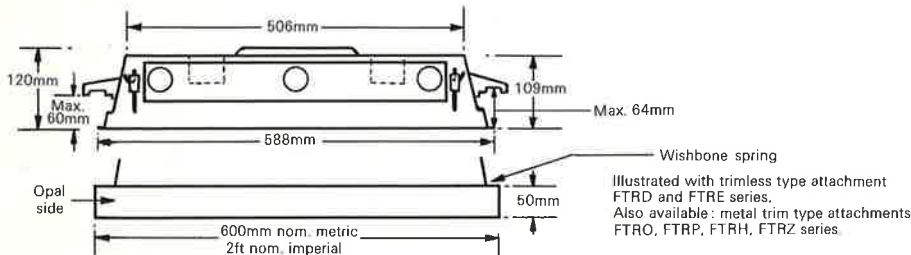
Batwing FTRB/X 4685 IMP

FTRB series 600mm and 2ft wide modules

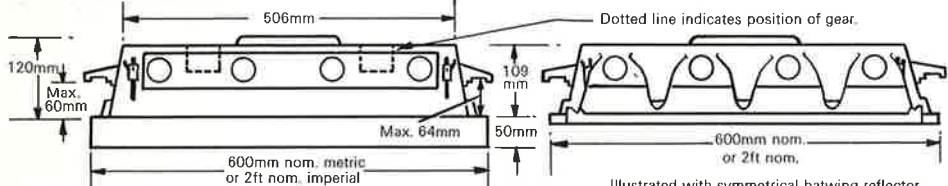
Fixing centres (see table with Range Details)



Three tube cross-section

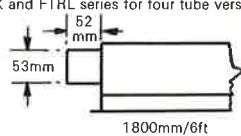
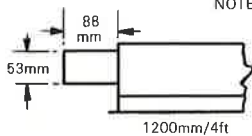
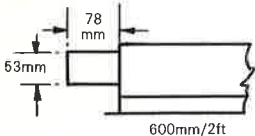


Four tube cross-section



Illustrated with trimless type attachment FTRD and FTRE series.
Also available: metal trim type attachments FTRO, FTRP, FTRH, FTRZ series.

Illustrated with symmetrical batwing reflector attachment FTRX series.
Also available: FTRL series, Low Brightness Louver.
NOTE: FTRX and FTRL series for four tube versions only.



End box dimensions (three and four tube)

New Format-FTRB series

RANGE DETAILS: FTRB SERIES

Nominal length mm ft	No. of tubes	Rating	Circuit	Metric/Imperial* Catalogue no.	Housing c/w gear Catalogue no.	Metric attachment no.	Imperial attachment no.	Attachment description	Fixing centres A mm B mm
600 2	2	20	OS	FTRB/O 220 MET/IMP	FTRB 220	FTRP 62	FTRP 22	Opal c/w frame	450 450
600 2	2	20	OS	FTRB/P 220 MET/IMP	FTRB 220	FTRP 62	FTRP 22	TL12 c/w frame	450 450
600 2	2	20	OS	FTRB/H 220 MET/IMP	FTRB 220	FTRH 62	FTRH 22	TL19 c/w frame	450 450
600 2	2	20	OS	FTRB/Z 220 MET/IMP	FTRB 220	FTRZ 62	FTRZ 22	Polirized c/w frame	450 450
600 2	2	20	OS	FTRB/D 220 MET/IMP	FTRB 220	FTRD 62	FTRD 22	Opal trimless	450 450
600 2	2	20	OS	FTRB/E 220 MET/IMP	FTRB 220	FTRZ 62	FTRZ 22	TL12/Opal trimless	450 450
1200 4	2	40	SRS	FTRB/O 240 MET/IMP	FTRB 240	FTRP 64	FTRP 24	Opal c/w frame	450 900
1200 4	2	40	SRS	FTRB/P 240 MET/IMP	FTRB 240	FTRP 64	FTRP 24	TL12 c/w frame	450 900
1200 4	2	40	SRS	FTRB/H 240 MET/IMP	FTRB 240	FTRH 64	FTRH 24	TL19 c/w frame	450 900
1200 4	2	40	SRS	FTRB/Z 240 MET/IMP	FTRB 240	FTRZ 64	FTRZ 24	Polirized c/w frame	450 900
1200 4	2	40	SRS	FTRB/D 240 MET/IMP	FTRB 240	FTRD 64	FTRD 24	Opal trimless	450 900
1200 4	2	40	SRS	FTRB/E 240 MET/IMP	FTRB 240	FTRZ 64	FTRZ 24	TL12/Opal trimless	450 900
1800 6	2	85	SRS	FTRB/O 2685 MET/IMP	FTRB 2685	FTRP 66	FTRP 26	Opal c/w frame	450 1350
1800 6	2	85	SRS	FTRB/P 2685 MET/IMP	FTRB 2685	FTRP 66	FTRP 26	TL12 c/w frame	450 1350
1800 6	2	85	SRS	FTRB/H 2685 MET/IMP	FTRB 2685	FTRH 66	FTRH 26	TL19 c/w frame	450 1350
1800 6	2	85	SRS	FTRB/Z 2685 MET/IMP	FTRB 2685	FTRZ 66	FTRZ 26	Polirized c/w frame	450 1350
1800 6	2	85	SRS	FTRB/D 2685 MET/IMP	FTRB 2685	FTRD 66	FTRD 26	Opal trimless	450 1350
1800 6	2	85	SRS	FTRB/E 2685 MET/IMP	FTRB 2685	FTRZ 66	FTRZ 26	TL12/Opal trimless	450 1350
600 2	3	20	OS	FTRB/O 320 MET/IMP	FTRB 320	FTRP 62	FTRP 22	Opal c/w frame	450 450
600 2	3	20	OS	FTRB/P 320 MET/IMP	FTRB 320	FTRP 62	FTRP 22	TL12 c/w frame	450 450
600 2	3	20	OS	FTRB/H 320 MET/IMP	FTRB 320	FTRH 62	FTRH 22	TL19 c/w frame	450 450
600 2	3	20	OS	FTRB/Z 320 MET/IMP	FTRB 320	FTRZ 62	FTRZ 22	Polirized c/w frame	450 450
600 2	3	20	OS	FTRB/D 320 MET/IMP	FTRB 320	FTRD 62	FTRD 22	Opal trimless	450 450
600 2	3	20	OS	FTRB/E 320 MET/IMP	FTRB 320	FTRZ 62	FTRZ 22	TL12/Opal trimless	450 450
1200 4	3	40	SRS	FTRB/O 340 MET/IMP	FTRB 340	FTRP 64	FTRP 24	Opal c/w frame	450 900
1200 4	3	40	SRS	FTRB/P 340 MET/IMP	FTRB 340	FTRP 64	FTRP 24	TL12 c/w frame	450 900
1200 4	3	40	SRS	FTRB/H 340 MET/IMP	FTRB 340	FTRH 64	FTRH 24	TL19 c/w frame	450 900
1200 4	3	40	SRS	FTRB/Z 340 MET/IMP	FTRB 340	FTRZ 64	FTRZ 24	Polirized c/w frame	450 900
1200 4	3	40	SRS	FTRB/D 340 MET/IMP	FTRB 340	FTRD 64	FTRD 24	Opal trimless	450 900
1200 4	3	40	SRS	FTRB/E 340 MET/IMP	FTRB 340	FTRZ 64	FTRZ 24	TL12/Opal trimless	450 900
1500 5	3	65	SS	FTRB.S/D 365 MET/IMP	FTRB.S 365	FTRP 65	FTRP 25	Opal c/w frame	450 1150
1500 5	3	65	SS	FTRB.S/P 365 MET/IMP	FTRB.S 365	FTRP 65	FTRP 25	TL12 c/w frame	450 1150
1500 5	3	65	SS	FTRB.S/H 365 MET/IMP	FTRB.S 365	FTRH 65	FTRH 25	TL19 c/w frame	450 1150
1500 5	3	65	SS	FTRB.S/Z 365 MET/IMP	FTRB.S 365	FTRZ 65	FTRZ 25	Polirized c/w frame	450 1150
1500 5	3	65	SS	FTRB.S/D 365 MET/IMP	FTRB.S 365	FTRD 65	FTRD 25	Opal trimless	450 1150
1500 5	3	65	SS	FTRB.S/E 365 MET/IMP	FTRB.S 365	FTRZ 65	FTRZ 25	TL12/Opal trimless	450 1150
1800 6	3	85	SRS	FTRB/O 3685 MET/IMP	FTRB 3685	FTRP 66	FTRP 26	Opal c/w frame	450 1350
1800 6	3	85	SRS	FTRB/P 3685 MET/IMP	FTRB 3685	FTRP 66	FTRP 26	TL12 c/w frame	450 1350
1800 6	3	85	SRS	FTRB/H 3685 MET/IMP	FTRB 3685	FTRH 66	FTRH 26	TL19 c/w frame	450 1350
1800 6	3	85	SRS	FTRB/Z 3685 MET/IMP	FTRB 3685	FTRZ 66	FTRZ 26	Polirized c/w frame	450 1350
1800 6	3	85	SRS	FTRB/D 3685 MET/IMP	FTRB 3685	FTRD 66	FTRD 26	Opal trimless	450 1350
1800 6	3	85	SRS	FTRB/E 3685 MET/IMP	FTRB 3685	FTRZ 66	FTRZ 26	TL12/Opal trimless	450 1350

*Note: Quote MET=Metric or IMP=Imperial as appropriate.

New Format-FTRB series

RANGE DETAILS: FTRB SERIES (continued)

Nominal length mm ft	No. of tubes	Rating	Circuit	Metric/Imperial* Catalogue no.	Housing c/w gear Catalogue no.	Metric attachment no.	Imperial attachment no.	Attachment description	Fixing centres A B mm mm
600 2	4	20	QS	FTRB/O 420 MET/IMP	FTRB 420	FTRO 62	FTRO 22	Opal c/w frame	450 450
600 2	4	20	QS	FTRB/P 420 MET/IMP	FTRB 420	FTRP 62	FTRP 22	TL12 c/w frame	450 450
600 2	4	20	QS	FTRB/H 420 MET/IMP	FTRB 420	FTRH 62	FTRH 22	TL19 c/w frame	450 450
600 2	4	20	QS	FTRB/Z 420 MET/IMP	FTRB 420	FTRZ 62	FTRZ 22	Polirized c/w frame	450 450
600 2	4	20	QS	FTRB/D 420 MET/IMP	FTRB 420	FTRD 62	FTRD 22	Opal trimless	450 450
600 2	4	20	QS	FTRB/E 420 MET/IMP	FTRB 420	FTRE 62	FTRE 22	TL12/Opal trimless	450 450
600 2	4	20	QS	FTRB/L 420 MET/IMP	FTRB 420	FTRL 62	FTRL 22	Low brightness louver	450 450
600 2	4	20	QS	FTRB/X 420 MET/IMP	FTRB 420	FTRX 62	FTRX 22	Symmetrical batwing reflector	450 450
1200 4	4	40	SRS	FTRB/O 440 MET/IMP	FTRB 440	FTRO 64	FTRO 24	Opal c/w frame	450 900
1200 4	4	40	SRS	FTRB/P 440 MET/IMP	FTRB 440	FTRP 64	FTRP 24	TL12 c/w frame	450 900
1200 4	4	40	SRS	FTRB/H 440 MET/IMP	FTRB 440	FTRH 64	FTRH 24	TL19 c/w frame	450 900
1200 4	4	40	SRS	FTRB/Z 440 MET/IMP	FTRB 440	FTRZ 64	FTRZ 24	Polirized c/w frame	450 900
1200 4	4	40	SRS	FTRB/D 440 MET/IMP	FTRB 440	FTRD 64	FTRD 24	Opal trimless	450 900
1200 4	4	40	SRS	FTRB/E 440 MET/IMP	FTRB 440	FTRE 64	FTRE 24	TL12/Opal trimless	450 900
1200 4	4	40	SRS	FTRB/L 440 MET/IMP	FTRB 440	FTRL 64	FTRL 24	Low brightness louver	450 900
1200 4	4	40	SRS	FTRB/X 440 MET/IMP	FTRB 440	FTRX 64	FTRX 24	Symmetrical reflector (batwing distribution)	450 900
1500 5	4	65	SS	FTRB.S/O 465 MET/IMP	FTRB.S 465	FTRO 65	FTRO 25	Opal c/w frame	450 1150
1500 5	4	65	SS	FTRB.S/P 465 MET/IMP	FTRB.S 465	FTRP 65	FTRP 25	TL12 c/w frame	450 1150
1500 5	4	65	SS	FTRB.S/H 465 MET/IMP	FTRB.S 465	FTRH 65	FTRH 25	TL19 c/w frame	450 1150
1500 5	4	65	SS	FTRB.S/Z 465 MET/IMP	FTRB.S 465	FTRZ 65	FTRZ 25	Polirized c/w frame	450 1150
1500 5	4	65	SS	FTRB.S/D 465 MET/IMP	FTRB.S 465	FTRD 65	FTRD 25	Opal trimless	450 1150
1500 5	4	65	SS	FTRB.S/E 465 MET/IMP	FTRB.S 465	FTRE 65	FTRE 25	TL12/Opal trimless	450 1150
1800 6	4	85	SRS	FTRB/O 4685 MET/IMP	FTRB 4685	FTRO 66	FTRO 26	Opal c/w frame	450 1350
1800 6	4	85	SRS	FTRB/P 4685 MET/IMP	FTRB 4685	FTRP 66	FTRP 26	TL12 c/w frame	450 1350
1800 6	4	85	SRS	FTRB/H 4685 MET/IMP	FTRB 4685	FTRH 66	FTRH 26	TL19 c/w frame	450 1350
1800 6	4	85	SRS	FTRB/Z 4685 MET/IMP	FTRB 4685	FTRZ 66	FTRZ 26	Polirized c/w frame	450 1350
1800 6	4	85	SRS	FTRB/D 4685 MET/IMP	FTRB 4685	FTRD 66	FTRD 26	Opal trimless	450 1350
1800 6	4	85	SRS	FTRB/E 4685 MET/IMP	FTRB 4685	FTRE 66	FTRE 26	TL12/Opal trimless	450 1350
1800 6	4	85	SRS	FTRB/L 4685 MET/IMP	FTRB 4685	FTRL 66	FTRL 26	Low brightness louver	450 1350
1800 6	4	85	SRS	FTRB/X 4685 MET/IMP	FTRB 4685	FTRX 66	FTRX 26	Symmetrical reflector (batwing distribution)	450 1350

*Note: Quote MET=metric or IMP=Imperial as appropriate.

New Format accessories

240V 50Hz SUPPLY

	1 × 2ft 20W*	2 × 2ft 20W*	4ft 40W†	5ft 65W†	6ft 75W†
Ballast	G.CBQ/20	G.CBQ/220	G.BU/40	G.CU/65	G.BU/675
Capacitor	G.C2224	G.C2224	G.C2273	G.C2245	G.C2220
Starter switch				155/500	

*Three tube fittings contain one single and one twin circuit. Four tube fittings contain two twin circuits.

†One ballast and one capacitor per tube.

Fuse (3A) G.T1299

Lampholder—spring mounted G.B1583

Fuseholder G.T1265

Lampholder—fixed G.B1582

Mains terminal block G.T1364/4

ACCESSORIES

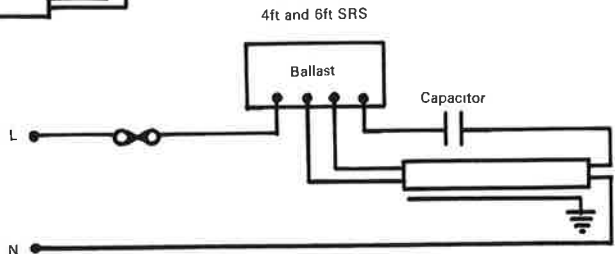
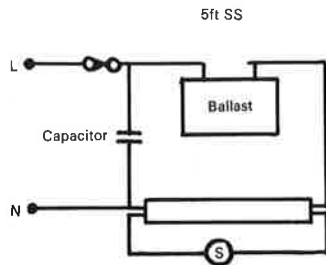
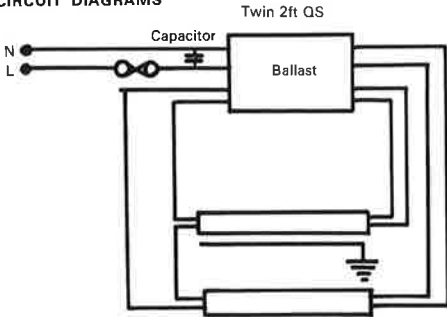
Catalogue no.	Description
FTR 1001	Side suspension arm set (4 per set) Catalogue no. FTR 1001 is for complete set of 4 suspension arms
KL 4601	Rod suspension set—2 required per fitting.
FTR 1002	Blanking plates (set of 2)—1 set per fitting required for FTRB series if blanking of back louver slots is required.

FTR 1003 Ducting box

APPROXIMATE COMPONENTS WEIGHTS

Body c/w control gear only	kg	Complete fitting with metal trim attachment (Types O, P, H and Z)	kg	Complete fitting with trimless attachment (Types D and E)	kg	Complete fitting with louver attachment (Types L and X)	kg
FTRA 140	5.5	FTR 14/34	7.7	FTR 14/34	7.4	—	—
FTRA 1675	7.3	FTR 16/36	10.9	FTR 16/36	10.6	—	—
FTRA 240	6.8	FTR 14/34	9.1	FTR 14/34	8.6	—	—
FTRA 2675	9.5	FTR 16/36	13.2	FTR 16/36	12.6	—	—
FTRB 320	6.8	FTR 22/62	8.9	FTR 22/62	8.5	—	—
FTRB 340	11.3	FTR 24/64	15.0	FTR 24/64	14.6	—	—
FTRB 3675	15.2	FTR 26/66	21.3	FTR 26/66	20.4	—	—
FTRB 420	7.3	FTR 22/62	9.3	FTR 22/62	9.0	FTR 22/62	10.7
FTRB 440	13.1	FTR 24/64	16.8	FTR 24/64	16.5	FTR 24/64	19.3
FTRB 4675	18.0	FTR 26/66	23.6	FTR 26/66	22.7	FTR 26/66	27.0

CIRCUIT DIAGRAMS



Kolorformat

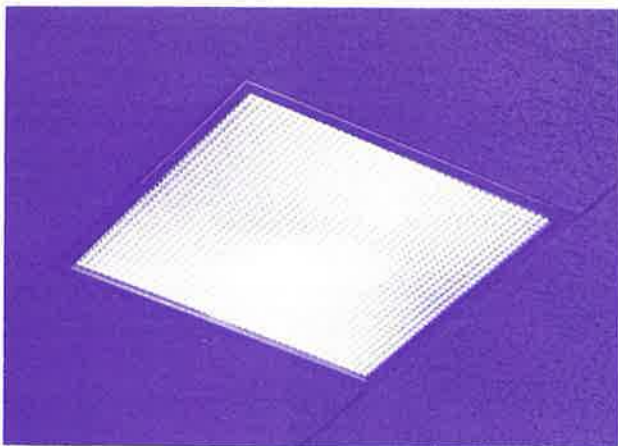
KOLORFORMAT is a recessed modular fitting for use with the 250W MBIF Kolorarc lamp and is particularly suitable for lighting office, store and shop interiors. KOLORFORMAT enables the following criteria to be achieved:

- high lighting levels
- excellent colour rendering
- control of glare
- economical utilisation of electrical power
- modular co-ordination with standard suspended ceilings
- ease of installation: from beneath the ceiling surface using side suspension arms support method.

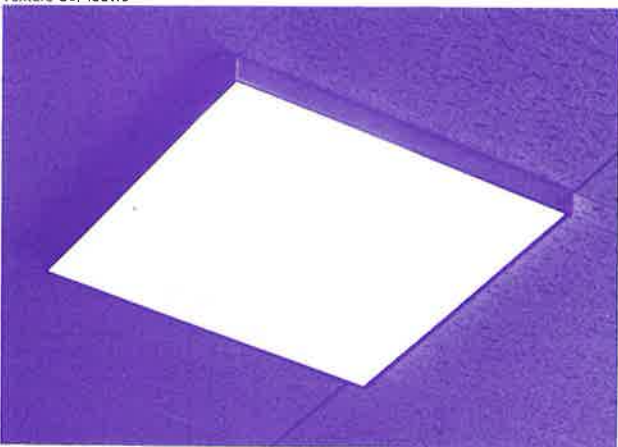
The performance of the KOLORFORMAT fitting and Kolorarc lamp achieves good colour quality and light control with a suitable uniformity of illumination, even with the relatively low ceiling heights (e.g. 3 metres) typical of many modern buildings. To key in with the ceiling module the fitting with an appropriate metric or imperial attachment can be used in either a 600mm x 600mm or 2ft x 2ft module for a wide range of suspended ceilings (e.g. concealed-fix, exposed tee, etc.)

KOLORFORMAT has been designed with one standard housing which is supplied complete with control gear for operating a 250W MBIF Kolorarc lamp. Versions with control gear to operate 250W MBF Kolorlux and 125W MBF Kolorlux lamps can also be supplied. Air extract slots are provided in the back of the body as standard. When used with the open louver attachments KOLORFORMAT is then suitable for use with negative plenum extract systems. For ducted extract an air volume control box (Catalogue no. FTR 1003, available to special order) should be used; this fits directly to the back of the fitting above the louver slots.

Attachments can be selected to suit either metric or imperial ceiling modules of 600mm x 600mm and 2ft x 2ft respectively but the standard housing is suitable for both types. These diffusers are attached to the body by means of wishbone springs which provide a positive location of the attachment and allow easy removal for routine maintenance.



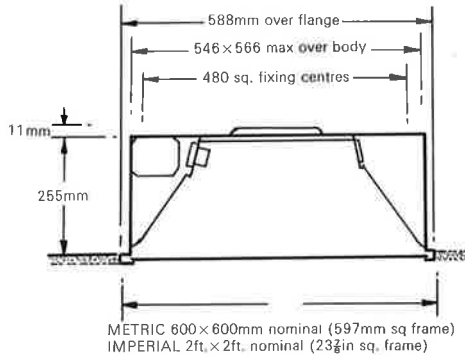
Metal trim panel in concealed-fix
Texture Cel louver



Aluminium frame in concealed fix
TL 19 Prismatic

Indoor luminaires in general are designed to BS 4533 Part 1 Section 1.4 and, except where otherwise stated, are "Luminaires for use in normal atmospheres." Where use in more onerous situations is contemplated, e.g. in part-completed buildings before drying out and made suitable for occupation, damp cellars, special processing plants, etc., additional surface protection may be required. Special finishes for such applications can be agreed in consultation with your local Thorn Lighting Office.

FITTING CROSS-SECTION



RANGE

Nominal size mm.	Watts	Lamp	Catalogue no.	Housing c/w control gear Catalogue no.	Attachment Catalogue no.	Attachment descriptions	Approx. weight kg
600 x 600	250	MBIF	DKBI/H 250 MET	DKBI 250	FTRH 62	Prismatic (TL 19) in metal trim	16-20
600 x 600	250	MBIF	DKBI/Z 250 MET	DKBI 250	FTRZ 62	Polirized in metal trim	16-11
600 x 600	250	MBIF	DKBI/TL 250 MET	DKBI 250	DKBTL 66	Texture-cel louver in metal trim	16-11
600 x 600	250	MBIF	DKBI/FH 250 MET	DKBI 250	DKBFH 66	Prismatic (TL 19) in aluminium frame	16-73
600 x 600	250	MBIF	DKBI/FL 250 MET	DKBI 250	DKBFL 66	Texture-cel louver in aluminium frame	16-82
600 x 600	250	MBIF	DKBI/FS 250 MET	DKBI 250	DKBFS 66	Aluminised specular eggcrate louver in aluminium frame	16-81
600 x 600	250	MBIF	DKBI/G 250 MET	DKBI 250	DKBG 66	Trimless diffuser prismatic (TL19) base	16-00
Nominal size ft.							
2 x 2	250	MBIF	DKBI/H 250 IMP	DKBI 250	FTRH 22	Prismatic (TL 19) in metal trim	16-20
2 x 2	250	MBIF	DKBI/Z 250 IMP	DKBI 250	FTRZ 22	Polirized in metal trim	16-11
2 x 2	250	MBIF	DKBI/TL/250 IMP	DKBI 250	DKBTL 22	Texture-cel louver in metal trim	16-11
2 x 2	250	MBIF	DKBI/FH 250 IMP	DKBI 250	DKBFH 22	Prismatic (TL 19) in aluminium frame	16-73
2 x 2	250	MBIF	DKBI/FL 250 IMP	DKBI 250	DKBFL 22	Texture-cel louver in aluminium frame	16-82
2 x 2	250	MBIF	DKBI/FS 250 IMP	DKBI 250	DKBFS 22	Aluminised specular eggcrate louver in aluminium frame	16-81
2 x 2	250	MBIF	DKBI/G 250 IMP	DKBI 250	DKBG 22	Trimless diffuser prismatic (TL19) base	16-00
Other Circuits	250	MBF	Delete 'I' from list above	DKB 250	Attachments as listed above	fittings only	13-8
	125	MBF	Delete 'I' and replace 250 by 125 in list above	DKB 125			13-6
							DKBI 250=15-0

Kolorformat accessories

CONTROL GEAR FOR 240V 50Hz SUPPLY

	Kolorarc	Kolorlux	
Lamp Wattage	250W	125W	250W
Ballast	G53251.T	G53306.4	G53198.4
Capacitor	GC2386	GC2383	GC2370
Ignitor	G53283		
Other ballast voltage ratings			
220V 50Hz	G53251.T	G53134.2	G53198.2
200-250V 50Hz		G53306.T	G53158.T

ACCESSORIES

FTR 1001 Side suspension arm set (set of 4)

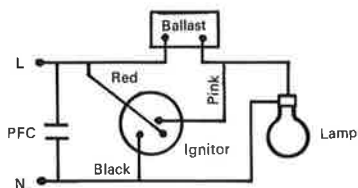
KL 4601 Rod suspension set

DKB 1001 Emergency lighting set

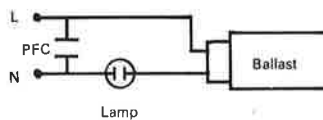
DKB 1002 Maintained lighting unit

CIRCUIT DIAGRAMS

Circuit for 250W Kolorarc metal halide discharge lamp



Circuit for 125W/250W Kolorlux mercury discharge lamp



Introduction

INTEGRATED CEILING SYSTEMS

In recognition of the extent to which lighting and air terminal equipment have become integrated with the ceiling, Thorn Lighting has designed integrated lighting/ceiling systems and is actively engaged in developing new systems to meet this market.

PROGRAMME 1 ARENA

Arena represents the full integration of lighting, ceiling and air handling facilities – a system which permits the use of acoustic tiles and metal tray panels of standard and therefore readily obtainable sizes.

PROGRAMME 2

Programme 2 represents the ultimate in modern integrated ceiling design. Based on a 1500mm or 1200mm module, it can have either a coffered profile or flat panel effects, both with textured finish. 600mm square recessed lighting fittings from the New Format and Kolorformat ranges or linear fittings specially designed for Programme 2 may be used. There are full facilities for air supply and extract and optional Trekline or Multi-trak incorporation. Facilities are also available for fixing partition heads to the grid.

COFFERLIGHT

Coffelight selects the 5ft Pop Pack fitting as the lighting unit in a recessed coffered ceiling system based on a 1200 x 1800mm module.

OTHER CEILING SYSTEMS

The extensive scope range of luminous ceiling products can be categorised in two main groups – the open louvered systems and the closed diffuser systems.

Open systems

Cancan, complete with a range of lampholder attachments for the Decor Spot, Decor Round and Reflector spot lamps, provides an open louver system for achieving both decorative effects and functional illuminance. Leaf-Lite, a non-modular system, also allows a variety of design possibilities with interesting visual effects.

Aluminium Louvers, in a wide variety of cell sizes and textured configurations, permit low brightness ceilings or featured areas. Circgrid and Paragrid, two related open louvered panels, are available complete with their own aluminium support grid.

Closed systems

The Architectural range of panels provides a variety of design shapes for overall luminous ceilings or for featured light bays. Polarized ceiling panels in two standard patterns – Dura and Plura – complete the translucent range and give the added benefits of visual performance achieved by polarized lighting.*

DOMINO

Domino is a 300mm module metal ceiling system incorporating lighted panels which can be arranged to give many decorative individual effects.

*See pages 70-71

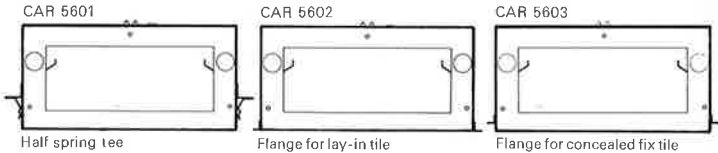
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Programme 1: ARENA

In most conventional suspended ceiling systems using recessed lighting fittings either the electrical contractor first hangs the lighting fittings from the structural ceiling and the ceiling contractor installs his tiles around them, or the ceiling contractor erects his ceiling first, leaving openings within which the electrician places his fittings. Either method is expensive, requiring a large number of suspension points, time is wasted while men of different trades wait for each other to finish, and almost always adjustments have to be made in the final stages. When ventilation or air conditioning is also required, the situation is still further complicated. Yet another sub-contractor is involved, and his ducting which must be installed before either lighting fittings or suspended ceilings are in place may conflict with the positioning of these components or their suspensions.

In the ARENA system the planning starts with the lighting layout. This determines the position of all components, and since the ceiling-boxes form the main structural support for the suspended ceiling, the number of suspension points for the latter is much reduced. The air ducting is designed in relation to the ceiling construction, and flexible connections can be made to terminal equipment at an early stage. The electrician's work is to provide wiring in the ceiling-boxes already installed and to the trunking runs (if any) and finally installing the gear channels, fluorescent tubes and diffusers. The whole planning and installation process is shortened and simplified with a consequent saving in time and money.



The Ceiling-Box

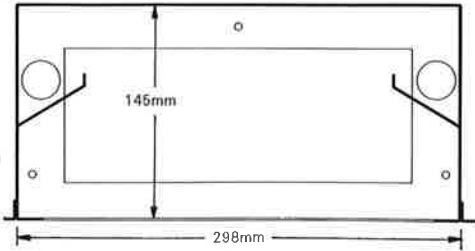
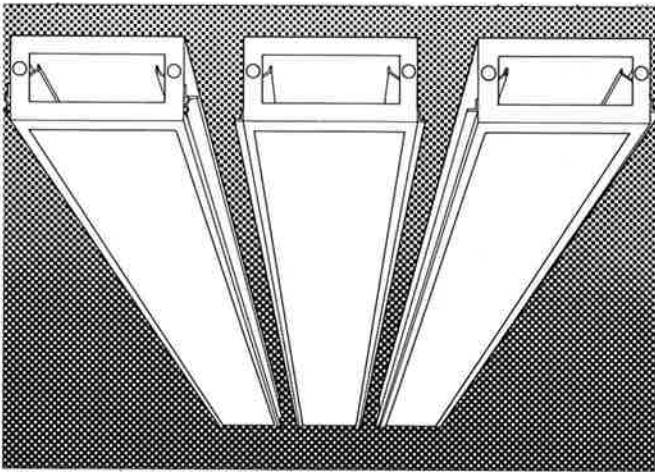
This is made flangeless with half spring-tees on each side to accept metal panels or with two types of flange to accept lay-in or concealed fix tiles. It is of modular tile width and it is constructed of sheet steel to the dimensions shown and stove enamelled white.

Apertures are provided at each end and in the top for air-extraction and the latter can be adapted to accept ducting.

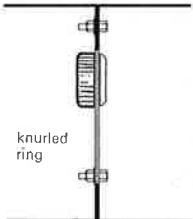
Air flow is controlled by a top flow plate. Two 26mm diameter holes are provided at each end to give access to the internal wiring channels and three holes are provided at either end to enable the boxes to be secured to each other or to air supply or extract boxes by means of 6mm nuts and bolts.

Suspension is by hook bolts entering four slots arranged in pairs at either end of 180mm x 1400mm centres. Note that these hook bolts are included in the ceiling-box assembly.

Internal wiring channels are provided and also support the gear-trays carrying fluorescent lamps. Clip-in covers can be supplied to order to isolate the wiring. Various types of light controlling devices can be laid on the internal flanges of the ceiling-box.



Width of flange for lay-in tile 12.5mm



2 bushes with knurled rings supplied with boxes

ARENA air-flow components

Air Supply Frames

These are made the same width as the ceiling-box and are designed to be installed between and in line with them. The assembly consists of just two parts both of which are made in 300mm and 600mm sizes:

1 An open supporting frame, secured to the ends of the ceiling-boxes by nuts/bolts, and with similar fixing arrangements for ceiling tiles.

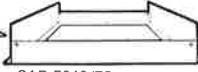
2 An air supply unit which consists of a grille, damper and cone combined in one integral unit and supplied under one reference number.

Note that 26mm diameter conduits must be provided by the electrical contractor to connect the wiring channels in the ceiling-boxes on either side of the supply boxes.

Air Supply Frames



CAR 5641/71



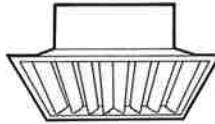
CAR 5642/72



CAR 5643/73

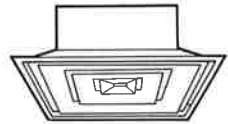
Catalogue nos. for 300mm sq or 300 x 600mm sizes.

Examples of Air Supply Units



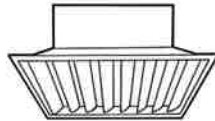
CAR 5639

Two-way fixed blade unit



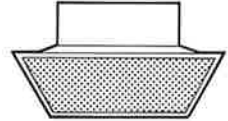
CAR 5688

Four-way throw (fixed blade) unit



CAR 5637

One-way fixed blade unit

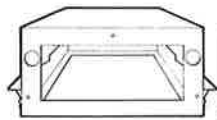


CAR 5686

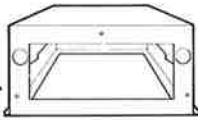
Perforated plate diffuser

Air Exhaust Boxes

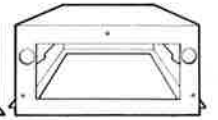
A 300mm or 600mm long closed top version of the ceiling-box in which can be rested an exhaust grille. These boxes are used when the ceiling-box has a closed diffuser and are designed to allow air to pass over the lamps and control gear and out through the opening in the top of the ceiling-box. They are not necessary where a low-brightness reflector or a louver is used. For extra exhaust by-pass use a supply air unit and frame for exhaust.



CAR 5631/61



CAR 5632/62



CAR 5633/63

Catalogue nos. for 300mm sq, or 300 x 600mm sizes.

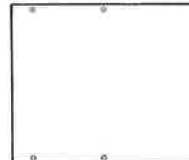
Where an air-box occurs at the end of a row of ceiling-boxes it may need extra support to avoid sagging.

The air-boxes are supplied with a black interior to avoid light reflection from an adjacent ceiling-box.

Top Flow Plate

A plate is provided to restrict air-flow through the opening in the top of the ceiling-box. Used in one position it allows 50% air-flow, in the others it blanks the hole off completely or permits full air flow.

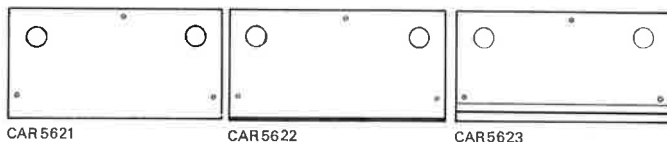
One of these plates is supplied with every ceiling-box (as part of the assembly).



ARENA components and supports

End Plates

These are used to close the ends of runs of ceiling units. They are made either flangeless or with flush and recessed flanges as shown and with grommets to allow through wiring. End plates may also be required on the ends of the ceiling-boxes adjacent to the air-supply boxes and in-fill frames to avoid light loss. These plates are supplied with blind grommets fitted into the conduit holes.



In-fill Panels

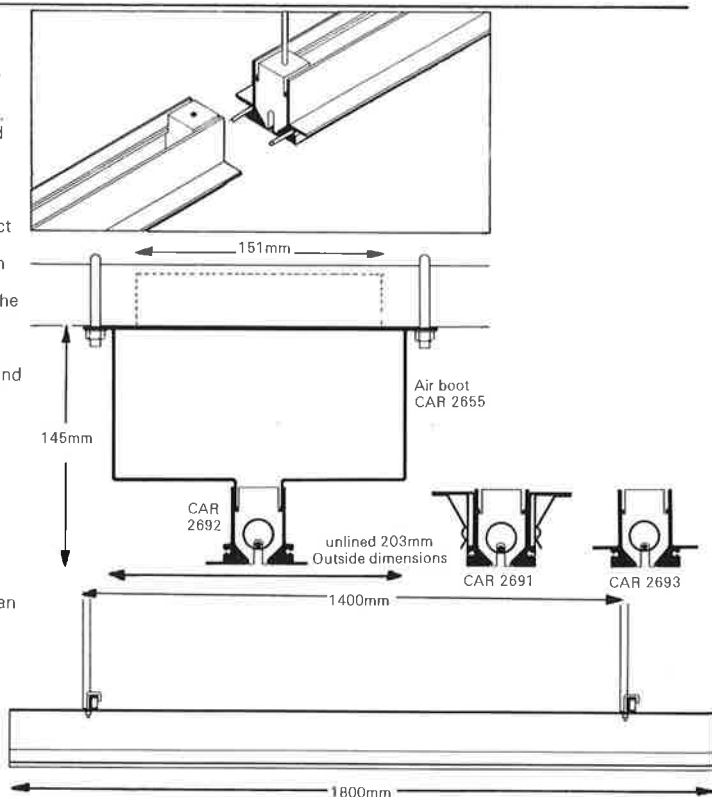
It is often necessary to fill the gaps between the ceiling units and diffuser boxes or at the edge of the ceiling. To do this, the air supply frame in either 300mm or 600mm long size is used, and into the aperture of the air supply frame is inserted a matching in-fill panel

which fits in with spring clips (supplied) and gives a neat appearance. A complete in-fill panel and frame is seen from below as a flat single unit but may also be adapted to accept loudspeakers, fire sprinkler heads, smoke detectors, etc.

Flowline Air Diffusers

These are made with the same trim finishes as the ceiling-boxes. They incorporate a roller device which can be used to control the air-flow. They are 1800mm long, connected and aligned with one another by dowels and their external cross sections match those of the Lightweight Trunking system. An adaptor plate is provided to connect them to the Lightweight Trunking. The active lengths of Flowline form part of the air supply assemblies which are rigidly suspended from the same support frame as the ceiling-boxes by hook bolts attached to flanges on the top of the boot. The boots are 1800mm long, unlined, and are supplied already attached to a standard 1800mm length of Flowline.

Blanking sections of Flowline are provided in 300mm and 600mm lengths, and can be connected to, and aligned with, active lengths or to one another by dowels as described above. They normally need no extra support, but intermediate supports may be required where the span is more than 1200mm.



Arena control gear and lighting attachments

Gear Trays

These carry two 6ft 75W fluorescent lamps and gear. Made of sheet steel, stove enamelled white, they can be hooked onto the through-wiring channels in the ceiling-box. Wiring is of heat-resisting PVC cable, terminating in a fused three-way terminal block for connection to the through-wiring. Standard gear trays are suitable for use on 240V 50Hz supplies. Details of other voltages may be obtained on application.

A three-lamp gear tray is available on demand but is only suitable for use in air-handling situations. Thorn Isora Division should be consulted before specifying this unit. Lamps are not included.

Low-Brightness Reflector Assembly

A twin lamp assembly in polished aluminium with anodised cross baffles which rests on the inner flange of the ceiling-box. It is designed to allow a free air-flow through the apertures in the top of the fitting. This type of control is suggested for situations where low glare ratings are specified.

Batwing Reflector Assembly

A twin lamp assembly with white cross baffles designed to give a light distribution of the batwing type. This is recommended for wider spacing between runs of fittings: it allows free air-flow through the fitting.

Prismatic Panels

Two patterns of prismatic panels to give varying degrees of light control are available and fit on the inner flange of the ceiling box. When this type of controller is used in air-handling fittings, exhaust-boxes must be installed between the light-boxes.

Opal Dish Diffusers

A simple lay-in dish for situations where low glare ratings are not required. Air exhaust-boxes are necessary if this type of diffuser is used in an air-handling fitting.

Specular Plastic Louver

A metalised plastic louver with 12mm square cells of parabolic cross section is used to produce a low-brightness surface and is suitable for situations where a very low-brightness louver of elegant appearance is required. Since the air-flow through the louvers is unrestricted air-boxes are not required.

Square Cell Louvers

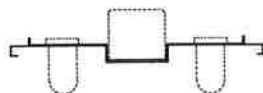
A conventional louver in satin anodised aluminium or plastic suitable for open air-handling fittings. For use where continuous unbroken lines of fittings are required with moderate glare ratings.

Line-Text Louver

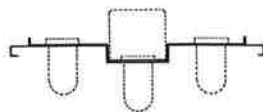
A white stove-enamelled aluminium louver for use where a more interesting texture is required. The cross blades are deepened to give a slotted appearance.

Polrized Panel

A flat sheet Polrized Panel can be used in installations where control of "veiling glare" and reductions in "direct glare" are sought. Air exhaust boxes are necessary if this type of diffuser is used in an air-handling fitting.



CAR 3675



CAR 5675

Please Note:

For replacement purpose Gear Trays for 6ft 85W lamps will continue to be available. CAR 2685/3685.



CAR 5611



CAR 5620



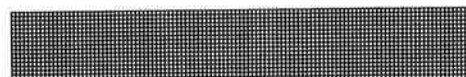
CAR 5611



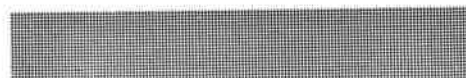
CAR 2612 and CAR 2613



CAR 2614



CAR 2615



CAR 2616 and CAR 2617



CAR 2618



CAR 2919

Arena components list

Lighting/ceiling Components

Catalogue no.	Description
CAR 5601	300 × 1800mm Ceiling Box for Metal Tray
CAR 5602	300 × 1800mm Ceiling Box for Lay-in Tile
CAR 5603	300 × 1800mm Ceiling Box for Concealed Fixing Tile
CAR 5675	Gear Tray Assembly (twin 6ft 75W) 1800mm Module
CAR 3601	300 × 1800mm Ceiling Box (for 3 tube version) for Metal Tray
CAR 3602	300 × 1800mm Ceiling Box (for 3 tube version) for Lay-in Tile
CAR 3603	300 × 1800mm Ceiling Box (for 3 tube version) for Concealed Fixing Tile
CAR 3675	Gear Tray Assembly (triple 6ft 75W) 1800mm Module
CAR 2681	Top Flow Plate for Ceiling Box (one packed with each ceiling box)
CAR 5611	1800mm Twin Low Brightness Reflector Assembly
CAR 5620	1800mm Batwing Reflector Assembly
CAR 5401	300×1200mm Ceiling Box for Metal Tray
CAR 5402	300×1200mm Ceiling Box for Lay-in Tile
CAR 5403	300×1200mm Ceiling Box for Concealed fixing tile
CAR 5440	1200mm Twin 4ft 40W Gear Tray (c/w gear)
CAR 5801	300×2400mm Ceiling Box for Metal Tray
CAR 5802	300×2400mm Ceiling Box for Lay-in Tile
CAR 5803	300×2400mm Ceiling Box for Concealed fixing tile
CAR 5885	2400mm Twin 8ft 85W Gear Tray (c/w gear)
CAR 2612	1800mm Prismatic Panel (TL15)
CAR 2613	1800mm Prismatic Panel (TL12)
CAR 2614	1800mm Opal Dish Diffuser
CAR 2615	1800mm Specular Plastic Louver
CAR 2616	1800mm Plastic Square Louver
CAR 2617	1800mm Anodised Aluminium Louver
CAR 2618	1800mm Line-Text Louver (White)
CAR 2619	1800mm Polirized Panel

Air terminal devices

CAR 5631	300mm long, Exhaust Box for Metal Tray
CAR 5632	300mm long, Exhaust Box for Lay-in Tile
CAR 5633	300mm long, Exhaust Box for Concealed Fix Tile
CAR 5635	300mm long, One-Way Exhaust Grille (fixed blade)
CAR 5636	300mm long, Two-Way Exhaust Grille (fixed blade)
CAR 5690	300mm long, Line-Text Exhaust Grille
CAR 5661	600mm long, Exhaust Box for Metal Tray
CAR 5662	600mm long, Exhaust Box for Lay-in Tile
CAR 5663	600mm long, Exhaust Box for Concealed Fix Tile
CAR 5665	600mm long, One-Way Exhaust Grille (fixed blade)
CAR 5666	600mm long, Two-Way Exhaust Grille (fixed blade)
CAR 5691	600mm long, Line-Text Exhaust Grille
CAR 5637	300mm long, One-Way Fixed Blade Supply Air Unit
CAR 5667	600mm long, One-Way Fixed Blade Supply Air Unit
CAR 5634	300mm long, One-Way Adjustable Blade Supply Air Unit
CAR 5664	600mm long, One-Way Adjustable Blade Supply Air Unit
CAR 5638	300mm long, Two-Way Adjustable Blade Supply Air Unit
CAR 5668	600mm long, Two-Way Adjustable Blade Supply Air Unit
CAR 5639	300mm long, Two-Way Fixed Blade Supply Air Unit
CAR 5669	600mm long, Two-Way Fixed Blade Supply Air Unit
CAR 5687	300mm long, Two-Way Throw Supply Air Unit *
CAR 5688	300mm long, Four-Way Throw Supply Air Unit *
CAR 5686	300mm long, Perforated Face Supply Air Unit, *
CAR 2691	1800mm long, Flowline for Metal Tray Systems
CAR 2692	1800mm long, Flowline for Lay-in Tiles
CAR 2693	1800mm long, Flowline for Concealed Fixing Tile
CAR 2655	1800mm long, Air Supply Boot (Unlined) for Arena Flowline
CAR 2694	300mm long, Flowline Blanking Section for Metal Tray
CAR 2695	300mm long, Flowline Blanking Section for Lay-in Tile
CAR 2696	300mm long, Flowline Blanking Section for Concealed Fix Tile
CAR 2697	600mm long, Flowline Blanking Section for Metal Tray
CAR 2698	600mm long, Flowline Blanking Section for Lay-in Tile
CAR 2699	600mm long, Flowline Blanking Section for Concealed Fix Tile

*Note: with fixed distribution

End plates and in-fill frames

CAR 5621	Ceiling Box End Plate (no flange)
CAR 5622	Ceiling Box End Plate with Lay-in Tile Support
CAR 5623	Ceiling Box End Plate with Concealed Fix Tile Support
CAR 5641	300mm long, Air Unit Frame for Metal Tray System
CAR 5642	300mm long, Air Unit Frame for Lay-in Tiles
CAR 5643	300mm long, Air Unit Frame for Concealed Fix Tiles
CAR 5671	600mm long, Air Unit Frame for Metal Tray System
CAR 5672	600mm long, Air Unit Frame for Lay-in Tiles
CAR 5673	600mm long, Air Unit Frame for Concealed Fix Tiles
CAR 5644	300mm long, Infill Plate c/w spring clips
CAR 5674	600mm long, Infill Plate c/w spring clips
CAR 2680	Clip-in Cover for Ceiling Box Wiring Channel

Suspension and accessories

CAR 2659	Suspension Hook Bolt Assembly
CAR 2658	Top-Hat Section for Half Spring Tee on Lightweight Trunking
CAR 2657	Arena Trunking Suspension Unit
CAR 2680	Trakline Ceiling Angle End Bracket
CAR 2700	Clamp for Trunking Suspension unit
CAR 2690	Trunking to Flowline jointing piece

Programme 2

Programme 2 is a ceiling system which, unlike other systems of its kind, both in this country and overseas, cannot be confined in its application to a series of pre-ordained finite design solutions. From the beginning an essential component of its development has been the desire to afford maximum flexibility to the specifier in the way in which the product can be related to his individual performance specification.

Programme 2 cannot however be regarded as being 'all things to all men'. This was never a possibility since to achieve this would have been to negate the systems approach entirely. A system by its very definition is a compromise. The real quality of Programme 2 lies in the breadth of the compromise and the way in which it has been achieved through the design of the component parts and their relationship to each other.

Programme 2 can be divided into four basic product parts:

THE GRID which is the structural framework which supports the suspended ceiling and gives it its dimensional discipline. In addition, it is the means whereby many of the major building services are introduced – air distribution, additional lighting, power, telephones, partitions, public address, sprinklers, etc.

CEILING INFILLS which range over a number of shapes and material types, such as coffers, both moulded and metal, and flat ceiling treatment.

LIGHTING which incorporates tubular fluorescent, U-tube fluorescent, high pressure mercury halide, high pressure fluorescent mercury and incandescent, together with a range of lighting controllers either with or without air-handling capacity.

AIR DIFFUSION which is achieved by three types of supply device – a modular air diffuser, a linear air bar and a slot air diffuser.

Both types of Thorn track can be incorporated into Programme 2. The permutations which stem from this range of options provide an almost infinite selection of design possibilities. They ensure enormous flexibility with design interpretations in which one solution is applied to a complete area and also to those situations where a range of interpretations is required within the one ceiling. This latter is the kind of flexibility which is most appreciated in those commercial spaces where a variety of interests has to be served.

Having emphasised the flexibility of the concept which lies at the very core of Programme 2, it must be conceded that there will be many occasions when the client will prefer one of a range of stock solutions. The advantages of this 'off-the-peg'

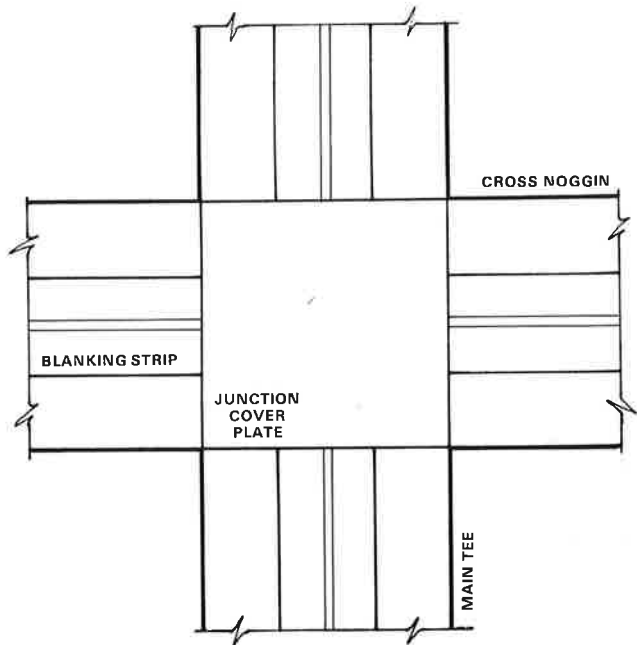
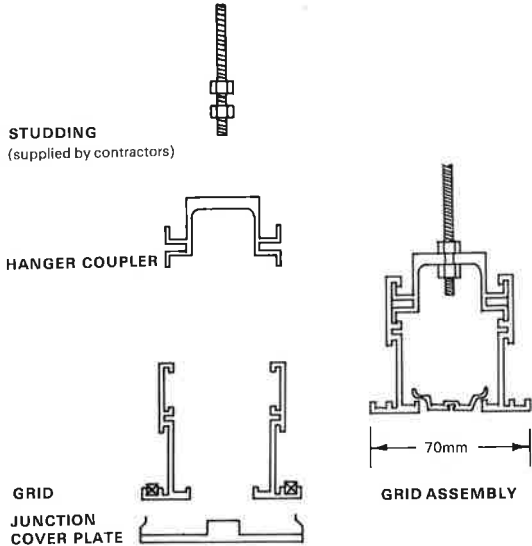
approach over the 'made-to-measure' can be crucial, particularly when cost is a major factor of the design brief. To meet this situation a number of stock solutions have been defined within Programme 2.



1. THE GRID

The ceiling grid of Programme 2 is the basic framework of the system. Not only does it give the ceiling its dimensional discipline, but it also supports all other components. It is a twin tee type of grid running in both directions and is formed of identical aluminium extrusions locked together to create a 27mm slot between them. All the tee sections have a satin anodised finish which combines durability with pleasing appearance. The slot between the tees has been designed to support equipment such as the Thorn track system, air diffusers (both supply and extract) and partition head fixings, the shape of the tee ensuring that each device is securely locked in place. Special services such as closed-circuit television cameras and monitors and signs of all kinds can also be hung from the grid by a special tee bolt. Where none of these facilities is required, the slot is sealed by a black PVC strip, which is supplied cut to length. This strip can be fitted and removed from below, allowing changes to be made once the ceiling is in place.

The grid was designed to be both simple and quick to erect. To achieve this the grid components have been broken down into main tees which run in one direction and cross noggins which run at right angles and create the cross grids. The main tees are supported from the soffit of the building by 6mm studding, the cross noggins locking into them. The junction is then covered by a clip-on plate. A fixing tolerance of ± 30 mm has been built into the main tee support and the system has been engineered for assembly in ambient temperatures of 5°C to 32°C.



PLAN OF TYPICAL INTERSECTION

Programme 2

2. CEILING INFILLS

A wide range of ceiling treatments is available as a standard part of the system. They fall into two broad categories, coffered and flat. All are supplied cut and formed to the correct size, the ceiling fixer facing a single assembly job when installing them into the ceiling. The particular choice of treatment will not only be dictated by visual considerations but also by the lighting and acoustic requirements of a particular project. There are three types of formed or coffered treatment, a moulded unit, a metal coffer and a linear unit.

Moulded coffers

These are one-piece units constructed from fire-resistant inorganic material which has excellent dimensional stability combined with heat-resistant properties.

The coffer material has a Class 'O' spread of flame rating, to the requirements of Section E15-1e/II of the Building (First Amendment) Regulations 1973.

The moulded coffers are available to match 1200mm square and 1500mm square grids. They can be supplied with an aperture suitable for a 600mm square fitting and have a textured surface. Where there is no requirement for a luminaire, an infill panel can be inserted into the hole.

The panel is secured by means of wishbone springs. Blank coffers can also be supplied in the same sizes and of the same contours.

Metal coffers

Unlike the moulded coffer which has curved sides, the metal coffer is a straight-sided unit formed from four identical panels clipped together. The panels are made from perforated sheet steel, finished white. They have an integral felt pad mounted behind to give a good level of acoustic absorption.

Linear coffers

A third shape of coffer is available suitable for linear fluorescent fittings. The assembly is made up of a central twin tube lighting fitting with metal ends to the coffer section; the inclined surfaces from the grid to the flange of the lighting fitting being completed with the use of mineral fibre boards. This light unit and its coffer assembly are supplied for both 1200mm and 1500mm module grids.

In addition to coffers there are *flat ceiling treatments* which not only offer alternative solutions to the coffers but also complement them. There is therefore a flat panel of the same material and finish as the moulded coffer. Like that unit it can be supplied with an aperture to accommodate a 600mm² luminaire or as a blank panel.

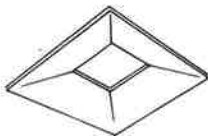
As an alternative, mineral fibre boards can be fitted around the 600mm² lighting fitting. These boards are supplied cut to size and simply drop into place.

Mineral fibre boards can also be used with the fitting that forms part of the linear coffer. The luminaire is mounted directly onto the grid, two pre-cut boards finishing the treatment to give a pleasing flat ceiling.

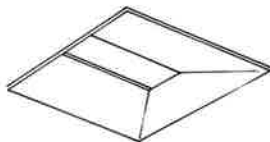
Mineral boards are available to fill those modules where no luminaire is required. In the case of the 1200 module this is a one-piece board; in the 1500 a pair of boards.



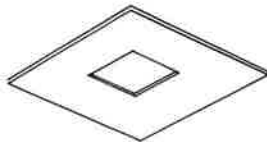
MOULDED COFFER



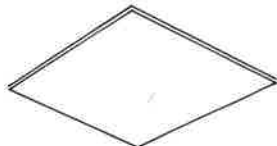
METAL COFFER



LINEAR COFFER



FLAT PANEL WITH OPENING
FOR LIGHTING FITTING



FLAT PANEL

3. LIGHTING

The system offers a variety of lighting options to provide a wide range of illuminances with glare indices between 13 and 22. The 600mm² luminaires are part of the standard range of New Format and Kolorformat luminaires. The New Format fittings can incorporate either four 2ft 20W lamps or two U-tubes and are detailed on pages 83 to 91. The Kolorformat luminaire houses a 250W Kolorarc or 125W and 250W Kolorlux lamps. Full information is given on pages 92 to 94.

The 300mm wide linear fitting is unique to Programme 2. The 1500mm version incorporates two 4ft 40W lamps; the 1200mm version, two 40 Watt lamps. A wide range of optical controllers is available from low brightness to prismatic and like the New Format fittings these have been designed to operate either as static or air-handling units.

4. AIR DIFFUSION

Three different types of air terminal supply devices are offered with the system. All have been specifically developed for use with either flat or coffered ceilings.

The first is the slot air diffuser which is designed to operate under positive pressure plenum directing air downwards. It is capable of supplying between 10 l/s/m to 40 l/s/m of conditioned air depending on ceiling height. The diffuser is formed of the PVC blanking strip with a series of controlled slots cut in it. Like the blanking strip, it is supplied cut to length and is dropped into the slot between the aluminium tee sections.

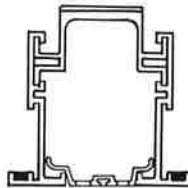
The second is the linear air bar diffuser consisting of a continuous air supply duct and a reversible air deflector and an equalising strip. The duct, of a vapour-sealed glass fibre material, is clipped onto the main grid. The equalising strip is slid into the top of the grid and ensures an even distribution of air along the duct length. The air deflector is in half-module lengths, clipped into the grid and diffuses the supply air horizontally. Conditioned air at flow rates up to 29 l/s per metre length can be supplied by the linear air bar. A single end fed continuous duct can be up to 10m in length, making it a quiet and economic air diffuser combination. Duct sections are supplied flat but pre-grooved in module lengths ready for forming into shape on site. They are butted together, the joint being sealed with a self-adhesive tape. The ends of the

runs of ducts are sealed with a preformed end piece which comes in two types, with spigot and without. The modular air diffuser is a conventional linear diffuser, 800mm or 1000mm long, and is supplied complete with plenum chamber. The unit drops into the grid, either in main tees or cross noggins as appropriate. A simple clip at each end locates the unit firmly in place while allowing it to be removed when necessary. Air is supplied to it via a central circular spigot to which flexible ducting can be fixed by means of a jubilee clip. The controller consists of an eccentrically mounted roller in the mouth of the diffuser, there being two rollers per unit. This latter facility allows the diffuser to be adjusted for volume and to throw air either one way or two ways, as required. The position of the rollers is set by means of a special tool supplied with the diffuser. As far as air extract is concerned, Programme 2 has been designed to operate on the heat recovery system. Air can be drawn through the luminaires thereby improving light

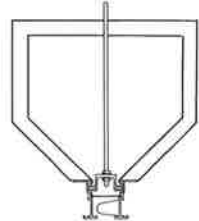
output. This obviates the need for separate air diffusers and also ensures that the heat generated by the luminaires is removed before it can become a load on the occupied space. The amount of supply air and therefore the size of the supply ductwork is thus reduced. Once air has passed through the luminaire it can either be ejected into the void above the ceiling which then acts as a negative plenum or be ducted away. A modified form of the black PVC infill strip is also available either to give supplementary extract capacity or on rare occasions to act as the principal means of air extract.

Fire prevention

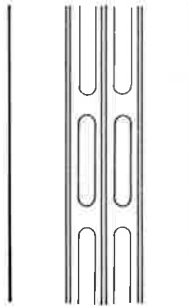
The system can accommodate fire detection and prevention equipment. The grid will accept sprinkler heads in any position using a special adaptor pipe. Heat, smoke or combustion detectors can be fitted onto the grid or in some cases on the infill components.



SLOT AIR DIFFUSER



LINEAR AIR BAR



MODULAR AIR DIFFUSER

Programme 2

Electrical distribution

Power supply to display lighting or office equipment can be incorporated in the grid. Trakline provides single circuit distribution of up to 30A per circuit and can be installed anywhere in the grid. Three circuit distribution of 10A per circuit can be provided by Multi-trak installed in a special twin tee section.

Access

Access into the plenum for servicing or alterations to any equipment in the void can easily be gained anywhere in the ceiling system.

The luminaires or ceiling infills can easily be removed.

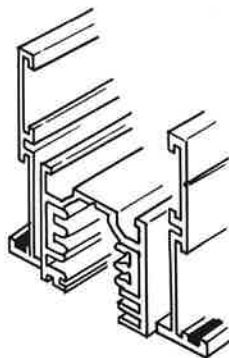
The performance of each component in the system has been thoroughly tested in the laboratories and in field trials.

Assembly of system

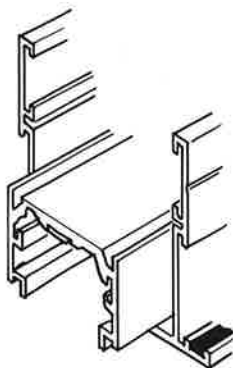
It is anticipated that before any erection work starts the sub-contractors will have prepared drawings in conjunction with each other. The full advantages of integration in terms of simple and speedy erection, together with minimal site damage, can only be achieved if the contractors' approach to the system is truly integrated. To this end, Thorn Lighting is willing to demonstrate to sub-contractors its installation at Slough by means of which they can indicate both the preferred method and sequence of installation.

As far as the ceiling contractor is concerned, his work will be in two stages. He will first erect the grid and then pass on to another area to allow the air-conditioning contractor to do his final work. Once this is completed, the contractor can return to install the ceiling infills. He is

followed by the electrical contractor who installs the luminaires and connects them to the electricity supply outlets previously provided. Before the ceiling gridwork is erected all the main ductwork and the electrical distribution network must be in position. It may prove economic to support these and the ceiling from a sub-grid fixed directly to the structural soffit. The use of such a grid is not necessary as far as the ceiling system itself is concerned but it may have a value in imposing a discipline upon the various trades involved, thereby ensuring a more coordinated method of working. The grid is supported from the structural soffit by standard 6mm threaded studding spaced at modular centres to which a hanger coupler is fitted. The main tee section lengths are slid on to the coupler, a steel plate aligning each pair of tees. This plate also accommodates any thermal expansion that may take place in the grid once it has been installed. When the runs of main tee have been erected, the cross noggins which make up the grid in the other direction are fitted. These are supplied as assemblies and lock into position, being located via a self-tapping screw. Every junction of main tees and cross noggins is masked by an intersection plate of the same finish as the grid. When the grid is fixed the air-conditioning contractor can drop in his diffusers and connect them up. The ceiling contractor then returns to fit the ceiling infills, all of which are supplied cut to size and simply drop into position.



**PROGRAMME 2 GRID
COMPLETE WITH
MULTI-TRAK**



**PROGRAMME 2
GRID COMPLETE WITH
TRAKLINE**

Programme 2 components and accessories

GRID COMPONENTS

Catalogue no.	Description
CNF 1003	Standard Tee for 1200 module
CNF 1004	Standard Tee for 1500 module
CNF 1102	Multi-trak Tee :1200 module
CNF 1104	Multi-trak Tee :1500 module
CNF 2003	Standard Tee : double length for 1200 module
CNF 2004	Standard Tee : double length for 1500 module
CNF 2102	Multi-trak Tee : double length for 1200 module
CNF 2104	Multi-trak Tee : double length for 1500 module
CNF 1005	Hanger/Coupler with plain hole fixing
CNF 1006	Hanger/Coupler with threaded bush hole
CNF 1007	Hanger/Coupler with off-set hole for sprinkler
CNF 1008	Pack of no. 6 PK screws for locking to grid
CNF 1031	Cross Noggin Assembly : 1200 module
CNF 1032	Cross Noggin Assembly : 1500 module
CNF 1033	Cross Noggin cleat (loose item)
CNF 1034	Main Tee terminator
CNF 1035	Expansion plate
CNF 1036	Junction Cover Plate
CNF 1037	Junction Cover for sprinkler
CNF 1054	Track Fixing Plate for Multi-trak
CNF 1055	Earth/Support Channel for Trakline
CNF 1056	Retaining Spring for Trakline
CNF 1071	Blanking Strip for 1200 module
CNF 1072	Blanking Strip for 1500 module

COFFERS AND PANELS

Catalogue no.	Description
CNF 3001	Perforated Metal Coffer : 1200 module
CNF 3003	Perforated Metal Coffer : 1500 module
CNF 3005	Access Panel for metal coffer
CNF 3101	Moulded Coffer (with aperture) for 1200 module
CNF 3102	Moulded Coffer (blank top) for 1200 module
CNF 3103	Moulded Coffer (with aperture) for 1500 module
CNF 3104	Moulded Coffer (blank top) for 1500 module
CNF 3105	Access Panel for moulded coffers and flat panels
CNF 3201	Moulded Flat Panel (aperture) for 1200 module
CNF 3202	Moulded Flat Panel (blank) for 1200 module
CNF 3203	Moulded Flat Panel (aperture) for 1500 module
CNF 3204	Moulded Flat Panel (blank) for 1500 module

MINERAL FIBRE TILES

Catalogue no.	Description
CNF 3051	Long Side Tile for 1200 (aperture) module
CNF 3052	Short Side Tile for 1200 (aperture) module
CNF 3053	Long Side Tile for 1500 (aperture) module
CNF 3054	Short Side Tile for 1500 (aperture) module
CNF 3059	Blank Module Tile for 1200
CNF 3060	Blank Module Tile for 1500
CNF 3055	Side Tile for linear fitting in 1200 (flat) module
CNF 3057	Side Tile for linear fitting in 1500 (flat) module
CNF 3056	Side Tile for linear fitting in 1200 (coffered) module
CNF 3058	Side Tile for linear fitting in 1500 (coffered) module

FITTINGS AND ACCESSORIES

Catalogue no.	Description
CNF 5021	Linear Fitting Body : 1200 module
CNF 5028	Twin-Lamp Gear Tray for CNF 5021
CNF 5022	TL15 Prismatic Panel for CNF 5021
CNF 5023	TL19 Prismatic Panel for CNF 5021
CNF 5005	Air Grille for CNF 5022/5023
CNF 5024	Batwing Reflector for CNF 5021
CNF 5001	Linear Fitting Body : 1500 module
CNF 5008	Twin-Lamp Gear Tray for CNF 5001
CNF 5002	TL15 Prismatic Panel for CNF 5001
CNF 5003	TL19 Prismatic Panel for CNF 5001
CNF 5005	Air Grille for CNF 5002/5003
CNF 5004	Batwing Reflector for CNF 5001

LINEAR FITTING SUPPORTS

Catalogue no.	Description
CNF 5026	Coffer End for 1200 module
CNF 5006	Coffer End for 1500 module
CNF 5027	Fitting Support Rail : 1200 module
CNF 5007	Fitting Support Rail : 1500 module
CNF 5025	Fitting Securing Bracket for 1200 and 1500 modules

AIR DIFFUSERS

Catalogue no.	Description
CNF 4002	Air Diffuser c/w plenum boot : 800 mm long
CNF 4001	Air Diffuser c/w plenum boot : 1000 mm long
CNF 4051	Linear Air Duct : 1200 module
CNF 4052	Linear Air Duct : 1500 module
CNF 4053	Linear Air Duct : 600mm (for 1200 and 1500 modules)
CNF 4054	Air Duct Spigot
CNF 4055	Air Duct End Cap
CNF 1075	Air Equaliser Strip (1200)
CNF 1076	Air Equaliser Strip (1500)
CNF 1079	Air Equaliser Strip (600)
CNF 1077	Linear Air Deflector (1200)
CNF 1078	Linear Air Deflector (1500)
CNF 1074	Slot Air Diffuser (1200)
CNF 1073	Slot Air Diffuser (1500)
CNF 2500	Maintenance/Adjustment Tool

Cofferlight



Cofferlight is a lighting/ceiling system with a recessed coffer design based on an 1800 x 1200mm module, formed by a supporting grid system of channels which can provide location of partitions, with complete facility for fixing anywhere on this module. The lighting unit can be selected from the Pop Pack range using 5ft 65W SRS fittings and diffusers. At normal viewing angles Cofferlight provides glare-free lighting but still permits high illuminance levels to be achieved.

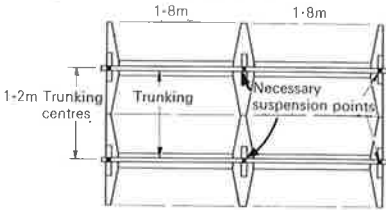
Three separate methods of suspension are possible:

- (1) Using Liteline trunking;
- (2) Using longitudinally-mounted twin 'C' channels;
- (3) Using cross-mounted 'C' channels.

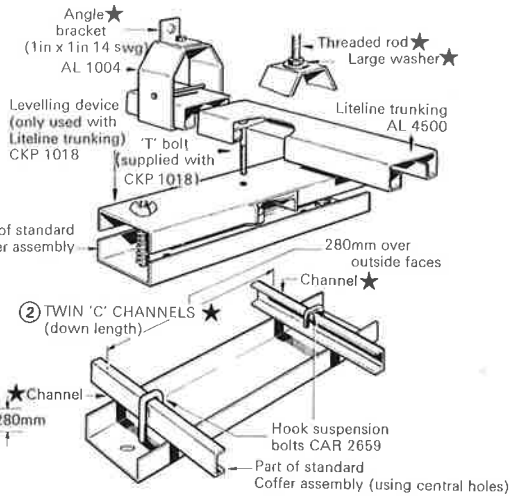
Single or dual coffer ends form the end of the individual coffers and it is these that are attached to the Liteline trunking. Main channel sections connect between the coffer ends and are terminated or joined to adjacent coffers by means of intersection assemblies. 5ft SRS Pop Pack fittings attached to top coffer plates span between the tops of the coffers and boards are laid either side to complete the recessed coffers.

METHODS OF SUSPENSION

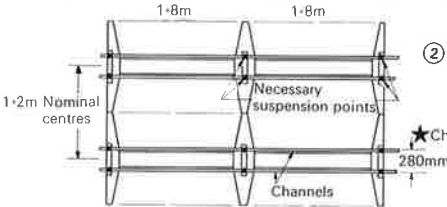
① USING LITELINE TRUNKING



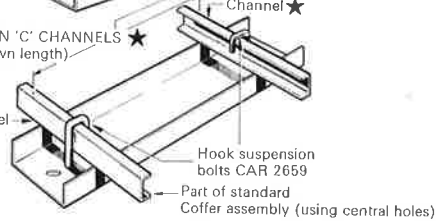
① LITELINE TRUNKING



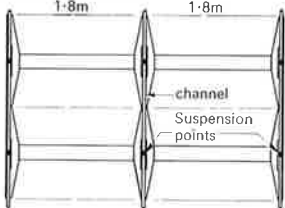
② TWIN 'C' CHANNEL GRID ★



② TWIN 'C' CHANNELS (down length) ★



③ SINGLE CHANNELS ★



③ ONE CHANNEL (across width) ★

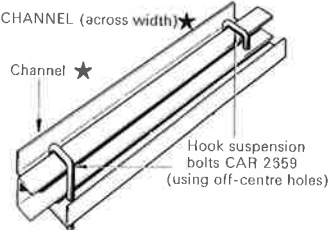


ILLUSTRATION OF PRIMARY FIXINGS ONLY

★denotes items supplied by contractor

1. Liteline Trunking

Standard Liteline Trunking (AL 4500) and associated components is used as the standard suspension system. Recommended suspension centres 1.8m. With this method of suspension, a levelling device (Catalogue no. CKP 1018) is required. Two screws, springs, wing nuts and 'T' bolt assembly are supplied to attach this to the appropriate coffer end (Catalogue no. CKP 1001 or 1002) (Diagram 1)

2. Twin 'C' Channels

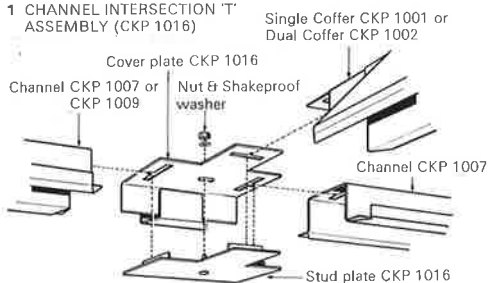
Use hook bolts (CAR 2659) in the two holes of the top coffer bracket nearest the centre. A 19mm x 38mm x 19mm 14swg galvanized channel is recommended. Recommended suspension centres 1.8m. The distance between outside faces of the 'C' Channels is 280mm. (Diagram 2)

3. Transverse 'C' Channel

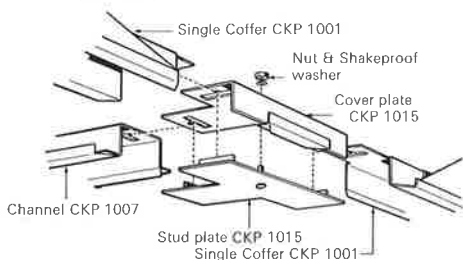
Use hook bolts (CAR 2659) in staggered holes. 'C' Channel, 19mm x 38mm x 19mm 14swg galvanized is recommended. Recommended suspension centres 1.2m. (Diagram 3)

Cofferlight grid

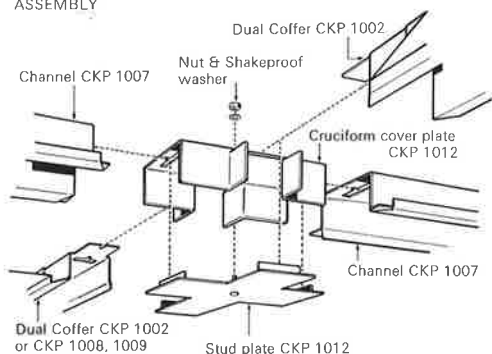
1 CHANNEL INTERSECTION 'T' ASSEMBLY (CKP 1016)



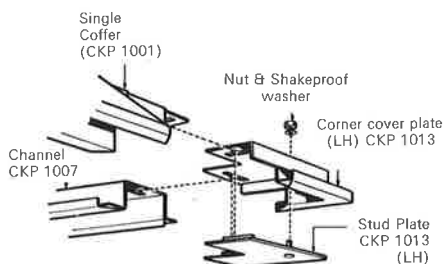
2 COFFER INTERSECTION 'T' ASSEMBLY (CKP 1015)



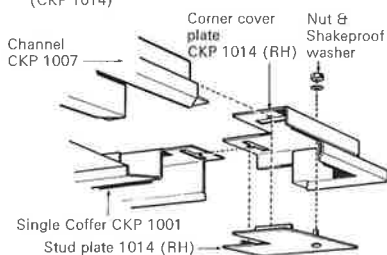
3 CRUCIFORM INTERSECTION ASSEMBLY



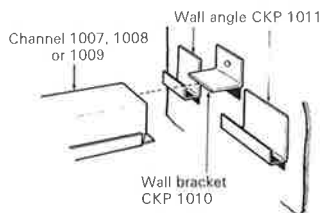
4 LEFT HAND CORNER ASSEMBLY (CKP 1013)

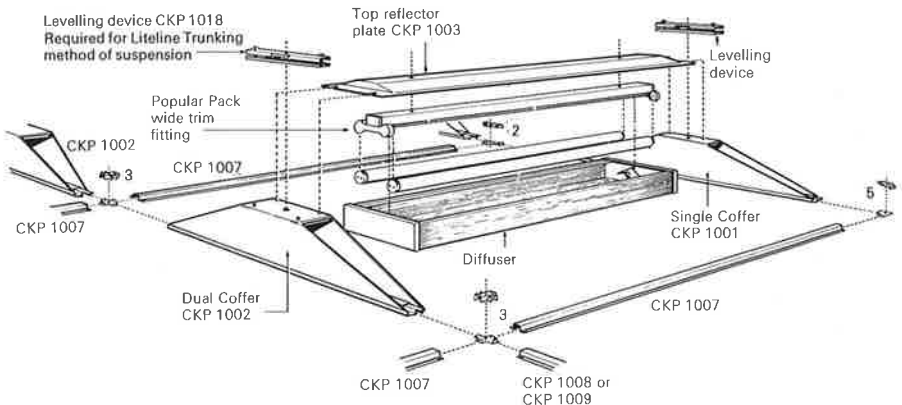


5 RIGHT HAND CORNER ASSEMBLY (CKP 1014)



6 WALL ANGLE INTERSECTION Wall Angle (CKP 1011) & Wall Bracket (CKP 1010)





NOTE: Hook Bolts CAR 2659 required when 'c' channel method of suspension is used.

RANGE

Catalogue no.	Description
CKP 1001	Single coffer end assembly
CKP 1002	Dual coffer end assembly
CKP 1003	Top reflector plate assembly
CKP 1004	Top coffer plate
CKP 1007	Main coffer channel section 1800mm long
CKP 1008	Fill-in channel (end detail as for coffers) 1200mm long
CKP 1009	Channel section (different detail each end) 600mm long
CKP 1010	Wall bracket (for channel)
CKP 1011	Wall angle 1800mm long
CKP 1012	Cruciform intersection assembly
CKP 1013	Left-hand corner assembly
CKP 1014	Right-hand corner assembly
CKP 1015	Coffer intersection tee assembly
CKP 1016	Channel intersection tee assembly
CKP 1018	Levelling device (including 'T' bolt)

Leaf-Lite



Leaf-Lite is a non-modular louver system of metal leaves mounted alternately at right angles to each other, giving a luminous ceiling with richly textured appearance.

The standard leaf finish is high reflectivity semi-gloss white but colours to the BS. range can be supplied to order. Other textures and finishes, such as gold finish or stainless steel, can also be supplied.

RANGE

Catalogue no.	Description
CLA 1036	Leaf-Lite, 3ft channel complete with white leaves
CLA 1048	Leaf-Lite, 4ft channel complete with white leaves
CLA 1136	Leaf-Lite, 3ft channel complete with gold leaves
CLA 1148	Leaf-Lite, 4ft channel complete with gold leaves
CLA 1236	Leaf-Lite, 3ft channel complete with leaves to BS. range of colours
CLA 1248	Leaf-Lite, 4ft channel complete with leaves to BS. range of colours
CLA 1436	Leaf-Lite, 3ft channel complete with stainless steel leaves
CLA 1448	Leaf-Lite, 4ft channel complete with stainless steel leaves
CLL 2048	Leaf-Lite main channel, 4ft white finish
CLL 2148	Leaf-Lite main channel, 4ft gold finish
CLL 2248	Leaf-Lite main channel, 4ft to BS. range of colours
CLL 2496	Leaf-Lite main channel, 8ft black for stainless steel leaves
CLL 2001	Leaf-Lite hanger coupler
CLL 2401	Leaf-Lite hanger coupler, black for stainless steel leaves

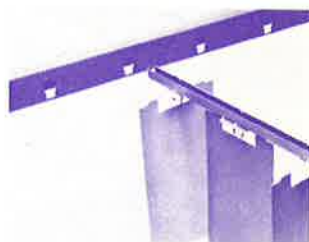
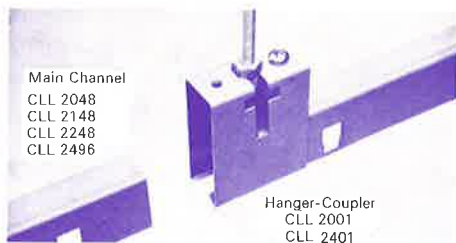
Leaf-Lite offers a wide variety of visual effects utilizing either conventional light sources or coloured PAR lamps with permutations of coloured leaves and variations in leaf shape. Leaf-Lite with its all steel construction is non-combustible. The system is simple and quick to install and requires only infrequent maintenance.

Weight

For estimating ceiling loadings an approximate guide to the installed weight of Leaf-Lite would be :
2 lb/ft²/9.5 kg/m².

Environmental services

The permeability of Leaf-Lite makes it ideally suited to the creation of built-in lighting effects where the ceiling membrane is required to be penetrable in respect of acoustic absorption. Sprinkler systems too can be accommodated.



Leaf Channel 3ft or 4ft complete with leaves

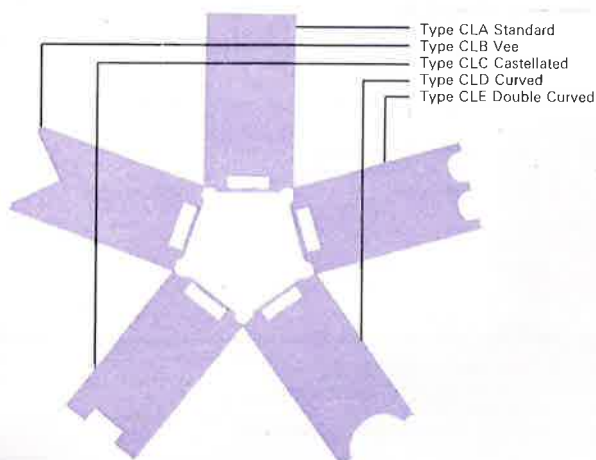
CLA 1036	CLA 1136	CLA 1236
CLA 1048	CLA 1148	CLA 1248
CLA 1436	CLA 1448	



Spring-locked self-aligning leaves



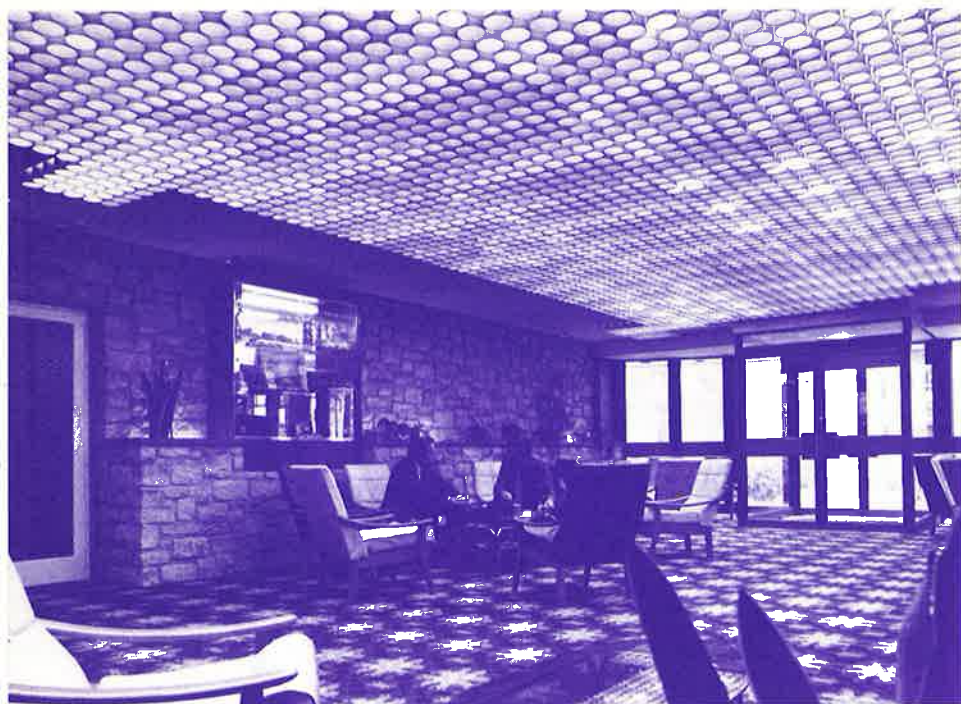
Completed system



Standard CLA and special leaf shapes which can be supplied to order

Products and trade-mark of Integrated Lighting Canada Limited—manufactured in this country under licence. Products not available outside the United Kingdom and Eire.

Cancan



CANCAN is a metal open louvered ceiling system based on a pre-assembled 600 x 600mm module of 25 cans. These are suspended from a centrally located hanger and adjoining panels can be connected together by means of a specially designed clip to complete the ceiling treatment.

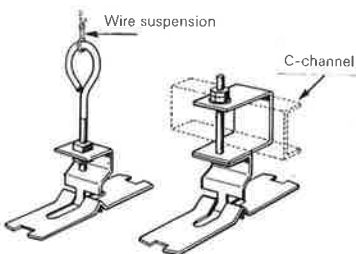
To complement the ceiling a number of lampholder attachments have been created to incorporate decorative lighting with the system.

- Two types of suspension assembly are available:
- (i) Eye-bolt Suspension Assembly: for use in areas of up to 4 panels.
 - (ii) C-clamp Suspension Assembly: for use in areas of over 4 panels.

Range

Catalogue no.	Description
CAN 1001	600 x 600mm Cancan panel—white (c/w four sets of joining clips)
CAN 1002	Lampholder and mounting assembly for 100mm Decor Round lamp
CAN 1003	Lampholder and mounting assembly for Decor Spot lamp
CAN 1004	Lampholder and mounting assembly for internally silvered reflector lamp
CAN 1005	Individual white can
CAN 1006	Pair of joining clips
CAN 1007	Eye-bolt suspension assembly
CAN 1008	C-clamp suspension assembly

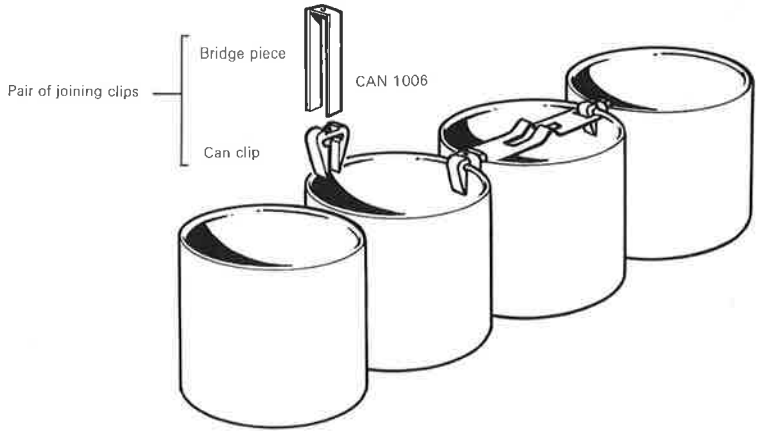
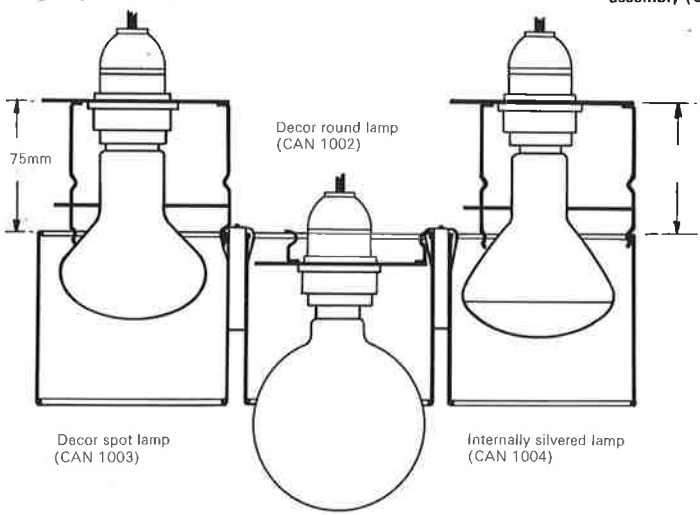
Approximate weight of panel CAN 1001: 2.9 kg
Approximate weight of lighting attachment with lamp: 0.2 kg



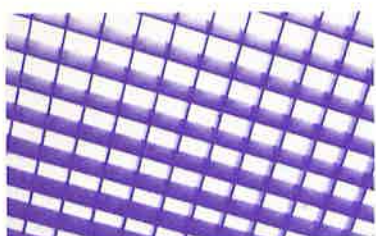
Eye bolt suspension assembly (CAN 1007)

C-clamp suspension assembly (CAN 1008)

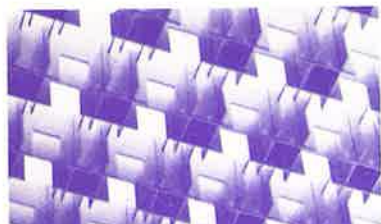
Lighting attachments



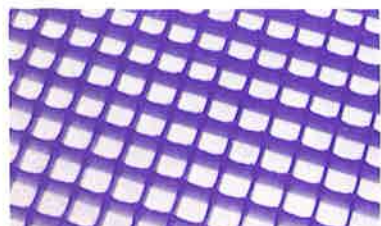
Aluminium louver



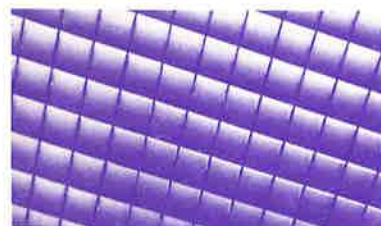
Alumi-Luvr (Trackless version Intra-cel)



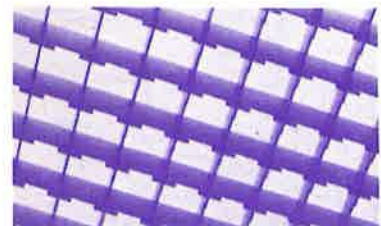
Quadra-Cel (Trackless version Quadrillia)



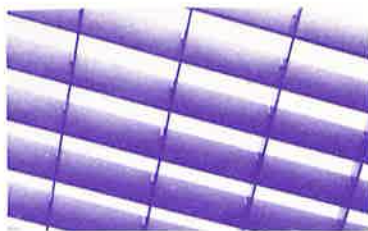
Texture-Cel (Trackless version Texture-Lite)



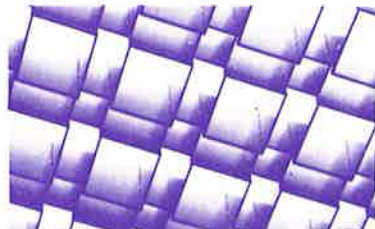
Angl-Cel



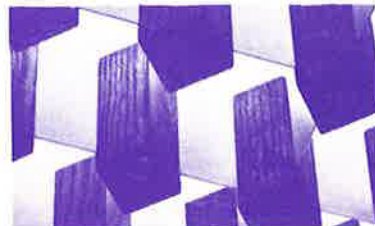
Square-Tex (Trackless version Intra-Tex)



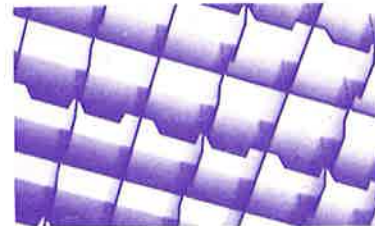
Line-TeX



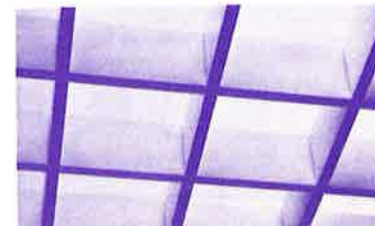
Chek-Cel (Trackless version Chek-Lite)



Arborial



Tweed—Trackless only



Magnagrid—Trackless only

Aluminium louver panels provide a wide variety of textured effects and are particularly suitable for applications where a low brightness illuminated ceiling is required. Standard nominal panel sizes are based on 600mm and/or 1200mm modules. Special size panels can be supplied to order up to a maximum 1800mm x 1200mm or 1500 x 1500mm. Standard finish is white, although other colours to BS 4800 can be supplied to special order.

Trackless versions are supplied complete with their own interlocking support system and a grid is not required. Trackless versions should be specially ordered as perimeter panels may require different edge configurations from central panels. Technical advice can be provided by the Isora Division of Thorn Lighting

RANGE

Description	Catalogue no	Cell sizes (mm)			Blade Thickness (mm)	Shielding angle	Nominal* Panel Size (mm)	Weight (kg/m ²)
		W	L	H				
Alumi-Luvr	CWA 2201	13	13	13	0.6	45°	600 x 600	3.7
Alumi-Luvr	CWA 2401	13	13	13	0.6	45°	600 x 1200	3.7
Alumi-Luvr	CWA 4401	13	13	13	0.6	45°	1200 x 1200	3.7
Alumi-Luvr	CWA 2203	25	25	25	0.8	45°	600 x 600	4.9
Alumi-Luvr	CWA 2403	25	25	25	0.8	45°	600 x 1200	4.9
Alumi-Luvr	CWA 2205	50	50	50	1	45°	600 x 600	6.2
Alumi-Luvr	CWA 2405	50	50	50	1	45°	600 x 1200	6.2
Texture-Cel	CWT 2201	13	13	13	0.6	45°	600 x 600	3.4
Texture-Cel	CWT 2401	13	13	13	0.6	45°	600 x 1200	3.4
Texture-Cel	CWT 2203	25	25	25	0.8	45°	600 x 600	4.4
Texture-Cel	CWT 2403	25	25	25	0.8	45°	600 x 1200	4.4
Texture-Cel	CWT 2205	50	50	50	1	45°	600 x 600	5.6
Texture-Cel	CWT 2405	50	50	50	1	45°	600 x 1200	5.6
Square-TEX	CWS 2201	13	13	13	0.6	45°	600 x 600	3.4
Square-TEX	CWS 2401	13	13	13	0.6	45°	600 x 1200	3.4
Square-TEX	CWS 2203	25	25	25	0.8	45°	600 x 600	4.4
Square-TEX	CWS 2403	25	25	25	0.8	45°	600 x 1200	4.4
Square-TEX	CWS 2205	50	50	50	1	45°	600 x 600	5.6
Square-TEX	CWS 2405	50	50	50	1	45°	600 x 1200	5.6
Chek-Cel	CWC 2210	75	75	50	1	Varies	600 x 600	7.5
		minor cell (60 + 15)						
Quadra-Cel	CWQ 2210	75	75	75	1	Varies	600 x 600	7.2
		minor cell (50 + 25)						
Angl-Cel	CWG 2202	20	20	20	0.6	—	600 x 600	3.7
Line-TEX	CWL 2207	40	20	30/20	0.8	28°/56°	600 x 600	4.6
Line-TEX	CWL 2407	40	20	30/20	0.8	28°/56°	600 x 1200	4.6
Line-TEX	CWL 4207	40	20	30/20	0.8	28°/56°	1200 x 600	4.6
Arboreal	CRR 2206	75	75	75	Block size 30 x 30 x 90		600 x 600	17.0
Tweed (Trackless only)	CRW 2203	25	25	30	0.8	45°/50°	600 x 600	4.7
Magnagrid	CRM 2208	86	86	40	9.0	27°	600 x 600	3.75
Magnagrid	CRM 2212	120	120	55	9.0	26°	600 x 600	3.75

*Actual panel sizes are approximately 10mm less than nominal sizes for lay-in panels. For trackless systems the actual panel size is the same as the nominal size.

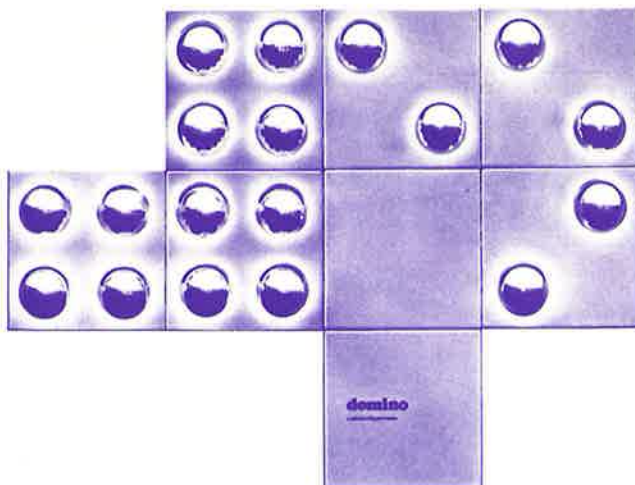
Products and trade-mark of Integrated Lighting Canada Ltd.,—manufactured in Holland and Canada. Products not available outside the United Kingdom and Eire.

Domino

Domino is a collection of decorative ceiling panels, featuring the 40W 100mm crown silvered Decor Round lamp. Domino panels are a nominal 300 x 300mm and designed for use with the various spring tee grid systems which are in common use. Domino consists of plain panels (i.e. without lamps), two lamp panels or four lamp panels which can be arranged in a variety of attractive Domino patterns.

The two lamp panels are arranged with the lamps diagonally and the four lamp panels with lamps in a symmetrical pattern. Panels are supplied complete with lampholders wired to a terminal block.

An accessory panel is also available for use with the fully recessed Downlight or Darklight fitting (Catalogue nos. TBFR 150 and TDFR 150). This is especially useful where functional illumination of specific areas is required without adversely affecting the harmony of the Domino ceiling.



Four Lamp Panel
CDO 1004

Plain Panel CDO 1000



Two Lamp Panel
CDO 1002

RANGE

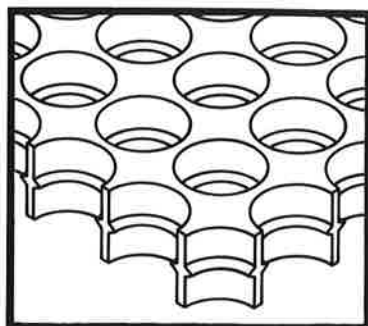
Catalogue no.	Description	Approx weight (kg)
CDO 1000	300 x 300mm plain Domino panel	0.5
CDO 1002	300 x 300mm Domino panel (2 lamps)	1.25 c/w lamps
CDO 1004	300 x 300mm Domino panel (4 lamps)	1.80 c/w lamps
CDO 1005	300 x 300mm Domino Accessory Panel	1.9 including fitting

Lamps to be ordered separately

Circlgrid and Paragrid luminous ceiling systems

Circlgrid

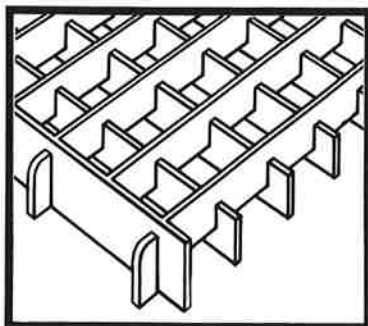
A unique louvered PVC lighting diffuser with circular cell configuration. The sandwich construction of vacuum-formed, sonically welded sheets gives rigid three-dimensional shape with great strength but minimum weight. Suitable for part or wholly luminous ceilings in prestige areas and shops, and for use in illuminated display areas. The material meets the requirements of the Building Regulations (1973 amendments). The panels are simple and quick to install. Standard panel sizes are 610mm/2ft square (nominal).



Circlgrid

Paragrid

Paragrid panel is a one-piece precision injection moulded louver with an open-grid bi-planar construction. It will effectively screen overhead services and permit free air circulation, thereby simplifying integration with heating and ventilation services. The panels are treated with an anti-static solution after manufacture to repel dust. This treatment is easily renewed during cleaning operations. Standard panels are 610mm/2ft square (nominal).

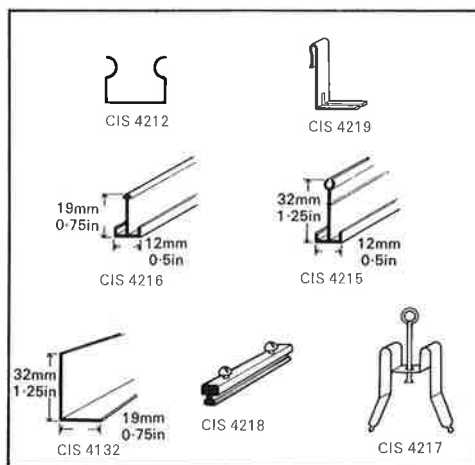


Paragrid

RANGE

Catalogue no.	Description
CIRCLGRID PANELS	
CCG 4200	White perforated circular cell, 2x2ft louver panel
CCG 4202	White unperforated circular cell, 2x2ft louver panel
PARAGRID PANEL	
CPG 4140	Bi-planar opal louver (1/2 in cell), polystyrene 2x2ft
CIRCLGRID AND PARAGRID GRID	
CIS 4215	Main track, anodized aluminium, 8ft long, 1 1/2 x 1/2 in
CIS 4216	Cross track, anodized aluminium, 2ft long (with jointing sleeve)*
CIS 4217	Hanger assembly for wire suspension
CIS 4218	Joiner for main track
CIS 4219	Wall angle end clip*
CIS 4132	Wall angle end trim, anodized aluminium, 8ft long, 1 1/2 x 1/2 in
CIS 4129	Suspension wire, 2mm gauge, 20m length
CIS 4212	Panel retaining clip*

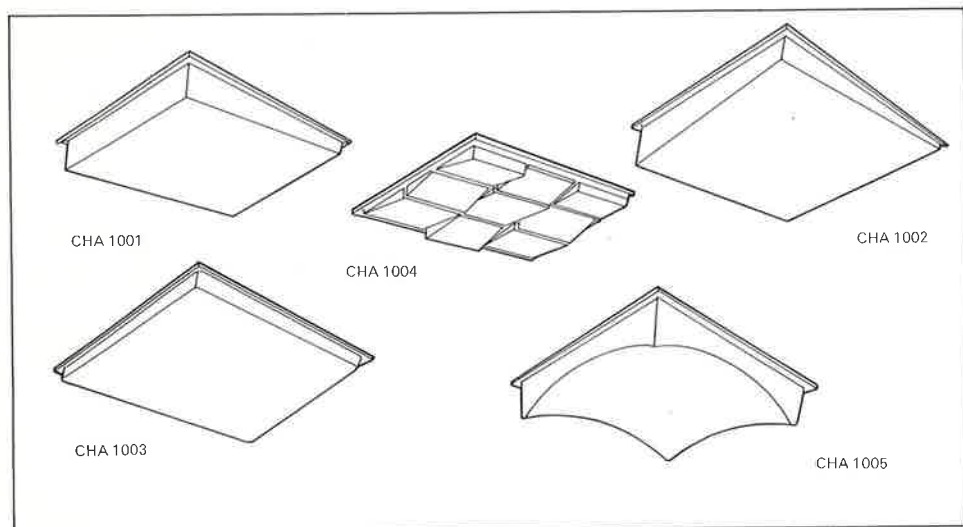
*Items required for Circlgrid only



CIRCLGRID and PARAGRID are manufactured under licence from the WILSON RESEARCH CORPORATION of USA.

Architectural range

This range of vacuum-formed diffusing panels provides an almost unlimited variety of sculptured ceiling forms which can be re-arranged whenever a new effect is required. The panels are of light-stabilising rigid vinyl available in a number of forms: Wedge, Tilted Wedge, Multi-Wedge, Minaret, and Flat Pan. They can be installed in any suitably-sized ceiling grid. Standard panels are a nominal 609mm (2ft) square. The Architectural range can be used either as an overall ceiling or arranged in attractive groupings when combined with other ceiling elements. It is particularly suitable for commercial interiors such as banking halls, hotel foyers and public buildings.



RANGE

Catalogue no.	Description
CHA 1001	Wedge Design in rigid PVC c/w Dust-cover
CHA 1002	Tilted Wedge Design in rigid PVC c/w Dust-cover
CHA 1003	Flat Pan Design in rigid PVC c/w Dust-cover
CHA 1004	Multiwedge Design in rigid PVC c/w Dust-cover
CHA 1005	Minaret Design in rigid PVC c/w Dust-cover
CHD 2000	Clip for Dust-cover
CHD 2424	Dust-cover for Architectural Range Panels

Panels are supplied c/w dust cover, and the weight is approx. 0.4 kg per panel assembly.

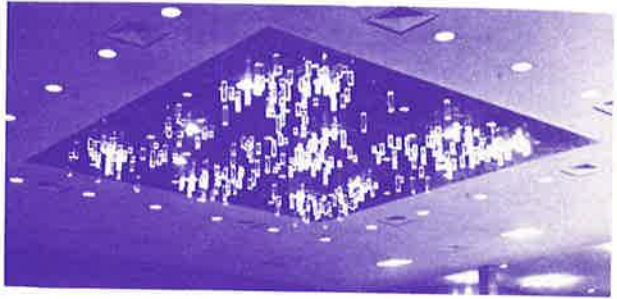
Support Grid

These panels can be used with most 25mm lay-in grids.

Celestial and Lightframe

Celestial

Celestial expresses in terms of today's materials something of the opulence of the traditional crystal chandelier and is ideally suited for use in prestige areas. It consists of an inverted tee-bar grid supporting a 610mm x 306mm/2ft x 1ft suspended ceiling of die-cast aluminium panels. The panels can be fly-cut to accept a variety of lighting and other services such as public address, sprinklers, air diffusers and downlighters. Celestial gives a non-modular appearance and will fit virtually any size or shape of ceiling area.



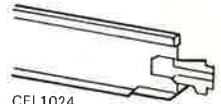
RANGE

Catalogue no.	Description
CELESTIAL	
CEL 1224	1 x 2ft Celestial panel, complete with torsion-ease springs
CEL 1120	Main tee, 10ft long, pre-slotted to accept springs
CEL 1024	Cross tee, 2ft long
CEL 2503	2½in diameter, 3in long cast and polished acrylic lens
CEL 2506	2½in diameter, 6in long cast and polished acrylic lens
CEL 2509	2½in diameter, 9in long cast and polished acrylic lens
CEL 2512	2½in diameter, 12in long cast and polished acrylic lens

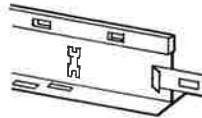
Products and trade-mark of Integrated Lighting Canada Ltd.—manufactured in Holland and Canada. Products not available outside the United Kingdom and Eire.



CEL 1224



CEL1024



CEL1120



CEL 2503/6/9/12

Lightframe

Lightframe is a profiled frame with 45° mitred corners which can be used in conjunction with a range of luminous ceiling panels. Standard finish is plain aluminium silver.

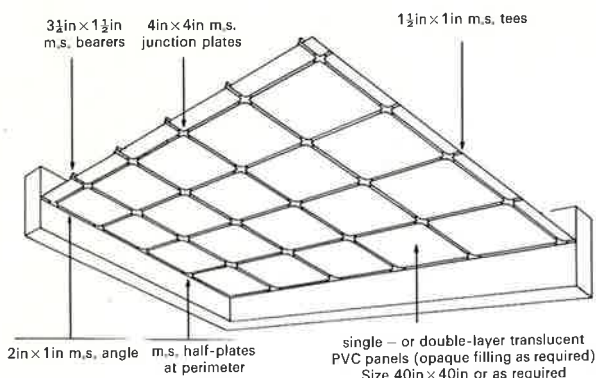
Lightframe can be used with any standard interlocking exposed tee grid system. The standard sizes fit 2ft x 2ft, 2ft x 4ft, 3ft x 3ft and 4ft x 4ft modules and other sizes can be made to order.



RANGE

Catalogue no.	Description
CFR 2424	2 x 2ft roll formed section, 45° mitred corner
CFR 2448	2 x 4ft roll formed section, 45° mitred corner
CFR 3636	3 x 3ft roll formed section, 45° mitred corner
CFR 4848	4 x 4ft roll formed section, 45° mitred corner
CFR 2000	Non-standard sizes to order

Thermalucient ceiling panels



View of underside of ceiling with Thermalucient panels mounted in Spaceliner grid.



Showing how the detachable PVC skins are fitted to the m.s. panel frames.

Thermalucient is a double-layer PVC film luminous ceiling panel with a 30mm (1.18in) still air space between the translucent films, which gives a high degree of thermal insulation. The panel consists of a channel frame over which the PVC skins are stretched. The skins can be easily removed for replacement.

The Thermalucient skin is made from 0.004in thick PVC with a welded perimeter bead. CTH catalogue numbers apply to the Thermalucient panels and CVT numbers to the corresponding replacement skins.

Besides the natural PVC film with 90% transmission, the following colours are available:

Daylight Blue	78% transmission
Daylight Blue high diffusion	57% transmission
Rose Pink	57% transmission
Golden Yellow	62% transmission
Powder Blue	49% transmission
Black	—

Where colours are used, normally the upper skin is 'natural' and the lower coloured.

The PVC film used in Thermalucient meets the performance requirements for flame resistance to Clause 21 of BS1763:1967 when tested to Method 508C of BS2782:1970. The material meets the requirements of The Building Regulations 1972, Section E16, Subsection 3(a).

Rear projection screens

Rear projection screens are made from the same PVC film as used in Thermalucient panels and are tailored to meet individual requirements. Screen sizes up to 60ft wide and with a 50ft drop can be supplied to order and larger sizes can also be considered.

RANGE

Catalogue no.	Description
THERMALUCIENT PANELS (Double skin)	
CTH 2424	Double skin Thermalucient panel 24 x 24in
CTH 3636	Double skin Thermalucient panel 36 x 36in
CTH 4020	Double skin Thermalucient panel 40 x 20in
CTH 4030	Double skin Thermalucient panel 40 x 30in
CTH 4040	Double skin Thermalucient panel 40 x 40in
CTH 4824	Double skin Thermalucient panel 48 x 24in
CTH 4848	Double skin Thermalucient panel 48 x 48in
CTH 6040	Double skin Thermalucient panel 60 x 40in
CTH 0606	Double skin Thermalucient panel 0.6m x 0.6m
CTH 1206	Double skin Thermalucient panel 1.2m x 0.6m
CTH 1212	Double skin Thermalucient panel 1.2m x 1.2m
CTH 2000	Special size panels up to 10 sq ft
CTH 3000	Special size panels over 10 sq ft

Spaceliner grid

Specialty designed for use with Thermalucient panels in order to mask the corners. For details of the lengths of main tee and cross tees, together with the full range of accessories, refer to the Comprehensive Price List or contact the nearest Thorn Lighting office.

REPLACEMENT SKINS

Catalogue no.	Description
CVT 2424	PVC skin for Thermalucient panel 24 x 24in
CVT 3636	PVC skin for Thermalucient panel 36 x 36in
CVT 4020	PVC skin for Thermalucient panel 40 x 20in
CVT 4030	PVC skin for Thermalucient panel 40 x 30in
CVT 4040	PVC skin for Thermalucient panel 40 x 40in
CVT 4824	PVC skin for Thermalucient panel 48 x 24in
CVT 4848	PVC skin for Thermalucient panel 48 x 48in
CVT 6040	PVC skin for Thermalucient panel 60 x 40in
CVT 0606	PVC skin for Thermalucient panel 0.6m x 0.6m
CVT 1206	PVC skin for Thermalucient panel 1.2m x 0.6m
CVT 1212	PVC skin for Thermalucient panel 1.2m x 1.2m
CVS 2000	Special sizes for Spaceliner panels
CVX 2000	Special sizes for Thermalucient panels

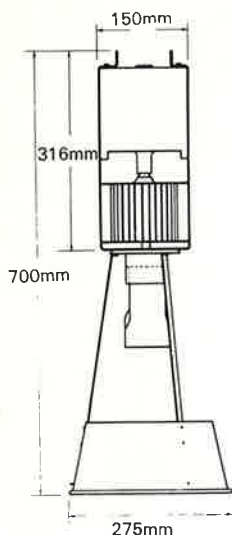
OTHER ITEMS

CTH 5001	Self-adhesive polyurethane foam plastic, 13ft roll, 3in wide
CTH 5002	Special clip for Spaceliner
CTH 5003	Special clip for Thermalucient

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New Hipak DFLB 250/S and 400/S IP22



DFLB 250/S
DFLB 400/S



These fittings are suitable for lighting many industrial areas having mounting heights of between 3.5-9m where high illumination levels coupled with reduced maintenance may be achieved. The encapsulated ballast is housed in an aluminium extrusion. The large polycarbonate wiring box, which has through wiring as well as top and side entry facilities, contains the capacitor and a large terminal block. The fitting is easily installed via a 25mm clearance hole in the top of the wiring box for conduit entry. Additional support lugs are located on the stove enamelled zinc plated steel frame. Stainless steel screws are used throughout.

The 250 or 400W MBFR mercury vapour reflector lamps are operated by switchless start control gear for 240V 50Hz supplies (other supplies on application).

Maximum light output is achieved since the position of the lamp, relative to the skirt reflector, is fixed at source of manufacture by means of a lamp spacer. A wire guard is supplied with the skirt reflector to afford lamp protection.

These fittings are designed to run continuously in an ambient temperature of 45°C and are drip proof.

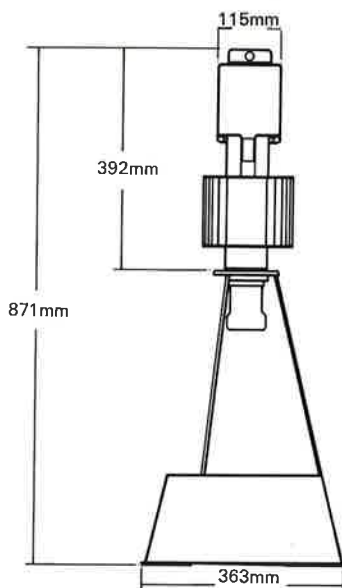
Made to BS 4533-2.2 (IP22).

RANGE

Complete fitting			Components	Reflector Catalogue no.	Spare wire guard Catalogue no.	Approx. weight (incl. lamp)	
Rating	Lamp type	Catalogue no.	Control gear housing including gear Catalogue no.			kg	lb
250W	MBFR	DFLB 250/S	DFLB 250	DFLS 400	Included	6.3	13.8
400W	MBFR	DFLB 400/S	DFLB 400	DFLS 400	Included	7.2	15.8

Note: DFLS skirt reflector may be replaced by a DFLX parabolic reflector for use with MBFU lamps.

New Hipak DFLB 700/S and 1000/S IP22



DFLB 700/S
DFLB 1000/S



These fittings are suitable for lighting many industrial areas having mounting heights of between 9-18m where high illumination levels coupled with reduced maintenance may be achieved. The encapsulated ballast is housed in an aluminium extrusion. The large polycarbonate wiring box, which has through wiring as well as top and side entry facilities, contains the capacitor and a large terminal block. The fitting is easily installed via a 25mm clearance hole in the top of the wiring box for conduit entry.

Additional support lugs are located on the stove enamelled zinc plated steel frame. Stainless steel screws are used throughout.

The 700 or 1000W MBFR mercury vapour reflector lamps are operated by switchless start control gear for 230/240V 50Hz supplies (other supplies on application).

The lamp, relative to the skirt reflector, is fixed at source of manufacture by means of a lamp spacer. A wire guard is supplied with the skirt reflector to afford lamp protection.

These fittings are designed to run continuously in ambient temperatures as follows:

700W 45°C

1000W 40°C

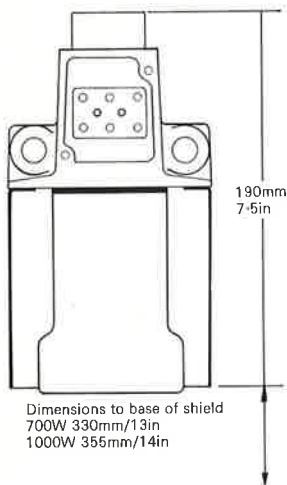
Made to BS 4533-2.2 (IP22). Drip proof.

RANGE

Complete fitting			Components			Approx. weight (incl. lamp)	
Rating	Lamp type	Catalogue no.	Control gear housing including gear Catalogue no.	Reflector Catalogue no.	Wire guard Catalogue no.	kg	lb
700W	MBFR	DFLB 700/S	DFLB 700	DFLS 1000	Included	13.9	30.7
1000W	MBFR	DFLB 1000/S	DFLB 1000	DFLS 1000	Included	14.0	30.9

Note: DFLS skirt reflector may be replaced by a DFLX parabolic reflector for use with MBFU lamps

HBT/R1000 fittings



Dimensions to base of shield
700W 330mm/13in
1000W 355mm/14in



HBT/R1000

These fittings are for installations where mounting heights of between 9-18m/30-60ft are available, and are particularly recommended for installations where a high illumination value with low maintenance is required. This fitting will accept either a 700W or 1000W* MBFR high pressure mercury vapour reflector lamp for use with remotely mounted control gear. The fitting is easily installed via a 25mm/1 in diameter conduit entry on top of the fitting.

A reflector shield is provided as standard to ensure the maximum downward light output and at the same time afford protection to the lamp. A protective wire guard is provided for fixing to the base of the reflector.

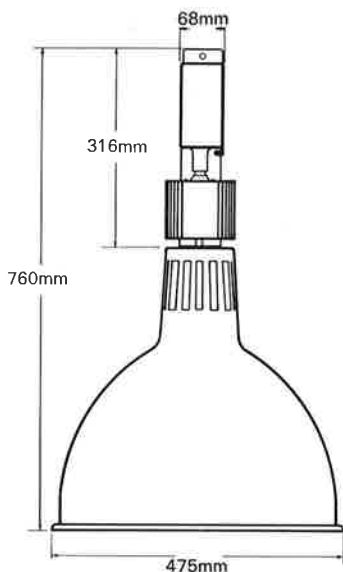
**Note*
Fittings for use with 250 and 400W lamps are available. Details on application.

RANGE

Complete fitting			Components	Dimensions		Weight (ex lamp)	
Rating	Lamp type	Catalogue no.	Top Catalogue no.	Reflector including guard Catalogue no.	Max. diameter mm ' in	kg	lb
700W, 1000W	MBFR	HBT/R1000	HBT	HBR 1000	368 14.5	0.79	1.75

Note. The HBR reflector shield can be replaced by HBX reflector (see page 131)

New Hipak DFLB 250/X and 400/X IP22



DFLB 250/X
DFLB 400/X



These fittings are suitable for lighting many industrial areas having mounting heights of between 3.5-9m where high illumination levels coupled with reduced maintenance may be achieved. The encapsulated ballast is housed in an aluminium extrusion. The large polycarbonate wiring box, which has through wiring as well as top and side entry facilities, contains the capacitor and a large terminal block. The fitting is easily installed via a 25mm clearance hole in the top of the wiring box for conduit entry. Additional support lugs are located on the stove enamelled zinc plated steel frame. Stainless steel screws are used throughout. The 250 or 400W MBF high pressure mercury vapour lamps are operated by switchless start control gear for

240V 50Hz supplies (other supplies on application).

A BZ1 distribution is achieved since the position of the lamp relative to the parabolic reflector is fixed at source of manufacture by means of a lamp spacer. Slots in the top of the reflector provide a small proportion of upward light and allow a flow of air to pass over the lamp and reflecting surfaces. A protective wire guard is available and may be fitted to the base of the reflector.

These fittings are designed to run continuously in an ambient temperature of 45°C and are drip proof.

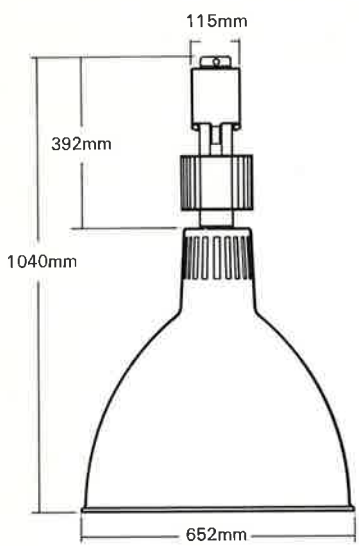
Made to BS 4533-2.2 (IP22).

RANGE

Complete fitting			Components			Approx. Weight (incl. lamp)	
Rating	Lamp type	Catalogue no.	Control gear housing incl. gear Catalogue no.	Reflector Catalogue no.	Optional Wire guard Catalogue no.	kg	lb
250W	MBF	DFLB 250/X	DFLB 250	DFLX 400	DFLG 400	7.25	15.9
400W	MBF	DFLB 400/X	DFLB 400	DFLX 400	DFLG 400	8.15	17.9

Note: The DFLX parabolic reflector may be replaced by a DFLS skirt reflector for use with the MBF/R lamps

New Hipak DFLB 700/X and 1000/X IP22



DFLB 700/X
DFLB 1000/X



These fittings are suitable for lighting many industrial areas having mounting heights of between 9-18m where high illumination levels coupled with reduced maintenance may be achieved. The encapsulated ballast is housed in an aluminium extrusion. The large polycarbonate wiring box, which has through wiring as well as top and side entry facilities, contains the capacitor and a large terminal block. The fitting is easily installed via a 25mm clearance hole in the top of the wiring box for conduit entry. Additional support lugs are located on the stove enamelled zinc plated steel frame. Stainless steel screws are used throughout. The 700 or 1000W MBF high pressure mercury vapour lamps are operated by switchless start control gear for

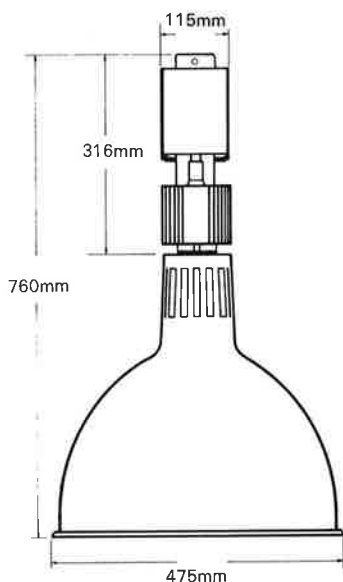
230/240V 50Hz supplies (other supplies on application). A BZ1 distribution is achieved since the position of the lamp relative to the parabolic reflector is fixed at source of manufacture by means of a lamp spacer. Slots in the top of the reflector provide a small proportion of upward light and allow a flow of air to pass over the lamp and reflecting surfaces. A protective wire guard is available and may be fitted to the base of the reflector. These fittings are designed to run continuously in ambient temperatures as follows :
700W 45°C
1000W 40°C
Made to BS 4533-2.2 (IP22)
Drip proof.

RANGE

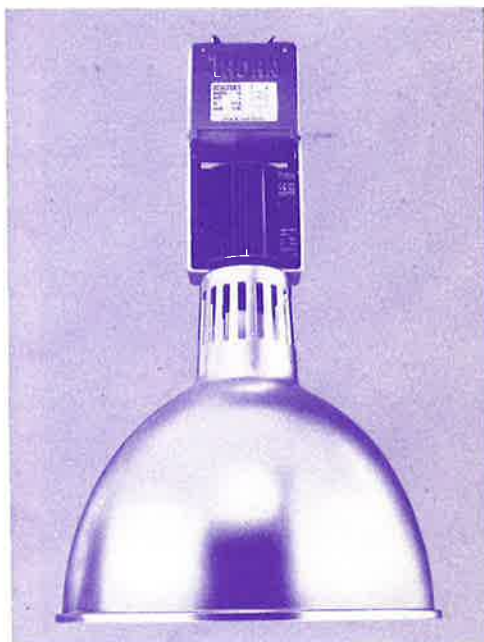
Complete fitting			Components			Approx. weight (incl. lamp)
Rating	Lamp type	Catalogue no.	Control gear housing including gear Catalogue no.	Reflector Catalogue no.	Optional wire guard Catalogue no.	
700W	MBF	DFLB 700/X	DFLB 700	DFLX 1000	DFLG 1000	15.7 34.7
1000W	MBF	DFLB 1000/X	DFLB 1000	DFLX 1000	DFLG 1000	15.8 34.9

Note: The DFLX parabolic reflector may be replaced by a DFLS skirt reflector for use with the MBF/R lamps

New Hipak DFLD 250/X, 400/X and 1000/X IP22



DFLD 250/X
DFLD 400/X

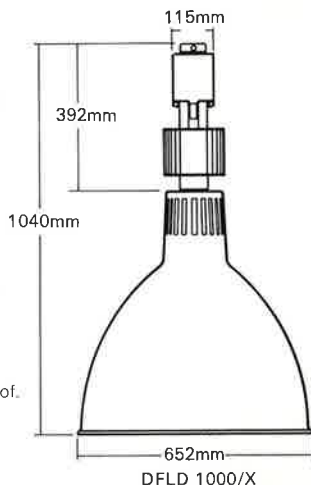


These fittings are suitable for lighting many industrial areas having mounting heights of between 3.5-18m where high illumination levels coupled with reduced maintenance may be achieved. The encapsulated ballast is housed in an aluminium extrusion. The large polycarbonate wiring box, which has through wiring as well as top and side entry facilities, contains the capacitor, ignitor and a large terminal block. The fitting is easily installed via a 25mm clearance hole in the top of the wiring box for conduit entry. Additional support lugs are located on the stove enamelled zinc plated steel frame. Stainless steel screws are used throughout. The MBIF Kolorarc lamp is operated by switchless start control gear for 240V 50Hz supplies (220V 50Hz on application) except the 1000W which is for 415V*.

Maximum light output to give a BZI distribution is achieved since the position of the lamp relative to the parabolic reflector is fixed at source of manufacture by means of a lamp spacer. Slots in the top of the reflector provide a small proportion of upward light and allow a flow of air to pass over the lamp and reflecting surfaces. A protective wire guard is available and may be fitted to the base of the reflector.

These fittings are designed to run continuously in ambient temperatures as follows:
250/400W —45°C
1000W —40°C

*(380V by internal wiring change).
Made to BS 4533-2.2 (IP22) drip proof.

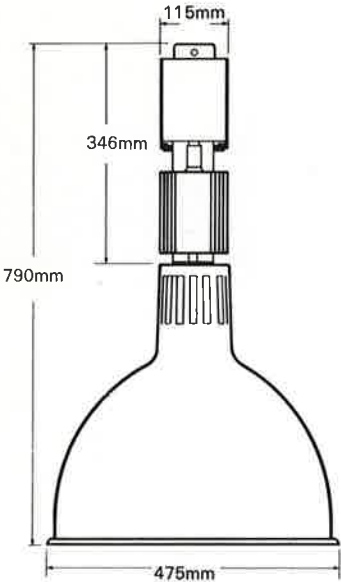


DFLD 1000/X

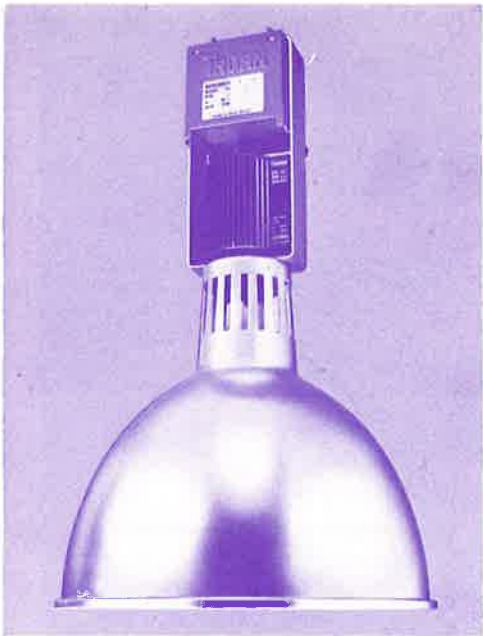
RANGE

Complete fitting			Components		Optional Wire guard Catalogue no.	Approx. weight (incl. lamp) kg lb
Rating	Lamp type	Catalogue no.	Control gear housing incl. gear Catalogue no.	Reflector Catalogue no.		
250W	MBI	DFLD 250/X	DFLD 250	DFLX 400	DFLG 400	9.2 20.4
400W	MBI	DFLD 400/X	DFLD 400	DFLX 400	DFLG 400	8.55 18.8
1000W	MBI	DFLD 1000/X	DFLD 1000	DFLX 1000	DFLG 1000	15.8 34.9

New Hipak DFLC 250/X and 400/X IP22



DFLC 250/X
DFLC 400/X



These fittings are suitable for lighting many industrial areas having mounting heights of between 6-15m where high illumination levels coupled with reduced maintenance may be achieved. The encapsulated ballast is housed in an aluminium extrusion. The large polycarbonate wiring box, which has through wiring as well as top and side entry facilities, contains the capacitor, ignitor and a large terminal block. The fitting is easily installed via a 25mm clearance hole in the top of the wiring box for conduit entry. Additional support lugs are located on the stove enamelled zinc plated steel frame. Stainless steel screws are used throughout. The 250 or 400W SON high pressure sodium lamps are operated by

switchless start control gear for 240V 50Hz supplies (220V 50Hz on application).

A BZ1 distribution is achieved since the position of the lamp relative to the parabolic reflector is fixed at source of manufacture by means of a lamp spacer. Slots in the top of the reflector provide a small proportion of upward light and allow a flow of air to pass over the lamp and reflecting surfaces. A protective wire guard is available and may be fitted to the base of the reflector.

These fittings are designed to run continuously in an ambient temperature of 45°C and are drip proof.
Made to BS 4533-2.2 (IP22).

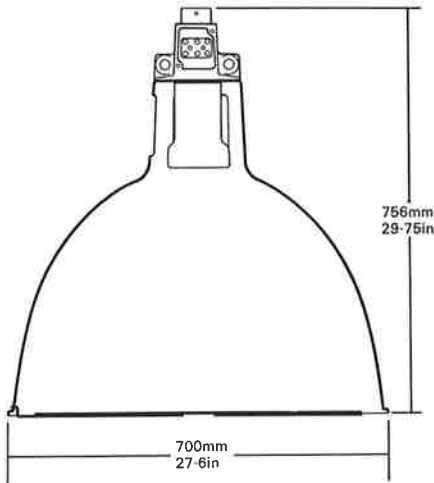
RANGE

Complete fitting

Rating	Lamp type	Catalogue no.	Components		Reflector Catalogue no.	Optional Wire guard Catalogue no.	Approx. Weight (incl. lamp)	
			Control gear housing incl. gear	Catalogue no.			kg	lb.
250W	SON	DFLC 250/X	DFLC 250	DFLC 250	DFLX	DFLG	9.15	20.1
400W	SON	DFLC 400/X	DFLC 400	DFLC 400	DFLX	DFLG	10.25	22.5

*Suspension and mains entry

HBT/X 1000 fittings



HBT/X1000

These fittings are for installations where mounting heights of 9-18m are available.

They are suitable for use in practically all types of industry and are particularly recommended for new installations or for replacing existing tungsten fittings where higher illumination values with reduced maintenance are required. The fitting will accept either 1000W MBI or 700 and 1000W MBF* lamps and is easily installed by means of a 25mm/1 in diameter conduit entry on top.

A reflector in anodized aluminium is provided to give a BZ1 high efficiency downward light output. Slots are provided at the top of the reflector to allow a flow of air over the lamp and reflecting surfaces which helps reduce maintenance. A protecting wire guard (Catalogue no. HB4602) is available for use with the reflector. Remotely mounted gear is required for this fitting.

***Note**
Fittings for use with 250 and 400W lamps are available. Details on application.

RANGE

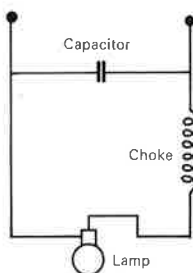
Complete fitting

Rating	Lamp type	Catalogue no.	Approx. weight (incl. lamp)	
			kg	lb
700W	MBF	HBT/X1000†	3.7	8.15
1000W	MBF or MBI	HBT/X1000†	4.2	9.25

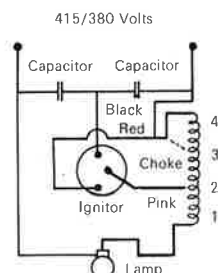
†This fitting may also be used with 500, 750, 1000, 1500W GLS lamps.

Replacements for high-bay fittings

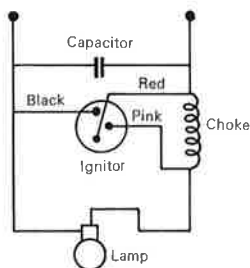
CIRCUIT DIAGRAMS



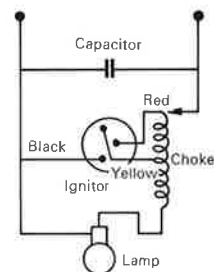
DFLB 250
DFLB 400
DFLB 700
DFLB 1000



DFLD 1000



DFLD 250
DFLD 400



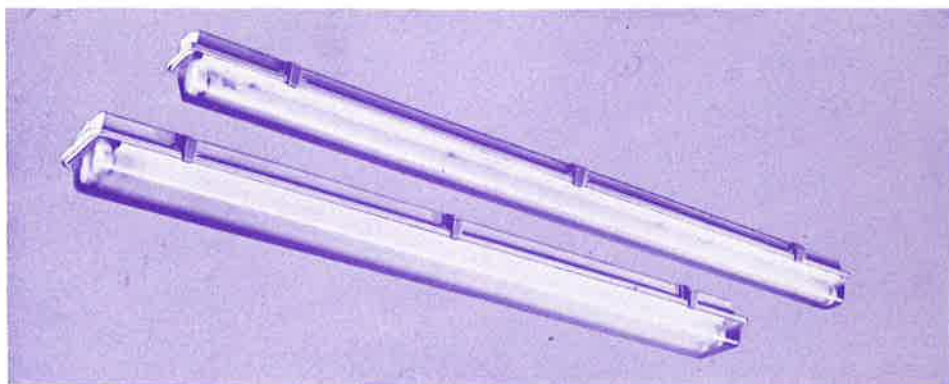
DFCL 250
DFCL 400

The items listed below are replacements for the industrial discharge lamp fittings with integral gear described on earlier pages. Full details of each item are shown in the control gear and accessories section of this catalogue.

Replacement items for industrial discharge fittings with integral gear

	125W	250W	400W	700W	1000W	250W	400W	1000W	250W	400W
Description	MBF	MBF/	MBF/	MBF/	MBF/	MBIF	MBIF	MBIF	SON	SON
Skirted lampholder	GL 1113	GL 1094	GL 1094	GL 1094	GL 1094	GL 1094	GL 1094	GL 1094	GL 1094	GL 1094
3-way terminal block	GT 1281/3	—	—	—	—	—	—	GL 1362/3	—	—
2-way terminal block	—	GT 1362	GT 1362	GT 1362	GT 1362	GT 1362	GT 1362	GL 1362/2	GT 1362	GT 1362
Ballast	G 53186-4	G 53285-4	G 53284-4	G 53291	2xG 53292-4	G 53289	G 53288-4	G 53289	G 53287-1	G 53286-1
Capacitor	GC 2383	GC 2370	GC 2331	GC 2382	2xG C2346	GC 2386	GC 2331	GC 2386x2	GC 2386	GC 2331
Ignitor	—	—	—	—	—	G 53283	G 53283	G 53283	G 53282	G 53282

Invincible LU corrosion-resistant fittings IP 53

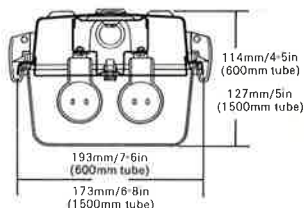
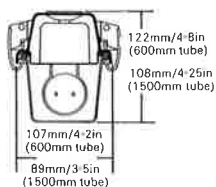


LUD R2065 LUD R1065

This corrosion-resistant GRP fitting is suitable for any application where excessive humidity is present, such as swimming baths, slaughter houses, breweries, or where corrosive elements are involved, such as some plating shops, dye works, chemical works or where fittings are used outdoors. The GRP body has bushes moulded in the back to receive the gear tray. The tray carries the usual components, and brackets are

provided at each end to support the lampholders. These same brackets provide fixing for a metal reflector to enclose the gear. The lamps are enclosed with a vacuum-formed acrylic cover which is supported from the GRP canopy by means of injection moulded brackets secured against the edge of the canopy. A gasket is positioned between the canopy and cover to form an effective seal. The plastic cover is held firmly against the gasket by six

plastic toggles (four on the 600mm/2ft) which engage under the lip of the plastic cover. These toggles are captive on the canopy. All fittings are for 240V 50Hz. Details of fittings for other supplies are available on application. These fittings, when ceiling mounted, resist rain and dust and are suitable for use outdoors and in many chemically corrosive atmospheres. Fittings comply with BS 4533-2.2 (IP53).



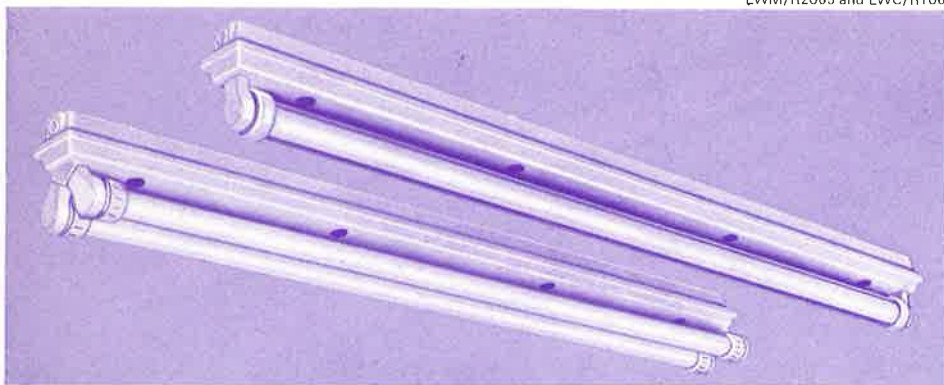
RANGE

Complete fitting				Components		Dimensions					
Nominal				Circuit	Catalogue no.	Enclosure Catalogue no.	Length		Weight (incl. tubes)		Fixing centres*
mm	ft	Rating	No. of tubes				mm	in	kg	lb	
600	2	20W	One	QS	LUD Q1020	LUD 12	711	28	3.4	7.5	500 19.7
600	2	20W	Two	QS	LUD Q2020	LUD 22	711	28	4.4	9.7	500 19.7
1500	5	65W	One	RS	LUD R1065	LUD 15	1594	62.8	6.9	15.3	600 or 24
1500	5	65W	Two	RS	LUD R2065	LUD 25	1594	62.8	9.8	21.7	610 24

*Fixing holes: 600mm/2ft fitting: 6.4mm/0.25in dia. clear

1500mm/5ft fitting: 25mm/1in dia. clear fitted with grommet to take 20mm/0.75in conduit

LWM/R2065 and LWC/R1065



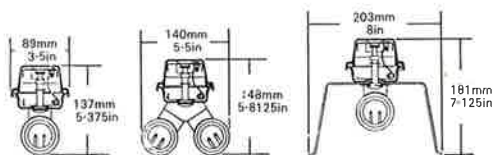
Suspension is by 20mm/0.75 in dia. conduit hook, etc., into the top elliptical, dual centre, grommeted holes for either imperial or metric suspension centres. Suitable washers and nuts must be used on both sides of the grommet to achieve an adequate seal.

This range of fittings is designed to combat the most exacting conditions. Some fittings will withstand conditions of high humidity and others temperatures down to -30°C (-22°F) (special low temperature control gear is used for operation at these temperatures and a double walled cylinder, LWD 15, is necessary).

The body is moulded in two halves from glass reinforced plastic, each half screwed together against a neoprene gasket with four nylon

screws. The lamps are fitted into special sealed lampholders which either grip the glass of the fluorescent tube (LWM types) or grip the outside of a LWC 15 plastic cylinder to maintain weatherproofness. Cable entry is via 20mm dia. grommeted holes in the top or a 20mm dia. grommeted hole at one end. The LWC15 plastic cylinder attachment can be provided to give complete mechanical protection to the fluorescent tube. All internal

metal parts, including the removable control gear tray, are coated to withstand these adverse conditions during maintenance. A PVC trough reflector, LWU25, is available to give added protection to the tube and to concentrate the light downwards. All fittings are for 230/240V 50Hz. Details of fittings for other supplies are available on application. Fittings comply with BS.4533-2.2 (IP 53)



RANGE

Complete fitting

Complete fitting				Components		Dimensions						
Nominal length		Rating	Circuit	Catalogue no.	Plastic cylinder or lampholder ring assembly Catalogue no.	Batten (less lampholder ring) Catalogue no.	Length		Approx. weight (incl. tubes)		Fixing centres	
							mm	in	kg	lb	mm	in
1500	5	65W Single	RS	LWM/R1065	LWM 15	LW R1065	1587	62.5	8.1	17.8	600	or 24
1500	5	65W Twin	RS	LWM/R2065	LWM 15×2	LW R2065	1587	62.5	10.8	23.7	600	or 24
1500	5	65W Single	RS	LWC/R1065	LWC 15	LW R1065	1587	62.5	9	19.8	600	or 24
1500	5	65W Twin	RS	LWC/R2065	LWC 15×2	LW R2065	1587	62.5	12.5	27.7	600	or 24
1500	5	80W Single	SS	LWM/S1080†	LWM 15	LW S1080	1587	62.5	8.1	17.8	600	or 24
1500	5	80W Single	SS	LWC/S1080*	LWC 15	LW S1080	1587	62.5	9	19.8	600	or 24
1500	5	80W Single	SS	LWD/S1080‡	LWD 15	LW S1080	1587	62.5	10.1	22.3	600	or 24

†Suitable for temperatures ranging between 5°C (41°F) and -5°C (23°F) at 240V only [15°C (59°F) for up to 3 hours]

*Suitable for temperatures ranging between 5°C (41°F) and -10°C (14°F) at 240V only [15°C (59°F) for up to 3 hours]

‡Standard for temperatures ranging between 5°C (41°F) and -30°C (-22°F) at 240V only [15°C (59°F) for up to 3 hours]

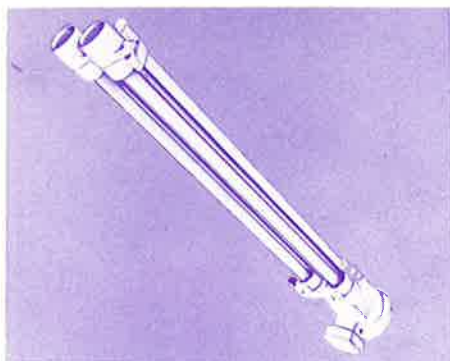
Standard 65W fittings may be used in an ambient temperature up to 40°C (104°F)

MS (Metal Strip) grade tubes (MCFA/U) are recommended for use with 65W fittings.

All 65W fittings incorporating a plastic cylinder (LWC 15) have been approved by H.M. Factory Inspectorate for use in Zone 2 areas

A plastic trough reflector, Catalogue no. LWU 25, is available for above fittings, single and twin tube

Invincible FP Flameproof Range IP 65



MoP Certificate no. 6055,
for groups II, III

FP 2685

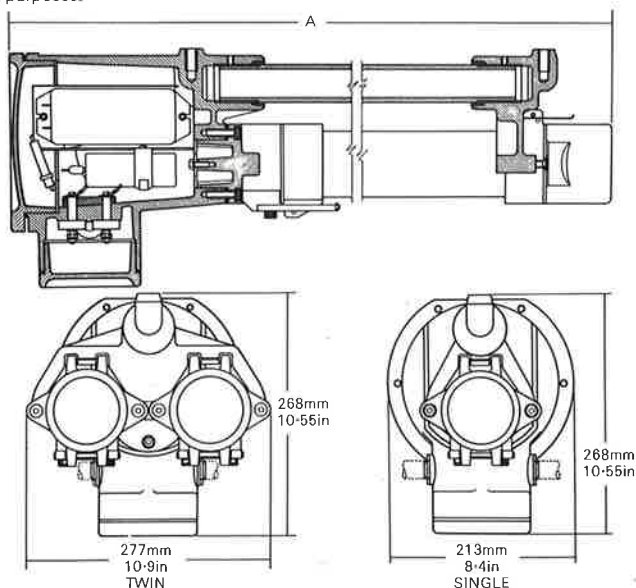
Temperature range Z at ambient temperature specified on fitting. The design comprises cast aluminium end boxes rigidly supported by a steel connecting tube. The main casting incorporates switchless control gear, on a removable tray, for either single or twin tube operation and also an underslung mains cable entry to facilitate installation. The remote end casting is removable, yet fully captive, for relamping purposes.

All visible joints are gasketed as necessary and external screws are in stainless steel and have socket heads. Maintenance of the fitting for relamping is either from one end or below and, if required, the glass tube assembly or gear tray can be removed completely without disturbing the incoming mains supply. 2 x 20mm entries are standard but



FP 1040

alternative entries can be supplied to special order. An all-white exterior finish is applied to the fitting after assembly. Reflectors with or without wire guards are available. All fittings are for 240V 50Hz. Details of fittings for other supplies are available on application. The fittings comply fully with BS.229:1957; BS.889:1965; and are jetproof and dusttight (IP 65)



Invincible FP Flameproof Range IP 65

RANGE

Complete fitting

Nominal tube length		Rating	Circuit	Catalogue no.
mm	ft			
600	2	40W Single	QS	FP 1240
600	2	40W Twin	QS	FP 2240
1200	4	40W Single	RS	FP 1040
1200	4	40W Twin	RS	FP 2040
1500	5	65W Single	RS	FP 1065
1500	5	65W Twin	RS	FP 2065
1800	6	85W Single	RS	FP 1685
1800	6	85W Twin	RS	FP 2685

Optional extras and spares

Catalogue no.	Description
FP 12	600mm/2ft Glass tube assembly
FP 14	1200mm/4ft Glass tube assembly
FP 15	1500mm/5ft Glass tube assembly
FP 16	1800mm/6ft Glass tube assembly
FPG 22	600mm/2ft Wire guard
FPG 24	1200mm/4ft Wire guard
FPG 25	1500mm/5ft Wire guard
FPG 26	1800mm/6ft Wire guard
FPR 22	600mm/2ft Reflector
FPR 24	1200mm/4ft Reflector
FPR 25	1500mm/5ft Reflector
FPR 26	1800mm/6ft Reflector
FP 4600	Adjustable suspension bracket
FP 4601	20mm ET flameproof plug
FP 4602	13mm eye bolt
FP 4603	Gear cover gasket
FP 4604	Terminal cover gasket
FP 4605	Glass tube gasket
FP 4606	Adaptor gasket

Dimensions

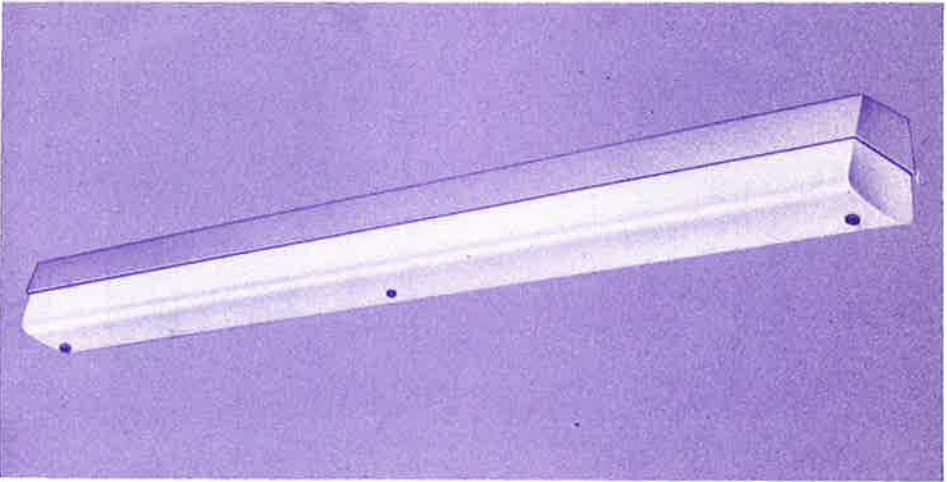
Catalogue no.	Dimension A				Approx. weight (incl. tube)		Fixing centres	
	length		width		kg	lb	mm	in
	mm	in	mm	in				
FP 1240	971	38.2	212	8.4	17	37.5	690	27.2
FP 2240	971	38.2	278	10.9	22.7	50	690	27.2
FP 1040	1581	62.2	212	8.4	23.9	52.7	1300	51.2
FP 2040	1581	62.2	278	10.9	28.8	63.4	1300	51.2
FP 1065	1882	74.1	212	8.4	26.3	57.9	1601	63
FP 2065	1882	74.1	278	10.9	32.1	70.8	1601	63
FP 1685	2147	84.5	212	8.4	29	64	1866	73.5
FP 2685	2147	84.5	278	10.9	35.4	78	1860	73.5

With reflector width of all sizes becomes 303mm/11.9in

With reflector and wire guard width of all sizes becomes 328mm/12.9in

		Additional Reflector weight		Additional Wire guard weight	
mm	ft	kg	lb	kg	lb
600	2	2.04	4.5	0.45	1
1200	4	4.08	9	1.18	2.6
1500	5	4.99	11	1.5	3.3
1800	6	5.9	13	1.82	4

Invincible FF food factory fitting



FFD 265

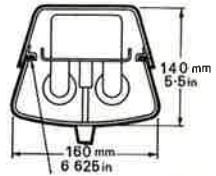
The fitting comprises a heavy gauge sheet steel housing, with flush seam welded ends, degreased and bonderised then given a high quality white plastic finish. A 3.2mm/0.125in thick 040 opal acrylic closure with robustly constructed 068 white acrylic rebated ends encloses the tubes.

The housing, with closure in position, has a smooth exterior to minimise the collection of moisture or dirt. The acrylic closure follows the shape of the housing metal work which is designed to overlap the diffuser and act as a water-shed. The closure is held in position by three captive nylon screws, and seats firmly on to a neoprene gasket which is cemented to an internal continuous channel inside the housing. The control gear is mounted on the upper side of a reflector gear tray and spring loaded bi-pin lampholders are mounted to the under side of this

tray. Wiring is PVC insulated, colour coded, and terminates in a three-way fused socket which fits a three-pin plug earthed to the inside of the main fitting housing. The control gear tray with gear, wiring and lampholders is removable as a complete unit by loosening three fixing screws, removing the tray and unplugging.

This fitting is for 240V 50 Hz Details of fittings for other supplies are available on application.

Fittings comply with BS 4533 - 2.2



Neoprene gasket all round

RANGE

Complete fitting					Components					Dimensions		Weight		Fixing centres	
Nominal length			No. of tubes	Circuit	Catalogue no.	Enclosure Catalogue no.	Length mm	in				(Incl. tubes) kg	lb	mm	in
mm	ft	Rating													
1500	5	65W	Two	RS	FFD 265	FFD 25	1613	63.5				15.3	33.7	610	24

20mm/0.75in dia. conduit clearance holes are provided for suspension and mains supply entry.

Renown wellglass IP63 Zone 2



DRN T160



DRN T125

BASEEFA certified wellglass fitting for Zone 2 areas but also suitable for use in many different arduous environments. It is fitted with internal choke to take 80 or 125W MBF lamps. The finned body and bezel are constructed of die-cast aluminium alloy, LM6-M. The heat resisting glass with diffusing flutes is cemented to the bezel, which is retained by socket head stainless steel screws and sealed by a neoprene gasket.

Secondary suspension holes are provided in two of the cooling fins. Standard stock fittings : Top entry tapped 20mm conduit or twin 20mm side (adjacent) entry with removable plug. Safety cord fitted between main body and glazing bezel.

All fittings are suitable for 230/240V 50Hz
Made to BS.4533-2.1 (IP63)
BASEEFA certificate no. 72057
Nomenclature :
S—2 x 20mm side entry
T—1 x 20mm top entry
C—Ceiling fixing strap

RANGE

Complete fitting

Rating	Lamp type	Catalogue no.	Cable entry	Approx. weight	
				kg	lb
80W	MBF	DRN T80	Top	7.3	16
80W	MBF	DRN S80/C	Twin (adjacent) side	7.3	16
125W	MBF	DRN T125	Top	7.3	16
125W	MBF	DRN S125/C	Twin (adjacent) side	7.3	16
200W	GLS	DRN T160	Top	3.6	8
200W	GLS	DRN S160/C	Twin (adjacent) side	3.6	8
160W	MBTF	DRN T160	Top	3.6	8
160W	MBTF	DRN S160/C	Twin (adjacent) side	3.6	8

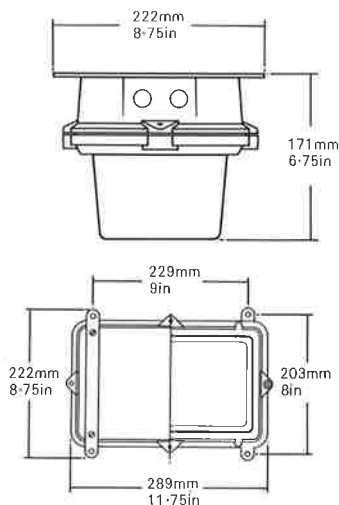
Optional extras and spares

Catalogue no.	Description
DRN C	Ceiling fixing strap
DRN R	Vitreous enamel external reflector
DRN W	Wire guard
DRN G	Spare glass

Dreadnought bulkhead fitting IP63 Zone 2



DDR E50



BASEEFA certified fitting for Zone 2 areas, dust-tight, rainproof and also suitable for use in many different arduous atmospheres. The body is die-cast in aluminium alloy LM6-M treated and stove enamelled grey. The Bezel frame with a neoprene gasket carries the glass and is screwed to body by four socket head stainless steel screws. An internal choke, capacitor and reflector are provided for MBF lamps and the inside of the fitting is sprayed white for MBTF and tungsten lamps.

A three-way terminal block, ES lampholder and fixing straps with $\frac{1}{4}$ in dia. clear fixing holes are provided. Recommended burning position for MBTF and GLS lamps : Cap up. Cable/mains entry via 2 x 20mm adjacent entries, one with removable plug. All fittings are suitable for 230/240V 50Hz.

Made to BS.4533-2.1 (IP 63)
BASEEFA certificate no. 72061

RANGE

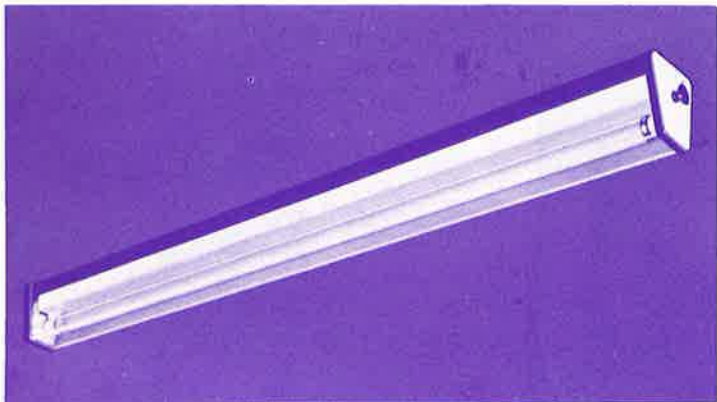
Complete fitting

Rating	Lamp type	Catalogue no.	Cable entry	Approx. weight (incl. lamps)	
				kg	lb
50W	MBF	DDR E50	Twin (adjacent) entries	6.35	14
80W	MBF	DDR E80	Twin (adjacent) entries	6.35	14
200W	GLS	DDR E160	Twin (adjacent) entries	4.54	10
160W	MBTF	DDR E160	Twin (adjacent) entries	4.54	10

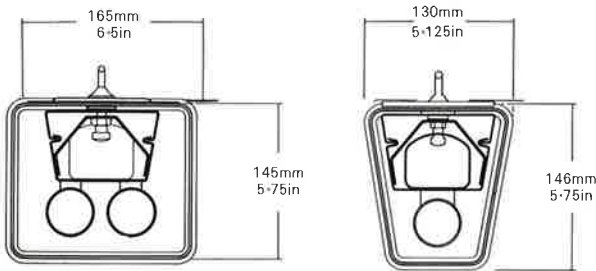
Optional extras and spares

Catalogue no.	Description
DDR W	Wire guard
DDR G	Spare glass

Glendale corrosion-resistant fittings IP54 Zone 2



FGSB 65

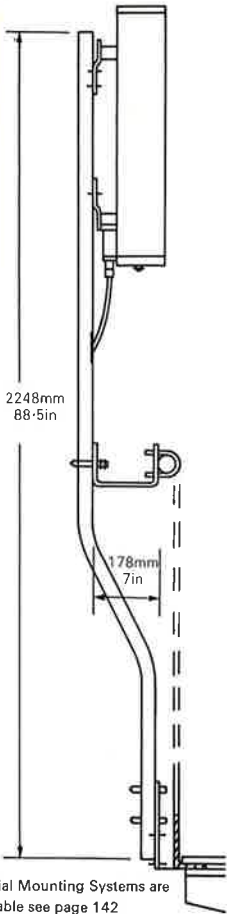


BASEEFA certified fittings for Zone 2 areas—splashproof, dustproof and suitable for use in most chemically corrosive atmospheres. The thick clear acrylic enclosure has stainless steel gasketed end plates, one of which can be removed to withdraw the gear channel for re-lamping. The channel slides on runners on a tray fixed inside the plastic enclosure and is provided with a nylon safety cord. It is locked in position by a thumb-screw. All internal parts are rust-proofed and stove enamelled white.

Suspension and Mains Entry
Standard fittings have two eyebolts

for suspension and a nylon cable gland suitable for 0.200–0.275 o.d. cables. Fittings with 'SB' in their catalogue numbers have fixing studs and Zone 2 conduit boxes with two 20mm entries, one plug being removable. The fittings can be mounted horizontally or vertically. All fittings are suitable for 230/240V 50Hz.

Made to BS.4533-2.1 (IP54)
BASEEFA certificate No. 72064.



Special Mounting Systems are available see page 142

CATALOGUE NOMENCLATURE
'A'—cable gland entry
'B'—Zone 2 box 2 x 20mm ET
'E'—eye bolt mounting
'S'—stud mounting

RANGE

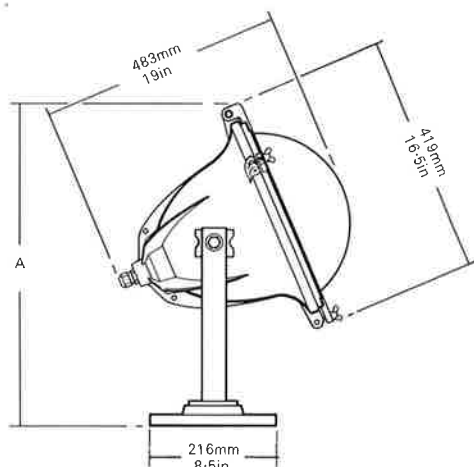
Complete fitting						Dimensions					
Nominal length								Approx. weight		Fixing centres	
mm	ft	Rating	Circuit	Catalogue no.	*Suspension	Length mm	in	kg	lb	mm	in
600	2	20W Single	QS	FGSB20	stud/box	686	27	6.35	14	457	18
600	2	20W Twin	QS	FGSB220	stud/box	686	27	7.25	16	457	18
600	2	20W Twin	QS	FGEA 220	eye/gland	686	27	7.25	16	457	18
1500	5	65W Single	RS	FGSB65	stud/box	1595	62.8	12.7	28	610	24
1500	5	65W Twin	RS	FGSB265	stud/box	1595	62.8	17.25	38	610	24
1500	5	65W Single	RS	FGEA65	eye/gland	1595	62.8	12.7	28	610	24
1500	5	65W Twin	RS	FGEA265	eye/gland	1595	62.8	17.25	38	610	24

* Suspension and mains entry



OGR250/A

Floodlight suitable for Zone 2 areas, jetproof, dust-tight and for use in most chemically corrosive atmospheres and many other arduous environments. The fitting is made of die-cast aluminium alloy stove enamelled grey, with plain heat-resisting glass bowl seated on a neoprene gasket in bezel secured by a floating hinge and three swing bolts with captive wing nuts. It may be mounted by a variety of means including a cradle and 254mm/10in dia. circular base plate or cradle and 102mm/4in dia. vertical pole clamp (see page 142). A concentrating anodized internal reflector is used with the MBF (Kolorlux) lamp. The fitting is supplied with integral choke but no capacitor and 3m of armour cable. Made to OCMA Specification no. ELEC 7—HMFI Approved for use in Zone 2 areas (BASEEFA certification applied for to BS.4533).



RANGE

Catalogue no.	Lamp	Holder	Dimensions		A (min.)	Weight
			A (max.)			
			mm	in	mm	kg
OGR 250	MBF/U 250W	GES	635	25	483	16.5
OGR 400	MBF/U 400W	GES	635	25	483	16.5
					19	36
					19	36

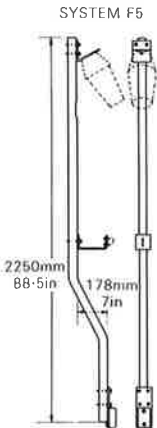
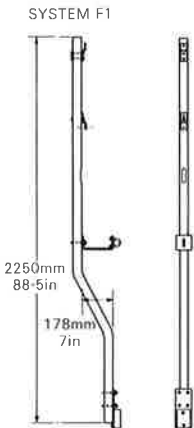
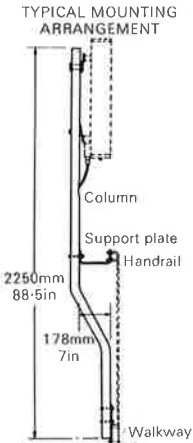
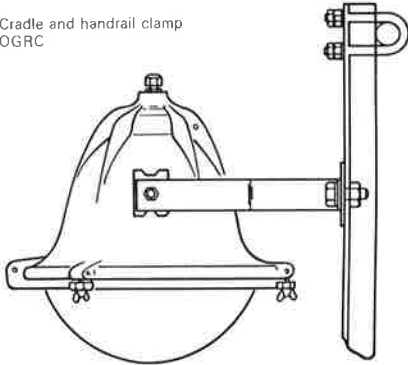
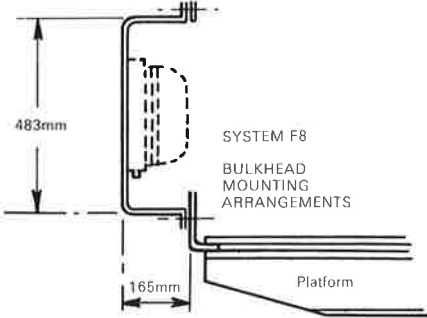
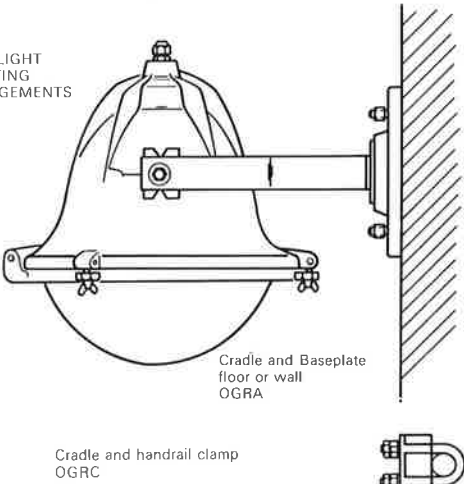
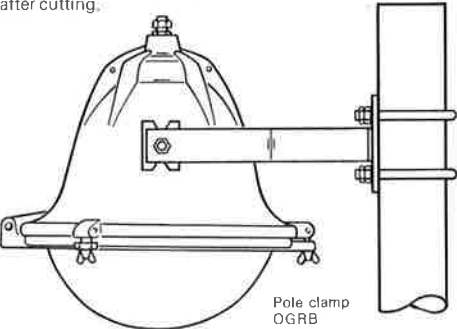
Mountings for adjustable floodlight fitting with side bosses

OGR A	Cradle and circular baseplate (254mm/10in dia.)
OGR B	Cradle and clamp for 102mm/4in dia. column
OGR C	Cradle and handrail clamps
OGR G	Spare glass only

Baseplate fixing: Four holes for 9mm/0.375in dia. bolts equally spaced on 216mm/8.5in dia. circle.

Zone 2 pole mounting systems

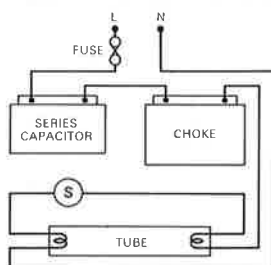
A selection of the most popular mounting systems are illustrated. Systems are available on request to customers specifications and are suitable for a wide selection of fittings from the Invincible Range. Pole systems are manufactured from 42mm o.d pipe and are galvanised after cutting.



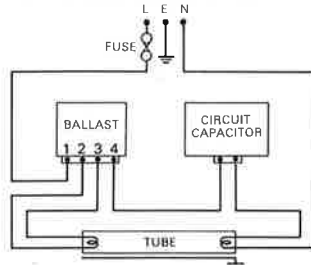
Invincible range accessories and control gear

CIRCUIT DIAGRAMS

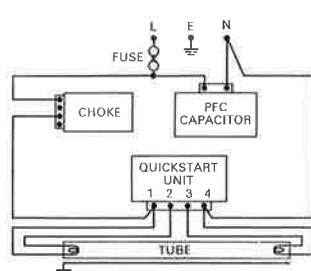
Leading power factor starter switch circuit, with cold temperature use series capacitor, for 1500mm/5ft 80W tube



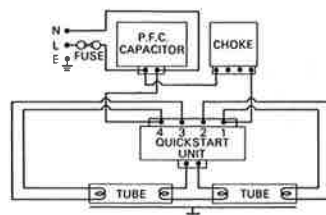
Semi-resonant start circuit for 1800mm/6ft 85W, 1500mm/5ft 65W and 1200mm/4ft 50W tube with series circuit capacitor



Quickstart circuit with PFC capacitor for 600mm/2ft 20W and 600mm/2ft 40W single tube



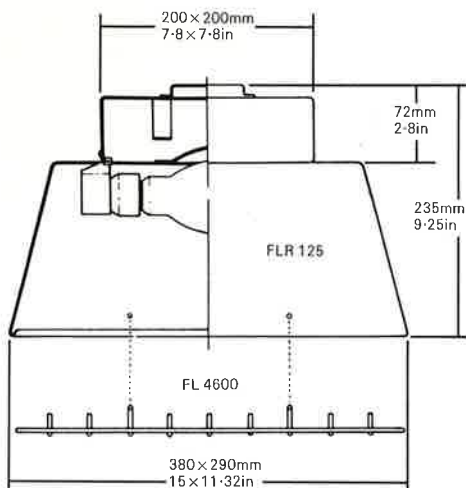
Quickstart circuit with PFC capacitor for 600mm/2ft 20W and 600mm/2ft 40W twin tube



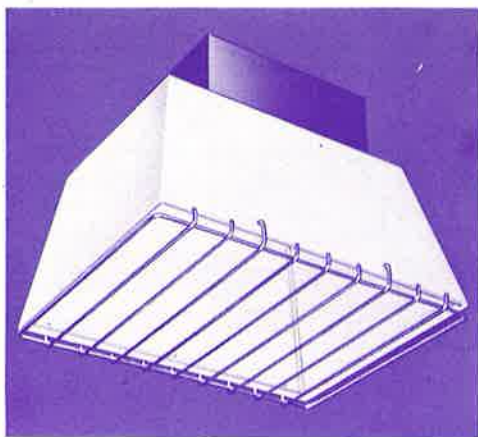
	Lampholder	Fuse holder	Fuse	Fused Terminal Block	Terminal Block	Quickstart Ballast Choke	Capacitor
LUD Q1020	G B1548/B	G T1310/X	G T1299	—	G T1281/3	G QS/40, G CU/20	G C2224
LUD Q2020	G B1548/B	G T1310/X	G T1299	—	G T1281/4 G T1281/2	G QS/220, G CU/40	G C2224
LUD R1065	G B1548/B	G T1310/X	G T1299	—	G T1281/3	GBU/65	G C2220
LUD R2065	G B1548/A	—	G T1299	G T1265	—	G BI/65	G C2220
LW R1065	G B1550	G T1310/X	G T1299	—	G T1316/3 G T1317/3	G BU/65	G C2220
LW R2065	G B1550	G T1310/X	G T1299	—	G T1316/3 G T1317/3	G BU/65	G C2220
LW S1080	G B1551	—	G T1299	G T1265	G T1281/2	G G69229.5	G C2167
FP 1240	G B1573	G T1310/X	G T1299	—	—	G CI/240, G QS/80	G C2222
FP 2240	G B1573	G T1310/X	G T1299	—	G T1281/1	G CI/2240, G QS/2240	G C2222
FP 1040	G B1573	G T1310/X	G T1299	—	G T1281/1	G BI/40	G C2273
FP 2040	G B1573	G T1310/X	G T1299	—	G T1281/1	G BI/40	G C2273
FP 1065	G B1573	G T1310/X	G T1299	—	G T1281/1	G BI/65	G C2220
FP 2065	G B1573	G T1310/X	G T1299	—	G T1281/1	G BI/65	G C2220
FP 1685	G B1573	G T1310/X	G T1299	—	G T1281/1	G BI/685	G C2220
FP 2685	G B1573	G T1310/X	G T1299	—	G T1281/1	G BI/685	G C2220
FFD/265	G B1548/B	—	G T1299	G A5079	—	G BI/65	G C2220
DFG 65	G B1512	—	G T1299	G T1265	—	G BI/65	G C2220
DFO 65	G B1512	—	G T1299	G T1265	—	G BI/65	G C2220
DFG 265	G B1512	—	G T1299	G T1265	—	G BI/65	G C2220
DFO 265	G B1512	—	G T1299	G T1265	—	G BI/65	G C2220
FGSB 20	G B1548/B	G T1310/X	G T1299	—	G T1363/3	G QS/40, G CU/20	G C2224
FGSB 220	G B1548/B	G T1310/X	G T1299	—	G T1363/3	G QS/220, G CU/20	G C2224
FGEA 220	G B1548/B	G T1310/X	G T1299	—	G T1363/3	G QS/220, G CU/20	G C2224
FGSB 65	G B1548/B	G T1310/X	G T1299	—	G T1363/3	G BU/65	G C2220
FGSB 265	G B1548/B	G T1310/X	G T1299	—	G T1363/3	G BU/65	2 x G C2220
FGEA 65	G B1548/B	G T1310/X	G T1299	—	G T1363/3	G BU/65	G C2220
FGEA 265	G B1548/B	G T1310/X	G T1299	—	G T1363/3	G BU/65	2 x G C2220

LW S1080 has starter switch, 155/500, and socket, G A50191X included in accessories

FLR 125 Fitting



weight 4.08kg 9lb



The FLR 125 fitting is for industrial areas with normal or low ceilings such as machine shops, garages, warehouses, storerooms and enclosed loading bays.

The fitting comprises a square black box containing control gear for one 125W MBF Kolorlux lamp (not included in pack), and a closed end trough reflector, finished white and attached to the underside. The lamp is mounted horizontally to reduce overall depth of the fitting.

Flicker is occasionally noticeable with lower wattage discharge sources. This is eliminated by the incorporation of a rectifier in the 125W circuit.

Reflector and gear box are in one pack and an optional wire guard is available.

Fixing: The fitting is secured to a BS conduit box by means of piercings clustered round a central 20mm dia. clearance hole located in the top boss at the centre of the fitting.

Fitting made to BS 4533-2.2.

RANGE

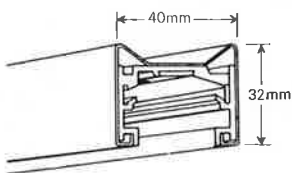
Catalogue no.	Description:
FLR 125	Metal reflector fitting for 125W MBF lamp
FL 4600	Wire guard

Index

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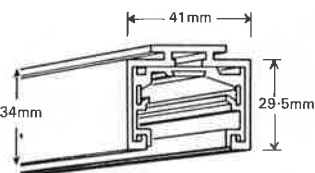
Trakline

Trakline is a system based on a PVC extrusion containing two copper conductors and an earth strip. This assembly is housed in a variety of metal sections to suit the specific application. A whole range of components is available, including a mains connector which will supply any length of track up to a loading of 30 amps (16 amps for TKS).



TKS Trakline

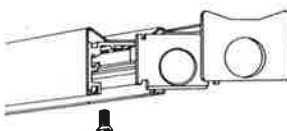
TK Track in a white painted rolled steel section



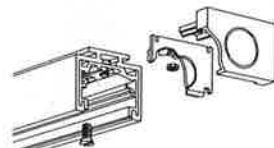
TKN Trakline

TK Track in an anodized aluminium extrusion

Both systems are available in three lengths, complete with metal end caps (and safety screen plastic caps) with knock-out cable entry holes.



The concave upper surface can accommodate irregularities in ceiling

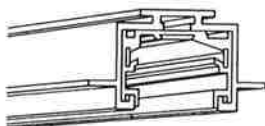


This section can be surface mounted or suspended

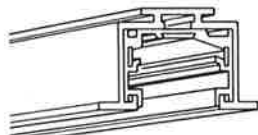
The PVC trakline assembly TK4500 can also be housed in four trunking systems, all 4.5 metre length only. Further details of these systems are given in the section on trunking.

Current rating

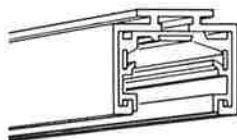
Trakline System	Rated Current
TKN	30A
Trakline in LTN, LTF, LTR	30A
TKS	16A
Trakline in AL 4500	16A



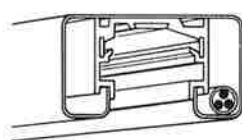
LTR 4500 lightweight trunking, extruded aluminium 4.5m long, to take TK 4500 track. Side flanged to accept concealed fix ceiling tiles.



LTF 4500 lightweight trunking, extruded aluminium 4.5m long, to take TK 4500 track. Flanged for recessing with lay-in tiles



LTN 4500 lightweight trunking, extruded aluminium 4.5m long, to take TK 4500 track. For surface mounting or conduit suspension.



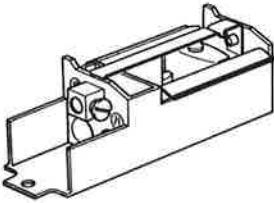
AL 4500 Liteline trunking. Grey painted cold rolled steel, 4.5m long, to take TK 4500 track. Can be suspended, fixed flush or incorporated into a suspended ceiling provided. Facilities for continuous unobstructed runways for cable.

RANGE

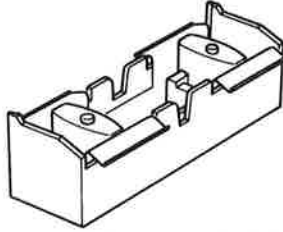
Catalogue no.	Description	Weight kg
TKS 1200	1.2 metre length Trakline c/w end caps; white painted steel	1.3
TKS 2400	2.4 metre length Trakline c/w end caps; white painted steel	2.4
TKS 3600	3.6 metre length Trakline c/w end caps; white painted steel	3.7
TKN 1200	1.2 metre length Trakline c/w end caps; anodized aluminium	1.6
TKN 2400	2.4 metre length Trakline c/w end caps; anodized aluminium	2.9
TKN 3600	3.6 metre length Trakline c/w end caps; anodized aluminium	4.3
TK 4500	4.5 metre length PVC track assembly only; c/w plastic end caps	2.4
LTR 4500	4.5 metre length flanged trunking section; anodized aluminium	3.63
LTF 4500	4.5 metre length flanged trunking section; anodized aluminium	3.63
LTN 4500	4.5 metre length trunking section; anodized aluminium	3.175
AL 4500	4.5 metre length trunking section; grey painted steel	6.3

Note: All these sections can be cut to length on site in accordance with instruction booklet TK113.

Trakline components



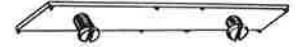
TK 1021 Mains connector
R right handed L left handed



TK 1031 Track coupler used in conjunction with TK 106 for TKN, LTN, LTF and LTR systems or with TK 127 for TKS, for continuous mounting in straight lengths



TK 106 Mechanical coupler.

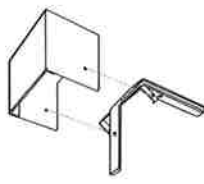


TK 127 Earth continuing strip.

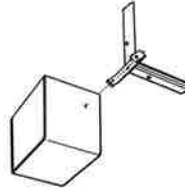
Elbows for TKN/LTN track.



TK 107 Horizontal elbow assembly



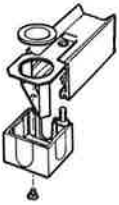
TK 108 Vertical internal elbow assembly



TK 109 Vertical external elbow assembly

To achieve a 90 degree joint the appropriate assembly is used plus two TK 1021 connectors, both positioned at the ends of adjoining track, looped together with 30 amp cable

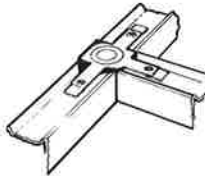
Wiring boxes for surface-mounted TKS and TKN track.



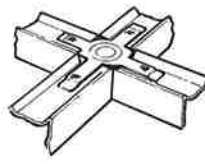
TK 121 End wiring box



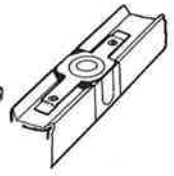
TK 122 Top entry 2 way 90 degree wiring boxes



TK 123 Top entry 3 way 'T' wiring box



TK 124 Top entry 4 way 'X' wiring box



TK 126 Top entry 2 way in-line wiring box

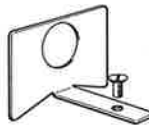
Electrical connection is made by the appropriate number of TK1021 connectors each the same way as TK107, 108 and 109 elbows. A steel hoop gives rigidity and plastic covers have knockouts.



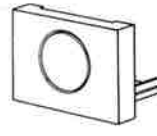
TK 115 End wiring box for TKN or LTN
TK 1171 Similar to above for LTR



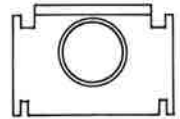
TK 116 Top entry wiring box for TKN or LTN continuous runs
TK 1181 Similar to above for LTR



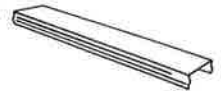
TK 128 Spare metal end caps for TKS



LTN 4507 Spare metal end caps for TKN

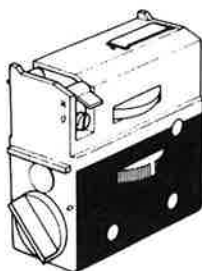


TK 1201 Plastic end plate

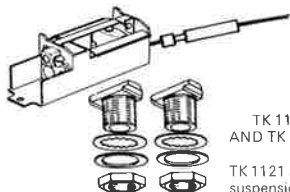


TK 111 Plastic clip-on cover, 390mm long

Trakline suspensions and parts list



TK 1051 Fittings adaptor box fitted with replaceable 5 amp fuse, GT 1356 White. Also available (Black) pre-wired on to fittings The installed box protrudes 40mm from the track



TK 1121
AND TK 1121F

TK 1121 Fluorescent fittings suspension set ; TK 1121F has cut lead fuse (illustrated) Support bolts threaded for 20mm conduit



LTN 4502 Suspension bolt assembly for TKN, LTF and LTR trunking. Sockets threaded for 20mm conduit.



LTN 4509 Suspension assembly for LTN, LTF and LTR trunking. Designed to butt onto 6:35mm suspension rods

Parts List

Catalogue no.	Description
TK 106	Straight mechanical coupler (TKN, LTN, LTF and LTR)
TK 107	Horizontal Elbow assembly (TKN, or LTN with TK)
TK 108	Vertical internal Elbow assembly (TKN or LTN with TK)
TK 109	Vertical external Elbow assembly (TLN or LTN with TK)
TK 111	Clip-on cover
TK 113	Installation instruction booklet
TK 115	End wiring box assembly (TKN or LTN with TK)
TK 116	Top entry wiring box (TKN or LTN with TK ; Continuous runs)
TK 121	End wiring box assembly (TKN or TKS, Surface mounted)
TK 122	Top entry wiring box, 2-way 90° (TKN or TKS, Surface mounted)
TK 123	Top entry wiring box, 3-way 'T' (TKN or TKS, Surface mounted)
TK 124	Top entry wiring box, 4-way 'X' (TKN or TKS, Surface mounted)
TK 126	Top entry wiring box, 2-way in-line (TKN or TKS, Surface mounted)
TK 127	Earth continuing strip (TKS)
TK 128	Spare end caps (TKS)
TK 1021L	Mains connector, left handed (for all TK sections)
TK 1021R	Mains connectors, right handed (for all TK sections)
TK 1031	Track coupler (for all TK sections)
TK 1051	Fittings adaptor box, white (for all TK sections)
TK 1121	Fluorescent fittings suspension set (for all sections)
TK 1121F	Fluorescent fittings suspension set with cut-lead fuse (for all sections) c/w 3 amp fuse to BS1362 (G.T1299)
TK 1171	End wiring box assembly (LTR with TK)
TK 1181	Top entry wiring box assembly (LTR with TK, continuous runs)
TK 1201	Spare end caps plastic
LTN 4502	Suspension bolt assembly (TKN, LTF and LTR)
LTN 4509	Suspension assembly (LTN, LTF and LTR)
LTN 4507	Spare end caps (TKN)
GT 1356	Replacement 5A fuse for TK 1051 adaptor box
GT 1299	Replacement 3A fuse for TK1121F suspension set

Multi-trak is a lighting track system, consisting of three copper conductors (I, II and III), together with a neutral (N) and earth (\perp) supported by a brushed anodised aluminium extrusion and with the conductors and neutral suitably insulated with a PVC extrusion (shown shaded).

The system is designed to cater for the following maximum loadings:

- 3 phase—15 amps per phase.
- 3 circuit—10 amps per circuit.

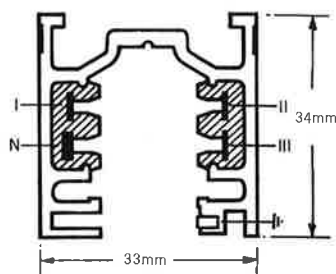
Generally, the system will be used as three separate single phase circuits and in that form the capacity is 2400 watts per circuit and 7200 watts in total.

For simple in-line installations, a line end and dead end are available as well as a module complying coupler and short non module coupler.

For more complicated installations "L", "T" and "X" junction pieces are available. Although the track section can be drilled and screwed directly to a ceiling, four other suspension methods are available:

1. Mounting clips.
2. Wire suspension (ceiling).
3. Conduit suspension (ceiling).
4. Surface suspension (1 metre drop).

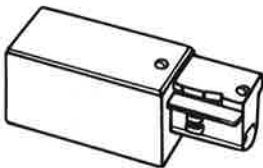
Other accessories include supports for slotted tiles, outlet box cover and display hooks.



RANGE

Catalogue no.	Description		Weight kg
TK 7840	1-1 metre length Multi-trak	When standard lengths are used the conductors and neutral are factory trimmed to be 8mm clear of the end of the insulation, but where standard lengths are cut special pliers (TK 7899) are available for cutting back the conductors and neutral in situ.	1-1
TK 7841	2-3 metre length Multi-trak		2-3
TK 7842	3-5 metre length Multi-trak		3-5
Catalogue no.	Description	Catalogue no.	Description
TK 7880	Support for concealed fix tiles	TK 7927	Display hook
TK 7881	Mounting clips	TK 7977	Line end
TK 7883	Support	TK 7980	Line end
TK 7884	Pendant mounting set	TK 7981	Dead end
TK 7885	End mounting unit	TK 7982	Coupler
TK 7886	Straight connector mounting unit	TK 7983	"L" connector (earth inside "L")
TK 7887	"L" connector mounting unit	TK 7984	"L" connector (earth outside "L")
TK 7888	"T" connector mounting unit	TK 7985	"T" connector (earth outside "T" top)
TK 7889	"X" connector mounting unit	TK 7986	"T" connector (earth inside "T" top)
TK 7891	Outlet box cover	TK 7987	"X" connector
TK 7899	Special pliers	TK 7988	Short coupler (non modular)
TK 7906	Adaptor Suspension (unfused)		
		GT 1356	Replacement 5 amp fuse (for TK 7909—now replaced by TK 7906)

Multi-trak components



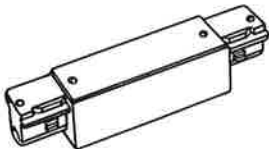
TK 7980 } Live ends
TK 7977 }

For connecting supply to an in-line trak installation, access is either through the end or back. Track is asymmetric with earth left or right when viewed from the end. Looking at track open end down TK 7977 has earth to the left with TK 7980 earth to the right.



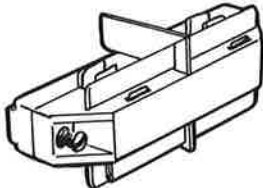
TK 7981
Dead end

TK 7981
Used as a finishing trim to track end,



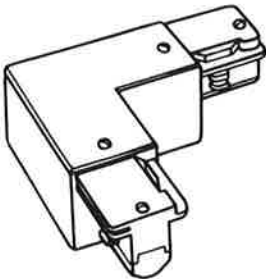
TK 7982
Coupler

TK 7982
Used to connect two lengths of track, whilst maintaining module length. It also provides facilities for incoming mains supply.



TK 7988
Short coupler

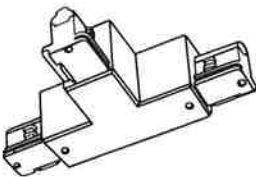
This non-modular coupler is used to connect two lengths of track.



TK 7983 } L-connector
TK 7984 }

Right angled connector for two lengths of track, it also provides facilities for incoming mains supply.

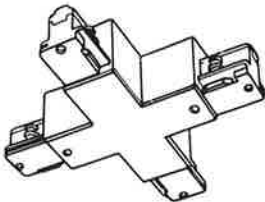
TK 7983: EARTH *INSIDE* 'L'
TK 7984: EARTH *OUTSIDE* 'L'



TK 7985 } T-connector
TK 7986 }

'T' connector for track, with incoming supply facilities.

TK 7985: EARTH *OUTSIDE* 'T' Top
TK 7986: EARTH *INSIDE* 'T' Top



TK 7987
X-connector

'X' connector for track lengths, also providing incoming mains supply facility.

Couplers and Junction pieces. All components in this group are made in grey glass loaded nylon and require no wiring when used for connecting lengths of track. Access for incoming supply, where provided, is obtained by removing 2 fixing screws and cover.

Multi-trak suspensions

Decorative Drop Suspensions

TK 7884 Pendant mounting set
TK 7885 End mounting unit

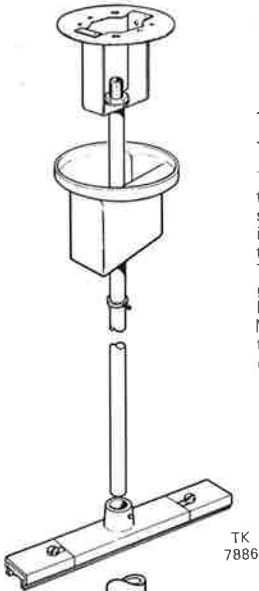
TK 7886 Straight connector mounting unit

TK 7887 'L' connector mounting unit

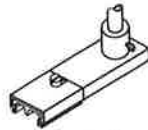
TK 7888 'T' connector mounting unit

TK 7889 'X' connector mounting unit

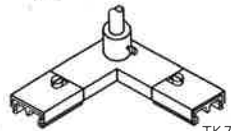
The support pieces slide into the flanges in the top of the track section and are then locked and screwed into the mounting unit. When a connector is used as a supply input the cables are taken through the stem; the total length of the drop is 1 metre. The ceiling end of the mounting consists of a grey plastic cover, over a metal bracket which has box fixing. The stem is painted grey metal. While Multi-trak can be drilled and screwed direct to the surface TK 7881 mounting clips provide means of fixing to less level surfaces.



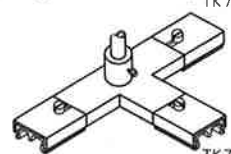
TK 7886



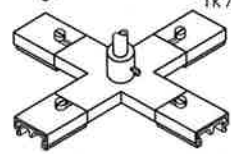
TK 7885



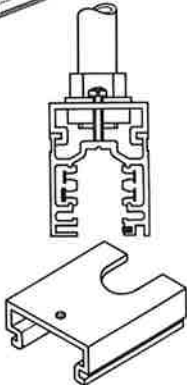
TK 7887



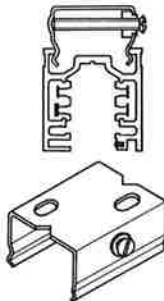
TK 7888



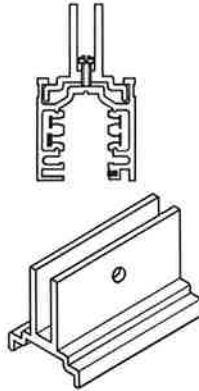
TK 7889



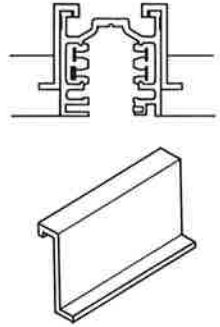
TK 7884



TK 7881 Mounting clip : Spring steel zinc-plated bracket



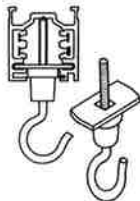
TK 7883 Recessed mounting support for track suspended with a normal wire suspension; anodized aluminium



TK 7880 Support for concealed fix ceiling tiles, anodized aluminium; 100mm long



TK 7906 Adaptor for pendant cable suspensions. Also available prewired on many fittings

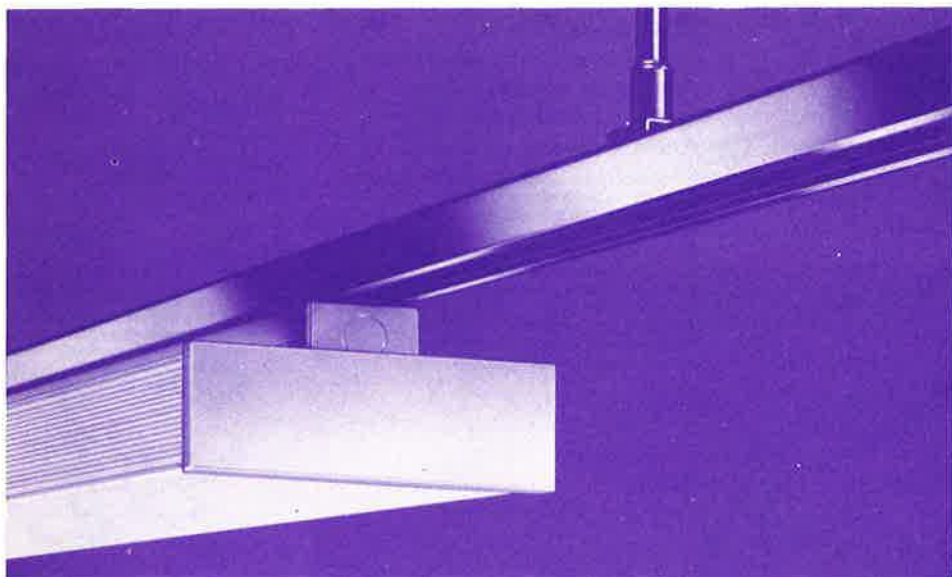


TK 7927 Galvanised steel display hook for a max. load of 10kg



TK 7891 Grey reinforced plastic cover for outlet boxes when track is mounted with TK 7881.

Lightweight trunking



This ultra-slim section of aluminium trunking is particularly suitable for office, store and display lighting applications where more industrial forms are too bulky and may present an unsatisfactory appearance.

Three types of trunking section are available – one for surface mounting or conduit suspension and two other types for recessing into suspended ceilings. (See illustrations on next page).

The trunking suspension assembly is used to connect the trunking section to the 19mm/¾in conduit down-drop.

Suspension of trunking by means of chains is not normally recommended.

The fitting is connected to the trunking section by means of the fittings suspension assembly. By this means extreme flexibility of suspension centres for the trunking and spacing of the fittings along the trunking is achieved.

The coupling piece to join the lengths of trunking together is fitted internally and is locked with set-screws without drilling the trunking.

A four-way coupling (Catalogue no. LTN 4510) enables continuous runs of Trakline to be used. (See perspective view on next page).

A PVC cover closes the open mouth of the trunking between fittings and a black finished end plate closes the end of the

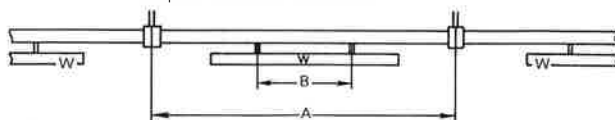
trunking. This end plate incorporates a knock-out to receive conduit which is used to feed into the trunking and make bends, or clear obstacles, etc. between the trunking runs.

Through-wiring cables are retained in the trunking by fibre support-pieces.

The trunking should not be exposed to 'wet site' conditions but stored in a dry area.

Maximum recommended trunking suspension centres 2.44m/8ft

NOTE: A gap of at least 6.35mm/0.25in must be left between trunking lengths during installation to allow for expansion.



Deflections for lightweight trunking

A	B	Weight W	Deflection
2.44m	0.61m	9kg	5.7mm
8ft	24in	20lb	0.225in
2.44m	1.22m	13.6kg	5.7mm
8ft	48in	30lb	0.225in

The above deflections were measured using maximum weight Popular Pack fittings. These figures assume that all loads are counter-balanced and the final trunking span will be

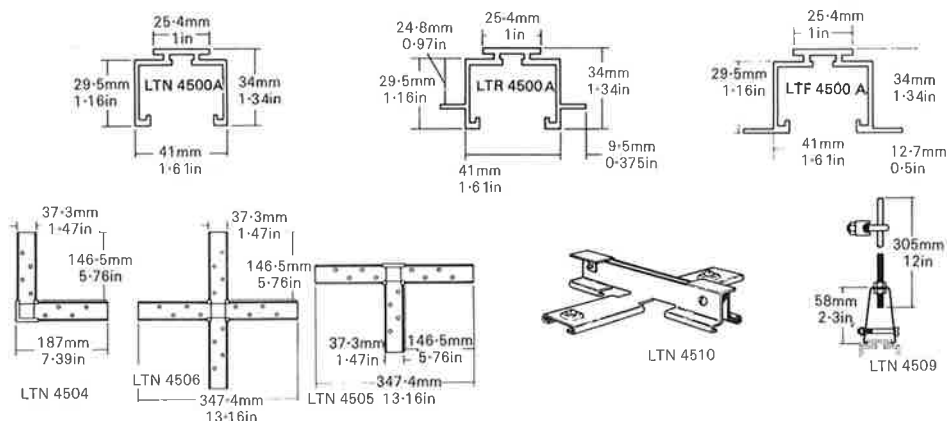
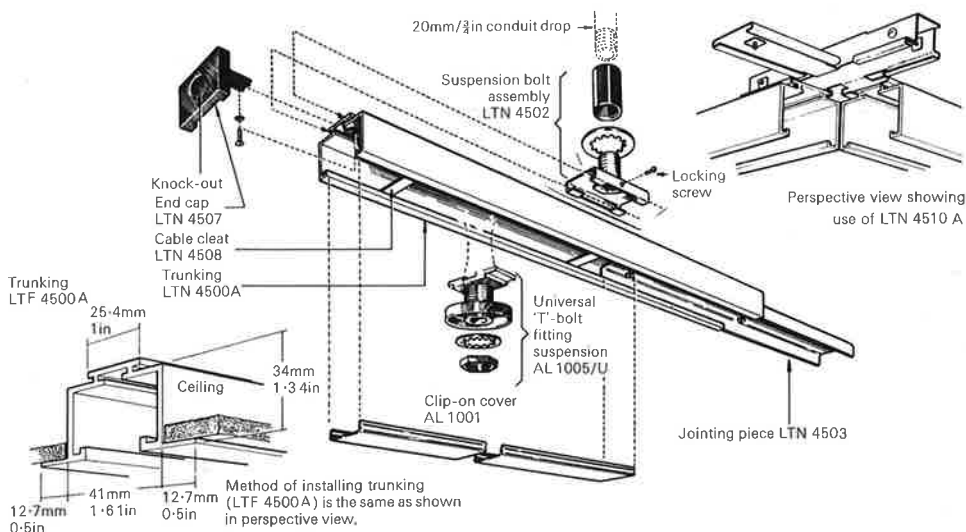
adequately supported at the termination point.

It is important when designing trunking installations to ensure that the deflection between spans does not exceed 1/300th of the total span.

For example, an installation requires trunking to be suspended at 2.44m/8ft spans. Therefore maximum

$$\text{deflection} = \frac{2440}{300} = 8.1\text{mm}/0.32\text{in}.$$

Lightweight trunking



Components table

Catalogue no.	Description	Weight	
		kg	lb
LTN 4500A	4.5 metre length trunking	3.175	7
LTR 4500A	4.5 metre length trunking for recessing	3.63	8
LTF 4500A	4.5 metre length trunking for recessing	3.63	8
AL 1005/U	Universal 'T'-bolt fitting suspension	0.09	0.19
LTN 4502	Trunking hanger assembly	0.085	0.19
LTN 4503	Jointing piece	0.34	0.75
LTN 4504	Two-way coupling	0.23	0.5
LTN 4505	Three-way coupling	0.28	0.61
LTN 4506	Four-way coupling	0.51	1.125
LTN 4507	End cap	0.028	0.063
LTN 4508	Cable cleats	0.014 (Pack of 10)	0.031
LTN 4509	New adjustable suspension	0.17	0.375
LTN 4510*	Four-way coupling	0.17	0.375
AL 1001	1.8 metre PVC cover (also used with Liteline trunking)	0.17	0.375

*Enables continuous runs of Trakline to be used with new lightweight trunking

Liteline trunking



Liteline trunking is a universal system for carrying overhead lighting, electric fittings or cables for industrial and commercial buildings. Liteline trunking can either be suspended, fixed flush to a ceiling or, by means of the top hat section, incorporated into a suspended ceiling. Having a cross section of only 66 x 32mm/2.625 x 1.25in, it is available in 4.5m/14.75ft lengths of 18 gauge cold rolled steel. The paint surface is a single dip coat finish and is light grey in colour to BS.2260.9-094. In certain circumstances it may be necessary to apply a final finishing coat for increased durability. Simple jointing by slide-in straight coupling piece secured by eight screws ensuring earth continuity, and removable clip-in PVC cover fillets enable easy installation.

The fittings and accessories have been designed to allow continuous unobstructed runways for the cables.

Maximum recommended suspension centres 3.35m/11ft

Neat and rigid

The trunking is small and compact in design and suitable for surface mounting installations. The design of the channel section ensures maximum rigidity and weight carrying capacity over unsupported spans up to 3.35m/11ft.

Easy to wire

When trunking is erected, there are no obstructions whatever and, therefore, cable can be fed into the trunking with ease.

Up to two lighting fittings can be supplied from any point by fitting a Parablock connector.

Flexible

The numerous junction pieces enable horizontal diversions of 90° to be made from the main trunking run.

Finish

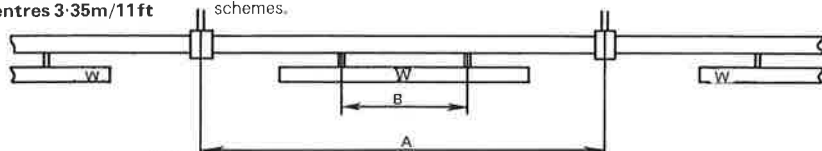
The BS.2660.9-094 light grey colour is attractive yet unobtrusive and is therefore ideal for commercial office schemes.

Simple installation

Simple jointing by slide-in straight coupling piece secured by eight screws ensuring earth continuity. Easily removable clip-in PVC cover fillet. 'Clip-over' suspension stirrup suitable for chain or conduit. Universal girder clamps for RSJ mounting.

Versatile

Any type of fitting with 19mm/3/4in conduit hole fixing can be suspended from any point by means of a special 'T' bolt assembly, which also facilitates alterations to lighting layouts. Fittings with larger conduit fixings can be mounted by means of a suitable reducer. A top hat section can be supplied where it is required to fit a flush mounted suspended ceiling.



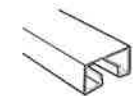
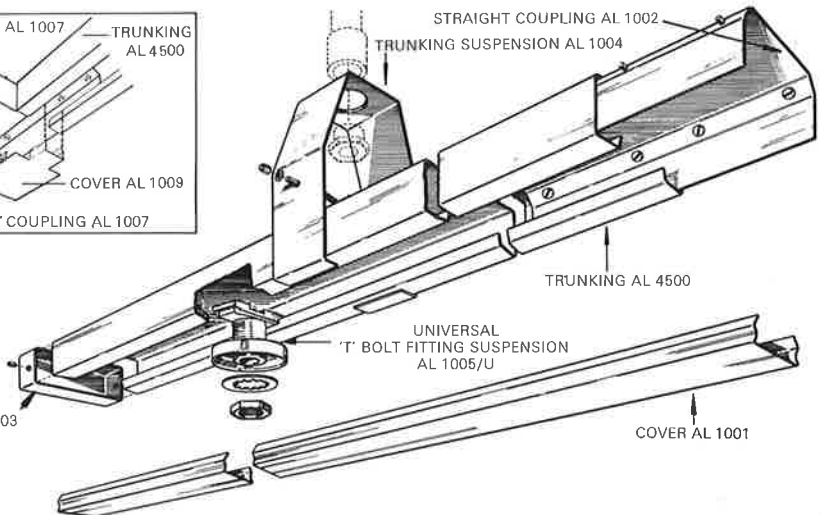
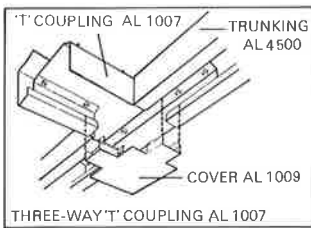
Deflections for Liteline trunking

A	B	Weight W	Deflection
3.35m/11ft	0.61m/24in	18kg/40lb	6.35mm/0.25in
A	B	Weight W	Deflection
3.35m/11ft	1.22m/48in	25kg/55lb	5.1mm/0.20in

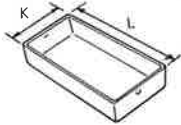
The above deflections were measured using Atlantic 4 fittings (Catalogue no. A4B/4685) at 0.61m/24in suspension centres and A4Z/T4885 at 1.22m/48in centres and suspended as detailed above.

These figures assume that all loads are counter-balanced and the final trunking span will be adequately supported at the termination point. It is important when designing trunking installations to ensure that the deflection between spans does

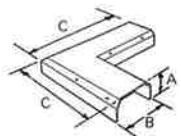
not exceed 1/300th of the total span. For example, an installation requires trunking to be suspended at 3.35m/11ft spans. Therefore maximum deflection
$$= \frac{3350}{300} = 11.2\text{mm}/0.44\text{in.}$$



Catalogue no.
AL 4500
Trunking sections
4.5m/14.75ft length
Weight 6.3kg/
13lb 14oz
66mm/2.6in wide x
32mm/1.3in deep



Catalogue no.
AL 1003
End cap
Weight 0.01kg/3/2oz



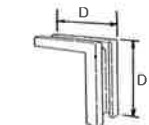
Catalogue no.
AL 1006
Horizontal coupling
Weight 0.5kg/1lb 3oz



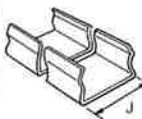
Catalogue no.
AL 1009
Cover assembly
Weight 0.06kg/2oz



Catalogue no.
AL 4512
Top hat section
4.5m/14.75ft length
Weight 3.5kg/7lb 10oz
106mm/4.1875in
wide x 43mm/
1.6875in deep



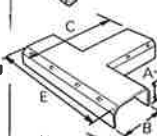
Catalogue no.
AL 1015
Vertical-horizontal
coupling (external)
Weight 0.7kg/1lb 10oz



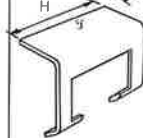
Catalogue no.
AL 1001
PVC cover fillet
1.8m/71in length
Weight 0.17kg/6oz



Catalogue no.
AL 1004
Trunking suspension
Weight 0.11kg/4oz
38mm/1.5in wide x
86mm/3.375in deep



Catalogue no.
AL 1007
'T' coupling
Weight 0.7kg/1lb 10oz



Catalogue no.
AL 1010
Girder clamp
assembly
Weight 0.14kg/5oz



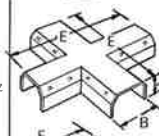
Catalogue no.
AL 1013
Parablock
connector
Weight 0.03kg/1oz
takes cable up to 7/036



Catalogue no.
AL 1002
Straight coupling
Weight 0.5kg/1lb 3oz



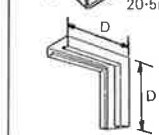
Catalogue no.
AL 1005/U
Universal 'T' bolt
fitting suspension
Weight 0.09kg/3oz



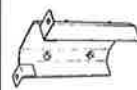
Catalogue no.
AL 1008
Four-way coupling
Weight 0.9kg/2lb 1oz



Catalogue no.
AL 1011
Suspension bracket
Weight 0.03kg/1oz



Catalogue no.
AL 1014
Vertical-horizontal
coupling (internal)
Weight 0.7kg/1lb 10oz



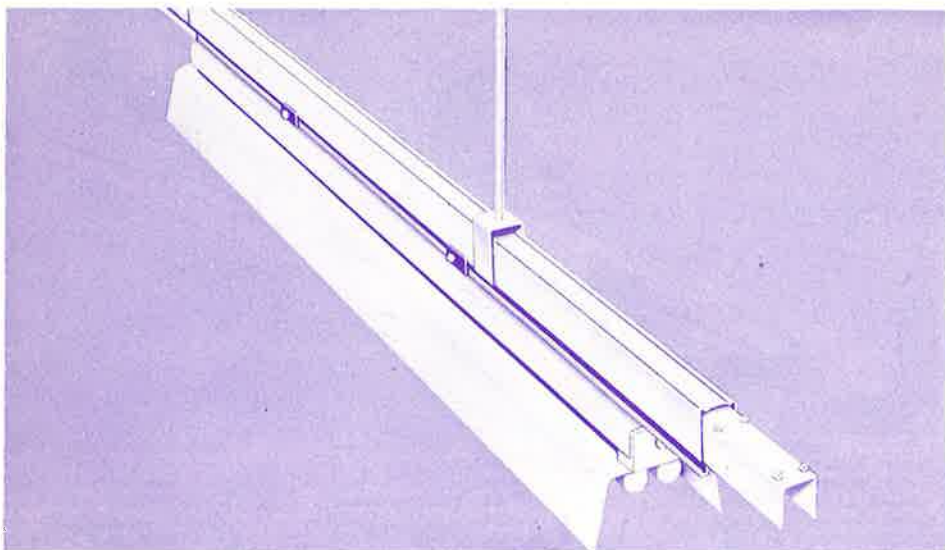
Catalogue no.
AL 1016
Stop-end junction
Weight 0.5kg/1lb 3oz

KEY

A = 1 1/8"
B = 2 3/8"
C = 7/8"
D = 9"
E = 12"
F = 1 1/8"

G = 1 3/8"
H = 3 7/8"
J = 1 1/2"
K = 1 3/32" INTERNAL
L = 2 5/16" INTERNAL

Atlantic trunking



The Atlantic trunking system is adapted to receive lighting fittings on its underside, and provides structural support for the fittings with adequate through-wiring capacity. The system reduces installation time to the minimum.

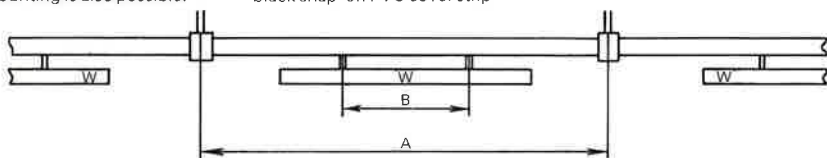
The close-top trunking is suspended by saddle brackets attached to down-drops from the ceiling or roof structure, and joint pieces hold the sections rigidly in line and provide earth continuity. The suspension of trunking by means of chains is not normally recommended. Close ceiling mounting is also possible.

Brackets are attached to the fittings by means of the threaded bush, nut and washer supplied. The brackets engage with the batten flanges of the trunking and allow the fitting to be hinged from the trunking during installation, maintenance or subsequent modification of the through-wiring in the trunking. Clip-in, 15 amp terminal blocks are available for inter-connection and looping in. Cable carriers are included in each trunking length to retain the cables neatly in position.

The trunking mouth is closed by a black snap-on PVC cover strip

which is easily cut to length on site to fit between fittings. This part is not required when the fittings are continuously mounted. To ensure satisfactory earth continuity between the fittings and the trunking an earth screw is provided on the jointing piece, a jumper cable being necessary to complete the bond.

Standard trunking is made from 18 swg galvanized sheet steel.
Maximum recommended trunking suspension centres 4.5m/14.75ft



Deflections for Atlantic trunking

A	B	Weight W	Deflection
4.5m/14.75ft	0.61m/24in	18kg/40lb	2.54mm/0.1in
A	B	Weight W	Deflection
4.5m/14.75ft	1.22m/48in	25kg/55lb	4.32mm/0.17in

For spans less than 4.5m the deflection on this trunking was not measurable.

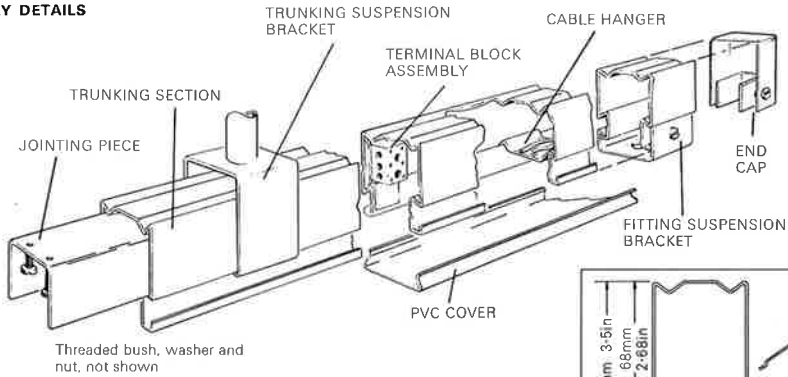
The above deflections were measured using Atlantic 4 fittings (Catalogue no. A4B/4685) at 0.61m/24in suspension centres and A4Z/T4885 at 1.22m/48in centres and suspended as detailed above.

These figures assume that all loads are counter-balanced and the final trunking span will be adequately supported at the termination point. It is important when designing trunking installations to ensure that the deflection between spans does

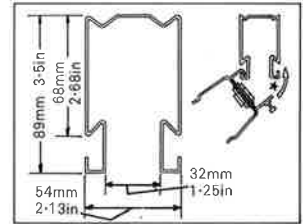
not exceed 1/300th of the total span. For example, an installation requires trunking to be suspended at 4.5m/14.75ft spans. Therefore maximum deflection

$$= \frac{4500}{300} = 15\text{mm}/0.6\text{in.}$$

ASSEMBLY DETAILS



KEY		
A = 2"	E = 7 ¹ / ₁₀ "	K = 1 ³ / ₃₂ "
B = 2 ⁵ / ₁₆ "	F = 3 ¹ / ₂ "	L = 2 ³ / ₃₂ "
C = 5"	G = 11 ³ / ₁₆ "	M = ⁸ / ₁₆ "
D = 2 ⁷ / ₃₂ "	H = 1 ¹ / ₁₆ "	N = 12"
	J = 3 ¹ / ₂ "	P = 2 ¹ / ₈ "



COMPLETE PARTS LIST

<p>Weight 0.01kg (0.03lb)</p> <p>AA 4702 Cable support</p>	<p>Weight 0.49kg (1.1lb)</p> <p>AA 4703 Straight coupling</p>	<p>Weight 0.14kg (0.32lb)</p> <p>AA 4704 Trunking suspension</p>
<p>Weight 0.05kg (0.12lb)</p> <p>AA 4705 Fitting suspension</p>	<p>Weight 0.141kg (0.3lb)</p> <p>AA 4706 End cap</p>	<p>Weight 0.20kg (0.45lb)</p> <p>AA 4707 PVC cover 2.4m/7.87ft</p>
<p>Weight 0.04kg (0.1lb)</p> <p>AA 4708 Terminal block assembly</p>	<p>Weight 0.11kg (0.25lb)</p> <p>AA 4709 Horizontal coupling</p>	<p>Weight 0.45kg (1.0lb)</p> <p>AA 4712 Four-way coupling</p>
<p>Weight 0.56kg (1.25lb)</p> <p>AA 4713 'T' coupling</p>	<p>Weight 12.24kg (27lb)</p> <p>AA 4500 Trunking 4.5m/14.75ft length</p>	

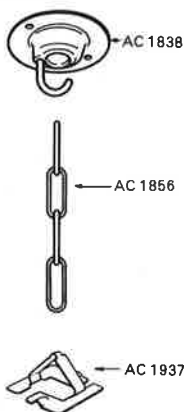
Suspension Sets

Suspension sets are available for all Thorn lighting fittings. Reference should be made to maximum loading table and respective weight of fitting to determine the type of suspension required. Standard length of rod or chain sets is 30in. Other lengths in multiples of 6in will be supplied on request. Half sections of the suspension sets are illustrated. Catalogue number relates to complete set.

Catalogue numbers for individual parts of suspension sets are shown on the diagrams.

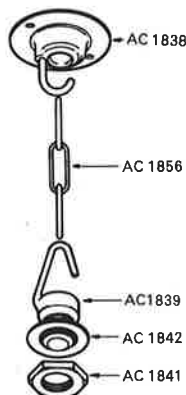
Max. loading table

Maximum loading per set Catalogue no.	kg	lb
A.30	18.2	40
B.30	30.9	68
H.30	123.0	270
K.30	27.3	60



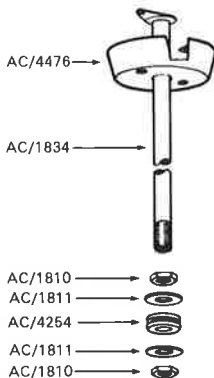
Suspension Set A.30 (Light Duty)

Two malleable iron hooked ceiling plates, two 30in lengths of chain, two spring loops.



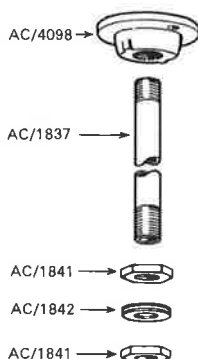
Suspension Set K.30 (Heavy Duty)

Two dome hook plates, two 30in lengths of chain, two 3/4 E.T. suspension hooks, back nuts and washers.



Suspension Set B.30

Two pressed ceiling plates, two 1/2in by 30in rods screwed 26 T.P.I., grommets, locknuts, washers. White finish.



Suspension Set H.30

Heavy duty conduit suspension including two 1/2in by 30in rods with ball joint ceiling plates and back-nuts. White finish.

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Mains voltage spotlights



VG 150



VGTK 150

VG 150 adjustable spotlight holder

An adjustable spotlight holder for use with 100W/150W reflector spotlight or general service lamp with auxiliary reflectors (Catalogue no. VA 100 or VA 150). A cool running fitting ideal for use with COOL-RAY PAR 38 lamp (indoors). Supplied wired complete with ES lampholder.

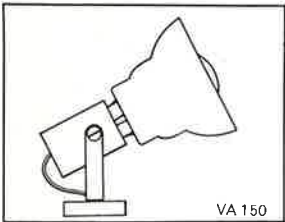
Catalogue no.	Cap	Lamp watts	Length		Diameter		Weight (ex. lamp)	
			mm	in	mm	in	kg	oz
VG 150	ES	150	82	3.25	57	2.25	0.22	8
VGTK 150*	ES	150	82	3.25	57	2.25	0.22	8

*For mounting on Trakline

Accessories

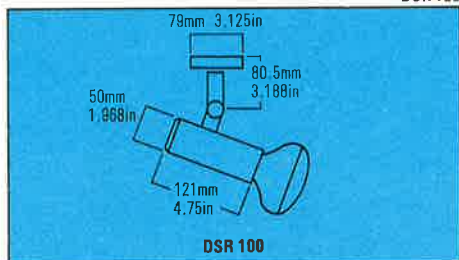
Auxiliary reflectors

Catalogue no.	Cap	Lamp watts	Length		Diameter		Weight (ex. lamp)	
			mm	in	mm	in	kg	oz
VA 100	ES	100	63	2.5	108	4.25	0.028	1
VA 150	ES	150	95	3.75	127	5.0	0.056	2





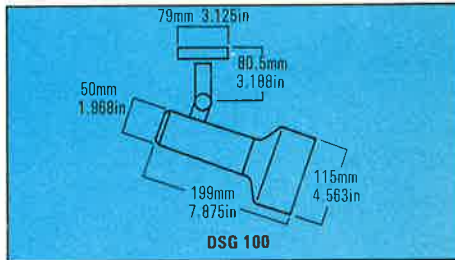
DSR 100



DSR 100



DSG 100



DSG 100

Hi-Spot 100W reflector spotlight

This fitting accepts a number of 75W and 100W interior display reflector lamps, ES only.

Fittings

Catalogue Number	Cap	Watts	Fixing	Finish	Weight	
					kg	lb
DTR 100	ES	100	Trakline	Matt black, chrome trim	0.57	1.25
DSR 100	ES	100	Ceiling	Matt black, chrome trim	0.68	1.5
DMR 100	ES	100	Multi-trak	Matt black, chrome trim	0.57	1.25

Optional attachments

Catalogue Number	Description	Finish	Weight	
			kg	lb
DVH 100	Cowl	Brushed and lacquered aluminium	0.06	0.125
DVL 100	Louver	Matt black	0.06	0.125
DVF 100R	Red glass filters*		0.11	0.25
DVF 100A	Amber glass filters*		0.11	0.25
DVF 100G	Green glass filters*		0.11	0.25
DVF 100B	Blue glass filters*		0.11	0.25

*Complete with clips; packed two per carton

Lamps

Watts	Description	Voltages
75/100	Interior display reflector lamp ES	240
75 only	As above in colours red, yellow, green and blue	240

Hi-Spot 100W GLS spotlight

This fitting uses standard 100W ES GLS lamps to produce a well defined beam. To do this it uses a reflector enclosed in a brushed and lacquered aluminium cowl.

Fittings

Catalogue Number	Cap	Watts	Fixing	Finish	Weight	
					kg	lb
DTG 100	ES	100	Trakline	Matt black, chrome trim	0.68	1.5
DSG 100	ES	100	Ceiling	Matt black, chrome trim	0.79	1.75
DMG 100	ES	100	Multi-trak	Matt black, chrome trim	0.68	1.5

Optional attachments

Catalogue Number	Description	Finish	Weight	
			kg	lb
DVL 100	Louver	Matt black	0.06	0.125
DVF 100R	Red glass filter*		0.11	0.25
DVF 100A	Amber glass filters*		0.11	0.25
DVF 100G	Green glass filters*		0.11	0.25
DVF 100B	Blue glass filters*		0.11	0.25

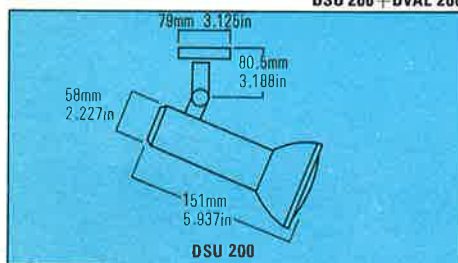
*Complete with clips; packed two per carton

Lamps

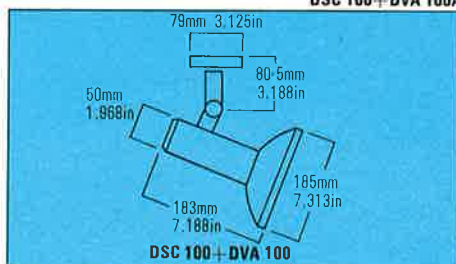
Watts	Description	Voltages
100	GLS, ES	110, 240 and 250



DSU 200 + DVAL 200



DSC 100 + DVA 100A



Hi-Spot 200W universal spotlight

This range of spotlights uses as its basis a standard 150W PAR38 lamp or up to 200W GLS lamp with an adjustable lampholder. This, with a range of reflectors, enables an immense variation of function to be performed.

Fittings

Catalogue Number	Cap Watts	Fixing	Finish	Weight kg lb
DTU 200	ES 150/200	Trakline	Matt black, chrome trim	0.68 1.5
DSU 200	ES 150/200	Ceiling	Matt black, chrome trim	0.79 1.75
DMU 200	ES 150/200	Multi-trak	Matt black, chrome trim	0.68 1.5

Optional attachments

Catalogue Number	Description	Finish	Weight kg lb
DVH 150	Cowl. See lamp information for uses	Brushed and lacquered aluminium	0.06 0.125
DVHR 150	Cowl and reflector for 150W GLS lamp	Brushed and lacquered aluminium	0.06 0.125
DVAL 200	Reflector and fowler for 200W GLS lamp	Natural aluminium	0.34 0.75
DVL 150	Fowler for use on DVH 150 and DVHR 150	Matt black	0.11 0.25
DVF 150R	Red glass filter*		0.17 0.375
DVF 150A	Amber glass filter*		0.17 0.375
DVF 150G	Green glass filter*		0.17 0.375
DVF 150B	Blue glass filter*		0.17 0.375

*Complete with clips; packed two per carton

Lamps

Watts	Description	Voltages
Up to 150	Interior Display Reflector Lamps, ES; all types including colours DVH 150* can be used.	240/250
100/150	GLS lamp (pearl), ES only DVHR 150* must be used	240/250
200	GLS lamp (pearl), ES only DVAL 200* must be used	240/250
100/150	PAR 38, all types including: Coolray, Colour-ray and colours DVH 150* can be used.	240/250

*See details in Optional attachments table

Hi-Spot 100W crown silvered spotlight

This fitting, for use with 100W crown silvered display lamp, has alternative coloured reflectors to increase its versatility. Available in ES only.

Fittings

Catalogue Number	Cap Watts	Fixing	Finish	Weight kg lb
DTC 100*	ES 100	Trakline	Matt black, chrome trim	0.68 1.5
DSC 100*	ES 100	Ceiling	Matt black, chrome trim	0.79 1.75
DMC 100*	ES 100	Multi-trak	Matt black, chrome trim	0.68 1.5
DTCB 100	ES 100	Trakline	Matt black, less reflector	0.57 1.25
DSCB 100	ES 100	Ceiling	Matt black, less reflector	0.68 1.5
DMCB 100	ES 100	Multi-trak	Matt black, less reflector	0.57 1.25

Packed with lamp

*Complete with natural anodised reflector

Optional attachments

Catalogue Number	Description	Weight kg lb
DVA 100R	Red reflector	0.11 0.25
DVA 100A	Amber reflector	0.11 0.25
DVA 100G	Green reflector	0.11 0.25
DVA 100B	Blue reflector	0.11 0.25
DVA 100C	Natural anodised reflector	0.11 0.25

Lamps

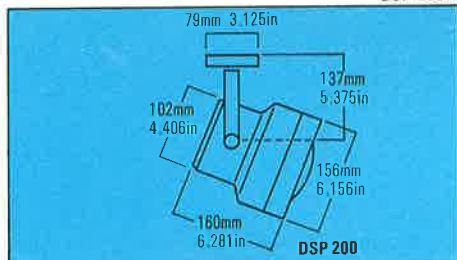
Watts	Description	Voltages
100	Crown silver display lamp ES cap	240/250



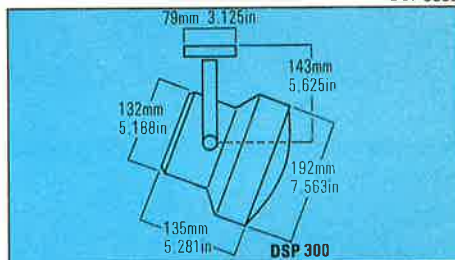
DSP 200W



DSP 300B



DSP 200



DSP 300

Hi-Spot 200W PAR38 spotlight

This group of fittings accepts the range of PAR38 lamps. It features die-cast bodies finished in black or white with brushed and lacquered aluminium cowl and contrasting chrome trim.

Fittings

Catalogue Number	Cap	Watts	Fixing	Finish	Weight	
					kg	lb
DTP 200W	ES	150	Trakline	White	1.7	3.75
DTP 200B	ES	150	Trakline	Black	1.7	3.75
DSP 200W	ES	150	Ceiling	White	1.81	4
DSP 200B	ES	150	Ceiling	Black	1.81	4
DMP 200W	ES	150	Multi-trak	White	1.7	3.75
DMP 200B	ES	150	Multi-trak	Black	1.7	3.75

Lamps

Watts	Description	Voltages
100, 150	PAR 38 spot and flood	240/250
150	PAR 38 Cool-ray	240/250
150	PAR 38 Color-ray red, yellow, green and blue	240/250
100	PAR 38 flood only red, yellow, green and blue	240/250

Hi-Spot 300W PAR56 spotlight

This fitting is designed to accept the PAR56 300W lamp. It has a die-cast body, finished in gloss white or matt black with chrome trim.

Fittings

Catalogue Number	Cap	Watts	Fixing	Finish	Weight	
					kg	lb
DTP 300W	2 lug	300	Trakline	White	1.81	4
DTP 300B	2 lug	300	Trakline	Black	1.81	4
DSP 300W	2 lug	300	Ceiling	White	1.92	4.25
DSP 300B	2 lug	300	Ceiling	Black	1.92	4.25
DMP 300W	2 lug	300	Multi-trak	White	1.81	4
DMP 300B	2 lug	300	Multi-trak	Black	1.81	4

Optional attachments

Catalogue Number	Description	Weight	
		kg	lb
DVF 300R	Red glass filter	0.23	0.5
DVF 300A	Amber glass filter	0.23	0.5
DVF 300G	Green glass filter	0.23	0.5
DVF 300B	Blue glass filter	0.23	0.5

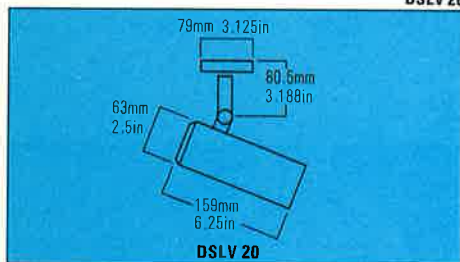
Complete with clips: packed two per carton

Lamps

Watts	Description	Voltages
300	PAR 56, sealed beam, wide, medium or narrow beam angles	240/250



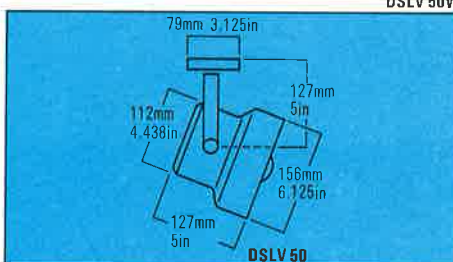
DSLVL 20



DSLVL 20



DSLVL 50W



DSLVL 50

Hi-Spot spotlight using 6V 20W TH lamp

This fitting uses a 6V 20W tungsten halogen lamp mains operated by an integral transformer. It is finished in matt black with chrome trim. Fitted with natural anodized aluminium reflector.

Fittings

Lamp caps all single-ended bi-pin

Catalogue Number	Watts	Voltages	Fixing	Finish	Weight	
					kg	lb
DTLV 20+	20	240/250	Trakline	Black	0.91	2
DSLVL 20+	20	240/250	Ceiling	Black	1.02	2.25
DMLV 20+	20	240/250	Multi-trak	Black	0.91	2

†Lamp packed with fitting

220V versions are available to special order only

Lamps

Watts	Description	Voltage
20	Tungsten-halogen display lamp Catalogue Number M34	6

Hi-Spot spotlight fitting using 12V 50W TH lamp

This fitting uses a 12V 50W tungsten halogen lamp which is mains operated by an integral transformer.

Fittings

Lamps caps all single-ended bi-pin

Catalogue Number	Watts	Voltages	Fixing	Finish	Weight	
					kg	lb
DTLV 50W+	50	240/250	Trakline	White	2.50	5.50
DTLV 50B+	50	240/250	Trakline	Black	2.50	5.50
DSLVL 50W+	50	240/250	Ceiling	White	2.61	5.75
DSLVL 50B+	50	240/250	Ceiling	Black	2.61	5.75
DMLV 50W+	50	240/250	Multi-trak	White	2.50	5.50
DMLV 50B+	50	240/250	Multi-trak	Black	2.50	5.50

†Lamp packed with fitting

220V versions are available to special order only

Optional attachments

Catalogue Number	Description	Weight	
		kg	lb
DVF 50R	Red glass filters*	0.17	0.375
DVF 50A	Amber glass filters*	0.17	0.375
DVF 50G	Green glass filters*	0.17	0.375
DVF 50B	Blue glass filters*	0.17	0.375

*Complete with clips. Packed two per carton

Lamp

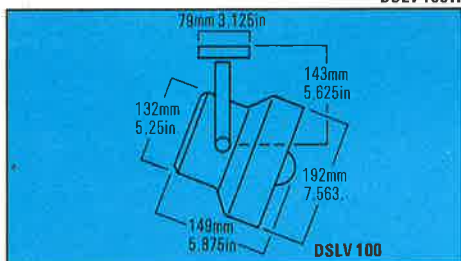
Watts	Description	Voltage
50	Tungsten Halogen Display Lamp Catalogue Number M32	12



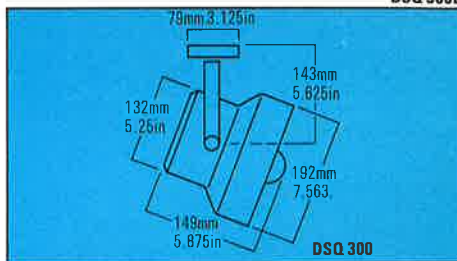
DSLVL 100W



DSQ 300B



DSLVL 100



DSQ 300

Hi-Spot spotlight using 12V 100W TH lamp

This fitting uses a 12V 100W tungsten halogen lamp mains operated by an integral transformer. Finished in gloss white or matt black with chrome trim.

Fittings

Lamp caps all single-ended bi-pin

Catalogue Number	Watts	Voltages	Fixing	Finish	Weight kg lb
DTLV 100W+	100	240/250	Trakline	White	3.40 7.5
DTLV 100B+	100	240/250	Trakline	Black	3.40 7.5
DSLVL 100W+	100	240/250	Ceiling	White	3.51 7.75
DSLVL 100B+	100	240/250	Ceiling	Black	3.51 7.75
DMLV 100W+	100	240/250	Multi-trak	White	3.40 7.5
DMLV 100B+	100	240/250	Multi-trak	Black	3.40 7.5

†Lamp packed with fitting
220V versions to special order only

Optional attachments

Catalogue Number	Description	Weight kg lb
DVF 300R	Red glass filters*	0.23 0.5
DVF 300A	Amber glass filters*	0.23 0.5
DVF 300G	Green glass filters*	0.23 0.5
DVF 300B	Blue glass filters*	0.23 0.5
DVCW	Controller lens, wide angle*	0.23 0.5

*Complete with clips; packed 2 per carton

Lamp

Watts	Description	Voltage
100	Tungsten-halogen display lamp Catalogue number M28	12

Hi-Spot spotlight using 300W M38 TH lamp

This fitting uses a mains voltage 300W tungsten halogen lamp. Finished in gloss white or matt black with chrome trim.

Fittings

Lamp caps all single-ended bi-pin

Catalogue Number	Watts	Fixing	Finish	Weight kg lb
DTQ 300B+	300	Trakline	Black	1.7 3.75
DTQ 300W+	300	Trakline	White	1.7 3.75
DSQ 300B+	300	Ceiling	Black	1.81 4.0
DSQ 300W+	300	Ceiling	White	1.81 4.0
DMQ 300B+	300	Multi-trak	Black	1.7 3.75
DMQ 300W+	300	Multi-trak	White	1.7 3.75

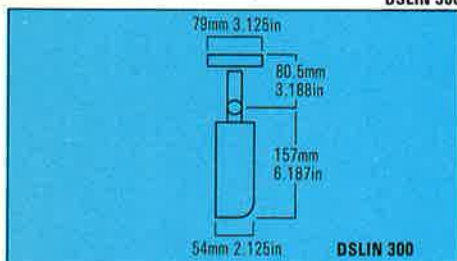
†Lamp packed with fitting

Lamp

Watts	Description	Voltages
300	Single-ended bi-pin Tungsten-Halogen Catalogue Number M38	120 200/230 240/250



DSLIN 300



Hi-Spot wallwasher using 300W TH lamp

This fitting uses a 300W tungsten halogen linear lamp to illuminate large vertical or horizontal areas. When used in this way the surface gives the appearance of uniformly high brightness. There is very little spill of light on to ceiling or floor.

Fittings

Black, chrome and matt finish aluminium

Catalogue Number	Cap	Watts (max)	Fixing	Weight	
				kg	lb
DTLIN300	R7s	300	Trakline	1.02	2.25
DSLIN300	R7s	300	Ceiling	1.13	2.5
DMLIN300	R7s	300	Multi-trak	1.02	2.25

Optional attachments

Catalogue Number	Description	Finish	Weight	
			kg	lb
DVWG	Wire guard, complete with fixing screws	Stainless steel	0.06	0.125

Lamps

these lamps should be 'frosted' finish

Watts	Description	Voltages
300	Tungsten Halogen linear lamp frosted	200/230 240/250



DSE 150S

Hi-Spot Darklight/Downlight adjustable cylinder

This fully adjustable spotlight designed as part of the Hi-Spot range, in brushed and lacquered silver finish, is available in surface, Trakline and Multi-trak versions. An ideal fitting with coloured PAR38 lamps for clubs, pubs and stage lighting, with good beam control and resistance to smoky and dusty interiors.

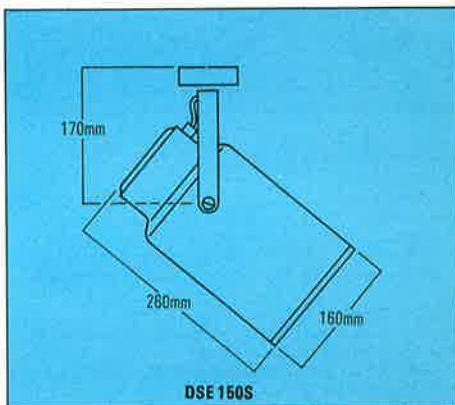
The Downlight type has a black ribbed baffle and the Darklight a plain black reflector.

Fittings

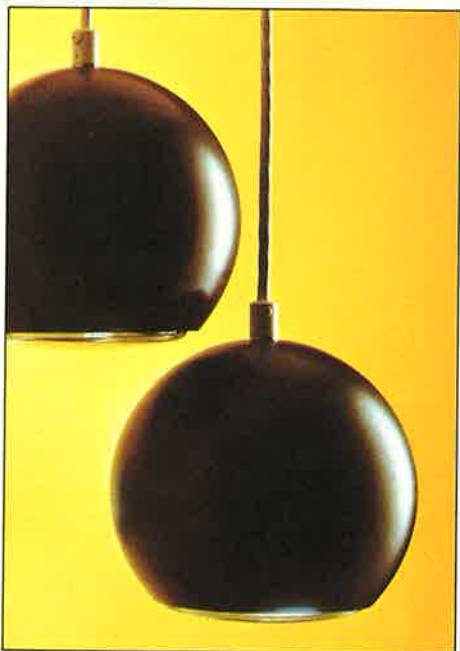
Catalogue number	Cap	Watts (max)	Fixing	Description	Weight kg lb
OSD 150S	ES	150	Surface	Darklight adjustable cylinder	1 2.2
OTD 150S	ES	150	Trakline	Darklight adjustable cylinder	1 2.2
OMD 150S	ES	150	Multi-trak	Darklight adjustable cylinder	1 2.2
DSE 150S	ES	150	Surface	Downlight adjustable cylinder	1 2.2
OTE 150S	ES	150	Trakline	Downlight adjustable cylinder	1 2.2
DME 150	ES	150	Multi-trak	Downlight adjustable cylinder	1 2.2

Lamps

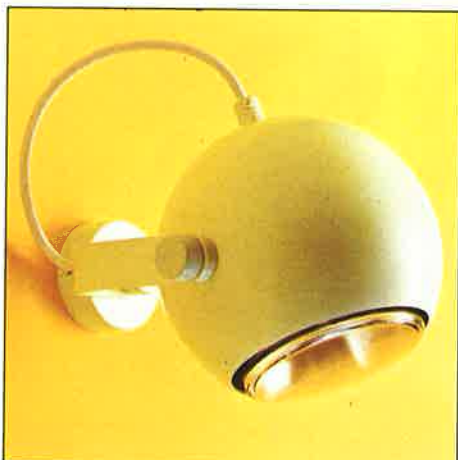
Watts	Description	Voltages
100	GLS with TPA 100 reflector	240/250
150 max	GLS with V A 150 reflector	240/250
150 max	Interior display reflector	240/250
150	PAR 38 including Cool-Ray	240/250



DSE 150S



TSP 1508N



TSP 150W

Spherical spotlights

A versatile range of Spherical Spotlights designed for use with a 150W PAR38 spotlamp as well as a 100W ES GLS using an auxiliary reflector.

For wall and ceiling mounting. Includes a pendant version. All are available completely wired for surface or track mounting.

All are available in brown and white.

Silver, red and yellow to special order only.

TTP & TSP

Wall and ceiling mounting versions with wired terminal block. Track mounting version is wired complete with Trakline adaptor box. Ample adjustment is provided by a unique friction action which permits swivel through 350° and horizontal of 180°.

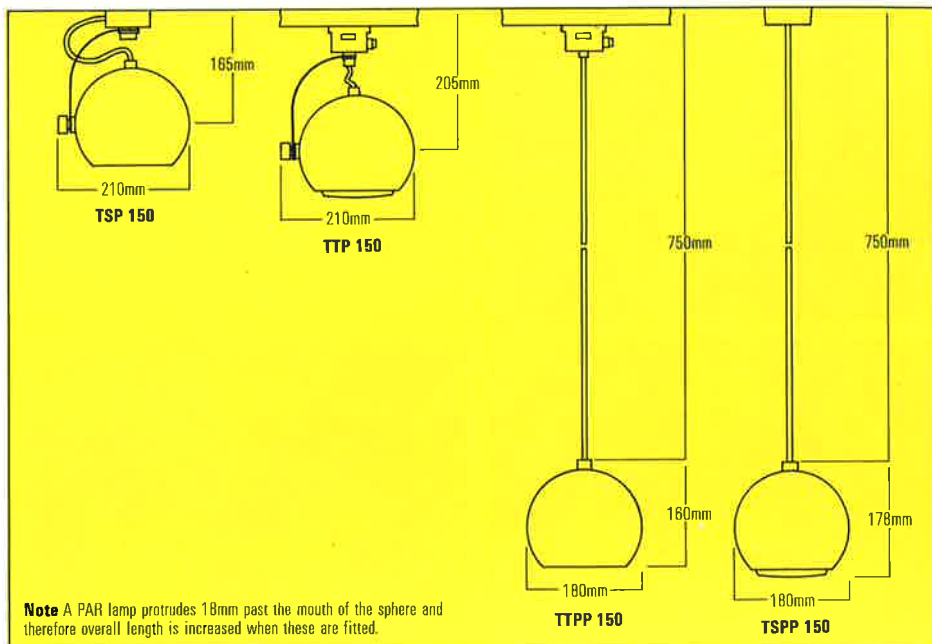
TSP & TTP

Pendant, suspended on white cable from white ceiling plate, is wired with terminal block.

Track mounting version is wired complete with Trakline adaptor box.

TPA 100

Auxiliary reflector fits on lamp by a simple clip-on action when using 100W GLS lamp in place of 150W PAR38.



Range

Catalogue Number	Description	Lamp/Watts	Weight kg lb
TSP 150 BN	Surface mounted spot Brown	150 PAR38 100GLS	0.62 1.37
TSP 150 W	Surface mounted spot White	150 PAR38 100GLS	0.62 1.37
TTP 150 BN	Track mounted spot Brown	150 PAR38 100GLS	0.73 1.62
TTP 150 W	Track mounted spot White	150 PAR38 100GLS	0.73 1.62
TSPP 150 BN	Surface mounted pendant Brown	150 PAR38 100GLS	0.40 0.87
TSPP 150 W	Surface mounted pendant White	150 PAR38 100GLS	0.40 0.87
TTPP 150 BN	Track mounted pendant Brown	150 PAR38 100GLS	0.51 1.12
TTPP 150 W	Track mounted pendant White	150 PAR38 100GLS	0.51 1.12
TPA 100	Auxiliary reflector for use with 100W GLS lamp	100	0.06 0.12



TSR 60Y



TSRC 60W



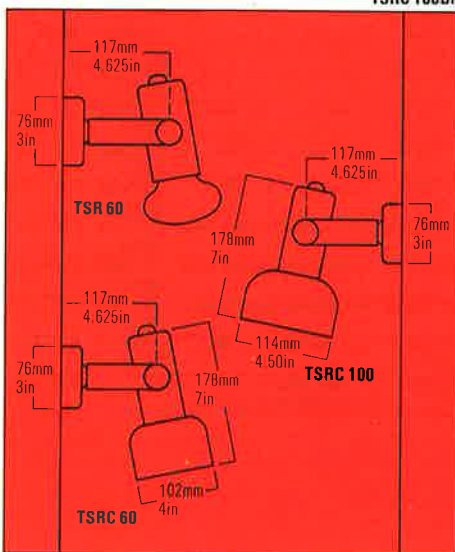
TSRC 100BN

Spot-on domestic spotlights

A comprehensive range of spotlights using the 60W Decor spotlamp and the 100W interior reflector lamp. Ample adjustment is provided by a friction action which permits swivel movement through 350° and horizontal of 180°. Each fitting's pack includes the appropriate BC lamp.

Wall, ceiling and track mounting

Spotlight with wired terminal block available in three body finishes comprising dark brown, yellow and white with mounting plate and stirrup in white. To this is added a well proportioned brushed and lacquered silver front cowl to shroud lamp for both the 60W and 100W size. For situations where it is necessary to use a bare spotlamp the 60W size is included in the range without the front cowl. Track mounting version is wired complete with track adaptor box. Where it is required to have a switch in the surface-mounted version a switch kit is available as an optional extra (Catalogue Number TSSW 4600).





TDRC 60W

Spot-on domestic spotlights

Floor standard

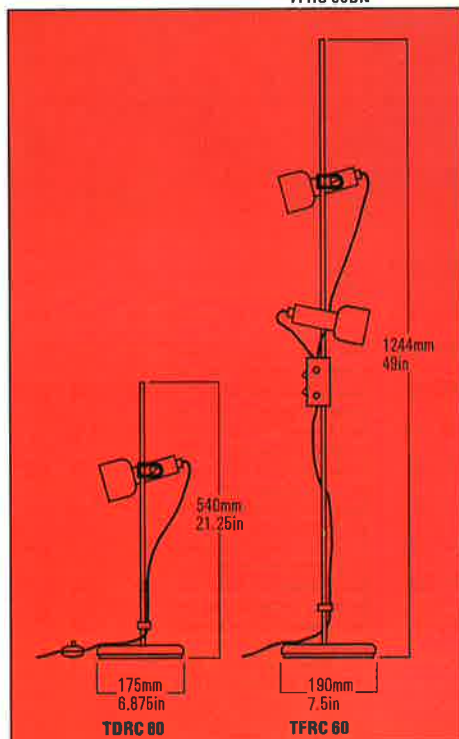
Standard with two 60W spotlights in the brown or white colour body finish and silver lacquered front cowl mounted on chromium stem with white painted weighted base wired complete with switch in stem.

Table stand

A matching unit to the floor standard but with one spotlight in the brown or white body finishes and front cowl wired complete with switch in stem.



TFRC 60BN

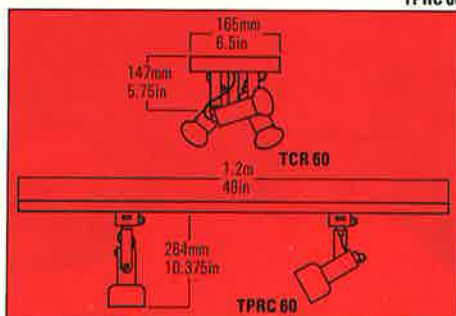




TPRC 60



TCR 60



Spot-on Trak-Pack and ceiling unit domestic spotlights

Trak-Pack

Two 60W spotlights in white painted finish with brushed and silver lacquer front cowl (TTTC 60W) mounted on 1.2m/48in length of track (TKS 1200) complete with mains connector.

Range Packed complete with lamps

Catalogue Number	Description	Lamp watts	Weight kg	lb
TSRC 100W	Surface Spot White with brushed and lacquered silver cowl	100	0.45	0.95
TSRC 100Y	Surface Spot Yellow with brushed and lacquered silver cowl	100	0.45	0.95
TSRC 100BN	Surface Spot Brown with brushed and lacquered silver cowl	100	0.45	0.95
TTTC 100W	Track Mounted Spot White with brushed and lacquered silver cowl	100	0.45	1
TTTC 100Y	Track Mounted Spot Yellow with brushed and lacquered silver cowl	100	0.45	1
TTTC 100BN	Track Mounted Spot Brown with brushed and lacquered silver cowl	100	0.45	1
TSRC 60W	Surface Spot White with brushed and lacquered silver cowl	60	0.43	0.94
TSRC 60Y	Surface Spot Yellow with brushed and lacquered silver cowl	60	0.43	0.94
TSRC 60BN	Surface Spot Brown with brushed and lacquered silver cowl	60	0.43	0.94
TTTC 60W	Track Mounted Spot White with brushed and lacquered silver cowl	60	0.45	1
TTTC 60Y	Track Mounted Spot Yellow with brushed and lacquered silver cowl	60	0.45	1
TTTC 60BN	Track Mounted Spot Brown with brushed and lacquered silver cowl	60	0.45	1

Ceiling unit

Three way ceiling mounting unit with three 60W spotlights in white without front cowl mounted on white ceiling plate.

Catalogue Number	Description	Lamp watts	Weight kg	lb
TSR 60W	Surface Spot White without front cowl	60	0.35	0.78
TSR 60Y	Surface Spot Yellow without front cowl	60	0.35	0.78
TSR 60BN	Surface Spot Brown without front cowl	60	0.35	0.78
TTR 60W	Track Mounted Spot White without front cowl	60	0.34	0.75
TTR 60Y	Track Mounted Spot Yellow without front cowl	60	0.34	0.75
TTR 60BN	Track Mounted Spot Brown without front cowl	60	0.34	0.75
TFRC 60W	Floor Stand Spots White with brushed and lacquered silver cowls	2 x 60	4.65	10.25
TFRC 60BN	Floor Stand Spots Brown with brushed and lacquered silver cowls	2 x 60	4.65	10.25
TDRC 60W	Table Stand Spot White with brushed and lacquered silver cowl	60	3.63	8
TDRC 60BN	Table Stand Spot Brown with brushed and lacquered silver cowl	60	3.63	8
TCR 60	3 way Ceiling Spot White without front cowls	3 x 60	0.91	2
TPRC 60	Trak-Pack with two white spotlights fitted front cowl	2 x 60	2.27	5
TSSW 4600	Switch kit for Surface Spot	60/100		



WWTK 1060BN



WW 1060W



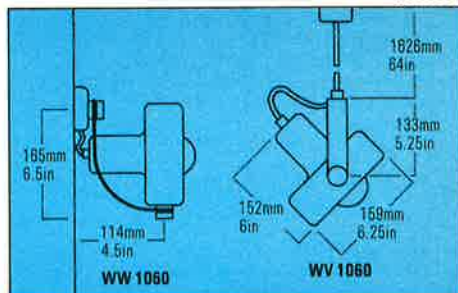
WV 1060Y

Show-off spotlights

Show-offs are available in three different styles. The first is an adjustable angle pendant (WV) which can easily be moved using the two side knobs and the cable clamp. The second is another adjustable spotlight (vertical or horizontal) for wall or surface mounting. This type (WW) includes a pushbutton switch on the wall plate. Finally there is a track mounted version. All three types come complete with a 60W BC lamp and auxiliary reflector, and are available in an attractive colour choice of white, yellow, or brown gloss stove enamel all with white straps.

Range

Catalogue Number	Colour	Type	Weight (ex lamp)	
			kg	lb
WV 1060W	White	Pendant (adj)	0.85	1.75
WV 1060Y	Yellow	Pendant (adj)	0.85	1.75
WV 1060BN	Brown	Pendant (adj)	0.85	1.75
WW 1060W	White	Wall-mounted	0.6	1.375
WW 1060Y	Yellow	Wall-mounted	0.6	1.375
WW 1060BN	Brown	Wall-mounted	0.6	1.375
WWTK 1060W	White	Track-mounted	0.56	1.25
WWTK 1060Y	Yellow	Track-mounted	0.56	1.25
WWTK 1060BN	Brown	Track-mounted	0.56	1.25





PSP 150R



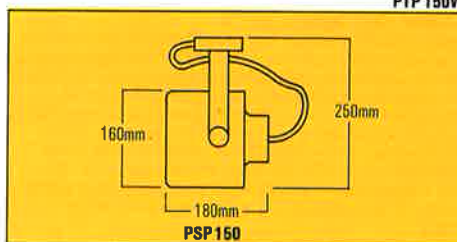
PTP 150W

PAR38 Show-off spotlight

This fitting will accept the whole range of PAR38 lamps. It is also suitable for use with 100W ES pearl lamps in conjunction with a TPA 100 auxiliary reflector. Designed for wall, ceiling and track mounting, available in white or orange gloss stove enamel.

Range

Catalogue Number	Description	Weight (ex lamp)	
		kg	lb
PSP 150W	Wall/Ceiling mounting, white	1.0	2.25
PSP 150R	Wall/Ceiling mounting, orange	1.0	2.25
PTP 150W	Track mounting, white	1.0	2.25
PTP 150R	Track mounting, orange	1.0	2.25
TPA 100	Auxiliary reflector for use with 100W GLS lamp	0.06	0.12





VKF 40W

Pin-up

A lightweight moulded plastic housing encloses a polished metal reflector and a black plastic spill ring. It is mounted on a black plastic gimbal swivelling on a plastic base. Reflectors are fully adjustable by a friction device. The range comprises a wall mounted spotlight, a floor standard and a table lamp, supplied complete with 40W 45mm round SES lamp.

Wall mounted

Housing and back plate in matching colours, brown, orange or white. Wired complete with 3m/9.8ft of white twin cable and torpedo switch.

Floor standard

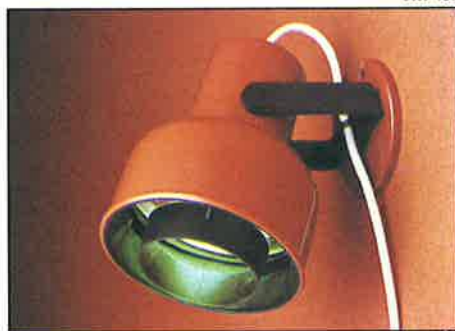
Two reflectors in matching colours—orange or white—are mounted on a two part chromium stem for convenience of packing and storage. Contrasting white or black weighted base wired with white or black flex to switch in stem or on floor controlling individual reflectors.

Table stand

A matching unit to the floor standard having single reflector in matching colours and wired with switch in stem or with separate torpedo switch.



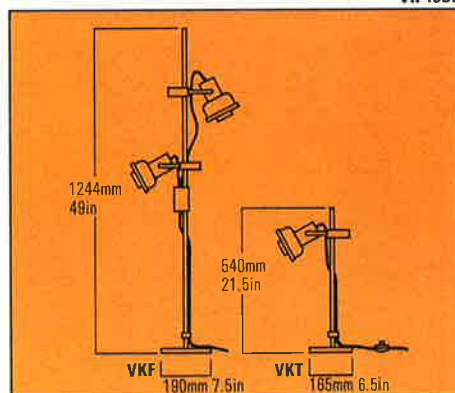
VKT 40R



VK 40BN

Range

Catalogue Number	Description
VK 40BN	Wall mounted spotlight, brown
VK 40R	Wall mounted spotlight, orange
VK 40W	Wall mounted spotlight, white
VKF 40R	Floor standard with two orange reflectors
VKF 40W	Floor standard with two white reflectors
VKT 40R	Table stand with single orange reflector
VKT 40W	Table stand with single white reflector





DNM 1040



DP 1040



JCX1060+A1060



JCXG 1060+JZA

Police lights

DNM 1040

This very attractive and compact unit is designed for mounting on the ceiling surface. It provides sparkle wherever needed and is also useful as a police light. Finished in white enamel, the fitting is fixed by a brass BC batten lampholder to a block which should be recessed into the ceiling. For Besa box fitting use adaptor plate (Catalogue number DNM 4600).

DP 1040

These compact units can be recessed into the ceiling surface, to provide an inconspicuous source extremely useful for police lights and can also be used to provide sparkle. Fitted with BC lampholder.

The range uses a 40W round bulb and can be provided with fixings for a Besa box recessed behind the ceiling or fixed to the ceiling surface by means of an additional bracket AC 4124.

Small recessed unit

This small recessed unit, which uses a 60W BC lamp, may be used by itself as a neat but cheap recessed display unit or with a copper colour cylindrical trim (Catalogue Number A 1060). An alternative attachment (Catalogue Number G 1060) enables the use of any of the Chelsea glasses with this fitting.

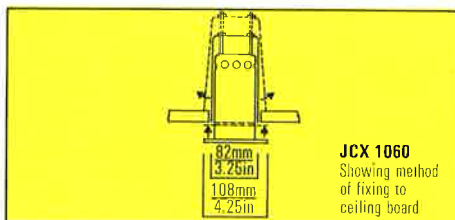
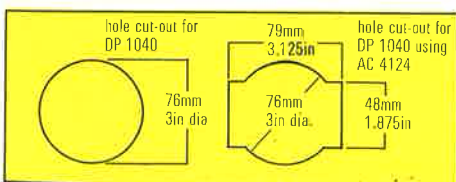
The basic unit is supplied complete with bracket for clamping direct to ceiling board and adjustment is provided for variations in ceiling thickness. The unit is 108mm (4.25in) overall diameter and requires a ceiling hole size of 85mm (3.25in). It weighs 0.22kg (0.5lb).

Range

Catalogue Number	Description
JCX 1060	Recessed Display fitting c/w mounting bracket
A 1060	Copper Colour Cylinder attachment
G 1060	Chelsea range glass holder for JCX 1060

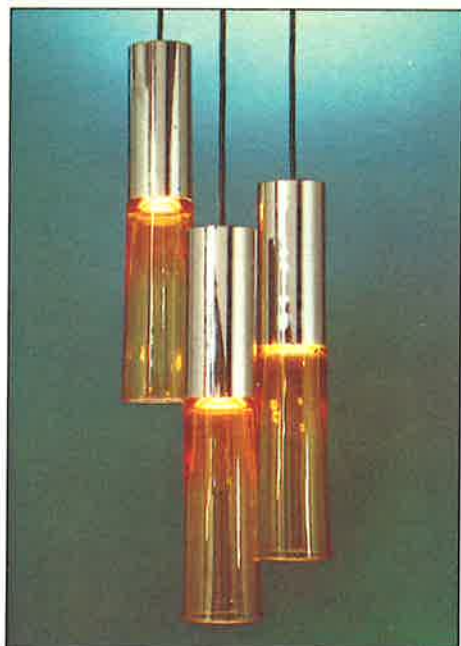
Range

Catalogue Number	Description	Lamp Watts	Weight kg	lb
DNM 1040	Ceiling mounted Police Light	40 mushroom	0.22	0.5
DNM 4600	BESA Box adaptor plate for DNM 1040	40 mushroom	0.04	0.1
DP 1040	Recessed Police Light	40 round bulb	0.22	0.5
AC 4124	Ceiling support bracket for DP 1040	40 round bulb	0.09	0.2



JCX 1060

Showing method of fixing to ceiling board



JCG3+JYA

Chelsea range

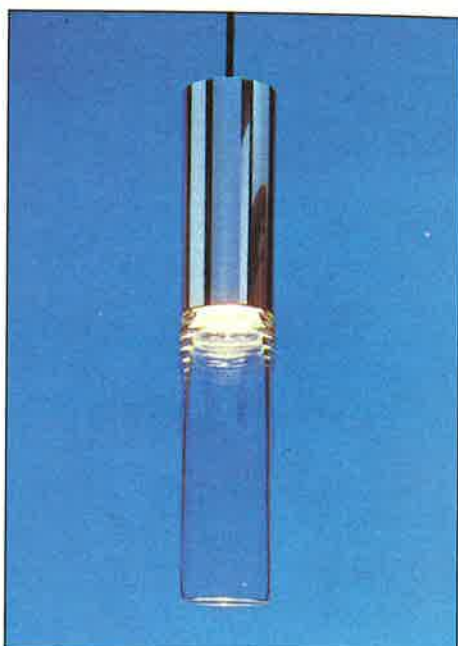
The sparkling handwrought glass is available in clear and amber in shapes that permit complete changes of lighting effect. Light is directed through the thick glass section from within a silver finish sleeve. Available for single or three-way suspension and matching wall bracket as well as recessing into the ceiling.* The Chelsea 40W reflector lamp is designed for use with these fittings.

Glasses

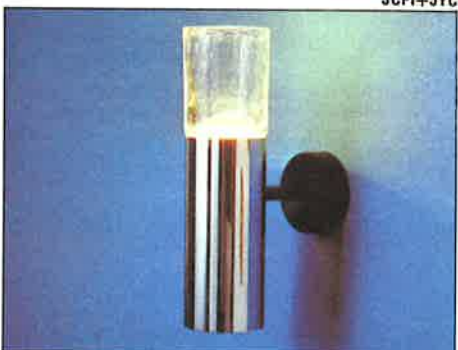
JZ glass. Available in clear or amber.

JY glass. The subtle colours are enhanced by the transmission of light through the glass itself, the lower end glowing with striking hues where the light is released. In clear or amber.

*Using the small recessed unit (Catalogue Number JCX 1080).



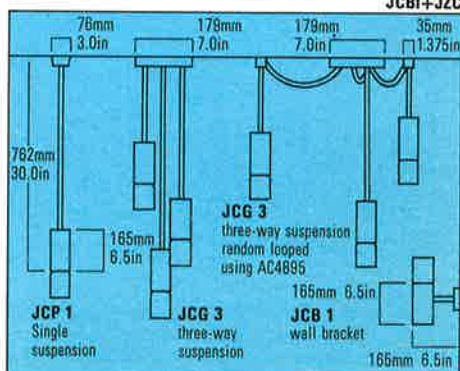
JCPI+JYC



JCBI+JZC

Range Glasses & suspension to be ordered separately.

Type	Catalogue Number	Description	Weight (ex glass and/or lamp)	
			kg	lb
Suspensions	JCP 1	Single pendant	0.23	0.5
	JCB 1	Wall bracket	0.23	0.5
	JCG 3	Three pendant group	1.36	3
	AC 4895	Cable suspension holder	—	—
Glasses	JZC	Clear	0.68	1.5
	JZA	Amber	0.68	1.5
	JYC	Clear	0.79	1.75
	JYA	Amber	0.79	1.75





XK 2040



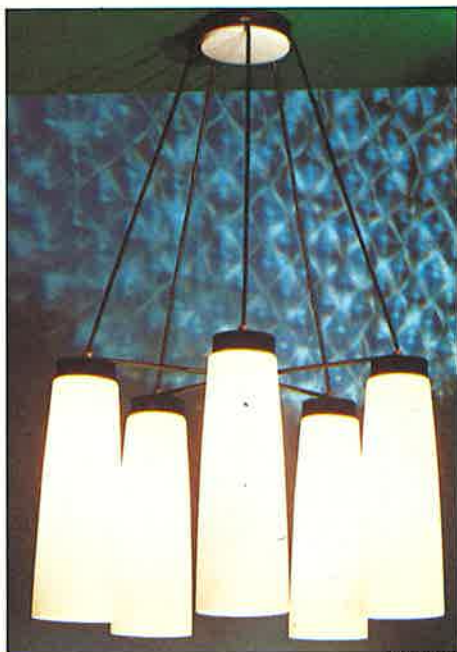
XJ 2040

Modern glass range

The Modern range of tungsten lighting fittings offers an interesting variety of glass diffusers. Both satin opal and clear crystal pattern glass have been used to fine effect, with surface treatment and texture giving qualities valuable for use in present-day interiors.

The link through this great variety is the suspension design with its distinctive black cap. Pendants—one, three and five-way—are arranged for straight drops, radiating arms or spreader assemblies and with wall brackets cover most applications. Nine glasses provide a wide scope for the interior designer. Two spherical glasses may be used in combination with certain cylindrical inner to create a richness of texture and colour.

Two ceiling fittings of crystal pattern glass supported in black finished metal framing complement the Modern range which is capable of varied and extensive use.



XS5+XU0



XLI+XDS

Range

Type	Description	Catalogue Number	Watts	Weight kg	lb
Glasses Single	Short crystal	XDS	100	0.57	1.25
	Short barrel	XZ0	100	0.23	0.5
	Long barrel	XY0	150	0.34	0.75
	Long U shaped	XU0	150	0.45	1
Complete ceiling fitting	Square	XJ 2040	2×40	3.15	7
	Round	XK 2040	2×40	2.25	5



XC3+XY0



XFL



XDO



XDC



XBC+XDC



XAT+XDO

Range Glasses and suspensions to be ordered separately

Glasses	Description	Catalogue Number	Watts (max)	Weight (ex lamp) kg lb
Outer	Bubbled sphere	XBC	150	1.59 3.5
	Twilight sphere	XAT	150	1.59 3.5
Inner or single	Long crystal	XDC	150	0.68 1.5
	Dimpled opal	XDO	150	0.68 1.5
	Plain cylinder	XFL	150	0.34 0.75



XJ 2040



XK 2040



XDS



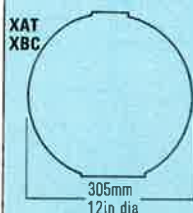
XYO



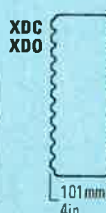
XZO



XUO



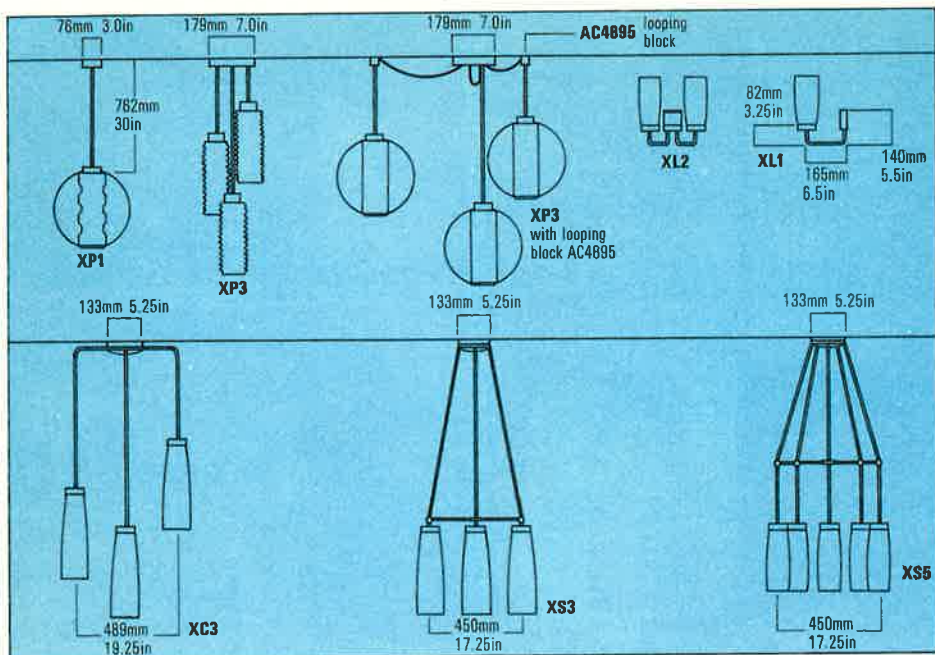
XAT
XBC



XDC
XDO



XFL



Modern suspensions

Range Glasses and suspensions to be ordered separately.

Glasses indicated are typical examples only

Type	Description	Catalogue Number	Weight (ex lamps)	
			kg	lb
Straight drop	Single	XP1	0.34	0.75
	3-way	XP3	1.36	3
Looping block		AC 4895		
Arm pendant	3-way	XC3	1.59	3.5
Spreader pendant	3-way	XS3	1.36	3
	5-way	XS5	1.81	4
Wall bracket	Single	XL1	0.57	1.25
	Twin	XL2	0.90	2



WXP3+WXGR



WXPI+WXGA

Junior modern

The Junior Modern range offers a low priced means of enjoying the charm of crystal style glass and giving decor that extra touch of luxury.

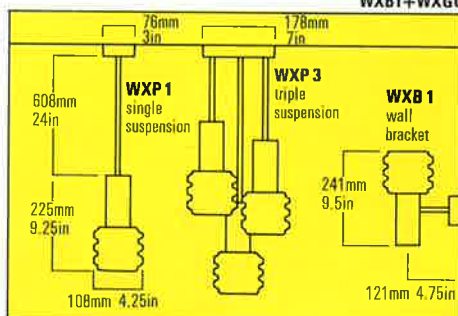
Colours available include amber and clear in a crystal pattern and orange and yellow flashed opal in the simple alternative style. These fittings can be used singly or in clusters over a dining table. A matching wall bracket is included in the range. Suspended on a black cable, the lampholder is shrouded in a silver finish shield. Glass packed complete with 60W lamp.

Range Glasses and suspensions to be ordered separately

Type	Catalogue Number	Description	Weight	
			kg	lb
Glasses	WXGA	Amber	0.4	0.875
	WXGC	Clear	0.4	0.875
	WXGY	Yellow flashed opal	0.4	0.875
	WXGO	White opal satin etched	0.4	0.875
	WXGR	Orange flashed opal	0.4	0.875
Suspensions	WXP 1	Single	0.45	1
	WXP 3	Triple	1.2	2.5
	WXB 1	Wall bracket	0.45	1



WXB1+WXGC





WJP 1040



WJB 1040

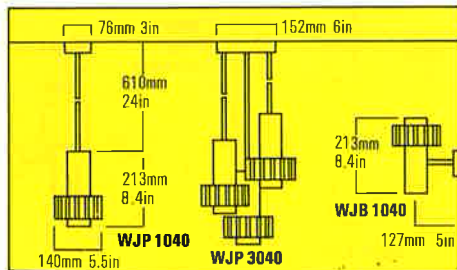
Junior Star

This range has been designed to create a sparkle in home lighting—at little cost. Junior Star produces its sparkle through a diffuser in the form of an externally ribbed tube made in clear acrylic. The light from a 40W candle lamp is transmitted by the diffuser over its fifteen ribs. Result: an edge-lit or sparkle effect that makes lighting a part of home decoration.

There are three different fittings in the Junior Star range, all inexpensively priced: single or triple way suspensions (WJP) and a wall bracket (WJB). The suspension fittings include black ceiling plates, flex and sateened and lacquered tubes. The wall bracket fittings are finished in matching shades. All three fittings come complete with a 40W candle lamp.

Range

Catalogue Number	Description	Weight kg	lb
WJP 1040	Single suspension	0.58	1.25
WJP 3040	Triple suspension	1.58	3.5
WJB 1040	Wall bracket	0.58	1.25
WJD	Spare diffuser	0.22	0.5



WJP 3040



WDB 1CP



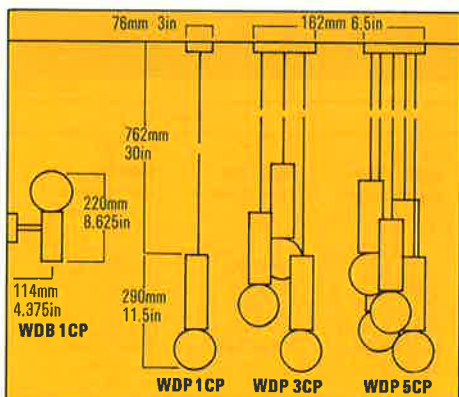
WDP 1CP

Droplette pendants

A comprehensive range of pendants with matching wall bracket for use with 60W and 40W Decor round lamps. Suspended on black cable from black ceiling plate fitted with cylindrical trim to lampholder in silver finish. Available in single, three or five way pendants or with matching wall bracket.

Range

Catalogue Number	Description	Weight	
		kg	lb
WDP 1CP	Single pendant with silver finish tube	0.3	0.75
WDP 3CP	Triple pendant with silver finish tube	1.25	2.75
WDP 5CP	Five way pendant with silver finish tube	1.6	3.5
WDB 1CP	Single wall bracket with silver finish tube	0.3	0.75



WDP 5CP



WLP 1100S

Link-lite

Link-lite 1

Using crystal styrene, this fitting achieves an effect that combines sparkling attractiveness with functional efficiency. As the light shines through the diffuser, the edges of the fins are strongly highlighted, forming a decorative pattern that completely surrounds the fitting. The suspension is fitted with a contrasting silver finish cylinder with a black cable assembly.

Supplied complete with 100W clear lamp. Registered design nos. 925530 and 925531.

Link-lite 2

Link-lite 2 uses a 150W clear lamp to provide higher illumination without loss of form or sparkle. Available as a single pendant on a 762mm/30in length of black cable giving an overall drop of 1041mm/41in. Fitted with a reversible lampholder support which permits the use of a 100W lamp while maintaining the same light centre as the 150W lamp.

Supplied complete with 150W clear lamp. Registered design no. 939,946. Winner of ELFA award for good design.

Link-lite 3

Link-lite 3 is the third member of the Link-lite family. Packed in decorative carton with black cable; suspension fully assembled and fitted in contrasting brushed and lacquer aluminium cylinder. In a separate compartment are 14 fins and two mounting rings with easy to follow instructions for assembly of diffuser. Supplied complete with 100W clear lamp. British Patent No. 1312213.



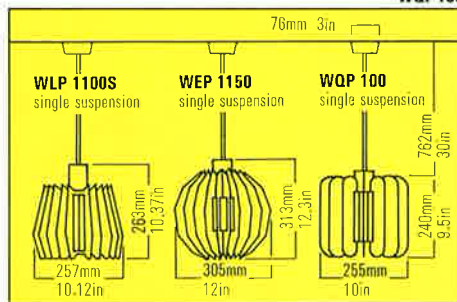
WEP 1150



WQP 100

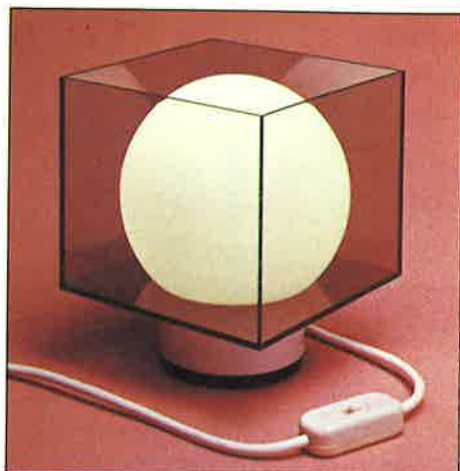
Range

Catalogue Number	Description	Lamp Cap	Lamp Watts	Weight kg	Weight lb
WLP 1100S	Link-lite 1 single suspension	BC	100	1.6	3.625
WEP 1150	Link-lite 2 single suspension	BC	100/150	1.8	4.0
WQP 100	Link-lite 3 single suspension	BC	100	0.92	2.06





WM 100A

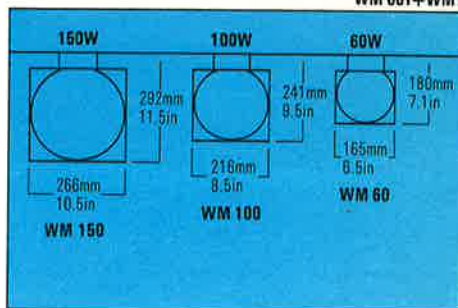


WM 60T+WM1

Cube light

An attractive range of decorative lighting fittings of classic simplicity. The Cube light range is built round a satin etched white opal screw neck sphere to which is added an acrylic cube outer in twilight or amber colour. Direct mounting to wall or ceiling is by a white plastic heat resistant gallery. This colourful range of decorative units is available in 60W, 100W and 150W lamp sizes as single units but equally attractive arrangements can be created by having regular or abstract patterns of cubes scattered on the ceiling.

These units have a wide range of applications in the home, hotel or restaurant. Also available is a table stand adaptor complete with cable and switch which can simply be added to any size of cube when a table lamp is required.



Range

Catalogue Number	Watts	Colour	Weight (ex lamp)	
			kg	lb
WM 60A	60	Amber	0.9	2
WM 60T	60	Twilight	0.9	2
WM 100A	100	Amber	1.59	3.5
WM 100T	100	Twilight	1.59	3.5
WM 150A	150	Amber	2.49	5.5
WM 150T	150	Twilight	2.49	5.5
WM1	Table stand adaptor		0.23	0.5



TPAS 100RD



WZA 100S

Modern adjustable pendants

Pumpkin

Modern in appearance, the Pumpkin shape reflector is spun in aluminium and painted in two colour finishes: one is a richly toned red outside and white inside and the other all white.

Suspended on contrasting black curly cable carried from a ceiling-mounted rise and fall unit with black cover providing ample height adjustment for hanging low over a table or high for general illumination. Designed for use with a 100W pearl lamp but when used with a 40W crown silvered Decor round lamp the silvered front adds to the decor of the fitting.

WZA

A superior quality adjustable pendant in two shade finishes: spun copper, polished and lacquered; and spun aluminium, brushed and lacquered*. Complete with white plastic concentric louvre suspended on black cable from ceiling-mounted rise and fall unit having black cover. Suitable for use with 100W lamp.

*Both with white painted reflectors.

WAM

A multi-purpose pendant fitting instantly adjustable to any convenient height by means of a ceiling mounted rise and fall unit. The reflector of spun aluminium is available finished in a variety of colours including brushed and lacquered amber, silver and brass. A stove enamelled white reflector is also available. All fittings are suspended on contrasting black cable carried from a black ceiling cover. An opal cylindrical inner ensures well diffused light. The lampholder has a contrasting silver finish surround.

WAR

Rise and fall suspension unit only.

Range

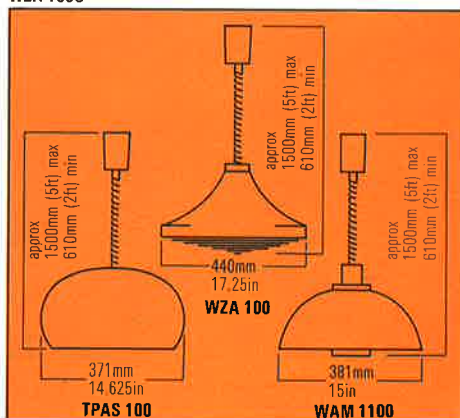
Catalogue Number	Description	Lamp Watts	Weight kg	Weight lb
TPAS 100RD	Pumpkin shape shade with red outside and white inside	100	0.9	2
TPAS 100W	Pumpkin shape shade with white outside and inside	100	0.9	2
WAM 1100S	Brushed silver shade with opal cylinder	100	1.6	3.6
WAM 1100A	Amber shade with opal cylinder	100	1.6	3.6
WAM 1100LB	Brushed and lacquered brass shade with opal cylinder	100	1.6	3.6
WAM 1100W	White shade with opal cylinder	100	1.6	3.6
WZA 100C	Adjustable pendant with flared copper reflector and white louvre	100	2.8	6.25
WZA 100S	Adjustable pendant with flared brushed silver reflector and white louvre	100	1.9	4.25
WAR	Rise and fall suspension unit	—	—	—



WZA 100C



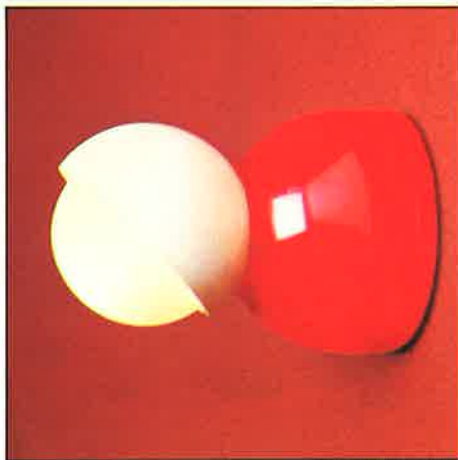
WAM 1100LB



WAM 1100W



DRP 40R



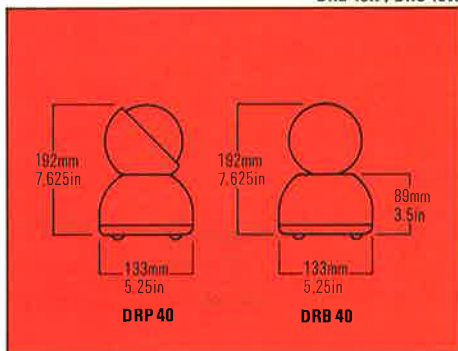
DRB 40R+DRC 40W

Dolly light

A versatile plastic moulded base for use with the 40W Decor 100mm round lamp. Moulded in polycarbonate and practically unbreakable. Available in two colours—red or white. A matching cowl partly to shroud lamp is available as an optional extra or is included in 'complete' pack. Suitable for wall or ceiling mounting as well as a table lamp. Wired switched lead also included in 'complete' pack. Packed in decorative carton.

Range

Catalogue Number	Description	Weight	
		kg	lb
DRP 40R	Basic pack comprising red moulded base and cowl wired with switched lead complete with 40W silverlight lamp	0.567	1.25
DRP 40W	Basic pack comprising white moulded base and cowl wired with switched lead complete with 40W silverlight lamp	0.567	1.25
DRB 40R	Red base only complete with 40W silverlight lamp	0.288	0.625
DRB 40W	White base only (lamp not included)	0.227	0.5
DRC 40R	Red cowl	0.113	0.25
DRC 40W	White cowl	0.113	0.25
DHS 40	Switched lead assembly	—	—





WY 1060RD WG 1060W WO 1060R

Occasional and ceramic based lamps

Occasional lamp

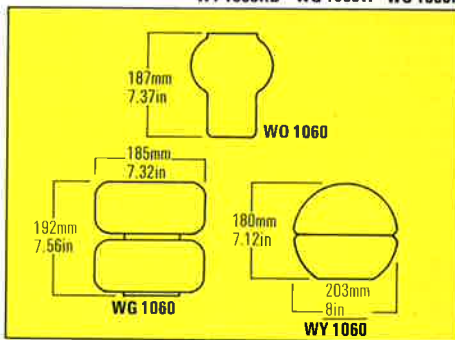
The orange or white flashed opal glass completely encloses a BC lampholder. The fitting is packed complete with a white flexible torpedo switch and a 60W lamp.

Ceramic based lamp

The orange or white flashed opal glass completely encloses the lamp and is mounted on a white ceramic base. This fitting is packed complete with a white flexible torpedo switch and a 60W lamp.

Yo-Yo lamp

A two part glass table lamp in white flashed opal with alternative base in red colour glass. Wired complete with ample length of white cable and torpedo switch. Packed with 60W pearl lamp.



Range

Catalogue Number	Colour
WO 1060R	Orange opal
WO 1060W	White opal
WG 1060W	White opal
WG 1060R	Orange
WY 1060RD	White top, red base
WY 1060W	All white



Surface mounted WH 60

Modern domestic cylinders

WH 60 is a high quality surface mounted cylinder in a brushed silver finish with low brightness baffles to eliminate glare. It provides the basic functional lighting to modern standards but with visual comfort: the solution to many lighting problems. Packed complete with 60W GLS lamp with clip-on auxiliary reflector. If the fitting is required to be recessed into the ceiling a bezel WR 60 can be used. This bezel is fitted with spring clips which hold the cylinders firmly yet permit projection to be adjusted with no effort. The WR 60 can be fitted from below using simple quick fix clips.

Range

Catalogue Number	Description	Weight kg	lb
WH 60	Ceiling cylinder	0.57	1.25
WR 60	Adjustable bezel ring	0.11	0.25



Semi-recessed WH 60 using WR 60



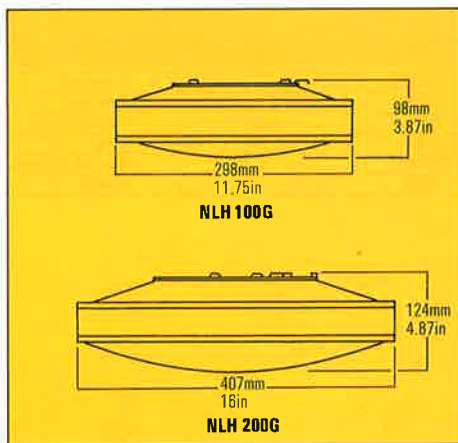
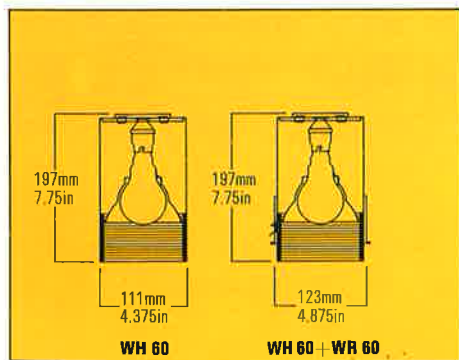
NLH 100G

Novelle

The Novelle fitting consists of a very shallow satin opal glass (NL 100 and NL 200) and gallery to which has been added a decorative gold fabric trim. It is designed to take one or two 100W lamps. The glass shade and gallery are for direct ceiling mounting by means of screws on standard 51mm (2in) centres.

Range

Catalogue Number	Colour	Lamp Watts	Glassware	Gallery	Trim
NLH 100G	Gold	100	NFG 100	NCB 100	NLHT 100G
NLH 200G	Gold	2 x 100	NFG 200	NCB 200	NLHT 200G





TD 150



TBSR 150



TDFR 150

Darklight/Downlight cylinder and recessed fittings*

Surface mounted cylinder

A brushed and lacquered cylinder with contrasting black ceiling plate. An elegant fitting designed to enhance entrances, foyers and lounges and any application calling for comfortable pools of glare-free light.

A suspension rod and plate (GM 6113/18/B and TDSU) is available to suspend this fitting 457mm (18in) from ceiling.

Fully recessed fitting

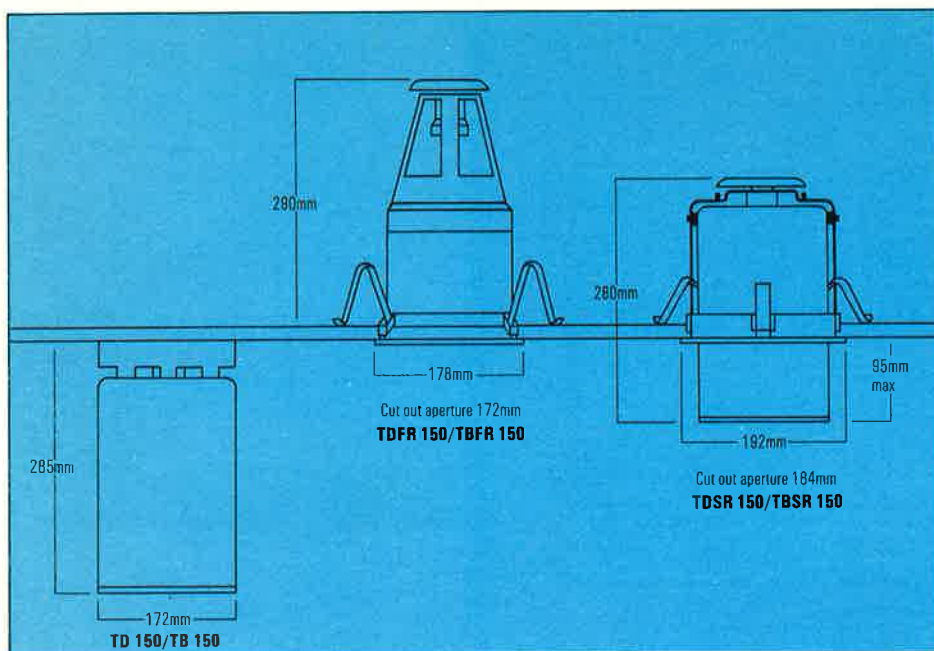
The fully recessed fitting complements the other cylinders in the range with the white ceiling ring being the only visible component. A hood is available to seal the fitting in ceiling voids where air is being handled, the maximum wattage with the hood in place is 60W.

Semi-recessed fitting

This variable depth recessed fitting will fit into restricted ceiling voids and give a similar lighting effect to the fully recessed version. Contrasting visual effects can be obtained by altering the amount of protrusion from the ceiling.

3 straps (TDPS) are available for fitting the ceiling ring of the recessed fittings into wet plaster ceilings.

**Downlight types have black ribbed baffles and the Darklight plain black reflectors.*



Range

Catalogue Number	Description	Weight kg	lb
TD 150	Darklight surface mounted cylinder	1	2.2
TB 150	Downlight surface mounted cylinder	1	2.2
GM 6113/18/B	460mm (18in) suspension set	—	—
TDSU	Suspension plate	—	—
TDFR 150	Darklight fully recessed fitting	1.75	3.9
TBFR 150	Downlight fully recessed fitting	1.75	3.9
TOPS	Wet plaster strap	—	—
TDHO	Hood	—	—
TDSR 150	Darklight semi-recessed fitting	1.5	3.3
TBSR 150	Downlight semi-recessed fitting	1.5	3.3

Lamps

Surface mounted cylinder



150W max PAR 38
NOT Cool-Ray



E27 (ES) 100W max GLS
with TPA 100 reflector



100W max interior
display reflector

Semi recessed fitting



150W max PAR 38
not Cool-Ray



E27 (ES) 100W max GLS
with TPA 100 reflector



150W max interior
display reflector

Fully-recessed fitting



150W max PAR 38
including Cool-Ray



E27 (ES) 150W max GLS
with VA 150 reflector



150W max interior
display reflector



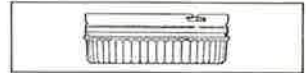
Suspended



Semi-recessed



Surface mounted



Satin etched opal bowl

Plastic louvre

Clear crystal glass dish

VC 100

A range of units in spun aluminium is available, natural anodized or painted black, to accommodate a 100W internally silvered lamp, 100W GLS lamp with VA 100 auxiliary reflector or 80W Kolorlux lamp using VA 150 auxiliary reflector. Three separate mountings can be achieved from the one basic unit:

(a) Suspended, by using

GM61131/18/B suspension rod.

(b) Semi-recessed, when used in conjunction with ceiling ring assembly (Catalogue no. VCM 100).

(c) Surface mounted, by fixing direct to the ceiling.

Three attachments are available, a satin etched opal bowl, a plastic louvre and a clear crystal glass dish.

Kolorlux lamps can be used on a c. circuits only and each lamp must be controlled by a ballast circuit.

The VCM 100 for semi-recessing requires a ceiling hole of 180mm/7in.

Basic unit

Catalogue no.	Watts	Finish
VC 100A	100	Natural anodized
VC 100B	100	Black painted
VC 100AES	80 Kolorlux	Natural anodized*
VC 100BES	80 Kolorlux	Black painted*

Dimensions of complete fitting

	Catalogue no.	Cap	Finish	Height		Diameter		Weight (ex lamp)	
				mm	in	mm	in	kg	lb
Satin etched opal bowl	VCZ 100A	BC	Anodized	301	11.87	162	6.37	1.1	2.5
	VCZ 100B	BC	Black	301	11.87	162	6.37	1.1	2.5
	VCZ 100AES*	ES	Anodized	301	11.87	162	6.37	1.1	2.5
	VCZ 100BES*	ES	Black	301	11.87	162	6.37	1.1	2.5
Plastic louvre†	VCL 100A	BC	Anodized	289	11.37	162	6.37	0.8	1.75
	VCL 100B	BC	Black	289	11.37	162	6.37	0.8	1.75
Clear crystal glass dish	VCX 100A	BC	Anodized	311	12.25	162	6.37	2.1	4.75
	VCX 100B	BC	Black	311	12.25	162	6.37	2.1	4.75
	VCX 100AES*	ES	Anodized	311	12.25	162	6.37	2.1	4.75
	VCX 100BES*	ES	Black	311	12.25	162	6.37	2.1	4.75

†Not available for use with Kolorlux lamp.

*Available to customer's orders only.

Recessed fittings



Plastic louvre



Clear crystal glass dish



Large satin etched opal glass bowl



Small satin etched opal glass bowl



Pin-hole attachment.
Combination of two reflectors concentrates light from upper reflector through lower reflector past a very small aperture (only 70mm/2.75in) to produce a wide angle beam.
Spun aluminium construction, finished eggshell white to match ceiling.



Basic units VR 100 and VR 100ES

1 x 100W and 1 x 80W Kolorlux recessed units in spun anodized aluminium with a polished rim. Adjustable support brackets are provided enabling quick fixing. These are attached from within the fitting, out of sight.

RANGE

Catalogue no.	Watts
VR 100	100
VR 100ES	80 Kolorlux

Kolorlux lamps can be used on a.c. circuits only and each lamp must be controlled by a ballast circuit.

Five attachments are available, each fitted with its own support ring, and are fitted to the basic unit via three bayonet slots.

ceiling hole size: 184.1mm 7.25in



Dimensions of complete fitting

	Catalogue no.	Watts	Protrusion below ceiling		Weight (exlamp)	
			mm	in	kg	lb
Plastic louvre†	VRL 100	100	20	0.75	0.45	1
Pin-hole attachment	VRP 100	100	0	0	0.79	1.75
Clear crystal glass dish	VRX 100	100	30	1.25	1.7	3.75
	VRX 100ES*	80 Kolorlux	30	1.25	1.7	3.75
Large satin etched opal glass bowl	VRY 100	100	50	2.0	1.02	2.25
	VRY 100ES*	80 Kolorlux	50	2.0	1.02	2.25
Small satin etched opal glass bowl	VRZ 100	100	20	0.75	0.68	1.5
	VRZ 100ES*	80 Kolorlux	20	0.75	0.68	1.5

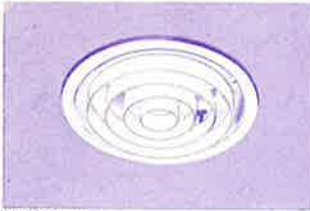
Attachments

	Catalogue no.
Plastic louvre†	VL 100
Pin-hole attachment	VP 100
Clear crystal glass dish	VX 100
Large satin etched opal glass bowl	VY 100
Small satin etched opal glass bowl	VZ 100

*Available to customer's orders only.

†Not available for use with Kolorlux lamp.

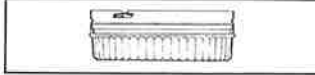
Recessed fittings



Plastic louvre



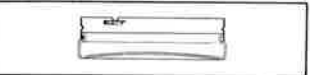
Clear crystal glass dish



Large satin etched opal glass bowl



Small satin etched opal glass bowl



'O' lighter attachment



'O' lighter attachment

An annular slot with a centre disc results in a glare free light of narrow distribution. Spun aluminium construction, finished eggshell white to match ceiling.

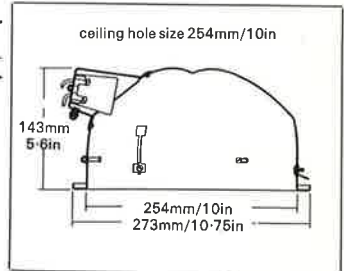
Basic Unit VR 200

1 x 200W GLS and 1 x 125W Kolorlux recessed units of spun anodized aluminium construction with a polished rim. Adjustable support brackets are provided enabling quick fixing to all types of suspended ceiling to be achieved. These are attached from within the fitting, are out of sight and eliminate the need for any other fixings.

RANGE

Catalogue no.	Cap	Watts	
VR 200	ES	200/125	Kolorlux

Five attachments are available, each fitted with its own support ring, and are fitted to the basic unit via three bayonet slots.



Dimensions of complete fitting

	Catalogue no.	Watts	Protrusion below ceiling		Weight (ex lamp)	
			mm	in	kg	lb
Plastic louvre†	VRL 200	200	20	0.7	0.57	1.25
'O' lighter attachment†	VR0 200	200	0	0	1.02	2.25
Clear crystal glass dish	VRX 200	200/125 Kolorlux	35	1.4	2.15	4.75
Large satin etched opal glass bowl	VRV 200	200/125 Kolorlux	45	1.9	1.43	3.15
Small satin etched opal glass bowl	VRZ 200	200/125 Kolorlux	20	0.8	1.13	2.5

Attachments

	Catalogue no.
Plastic louvre†	VL 200
'O' lighter attachment†	VO 200
Clear crystal glass dish	VX 200
Large satin etched opal glass bowl	VY 200
Small satin etched opal glass bowl	VZ 200

†Not available for use with Kolorlux lamp.

Surface-mounted fittings



Plastic louvre



Small satin etched opal glass bowl



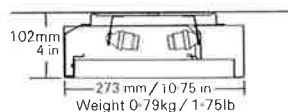
Clear crystal glass dish

Basic Units VS 2060

Surface mounting spun aluminium ceiling fittings in natural anodized and black painted finishes. Cable

entry and fixing holes suitable for 51mm/2in Besa box centres are provided. All fittings are supplied complete with BC lampholders.

Catalogue no.	Watts	Finish
VS 2060A	2 x 60	Natural anodized
VS 2060B	2 x 60	Black painted



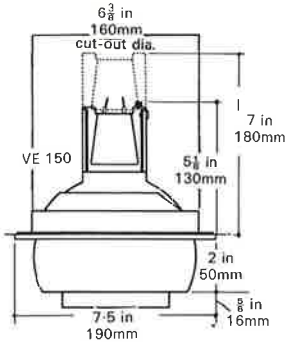
Attachments are fitted to the basic unit by three bayonet slots.

Dimensions of complete fitting

	Catalogue no.	Height		Diameter		Weight (ex lamps)	
		mm	in	mm	in	kg	lb
Plastic louvre	VSL 2060A	120	4.75	273	10.75	0.91	2
	VSL 2060B	120	4.75	273	10.75	0.91	2
Clear crystal glass dish	VSL 2060A	139	5.5	273	10.75	2.49	5.5
	VSL 2060B	139	5.5	273	10.75	2.49	5.5
Small satin etched opal glass bowl	VSL 2060A	120	4.75	273	10.75	1.47	3.25
	VSL 2060B	120	4.75	273	10.75	1.47	3.25

Attachments

	Catalogue no.	Watts
Plastic louvre	VL 200	2 x 60
Clear crystal glass dish	VX 200	2 x 60
Small satin etched opal glass bowl	VZ 200	2 x 60



150W I/S SPOT
and VEL 150



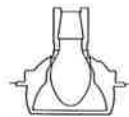
150W I/S SPOT
or FLOOD



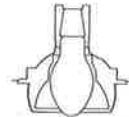
100W I/S SPOT



150W GLS
and VA 150



80W KOLORLUX
and VA 150



125W KOLORLUX
and VA 150



150W PAR 38 SPOT



100W GLS
and VA 100

VE 150 adjustable eyeball spotlight

Semi-recessed eyeball spotlight fitting fully adjustable in all directions providing emphasis lighting from an inconspicuous source. An adjustable lampholder support permits the use of a wide range of lamps while maintaining the correct light centre.

Supplied complete with Porcelain ES lampholder wired with glass braided flying leads. For use with lamp as shown in the line drawings above. If Kolorlux lamps are used, control gear must be remotely mounted.

Three hole fixing is provided to the ceiling ring which is concealed by polished anodised aluminium trim when in position. Body is stove enamelled black or white.

Black painted clip-on louvre Catalogue no. VEL 150



British Pat.
1,199,890

VE 150



VELV 50/W

	Catalogue no.	Colour	Weight	
Eyeball fitting	VE 150/B	Black	0.45	1.0
	VE 150/W	White		
Louvre attachment	VEL 150		0.05	0.2
100W Auxiliary reflector	VA100		0.028	0.06
150W Auxiliary reflector	VA 150		0.056	0.12

A similar fitting to accept a 12V 50W M32 tungsten halogen lamp is also available. These fittings require a remotely mounted transformer TRF 2338F detailed under Low Voltage Spotlights (page 198).

Fitting		Weight		Cut-out in (dia.)
Catalogue no.	Colour	kg	lb	
VE LV50/B	Black	0.45	1	6.375
VE LV50/W	White	0.45	1	6.375

Low voltage spotlights



DAS 1050

This fitting consists of a neat lampholder housing mounted on a 102mm/4in pillar providing complete universal adjustment. The housing is locked into position by a simple clamping screw. A 12V 50W

internally silvered, parabolic shaped lamp, with ES cap, is used which gives a narrow beam of light of high intensity. The small size of the fitting enables it to be concealed easily, either within a display or behind features in a window or room.

Catalogue no.	Diameter (lamp dia.) mm in		Overall length (incl. lamp) mm in		Pillar height mm in		Weight (ex lamp) kg lb	
DAS 1050	64	2.5	114	4.5	102	4	0.17	0.375



DCS 1050

In order to provide a compact and adjustable light source, the unit has a cylindrical mask, with the result that both the lamp and lampholder are completely enclosed. A 12V 50W internally silvered, parabolic shaped

lamp, with ES cap, is used giving a narrow beam of light of high intensity. As with other items in this series of display fittings, the clamp and pillar assembly provide universal adjustment.

Catalogue no.	Diameter mm in		Overall length mm in		Pillar height mm in		Weight (ex lamp) kg lb	
DCS 1050	76	3	146	5.75	102	4	0.3	0.5

Lamp for DAS 1050 and DCS 1050

Reference no.	Watts	Description	Volts
11-7014	50	Internally silvered parabolic shaped ES.	12



Transformer

It is necessary with all low voltage fittings to use a specially designed transformer to provide the correct working voltage to the lamp. Details

of this transformer are given below together with the catalogue number of the fitting for which it has been designed.

Catalogue no.	Primary tapping	Sec. out-put	Length mm	in	Width mm	in	Height mm	in	Weight kg	lb	For use with
TRF 2338F	240V	12V	108	4.25	76	3	92	3.63	1.9	4.25	1 DAS 1050 1 DCS 1050 1 VE LV50/W 1 VE LV50/B

Fixing holes for TRF 2338F: four holes 5mm/0.1875in diameter on 70 x 57mm/2.75 x 2.25in centres.

Each of the low voltage fittings illustrated in this catalogue is wired complete with 1829mm/6ft of high temperature cable. Any variation in this length will result in loss of efficiency or premature lamp failure.

This versatile range of glassware has been specially designed to meet the demand for new and interesting shapes to cater for a wide variety of applications in modern interiors.



	A		B	
	mm	in	mm	in
NC 100	102	4	203	8
NC 200	127	5	356	14

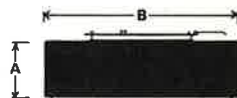


NC Two sizes of round white satin etched glasses, with lever-release galleries for mounting directly on to walls and ceilings.

Fitting Catalogue no	Watts	Cap	Glassware Catalogue no	Gallery Catalogue no	Weight (ex lamps)
NC 100	100	BC	NCG 100	NCB 100	0.79 1.75
NC 200	2×100	BC	NCG 200	NCB 200	1.02 2.25



	A		B	
	mm	in	mm	in
NCA 100	85	3.37	225	8.87
NCA 200	105	4.12	381	15.0



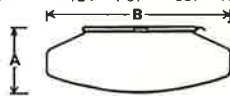
NCA Two sizes of metal trim, finished in a lacquered gun-metal colour, to fit on to horizontally mounted NC and ND fittings.

Catalogue no	For use on	Weight kg	lb
NA 100	NC 100, ND 100, ND 100 ES	0.11	0.25
NA 200	NC 200, ND 200 ES	0.46	1.00

NOTE: Trims are to be ordered separately.



	A		B	
	mm	in	mm	in
NL 100	98	3.87	279	11
NL 200	124	4.87	387	15.25

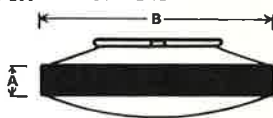


NL Two sizes of round white satin etched glasses with lever release galleries for mounting directly on to walls and ceilings.

Fitting Catalogue no	Watts	Cap	Glassware Catalogue no	Gallery Catalogue no	Weight (ex lamps)
NL 100	100	BC	NFG 100	NCB 100	1.13 2.5
NL 200	2×100	BC	NFG 200	NLB 200	1.81 4.0



	A		B	
	mm	in	mm	in
NLT 100	48	1.87	282	11.12
NLT 200	54	2.12	390	15.37



NLT Two sizes of black painted metal trims to fit on to horizontally mounted NL and NF fittings.

Catalogue no	For use on	Weight kg	lb
NT 100	NL 100, NF 100, NF 100 ES	0.11	0.25
NT 200	NL 200, NF 200 ES	0.17	0.37

NOTE: Trims are to be ordered separately.

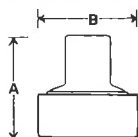
Nova Range

ND Two sizes of round white satin etched glasses, complete with flanged cap galleries for ceiling or rod suspension. The smaller type is also available with an ES lampholder for KOLORLUX lamps; the larger type will accept either GLS or KOLORLUX lamps. Kolorlux lamps require control gear.



ND 100
ND 200

A	in	B	in
mm		mm	
210	8.25	203	8.0
257	10.12	356	14.0



Fitting	Watts	Cap	Glassware	Gallery	Weight (ex lamps)
Catalogue no			Catalogue no	Catalogue no	kg lb
ND 100	100	BC	NCG 100	NFB 100	0.91 2.0
*ND 100 ES	80 K	ES	NCG 100	NFB 100 ES	0.91 2.0
ND 200 ES	200 GLS	ES	NCG 200	NFB 200 ES	1.59 3.5
	125 K				

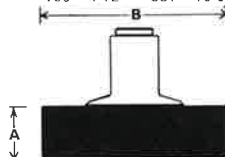
*NOTE: made to customers special order.

NDA Two sizes of metal trim, finished in a lacquered gun-metal colour, to fit on horizontally mounted ND and NC fittings.



NDA 100
NDA 200

A	in	B	in
mm		mm	
85	3.37	225	8.87
105	4.12	381	15.0



Catalogue no	For use on	Weight kg lb
NA 100	ND 100, ND 100 ES, NC 100	0.11 0.25
NA 200	ND 200 ES, NC 200	0.45 1.00

NOTE: Trims are to be ordered separately.

NF Two sizes of round white satin etched glasses, complete with flanged cap galleries for ceiling or rod suspension. The smaller type is also available with an ES lampholder for KOLORLUX lamps; the larger type will accept either GLS or KOLORLUX lamps. Kolorlux lamps require control gear.



NF 100
NF 200

A	in	B	in
mm		mm	
216	8.5	279	11.00
254	10.0	387	15.25



Fitting	Watts	Cap	Glassware	Gallery	Weight (ex lamps)
Catalogue no			Catalogue no	Catalogue no	kg lb
NF 100	100	BC	NFG 100	NFB 100	1.02 2.25
*NF 100 ES	80 K	ES	NFG 100	NFB 100 ES	1.02 2.25
NF 200 ES	200 GLS	ES	NFG 200	NFB 200 ES	1.81 4.00
	125 K				

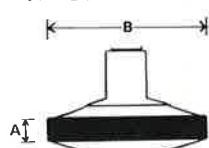
*NOTE: made to customers special order.

NFT Two sizes of black painted metal trims to fit on to horizontally mounted NF and NL fittings.



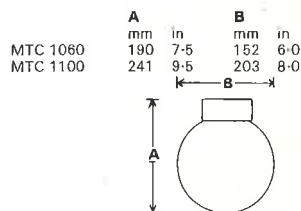
NFT 100
NFT 200

A	in	B	in
mm		mm	
48	1.87	282	11.12
54	2.12	390	15.37



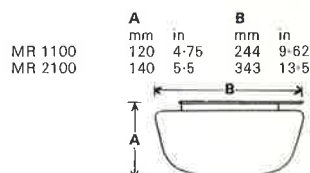
Catalogue no	For use on	Weight kg lb
NT 100	NF 100, NF 100 ES, NL 100	0.11 0.25
NT 200	NF 200 ES, NL 200	0.17 0.37

NOTE: Trims are to be ordered separately.



MTC Two sizes of polished opal white glass spheres, screw neck, complete with heat resistant white plastic galleries for mounting directly on to walls or ceilings.

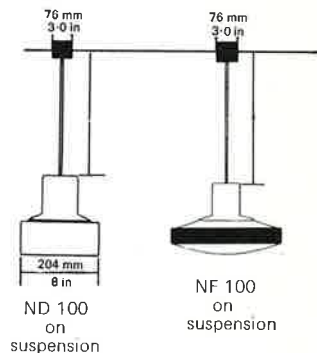
Fitting Catalogue no	Watts	Cap	Glassware Catalogue no	Gallery Catalogue no	Weight (ex lamps)	
					kg	lb
MTC 1060	60	BC	MTCG 1060	MTCB 1060	0.68	1.5
MTC 1100	100	BC	MTCG 1100	MTCB 1100	0.79	1.75



MR Two sizes of round, polished opal white glasses complete with lever release galleries for mounting directly on to walls and ceilings.

Fitting Catalogue no	Watts	Cap	Glassware Catalogue no	Gallery Catalogue no	Weight (ex lamps)	
					kg	lb
MR 1100	100	BC	MRG 1100	NCB 100	1.02	2.25
MR 2100	2x100	BC	MRG 2100	NCB 200	1.81	4.00

GM6113/18/B As an alternative to direct ceiling fixing a 13mm/0.5in black suspension rod set is available for the ND and NF fittings. The rod length is 457mm/18in.

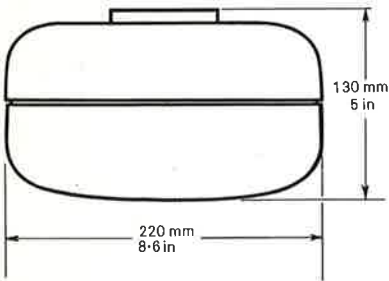
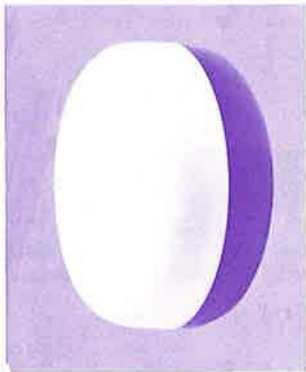
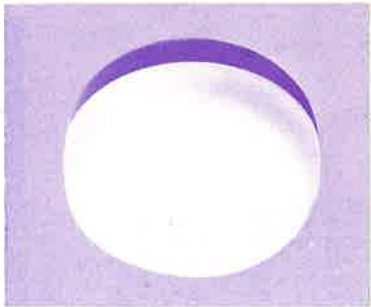


Oyster

An all-purpose totally enclosed unit for wall or ceiling mounting. Manufactured in two tone polycarbonate. Grey body, opal front diffuser – it is virtually unbreakable, corrosion resistant and vandal proof. A fitting that will be equally at home in the bathroom, kitchen or corridor as it would under a porch, in a garage or a walkway. By means of a "Snap Together" action the front diffuser is removed with the aid of a coin, simplifying the relamping and cleaning operation. The fitting has an internal reflector.

The porcelain lamp holder is pre-wired with high temperature flying leads for ease of installation. For outdoor use a foam rubber gasket is available for fixing at rear of fitting at the point of contact with wall or ceiling.

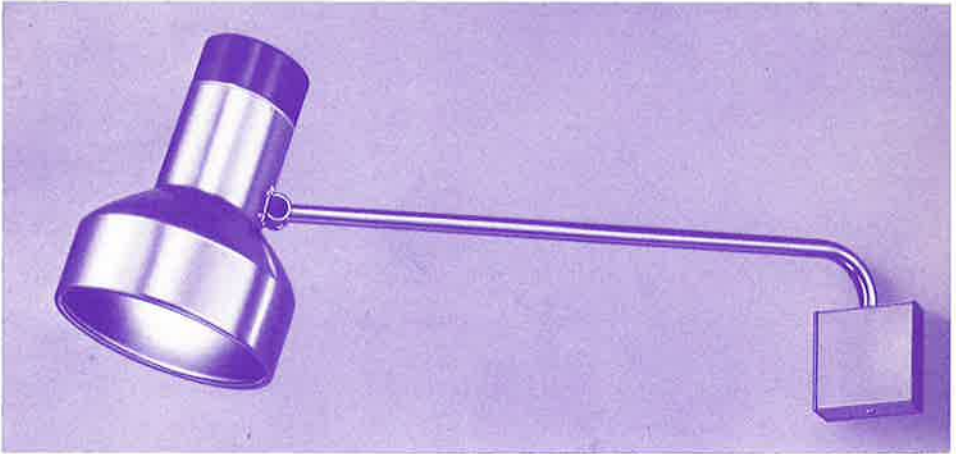
Designed for use with 60W pearl BC lamp it is packed in a decorative carton complete with lamp. Emergency version is also available.



RANGE

Catalogue no.	Description	Lamp watts	Weight	
			kg	lb
O.OY60	Wall/Ceiling Mounting Unit	60	0.68	1.5
O.OY4600	Gasket			

Hospital low brightness fitting



OE 0 1060 adjustable wall fitting

OE 0 1060 adjustable wall fitting

Wall fitting for local lighting where function and appearance are important. The efficient design — about 300 lux 1.2m/4ft away using a 60W lamp — permits bed head lighting wall mounted between 1.5m/5ft and 1.8m/6ft from floor. Carefully controlled reflector brightness provides comfortable conditions for opposite and adjacent patients. The reflector is of spun aluminium satin etched and anodized, supported by an anodized duraluminium rod mounted on a cast aluminium back plate stove enamelled BS.9.098.

Horizontal adjustment is obtained through an angle of approximately 160° and vertical through an angle of 20° either side. Wired complete with BC lampholder to accommodate one 60W lamp. Arranged for Besa mounting.

OE 1 0075 adjustable wall fitting

Matches OE 0 1060 but fitted with switch light with push switch control. Made to order only.

RANGE

Catalogue no.	Diameter		Height		Weight (ex lamp)		Projection to centre of reflector	
	mm	in	mm	in	kg	lb	mm	in
OE 0 1060 OE 1 0075 }	161*	6.3*	216†	8.5†	0.8	1.75	470	19.5

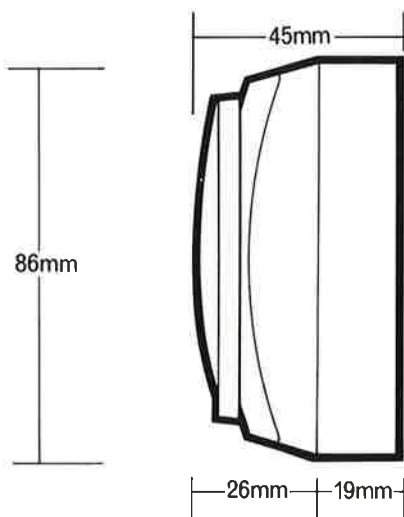
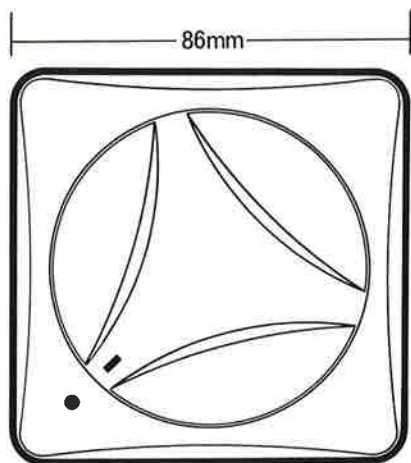
*Reflector diameter. †Reflector height.

Mini-Dimmer for incandescent lamps

The Mini-Dimmer is a solid state device designed to produce smooth, reliable, and economic dimming of incandescent lamps up to 300W total load on 200/250V 50 Hz supplies.

This dimmer may be substituted directly for any single pole on-off switch mounted on a standard $3\frac{3}{8}$ in (86mm) sq switch plate. A special mounting frame is supplied with each dimmer for use with "plaster-depth" or other shallow switch boxes.

Suppression against interference on radio and television is provided within the unit.



Catalogue no.

Capacity

SS300

300W—GLS lamps: 150W—candle lamps, reflector lamps, tungsten-halogen lamps

Introduction

Founded on 30 years of design innovation and practical experience, the Thorn Theatre Lighting Division is an unchallenged leader not only in the stage lighting field but in virtually every aspect of illumination and its control. Purpose-built control equipment is available for everything from a simple window display to the most elaborate theatre or television studio complex. The advanced design technology ensures trouble-free installation, ease of operation and exceptional long-term reliability. The commercial engineers engaged on Thorn Theatre Lighting projects are not only fully qualified technically, but have the experience and artistic flair to contribute creatively in the

design and operation of lighting for theatre presentations of all kinds. A Planning and Advisory service is available, making possible the closest consultation at all levels in the design of controlled lighting systems in any kind of new or existing building or structure.

A specialised function of the Theatre Lighting Division stems from its many years of experience of stage, studio and auditorium equipment of all kinds. Complete familiarity with the installation of its own and other manufacturers' equipment enables the Division to take full responsibility in the role of principal contractor for the co-ordination of large scale projects involving the work of outside suppliers and manufacturers.

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Industrial, commercial and auditorium dimming

Series H Individual Dimmer Units

Series H dimmer units are available in two versions, prefixed 'T' and 'F'. The former are for dimming tungsten or tungsten halogen lamp loads and the latter for fluorescent lamp loads. Maxima are shown below.

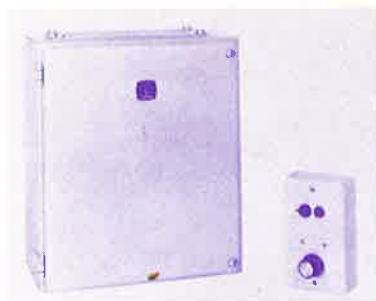
In its basic form every Series H dimmer is supplied with a compact manual remote control box carrying an on/off switch, an indicator lamp and a brightness control knob. Alternative methods of control are described below.

Autofader

Identified by the suffix /P following the dimmer type number, the autofader consists of a control unit and a remote control box carrying an on/off switch, an indicator lamp and three control buttons labelled RAISE, PRESET and LOWER. The time for a full fade can be varied between 2 and 30 seconds but this standard range can be extended if required.

Auto-Colour Changer

Used in conjunction with two or three Series H dimmers, the H2CC or H3CC colour changers permit continuous automatic crossfading between two or three independent groups of lamps or fluorescent tubes.



TH 40 dimmer
2500W

Manual remote
control unit

TUNGSTEN LOADING (max.)

Dimmer Type No	Dimmer Rating	Number of lamps per dimmer*							
		60W	100W	150W	200W	300W	500W	750W	1000W
TH 10	1kW	16	10	6	5	3	2	1	1
TH 40	2.5kW	41	25	16	12	8	5	3	2
TH 50	5kW	83	50	33	25	16	10	6	5
TH 100	10kW	166	100	66	50	33	20	13	10

*Or mixed wattages to not more than the rating of the dimmer.

FLUORESCENT LOADING (max.)

		No of 38mm (1½ in) dia. tubes per dimmer				
Dimmer Type No		450mm (1½ft) 15W†	600mm (2ft) 20W†	1200mm (4ft) 40W	1500mm (5ft) 65W	1800mm (6ft) 75W
FH 10	20	16	8	6	5	
FH 40	40	36	18	12	10	
FH 50	110	100	50	32	28	

†Wired in series pairs.

Industrial, commercial and auditorium dimming

Series FP Multipack Dimmers and Cabinets

Series FP multipack units contain a number of individual 22 amp dimmers suitable for controlling fluorescent lamps. Each dimmer will accommodate the same loading as a Series H type FH50 (see previous page). The dimmers are normally controlled together by a common input signal. Unless alternative control arrangements are specified, a Series H manual control box is supplied with all Series FP dimmer cabinets.

System Options

— Electronic Up-down-Preset Autofade (as Series H type -/P) complete with two pushbutton control boxes

can be supplied with each unit. Add/AUTO to type number. FP6/AUTO and FP10/AUTO can be supplied with circuits divided into two groups. Two further auto control boxes are supplied in these circumstances.

— Motorised Up-Down-Stop

Autofader with two push-button panels available instead of electronic type.

Add/AUTO-M to type number.

— Special control panel arrangements at extra cost.

— One or more tungsten type dimmers can be substituted for fluorescent dimmers.

— Three phase versions available for some models.

— Dimmers may be fitted with individual bypass relays (DIM/STATIC controls).



Series FP multipack dimmer unit and control equipment

Type Number	Number of dimmers	Physical configuration
FP2	2	Wall mounted
FP3	3	Wall mounted
FP4	4	Wall mounted
FP6	6	Free standing
FP10	10	Free standing

Choice of lighting fittings

It is recommended that, wherever possible, fittings and tubes from the Thorn range be used for fluorescent dimming application*. This facility is available for 600mm, 1200mm, 1500mm and 1800mm tubes. Special control gear is necessary for fluorescent dimming and increasing

numbers of fitting types can be supplied suitably modified and with this gear already integrally mounted.

For ultra-slim fittings or applications such as pelmet lighting, remotely positioned gear is necessary. This can be supplied in the form of pre-wired boxes or trays as listed in the table below.

Control gear range

Catalogue No.	Description
CBD 1020/30/40/65	Box for single 20, 30, 40 or 65W tube respectively
CBD 2020/30/40/65	Box for twin 20, 30, 40 or 65W tubes respectively
CBD 3020/30/40/65	Box for triple 20, 30, 40 or 65W tubes respectively
GT 1020/30/40/65	Tray for single 20, 30, 40 or 65W tube respectively
GT 2020/30/40/65	Tray for twin 20, 30, 40 or 65W tubes respectively
GT 3020/30/40/65	Tray for triple 20, 30, 40 or 65W tubes respectively

Dimming of tungsten halogen lamps

In general, tungsten halogen lamps can be dimmed entirely successfully (most television studios employ them in this manner). However, in certain types of tungsten halogen lamp, notably some projector lamps, dimming disturbs the halogen cycle and thereby tends to reduce the lamp life*.

Transformer fed lamps

Purpose-designed dimmers are required if transformer-fed lamps are to be dimmed. Suitable dimmers are available in the Thorn range*.

*For advice on the application of dimmer control to fluorescent, tungsten halogen and transformer fed lamps, we recommend that you consult your local Thorn area office.

Club Series Portable Manual Control Systems

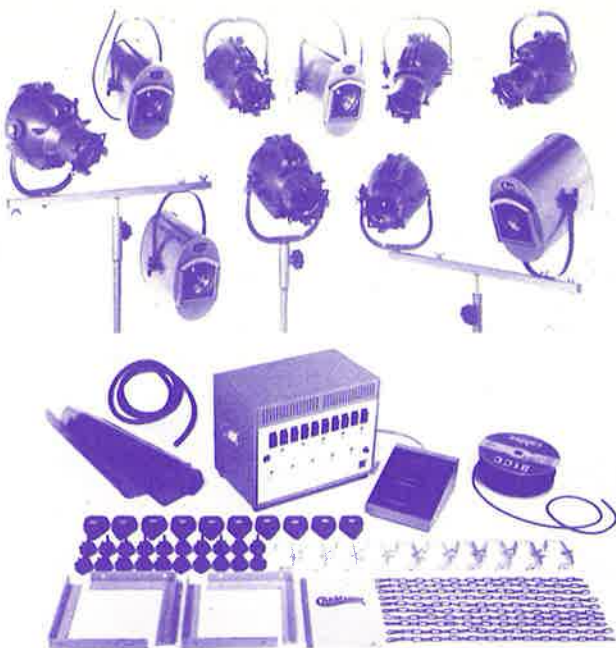
Club Manual Systems, Club Disco, Club Master

These portable systems (which are, of course, equally suitable for permanent installation) provide ideal theatre style lighting control at a price which commends their use in clubs, schools, cabarets, discotheques, fashion shows, displays, photographic studios and the like.

Each system consists of a miniature control desk fitted with ten metres of control cable, and either one or two packs containing the dimmers. Basic control desks include two presets of channel faders, each controlled by a master fader. A dead blackout switch is also included.

Club dimmers are designed to control incandescent lamps and have maximum power capabilities of 2.5kW and 5kW. The 2.5kW dimmers are available in five or ten way single phase packs or, for export only, nine way three phase packs. The 5kW dimmers are supplied in five way single phase packs. Club dimmers are also ideal for use with other transportable Thorn control systems.

Club Disco uses a different control desk with the same dimmers. It has been designed especially for discotheques and provides an impressive variety of automatic lighting effects. In Club Disco 10 a three channel sound/light system controls light changes which vary in colour, brightness and timing according to the pitch, volume and rhythm of music or speech. This is supplemented by four automatic colour-changing channels. The remaining three channels allow manually controlled lighting effects to take place and any of the automatic channels may also be switched to direct manual control if required. ClubDisco 5 is a simpler version incorporating only the sound/light system and two automatic colour-changing channels.



ClubMaster 10 kit showing Club 10/2 control panel and C10B dimmer pack. (Floor stands shown are supplied with ClubMaster 5 kit only.)

The ClubMaster kit is the answer to the problems of a newcomer to stage lighting who requires an effective low cost installation without having to choose and purchase equipment from several sources. The ClubMaster packages, based on the Club 5/2 and Club 10/2 control systems, include spotlights, lamps, colour filters, hanging clamps, brackets, plugs, sockets and cables, together with an easy to understand instruction manual which explains assembly and operation.



ClubDisco 10 control unit

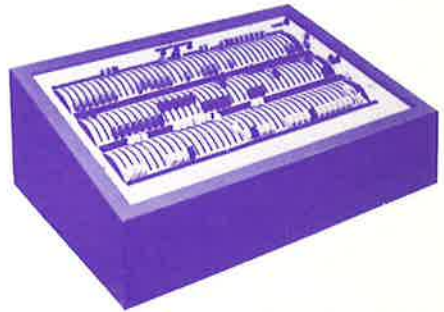


Club 10 control unit

Series SM

The SM equipments are simple multi-preset control desks without grouping facilities, and are ideal for schools and amateur stages. A master fader and blackout switch is associated with each preset of individual faders and an overall dead-blackout switch is incorporated.

Apart from their considerable economy, further enhanced by the optional substitution of flat scale faders, the great advantage of the Series SM systems is their operational simplicity. An unskilled operator can, with no previous experience, immediately become sufficiently familiar with the controls to produce an acceptable degree of expertise.



Simple preset system, type 3SM40

Series PM

Best known of the Thorn range of preset systems, the Series PM control desks are in use world-wide in a great variety of applications. These desks are ideal for smaller TV studios, multi-purpose halls, drama studios and conventional theatres.

In Series PM systems, each preset of channel faders is subject to overall control by a corresponding preset master fader and blackout switch. Ten separate selections of channel faders (20 in the case of four preset models) can be grouped under the control of a corresponding number of group master faders by inserting miniature plugs into holes in a matrix panel. By thus setting and grouping the individual faders, the system is made to provide a non-electronic memory facility.



Plug matrix grouping system, type 3PM80

Multi-preset control systems

Series GM

This series has been designed specifically for smaller professional theatres.

Channel faders in the Series GM are arranged in two or three presets, and associated with each preset are three group master faders. A three-position switch above each individual channel fader allocates control of this particular fader to one or other of the three master faders serving that preset. This permits entirely separate groupings to be formed within each preset.

Associated with each group master fader are three pushbuttons. One of these is a blackout button affecting channels allocated to that group. The other two respectively assign the particular group master fader to one or other end of a dipless crossfade master.

Standard auxiliary facilities include switches for 'non-dim' circuit contactors, switched faders to control houselight dimmers and built-in cuelights with reply button.

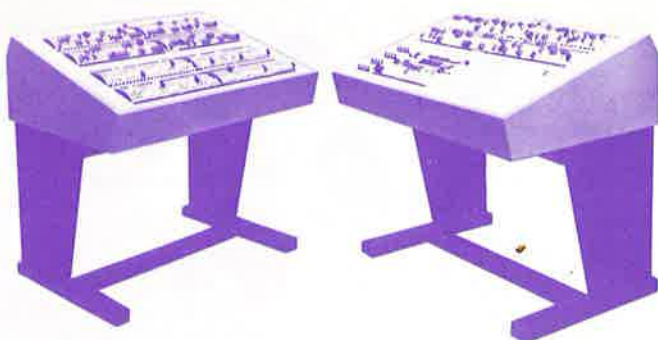
Cabaret automatic systems

The Cabaret control system offers the facilities provided by the ClubDisco in an expanded and upgraded form. It is available to serve either 20 or 30 lighting circuits by means of a split two-preset arrangement of 20 or 30 channels each.

Two master faders respectively control the presets serving the first 10 (or 20) channels while a further pair control the presets serving the remaining 10 channels. Each master fader is provided with a three-position switch, enabling the channels served to be controlled normally, switched off, or momentarily flashed on at the set levels.

Two-position switches are provided above the first seven channel faders in the yellow preset. One position permits normal two preset control while the alternative position selects automatic control as follows:

Channels 11, 12 & 13 (or 21, 22 & 23) — Sound/light control (see ClubDisco).



GM control desks

Channels 14 & 15 (or 24 & 25) — Auto crossfade 1

Channels 16 & 17 (or 26 & 27) — Auto crossfade 2

Two additional and independent faders are fitted, each associated with an on/off switch and indicator lamp.

These are provided to control dimmers for houselights, tab dressings, dance lighting or transformer load circuits.

Two three-position switches are provided for the control of electrically operated curtains or non-dimmed lighting channels, e.g. ultra violet or strobes.

The remaining controls comprise system on/off, master blackout and effects on/off switches. Indicator lamps show the availability of power to the desk, to the effects system and to the auxiliary faders.

Miscellaneous theatre/studio lighting equipment

- Type LAO 'No compromise' professional dimmers. 10kW, 5kW and dual 2.5kW.
- Type C economy dimmers for professional use. 2.5kW and 5kW.
- 'Aurama' Son et Lumière control system. (Just press the tape recorder START button.)
- Class T theatre/TV studio lamps. Tungsten or tungsten halogen.
- Floodlights and spotlights for professional or amateur use.
- 'Cinemoid' filter material.
- Electricians' panels for lighting control during rigging.
- Patch panels for economy in dimmers.
- Audio and communications equipment.
- Control room ancillary equipment.

SYSTEM CAPACITIES

System type	Channels	Presets	Group masters
SM	20-60	2 or 3	—
PM	30-140	2 to 4	10 or 20
GM	40-120	2 or 3	6 or 9
Cabaret	20 or 30	2 (split pairs)	—

Dimmer Level Memory Systems

Q-File

Q-File is the best established system of its type in the world, and its name has become almost synonymous with electronic memory lighting control equipment.

The most recent versions of Q-File, the series 2000 and Series 1000 equipments, follow the same operational principles as the original system. However, the new designs incorporate the latest solid-state integrated circuit modules and this has resulted in even simpler operation, additional facilities, and a reduction in the space required by the electronics cabinets.

Principal Features

- Single fader lever with numbered channel selector buttons, for intensity adjustment during setting up or for later modification. When not hand controlled, lever moves automatically to show existing level of selected channel.
- Instant manual override of any channel at any time.
- Electronic memories record channel intensity and permit instant random access.
- Memories may be recalled singly or in any combination, as instant effects or by means of automatic fades or crossfades.
- Four independent automatic fades can take place simultaneously or separately, at the same or different speeds.
- Mimic panel shows status of channels in use or set up in 'preset'.
- Facilities for 'Blind Plotting', memory content review and memory modification without affecting lighting in use.
- Independent stand-by control by an auxiliary system having group faders to which channels are allocated through a plug matrix.

Q-File Series 2000

Q-File 2000 is the modular version in which both the central and peripheral facilities include a large range of options. These enable the system to be altered or added to at any time.

Various types of mimic panel and auxiliary control system are available. The desk furniture is normally custom-built to meet user requirements. Q-File 2000 panels can also be fitted to the user's own desk.

System Variations

Optional extra facilities include a portable remote control unit, a tape programming unit which provides library storage, manual group master faders and two types of flasher unit.

Q-File Series 1000

Q-File 1000 is the economy orientated non-modular version. It offers the same basic operational facilities as Q-File 2000, but standardised presentation, capacities and peripheral facilities allow it to be offered at a substantially lower price.

Standard mimic and auxiliary control panels are fitted and the desk is of fixed design. However, two blank panels are provided for any supplementary controls or indicators required by the user.

System Variations

A portable remote controller and a tape programming unit are available as optional extras. These are similar to those provided for Q-File 2000.



Q-File 2000 at London's Talk of the Town theatre restaurant



Q-File 1000 control desk



Portable remote control unit.

Dimmer Level Memory Systems

Q-Master

The Q-Master range incorporates many of the operational features of Q-File in new and compact form. All the control electronics are housed within the desk so that a Q-Master installation consists only of desk and dimmer cabinets.

The design of the Q-Master systems is such that operators familiar with conventional preset control desks can very quickly become adept at using their new equipment.

Although permitting this ready transfer Q-Master nevertheless provides all the facilities to be expected of a Thorn electronic memory system.

Principal Features

- One dimmer lever per lighting channel for setting up memories. Channels may be switched to direct control, singly or together, at any time.
- Mimic lamps showing status of channels in use.
- Electronic memories record channel intensity and permit instant random access.
- Memory recall via any or all of three master faders controlling three parallel playback systems.
- Automatic fade and crossfade capability.
- Facilities for 'Blind Plotting'.
- 'Built-in' stand-by manual control system.

Q-Master Series 2000

This version of Q-Master is intended for the medium to large theatre or studio in which multiple faders are preferred to single-fader channel access.

In addition to the largest channel and memory capacity of the range, Q-Master 2000 design offers two optional extra features: a portable remote control unit and a programming system to provide library storage. The former permits lighting to be set and recorded from any convenient point in the theatre or studio. The latter allows an unlimited library of lighting plots to be built up. This is particularly appropriate in a repertory situation where the recorded lighting plots may need to be changed or reinstated at frequent intervals.

Q-Master Series 1000

Incorporating all the standard facilities offered by the Series 2000 version, the compact Q-Master 1000 has been designed and priced specifically for the small to medium sized theatre or studio. It is intended for those who have long aspired to the benefits of an electronic memory lighting control system but who have, until now, regarded it as being beyond their budget.

QT 120

Introduced at the 1975 International Television Symposium, the QT 120 is a truly portable dimmer level memory system designed especially for outside broadcast and touring theatre applications. The self-contained control console consists of two parts, a desk and a pedestal. These can be easily and quickly separated and are small enough to be carried in a medium sized car. Each part weighs less than 30kg.

Principal Features

- Single fader lever with decimally coded channel selector buttons.
- Electronic memories record channel intensity and allow instant random access.
- Single or group control of channels.
- Single lever dipless crossfade.
- Three independent playback systems.
- Channel level indicator.
- Manually set up lighting may be used directly, memorised, or transferred to the control of any of three playbacks. This latter facility allows the systems to be used as a 120 channel three preset board without involving the memory banks.



Q-Master 1000 40 channel control desk including optional second preset



QT120 portable control system

SYSTEM CAPACITIES

System Type	Channels	Memories
Q-File 2000	390 (max)	100 or 200
Q-File 1000	198	100 or 200
Q-Master 2000	80-200	300
Q-Master 1000	40-160	50 or 100
QT 120	120	100

Outdoor and Street Lighting

Introduction

This section describes a wide range of fittings for exterior lighting and floodlighting, and the full range of street lighting fittings.

Bulkhead and wellglass fittings include the OB vandal-proof fluorescent bulkhead which has proved its worth in many situations.

The Escort wellglass and Patio fittings are suitable for situations demanding a more decorative treatment.

Floodlighting equipment covers almost all requirements, from the miniature 150W Minifloods and the Sun 500 and 1000 fittings for general lighting, through the Haline and 400W Area floodlights to the Linear Halide and CSI sealed beam floodlights used in unusual and rigorous situations.

The street lighting fittings and columns described in these pages are used all over the world, and there is a type suitable for every kind of road from motorways to country lanes. The Precinct is an attractive fitting for both street lighting and bulkhead applications.

IMPORTANT

Fittings shown in the Outdoor Lighting section of this catalogue are designed to be weatherproof and suitable for operation in ambient temperatures not exceeding 15°C in accordance with current British Standards Specifications.

When used indoors in situations involving higher ambient temperatures, performance may be impaired and we do not recommend such applications without our prior agreement.

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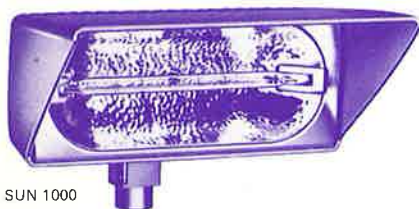
Sunflood 300/1000W tungsten halogen floodlights



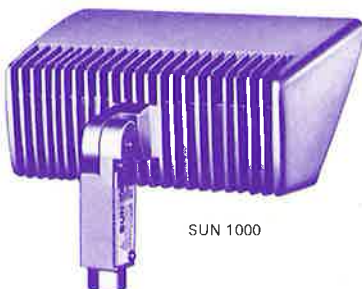
SUN 500



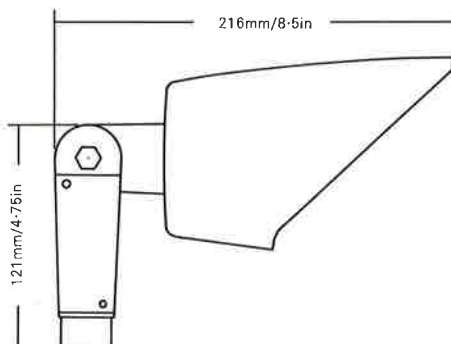
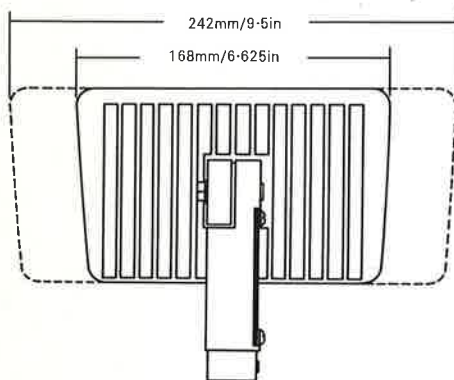
SUN 500



SUN 1000



SUN 1000



Description

The main body, with specially designed cooling fins, and the terminal block housing are pressure die-cast in LM6-M aluminium alloy. The reflector is of magnesium alloy, hammer finished, chemically brightened, and anodized.

The lampholders consist of single fine silver 'button' contacts, mounted on nickel-silicon-copper alloy leaf springs, tempered, plated and housed in porcelain shrouds. Wiring is carried out with special heat-resisting cable.

All fixing screws are of stainless steel. The two-way porcelain terminal block is completely insulated by a moulded polypropylene shield. An earth terminal is provided.

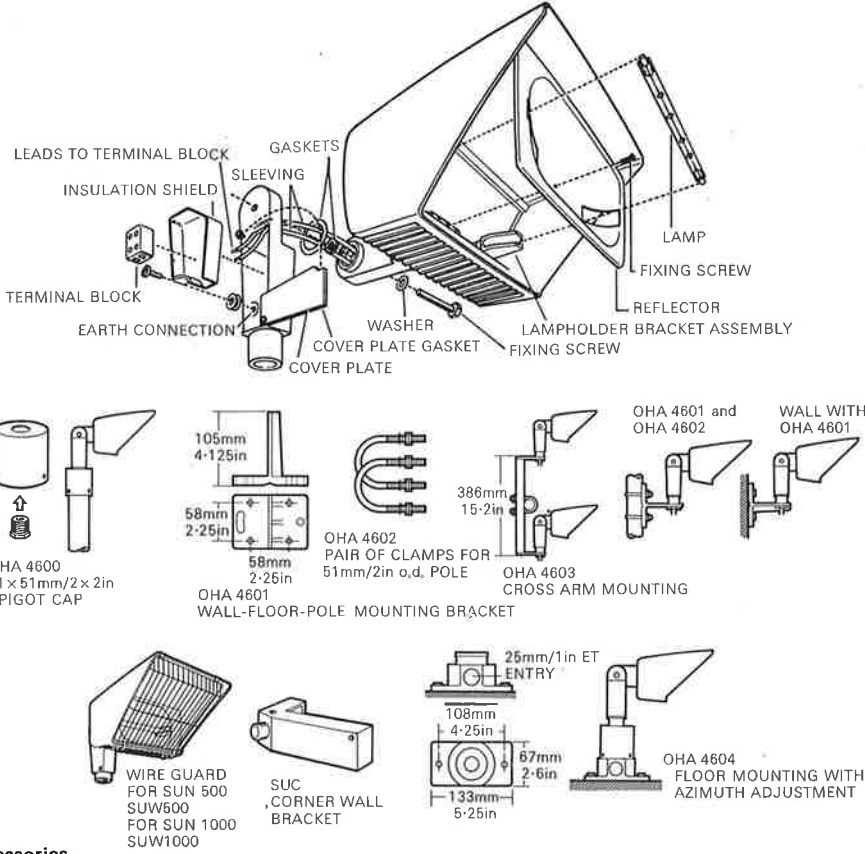
Range

Catalogue no.

SUN 500 Sunflood fitting packed with 240V 500W lamp

SUN 1000 Sunflood fitting packed with 240V 1000W lamp

Sunflood 300/1000W tungsten halogen floodlights



Accessories

A comprehensive range of mounting accessories is available, catering for most mounting requirements. Designed for simple fixing, they are interchangeable throughout the range. Mounting accessories are attached to the 20mm ET tapped entry boss. Accessories are supplied in a plastic bag containing all the necessary components.

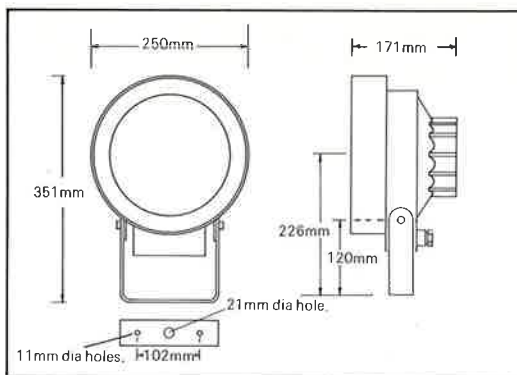
Spares

Lamp protection can be afforded by the provision of a Sunflood wire guard. It is available for both sizes of Sunflood. The wire guard is made of stainless steel and is clip hinge fixed for easy maintenance. Spare reflectors and lampholder assemblies are also available.

Catalogue no.		Weight kg
OHA 4600	Spigot cap for 51mm/2in o.d. pole	0.241
OHA 4601	Mounting bracket for pole, wall or floor	0.340
OHA 4602	Pair of 'U' clamps for use with HA 4601	—
OHA 4603	Cross-arm bracket for 51mm/2in o.d. pole	0.480
OHA 4604	Floor bracket	—
SUC	Corner wall bracket	—

Catalogue no.	
SUW500	Wire guard for Sun 300/500
SUW1000	Wire guard for Sun 750/1000
SUL500	Available to special order: Lampholder assembly for Sun 300/500 (comprises one bracket, two lampholders and leads)
SUL1000	Lampholder assembly for Sun 750/1000 (comprises one bracket, two lampholders and leads)
SUR500	Reflector for Sun 300/500
SUR1000	Reflector for Sun 750/1000

Sunspot floodlight



Application

Sunspot is a versatile, enclosed, rainproof outdoor floodlight suitable for use with either 300W M38 or 500W M40 single-ended tungsten halogen lamps. There is a choice of front glass and an optional range of colour filters.

Sunspot is particularly suited to lighting special features where a high intensity narrow beam is required. It is also suitable for general outdoor applications with optional coloured decorative effects.

Description

The pressure die-cast aluminium body (LM6-M) is finished in semi-matt, black heat-resisting paint. Light control from the compact tungsten halogen source is via a polished reflector and clear front glass to give a high intensity narrow beam or an alternative glass enables a wider distribution to be achieved. The cool wiring box complete with 3-way terminal block, cable clamp and gland entry (7-11mm O/D) has a black thermoset plastic base and glass filled nylon cover.

Mounting

A zinc-plated stirrup finished in matching semi-matt black permits a range of mounting arrangements. The stirrup can be used with Haline/Sunflood mounting accessories.

Lamps

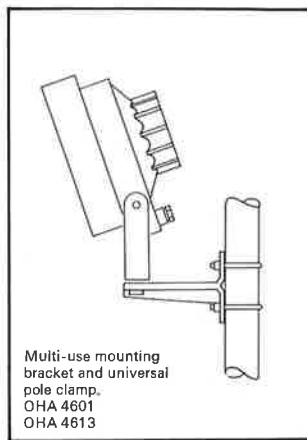
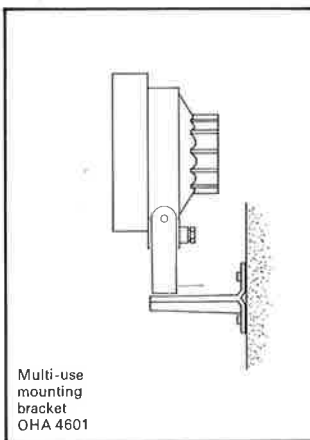
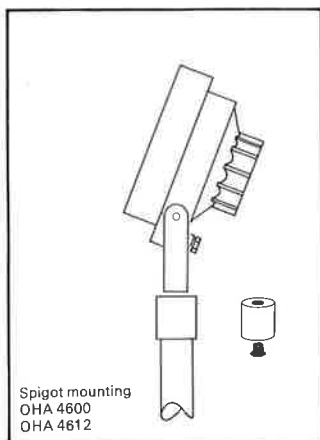
Tungsten halogen type M38
240/250V 300W single-ended and
M40 240/250V 500W single-ended.

RANGE

Catalogue no.	Description	Weight kg
Luminaires		
OSC 500	Sunspot (clear) c/w M38 300W lamp	2.5
OSP 500	Sunspot (prismatic) c/w M38 300W lamp	2.5
OSC 500 LL	Sunspot (clear)	2.5
OSP 500 LL	Sunspot (prismatic)	2.5

Accessories

OSF.B	Blue filter	0.25
OSF.R	Red filter	0.25
OSF.Y	Yellow filter	0.25
OSF.G	Green filter	0.25
OSH	Hood for Sunspot	

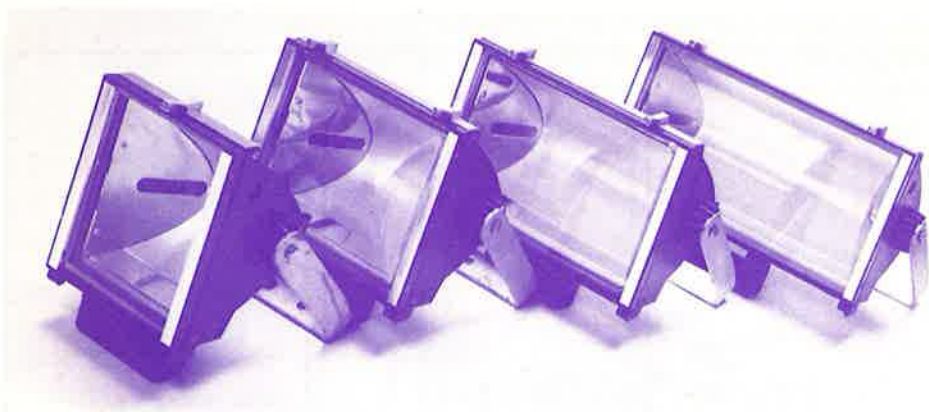


ACCESSORIES COMMON TO HALINE RANGE

Catalogue no.	Description	Approx. weight kg
OHA 4600	50mm O/D spigot cap for pole top mounting	0.24
OHA 4601	Multi-use mounting bracket	0.34
OHA 4603	Cross-arm mounting	0.48
OHA 4612	76mm O/D spigot cap for pole top mounting	0.35
OHA 4613	Universal pole clamp for pole 51-89mm diameter	0.48
Spare front glasses		
OMC	Spare front glass (clear)	0.34
OMP	Spare front glass (prismatic)	0.34
OMW	Optional front glass (wide)	0.34
OMS	Optional front glass (stipple)	0.34

Windage area = 0.05m²

Haline tungsten halogen floodlights



Application

Suitable for area lighting, buildings, precincts, stadia, car parks, forecourts or any purpose where a wide horizontal beam spread and accurate vertical beam control are required.

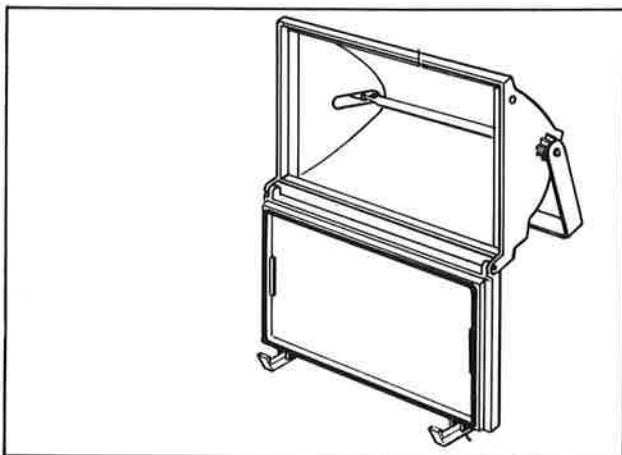
Description

One-piece reflector/body of extruded aluminium featuring asymmetrical, faceted reflector profile. This construction gives rigidity and accuracy for the best and most consistent optical performance. Reflectors are finished polished (specular) or matt (diffuse) and provided with polished aluminium end diaphragms for improved light distribution. Die-cast LM6-M aluminium alloy end plates enclose the fitting and carry lampholders. The cool wiring box is made of black thermoset plastic for the base, and with glass-filled nylon cover contains an easy access terminal block, cable clamp and neoprene gasket complete with gland suitable for 7-11 mm O/D cable.

Access for relamping is obtained via the hinged silicone rubber gasketed front frame and glass secured with catches on all fittings.

Full weatherproofing is provided by dished borosilicate glasses on 750-1500W sizes and by flat glasses on 300/500W and 2000W sizes.

Lampholders feature solid fine silver contacts for long and trouble-free life.



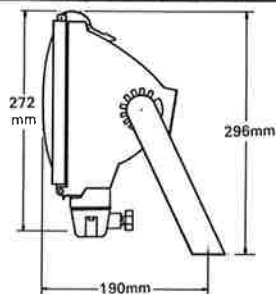
Exterior finish

Reflector/body is matt aluminium, castings matt black, glazing trim anodized aluminium, screws and catches stainless steel.

The Haline OHS/D 500 and OHS/D 1000 are suitable for 120/240 volts; the remainder of the range is suitable for 200-250 volt supply only.

Mounting

A 25° cranked stirrup is standard to the complete range allowing floor, wall or pendant mounting and adjustment in two planes.



Catalogue no.	Length mm
OHS/D 500	237
OHS/D 1000	309
OHS/D 1500	374
OHS/D 2000	450

OHS = Specular reflector OHD = Diffuse reflector

Haline tungsten halogen floodlights

FITTINGS

Catalogue no.	Lamp watts	Description	Weight (kg)	Projected area (m ²)
OHS 500	300/500	500W Specular reflector	2.9	0.05
OHD 500	300/500	500W Diffuse reflector	2.9	0.05
OHS 1000	750/1000	750/1000W Specular reflector	4.0	0.06
OHD 1000	750/1000	750/1000W Diffuse reflector	4.0	0.06
OHS 1500	1500	1500W Specular reflector	4.7	0.08
OHD 1500	1500	1500W Diffuse reflector	4.7	0.08
OHS 2000	2000	2000W Specular reflector	4.9	0.09
OHD 2000	2000	2000W Diffuse reflector	4.9	0.09

ACCESSORY PACKS SUITABLE FOR ALL HALINES

Catalogue no.	Description	Weight kg
OHA 4600	51mm/2in O/D spigot cap, pole top mounting	0.241
OHA 4601	Multi-use mounting bracket	0.340
OHA 4603	Cross-arm mounting	0.480
OHA 4606	Hood 750/1000W for OHS/OHD 1000	0.142
OHA 4607	Hood 1500W for OHS/OHD 1500	0.149
OHA 4608	Hood 2000W for OHS/OHD 2000	0.150
OHA 4609	Wing universal, all sizes except OHS/OHD500	0.085
OHA 4612	76mm/3in O/D spigot cap, pole top mounting	0.354
OHA 4613	Universal pole clamp, for poles 48-89mm/ 2-3.5in O/D	0.480
OHA 4614	2-replacement lampholder contact	0.028

Accessories

Accessories are supplied packed in plastic bags containing all necessary components as follows:

OHA 4600 51mm/2in Spigot Cap

Pack contains one 51mm x 51mm/ 2in x 2in spigot cap and HEX head steel bush, washer and nut. Cap is attached to stirrup with bush and nut and wiring fed through it.

OHA 4601 Multi-use Mounting

Pack contains bracket, bush, washer and nut used for wall mounting.

OHA 4603 Cross-arm Mounting

Pack contains bracket, two bushes, washers and nuts and one pair of OHA 4602 clamps for mounting two fittings, one above the other, on a single horizontal 51mm/2in O/D bracket arm.

OHA 4606/8 Hood

Pack contains hood and four stainless steel screws. Used to control upward light. Attached to glazing-frame with longer screws provided.

OHA 4609 Wing

Pack contains one wing and two screws. Used to control side light. Attached to glazing-frame with longer screws provided.

NOTE: Not available for OHS/OHD 500.

OHA 4612 76mm/3in Spigot Cap

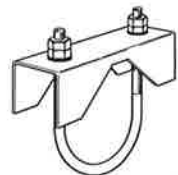
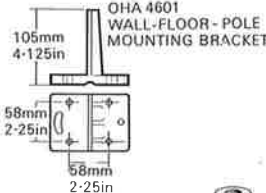
Pack contains one 76mm x 76mm/ 3in x 3in spigot cap and Hex head steel bush, washer and nut. Cap is attached to stirrup with bush and wiring fed through it.

OHA 4613 Universal Pole Clamp

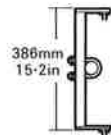
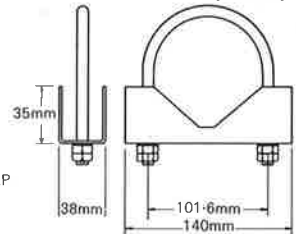
Pack contains one clamping strap, a U-bolt and two nuts with washers and is capable of fixing on 51-89mm/ 2-3.5in O/D pole without adjustment.

OHA 4614 Replacement Lampholder Contact

Pack contains two contact assemblies with cable for 2000W size. Cable cut to length during installation for OHS/OHD 500, 1000 and 1500.



UNIVERSAL POLE CLAMP
OHA 4613



OHA 4603
CROSS-ARM MOUNTING



OHA 4614

REPLACEMENT LAMPHOLDER CONTACT

New Haline floodlight for Sonline SON-TD lamp

Applications

Weatherproof control box containing control gear 400W 220/240V 50Hz. Suitable for wall, pole or floor mounting with provision for one New Haline Mk 13 or ON 1600 floodlight with 400W SON-TD lamp. May also be used remote with any luminaire housing SON, SON-T or SON-TD lamp.

Description

Cast LM6M aluminium alloy box with aluminium lid, secured by two captive screws. Gasketed for full rainproofing in any mounting position. Contains one set of 400W control gear 220/240V 50Hz for high pressure sodium discharge lamp.

Fully wired between rewirable fuse and neutral link for mains and 2-way terminal block. Provided with mains cable clamp and earth terminals. Two entries 'mains in' and 'lamp out' tapped 20mm metric conduit and provided with nylon cable gland suitable for 7 to 13mm ϕ 3-core PVC flexible cable, (1mm² flat twin and earth 600/1000V PVC cable to BS 6004:1969). Finish matt black.

Mounting

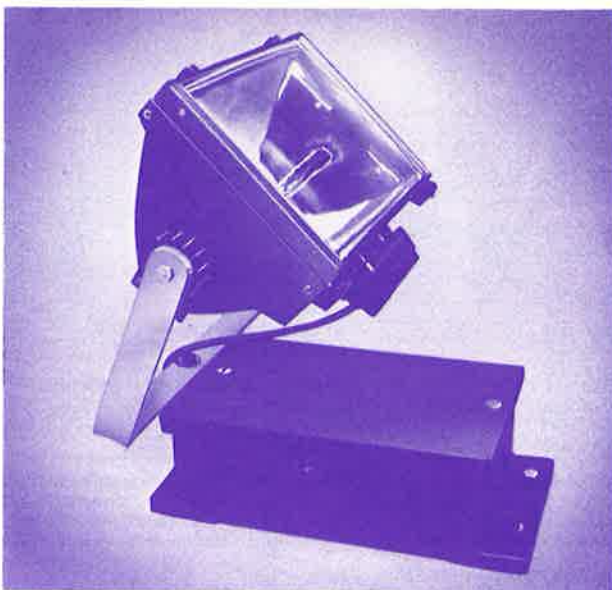
Four external fixing holes for floor or wall mounting bolts. For metal poles 48mm to 90mm ϕ , two standard OHA universal pole clamps should be used. Coach bolts may be used for wood poles. Equipped with two integrally cast 20mm ϕ bosses 90° apart, suitable for mounting one OHS/OHD 1500 New Haline luminaire or one ON 1600 floodlight luminaire in two alternative positions. Fixing bolt and washer inserted on underside of boss for transit only.

Control gear

Gear normally fitted 1 \times G.53230 T
Ballast 220/240V
50Hz
2 \times GC.2331
capacitors 20 μ f
250V
1 \times G.53282
ignitor
Fuse rating 15 amp

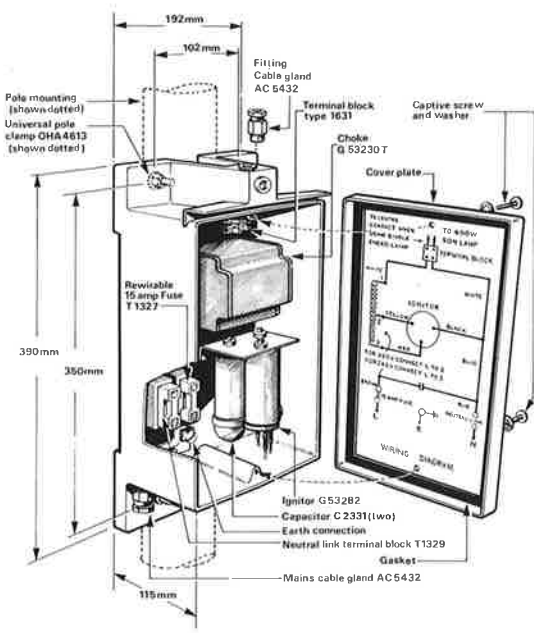
Catalogue no.

Control box, complete with gear, fuse and glands less pole clamps – OHA 4615.

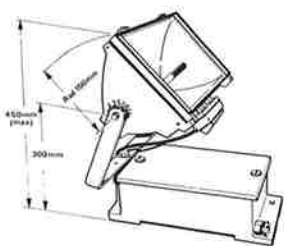


OHA 4615 with OHD 1500

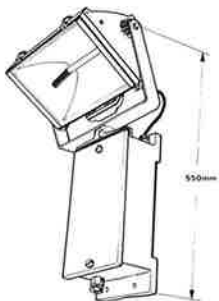
New Haline floodlight for Sonline SON-TD lamp



GEAR BOX ASSEMBLY



FLOOR MOUNTING



WALL OR POLE MOUNTING

Weights

New Haline	Kg
OHA 4615	9.525
OHS/D 1500	4.700
SON-TD lamp	0.100
Total	14.325
ON 1600	Kg
OHA 4615	9.525
ON 1600	7.257
SON-TD lamp	0.100
Total	16.882

Minifloods

The Miniflood is a weatherproof lampholder housing and mounting assembly for exterior application designed for use with the 150W mains voltage sealed reflector spot or flood lamp.

Description

The basic unit supplied with various forms of mounting comprises a satin finished extruded aluminium case housing a ready wired ES lampholder. Weather-proofing is completed by a silicone rubber sealing ring between case and lamp. Adjustment and locking are by means of a slotted thumb screw.

The ER 1150 is wired for connection to conduit installations with an alternative wall mounting bracket EKB and a corner mounting bracket EKC being available.

The M36 1150 is supplied with 1.8m/6ft of PVC 3-core cable and a black polythene coated steel bracket which allows fixing to conduit or by woodscrew, as well as free standing.



ER 1150 Miniflood using EKB flat wall bracket



M36 1150 Miniflood

RANGE

Catalogue no.	Description	Weight	
		g	oz
ER 1150	Miniflood (less brackets, less lamp)	399	14
M36 1150	Miniflood (with brackets, less lamp)	512	18
EKB	Flat wall bracket	113	4
EKC	Corner bracket	340	12

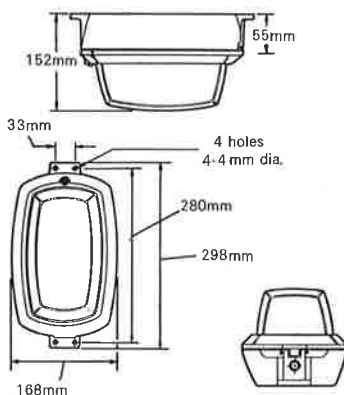
Dimensions

Catalogue no.	Length		Height		Diameter	
	mm	in	mm	in	mm	in
ER 1150 incl. lamp	191	7.5	—	—	121.5	4.75
M36 1150 incl. lamp	191	7.5	—	—	121.5	4.75
M36 1150 mounting bracket	105	4.125	132	5.1875	—	—

Lamps

	Type	Watts	Volts	Cap
Sealed beam reflector lamps (Par 38)	Spot	150	220/230, 240, 250	ES
Sealed beam reflector lamps (Par 38)	Flood	150	220/230, 240, 250	ES
Color-ray sealed beam reflector lamps (Par 38)	Spot	150	220/230, 240, 250	ES
Standard colours: blue, green, red and yellow				

Kolorlux bulkhead fitting



Description

The 50W MBF/U bulkhead has a body cast in corrosion resistant LM6 aluminium alloy with light control provided by a prismatic diffuser held firmly in position by a hinged glazing ring. The polycarbonate diffuser is held against the ring by clips. The ring seats on to a tubular neoprene gasket cemented firmly into a recess in the cast body. The cast metalwork has a sprayed aluminium finish on the exterior and the interior is painted white.

The control gear is fixed directly to the back of the casting inside, together with a porcelain terminal block. A separate earth terminal is provided. An ES porcelain lampholder is mounted in front of a diffused aluminium reflector. The reflector is slotted at one end and has a keyhole slot at the other so that it can be easily removed from its two locating screws. A separate earth wire is provided to earth the reflector.

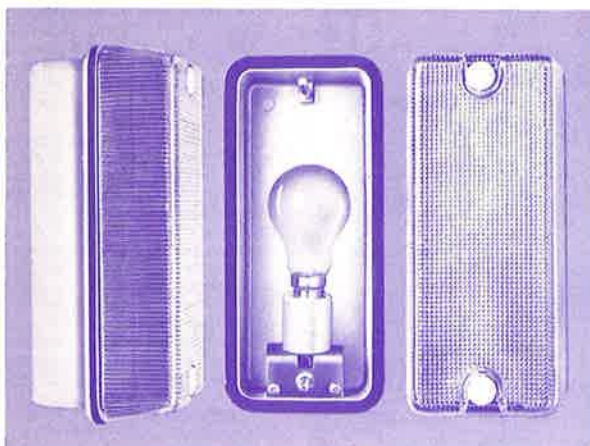
Alternative version

An alternative gearless version suitable for 100W GLS has a porcelain ES lampholder mounted on an easily removable bracket with a separate earth terminal on the casting. Insulating sleeves are provided to protect the incoming cable.

RANGE

Catalogue no.	Description	Type	Lamp
TG 4075	MBF/U prismatic bulkhead complete with 240V gear With Polycarbonate Diffuser	Standard	50W MBF/U ES cap
TG 4208	GLS prismatic bulkhead less gear With Polycarbonate Diffuser	Standard	100W GLS ES cap
TG 4069	Spare Polycarbonate Diffuser	—	—
Weight: with gear 4.76kg/10.5lb; less gear 2.5kg/5.5lb			
Entry: 20mm ET conduit top and bottom.			

Escort tungsten bulkhead



Escort bulkhead

Application

Bulkhead fittings for incandescent light source in a pleasing style. Well made and efficient, sets new standards of simplicity in installation and servicing, with prolonged periods between maintenance. The shallow, square styling is simple and attractive, blending well with any wall finish or decorative scheme.

Low initial cost is a feature of the miniature incandescent bulkhead fittings, which are particularly suitable for installations where manual or time switch control is in operation.

Description

Completely weatherproof and protected against corrosion, these fittings have lattice glass diffusers and are much shallower than most. They incorporate an anti-theft locking device.

Lamps 40- 100W GLS BC or ES

Glass diffuser The replaceable prismatic diffuser is retained in position by two captive vandal-proof nylon screws. The diffuser fits outside the lip of the body casting and closes onto a neoprene gasket for weatherproofing.

Body casting This is a pressure die-cast aluminium alloy in LM24M grey enamel hammer finish. A conduit entry knockout is provided at the lampholder end. There is also provision for Besa box and conduit entry at the back. The units can be either semi-recessed or surface mounted.

Catalogue no.

OLG 1100 BC
OLG 1100 ES

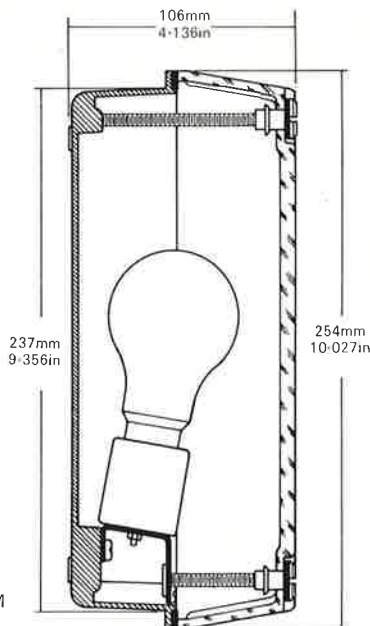
Weight

kg	lb
1.13	2.5
1.13	2.5

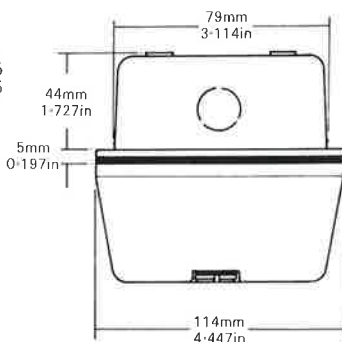
Spares

BC lampholder
ES lampholder
Glass diffuser

G.1159
G.1129
OLG 4800



CROSS SECTION AND DIMENSIONS



Escort fluorescent bulkhead

Application

A tough weatherproof fitting for surface or recess mounting anywhere outdoors.

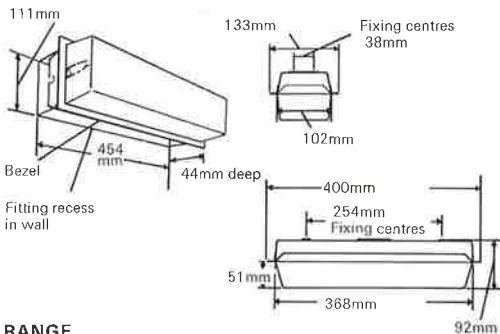
Description

The fitting comprises pressure die-cast aluminium body (grey finish) with high impact acrylic cover (wire guards are not a necessary accessory with this unit).

The opal cover is secured with two captive screws opened only by a special key provided with each fitting and is retained when open with a plastic toggle. Switchstart gear for 2 or 3 8W 300mm/12in fluorescent T5 lamps is mounted under a hinged reflector tray. Stock fittings are LPF (single lamp versions and HPF 2 lamp versions are available to special order).

For easy installation the die-cast body includes $\frac{3}{4}$ in ET entries at ends and $\frac{3}{4}$ in knockout in centre back (two plugs are provided). Wireways are cast in from the end entries to the central terminal block as well as alternative drill indents for fixing holes. Tubes are packed with each fitting for convenience. A bezel trim is available for use when the bulkhead is recessed.

See page 66 for emergency lighting application.



RANGE

Catalogue no.	Description	kg	Weight	lb
OBD 2008	2 lamp parallel wired SS circuit LPF, 2 x 8W 300mm/12 in fluorescent tubes with acrylic diffuser	2.03		4.5
OBD 3008	*3 lamp SS circuit LPF, 3 x 8W 300mm/12 in fluorescent tubes with acrylic diffuser	2.26		5.0
OBV 2008	2 lamp parallel wired SS circuit LPF, 2 x 8W 300mm/12 in fluorescent tubes with polycarbonate diffuser	2.03		4.5
OBV 3008	*3 lamp SS circuit LPF, 3 x 8W 300mm/12 in fluorescent tubes with polycarbonate diffuser	2.26		5.0

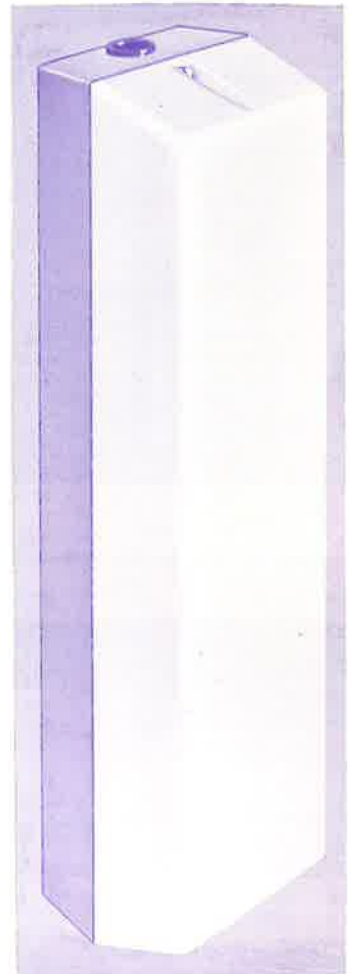
SPARES

OBD	Spare acrylic diffuser	0.68		1.5
OBV	Spare anti-vandal diffuser	0.68		1.5

ACCESSORIES

OBB	Bezel trim	269	grammes	9½ oz
OBK	Diffuser fixing key	7		½

*Series pair, in parallel with single tube circuit.



Escort fluorescent bulkhead

Escort wellglass

These Wellglass fittings are available in two sizes, suitable for 60/200W tungsten lamps and 80/125W mercury vapour lamps. They utilise a screw neck gallery of cast aluminium alloy (LM6-M) construction suitable for either side or top entry. The latter is also suitable for direct Besa box mounting. The two sizes of glass cater for 100W or 200W ratings but employ a common screw neck detail to match the galleries. This is internally etched and is fitted complete with a weatherproof seal. A white nylon reflector may be fitted if required over the screw neck of the glassware and is available to both sizes. For wall or corner mounting, bracket assemblies are available for use with the side entry gallery.



EMF 1200 top entry with EKR 200 reflector and EKB bracket



EKF 1100 side entry using EKC corner bracket



EKF 1200 side entry using EKB wall bracket

RANGE:

Catalogue no.	Type	GLS lamp	MBF lamp	Lampholder	Diameter		Height		Weight	
					mm	in	mm	in	kg	lb
EKF 1100	Side entry	60/100W	—	BC	114	4.5	187	7.37	0.9	2
EMF 1100	Top entry	60/100W	—	BC	114	4.5	187	7.37	0.9	2
EKF 1200	Side entry	150/200W	80/125W	ES	146	5.75	235	9.25	1.02	2.25
EMF 1200	Top entry	150/200W	80/125W	ES	146	5.75	235	9.25	1.02	2.25

Attachments

Catalogue no.	Type	Lamp watts	Dimensions		Weight	
			mm	in	g	oz
EKR 100	Reflector	60/100	184	7.25 diameter	85	3
EKR 200	Reflector	150/200	219	8.62 diameter	59	2
EKB	Wall bracket	—	120	4.75 length	113	4
EKC	Corner bracket	—	152	6 square	340	12
			120	4.75 projection		
					kg	lb
EKG 100	Replacement glass	60/100	114	4.5 diameter	0.57	1.25
EKG 200	Replacement glass	150/200	146	5.75 diameter	0.9	2.0



WPC R 1060 BC



WPW A 1060 BC

The Escort Patio range comprises two fittings and three alternative glasses.

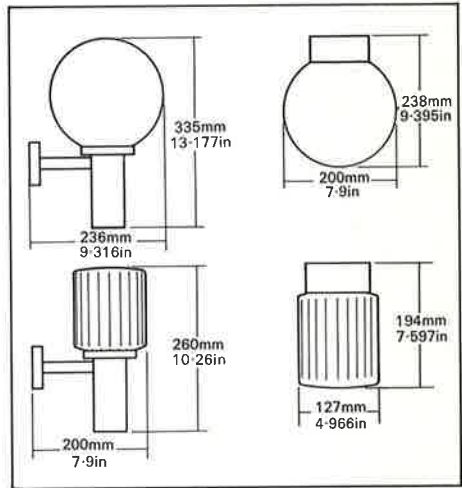
Fittings

The fittings have a matt black, weather resistant and non-corrosive finish. Each fitting has a 2BC lampholder as standard (ES lampholder is available).

The fittings take a 60W lamp, standard GLS or decorative shape.

Glassware

The glasses are interchangeable and available in two shapes, cylindrical and spherical. The cylindrical glass is ribbed with a clear finish. The spherical glasses are either amber aerated or white opal.



RANGE

Catalogue no.	Description	Weight kg lb	Catalogue no. Metalwork	Catalogue no. Glass
WPC A 1060 BC	Under-canopy fitting with amber aerated spherical glass	1.46 3.25	WPC 1060 BC	WPA
WPC R 1060 BC	Under-canopy fitting with ribbed cylindrical glass	1.46 3.25	WPC 1060 BC	WPR
WPC S 1060 BC	Under-canopy fitting with opal spherical glass	1.46 3.25	WPC 1060 BC	WPS
WPW A 1060 BC	Wall bracket with amber aerated spherical glass	1.58 3.5	WPW 1060 BC	WPA
WPW R 1060 BC	Wall bracket with ribbed cylindrical glass	1.58 3.5	WPW 1060 BC	WPR
WPW S 1060 BC	Wall bracket with opal spherical glass	1.58 3.5	WPW 1060 BC	WPS
SPARE GLASSES				
WPA	Amber aerated spherical glass	0.9 2.0		
WPR	Ribbed cylindrical glass	0.9 2.0		
WPS	Opal spherical glass	0.9 2.0		

M25 junior floodlight projector



M25 junior floodlight

Description

The projector is of robust construction and made from first quality materials, selected to withstand corrosive atmospheres found in industrial locations.

The projector comprises six major components.

A reflector spun from super purity aluminium, polished and anodised, is secured internally to an aluminium alloy ring casting which itself is pivoted in a galvanised steel stirrup assembly.

A heat-resisting front glass cover secured into the reflector by a neoprene gasket makes a weatherproof seal.

Gasketed and fastened to the body casting by stainless steel studs and wing nuts through slotted cast-on lugs, is an easily removable lampholder housing at the base of which is a detachable cast cover plate.

To complete the assembly, an auxiliary reflector is fixed between main reflector and main body casting ; a GES lampholder, on a

plated steel bracket, is fixed to the appropriate pre-set focus position ; and the cover plate end cap encloses a cool wiring chamber containing porcelain terminal block, earth connection and cable gland. The stirrup assembly provides locking bolts, with plastic coated heads and handles, DV bearing quadrant marked 0°-180°. All castings are aluminium alloy, LM6-M.

Special features and maintenance

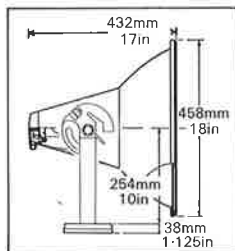
The floodlight once aimed need not be moved for re-lamping, which is effected by removing lampholder housing complete with lamp from body casting.

The terminal block, earth screw and supply cable are located within the cool wiring chamber at base of lampholder casting, affording easy access along with protection from lamp heat.

The neoprene gasket and method of

glazing provide a very effective weatherproof seal.

Details of discharge lamp control listed in the control gear section of this catalogue.



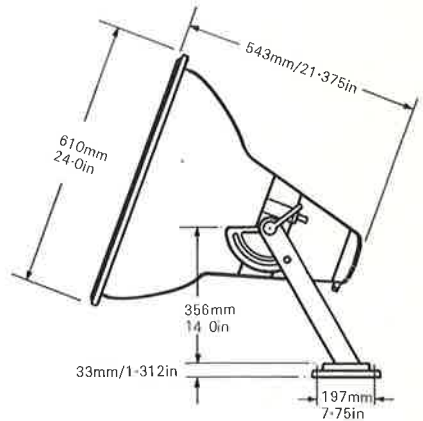
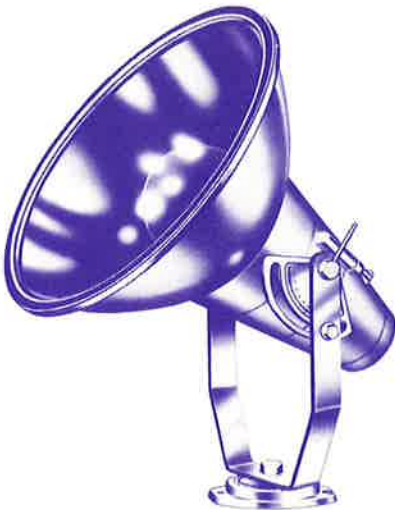
RANGE

Catalogue no.	Mounting	Reflector	Weight kg
M25 S500	2 x 9.5mm/3/4in diameter clear holes at 152mm/6in centre	Specular	9.07
M25 D500	2 x 9.5mm/3/4in diameter clear holes at 152mm/6in centre	Diffuse	9.07
TG 4262	Base plate		0.36

LAMPS

Lamp type	GLS	B2/1	MBF/U	MBI and MBIF
Watts	300/500	500	250/400	250/400

M25F floodlight projector



M25F floodlight projector

Description

The projector is of robust construction and made from first quality materials, selected to withstand corrosive atmospheres found in industrial locations. The projector comprises six major components. A reflector spun from super purity aluminium, polished and anodised, is secured internally to an aluminium alloy body casting which itself is pivoted in a galvanised steel cranked stirrup assembly. A heat-resisting front glass cover secured into the reflector by a neoprene gasket makes a weatherproof seal. Gasketed and fastened to the body casting by stainless steel studs and wing nuts through slotted cast-on lugs, is an easily removable lampholder housing at the base of which is a detachable cast cover plate. To complete the assembly, an auxiliary reflector is fixed between main reflector and main body casting; a GES lampholder is

provided and the cover plate end cap encloses a cool wiring chamber containing porcelain terminal block, earth connection and cable gland. The stirrup assembly provides locking bolts, with plastic coated heads and handles, and DV bearing quadrant marked 0° – 90° at $2\frac{1}{2}^{\circ}$ intervals. A cast baseplate, marked with azimuth bearing angles, 0° – 180° , is available as an optional extra. All castings are aluminium alloy, LM6-M.

Special features and maintenance

Provision is made for accurate lamp focusing by adjustment of three screws with screwdriver slot. The floodlight once aimed need not be moved for re-lamping, which is effected by removing lampholder housing complete with lamp from body casting. A re-setting stop situated in the quadrant makes it possible to swivel the fitting on its horizontal axis for cleaning front

glass. The fitting then returns to its predetermined aiming position. The terminal block, earth screw and supply cable are located within the cool wiring chamber at base of lampholder casting, affording easy access with protection from lamp heat.

The neoprene gasket and method of glazing provide a very effective weatherproof seal. For replacement of glass front cover a special glazing tool is available (M25 glazing tool. Catalogue No. M25 GT.) Details of discharge lamp control gear and weatherproof boxes will be found in the control gear section of this catalogue.

RANGE

Catalogue no.	Reflector	Weight kg	Mounting
M25F D1500	Diffuse	12.7	1 x 17mm/ $\frac{11}{16}$ in hole
M25F S1500	Specular	12.7	1 x 17mm/ $\frac{11}{16}$ in hole
M25 8P	Baseplate (optional extra) (TG 4261)	0.61	2 x 13mm/0.5in diameters 197mm/7.75in centre

LAMPS

Lamp type	GLS	MB/U	MBF/U	MBI & MBI/F
Watts	750/1500	1000	1000	1000

M28 light duty floodlight



M28 200 light duty floodlight



M28 500 light duty floodlight

The M28 is designed for general purpose light duty floodlighting for 150/500W tungsten GLS lamps.

Description

The M28 150 and M28 200 floodlights in this range are identical in construction, varying only in overall dimensions. Mains wiring is fed via a fixed nylon gland direct into the back of the lampholder.

The M28 500 has a removable back cover with cable gland, single screw fixing, giving access to a terminal block for mains connection.

Re-lamping on all sizes is carried out by removal of front glass and glazing ring. Removal of the $\frac{1}{2}$ in packed gland on 150W and

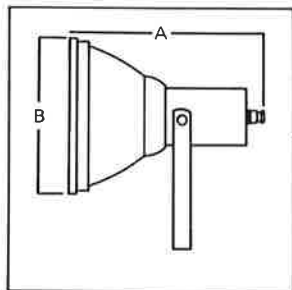
200W sizes allows easy withdrawal of lampholder and yoke assembly for wiring.

All three types have fixed focus. Floodlight bodies are manufactured from sheet steel, the whole assembly being given anti-corrosion treatment and finished stoved aluminium lacquer.

The complete assembly is supplied mounted on an adjustable steel stirrup.

Mounting

All mounting stirrups have a centre fixing hole $10.3\text{mm}/\frac{13}{32}$ in diameter plus two holes $5.5\text{mm}/\frac{7}{32}$ in diameter on $50.8\text{mm}/2$ in centres.



RANGE

Catalogue no.	Lamp	Cap	Approx. weight kg	Dimensions (mm)		Projected area (m ²)
				A	B	
M28 150	150W GLS	BC	1.14	274	203	0.035
M28 200	200W GLS	ES	2.10	318	254	0.055
M28 500	300/500W GLS	GES	4.54	483	305	0.079

The Area flood is a totally enclosed floodlight for post top, wall or stirrup mounting. Integral precision wound gear for Kolorlux, Kolorarc and KolorSON lamps is supplied wired to the lampholder. High light output with good optical control and asymmetric light distribution fits it for area floodlighting.

Description

Support casting

The casting which includes the control spigot cap is made of LM6-M aluminium alloy. Integral control gear is mounted on the casting.

Body

The GRP body, moulded in one piece, incorporates a channel section carrying a silicone rubber gasket which provides a seal between body and casting.

Bowl ring assembly

Bowl ring is a GRP moulding with corrosion-resistant hinges at the top for easy access. A toughened flat glass is secured into the bowl ring. Both bowl and ring seat against silicone rubber gaskets for full weatherproofing. The assembly is secured by two Dzus coin-slot clips.

Reflector assembly

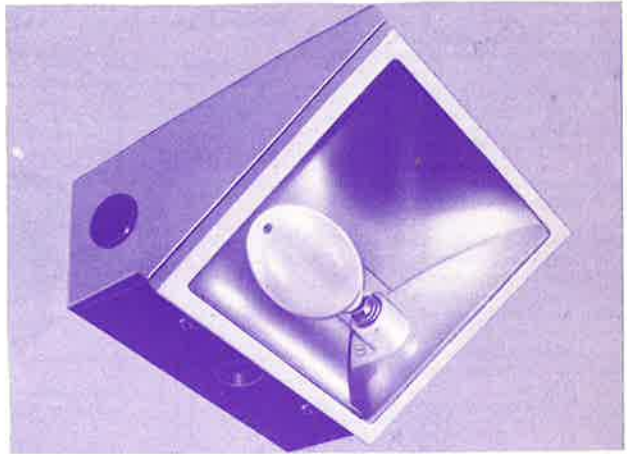
Two-part, of chemically polished aluminium, giving an asymmetric light distribution. The lower portion hinges down giving easy access to the control gear and fixing screws.

Wiring and installation

Mains wiring is fed via a cable to a 3 way 10A terminal block.

Post top and bracket mounting

The Area floodlight is secured to post or bracket through the two

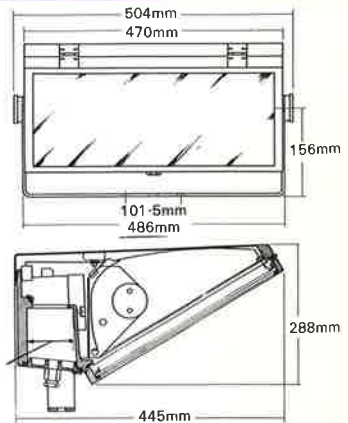


Allen type screws in the spigot cap 76mm/3in dia x 114mm/4.5in.

Wall brackets are available in 152mm/6in for close to wall fixing with limited adjustment in azimuth. The 254mm/10in bracket permits full 180° adjustment in azimuth, if required.

Stirrup mounting

Stirrup arms are secured to the floodlight by the black securing knobs. A blanking plate is provided for gland entry of the mains cable. With this mounting the fitting may be aimed as required in elevation. Central stirrup fixing hole 21mm.



RANGE

Packed in one carton c/w lamp

FITTING

LAMP

Catalogue no.	Bowl	Weight	Type	Watts	Cap
OAC G400	Glass	20 kg 44 lb	MBIF Kolorarc	400	GES
OAK G250	Glass	13.6 kg 30 lb	MBF/U Kolorlux	250	GES
OAK G400	Glass	15.2 kg 33.5 lb	MBF/U Kolorlux	400	GES
OAS G250	Glass	16.8 kg 37 lb	KolorSON	250	GES
OAS G400	Glass	18.5 kg 41 lb	KolorSON	400	GES

ACCESSORIES

Description

OAB 36	76mm/3in OD; 152mm/6in wall bracket 152mm/6in projection
OAB 310	76mm/3in OD; 254mm/10in wall bracket 254mm/10in projection
OAG	Spare front glass
OAE	Stirrup assembly—comprising stirrup, blanking plate and gland
OAA 2	Adaptor for 51mm/2in ø spigot

CONTROL GEAR for 240V 50Hz supply

	250W MBF	400W MBF	400W MBIF	250W SON	400W SON
Ballast	G 53198.4	G 53193.4	G 53193.4	G 53251.T	G 53230.T
Capacitor	GC 2370	GC 2331	GC 2331	GC 2386	2 x GC 2331
Ignitor	—	—	G 53283	G 53282	G 53282

M30 linear sodium floodlight

Description

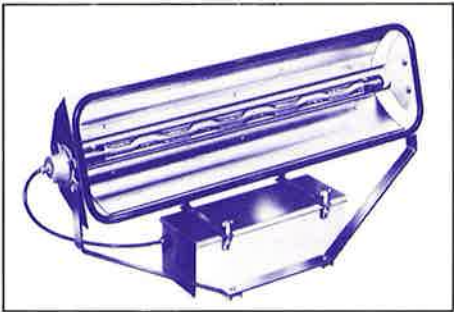
The M30 floodlight is designed for general area lighting. The projector body is of heavy gauge zinc-coated sheet steel with internal specular reflector of aluminium. The armour plate glass front is secured in a rubber weatherproof sealing gasket. Access for servicing and lamp replacement is effected by removing the die-cast aluminium end cap which has three-way quick release keyhole slots. Finish : stove enamel grey. Mounting cradle, wall brackets and pole clamps : mild steel strip cast aluminium LM6 and steel rod. Control gear box : heavy gauge galvanised steel fitted with a hinged lid, fully gasketed. A removable tray for control gear is supplied complete with mains terminal block. Finish : stove enamel grey.

Lamps

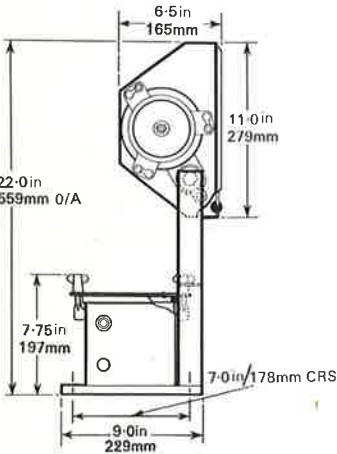
140W SLI/H linear sodium discharge
200W SLI/H linear sodium discharge

Control Gear

Details of control gear can be found on page 29 4



M30 linear sodium floodlight



M30

RANGE

Catalogue no.	Description	Weight kg
M30	Floodlight (excluding control gear) ; with gear box ; floor mounting.	28.12*
	comprising : 1 M30 TG 3116 flood housing 1 M30 TG 2855 side strap 1 M30 TG 2630 gear box	
M30 F	Floodlight (excluding gear box) ; wall mounting	12.03
	comprising : 1 M30 TG 3116 flood housing 2 M30 TG 2586 wall bracket	
M30 FP	Floodlight (excluding gear box) ; pole mounting	15.42
	comprising : 1 M30 TG 3116 flood housing 1 M30 TG 2855 side strap 1 M30 TG 3378 back plate 2 M30 TG 2585 pole clamps	
M30 GBP	Gear box (excluding control gear)	16.78*
	comprising : 1 M30 TG 2630 gear box 2 M30 TG 2585 pole clamps	
M30 GB	Gear box only (less gear) 1 TG 2630	

*weight includes gear.

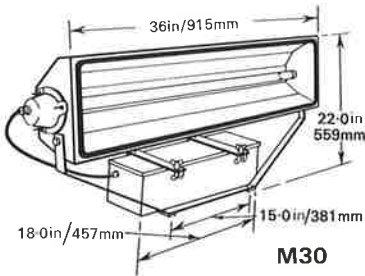


M30 FP

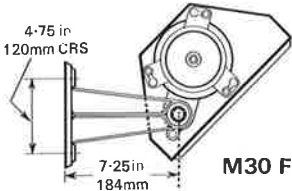
M30 GB P

Fixing centres 13mm dia. on 121mm centres in each bracket

Projected area : 0.362m²



M30



M30 F

750/1600W MBIL floodlight

Features

Compactness—Low Windage—High Output
—Excellent Colour Rendering—Low Glare.

Applications

Designed to provide even illumination over a wide area with low glare at higher angles both for the large stadia requiring high illumination levels and for those requiring lower illumination levels.

Also ideal for lighting any large areas from buildings, poles or short towers with high efficiency and excellent colour rendering. The asymmetric light distribution also provides a very effective means of floodlighting buildings from a short offset.

Lamp

750/1600W MBIL linear metal halide unjacketed tubular double-ended lamp with standard R7s cap. (Lamp data sheet

available on request). The fitting is weatherproof. Gear is mounted remote.

Description

The contoured asymmetric reflector, polished and anodised, is located between end plates cast in LM6-M aluminium alloy. Cool chambers in the castings provide accommodation for special lampholders. At the rear of the reflector a cast chamber with a gasketed lid provides the wiring facilities. Mains entry is by a cable gland.

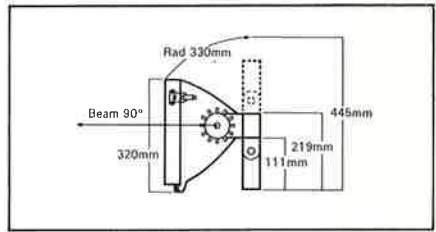
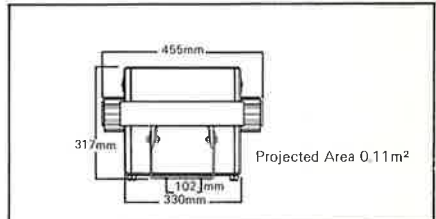
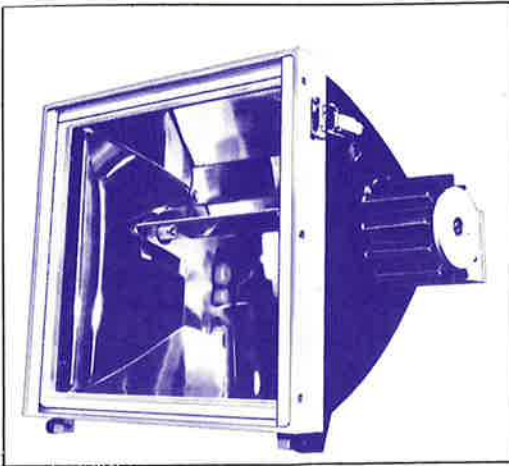
Mounting and aiming

The fitting is provided with a stirrup which gives facilities for altering elevation and azimuth. A universal pole mounting bracket (OHA 4613) can be supplied.

The cast wiring box can be reversed to provide standing or pendant mounting. The baffle in the fitting provides sharp run-back above the peak and coverage near the base of the tower or pole, on short offset types of installation. The ONR insert reflector may be used to give wide, symmetrical beam distribution, where required. Central stirrup fixing hole 21mm.

Re-lamping

Access to the lamp for replacement purposes is made through hinging down glass front.



Gear

BALLASTS

1600W 2 × G53254.2 240V

750W 1 × G53254.4 240V

1600W 2 × G53254.2 220V

750W 1 × G53254.2 220V

PF CORRECTION 220/240V

1600W 6 × GC2346 (150uF)

750W 3 × GC2346 (75uF)

PHASE/PHASE PF CORRECTION

380/415V

1600W 50uF/lamp (440V)

750W 25uF/lamp (440V)

It should be noted that bulk 3 phase correction shows considerable saving in cost and weight of equipment.

Weatherproof boxes for capacitors

GM6172 Box to house 4 capacitors.

GM6174 Box to house 8 capacitors.

Gland and cabling to be completed by contractor.

Ballast mounting

GM6181 mounting bracket for G53254.4 or 2.

RANGE

Catalogue No.	Description	Weight (kg)
ON1600	Flood c/w stirrup (lamps ordered separately)	7.25
OHA 4613	Clamp for 51-89mm OD pole	0.45
ONS	Spare front glass	
ONR	Diffuse reflector insert assembly	
750W MBIL Gear Sets		
1-G 53254.2	220V ballast 9-25in (235mm) × 8-125in (207mm) dia	24.95
3-GC2346	220V capacitors	0.68 (each)
1-G 53254.4	240V ballast 9-25in (235mm) × 8-125in (207mm) dia	24.95
3-GC2346	240V capacitors	0.68 (each)
1600W MBIL Gear Sets		
2-G 53254.2	220V ballast each 9-25in (235mm) × 8-125in (207mm) dia	24.95 (each)
6-GC2346	220V capacitors	0.68 (each)
2-G 53254.4	240V ballast as G53254.2	24.95 (each)
6-GC2346	240V capacitors	0.68 (each)
400W SON TD Gear Set		
Box with Gear		9.525
OHA4615 220/204V	50Hz	Dimensions 390mm × 192mm × 115mm
OHA4615.2.6 220V	60Hz	Dimensions 390mm × 192mm × 115mm

1000W CSI sealed beam floodlight

Lamp

1000W Compact Source Iodide PAR 64 discharge lamp with special bi-post cap.

Description

The floodlight consists of two major assemblies: a glazing ring and a lamp and pulse starter housing assembly.

Glazing ring

Cast in LM6-M aluminium with mounting lugs. The glazing ring is secured to the lamp housing by three stainless steel toggle-catches. Glass can be either clear, stippled or prismatic.

Lamp/pulse starter housing

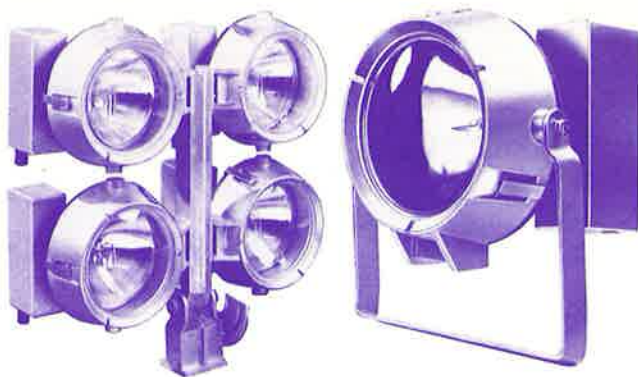
The bi-post lampholder is contained in a cast aluminium housing of LM6-M alloy and the lamp housing between the lampholder casting and the glazing ring is spun aluminium, finished matt black. The pulse starter unit housing of LM 6-M alloy is mounted on the side of the lampholder housing. Cable entry is by gland. Ballasts and capacitors are mounted remote.

Mounting

Mounting brackets give adjustment in azimuth and elevation.

OMA : Stirrup assembly for mounting a single fitting. For pole mounting use OHA 4613 on stirrup. Central stirrup fixing hole 21mm.

OMB4 - Multi-way bracket for up to four fittings. The assembly comprises a bracket only. Fixing bolts are provided with the fitting. See diagram for 4 way mounting. And note that elevation is locked in



Four OM 1000C 1 kW floodlights on OMB 4 bracket

position by bolt through sector plate. The main elevation bolt remains untouched.

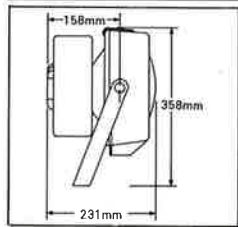
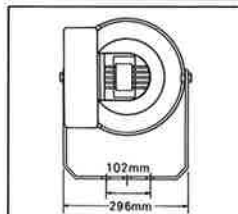
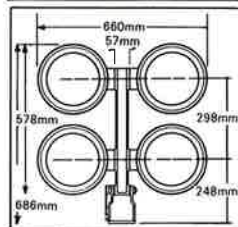
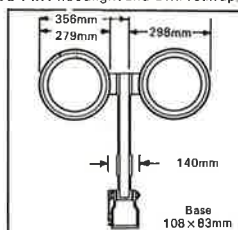
Re-Lamping

The floodlight is re-lamped from the rear without disturbing the aim by releasing and removing the lamp housing from the glazing ring.

Wind Loading

A complete four lamp unit can be mounted in the same headframe space as a 0.6m/24in diameter floodlight. The maximum projected areas are :
Single OM 1000 fitting - 0.07sq.m, approx.
OMB4 bracket only - 0.0034sq.m, approx.

OM 1000C 1 kW floodlight and OMA stirrup.



RANGE

Catalogue no.	Description	Weights kg
OM 1000 C	1 kW floodlight with clear front glass	6.34
OM 1000 P	1 kW floodlight with prismatic front glass	6.34
OM 1000 S	1 kW floodlight with stippled front glass	6.34
OM 1000 W	1 kW floodlight with extra wide prismatic front glass	6.34
OMA	Stirrup assembly	0.9
OMB4	Multi-way mounting bracket assembly	2.49
OMD	Spill-ring attachment	0.5
OMG B6	Gear tray for remote indoor use with 6 ballasts (For operating two fittings)	36.74
OMG C16	Gear tray for remote indoor use with 16 capacitors	16.32
OMG B3 C8	Gear Tray for remote indoor use with 3 ballasts and 8 capacitors (For operating one fitting)	24.94
OMC	Spare clear front glass	0.34
OMP	Spare prismatic front glass	0.34
OMS	Spare stippled front glass	0.34
OMW	Spare extra wide prismatic glass	0.34
OHA 4613	Universal pole clamp	0.45
Lamp		0.9

Lamps are ordered separately, as are delay relays if required.

Gear tray OMG types are 322mm between centres (length), 184mm between centres (width).

Room must be left on OMG C16 to remove fuses.

Replacement starter unit gear tray Catalogue no. OMX:

Street lighting numbering system

Purpose

The purpose of the system is to provide an immediate and positive identification of a catalogue number in relation to range and description of the lantern.

Basic Principle

1. All items of streetlighting equipment are catalogued with prefix Q. This automatically locates the whole range in the same section of the Comprehensive Price List for easier location. It also gives an immediate statement of equipment type.

2. Second and third digits are initial letter and number of the lantern in the range description.

e.g. A3 = Alpha 3
B4 = Beta 4
G3 = Gamma 3 etc.

3. A standard vocabulary of suffix letters, indicative of type detail, with or without gear, accessories or attachments etc., is included as appropriate in the catalogue number. See below secondary ref.

4. A system of four-digit numbers indicating no. of lamps and maximum wattage. (See below)

5. Where components making up a lantern are supplied as separate packages, each package has catalogue number.

6. When producing a complete fitting catalogue number, separate packages are indicated by an oblique stroke /.

An example would be:

QB4 U1200=Open Beta 4
canopy with
lugs
= 2 Pin BC
lampholder
QB4 Y = Beta 4 refractor
dome

The complete Beta 4 open lantern for GLS lamp then becomes: QB4 U/Y/1200B22— indicating three packages.

Conversions

$\frac{3}{4}$ in BSP = $1\frac{1}{16}$ in O/D = 26mm O/D.
1 in BSP = $1\frac{11}{32}$ in O/D = 34mm O/D.
 $1\frac{1}{4}$ in BSP = $1\frac{11}{16}$ in O/D = 42mm O/D.

Secondary References:

- B. With gear
- C. Cut off
- D. Acrylic bowl/diffuser/cylinder – clear or semi-obscured with or without refractor plates.
- E. Support assembly
- F. Small canopy
- G. Glass flat or bowl – clear or refractor
- H. Bowl ring
- I. Kolorarc (MBIF)
- J. Canopy with lugs – enclosed type
- K. Triangular spigot (QLC columns)
- L. Lampholder/bracket assembly – AMEL, lampholder only
- M. Acrylic bowl – stippled or pinspot
- N. High pressure sodium (SON)
- O. Acrylic bowl or cylinder – opal
- P. PE cell socket
- R. Aeroscreen
- S. Semi cut-off
- T. Top entry
- U. Open Lantern
- V. Vandal resistant bowl – clear, opal or prismatic
- W. Large canopy or canopy and bowl now packed separately
- X. Refractor ring, symmetric
- Y. Refractor ring, asymmetric – glass or plastic
- Z. Refractor ring, asymmetric – inner portion only (QBI)

Suffix Numbers – Lamps and Wattages

1035 – 1 x 35W
1055 – 1 x 55W
1080 – 1 x 80W
1090 – 1 x 90W
1100 – 1 x 100W
1125 – 1 x 125W
1135 – 1 x 135W
1140 – 1 x 140W
1200 – 1 x 200W
1250 – 1 x 250W
1400 – 1 x 400W
2240 – 2 x 600mm/2ft 40W tubes

Where more than one lamp is available for fitting, the largest wattage is used for the reference number.

Suffix Numbers – Control Gear

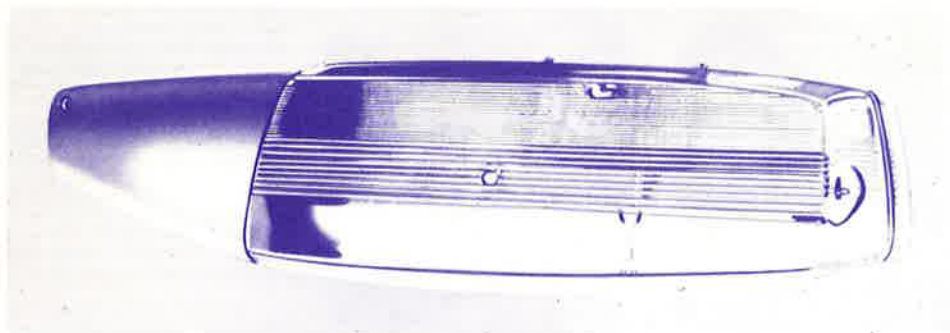
.4 – 240V 50 Hz
.H – 230/250V tapped
.T – 200/250V tapped

Suffix Numbers – Lampholders

B22 – 2BC
B22-3 – 3BC
E27 – ES
Mainly for reference information only.

NOTE: The above vocabulary is provided for reference information only. When ordering please refer to catalogue numbers given on appropriate lantern page.

Alpha One semi-cut-off sodium



QA1 E/D1090

Lamps

One 55W or 90W SOX sodium discharge lamp.

Distribution

Semi-cut-off DLOR 71%.

Specification

To BS 1788, Kite marked, DOE and COID approved.

The end support is LM6-M die-cast aluminium alloy. The opticell is injection moulded clear acrylic and hermetically sealed. Other components are of stainless steel or aluminium. Control gear is mounted remote.

Mounting

Side entry for 42mm dia. \times 110mm ($1\frac{1}{4}$ in BSP) spigot.

Recommended mounting height: nominal 6-8m.

Recommended column: QC8; see pages 258-260 for full details.

Average spacing/height ratio: 4:1.

Catalogue no.

Complete lanterns

Lanterns comprise end support and opticell.

QA1 E/D1055 for 55W SOX.

QA1 E/D1090 for 90W SOX.

Packages

QA1 E End support assembly.
QA1 D1055 55W SOX opticell.

QA1 D1090 90W SOX opticell.

Control gear

Gear sets required for lanterns.

Lamp

55W SOX

90W SOX

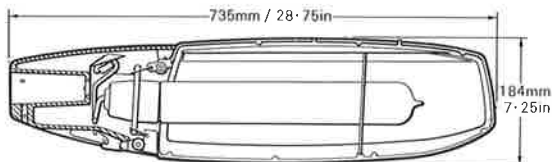
Control gear

G53182.4

G532280

G53232.4

G53236



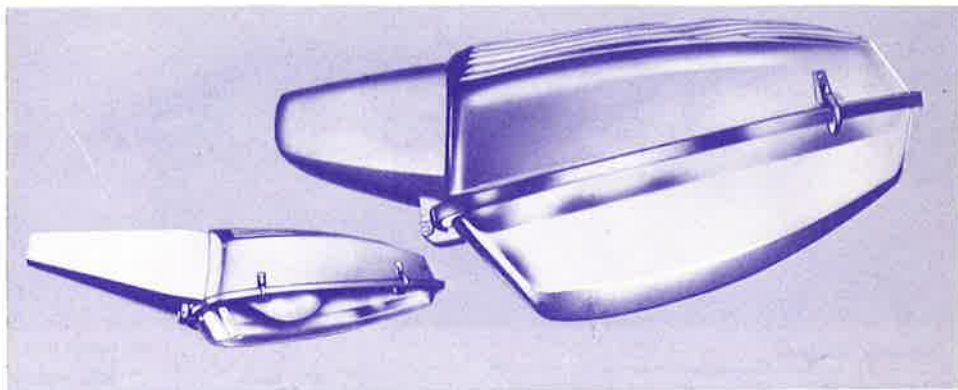
Overall width 241mm/9.5in

Weight 3.85kg

Windage area 0.119 m²



Alpha Three mercury/metal-halide/SON lantern



OA3 DWCB 1400.4

OA3 DWS 1400

Lamps

One 250W or 400W MBF/U or
One 400W MBI/F or
One 250W or 400W SON

Distribution

- (a) Cut-off
- (b) Semi-cut-off

Specification

To BS.1788, Kite marked, DOE and
CQID approved. The canopy is
pressed aluminium and painted
white internally. End support/gear
slipper with porcelain lampholder is
in LM6-M die-cast aluminium alloy.
Bowls are moulded in clear UV
stabilized acrylic plastic. Control
gear for 'less gear' lanterns is
mounted remote.

Mounting

Side entry for 42mm dia. x 125mm
(1½ in BSP) spigot.

With gear: 48mm dia. x 100mm
Recommended mounting height:
8-12m.

Recommended columns: QC8,
QC10 or QC12; see pages
258-260 for full details.

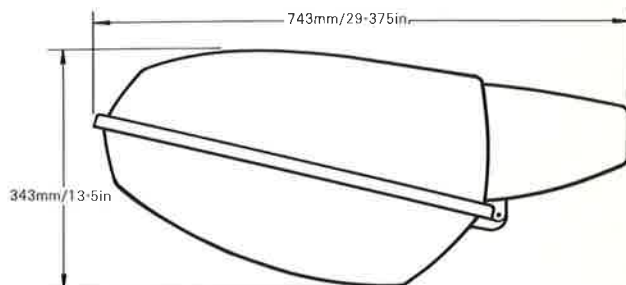
Average spacing/height ratio:

4.5:1 (SCO)

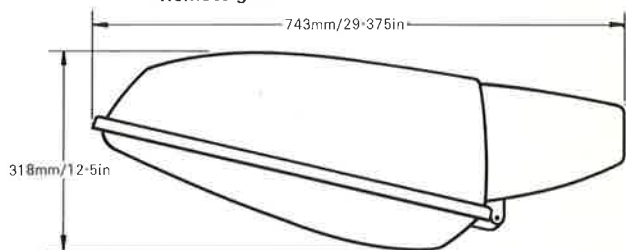
3:1 (CO)

Catalogue no.

All lanterns comprise fully assembled
canopy in one pack with cover
bowls in separate pack for safe
transit. Canopy and bowl may be
ordered separately, or as a complete
lantern by the insertion of the
letter 'D' in the appropriate canopy
catalogue number.



Remote gear semi-cut-off lantern



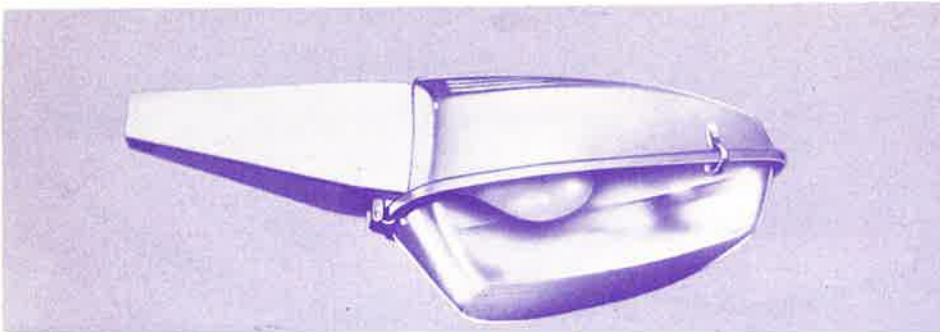
Remote gear cut-off lantern

Overall width
464mm/18.25in

Weight
4.875kg/10.75lb

Windage area
164m²/1.75ft²

Alpha Three mercury/metal-halide/SON lantern



Canopies less gear

QA3 D/WSB,1400,T.

Without Photocell		With Nema Photocell Socket	WEIGHTS (kg) (incl. bowl)
QA3 WS 1400	Semi-cut-off canopy for 400W MBF/SON/MBIF lamp	QA3 WSP 1400	5.44
QA3 WS 1250	Semi-cut-off canopy for 250W MBF/SON/MBIF lamp	QA3 WSP 1250	5.44
QA3 WC 1400	Cut-off canopy for 400W MBF/SON/MBIF lamp	QA3 WCP 1400	4.76
QA3 WC 1250	Cut-off canopy for 250W MBF/SON/MBIF lamp	QA3 WCP 1250	4.76

Canopies with gear

QA3 WSB 1400 4	Semi-cut-off 400W MBF 240V	QA3 WSPB 1400 4	12.56
QA3 WSB 1250 4	Semi-cut-off 250W MBF 240V	QA3 WSPB 1250 4	11.24
QA3 WSNB 1400 T	Semi-cut-off 400W SON 220/240V	QA3 WSPNB 1400 T	14.40
QA3 WSNB 1250 T	Semi-cut-off 250W SON 220/240V	QA3 WSPNB 1250 T	12.70
QA3 WCB 1400 4	Cut-off 400W MBF 240V	QA3 WCPB 1400 4	11.88
QA3 WCB 1250 4	Cut-off 250W MBF 240V	QA3 WCPB 1250 4	10.56
QA3 WCNB 1400 T	Cut-off 400W SON 220/240V	QA3 WCPNB 1400 T	13.72
QA3 WCNB 1250 T	Cut-off 250W SON 220/240V	QA3 WCPNB 1250 T	12.02

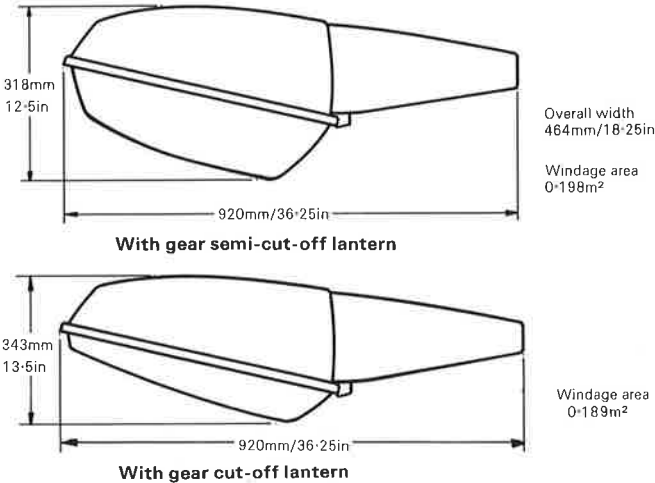
Bowls

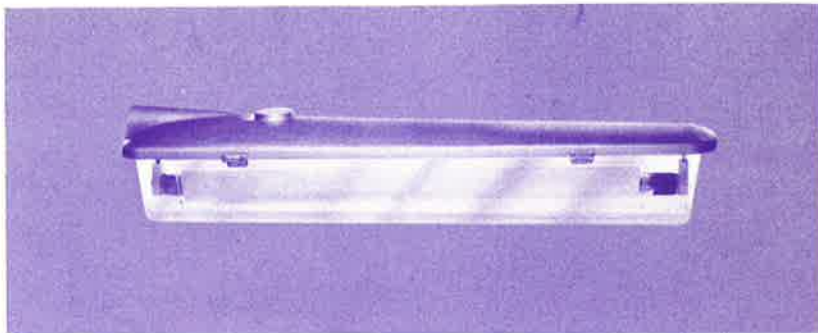
QA3 DS	Bowl for semi-cut-off Alpha 3
QA3 DC	Bowl for cut-off Alpha 3

Control gear

Gear sets required for 'less gear' lanterns and supplied for 'with gear' lanterns.

Lamp	Control gear
250W MBF	G 53198.4 G C2214
400W MBF	G 53193.4 G C2218
400W MB1/F	G 53193.T G 53282 G C2218
250W SON	G 53251.T G 53282 G C2235
400W SON	G 53230.T G 53282 2× G C2218





QA5 1200

Lamps

One 140W or 200W SLI/H sodium discharge lamp.

Distribution

Semi-cut-off DLOR 75%.

Specification

To BS.1788, Kite marked and DOE approved. The canopy of LM6-M die-cast aluminium alloy incorporates an aluminium reflector. The acrylic bowl has sealed-in refractor plates. Control gear is mounted remote.

Mounting

Side entry for 42mm dia. x 110mm spigot.

Recommended mounting height: 10-12m.

Recommended columns: QC10 and QC12; see pages 256-260 for full details.

Average spacing/height ratio: 4:1.

Catalogue no.

Complete lanterns

Lanterns comprise canopy assembly and bowl.

QA5 DW/1200 lantern for 140W or 200W SLI/H lamp

Packages

QA5 W.1200 Canopy assembly for 140W or 200W SLI/H lamp
QA5 D Bowl assembly

Control gear

Gear sets required for lanterns.

Lamp

140 SLI/H

200 SLI/H

Control gear

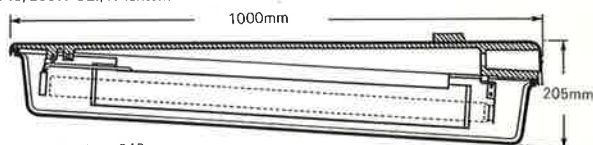
G53232.4

GC2218

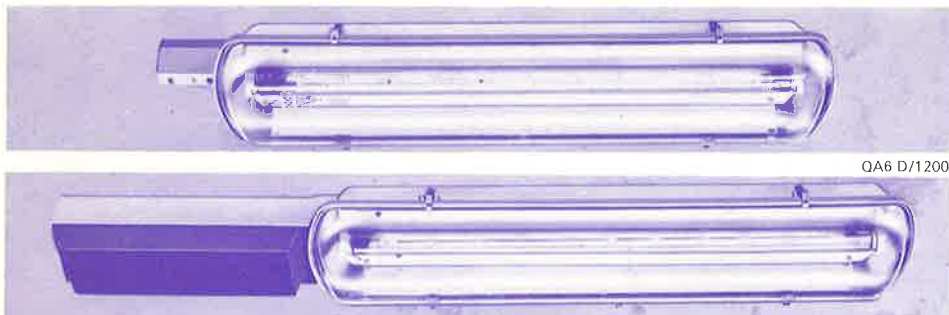
G53261.T

GC2235

140/200W SLI/H lantern



Overall width: 248mm
Weight: 5.67 kg
Windage area: 0.167m²



QA6 D/1200

QA6 D/B1140.4

Lamps

One 140W or 200W SLI/H lamp.

Distribution

Cut-off DLOR 65% 140W.

77% 200W.

To BS.1788. Kite marked, DOE and COID approved. The canopy is GRP and the bowl is UV stabilized acrylic. End supports are LM6-M aluminium alloy.

The control gear for 'less gear' lanterns is mounted remote.

Mounting

Recommended mounting height: 10-12m.

Recommended columns: QC10 or QC12; see pages 258-260 for full details.

Recommended spacing: approximately 3:1.

Catalogue no.

Complete lanterns less gear

Lanterns comprise canopy assembly and bowl.

QA6 D/1140 for 140W SLI/H lamp.

QA6 D/1200 for 200W SLI/H lamp.

QA6 D/P.1140 for 140W SLI/H lamp

c/w 3-pin photocell socket.

QA6 D/P.1200 for 200W SLI/H lamp

c/w 3-pin photocell socket.

Complete lanterns with gear

Lanterns comprise canopy

assembly (with gear) and bowl

QA6 D/B.1140.4 for 140W SLI/H

lamp.

QA6 D/B.1200.T for 200W SLI/H

lamp.

QA6 D/PB.1140.4 for 140W SLI/H

c/w 3-pin photocell socket.

QA6 D/PB.1200.T for 200W SLI/H

c/w 3-pin photocell socket.

Packages

QA6 1140 Canopy/end support assembly for 140W SLI/H

(less gear).

QA6 1200 Canopy/end support assembly for 200W SLI/H

(less gear).

QA6.P.1140 Canopy/end support assembly for 140W SLI/H (less gear) c/w 3-pin photocell socket.

QA6.P.1200 Canopy/end support assembly for 200W SLI/H (less gear) c/w 3-pin photocell socket.

QA6.P4.1140 Canopy/end support assembly for 140W SLI/H (less gear) c/w 4-pin photocell socket.

QA6.P4.1200 Canopy/end support assembly for 200W SLI/H (less gear) c/w 4-pin photocell socket.

QA6.B.1140.4 Canopy/end support assembly with gear for 140W SLI/H.

QA6.B.1200.T Canopy/end support assembly with gear for 200W SLI/H. QA6.PB.1140.4 Canopy/end support assembly c/w 3-pin photocell socket and gear for 140W SLI/H. QA6.PB.1200.T Canopy/end support assembly c/w 3-pin photocell socket and gear for 200W SLI/H. QA6.D Bowl assembly.

Also available to special order with four-pin photocell sockets and cross-wiring facility.

PROVISION FOR PHOTOCELL



QA6 D/1200

Windage area
0-130m²

Weight
6-40kg/14-125lb

Width
248mm/9-75in



QA6 D/B.1200.T

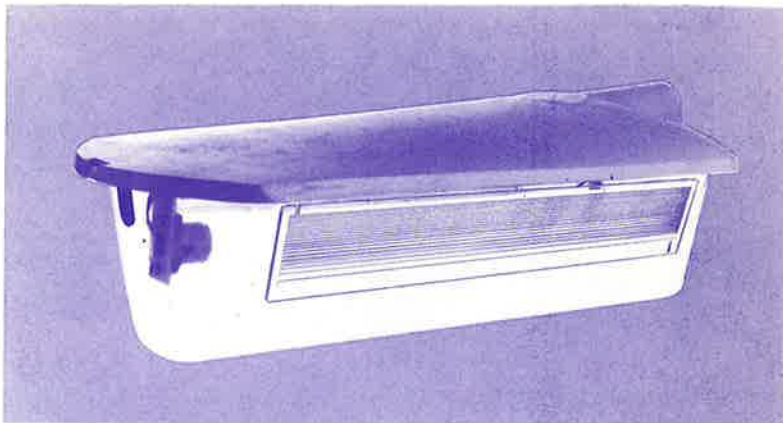
Windage area
0-176 m²

Weight
13-58 kg
18-26 kg

140 W

200 W

Alpha Nine semi-cut-off sodium



Lamp

One 90W SOX sodium discharge lamp.

Distribution

Semi-cut-off DLOR 60%.

Specification

To BS.1788, Kite marked and DOE approved.

The canopy is of LM6-M aluminium alloy with a porcelain BC lampholder. The bowl is UV stabilized acrylic with bonded internal refractor plates. The control gear is mounted on the canopy of the 'with gear' lantern. Control gear for 'less gear' lantern is mounted remote.

Mounting

Side entry for 42 x 100mm spigot.

Recommended mounting height 8-10m.

Recommended columns: QC8 or QC 10; see pages 256-260 for full details.

Average spacing/height ratio: 4.5:1.

Catalogue no.

Complete lantern less gear

Lantern comprises canopy assembly and bowl assembly QA9 D/W 1090 lantern for 90W SOX

Complete lantern with gear

Lantern comprises canopy assembly with gear and bowl assembly QA9 D/WB.1090.4 lantern for 90W SOX

Packages

QA9 W.1090 Canopy assembly (less gear)

QA9 WB.1090.4 Canopy assembly (with gear)

QA9 D. Bowl for less gear lantern

QA9 DWB. Bowl for with gear lantern

QA9.DB. Replacement bowl only for use with obsolete QA9 B.1090.

Control gear

Gear sets required for 'less gear' lantern and supplied for 'with gear' lanterns.

Lamp

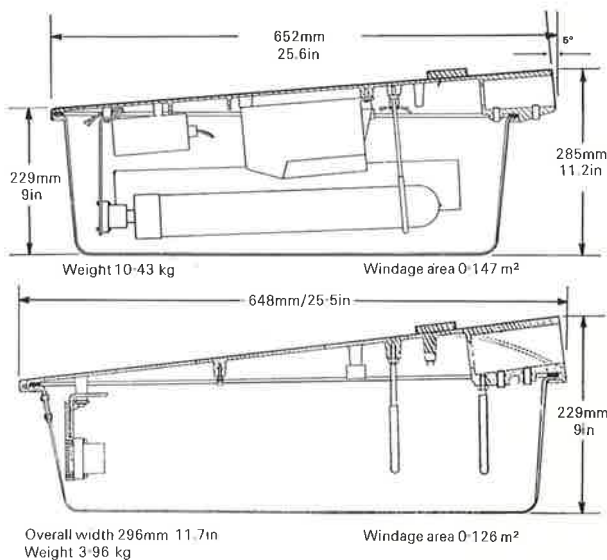
90W SOX

Control gear

G 53232.4

G C2236

QA9 D/WB 1090 4



Beta Four top entry GLS/mercury



QB4 V/1200/B22-3

Weights		Windage area
open lantern	1.25 kg	0.033 m ²
enclosed lantern	1.70 kg	0.047 m ²

Lamps

- One 60, 100, 150 or 200W GLS tungsten filament lamp.
- One 80W or 125W MBF lamp.

Specification

To BS.1788.
The canopy is LM6-M aluminium alloy and the refractor bowl is either UV stabilised acrylic or polycarbonate. The refractor for open lanterns is glass. Control gear for MBF lamps is mounted remote.

Mounting

Top entry for $\frac{3}{4}$ in BSP thread \times 18mm.
Recommended mounting height: 5m.
Recommended column: QC3 with QC B.T 126 bracket; see pages 256 262 for full details.
Average spacing/height ratio: 6:1.

Catalogue no.

Complete lanterns (open)

QB4 U/Y/1200/B22 for 60/150W GLS

QB4 U/Y/1200/E27 for 150/200W GLS or 80/125W MBF

QB4 U/Y/1200/B22-3 for 80/125W MBF

Complete lanterns (enclosed)

QB4 D/1200/B22 Lantern with acrylic bowl for 60/150 GLS.

QB4 D/1200/E27 Lantern with acrylic bowl for 80/125W MBF.

QB4 D/1200/B22-3 Lantern with acrylic bowl for 80/125W MBF

QB4 V/1200/B22 Lantern with anti-vandal bowl for 60/150W GLS.

QB4 V/1200/E27 Lantern with anti-vandal bowl for 150W GLS or 80/125W MBF

QB4 V/1200/B22-3 Lantern with anti-vandal bowl for 80/125W MBF

Packages

QB4 1200 Canopy assembly (for bowl)—enclosed.

QB4 U 1200 Canopy assembly (for refractor)—open.

QB4 D Acrylic refractor bowl.
QB4 V Polycarbonate refractor bowl.

QB4 Y Glass refractor dome.

GL 1085 Lampholder (2BC-B22).

GL 1086 Lampholder (3BC-B22-3).

GL 1087 Lampholder (ES-E27).

Control gear

Gear sets required for discharge lamps in lanterns.

Lamp

80W MBF

125W MBF

Control gear

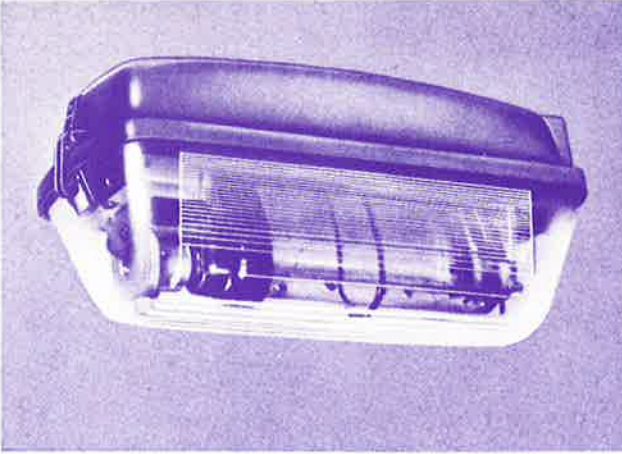
G 53162.4

G C2234

G 53159.4

G C2234.

Beta Five sodium lantern



QB5D/1in B1035-4

Lamp

One 35W SOX sodium discharge lamp.

Specification

To BS.1788

The canopy/gear housing and bowl ring are LM6-M aluminium alloy. Bowls are either acrylic or vandal-resistant plastic with bonded internal refractor plates. Gear can be mounted remote with 'less gear' lanterns.

Mounting

Side entry for 34mm dia. x 80mm spigot.

Top entry for $\frac{3}{4}$ in BSP threaded. Also available to order 27mm side entry and 1in BSP top entry. Recommended mounting height: 5m.

Recommended column: QC3 with QCB.S534 bracket; see pages 256-260 for full details.

Average spacing/height ratio: 6:1.

Catalogue no.

Complete lanterns less gear

Lanterns comprise canopy assembly and bowl assembly.

QB5.D/1in 1035-1in BSP

(34mm \varnothing) side entry with acrylic bowl for 35W SOX

QB5.T.D/ $\frac{3}{4}$ in 1035- $\frac{3}{4}$ in BSP

threaded top entry with acrylic bowl for 35W SOX

For lanterns requiring anti-vandal bowl replace 'D' with 'V'.

Complete lanterns with gear

Lanterns comprise canopy/gear assembly and bowl assembly.

QB5.D/1in B.1035.4-1in BSP

(34mm \varnothing) side entry with acrylic bowl for 35W SOX

QB5.TD/ $\frac{3}{4}$ in B.1035.4- $\frac{3}{4}$ in BSP

threaded top entry with acrylic bowl for 35W SOX

For lanterns requiring anti-vandal bowl replace 'D' with 'V'.
For lanterns with ignitor circuit add suffix 'A' to catalogue no. of with gear canopy, for example, QB5.1in B1035.4A.

Packages

QB5.1in 1035-1in BSP (34mm \varnothing) side entry canopy (less gear)

QB5. $\frac{3}{4}$ in 1035- $\frac{3}{4}$ in BSP (27mm \varnothing) side entry canopy (less gear)

QB5.T. $\frac{3}{4}$ in 1035- $\frac{3}{4}$ in BSP threaded top entry canopy (less gear)

QB5.T.1in 1035-1in BSP threaded top entry canopy (less gear)

QB5.1in B.1035.4-1in BSP (34mm \varnothing) side entry canopy (with gear)

QB5. $\frac{3}{4}$ in B.1035.4- $\frac{3}{4}$ in BSP (27mm \varnothing) side entry canopy (with gear)

QB5.T. $\frac{3}{4}$ in B.1035.4- $\frac{3}{4}$ in BSP threaded top entry canopy (with gear)

QB5.T.1in B.1035.4-1in BSP threaded top entry canopy (with gear)

QB5.D-Acrylic bowl assembly

QB5.V-Anti-vandal bowl assembly

Control gear

Gear sets required for 'less gear' lanterns and supplied for 'with gear' lanterns.

Lamp

35W SOX

(less gear)

35W SOX

(with gear)

Control gear

G 53131.4

G C2384

G 53182.4

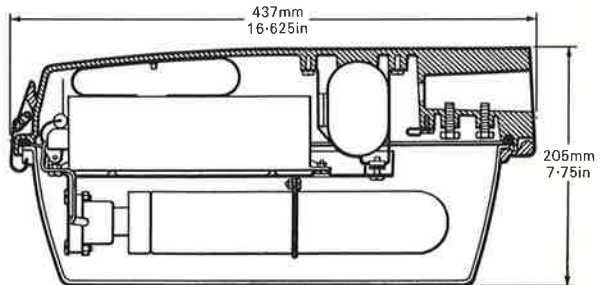
G C2384

Ignitor version

G 53311

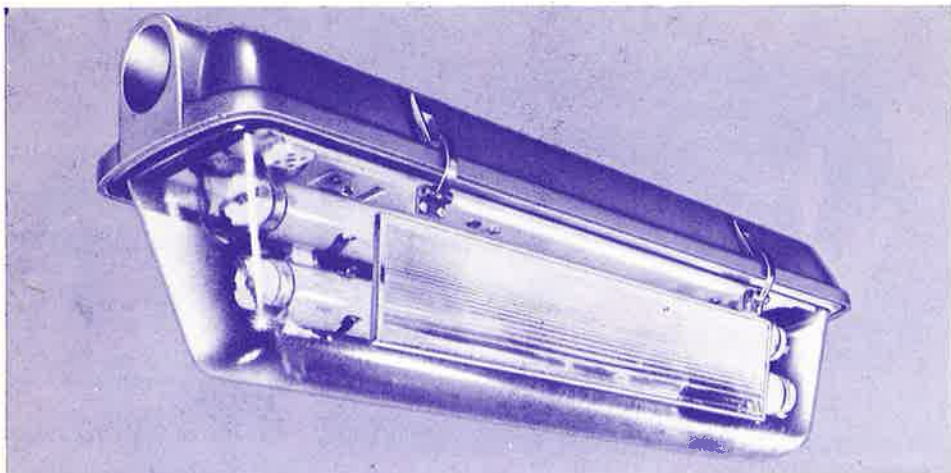
G 53312.4

G C2223



Overall width: 160mm/6.25in
Weight: 7.64kg/16lb
Windage area: 0.070m²/0.875 ft²

Beta Six side entry fluorescent



QB6 D/B2240,4

Lamps

Two 40W 600mm/2ft MCFA/U metal strip tubes 240V 50Hz.

Specification

To BS.1788.

The canopy of LM6-M aluminium alloy houses the control gear on a sheet steel tray (enamelled white). The bowl is Darvic or acrylic with internal bonded refractor plates.

Mounting

Side entry for 42mm dia. x 100mm spigot.

Recommended mounting height : 5m

Recommended column : QC3 with OCB.S542 bracket: see pages 256 - 262 for full details.

Average spacing/height ratio :6:1.

Catalogue no.

Complete lanterns with gear

Lanterns comprise canopy assembly and bowl assembly.

QB6 D/B2240,4 Lantern with acrylic bowl for two 600mm/2ft 40W MCFA/U

QB6 V/B2240,4 Lantern with anti-vandal bowl for two 600mm/2ft 40W MCFA/U

Packages

QB6 B2240,4 Canopy with gear and gear tray.

QB6 D Bowl assembly (acrylic).

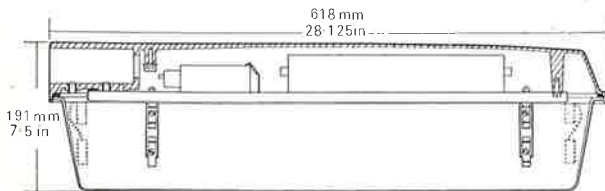
QB6 V Bowl assembly (Darvic anti-vandal).

Control gear

Gear set supplied with lantern.

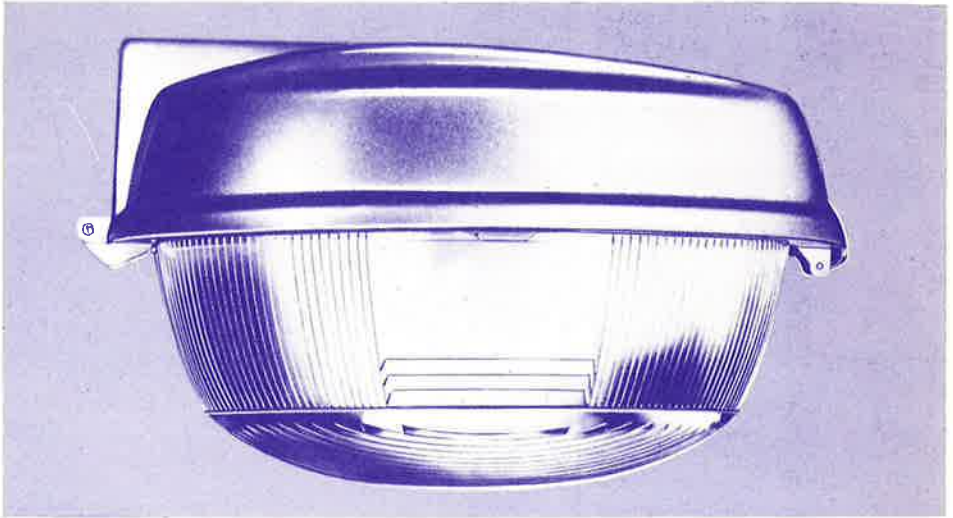
Lamp 40W MCFA/U

Control gear G 69082,4 GC2222



Overall width : 171mm
Weight : 6.58 kg
Windage area : 0.128 m²

Beta Seven side entry mercury



QB7 G/1125 E27

Lamps

One 80W or 125W MBF lamp.

Specification

To BS.1788.

The canopy/body is LM6-M aluminium alloy and the bowl can be either glass or CAB anti-vandal plastic. Control gear for MBF lamps is mounted remote.

Mounting

Side entry for 34mm dia. x 80mm spigot.

Recommended mounting height: 5m

Recommended column: QC3 with QCB S534 bracket; see pages 256 262 for full details.

Average spacing/height ratio: 6:1.

Catalogue no.

Complete lanterns

Lanterns comprise a body assembly and a bowl assembly.

QB7 G/1125 B22-3 Lantern with glass bowl for 80/125W MBF

QB7 G/1125 E27 Lantern with glass bowl for 80/125W MBF

QB7 V/1125 B22-3 Lantern with vandal bowl for 80/125W MBF

QB7 V/1125 E27 Lantern with vandal bowl for 80/125W MBF

Packages

QB7 1125 B22-3 Body assembly (3BC lampholder).

QB7 1125 E27 Body assembly (ES lampholder).

QB7 G Bowl assembly (glass).

QB7 V Bowl assembly (CAB anti-vandal).

Control gear

Gear sets required for discharge lamps in lanterns.

Lamp

80W MBF

125W MBF

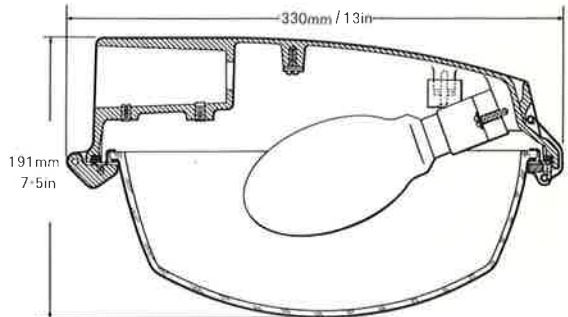
Control gear

G 53162.4

G C2234

G 53159.4

G C2234



Overall width: 270mm/10.625in

Windage area: 0.047 m²

Weights

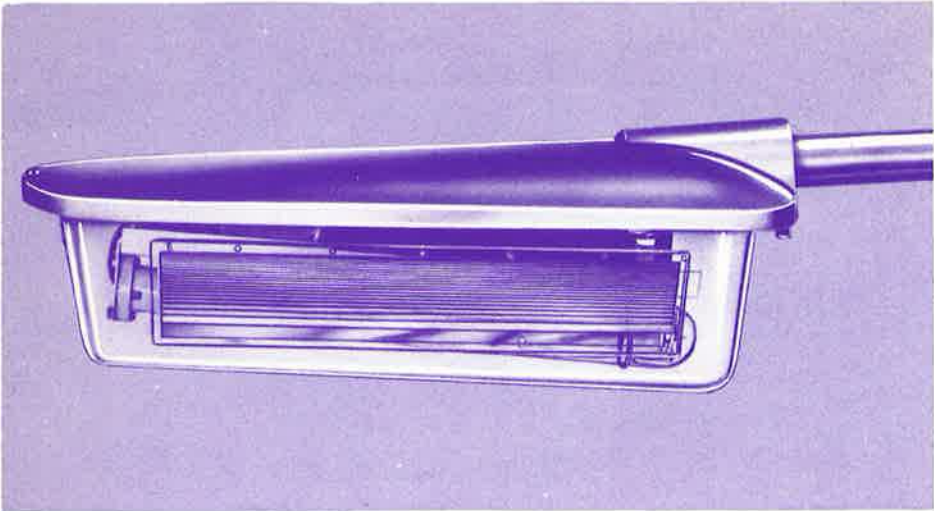
with glass bowl

with vandal bowl

3.74 kg

2.15 kg

Beta Eight side entry sodium



Lamp

One 55W SOX sodium discharge lamp.

Specification

To BS.1788.

The canopy is of LM6-M aluminium alloy with a porcelain lampholder. The bowl can be either UV stabilized acrylic or CAB plastic. Both bowls have bonded internal refractor plates. The control gear for 'with gear' lanterns is mounted on a gear tray in the canopy. Control gear for 'less gear' lanterns is mounted remote.

Mounting

Side entry for 34mm dia. x 80mm spigot.

Recommended mounting height : 5m
Recommended column : QC3 with QCB.S534 bracket; see pages 256 -- 262 for full details.

Catalogue no.

Complete lanterns less gear

Lanterns comprise a canopy assembly and a bowl assembly.
QB8 D/1055 Lantern with acrylic bowl for 55W SOX.
QB8 V/1055 Lantern with vandal bowl for 55W SOX.

Complete lanterns with gear

Lanterns comprise a canopy assembly (with control gear) and a bowl assembly.
QB8 D/B1055.4 Lantern with acrylic bowl for 55W SOX.

QB8 V/B1055.4 Lantern with vandal bowl for 55W SOX.

Packages

QB8 1055 Canopy assembly (less gear).
QB8 B1055.4 Canopy assembly (with gear).
QB8 D Bowl assembly (acrylic).
QB8 V Bowl assembly (CAB anti-vandal).

Control gear

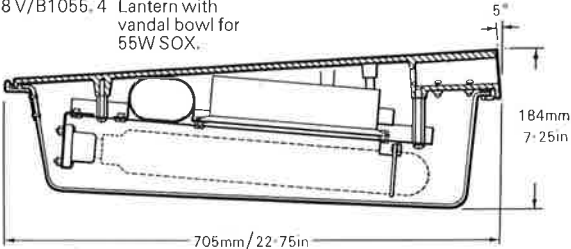
Gear sets required for 'less gear' lantern and supplied for 'with gear' lantern.

Lamp

55W SOX (less gear)
55W SOX (with gear)

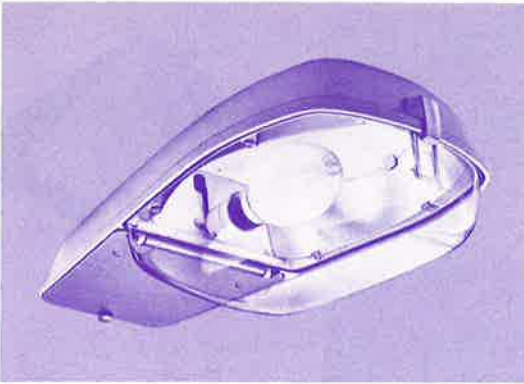
Control gear

G 53131.H
G C2280
G 53181.4
G C2280



Width: 242mm/9.5in
Windage area: 0.086 m²

Weights
less gear: 4.08 kg
with gear: 8.49 kg



QB79 V/WB 1125.T

Lamps

One 80W or 125W MBF lamp

Specification

To BS 1788.

The canopy/body is pressure die cast from LM6-M aluminium alloy, and the bowl moulded from polycarbonate. There is a cast partition between lamp and gear. The control gear is in the lantern, or supplied for remote mounting if required.

Mounting

Side entry for 48mm diameter x 110mm. A reducer is available to reduce this to 33mm.

Catalogue no.

Complete lanterns

Lanterns comprise two packages:

(1) Body with gear compartment (and gear if applicable).

(2) Bowl.

QB79 V/WB 1080.4 Lantern with vandal-resistant bowl complete with integral control gear 80W MBF 240V.

QB79 V/WB 1125.T Lantern with vandal-resistant bowl complete with integral control gear 125W MBF.

QB79 V/W 1200 Lantern with vandal-resistant bowl less gear.

All supplied complete with ES lampholder unless otherwise specified.

Packages

QB79 WB 1080.4 Body and gear for 80W MBF 240V.

QB79 WB 1125.T Body and gear for 125W MBF.

QB79 W 1200 Body without gear for use with remote gear.

For lanterns supplied with photocell socket add P after W in above catalogue numbers.

QB79 V Polycarbonate vandal-resistant bowl.

Control gear

Gear sets required for 'less gear' lantern and supplied in 'with gear' lantern.

Lamp

80W MBF (less gear)

125W MBF (less gear)

80W MBF (integral gear)

125W MBF (integral gear)

Control gear

G 53162.4

GC 2383

G 53159.4

GC 2383

G 53272.4

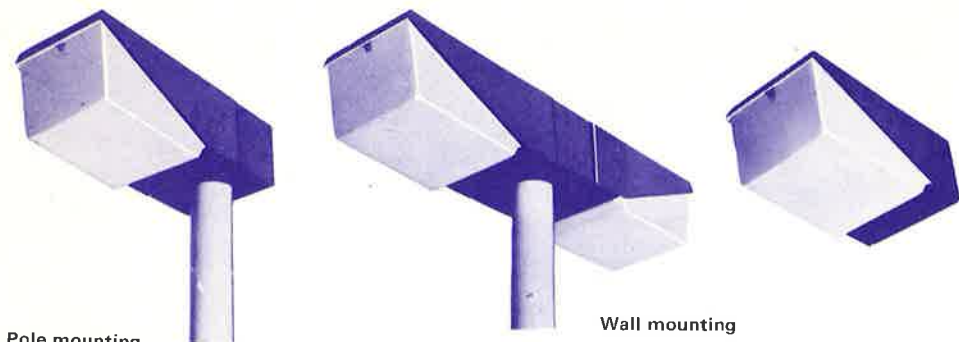
GC 2383

G 53271.T

GC 2383

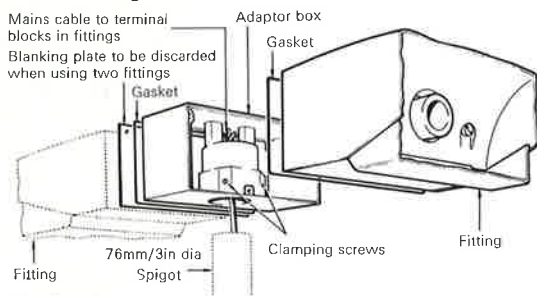


Precinct 80 and 125W MBF



Pole mounting

Mains cable to terminal blocks in fittings
Blanking plate to be discarded when using two fittings



Application

Precinct is a wall-mounted fitting in an alternative shape to the traditional bulkhead. With an adaptor box it can be column mounted, either singly or in pairs. Thus a matching installation can be planned for walls and columns.

Precinct is manufactured with integral control gear for 80W and 125W MBF.

Construction

A pressure die-cast LM6-M aluminium canopy with integral cast reflector houses a separate gear tray with appropriate 240V integral gear.

The ES lampholder is mounted on the gear tray and projects through the back of the reflector.

Three shrouded fixing holes are provided in the gear tray, and 19mm/ $\frac{3}{4}$ in conduit clearance knock-outs are provided in the sides and bottom. The diffuser is opal Polycarbonate.

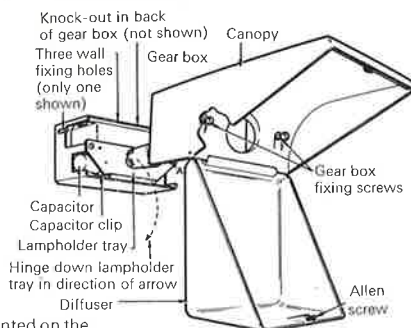
Pole mounting adaptor

One pole mounting adaptor provides facility for one or two fittings as shown in the post top version diagram. The assembly shows that a blanking off plate is used only when one fitting is installed.

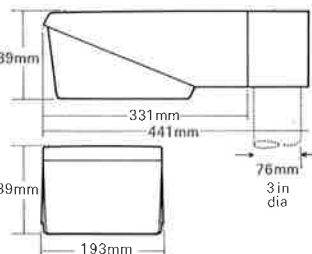
Recommended mounting height 3-6m/10-20ft

Recommended column : QC4 with QCS60 spigot.

Wall mounting



Dimensions



Spares

Provisions are made for spare anti-vandal bowls for the rare occasions when a replacement may be required.

RANGE : Packed complete with lamp

Catalogue no.	Description	Windage Area (m ²)	Weight kg	lb	Lamp	Cap
OC 1080.4	80W Precinct c/w gear	0.064	4.1	9.039	MBF	ES
OC 1125.4	125W Precinct c/w gear	0.064	4.8	9.48	MBF	ES

Catalogue no.	Description	Weight kg	lb
OCA 1/2	Adaptor mounting	1.59	3.505
OCV	Spare anti-vandal bowl	0.23	0.507
GL 1113	Spare lampholder	0.11	0.242

Gamma Three mercury/fluorescent



QG3 1400

Lamps

- a) One 250W or 400W MBF lamp,
- b) One 250W or 400W SON lamp,
- c) One 400W MBIF lamp.

Specification

COID approved.

Base is LM6-M aluminium alloy and the canopy is an acrylic enamelled aluminium spinning. The bowl is acrylic plastic and the toggle catches are stainless steel. All control gear is mounted remote.

Mounting

Post top mounting for 76 x 76mm spigot.

Recommended mounting height: 5-8m

See pages 256-260 for suitable aluminium columns.

Catalogue no.

Complete lanterns

Lantern comprises base assembly, bowl and canopy.

QG3 1400 for 250/400 MBF

250/400W SON and 400W MBIF.

Replacement packages

QG3 O Opal bowl.

QG3 F Canopy assembly.

QG3 E Support assembly.

Control gear

Gear sets required for lantern.

Lamp

250W MBFU

400W MBFU

400W MBIF

250W SON

400W SON

Control Gear

G 53198.4

G C2370

G 53193.4

G C2331

G 53193.4

G 53283

G C2331

G 53251.T

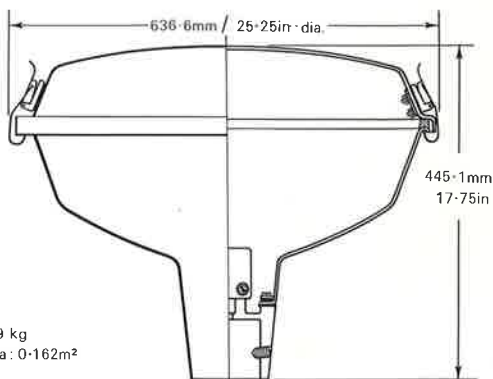
G 53282

G C2386

G 53230.T

G 53282

G C2331 (x2)



Weight: 4.99 kg

Windage area: 0.162m²

Gamma Four-multi-lamp

Lamps

- a) Two or three 500W GLS tungsten filament lamps.
- b) Two or three 250W or 400W MBF/U lamps.
- c) Two or three 250W or 400W SON lamps.
- d) Two or three 400W MBIF lamps.

Distribution

Symmetrical.

Specification

COD approved.

The canopy of sheet aluminium is attached to the base casting assembly of LM6-M aluminium alloy by a steel stem.

The bowl is of acrylic plastic.

Control gear is mounted remote.

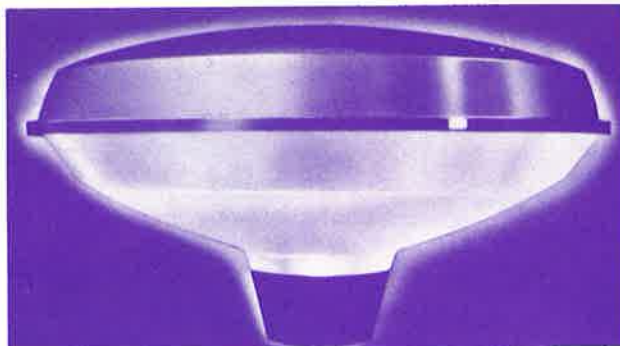
Mounting

Post top mounting for 76 x 130mm spigot.

Recommended mounting height : 8m or 10m for 3ft lantern ; 10m or 12m for 4ft lantern .

Recommended columns : QC8.G4 for 3ft version only ; or QC10.G4 or QC12.G4 for either version.

Max. column diameter 413mm for a distance of 300mm below spigot. Provide column with three radial pegs at this point.



QG4 O/W/3400

Catalogue no.

Complete 3ft Fittings

Lanterns comprise a stem assembly, canopy and bowl.

QG4 O/F2500 for 2
250/400W MBF/U,
250/400W SON and 400W
MBIF.

QG4 O/F400 for 3-500W GLS.
250/400W MBF/U, 250/
400W SON and 400W MBIF.

Packages for 3ft Fittings

QG4 2500 Stem assembly (2 lamps).

QG4 3400 Stem assembly (3 lamps).

QG4 F Canopy assembly (3ft).

QG4 O.36 Opal bowl (3ft).

Complete 4ft Fittings

QG4 O/W/3400 for 3 x 250/400W
MBF/U, 250/400W SON and
400W MBIF.

Packages for 4ft Fittings

QG4 W3400 Stem assembly for

3—250/400W MBF/U.

250/400W SON and 400W

MBIF.

QG4 O Opal bowl (4ft).

QG4 W Canopy assembly (4ft).

Control gear

Gear sets required for discharge lamps in lanterns.

Lamp

250W MBFU

400W MBFU

400W MBIF

250W SON

400W SON

Control Gear

G 53198.4

G C2370

G 53193.4

G C2331

G 53193.4

G 53283

G C2331

G 53251.T

G 53282

G C2386

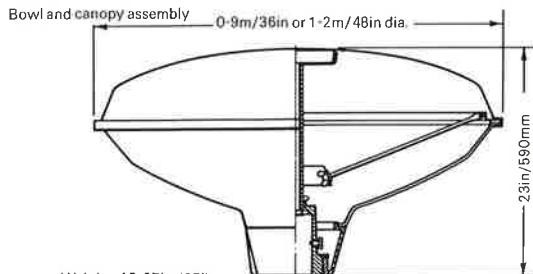
G 53230.T

G 53282

G C2331 (x2)



QG4 O/W3400 on QC10G4 column



Weight : 15.87kg/35lb

Lamps

- a) One 100W or 200W GLS tungsten filament lamp.
- b) One 80W or 125W MBF lamp.

Distribution

- a) Asymmetrical.
- b) Symmetrical.

Specification

C.O.I.D. approved.

The canopy is an acrylic enamelled aluminium spinning. The bowl is either acrylic or CAB and the refractor is glass. Control gear for discharge lamps is mounted remote.

Mounting

- a) On QC3 or other Group B column with QCX adaptor and QCS60 spigot.
- b) On aluminium columns with QG5 E 3 x 3 adaptor and QCS76 spigot.

Recommended mounting height: 5m.

Catalogue no.

Complete lanterns

Lanterns comprise bowl, body, lampholder and support and refractor (except opal bowl version)

QG5 JD/Y1200.B22 with asymmetric refractor for 100/150W GLS.

QG5 JD/Y1200.E27 with asymmetric refractor for 80/125W MBF

QG5 JD/Y1200.B22-3 with asymmetric refractor for 80/125W MBF

QG5 JD/X/1200.B22 with symmetric refractor for 100/150 GLS.

QG5 JD/X/1200.E27 with symmetric refractor for 80/125W MBF

QG5 JD/X/1200.B22-3 with symmetric refractor for 80/125 MBF

n.b. FOR CLEAR ANTI-VANDAL BOWL INSERT V FOR D IN COMPLETE CATALOGUE NUMBER.



QG5 O/1200.B22-3 with QCX adaptor.

QG5 O/1200.B22 for 100/150 GLS
QG5 O/1200.E27 for 150/200 GLS
QG5 O/1200.B22-3 for 80/125W MBF

Packages

QG5 JD 1200 Body, lampholder support, and clear acrylic bowl.

QG5 JV1200 Body, lampholder support, and clear vandal bowl.

QG5 O1200 Body, lampholder support, and opal acrylic bowl.

QG5 J1200 Canopy with lugs for refractor.

QX Symmetric refractor

QY Asymmetric refractor.

QG5 E3 x 3 Support casting for 3 x 3 spigot.

QG5 EK Support casting for leader column.

GL 1086 Lampholder 3BC (B22-3)

GL 1085 Lampholder 2BC (B22).
GL 1087 Lampholder ES (E27).

Replacements

QG5 D Clear acrylic bowl.

QG5 O Opal acrylic bowl.

QG5 V Clear anti-vandal bowl CAB

Control gear

Gear sets required for MBF lamps.

Lamp

80W MBF

125W MBF

Control gear

G53162.4

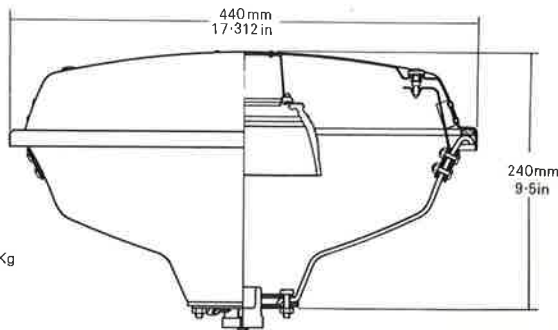
G53162.4

G53159.4

G53159.4

G53159.4

G53159.4



Weight: QG5JD/Y1200/B22 = 2.49Kg

QG5O/1200/B22 = 1.93Kg

Windage area: 0.081m²

Gamma Six GLS/sodium/mercury



QG6 V/F/B1125.4



QG6 O/F/B1035.4



QG6 V/W/B1080.4/B22-3



QG6 W/O/1200/E27

Lamps

- a) One 100W, 150W or 200W GLS tungsten filament lamp.
- b) One 160W MBTF lamp.
- c) One 80W or 125W MBF lamp
- d) One 35W SOX lamp.

Specification

Base castings are LM6-M aluminium alloy and the canopies spun aluminium alloy. Bowls are either injection moulded opal acrylic or opal polycarbonate. In the 'with gear' lanterns, the control gear is mounted in the base casting on a removable gear-tray. Control gear for 'less gear' lanterns is mounted remote.

Mounting

Post top mounting for 76 x 76mm spigot.

Recommended mounting height : 5m.

Recommended columns : QCO with QCS 76 spigot : see pages 256-262 for full details.

Catalogue no.

Space will not allow the listing of the many alternative assemblies possible. Complete catalogue numbers are made up by a combination of letters and numbers of the components listed. For ease of recognition the components are shown pictorially on the following page and examples given for complete lanterns.

Packages and spares

QG6 1200 Base casting assembly (less gear).

QG6 B1035.4 Base casting assembly with 240V 35W SOX gear and 2BC lampholder.

QG6 B1080.4 Base casting assembly with 240V 80W MBF gear and ES lampholder.

QG6 B1125.4 Base casting assembly with 240V 125W MBF gear and ES lampholder.

QG6 O Opal bowl (acrylic).
 QG6 V Opal bowl (polycarbonate).
 QG6 W Large canopy.
 QG6 F Small canopy.
 QP1 Photo cell socket.
 GL 1085 Lampholder (2BC-B22).
 GL 1086 Lampholder (3BC-B22-3).
 GL 1087 Lampholder (ES-E27).
 NB : Each lantern requires :
 1) A base casting assembly
 2) A bowl
 3) A canopy
 4) A lampholder (for 'less gear' lanterns or 3BC 'with gear')
 For lanterns requiring a photocell socket add letter P to base casting.

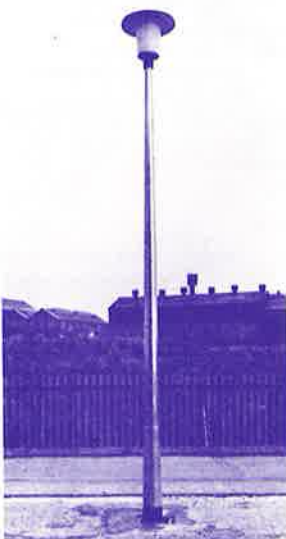
Examples of complete lantern

- 1) QG6 O/W/1200/E27 'Less gear' base casting, acrylic bowl, large canopy, and ES lampholder.
- 2) QG6 V/F/B1080.4/B22-3 240V gear base casting, polycarbonate bowl, small canopy, and 3 BC lampholder.
- 3) QG6 V/W/PB1125.4 240V gear base casting, polycarbonate bowl, large canopy, ES lampholder, and photocell socket.

Control gear

Gear sets required for 'less gear' lanterns.

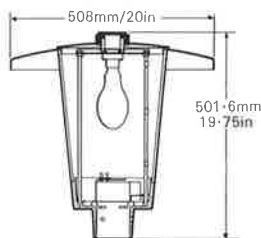
Lamp	Control gear
80W MBF	G 53162.4 G C2234
125W MBF	G 53159.T G C2234
35W SOX	G 53131.4 G C2280
Gear sets supplied for 'with gear' lanterns	
80W MBF	G 53272.4 G C2223
125W MBF	G 53271.4 G C2222
35W SOX	G 53131.4 G C2232



QG6 W/O/1200/E27 on QCO aluminium column

Gamma Six GLS/sodium/mercury

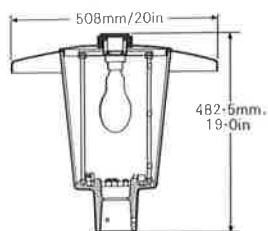
Dimensions of selected lanterns illustrated on previous page.



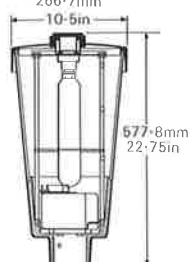
Weight: 6.69kg
Windage area: 0.114m²



Weight: 6.23kg
Windage area: 0.104m²















Weight: 4.42kg
Windage area: 0.105m²

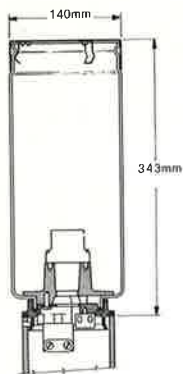


Weight: 11.34kg
Windage area: 0.119m²

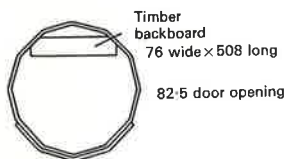
Catalogue number combinations for complete lanterns

BASE CASTING ASSEMBLY	CANOPIES, BOWLS,	INSERT LETTER	ACCESSORIES	ADD SUFFIX
 BASIC CATALOGUE NUMBERS QG6, B1200 Post-top base casting assembly Less gear	 QG6.W 20in dia canopy	W	 GL 1085 2BC lampholder	B22
 QG6, B 1080-4 Post-top base casting assembly 80W geared	 QG6.F 10.5in dia canopy	F	 GL 1086 3BC lampholder	B22-3
 QG6, B 1125-4 Post-top base casting assembly 125W geared	 QG6.O Acrylic bowl	O	 GL 1087 ES lampholder	E27
 QG6, B1035-4 Post-top base casting assembly 35W geared	 QG6.V Anti-vandal bowl	V	 QP1 Twist and lock photocell socket	P

Gamma Seven GLS/mercury



Section through lantern



Cross-section through base compartment

Door opening length 457
Depth in ground 610
Cable entry 100 x 50 situated 305 below ground level

Dimensions in mm

Lamps

- a. One 100W GLS tungsten filament lamp.
- b. One 80W MBF lamp.

Specification

COID approved.
The base casting is LM6-M aluminium alloy. The bowl is acrylic plastic with a spun aluminium top cap. Control gear for discharge lamp is mounted remote.

Weight: 1.2kg/2.75lb
Windage area 0.047m²

Mounting

- a) Pole top on QCG7 column specially designed for this lantern.
 - b) Wall bracket QPRK 1100.
 - c) Corner wall bracket QPRM 1100.
- Nominal column height 5m.

Catalogue no.

Complete lanterns

Lanterns comprise a base casting assembly, bowl and top cap.

- QG7 EFO1100.B22 for GLS lamp.
- QG7 EFO1080.E27 for GLS or MBF lamp.
- QG7 EFO1080.B22-3 for MBF lamp.



QG7 EFO1080.E27 lantern on QCG7 column and QPRK/1100 wall bracket

Replacements

- QG7 O Spare bowl.
- QG7 F Spare top cap.

Control gear

Gear set required for discharge lamp.

Lamp 80W MBF

Control gear
G 53162.4
G C2383

Gamma Eight GLS/mercury



QG8.K O/L 1200-E27

Lamps

- a) One 100W, 150W or 200W tungsten filament lamp
- b) One 80W or 125W MBF/U lamp.

Specification

The canopy is spun aluminium alloy and internally sprayed white. The bowl can be either acrylic or anti-vandal, and the spigot caps are LM6-M aluminium alloy. Control gear for discharge lamps is mounted remote. The patented top cap allows the use of a one-piece photocell when the fitting is supplied with a photocell socket.

Mounting

- a) Using the 60mm spigot cap version on the QC1 or QC3 column with QCS60 spigot.
- b) Using the 76mm spigot cap version on an aluminium column with QCS76 spigot.

Recommended mounting height: 5 m

Catalogue no. Complete lanterns

QG8 60 O 1200 Lantern (less lampholder) with 60mm dia. x 70mm spigot cap and opal bowl.

QG8 76 O 1200 Lantern (less lampholder) with 76mm dia. x 76mm spigot cap and opal bowl.

For versions with vandal-resistant bowl substitute V for O in catalogue number.

For versions with photocell socket add P after O or V in catalogue number.

Lampholders: G.L1085 - 2BC
G.L1086 - 3BC
G.L1087 - ES

Control gear

Gear sets required for discharge lamp.

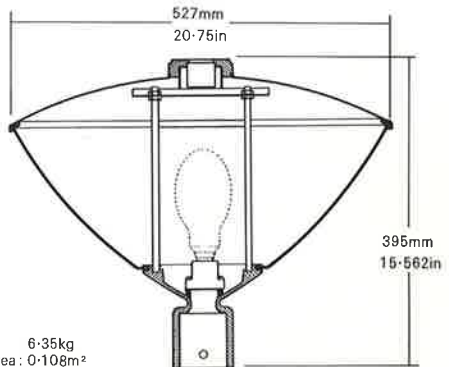
Lamp
80W MBF/U

125W MBF/U

Control gear

G 53162.4
G C2383
G 3306.4
G C2383

Fitting with vandal bowl can be ordered as a special lantern.



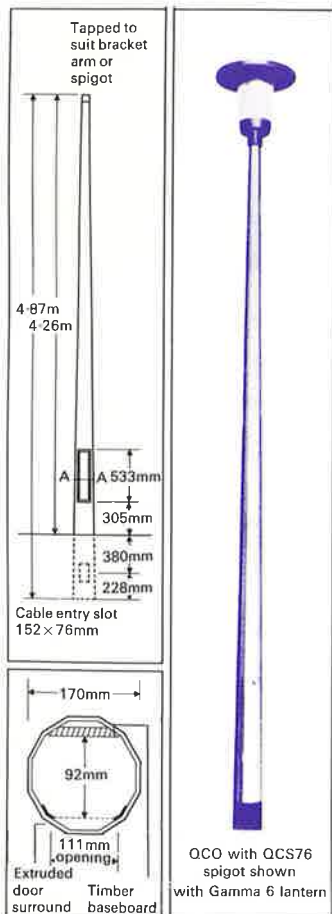
Weight: 6.35kg
Windage area: 0.108m²

Leader and Lucerna aluminium columns

LUCERNA COLUMN QCO

The column is twelve-sided in section and is manufactured from aluminium alloy NS4. A base compartment is provided for control gear which is mounted on a timber baseboard.

 BS985 3:1966



Section A-A

Catalogue number

QCO

Column with tapped top casting for use with bracket or spigot

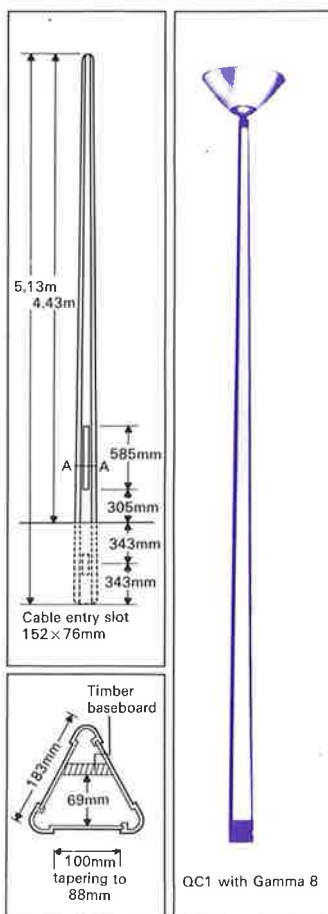
For surface mounting versions to special order add suffix "FP".

Data

Weight	14.5kg
Base compartment nominal dimensions	
Door opening	533 x 111mm
Baseboard dimensions	623 x 114mm

LEADER COLUMN QC1

The column, which has a triangular section, is manufactured from aluminium alloy HE9-P, and the spigot is cast from aluminium alloy LM6-M. A base compartment is provided for control gear, which is mounted on a timber baseboard.



Section A-A

Catalogue number

QC1

Data

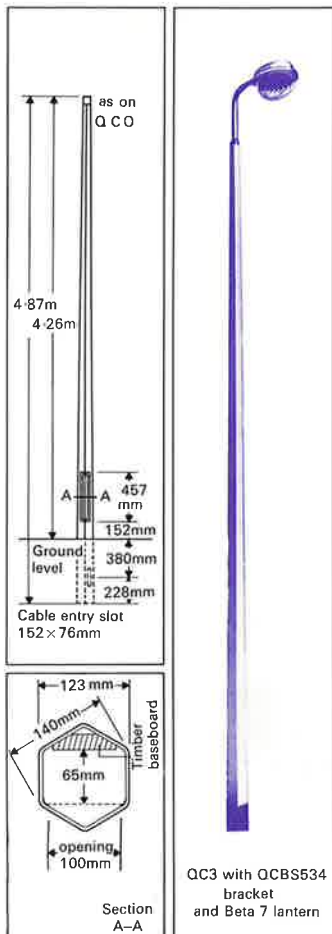
Weight	13.6kg
Base compartment nominal dimensions	
Door opening	585 x 68mm minimum
Depth	69mm
Baseboard dimensions	609 x 67mm

Classic and Sheerline aluminium columns

SHEERLINE COLUMN QC3

The column, which is hexagonal in section is made from aluminium alloy NS4. A base compartment is provided for control gear, which is mounted on a timber baseboard.

BS 3989:1966



Catalogue number

QC3 Column with tapped top casting for use with bracket or spigot

For columns with surface mounting flange plate add suffix 'FP' to catalogue number

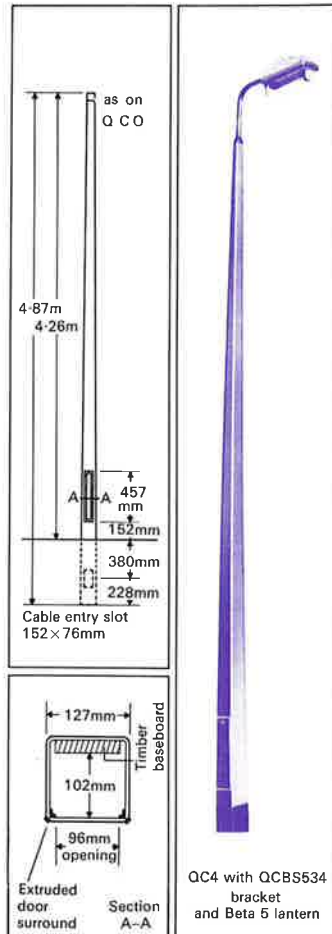
Data

Weight	13.2kg
Base compartment nominal dimensions	
Door opening	457 x 100mm
Depth	65mm
Baseboard dimensions	623 x 89mm

CLASSIC COLUMN QC4

The column, which is square in section, is manufactured from aluminium alloy NS4. A base compartment is provided for control gear, which is mounted on a timber baseboard.

BS 3989:1966



Catalogue number

QC4 Column with tapped top casting for use with bracket or spigot

For columns with surface mounting flange plate add suffix 'FP' to catalogue number

Data

Weight	14.5kg
Base compartment nominal dimensions	
Door opening	457 x 96mm
Depth	102mm
Baseboard dimensions	623 x 89mm

Group A aluminium lighting columns

Introduction

This range of aluminium lighting columns is designed to meet the requirements of Group A street lighting. It is available in 8, 10 and 12 metre versions with a range of single and double outreach arm brackets for street lighting lanterns and also with a number of standard mounting arrangements for floodlights. Low mass, an ability to absorb impact energy and structural stability combine to give aluminium columns added safety to road users. Columns require no regular maintenance and the base material retains a high recovery value.

- Approved by the Department of the Environment.
- Approved by the Design Council.
- Designed to BS3989.

General Column specifications

Material:

Shaft — aluminium sheet (BS1470: NS4-H6)

Top casting — supplied as standard welded to column top, LM6-M alloy.

Outreach bracket arms — aluminium tube BS1471. Single and double arms give 5° uplift for street lighting.

Backboard: Timber, 914mm × 152mm

Door opening: 610mm × 130mm.

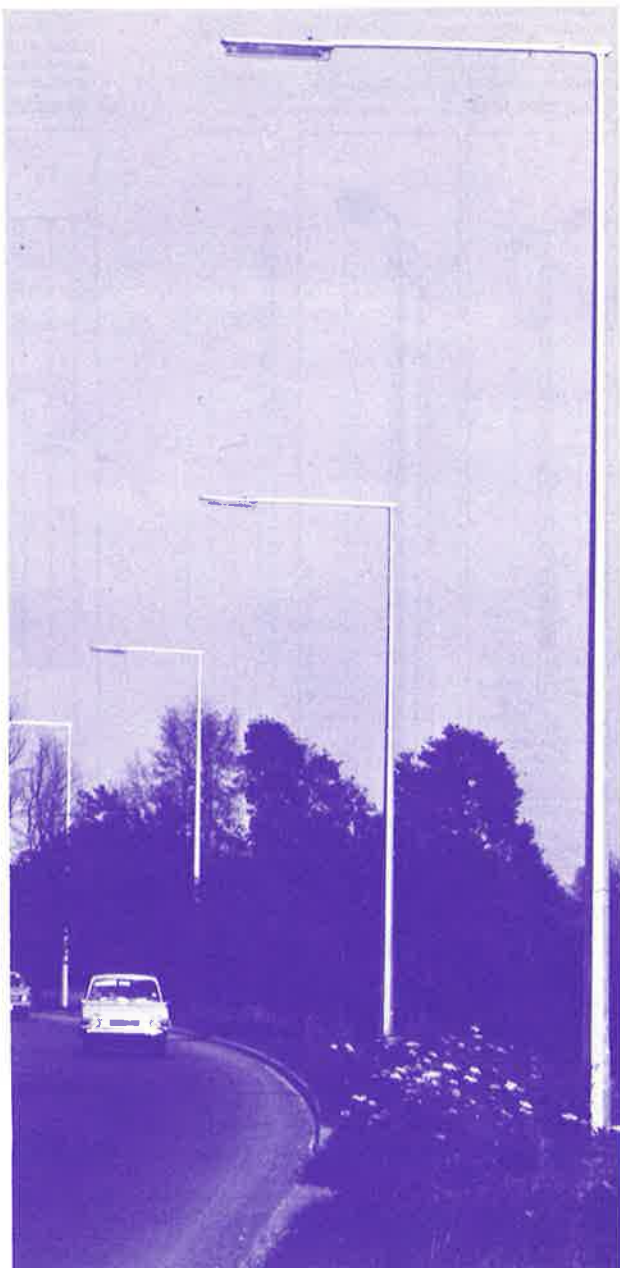
Earth connection: Stainless steel.

Column Section: Octagonal.

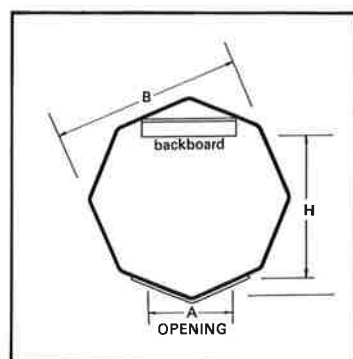
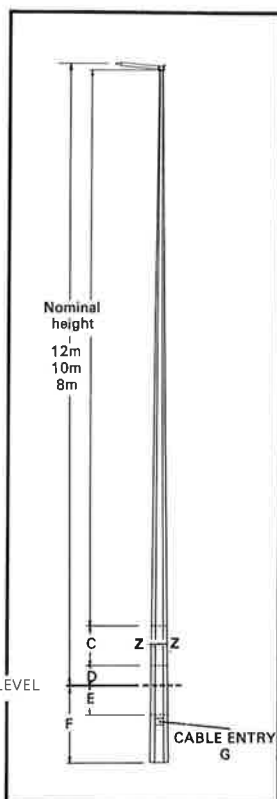
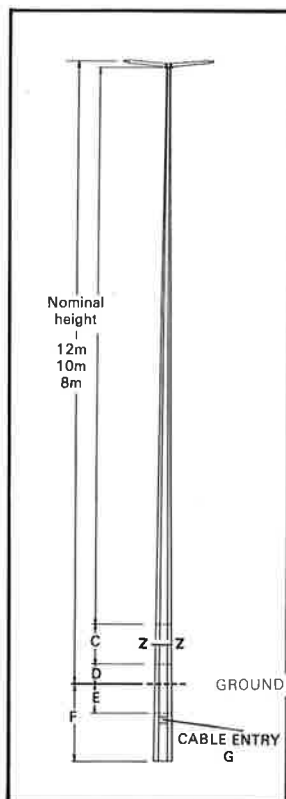
Spare Door Key: Catalogue no. QCK.

Outreach Bracket Arms: See table.

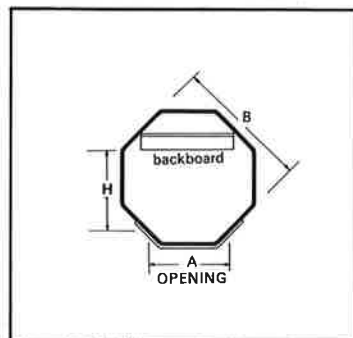
Standard spigot (unless otherwise specified) 42 × 100mm (1½ in BSP × 3.94 in).



Group A aluminium lighting columns



Cross section of 12 and 10m column (Z-Z)



Cross section of 8m column (Z-Z)

Column dimensions (mm)

Nominal height	A	B	C	D	E	F	G	H
12 metre	136	305	610	457	305	1500	152×76	230
10 metre	136	249	610	457	305	1500	152×76	173
8 metre	128	219	610	457	305	1219	152×76	130

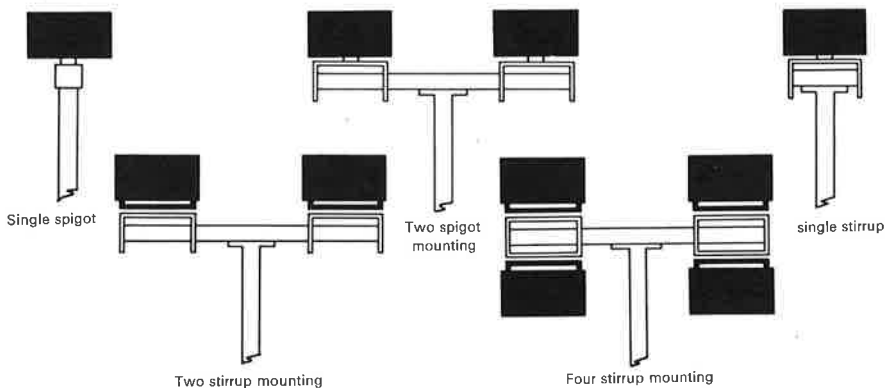
RANGE

Streetlighting bracket arms






Catalogue No.	Description	12m	10m	8m
QCB 1075	Single arm, 0-75m outreach	●	●	●
QCB 1125	Single arm, 1-25m outreach	●	●	●
QCB 1200	Single arm, 2-0m outreach	●	●	●
QCB 1300	Single arm, 3-0m outreach	●	●	●
QCB 2150	Double arm, 1-5m span	●	●	●
QCB 2250	Double arm, 2-5m span	●	●	●
QCB 2400	Double arm, 4-0m span	●	●	●
QCB 2500	Double arm, 5-0m span	●	●	●

Group A aluminium lighting columns

STANDARD FLOODLIGHTING MOUNTING ARRANGEMENTS



RANGE

Catalogue no.*	Floodlight mounting	Luminaire No.	Type	Additional items required	Column 12m	10m	8m
	Single spigot luminaire	1	Sunflood/Sunspot	OHA4612	●	●	●
	(a) 76×76mm	1	Area flood	—	●	●	●
	(b) 152×76mm	1	Area flood	—	●	●	●
	Two spigot mounting luminaires	2	Area flood	—	●	●	●
	Single stirrup mounted luminaire—	1	Haline	—	●	●	●
	platform mounting to stirrup	1	Area flood	OAE	●	●	●
	QF1	1	ON1600 flood	—	●	●	●
	QF1	1	M25J	—	●	●	●
	Two stirrup mounted luminaires—	2	Haline	—	●	●	●
	platform mounting to stirrup	2	Area flood	2×OAE	●	●	●
	QF2 ‡	2	ON1600 flood	—	●	●	●
	QF2 ‡	2	M25J	—	●	●	●
	Four stirrup mounted luminaires—	4	Haline	—	●	●	●
	platform mounting to stirrup	4	—	—	●	●	●

Special brackets are available to order for mounting up to eight Sunfloods.
Adaptors for other floodlights not listed in the range table can be supplied to order.

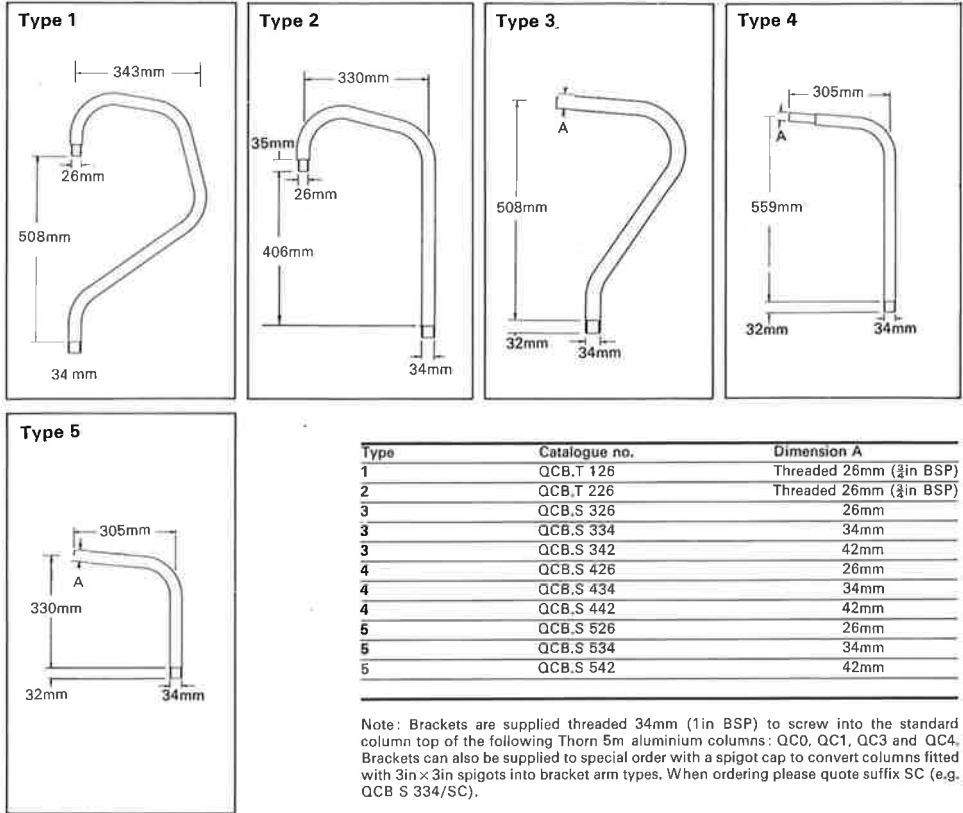
*When specifying columns for use with the floodlight arrangements listed both column and fixing references should be given, eg. QF4 with 12 metre column—thus QC12/F4.

†Catalogue no. for specification purposes only: column will be supplied with fixing arrangement as one complete unit.

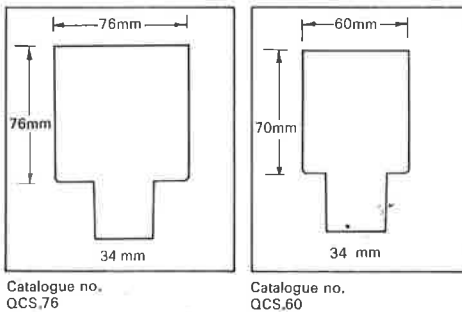
‡In some cases where multiple floodlight arrangements requiring separate control gear are used, it may be necessary to locate gear remote from the column.

Brackets and spigot castings

BRACKETS FOR USE WITH THORN 5m COLUMNS



SPIGOT CASTINGS FOR USE WITH THORN 5m COLUMNS



Note: Spigot castings are threaded 34mm (1in BSP) to screw into the standard column top when required for post-top lantern mounting.

SPARE DOORS AND KEYS FOR THORN 5m ALUMINIUM COLUMNS

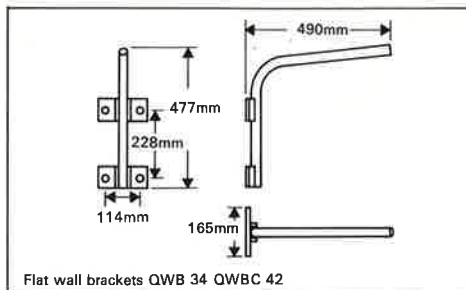
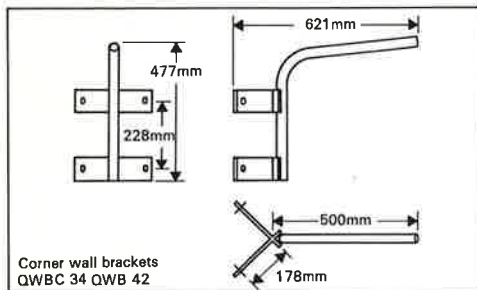
Doors

Catalogue no.	Description
QCD 0	Door for QC0
QCD 1	Door for QC1
QCD 3	Door for QC3
QCD 4	Door for QC4

Keys

Catalogue no.	Description
QCK	Spare keys
QCK, LF	Spare keys for QC0 and QC4 only

Aluminium wall brackets and boxes



Wall Brackets

Wall brackets are formed in HT9 aluminium alloy tube and are available for either flat wall or corner wall mounting, for use with either 34mm or 42mm (1in or 1½in BSP) side entry lanterns.

Data

Material
Aluminium alloy NS4
Bracket casting
LM6-M aluminium alloy outreach (304mm)
Brackets
HE9-P extruded tube
Backboard
Hardwood 610×89mm
Lock
Dzus type
Base compartment
533×102×99mm deep
Weight
5kg

Outside Lighting Box

Materials

Galvanised steel pipe and LM6-M spigot castings

When ordering, specify size by addition of suffix to catalogue number e.g. QLCB1/¾in, QLCB6/1½in.



RANGE

Catalogue No.	Description
QWB 34	Flat wall mounting for 34mm S/E.
QWB 42	Flat wall mounting for 42mm S/E.
QWBC 34	Corner wall mounting for 34mm S/E.
QWBC 42	Corner wall mounting for 42mm S/E.

RANGE

Catalogue No.	BSP	Entry
QWGB 26	¾in	Top
QWGB 34	1in	Side
QWGB 42	1½in BSP	Side

Control Gear and Accessories

Introduction

Thorn Lighting control gear and accessories have achieved a reputation for consistently high quality at economical prices by a policy of close co-operation between research and engineering departments and the factory where the equipment is made. The factory has been granted British Standard Licences for the manufacture of mercury and low pressure sodium ballasts to BS 4782 and fluorescent

lamp ballasts to BS 2818. Ballasts within this range bear the Kitemark emblem. This emphasises the high standard of quality and inspection at the factory and ensures maximum performance with long life. Manufacture is carried out at Spennymoor, co. Durham, in what is probably the largest control gear factory in Europe. A high proportion of its output is exported.

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Circuit components for XB and XE/D compact source xenon discharge lamps	296-297
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Circuit components for 400W, 700W and 1000W MBF, MBFR and MBF Kolorlux mercury discharge lamps	299
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Circuit components for MB/D, M8L/D, MBW/U and ME/D mercury discharge lamps	302-303
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Circuit components for 400W/800W Graph-X 365/420 photoprinting lamps	306-307
Circuit components for 1800W and 2000W MBIL linear metal halide discharge lamps	308-309
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Installation

Certain factors must be considered when installing fluorescent lighting equipment which do not apply to the installation of non-reactive loads such as tungsten filament lamps.

- 1 **Cable ratings:** A factor of 1.25 is normally applied to the rating of distribution cables, i.e. not more than a 4 amp load on a 5 amp circuit.
- 2 **Fuse ratings:** When HRC fuses or quick reaction protective devices are used to control a circuit it may be necessary to halve the normal rating to allow for switching surges, i.e. a 5 amp HRC fuse may be limited to a maximum of 2.5 amps.
- 3 **Wall switches:** Because of the high voltage surges that occur when switching fluorescent tubes on or off, a 'quick-make and slow-break' switch action is preferable. Certain quick break actions and switches with an earthed metal plate or mechanism may be unsuitable for fluorescent lighting.
- 4 **Harmonics and neutral current:** All fluorescent tube circuits produce a certain amount of harmonic distortion which increases the neutral current in a 3-phase 4-wire system. Where the fluorescent lighting forms a large part of the electrical load, a full-size neutral must be used and the main 4-core distribution cables should have their current rating reduced by a factor of 17 per cent.
- 5 **Gear noise:** All control gear having a laminated iron core will produce noise due to the magnetisation of the laminations. The noise level varies according to the type of circuit and the wattage rating. Although all the control gear listed here is suitable for use in offices and factories having a normal background noise level, this control gear could become audible when the ambient noise becomes reduced, e.g. in an office outside normal working hours. Advice should be sought regarding suitable gear for use in exceptionally quiet locations.
The method of mounting the fitting and the surface on which it is fixed play a very important part in securing satisfactory operation in difficult conditions.

- 7 When control gear is not enclosed within a lighting fitting, it is recommended that it should be mounted on a non-combustible material in accordance with the IEE Regulations for the Electrical Equipment of Buildings.

- 8 **Dimmable fluorescent lighting**
Standard fluorescent units cannot be successfully dimmed. However, many Thorn fittings are available in dimmable form. These include any units in the Atlantic, SM and New Format ranges which use tubes of 1½ in diameter and 18 in, 2 ft., 3 ft., 4 ft. and 5 ft. length. Specify purpose when ordering. Alternatively, certain non-Thorn units are suitable for modification and your regional Thorn office will be pleased to advise you.

For more detailed information on installation and maintenance of fluorescent lighting equipment see the Thorn Technical Pocket-book.

- 6 **Radio and television interference.** Fluorescent tubes emit a certain amount of high frequency radiation particularly near end of life which can be picked up by radio and television sets. If the tube is more than 2.4–3m/8–10ft from a set which has a good outdoor aerial with a screened lead, interference is not normally experienced. Care should be taken, however, when using portable radios or television sets with indoor aerials close to the fluorescent tube.

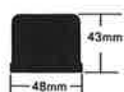
2400mm 125W Fluorescent tube control gear

SWITCHSTART CONTROL GEAR FOR 240V 50Hz SUPPLY

Tube	1 × 2400mm 125W	1 × 2400mm 125W	1 × 2400mm 125W
Circuit	Switchstart	Switchstart	Switchstart
Type of control gear	LPF choke	LPF choke	Leading p.f. ballast
Circuit diagram	228	2	13

CHOKE OR BALLAST

	2 × G.CUH/125	G.CI/125	G.CBS/125
Catalogue no.	2 × G.CUH/125	G.CI/125	G.CBS/125
Weight	1.8kg (each)	2kg	2.6kg
Filling	Polyester resin	Polyester resin	Polyester resin
Can colour	White	White	White
Terminals	Screw	Screw	Screw
Cross section			



t_w	120°C	105°C	105°C
Δt	55°C	55°C	55°C

CAPACITOR

Catalogue no.	G.C2173	G.C2173	Included in ballast
Capacitance (μF)	7.2 ± 5%	7.2 ± 5%	—
Volts rating	440V	440V	—
Length incl. terminals	156mm	156mm	—
Diameter	38mm	38mm	—
Terminals	Push wire	Push wire	—
Fixing clips	G.Y5244 and G.Y5245	G.Y5244 and G.Y5245	—

STARTER SWITCH

Catalogue no.	155/800	155/800	155/800*
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FUSE

1 tube – rating	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299
2 tube – rating	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299
3 tube – rating	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299
4 tube – rating	5A	5A	5A
Catalogue no.	G.T1268	G.T1268	G.T1268

Other choke or ballast ratings

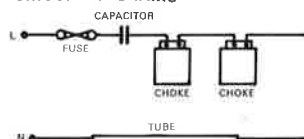
200/210V 50Hz	Not available	G.42355 step-up transformer with G.CI/125	Not available
220V 50Hz	G.42343 step-up transformer with 2 × G.CUH/125	G.42350 step-up transformer with G.CI/125	Not available
250V 50Hz	Not available	Not available	Not available

*Order starter switch separately

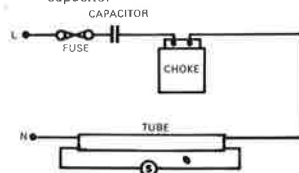


Choke or ballast approved to BS 2818

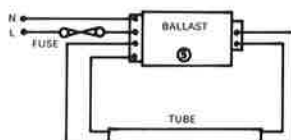
CIRCUIT DIAGRAMS



228 Leading power factor starter switch circuit with essential series capacitor

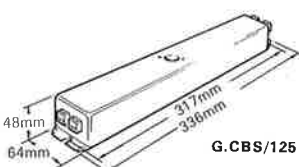
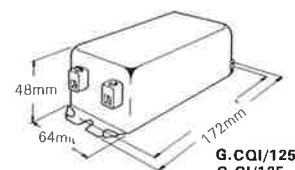
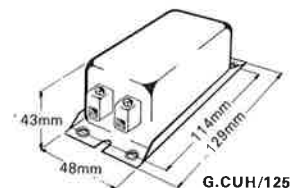


2 Leading power factor starter switch circuit with essential series capacitor



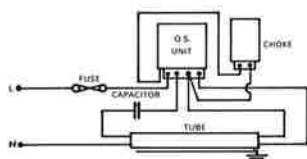
13 Starter switch circuit for leading p.f. ballast

CONTROL GEAR TYPES

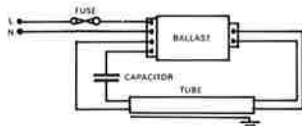


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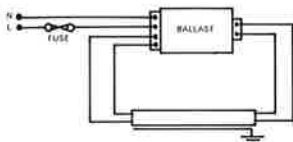
2400mm 125W Fluorescent tube control gear



245 Quickstart circuit with separate choke and essential circuit capacitor



174 Quickstart circuit for L.P.F. ballast with essential circuit capacitor



16 Quickstart circuit for H.P.F. ballast

SWITCHLESS START CONTROL GEAR FOR 240V 50Hz SUPPLY

Tube	1 x 2400mm 125W	1 x 2400mm 125W	1 x 2400mm 125W
Circuit	Quickstart	Quickstart	Quickstart
Type of control gear	LPF choke	LPF ballast	HPF ballast
Circuit diagram	245	174	16

CHOKES OR BALLAST

Catalogue no.	G.CQI/125	G.BQI/125	G.CBQ/125
Weight	1.9kg	3.4kg	4.65kg
Filling	Polyester resin	Polyester resin	Polyester resin
Can colour	White	White	White
Terminals	Screw	Screw	Screw
Cross section			



t_w
 Δt

105°C
60°C



105°C
65°C



105°C
65°C

CAPACITOR

Catalogue no.	G.C2228	G.C2228	Included in ballast
Capacitance (μF)	7.8 \pm 5%	7.8 \pm 5%	—
Volts rating	440V	440V	—
Length incl. terminals	145mm	145mm	—
Diameter	38mm	38mm	—
Terminals	Pin	Pin	—
Fixing clips	G.Y5244 and G.Y5245	G.Y5244 and G.Y5245	—

QUICKSTART UNIT

Catalogue no.	G.QS/125	Included in ballast	Included in ballast
Weight	1.9kg	—	—
Filling	Polyester resin	—	—
Can colour	White	—	—
Terminals	Screw and flying lead	—	—

Cross section



t_w
 Δt

105°C
55°C

FUSE

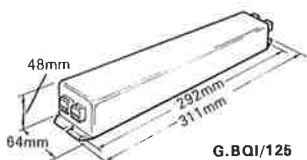
1 tube - rating	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299
2 tube - rating	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299
3 tube - rating	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299
4 tube - rating	5A	5A	5A
Catalogue no.	G.T1268	G.T1268	G.T1268

Other choke or ballast ratings

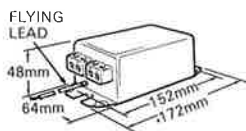
200/210 50Hz	G.42355 step-up transformer with G.CQI/125	G.42355 step-up transformer with G.BQI/125	Not available
220V 50Hz	G.42350 step-up transformer with G.CQI/125	G.42350 step-up transformer with G.BQI/125	Not available
250V 50Hz	Not available	Not available	Not available



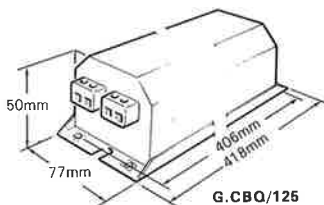
Choke or ballast approved to BS 2818



G.BQI/125




G.QS/125



G.CBQ/125

2400mm 85W Fluorescent tube control gear

 **Control gear for this tube size is not included in BS 2818**

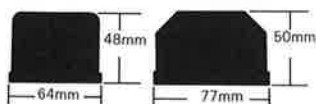
CONTROL GEAR FOR 240V 50Hz SUPPLY

Tube	1 × 2400mm 85W	2 × 2400mm 85W
Circuit	Quickstart	Twinstart
Type of control gear	LPF ballast	HPF ballast †
Circuit diagram	183	6

BALLAST

Catalogue no.	G.BQ1/85	G.BV/285
Weight	2.2kg	5.2kg
Filling	Polyester resin	Polyester resin
Can colour	White	White
Terminals	Screw and flying lead	Screw

Cross section



tw	105°C	105°C
Δt	45°C	70°C

CAPACITOR

Catalogue no.	G.C2226	Included in ballast
Capacitance (μF)	5 ± 5%	—
Volts rating	440V	—
Length incl. terminals	125mm	—
Diameter	38mm	—
Terminals	Pin	—
Fused or unfused	Unfused	—
Fixing clip	G.Y5244 and G.Y5245	—

FUSE

1 tube — rating	3A	—
Catalogue no.	G.T1299	—
2 tube — rating	3A	3A
Catalogue no.	G.T1299	G.T1299
3 tube — rating	3A	—
Catalogue no.	G.T1299	—
4 tube — rating	3A	3A
Catalogue no.	G.T1299	G.T1299

Other ballast ratings (Details as 240V units above)

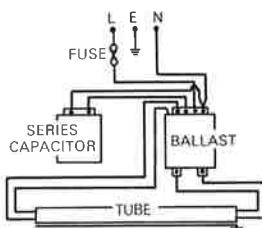
200/210V 50Hz	G.42355 step-up transformer with G.BQ1/85	Not available
220V 50Hz	G.42360 step-up transformer with G.BQ1/85	G.69222-2 †
250V 50Hz	Not available	Not available

†No R.I.S. fitted internally—G.C2139 to be ordered separately.

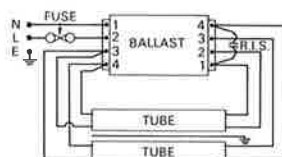
2400mm 85W Fluorescent tube control gear

CIRCUIT DIAGRAMS

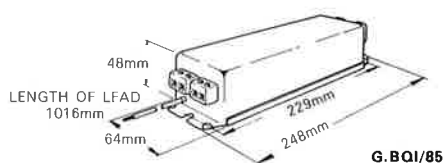
183 Quickstart circuit for combined choke and transformer with essential series capacitor



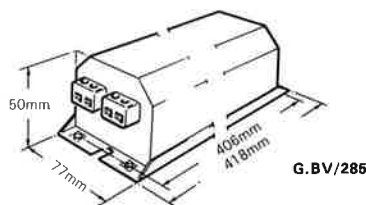
6 2400mm 85W Twinstart circuit



CONTROL GEAR TYPES



G.BQI/85



G.BV/285

1800mm 85W Fluorescent tube control gear

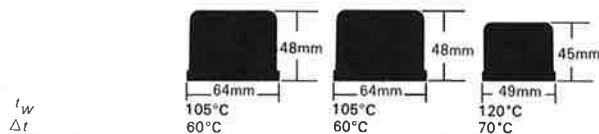
CONTROL GEAR FOR 240V 50Hz SUPPLY

Tube	1×1800mm 85W	1×1800mm 85W	1×1800mm 85W
Circuit	Switchstart	Semi-resonant start	Semi-resonant start
Type of control gear	HPF ballast	LPF ballast	LPF ballast
Circuit diagram	13	7	7

CHOKE OR BALLAST

Catalogue no.	G.CBS/685	G.BI/685	G.BU/685
Weight	2.4kg	1.8kg	1.8kg
Filling	Polyester resin	Polyester resin	Polyester resin
Can colour	White	White	White
Terminals	Screw	Screw	Screw

Cross section



CAPACITOR

Catalogue no.	Included in ballast	G.C2220	G.C2220
Capacitance (μF)	—	8.4±5%	8.4±5%
Volts rating	—	250V	250V
Length incl. terminals	—	121mm	121mm
Diameter	—	38mm	38mm
Terminals	—	Push-wire	Push-wire
Fused or unfused	—	Unfused	Unfused
Fixing clips	—	G.Y5244 and G.Y5245	G.Y5244 and G.Y5245

STARTER SWITCH

Catalogue no.	155/800†	—	—
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FUSE

1 tube – rating	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299
2 tube – rating	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299
3 tube – rating	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299
4 tube – rating	5A	3A	3A
Catalogue no.	G.T1268	G.T1299	G.T1299

Other choke or ballast ratings

(Details as 240V units above unless otherwise stated)

200/210V 50Hz	Not available	Not available	Not available
220V 50Hz	Not available	Not available	G.69294.2†
250V 50Hz	Not available	Not available	G.69255.5

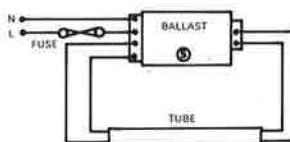
†This unit must be used with capacitor G.C2289 (10μF±5%)

‡Order starter switch separately

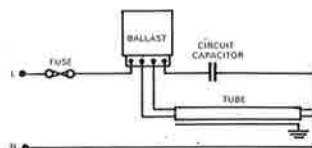
1800mm 85W Fluorescent tube control gear

CIRCUIT DIAGRAMS

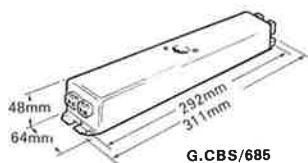
13 Starter switch circuit for HPF ballast



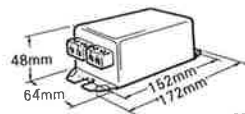
7 Semi-resonant start circuit with essential circuit capacitor



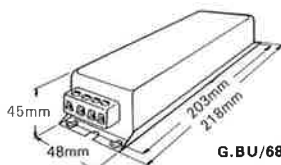
CONTROL GEAR TYPES



G.CBS/685



G.BI/685



G.BU/685

1800mm 75W Fluorescent tube control gear

 Control gear for this tube size is not included in BS2818.

CONTROL GEAR FOR 240V 50Hz SUPPLY

Tube	1 × 1800mm 75W	1 × 1800mm 75W	1 × 1800mm 75W
Circuit	Semi-resonant start	Switchstart	Switchstart
Type of control gear	LPF ballast	LPF choke	LPF choke
Circuit diagram	7	244 (lag)	244 (lead)

CHOKES OR BALLAST

Catalogue no.	G.BU/675	2 × G.CUH/675	G.CU/65
Weight	1.8kg	0.9kg (each)	1.2kg
Filling	Polyester resin	Polyester resin	Varnish
Can colour	White	White	White
Terminals	Push-wire	Push-wire	Screw
Cross-section			



t_w	120°C	120°C	120°C
Δt	60°C	50°C	60°C

CAPACITOR

Catalogue no.	G.C2220	—	G.C2226
Capacitance (μF)	8.4 ± 5%	—	5 ± 5%
Volts rating	250V	—	440V
Length incl. terminals	121mm	—	125mm
Diameter	38mm	—	38mm
Terminals	Push-wire	—	Push-wire
Fused or unfused	Unfused	—	Unfused
Fixing clips	G.Y5244 and G.Y5245	—	G.Y5244 and G.Y5245

STARTER SWITCH

Catalogue no.	—	155/800	155/800
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FUSE

1 tube—rating	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299
2 tube—rating	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299
3 tube—rating	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299
4 tube—rating	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299

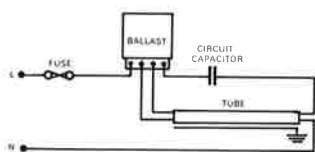
OTHER CHOKES OR BALLAST RATINGS

200/210V 50Hz	Not available	Not available	Not available
220V 50Hz	Not available	Not available	Not available
250V 50Hz	Not available	Not available	Not available

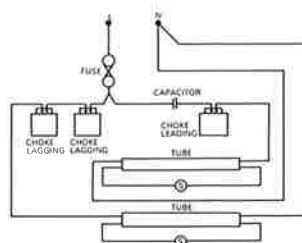
1800mm 75W Fluorescent tube control gear

CIRCUIT DIAGRAMS

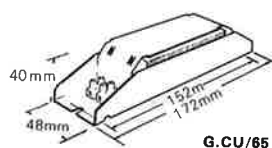
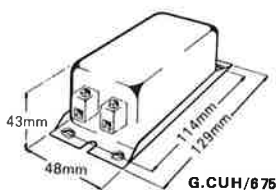
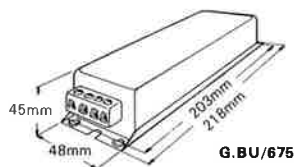
7 Semi-resonant start circuit with essential circuit capacitor



244 Lead/lag starter switch circuit



CONTROL GEAR TYPES

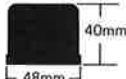






1500mm 80W Fluorescent tube control gear

CONTROL GEAR FOR 240V 50Hz SUPPLY

Tube	1 x 1500mm 80W	1 x 1500mm 80W	1 x 1500mm 80W	1 x 1500mm 80W	1 x 1500mm 80W
Circuit	Switchstart	Switchstart	Quickstart	Switchstart	Semi-resonant start
Type of control gear	LPF choke	LPF choke	LPF choke	HPF ballast	HPF ballast
Circuit diagram	1	1	8	13	16

CHOKE OR BALLAST

Catalogue no.	G.CU/685	G.CI/80	G.CI/80	G.CBS/685	G.CBR/80
Weight	1.8kg	1.9kg	1.9kg	2.4kg	3kg
Filling	Polyester resin	Polyester resin	Polyester resin	Polyester resin	Polyester resin
Can colour	White	White	White	White	White
Terminals	Screw	Screw	Screw	Screw	Screw
Cross section					
f_w	105°C	105°C	105°C	105°C	105°C
Δt	85°C	60°C	60°C	60°C	60°C

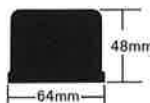
CAPACITOR

Catalogue no.	G.C2222	G.C2222	G.C2222	Included in ballast	Included in ballast
Capacitance (μF)	8±10%	8±10%	8±10%	—	—
Volts rating	250V	250V	250V	—	—
Length incl. terminals	99mm	99mm	99mm	—	—
Diameter	38mm	38mm	38mm	—	—
Terminals	Push-wire	Push-wire	Push-wire	—	—
Fused or unfused	Unfused	Unfused	Unfused	—	—
Fixing clips	G.Y5244 and G.Y5245	G.Y5244 and G.Y5245	G.Y5244 and G.Y5245	—	—

STARTER SWITCH

Catalogue no.	155/500	155/500	—	155/500†	—
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QUICKSTART UNIT

Catalogue no.	—	—	G.QS/80	—	—
Weight	—	—	1kg	—	—
Filling	—	—	Polyester resin	—	—
Can colour	—	—	White	—	—
Terminals	—	—	Screw	—	—
Cross section					

FUSE

1 tube – rating	3A	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299	G.T1299
2 tube – rating	3A	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299	G.T1299
3 tube – rating	3A	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299	G.T1299
4 tube – rating	5A	5A	5A	5A	3A
Catalogue no.	G.T1268	G.T1268	G.T1268	G.T1268	G.T1299

Other choke or ballast ratings (Details as 240V 50Hz units above unless otherwise stated)

200/210V 50Hz	G.69249.1	G.CI/80	G.CI/80	Not available	Not available
220/230V 50Hz	Not available	G.CI/80	G.CI/80	Not available	Not available
240/250V 50Hz	G.69249.5 (250V)	G.CI/80	G.CI/80	Not available	Not available
200/210V 60Hz	Not available	G.62845.T	G.62845.T	Not available	Not available
220/230V 60Hz	Not available	G.62845.T	G.62845.T	Not available	Not available
240/250V 60Hz	Not available	G.62845.T	G.62845.T	Not available	Not available

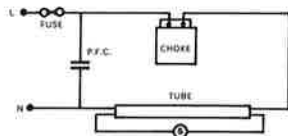
†Order starter switch separately

Choke or ballast approved to BS 2818

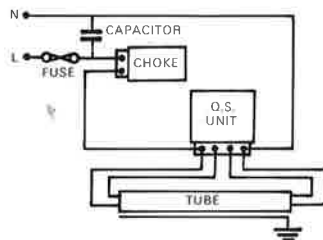
1500mm 80W Fluorescent tube control gear

CIRCUIT DIAGRAMS

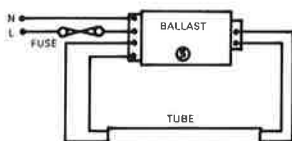
1 Standard starter switch circuit with optional PFC capacitor



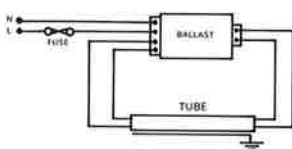
8 Tapped quickstart transformer circuit with optional PFC capacitor



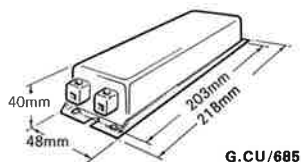
13 Starter switch circuit for HPF ballast



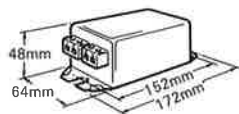
16 HPF ballast (SRS circuit)



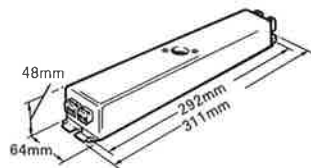
CONTROL GEAR TYPES



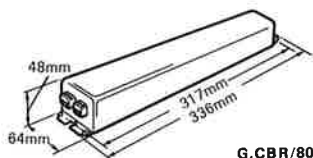
G.CU/685



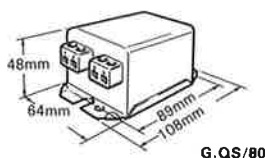
G.CI/80



G.CBS/685



G.CBR/80



G.QS/80

1500mm 65W Fluorescent tube control gear

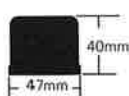
CONTROL GEAR FOR 240V 50Hz SUPPLY

Tube Circuit	1 × 1500mm 65W Switchstart LPF choke	1 × 1500mm 65W Switchstart HPF ballast	1 × 1500mm 65W Semi-resonant start LPF ballast	1 × 1500mm 65W Semi-resonant start LPF ballast	1 × 1500mm 65W Semi-resonant start HPF ballast
Type of control gear	1	13	7	7	16
Circuit diagram					

CHOKES OR BALLASTS



Catalogue no.	G.CU/65	G.CBS/65	G.BU/65	G.BI/65	G.CBR/65
Weight	1.2kg	1.8kg	1.72kg	1.9kg	2.95kg
Filling	Varnish	Polyester resin	Polyester resin	Polyester resin	Polyester resin
Can Colour	White	White	White	White	White
Terminals	Screw	Screw	Screw	Screw	Screw
Cross section					



t_w
 Δt

120°C
60°C

105°C
50°C

120°C
65°C

105°C
55°C

105°C
55°C

CAPACITOR

Catalogue no.	G.C2245	Included in ballast	G.C2220	G.C2220	Included in ballast
Capacitance (μF)	5 ± 10%	—	8.4 ± 5%	8.4 ± 5%	—
Volts rating	250V	—	250V	250V	—
Length incl. terminals	99mm	—	121mm	121mm	—
Diameter	38mm	—	38mm	38mm	—
Terminals	Push-wire	—	Push-wire	Push-wire	—
Fused or unfused	Unfused	—	Unfused	Unfused	—
Fixing clips	G.Y5244 and G.Y5245	—	G.Y5244 and G.Y5245	G.Y5244 and G.Y5245	—

STARTER SWITCH

Catalogue no.	155/500	155/500†	—	—	—
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FUSE

1 tube — rating	3A	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299	G.T1299
2 tube — rating	3A	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299	G.T1299
3 tube — rating	3A	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299	G.T1299
4 tube — rating	3A	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299	G.T1299

Other choke or ballast voltage ratings (Details as 240V 50Hz units above unless otherwise stated)

200/210V 50Hz	G.69418.1	Not available	G.69350.1	G.68063.1	Not available
220V 50Hz	G.69418.2	Not available	G.BU/685	G.BI/685	Not available
250V 50Hz	G.69028.5	Not available	G.69250.5	G.68063.5	Not available
240V 60Hz	G.69418.1	Not available	Not available	Not available	Not available

†Order starter switch separately

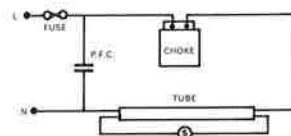


Choke or ballast approved to BS 2818

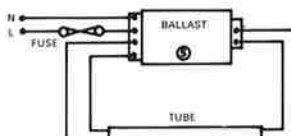
1500mm 65W Fluorescent tube control gear

CIRCUIT DIAGRAMS

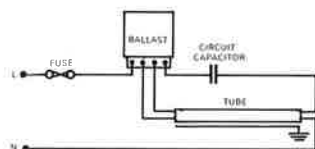
- 1 Standard starter switch circuit with optional PFC capacitor



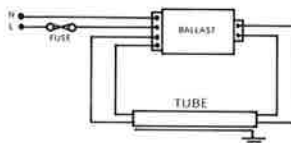
- 13 Starter switch circuit for HPF ballast



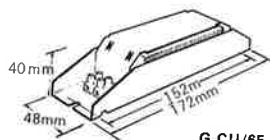
- 7 Semi-resonant start circuit with essential circuit capacitor



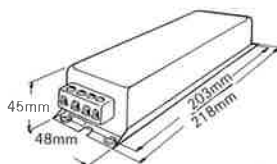
- 16 HPF ballast (SRS circuit)



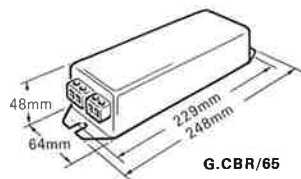
CONTROL GEAR TYPES



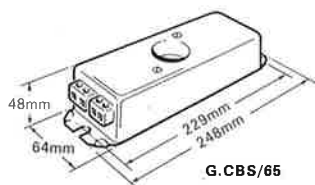
G.CU/65



G.BU/65



G.CBR/65



G.CBS/65



G.BI/65

1500mm 50W Fluorescent tube control gear

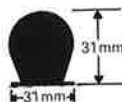
⚠ Control gear for this tube size is not included in BS 2818

CONTROL GEAR FOR 240V 50Hz SUPPLY

Tube	1 × 1500mm 50W
Circuit	Semi-resonant start
Type of control gear	LPF ballast
Circuit diagram	18

CHOKE OR BALLAST

Catalogue no.	G.BJ/50*
Weight	1 kg
Filling	Varnish
Can colour	White
Terminals	Screw
Cross section	



t_w	120°C
Δt	70°C

CAPACITOR

Catalogue no.	G C2368
Capacitance μF	5.7 ± 5%
Volts rating	250V
Length incl. terminals	76mm
Diameter	32mm
Terminals	Pin
Fixing clip	G Y5259‡

FUSE

1 tube – rating	3A
Catalogue no.	G 1299
2 tube – rating	3A
Catalogue no.	G 1299
3 tube – rating	3A
Catalogue no.	GT1299
4 tube – rating	3A
Catalogue no.	GT1299

Other choke or ballast voltage ratings

200/210V 50Hz	Not available
220V 50Hz	Not available
250V 50Hz	Not available

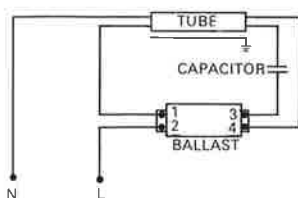
*Made in France

‡For use on Arrowslim fittings only

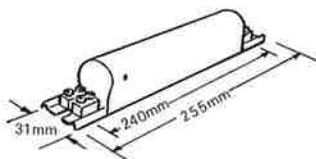
1500mm 50W Fluorescent tube control gear

CIRCUIT DIAGRAM

18 LPF ballast (SRS circuit)



CONTROL GEAR TYPE



G.B.J/50

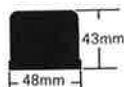
1200mm 40W Fluorescent tube control gear

CONTROL GEAR FOR 240V 50Hz SUPPLY

Tube	1 × 1200mm 40W	1 × 1200mm 40W	1 × 1200mm 40W	1 × 1200mm 40W	1 × 1200mm 40W
Circuit	Switchstart	Switchstart	Semi-resonant start	Semi-resonant start	Semi-resonant start
Type of control gear	LPF choke	HPF ballast	HPF ballast	LPF ballast	LPF ballast
Circuit diagram	1	13	16	7	7

CHOKES OR BALLAST

Catalogue no.	G.CU/40	G.CBS/40	G.CBR/40	G.BU/40	G.BI/40
Weight	0.9kg	1.1kg	1.8kg	1.3kg	1.4kg
Filling	Polyester resin	Polyester resin	Polyester resin	Polyester resin	Polyester resin
Can colour	White	White	White	White	White
Terminals	Screw	Screw	Screw	Screw	Screw
Cross section					



t_w	120°C	120°C	105°C	105°C	120°C
Δt	55°C	55°C	50°C	50°C	50°C

CAPACITOR

Catalogue no.	G.C2224	Included in ballast	Included in ballast	G.C2273	G.C2273
Capacitance (μF)	3.5 ± 10%	—	—	5.5 ± 10%	5.5 ± 10%
Volts rating	250V	—	—	250V	250V
Length incl. terminals	75mm	—	—	99mm	99mm
Diameter	38mm	—	—	38mm	38mm
Terminals	Push-wire	—	—	Push-wire	Push-wire
Fused or unfused	Unfused	—	—	Unfused	Unfused
Fixing clips	G.Y5244 and G.Y5245	—	—	G.Y5244 and G.Y5245	G.Y5244 and G.Y5245

STARTER SWITCH

Catalogue no.	155/400	155/400*	—	—	—
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FUSE


1 tube – rating	3A	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299	G.T1299
2 tube – rating	3A	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299	G.T1299
3 tube – rating	3A	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299	G.T1299
4 tube – rating	3A	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299	G.T1299

Other choke or ballast voltage ratings (Details as 240V 50Hz units above unless otherwise stated)

200/210V 50 Hz	G.69354.1	Not available	Not available	Not available	Not available
220V 50Hz	G.69369.2	Not available	Not available	G.69004.2†	Not available
250V 50Hz	G.69354.5	Not available	Not available	Not available	Not available
220V 60Hz	G.69374.2	Not available	Not available	Not available	Not available
240V 60Hz	G.69354.1	Not available	Not available	Not available	Not available

*Order starter switch separately

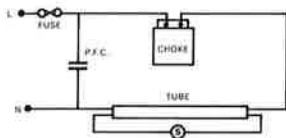
†This unit must be used with capacitor G.C2298 (4 μF ± 5% 380V)

 Choke or ballast approved to BS 2818

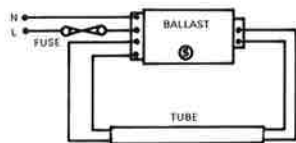
1200mm 40W Fluorescent tube control gear

CIRCUIT DIAGRAMS

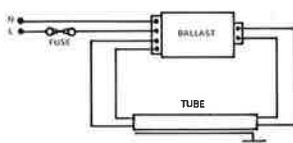
- 1 Standard starter switch circuit with optional PFC capacitor



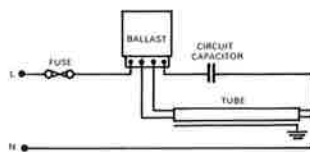
- 13 Starter switch circuit for HPF ballast



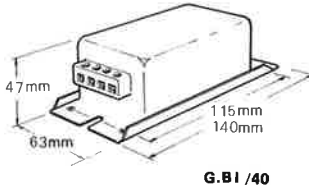
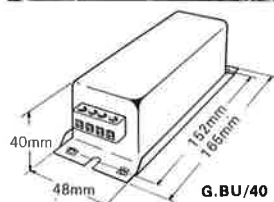
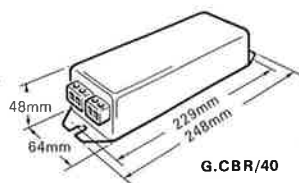
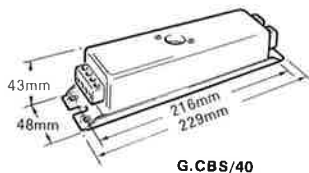
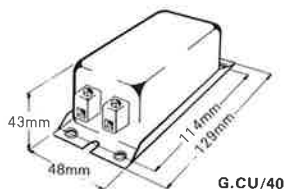
- 16 Semi-resonant circuit for HPF ballast



- 7 Semi-resonant start circuit with essential circuit capacitor



CONTROL GEAR TYPES



32W Circular and 900mm 30W Fluorescent tube control gear

CONTROL GEAR FOR 240V 50Hz SUPPLY

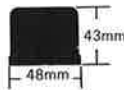
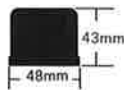
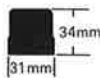
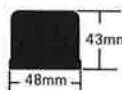
Tube	1 × 32W Circular or 1 × 900mm 30W 26mm and 38mm dia.	1 × 900mm 30W 26mm and 38mm dia.	1 × 900mm 30W 26mm and 38mm dia.	1 × 900mm 30W 26mm and 38mm dia.
Circuit	Switchstart	Switchstart	Quickstart	Switchstart
Type of control gear	LPF choke	LPF choke	LPF ballast	LPF ballast
Circuit diagram	1	1	219	17

CHOKE OR BALLAST



Catalogue no.	G.CU/30	G.CJ/30	G.CBQ/30	G.CBS/30
Weight	0.9kg	0.8kg	1.6kg	1.1kg
Filling	Polyester resin	Varnish	Polyester resin	Polyester resin
Can colour	White	Natural varnish	White	White
Terminals	Screw	Screw	Screw	Screw

Cross section



t_w
 Δt

120°C
50°C

105°C
55°C

105°C
50°C

120°C
45°C

CAPACITOR

Catalogue no.	G.C2224	G.C2227	G.C2224	G.C2224
Capacitance (μF)	3.5 ± 10%	3 ± 10%	3.5 ± 10%	3.5 ± 10%
Volts rating	250V	250V	250V	250V
Length incl. terminals	75mm	87mm	75mm	75mm
Diameter	38mm	32mm	38mm	38mm
Terminals	Push-wire	Pin	Push-wire	Push-wire
Fused or unfused	Unfused	Unfused	Unfused	Unfused
Fixing clips	G.Y5244 and G.Y5245	G.Y5259*	G.Y5244 and G.Y5245	G.Y5244 and G.Y5245

STARTER SWITCH

Catalogue no.	155/400	155/400	—	155/400
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FUSE

1 tube – rating	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299
2 tube – rating	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299
3 tube – rating	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299
4 tube – rating	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299

Other choke or ballast voltage ratings (Details as 240V units above)

200/210V 50Hz	G.CU/40	Not available	Not available	Not available
220V 50Hz	G.69367.2	G.66051.2	Not available	Not available

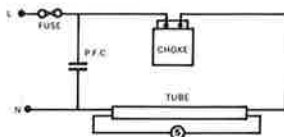
*For use in Arrowslim fitting only

Choke or ballast approved to BS 2818

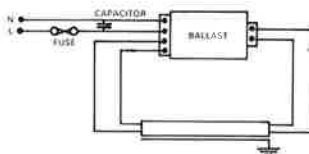
32W Circular and 900mm 30W Fluorescent tube control gear

CIRCUIT DIAGRAMS

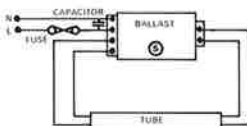
- 1 Standard starter switch circuit with optional PFC capacitor



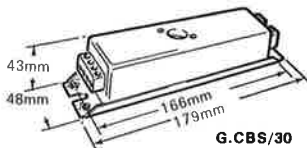
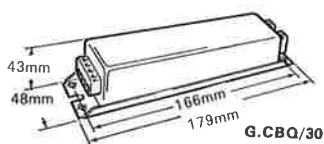
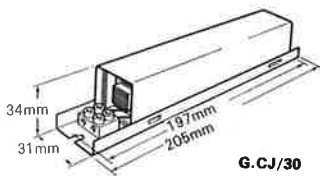
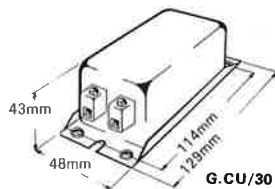
- 219 Quickstart circuit for LPF ballast with optional PFC capacitor



- 17 Starter switch circuit for LPF ballast with optional PFC capacitor



CONTROL GEAR TYPES



600mm 40W Fluorescent tube control gear

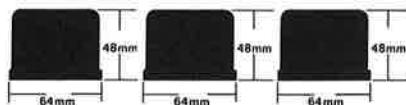
Control gear for this tube size is not included in BS 2818

SWITCHSTART CONTROL GEAR FOR 240V 50Hz SUPPLY

Tube(s)	1 × 600mm 40W	2 × 600mm 40W	2 × 600mm 40W
Circuit	Switchstart	Switchstart	Switchstart
Type of control gear	LPF choke	LPF choke	HPF ballast
Circuit diagram	1	10	15

CHOKES OR BALLAST

Catalogue no.	G.CI/240	G.CI/2240	G.CBS/685
Weight	1.9kg	1.9kg	2.1kg
Filling	Polyester resin	Polyester resin	Polyester resin
Can colour	White	White	White
Terminals	Screw	Screw	Screw
Cross section			



t_w	105°C	105°C	105°C
Δt	65°C	65°C	60°C

CAPACITOR

Catalogue no.	G.C2222	G.C2222	Included in ballast
Capacitance (μF)	$8 \pm 10\%$	$8 \pm 10\%$	—
Working volts	250V	250V	—
Length incl. terminals	99mm	99mm	—
Diameter	38mm	38mm	—
Terminals	Push-wire	Push-wire	—
Fused or unfused	Unfused	Unfused	—
Fixing clips	G.Y5244 and G.Y5245	G.Y5244 and G.Y5245	—

STARTER SWITCH

Catalogue no.	155/200	2 × 155/200	2 × 155/200 ‡
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FUSE

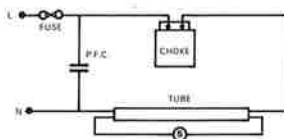
1 tube – rating	3A	—	—
Catalogue no.	G.T1299	—	—
2 tube – rating	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299
3 tube – rating	3A	—	—
Catalogue no.	G.T1299	—	—
4 tube – rating	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299

Other choke or ballast voltage ratings

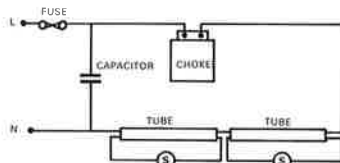
200/210V 50Hz	G.CI/240	G.CI/2240	Not available
220/230V 50Hz	G.CI/240	G.CI/2240	Not available
240/250V 50Hz	G.CI/240	G.CI/2240	Not available

‡Order starter switches separately; one starter switch socket will also be required

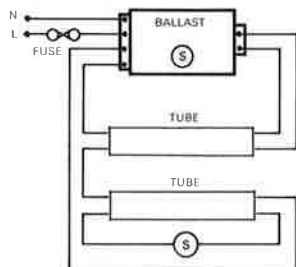
CIRCUIT DIAGRAMS



1 Standard starter switch circuit with optional PFC capacitor

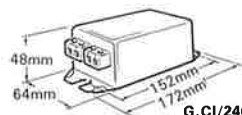


10 Starter switch circuit for series pair tube operation with optional PFC capacitor

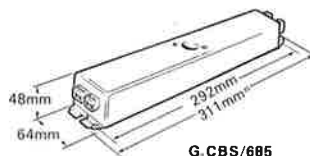


15 Twin tube starter switch circuit for HPF ballast

CONTROL GEAR TYPES



G.CI/240
G.CI/2240
G.QS/2240



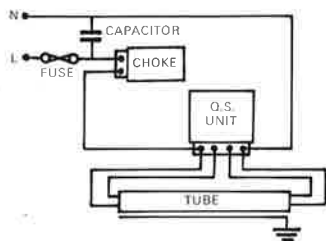
G.CBS/685

600mm 40W Fluorescent tube control gear

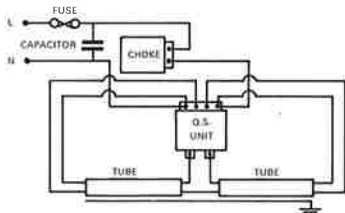


Control gear for this tube size is not included in BS 2818

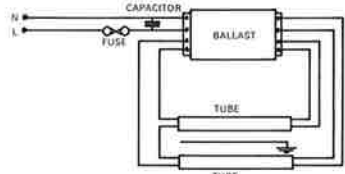
CIRCUIT DIAGRAMS



8 Tapped quickstart transformer circuit with optional PFC capacitor



11 Twin tube quickstart circuit with optional PFC capacitor



12 Twin tube quickstart circuit for LPF ballast with optional PFC capacitor

SWITCHLESS START CONTROL GEAR FOR 240V 50Hz SUPPLY

Tube(s)	1 × 600mm 40W	2 × 600mm 40W	2 × 600mm 40W
Circuit	Quickstart	Quickstart	Quickstart
Type of control gear	LPF choke	LPF choke	LPF ballast
Circuit diagram	8	11	12

CHOKE OR BALLAST

Catalogue no.	G.CI/240	G.CI/2240	G.CBQ/2240
Weight	1.9kg	1.9kg	2.7kg
Filling	Polyester resin	Polyester resin	Polyester resin
Can colour	White	White	White
Terminals	Screw	Screw	Screw
Cross section			



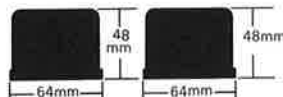
t_w
 Δt

CAPACITOR

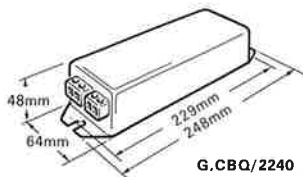
Catalogue no.	G.C2222	G.C2222	G.C2222
Capacitance (μF)	8 ± 10%	8 ± 10%	8 ± 10%
Working volts	250V	250V	250V
Length incl. terminals	99mm	99mm	99mm
Diameter	38mm	38mm	38mm
Terminals	Push-wire	Push-wire	Push-wire
Fused or unfused	Unfused	Unfused	Unfused
Fixing clips	G.Y5244 and G.Y5245	G.Y5244 and G.Y5245	G.Y5244 and G.Y5245

QUICKSTART UNIT

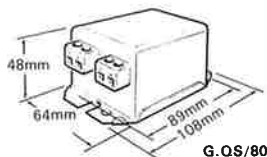
Catalogue no.	G.QS/80	G.QS/2240	Included in ballast
Weight	1kg	1.4kg	—
Filling	Polyester resin	Polyester resin	—
Can colour	White	White	—
Terminals	Screw	Screw	—
Cross section			



CONTROL GEAR TYPES



G.CBQ/2240



G.QS/80

FUSE

1 tube — rating	3A	—	—
Catalogue no.	G.T1299	—	—
2 tube — rating	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299
3 tube — rating	3A	—	—
Catalogue no.	G.T1299	—	—
4 tube — rating	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299

Other choke or ballast voltage ratings

200/210V 50Hz	G.CI/240	G.CI/2240	Not available
220/230V 50Hz	G.CI/240	G.CI/2240	Not available
240/250V 50Hz	G.CI/240	G.CI/2240	Not available

Twin 600mm20W Fluorescent tube control gear

CONTROL GEAR FOR 240V 50Hz SUPPLY

Tubes	2 × 600mm 20W	2 × 600mm 20W	2 × 600mm 20W	2 × 600mm 20W
Circuit	Switchstart	Quickstart	Switchstart	Quickstart
Type of control gear	LPF choke	LPF choke	LPF ballast	LPF ballast
Circuit diagram	10	11	15	12

CHOKE OR BALLAST

Catalogue no.	G.CU/40	G.CU/40	G.CBS/40	G.CBO/220
Weight	0.9kg	0.9kg	1.1kg	1.2kg
Filling	Polyester resin	Polyester resin	Polyester resin	Polyester resin
Can colour	White	White	White	White
Terminals	Screw	Screw	Screw	Screw
Cross section				



CAPACITOR

Catalogue no.	G.C2224	G.C2224	Included in ballast	G.C2224
Capacitance (μF)	3.5 ± 10%	3.5 ± 10%	—	3.5 ± 10%
Volts rating	250V	250V	—	250V
Length incl. terminals	75mm	75mm	—	75mm
Diameter	38mm	38mm	—	38mm
Terminals	Push-wire	Push-wire	—	Push-wire
Fused or unfused	Unfused	Unfused	—	Unfused
Fixing clips	G.Y5244 and G.Y5245	G.Y5244 and G.Y5245	—	G.Y5244 and G.Y5245

STARTER SWITCH

Catalogue no.	2 × 155/200	—	2 × 155/200†	—
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QUICKSTART UNIT

Catalogue no.	—	G.OS/220	—	Included in ballast
Weight	—	0.9kg	—	—
Filling	—	Polyester resin	—	—
Can colour	—	White	—	—
Terminals	—	Screw	—	—
Cross section	—	—	—	—



FUSE

2 tube – rating	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299
4 tube – rating	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299

Other choke or ballast voltage ratings (Details as 240V 50Hz units above)

200/210V 50Hz	G.69354.1	G.69354.1	Not available	Not available
220V 50Hz	G.69369.2	G.69369.2	Not available	Not available
250V 50Hz	G.69354.5	G.69354.5	Not available	Not available
220V 60Hz	G.69374.2	G.69374.2	Not available	Not available
240V 60Hz	G.69354.1	G.69354.1	Not available	Not available

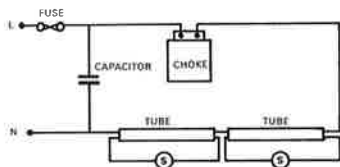
†Order starter switches separately: one starter switch socket will also be required

☞ Choke or ballast approved to BS 2818

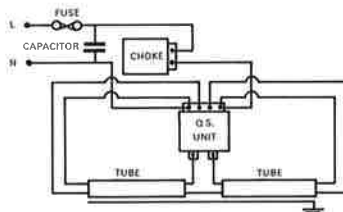
Twin 600mm 20W Fluorescent tube control gear

CIRCUIT DIAGRAMS

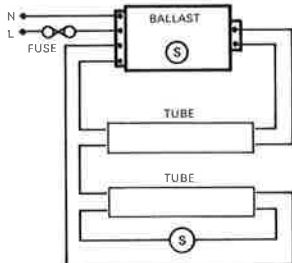
10 Starter switch circuit for series pair tube operation with optional PFC capacitor



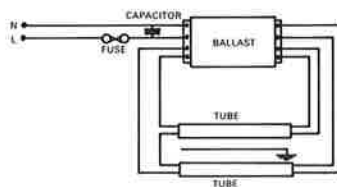
11 Twin tube quickstart circuit with optional PFC capacitor



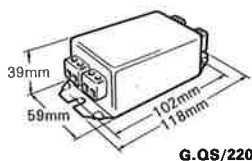
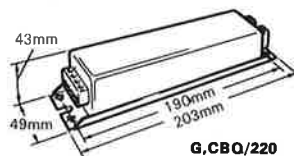
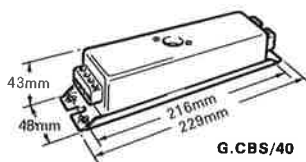
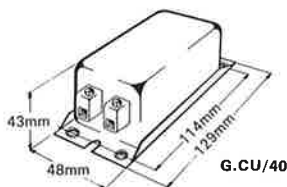
15 Twin tube starter switch circuit for HPF ballast



12 Twin tube quickstart circuit for LPF ballast with optional PFC capacitor



CONTROL GEAR TYPES



Twin 450mm 15W Fluorescent tube control gear

CONTROL GEAR FOR 240V 50Hz SUPPLY

Tubes	2 × 450mm 15W 26mm and 38mm dia.	2 × 450mm 15W 26mm and 38mm dia.	2 × 450mm 15W 26mm and 38mm dia.
Circuit	Switchstart	Quickstart	Switchstart
Type of control gear	LPF choke	LPF choke	LPF ballast
Circuit diagram	10	11	218

CHOKES OR BALLAST

Catalogue no.	G.CU/30	G.CU/30	G.CBS/30
Weight	0.9kg	0.9kg	1.1kg
Filling	Polyester resin	Polyester resin	Polyester resin
Can colour	White	White	White
Terminals	Screw	Screw	Screw
Cross section			



t_w
 Δt

120°C
60°C



120°C
50°C



120°C
45°C

CAPACITOR

Catalogue no.	G.C2224	G.C2224	—
Capacitance (μF)	3.5 ± 10%	3.5 ± 10%	—
Volts rating	250V	250V	—
Length incl. terminals	75mm	75mm	—
Diameter	38mm	38mm	—
Terminals	Push-wire	Push-wire	—
Fused or unfused	Unfused	Unfused	—
Fixing clips	G.Y5244 and G.Y5245	G.Y5244 and G.Y5245	—

STARTER SWITCH

Catalogue no.	2 × 155/200	—	2 × 155/200†
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QUICKSTART UNIT

Catalogue no.	—	G.QS/220	—
Weight	—	0.9kg	—
Filling	—	Polyester resin	—
Can colour	—	White	—
Terminals	—	Screw	—
Cross section			



t_w
 Δt

105°C
20°C

FUSE

2 tube – rating	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299
4 tube – rating	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299

Other choke or ballast voltage ratings (Details as 240V units above)

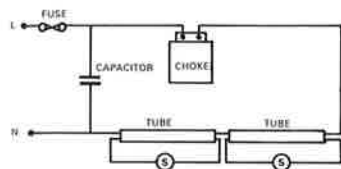
200/210V 50Hz	G.69353.1	G.69353.1	Not available
220V 50Hz	G.69354.5	G.69354.5	Not available
250V 50Hz	G.69353.5	G.69353.5	Not available

†Order starter switches separately: one starter switch socket will also be required.

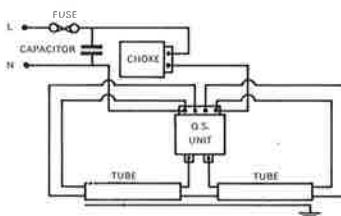
Twin 450mm 15W Fluorescent tube control gear

CIRCUIT DIAGRAMS

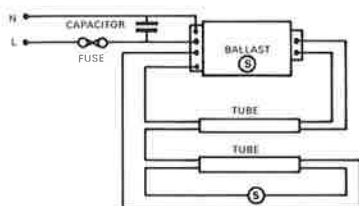
10 Starter switch circuit for series pair tube operation with optional PFC capacitor



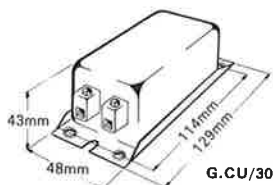
11 Twin tube quickstart circuit with optional PFC capacitor



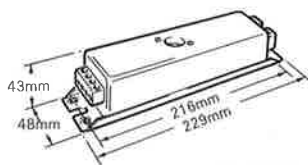
218 Twin tube starter switch circuit for LPF ballast



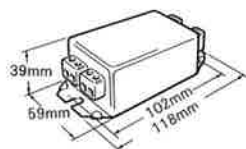
CONTROL GEAR TYPES



G.CU/30







G.CBS/30



G.QS/220

Single 22W Circular, 600mm 20W and 450mm 15W Fluorescent tube control gear

CONTROL GEAR FOR 240V 50Hz SUPPLY

Tube	1 × 600mm 20W or 1 × 450mm 15W	1 × 22W Circular or 1 × 600mm 20W or 1 × 450mm 15W	1 × 600mm 20W or 1 × 450mm 15W	1 × 22W Circular or 1 × 600mm 20W or 1 × 450mm 15W
Circuit	Quickstart	Switchstart	Quickstart	Switchstart
Type of control gear	LPF choke	LPF choke	LPF ballast	LPF ballast
Circuit diagram	8	1	219	17
CHOKE OR BALLAST				
Catalogue no.	G.CU/20	G.CU/20	G.CBO/20	G.CBS/20
Weight	0.9kg	0.9kg	1.13kg/	1.02kg/
Filling	Polyester resin	Polyester resin	Polyester resin	Polyester resin
Can colour	White	White	White	White
Terminals	Screw	Screw	Screw	Screw
Cross section				
t_w	120°C	120°C	105°C	120°C
Δt	50°C	50°C	50°C	50°C

CAPACITOR

Catalogue no.	G C2224	G C2224	G C2224	G C2224
Capacitance (μF)	3.5 ± 10%	3.5 ± 10%	3.5 ± 10%	3.5 ± 10%
Working volts	250V	250V	250V	250V
Length incl. terminals	75mm	75mm	75mm	75mm
Diameter	38mm	38mm	38mm	38mm
Terminals	Push-wire	Push-wire	Push-wire	Push-wire
Fused or unfused	Unfused	Unfused	Unfused	Unfused
Fixing clips	G.Y5244 and G.Y5245	G.Y5244 and G.Y5245	G.Y5244 and G.Y5245	G.Y5244 and G.Y5245

STARTER SWITCH

Catalogue no.	—	155/200	—	155/200†
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QUICKSTART UNIT

Catalogue no.	G.QS/40	—	Included in ballast	—
Weight	0.9kg	—	—	—
Filling	Polyester resin	—	—	—
Can colour	White	—	—	—
Terminals	Screw	—	—	—
Cross section		—	—	—

FUSE

1 tube – rating	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299
2 tube – rating	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299
3 tube – rating	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299
4 tube – rating	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299

Other choke or ballast voltage ratings (Details as 240V 50Hz units above)

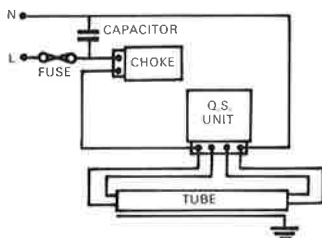
200/210V 50Hz	G.69352.1	G.69352.1	Not available	Not available
220V 50Hz	G.69368.2	G.69368.2	Not available	Not available
250V 50Hz	G.69352.5	G.69352.5	Not available	Not available
220V 60Hz	G.69378.2	G.69378.2	Not available	Not available
240V 60Hz	G.69352.1	G.69352.1	Not available	Not available

†Order starter switches separately

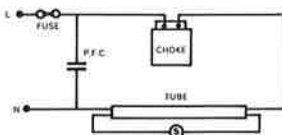
Choke or ballast approved to BS 2818

Single 22W Circular, 600mm 20W and 450mm 15W Fluorescent tube control gear

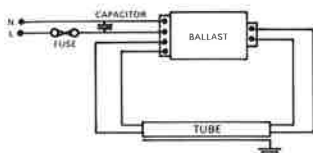
8 Tapped quickstart transformer circuit with optional PFC capacitor



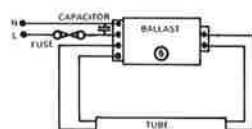
1 Standard starter switch circuit with optional PFC capacitor



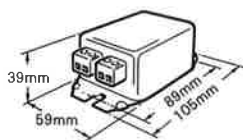
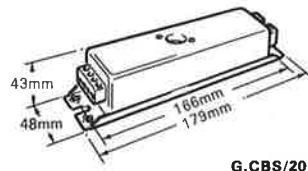
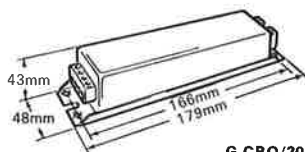
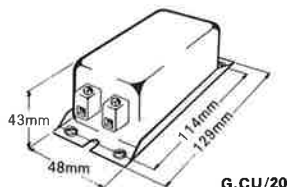
219 Quickstart circuit for LPF ballast with optional PFC capacitor



17 Starter switch circuit for LPF ballast with optional PFC capacitor



CONTROL GEAR TYPES



525mm 13W, 300mm 8W, 225mm 6W and 150mm 4W control gear

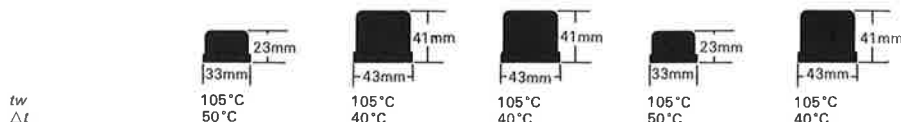
CONTROL GEAR FOR 230/250V 50Hz SUPPLY

Tube(s)	1 × 525mm 13W	1 × 525mm 13W or 2 × 300mm 8W	2 × 150mm 4W or 225mm 6W	1 × 300mm 8W	1 × 4/6/8W
Circuit	Switchstart	Switchstart	Switchstart	Switchstart	Switchstart
Type of control gear	LPF choke	LPF choke	LPF choke	LPF choke	LPF choke
Circuit diagram	1	1 or 10	10	1	1

CHOKE OR BALLAST

Catalogue no.	G.CD/13	G.CPX/28	G.CPX/8	G.CD/8	G.CPX/8
Weight	0.6kg	0.6kg	0.6kg	0.6kg	0.6kg
Filling	Polyester resin	Polyester resin	Polyester resin	Polyester resin	Polyester resin
Can colour	White	White	White	White	White
Terminals	Screw	Screw	Screw	Screw	Screw

Cross section



CAPACITOR

Catalogue no.	G.C2286	G.C2286	G.C2286	G.C2286	G.C2286
Capacitance (μF)	2±10%	2±10%	2±10%	2±10%	2±10%
Working volts	250V	250V	250V	250V	250V
Length incl. terminals	52mm	52mm	52mm	52mm	52mm
Diameter	26mm	26mm	26mm	26mm	26mm
Terminals	Solder tags	Solder tags	Solder tags	Solder tags	Solder tags
Fused or unfused	Unfused	Unfused	Unfused	Unfused	Unfused
Fixing clip	G.Y5200	G.Y5200	G.Y5200	G.Y5200	G.Y5200

STARTER SWITCH

Catalogue no.	155/500	155/500 (13W) or 2 × 155/100†	2 × 155/100†	155/500	155/500
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FUSE

1 tube – rating	3A	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299	G.T1299
2 tube – rating	3A	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299	G.T1299
3 tube – rating	3A	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299	G.T1299
4 tube – rating	3A	3A	3A	3A	3A
Catalogue no.	G.T1299	G.T1299	G.T1299	G.T1299	G.T1299

Other choke or ballast voltage ratings (Details as 230/250V 50Hz units above unless otherwise stated)

200/220V 50Hz	G.69160.L	Not available	G.CPX/28	G.69159.L	G.CPX/28
110/115V 50Hz	Not available	Not available	Not available	Not available	G.69346 } *
110/115V 60Hz	Not available	Not available	Not available	Not available	G.69347 }

*Use 155/100 starter switch

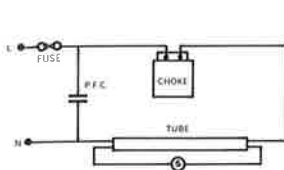
†Due to the asymmetrical construction of these switches, they must be placed in the starter switch sockets correctly orientated (i.e. if the switches refuse to operate, one must be removed and rotated through 180°)

Choke or ballast approved to BS2818

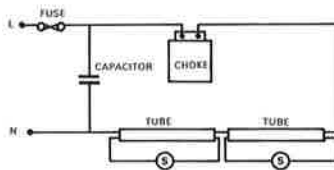
525mm 13W, 300mm 8W, 225mm 6W and 150mm 4W control gear

CIRCUIT DIAGRAMS

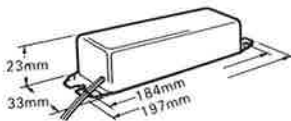
1 Standard starter switch circuit with optional PFC capacitor



10 Starter switch circuit for series pair tube operation with optional PFC capacitor

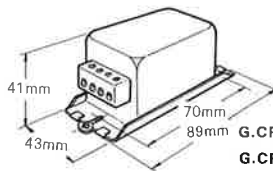


CONTROL GEAR TYPES



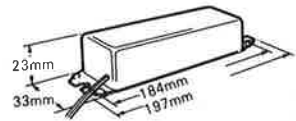
G.CD/8

One brown lead
330mm long
One white lead
51mm long



G.CPX/8

G.CPX/28



G.CD/13

One brown lead
368mm long
One white lead
85mm long

Circuit components for SOX and SLI sodium discharge lamps

CONTROL GEAR FOR 240V 50Hz SUPPLY

Lamp	35, 55W SOX	35, 55W SOX	90W SOX/140W SLI/H	135/180W SOX	200W SLI/H
Circuit diagram	307	307	307	304	302
Ballast					
Catalogue number	G 53182.4†*	G 53131.4*	G 53232.4*	G 53260.T*	G 53261.T*
Weight	3.4 kg	4.2 kg	5.82 kg	6.55 kg	6.55 kg
Filling	Polyester resin	Polyester resin	Polyester resin	Polyester resin	Polyester resin
Illustrated type	D11	D13	D1	D14	D15
Can colour	White	White	White	White	White
Terminals	Screw	Screw	Screw	Screw	Screw
$t_w/\Delta t$ (°C)	105/60	105/50	120/75	120/85	120/85

Capacitor

Catalogue number	G C2384	G C2384	G C2331 (for 140W) G C2346 (for 90W)	G C2281	G C2382
Capacitance μ F	15 \pm 10%	15 \pm 10%	20 \pm 10% (for 140W) 25 \pm 10% (for 90W)	13 \pm 5%	35 \pm 10%
Working voltage	250	250	250	440	250
Terminals	Flying leads	Flying leads	Flying leads	Flying leads	Flying leads
Fused or unfused	Unfused	Unfused	Unfused	Unfused	Unfused

Fuse Rating

HRC	5A	5A	5A	5A	5A
Re-wireable	5A	5A	5A	5A	5A

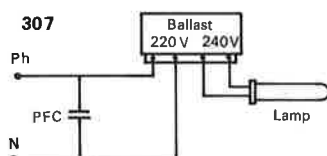
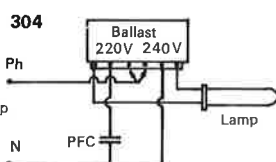
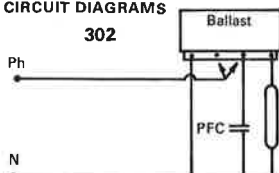
Other ballast voltage ratings

220V 50Hz	G 53182.T†	Not available	G 53232.2*	G 53260.T*	G 53261.T*
250V 50Hz	G 53182.T†	Not available	Not available	Not available	Not available
Illustrated type	D12		D1	D14	D15
$t_w/\Delta t$ (°C)	—	—	120/85	120/85	120/85

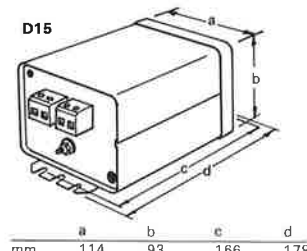
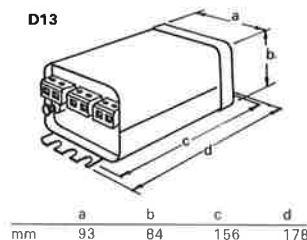
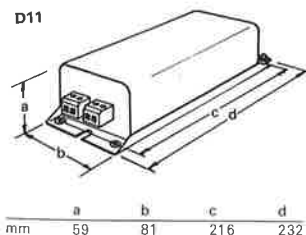
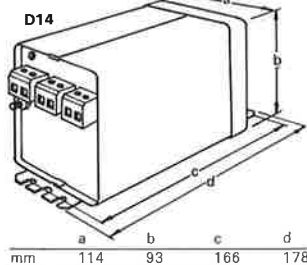
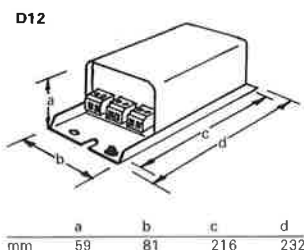
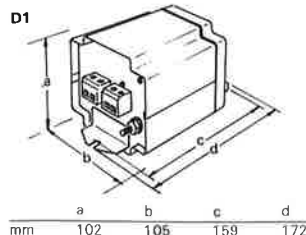
†Fittings use only. For all other applications the G 53131.4 must be used.

*Ballast approved to BS4782.

CIRCUIT DIAGRAMS



CONTROL GEAR TYPES



Circuit components for 250W and 400W SON high-pressure sodium discharge lamps

CONTROL GEAR FOR 240V 50Hz SUPPLY

Lamp	250W	400W
Circuit diagram	315	315

Ballast

Catalogue no.	G. 53251.T	G. 53230.T
Weight	3.8kg	5.7kg
Filling	Polyester resin	Polyester resin
Illustrated type	D2	D1
Can colour	White	White
Terminals	Screw	Screw

Capacitor

Catalogue no.	G. C2386	2 × G. C2331 (in parallel)
Capacitance μF	30 $\pm 10\%$	20 $\pm 10\%$ (each)
Working volts	250V	250V
Terminals	Flying leads	Flying leads
Fused or unfused	Unfused	Unfused

Ignitor

Catalogue no.	G. 53282	G. 53282
Weight	0.065kg	0.065kg
Illustrated type	D27	D27
Can finish	Aluminium	Aluminium
Terminals	Flying leads	Flying leads

Fuse rating

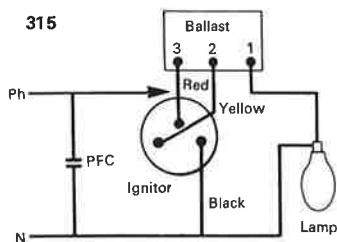
HRC	10A	15A
Re-wireable	5A	10A

Other ballast voltage ratings

220V 50Hz	G. 53251.T	G. 53230.T
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CIRCUIT DIAGRAM

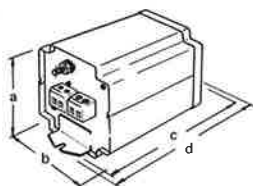
315



Notes: 1) Maximum permissible distances between lamp and ignitor/ballast combination using 1mm² PVC twin and earth cable are: 250W-45m, 400W-30m.
2) For 220V operation remove phase lead from terminal 3 of ballast and re-connect to terminal 2.

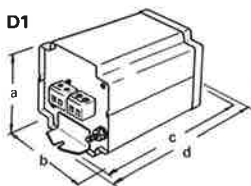
CONTROL GEAR TYPES

D2



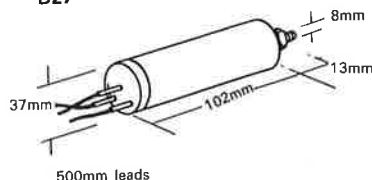
	a	b	c	d
mm	89	98	146	158

D1



	a	b	c	d
mm	102	105	158	171

D27



Circuit components for XB and XE/D compact source xenon discharge lamps

A.C. LAMPS 200/250V 50Hz

Lamp	250W XE/D	500W XE/D	1000W XB	1500W XB
Circuit diagram	320	320	320	320
Ballasts				
Catalogue no.	4 × G 53235 *	6 × G 53235 *	6 × G 53235 *	2 × G 53251,T & * 3 × G 53230,T
Weight	10.4kg (each)	10.4kg (each)	10.4kg (each)	
Illustrated type	D21	D21	D21	D2/D1
Terminals	Screw	Screw	Screw	Screw
Starter				
Catalogue no.	G 53239	G 53239	G 53239	G 53239
Weight	5.9kg	5.9kg	5.9kg	5.9kg
Illustrated type	D25	D25	D25	D25
Capacitors				
Catalogue no.	3 × G C2275 (160 µF) * or 3 × G C2275 & 1 × G C2331 (200 µF)	4 × G C2275 (240 µF) * or 5 × G C2275 (300 µF) *	4 × G C2275 (240 µF) * or 5 × G C2275 (300 µF) *	3 × G C2275 & 1 × G C2331 (200 µF) *
Mains current	3A (180 µF) 2A (200 µF)	8.5A (240 µF) 4.5A (300 µF)	7.5A (240 µF) 5A (300 µF)	9.25A (200 µF)
Working volts	250V	250V	250V	250V
Terminals	Screw	Screw	Screw	Screw
Illustrated type	D36	D36	D36	D36 (G C2275)

* Connected in parallel

D.C. LAMPS ON 200/250V 50Hz SUPPLY

Lamp	250W XE/D	500W XE/D	2000W XE/D 2 electrode	2000W XE/D 3 electrode
Circuit diagram	323	323	321	322
Starter				
Catalogue no.	G 53239	G 53239	G 53233	G 53234
Weight	5.9kg	5.9kg	12.7kg	4.1kg
Illustrated type	D25	D25	D19	D20
Rectifier ballast				
Catalogue no.	G 53236	G 53236	G 53237	G 53238
Weight	37kg	37kg	180kg	180kg
Illustrated type	D22	D22	D23	D24

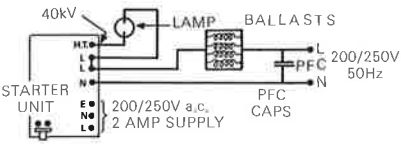
D.C. LAMPS ON 35/65V D.C. SUPPLY

Lamp	250W XE/D	500W XE/D	2000W XE/D 2 electrode	2000W XE/D 3 electrode
Circuit diagram	323	323	321	322
Starter				
Catalogue no.	G 53239	G 53239	G 53233	G 53234
Weight	5.9kg	5.9kg	12.7kg	4.1kg
Illustrated type	D25	D25	D19	D20
Series resistance				
Resistance value (ohms)	V—16.5 15	V—22 85	V—25 80	V—23.5 85
Current (amps)	15A	23A	80A	85A

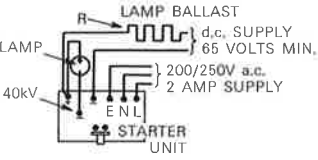
Circuit components for XB and XE/D compact source xenon discharge lamps

CIRCUIT DIAGRAMS

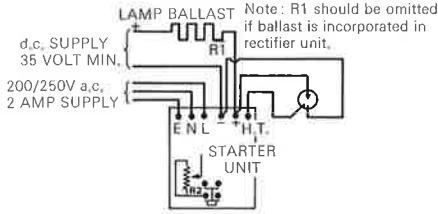
320



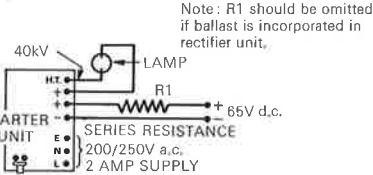
321



322



323



CONTROL GEAR TYPES

<p>D21</p>	<p>D25</p>	<p>D19</p>
a 140 b 203 c 208 d 150	a 165 b 191 c 318 d 289 e 175	a 203 b 314 c 267
<p>D20</p>	<p>D22</p>	<p>D23/D24</p>
a 222 b 156 c 187 d 292 e 232	a 356 b 432 c 216	a 1035 b 464 c 565

Circuit components for 50W, 80W, 125W and 250 W MBF, MBFR and MBF Kolorlux lamps



CONTROL GEAR FOR 240V 50Hz SUPPLY

Lamp	50W	80W	125W	250W
Circuit diagram	301	301	301	301
Ballast (Filling polyester resin; can colour white)				
Catalogue no.	G 53184.4†	G 53162.4*	G 53306.4*	G 53198.4**‡
Weight	1.2kg	1.8kg	1kg	2.72kg
Illustrated type	D16	D9	D7	D5
Terminals	Screw	Screw	Screw	Screw
$t_W/\Delta t$ (°C)	—	105/50	105/55	130/90

Capacitor (unfused)

Catalogue no.	G C2203†	G C2383	G C2383	G C2370
Capacitance μ F	6 \pm 10%	8 \pm 10%	8 \pm 10%	13 \pm 10%
Working volts	250V	250V	250V	250V
Terminals	Solder tags	Flying leads	Flying leads	Flying leads

Fuse rating

HRC	5A	5A	5A	10A
Re-wireable	5A	5A	5A	5A

Other ballast voltage ratings (Filling polyester resin; can colour white)

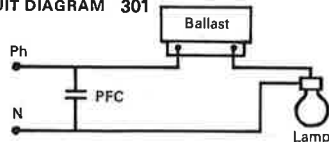
220V 50Hz				
Catalogue no.	G 53188.2†	G 53176.2†	G 53134.2†	G 53198.2*‡
Illustrated type	D16	D17	D18	D5
Weight	1.2kg	1.36kg	1.87kg	2.72kg
$t_W/\Delta t$ (°C)	—	—	—	130/85
200/250V 50Hz				
Catalogue no.	—	G 53162.T	G 53306.T	G 53158.T
Illustrated type	—	D10	D8	D31
Weight	—	1.8kg	—	3.86kg
Voltage tappings	—	200/210; 220/230; 240/250V	200/210; 220/230; 240/250V	200; 210; 220; 230; 240; 250V

†For fittings use *only*.

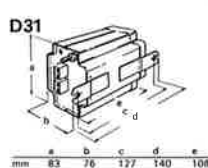
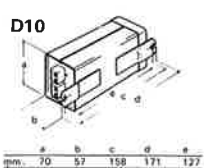
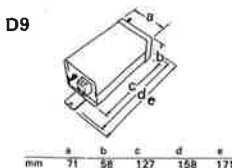
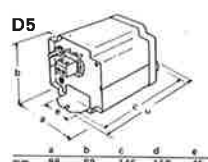
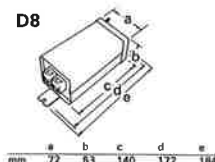
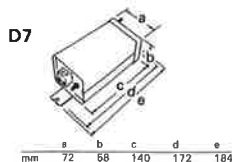
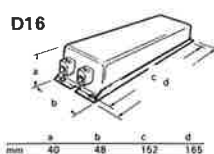
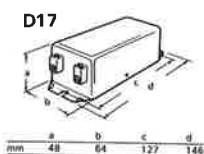
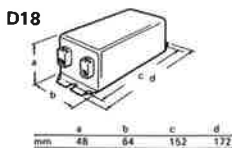
*Ballast approved to BS4782.

‡The heat dissipation from these ballasts is extremely efficient and it is therefore necessary to ensure that cables in close proximity to the ballast surface are high temperature grade or suitably protected by high temperature sleeving.

CIRCUIT DIAGRAM 301



CONTROL GEAR TYPES



Circuit components for 400W, 700W and 1000W MBF, MBFR and MBF Kolorlux mercury discharge lamps



CONTROL GEAR FOR 240V 50Hz SUPPLY

Lamp	400W		700W		1000W
Circuit diagram	301		306		306
Ballast					
Catalogue no.	G 53193.4*††	G 53157.T†	+	G 53198.4*††	2×G 53243.4*††
Weight	3-86kg	5-5kg		2-72kg	3-86kg(each)
Filling	Polyester resin	Polyester resin		Polyester resin	Polyester resin
Illustrated type	D3	D30		D5	D4
Can colour	White	White		White	White
Terminals	Screw	Screw		Screw	Screw
t _w /Δt (°C)	130/90	—		130/90	130/90

Capacitor

Catalogue no.	G C2331	G C2331 *	G C2370 *	2 × G C2346 *
Capacitance μ F	20 ± 10%	20 ± 10%	13 ± 10%	25 ± 10% (each)
Working volts	250	250	250	250
Terminals	Flying leads	Flying leads	Flying leads	Flying leads
Fused or unfused	Unfused	Unfused	Unfused	Unfused

Fuse ratings

HRC	15A	15A	15A	20A
Re-wireable	10A	10A	10A	15A

Other ballast voltage ratings

220V 50Hz	G 53193.2††	Not available	Not available	2 × G 53243.2*††
Catalogue no.	D3	—	—	D4
Illustrated type	—	—	—	—
Weight	3-86kg	—	—	3-86kg
Filling	Polyester resin	—	—	Polyester resin
Can colour	White	—	—	White
$t_w / \Delta t$ (°C)	130/85	—	—	—
200/250V 50Hz	G 53157.T	G 53157.T	G 53158.T*	2 × G 53164.T*
Catalogue no.	D30	D30	D31	D30
Illustrated type	—	—	—	—
Weight	5-5kg	5-5kg	3-86kg	5-5kg (each)
Filling	Polyester resin	Polyester resin	Polyester resin	Polyester resin
Can colour	White	White	White	White
Voltage tappings	200; 210; 220; 230; 240; 250	—	200; 210; 220; 230; 240; 250	190; 200; 210; 220; 230; 240

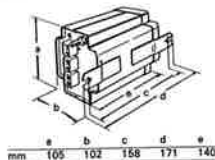
*Connected in parallel

†Ballast approved to BS4782

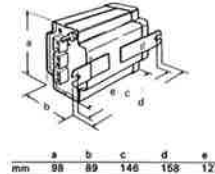
†The heat dissipation from these ballasts is extremely efficient and it is therefore necessary to ensure that cables in close proximity to the ballast surface are high temperature grade or suitably protected by high temperature sleeving

CONTROL GEAR TYPES

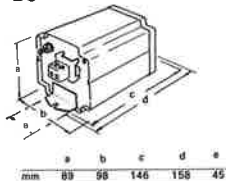
D30



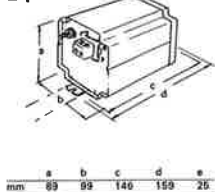
D31



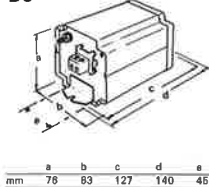
D3



D4

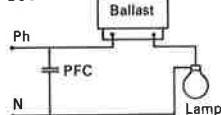


D5

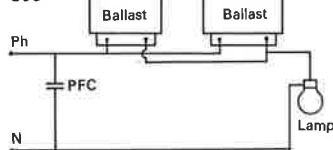


CIRCUIT DIAGRAMS

301



306



Circuit components for 250W, 400W and 1000W Kolorarc metal halide discharge lamps

CONTROL GEAR FOR 240V 50Hz SUPPLY

Lamp	250W	400W	1000W
Circuit diagram	324	324	311

Ballast

Catalogue no.	G 53251.T	G 53193.4	G 53247.4
Weight	3.8kg	3.86kg	24kg
Filling	Polyester resin	Polyester resin	Polyester resin
Illustrated type	Type D2	Type D3	Type D6
Can colour	White	White	Black
Terminals	Screw	Screw	Flying leads

Ballast fixing bracket

Catalogue no.	—	—	G M6181
---------------	---	---	---------

Capacitor

Catalogue no.	G C2386	G C2331	4XG C2346 (in parallel)
Capacitance μF	$30 \pm 10\%$	$20.0 \pm 10\%$	$25 \pm 10\%$ (each)
Working volts	250	250	250
Terminals	Flying leads	Flying leads	Flying leads
Fused or unfused	Unfused	Unfused	Unfused

Ignitor

Catalogue No.	G 53283	G 53283	—
Weight	0.15kg	0.15kg	—
Illustrated type	Type D28	Type D28	—
Can finish	Aluminium	Aluminium	—
Terminals	Flying leads	Flying leads	—

Fuse rating

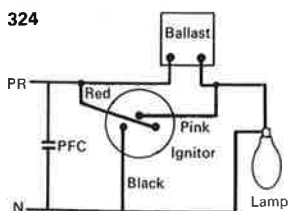
HRC	10A	15A	20A
Re-wireable	5A	10A	15A

Other ballast voltage ratings available

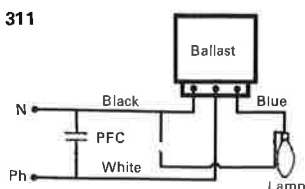
220V 50Hz	G 53251.T	G 53193.2	G 53247.2
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CIRCUIT DIAGRAMS

324

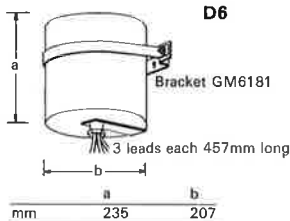


311

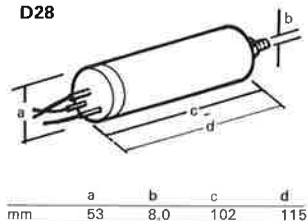


CONTROL GEAR TYPES

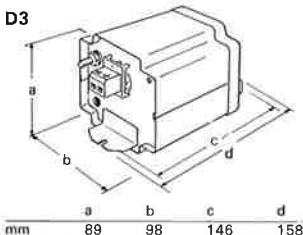
D6



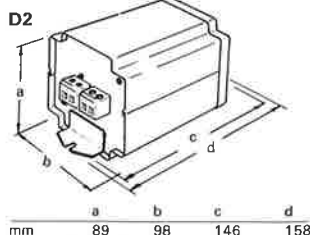
D28



D3



D2



Circuit components for M1 and M2 miniature mercury discharge lamps

Lamp type
Circuit diagram
Supply voltage

M1
344
 24V d.c.

Ballast
 Catalogue no.
 Weight
 Filling
 Illustrated type
 Can colour
 Terminals
 Series resistance †
 Heater resistance †

—
 —
 —
 —
 —
 —
 24 ohms
 30 ohms

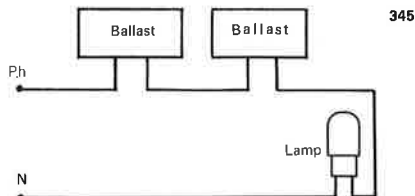
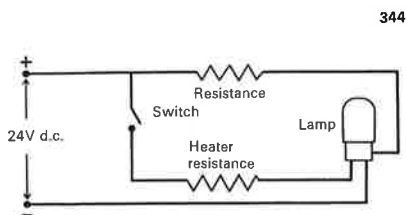
M2
345
 200/250V 50Hz

GCI/80 + G69343*
 1.9kg 0.57kg
 Polyester resin Polyester resin
A2 **G**
 White White
 Screw Screw

†Supplied by installer

*Ballasts connected in series

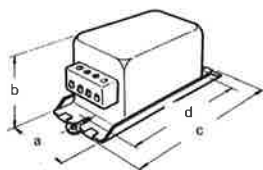
CIRCUIT DIAGRAMS



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

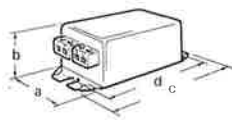
CONTROL GEAR TYPE S

G



	a	b	c	d
mm	43	41	89	70

A2



	a	b	c	d
mm	64	48	172	152

Circuit components for MB/D, MBL/D, MBW/U and ME/D mercury discharge lamps

CONTROL GEAR FOR 200/250V 50Hz SUPPLY

Lamp	125W MB/D 125W MBL/D 125W MBW/U	250W ME/D	1000W ME/D
Circuit diagram	301	301	316
Ballast			
Catalogue no.	G 53306.T	G 53235	4 × G 53235 (in parallel)
Weight	2.54kg	10.43kg	10.43kg (each)
Filling	Polyester resin	—	—
Illustrated type	D8	D21	D21
Can colour	White	—	—
Terminals	Screw	Screw	Screw
Capacitor			
Catalogue no.	G C2383	G C2275	4 × G C2275 (in parallel)
Capacitance μ F	8 ± 10%	60	60 (each)
Working volts	250	250	250
Terminals	Flying leads	Screw	Screw
Illustrated type	—	D36	D36
Starting capacitor			
Capacitance μ F	—	—	0.5
Working volts	—	—	1000
Manufacturer and ref. no.	—	—	TCC type CP142W or equivalent
Fuse rating			
HRC	5A	10A	20A
Re-wireable	5A	5A	20A
Starting switch			
Type	—	—	Pushbutton rated at 5A

CONTROL GEAR FOR 200/250V D.C. SUPPLY

Lamp	125W MBL/D	250W ME/D	1000W ME/D
Circuit diagram	341	342	343
Ballast			
Catalogue no.	G 53306.T	G 53235	Not required
Resistance	See table 1 below	See table 2 below	See table 3 below
Starting switch			
Type	Quick break	Pushbutton rated at 10A	Pushbutton rated at 5A

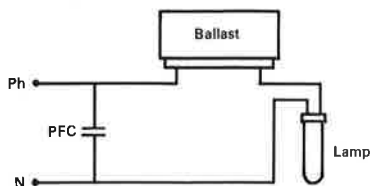
RESISTANCE TABLES

1			2			3		
Supply voltage	Resistance $\pm 5\%$	Current rating (amps)	Supply voltage	Resistance $\pm 5\%$	Current rating (amps)	Supply voltage	Resistance $\pm 5\%$	Current rating (amps)
200	79	2.3	200	35.2	5.6	200	8.9	22.5
210	87	2.3	210	37.9	5.5	210	9.5	22.0
220	95	2.3	220	40.6	5.4	220	10.2	21.6
230	105	2.3	230	43.3	5.3	230	10.9	21.0
240	112	2.3	240	46.0	5.2	240	11.5	20.8
250	123	2.3	250	48.7	5.1	250	12.2	20.4

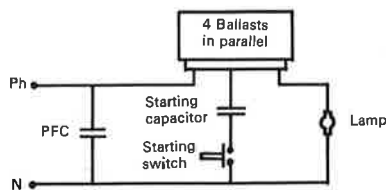
Circuit components for MB/D, MBL/D, MBW/U and ME/D mercury discharge lamps

CIRCUIT DIAGRAMS

301

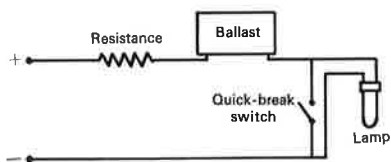


316

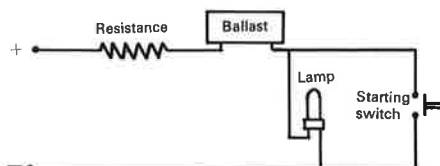


Note: The starting capacitor and switch are connected to the appropriate tapping in the first of the parallel ballasts only.

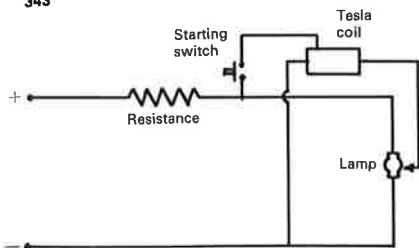
341



342

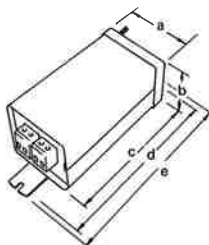


343



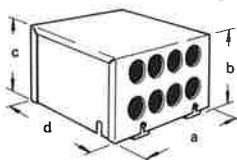
CONTROL GEAR TYPES

D8



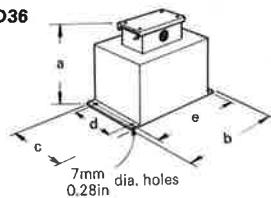
	a	b	c	d	e
mm	72	58	140	172	184

D21



	a	b	c	d
mm	208	150	140	203

D36



	a	b	c	d	e
mm	178	197	114	89	178

Circuit components for 400W and 1000W CSI compact source iodide lamps

CONTROL GEAR FOR 240V 50Hz SUPPLY

Lamp	400W	1000W	1000W Hot restrike
Circuit diagram	338	339	340
Ballast			
Catalogue no.	G 53230.T	3×G 53230.T†	3×G 53230.T†
Weight	5.7kg	5.7kg (each)	5.7kg (each)
Filling	Polyester resin	Polyester resin	Polyester resin
Illustrated type	D1	D1	D1
Can colour	White	White	White
Terminals	Screw	Screw	Screw
Capacitor			
Catalogue no.	2×G C2331‡	8×G C2346‡	8×G C2346‡
Capacitance, µF	20±10% (each)	25±10% (each)	25±10% (each)
Working voltage	250	250	250
Terminals	Flying leads	Flying leads	Flying leads
Fused or unfused	Unfused	Unfused	Unfused
Fuse rating			
HRC	15A	20A	20A
Re-wireable	10A	20A	20A
Pulse transformer			
Catalogue no.	G 47075	G 47077	—
Weight	—	0.8kg	—
Illustrated type	D34	D35	—
Filling	Polyester resin	Polyester resin	—
Can colour	White	White	—
Terminals	Screw	Screw	—
Starter			
Type	Vibrating relay †	Vibrating relay †	Walter Bauch Type 240*
Components	See chart 1 opposite	See chart 1 opposite	or IREM Type A1530
Starter Switch			
Type	—	—	Double pole push-button rated at 5A
Additional components			
	—	—	See chart 2 opposite
Combined units			
220V 50Hz	G 53196.2	G 53255.T	—
240V 50Hz	G 53196.4	G 53255.T	—
Illustrated type	D32	D33	—
Weight	11.8kg	27.2kg	—
Colour	Light grey	Black/White	—

*These starters are not supplied by Thorn Lighting Ltd. and should be obtained direct from the manufacturers: Walter Bauch, Elektrogerate, 1 Berlin 44, Elbestrasse 28-29, W. Germany; or IREM, 10050 S. Antonino (Torino), Italy.

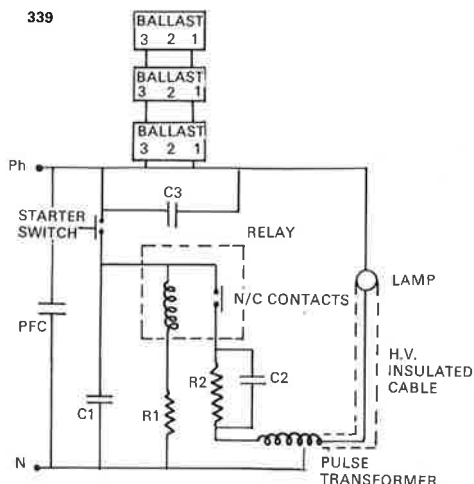
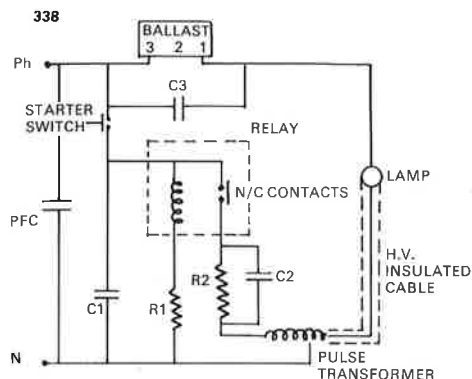
†Starter units incorporating the respective pulse transformer are available under the following catalogue numbers:

400W	G 53318
1000W	G 53319

‡Connected in parallel.

Circuit components for 400W and 1000W CSI compact source iodide lamps

CIRCUIT DIAGRAMS



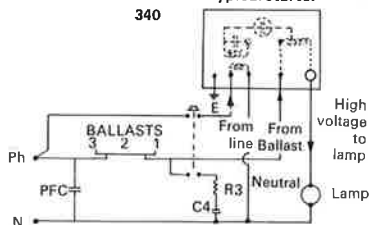
COMPONENT CHART—1

Component	Type	Where obtainable
C1, C2	0.22μF 1000V d.c. mixed dielectric	R.S. Components
C3	0.005μF 1000V d.c. disc ceramic	R.S. Components
R1	4.7K Ω 1W carbon	R.S. Components
R2	4.7K Ω 10W	R.S. Components
Relay	Reference 325/T5 14084/2	Magnetic Devices Ltd.

COMPONENT CHART—2

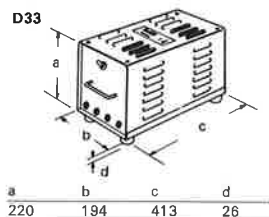
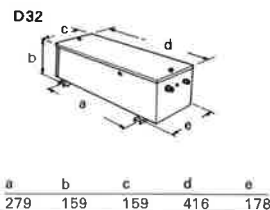
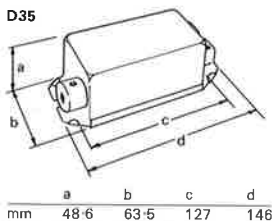
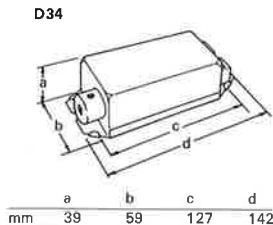
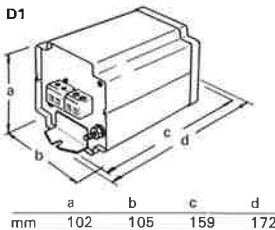
Component	Type	Where obtainable
R3	27 Ω 2.5W	R.S. Components
C4	2μF ±10% 250V	R.S. Components

Typical starter



Note: For 220V operation connect phase lead to terminal 2 on ballast(s)

CONTROL GEAR TYPES



Circuit components for 400W and 400/800W Graph X 365/420 photoprinting lamps

CONTROL GEAR FOR 240V 50HZ SUPPLY

Lamp	400W	400/800W
Circuit diagram	333	334

Ballast

Catalogue no.	G 53230.T	2× G 53230.T
Weight	5.7kg	5.7kg (each)
Filling	Polyester resin	Polyester resin
Illustrated type	D1	D1
Can colour	White	White
Terminals	Screw	Screw

Capacitor

Catalogue no.	2× G C2331	2× G C2331 + G C2386
Capacitance μ F	20±10% (each)	20±10% (each) + 30±10%
Working voltage	250	250
Terminals	Flying leads	Flying leads
Fused or unfused	Unfused	Unfused

Fuse rating

HRC	15A	15A
Re-wireable	10A	10A

Starter

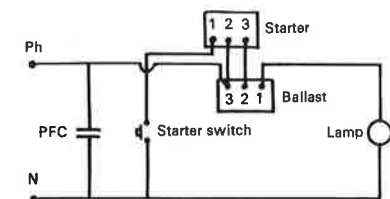
Catalogue no.	G 53279.T	G 53279.T
Weight	0.35kg	0.35kg
Illustrated type	D26	D26

Relay

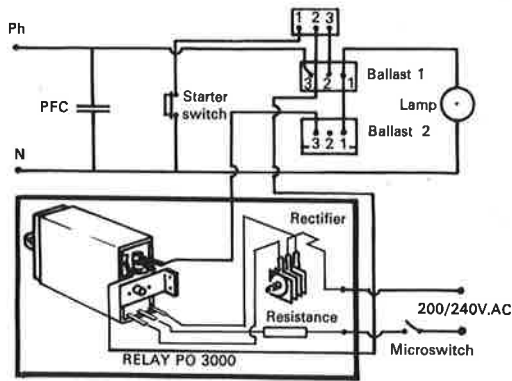
Type	<p>PO 3000 reference 3EH2DA available from Keyswitch, Bendon Valley, Wandsworth S W18.</p> <p>OR</p> <p>An alternative relay capable of withstanding 4 kV both between contacts, when open, and also to earth.</p>	
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Circuit components for 400W and 400/800W Graph X 365/420 photoprinting lamps

CIRCUIT DIAGRAMS



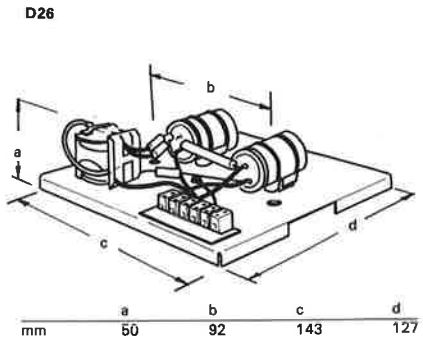
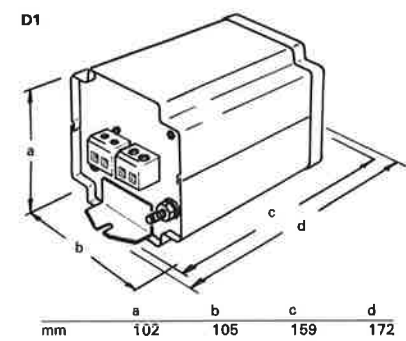
333



334

Note : For 220V operation reverse connections at 2 and 3 on ballast(s).

CONTROL GEAR TYPES



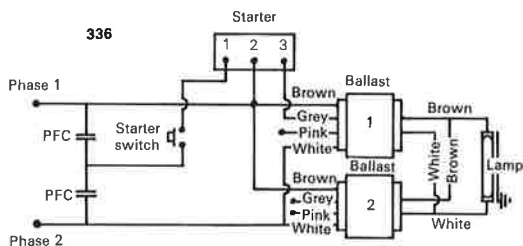
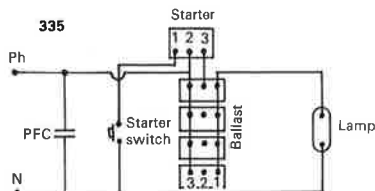
Circuit components for 1800W and 2000W MBIL linear metal halide discharge lamps

Lamp	1800W	2000W	2000W simmering
Supply voltages	240V 50Hz	415V 3 Phase 50Hz	415V 3 Phase 50Hz
Circuit diagram	335	336	337
Ballast			
Catalogue no.	4 × G 53230.T	2 × G 53299	2 × G 53299
Weight	5.7 kg (each)	—	—
Filling	Polyester resin	—	—
Illustrated type	D1	D29	D29
Can colour	White	Black	Black
Terminals	Screw	Flying leads	Flying leads
Capacitor			
Catalogue no.	6 × G C2331 <i>or</i> 5 × G C2346	2 × G C2275	2 × G C2275
Capacitance μF	20 \pm 10% (each) <i>or</i> 25 \pm 10% (each)	60 (each)	60 (each)
Working voltage	250	250	250
Terminals	Flying leads	—	—
Fused or unfused	Unfused	—	—
Illustrated type	—	D36	D36
Fuse rating			
HRC	30A	20A	20A
Re-wireable	25A	15A	15A
Starter			
Catalogue no.	G 53279.T	G 53279.T	G 53279.T
Weight	0.35kg	0.35kg	0.35kg
Illustrated type	D26	D26	D26

Circuit components for 1800W and 2000W MBIL linear metal halide discharge lamps

CIRCUIT DIAGRAMS

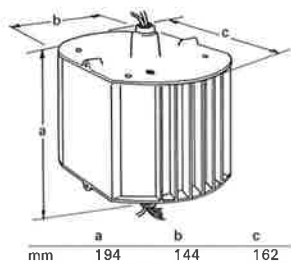
Note: For 220V operation reverse connections 2 and 3 on ballasts.



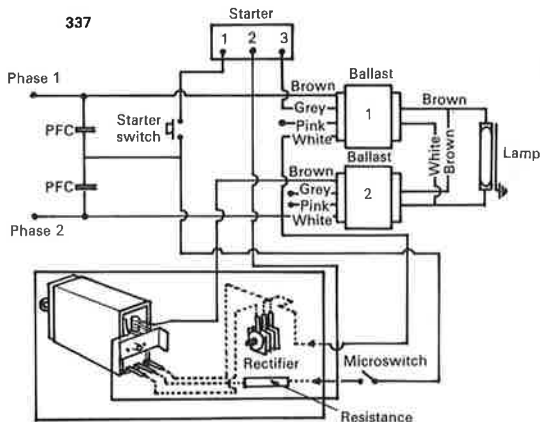
Note: For 380V 3 Phase 50Hz operation remove grey lead from starter terminal 3 and connect to phase 1. Remove existing brown lead from phase 1 and re-connect to starter terminal 3. Remove connection from relay to brown lead of 2nd ballast and connect to grey lead.

CONTROL GEAR TYPES

D29

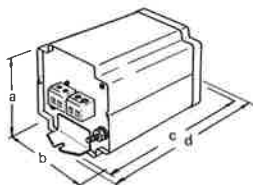


Length of leads outside of can 250 ± 5 mm



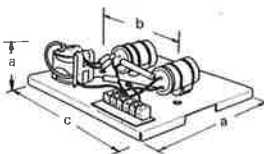
RELAY P03000

D1



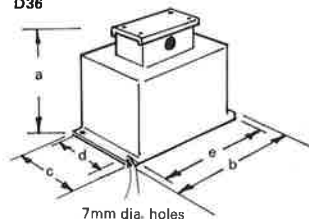
	a	b	c	d
mm	102	105	158	171

D26



	a	b	c	d
mm	50	92	143	127

D36



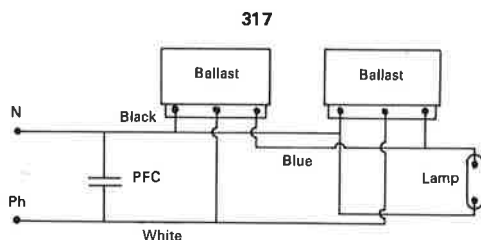
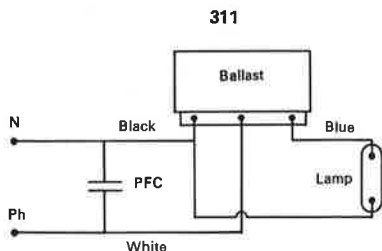
	a	b	c	d	e
mm	178	197	114	89	178

Circuit components for 750W 1200W and 1600W MBIL linear metal halide discharge lamps

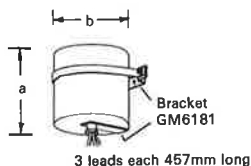
CONTROL GEAR FOR 240V 50Hz SUPPLY

Lamp	750W	1200W	1200W simmering	1600W
Circuit diagram	311	317	330	317
Ballast				
Catalogue no.	G 53254.4	2× G 53254.4	2× G 53254.4	2× G 53254.4
Weight	23.2kgs	23.2kgs (each)	23.2kgs (each)	23.2kgs (each)
Filling	Polyester resin	Polyester resin	Polyester resin	Polyester resin
Illustrated type	D6	D6	D6	D6
Can colour	Black	Black	Black	Black
Terminals	Leads	Leads	Leads	Leads
Ballast fixing bracket				
Catalogue no.	GM6181	2× GM6181	2× GM6181	2× GM6181
Capacitor				
Catalogue no.	3× GC2346	8× GC2346	8× GC2346	6× GC2346
Capacitance, μ F	25±10% (each)	25±10% (each)	25±10% (each)	25±10% (each)
Working voltage	250	250	250	250
Terminals	Flying leads	Flying leads	Flying leads	Flying leads
Fused or unfused	Unfused	Unfused	Unfused	Unfused
Fuse rating				
HRC	15A	20A	20A	20A
Re-wireable	10A	15A	15A	15A
Changeover switch				
Type	—	—	Crabtree 20A Rocker Grid Switch Type 2450 or MK 15/20A Rocker Grid Switch Type 4891	—

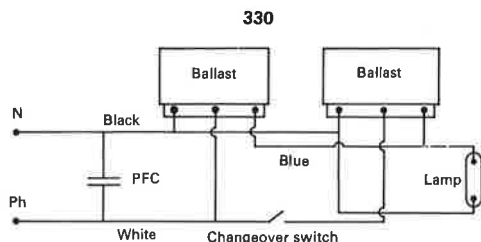
CIRCUIT DIAGRAMS



CONTROL GEAR TYPE D6



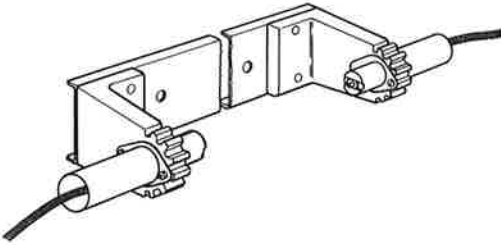
	a	b
mm	235	207



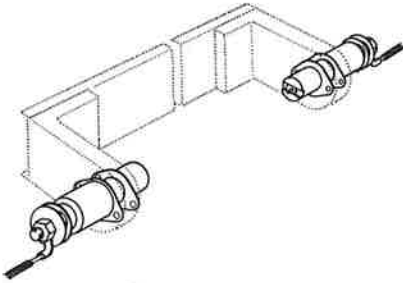
Lampholders for Hytek lamps



Lampholder L 1101
for use with 400W CSI lamps.



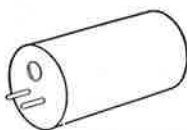
Lampholder Assembly L 1153
for use with 1200W MBIL lamps.



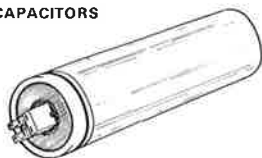
Lampholder L 1173
for use with 1800W MBIL lamps.

Capacitors for fluorescent tube circuits

STANDARD PFC AND SERIES CAPACITORS



R with pin terminals
Pins at 10mm crs.



Q with push wire terminals

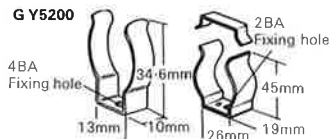
A range of capacitors for fluorescent tube circuits in cases of aluminium or approved plastics. All capacitors detailed below are fitted with a suitable internal discharge resistor.

Type Q capacitors have push-wire terminals of the screwless, releasable, push-wire type and accept one or two 0.5 sq. mm. to 1.0 sq. mm. conductors per terminal; conductor release apertures are provided.

CAPACITOR SUPPORT CLIPS

GY5244 For 38mm dia. capacitors
GY5245 Clip for GY5244
GY5200 For 25mm dia. capacitors

GY5200



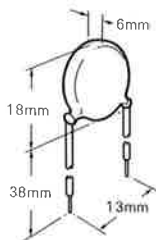
GY5244

Catalogue no.	Rated capacitance (μF) and tolerance	Rated voltage (V)	Rated frequency (Hz)	Fused or unfused	Self-healing	Rated min/max. temperatures (°C)	Type	Dia. (mm)	Length* (mm)	Use
G C2220	8.4 ± 5%	250	50/60	Unfused	Yes	-40/85	Q	38	100	6ft 85W/6ft 75W/5ft 65W SRS
G C2222	8 ± 10%	250	50/60	Unfused	Yes	-40/85	Q	38	78	5ft 80W/2ft 40W SS/QS
G C2274	10 ± 10%	250	50/60	Unfused	Yes	-40/85	Q	38	104	2 × 5ft 65W SS
G C2368	5.7 ± 5%	250	50/60	Unfused	Yes	-40/85	R	32	78	5ft 50W SRS
G C2228	7.8 ± 5%	440	50	Unfused	Yes	-40/85	Q	38	124	8ft 125W QS
G C2173	7.2 ± 5%	440	50/60	Unfused	Yes	-40/85	Q	38	135	8ft 125W SS
G C2223	6 ± 10%	250	50/60	Unfused	Yes	-40/85	Q	38	78	6ft 85W SS
G C2273	5.5 ± 10%	250	50/60	Unfused	Yes	-40/85	Q	38	78	4ft 40W SRS
G C2226	5 ± 5%	440	50	Unfused	Yes	-40/85	Q	38	104	8ft 85W QS/6ft 75W leading SS
G C2245	5 ± 10%	250	50/60	Unfused	Yes	-40/85	Q	38	78	5ft 65W SS
G C2224	3.5 ± 10%	250	50/60	Unfused	Yes	-40/85	Q	38	54	2ft 20W/3ft 30W/4ft 40W SS/QS
G C2227	3 ± 10%	250	50	Unfused	Yes	-40/85	R	32	48	3ft 30W (for Arrowslim fitting)
G C2286	2 ± 10%	250	50/60	Unfused	Yes	-40/85	Q	26	44	13/8/6/4W SS

* Length is can length only. Pin terminals project 9mm
Push wire terminals project 21mm

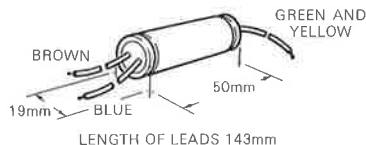
RADIO INTERFERENCE SUPPRESSION CAPACITORS

All starter switches and starting transformers shown in this catalogue incorporate a 0.005μF radio interference suppressor. For additional suppression the following capacitors are available:



G C2139

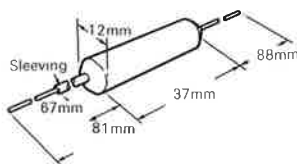
A ceramic base 0.005μF 800V a.c. capacitor to BS.4017 with high temperature PVC sleeved 38mm leads.



G C2051

A radio interference suppression filter network comprising two 0.005μF and one 0.1μF delta connected for additional suppression where the GC2139 fails to suppress the interference.

ARTIFICIAL EARTH



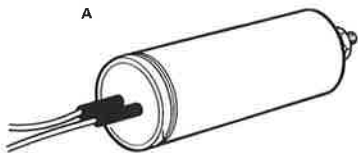
G C2050

An artificial earth unit for connection between the tube earth strip, or a metal chassis in close proximity to the tube, and neutral when no earth is available.

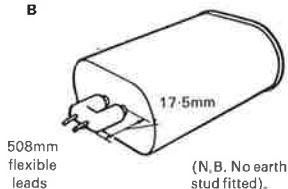
Capacitors for mercury and sodium discharge lamp circuits

CAPACITOR TYPES

A



B



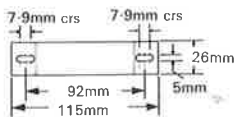
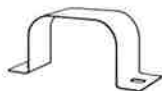
RANGE

Catalogue no.	Rated capacitance (μF) and tolerance	Rated voltage (V)	Rated frequency (Hz)	Fused or unfused	Self healing	Rated min/max temperatures ($^{\circ}\text{C}$)	Type	Diameter mm	Length mm	Fixing clip
G C2383	$8 \pm 10\%$	250	50	Unfused	Yes	$-40/+85$	A	38	74	GY5319
G C2370	$13 \pm 10\%$	250	50	Unfused	Yes	$-40/+85$	A	45	104	GY5320
G C2384	$15 \pm 10\%$	250	50	Unfused	Yes	$-40/+85$	A	45	104	GY5320
G C2345	$16 \pm 10\%$	250	50	Unfused	Yes	$-40/+85$	A	45	104	GY5320
G C2385	$18 \pm 10\%$	250	50	Unfused	Yes	$-40/+85$	A	45	107	GY5320
G C2331	$20 \pm 10\%$	250	50	Unfused	Yes	$-40/+85$	A	45	107	GY5320
G C2346	$25 \pm 10\%$	250	50	Unfused	Yes	$-40/+85$	A	45	107	GY5320
G C2386	$30 \pm 10\%$	250	50	Unfused	Yes	$-40/+85$	A	45	105	GY5320
G C2382	$30 \pm 10\%$	250	50	Unfused	Yes	$-40/+85$	A	45	105	GY5320
G C2281	$13 \pm 5\%$	440	50	Unfused	Yes	$-40/+70$	B	51×76	105	GY5279
G C2278	$15 \pm 5\%$	350	50	Unfused	Yes	$-40/+70$	B	51×76	121	GY5279
G C2288	$17.5 \pm 5\%$	350	50	Unfused	Yes	$-40/+70$	B	51×76	137	GY5279

CAPACITOR CLIP

G.Y5279

For 76mm \times 51mm capacitors



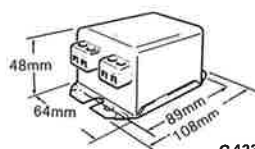
Voltage transformers and voltage conversion units

SUPPLY VOLTAGE STEP-UP TRANSFORMERS

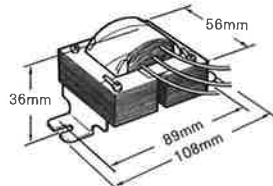
Used in conjunction with 240V circuits

RANGE

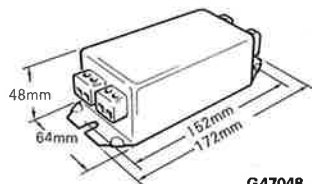
Catalogue no.	G42343	G42350	G42355	G47048
Voltage input	220V	220V	200/210V	110V
Maximum load	220VA	220VA	170VA	100VA
Weight	0.45kg	0.9kg	0.9kg	1.86kg
Insulation	Varnish	Polyester resin	Polyester resin	Polyester resin
Can colour	Natural	White	White	White
Terminals	Leads	Screw	Screw	Screw



G 42350
G 42355



LENGTH OF LEADS 305mm
G 42343



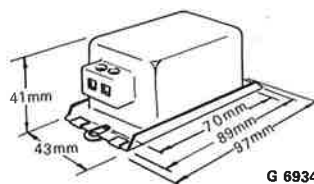
G47048

CONVERSION CHOKES (50Hz supply)

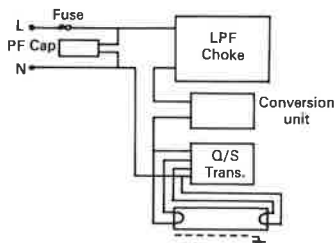
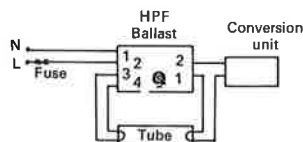
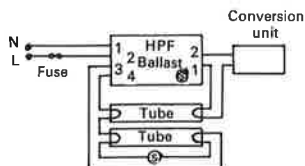
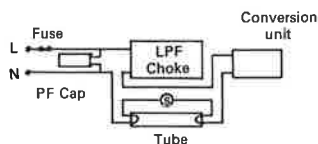
Used in series with 200/210V choke on 240/250V supply. See circuits below.

RANGE

Catalogue no.	Maximum Tube size	Weight kg	Insulation	Can colour	Terminals
G 69342	5ft 80W	0.57	Polyester resin	White	Screw
G 69343	4ft 40W	0.57	Polyester resin	White	Screw



G 69342
G 69343



Combined ballast units for fluorescent tubes

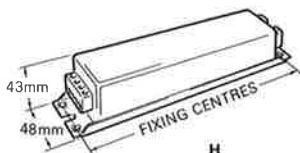
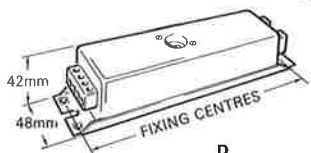
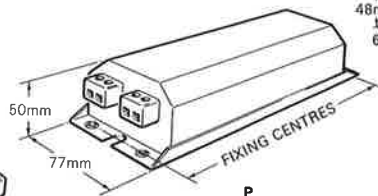
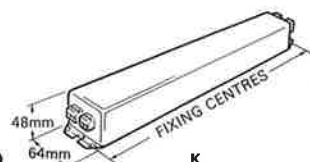
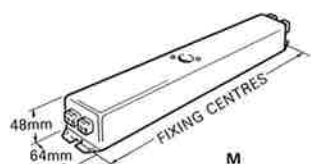
A range of 240V 50Hz HPF and LPF ballasts incorporating all necessary circuit components in one can.

These ballasts provide completely self-contained units ideal for mounting at some distance away from the tube or, alternatively, for use adjacent to the tube when shortage of space prevents the use of a complete fluorescent fitting.

These units are ideal for mounting within interior signs, or within suitably designed exterior signs, and are also used for some showcase lighting and in certain architectural features such as alcoves, pelmets, etc.

All ballasts have screw terminal connections.

When required, starter switches must be ordered separately.



RANGE

Catalogue no.	Use	Can colour	Illustrated type	Fixing centres mm	Weight kg
G CBS/125	2400mm 125W Leading PF SS	White	M	317	2.6
G CBQ/125	2400mm 125W HPF QS	White	P	406	4.5
G CBS/685	1800mm 85W, 1500mm 80W, 2 x 600mm 40W* HPF SS	White	M	292	2.4
G CBR/80	1500mm 80W HPF SRS	White	K	229	3.0
G CBS/65	1500mm 65W HPF SS	White	M	229	1.8
G CBR/65	1500mm 65W HPF SRS	White	K	229	2.9
G CBS/40	1200mm 40W, 2 x 600mm 20W* HPF SS	White	D	216	1.1
G CBR/40	1200mm 40W HPF SRS	White	K	229	1.8
G CBS/30	900mm 30W, 2 x 450mm 15W* LPF SS†	White	D	166	1.1
G CBQ/30	900mm 30W LPF QS†	White	H	166	1.6
G CBQ/2240	2 x 600mm 40W LPF QS†	White	K	229	2.7
G CBQ/220	2 x 600mm 20W LPF QS†	White	H	190	1.4
G CBS/20	600mm 20W, 450mm 15W LPF SS†	White	D	166	1.0
G CBQ/20	600mm 20W, 450mm 15W LPF QS†	White	H	166	1.1

SS= Switchstart QS= Quickstart SRS= Semi-resonant start

*An additional starter switch socket will be required when these units are used for series pair operation.

†Low power factor: use separate capacitor for HPF correction.

Control gear boxes

WEATHERPROOF BOXES FOR EXTERIOR USE

These boxes are made of zinc coated sheet steel finished stove enamel acrylic grey to BS 4800 18B 25. A weatherproof seal is effected between lid and box by means of a closed cell neoprene sponge gasket. Two 20mm diameter holes are provided in one end of each box for supply and lamp connections. A wooden baseboard is fitted for control gear mounting and an earth terminal is available on one end.

These boxes are not supplied complete with control gear or terminal blocks.

G M6174

1000W HPMV or 400W MBI

Internal dimensions

Length 425mm

Width 244mm

Height 130mm

External dimensions

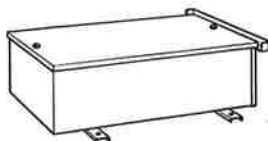
Length 437mm

Width 247mm

Height 155mm

Fixing centres

279 × 279 × 7.92mm diameter



Weight

5.84kg

G M6172

80–400W HPMV or 35–200W SLI/H or SOX

Internal dimensions

Length 406mm

Width 144mm

Height 130mm

External dimensions

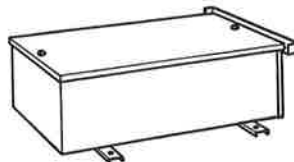
Length 420mm

Width 168mm

Height 163mm

Fixing centres

279 × 178 × 7.92mm diameter



Weight

3.74kg

G M6169

This box is made of high quality aluminium designed to accommodate a large range of control gear for exterior use.

It can accommodate either:

- 1 80W or 125W MBF type control gear with time switch and fuses;
- 2 35W SOX, 55W SOX type control gear with time switch and fuses;
- 3 250W or 400W MBF type control gear with time switch and fuses only; or
- 4 140/200W SLI control gear only. No time switch.

Internal dimensions

Length 387mm

Width 127mm

Height 121mm

External dimensions

Length 425mm

Width 203mm

Height 152mm

Weight

Weight 3.63kg



REMOTE BOXES FOR INTERIOR USE

These boxes are made of sheet steel finished stove enamel acrylic light grey to BS 4800. Two 20mm diameter holes are provided in one end of each box for supply and lamp connections to two-way 10A porcelain terminal blocks. A separate earth terminal is close to these blocks. Boxes are wired complete with 240V 50Hz HPF control gear.

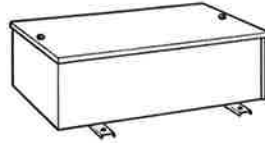
- RB G1000-4** Gear box complete with 1000W MBF control gear
RB G700-4 Gear box complete with 700W MBF control gear

External dimensions

Length 425mm
Width 247mm
Height 149mm

Weights

RB G1000 17.92kg
RB G700 13.95kg



Fixing centres

279 × 279 × 7.92mm diameter

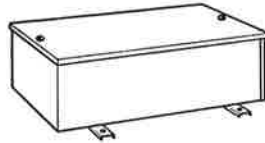
- RB G400-4** Gear box complete with 400W MBF control gear
RB IG400-4 Gear box complete with 400W MBI control gear
RB SG400-4 Gear box complete with 400W SON control gear
RB SG250-4 Gear box complete with 250W SON control gear
RB G250-4 Gear box complete with 250W MBF control gear
RB IG250-4 Gear box complete with 250W MBI control gear

External dimensions

Length 416mm
Width 157mm
Height 149mm

Weights

RB G400 8.05kg
RB IG400 8.59kg
RB SG400 8.17kg
RB G250 6.35kg
RB SG250 6.8kg



Fixing centres

279 × 178 × 7.92mm/11 × 7 × 0.31in diameter

CONTROL GEAR BOXES FOR INTERIOR USE WITH 80 or 125W MBF KOLORLUX LAMPS

Enclosed gear trays fitted with 240V 50Hz HPF control gear wired to a fused terminal block for incoming mains supply and a two-way terminal block for lamp connection. Boxes finished gloss white externally.

- RB G125-4** Gear box complete with 125W MBF control gear
RB G80-4 Gear box complete with 80W MBF control gear

External dimensions

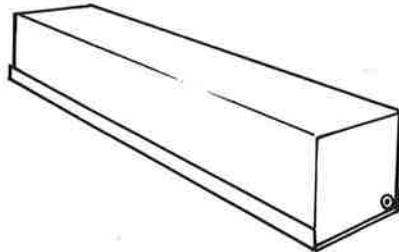
Length 337mm
Width 92mm
Height 83mm

Fixing centres

292 × 51mm

Weights

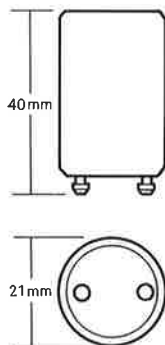
RB G125 3.63kg
RB G80 3.18kg



Note: Flicker is occasionally noticeable on MBF Kolorlux lamps and to eliminate it rectified circuit versions of these gear boxes are available to special order.

Starters for fluorescent lamps

This range of 2 pin, small can, glowstarters in plastic canisters incorporates constructional features resulting in switches of high quality, reliability and appearance. A high temperature grade of plastic is used for the canister with brand detail in distinctive black or red ink. The canister is inherently electrically safe and non-corrodible. The plastic moulding is tremendously tough, difficult to squash, virtually unbreakable and cannot be dented. Plastic can switches are electrically and mechanically interchangeable with metal can types of equivalent rating. Solid pins are secured to the insulated base disc and solderless junctions connect these pins to the interior wiring. A radio interference suppression capacitor is fitted internally to each canister.



RANGE

2 pin ; small can ; a.c. glow switch

Catalogue no.	Application	Operating voltage
155/800	2400mm 125W leading circuit or 1800mm 75/85W	230/250V
155/501	1500mm 50W leading circuit	240V
155/500	4W, 6W, 8W, 13W, 30W, 32W, 1200mm 40W, 65W or 80W	200/250V
155/400	4W, 6W, 8W, 30W, 32W or 1200mm 40W	200/250V
155/200	Single 15W, 20W, 22W or 600mm 40W Series pair 15W, 20W or 600mm 40W (two 155/200)	105/250V 200/250V
155/100	Single 4W, 6W or 8W Series pair 4W, 6W or 8W (two 155/100) †	110/130V 230/260V

†Due to the asymmetrical construction of these switches, they must be placed in the starter switch sockets correctly orientated (i.e. if the switches refuse to operate, one must be removed and rotated 180 degrees).

Terminal blocks, fuse holders and starter switch sockets

FUSES

G T1268, G T1299

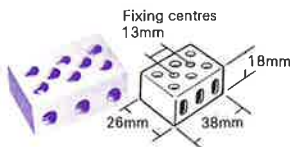
All fuses comply with BS 1362 dimensions and must be used with T1265, A5079 and T1304 fuseholders.

Catalogue no.	Rating	Colour
G T1268	3A	Red
G T1268	5A	Black



G T1306

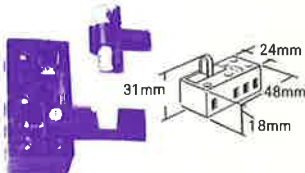
A 10A 250V 3-way white porcelain terminal block. Inserts are of extruded brass with 0.125in x 0.118in o.d. round bore barrels and pinch screw terminals. These inserts give facility for loop-in cables. Line, earth and neutral terminals clearly marked on terminal block.



G T1265

A mains circuit terminal block incorporating a fuse in the line circuit. Black phenolic moulded body with black polypropylene fuse carrier and fuse retaining plate. Earth and neutral connections are of the through barrel type with pinch screw terminals and two line connections are provided for mains input and circuit feed.

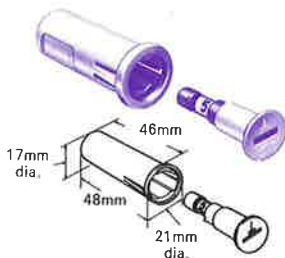
Back fixing is achieved by means of screw and shakeproof washer provided. For front fixing a 12mm 6BA screw must be used which is not provided. Either method of fixing provides earth connection to chassis. Fuses to be ordered separately.



G T1334

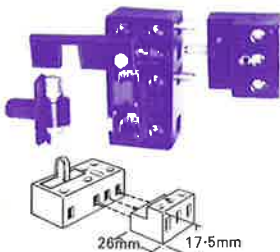
White nylon end entry fuse holder which enables control units to be disconnected before maintenance. Fuse loading cap has bayonet-catch fixing and is finger or coin operated. Push wire terminals for single incoming and double outgoing. Fuses to be ordered separately.

G T1359 Replacement loading cap.



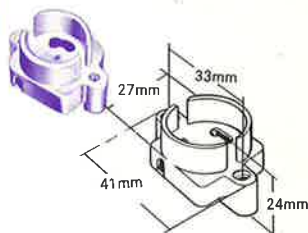
G A5079

Combined fused terminal block with mains plug. Comprises fused block similar to G T1265, above, but with pins in line and neutral barrels, and a black phenolic moulded plug with a pin in the earth barrel. Fuses to be ordered separately. G A5037—replacement mains plug.



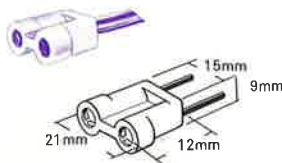
G A5019/X

White urea moulding with paxolin backplate. Side pressure switch contacts. Draw nut terminals giving side and rear cable entries. Optional extra earth clips (Catalogue no. G Y5267) are held by the holder fixing screws and pass through gaps in the holder skirt. When mounted on 22mm distance pieces behind fitting chassis the starter switch projects enough for easy removal.



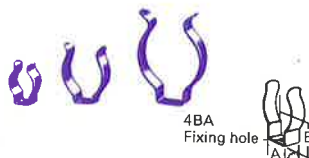
G M6064/12/Loop

White PVC moulding enclosing starter switch contacts crimped to 305mm loop 16/0.2mm white PVC cable which can be cut at a point to suit wiring layout. This holder does not support the starter switch and the G Y5274 black oil dipped spring steel clip can be supplied. The clip latches into a square hole (5.6mm min. to 5.8mm max.) in the fittings chassis.



G Y5204, G Y5200, G5201

A range of bright zinc plated spring steel tube support clips which can be used around the glass of the tube or around the metal cap. When used around the lamp cap to earth the cap to the metalwork of the fitting chassis any paint should be scraped from the chassis to give good continuity.



Catalogue no.	Tube dia. mm	A mm	B mm	C mm
G Y5204	16	7.5	10.3	7.9
G Y5200	26	12.7	17.8	9.5
G Y5201	38	16.7	26.2	9

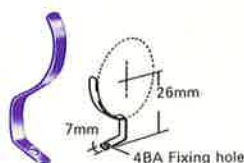
G Y5257

A nickel plated spring steel support clip for circular fluorescent tubes. Three clips are required per tube, mounted inside the tube circumference.

Note: Fixing details are approximate and must be adjusted to suit lamp used because of variation in lamp size from different manufacturers.

Fixing details

22W tube: 149mm radius
32W tube: 232mm radius
40W tube: 333mm radius
or 60W



Lampholders for fluorescent tubes

For T12 (38mm diameter) bi-pin fluorescent tubes

G B1502

White urea moulding with double-sided independently sprung tube pin contacts and pinch screw terminals for incoming cables. 6BA tubular tapped nuts are provided for fixing. Earth contact (Catalogue no. G Y5420) is available as an optional extra. This holder is not suitable for use with 2400mm tubes which have large tolerances in length.



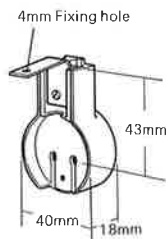
G B1512

A white urea two-piece moulding with earth clip and double-sided lamp pin contacts. Pinch screw cable terminals. A recess allows a neat termination of 2-core or 3-core flexible cable.



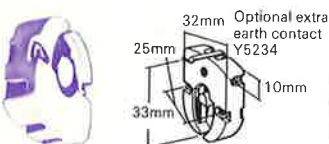
G B1580/A4

White polycarbonate mouldings with shroud, to give tube cap support, and side pressure lamp pin contacts, push-wire terminals for single conductor cables, lampholder is vertical with a nominal length tube.



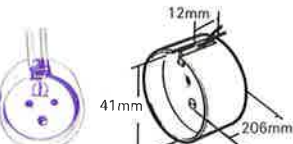
G B1524

White urea moulding with paxolin backplate. Single-sided tube contacts with pinch screw terminal for incoming cables. Earth contact G Y5234 is available as an optional extra. 6BA tubular tapped nuts are provided for fixing. This lampholder is not suitable for use with 2400mm tubes which have large tolerances in length.



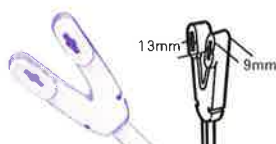
G B1573

A white urea two-piece moulding with an earth spring and deep skirt which covers the tube cap giving additional support. Double-sided side-pressure contacts are crimped to 305mm loop of high-temperature 16/0-2mm white PVC flexible cable. Earth lead connection is to lamp pin terminal.



G B1529

A high temperature white PVC moulding with double-sided brass contacts crimped to 1220mm flat twin 23/-0076in white high-temperature PVC flexible cable. The extra firm contact grips make this holder suitable for vertical tubes subjected to vibration. No earth clip is available.



FIXING DETAILS

Dimensions below are distances between backs of lampholders. The dimensions given for G B1512 and G B1573 are for lampholders when fitted to the fluorescent tube.

The dimensions for G B1524 and G B 1502 are recommended distances between backs of lampholders when mounted on support brackets. Dimensions for G B1580/A4 are recommended distances between fixing centres.

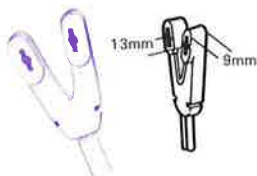
Tube size mm	G B1512 mm	G B1573 mm	G B1524 mm	G B1580/A4 mm	G B1502 mm
2400	2395-5	2398	—	2329	—
1800	1784	1786	1784	1718	1827
1500	1521	1523	1520	1454	1563
1200	1220	1222	1220	1154	1263
900	915	916	915	849	958
600	610	613	610	544	653
450	458	460	458	392	501

Lampholders for fluorescent tubes

For T8 (26mm diameter) bi-pin fluorescent tubes

G B1529

The G B1529 tube holder shown for T12 tubes is also suitable for T8 tubes.



G B1555/Z

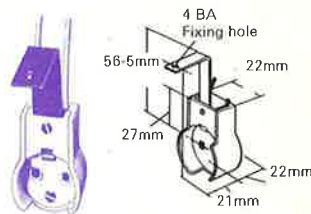
White urea mouldings with shroud to give tube cap support. Side pressure lamp pin contacts with incoming cable crimped to contacts. Cable is high temperature 16/0-2mm white PVC flexible in 305mm loop which can be cut at any point to suit the wiring layout. Other loop lengths available on request. This holder has no current carrying springs or moving parts. The bracket enables the holder to be mounted on a fixed or detachable bridge across the channel.

A locating notch or other means must be provided to stop rotation. Lampholder is vertical with a nominal length tube.

Fixing details

Dimensions below are recommended distances between fixing centres.

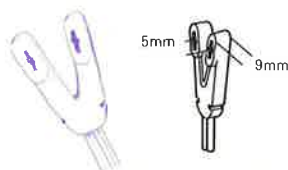
Tube size	mm
1500mm	1444-2
900mm	840
450mm	381-8



For T5 (15mm diameter) miniature bi-pin fluorescent tubes

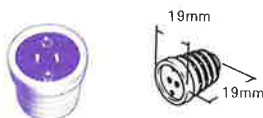
G B1529

A high-temperature PVC moulding with double-sided brass contacts crimped to 1220mm flat twin 28/0-15mm white high-temperature PVC flexible cable. No earth contact available.



G B1561

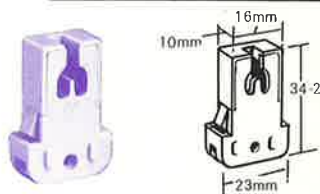
White PVC moulding with paxolin insert. Plated brass contacts with solder tag connections. This holder is assembled by threading the incoming cables through the PVC moulding and soldering them to the solder tags on the paxolin insert. This insert is then pressed into the PVC moulding.



G.B1598

White polycarbonate moulding with single-sided phosphor bronze lamp pin contacts. Push-wire terminals for single conductor cables. This lampholder is self-fastening into a 17.5mm x 10.5mm hole in 22SWG (0.7mm) metal. Dimensions between holes are shown below.

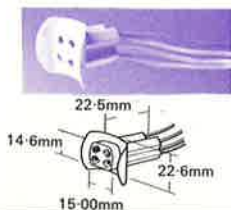
Tube size	mm
525mm	517
300mm	289
225mm	212
150mm	136



Lampholder for circular fluorescent tubes

G B1623

A single moulding high-temperature white polycarbonate body with 305mm PVC 16/0-2mm leads (one pair, yellow for starter holder connection, one lead, white, for choke connection and one lead, blue for connection to neutral supply terminal). Split cylinder grip pin brass contacts crimped to leads.



Bi-pin to BC adaptor

G B1515

Bi-pin/BC adaptor with earth contact. A pair of these adaptors enables modern bi-pin tubes to be used where BC lampholders are fitted in a fitting. Two adaptors required per tube.



Weatherproof sleeve (for T12 38mm diameter) bi-pin fluorescent tubes

G M6028

White neoprene moulding suitable for use with G B1512 lampholder. It is recommended that AC 1981 circular flex be used for connection to lampholder and the cable entry into the cap be made waterproof with silicone grease.

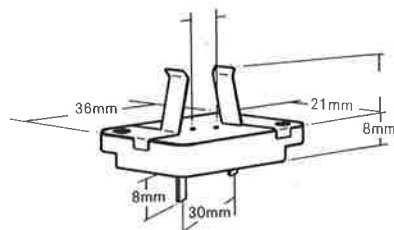


Miscellaneous Lampholders

The G.L. 1079 series are for use with miniature tungsten halogen LV lamps having G6.35 caps, e.g. M28, M32, M36, M37. Both tab and lead wire versions are available. The basic flat holder is suitable where the lamp is not subject to any vibration and is unlikely to sag. Where extra support for the lamp is necessary the versions with springs which support the lamp pinch are recommended.



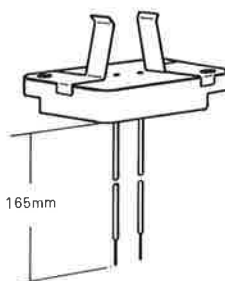
G.L. 1079



G.L. 1079 S/L
Lampholder suitable for use with G6.35 caps.



G.L. 1079 W



G.L. 1079 S/LW



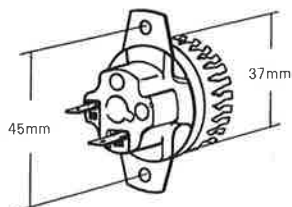
G.L. 1123/A

Suitable for use with low volt miniature tungsten lamps having G.4 caps, eg. M29, M30, M34, M35

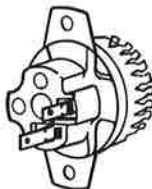


G.L. 1105

Suitable for tungsten halogen lamps having GY9.5 cap. e.g. A1/233 and A1/247



G.L. 1042/LV
for lamp voltages up to and including 21.5V



G.L. 1042/HV
for lamp voltages over 21.5V

Suitable for use with lamps having G.17q caps.

Introduction

Thorn Lighting has the finest fluorescent tube works in Western Europe making the extensive range of tubes described in this section of the catalogue, including the de luxe colours which are receiving

increasing acknowledgment for interior lighting installations where good colour rendering and colour appearance are important.

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Light output	330-331
Electrical data	332-333
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General information

Braided Cathode

The braided cathode filament—British Patent 131059—is now being used in 1500mm/5ft 65/80W and 80W BC, 1800mm/6ft 75/85W and 2400mm/8ft 85W and 125W tubes.

These exclusive braided cathodes give more efficient operation, fewer early failures and longer life than the conventional coiled coil cathode.

The braided cathode consists of a hollow mesh cylinder which is formed by braiding eight very thin strands of tungsten wire together. This means that the emitter is held within the hollow cylinder thus forming a solid core.

The release of electrons is better controlled than with a coiled coil filament and this results in the braided cathode having approximately 70% greater electron emission.

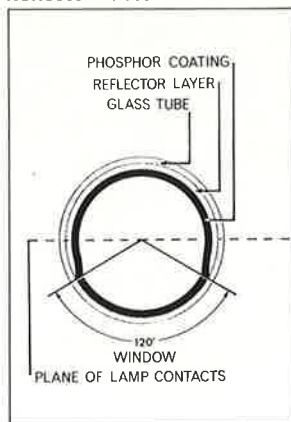


Cathode Shields

Cathode shields are incorporated on the high loading tube range (600mm/2ft 40W, 1500mm/5ft 65/80W, 1800mm/6ft 75/85W, 2400mm/8ft 85W and 125W).

This shield traps evaporation from the cathode during life, preventing black marks from forming at the end of the tube. In addition, cathode shields reduce flicker which may sometimes be noticeable from commercial fittings.

Reflector Tubes



The reflector fluorescent tubes have an additional highly reflecting coating added between the fluorescent powder and the inside of the glass tube. In this way the majority of light is radiated through an aperture of 120° from the lamp centre in the preferred direction. This lamp is particularly useful in the following applications:

Lighting in dusty atmospheres

Dust collection on an ordinary tube and fitting rapidly reduces light output. With a reflector tube, light re-direction is independent of dust, and light output is better maintained.

Display lighting

This lamp is useful where space is restricted as in showcases where it is difficult to put an external reflector.

High intensity lighting

Reflector lamps enable tubes to be mounted in banks where an external reflector may not be convenient or effective.

Replacement

Lamps can be used in old fittings which have deteriorated so as to give an increase in useful light output.

Rated Life and Group Replacement

The rated life of all 1200mm/4ft, 1500mm/5ft, 1800mm/6ft and 2400mm/8ft, 38mm/1½in diameter tubes is 7500 hours. The rated life of all other ratings is 5000 hours. In many situations it is advantageous to replace tubes in bulk (Group Replacement) rather than as individual lamps fail. Among the benefits of Group Replacement are:

- A saving in initial cost.
 - A higher average level of lighting
 - More uniform lighting
 - Less interruption of work
 - A saving in running costs.
- Further information on Group Replacement is available from Regional Offices.

Guarantee

Any fluorescent tube failing within 12 months from the date of purchase by the user (or prior to 3000 hours burning whichever is the shorter), except through misuse, will be replaced free of charge.

British Standards

Fluorescent tubes described in this catalogue conform to British Standard BS5319:1967 and International Standard IEC81 where applicable.

Thorn Lighting holds Licence no. 5247 for the manufacture of fluorescent tubes to BS.1853.

Fluorescent Tube Packing Quantities

Circles: 12
2400mm/8ft 20
Blacklight Blue: 24
All others: 25

Miniature Fluorescent Tubes

Miniature fluorescent tubes give high lumen output with low power consumption (equivalent to a filament lamp five times the wattage).

Their long life, low temperature and slim shape make them particularly suitable for signs, bollards, displays, bulkheads and appliances.

Colours for General Use

To encourage rationalisation of the range of fluorescent tube colours available, two colours have been chosen by Thorn as being suitable for the majority of installations:

White—The highest efficacy tube available for general lighting purposes.

Plus White—Good colour rendering tube for commercial purposes, with high efficacy.

These colours are identified in **bold type** in this catalogue and it is recommended that they be used for general lighting purposes.

Marking of Rated Wattage on Tubes

The wattage dissipated by any discharge lamp, including a fluorescent tube, depends mainly on the characteristics of the ballast with which the particular lamp is operated and on the mains supply voltage at any given time.

Because of this the marking of a rated wattage on any given fluorescent tube does not necessarily indicate the wattage which the tube is intended to dissipate in any given circuit arrangement.

The appropriate fluorescent tube and associated ballast specifications list the rated or nominal wattage of any given tube type and also the "objective wattage" which is the actual target wattage the tube should dissipate when operated under prescribed conditions in association with a mid-point reference ballast.

Bi-pin/BC Adaptor

G B1515 Adaptor converting bi-pin lamp cap to BC. The overall length of a 1500mm/5ft bi-pin tube with these adaptors does not exceed the length of a BC tube.



Carton Colour Coding

Thorn were the first to operate carton label colour coding on the labels at the ends of tube cartons to assist identification. The coding is as follows:—

White—Buff
Warm White—Pink
Daylight—Magenta
Natural—Green
Northlight/Colour matching—Blue
De Luxe Natural—Red
All other colours are coded white.

Tube Grades

There are different grades of tube to suit various types of control gear and the correct type must be used to obtain satisfactory starting performance.

GP (General Purpose Quickstart) grade tubes (MCFE/U)

The GP Quickstart tube is manufactured to give satisfactory starting with all switch or switchless start control gear and is now supplied as the standard tube for use in all fittings. For switchless start circuits the metal chassis must extend the full length of the tube and be bonded to earth. The metalwork must not be more than 20mm from the tube. Quickstart, resonant-start and other switchless start circuits must be used only on 200–250V 50 Hz supplies where the neutral conductor is at earth potential.

MS (Metal Strip) grade tubes (MCFA/U)

This tube is necessary only for special conditions, e.g. where earthed metalwork is not adjacent to the tube. It has a metallic conducting strip cemented to the outside of the tube, connected to both caps, which must be earthed.

A limited range of the more popular tubes in 600–1500mm/2–5ft lengths can be supplied with metal strip, in White, Warm White and Daylight colours only, to special order.

NOTE: Red and Gold tubes are standard grade only i.e. for use on starter switch circuits and not switchless-start circuits.

Colours and applications

COLOURS FOR GENERAL USE

To encourage rationalisation of the range of fluorescent tube colours available, two colours have been chosen by Thorn as being suitable for the majority of installations.

White – The highest efficacy tube available for general lighting purposes.

Plus White – A high efficacy tube with good colour rendering quality.

These colours are identified in **bold type** in this catalogue. Their intermediate white appearance of around 3500K will prove suitable for normal illumination standards of between 200 lux and 1000 lux. The difference in lumen output between **White** and **Plus White** is sufficiently small for lighting schemes to be designed with either of these preferred colours, according to the relative importance of tube cost as against colour rendering quality. It should be noted that the total annual lighting cost when changing from **White** to **Plus White** tubes is minimal, of the order of 3 per cent only.

CHOICE OF TUBE COLOURS

Appearance				Warm	Intermediate	Cool
Colour temperature				2000–3000K	3000–4000K	4000–6000K
LUMEN OUTPUT	High	COLOUR RENDERING	Fair	WARM WHITE	WHITE (3,500K)	DAYLIGHT (Cool white)
	Average		Good	HOME-LITE DE LUXE WARM WHITE	PLUS WHITE *	NATURAL
	Low		Very good	DE LUXE NATURAL or KOLOR-RITE		NORTHLIGHT or ARTIFICIAL DAYLIGHT

The table shows how the general purpose **White** and **Plus White** compare with other colours in the Thorn 'near white' range.

***Plus White** combines high lumen output with good colour.

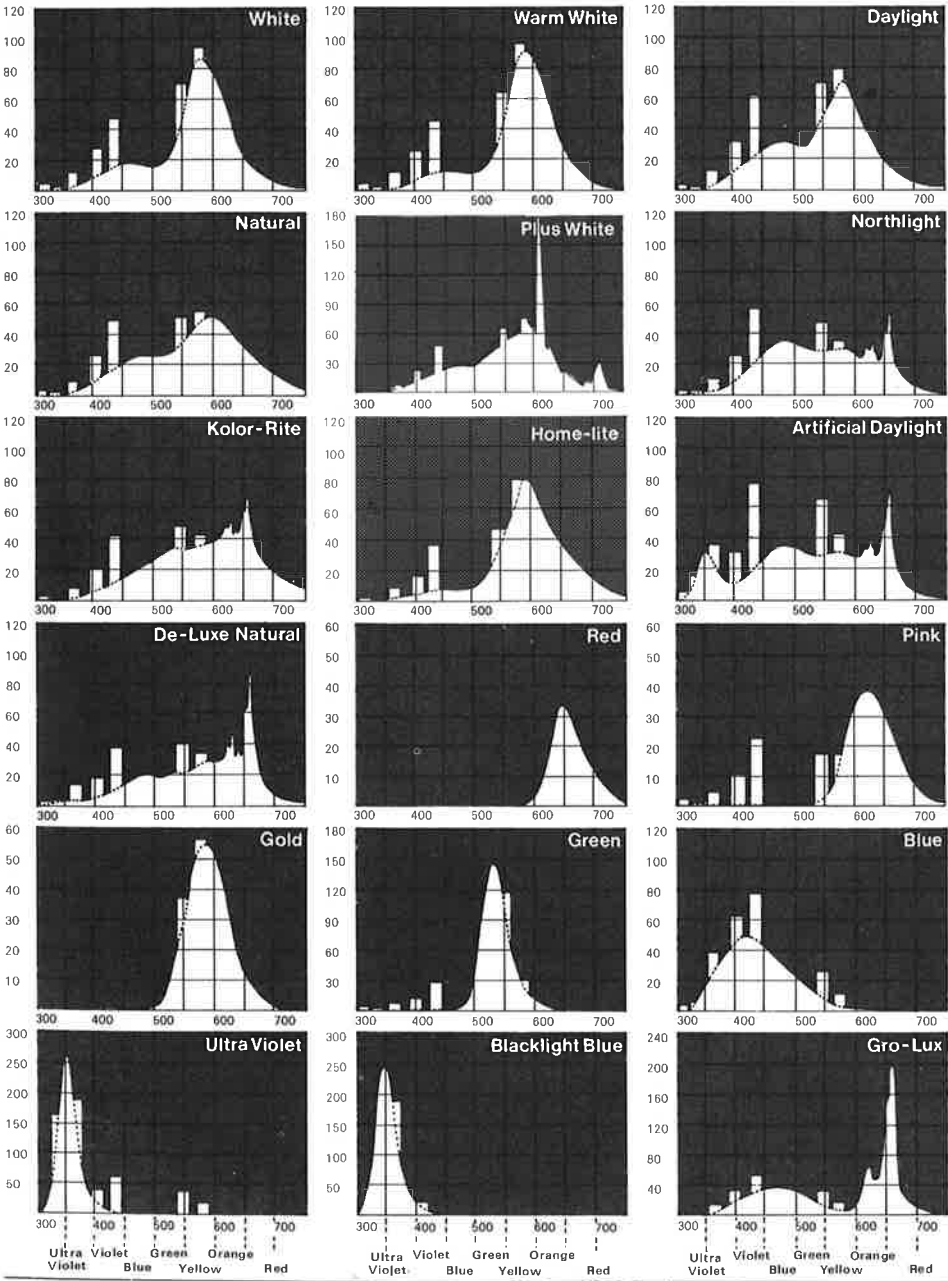
Tube colour	Percentage of white tube lumens	Colour rendering quality	Colour appearance	Application and remarks
INDUSTRIAL LIGHTING				
White	100	Fair	Intermediate	General illumination at maximum efficacy and with moderate colour rendering quality.
Daylight	94	Fair	Cool	Buildings requiring artificial illumination to blend with natural daylight. Minimum of 300 lux must be provided to avoid an excessively cold appearance when colour rendering will lack orange/red.
Plus White	95	Good	Intermediate	Areas where reasonably good colour rendering is required covering the complete visible spectrum; particularly for illuminance standards around 500 lux.
Artificial Daylight	41	Very good	Cool	Areas where accurate colour matching is carried out. A minimum of 900 lux must be provided. Conforms to BS950:Part One (6500K).
Gold	55	Poor	Warm	For special areas requiring low ultra-violet and violet output.
COMMERCIAL LIGHTING				
White	100	Fair	Intermediate	General and drawing offices requiring maximum lighting efficiency.
Natural	70	Good	Cool	General office lighting particularly where required to blend with natural daylight. Minimum of 300 lux necessary.
Plus White	95	Good	Intermediate	Good intermediate general lighting of areas where reasonably good colour rendering is required covering the complete visual spectrum; particularly for illuminance standards around 500 lux.
°Kolor-rite	65	Very good	Cool	Offices, showrooms, studios, colleges, hospitals.
De Luxe Warm White	66	Good	Warm	Office buildings requiring a warm effect, flattering to the complexion.
Home-lite	80	Good	Warm	Interiors requiring a warmer appearance than provided by filament lamps.

Colours and applications

Tube colour	Percentage of white tube lumens	Colour rendering quality	Colour appearance	Application and remarks
DISPLAY LIGHTING				
Plus White	95	Good	Intermediate	General commercial lighting where reasonably good colour rendering is required covering the complete visible spectrum; particularly for illuminance standards around 500 lux.
Northlight/Colour Matching	59	Good	Cool	Tailors (colour matching areas), furriers and for wintry effects. Minimum of 600 lux necessary to avoid an excessively cold appearance.
Natural	70	Cool	Intermediate	Jewellery, glassware, china, hardware, tailors (main shop areas), summer frocks and department stores. Minimum of 300 lux necessary.
De Luxe Natural	49	Very good	Intermediate	Florists, fishmongers, butchers, grocers, supermarkets and brightly coloured merchandise.
°Kolor-rite	65	Cool	Intermediate	The first choice where true reproduction of colour is required, gives the effect of a sunny day.
De Luxe Warm White	66	Good	Warm	Furniture, restaurants, lounges requiring filament lamp effect.
Home-lite	80	Good	Warm	Interiors requiring a warmer appearance than provided by filament lamps.
White	95	Fair	Intermediate	General display lighting requiring maximum light output, but without the need for good colour quality.
Colours	—	Poor	Poor	Green, gold, blue, red, pink, for special effects.
DOMESTIC LIGHTING				
Warm White	95	Fair	Warm	Rooms requiring maximum light output.
Plus White	95	Good	Intermediate	General domestic lighting of areas requiring a good working light standard combined with good colour rendering.
De Luxe Warm White	66	Good	Warm	Rooms requiring a warmer colour light.
Home-lite	80	Good	Warm	Interiors requiring a warmer appearance than provided by filament lamps.
Pink	25	Poor	Warm	Decorative lighting giving a very warm effect.
SPECIAL APPLICATIONS				
Green	95	Poor	Poor	Saturated colours for display, floodlighting, stage lighting. Note: Red and Gold tubes should only be used in switchstart circuits.
Gold	55			
Pink	25			
Blue	20			
Red	5			
Gro-lux	30	—	—	This special tube colour has been developed for plant growth purposes, and for aquarium lighting where it stimulates aquatic plant growth. Gro-lux tubes have a lavender colour appearance with a strong red and blue rendering effect. Colouring of tropical fish, plants and flowers looks especially vivid under Gro-lux tubes.
Ultra violet (non-filter)	—	—	—	The ultra-violet tube emits a large proportion of its energy as invisible ultra-violet radiation between 300 and 400 nanometres. The tube also emits a small amount of visible light at the blue end of the spectrum. Available 65/80W, 40W, 20W, 15W and 8W.
Germicidal U.V.	—	—	—	Special clear glass 1in diameter 3ft 30 watt tubes are available which give short wave ultra-violet (protection of eyes essential with this lamp).
Blacklight Blue	—	—	—	Ultra-violet tubes as above (but with black glass bulb) which transmit ultra-violet only filtering out the visible light. Available 40W (1200mm), 15W, 8W, 6W and 4W.
Radar Red	—	—	—	A bright magenta red colour with a higher light output than Red — originally used for radar rooms but also gives a strong red effect to meat and bacon displays. Available 65/80W and 40W.

Spectral distribution

Horizontal scales are wavelengths in nanometres (10^{-9} metres)
Vertical scales are power in milliwatts per nanometre band width for a 1500mm (5ft) tube at 65W;
the Blacklight Blue is for a 40W tube.



Colour Data

The colour rendering and colour appearance data below is on the same basis as the values specified in BS1853, but there is a trend towards other methods of colour specification, e.g. 6 band values for colour rendering and the CIE uniform chromaticity scale for colour appearance in which the co-ordinates are expressed in u and v values. With this in mind the additional data is provided in table 2.

Colour Temperatures for Fluorescent Tubes

The term 'colour temperature' should strictly be applied only to spectral distributions close to the black body distributions. Thus in fluorescent tube colours the 'colour temperature' is merely an indication of the location of the chromaticity co-ordinates on a colour chart. The 'colour temperatures' should not be used as a guide for photographic purposes.

Artificial Daylight	6500K
Northlight/Colour Matching	6500K
Tropical Daylight	6500K
Daylight	4300K
*Kolor-rite	4000K
Natural	4000K
De Luxe Natural	3600K
White	3400K
Warm White	3000K
De Luxe Warm White	3000K
Home-lite	2600K

Nominal percentage light output for 1500mm (5ft) tubes at 65W

Table 1-8 Bands

CIE Bands	nm	Artificial Daylight	Northlight/Colour Matching	Daylight	Natural	*Kolor-rite	De Luxe Natural	White	Warm White	De Luxe Warm White	Home-lite
1. Far Violet	380-420		0.017	0.014	0.014	0.017	0.011	0.010	0.007	0.017	0.008
2. Violet	420-440	1.06	0.42	0.31	0.33	0.13	0.37	0.26	0.25	0.30	0.24
3. Blue	440-460		0.65	0.38	0.37	0.48	0.39	0.22	0.17	0.10	0.120
4. Blue-Green	460-510	9.6	9.7	5.3	5.6	7.9	6.1	3.1	2.5	2.4	1.800
5. Green	510-560	44.9	44.5	37.2	38.0	38.0	38.7	32.3	29.5	35.8	29.00
6. Yellow	560-610	33.8	34.1	48.9	44.1	39.5	37.5	54.9	67.3	45.8	54.70
7. Light Red	610-660	9.9	10.0	7.8	11.2	13.0	15.8	9.1	10.2	14.9	13.0
8. Dark Red	660-760	0.63	0.63	0.17	0.69	1.06	1.2	0.19	0.21	0.81	0.52

Ultra-violet (watts per 65W tube, between 300 and 400 nanometres)

	1.30	0.47	0.53	0.41	0.32	0.42	0.44	0.40	0.40	0.36
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Colour appearance

'X' and 'Y' colour co-ordinates

X	0.313	0.317	0.373	0.378	0.3804	0.390	0.414	0.435	0.437	0.454
Y	0.329	0.324	0.380	0.365	0.3767	0.356	0.397	0.401	0.400	0.400

Table 2-6 Bands

1. Violet-Blue	400-455	0.79	0.83	0.57	0.58	0.435	0.62	0.41	0.34	0.36	4.1
2. Blue-Green	455-510	11.2	11.0	5.3	6.3	8.03	6.3	3.3	2.7	2.6	1.8
3. Green	510-540	23.1	19.9	12.6	15.0	19.8	14.8	9.3	8.3	13.5	7.7
4. Green-Yellow	540-590	43.7	48.0	59.9	52.7	44.7	50.0	61.3	60.7	53.2	48.1
5. Orange	590-620	14.4	13.1	17.5	18.1	17.7	16.5	20.7	22.4	20.6	23.3
6. Red	620-760	6.8	7.2	4.1	7.3	9.4	11.8	4.9	5.6	9.8	

Colour appearance

Nominal u and v colour co-ordinates

CIE uniform chromaticity scale

u	0.1978	0.203	0.219	0.228	0.2251	0.240	0.239	0.251	0.252	0.268
v	0.3122	0.311	0.335	0.031	0.3344	0.329	0.343	0.347	0.347	0.344

INTRODUCTION OF PLUS WHITE

The new Plus White tube colour of 3600K appearance and with good colour rendering has now been added to the Thorn range. Full details are available on request.

Light output

Lumen outputs

The lumen outputs quoted in this catalogue are measured at 25°C in accordance with BS.1853.

Initial lumens

Initial lumens are measured after 100 hours operation.

Lighting design lumens

Lighting design lumens are the lamp outputs at 2000 hours and are recommended as a guide to lighting engineers planning scheme layouts.

Lumen output beyond 2000 hours decreases by 2% to 3% per 1000 hours use according to the colour and loading

Colours for general use

The colours identified in bold type (**WHITE** and **PLUS WHITE**) are recommended for general lighting purposes.

MINIATURE FLUORESCENT TUBES

Initial lumens				
	525mm	300mm	225mm	150mm
	21in	12in	9in	6in
	13W	8W	6W	4W
White	850	480	300	130
Warm White	850	480	300	—
Daylight	800	440	280	120
Natural	—	325	230	—

All these tubes are 16mm/0.625in diameter.

U-SHAPED 525mm x 120mm x 25mm TUBE

Initial lumens		Lighting Design lumens	
White	2825	2575	
Plus White	2725	2500	

Lighting design lumens

525mm	300mm	225mm	150mm
21in	12in	9in	6in
13W	8W	6W	4W
750	420	250	100
750	420	250	—
700	360	240	90
—	280	190	—

FLUORESCENT TUBES

Initial lumens (100 hours)														
	2400 mm 8ft 125W	2400 mm Super 8 85W	1800 mm Super 6 85W*	1800 mm Super 6 75W*	1500 mm Super 5 80W*	1500 mm Super 5 65W*	1500† mm 5ft 50W	1200 mm 4ft 40W	900 mm 3ft 30W	900† mm 3ft 30W	600 mm 2ft 40W	600 mm 2ft 20W	450 mm 18in 15W	450† mm 18in 15W
White	9500	7350	6600	6050	5700	5100	3850	3050	2100	2400	2000	1225	900	950
Plus White	9000	7000	6200	5750	5450	4800	—	2900	—	—	—	1150	—	—
Warm White	9400	7250	6600	5950	5600	4950	3800	2950	2100	2400	2000	1200	900	950
Daylight	9000	7000	6250	5750	5450	4800	—	2900	2000	2300	1900	1150	850	900
Home-lite	—	—	—	—	4400	4000	—	2450	—	—	—	—	—	—
Natural	7150	5500	4800	4400	4300	3700	2800	2300	1600	1800	1500	900	—	700
D.L. Warm White	6800	5300	—	—	—	—	—	—	1500	1700	1400	850	600	—
*Kolor-rite	6300	4800	4300	3900	3800	3350	—	2000	—	1550	1300	850	—	—
Northlight/Colour Matching	5800	4500	4000	3600	3400	3000	—	1900	—	1500	1250	800	550	600
De Luxe Natural	5500	4300	3700	3400	3200	2900	2300	1750	—	1400	1150	700	500	550
Artificial Daylight	4800	—	3300	3000	2900	2600	—	1500	—	—	—	650	—	—

Lighting design lumens (2000 hours)

White	8800	6850	6300	5750	5200	4750	3600	2800	1850	2150	1700	1100	750	800
Plus White	8350	6500	5850	5450	4950	4500	—	2700	—	—	—	1050	—	—
Warm White	8700	6750	6100	5650	5100	4600	3550	2700	1850	2150	1700	1100	750	800
Daylight	8400	6500	5750	5450	4950	4450	—	2650	1750	2050	1600	1050	700	750
Home-lite	—	—	—	—	3900	3600	—	2200	—	—	—	—	—	—
Natural	6500	5000	4350	4000	3900	3400	2400	2100	1400	1600	1300	800	—	600
D.L. Warm White	6200	4700	—	—	—	—	—	—	1250	1450	1200	750	500	—
*Kolor-rite	5700	4400	3850	3500	3400	3000	—	1800	—	1300	1100	750	—	—
Northlight/Colour Matching	5300	4100	3600	3200	3100	2700	—	1700	—	1250	1050	700	450	500
De Luxe Natural	4800	3800	3200	2900	2700	2500	1900	1500	—	1100	900	600	400	450
Artificial Daylight	3800	—	2600	2400	2300	2100	—	1200	—	—	—	500	—	—

†These tubes are 26mm/1in diameter. All others are 38mm/1.5in diameter.

*The Super 5 tube is a dual purpose 65/80W tube suitable for use in all 65W or 80W bi-pin fittings and the Super 6 tube is dual 75W and 85W rated.

1500mm/5ft 80W BC tubes are still available in a limited range of standard colours

REFLECTOR TUBES

Initial lumens (100 hours)						
	2400mm 8ft	2400mm 8ft	1800mm 6ft	1500mm 5ft at 80W	1500mm 5ft at 65W	1200mm 4ft 40W
White	8400	6500	5800	5100	4500	2700
Warm White	8300	6400	5600	—	4400	2650
Daylight	—	—	5500	—	4200	2600
Lighting design lumens (2000 hours)						
White	7700	6000	5200	4600	4200	2450
Warm White	7600	5900	5000	—	4000	2400
Daylight	—	—	4900	—	3800	2350

COLOURED TUBES (Bi-pin only)

Five standard colours – Red, Blue, Green, Gold and Pink – are available. These are primarily designed for decorative and effect lighting purposes.

Lighting design lumens (2000 hours)							
	1800mm 5ft 75/85W	1500mm 5ft at 80W	1500mm 5ft at 65W	1200mm 4ft 40W	900mm 3ft 30W	600mm 2ft 40W	600mm 2ft 20W
Pink	1600	1400	1250	750	550	500	290
Red*	—	250	230	140	—	—	50
Gold*	—	2700	2400	1450	—	—	550
Green	—	5200	4600	2800	—	—	1100
Blue	—	1300	1150	700	—	—	270

*Red and Gold tubes should be used only in switchstart circuits.

GRO-LUX

Lighting design lumens (2000 hours)							
1500mm 5ft at 80W	1500mm 5ft at 65W	1200mm 4ft 40W	900mm* 3ft 30W	600mm 2ft 20W	450mm* 18in 15W	525mm 21in 13W	300mm 12in 8W
1450	1300	810	530	340	200	180	100

*26mm/1in diameter.

TROPICAL DAYLIGHT

Lighting design lumens (2000 hours)
450mm/18in 15W: 550

CIRCULAR TUBES

Lighting design lumens (2000 hours)			
Circular—Warm White only			
400mm 16in (diameter)	400mm 16in	300mm 12in	
60W	40W	32W	
3400	2300	1600	

Electrical data for special control gear

Electrical data for standard 240V 50Hz tube circuits. Average performance tested at 25°C to BS.2818

The figures on this page are for intermediate section gear.

Tube size	2400mm 8ft	2400mm 8ft	1500mm 5ft	1500mm 5ft	1200mm 4ft	600mm 2ft	600mm 2ft
Diameter +	38mm 1.5in	38mm 1.5in	38mm 1.5in	38mm 1.5in	38mm 1.5in	38mm 1.5in	38mm 1.5in
Nominal tube watts	125W	85W	80W	65W	40W	40W	20W
Lamp cap	BP	BP	BC or BP	BP	BP	BP	BP
Actual lamp watts	123	85	76	64	39.5	37	19.5
Average tube volts	150	184	100	110	102	47	58
Average tube amps	0.94	0.55	0.87	0.67	0.44	0.88	0.37
Rated life (hours)	7500	7500	7500	7500	7500	5000	5000

SINGLE TUBE SWITCHSTART

Total circuit watts	94	58
Lagging power factor	0.85	0.85
Total volt/amps	110	69
Mains current at 240V	0.46	0.29
Min. starting temperature	0°C	0°C
% Harmonics per phase	17%	

SINGLE TUBE SWITCHLESS START

Total circuit watts	154	100	99	80	54
Lagging power factor	0.98	0.99	0.85	0.91	0.93
Total volt/amps	158	100	116	87	58
Mains current at 240V	0.66	0.42	0.48	0.36	0.24
Min. starting temperature	+5°C	+5°C	+5°C	-5°C	-5°C
% Harmonics per phase	8%	7%	17%	25%	25%

TWIN TUBE SERIES PAIR SWITCHLESS START

Total circuit watts	207	100	54
Lagging power factor	0.95	0.85	0.85
Total volt/amps	218	118	63
Mains current at 240V	0.91	0.49	0.26
Min. starting temperature	+5°C	+5°C	+5°C
% Harmonics per phase	17%		

TWIN TUBE SERIES PAIR SWITCH START

Total circuit watts	94	50
Lagging power factor	0.85	0.85
Total volt/amps	110	59
Mains current at 240V	0.46	0.25
Min. starting temperature	0°C	0°C
% Harmonics per phase		

The above circuit watts for control gear tested in accordance with BS.2818 may be reduced by up to 5% when operating in some fittings as the circuit watts reduce as the lamp operating temperature rises.

Electrical data for standard control gear

Electrical data for 240V 50Hz tube circuits. Average performance tested at 25°C to BS.2818.

The figures below are for slim section gear.

Tube size	8ft	6ft	6ft	6ft	5ft	5ft	4ft	4ft	2ft
Diameter	1½in	1½in	1½in	1½in	1½in	1½in	1½in	1½in	1½in
Nominal tube watts	125	85	75 x 2	75	65	65	40	40	20
Actual lamp watts	120	81	153	73	63	63	39	39	19
Average tube volts	152	123	129	131	113	113	104	104	58
Average tube amps	0.92	0.77	2 x 0.70	0.64	0.63	0.63	0.42	0.42	0.38
Rated life (hours)	7500	7500	7500	7500	7500	7500	7500	7500	5000

Circuit type	SS	SRS	SS Twin	SRS	SS	SRS	SS	SRS	SS
Total circuit watts	142	103	180	90	78	82	51	55	30
Mains current amps	0.92	0.50	0.78	0.42	0.37	0.37	0.24	0.24	0.38
Total volt amps	220	120	185	100	90	89	60	58	91
Lagging power factor	0.63†	0.86	0.98	0.90	0.87	0.92	0.90	0.95	0.34*
Min. starting temperature	0°C	-5°C	0°C	-5°C	0°C	-5°C	0°C	-5°C	0°C
% 3rd Harmonics per phase	14%	25%	16%	25%	17%	25%	17%	25%	17%

Tube size	1500mm 5ft	900mm 3ft	450mm 18in	525mm 21in	300mm 12in	225mm 9in	150mm 6in
Diameter	26mm 1in	26mm 1in	26mm 1in	16mm 0.625in	16mm 0.625in	16mm 0.625in	16mm 0.625in
Nominal tube watts	50W	30W	15W	13W	8W	5W	4W
Lamp cap	BP	BP	BP	Min. BP	Min. BP	Min. BP	Min. BP
Actual lamp watts	50	30	15	13	8	6	4
Average tube volts	160	101	57	92	55	43	30
Average tube amps	0.38	0.36	0.34	0.17	0.17	0.16	0.15
Rated life (hours)	5000	5000	5000	5000	5000	5000	5000

SINGLE TUBE SWITCHSTART

Total circuit watts	—	39	25	19	14	12	10
Lagging power factor	—	0.49*	0.31*	0.46*	0.34*	0.31*	0.28*
Total volt/amps	—	46	81	41	41	39	36
Mains current at 240V	—	0.36	0.34	0.17	0.17	0.16	0.15
Min. starting temperature	—	0°C	0°C	0°C	0°C	0°C	0°C
% Harmonics per phase	—	17%	—	—	—	—	—

SERIES PAIR SWITCHSTART

Total circuit watts	—	—	40	—	22	18	14
Lagging power factor	—	—	0.85	—	0.52*	0.46*	0.39*
Total volt/amps	—	—	47	—	41	39	36
Mains current at 240V	—	—	0.20	—	0.17	0.16	0.15
Min. starting temperature	—	—	0°C	—	0°C	0°C	0°C

SINGLE TUBE SWITCHLESS START

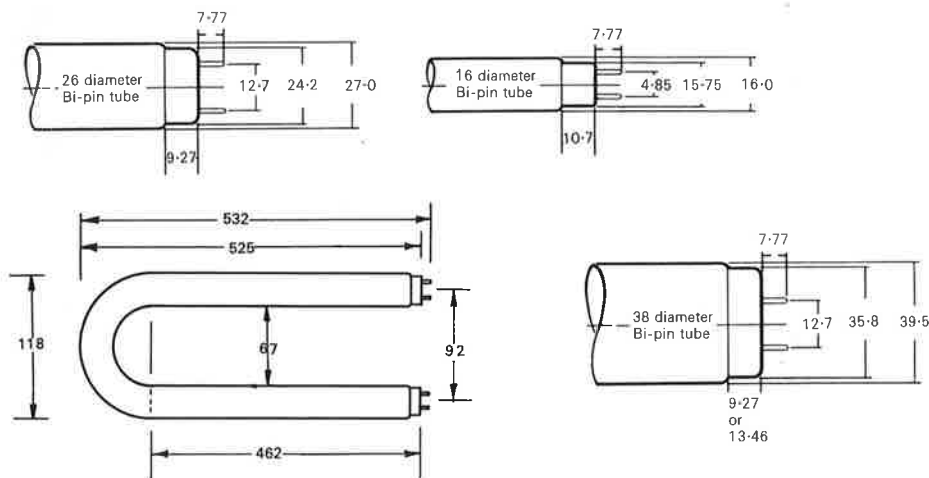
Total circuit watts	66	54
Lagging power factor	0.88	0.93
Total volt/amps	91	58
Mains current at 240V	0.38	0.24
Min. starting temperature	+5°C	-5°C
% Harmonics per phase	32%	25%

*Uncorrected value. Allow 0.85 if power factor capacitor is fitted

†Leading power factor.

The above circuit watts for control gear tested in accordance with BS. 2818 may be reduced by up to 5% when operating in some fittings as the circuit watts reduce as the lamp operating temperature rises.

Dimensions



Maximum dimensions (mm)

STRAIGHT TUBES

Rated wattage	Nominal dimensions		cap	Length, base face to base face (mm)	Length, base face to end of opposite cap pins		Length overall	
	mm*	in			mm max.	mm min.	mm max.	mm min.
125	2400×38	96×1½	Bi-pin	2374.9	2382.0	2378.4	2389.1	—
85	2400×38	96×1½	Bi-pin	2374.9	2382.0	2378.4	2389.1	—
75/85	1800×38	72×1½	Bi-pin	1763.8	1770.9	1768.4	1778.0	—
65/80	1500×38	60×1½	Bi-pin	1500.0	1507.1	1504.8	1514.3	—
80	1500×38	60×1½	BC	—	—	—	1530.4	1517.6
50	1500×26	60×1	Bi-pin	1500.0	1507.1	1504.8	1514.3	—
40	1200×38	48×1½	Bi-pin	1119.4	1206.5	1204.1	1213.6	—
40	600×38	24×1½	Bi-pin	589.8	596.9	594.5	604.0	—
30	900×38	36×1½	Bi-pin	894.6	901.7	899.3	908.8	—
30	900×26	36×1	Bi-pin	894.6	901.7	899.3	908.8	—
20	600×38	24×1½	Bi-pin	589.8	596.9	594.5	604.0	—
15	450×38	18×1½	Bi-pin	437.4	444.5	442.1	451.6	—
15	450×26	18×1	Bi-pin	437.4	444.5	442.1	451.6	—
13	525×16	21×⅝	Small bi-pin	516.8	523.9	521.5	531.0	—
8	300×16	12×⅝	Small bi-pin	288.2	295.3	292.9	302.4	—
6	225×16	9×⅝	Small bi-pin	212.0	219.1	216.7	226.2	—
4	150×16	6×⅝	Small bi-pin	135.8	142.9	140.5	150	—

*U-SHAPED TUBE 525×120mm (21in×5in)—see dimensional diagram above.

CIRCULAR TUBES

Lamp watts	Nominal diameter		Inside lamp diameter/ glass mm		Inside lamp diameter/ base mm		Outside lamp diameter*		Bulb diameter	
	mm	in	max.	min.	max.	min.	max.	min.	max.	min.
22	200	8½	160.4	151.1	155.6	150.8	215.9	203.2	30.9	26.2
32	300	12	245.6	237.3	246.1	239.7	311.2	298.5	34.1	29.4
40	400	16	346.9	338.9	347.7	341.3	412.8	400.0	34.1	29.4
60	400	16	346.9	338.9	347.7	341.3	412.8	400	34.1	29.4

*Base and glass dimensions the same

Introduction

Thorn Lighting offers the widest choice of discharge lamps in the country. This range enables you to select lamps with the best combination of light output and colour to satisfy your particular requirements. And so, because you get the right lamp for the job, you enjoy maximum operating efficiency and minimum maintenance costs.

Kolorarc lamps, with their special metallic additives, have no challengers for really accurate colour rendering, so accurate that they have been proved suitable light sources for use with colour television. In any commercial or industrial situation where high light output combined with accurate colour rendering is demanded, Kolorarc lamps are ideal.

Kolorlux lamps combine good colour with a wide range, stretching from 50W to 1000W, giving exceptional flexibility. The MBFR version, with its internal coating, gives improved lumen maintenance in industrial

situations and lowers operating costs.

Kolor-Plus MBTF lamps take this flexibility even further by requiring no control gear and make excellent long-life replacements for ordinary tungsten filament lamps—especially where maintenance is difficult and costly.

The KolorSON high pressure sodium lamp is the most efficient in the Kolor range, producing a brilliant golden light. It is becoming increasingly popular for exterior lighting where improved colour is needed, and also for interior use where warm colour is acceptable and high efficacy vital.

The Linear Sodium and SOX lamps are for outdoor and streetlighting applications and achieve the highest possible light output for the lowest cost.

All these discharge lamps have been developed by Thorn's incomparable research and design facilities and backed by Britain's largest distribution network.

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General lamp information

Lighting Advisory Service

Discharge lamps are compact, high output sources and their successful use, particularly in commercial interiors, is dependent on the optical control provided by the luminaire. In addition, interior lighting design requires careful attention to layout and decor to ensure visual satisfaction.

The advice of Thorn Lighting engineers is available on request.

Initial Lumens

The initial lumens quoted are measured after 100 hours operation.

Lighting Design Lumens

Lighting design lumens quoted are the lumen outputs at 2000 hours (3000 hours for SLI and SOX) and are recommended as a guide to Lighting Engineers planning scheme layouts. Lumen output beyond 2000 hours decreases by 2-3% per 1000 hours use according to type.

Supply Voltage

All lamps are suitable for use on 220V and 240V supplies in conjunction with control gear.

All Mercury, Metal Halide, low and high pressure Sodium lamps described in this section will start and continue to operate with a 10%

reduction in the rated voltage (220V or 240V) provided that the correct control gear is used. Kolor-Plus Mercury Tungsten lamps must be operated on the correct supply voltage.

Ambient Temperature

Lamps described in this section will start at ambient temperatures down to -20°C . The diagram shows the effect of ambient temperature on the starting voltage of mercury lamps.

Standards

Lamps conform to the following standards where applicable:—

BS 3677 : High Pressure Mercury Vapour Lamps.

BS 3767 : Low Pressure Sodium Vapour Lamps.

IEC Publication 188 : High Pressure Mercury Vapour Lamps

IEC Publication 192 : Low Pressure Sodium Vapour Lamps

Dimensions

The dimensions shown are maximum.

Cap Designations

ES — E27

GES — E40

BC — B22

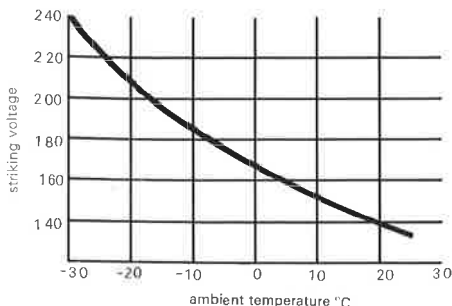
3 pin BC — B22-3

BIPIN — G13

Run-up Time

The following table shows typical run-up times to 90% light output. The time taken will vary depending on the location and the type of fitting housing the lamp.

MB, MBF, MBFR		SON, SON-T, SON-TD	
50W	5 mins	250W	7 mins
80W	3 mins	400W	5 mins
125W	3 mins	SLI	
250W	4 mins	140W	12 mins
400W	4 mins	200W	7 mins
700W	3 mins	SOX	
1000W	2 mins	35W	6 mins
MBI, MBIF		55W	6 mins
250W	2 mins	90W	7 mins
400W	2 mins	135W	8 mins
1000W	2 mins	180W	11 mins



Kolorarc MBIF and MBI metal halide lamps

Description High pressure discharge in mercury with metallic additives operating in a quartz arc tube, Kolorarc (MBIF) lamps have hard glass elliptical bulbs coated on the interior surface with fluorescent phosphor increasing the light output, improving the colour and diffusing the arc. MBI lamps have clear hard glass elliptical bulbs. The special additives in the arc help provide a more continuous spectral power distribution throughout the visible spectrum. At the same time the mercury resonance lines are reduced in comparison with ordinary mercury lamps, giving a light source with excellent colour rendering properties comparable to a Natural fluorescent tube.

Application In any situation where high light output must be combined with good colour rendering, Kolorarc lamps are ideal. They can be used indoors for offices, shops, supermarkets and stores, where colour is of primary importance, and are finding increasing application for illuminating interior sports halls, gymnasias and swimming pools. The excellent colour rendering of Kolorarc makes it suitable for museums and exhibitions where skilled lighting design can enhance the beauty of the exhibits.

Industrially, Kolorarc lamps can be used in area and high-bay lighting where good colour qualities, coupled with high output efficiency, are required: Kolorarc lamps are 30% more efficient than MBF colour corrected mercury lamps. The high lumen output is of primary importance where the weight of fittings on the ceiling is a serious consideration. MBI lamps, with clear outer bulbs, are suitable where precise optical control is required, such as floodlighting. Kolorarc and MBI lamps have proved suitable light sources for use with colour television cameras. Other varieties of metal halide lamps are being increasingly used for stadia floodlighting, especially that of football grounds.

Burning Position BU: Base up, Lamps must *not* be operated with cap more than 15° below horizontal. For general industrial use. BD: Base down, Lamps must *not* be operated with cap more than 15° above horizontal. H: Horizontal, For use in commercial fittings with orientated lampholders when the lamps are intended to be burnt $\pm 15^\circ$ of horizontal.

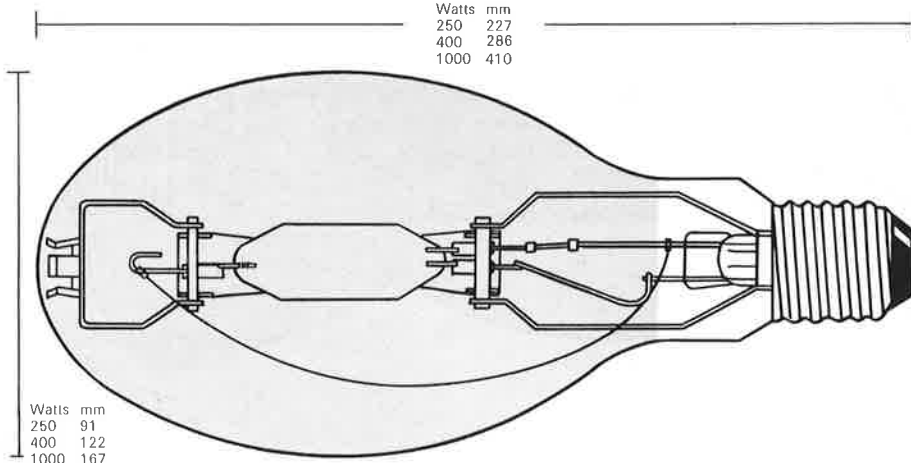
Further Information For further information see page 336

RANGE

	Watts	Burning Position	Nominal Lamp Voltage	Lamp Current Amps	Cap	Initial Lumens	Lighting Design	Standard Pack
MBIF	250	BU and H	9C	3.1	GES	19000	16000	10
	400	BU† and H	135	3.3	GES	32000*	27000*	10
	1000	BU†	250	4.2	GES	92000*	85000*	1
MBI	400	BU†	135	3.3	GES	29000*	24000*	10
	1000	BU†	250	4.2	GES	85000*	78000*	1

*Applies to vertical position: when operated horizontally reduce by 10%
†BD available to order

Watts mm
250 227
400 286
1000 410



Kolorlux MBF mercury fluorescent lamps

Description High pressure mercury vapour discharge operating in a quartz arc tube. The interior surface of the elliptical bulb is coated with a fluorescent phosphor which converts ultra-violet radiation from the discharge into visible light. Kolorlux lamps employ a phosphor giving up to 10% higher light output than standard MBF lamps together with improved colour at the red end of the spectrum.

Applications MBF lamps are widely used in industrial lighting and streetlighting. The improved colour of Kolorlux has extended the applications to commercial and display

lighting, shopping centre and concourse lighting, and area floodlighting. In comparison with fluorescent tubes, higher output Kolorlux lamps need fewer fittings for an equivalent illumination level, giving a tidier ceiling and reduced maintenance costs

Burning Position

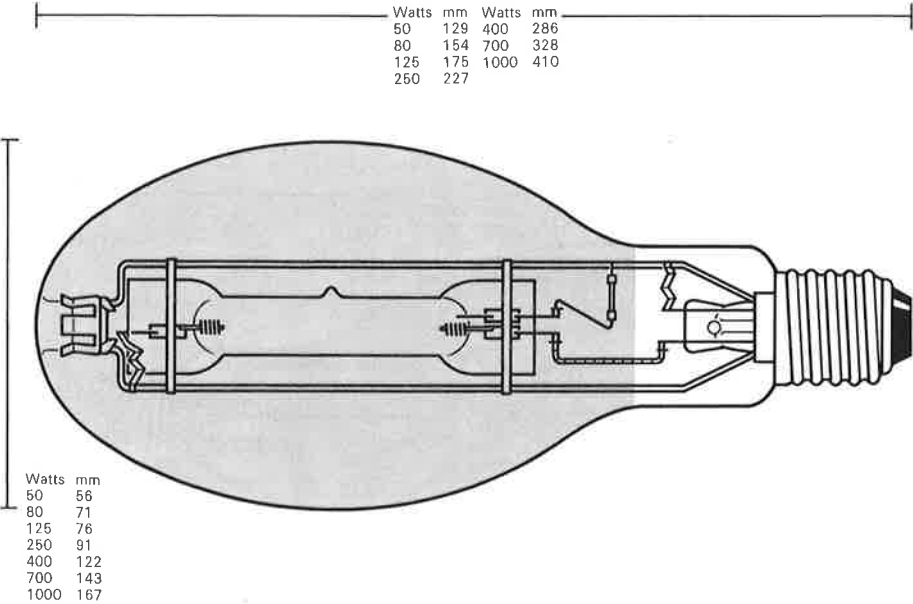
Universal : lamps may be operated in any position.

For further information see page 336

RANGE

Watts	Nominal Lamp Voltage	Lamp Current Amps	Cap	Lumens		Standard Pack
				Initial	Lighting Design	
50	95	0.6	ES	1900	1800	50
80	115	0.80	ES*	3600	3350	25
125	125	1.15	ES*	6250	5550	25
250	130	2.15	GES	13500	12000	10
400	135	3.25	GES	23000	21500	10
700	140	5.60	GES	40000	38000	1
1000	145	7.60	GES	56000	54000	1

*3 pin BC cap also available.
A range of MB lamps is also available : details on request.



Kolorlux MBFR mercury reflector lamps

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

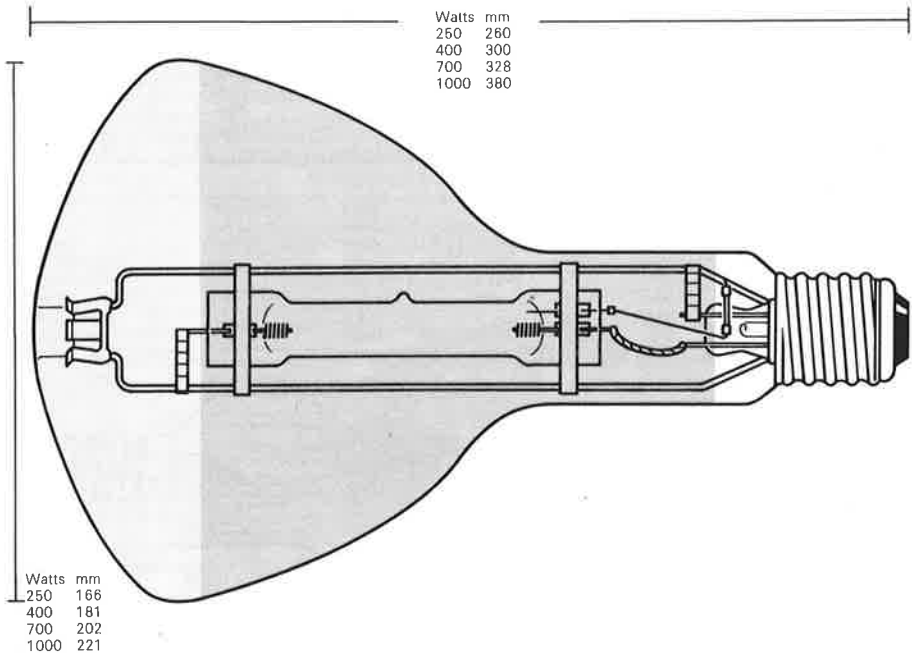
Application Kolorlux reflector lamps are particularly suitable for medium and high bay lighting. The hard glass outer bulb allows the lamps to be used in exposed conditions for area lighting. The improved colour of Kolorlux has widened the use of reflector lamps into commercial applications such as display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

Burning Position Universal : lamps can be operated in any position.

For further information see page 336

RANGE

Watts	Nominal Lamp Voltage	Lamp Current Amps	Cap	Lumens		Standard Pack
				Initial	Lighting Design	
250	130	2.15	GES	11500	10500	1
400	135	3.25	GES	20500	18000	1
700	140	5.60	GES	35000	32500	1
1000	145	7.60	GES	52000	48000	1



Kolor-Plus MBTF and Black Light MBTW mercury tungsten lamps

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

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

Kolor-Plus MBTF lamps (illustrated below) have an outer bulb coated with a phosphor giving higher light output and improved colour.

The MBTW lamp has a pear shaped 'Black Light' outer bulb (length 183mm diameter 91mm) which effectively obscures all visible radiation, and emits long wave ultra-violet.

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

The MBTW lamp is a very convenient way of providing Ultra Violet lighting ('Black Light') for fluorescent effects in dance halls, clubs, discotheques, parties etc.

Advantages

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

Supply Voltage

Kolor-Plus MBTF lamps are available in 240/250V. The lamps must be operated on the correct supply. Sudden reductions in voltage may cause them to extinguish.

Rated Life

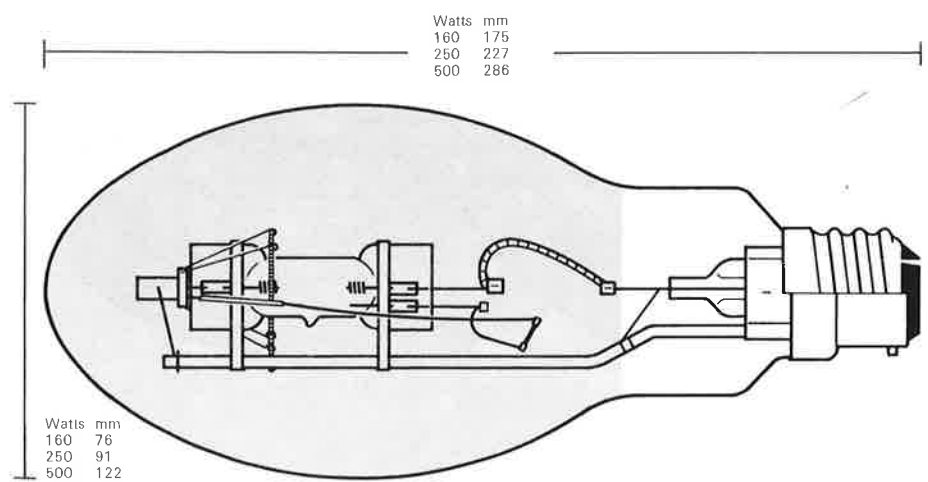
MBTF—8000 hours
MBTW—3000 hours

Operating Position

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

RANGE

	Watts	Supply Voltage	Lamp Current Amps	Cap	Lumens		Standard Pack
					Initial	Lighting Design	
MBTF	160	240/250	0.65	BC or ES	2900	2560	24
	250	240/250	1.05	GES	5500	4840	10
	500	240/250	2.10	GES	12500	11500	10
MBTW	175	240/250	0.70	BC or ES	—	—	10



KolorSON and SONline high pressure sodium lamps

Construction The high-pressure sodium lamp differs from other discharge lamps in that it employs an arc tube made of sintered aluminium oxide. This material is necessary to withstand the intense chemical activity of sodium vapour at high temperature and pressure.

Three types of outer bulb are available :

- 1) SON KolorSON
Elliptical hard glass with a diffusing coating. This lamp has the same luminance ratio as an MBF lamp and can be used in the same fittings. (Different control gear is required).
- 2) SON-T
Tubular clear hard glass, for floodlighting purposes.
- 3) SON-TD SONline
Tubular double-ended clear quartz. The length and cap are the same as for a 1500W tungsten halogen floodlighting lamp. Designed for use in TH floodlighting fitting in conjunction with suitable gearbox. In comparison with 1500W TH lamp, the 400W SONline gives 27% more light, 1/3 of the power consumption and 3 times the life.

Starting and Operation The lamp is started by a high-voltage pulse applied by an ignitor which ceases to function once the arc has struck. The ignitor may be mounted up to 45 metres from a 250W lamp and 30 metres from a 400W lamp. External starting simplifies lamp construction, ensures immediate striking and is very reliable. The lamp takes four or five minutes to run up to full brightness. SON lamps will normally restrike within one minute of extinction and rapidly regain full light

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

Applications Public lighting : traffic routes, city centres, shopping areas.
Area lighting : airports, dockyards, car parks, forecourts.
Floodlighting : stadiums, buildings, marshalling yards, sports grounds. Interior lighting : high-bay lighting for factories, warehouses, hangars, halls.
The Department of the Environment have recommended that high pressure sodium lamps be used for street lighting in conservation areas, both in the country and the town.

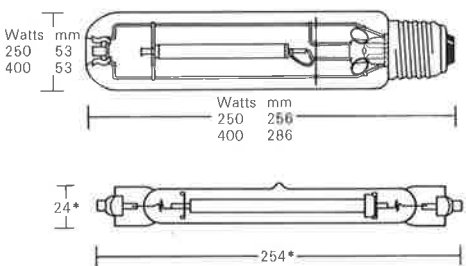
Burning Position SON and SON-T
Universal : lamps may be operated in any position.
SON-TD
Horizontal $\pm 20^\circ$

Further Information For further information see page 336

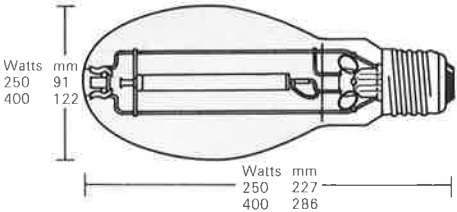
RANGE

Watts/Type	Nominal Lamp Voltage	Lamp Current Amps	Cap	Lumens		
				Initial	Lighting Design	Standard Pack
250 Tubular SON-T	100	3.0	GES	25000	22500	12
250 Elliptical SON	100	3.0	GES	23500	21000	10
400 Tubular SON-T	105	4.4	GES	47000	42000	12
400 Elliptical SON	105	4.4	GES	44000	40000	10
400 SON-TD*	105	4.4	RX7s	47000	42000	10

*The lumen output and electrical characteristics of this lamp refer to operation under optimum conditions in a suitable fitting. The quoted performance will not be achieved in free air.



*Nominal Dimensions



Linear SLI/H sodium lamps

Description The lamp consists of a low pressure sodium discharge operating in a linear arc tube. The arc tube is enclosed in an evacuated tubular outer bulb which has an infra-red reflecting coating on the inside surface to provide thermal insulation.

Special Advantages The small source size and uniform distribution of both the 140W and 200W ratings conform to the design requirements of modern streetlighting lanterns. Light is emitted uniformly from an arc 780mm long and only 29mm wide. The compact and lightweight construction makes it easy to handle during relamping. The lamp is 908.8mm/3ft long and 39.5mm/1.5in in diameter and weighs less than 0.45kg/1lb. Transport and installation are further

simplified by a 25-way pack which can easily be stored in a service truck or tower wagon.

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

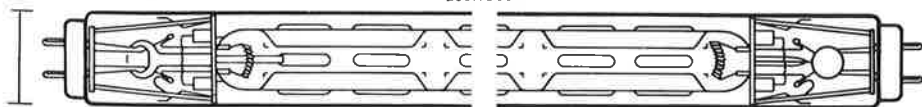
Application The primary application for linear sodium lamps is for streetlighting where their outputs are suitable for the DoE requirements for principal and trunk roads, and motorways. The construction of the lamp materially assists in the optical design and shape of lanterns to meet illuminance distribution and environmental criteria.

Operating Position The lamps must operate in a horizontal position $\pm 20^\circ$

RANGE

Watts	Nominal Lamp Voltage	Lamp Current Amps	Cap	Lighting Design Lumens	Standard Pack
140	175	0.9	Bi-pin	20000	25
200	145	1.6	Bi-pin	25000	25
200 (HO)	145	1.6	Bi-pin	27500	25

Watts mm
140 909
200 909
200HO909



Watts mm
140 39.5
200 39.5
200HO39.5

SOX sodium lamps

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

Application The primary application for SOX lamps is for streetlighting where their higher efficacy has superseded earlier types as follows:
 1/ The 90W SOX lamp replaces the 140W SOI/H integral lamp. Both lamps have the same dimensions and can be operated from the same control gear.

2/ The 55W SOX lamp replaces the 85W SOI/H integral lamp. Both lamps have the same dimensions and can be operated from the same control gear.

3/ The 35W SOX lamp replaces the 60W SOI/H integral lamp. Both lamps have the same dimensions and can be operated from the same control gear.

4/ The 35W SOX lamp is also electrically interchangeable with the 45W SOI/H integral lamp. Although the 35W SOX is longer than the 45W SOI/H it can be used as a replacement in lanterns originally designed for 45/60W SOI/H.

Burning Position

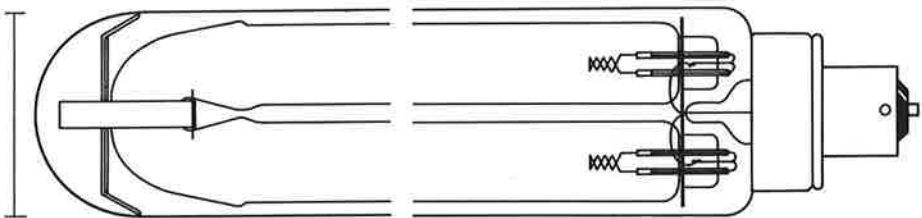
Horizontal $\pm 20^\circ$.

The 35W and 55W ratings may also be operated in the vertical cap up position.

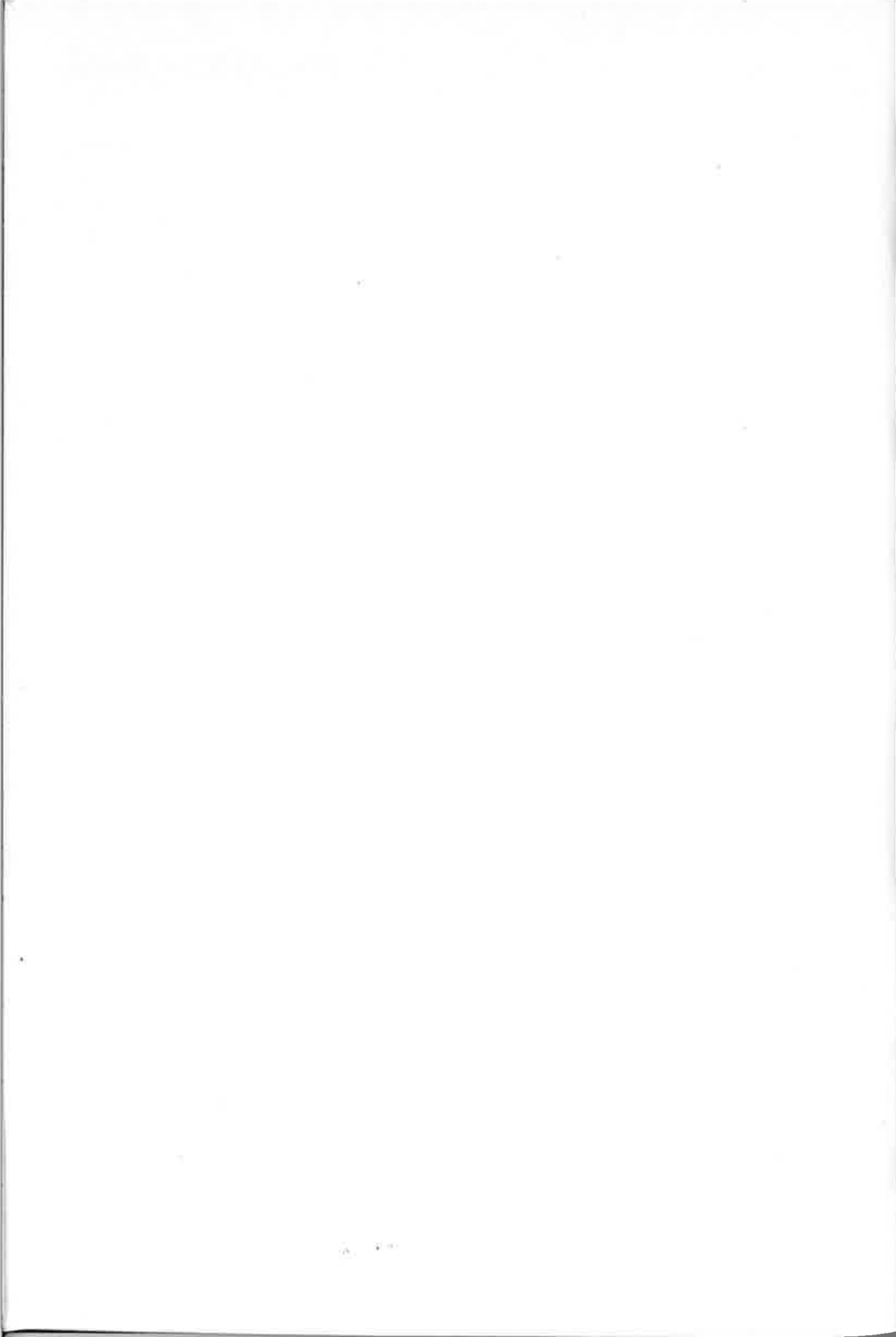
RANGE

Watts	Nominal Lamp Voltage	Lamp Current Amps	Cap	Lighting Design Lumens	Standard Pack
35	70	0.6	BC	4300	9
55	109	0.59	BC	7500	9
90	112	0.94	BC	12500	9
135	164	0.95	BC	21500	9
180	240	0.91	BC	31500	9

Watts	mm
35	311
55	425
90	528
135	775
180	1120



Watts	mm
35	53
55	53
90	67
135	67
180	67



Introduction

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

There is also a variety of ultra-violet sources. These proven ranges of discharge lamps are used for inspection and development projects

in many locations and they undoubtedly have done much to maintain the excellent quality and advanced design of much British industrial and engineering equipment.

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

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Mercury lamps for projector purposes — Type ME/D

Supply voltage 200/250.

DESCRIPTION

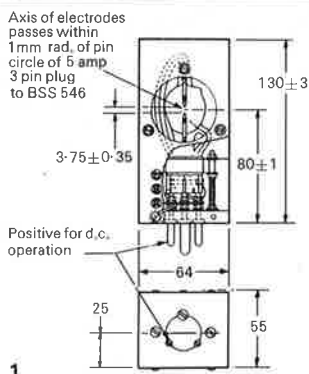
Mercury vapour discharge lamps with quartz arc tubes loaded above 100W/cm of arc length and operating at a pressure of above 30 atmospheres.

The arc operates between solid tungsten electrodes providing a compact stable light source of high brightness. The radiations have much photochemical value and little heating effect. In the 250W ratings the same basic lamp has various casings and bases, the three main types being shown in the table and illustrations. Windows are of quartz where short-wave u.v. radiation is required, or of glass where it must be excluded. The lamp with P28/25 prefocus cap is interchangeable with certain class A1 tungsten filament projector lamps. Lamps may be operated on d.c. or a.c., supplies in conjunction with appropriate control gear. For a.c. supplies this consists of a choke and power factor correction capacitor. In addition, the 1000W lamp utilises a starting capacitor in series with a pushbutton switch. For d.c. operation of 250W lamps a choke and series resistance are required, the choke being retained for starting purposes. The 1000W lamp on d.c. operation requires a series resistance, the lamp being started by means of a Tesla coil. All lamps must be operated vertically, cap downwards. A tilt of more than 10° will cause damage to the arc tube.

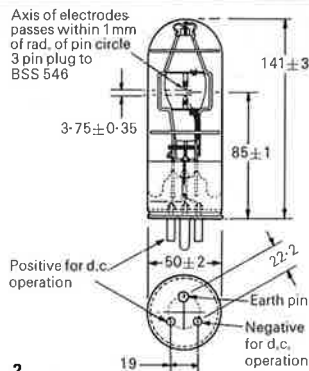
TYPICAL APPLICATIONS

Monochrome slide and film projectors, film printing, projection microscopes, profile projectors and industrial inspection purposes.

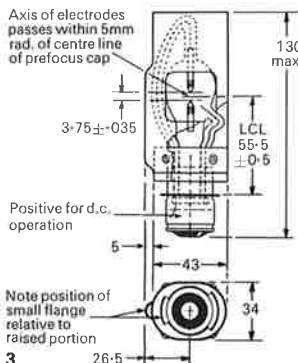
CONTROL GEAR See Control Gear section.



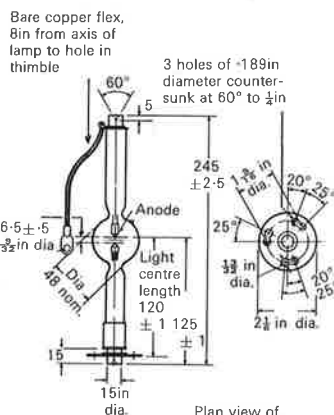
1



2



3



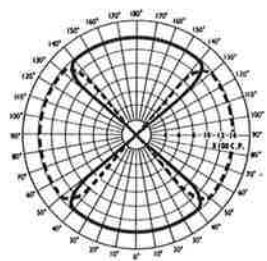
4

Plan view of mounting flange; all dimensions in mm unless otherwise stated

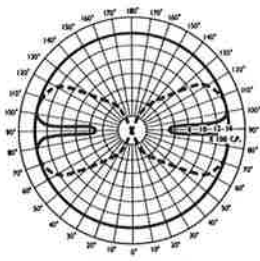
RANGE

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

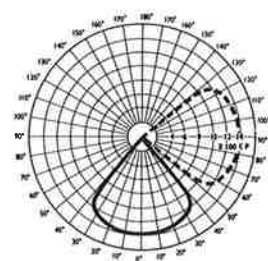
Mercury lamps for projector purposes — Type ME/D



PREFOCUS LAMP



LAMP WITH TUBULAR GLASS ENVELOPE



3 PIN BOX TYPE LAMP

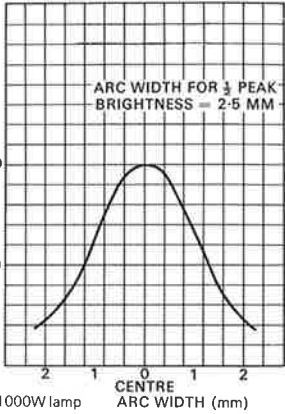
LIGHT DISTRIBUTION

The light distribution of each of the three main variations of the 250W lamp is shown in the polar diagrams above.

DISTRIBUTION IN HORIZONTAL PLANE THROUGH CENTRE OF LAMP

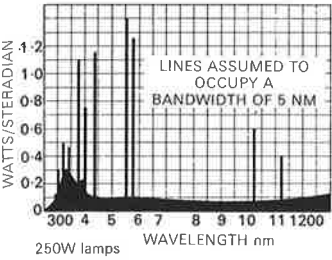
DISTRIBUTION IN VERTICAL PLANE 0°-180° THROUGH AXIS OF LAMP

BRIGHTNESS DISTRIBUTION ACROSS CENTRE OF ARC



1000W lamp

SPECTRAL DISTRIBUTION



SPECTRAL DISTRIBUTION 250W LAMPS

The diagram shows an appreciable level of continuous radiation with a number of lines the strongest of which lie in the u-v area at 365nm and in the blue (at 405 and 436nm) the green (546 nm) and yellow (579nm) regions of the visible spectrum. It should be noted that this diagram shows the spectral distribution of a bare quartz tube. In lamps with glass envelopes or glass windows wavelengths shorter than 350nm are progressively filtered out until there is virtually no emission at wavelengths of 300nm and below.

SPECTRAL DISTRIBUTION 1000W LAMP

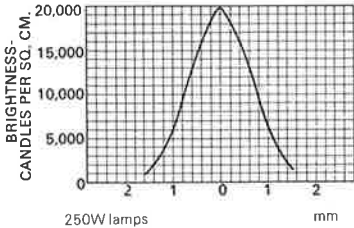
The spectral energy curve is continuous with strong mercury lines and is similar to that of the 250W ME/D lamp.

The energy in watts/steradian is approximately four times as great. The proportion of infra red radiation is considerably less than that of a tungsten filament lamp. Consequently the heating effect for the same illumination is less, and higher intensities can be safely used on heat sensitive materials.

WARNING

Short-wave u-v radiations are harmful to the human eye and skin. Since they are readily transmitted through quartz, though absorbed by most kinds of glass, precautions must be taken to shield observers from direct or reflected radiation when operating a rectangular box lamp with a quartz window or an oval metal cased lamp with an unglazed aperture. Radiations from ME lamps with glass envelopes or glass windows are quite harmless.

BRIGHTNESS DISTRIBUTION ACROSS CENTRE OF ARC



250W lamps

The curve showing the brightness distribution is measured across the arc at the centre of the arc length. The brightness distribution along the arc length is almost constant except in the regions adjacent to the electrodes.

Mercury lamp for long wave u-v—Type MBTW Black light

DESCRIPTION

The MBTW lamp consists of a high pressure mercury discharge in a quartz arc tube. Mounted co-axially with the arc tube and connected in series with it is a coiled tungsten filament which acts as a ballast to the arc.

The lamp has a pear-shaped Black Glass outer bulb which effectively obscures all visible radiation but emits long wave ultra-violet ('Black Light'). No control gear is needed: MBTW lamps operate direct from the supply.

APPLICATION

The main application is as a source of long wave ultra-violet radiation for the excitation of fluorescent materials.

It is a convenient way of providing ultra-violet lighting for fluorescent effects—dance halls, clubs, discotheques, parties, etc.

This lamp can be used as a direct plug-in replacement for a tungsten lamp, making it ideal for temporary use.



All dimensions in mm

ULTRA-VIOLET OUTPUT

The spectral power distribution curve shows that the lamp output is confined to the long wave ultra-violet region, principally at 365 nanometers.

The outer bulb absorbs nearly all the visible radiation produced and only a dull purple glow can be seen when the lamp is operating.

The radiation from this lamp is harmless but when viewed directly the eye fluoresces and causes a blurring effect. In any application where personnel are working close to the lamp for long periods (e.g. on inspection work) the lamp should be shielded from direct view to avoid discomfort.

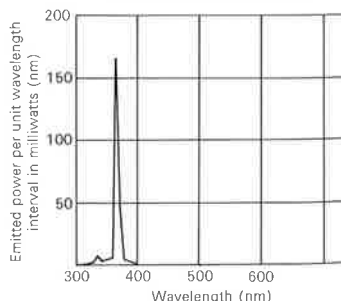
VOLTAGES

MBTW lamps can be supplied in two voltage ratings, 220/230V and 240/250V. Lamps must be operated on the correct supply. Sudden reductions in voltage or vibration may cause them to extinguish.

Burning Position

Vertical cap up

SPECTRAL DISTRIBUTION



LAMP

Reference no.	Watts	Cap	Lamp operating		Life Hours
			Volts	Amps	
91—5525	175	BC	220/230	0.75	3000
91—5527	175	BC	240/250	0.70	3000

Mercury lamp for long wave u-v— Type MBW Black light

Supply voltage 200/250 a.c.

DESCRIPTION

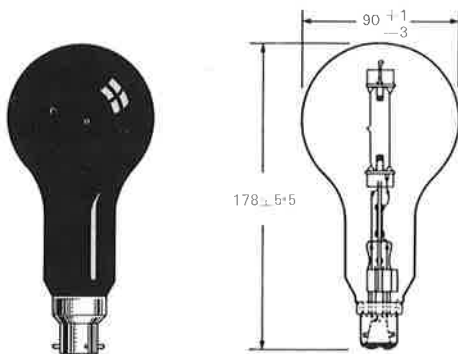
Mercury vapour discharge lamps with quartz arc tubes loaded below 100W/cm of arc length and operating at pressures of 8/10 atmospheres. The quartz arc tube is enclosed in a pear shaped outer bulb of Woods glass which absorbs virtually all radiation from the arc tube other than that in the long wave u-v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

The lamp is thus eminently suitable as a source of long wave u-v radiation to excite fluorescence in responsive substances. The lamp is designed for operation on 200/250W a.c. supplies with suitable control gear in the form of a series choke and power factor correction capacitor. It will operate in any position.

TYPICAL APPLICATIONS

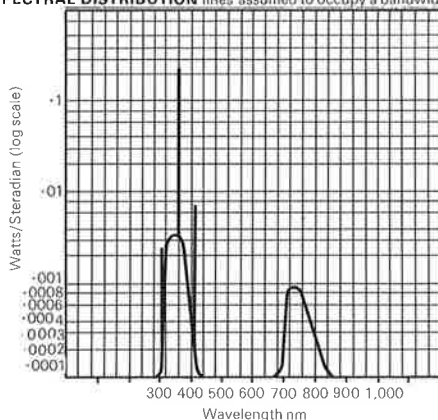
As a source of long wave u-v for bacteriological, mineralogical and forensic investigations; in connection with fluorescent pigments for various detection methods; and for special effects in entertainments and shop window lighting.

CONTROL GEAR See pages 302 - 303



All dimensions in mm

SPECTRAL DISTRIBUTION lines assumed to occupy a bandwidth of 5 nm



RANGE

Reference no.	Watts	Cap	Lamp operating		Starting current		Life Hours
			Volts	Amps	Amps		
91-6217	125	822/31 x 30 3-pin	110/140	1.15	1.5/2		1500

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

DESCRIPTION

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

The lamps operate in any position.

TYPICAL APPLICATION

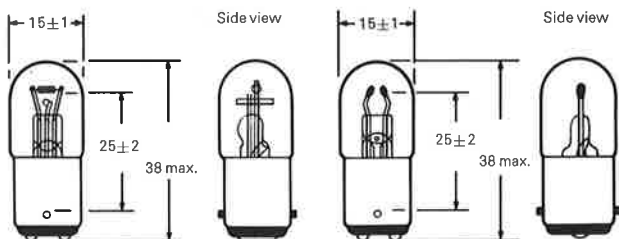
These lamps were originally developed to meet the demand for a small source of both u-v and visible light for such applications as exciting fluorescence on instrument panels. They are now used as time markers in recording camera equipment, as a source of the mercury green line in laboratory instruments, for exciting a wide range of fluorescent materials and for various biological and entomological purposes, as, for example, the light-source in an insect trap.

CONTROL GEAR

See Page 297.

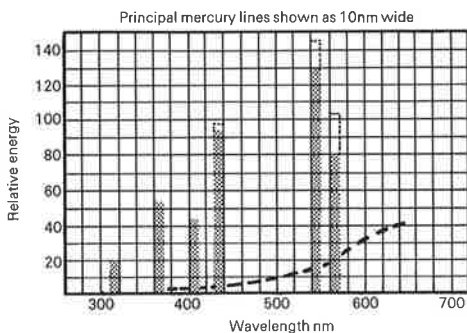
MERCURY DISCHARGE TUBE M1

MERCURY DISCHARGE TUBE M2



All dimensions in mm

SPECTRAL ENERGY DISTRIBUTION.



The spectrum of both the M1 and M2 Tubes can be taken as that of a low pressure discharge in mercury with an appreciable amount of energy at 365nm, the envelope cut off being at about 300nm. When the filament heater of the M1 Tube is switched on an additional amount of continuum is introduced, this additional energy being indicated by the dotted lines in the diagram.

RANGE

Reference no.	Type	Rating*	Supply Volts	Cap	Filament current Amps	Arc current Amps	Life Hours
98-9001	M1	4.5W	22 d.c. min.	SBC	0.8 (0.95 max)	0.75 max.	200
98-9002	M2	4.5W	200/250 a.c.	SBC	—	0.5/1.5	200

* At 0.75 Amp

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

Supply voltage 200/250

DESCRIPTION

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

The lamp is designed to operate in free air but should be shielded from draughts. Before it is put into service, the quartz envelope should be thoroughly cleaned with a grease solvent, such as ordinary methylated spirits. This avoids any contamination from handling causing devitrification of the quartz in operation.

When a lamp is operated direct from the supply mains and a high degree of stability of light-output is required, a current stabilization device, such as a constant current arrangement, is to be preferred to voltage stabilization.

TYPICAL APPLICATION

The lamp provides a stable linear source for optical purposes. As the light source is narrow and of uniform brightness along its length, it is very suitable for film printing or as a source of u-v radiation.

CONTROL GEAR See pages 298-299

Note

D.C. operation. The a.c. circuit is conventional, but for d.c. circuits a quick-break switch across the lamp, an ohmic resistor and a choke are required, as shown in the diagram. The choke provides an inductive surge the lamp when the quick-break switch is opened.

The value of resistors for various supply voltages are shown below:

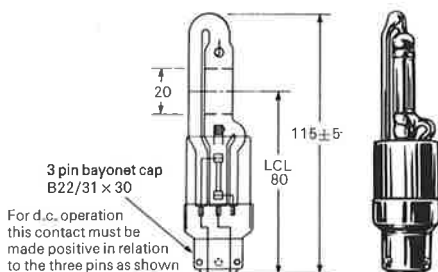
Supply Volts	Resistance Value (ohms)	Current Rating (amps)
200	79	2.3
210	87	
220	95	
230	105	
240	112	
250	123	

WARNING

This lamp emits short-wave u-v which is harmful to the human eyes and skin. Precautions must be taken to shield observers from direct and reflected radiation, for example, by means of a clear glass screen which will filter out the radiation below 300 nm.

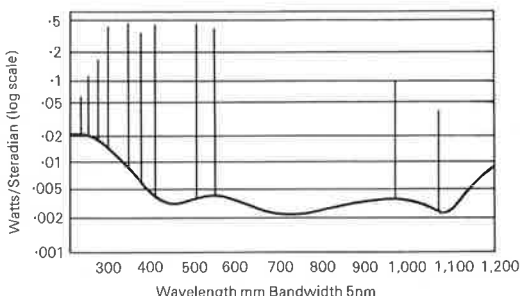
LAMP

Reference no.	Watts	Arc length mm	Arc width mm	Cap	Light centre length mm	Lamp operating Volts	Amps	Starting current Amps	Max. brightness Stilbs	Life Hours
91-9006	125	20	1.5	B22/31 x 30 3-pin	80±1	110	1.25	3	800	1000



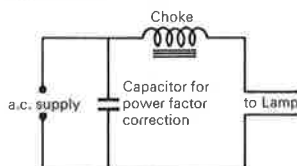
All dimensions in mm

SPECTRAL DISTRIBUTION

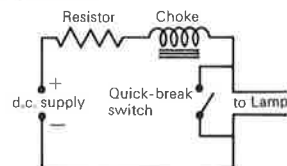


CIRCUIT DIAGRAMS

a.c. operation



d.c. operation



Short and long wave u-v and germicidal lamps

FLUORESCENT TYPE GERMICIDAL TUBES

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

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

TYPICAL APPLICATION

For hospitals, etc., for sterilising purposes.

TUBES

Rating	Reference no.	Nominal dimensions mm	in	Standard pack
8W	92-1213	300 × 16	12 × $\frac{5}{8}$	25
15W	92-2013	457 × 25	18 × 1	25
30W	92-4540	914 × 25	36 × 1	25

LONG WAVE ULTRA-VIOLET FLUORESCENT TYPE TUBES

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

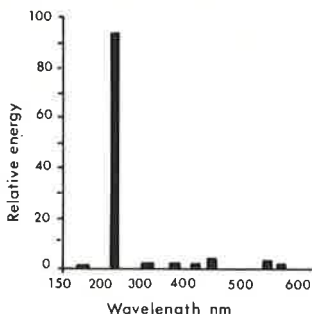
Type	Ratings
Ultra-violet (non-filter)	1500mm/5ft 65/80W; 1200mm/4ft 40W; 600mm/2ft 20W; 450mm/18in 15W; 300mm/12in 8W
Blacklight blue u-v	1200mm/4ft 40W; 450mm/18in 15W; 300mm/12in 8W; 225mm/9in 6W; 150mm/6in 4W

FITTINGS AND CONTROL GEAR

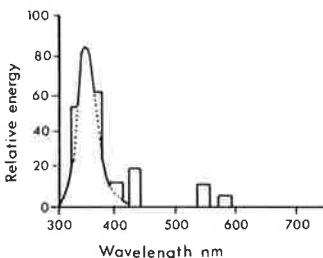
All tubes listed on this page go into standard fittings and operate on standard fluorescent control gear.

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

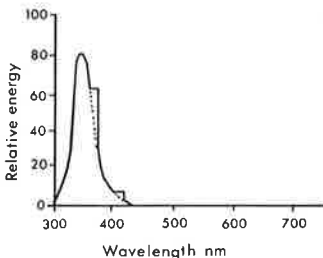
SPECTRAL ENERGY DISTRIBUTION GERMICIDAL TUBES



SPECTRAL ENERGY DISTRIBUTION ULTRA-VIOLET TUBES



SPECTRAL ENERGY DISTRIBUTION BLACKLIGHT BLUE TUBES



Metal halide u-v cure lamp — Type MBIL 1800W

DESCRIPTION

An 1800W lamp designed as a high intensity ultra violet source with a high electrical loading per unit length, containing metal halides to enhance the u-v in the region of 250–400nm.

Operation of the lamp can be either in the vertical or horizontal position, giving flexibility in its application as a single or multiple lamp unit.

Designed as a natural air cooled lamp, some air flow is recommended over the lamp seals and holder.

The lamp does not generate any toxic ozone but precautions must be taken to prevent any stray radiation as this is harmful to the eyes and skin.

Designed to operate from the normal 220–240V, 50 Hz supply, the lamp makes use of standard industrial and streetlighting ballasts with a simple pulse unit for lamp starting.

CONTROL GEAR

4 in parallel G.53230.T, to operate in maximum ambient of 80°C.

STARTER

Electrical components mounted on a metal tray 127mm x 102mm, Height 63.5mm, Reference no. G.53279.

POWER FACTOR CORRECTION

Capacitors (6 off) G.C2218
Alternatively (5 off) G.C2236

VOLTAGE SUPPLIES

Circuit diagram shown is wired for 240 volts supply. For 220 volts reverse connections to choke terminals 2 and 3.

REFLECTOR

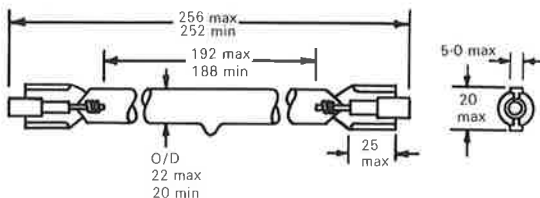
The lamp may be positioned in any design of reflector but it is recommended that the principal focus is not less than 25mm. High purity aluminium reflectors are recommended with an anodised coating of not more than 5 microns thick.

LAMPHOLDER

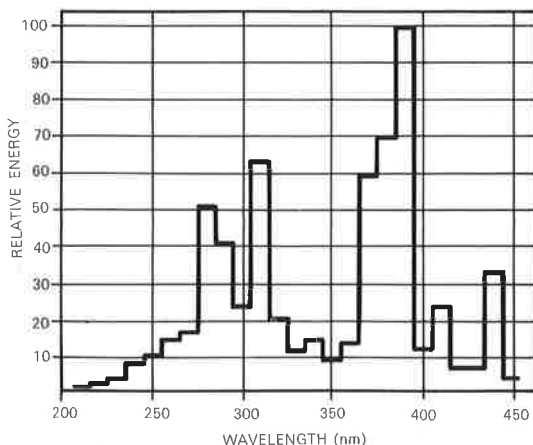
A lampholder assembly GL1173 is available for use with this lamp. It is recommended that the lamp holder ends are contained within a ducting with air holes to provide an air flow over the lamp seals and caps so that a temperature of 350°C is never exceeded when measured at a point in the quartz adjacent to the ceramic cap.

LAMP PERFORMANCE

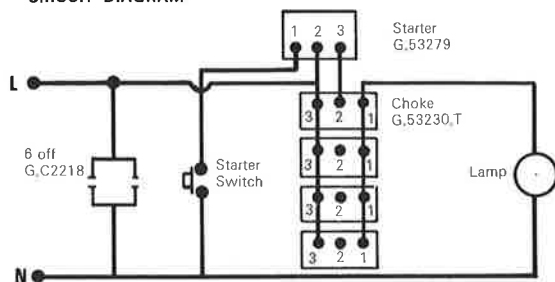
The lamp may be operated at 50%–75% or at its full rating. Lamp life at its full rating is in excess of 500 hours when the u-v intensity has fallen to about 90% of its initial value. The run-up time of the lamp to full power is less than 40 seconds and the restrike time is similar.



TYPICAL SPECTRAL POWER DISTRIBUTION



CIRCUIT DIAGRAM



LAMP

Reference no.	Watts	Length mm	Diameter mm	Arc length mm	Cap	Life hours
91-7480	1800	256	22	190	R7s	500

Compact source mercury iodide projector lamp-400W

DESCRIPTION

The 400W compact source iodide lamp gives white light of good colour rendering properties at an efficiency of 80L/W. The source size is approximately 9 x 5 mm and the brightness is about 8000 candelas per square cm.

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

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

APPLICATIONS

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

In general, considerations of source size, lamp size, lamp rating and efficiency indicate that it can be used in applications which at present use 100V-240V hard glass filament projector lamps of 250W-1000W rating to give a substantial advantage in terms of either increased light output or a reduction in input power and heat. It is useful in high-powered slide projectors and theatre spotlights (especially follow-spots), in overhead projectors, projection microscopes, enlargers and cine projectors. It is suitable for colour photography using daylight colour-film stock.

CONTROL GEAR See pages 304, 305.

LAMPHOLDER

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

DIMENSIONS

(in millimetres)

Arc length	9 ± 1
Arc size	9 x 5
Overall length (max)	55
LCL	34 ± 1
Diameter (max)	30
Pin length (min)	8.5
Pin spacing	9.0 ± 0.5
Pin diameter	0.76

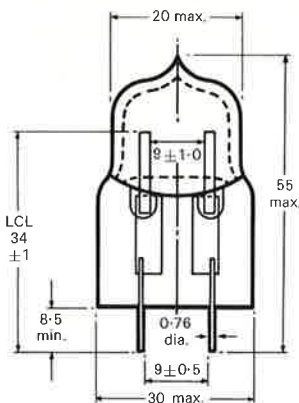
LIFE

Nominal objective: 500 hrs

OPERATING POSITION

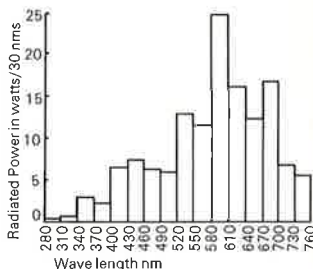
Universal

LAMP REFERENCE NUMBER 99-0201

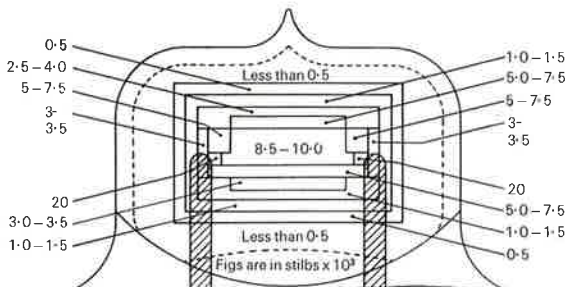


All dimensions in mm

TYPICAL SPECTRAL POWER HISTOGRAM



TYPICAL BRIGHTNESS DISTRIBUT DIAGRAM



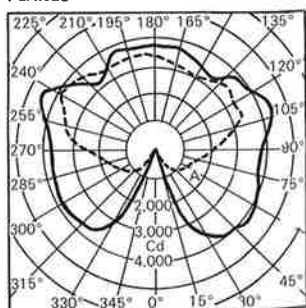
ELECTRICAL CHARACTERISTICS

Supply volts a.c.	2 20 240
Arc watts nom.	400
Arc volts nom.	100
Arc current (amps) nom.	5
Run up time (secs)	50
Re-starting time (mins)	3/5

LUMINOUS CHARACTERISTICS

Initial lum. eff. (min)	80 lumens/watt
Lumen maintenance	85%
Colour rendering	Good
Chromaticity co-ordinates	x=0.432 y=0.382

TYPICAL CANDLEPOWER DISTRIBUTION IN VERTICAL PLANES



A - through electrodes
B - normal to electrodes



Compact source mercury iodide projector lamp—1000W

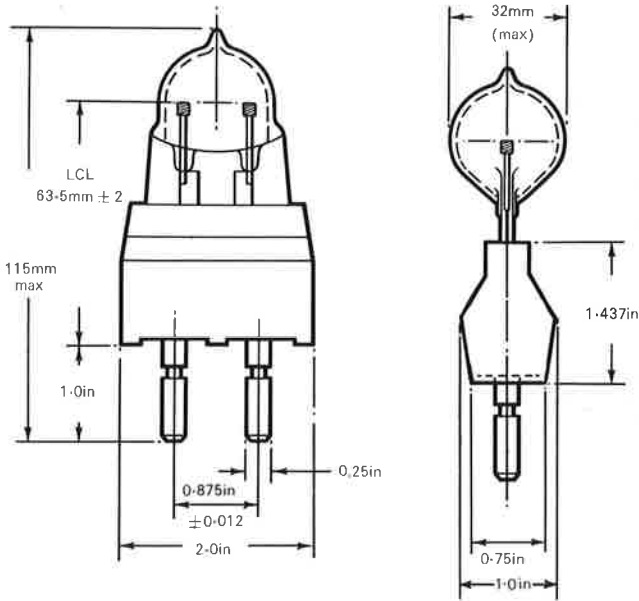
LAMP REFERENCE NUMBER 99-0221

DESCRIPTION

The 1000W compact source iodide lamp gives white light of good colour rendering at an efficacy of 90 L/W for 200 hours life. Somewhat unconventional in appearance, the lamp is extremely robust. It can be readily fitted into existing equipment and simplifies the design of new equipment.

APPLICATIONS

The high efficacy, robustness and small size of this lamp make it eminently suitable for projector purposes such as for follow spotlights. For photographic purpose it is suitable for use with daylight colour film stock.



ELECTRICAL CHARACTERISTICS

Supply volts	240
Arc watts	1000
Arc volts	70–85
Arc current (amps)	15
Run-up time (secs)	30
Re-start time (mins)	2–5

**DIMENSIONS
(in millimetres)**

Arc length	14–15
Overall length (max)	115
Light centre length	63.5±2
Diameter (max)	32
Cap	Medium Bipost—G22

LUMINOUS CHARACTERISTICS

Initial efficiency	90 lumens/watt
Lumen maintenance	90%
Colour rendering	Good
Chromaticity coordinates	x=0.395 y=0.395 CV 3.5%

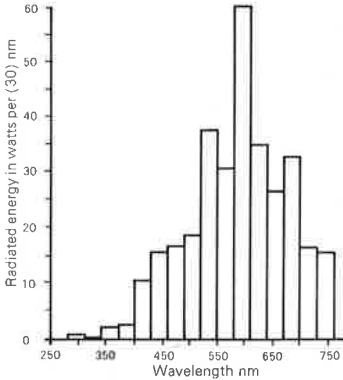
LIFE

Nominal objective 200 hours

OPERATING POSITION

Universal

**TYPICAL SPECTRAL POWER
HISTOGRAM**



Compact source metal halide hot re-strike lamp 1000W CSI

DESCRIPTION

The 1kW CSI compact source iodide lamp (reference no. 99-0421) is a modified form of the standard 1kW CSI (reference no. 99-0221) in which the lamp terminations have been modified to give better insulation so enabling the lamp to be restarted instantly when hot.

APPLICATIONS

The high efficiency, robustness, and small size of this lamp makes it eminently suitable for cinema and television lighting use. For photographic purposes it is suitable for use with daylight colour film stock.

ELECTRICAL CHARACTERISTICS

Supply volts	220, 240
Arc watts	1000
Arc volts	70/85
Arc current (amps)	15
Run-up time (secs)	30
Restart time	Instantaneous

DIMENSIONS

(in millimetres)	
Overall length	118 max.
L.C.L.	63.5 ± 2
Diameter	32 max.
Arc length	14-15
Cap	Bipost G38

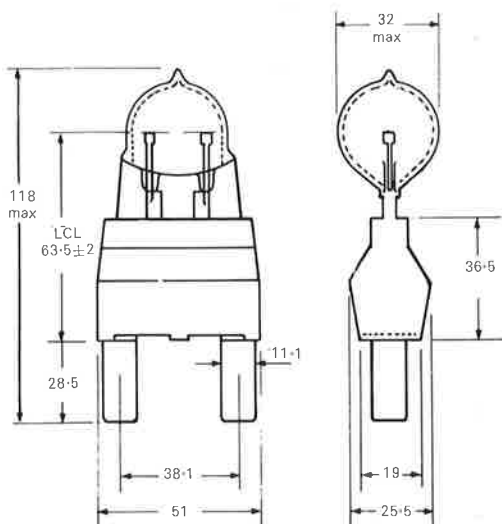
LUMINOUS CHARACTERISTICS

Initial efficiency	90 lumens/watt
Lumen maintenance	90%
Horizontal candle power	Approx. 10,000 candelas
Centre arc brightness	8,000 Stilbs
Life	200 Hours
Operating position	Universal
Chromaticity co-ordinates	$x = 0.395$ $y = 0.395$ $CV = 3.5\%$
Colour rendering	See spectral curve

CONTROL GEAR

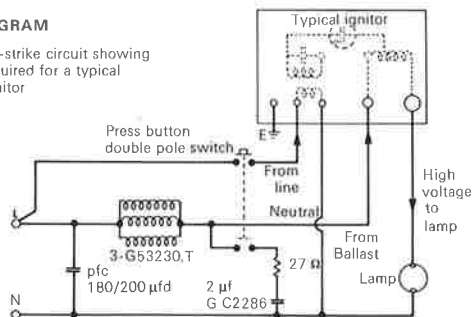
Three chokes G53230T in parallel, PF correction capacitors and 25kV minimum output* starter unit. Recommended Type, Walter Bausch—type 420, or IREM Type A-1530.
See circuit diagram.
Chokes and capacitors available as gear tray assembly OMG B3C8.

*As measured by a sphere gap to BS358. Spikes approximately double this value may be recorded on an oscilloscope.



CIRCUIT DIAGRAM

1kW CSI hot re-strike circuit showing connections required for a typical high voltage ignitor



All dimensions in mm

INSTALLATION

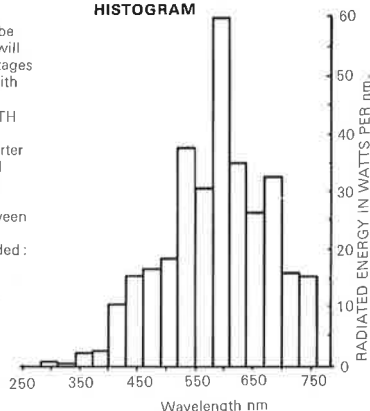
Standard G38 lampholders should not be used with this lamp and circuit as they will not necessarily carry the high pulse voltages required for hot restart. A lampholder with well insulated sockets is necessary.

Suitable lampholder: BENDER & WIRTH type 938/223.

Short, well insulated leads between starter and lamp are essential to prevent actual arcing and to minimise pulse losses by 'brushing'. The following minimum clearance and creepage distances between the hot lead and any adjacent metal, whether earthed or not, are recommended:

- (1) Between smooth surfaces 15mm.
 - (2) Between sharp projections 30mm.
- Creepage distances i.e. bridged by an insulating surface 30mm.

TYPICAL SPECTRAL POWER HISTOGRAM



Sealed beam compact source iodide lamp—1000W

DESCRIPTION

The 1kW sealed beam compact source iodide lamp consists of the standard 1kW CSI lamp 99-0221 (see page 355) enclosed in a 205mm/8in diameter sealed beam reflector envelope. This results in a beam intensity of 1.5 million candelas with a beam spread of 18° (to 0.1 peak intensity).

APPLICATIONS

Floodlighting, especially for filming and TV outside broadcasts; suitable for use with daylight colour film stock; also as a general replacement for carbon arcs.

ELECTRICAL CHARACTERISTICS

Supply voltage	220, 240 a.c.
Arc watts	1000
Arc volts	70/85
Arc current (amps)	15 approx.
Run-up time (secs)	50
Restart time (mins)	5

DIMENSIONS

(in millimetres)

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

LUMINOUS CHARACTERISTICS

Initial beam candlepower (peak)

1.5 million candelas

Beam spread $\frac{1}{2}$ peak $\frac{1}{3}$ peak $\frac{1}{10}$ peak

$\pm 3^\circ$ $\pm 4^\circ$ $\pm 6^\circ$ $\pm 9^\circ$

Colour rendering Good

Chromaticity co-ordinates $x=0.395$
 $y=0.395$
 $CV=3.5\%$

LIFE

Nominal objective 1000 hours

OPERATING POSITION

Universal

CONTROL GEAR (see pages 304,305)

Control gear and box, G 53255, consisting of series ballast circuit and high voltage pulse starter unit. The starter unit is mounted on a detachable chassis and may be removed and fixed separately.

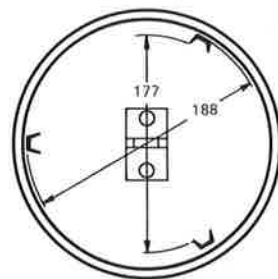
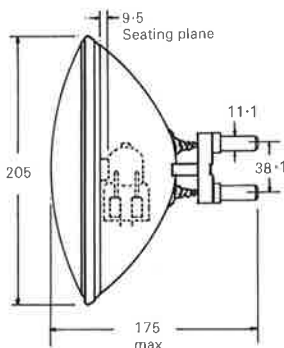
This enables the starter unit to be mounted on the lamp housing ensuring a short, totally enclosed HT lead.

LAMP FITTINGS (see page 234)

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

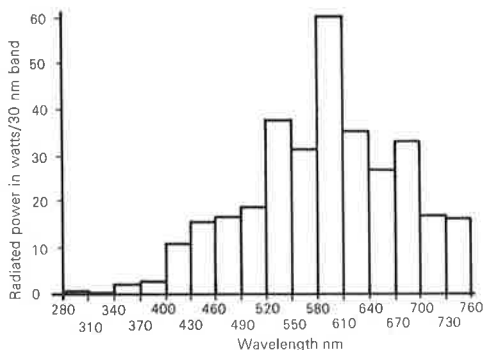
A complete gear box G 53255 is not required with this fitting. Only the ballast and capacitor tray assembly (Catalogue no. OMG B3C8) is needed.

LAMP REFERENCE NUMBER 99-1222



All dimensions in mm

SPECTRAL ENERGY HISTOGRAM



WARNING

The unit generates high voltage pulses for lamp starting. Safety precautions should be taken during installation and operation of the unit.

The control unit and associated lamp house must be earthed. The HV cable should be protected from accidental damage.

The supply must be disconnected before servicing. For outdoor use the lamp must be protected from rain.

Linear metal halide lamp —Type MBIL 750W

Supply voltage 200/250 a.c.

LAMP REFERENCE NO. 91 7461

DESCRIPTION

The lamp consists of a quartz tube in which an electrical discharge takes place between tungsten electrodes in an atmosphere of mercury-vapour to which has been added certain metal halides. The halides are chosen to give a high efficacy with good colour appearance and colour rendering approximating to daylight.

The lamp is designed to be used with a projector ON1600 (See page 233) with which it forms an integral unit.

APPLICATIONS

Outdoor floodlighting.

LAMP CHARACTERISTICS

Rating	750W
Arc volts	500
Operating current	1.75 amp
Run-up time	2½ mins
Light output: initial	67000 lumens
throughout life	58500 lumens

LIFE

Nominal objective 5000 hours

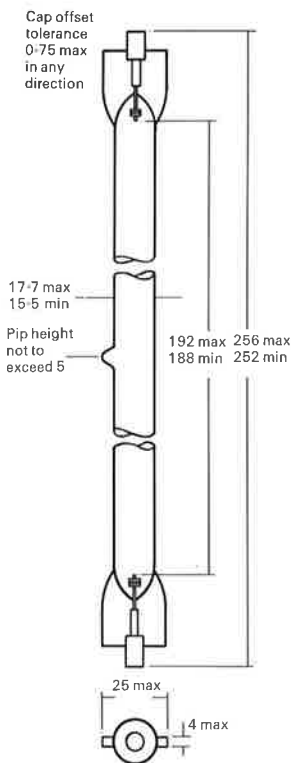
OPERATING POSITION

Horizontal

WARNING

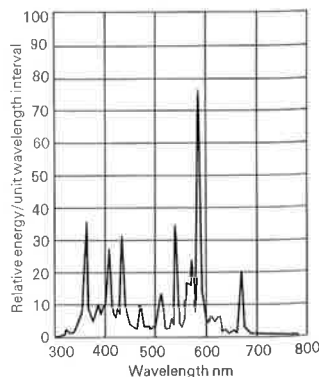
The light emitted by the bare lamp should not be observed with the naked eye as it emits short wave u-v radiation. This radiation is filtered out by the cover glass of the projector ON1600.

The arc tube should not be touched with the bare hand, but if this is unavoidable it should be cleaned with methylated spirit before operation, to avoid crazing of the surface.



All dimensions in mm

SPECTRAL DISTRIBUTION



Metal halide floodlighting lamp—Type MBIL 1600W

DESCRIPTION

This lamp consists essentially of an arc burning between tungsten electrodes in an atmosphere of mercury vapour and additional metallic halides enclosed in a tubular quartz bulb. The halides are chosen to give a high efficacy light output of good colour rendering and colour appearance approximating to daylight. The lamp is designed to operate with projector ON 1600

APPLICATIONS

The fitting was originally designed and used for the floodlighting of football stadia, in which it has proved highly successful. It can also be used for general floodlighting. Its colour-rendering properties are good and allow its use in colour television.

LAMP CHARACTERISTICS

Rating	1600W
Caps	Ceramic
Bulb finish	Frosted
Operating volts	450
Operating amps	3.75
Nominal lumens (initial)	135000
Nominal lumens (throughout life)	115000
Run-up time (mins)	2

CONTROL GEAR See Control Gear section.

LIFE

Objective 3000 hours.

OPERATING POSITION

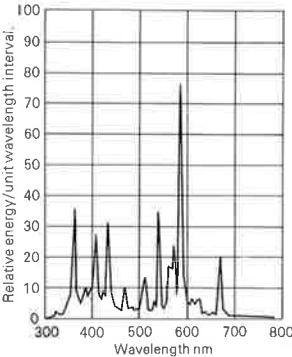
Horizontal.

SAFETY PRECAUTIONS

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

LAMP REFERENCE NUMBER 91-7475

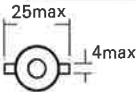
TYPICAL SPECTRAL DISTRIBUTION CURVE



Cap offset tolerance 0.75 max in any direction

17.7 max
15.5 min
Pipe height not to exceed 5

192 max
188 min
258 max
252 min



All dimensions in mm

Metal halide photoprinting lamp —Type MBIL 1200W

DESCRIPTION

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

GENERAL APPLICATION

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

LAMP CHARACTERISTICS

Rating	1200W nominal
Supply volts	240V 50Hz
Arc volts	350 ± 30
Arc current (amps)	4
Run-up time (mins) approx.	2

CAP

Ceramic

LIFE

Objective 500 hours

OPERATING POSITION

Horizontal

CONTROL GEAR

See page 310.

SAFETY PRECAUTIONS

The light emitted from the lamp or the reflector should not be observed with the naked eye.

If the tube has been handled, it must be cleaned with methylated spirits before operation.

Owing to the high open-circuit voltage of the control gear, the lamp enclosure must be provided with a lock which automatically switches off the supply when the enclosure is opened.

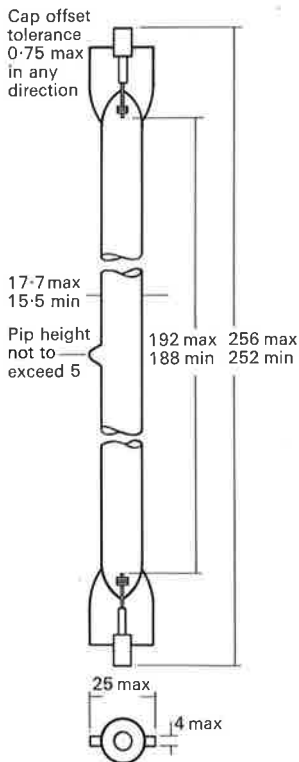
LAMPHOLDER ASSEMBLY

A lampholder assembly GL1153 has been designed for use with these lamps.

SIMMERING CONDITIONS

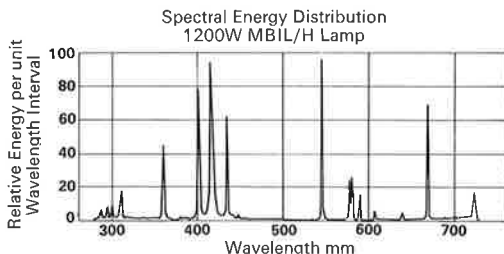
The lamp may be operated under simmering conditions at approx. half power. Circuit details on application.

LAMP REFERENCE NUMBER 91-7470



All dimensions in mm

TYPICAL SPECTRAL DISTRIBUTION CURVE



Linear metal halide lamp—Type MBIL 2kW

Reference no. 91-7484

DESCRIPTION

This 2kW MBIL lamp consists of an arc between tungsten electrodes in an atmosphere of mercury vapour and additional metal halides enclosed in a linear quartz bulb. The halides are chosen to ensure maximum radiation in the 360 to 450 nm region.

APPLICATIONS

Photoprinting purposes in the graphic arts industry, e.g. diazo printing, photo-resists, etc. The u-v output enables faster printing speeds than those obtained from conventional carbon arcs.

PHYSICAL CHARACTERISTICS

Arc tube diameter	22mm
Arc length	148mm
Overall length	215mm
Caps	Ceramic with 12in leads
Operating position	Horizontal with exhaust pip uppermost

ELECTRICAL CHARACTERISTICS

Supply voltage	380/415V
	3 Phase 50Hz
Arc watts	2000
Arc volts	250 ± 25
Arc current	8.4 amps nominal
Run-up time	Approx. 1 minute
Objective life	200hrs. continuous burning at 2kW. 1000 hrs. under simmering conditions with 2kW at exposures only. See circuit diagram.

OZONE

This lamp is designed to prevent formation of toxic ozone.

CONTROL GEAR

2 Chokes ref: G 53299 in parallel with starter unit ref: G 53279 and 2 capacitors GC 2275. In addition, for simmering operation a relay type PO3000 is recommended.

SAFETY PRECAUTIONS

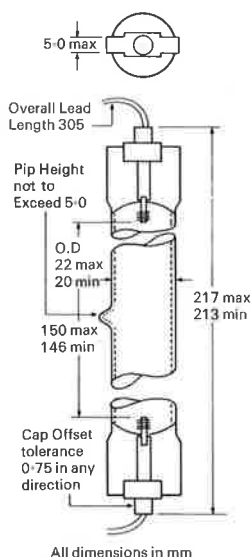
The light emitted from the lamp or reflector should not be observed with the naked eye. The lamp arc tube should not be touched with the bare hand, but, if this is unavoidable, it should be cleaned with a methylated spirit damped cloth before operation.

INSTALLATION

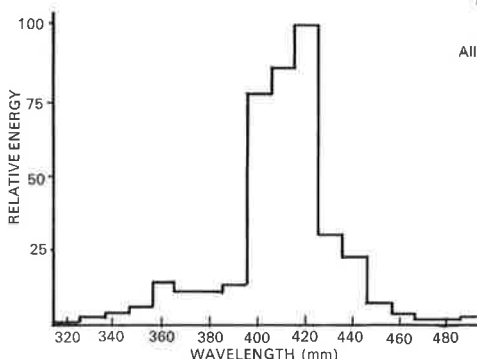
The lamp is designed for use in an enclosure with some general air flow over and around the lamp. The lamp will only operate satisfactorily if the bulb wall temperature is between 600°C and 750°C, with a maximum lamp seal temperature adjacent to the cap of 350°C.

EXPOSURE CONTROL

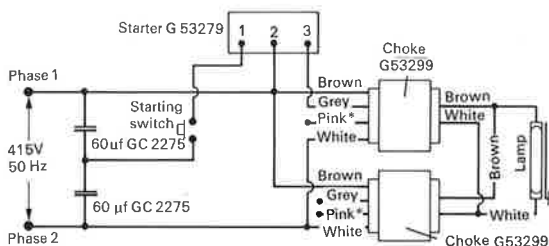
It is recommended that a simple shutter be used for short or repeated exposures to avoid delay in restarting and running-up after lamp extinction. Alternatively, the lamp can be simmered at approximately half power by disconnecting one choke except during actual exposure.



SPECTRAL ENERGY DISTRIBUTION CURVE:
2kW MBIL LAMP



2 kW/1 kW MBIL SIMMERING CIRCUIT FOR ACROSS PHASE OPERATION



The lamp can be simmering at 1 kW by the inclusion in the above circuit of a relay to disconnect one choke. Details on application.

For 380V 50Hz operation:

- Top choke –** Remove grey lead from starter terminal 3 and connect phase 1. Remove existing brown lead from phase 1 and re-connect to starter terminal 3.
- Bottom choke –** Remove brown lead from phase 1 and replace with the grey. *Ignitor lead pink is not required when starter G 53279 is used.

400/800W metal halide photoprinting lamps— Type MBI PAR 64, Graph—X 420 and Graph—X 365

Description

High pressure metal halide quartz arc lamps enclosed in sealed beam envelopes with internal reflector, providing radiation primarily in the 417 nm and 365 nm wavebands. The unit is fitted with a spreader lens to give an elliptical light distribution capable of giving reasonably uniform radiation over a 36in x 24in area at a distance of 2-3ft.

The lamp circuit operates either on 400W or 800W with appropriate control gear.

Application

In the photoprinting field, especially for diazo and photo resist printing as replacement for carbon arcs. By using this unit printing times can be reduced by factors of 4 to 1 or more with a reduction in electrical power. The Graph -X 420 (ref. 91-9828) is designed for use with those coatings which are responsive to 417 nm radiation; the Graph -X 365 (ref. 91-9827) for those coatings requiring 365 nm radiation.

Electrical characteristics

400W Operation

Arc watts	400
Arc volts	105 ± 15
Arc Current	4.4 amps
Run-up time	2 minutes
Restrike time	7/10 minutes

800W Operation

Arc watts	800
Arc volts	110 ± 15
Arc Current	9 amp
Run-up time	—
Restrike time	—

Switching from 400W to 800W
Instantaneous extra u-v output

Life

400W

1000 hours nominal

800W

100/200 hours nominal
(continuous operation)

If run at 800W for the duration of the exposure, little reduction in total life.

Lamp reference no.

Graph -X 420 91-9828

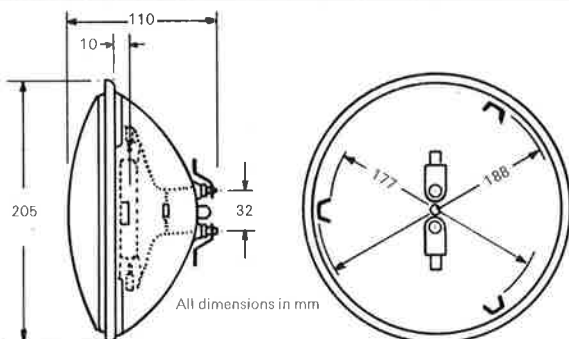
Graph -X 365 91-9827

Control gear

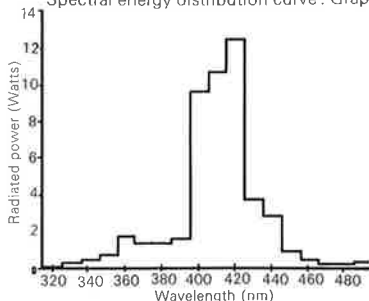
400W operation see circuit diagram.
For 800W operation additional choke
53230T required. Complete circuit
details on application.

Lamp Fitting

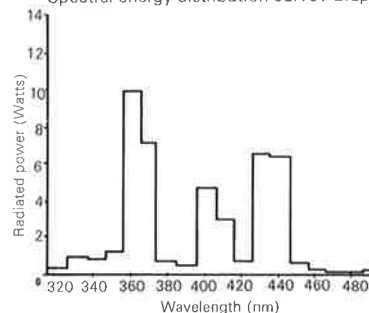
A special fitting (DHIP/S400) has
been designed for use with this
lamp at 400W only. See page 363.



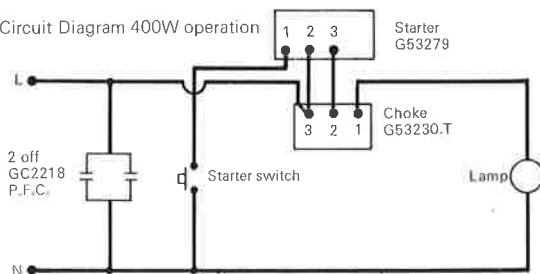
Spectral energy distribution curve: Graph—X 420



Spectral energy distribution curve: Graph—X 365

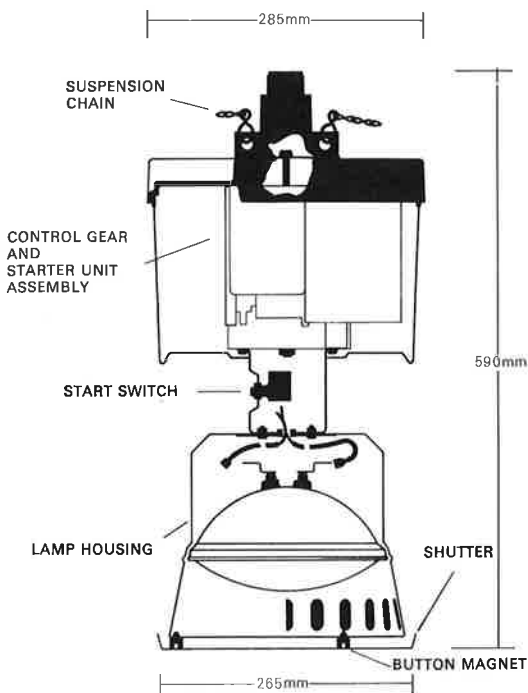


Circuit Diagram 400W operation



For 220V supplies reverse connections at 2 and 3 on Choke G53230T

Graph-X Sealed Beam lamp unit for photoprinting



DHIP/S400 GRAPH-X FITTING

This fitting is designed for use in the Graphic Arts Industry to accommodate a 400/800W MBI Sealed Beam Photoprinting lamp (ref : 91 9827, 91 9828), for exposing of platemaking, colour proofing, photo-resist and diazo material. The fitting incorporates control gear consisting of a choke, capacitors and starter unit in a cylindrical can to which is attached a reflector in anodized aluminium which houses the lamp. A magnetically held shutter is provided to cover the reflector front. A push button is included in the neck of the fitting for starting the lamp.

RANGE

Rating	400W
Lamp Type	400/800W MBI Sealed Beam GRAPH-X 365 and GRAPH-X 420
Cat. No.	DHIP/S400
Weight Including Lamp	23lb (10.5kg)

COMPONENTS

Control Gear Housing	DHIP/400
Including Gear	DHS
Reflector/Shutter	

Pulsed xenon photoprinting lamps—linear types

DESCRIPTION

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

The spectrum of the radiation is virtually continuous extending from the ultra-violet through the visible into the infra-red. The colour of the visible radiation is very similar to noon sunlight having a colour temperature of 5600°K. Light output is controlled by the gear which pulses the lamp for a specific period.

APPLICATION

Photo reproduction

Until recently the standard light source for copy board illumination has been the open carbon arc. Over the past few years special discharge lamps have been used, particularly pulsed xenon lamps.

CONTROL GEAR

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

Suitable gear for operating the lamp is manufactured by Theimer Ascorlux and Littlejohn.

LAMP SPECIFICATION

Type	Pulsed Xenon Arc
Cap	Ceramic with flexible leads
Arc voltage	110 ± 5
Supply voltage	200/250V 50Hz
Pulsed frequency	100Hz
Design wattage	1500 and 3000
Efficacy	25 Lumens per Watt

OPERATING POSITION

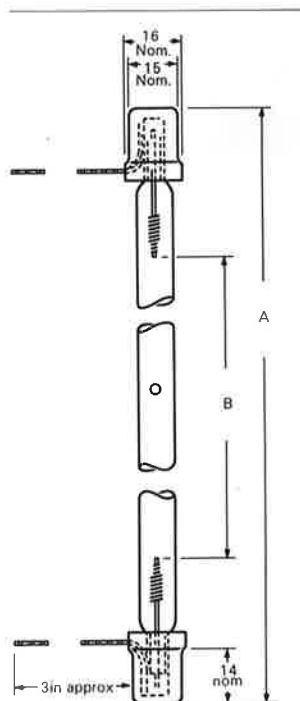
Universal : forced cooling essential.

LIFE

500 hours

LAMPS

Rating	Lamp Reference no.
1500W	98-2015
3000W	98-2030



Rating	A	B
1500W	392 ± 3	310 approx.
3000W	695 ± 3	615 approx.

All dimensions in mm unless otherwise stated

Pulsed xenon photoprinting lamps—helical types

DESCRIPTION

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

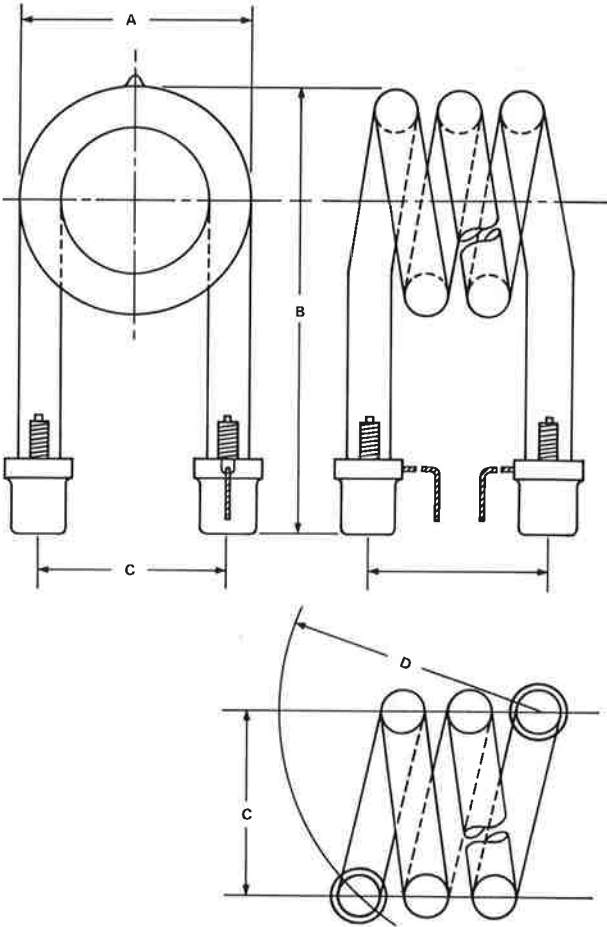
For some equipment it is necessary to include a striker starting device on the 4kW lamp.

LAMP SPECIFICATION

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

LIFE

200 hours.



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

All dimensions in mm

Linear source xenon lamps — Type XB

DESCRIPTION

Linear source xenon lamps consist of an arc burning between tungsten electrodes operating in an atmosphere of pure xenon contained in a tubular quartz bulb.

The spectrum of the radiation is virtually continuous extending from the ultra-violet through the visible into the infra-red. The colour of the visible radiation is very similar to noon sunlight with a colour temperature of approximately 5600°K. Light output may be modified over a wide range, without appreciably altering the colour of the light, by adjusting the power input.

On starting these lamps full output is given almost immediately. The lamps require a starter unit to initiate the arc, and a series inductance and power factor correction capacitor are also required.

APPLICATION

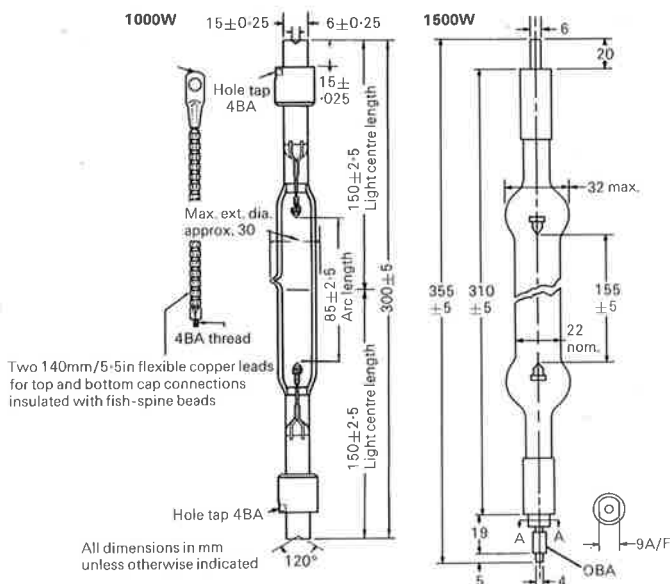
High speed photography and cinematography
Colour matching
Fadeometer testing
Graphic arts
Optical instruments
Laboratory and general scientific purposes

OPERATING POSITION

Vertical $\pm 15^\circ$

CAPS

Special cylindrical



TYPICAL SPECTRAL POWER DATA

Spectral band	Spectral Power (Watts)		Spectral band	Spectral Power (Watts)	
	1 kW	1.5 kW		1 kW	1.5 kW
250-280	2.20	3.3	640-670	9.10	13.6
280-310	2.20	3.3	670-700	10.0	15.0
310-340	3.08	4.6	700-730	9.8	14.8
340-370	4.50	6.6	730-760	10.62	16.2
370-400	7.0	10.5	760-790	9.83	14.8
400-430	7.7	11.6	790-820	12.75	19.1
430-460	8.55	12.8	820-850	21.5	32.5
460-490	11.0	16.5	850-880	13.2	19.8
490-520	8.75	13.1	880-910	26.4	39.5
520-550	8.75	13.1	910-940	17.6	26.5
550-580	8.97	13.33	940-970	14.9	22.3
580-610	9.10	13.6	970-1000	16.3	24.5
610-640	9.30	13.9			

RANGE

Reference no.	Rating	Supply Volts	Arc Length (mm)	Lamp operating		Lumens	Life Hours
				Volts	Amperes		
98-0125	1000W	200/250V 50Hz	85 ± 2.5	42	25	22000	500
98-0150	1500W	200/250V 50Hz	155 ± 5	65/80	20/25	33000	1500

Compact source xenon flash-tube—Type FA5

DESCRIPTION

The arc of the 230W type FA5 flash-tube operates between tungsten electrodes in an atmosphere of pure xenon contained in a tubular glass envelope. It is designed to be operated continuously from mains with an inductive ballast, or as a powerful electronic flash-tube on a 1000–2000V supply.

Under continuous operating conditions its spectral characteristics are those of a normal xenon arc but under high-intensity flash conditions there is a slight shift towards the blue end of the spectrum, so that the colour approximates to that of North-sky daylight. Colour-rendering is excellent.

Full light output is reached almost immediately and the light output may be modified over a wide range by adjusting the power input without appreciably altering the colour of the light.

APPLICATIONS

1. FLASH TUBE

The unusually small size and high power of the light-source make it especially suitable for use with optical systems. Setting-up and focussing can be facilitated by continuous operation of the tube. It is used in high-speed photography and for stroboscopy.

2. CONTINUOUS OPERATING

This is mainly useful where low initial cost of lamp and circuitry is of prime importance. Where the highest arc brightness or efficacy are needed one of the range of compact source quartz xenon lamps should be used.

Lamps are used in optical instruments, for the graphic arts, for colour-matching and laboratory and general scientific work.

SINGLE FLASH OPERATION

Electrical characteristics

Operating voltage: 1000–2000V

Maximum loading: 150 joules

Maximum repetition frequency: 1 every 10 seconds.

Trigger voltage: 12kV.

Approximate luminous characteristics

Total light-output: 1500 lm/secs

Peak lumen output: 2.0×10^6 lm.

Approx. flash duration to $\frac{1}{2}$ peak: 1.0 millisecond.

Average objective life: 5000 flashes.

NOTE

The trigger ring round the tube consists of a single turn of wire at a point approximately half-way up to the top electrode.

The spark-gap is an air-gap with approximately 5kV breakdown (4mm gap; needle points).

The basic circuit has been found satisfactory under single flash conditions, and data given above only applies to it. The tube may be operated at other loading and repetition rates if the maximum mean power (230W) is not exceeded. At higher frequencies and mean powers special pulse forming circuits will be needed.

WARNING

The design and construction of these high tension circuits should only be attempted by persons familiar with the problems involved as they can be dangerous and even lethal.

CONTINUOUS OPERATION

Electrical characteristics

Lamp rating 230W

Minimum supply voltage 200V

Lamp operating voltage 13.5V

Lamp operating current 18.5A

Approximate luminous characteristics

Light output 2750 lm

Efficacy 12 L/W

Mean horizontal c.p. 300 cds

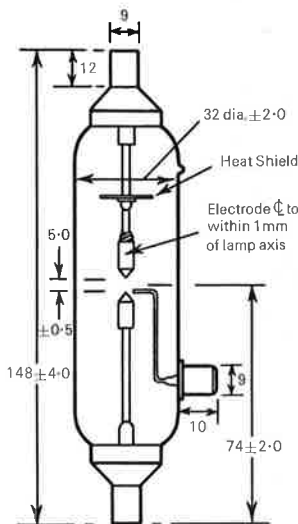
Centre arc luminance 2000 stils

Average objective life 500 hours

NOTE

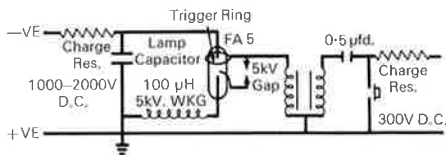
Four or five type G 53235 chokes each passing approximately 4 amps may be wired in parallel to form the inductance. Tappings must be adjusted to give 18.5 amps. Other constant current (or power) circuits and alternative starting circuits may be used if more convenient.

LAMP REFERENCE 95—2005

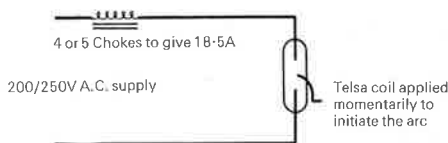


All dimensions in mm

BASIC CIRCUIT FOR SINGLE FLASH OPERATION



BASIC CIRCUIT FOR CONTINUOUS OPERATION

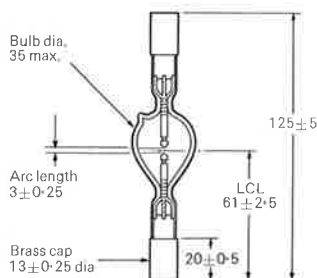
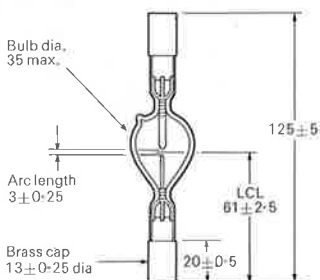


Compact source xenon lamps—Type XE/D

250W/D.C.

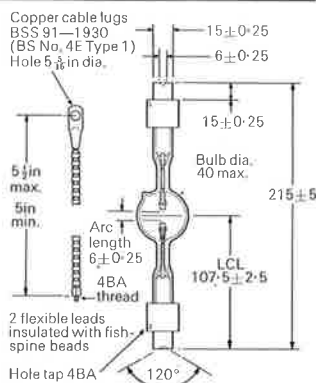
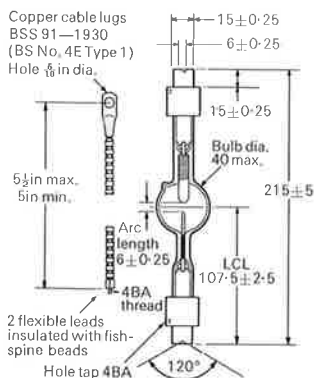
250W/A.C.

All dimensions in mm unless otherwise stated.



500W/D.C.

500W/A.C.



DESCRIPTION

The quartz bulb of a xenon compact source discharge lamp encloses electrodes between which the arc is struck in a high pressure atmosphere of pure xenon. The very compact high-brightness light-source emits radiation in a virtually continuous spectrum extending from the ultra-violet region through the visible into the infra-red. There is a pronounced peak in the latter at about 900nm. The lamp is thus a powerful u-v and i-r radiator as well as a light-source. The colour temperature of the source is approximately 5600K, similar to noon sunlight. Colour rendering is excellent.

The light output may be modified over a wide range by adjusting the power input.

HOUSING

Housings reference G.M6077 and G.M6078 are available for use with xenon lamps. See page 371.

Compact source xenon lamps—Type XE/D

RANGE

Reference no.	Rating Watts	Supply Volts	Arc size mm	Lamp operating		Lumens	Luminance*	Life Hours
				Volts	Amps			
98-0352	250	65 min. d.c.	3 × 2	16.5	15	5000	11000	1500
98-0351	250	200/250 a.c.	3 × 2	16	17	5000	10000	500
98-1002	500	65 min. d.c.	5 × 3	22	23	12000	20000	1000
98-1001	500	200/250 a.c.	5.5 × 3	20	27	11000	11000	500
98-1530	2kW 2 Electrodes	65 min. d.c.	5.5 × 4	25	80	70000	90000	1500
98-1520	2kW 3 Electrodes	35 min. d.c.	6 × 4	23.5	85	65000	70000	1500

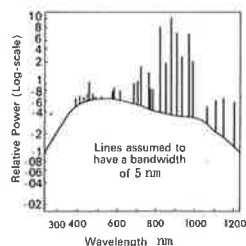
*Luminance = Average luminance of brightest circle of 2mm dia. in candelas/cm²

TYPICAL POWER DISTRIBUTION DATA FOR XENON LAMPS

Spectral Band nm	Spectral power watts				
	250W A.C. & D.C.	500W D.C.	500W A.C.	2kW D.C. 2 Electrode	2kW D.C. 3 Electrode
250-280	0.50	1.52	1.40	8.4	7.7
280-310	0.80	2.04	1.87	9.3	8.5
310-340	1.10	2.76	2.53	12.5	11.4
340-370	1.38	3.24	2.97	17.8	16.3
370-400	1.65	4.07	3.74	22.5	20.6
400-430	1.75	4.45	4.07	26.0	23.7
430-460	1.95	4.67	4.29	28.1	25.7
460-490	2.30	5.75	5.28	33.9	31.0
490-520	2.00	4.95	4.55	28.5	26.0
520-550	2.00	4.80	4.40	27.4	25.2
550-580	2.05	4.90	4.50	29.2	26.7
580-610	2.10	4.90	4.50	29.0	26.5
610-640	2.15	4.80	4.40	28.7	26.2
640-670	2.10	4.55	4.18	26.3	24.0
670-700	2.30	5.00	4.60	27.6	25.0
700-730	2.20	4.95	4.55	27.9	25.5
730-760	2.40	5.40	4.95	30.8	28.2
760-790	2.25	5.15	4.73	27.9	25.5
790-820	2.90	6.37	5.85	35.0	32.0
820-850	4.90	11.20	10.30	68.3	62.5
850-880	3.05	7.20	6.60	35.5	32.5
880-910	6.00	13.10	12.00	77.0	70.5
910-940	4.00	9.70	8.90	56.9	52.0
940-970	3.40	7.70	7.05	47.0	42.9
970-1000	3.70	9.10	8.36	52.5	48.0

These figures are accurate to 10% in the visible and infra-red regions but may be up to 25% in error in the ultra-violet.

TYPICAL SPECTRAL POWER DISTRIBUTION OF COMPACT SOURCE XENON LAMP



Standard xenon lamp '4 in 1' housings

GENERAL SPECIFICATION

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

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

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

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

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

250W HOUSING CATALOGUE no. G.M6078

Dimensions

Base	6in x 6in
Overall height	10½in
Optical centre line height from table surface	5in
Weight	10lb

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

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

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

500W/2kW HOUSING CATALOGUE no. G.M6077

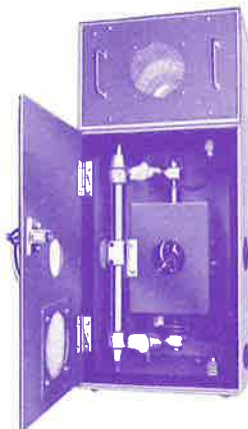
Dimensions

Base	12in x 12in
Overall height	26in
Optical centre line height from table surface	9.5 in
Weight	50lb

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



G.M6078



G.M6077

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

SAFETY REQUIREMENTS

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

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

ADDITIONAL FACILITIES

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

optical systems, provision has been made for Kinematic mounting. A special Kinematic base plate suitable for either housing, providing location for PT1 standard optical benches is available.

Other available accessories include –
Heat filters.

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

Enquiries for these additional features should be made to –
Goulding & Partners (Consultant Engineers) Ltd, 1a Essex Road, Acton, London W3
Telephone 01-992 6022.

Linear neon high intensity obstruction light

DESCRIPTION

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

APPLICATIONS

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

FITTINGS AND CONTROL GEAR

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

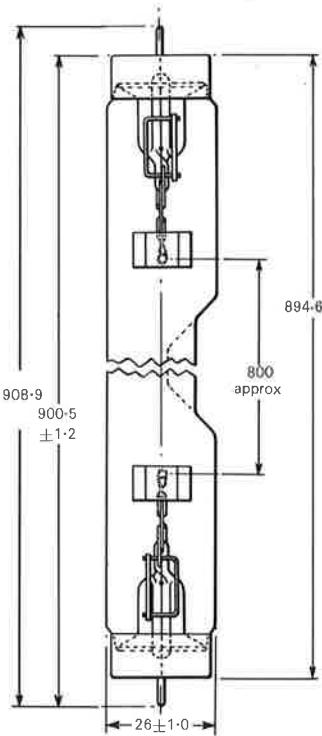
LAMP CHARACTERISTICS

Watts 160
Nominal arc current 1.33 amps
Nominal arc voltage 157
Initial light output 2000 lumens
Minimum light output at 4000 hours 1850 lumens
Rated life continuous burning 4000 hours
Rated life flashing 30 million flashes

DIMENSIONS

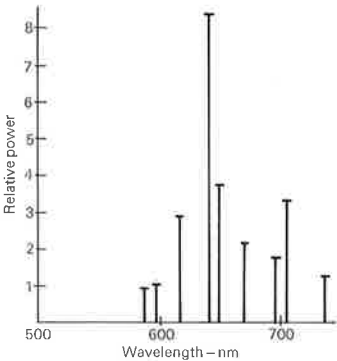
Diameter 26mm ± 1 mm
Overall length 909 mm, maximum
Caps G 13/10 \times 24 - bi-pin

LAMP REFERENCE NUMBER 98-4501



dimensions in mm

Spectral energy diagram



Index

Lamp information	374
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General Lamp Information

British Standards

Lamps described in this section comply with the following British standards where applicable:

BS 161. Tungsten Filament General Service Electric Lamps.

BS 555. Tungsten Filament Miscellaneous Electric Lamps.

BS 98. Dimensions of Screw Lamp Caps and Lampholders.

BS 52. Bayonet Lamp – Caps, Lampholders and BC adaptors.

Thorn Lighting Limited hold Licence nos. 5248, 5249, 5819, 5821, 7557 for the manufacture of lamps to BS 161.

European Standards

Lamps also comply with the following European standard where applicable:

IEC 64. Tungsten Filament Lamps for General Service.

Dimensions

The dimensions shown in this section are in millimetres and, unless otherwise stated, are maximum values.

Lamp cap code

IEC designation	Common designation	Description
B15d	SBC	Small bayonet cap
B22d	BC	Bayonet cap
B22d-3	3-pin BC	Bayonet cap – 3 pin
E12	CAND	Candelabra screw
E14	SES	Small Edison screw
E27	ES	Edison screw
E40	GES	Goliath Edison screw

Note: The first number group in the IEC designation represents the diameter of the cap in millimetres.

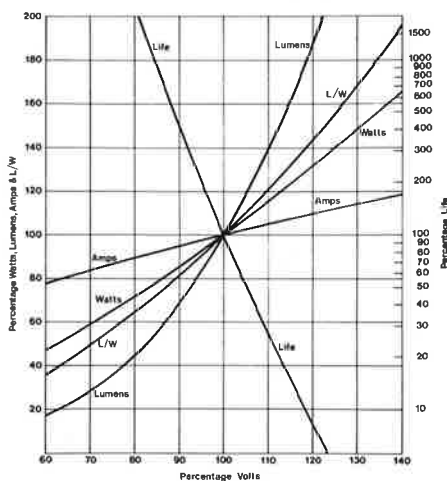
Lumen output

The figures given below are the nominal average lumens throughout life for 240V lamps. These values are given for the practical guidance of lighting engineers.

Watts	*Plus Lamps	*Neta Bulb	Single Coil Lamps
25	—	—	200
40	390	360	325
60	665	610	575
75	885	—	—
100	1260	1160	1160
150	2075	1770	1960
200	—	—	2720
300	—	—	4300
500	—	—	7700
750	—	—	12400
1000	—	—	17300

* Coiled coil.

Variation of tungsten filament lamp characteristics with change in voltage.



Effect of voltage on light output

The supply voltage is the main factor affecting the light output of tungsten filament lamps. If there is a 5% increase or decrease in the supply voltage there will be a 20% increase or decrease in the light output of the lamps.

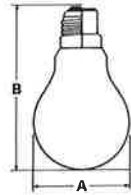
Life

The main factor affecting the life of a tungsten filament lamp is the voltage of the supply on which it is operating. Continual operation on a supply with a voltage (say) 5% above or below the correct voltage will approximately halve or double the life of the lamp (see graph above). Correct matching of lamp and supply is therefore important.

General lighting service lamps

PLUS LAMPS—COILED COIL

Watts	Voltages	Cap	Finish	Standard Pack
40	240 250	BC	Clear	100 and 25
40	240 250	BC	Pearl	100 and 25
60	240 250	BC	Clear	100 and 25
60	240 250	BC	Pearl	100 and 25
75	240	BC	Pearl	25
100	240 250	BC	Clear	100 and 25
100	220/230 240 250	BC	Pearl	100 and 25
100	240	ES	Pearl	25
150	240 250	BC	Clear	100 and 25
150	240 250	BC	Pearl	100 and 25
150	240	ES	Pearl	25



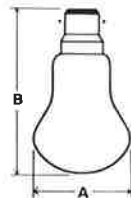
PLUS LAMP

	A	B
40 - 100W	BC 61	108.5
150W	BC 69	128.5

(For ES Caps add 1.5mm to length of BC equivalent)

NETABULB

Watts	Voltage	Cap	Finish	Standard Pack
40	240	BC	Silverlight	100 and 25
60	240	BC	Silverlight	100 and 25
100	240	BC	Silverlight	100 and 25
150	240	BC	Silverlight	100 and 25



NETABULB

	A	B
40, 60, 100W	61	103.5
150W	76	124.5

COLOURED

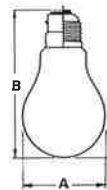
Watts	Voltages	Cap	Finish	Standard Pack
15	200/250	BC, ES	Amber, blue, green, pink, yellow, red	100*
25	200/250	BC, ES	Amber, blue, green, pink, yellow, red	100*
40†	200/250	BC, ES	Amber, blue, green, pink, yellow, red	100*
60†	200/250	BC	Amber, blue, green, pink, yellow, red	100*
60†	200/250	ES	Amber, blue, green, red, yellow	25
100†	200/250	BC	Amber, blue, green, pink, yellow, red	25

*Standard pack consists of 10 x 10 way packs per container.
†Not suitable for outdoor use unless enclosed for protection against rain.

COLOURED

	A	B
15W-60W	61	108.5
100W	69	128.5

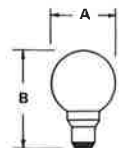
(For ES caps add 1.5mm to length of BC equivalent)



ROUND BULB FESTIVE (for Silverlight see page 377)

Watts	Voltage	Cap	Finish	Standard Pack
15	200/250	BC, ES	Amber, blue, green, red, yellow	50*
25	200/250	BC, ES	Amber, blue, green, red, yellow	50*

*Standard pack consists of 5 x 10-way packs per container



ROUND BULB

	A	B
BC	46	68.5
ES	46	72.5

All dimensions in mm

All dimensions in mm

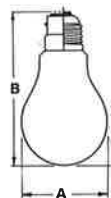
General lighting service lamps

SINGLE COIL

Watts	Voltages		Cap		Finish	Standard Pack
5-8	Nightlight	200/250	BC	Pearl	10	
15		240 250	BC	Pearl	25	
25		220/230 240 250	BC	Pearl	25	
25		240	ES	Pearl	25	
40		240	BC	Clear	25	
40 110		220/230 240 250	BC	Pearl	25	
40 110 120		240 250	ES	Pearl	25	
40		240	SBC	Pearl	25	
60 110		220/230 240 250	BC	Clear	25	
60 110 120		220/230 240 250	BC	Pearl	25	
60 110		240 250	ES	Clear	25	
60 110		220/230 240	ES	Pearl	25	
60		240	SBC	Pearl	25	
100 110 120		240 250	BC	Clear	25	
100 110 120		220/230 240 250	BC	Pearl	25	
100 110		240 250	ES	Clear	25	
100 110		240 250	ES	Pearl	25	
150 110		240 250	BC	Pearl	25	
150 110		240 250	ES	Pearl	25	
200		240 250	BC	Pearl	25	
200 110		240 250	ES	Pearl	25	
300 110 120		220/230 240 250	GES	Clear	10	
300 110		240	ES	Clear	10	
500 110 120		240 250	GES	Clear	10	
750		240 250	GES	Clear	10	
1000		240 250	GES	Clear	10	

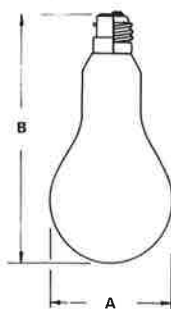
SINGLE COIL Extra low voltage

Watts	Voltages		Cap	Finish	Standard Pack
25	25	50	BC	Pearl	25
40	25	50	BC	Pearl	25
40	25		3pin BC	Pearl	25
40	25	50	ES	Pearl	25
60	25	50	BC	Pearl	25
60	25	50	ES	Pearl	25
100	25	50	BC	Pearl	25
300	50		GES	Clear	10



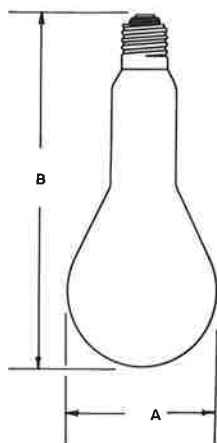
SINGLE COIL

15- 100W BC
A 61 B 108.5
(For ES Caps add 1.5mm to length of BC equivalent)



SINGLE COIL

150- 200W BC
A 61 B 164.5
(For ES Caps add 1.5mm to length of BC equivalents)



300W ES A 111.5 B 245
300- 500W GES A 111.5 B 239
750-1000W GES A 131.5 B 299

All dimensions in mm

Decorative lamps

PLAIN CANDLE

Watts	Voltage	Cap	Finish	Standard Pack
25	240/250	BC, SBC	Clear	50*
25	240/250	BC, SBC	Pearl	50*
25	240/250	BC, SBC, SES	Silverlight	50*
40	240/250	BC, SBC, SES	Clear	50*
40	240/250	BC, SBC	Pearl	50*
40	240/250	BC, SBC, SES	Silverlight	50*
60	240/250	BC, SBC	Clear	50*
60	240/250	BC, SBC	Pearl	50*
60	240/250	BC, SBC	Silverlight	50*

PLAIN CANDLE – COLOURED

Watts	Voltage	Cap	Finish	Standard pack
25	240/250	BC	Amber	50*
40	240/250	BC	Amber	50*

TWISTED CANDLE

Watts	Voltage	Cap	Finish	Standard Pack
25	240/250	BC, SBC	Clear	50*
25	240/250	BC, SBC	Pearl	50*
40	240/250	BC, SBC	Clear	50*
40	240/250	BC, SBC	Pearl	50*
60	240/250	BC, SBC	Clear	50*
60	240/250	BC, SBC	Pearl	50*

TWISTED CANDLE – TIPPED

Watts	Voltage	Cap	Finish	Standard Pack
40	240/250	BC	Amber tip, Pink tip	50*
60	240/250	BC	Amber tip, Pink tip	50*

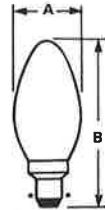
DECOR ROUND (For Decor Spots see page 380)

Watts	Voltage	Cap	Finish	Standard Pack
40	240/250	BC, ES	Clear	10
40	240/250	BC, ES	Silverlight	10
40	240/250	BC, ES	Amber, red, green, purple	10
40	240/250	BC, ES	Crown Silvered	10
60	240/250	BC, ES	Silverlight	10

ROUND BULB (For Coloureds see page 375)

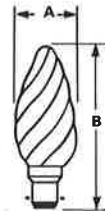
Watts	Voltage	Cap	Finish	Standard Pack
25	240/250	BC, SBC, SES	Silverlight	50*
40	240/250	BC, SBC, ES, SES	Silverlight	50*

Standard pack consists of 5 x 10-way packs per container.



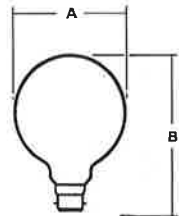
PLAIN CANDLE

	A	B
25W-40W BC	36	97
SBC	36	103
SES	36	104
60W BC	46	128
SBC	46	133



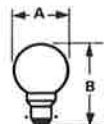
TWISTED CANDLE

	A	B
25W BC	36	100
SBC	36	104
40W-60W BC	47	128
SBC	47	133



DECOR ROUND

	A	B
40-60W BC	102	142.5
40-60W ES	102	144



ROUND BULB

	A	B
BC	46	68.5
SBC	46	74.5
SES	46	75.5
ES	46	72.5

All dimensions in mm

Special service lamps

FIREGLOW

Watts	Voltage	Cap	Finish	Standard Pack
60	200/250	BC	Lacquered	50
60	200/250	3-pin BC	Lacquered	50
60	200/250	2-prong	Lacquered	50

PYGMY SIGN

Watts	Voltages	Cap	Finish	Standard Pack
15	25	BC, SBC	Clear	50
15	50	BC, SBC, ES	Clear	50
15	60	BC	Clear	50
15	100/110	BC, SBC, ES, SES	Clear	50
15	120/130	BC, SBC, ES, SES	Clear	50
15	150	BC	Clear	50
15	200/250	BC, SBC, ES, SES	Clear	50
15	200/250	BC, SBC	Amber, Blue, Green, Pink Red, Yellow	50
25	200/250	BC, SBC, ES, SES	Clear	50

PYGMY SIGN — ROUGH SERVICE

Watts	Voltage	Cap	Finish	Standard Pack
15	200/250	BC, SBC, SES	Clear	50
25	200/250	BC, ES, SBC	Clear	50

SWITCHBOARD INDICATOR

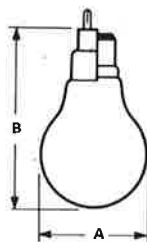
Watts	Voltage	Cap	Finish	Standard Pack
	200/260	BC	Clear	50

PILOT INDICATOR

Watts	Voltages	Cap	Finish	Standard Pack
6/10	50	SBC, CAND	Clear	25
6/10	100/130	SBC, SES, CAND	Clear	25
6/10	200/250	SBC, SES, CAND	Clear	25

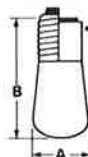
OVEN LAMPS

Watts	Voltage	Cap	Finish	Standard Pack
60	240/250	BC, ES	Clear	10



FIREGLOW

	A	B
BC	61	108.5
3-pin BC	61	108.5
2-prong	61	110.5



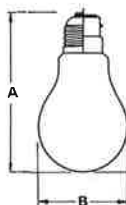
PYGMY AND SWITCHBOARD INDICATOR

	A	B
BC	29	59
ES	29	61
SBC	29	65
SES	29	66



PILOT INDICATOR

	A	B
SBC	19	43
CAND	19	48
SES	19	49



OVEN LAMP

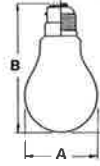
	A	B
BC	61	108.5
ES	61	110

Dimensions in mm

Special service lamps

ROUGH SERVICE

Watts	Voltages		Cap	Finish	Standard pack
40	110/120	200/250	BC, ES	Pearl	25
60	110/120	200/250	BC, ES	Pearl	25
100	110/120	200/250	BC, ES	Pearl	25

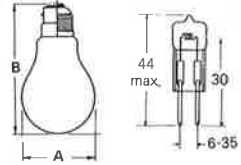


ROUGH SERVICE & SAFELITE

	A	B
40-60W	61	108-5
100W	69	128-5

TRAFFIC SIGNAL

Watts	Voltages		Nominal L.C.L.	Cap	Finish	Standard Pack
65	240/250		62	ES	Clear	25
65	250		65	BC	Clear	25
Tungsten halogen						
50	12	M32	30	Bi-pin G6-35	Clear	1
100	12	M28	30	Bi-pin G6-35	Clear	1



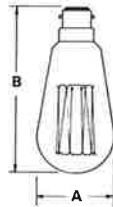
M32, M28

TRAFFIC SIGNAL

	A	B		A	B
65W ES	61	110	M32	8-5	44
65W BC	61	115	M28	11	45

CAGE, NAVIGATION

Watts	Voltages		Cap	Finish	Standard Pack
40	220/240		BC	Clear	100
60	220/240		BC	Clear	72



NAVIGATION

	A	B
40W	59	128
60W	65	145

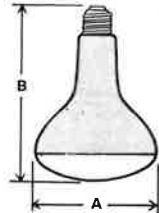
HEATING LAMPS

INFRA-RED REFLECTOR Standard bulb (NOT for domestic use)

Watts	Voltages		Cap	Finish	Standard Pack
150		200/250	ES	Satin	12
275		200/250	BC	Satin	12
275	100/130	200/250	ES	Satin	12
275		200/250	BC, ES	Clear	12

INFRA-RED REFLECTOR Hard glass bulb (Domestic and other uses)

Watts	Voltages		Cap	Finish	Standard pack
275		200/250	BC, ES	Clear Front	10
275		200/250	BC, ES	Red Front.	10



INFRA-RED REFLECTOR

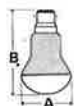
	A	B
150-275W	127-5	182-5

All dimensions in mm

Reflector lamps

CHELSEA For use with Chelsea Glass

Watts	Voltages	Cap	Finish	Standard Pack
40	240/250	BC	Clear Front	25

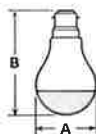


CHELSEA

40W A B
 61 103-5

CROWN SILVERED DISPLAY High volt

Watts	Voltages	Cap	Finish	Standard Pack
60	240/250	BC, 3PBC ES	Crown Silvered	25
100	240/250	3PBC, ES	Crown Silvered	25
60	240/250	3Pin BC ES	Crown Silvered - Lacquered Red, Blue, Green, Yellow	25

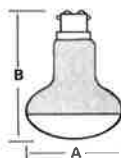


MAINS VOLTAGE DISPLAY

60 & 100W A B
 69 128-5

DECOR SPOT

Watts	Voltages	Cap	Finish	Standard Pack
40	240/250	BC, ES	Lacquered Blue, Green, Red, Yellow	10
60	240/250	BC, ES	Light Diffuse Front	10

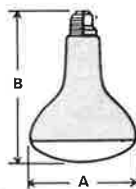


DECOR SPOT

40 & 60W A B
 81 113

INTERIOR DISPLAY REFLECTOR

Watts	Voltages	Cap	Finish	Standard Pack
75	240/250	BC, ES	Light Diffuse Front	10
75	240/250	BC, ES	Lacquered Blue, Green, Red, Yellow	10
100	240/250	BC, ES	Light Diffuse Front	10
150	240/250	BC, ES	Light Diffuse Front	10



REFLECTOR DISPLAY

75W and 100W A B
150W 96 139
 126-5 181
(For ES caps add 1-5mm to length of BC equivalent)

All dimensions in mm

Sealed beam lamps/Low volt display lamps

Par sealed beam spotlights and floodlights

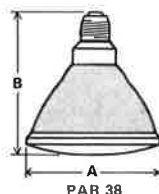
These lamps, with the exception of the PAR 38 Cool-ray and PAR 56 are for indoor and outdoor applications. The Color-ray spotlights have internal

thin film dichroic lenses which have a high transmission factor and maintain constant colour through life. The Cool-ray lamp has a dichroic reflector, allowing much of the heat to pass through the back of the lamp

without loss of light. This lamp is for use in special fittings only, indoors. Its cool ray and colour temperature of 4000°K make it an ideal source for display and exhibition applications.

PAR 38 SEALED BEAM SPOT & FLOOD

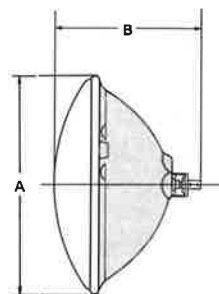
Watts	Voltages	Cap	Finish	Standard Pack
100	240/250	ES	Clear Front, Spot	10
100	240/250	ES	Clear Front, Flood	10
100	240/250	ES	Lacquered Blue, Green, Red, Yellow	10
150	24 110/115 240/250	ES	Clear Front, Spot	10
150	110/115 240/250	ES	Clear Front, Flood	10
150	240/250	ES	Color-Ray, Blue, Green, Red, Yellow	10
150	240/250	ES	Cool-Ray, Spot	10



PAR 38
100W and 150W A 123 B 138

PAR 56 SEALED BEAM

Watts	Voltages	Cap	Finish	Standard Pack
300	240/250	2 lug	Clear Front, Wide Beam	10
300	240/250	2 lug	Clear Front, Med-Beam	10
300	240/250	2 lug	Clear Front, Narrow Beam	10



PAR 56
A 178.6 B 133.4

LOW VOLTAGE DISPLAY

Volts	12	12	12	12	24
Watts	50	50	50	24	150
Cap.	Bosch	Bosch	ES	SBC	Bosch
Ref.	11-7015	11-8012	11-7014	11-7005	11-7040
Pack Qty.	25	25	25	25	25

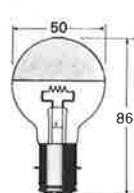
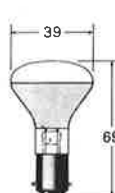
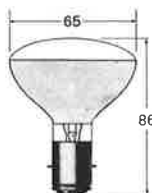
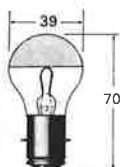
Internal crown reflector for narrow non-spill beam.

Parabolic internal reflector, diffusing front for high intensity soft edged beam.

Parabolic internal reflector, clear front for narrow beam.

Parabolic internal reflector, diffused front for high intensity soft edged beam.

Internal crown reflector for narrow non-spill beam.



All dimensions in mm

Tubular lamps

ARCHITECTURAL STRAIGHT – Striplites

Watts	Voltages	Cap	Finish	Standard Pack
35	240/250	Peg	Opal	1
53	240/250	Peg	Opal	1
60	240/250	Peg	Opal	1
60	240/250	Double centre contact S14d	Opal	1
75	240/250	Peg	Opal	1
110	240/250	Peg	Opal	1
150	240/250	Peg	Opal	1

ARCHITECTURAL STRAIGHT

		A	B	C
12in	35W	30	229	305
18in	53W	30	382	457
20in	60W	30	424	500
24in	75W	30	534	610
36in	110W	30	839	915
48in	150W	30	1144	1220

Nominal Dimensions

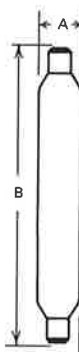


DOUBLE CAP TUBULAR – Striplites

Watts	Voltages	Cap	Finish	Standard Pack
30 or 60	240/250	S15s	Clear	25
30 or 60	240/250	S15s	Opal	25
60	240/250	S15s	Amber (284 mm only)	25

DOUBLE CAP TUBULAR

30 and 60W	A	B
	26	222
	26	285



SINGLE CAP TUBULAR

Watts	Voltages	Cap	Finish	Standard Pack
25	240/250	BC, SBC, SES	Clear	50
40	240/250	BC, SBC	Clear	50
60	240/250	BC	Opal (Longlite)	25



SINGLE CAP TUBULAR

BC and SBC	A	B
ES	26	85
	26	87

LONGLITE

60W	A	B
	39	305



LONGLITE

All dimensions in mm

Tungsten halogen photoprinting lamps

A number of office copying machines require a linear light source of relatively high colour temperature, and for these applications linear tungsten halogen lamps are the ideal sources. The advantage of tungsten halogen lamps is that the

light output remains constant throughout life, and so the speeds of copying remain unchanged throughout the lamp life. For the larger sizes of lamps it is desirable to obtain even illumination across the length of the lamps, and

this is achieved by the use of "segmented filaments" where the filaments are wound with differential gaps to avoid fall-off of light at the ends of the lamp.

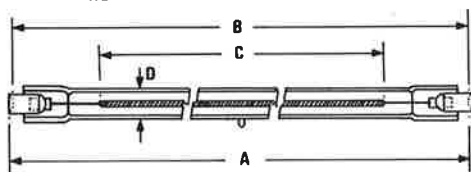
Fusing

It is an advantage to have a fuse in the fitting or external circuit.

Operating temperatures: During operation, the temperature of the lamp pinch seal should not exceed 350°C, while the bulb wall temperature must not drop below 250°C in order to maintain the tungsten-halogen cycle.

Principle of operation and Advantages of use are as indicated in the section referring to **tungsten halogen floodlighting lamps**.

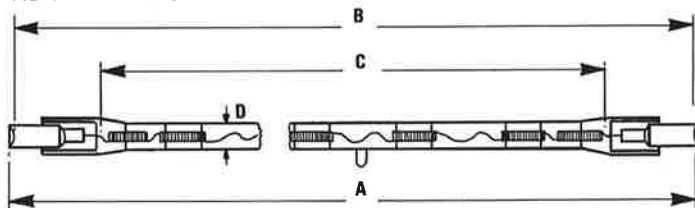
NON-SEGMENTED FILAMENT TYPES



Watts	Volts	Caps	Contact to Ceramic Max (A)	Contact to Contact (B)	Nom Light Length (C)	Max Bulb Dia (D)	Nom Lumens	Colour Temp	Operating Position	Lamp Type
500	110	R7s	117-6	114.2±1.6	60	11 max	10500	2900 K	Horizontal	K1
500	120	R7s	117-6	114.2±1.6	60	11 max	10500	2900 K	Horizontal	K1
500	120	R7s	117-6	114.2±1.6	60	8.5 max	13000	3200 K	Horizontal	DC1/1
800	220	R7s	117-6	114.2±1.6	67	12 max	20600	3200 K	Horizontal	P2/18
800	240	R7s	117-6	114.2±1.6	67	12 max	20600	3200 K	Horizontal	P2/18

Min. life of above lamps 50,000 switchings at 6 seconds on 6 seconds off.

SEGMENTED FILAMENT TYPES



Watts	Volts	Caps	Contact to Ceramic (A)	Contact to Contact (B)	Nom Light Length (C)	Max Bulb Dia (D)	Nom Lumens	Colour Temp	Operating Position	Lamp Type
650	220/230	R7s	318 max	315±1.6	276	8.5 max	14300	3200 K	Horizontal	—
650	240/250	R7s	318 max	315±1.6	276	8.5 max	14300	3200 K	Horizontal	—
1000	220/230	R7s	267 max	264±1.6	220	8.5 max	23000	3200 K	Horizontal	—
1000	240/250	R7s	267 max	264±1.6	220	8.5 max	23000	3200 K	Horizontal	—
1000	220/230	R7s	318 max	315±1.6	270	8.5 max	23000	3200 K	Horizontal	DC1/8
1000	240/250	R7s	318 max	315±1.6	270	8.5 max	23000	3200 K	Horizontal	DC1/8
1500	220/230	R7s	368 max	365±1.6	320	8.5 max	32250	3200 K	Horizontal	DC1/9
1500	240/250	R7s	368 max	365±1.6	320	8.5 max	32250	3200 K	Horizontal	DC1/9

Min. life of above lamps 50,000 switchings at 6 seconds on 6 seconds off.

All dimensions in millimetres

Linear tungsten halogen lamps

Principle: The tungsten filament is enclosed in a gas-filled quartz tube, together with a carefully controlled quantity of a halogen. When the tungsten filament is heated by the electric current the halogen vaporises and controls the evaporation of the filament, the tungsten vapour being carried to the contrastingly comparative cool wall of the bulb where it combines with the halogen to form a tungsten halide. This compound then returns to the filament where it is chemically converted back to tungsten and the halogen. The action continues to repeat itself while the lamp is in operation.

The regenerative cycle performs a 'self-cleaning' action on the inner surface of the bulb resulting in nearly 100% lumen maintenance.

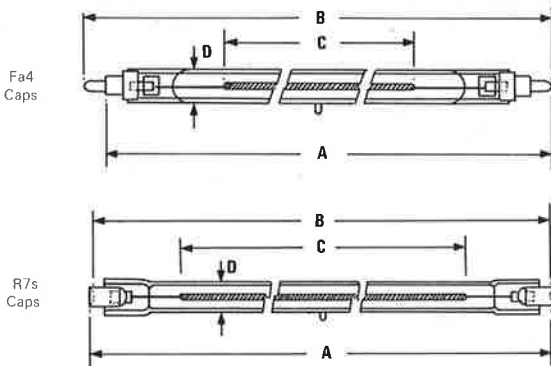
Advantages:

- 1 Up to 20% more light output compared to corresponding GLS lamp.
- 2 Double life—2000 hours.
- 3 Constant light output through life.
- 4 Compact easily controllable light source.

Fusing:

It is an advantage to have a fuse in the fitting or external circuit.

Operating temperatures: During operation, the temperature of the lamp pinch seal should not exceed 350°C, whilst the bulb wall temperature must not drop below 250°C in order to maintain the tungsten-halogen cycle.



Watts	Volts	Caps	Contact to Ceramic Max (A)	Contact to Contact (B)	Nom Light Length (C)	Max Bulb Dia (D)	Rated Life (Hrs)	Nom Lumens	Colour Temp °K	Operating Position	Lamp Type
300	110/115	R7s	117-6	114.2±1.6	62-0	9-0	2000	6250	2900	Horizontal	K9
300	200/230	R7s	117-6	114.2±1.6	66-0	9-0	2000	5000	2900	Horizontal	K9
300	240/250	R7s	117-6	114.2±1.6	66-0	9-0	2000	6000	2900	Horizontal	K9
300†	240/250	R7s	117-6	114.2±1.6	66-0	9-0	2000	6000	2900	Horizontal	K9
500	110	R7s	117-6	114.2±1.6	57-0	11-0	2000	10500	2900	Horizontal	K1
500	120	R7s	117-6	114.2±1.6	57-0	11-0	2000	10500	2900	Horizontal	K1
500	200/230	R7s	117-6	114.2±1.6	66-0	11-0	2000	9500	2900	Horizontal	K1
500	240/250	R7s	117-6	114.2±1.6	66-0	11-0	2000	9500	2900	Horizontal	K1
750	200/230	R7s	189-1‡	185.7±1.6	117-0	11-0	2000	15000	3000	Horizontal	K3
750	240/250	R7s	189-1‡	185.7±1.6	117-0	11-0	2000	15000	3000	Horizontal	K3
1000	110	R7s	189-1	185.7±1.6	107-0	11-0	2000	22000	3000	Horizontal	K4
1000	200/230	R7s	189-1	185.7±1.6	112-0	11-0	2000	21000	3000	Horizontal	K4
1000	240/250	R7s	189-1	185.7±1.6	112-0	11-0	2000	21000	3000	Horizontal	K4
1500	200/230	R7s	254-1	250.7±1.6	175-0	11-0	2000	33000	3000	Horizontal	K5
1500	240/250	R7s	254-1	250.7±1.6	175-0	11-0	2000	33000	3000	Horizontal	K5
2000	200/230	R7s	331-0	327.4±1.6	249-0	11-0	2000	44000	3000	Horizontal	K8
2000	240/250	R7s	331-0	327.4±1.6	249-0	11-0	2000	44000	3000	Horizontal	K8
2000	200/230	Fa4	324-1	334.4 max	229-0	12-0	2000	44000	3000	Horizontal	K6
2000	240/250	Fa4	324-1	334.4 max	229-0	12-0	2000	44000	3000	Horizontal	K6

†Frosted for use with Wall Washer fitting

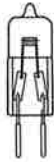
‡The standard length of the 750W lamp is 189.1mm
Lamps with a length of 178mm are also available.
Please specify length when ordering.

All dimensions in millimetres

Single-ended tungsten halogen lamps



M34 6V 20W
M35 12V 20W



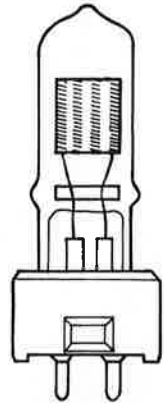
M32 12V 50W



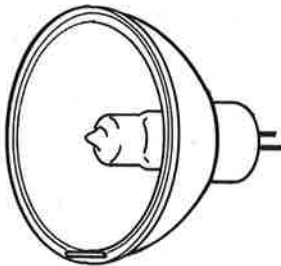
M28 12V 100W



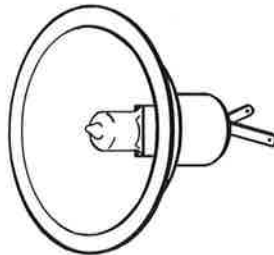
M36 24V 250W



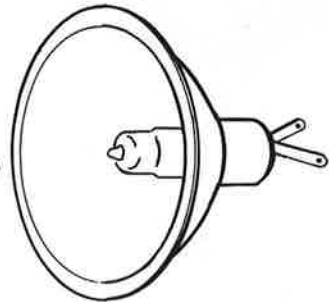
M38 300W



M37 12V 55W



M39 6V 20W



M41 6V 20W

Principle of operation and advantages of use are as indicated on the preceding page.

Lampholders suitable for some of these lamps are listed on page 321.

Fusing: A fuse should be mounted in the fitting or external circuit.

Operating temperatures:

During operation the temperatures of the lamp pinch seal should not exceed 350°C, while the bulb wall temperature must not drop below 250°C in order to maintain the tungsten-halogen cycle.

Lamp type	Watts	Volts	Overall length (max)	Bulb/Flange dia. (max)	Nom. lumens	Rated life (Hours)	Base	Operating position	Description
M34	20	6	30	8.5	350	2000	G4	Any	
M39	20	6	39	50	—	2000	2 Tab	Any	Ellipsoidal mirror
M41	20	6	40	56	—	2000	2 Tab	Any	Parabolic mirror
M35	20	12	30	8.5	450	300	G4	Any	
	23	113.2	30	8.5	600	300	G4	Any	
M32	50	12	44	12	900	2000	GY6.35	Any	
M37	55	12	42	50	—	750	GZ6.35	Any	Ellipsoidal mirror
M28	100	12	45	11	2150	2000	GY6.35	VBD ± 90°*	
M36	250	24	58	15	5750	2000	G6.35	VBD ± 90°*	
M38	300	120 200/230 240/250	80	15	5000	2000	GY9.5	Any	

* Can be operated in any position if heat sinks are used

† M35 can be operated at 13.2V. The characteristics for such operating are as above.

VBD: Vertical, base down.

All dimensions in mm



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CAUTIONARY NOTICE

Tungsten halogen lamps of certain ratings are packed in cartons which contain an instruction leaflet.

To ensure maximum safety, it is essential that the leaflet is studied before installing the lamp in the equipment.

Projector lamps, Class A1—50, 75 and 100W



A1/17 8V 50W Projector Lamp
This 8V50W lamp has been designed for use with both Super 8 and Standard 8 cine projectors. It is a direct replacement for the 8V 50W A1/185.



A1/250 8V 50W Tungsten Halogen Lamp

A new concept in Tungsten Halogen Projector Lamp design featuring the most precise lamp engineering principles. A Super 8 Cine projector light source.



A1/231 12V 100W Tungsten Halogen Projector Lamp

The A1/231 has been designed particularly for Super 8 cine projectors. It is a complete optical system comprising a tungsten halogen lamp integral with a dichroic ellipsoidal mirror reflector.

Equipment utilising this light source is able to dispense with the conventional condenser optical system, and this results in an appreciable gain in the level of screen illumination. The design permits extremely accurate alignment of the lamp within the projector.

CLASS A1 50, 75 and 100 WATT (50 and 75 watt not colour coded)

Lamp Ref.	Volts	Watts	Dimensions mm			Nominal Lumens	Base	Filament Formation	Average Life Hours	Special Features
			Maximum Bulb Diameter	Maximum Overall Length	Light Centre Length					
A1/17	8	50	33×44	96	47±0.5	—	Small Pre-Focus P30s	J	25	A B H I
A1/202	8	50	31	96	47±0.1	—	Small Pre-Focus P30s	J	25	A B F I
A1/220	12	50	11.5	44	30±0.25	1400	2 Pin G6.35	D	50	E J
A1/225	240/250	60	26	67	35±1	675	S.C.C. BA15s	F4	100	A K
A1/229	8	50	50	42	—	—	2 Pin G6.35	D	50	E I J L
A1/250	8	50	50	50	—	—	Special 2 Tab	D	50	E I J L
A1/230	12	75	50	42	—	—	2 Pin G6.35	D	50	E I J M
A1/4	12	100	26	135	55±0.5	2700	Med Pre-Focus P28s	H3	25	A
A1/4	115	100	26	135	55±0.5	1850	Med Pre-Focus P28s	F3	25	A
A1/4	240, 250	100	26	135	55±0.5	1650	Med Pre-Focus P28s	F4	25	A C
A1/21	115	100	26	78	35±1	1850	S.C.C. BA15s	F3	25	A
A1/21	240, 250	100	26	78	35±1	1650	S.C.C. BA15s	F4	25	A C
A1/45	12	100	11.5	45	18±0.2	3000	2 Pin Pre-Focus PG22	J	60	E J
A1/186	12	100	26	78	35±1	2800	S.C.C. BA15s	J	25	A
A1/193	12	100	26	78	29.5±0.5	2800	BA21s 4 Pin	J	25	—
A1/209	12	100	11	45	24±0.5	3000	2 pin Ceramic G6.35	J	50	E J
A1/215	12	100	11	44	30±0.25	3000	2 Pin G6.35	J	50	E J
A1/231	12	100	50	42	—	—	2 Pin G6.35	D	50	E I J M

- A Obscured top
B Forced cooling necessary. Maximum bulb wall temperature 500°C
C Voltage range in 10 volt steps
D Offset filament
E Operates on tungsten halogen principle
F Internal aluminised mirror
G Internal dichroic mirror
H Silvered bulb
I Due to integral mirror nominal lumens not shown

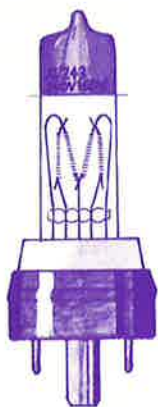
- J Minimum bulb wall temperature 350°C
K Dual Voltage
L External integral aluminised mirror
M External integral dichroic mirror
N Internal proximity reflector
O Due to internal reflector nominal lumens not shown
P Linear overhead projector lamp

- Q 3 or 4 amp H.B.C. fuse necessary
R 5 or 6 amp H.B.C. fuse necessary
S 6 or 7 amp H.B.C. fuse necessary

Operating position base down with the following exceptions:

- A1/220 – base down to horizontal A1/229 – horizontal
A1/45 – base down to horizontal A1/230 – horizontal
A1/209 – base down to horizontal A1/231 – horizontal
A1/215 – base down to horizontal A1/250 – horizontal
A1/17 } Focal Distance 33.5mm
A1/202 }
A1/229 }
A1/231 } Focal Distance 32mm
A1/230 }

Projector lamps, Class A1—150W



**A1/243 150W Mains Voltage
Tungsten Halogen Lamp**



**A1/216 Tungsten
Halogen Lamp**

The A1/216, which operates on the Tungsten Halogen principle, has been designed primarily as a light source for 35 mm slide projectors. Although of only 150W rating, machines utilizing this lamp may achieve a screen illumination equal to that given by many projectors using a conventional mains voltage 500W lamp.

CLASS A1 150 WATT

Lamp Ref.	Volts	Watts	Dimensions mm				Nominal Lumens	Base	Filament Formation	Average Life Hours	Special Features
			Maximum Bulb Diameter	Maximum Overall Length	Light Centre Lengths						
A1/18	21.5	150	39	81	39.7±0.1	—	—	Tru-Focus G17q	G	25	B F I
A1/24	125	150	39+42	81	39.7±0.1	—	—	Tru-Focus G17q	G	25	B D F I
A1/167	240, 250	150	26	90	35±1	2700	S.C.C. BA15s	F4	25	A C	
A1/175	240, 250	150	26	135	55.5±0.5	2700	Med Pre-Focus P28s	F4	25	A C	
A1/182	240, 250	150	30	76	33.5±1	2700	Tru-Focus G17q	F4	25	A C	
A1/184	21.5	150	39	91	39.7±0.1	—	—	Tru-Focus G17q	G	25	A B F I
A1/194	21.5	150	48	86	39.7±0.1	—	—	Tru-Focus G17q	G	25	B F I
A1/210	21.5	150	39	91	39.7±0.1	—	—	Tru-Focus G17q	G	25	B D F I
A1/211	21.5	150	39	91	39.7±0.1	—	—	Tru-Focus G17q	G	25	A B G I
A1/212	24	150	33	103	39.7±0.1 —1.5	4100	—	Tru-Focus G17q	J	25	A B D
A1/216	24	150	13.5	47	32±0 —0.25	5000	—	2 Pin G6.35	J	50	E J
A1/232	15	150	50	42	—	—	—	2 Pin G6.35	D	50	E I J M N
A1/234	15	150	11.5	45	30±0.25	5000	—	2 Pin G6.35	J	50	E J
A1/243	240	150	15	76	33.5±1	3000	—	Tru-Focus G17t	F4	50	A E R J

- A Obscured top
B Forced cooling necessary. Maximum bulb wall temperature 500°C
C Voltage range in 10 volt steps
D Offset filament
E Operates on Tungsten Halogen principle
F Internal integral aluminised mirror
G Internal integral dichroic mirror
H Silvered bulb
I Due to integral mirror nominal lumens not shown
- J Minimum bulb wall temperature 350°C
K Dual Voltage
L External integral aluminised mirror
M External integral dichroic mirror
N Light centre length not specified
O Mirror rim to film gate 32 mm
P Internal proximity reflector
Q Due to internal reflector nominal lumens not shown
R Linear overhead projector lamp

- R 3 or 4 amp H.B.C. fuse necessary
S 5 or 6 amp H.B.C. fuse necessary
T 6 or 7 amp H.B.C. fuse necessary

Operating position base down with the following exceptions:
A1/211 — base down to horizontal A1/18 — horizontal
A1/216 — base down to horizontal A1/24 — horizontal
A1/234 — base down to horizontal A1/194 — horizontal
A1/232 — horizontal

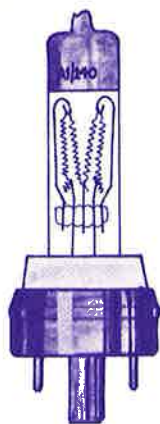
- A1/18
A1/184
A1/194 } Focal Distance 43.5 mm
A1/211
A1/24 — Focal Distance 57.2 mm
A1/210 — Focal Distance 56.6 mm

Projector lamps Class A1—200, 250 and 300W



A1/223 Tungsten Halogen Lamp

The A1/223 is intended for use in 35mm slide projectors. Like all Tungsten Halogen Projector lamps it is more robust and compact than the normal tungsten filament equivalent. Screen illumination, when used with a suitable optical system, can be greater than that attained with a conventional 1000W projector lamp.



A1/240 300W Mains Voltage Tungsten Halogen Lamp

CLASS A1 200, 250 and 300 WATT (200 watt not colour coded)

Lamp Ref.	Volts	Watts	Dimensions mm			Nominal Lumens	Base	Filament Formation	Average Life Hours	Special Features
			Maximum Bulb Diameter	Maximum Overall Length	Light Centre Length					
A1/252	24	200	50	45	—	—	G5-3	M	25	E I J M
A1/5	115	250	33	135	55.5 ± 0.5	5500	Med Pre-Focus P28s	F3	50	A
A1/5	240, 250	250	33	135	55.5 ± 0.5	5200	Med Pre-Focus P28s	F5	50	A C
A1/223	24	250	13.5	55	33 ± 0.25	8500	2 Pin G6.35	J	50	E J
A1/235	24	250	13.5	56	23 ± 0.2	8500	2 Pin Pre-Focus PG22	D	50	E J
A1/246	24	250	50	50	—	—	2 Pin G6.35	J	25	E I J M
A1/258	24	250	44	47.5	—	—	GX7-9	J	50	E I J M
A1/259	24	250	50	45	—	—	G5-3	M	50	E I J M
A1/6	115	300	33	135	55.5 ± 0.5	7400	Med Pre-Focus P28s	F3	25	A B
A1/6	240, 250	300	33	135	55.5 ± 0.5	6900	Med Pre-Focus P28s	F5	25	A B C
A1/37	115	300	28	105	35 ± 1	7400	S.C.C. BA15s	F3	25	A B
A1/37	240, 250	300	28	105	35 ± 1	6900	S.C.C. BA15s	F5	25	A B C
A1/178	240, 250	300	33	103	39.7 ± 1	6900	Tru-Focus G17q	F5	25	A B C
A1/183	240, 250	300	31	81	35 ± 1	6900	S.C.C. BA15s	F5	25	A B C
A1/201	240, 250	300	33	103	39.7 ± 1	—	Tru-Focus G17q	F5	25	A B N O
A1/240	240	300	23 15	81	39.7 ± 1	7200	Tru-Focus G17t	F4	50	A E J Q
A1/249	240	300	15	62	40 ± 0.5	7200	G6-35	F4	50	A E J Q

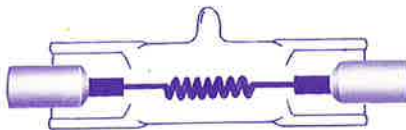
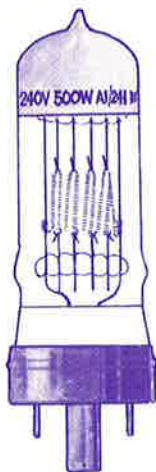
- A Obscured top
B Forced cooling necessary. Maximum bulb wall temperature 500°C
C Voltage range in 10 volt steps
D Offset filament
E Operates on tungsten halogen principle
F Internal aluminised mirror
G Internal dichroic mirror
H Silvered bulb
I Due to integral mirror nominal lumens not shown

- J Minimum bulb wall temperature 350°C
K Dual Voltage
L External integral aluminised mirror
M External integral dichroic mirror
N Internal proximity reflector
O Due to internal reflector nominal lumens not shown
P Linear overhead projector lamp

- Q 3 or 4 amp H.B.C. fuse necessary
R 5 or 6 amp H.B.C. fuse necessary
S 6 or 7 amp H.B.C. fuse necessary

Operating position base down with the following exceptions:
A1/223 - Base down to horizontal
A1/235 - Base down to horizontal
A1/252 - Horizontal
A1/262 - Focal Distance 32mm
A1/258 - Horizontal
A1/259 - Horizontal

Projector lamps, Class A1—420 and 500W



A1/227 120V 420W Tungsten Halogen Overhead Projector Lamp

This lamp employs the Tungsten Halogen Principle. It has an extended life compared with normal tungsten filament lamps and possesses the additional advantages of higher light output and almost 100 per cent lumen maintenance.

A1/241 500W Mains Voltage Tungsten Halogen Lamp

CLASS A1 420 and 500 WATT

Lamp Ref.	Volts	Watts	Dimensions mm			Nominal lumens	Base	Filament formation	Average life hours	Special features
			Maximum Bulb diameter	Maximum overall length	Light centre length					
A1/227	120	420	13.5	65.5	—	11000	Double ended R7s	D	75	E J Q
A1/7	115	500	33	135	55.5 ± 0.5	12500	Med Pre-Focus P28s	F8	25	A B
A1/7	240, 250	500	33	135	55.5 ± 0.5	11400	Med Pre-Focus P28s	F11	25	A B C
A1/8	115	500	66	135	55.5 ± 0.5	11500	Med Pre-Focus P28s	A6	50	—
A1/8	240, 250	500	66	135	55.5 ± 0.5	11000	Med Pre-Focus P28s	A8	50	C
A1/180	240, 250	500	33	103	39.7 ± 1	11400	Tru-Focus G17q	F11	25	A B C
A1/205	240, 250	500	33	103	39.7 ± 1	—	Tru-Focus G17q	F11	25	A B C O P
A1/241	240	500	23	94	39.7 ± 0.1	—	Tru-Focus G17t	C10	50	A E J O P R
A1/254	240	500	23	75	36.5 ± 0.5	—	GY9-5	A8	75	A E J O P R

- A Obscured top
 B Forced cooling necessary. Maximum bulb wall temperature 500°C
 C Voltage range in 10 volt steps
 E Operates on tungsten halogen principle

- J Minimum bulb wall temperature 350°C
 O Internal proximity reflector
 P Due to internal reflector nominal lumens not shown
 Q Linear overhead projector lamp

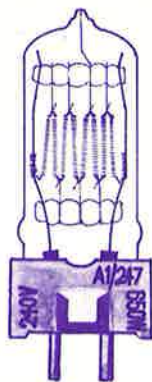
- R 3 or 4 amp HBC fuse necessary
 S 5 or 6 amp HBC fuse necessary
 Operating position base down

Projector lamps, Class A1— 600, 650 and 750W



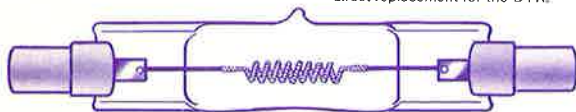
A1/233 240V 650W Tungsten Halogen Overhead Projector Lamp

The A1/233 is the latest development in the field of overhead projector lamps. Operating on the tungsten halogen principle it offers all the advantages of a compact source for overhead projectors. The A1/233 is a direct replacement for the DYR.



A1/247 240V 650W Tungsten Halogen Projector Lamp

This Tungsten Halogen light source has been developed primarily for overhead projectors—the grid formation of the filament provides a high level of light output having even distribution.



A1/228 240V 600W Tungsten Halogen Overhead Projector Lamp

A mains version of the low voltage lamp which has been a popular light source for overhead projectors. Operating on the tungsten halogen principle it offers all the well-known advantages of this type of lamp. Also available in low voltage 120V rating.

CLASS A1 600, 650 and 750 WATT (600 and 650 watt not colour coded)

Lamp Ref.	Volts	Watts	Dimensions mm			Nominal Lumens	Base	Filament Formation	Average Life Hours	Special Features
			Maximum Bulb Diameter	Maximum Overall Length	Light Centre Length					
A1/228	120	600	13-5	93-5	—	17000	Double Ended R7s	F G	75	E J P
A1/228	240/250	600	13-5	93-5	—	16250	Double Ended R7s	F G	75	E J K P Q
A1/233	240/250	650	22-5	65	36-5 ± 1	16500	GY9-5	E2	75	E J K Q
A1/247	240/250	650	22-5	75	36-5 ± 0-5	17750	GY9-5	A8	75	E J Q
A1/257	240/250	650	23	75	36-5 ± 0-5	—	GY9-5	A8	75	E J K N O Q
A1/9	115	750	39	140	55-5 ± 0-5	19500	Med Pre-Focus P28s	C8	25	A B
A1/9	240, 250	750	39	140	55-5 ± 0-5	18000	Med Pre-Focus P28s	C10	25	A B C
A1/52	115	750	37	163	81 ± 0-5	19500	3 Fin Ring P39s	C8	25	B D
A1/53	115	750	39	135	59 ± 0-5	19500	Large B.H. P46s	C8	25	A B
A1/53	240, 250	750	39	135	59 ± 0-5	18000	Large B.H. P46s	C10	25	A B C
A1/206	115	750	39	118	39-7 ± 1	—	Tru-Focus G17q	C8	25	A B N O
A1/206	240, 250	750	39	118	39-7 ± 1	—	Tru-Focus G17q	C10	25	A B C N O
A1/256	240	750	23	94	39-7 ± 1	—	G17t	C10	50	A E J N O R

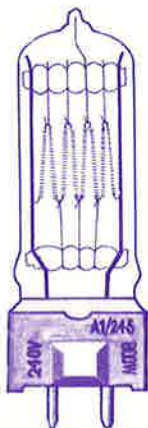
- A Obscured top
B Forced cooling necessary. Maximum bulb wall temperature 500°C
C Voltage range in 10 volt steps
D Offset filament
E Operates on tungsten halogen principle
F Internal integral aluminised mirror
G Internal integral dichroic mirror
H Silvered bulb
I Due to integral mirror nominal lumens not shown

- J Minimum bulb wall temperature 350°C
K Dual Voltage
L External integral aluminised mirror
M External integral dichroic mirror
N Internal proximity reflector
O Due to internal reflector nominal lumens not shown
P Linear overhead projector lamp

- Q 3 or 4 amp H.B.C. fuse necessary
R 5 or 6 amp H.B.C. fuse necessary
S 8 or 7 amp H.B.C. fuse necessary

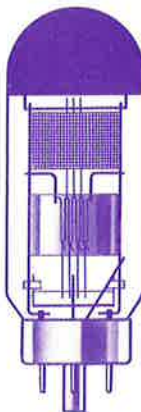
Operating position base down with the following exceptions:
A1/228 — Horizontal
A1/52 — Base up
A1/233 — Base down to horizontal
A1/247 — Base down to horizontal

Projector lamps, Class A1—800, 1000 and 1200W

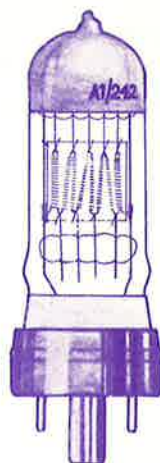


A1/245 240V 800W Tungsten Halogen Projector Lamp

A powerful highly efficient lamp rated 240V 800W for Overhead projector application where a high level of screen illumination is of prime importance.



A1/208 1200W Proximity Reflector Tru-Focus Lamp



A1/242 1000W Tungsten Halogen Proximity Reflector Tru-Focus Lamp

Class A1 800, 1000 and 1200 Watts

Lamp Reference	Volts	Watts	Dimensions mm			Nominal lumens	Base	Filament formation	Average life hours	Special features
			Maximum Bulb Diameter	Maximum overall length	Light centre length					
A1/245	240/250	800	23	84	44.5±0.5	21500	GY9-5	C8	75	E J R
A1/255	240/250	800	23	84	44.5±0.5	—	GY9-5	C8	75	E J O P R
A1/57	115	1000	66	240	120±5	25000	GES E40s	A6	100	—
A1/57	240, 250	1000	66	240	120±5	23000	GES E40s	A8	100	—
A1/58	240, 250	1000	66	140	55.5±0.5	25000	Med Pre-Focus P28s	C10	25	A C
A1/59	115	1000	39	140	55.5±0.5	27000	Med Pre-Focus P28s	C8	25	A B
A1/59	240, 250	1000	39	140	55.5±0.5	25000	Med Pre-Focus P28s	C10	25	A B C
A1/91	115	1000	39	135	59±0.5	27000	Large BH P46s	C8	25	A B
A1/91	240, 250	1000	39	135	59±0.5	25000	Large BH P46s	C10	25	A B C
A1/188	240	1000	66	245	87±0.5	23000	Large Pre-Focus P40s	A8	100	C
A1/207	115	1000	39	118	39.7±1	—	Tru-Focus G17q	C8	25	A B O P
A1/207	240, 250	1000	39	118	39.7±1	—	Tru-Focus G17q	C10	25	A B C O P
A1/242	240, 250	1000	23	94	39.7±0.1	—	Tru-Focus G17t	C10	50	A E P O R
A1/208	115	1200	39	118	39.7±1	—	Tru-Focus G17q	C10	10	A B O P

A Obscured top
 B Forced cooling necessary. Maximum bulb wall temperature 500°C
 C Voltage range in 10 volt steps
 E Operates on tungsten halogen principle

J Minimum bulb wall temperature 350°C
 O Internal proximity reflector
 P Due to internal reflector nominal lumens not shown
 R 5 or 6 amp HBC necessary

Operating position base down

Projector lamps, Class F

LAMP BASES



BH P30s



P 28s



P40s



G 17q



B 15s
S.C.C.



PG 22



G 6:35



GY 9:53



GY 16



G 22



GX 38q



G 38



GX 9:5

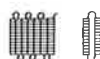
FILAMENT FORMATIONS



A



B



C



D



E



F



G



H



J

CLASS F MICRO-PROJECTOR LAMPS

Lamp Ref.	Volts	Watt	Maximum Diameter	Dimensions mm		Nominal Lumens	Base	Crown of bulb to Filament	Average Life Hours	Special Features
				Maximum Overall Length	Light Centre Length					
F/30	4	8	37	67	—	100	S.E.S. E14s	10+2	100	A
F/8	12	12	37	62	40±3	190	S.B.C. BA15d	—	100	A
F/10	6	24	39	65	—	410	S.E.S. E14s	10±2	100	A
F/10	12	24	39	65	—	440	S.E.S. E14s	10±2	100	A
F/3	12	24	39	65	—	440	S.B.S. BA15d	10±2	100	A
F/23	6	30	39	69	—	450	E.S. E27s	10±2	200	A
F/80	6	30	39	58	—	420	B.C. B22d	7±2	200	B C
F/58	6	48	40	65	—	675	S.E.S. E14s	7±2	200	A C
F/59	6	48	40	70	—	675	E.S. E27s	7±2	200	A C
F/81	6	48	39	63	41±0.5	675	Small Pre-Focus P30s	—	200	A C
F/4	12	48	52	81	40±3	950	S.E.S. E14s	—	100	B
F/38	12	48	40	65	40±3	850	S.B.C. BA15d	—	100	B
F/76	12	50	40	72	33±0.5	950	Bosch BA20s	—	50	B
F/77	12	50	40	70	48±3	950	S.E.S. E14s	—	50	B
F/14	12	100	62	91	55±5	2250	E.S. E27s	—	100	B
F/63	12	100	62	98	37±0.5	2250	Med Pre-Focus P28s	—	100	B

A Operating position – vertical base down ±135°

B Vertical base down ±135°

C Solid source filament

Projector lamps, Class G, Class M



Class G Exciter lamps

A range of high efficiency lamps for the sound heads of cinema projectors.



M29 Cine Film Editor Lamp

Tungsten halogen lamps give greater light output than conventional incandescent lamps of similar ratings. They operate at a high colour temperature so the light is whiter. The small dimensions allow the production of equipment of compact design. The quartz bulb gives a high degree of resistance to thermal and mechanical shock.

CLASS G EXCITER LAMPS

Lamp Reference	Volts	Watts <i>AMPS</i>	Dimensions mm				Nominal lumens	Base	Filament formation	Average life hours	Operating positions
			Maximum diameter	Maximum overall length	Light centre length						
G/19	4	0.75	16.5	50	31.8 ± 0.8	30	SCC BA15s	D		50	A
G/27	4	0.75	16.5	50	28.5 ± 0.5	30	Small Pre-Focus P30s	H		50	A
G/29	4	0.75	16.5	50	28.5 ± 0.5	30	Small Pre-Focus P30s	D		50	A
G/31	4	0.75	25.5	51	28.5 ± 0.5	30	Small Pre-Focus P30d	D		50	D
G/4	6	1	16.5	42	21.5 ± 0.5	80	SCC BA15s	H		100	A
G/5	6	1	16.5	50	28.5 ± 0.5	80	Small Pre-Focus P30s	H		100	C
G/40	6	1	16.5	57	28.5 ± 0.5	80	Small Pre-Focus P30s	D		100	B
G/48	7	0.2	16.5	50	28.6 ± 0.25	13-10	Small Pre-Focus P30s	H		50	A

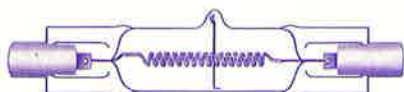
- A Universal
- B Vertical base down $\pm 30^\circ$
- C Vertical base down $\pm 45^\circ$
- D Horizontal $\pm 120^\circ$

CLASS M CINE FILM EDITOR LAMPS

Lamp Ref.	Volts	Watts	Dimensions mm				Nominal Lumens	Base	Filament Formation	Average Life (Hours)	Special Features
			Maximum Bulb Diameter	Maximum Overall Length	Light Centre Length						
M29	6	10	8.5	30	19.5 ± 0.25	200	Special 2 Pin		D	100	A B
M30	6	20	8.5	30	19.5 ± 0.25	450	Special 2 Pin		D	100	A B

- A Operates on Tungsten Halogen Principle
- B Operating position vertical base down to horizontal

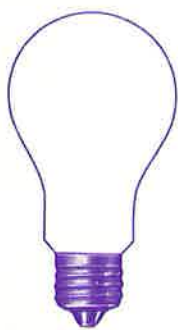
Photographic lamps, Class P1



**P1/11 240V 800W Tungsten
Halogen Photographic Lamp**

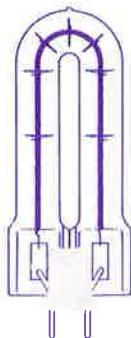


**P1/12 240V 1000W Tungsten
Halogen Photographic Lamp**



P1/1 Photoflood

The P1/1 is specially suitable for indoor photography, and will enable approximately 60m/200ft of cine film or about 300 still photographs to be taken, representing about three hours' total life. Safety fuses are incorporated in the cap. Suitable for use with monochrome film and colour stock balanced for 3400°K.



**P1/15 240V 1000W Single
Ended Sun Gun Lamp**

A new concept in tungsten halogen lighting, compact and robust, particularly suitable for use with lighting units designed for the Super 8 format. Operates directly from the mains with an average life of 12 hours.



P1/6 Reflector Photoflood

This unit incorporates its own reflector, thus giving a much greater beam candle power.

CLASS P1 PHOTOGRAPHIC LAMPS for monochrome and colour film balanced for 3400°K

Lamp ref.	Volts	Watts	Dimensions mm				Nominal lumens	Base	Average life hours	Special features
			Max. dia.	Max. pip protuberance from bulb axis	Nominal contact length	Max. clearance length				
P1/8	30	250	12	10-2	74-9±1.6	78-3	80	8000 Double ended R7s	12	A
P1/1	240/250	275	61	—	—	—	108-5	8300 BC B22d	3	B C
P1/1	240/250	275	61	—	—	—	110	8300 ES E27s	3	B C
P1/6	240/250	375	97	—	—	—	133-5	13000 BC B22d	4	B E F H
P1/6	240/250	375	97	—	—	—	135	13000 ES E27s	4	B E F H
P1/2	240/250	500	82	—	—	—	164-5	15000 BC B22d	6	B C
P1/2	240/250	500	82	—	—	—	166	15000 ES 27s	6	B C
P1/9	120	650	15	11-4	74-9±1.6	78-3	80	21000 Double ended R7s	12	A
P1/13	240/250	650	28	—	—	—	65	20000 2 Pin Ceramic G6.35	15	A B I
P1/11	240/250	800	15	11-4	74-9±1.6	78-3	80	24500 Double ended R7s	12	A B K
P1/12	240/250	1000	12	10-2	121-7±1.6	125-1	127	33000 Double ended R7s	15	A B K
P1/15	240/250	1000	28	—	—	—	65	32000 2 Pin Ceramic G6.35	12	A B K
P1/18	240/250	1250	12	10-2	121-7±1.6	125-1	127	—	15	A B L
P1/19	240/250	1250	28	—	—	—	75	40000 2 Pin Ceramic G6.35	15	A B L

A Operates on tungsten halogen principle

B Dual voltage

C Voltage range in 10 volt steps

D Satin etched bulb

E Reflector photoflood

H Light output measured in centre beam candles

I 3 or 4 amp HBC fuse necessary

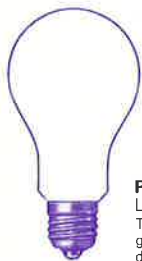
K 5 or 6 amp HBC fuse necessary

L 6 or 7 amp HBC fuse necessary

In the interest of safety tungsten halogen lamps above 130V rating should have a separate high breaking capacity fuse in the circuit. See special features column for individual lamp requirements.

Operating position: Universal, with the exception of: P1/13, P1/15 and P1/17 which are Base down to horizontal ±4°.

Photographic lamps, Class P2, Class P3



P3/3 High Intensity Enlarger Lamp (Opalised)
These lamps have opalised bulbs and give a brilliant white light evenly diffused.



P2/4 Reflector Photoflood
The P2/4 is specially designed to meet the exacting requirements of film and TV studios. The silvered bulb permits the use of the lamp in fittings without separate external reflectors.

CLASS P2 PHOTOGRAPHIC LAMPS for use with colour film balanced for 3200°K and for all monochrome film stock

Lamp Ref.	Volts	Watt	Dimensions mm				Maximum Overall Length	Nominal Lumens	Base	Average Life Hours	Special Features
			Maximum Bulb Diameter	Max. pip protuberance from bulb axis.	Nominal Contact Length	Maximum Clearance Length					
P2/1	115	500	89	—	—	—	183.5	12500	E.S. E27s	100	D
P2/1	240, 250	500	89	—	—	—	183.5	11000	E.S. E27s	100	C D
P2/4	115	500	127.5	—	—	—	182	7200	E.S. E27s	20	E F H
P2/4	240, 250	500	127.5	—	—	—	182	7200	E.S. E27s	12	C E F H
P2/5	115	500	127.5	—	—	—	182	12000	E.S. E27s	20	E G H
P2/5	240, 250	500	127.5	—	—	—	182	12000	E.S. E27s	12	C E G H
P2/10	240/250	625	12	10.2	185.7±1.6	189.1	190	15500	Double ended R7s	200	A B I
P2/15	240	625	12	10.2	114.2±1.6	117.6	119.5	16250	Double ended R7s	75	A I
P2/6	120	650	15	11.4	74.9±1.6	78.3	80	17000	Double ended R7s	100	A K
P2/16	240/250	650	28	—	—	—	75	17500	G6.35	50	A B I
P2/13	240	800	15.0	11.4	74.9±1.6	78.3	80	20000	Double ended R7s	50	A B K
P2/14	240	800	13.5	12	88.4	91.8	93.5	20000	Double ended R7s spcl	50	A K
P2/18	240	800	12	10.2	115	117	119	20600	Double ended R7s	150	A K
P2/25	115	850	28	—	—	—	75	23000	2 Pin Ceramic G6.35	50	A M
P2/7	240/250	1000	12	10.2	185.7±1.6	189.1	190	26000	Double ended R7s	200	A B K
P2/17	240/250	1000	28	—	—	—	75	28000	G6.35	50	A B K
P2/12	240/250	1250	12	10.2	185.7±1.6	189.1	190	33500	Double ended R7s	200	A B L
P2/26	240/250	1250	28	—	—	—	75	23000	2 Pin Ceramic G6.35	50	A B L
P2/27	240	2000	30	25	138.45±1.27	—	141.22	143	50000	RX7S	300 A M

A Operates on tungsten halogen principle

B Dual Voltage

C Voltage range in 10 volt steps

D Pearl bulb

E Satin etched bulb

F Reflector Photoflood

G Reflector Photo Spot

H Light output measured in Centre Beam

I Candles

J 3 or 4 amp H.B.C. fuse necessary

K 5 or 6 amp H.B.C. fuse necessary

L 6 or 7 amp H.B.C. fuse necessary

M 10 amp H.B.C. fuse necessary

Class P2 Operating Position:— Universal with the following exceptions:

P2/7 Horizontal ±4°

P2/10 Horizontal ±4°

P2/12 Horizontal ±4°

P2/15 Horizontal ±4°

In the interest of safety tungsten halogen lamps above 130V rating should have a separate high breaking capacity fuse in the circuit. See special features column for individual lamp requirements.

CLASS P3 PHOTOGRAPHIC ENLARGER LAMPS HIGH INTENSITY

Lamp Ref.	Volts	Watt	Dimensions mm			Average Life (Hours)	Special Features
			Maximum Overall Length	Maximum Diameter	Base		
P3/3	240, 250	75	108.5	61	B.C. B22d	100	A B
P3/3	240, 250	75	110	61	E.S. E27s	100	A B
P3/4	240, 250	150	108.5	61	B.C. B22d	100	A B
P3/4	240, 250	150	110	61	E.S. E27s	100	A B

A Internally opalised bulb

B Voltage range in 10 volt steps

Class P3 Operating Position:—Universal

Photographic lamps, Class CP, Class T

CP/41 2kW Studio Tungsten Halogen Lamp

With monoplane filament.
For use in conventional Fresnel spot-flood fittings.



T/12 Tungsten Halogen Theatre Spotlight Lamp

For use in cinemas, theatres and other applications, where a suitable housing and reflector can make good use of the compact, intense light source.



Class CP Conventional and tungsten-halogen lamps for use with colour film balanced for light of 3200°K and all monochrome film stock

Lamp ref.	Volts	Watts	Dimensions (mm)			Nominal lumens	Average life hours	Cap	Special features
			Maximum diameter	Maximum overall length	Light centre length				
CP/1	115 240	275 275	61 61	110 110	— —	7500	8 5	BC or ES	I
CP/2	115 240	500 500	82 82	166 166	— —	14000/13750	20 15	BC or ES	B I
CP/39	115/120, 220, 240	650	35	140	63.5 ± 0.5	17000/16800	100	Med Bi-post G22	A B D G
CP/47	115/120, 220, 240	650	35	110	55 ± 2	17000/16800	100	2 pin GX9-5	A B D G
CP/51	115/120, 220, 240	650	35	130	55.5 ± 0.5	17000/16800	100	Med Pre-Focus P28s	A B D G
CP/3	115	1000 1000	153 153	309 309	— —	30000/28000	30 25	GES E40	B I
CP/40	115/120, 220, 240	1000	35	140	63.5 ± 0.5	27000/26000	200	Med Bi-post G22	A B D G
CP/48	115/120, 220, 240	1000	35	110	55 ± 2	27000/26000	200	2 pin GX9-5	A B D G
CP/52	115/120, 220, 240	1000	35	130	55.5 ± 0.5	27000/26000	200	Med Pre-Focus P28s	A B D G
CP/30	115, 120, 220, 240	1250/1250	60	220	143 ± 2	28000/59000 25000/53000	250	4 pin GX38q	B C D E
CP/41	115/120, 220, 240	2000	40	210	127 ± 2	54000/52000	200	Bi-post G38	A B D G
CP/43	115/120, 220, 240	2000	40	145	70 ± 2	54000/52000	400	2 pin GY16	A B D G
CP/53	115/120, 220, 240	2000	40	200	87 ± 0.5	54000/52000	400	Lar Pre-Focus P40s	A B D G
CP/55	115/120, 220, 240	2000	40	160	75 ± 0.5	54000/52000	400	Med Bi-Post G22	A B D G
CP/32	220, 240	2500/2500	70	220	143 ± 2	55000/117000	250	4 pin GX38q	C D E
CP/29	115/120, 220, 240	5000	75	265	165 ± 2	145000/135000	400	Bi-post G38	A B D G
CP/54	220, 240	10000	70	380	254 ± 2	280000	400	Bi-post G38	D E

Class T Theatre spotlight lamps

Lamp ref.	Volts	Watts	Dimensions mm			Base	Average life hours	Special features
			Maximum diameter	Maximum overall length	Light centre length			
T/3	240, 250	250	78	124	55.5 ± 0.5	Med Pre-Focus P28s	200	G
T/1	240, 250	500	100	140	55.5 ± 0.5	Med Pre-Focus P28s	200	G
T/17	220, 240	500	27	122	55.5 ± 0.5	Med Pre-Focus P28s	750	A D G
T/12 115/120	220, 240	650	35	110	55 ± 2	2 pin GX9-5	750	D G
T/13 115/120	220, 240	650	35	130	55.5 ± 0.5	Med Pre-Focus P28s	750	A D G
T/2	240, 250	1000	132	200	87 ± 0.5	Large Pre-Focus P40s	200	G
T/4	240, 250	1000	39	155	89 ± 0.5	Med Pre-Focus P28s	200	H
T/6	240, 250	1000	102	140	55.5 ± 0.5	Med Pre-Focus P28s	200	F
T/11 115/120	220, 240	1000	35	110	55 ± 2	2 pin GX9-5	750	D G
T/14 115/120	220, 240	1000	35	130	55.5 ± 0.5	Med Pre-Focus P28s	750	A D G
T/15 115/120	220, 240	1000	35	160	89 ± 0.5	Med Pre-Focus P28s	750	A D H
T/16 115/120	220, 240	1000	35	200	87 ± 0.5	Large Pre-Focus P40s	750	A D G

Operating Positions

- E VBD ± 45°
- F VBD ± 75°
- G VBD ± 90°
- H VBU ± 15°
- I Universal

- A Dual voltage for low volt lamps
- B Higher lumen/life figures apply to low voltage lamps
- C Twin filament lamp. Higher lumen figures apply to twin filament operation
- D Operates on tungsten halogen principle

Outstanding features of these photo-flashbulbs are:

Zirconium filling: The use of zirconium foil enables more light to be packed into less space, thus giving greater economy, greater efficiency and flexibility.

Precision manufacture: Dependability is of prime importance in flash photography. These bulbs are of consistent high quality, thanks to precision manufacture and rigorous test standards.

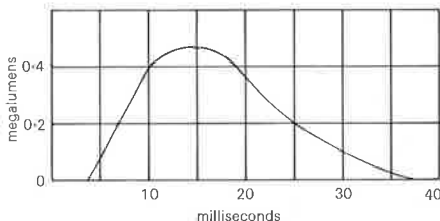
Super AG3B flashbulbs will work to perfection with a reflector only 50mm/2in in diameter. Many cartons can easily be carried in the pocket.

Full exposure data is printed on every flash carton

Tru-Flash Type 1B

Specification

Class	MF
Colour of bulb	Blue
Total light output (lumen secs)	7500
Peak light output (megalumens)	0.45
Time to peak (milliseconds)	13
Duration above half peak (milliseconds)	15
Voltage range	3-45
Maximum bulb diameter (mm)	11.9
Maximum overall length (mm)	40.5
Bulbs per pack	5
Bulbs per outer container	200
Colour code	Blue



Mini-Flash Super AG3B

Specification

Class	MF
Colour of bulb	Blue
Total light output (lumen secs)	7500
Peak light output (megalumens)	0.45
Time to peak (milliseconds)	13
Duration above half peak (milliseconds)	15
Voltage range	3-45
Maximum bulb diameter (mm)	11.9
Maximum overall length (mm)	33.3
Bulbs per pack	5
Bulbs per outer container	200
Colour code	Blue

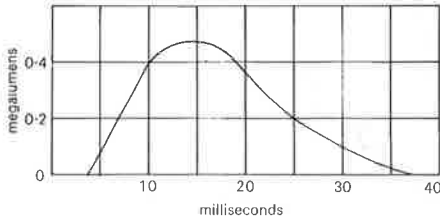
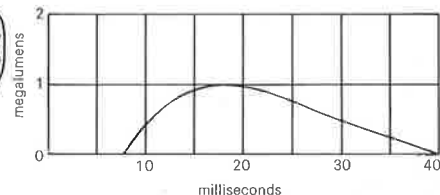


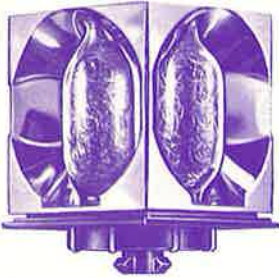
Photo-Flash M3

Specification

Class	M
Colour of bulb	Clear
Total light output (lumen secs)	16000
Peak light output (megalumens)	1
Time to peak (milliseconds)	17
Duration above half peak (milliseconds)	15
Voltage range	3-45
Maximum bulb diameter (mm)	22
Maximum overall length (mm)	45
Bulbs per pack	6
Bulbs per outer container	180
Colour code	Red



Flashcubes & Magicube X



Four miniature blue bulbs, smaller in size than an AG3B, are enclosed in a plastic cube complete with a precision reflector for each individual bulb. Flashcubes are simple to fit on the camera and simple to remove, either manually or by automatic ejection. They are only just warm to the touch after four bulbs have been fired.

The precision-made base ensures correct location on the camera, enabling positive contact and automatic rotation of the Flashcube.

Flashcubes may be used with suitably designed cameras and adaptors, with X synchronization at shutter speeds up to 1/60 second and at all shutter speeds with M synchronization.

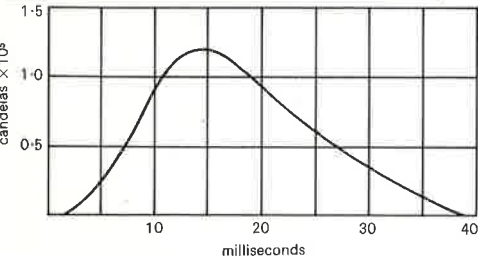
Exposure Data

Film Speed	10	25	40	100	160	320
	ASA to 12	to 32	to 64	to 125	to 200	to 500
Film Speed	12	15	17	21	23	26
	DIN to 13	to 16	to 19	to 22	to 24	to 28

Shutter Sync	Shutter Speed	Guide nos.					
X	1/25-1/30	32	55	75	100	130	200
X or M	1/50-1/60	22	36	50	70	90	130
M	1/100-1/125	18	30	42	60	75	110
M	1/200-1/300	15	24	34	48	60	90

Specification

Class	MF
Colour of bulb	Blue
Total light output (beam candle power sec)	2000
Peak light output (beam candle power)	130000
Time to peak (milliseconds)	13
Duration above half peak (milliseconds)	15
Voltage range	3-45
Width (mm)	28.5
Overall length (mm)	35.5
Cubes per pack	3
Cubes per outer pack	60



Magicube X is a major advance towards 100% photoflash reliability. It is mechanically activated, thus eliminating the need for batteries and consequent failures due to poor electrical contact or corrosion. Magicube X can be used only with cameras designed with the special Magicube firing system.

Exposure Data Guide nos./X Synchronization

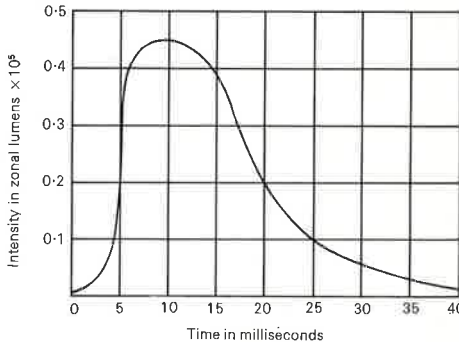
Film Speed	ASA to 15	25-32	40-50	64-80	100-125	160-200
1/30 sec	45	56	72	90	125	
1/60 sec	40	50	64	80	100	

Flash to subject distance for single speed cameras

Monochrome film stock	1.2m/4ft-4.5m/15ft
Colour film stock	1.2m/4ft-2.7m/9ft

Specification

Colour of bulb	Blue
Total light output (zonal lumens/sec)	460
Peak intensity (zonal lumens)	44000
Time to peak (milliseconds)	7
Duration above half peak (milliseconds)	13
Maximum width (mm)	30.5
Maximum overall height (mm)	41
Cubes per pack	3
Cubes per outer	30



Introduction

Thorn Lighting are leading suppliers of automobile and miniature lamps to major U.K. and European users. An important innovation has been wedge-base lamps, developed and patented by Thorn Lighting and now in use all over the world.

Two recent Thorn developments were cited in the Queen's Award to Industry 1972 for Technological Innovation: the molybdenum "frame mount" used in the H4 (26-0472 12V 60/55W) and "Bromophosphonitrile" the patented halogen compound used in many Thorn tungsten halogen auto lamps. The lamps listed are representative of the main range of lamps made by Thorn Lighting.

Index

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Semiconductor lamps: LEDs	412
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Lamp number index

Thorn lamps are listed by U.K. Trade Reference numbers or where these are not allocated, by the Thorn Product Code number.

Most auto lamps are types included in the European Regulation currently being prepared and where this is so the category is shown, e.g. P25-1, R19/5, T8/4, W10, etc. European usage will supersede U.K. references where appropriate: for

instance a 382 will be known as a 12V P25-1.

The following abbreviations are used:

S.B. Sealed Beam
T.H. Tungsten Halogen
W.B. Wedge Base

Lamp Reference no.	European Reference	Volts	Watts	Description	Standard Pack	Page no.
1		12	24	Head	10	407
2		12	36	Head	10	407
4		12	24	Head	10	407
5		12	36	Head	10	407
123		24	36	Head	10	407
149	R19/5	24	5	Side, tail	10	408
150	R19/5	24	5	Side, tail	10	408
185		12	48	Prefocus head	10	407
205	R19/5	6	5	Side, tail	10	408
206	R19/5	6	5	Side, tail	10	408
207	R19/5	12	5	Side, tail	10	408
209	R19/5	12	5	Side, tail	10	408
222		12	4	Side, tail	10	408
227		24	6	Side, tail	10	408
228		28	6	Side, tail	10	408
233	T8/4	12	4	Side, tail	10	408
241	P25-1	24	21	Stop, flasher	10	408
244	R19/10	6	10	Side, tail	10	408
245	R19/10	5	10	Side, tail	10	408
247	R19/5	5	6	Side, tail	10	408
248	R19/5	24	6	Side, tail	10	408
249	T8/4	24	4	Side, tail	10	408
253		6	6	Festoon	10	409
254		12	6	Festoon	10	409
255		6	3	Festoon	10	409
256		12	3	Festoon	10	409
260		24	6	Festoon	10	409
265		12	10	Festoon	10	409
270		12	18	Festoon	10	409
273	C15	12	21	Festoon	10	409
275		6	0.1	Cycle	10	410
831		2.5	0.3A	Flashlamp	10	410
280		12	1.5	Instrument panel	10	409
281		12	2	Instrument panel	10	409
286		12	1.2	Instrument panel	10	409
297		12	2	Instrument panel	10	409

Lamp Reference no.	European Reference	Volts	Watts	Description	Standard Pack	Page no.
288		12	2	Instrument panel	10	409
289		24	2	Instrument panel	10	409
290	P25-1	24	21	Stop, flasher	10	408
291	P25-1	24	21	Stop, flasher	10	408
293	T8/4	6	4	Side, tail	10	408
295		6	0.2	Cycle	10	410
296		6	0.25	Cycle	10	410
312		6	30/24	Prefocus head	10	407
317	P25-1	6	21	Stop, flasher	10	408
319	P25-1	6	21	Stop, flasher	10	408
323		12	45	Prefocus head	10	407
330		24	44	Prefocus head	10	407
331		24	44	Prefocus head	10	407
334		24	21/5	Stop/tail	10	408
335	P25-1	12	21	Stop, flasher	10	408
346	P25-1	12	21	Stop, flasher	10	408
380	P25-2	12	21/5	Stop/tail	10	408
381		12	21	Stop/tail	10	408
382	P25-1	12	21	Stop, flasher	10	408
384	P25-2	6	21/5	Stop/tail	10	408
410		12	45/40	Prefocus head	10	407
411		12	45/40	Prefocus head	10	407
414		12	50/40	Prefocus head	10	407
423		6	45/40	Prefocus head	10	407
429		24	55/50	Prefocus head	10	407
437		24	54/44	Prefocus head	10	407
448	H1	12	55	T.H. head/aux	10	405
450		12	55	T.H. auxiliary	10	405
453	H3	12	55	T.H. auxiliary	10	405
454		6	55	T.H. auxiliary	10	405
455	H3	6	55	T.H. auxiliary	10	405
458		24	70	T.H. auxiliary	10	405
459		24	70	T.H. auxiliary	10	405
460	H3	24	70	T.H. auxiliary	10	405
463		12	60/55	T.H. head	10	405
465	H1	6	55	T.H. head auxiliary	10	405

Lamp number index

Lamp Reference no.	European Reference	Volts	Watts	Description	Standard Pack	Page no.
466	H1	24	70	T.H. Head auxiliary	10	405
471		12	75/60	Prefocus head	10	407
472	H4	12	60/85	T.H. head	10	405
501	W10/5	12	5	W.B. side, tail	10	408
503		12	5	W.B. reversing	10	408
504		12	3	W.B. instr. panel	10	409
505		24	3	W.B. instr. panel	10	409
506		12	1.5	W.B. instr. panel	10	409
507	W10/5	24	5	W.B. side, tail	10	408
641		6	3	Instrument panel	10	409
643		12	2.2	Instrument panel	10	409
650		24	2.8	Instrument panel	10	409
651		24	2.8	Instrument panel	10	409
653		24	6	Festoon	10	409
695		24	2.8	Instrument panel	10	409
804		12	12	Bus	100	407
805		12	12	Bus	100	407
809		12	24	Bus	100	407
810		12	24	Bus	100	407
816		24	12	Bus	100	407
817		24	12	Bus	100	407
821		24	20	Bus	100	407
822		24	20	Bus	100	407
830		2.2	0.25	Flashlamp	10	410
836		4.5	0.3	Flashlamp	10	410
837		5.5	0.3	Flashlamp	10	410
844		6	0.25	Cycle	10	410
847		6	0.5	Cycle	10	410
853		6.3	0.15	Radio panel	10	411
854		6.3	0.25	Radio panel	10	411
855		6.5	0.3	Radio panel	10	411
856		6.5	0.3	Radio panel	10	411
858		6.5	0.3	Radio panel	10	411
865		24	2.8	Instrument panel	10	409
867		24	2.8	Instrument panel	10	409

Lamp Reference no.	European Reference	Volts	Watts	Description	Standard Pack	Page no.
917		3.6	0.5	Flashlamp	10	410
918		3.8	0.3	Flashlamp	10	410
950		6	6	Instrument panel	10	409
951		6	6	Side, tail	10	408
954		6	0.25	Cycle	10	410
970		2.5	0.2A	Flashlamp	10	410
972		2.5	0.3A	Flashlamp	10	410
974		3.5	0.15A	Flashlamp	10	410
987		12	2.2	Instrument panel	10	409
989		12	5	Side, tail	10	408
990		6	3	Instrument panel	10	409
991		6	0.04A	Cycle	10	410
993		24	2.8	Instrument panel	10	409
998		6	0.1A	Cycle	10	410
2097		12	1.2	Instrument panel	10	409
5712		12	50	S.B. head	10	404
5718		12	50/37.5	S.B. head	10	404
5724		12	75	S.B. head	10	404
5725		12	55	Halogen S.B. aux	10	404
5726		12	55	Halogen S.B. aux	10	404
5732		12	60/37.5	S.B. head	10	404
5733		12	75	Halogen S.B. head	2	406
5734		12	55	Halogen S.B. head	2	406
7002		12	60/45	S.B. head	10	404
7011		12	60/45	S.B. head	10	404
7014		12	60/45	S.B. head	10	404
7020		12	75/50	S.B. head	10	404
7021		12	75/50	S.B. head	10	404
7022		12	60/55	Halogen S.B. head	2	406
7026		12	60/46	S.B. head	10	404
7503		12	60/50	Rect. S.B. head	10	404
7505		12	75/60	Rect. S.B. head	10	404
7511		12	75/60	Rect. S.B. head	10	404

Sealed beam headlamps

HEADLAMPS – with 7in diameter lens

Lamp Reference	Volts	Watts	Drive	Dip	Standard pack
7002	12	60/45	RH	Left	10
7011*	12	60/45	LH	Right†	10
7014*	12	60/45	RH	Left	10
7020	12	75/50	RH	Left SI	10
7021*	12	75/50	RH	Left SI	10
7025	12	60/45	RH	Left PR	10



HEADLAMPS – with 5½in diameter lens

5712	12	50	RH	—	10
5718*	12	50/37.5	RH	Left	10
5724	12	75	RH	— SI	10
5732	12	60/37.5	RH	Left SI	10



HEADLAMPS – RECTANGULAR

7505*	12	75/60	RH	Left†	10
7503*	12	60/50	LH	Right†	10
7511*	12	75/60	RH	Left† US	10



TUNGSTEN HALOGEN AUXILIARY LAMPS – with 5½in diameter lens

5725	12	55	Fog	10
5726	12	55	Long Range	10



TUNGSTEN HALOGEN HEADLAMPS

7in circular

7022*	12	60/55	RH	Left†	H	2
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5½in circular

5733	12	75	RH	—	H	2
5734*	12	55	RH	Left	H	2



*With pilot aperture

†Asymmetric beam

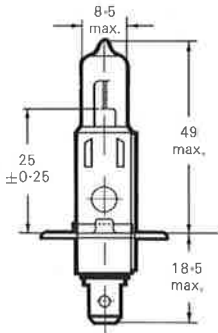
SI — Super Intensity

R —

US — Uplight Shield

H — Halogen

①



Lamp Reference	European Reference	Volts	Watts	Cap	Diagram	Standard pack
465	H1	6	55	P14-5s	1	10
465	H3	6	55	PK22s	2	10
448	H1	12	55	P14-5s	1	10
453	H3	12	55	PK22s	2	10
466	H1	24	70	P14-5s	1	10
460	H3	24	70	PK22s	2	10
472	H4	12	60/55	P43t-38	3	10

British Prefocus types

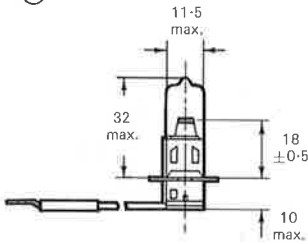
Lamp Reference	Volts	Watts	Cap	Diagram	Standard pack
454	6	55	P36s	5	10
460	12	55	P36s	5	10
458	24	70	P36d	5	10
459	24	70	P36s	5	10
463	12	60/55	P36t	4	10

Caps P36s: BPF s.c.

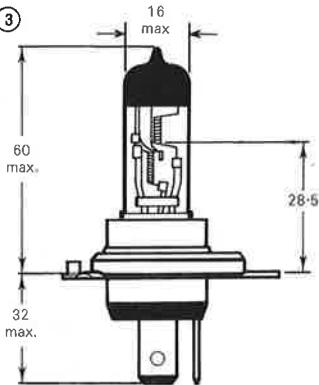
P36d: BPF d.c.

All dimensions in mm

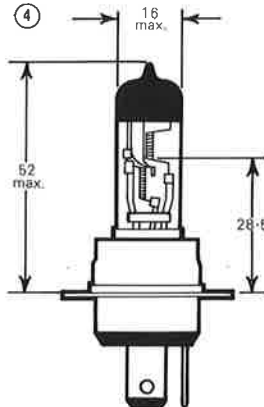
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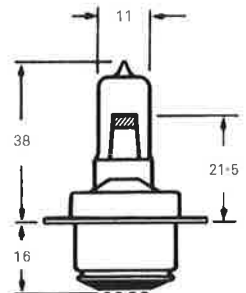
③



④



⑤



Tungsten Halogen Headlamp Conversion Kits

7" CONVERSION KIT 12V 60/55W R.H. DRIVE

7022 Kit comprises two 12V 60/55W sealed beam headlamps

R.H. Drive, main and dip beam, ref. 60-7022.

Tungsten Halogen conversion for all 7" dia sealed beam units except 60-7012 and 60-7025. Headlamp contains a T.H. capsule similar to H4 giving far reaching main beam plus asymmetric dip beam with sharp cut-off and high intensities on near side.



5½" CONVERSION KITS 12V 75W & 12V 55W R.H. DRIVE

5733 Kit comprises two 12V 75W sealed beam headlamps

R.H. Drive, main beam (inner), ref. 60-5733.

5734 Kit comprises two 12V 55W sealed beam headlamps

R.H. Drive, dip beam (outer) ref. 60-5734.

Tungsten Halogen conversion for all 5½" sealed beam units.

Part conversion with 5733 kit improves main beams markedly but for greater benefit use full system 5733 & 5734 and obtain nearly double intensities on dip beam of British pattern. Simple replacement results in 2 main 2 dip beams— for full 4-lamp main beam fit suitable relay.



463 CONVERSION KIT 12V 60/55W

463 Kit comprises two 12V 60/55W headlamp bulbs plus adaptor plates and two types of retention springs.

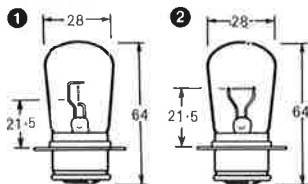
Tungsten Halogen conversion for many metal reflector headlights.

Converts from conventional European bulb ref. 410. Considerable increase in intensities of main and dip beams.



Prefocus headlamps, Bus lamps

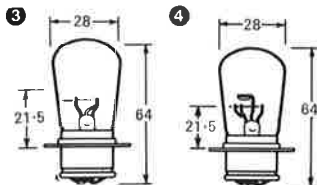
All dimensions in mm



PREFOCUS, BRITISH TYPES

Single Filament

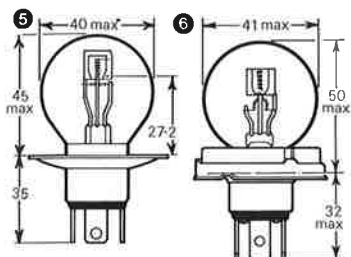
Lamp Reference	Volts	Watts	European Ref.	Filament	Cap	Diagram	Standard pack
185	12	48		Axial	P36s	1	10
323	12	48	F1	Transverse	P36s	2	10
331	24	44		Axial	P36d	1	10
330	24	44	F1	Transverse	P36d	2	10



Double Filament

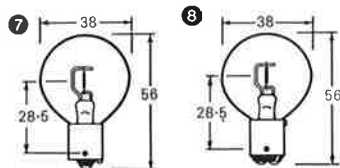
Lamp Reference	Volts	Watts	Drive	Dip	Cap	Diagram	Standard pack
312	6	30/24	Either	Vertical	P36d	3	10
414*	12	50/40	RH	Left	P36d	4	10
437*	24	54/44	RH	Left	P36d	4	10
471	12	75/60	RH	Left	P50t	5	10

*These lamps have transverse shielded filaments



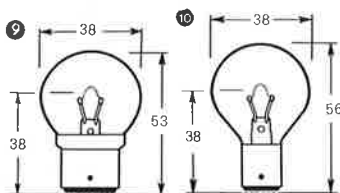
PREFOCUS - EUROPEAN TYPES with UEC CAP

Lamp Reference	Volts	Watts	Drive : Dip	Cap	Diagram	Standard pack
423	6	45/40	Either	P45t	6	10
410	12	45/40	Either	P45t	6	10
411	12	45/40 Yellow	Either	P45t	6	10
429	24	55/50	Either	P45t	6	10



ORDINARY TYPES

Lamp Reference	Volts	Watts	Filament	Cap	Diagram	Standard pack
1	12	24	Axial	BA15s	7	10
4	12	24	Axial	BA15d	8	10
2	12	36	Axial	BA15s	7	10
5	12	36	Axial	BA15d	8	10
123	24	36	Axial	BA15d	8	10



BUS LAMPS

For interior lighting

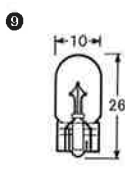
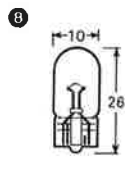
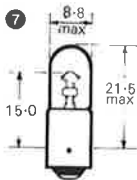
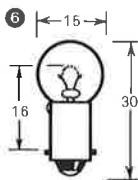
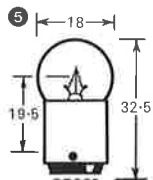
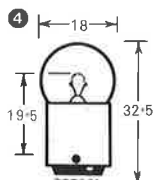
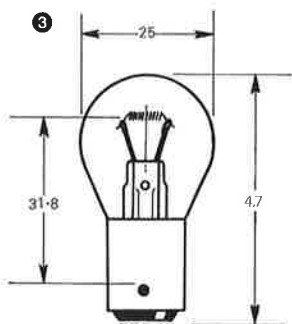
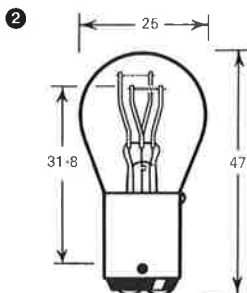
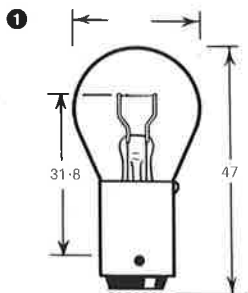
Lamp Reference	Volts	Watts	Cap	Finish	Diagram	Standard pack
804	12	12	B22d	Pearl	9	100
805	12	12	BA15d	Pearl	10	100
809	12	24	B22d	Pearl	9	100
810	12	24	BA15d	Pearl	10	100
816	24	12	B22d	Pearl	9	100
817	24	12	BA15d	Pearl	10	100
821	24	20	B22d	Pearl	9	100
822	24	20	BA15d	Pearl	10	100

Caps P36s: BPF s.c.
P36d: BPF d.c.
P45t: UEC

BA15s: SCC
BA15d: SBC
B22d: BC

All dimensions in mm

Flasher, stop and stop/tail lamps Side and tail lamps



FLASHER, STOP AND STOP/TAIL

Lamp Reference	European Reference	Volts	Watts	Cap	Diagram	Standard pack
317	P25-1	6	21	BA15s	1	10
319	P25-1	6	21	BA15d	1	10
384	P25-2	6	21/5	BA15d	2	10
382	P25-1	12	21	BA15s	1	10
335	P25-1	12	21	BA15d	1	10
381		12	21/5	BA15d	2	10
380	P25-2	12	21/5	BA15d	2	10
334		24	24/6	BA15d	2	10
241	P25-1	24	21	BA15s	1	10
346	P25-1	24	21	BA15d	1	10

Heavy Duty Lamps

290	P25-1	24	21	BA15s	3	10
291	P25-1	24	21	BA15d	3	10

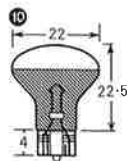
SIDE AND TAIL

Lamp Reference	European Reference	Volts	Watts	Cap	Diagram	Standard pack
293	T8/4	6	4	BA9s	7	10
205	R19/5	6	5	BA15s	4	10
206	R19/5	6	5	BA15d	4	10
951		6	6	BA9s	6	10
244	R19/10	6	10	BA15s	4	10
233	T8/4	12	4	BA9s	7	10
222		12	4	BA9s	6	10
501	W10/5	12	5	W2.1 x 9.5d	8	10
503		12	5	W2.1 x 9.5d	10	10
989		12	5	BA9s	6	10
207	R19/5	12	5	BA15s	4	10
209	R19/5	12	5	BA15d	4	10
245	R19/10	12	10	BA15s	4	10
249	T8/4	24	4	BA9s	7	10
507	W10/5	24	5	W2.1 x 9.5d	9	10
149	R19/5	24	5	BA15s	5	10
150	R19/5	24	5	BA15d	5	10
227		24	6	BA9s	6	10
228		28	6	BA15d	5	10

Heavy Duty Lamps

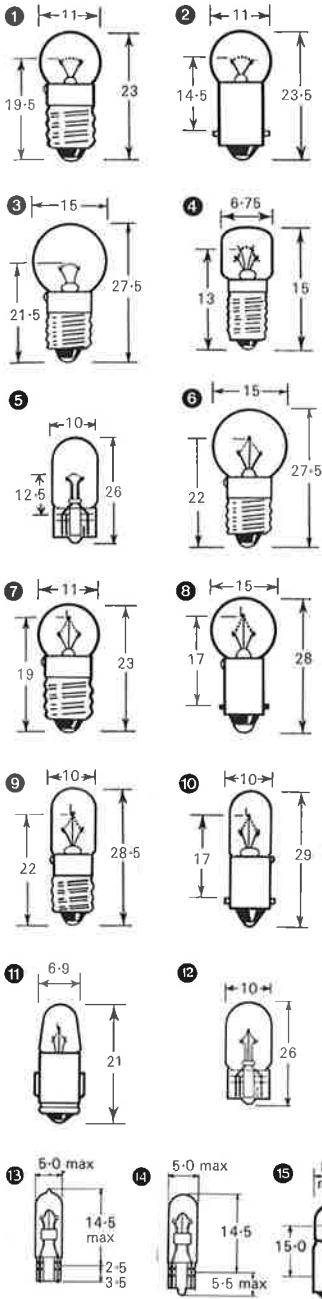
247	R19/5	24	6	BA15d	5	10
248	R19/5	24	6	BA15s	5	10

Caps BA9s: MCC
BA15s: SCC
BA15d: SBC
BA15d: SBC Index
W2.1 x 9.5d: Wedge



All dimensions in mm

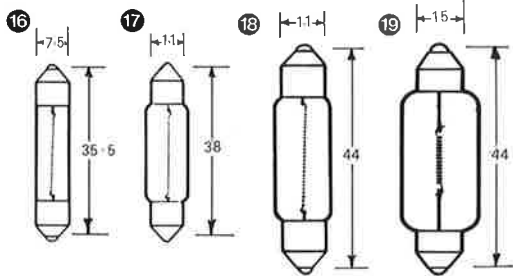
Panel and indicator lamps Festoon lamps



INDICATOR, PANEL AND INSTRUMENT WARNING

Lamp Reference	Volts	Watts	Cap	Diagram	Standard pack
287	6	2	BA9s	15	10
990	6	3	E10/13	1	10
641	6	3	BA9s	2	10
950	6	6	E10/13	3	10
286	12	1.2	W2×4-6d	14	10
2097	12	1.2	W2×4-6d	13	10
280	12	1.5	E5/8	4	10
506	12	1.5	W2.1×9-5d	5	10
297	12	2	W2.1×9-5d	12	10
288	12	2	BA9s	15	10
281	12	2	BA7s	11	10
987	12	2.2	E10/13	1	10
643	12	2.2	BA9s	2	10
504	12	3	W2.1×9-5d	5	10
289	24	2	BA9s	15	10
650	24	2.8	E10/13	7	10
651	24	2.8	BA9s	8	10
695	24	2.8	E10/13	9	10
993	24	2.8	E10/13	6	10
865	24	2.8	BA9s	2	10
867	24	2.8	BA9s	10	10
505	24	3	W2.1×9-5d	12	10

Caps E5/8: LES
BA7s: 2 lug
BA9s: MCC
E10/13: MES
W2.1×9-5d: Wedge 10mm
W2×4-6d: Wedge 5mm



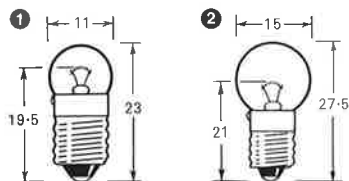
FESTOON

Lamp Reference	ECE Reference	Volts	Watts	Cap	Diagram	Standard pack
255		6	3	S7/8	16	10
253		6	6	S8-5/8	17	10
256		12	3	S7/8	16	10
254		12	6	S8-5/8	17	10
265		12	10	S8-5/8	19	10
270		12	18	S8-5/8	19	10
273	C15	12	21	S8-5/8	19	10
653		24	6	S8-5/8	17	10
260		24	6	S8-5/8	18	10

All dimensions in mm

Flashlamps and cycle dynamo lamps

Miners' and emergency lamps



FLASHLAMPS

Ordinary type

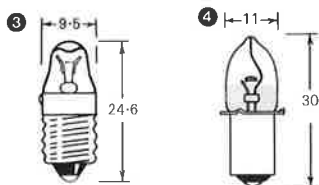
Lamp Reference	Volts	Amps	Cap	Diagram	Standard pack
970	2.5	0.2	E10/13	1	10
972	2.5	0.3	E10/13	1	10
974	3.5	0.15	E10/13	1	10
977	3.5	0.3	E10/13	1	10
835	4.5	0.3	E10/13	2	10
837	5.5	0.3	E10/13	2	10

Lens end type

830	2.2	0.25	E10/13	3	10
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Prefocus flashlights

31	2.5	0.3	P13-5s	4	10
917	3.6	0.5	P13-5s	4	10
918	3.8	0.3	P13-5s	4	10



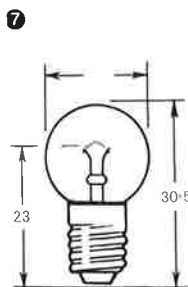
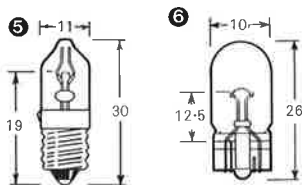
CYCLE DYNAMO LAMPS

Headlamps

Lamp Reference	Volts	Amps	Cap	Finish	Diagram	Standard pack
295	6	0.2	Wedge		6	10
954	6	0.25	E10/13		2	10
296	6	0.25	Wedge		6	10
844	5	0.25	E10/13	Gran.	2	10
847	6	0.5	E10/13		2	10

Tail lamps

991	6	0.04	E10/13		5	10
998	6	0.1	E10/13		5	10
275	6	0.1	Wedge		6	10

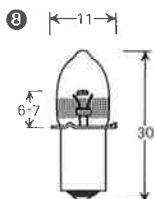


MINERS' LAMPS

Lamp Reference	Volts	Amps	Cap	Type	Diagram	Standard pack
5.02315	3.6	1	E10/13	Krypton	7	25
3.70879	4	0.9	E10/13	Krypton	7	25
2.02322	4	1	E10/13	Krypton	7	25

Prefocus type

6.78029	4	1	P13-5s	Krypton	8	25
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EMERGENCY LIGHTING LAMPS

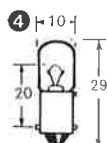
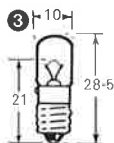
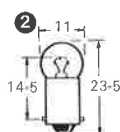
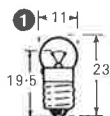
Lamp Reference	Volts	Amps	Cap	Type	Diagram	Standard pack
2.76929	2.4	1.0	E10/13	Krypton	7	25
2.77572	3.6	0.6	E10/13	Krypton	7	25

Caps E10/13: MES
P13-5s: Prefocus flash

All dimensions in mm

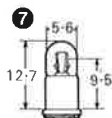
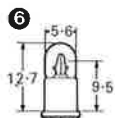
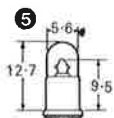
Radio and subminiature lamps

Telephone Visual and Telewriter lamps



RADIO PANEL LAMPS

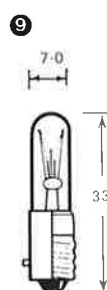
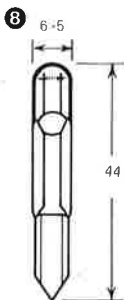
Lamp Reference	Volts	Amps	Cap	Diagram	Standard pack
853	6.3	0.15	E10/13	3	10
854	6.3	0.25	BA9s	4	10
856	6.5	0.3	E10/13	1	10
855	6.5	0.3	BA9s	2	10
858	6.5	0.3	BA9s	4	10



SUBMINIATURE PANEL LAMPS

Lamp Reference	Volts	Amps	Cap	Diagram	Standard pack
2.00506	6	0.1	S6s/8	5	50
4.00507	6	0.2	S6s/8	5	50
9.00513	12	0.1	S6s/8	6	50
0.00522*	28	0.04	S6s/8	7	50
6.00525	28	0.04	S6s/8	7	50
0.00446	28	0.08	S6s/8	7	50

*Long life lamp



TELEPHONE VISUAL LAMPS

Side contact plates and coloured endpieces

Lamp Reference no.	Volts	Amps	Filament	Endpiece colour	Diagram	Standard pack
7.02355	6	0.041	No. 2 Metal	Grey	8	100
3.02358	12	0.10	No. 2 Metal	Red	8	100
6.02363	24	0.10	No. 2 Metal	Yellow	8	100
6.03097	12	0.117	No. 2 Carbon	Red	8	100
1.02352	50	0.107	No. 2 Carbon	White	8	100

TELEWRITER LAMPS

Lamp Reference no.	Volts	Watts	Cap	Diagram	Standard pack
4.02384	50	2.5	BA9s	9	50
6.02385	50	2.5	E10/13	9	50
4.02389	60	3.6	E10/13	9	50

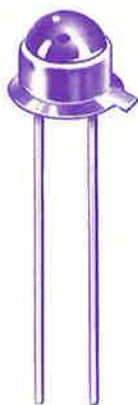
All dimensions in mm

Caps BA9s: MCC
E10/13: MES
S6s/8: Midget flange

Semiconductor lamps LEDs

Gallium Arsenide Phosphide lamps are a new type of semiconductor junction electroluminescent device. They have electrical characteristics similar to a normal diode but with the distinguishing feature that visible radiation is generated at the junction when biased in the forward direction.

The Thorn lamps offer high visibility for low power consumption. The encapsulation ensures stable, ultra-long life expectancy and high resistance to vibration or shock and offers typical solid state reliability.



TYPES

Single colour

The range includes high performance lamps in three colours with outputs matched for equivalent visual effect within the range.

60mA projection

A projection lamp designed to throw a spot 2mm dia. at 2cm range is now available; it is suitable for excitation of photo sensors or for direct visible indications through translucent or diffracting surfaces.

Dual colour

A recent addition is the dual colour range of red/green, red/yellow and yellow/green lamps with 3-pin TO18 common cathode configuration rated at 20mA. They are suitable for single point indication of circuit status, yes/no, wait/stop and many physical parameters, e.g. hot/cold, etc.

RANGE

Single colour

TO18 2 pin

Lamp reference	Colour	Nominal current	Lens	Total flux	Features	Product code no
49-1101	Red	20mA	Clear	1.5mL	High contrast	3.78031
49-1121	Yellow	20mA	Clear	3.0mL		5.78032
49-1141	Green	20mA	Clear	3.0mL		7.78033
49-1002	Red	60mA	Clear	2.0mL	Semi-directional	9.76718
49-1003	Red	50mA	Diffused	3.0mL	Diffused lens for larger illuminated area	3.78036
49-1023	Yellow	50mA	Diffused	6.0mL		1.78395
49-1043	Green	50mA	Diffused	6.0mL		3.78396
49-1001	Red	50mA	Clear	4.0mL	High luminance over wide angle	7.76717
49-1021	Yellow	50mA	Clear	8.0mL		4.78089
49-1041	Green	50mA	Clear	8.0mL		9.78090

Projector

TO18 2 pin

49-1011	Red	60mA	Clear	40 lux over 2mm spot at 2cm from lamp		1.78694
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Dual colour

TO18 3 pin

49-1263	Red/Green	20mA	Clear	Flux as 20mA singles	Compact dual indicating source, common cathode, mounting grommet available	7.78692
49-1273	Red/Yellow	20mA	Clear			8.78564
49-1283	Yellow/Green	20mA	Clear			9.78693

Auto and miniature lamp caps

E5/8
(LES)



BA 7s



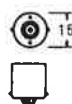
BA9s
(MCC)



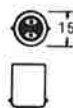
E10/13
(MES)



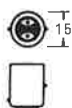
BA15s
(SCC)



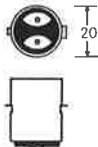
BA15d
(SBC)



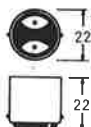
BAY 15d
(SBC Index)



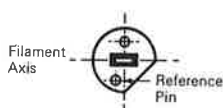
BA 20 d
(Bosch)



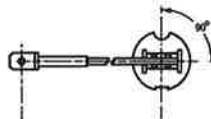
B22/22
(BC)



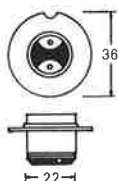
P14-5s



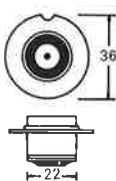
PK22s



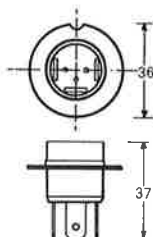
P36d
(BPF dc)



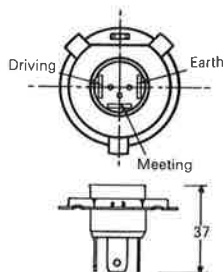
P36s
(BPF sc)



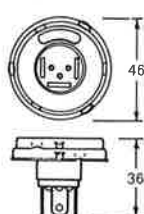
P36t



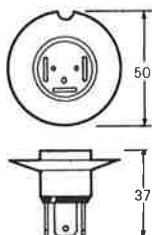
P43t-38



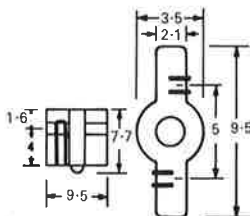
P45t/41
(UEC)



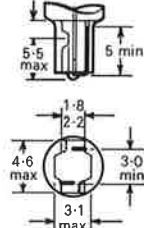
P50t
(Prefocus)



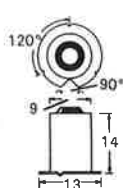
W2.1 × 9.5d
(Wedge Base)



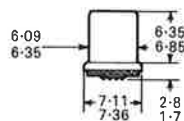
W2 × 4.6d
(Wedge base)



P13-5s
(Prefocus)



S6s/8
(Midget flange)



All dimensions in mm

GENERAL CONDITIONS OF SALE

(Applicable to sales in the United Kingdom only)

1. **GENERAL.** All orders are accepted and executed on the understanding that the Purchaser is bound by the following General Conditions of Sale. Where there is any inconsistency between these General Conditions of Sale and any Conditions which the Purchaser seeks to impose these General Conditions of Sale shall prevail.
2. **VALIDITY OF QUOTATIONS.** The Company reserves the right to refuse the Purchaser's acceptance of a quotation unless such quotation is stated to be open for a specific period and is not withdrawn in such period.
3. **PRICES AND DISCOUNTS.** The published prices of and the discounts applicable to the Company's products are those ruling on the date of publication and are subject to alteration without notice.
4. **PAYMENT.** Unless otherwise agreed in writing, payment in full is due in respect of any goods delivered. $2\frac{1}{2}$ per cent settlement discount will be allowed off accounts (excluding the amount of any tax on the supply or purchase of the goods) paid by the end of the month following that in which the invoice is dated. No other settlement terms will be granted.
5. **NEW ACCOUNTS.** Where a credit account is desired, a Bank and two trade references are required.
6. **CARRIAGE.** Unless otherwise specified by the Company, goods are delivered carriage free to any part of Great Britain and Northern Ireland. Special fittings and dimming equipment are offered ex-works carriage extra. When special delivery arrangements are requested, the difference between standard delivery and special rates will be charged.
7. **PACKING.** A charge is made when it is necessary to despatch goods in crates or cases but this amount will be credited in full on the return, within one month, of the crates or cases in good condition carriage paid. No charge is made for any other form of packing and no credit will be allowed for its return.
8. **LOSS OR DAMAGE IN TRANSIT.** Clear receipts should be given only if goods have been examined, as an unqualified signature may react to the disadvantage of the Purchaser if the consignment should become the subject of a claim. In the event of short delivery or damage in transit, it is essential that the Company's despatching depot and the Carriers be advised within three days of receipt of goods. Irrespective of condition of packing, goods and packing should be held for inspection by Carriers before return. After inspection, Carriers should accept goods or return to sending depot, carriage free.
The following details should be sent to the Company:—

Advice note number.	Condition of package.	Date Carrier advised.
Carrier's name.	Date consignment received.	Extent of damage or shortage.

In the event of non-delivery, Carriers and the Company's despatching depot should be advised within ten days of date of advice packing note. The Company will not be responsible for goods lost or damaged in transit unless the above conditions are observed.
9. **LIABILITY FOR DELAY.** Any times quoted for despatch, repair or replacement are to be treated as estimates only and the Company shall not be liable for failure to despatch, repair or replace within such time unless the Purchaser has suffered loss thereby and the amount payable in respect thereof shall have been agreed in writing as liquidated damages, in which case the Company's liability shall be limited to the amount so agreed to be paid. In all cases, whether a time for despatch, repair or replacement be quoted or not, the time for despatch, repair or replacement shall be extended by a reasonable period if delay in despatch, repair or replacement is caused by instructions or lack of instructions from the Purchaser or by industrial dispute or by any cause whatsoever beyond the Company's reasonable control.
10. **DEFAULT.** The Company shall have the right to discontinue delivery and also at its discretion to determine the contract in respect of any undelivered goods if the Purchaser defaults in payment.
11. **DEFECTS AFTER DELIVERY**
 - a) Nothing herein contained shall operate to exclude any warranty or condition implied by law as to quality of the goods in the event that the goods when sold by you or when sold by any person or persons to whom you may sell the goods shall become the subject of a Consumer Sale as defined in the Supply of Goods (Implied Terms) Act 1973 provided always that any claim under such warranty or condition shall not arise from any act or omission by you or by any other person or persons selling the goods as a Consumer Sale.
 - b) Save as aforesaid the Company will make good, by repair or at the Company's option, by the supply of replacement, defects which, under proper use, appear in the goods within a period of 12 calendar months after the goods have been delivered and arise solely from faulty design (other than a design made, furnished or specified by the Purchaser for which we have disclaimed responsibility in writing), materials or workmanship. Provided further that in respect of parts or components not of the Company's manufacture, the Company will give the Purchaser a guarantee equivalent to the guarantee (if any) which the Company may have received from the supplier of such parts or components in respect thereof but not so as to impose on the Company in respect of such parts or components a liability greater than that imposed on it by the aforesaid period of this clause. Save as aforesaid and as provided in Clauses 8 and 9, the Company shall not be under any liability in respect of defects in goods delivered or for any injury, damage or loss resulting from such defects or from any work done in connection therewith and its liability under this clause shall be in lieu of any warranty or condition implied by law as to the quality or fitness for any particular purpose of such goods.
12. **SPECIAL ORDERS.** All orders for lamps of non-standard voltages or for types not included in catalogues are considered to be "Special Types"—the production of which is undertaken on the understanding that the Purchaser will accept under or over delivery to the extent of 10 per cent at the price quoted per unit.
13. **RETURN OF GOODS.** In no circumstances may goods supplied against a firm order be returned without the customer having first applied for and obtained the written consent of the Company. A handling charge amounting to not more than 10 per cent of the invoice value of the returned goods may be deducted from any credit allowed where it is established that the reason for their return is not subject to the provision of Clause 8 or 11 hereof or through any error on the part of the Company.
14. **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.
15. **PATENTS.** In the event of any claim being made or action being brought against the Purchaser in respect of infringement of British patents by the use or sale of goods supplied hereunder, the Purchaser is to notify the Company immediately and the Company shall be at liberty with Purchaser's assistance if required, but at the Company's expense, to conduct through the Company's own Lawyers and Experts all negotiations for the settlement of the same or any litigation that may arise therefrom; subject to such notifications and provided that no goods, or any part thereof, shall be used for any purpose other than that for which the Company supply them, the Company will indemnify the Purchaser in respect of any such claims.
16. **LEGAL CONSTRUCTION.** These General Conditions of Sale shall be construed in accordance with the law of England and if any question, dispute or difference shall arise between the parties in respect of their interpretation or their rights or duties hereof, the same shall be referred to a single arbitrator in London in case the parties can agree upon one. Otherwise it shall be referred to arbitration in London under the provision of the Arbitration Acts 1889 to 1950 or any statutory modification or re-enactment thereof which provisions shall also apply to the case of a reference to a single arbitrator.

Thorn Lighting UK branches

Belfast

Prince Regent Road, Castlereagh
Belfast BT5 6QR
Telephone 0232-54122
Telex Thornlite Belfast 74695

Birmingham

Thorn House, Aston Church Road
Saltley Trading Estate, Birmingham
B81 8E
Telephone 021-327 1535
Telex Thornlite Birmingham 33235

Cardiff

Thorn House, Penarth Road
Cardiff, Wales CF1 7YP
Telephone 0222-44200
Telex Thornlite Cardiff 49334

Glasgow

Thorn House, Lawmoor Street
Glasgow G5 0TT
Telephone 041-429 6222
Telex Thornlite Glasgow 77630

Leeds

Thorn House, 3 Ring Road
Lower Wortley, Leeds LS1 6EJ
Telephone 0532-636321
Telex Thornlite Leeds 55110

London

Victoria Trading Estate, Victoria Way
Charlton, London SE7 7PA
Telephone 01-858 3201
(order office) or 01-858 3281
(all other enquiries)
Telex Thornlite Charlton 896171

Manchester

Thorn House, 2 Claytonbrook Road
Clayton, Manchester M11 1BP
Telephone 061-223 1322
Telex Thornlite Manchester 668642

Reading

10 Richfield Avenue, Reading
RG1 8PA
Telephone 0734-53257

Southampton

West Quay Trading Estate, West
Quay Road, Southampton SO9 1FF
Telephone 0703-27401

Government Contracts and Order Office

Atlas House, Great Cambridge Road
Enfield EN1 1UL
Telephone 01-363 5353

Head Office and Showroom

Thorn House
Upper Saint Martin's Lane
London WC2H 9ED
Telephone 01-836 2444
Telex Thorn London 24184/5

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Australia

Thorn Lighting Industries Pty Limited
210 Silverwater Road, Lidcombe,
NSW 2141

Austria

Thorn Electrical Industries GmbH
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Vienna

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Thorn Lighting Canada Limited
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Ontario 24T 1G3

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Villeurbanne

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Borsteler Chaussee 287

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Casella Postale 604, I-36100 Vicenza

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PO Box 15150, New Lynn,
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