

# THORN LIGHTING



COMPREHENSIVE CATALOGUE 1977



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# THORN LIGHTING

A MEMBER OF THE THORN GROUP

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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. All goods supplied by Thorn Lighting Limited are supplied subject to the Company's General Conditions of Sale which are printed on pages 274-275 of this catalogue.

## 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 not so manufactured will bear an appropriate indication on the product.

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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.

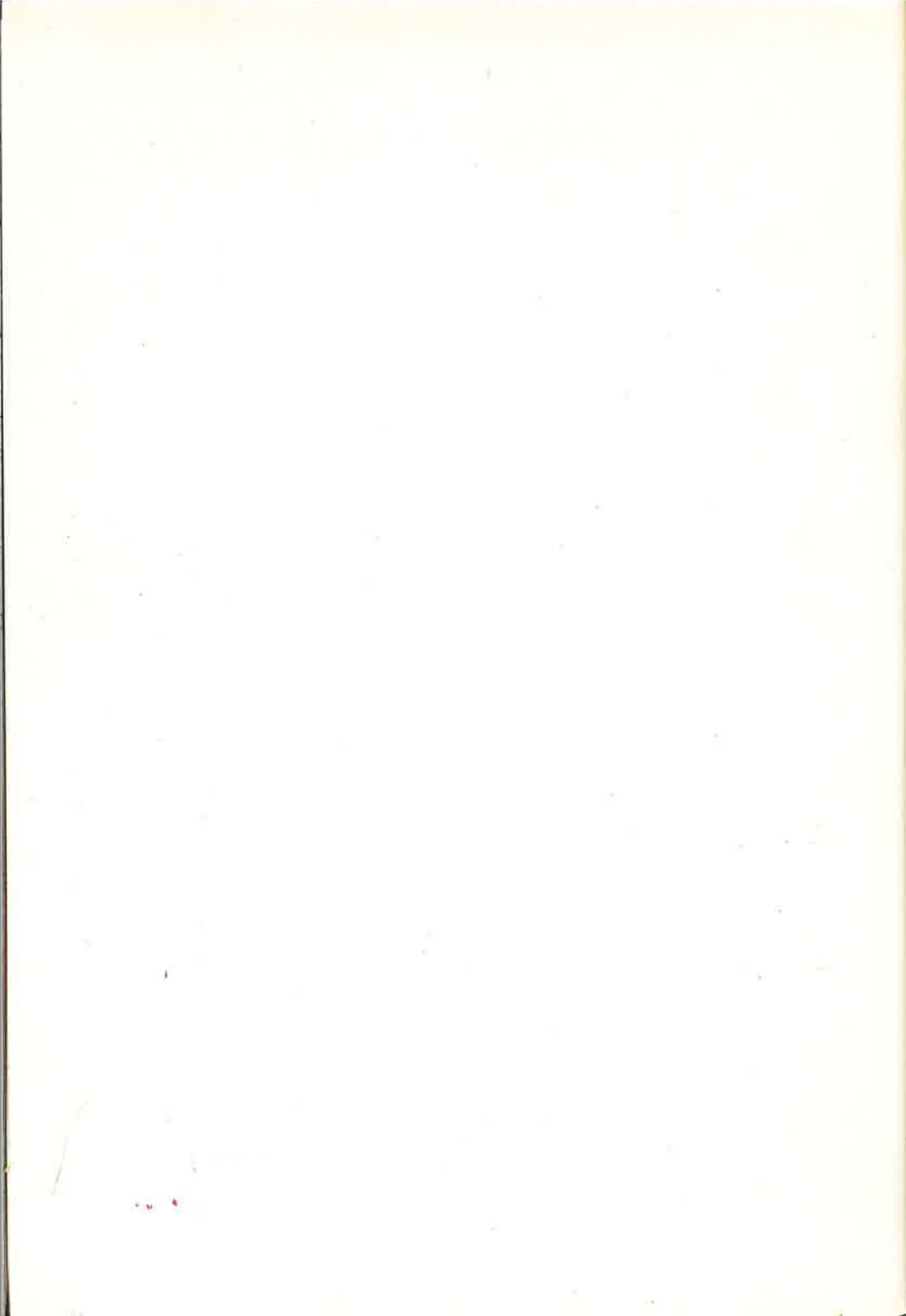


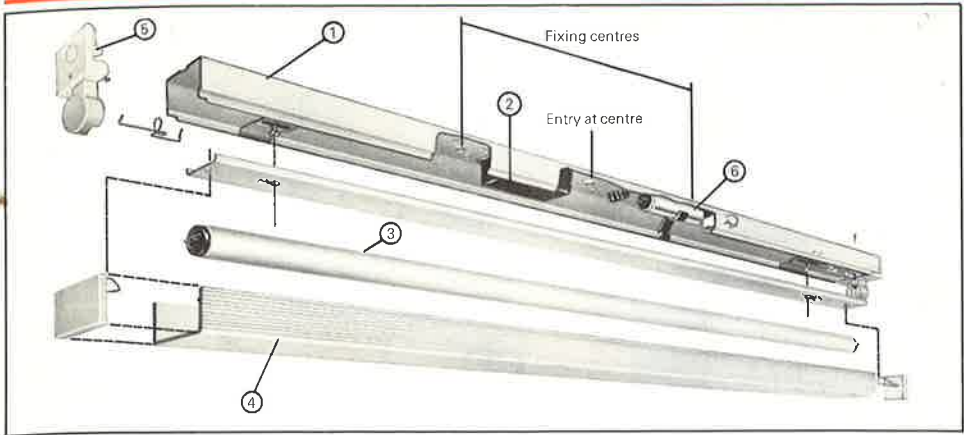
# Industrial, commercial and domestic fluorescent fittings

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## FEATURES

- 1 Range of 2400mm, 1800mm, 1500mm, 1200mm and 600mm single and twin tube fittings finished in white stoved enamel. For use in ordinary indoor atmospheres where ambient temperature does not exceed 25°C.
- 2 All fittings wired with high quality, slim switchstart control gear. 1800mm fittings also available with 75W starterless control gear.
- 3 Complete with high efficiency White tube(s).
- 4 Diffusers and prismatic controllers in light-stabilised polystyrene with spring-mounted end plates. Metal reflector attachments have key-hole slot fixings.
- 5 Spring-mounted lampholders with knock-outs for end entry.
- 6 All fittings power factor corrected except 600mm single, 2400mm fittings operate at leading power factor. Single 1800mm 75W switchstart fittings are supplied in matched pairs to give near-unity power factor. 2400mm fittings can be used with 100W or 125W tubes.

## 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 comply with BS 4533 - 2, 2 (IP20).

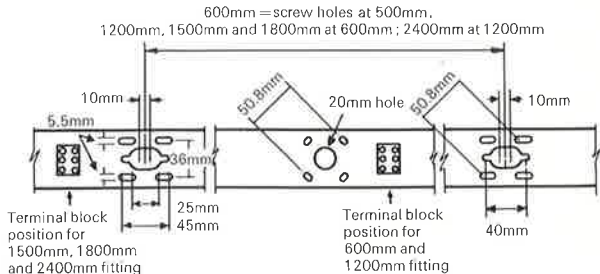
## Supply voltage

Standard fittings 230/240v 50Hz. The following fittings can be supplied to order at the voltage shown at no extra charge:

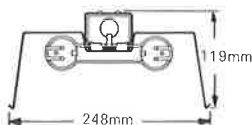
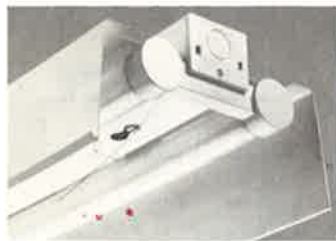
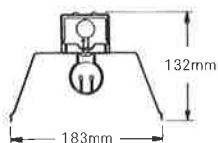
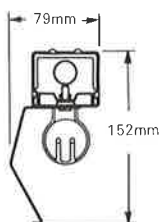
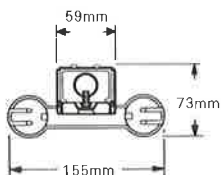
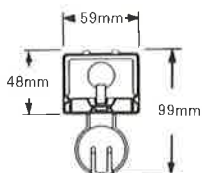
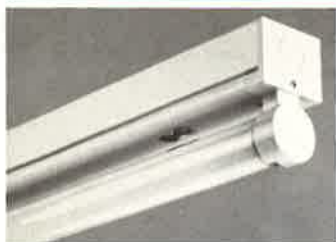
20W 600mm	} 220V 50Hz
40W 1200mm	
65W 1500mm	

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 FIXING CENTRES



# Popular Pack



## PP batten

Single and twin-tube battens complete with tube(s). The starter switch is readily accessible through the side of the fitting. Bracket (catalogue no. PP 4620) is available free of charge to secure conduit into the end of the fitting. For continuous mounting a space of 12mm between battens and trough reflectors, and 50mm between diffusers is essential for correct maintenance.

## PPA angle reflector

Asymmetrical metal reflector attached to the batten by screws fitted into slideable spring nuts retained in the batten. Screws engage into keyhole slots in the reflector.

## PPR metal reflectors

Open-ended slotted metal trough reflectors in white stoved enamel. Fitted by sliding captive screws on batten into keyhole slots.

## RANGE:

Nominal length mm	Rating	Circuit	Batten Catalogue no.	Length mm	Approx. weight (incl. tubes) kg	Fixing centres mm
600	20W Single	Switchstart	PP 20	615	1.8	500
600	20W Twin	Switchstart	PP 220	615	2.16	500
1200	40W Single	Switchstart	PP 40	1224	2.6	600
1200	40W Twin	Switchstart	PP 240	1224	4.1	600
1500	65W Single	Switchstart	PP 65	1525	3.4	600
1500	65W Twin	Switchstart	PP 265	1525	5.45	600
1800	75W Single*	Switchstart	PP 675*	1788	3.7	600
1800	75W Twin	Switchstart	PP 2675	1788	6.12	600
1800	75W Single	Resonant Start	PPQ 675	1788	4.32	600
1800	75W Twin	Resonant Start	PPQ 2675	1788	6.7	600
2400	100W Single	Switchstart	PP 100	2398	5.23	1200
2400	100W Twin	Switchstart	PP 2100	2398	7.95	1200

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

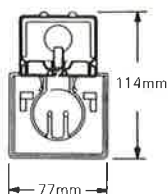
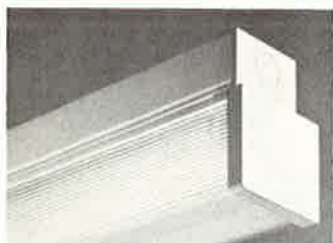
## RANGE:

Nominal length mm	Rating	Circuit	Fitting Catalogue no.	Length mm	Approx. weight (incl. tubes) kg	Reflector Catalogue no.	Batten Catalogue no.
1200	40W Single	SS	PPA/40	1224	3.97	PPA 4	PP 40
1500	65W Single	SS	PPA/65	1525	5.1	PPA 5	PP 65
1800	75W Single	SS	PPA/675	1788	5.4	PPA 6	PP 675
1800	75W Single	SRS	PPA/Q675	1788	6.0	PPA 6	PPQ 675
2400	100W Single	SS	PPA/100	2398	7.85	PPA 8	PP 100

## RANGE

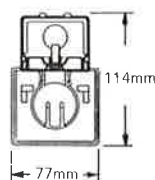
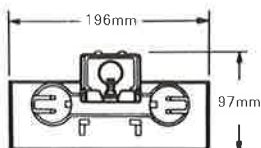
Nominal length mm	Rating	Circuit	Fitting Catalogue no.	Length mm	Approx. weight (incl. tubes) kg	Reflector Catalogue no.	Batten Catalogue no.
1200	40W Single	SS	PPR/40	1224	4.8	PPR 4	PP 40
1200	40W Twin	SS	PPR/240	1224	6.8	PPR 24	PP 240
1500	65W Single	SS	PPR/65	1525	6.3	PPR 5	PP 65
1500	65W Twin	SS	PPR/265	1525	8.3	PPR 25	PP 265
1800	75W Single	SS	PPR/675	1788	6.9	PPR 6	PP 675
1800	75W Twin	SS	PPR/2675	1788	9.6	PPR 26	PP 2675
1800	75W Single	SRS	PPR/Q675	1788	7.5	PPR 6	PPQ 675
1800	75W Twin	SRS	PPR/Q2675	1788	10.2	PPR 26	PPQ 2675
2400	100W Single	SS	PPR/100	2398	9.2	PPR 8	PP 100
2400	100W Twin	SS	PPR/2100	2398	14.0	PPR 28	PP 2100

## Popular Pack



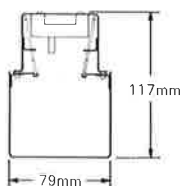
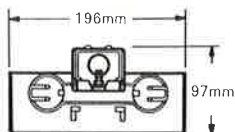
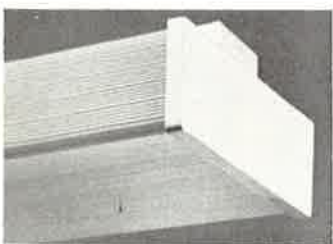
### PPC prismatic controllers

Attachments of transparent extruded plastic with side prisms, the base embossed with a fine prismatic pattern. Quickly attached or detached from the batten by the clip-on action of the spring-fixed end caps.



### PPD plastic diffusers

White opal diffuser in extruded plastic with external reeding. The white plastic end plates are fitted to the batten by spring clips to enable quick installation of the diffuser.



### One-plus-One attachment

Formed from a combination of a central box housing and two individual fittings in tandem. Can be extended to give a continuous structure of in-line lighting. Suitable for ceiling mounting only.

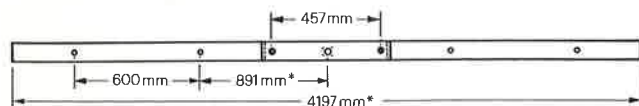
# Popular Pack

## RANGE:

Nominal length mm	Rating	Circuit	Fitting Catalogue no.	Length mm	Approx. weight (incl. tubes) kg	Diffuser Catalogue no.	Batten Catalogue no.
600	20W Single	SS	PPC/20	638	2.1	PPC 2	PP 20
600	20W Twin	SS	PPC/220	638	2.84	PPC 22	PP 220
1200	40W Single	SS	PPC/40	1248	3.2	PPC 4	PP 40
1200	40W Twin	SS	PPC/240	1248	5.23	PPC 24	PP 240
1500	65W Single	SS	PPC/65	1550	4.2	PPC 5	PP 65
1500	65W Twin	SS	PPC/265	1550	6.2	PPC 25	PP 265
1800	75W Single	SS	PPC/675	1818	3.9	PPC 6	PP 675
1800	75W Twin	SS	PPC/2675	1818	5.9	PPC 26	PP 2675
1800	75W Single	SRS	PPC/Q675	1818	4.5	PPC 6	PPQ 675
1800	75W Twin	SRS	PPC/Q2675	1818	6.49	PPC 26	PPQ 2675
2400	100W Single	SS	PPC/100	2428	6.53	PPC 8	PP 100
2400	100W Twin	SS	PPC/2100	2428	9.8	PPC 28	PP 2100

## RANGE:

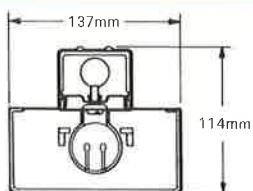
Nominal length mm	Rating	Circuit	Fitting Catalogue no.	Length mm	Approx. weight (incl. tubes) kg	Diffuser Catalogue no.	Batten Catalogue no.
600	20W Single	SS	PPD/20	638	2.0	PPD 2	PP 20
600	20W Twin	SS	PPD/220	638	2.6	PPD 22	PP 220
1200	40W Single	SS	PPD/40	1248	3.0	PPD 4	PP 40
1200	40W Twin	SS	PPD/240	1248	5.0	PPD 24	PP 240
1500	65W Single	SS	PPD/65	1550	4.0	PPD 5	PP 65
1500	65W Twin	SS	PPD/265	1550	6.6	PPD 25	PP 265
1800	75W Single	SS	PPD/675	1818	4.3	PPD 6	PP 675
1800	75W Twin	SS	PPD/2675	1818	7.2	PPD 26	PP 2675
1800	75W Single	SRS	PPD/Q675	1818	4.9	PPD 6	PPQ 675
1800	75W Twin	SRS	PPD/Q2675	1818	7.8	PPD 26	PPQ 2675
2400	100W Single	SS	PPD/100	2428	5.9	PPD 8	PP 100
2400	100W Twin	SS	PPD/2100	2428	9.6	PPD 28	PP 2100



\* 1800 mm PPC/PPD dimensions shown

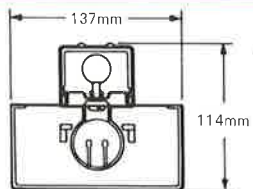
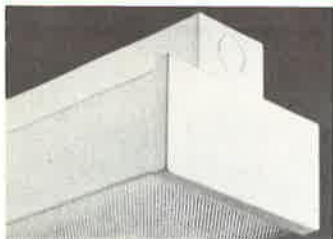
Catalogue no.	Length mm	Approx. weight kg	Fixing centres mm
PP 4621	610	1.5	457 and centre BS box piercing

## Popular Pack



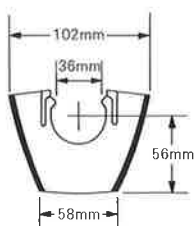
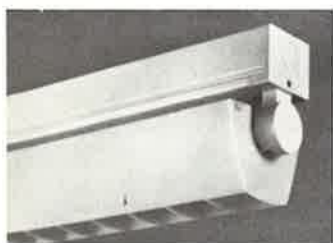
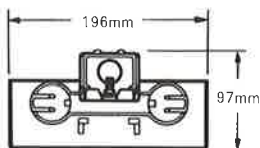
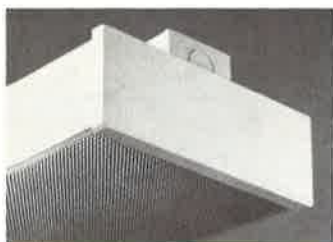
### PPL prismatic controller

A larger version of the single PPC type, providing lower brightness lighting in situations where special glare control is required. Increased size makes possible a high degree of light control.



### PPE opal sided prismatic controllers

Attachments with opal finish sides and fine prismatic pattern embossed bases. Quickly attached to the batten by the clip-on action of the end caps.



### Clipluvs sectional louvers

Clip-on opal plastic louvered diffuser supplied as five sections to fit on a 1500mm tube. Four or two sections can be used with 1200mm or 600mm tubes.

Catalogue no.	Description
KU5 P	Five-piece pack



## RANGE:

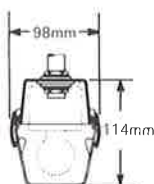
Nominal length mm	Rating	Circuit	Fitting Catalogue no.	Length mm	Approx. weight (incl. tubes) kg	Diffuser Catalogue no.	Batten Catalogue no.
1200	40W Single	SS	PPL/40	1248	3.6	PPL 4	PP 40
1500	65W Single	SS	PPL/65	1550	4.7	PPL 5	PP 65
1800	75W Single	SS	PPL/675	1818	5.2	PPL 6	PP 675
1800	75W Single	SRS	PPL/Q675	1818	5.8	PPL 6	PPQ 675
2400	100W Single	SS	PPL/100	2428	7.0	PPL 8	PP 100

## RANGE:

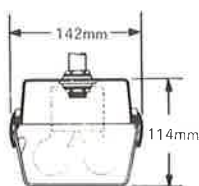
Nominal length mm	Rating	Circuit	Fitting Catalogue no.	Length mm	Approx. weight (incl. tubes) kg	Diffuser Catalogue no.	Batten Catalogue no.
1200	40W Single	SS	PPE/40	1248	3.4	PPE 4	PP 40
1200	40W Twin	SS	PPE/240	1248	5.23	PPE 24	PP 240
1500	65W Single	SS	PPE/65	1550	4.42	PPE 5	PP 65
1500	65W Twin	SS	PPE/265	1550	6.2	PPE 25	PP 265
1800	75W Single	SS	PPE/675	1818	5.0	PPE 6	PP 675
1800	75W Twin	SS	PPE/2675	1818	6.9	PPE 26	PP 2675
1800	75W Single	SRS	PPE/Q675	1818	5.67	PPE 6	PPQ 675
1800	75W Twin	SRS	PPE/Q2675	1818	7.5	PPE 26	PPQ 2675
2400	100W Single	SS	PPE/100	2428	6.8	PPE 8	PP 100
2400	100W Twin	SS	PPE/2100	2428	9.8	PPE 28	PP 2100



PPUQ 675



PPUQ 2675



## PPU Sentinel fittings (IP 53)

### Ordering note:

This range of 1800mm glass fibre and acrylic bowl 'proof' type fittings has now been replaced by the following fittings suitable for use in damp or corrosive situations: 1800mm 'LU', 1800mm 'LZ'—See **High bay and Invincible** section for details.

# Popular Pack replacement control gear and accessories

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	Circuit Diagram No.
125W						
100W 2400mm	SS	Single tube	1 x GCU 100/125	1 x GC 2173	1 x 155/800	2
		Twin tube	2 x GCU 100/125	2 x GC 2344	2 x 155/800	2 x 2
75W 1800mm	SRS	Single tube	1 x GBU 675	1 x GC 2220	—	7
		Twin tube	2 x GBU 675	2 x GC 2220	—	2 x 7
75W 1800mm	SRS	Single tube	1 x G 69383.4	1 x GC 2220	—	7
Sentinel		Twin tube	2 x G 69383.4	2 x GC 2220	—	2 x 7
75W 1800mm	SS	Single tube	1 x GCU 65	1 x GC 2226	1 x 155/800	2
		Single tube (lead)	1 x GCU 75	—	1 x 155/800	1
		Single tube (lag)	1 x GCU 75	—	—	—
		Twin tube	1 x GCU 65	1 x GC 2226	2 x 155/800	244
			1 x GCU 75	—	—	—
65W 1500mm	SS	Single tube	1 x GCU 65	1 x GC 2245	1 x 155/500	1
		Twin tube	2 x GCU 65	2 x GC 2274	2 x 155/500	2 x 1
40W 1200mm	SS	Single tube	1 x GCU 40	1 x GC 2274	1 x 155/400	1
		Twin tube	2 x GCU 40	2 x GC 2222	2 x 155/400	2 x 1
20W 600mm	SS	Single tube	1 x GCU 20	—	1 x 155/200	1
		Twin tube	1 x GCU 40	1 x GC 2224	2 x 155/200	10

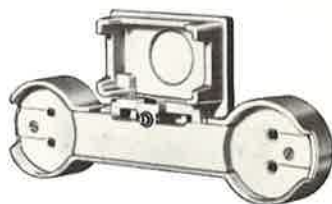
For circuit diagrams see **control gear and accessories** section.



**GB 1562**  
Single bi-pin white plastic grip-pin lampholder



**GB 1548-A3**  
Replacement lampholder for Slim Twin fittings.



**GB 1563**  
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 and 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



### GM 6064-12 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



### GA 5051

Current starter socket



### GA 5019-X Starter Socket

Used in earlier Popular Pack fittings. Fixed by clip **GY 5285**



### GT 1281-3

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



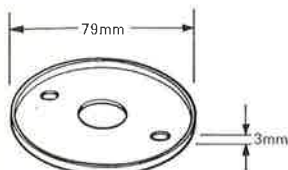
Also available:

### PP 4624

Clip-in three way terminal block complete with 750 mm silicone rubber insulated cable per way. Each way will accept three 2.5 square mm cable.

### 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 600mm 20W twin only. Standard quantity 5 per pack.



### PP 4619: Free on request.

Pattress 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.



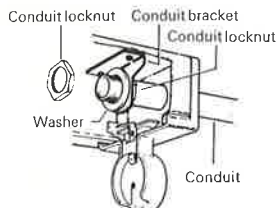
### PP 4600

Lampholder tension spring for single and wide twin fittings.



### GY 5283

Fixing clip for 38mm dia. capacitors. **GY 5273** for 32mm dia. capacitors.



### 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 4609

Replacement plastic clip for Sentinel fittings.



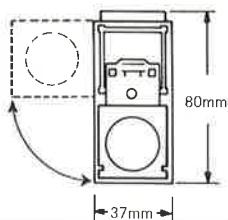
### FUSE

BS 1362 dimensions

**GT 1299** 3 amp single and twin tube 1800mm 85W and earlier SRS fittings.

(Replacement use only)

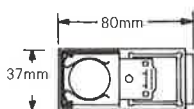
# Arrowslim



## AS batten

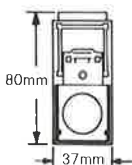
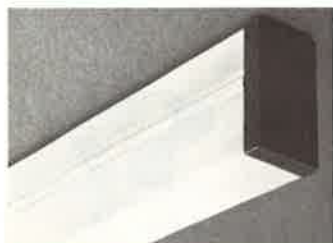
Single batten fitting with three-position twist lampholder in 900mm 30W, 1050mm 40W and 1500mm 50W sizes. Packed complete with a 26mm diameter Warm White tube. 30W and 40W batten have switchstart gear; 50W has switchless gear. A push switch (catalogue no. AS 4601) is available for wall mounted fittings.

Fittings comply with BS 4533-2.2 (IP20).



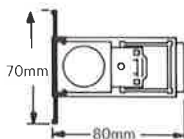
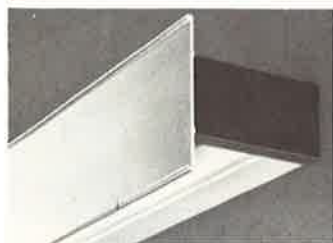
## ASD diffuser

Opal acrylic 'L' extrusion diffuser fixed to the basic fitting by engagement with the lampholders, or by spring clips fitted to the end of the diffuser (50W version only).



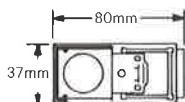
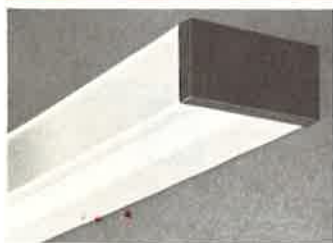
## ASU attachment

A closely fitting acrylic 'U' extrusion diffuser fixed to the basic fitting by engagement with the lampholders.



## ASA attachment

Satin etched extruded aluminium front baffle for upward and downward lighting. Retained in position on the wall mounted fittings by engagement with the lampholders.



## ASC attachment

Slim acrylic extrusion with the front trim having a brushed copper appearance.

## RANGE

Nominal Length mm	Rating	Circuit	Complete Fitting Catalogue no.	Length mm	Approx. weight (incl. tubes) kg	Fixing centres mm
900	30W Single	Switchstart	AS 30	914	1.82	600
1050	40W Single	Switchstart	AS 40	1066	2.10	600
1500	50W Single	Resonant start	ASQ 50	1519	2.64	600

## Supply voltage

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

## RANGE

Nominal Length mm	Rating	Circuit	Complete Fitting Catalogue no.	Length mm	Approx. weight (incl. tubes) kg	Diffuser Catalogue no.	Batten Catalogue no.
900	30W Single	Switchstart	ASD/30	914	2.0	ASD 3	AS 30
1050	40W Single	Switchstart	ASD/40	1066	2.3	ASD 4	AS 40
1500	50W Single	Resonant start	ASD/Q50	1519	2.9	ASD 5	ASQ 50

## RANGE

Nominal Length mm	Rating	Circuit	Complete Fitting Catalogue no.	Length mm	Approx. weight (incl. tubes) kg	Attachment Catalogue no.	Batten Catalogue no.
900	30W Single	Switchstart	ASU/30	914	2.03	ASU 3	AS 30
1050	40W Single	Switchstart	ASU/40	1066	2.35	ASU 4	AS 40

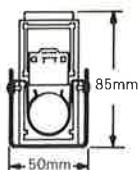
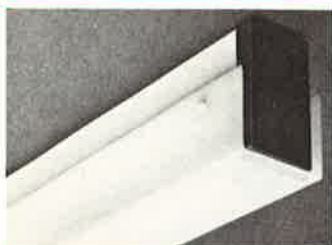
## RANGE

Nominal Length mm	Rating	Circuit	Complete Fitting Catalogue no.	Length mm	Approx. weight (incl. tubes) kg	Attachment Catalogue no.	Batten Catalogue no.
900	30W Single	Switchstart	ASA/30	914	2.21	ASA 3	AS 30
1500	50W Single	Resonant start	ASA/Q50	1519	3.28	ASA 5	ASQ 50

## RANGE

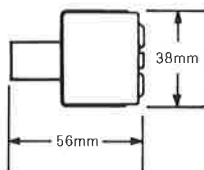
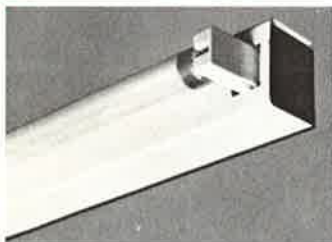
Nominal Length mm	Rating	Circuit	Complete Fitting Catalogue no.	Length mm	Approx. weight (incl. tube) kg	Attachment Catalogue no.	Batten Catalogue no.
900	30W Single	Switchstart	ASC/30	914	2.0	ASC 3	AS 30

## Arrowslim /Minipack



### Arrowslim ASF two-tone diffuser

Extruded plastic diffuser with clear fine reeded base and opal sides. Fixed by spring clips fitted to the end of the diffuser.

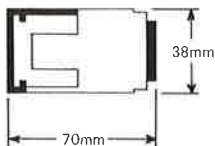


### LJ Series Minipack fittings

The smallest fluorescent fittings offered for everyday use. Packed complete with Warm White tube. White channel cover with black ends. The cover can be removed for installation and access to control gear. A pull switch (catalogue no. LJ 4600) is available. Shelf clips (catalogue no. LJ 4601) locate inside the batten, accommodating shelf thickness up to 26mm. For use in ordinary indoor atmospheres where the ambient temperature does not exceed 25°C. Fittings comply with BS 4533-2.2 (IP20).

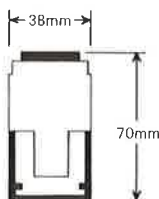
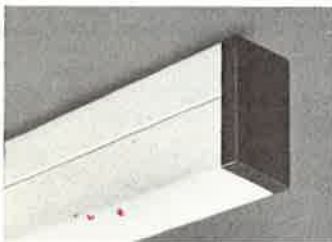
#### Supply voltage

Standard fitting 230/250V 50Hz. Details of fittings for other supplies are available on application.



### LJD opal acrylic angle and LJU opal acrylic enclosed diffuser attachments

These diffusers fit inside black plastic end plates which are spring clipped to the slotted ends of the batten cover to give a neat, flush appearance.



# Arrowslim / Minipack

## RANGE

Nominal Length mm	Rating	Circuit	Complete Fitting Catalogue no.	Length mm	Approx. weight (incl. tube) kg	Attachment Catalogue no.	Batten Catalogue no.
1500	50W Single	Resonant start	ASF/Q50	1519	3.1	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.

## RANGE

Nominal Length mm	Rating	Circuit	Batten Fitting Catalogue no.	Length mm	Approx. weight (incl. tube) kg	Fixing centres mm
300	8W Single	Switchstart	LJS 1008 H	324	0.85	305
525	13W Single	Switchstart	LJS 1013 H	552	1.10	457

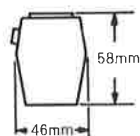
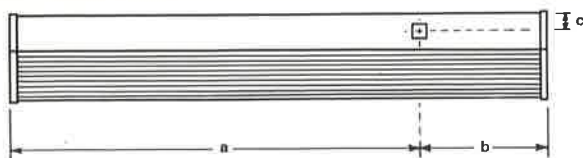
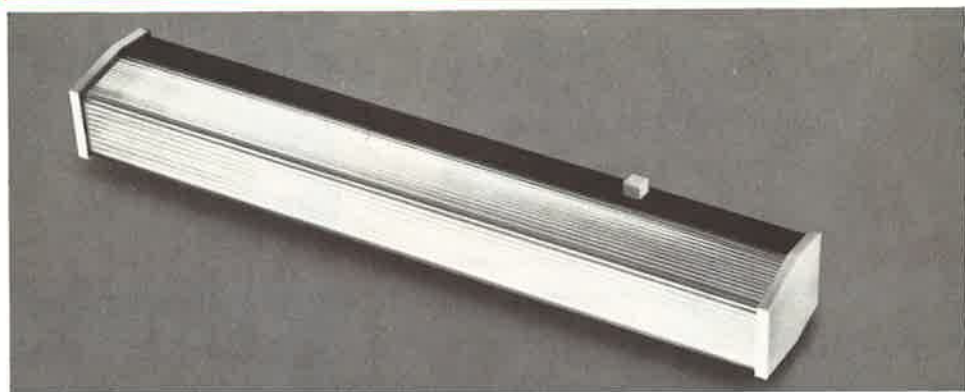
Indoor luminaires in general are designed to BS 4533 Part 1 Section 1.4 and, except where otherwise stated are 'Luminaires for use in normal atmospheres'. Where use in more onerous situations is contemplated, e.g. in part-completed buildings before drying out and made suitable for occupation - damp cellars, 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.

## RANGE

Nominal length mm	Rating	Circuit	Batten Catalogue no.	Attachment Catalogue no.	Length mm	Approx. weight (incl. tube) kg	Fixing centres mm
<b>LJD</b>							
300	8W Single	Switchstart	LJS 1008 H	LJD 112	340	0.92	305
525	13W Single	Switchstart	LJS 1013 H	LJD 121	570	1.21	457
<b>LJU</b>							
300	8W Single	Switchstart	LJS 1008 H	LJU 112	340	0.95	305
525	13W Single	Switchstart	LJS 1013 H	LJU 121	570	1.25	457



# Nomad



Battery operated 8W and 13W transistorised fluorescent fittings packed complete with Warm White tube. Olive green body and clear reeded prismatic controller in high impact, light stabilised polystyrene with push switch and high frequency control gear and protection against accidental polarity reversal.

These fittings are Class II all-insulated items, to BS 4533-2.2.

## RANGE

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

Transistorised fluorescent fittings suitable for operation on 6 volt supplies are also available. Details 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	b mm	c mm
8W	262	79	10
13W	490	79	10

## Battery information

Battery information		Supply current (amps)	Battery rating (amp/hours)		60
Rating			38	42	
Number of hours of operation *					
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.



**GA 5089** Starter socket for Arrowslim and Minipack fittings.



**LJ 4600** Pull switch for wall mounted Minipack fittings.



**GB 1598-3**  
Lampholder for Minipack fitting.

**GB 1598**  
Lampholder for Nomad fitting.  
(No Bracket)



**GT 1281-3**  
Three way terminal block. Each way will accept one 2.5sq mm cable or two 1.5sq mm cables together.



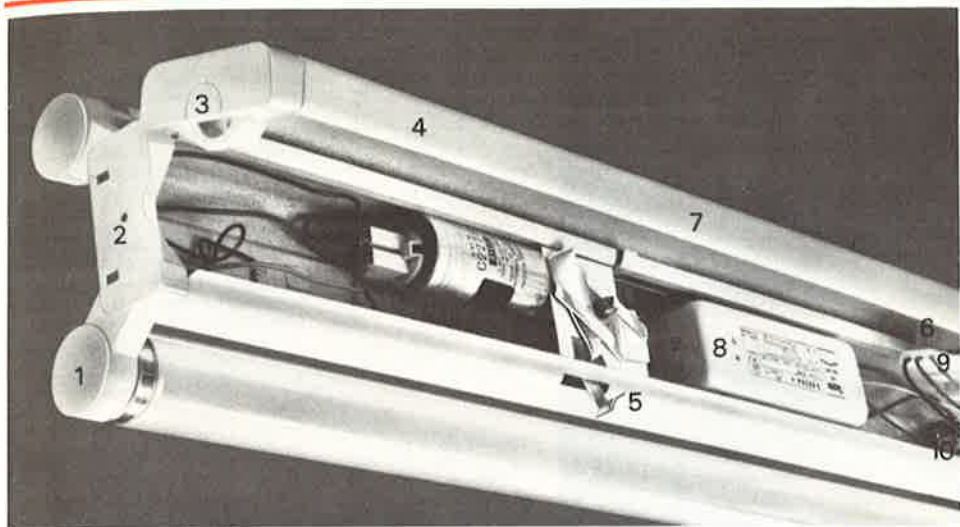
**AS 4600** Patress block cover for ceiling mounted Arrowslim fittings.

## Replacement control gear for 240V 50Hz supply

Tube size	Fitting	Choke	Capacitor	Starter Switch	Circuit Dia. no.
8W 300mm	Minipack	1 x GCD 8	—	1 x 155/400	1
13W 525mm	Minipack	1 x GCD 13	—	1 x 155/500	1
30W 900mm	Arrowslim AS 30	1 x GCJ 30	—	1 x 155/400	1
40W 1050mm	Arrowslim AS 40	1 x GCJ 40	—	1 x 155/400	1
50W 1500mm	Arrowslim AS 50	1 x GCJ 50	1 x GC 2229	1 x 155/501	2
50W 1500mm	Arrowslim ASQ 50	1 x GBJ 50	1 x GC 2368	—	18

For circuit diagrams see control gear and accessories section.





## Clipper range

Clipper provides one of the most economical lighting systems available. Tube sizes are 1200mm 40W, 1500mm 65W, 1800mm 75W and 2400mm 85W in single and twin-tube versions and a triple-tube 1800mm 75W spine. A full range of attachments is available. The 75W and 85W ratings in 1800mm and 2400mm lengths are particularly recommended for highest lighting and electrical performance.

Clipper is quick and easy to install and maintain. The only component to be fixed to the ceiling before making the electrical connection to a very accessible terminal block is a lightweight metal channel. This is easily screwed into position by one man. The spine, containing fused starterless control gear and lampholders, simply hooks on the ceiling plate, plugs into the terminal block socket, and clips up into place. The same ceiling plate is suitable for both single and twin-lamp spines, and the three-tube 1800mm version. Maintenance is simple and a replacement can be installed without disturbing the rest of the lighting.

Clipper trunking acts as a large capacity continuous ceiling plate. The spine can be clipped to it in exactly the same way but saving the cost of a ceiling plate.

## Standards

Fittings comply with BS 4533-2.2 (IP20).

## Supply voltage

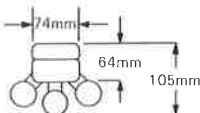
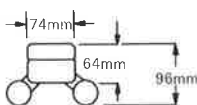
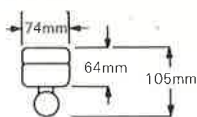
Standard fittings for 230/240V 50Hz. Details of other voltages and circuits on application.

## Features

1. Centre-twist rotary contact lampholders for easy lamp insertion. Enables end-to-end mounting of batten and reflectors.
2. Location of lampholder assembly carried out on the bench before the spine is installed.
3. Plastic end plate with knock-out for conduit entry.
4. Ceiling plate zinc plated for damp protection before white paint application.
5. Zinc plated finger latch which locks spine and ceiling plate together.
6. Spines individually protected with fused terminal blocks, connected to plate socket via flying lead plug.
7. Tags for cable shield location where through-wiring passes alongside choke units.
8. Slim section starterless control gear, leaving adequate space for through-wiring.
9. Spaced terminal block and socket for easy mains connection.
10. Sighting holes for easy alignment of spine and ceiling plate.

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.

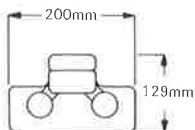
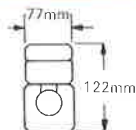
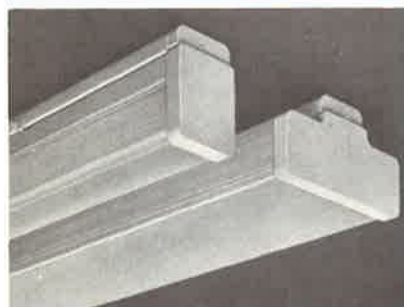
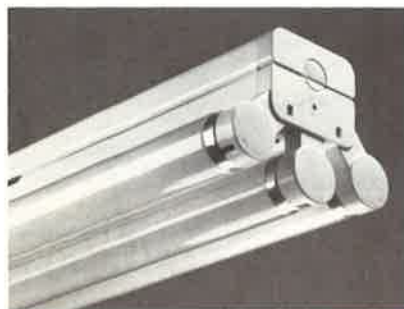
# Clipper



## FCMA and FCMQ batten fittings

The basic batten consists of:

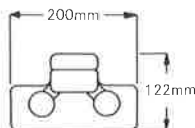
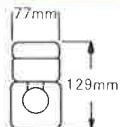
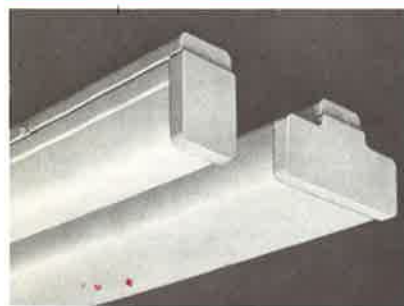
1. An FCMA ceiling plate for single, twin, and 1800mm 3-tube spines. The metal channel contains a central terminal block and socket and plastic end plates with conduit knock-outs (not required when using Clipper trunking).
2. The FCMQ spine, which is a metal channel carrying control gear and lampholders. The holders are located by simple spring clips and each spine is individually fused. There is a flying lead plug connection to the socket in the ceiling plate, and two finger latches locate and fix the hook-in spine to the ceiling plate.



## FCMC prismatic controllers

Clear acrylic prismatic controllers for single and twin battens, held by spring-loaded end caps, 30mm must be left between adjacent ceiling plates to allow freedom of operation of the end plates.

**Note:** A large-section controller for 3-tube 1800mm spine is also available. Details on application.



## FCMD diffusers

Plain opal acrylic diffusers for single and twin battens, held by spring-loaded end caps, 30mm must be left between adjacent ceiling plates to allow freedom of operation of the end caps.

## RANGE

Nominal length mm	Rating	Circuit	Ceiling plate Catalogue no.	Spine Catalogue no.	Fixing Centres	Length (mm)	Weight (kg)
1200	40W Single	SRS	FCMA 4	FCMQ 40	600/610	1229	3.6
1200	40W Twin	SRS	FCMA 4	FCMQ 240	600/610	1229	5.3
1500	65W Single	SRS	FCMA 5	FCMQ 65	600/610	1529	4.3
1500	65W Twin	SRS	FCMA 5	FCMQ 265	600/610	1529	6.4
1800	75W Single	SRS	FCMA 6	FCMQ 675	600/610	1793	4.6
1800	75W Twin	SRS	FCMA 6	FCMQ 2675	600/610	1793	6.7
1800	75W Triple	SRS	FCMA 6	FCMQ 3675	600/610	1793	8.8
2400	85W Single	QS	FCMA 8	FCMQ 885	1200/1220	2403	5.7
2400	85W Twin	QS	FCMA 8	FCMQ 2885	1200/1220	2403	8.5

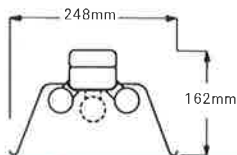
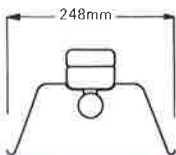
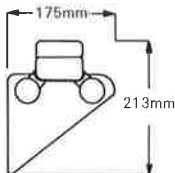
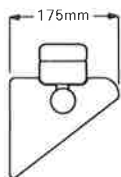
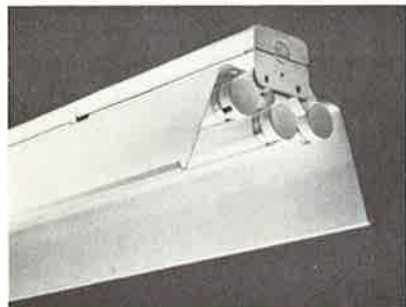
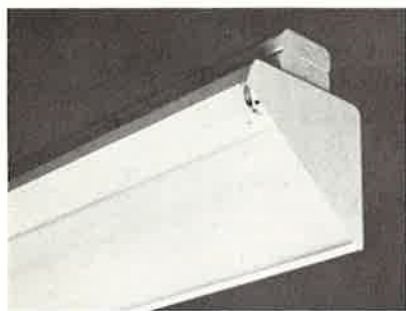
## RANGE

Nominal length mm	Rating	Ceiling plate Catalogue no.	Spine Catalogue no.	Controller Catalogue no.	Length (mm)	Weight (kg)
1200	40W Single	FCMA 4	FCMQ 40	FCMC 4	1242	4.6
1200	40W Twin	FCMA 4	FCMQ 240	FCMC 24	1242	6.5
1500	65W Single	FCMA 5	FCMQ 65	FCMC 5	1544	5.6
1500	65W Twin	FCMA 5	FCMQ 265	FCMC 25	1544	7.8
1800	75W Single	FCMA 6	FCMQ 675	FCMC 6	1812	6.1
1800	75W Twin	FCMA 6	FCMQ 2675	FCMC 26	1812	8.5
2400	85W Single	FCMA 8	FCMQ 885	FCMC 8	2422	7.7
2400	85W Twin	FCMA 8	FCMQ 2885	FCMC 28	2422	10.9

## RANGE

Nominal length mm	Rating	Ceiling plate Catalogue no.	Spine Catalogue no.	Diffuser Catalogue no.	Length (mm)	Weight (kg)
1200	40W Single	FCMA 4	FCMQ 40	FCMD 4	1242	4.6
1200	40W Twin	FCMA 4	FCMQ 240	FCMD 24	1242	6.5
1500	65W Single	FCMA 5	FCMQ 65	FCMD 5	1544	5.6
1500	65W Twin	FCMA 5	FCMQ 265	FCMD 25	1544	7.8
1800	75W Single	FCMA 6	FCMQ 675	FCMD 6	1812	6.1
1800	75W Twin	FCMA 6	FCMQ 2675	FCMD 26	1812	8.5
2400	85W Single	FCMA 8	FCMQ 885	FCMD 8	2422	7.7
2400	85W Twin	FCMA 8	FCMQ 2885	FCMD 28	2422	10.9

# Clipper



## FCMY angle and FCMR dispersive metal reflectors

Sheet steel angle and open-ended trough reflectors finished with high reflectivity white acrylic enamel. For single, twin, and 3-tube (dispersive only) spines. Simply fixed with two screws which engage cage nuts positioned in the knock-outs provided in the spine. Reflector is fixed to the spine before connecting to ceiling plate or trunking.

**Note:** Wire guards can be supplied to order.

## Clipper electrical data

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

	1200mm	1500mm	1800mm	2400mm
Nominal tube length	1200mm	1500mm	1800mm	2400mm
Nominal tube watts	40	65	75	85
Circuit type	SRS	SRS	SRS	OS
Total circuit watts	55	82	90	103
Average tube volts	104	115	130	185
Average tube amps	0.47	0.64	0.64	0.54
Mains current amps	0.24	0.37	0.42	0.43
Total volt/amps	58	93	100	104
Lagging power factor	0.95	0.92	0.90	0.99
Minimum starting temperature	-5°C	-5°C	-5°C	+5°C
% harmonics/phase	25	25	25	8

## Replacement Control Gear

Nominal length mm	Rating	SRS unit	QS unit	Choke	Capacitor	Circuit Diagram no.
1200	40W	GBU 40	—	—	GC 2273	7
1500	65W	GBU 65	—	—	GC 2220	7
1800	75W	GBU 675	—	—	GC 2220	7
2400	85W	—	GQS 85	GCQU 85	GC 2226	239

For circuit diagrams see **control gear and accessories** section.



## RANGE

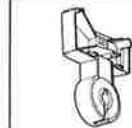
Nominal height mm	Rating	Ceiling plate Catalogue no.	Spine Catalogue no.	Reflector Catalogue no.	Length (mm)	Weight (kg)
1200	40W Single	FCMA 4	FCMQ 40	FCMY 4	1229	6.0
1200	40W Twin	FCMA 4	FCMQ 240	FCMY 4	1229	7.5
1500	65W Single	FCMA 5	FCMQ 65	FCMY 5	1529	7.3
1500	65W Twin	FCMA 5	FCMQ 265	FCMY 5	1529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

## RANGE

Nominal length mm	Rating	Ceiling plate Catalogue no.	Spine Catalogue no.	Reflector Catalogue no.	Length (mm)	Weight (kg)
1200	40W Single	FCMA 4	FCMQ 40	FCMR 4	1229	6.1
1200	40W Twin	FCMA 4	FCMQ 240	FCMR 4	1229	7.8
1500	65W Single	FCMA 5	FCMQ 65	FCMR 5	1529	7.4
1500	65W Twin	FCMA 5	FCMQ 265	FCMR 5	1529	9.5
1800	75W Single	FCMA 6	FCMQ 675	FCMR 6	1793	8.3
1800	75W Twin	FCMA 6	FCMQ 2675	FCMR 6	1793	10.4
1800	75W Triple	FCMA 6	FCMQ 3675	FCMR 6	1793	12.6
2400	85W Single	FCMA 8	FCMQ 885	FCMR 8	2403	10.7
2400	85W Twin	FCMA 8	FCMQ 2885	FCMR 8	2403	13.5

## Clipper accessories

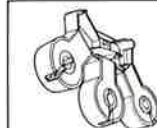
**GB 1621**  
Single lampholder



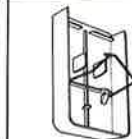
**GB 1622**  
Twin lampholder



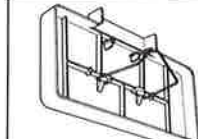
**GB 1624**  
Triple lampholder



**FCM 4610**  
Single lamp diffuser/  
controller end cap



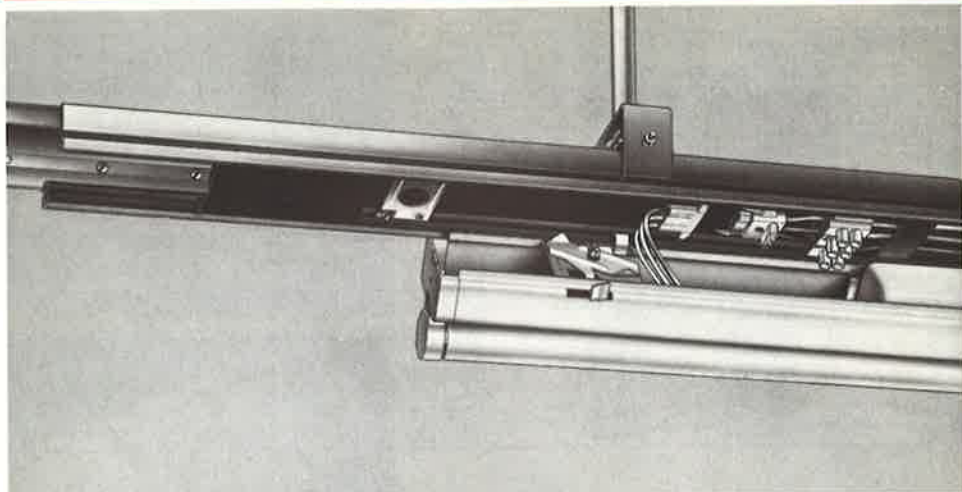
**FCM 4611**  
Twin lamp diffuser/  
controller end cap



**GA 5116**  
Connecting socket for spine  
with 200mm leads



# Clipper industrial trunking



Clipper trunking combines ease of installation with lighting flexibility and the two sizes provide the basis for suitable application in both commercial and industrial interiors. Clipper trunkings are particularly advantageous as they save the use of ceiling plates giving benefits in terms of cost saving and also make the complete assembly shallower. The spines together with their attachments clip on to the trunkings in the same manner as to the ceiling plate using the finger latches thereby eliminating the cost and labour of the tee bolts, nuts and washers used with conventional trunking system.

## Finish

Suffix G indicates the standard hot dipped galvanised finish which is recommended for use in buildings where the trunking is installed during the construction stage or where humid interior atmospheres exist. Note : Other special finishes are available to order.

## Weight

The approximate weight of the trunkings are :

FCM : 1.75 kg/metre

FCMX : 2.40 kg/metre

The weight of the Clipper fittings should be added to ascertain the total weight.

## Suspension

The maximum recommended trunking suspension centres are 4 metres.

## Wiring

Cable cleats FCM 4502 should be installed at not more than 450mm centres to locate correctly the through wiring.

In addition the fibre heat shield FCM 4514 should be positioned in the trunking above each choke to provide additional protection. In a normal ambient temperature of 25°C, the average cable surface temperature in the trunking is 46°C.

## Cable capacity

Unit system factors are given below to enable the maximum capacity to be simply calculated.

Unit size :

220 FCM

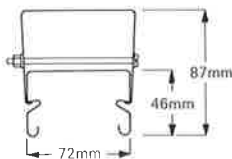
660 FCMX

Unit system factors

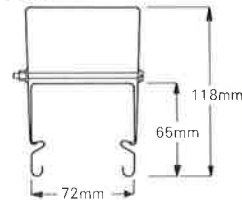
Cable size (mm)	Factor (Copper or Aluminium)
1-0	8-1
1-5	9-1
2-5	11-4
4-0	16-6
6-0	21-3
10-0	33-3

To check trunking capacity, multiply quantities of each size of cable by the appropriate factor as tabulated and the total should not exceed the trunking unit size.

## Dimensions FCM

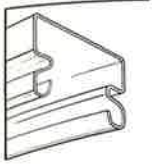


## FCMX

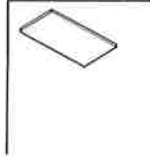


# Clipper industrial trunking

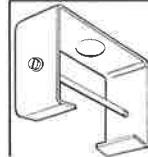
**FCM 4500/G**  
**FCMX 4500/G**  
4-5 metre length  
Clipper trunking



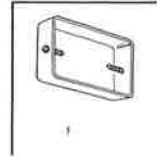
**FCM 4502\***  
Cable cleat



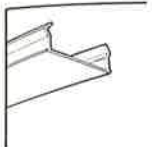
**FCM 4504**  
**FCMX 4504**  
Suspension hanger



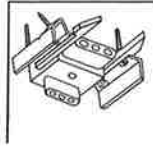
**FCM 4506**  
**FCMX 4506**  
End plate



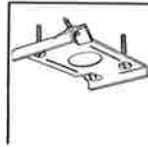
**FCM 4507\***  
Cover strip



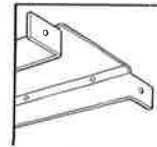
**FCM 4508**  
**FCMX 4508**  
Terminal socket  
assembly



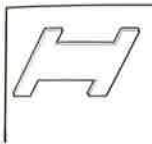
**FCM 4509\***  
Auxiliary suspension  
bracket



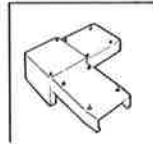
**FCM 4511**  
**FCMX 4511**  
Trunking end coupler



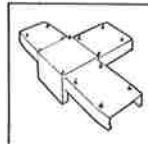
**FCM 4514\***  
Fibre heat shield



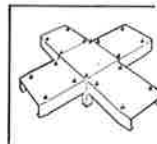
**FCM 4515**  
**FCMX 4515**  
Two way coupler



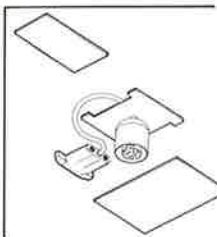
**FCM 4516**  
**FCMX 4516**  
Three way coupler



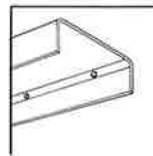
**FCM 4517**  
**FCMX 4517**  
Four way coupler



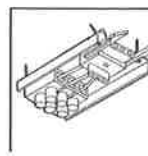
**FCM 4518\***  
Temporary site light



**FCM 4519**  
**FCMX 4519**  
Trunking straight coupler



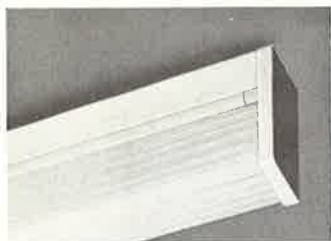
**FCM 4520\***  
Large capacity terminal  
socket



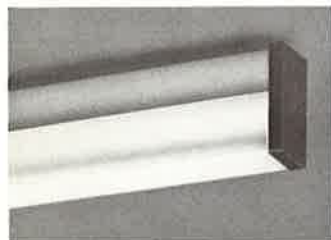
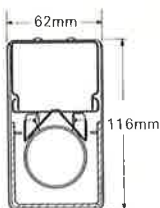
\*Indicates components suitable  
for both FCM 4500/G and  
FCMX 4500/G trunking sections

**Note:** For Clipper FCMF ceiling  
trunking see pages 68-69.

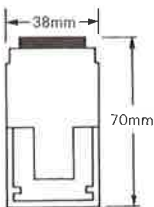
# Homelite



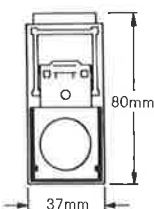
1200mm Homelite FHL D 40  
1500mm Homelite FHL D 65



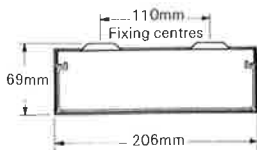
Mini Homelite FHL D 13



Slim Homelite FHSD 40



Compact Homelite FHUD 40



A range of domestic fluorescent luminaires supplied complete with Warm White tubes, opal diffusers, and optional stick-on copper coloured end cap trims (trims not supplied with Mini Homelite FHL D 13). On/off switches are available as optional extras for Mini Homelite FHL D 13 (catalogue no. LJ 4600) and Slim Homelite FHSD 40 (catalogue no. AS 4601). Fittings are suitable for normal indoor atmospheres in ambient temperatures up to 25°C.

Fittings comply with BS 4533 - 2, 2 (IP20).

## Supply voltage

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

## RANGE

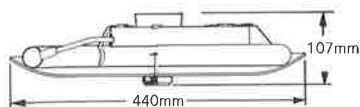
Catalogue no.	Description	Length mm	Weight kg	Lamp length nominal mm	Rating	Tube colour
FHL D 13	Mini Homelite c/w diffuser	571	1.25	525	13W	Warm White
FHL D 40	1200mm Homelite c/w diffuser	1228	3.0	1200	40W	Warm White
FHL D 65	1500mm Homelite c/w diffuser	1529	4.0	1500	65W	Warm White
FHUD 40	Compact Homelite c/w diffuser	570	2.5	525*	40W	Warm White
FHSD 40	Slim Homelite c/w diffuser	1065	2.35	1050	40W	Warm White

\*U-tube

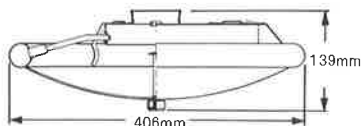
# Circline fluorescent fittings



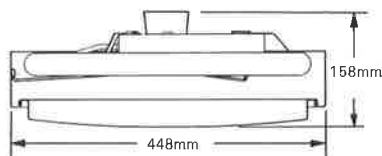
CFLSG 60



CFSPG 60



CFA 60



A triangular shaped gear tray with 60W switchstart control gear hidden from view by the diffusers. Supplied complete with Warm White tube. For use in ordinary indoor, normal atmospheres.

Fittings comply with BS 4533 - 2.2 (IP20).

## Supply voltage

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

## CFLSG 60 and CFSPG 60 sparkle glass fittings

These bowl diffusers are moulded in clear glass with a smooth upper, and a patterned lower surface. A radial pattern is silk-screened in white on the upper surface. Each glass is attached to the fitting by a white plastic knob with an aluminium insert.

## CFA 60 fittings

The anodized aluminium attachment is located over the centre securing screw on the gear tray. A white opal dish is then inserted.

## RANGE

Catalogue no.	Description	Rating	Circuit
CFLSG 60*	Large sparkle glass fitting	60W Single	Switchstart
CFSPG 60*	Small sparkle glass fitting	60W Single	Switchstart
CFA 60†	Aluminium frame fitting	60W Single	Switchstart

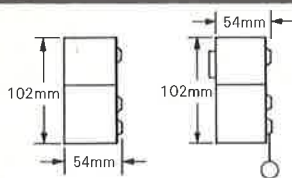
\*See domestic fluorescent accessories for replacement retaining knobs.

†See domestic fluorescent accessories for replacement aluminium frame and opal diffuser dish.

# Viewpoint combined light and shaver point



LST 15



**LS 15** General purpose type with a mains voltage shuttered shaver socket for use in all rooms excluding bathrooms.

**LST 15** Bathroom model with dual voltage output (115/230V) from the shaver socket by a double wound transformer to BS 3052. Fitted with a pull switch.

Each fitting is supplied complete with a 450mm 15W (26mm dia.) Warm White tube. Body is of slate grey plastic fixed to a steel backplate. The front panel has a brushed silver finish trim.

Fittings comply with BS 4533 - 2.2 (IP20).

## Supply voltage

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

## RANGE

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

## Domestic fluorescent accessories



**GB 1562**  
Lampholder for 1200mm and 1500mm Homelite fittings.



**GB 1598-3**  
Lampholder for Mini Homelite fitting.



**GB 1641**  
Lampholder including starter socket for Compact Homelite fitting.



**GB 1555-Z**  
Lampholder for Viewpoint fittings.



**GB 1623**  
Lampholder for Circline fittings.



**GB 1586**  
Lampholder for Slim Homelite fitting.



**GA 5089**  
Starter socket for Mini and Slim Homelite, and LS 15 Viewpoint fittings.



**GA 5051**  
Starter socket for 1200mm and 1500mm Homelite fittings.

## Replacement spares and control gear for 240V 50Hz supply

Fitting catalogue no.	Lampholder	Starter switch	Choke	Diffuser	QS Transformer	End cap	End cap trim	Fixing knob	Circuit diagram no.
LS 15	GB 1555-Z	155/200	G 69460.4	LS 4600	—	—	—	—	1
LST 15	GB 1555-Z	—	G 69460.4	LS 4600	G 47045 G 47100*	—	—	—	8
FHLD 40	GB 1562	155/400	GCU 40	FHLD 4	—	1700/2704	1700/2708	—	1
FHLD 65	GB 1562	155/500	GCU 65	FHLD 5	—	1700/2704	1700/2708	—	1
FHLD 13	GB 1598-3	155/500	GCD 13	LJU 121	—	1435/801	—	—	1
FHUD 40	GB 1641	155/400	GCU 40	FHUD 4	—	2040/5099	2040/5101	—	1
FHSD 40	GB 1586	155/400	GCU 40	ASU 4	—	—	—	—	1
CFLSG 60	GB 1623	155/500	GCU 65	LSG	—	—	—	CF 4607	216
CFSPG 60	GB 1623	155/500	GCU 65	SPG	—	—	—	CF 4606	216
CFA 60	GB 1623	155/500	GCU 65	CF 4601 (Frame) CF 4603 (Dish)	—	—	—	—	216

\*Double wound transformer.

For circuit diagrams see Control gear and accessories section.

## Index

Definitions	38
Slave luminaires	38
Self-contained emergency lighting luminaires	38-39
Self-contained exit signs	40



# 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

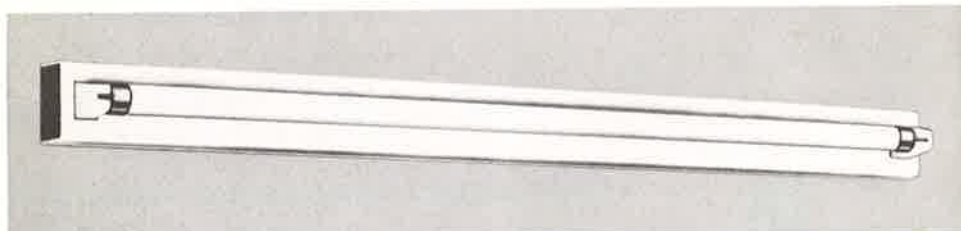
The part of emergency lighting which is provided to ensure that the means of escape can be safely and effectively used at all times.

### 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.



GH 3092/GH 3093

### Transistorized fittings (slave luminaires)

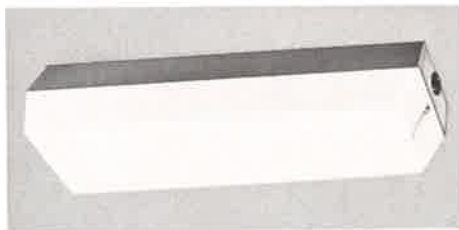
Fittings suitable for use on central battery systems are 12V versions of the Minipack available for use with 525mm 13W or 300mm 8W fluorescent tubes (see Page 22 for constructional details).

**RANGE:** Packed complete with Warm White tube

Catalogue no.	Lamp	Length mm	Width mm	Depth mm
GH 3093	1 x 525mm 13W	552	38	56
GH 3092	1 x 300mm 8W	324	38	56

### Self-contained emergency lighting bulkhead luminaires

The Escort fluorescent bulkhead fitting (for full details of construction see page 154) has been modified for emergency lighting use. The fitting is non-maintained. 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 x 300mm 8W	1 Hour	368	102	92
FBL 18	1 x 300mm 8W	3 Hours	368	102	92

## Emergency lighting

### Self-contained emergency lighting luminaires

Self-contained non-maintained luminaires giving three-hour duration emergency lighting. They have been modified for emergency lighting use by adding a control gear tray/reflector and a fluorescent tube, or krypton lamp (KOY 3).

The control gear comprises a control unit and batteries, and includes a solid-state hold-off device and a ballast circuit for the fluorescent tube. A long life, light emitting diode (red) indicates a charging current flowing into the batteries.

On mains recovery the batteries are recharged automatically. Details of fittings for other supply voltages are available on application.



KOY 3, FOY 3



FXJ 3



FXK 3



FLG 3

**RANGE:** Packed complete with 4W White Tube (Krypton lamp KOY 3)

Catalogue no.	Lamp	Length mm	Width mm	Depth mm
KOY 3	1 x 2.4V 1.0A Krypton	220	220	130
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

## Exit sign basic box

The GH 3085 is a sustained emergency lighting luminaire. One 300mm 8W White fluorescent tube operates from the mains; the other from the integral control gear and battery pack for a three-hour duration. The basic box is of folded sheet steel primed on outside surfaces and with a silver medium hammer finish. All components are mounted on the back of the hinged white enamelled reflector.

A white opal plastic panel and stove enamelled grey metal blanking plate cut-out fit in the base to provide downward area lighting if required. The box has 4 x 6mm dia. mounting holes on 345 x 145mm centres and a centrally positioned BESA box cable entry.

## Front panels

In compliance with BS 5266, all exit panels are now supplied with green lettering as standard. Red is available to special order. The illuminated area of all panels is 420 x 165mm.

## Exit sign ordering

Complete signs comprise two components:

- 1 Exit sign basic box (GH 3085).
- 2 Front panel (GH 2842 - GH 2847).



GH 3085 / GH 2842



GH 2842



GH 2843



GH 2844



GH 2845



GH 2846



GH 2847

## RANGE

Catalogue no.	Description	Length mm	Height mm	Depth mm
GH 3085	Exit sign basic box c/w 240V 50Hz control gear and 2 x 300mm 8W white fluorescent tubes	430	195	120
GH 2842	Front panel EXIT			
GH 2843	Front panel EMERGENCY EXIT			
GH 2844	Front panel FIRE EXIT			
GH 2845	Front panel TO FIRE EXIT			
GH 2846	Front panel TO FIRE EXIT →			
GH 2847	Front panel ← TO FIRE EXIT			

# Enclosed surface-mounted and recessed fluorescent and discharge luminaires

## Index

Polarized diffuser panels	42
Thorn Surface Pack	43
Sheerlume	44
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KSP London line luminaire	48
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New Format range	50-54
Kolorformat	55-56

## Polrized diffuser panels

When light is reflected from a shiny surface, such as the page of a book, at a glancing angle, two things happen. The reflected image of the light source gives rise to glare, making it more difficult to see what is printed on the page, and the light reflected at around 60° from the horizontal is horizontally polarized.

The only wholly effective way to remove veiling or reflected glare entirely is to move the light source, or tilt the reflecting surface at a different angle, but if most of the horizontally polarized light can be eliminated the situation can be much improved.

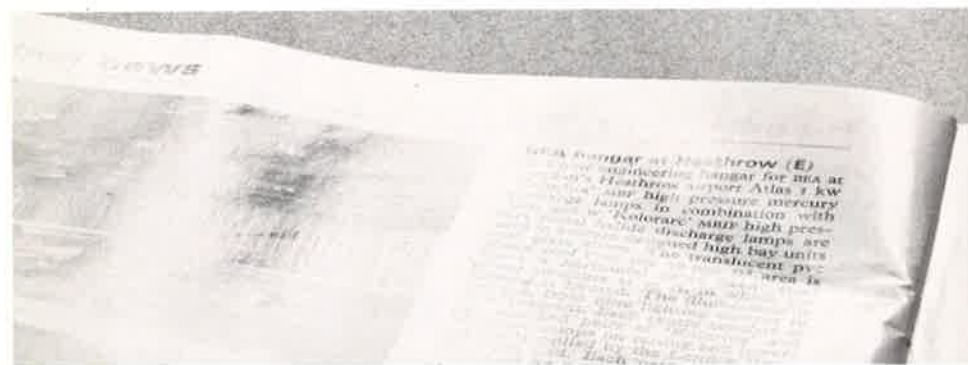
There are two ways of doing this. One is to wear spectacles which are vertically polarized, and obstruct the horizontally polarized light which causes the glare. This is the only way to overcome reflections of sunlight or a bright sky, but where artificial lighting is concerned it is possible to polarize the light vertically at source. This can be done by the process known as 'stack polarization' whereby a specially treated translucent panel is placed below the light source instead of a conventional diffuser or prismatic controller.

The light transmitted by these panels at or near 58° from the vertical is vertically polarized, so that very little is reflected from a polished horizontal surface, virtually eliminating the veiling glare. An immediate improvement in contrast is observed, as may be seen in the photographs below, one taken in ordinary unpolarized light and the other in light in which the horizontally polarized component has been removed.

Polarized panels also act as normal diffusers, reducing direct glare, and they are effective at all angles in azimuth. Prismatic lenses and reflectors which can reduce veiling glare by screening the light at these angles only work when the fitting is viewed from the side.

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

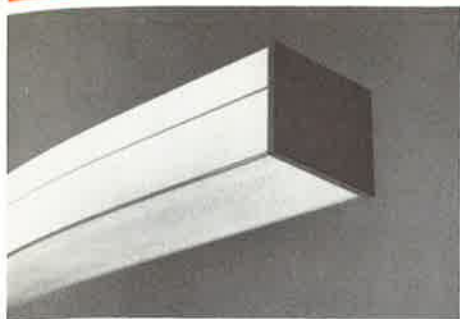
- New Format range
- Surface Modular range (SM)
- Programme 1 (Arena) lighting/ceiling system



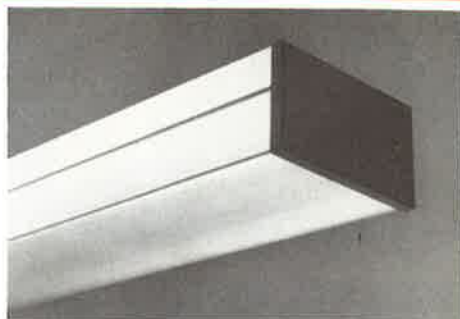
An extreme example of veiling glare and its removal by polarization



# Thorn Surface Pack



Single tube luminaire



Twin tube luminaire

A range of surface fluorescent luminaires suitable for all commercial interiors. Available in two body widths and three lengths as specified in the following table. Luminaires are supplied complete with opal side prismatic base controller and White tubes. Manufactured from formed sheet steel, the spines are finished in high reflectance, stove enamelled white acrylic paint and the end plates are stove enamel semi-matt black. The twin tube circuits have separate switching facilities for each tube. All circuits are unfused SRS.

Luminaires comply with BS 4533-2.2(IP20).

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.

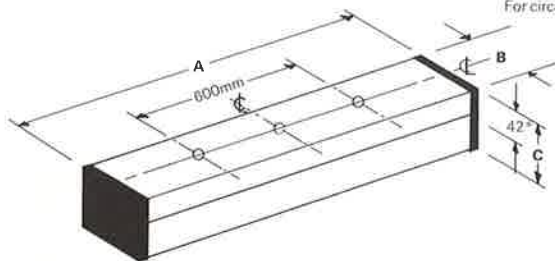
## RANGE

Catalogue no.	Description	Weight (approx) kg
FSP 140	1200mm 40W single batten and controller c/w White tube	4.8
FSP 240	1200mm 40W twin batten and controller c/w White tubes	7.9
FSP 165	1500mm 65W single batten and controller c/w White tube	5.4
FSP 265	1500mm 65W twin batten and controller c/w White tubes	8.9
FSP 175	1800mm 75W single batten and controller c/w White tube	6.1
FSP 275	1800mm 75W twin batten and controller c/w White tubes	10.0

## Replacement spares and control gear for 240V 50Hz supply

	40W	65W	75W
Ballast	G 69264.4	G 69349.4	G 69445.4
Capacitor	GC 2273	GC 2220	GC 2220
Lampholder	GB 1633	GB 1633	GB 1633
Terminal block	GT 1364-3	All single tube luminaires	
Terminal block	GT 1364-4	All twin tube luminaires	
Circuit diagram no.	7	252	252

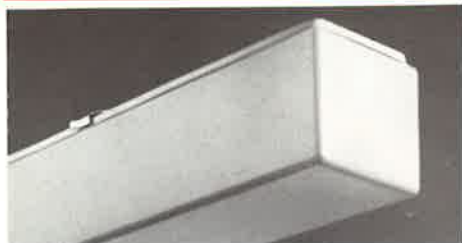
For circuit diagrams see Control gear and accessories section.



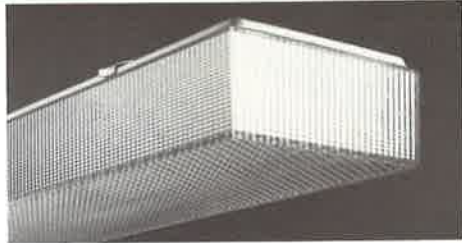
Catalogue no.	Nominal dimensions			Notes
	A mm	B mm	C mm	
FSP 140	1248	137	117	1 Dimension marked * relates to exposed depth of white painted batten
FSP 165	1550			
FSP 175	1815			
FSP 240	1248	196	115	2 Fixing centres are standard to all lengths. BESA holes are supplied at quoted dimension and at luminaire centre
FSP 265	1550			
FSP 275	1815			



# Sheerlume



Opal diffuser



Prismatic controller

A shallow enclosed surface fluorescent luminaire for commercial interiors, giving good light distribution and output, and wide spacing to height mounting ratios. In 1200mm and 1500mm lengths, single and twin with SRS control gear.

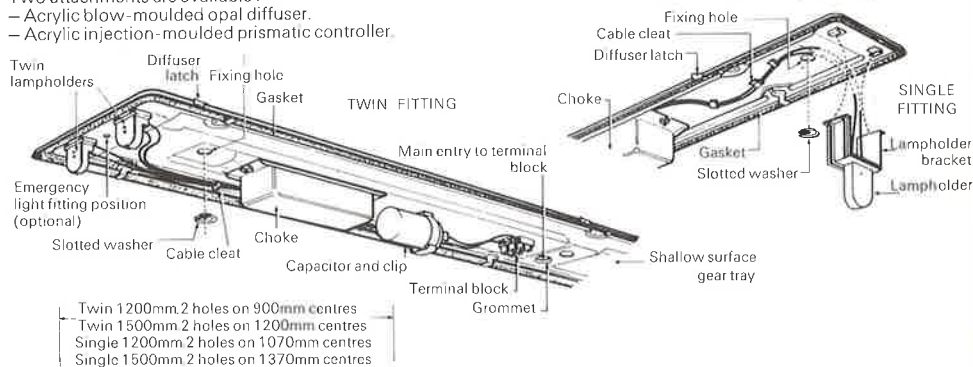
Two attachments are available:

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

Attachments are held against a gasket by quick-release thumb catches.

Auxiliary lighting kit (catalogue no. FSS 1001) enables one or two 15W Pygmy lamps to be mounted at each end of the luminaire.

Luminaires comply with BS 4533-2.2 (IP20).



## RANGE

Catalogue no.	Description	Nominal dimensions mm	Weight (approx.) kg
FSS1 1040	Shallow surface gear tray	1 × 1200 40W SRS	2.25
FSS1 1065	Shallow surface gear tray	1 × 1500 65W SRS	3.0
FSS2 2040	Shallow surface gear tray	2 × 1200 40W SRS	4.30
FSS2 2065	Shallow surface gear tray	2 × 1500 65W SRS	6.0
FSS0 112	Shallow surface opal attachment	1260 × 105	0.7
FSS0 115	Shallow surface opal attachment	1560 × 105	0.9
FSS0 212	Shallow surface opal attachment	1260 × 195	0.9
FSS0 215	Shallow surface opal attachment	1560 × 195	1.4
FSSH 112	Shallow surface prismatic attachment	1260 × 105	0.7
FSSH 115	Shallow surface prismatic attachment	1560 × 105	0.9
FSSH 212	Shallow surface prismatic attachment	1260 × 195	0.9
FSSH 215	Shallow surface prismatic attachment	1560 × 195	1.4

## Accessory

FSS 1001	Auxiliary lighting kit
----------	------------------------

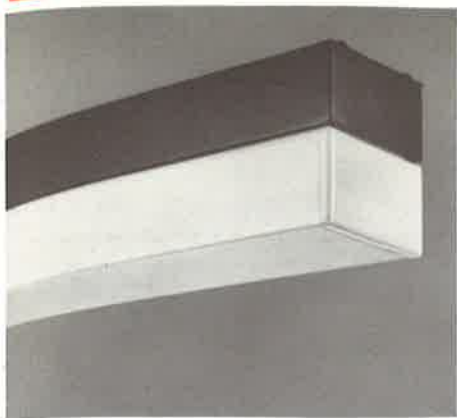
## Replacement control gear for 240V 50Hz supply

	1 × 1200mm 40W	1 × 1500mm 65W	2 × 1200mm 40W	2 × 1500mm 65W
SRS ballast	GBU 40	GBU 65	2 × GBU 40	2 × GBU 65
Capacitor	GC 2273	GC 2220	2 × GC 2273	2 × GC 2220
Circuit diagram no.	7	7	2 × 7	2 × 7

For circuit diagrams see **Control gear and accessories** section.

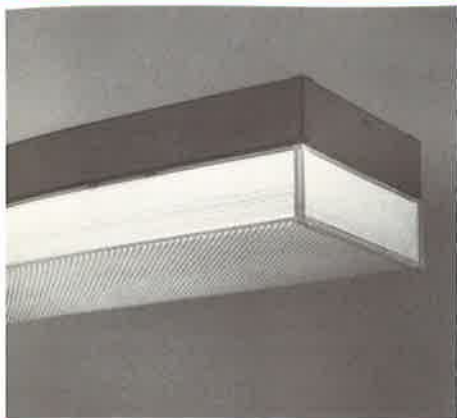
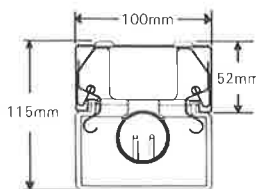


## SM range



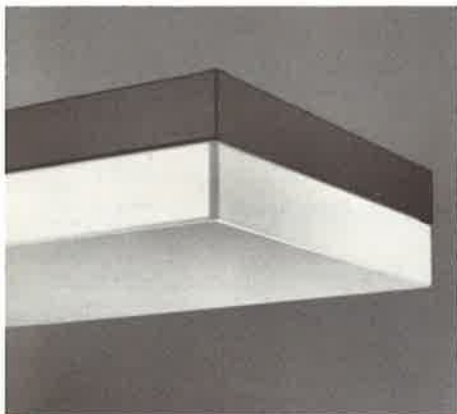
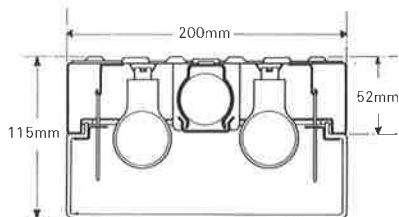
### SMB1

The smallest luminaire in a range of surface fluorescent luminaires. Constructed from sheet steel finished semi-matt black outside, white inside, and available with three attachments – opal, opal sided prismatic base, opal sided polarized base. The body has spring clips for mounting the attachments. Two lamp lengths are offered in this single lamp luminaire, 1200mm and 1800mm. SMB1 denotes a body width of 100mm.



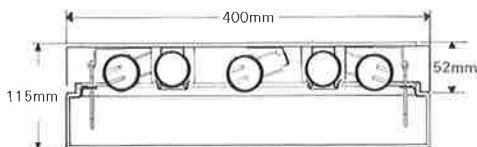
### SMWB2

In common with all bodies in this range, attachments seat against foam gaskets to prevent ingress of dirt, and wiring is connected to a 3-way fused terminal block. Wishbone springs secure the attachments to the body. Available as a twin lamp luminaire in 1200mm and 1800mm lengths. Accepts the same attachments as SMB1, with similar construction and finish.



### SMWB4

Three lamp-ways, two lengths (1200mm and 1800mm) in 400mm wide body. Attachments, as above, are wishbone spring mounted. Standard semi-matt black external finish with white interior.

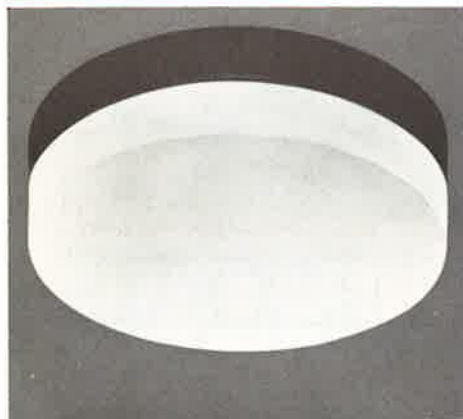
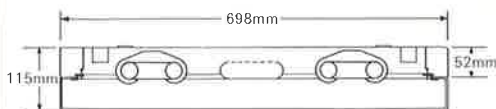


## SM range



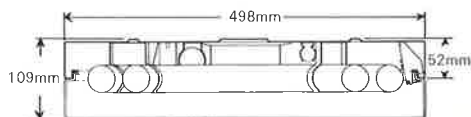
### SMWBQ

The square luminaire in the range, finished to match the linear versions and supplied complete with Thorn T8 Plus White U-tubes. The three standard attachments are wishbone spring mounted. Luminaire is 698mm square.

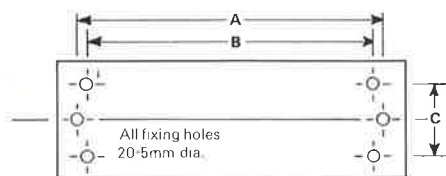


### SMO

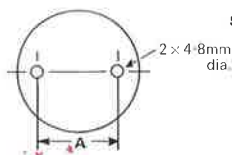
A semi-matt black circular luminaire, 500mm diameter, complete with 60W Warm White tube and opal diffuser. May be wall mounted.



Linear and square luminaire



SMO circular luminaire



### Note:

Ambient temperatures at luminaire level should not exceed 25°C. For continuous mounting an expansion gap of 5.4mm should be left between luminaires. Luminaires comply with BS 4533-2.2 (IP20).

### Fixing hole arrangements

	Dimensions mm		
	A	B	C
SMB1 1040	610	—	—
SMB1 1675	900	—	—
SMWB2 2040	—	610	100
SMWB2 2675	—	900	100
SMWB4 3040	—	610	200
SMWB4 3675	—	900	200
SMWBQ 240 U/340 U	—	406	406
SMDO 60	305	—	—

## Luminaires

Catalogue no.	Lamp-ways	Rating/circuit	Nominal Dimensions mm	Weight complete (approx.) kg
SMB1 1040	1	40W SRS	1300 x 100	5.1
SMB1 1675	1	75W SRS	1850 x 100	6.6
SMWB2 2040	2	40W SRS	1300 x 200	8.4
SMWB2 2675	2	75W SRS	1850 x 200	10.9
SMWB4 3040	3	40W SRS	1300 x 400	13.7
SMWB4 3675	3	75W SRS	1850 x 400	17.9
SMWBQ 240 U	2	40W SRS	698 x 698	27.0
SMWBQ 340 U	3	40W SRS	698 x 698	27.5
SMO 60	1	60W SS	500 dia.	7.2

## Attachments

Luminaire catalogue no.	Attachments catalogue no.	O	Z*
	Opal	Opal sided prismatic base	Opal sided polirized base
SMB1 1040	SMD1 4	SMO1 4	SMZ1 4
SMB1 1675	SMD1 6	SMO1 6	SMZ1 6
SMWB2 2040	SMWD2 4	SMWO2 4	SMWZ2 4
SMWB2 2675	SMWD2 6	SMWO2 6	SMWZ2 6
SMWB4 3040	SMWD4 4	SMWO4 4	SMWZ4 4
SMWB4 3675	SMWD4 6	SMWO4 6	SMWZ4 6
SMWBQ 240 U †	SMWDQ 2	SMWOQ 2	SMWZQ 2
SMWBQ 340 U †	SMWDQ 2	SMWOQ 2	SMWZQ 2
SMO 60	SMDO	Packed complete with body and lamp	

\*Made to order only.

† Packed complete with Plus White T8 U-tubes.

Composite ordering numbers may be used as follows:

SMB1 1040 + SMD1 4 = SMD1/1040

SMWB4 3675 + SMWO4 6 = SMWO4/3675

## Accessories

	SM accessories catalogue no. (excluding SMDQ 60 and SMWBQ 240 U/340 U)	SMWBQ 240 U/340 U accessories catalogue no.	SMDQ 60 accessories catalogue no.
Lampholder	GB 1580-LS (SMB1) GB 1580-SM (all exc. SMB1)	GB 1636	GB 1623
Fused terminal block	GT 1367	GT 1367	GT 1367
Fuse	GT 1299	GT 1299	GT 1299
Capacitor clip	GY 5244	GY 5244	GY 5244
Capacitor safety clip	GY 5245	GY 5245	GY 5245
Starter socket	—	—	GA 5089
Cable cleat	GAC 5363	GAC 5363	GAC 5363
Lamp clip	—	—	GY 5294
Wiring grommet	GAC 5297	GAC 5297	GAC 5297
Blind grommet	GAC 5402	GAC 5402	—
Gasket for sides/mm length	SM 4600/—	SM 4600/—	—
Gasket for end/mm length	SM 4601/—	—	—

## Replacement control gear for 240V 50Hz supply

Circuit	Choke/ballast	Capacitor	Starter switch	Circuit diagram no.
75W single tube circuit	1 x GBU 675	1 x GC 2220	—	7
75W twin tube circuit	2 x GBU 675	2 x GC 2220	—	7
40W (linear) single tube circuit	1 x GBU 40	1 x GC 2273	—	7
40W (linear) twin tube circuit	2 x GBU 40	2 x GC 2273	—	7
40W (U-tube) twin tube circuit	1 x GBU 40	1 x GC 2273	—	7
40W (U-tube) three tube circuit	2 x GBU 40	2 x GC 2273	—	7
SMO 60	1 x GCU 65	1 x GC 2245	155/500	1

For circuit diagrams see Control gear and accessories section.

# KSP London line luminaire

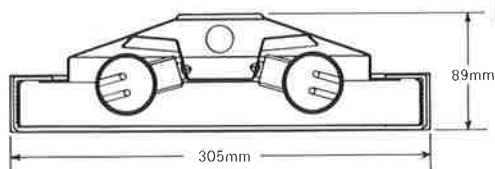


Slim-section 1800mm twin tube luminaire which projects only 89mm from the ceiling, making it ideal for modern interiors. The light controller provides low glare from all normal angles of vision.

For 230/240V 50Hz supply. Details of luminaires for other supplies are available on application.

Luminaire complies with BS 4533-2.2 (IP20).

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.



## RANGE

Nominal length mm	Rating	No. of tubes	Circuit	Luminaire Catalogue no.	Diffuser Catalogue no.	Batten Catalogue no.	Overall length mm	Approx. weight (incl. tubes) kg	Fixing centres mm
1800	75W	2	SRS	KSPR 2675	KSP 26	KSR 2675	1829	12.7	610

This fitting is not suitable for chain suspension

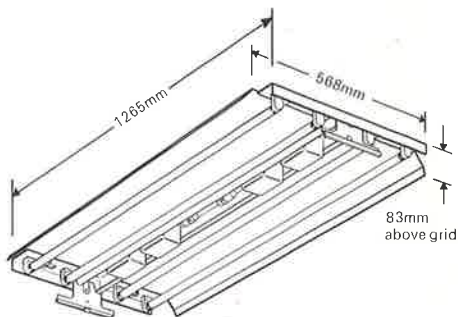
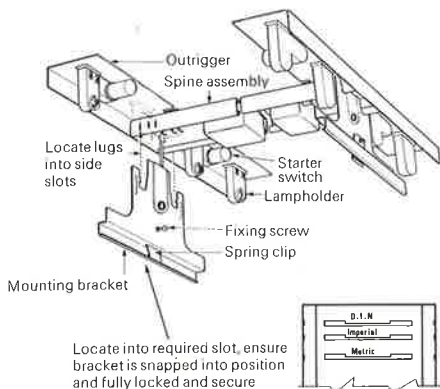
# Troffer Pack



A lightweight troffer for simple recessed lighting in lay-in exposed tee ceilings. Supplied in kit form, the luminaire is easy and quick to install and ideally suited for conversion of existing premises as well as new building work.

The luminaire replaces a standard ceiling tile, simply clipping to the main tees and requiring only 150mm void depth for installation. The common body is suitable for imperial and metric ceilings while different size diffusers are available to suit the ceiling module. Main tees for support should be 38mm high with a 24mm table running at right angles to the luminaire. If cross tees are used for support, these must comply with the above dimensions and be independently supported as main tees. Troffer Pack is supplied complete with White tubes. Two types of diffuser are available:

- Pearl opal flat panel (styrene).
  - TL 12 prismatic flat panel (styrene).
- Luminaires comply with BS4533-2.2(IP20).



## RANGE

### Luminaires

Catalogue no.	Nominal length mm	Nominal width mm	Rating	Tubes	Circuit	Weight (approx.) kg
FTP 240	1200	600	40W	2	SS	6.5
FTP 440	1200	600	40W	4	SS	8.5

### Diffuser attachments

Imperial Catalogue no.	Nominal size ft	Type	Metric Catalogue no.	Nominal size mm	Type
FTPO 24	4 x 2	Pearl opal	FTPO 612	1200 x 600	Pearl opal
FTPP 24	4 x 2	TL12 Prismatic	FTPP 612	1200 x 600	TL12 Prismatic

Maximum attachment weight - 2 kg.

### Replacement spares and control gear for 240V 50Hz supply

SS choke	GCU 40	Lampholder/starter socket	GB 1647
SS capacitor	GC 2224	Terminal block	GT 1364-4
Starter switch	155/400	Capacitor clips	GY 5244 and GY 5245
Lampholder	GB 1634	Circuit diagram no.	1

For circuit diagrams see Control gear and accessories section.

# New Format

## Description

A range of modular recessed fluorescent luminaires for commercial interiors, with a comprehensive selection of light control attachments. Available in two widths:

Series FTRA – 300mm wide

Series FTRB – 600mm wide

The luminaires are compatible with most commercial ceiling systems.

Three methods of suspension may be used: conduit, rod suspension, or side arm suspension. For direct attachment to the structural ceiling 20mm conduit may be used or the Thorn adjustable rod suspension set (catalogue no. KL 4601). A special side arm suspension set (catalogue no. FTR 1001) permits the luminaire to rest directly on to load bearing gridwork of a suitably supported suspended ceiling. This method allows the ceiling to be fully installed before the lighting. It also facilitates re-arrangement of the lighting layout when required, with the minimum disturbance to the suspended ceiling.

Luminaires comply with BS 4533-2.2 (IP20)

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.



FTRB attachment + FTRB body



FTRB air handling attachment + FTRB body



FTRD attachment + FTRA body



FTRP attachment + FTRA body



FTRX attachment + FTRB body

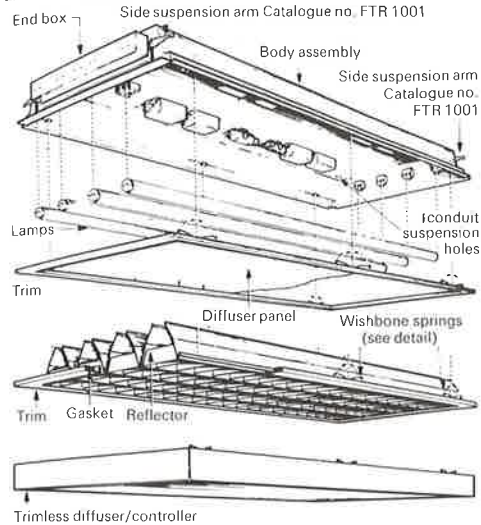


## Luminaire range

### 1. Linear tube

Two module widths are available, 300mm (FTRA) and 600mm (FTRB), suitable for imperial and metric ceilings. The attachments are available in imperial and metric sizes to suit the ceiling module. Care must be taken to select the correct item. The luminaires are equipped with an end box which extends beyond the ceiling module. One end of the aperture must be clear of any obstruction interfering with the end box. Note that the end box does not permit continuous mounting. A choice of lamp-ways and lengths are available within each module width.

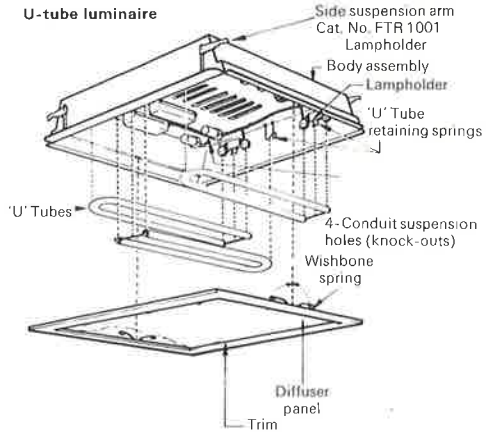
### Linear luminaire



### 2. U-tube

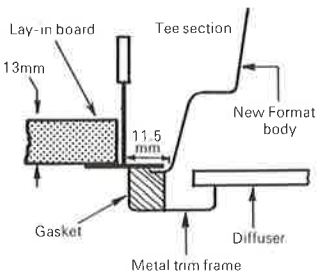
A square U-tube luminaire is available in the FTRB series. 600mm x 600mm square, it is supplied complete with Thorn T8 White U-tubes (priced separately) and is available in two and three-tube versions.

### U-tube luminaire

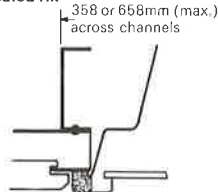


## Flange details with common suspended ceiling types

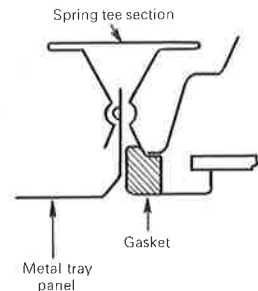
### Exposed tee (lay-in grid)



### Concealed fix



### Spring tee system

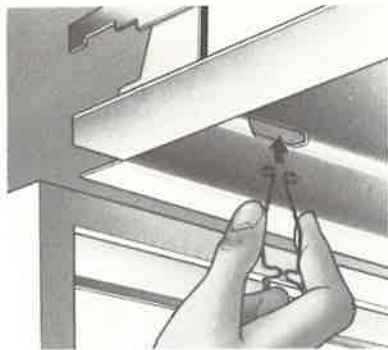
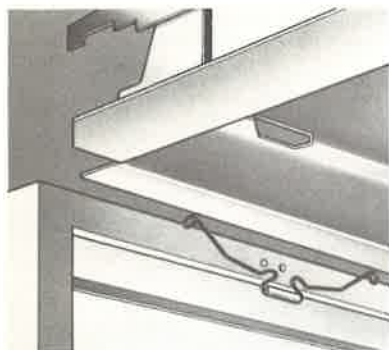




# New Format

## Attachments

All attachments are fitted to the luminaires by wishbone springs giving quick, positive location and easy removal for maintenance and cleaning.



Two models are available:

- 1 A recessed type to fit within the ceiling aperture. Supplied in two sizes to suit imperial and metric modules.
- 2 A model designed to overlap the ceiling aperture. This is available in all types except the FTRF and FTRX series, listed below. Overlap attachments fit both imperial and metric ceiling modules.

## Range

**FTRD series** — Dished opal trimless.

**FTRE series** — Dished opal sided, prismatic (TL 12) base trimless.

**FTRF series** — Flat prismatic (TL 19) panel in white air handling metal frame (for FTRB series luminaires only).

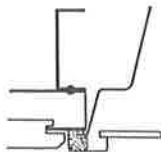
**FTRQ series** — Flat opal panel in shallow white metal trim.

**FTRP series** — Flat prismatic (TL 12) panel in shallow white metal trim.

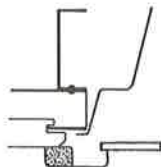
**FTRX series** — Symmetrical reflector (batwing distribution) in shallow white metal frame.

**FTRZ series** — Flat polarized panel in shallow white metal trim.

**Recessed attachment**



**Overlap attachment**



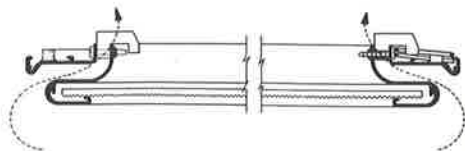
## Air handling

The FTRB series of luminaires (600mm wide) have air extract louvers as standard in the back of the body.

When this facility is not required and it is considered necessary to blank off the louvers, a blanking plate set (catalogue no. FTR 1002) can be used.

The FTRF series air handling frame is specially designed for use with the FTRB wide version. The facility is offered to extract air from ventilated or air conditioned spaces. Negative pressure return plenums or ducted extract systems can be accommodated.

Thorn ducting box (catalogue no. FTR 1003) is available for the latter system equipped with a balanced damper. For heat recovery systems, the air flow rate should be in the range 7-40 litres/sec. to obtain optimum performance and heat extraction. The symmetrical reflector may also be used for air handling applications.



Air flow pattern through FTRF series air handling frame.

**RANGE**  
**Table 1**  
**Luminaires**

	Nominal length mm	ft	Rating	Circuit	Lamp-ways	Body catalogue no.
FTRA series (narrow version) 300mm wide nominal	1200	4	40W	SRS	1	FTRA 140
	1200	4	40W	SRS	2	FTRA 240
	1800	6	75W	SRS	1	FTRA 1675
	1800	6	75W	SRS	2	FTRA 2675
FTRB series (wide version) 600mm wide nominal	600	2	40W	SRS	2	FTRB 240 U
	600	2	40W	SRS	3	FTRB 340 U
	1200	4	40W	SRS	2	FTRB 240
	1200	4	40W	SRS	3	FTRB 340
	1200	4	40W	SRS	4	FTRB 440
	1800	6	75W	SRS	2	FTRB 2675
	1800	6	75W	SRS	3	FTRB 3675
	1800	6	75W	SRS	4	FTRB 4675

**Table 2**  
**Attachments**

Body c/w gear catalogue no.	Attachments catalogue nos. for recessed trim						
	FTRD	FTRE	FTRF	FTRO	FTRP	FTRX	FTRZ
FTRA 140	14	14		14	14		Imperial
	34(W)	34(W)		34(W)	34(W)		Metric
FTRA 240	14	14		14	14		Imperial
	34(W)	34(W)		34(W)	34(W)		Metric
FTRA 1675	16	16		16	16		Imperial
	36(W)	36(W)		36(W)	36(W)		Metric
FTRA 2675	16	16		16	16		Imperial
	36(W)	36(W)		36(W)	36(W)		Metric
FTRB 240 U	22	22	22	22	22	22	Imperial
	62(W)	62(W)	62	62(W)	62(W)	62(W)	Metric
FTRB 340 U	22	22	22	22	22	22	Imperial
	62(W)	62(W)	62	62(W)	62(W)	62(W)	Metric
FTRB 240	24	24	24	24	24	24	Imperial
	64(W)	64(W)	64	64(W)	64(W)	64(W)	Metric
FTRB 340	24	24	24	24	24	24	Imperial
	64(W)	64(W)	64	64(W)	64(W)	64(W)	Metric
FTRB 440	24	24	24	24	24	24	Imperial
	64(W)	64(W)	64	64(W)	64(W)	64	Metric
FTRB 2675	26	26	26	26	26	26	Imperial
	66(W)	66(W)	66	66(W)	66(W)	66(W)	Metric
FTRB 3675	26	26	26	26	26	26	Imperial
	66(W)	66(W)	66	66(W)	66(W)	66(W)	Metric
FTRB 4675	26	26	26	26	26	26	Imperial
	66(W)	66(W)	66	66(W)	66(W)	66	Metric

**Note:** Table 2 lists catalogue nos. for recessed trim. To specify overlap trim use metric catalogue no. with suffix W. Availability of overlap trim is indicated in Table 2 by (W).

e.g. To order recessed trim (opal trimless) for FTRB 340, quote FTRD 24 for imperial, or FTRD 64 for metric. To order overlap trim for same luminaire quote FTRD 64 W.

**Note:** Overlap trim is common to imperial and metric ceiling modules.

## Accessories

Catalogue no.	Description
FTR 1001	Suspension arm set (4 per set).
FTR 1002	Blanking plates (2 per set).
FTR 1003	Ducting box.
KL 4601	Rod suspension set (4 per set).

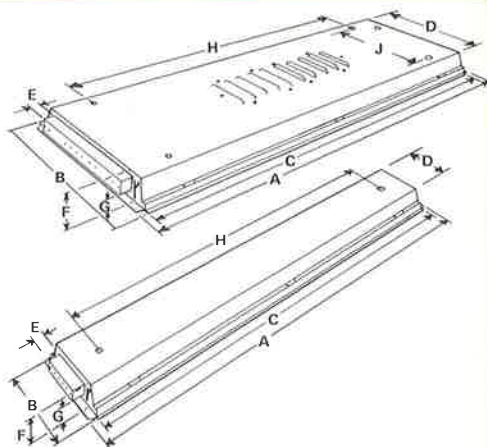
# New Format

## Dimensions and suspension centres

(All dimensions in mm)

Dimension	Nominal length	600	1200	1800
<b>FTRA (narrow version)</b>				
A	—	1190	1790	—
B	—	288	288	—
C	—	1144	1744	—
D	—	207	207	—
E	—	88	52	—
F	—	109	109	—
G	—	40	40	—
H	—	900	1350	—
<b>FTRB (wide version)</b>				
A	590	1190	1790	—
B	588	588	588	—
C	544	1144	1744	—
D	506	506	506	—
E	78	88	52	—
F	109	109	109	—
G	40	40	40	—
H	450	900	1350	—
J	450	450	450	—

Extract louvers on FTRB version only – 11mm high.



Trimless attachments



Trimmed attachments



## Luminaire weights (approx.)

Body c/w control gear only	kg	Complete luminaire with metal trim attachments (Types O, P & Z)	kg	Complete luminaire with trimless attachments (Types D & C)	kg	Complete luminaire with batwing reflector (Type X)	kg	Complete luminaire with air handling frame attachment (Type F)	Imperial version kg	Metric version 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 240 U	7.0	FTR 22/62	9.1	FTR 22/62	8.7	—	—	FTR 22/62	2.7	2.4
FTRB 340	11.3	FTR 24/64	15.0	FTR 24/64	14.6	—	—	FTR 24/64	4.7	4.2
FTRB 340 U	7.5	FTR 22/62	9.5	FTR 22/62	9.2	—	—	FTR 22/62	2.7	2.4
FTRB 3675	15.2	FTR 26/66	21.3	FTR 26/66	20.4	—	—	FTR 26/66	6.7	5.9
FTRB 440	13.1	FTR 24/64	16.6	FTR 24/64	16.5	FTR 24/64	19.3	FTR 24/64	4.7	4.2
FTRB 4675	18.0	FTR 26/66	23.6	FTR 26/66	22.7	FTR 26/66	27.0	FTR 26/66	6.7	5.9

## Replacement control gear for 240V 50Hz supply

	1200mm 40W	1800mm 75W	600mm 40W U-tube
Ballast	GBU 40	GBU 675	GBU 40
Capacitor	GC 2273	GC 2220	GC 2273
Circuit diagram no.	7	7	7

For circuit diagrams see Control gear and accessories section.

## Replacement spares

Fuse (3A)	GT 1299	GT 1299	GT 1299
Fuseholder	GT 1367	GT 1367	GT 1367
Mains terminal block	GT 1364.4	GT 1364.4	GT 1364.4
Lampholder – spring mounted	GB 1583	GB 1583	—
Lampholder – fixed	GB 1582	GB 1582	—
U-tube lampholder	—	—	GB 1636

A recessed modular luminaire for 250W and 400W MBIF lamps. Available with two attachments – the DKG series of dished prismatic trimless controllers, and DKH series flat prismatic (TL 19) panels in shallow white metal frames. It is suitable for air extract from ventilated or air conditioned areas using the New Format FTRF series air handling frame.

Three methods of suspension may be used – conduit, rod suspension, and side arm suspension. Mounting details are identical to those for the New Format range. It is recommended that additional ceiling supports are fitted within 150mm of each corner of the luminaire.

The luminaire, 600mm x 600mm square (nominal), is compatible with most commercial ceiling systems and is suitable for all commercial applications particularly where good colour rendering is required.

One standard housing accommodating the full range of lamps including 125W, 250W and 400W MBF, is common for imperial and metric ceilings. Attachments must be specified to suit the ceiling module.

Note: MBF circuits are rectified up to and including 250W. All luminaires are supplied with lamp (which is separately priced).

Luminaires 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.

## RANGE

**Housings complete with control gear for 240V 50Hz supply**

Nominal size mm	Watts	Lamp	Catalogue no.	Weight (approx) kg
600 x 600	250	MBIF	DKC 250	17.1
600 x 600	400	MBIF	DKC 400	19.1
600 x 600	125	MBF	DKK 125	15.0
600 x 600	250	MBF	DKK 250	15.5
600 x 600	400	MBF	DKK 400	19.0

## Attachments

Description	Imperial catalogue no.	Metric catalogue no.
Prismatic (TL 19) trimless controller	DKG 22	DKG 62
Flat prismatic (TL 19) panel in shallow white metal trim	DKH 22	DKH 62
Flat prismatic (TL 19) panel in white metal frame	FTRF 22	FTRF 62



DKG series attachment

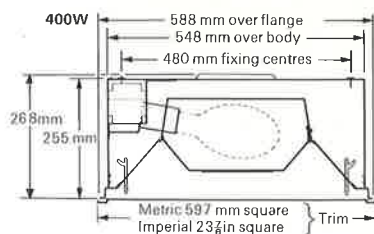
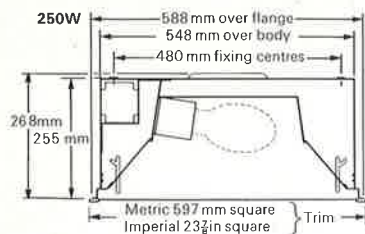


DKH series attachment



FTRF series attachment

## Luminaire cross section



## Accessories

Catalogue no.	Description
FTR 1001	Side arm suspension set (set of 4).
FTR 1002	Blanking plate (set of 2).
FTR 1003	Ducting box.
KL 4601	Rod suspension set.
DK 1	Emergency lighting unit.
DK 2	Auxiliary lighting unit (Suitable for 250W circuits only).

## Replacement control gear for 240V 50Hz supply

Catalogue no.	Ballast	Capacitor	Terminal block (fused)	Fuse	Circuit diagram no.
DKC 250	G 53251.1	GC 2386	GT 1331	GT 1336 (10A)	303
DKC 400	G 53317.4	GC 2346	GT 1331	GT 1336 (15A)	303
DKK 125	G 53306.4	GC 2383	GT 1331	GT 1268 (5A)	301
DKK 250	G 53198.4	GC 2370	GT 1331	GT 1336 (10A)	301
DKK 400	G 53317.4	GC 2331	GT 1331	GT 1336 (15A)	301

For circuit diagrams see Control gear and accessories section.

### Index

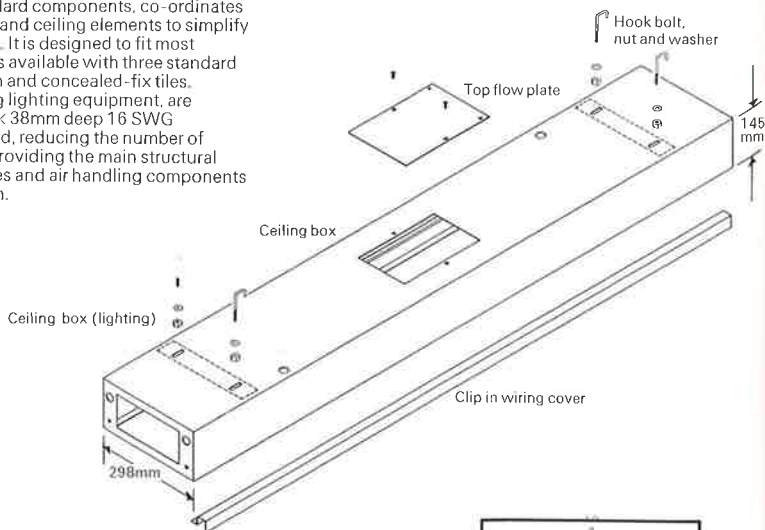
Programme 1 (Arena)	68-62
Programme 2	63-67
Clipper ceiling trunking	68-69
Circulgrid and Paragrid	70
Architectural range	71
Thermalucent ceiling panels	72



# Programme 1 (Arena)



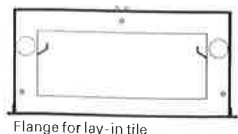
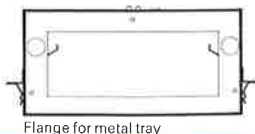
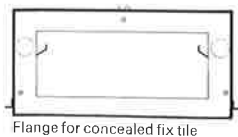
An integrated ceiling system, based on a  $300 \times 300$ mm module made up of standard components, co-ordinates the lighting, air handling and ceiling elements to simplify planning and installation. It is designed to fit most proprietary ceilings and is available with three standard trims for metal tray, lay-in and concealed-fix tiles. Ceiling boxes, containing lighting equipment, are supported from a  $19\text{mm} \times 38\text{mm}$  deep 16 SWG galvanized C-channel grid, reducing the number of suspension points, and providing the main structural support for the ceiling tiles and air handling components installed in line with them.



## Ceiling box

Sheet steel stove enamelled white, 300mm wide. Supplied with four hook bolts for securing to the C-channel, and nuts, bolts and washers to connect them to adjacent components. Two integral wire-ways support a two or three-lamp gear tray. A range of lighting controllers is available.

Air extraction, when required, is over the lamp-ways via an aperture in the top of the box, directly in to the plenum or ducted through an adaptor box. A flow plate is provided to control or blank off this aperture.



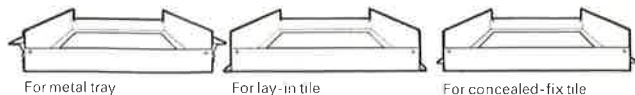


# Programme 1 (Arena)

## Air unit frames

Open topped 300mm and 600mm long  $\times$  300mm wide frames to take three types of tile, are installed in line with the ceiling boxes and support an air supply or extract unit, or in-fill panel. Where through-wiring is required with the frame installed, 26mm dia. conduit must be used to connect the ceiling boxes.

## Air unit frames



See components list for catalogue nos. of 300mm sq. or 300  $\times$  600mm sizes.

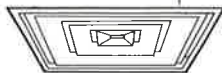
## Air supply units

A range of air diffusers is available to fit the air unit frames. Supplied complete with opposed-blade dampers and rectangular spigots.

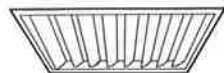
## Examples of air supply/exhaust grilles



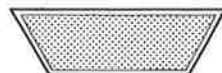
Two-way fixed blade unit



Four-way throw (fixed blade) unit



One-way fixed blade unit



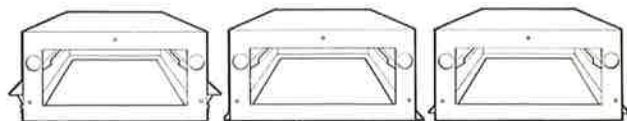
Perforated plate diffuser

## Air exhaust boxes

300mm or 600mm long, closed boxes in which can be rested exhaust grilles which butt on to the ceiling boxes to allow air to pass into them where opal or prismatic panels are used. They are unnecessary with low brightness and batwing reflectors or louvers.

Internally finished matt black with white trim and flange.

Exhaust grilles are available to match the one and two-way fixed blade supply grilles.



See components list for catalogue nos. of 300mm sq. or 300  $\times$  600mm sizes.

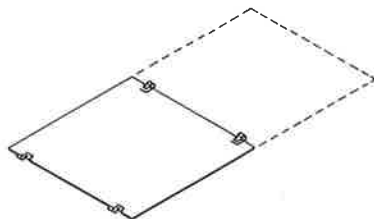
## End plates

These are located at the ends of ceiling boxes to provide an air and light seal. Supplied complete with blind grommets and edge trims to suit the three types of ceiling tile.



## In-fill panels

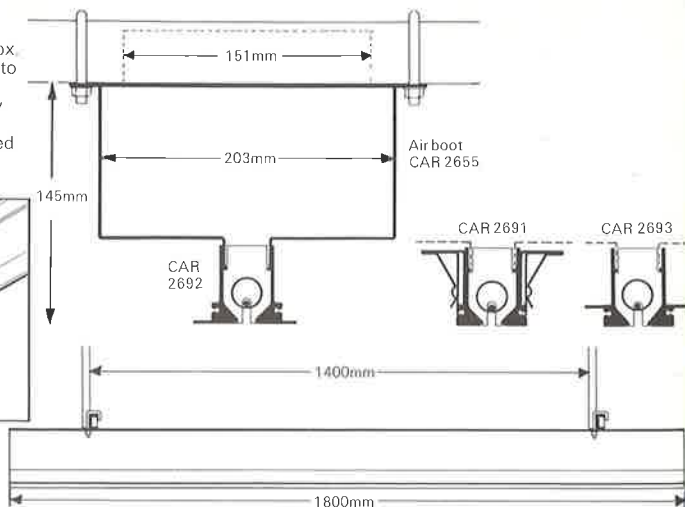
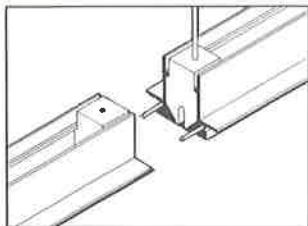
These steel panels locate in to the air unit frames and are made in 300mm and 600mm sizes. Holes can be pierced for sprinkler heads, smoke detectors etc.



# Programme 1 (Arena)

## Flowline air diffuser

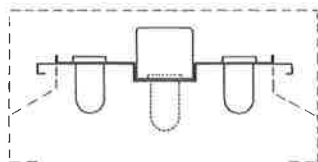
1800mm long, linear air diffuser supplied complete with plenum box. The depth of the unit corresponds to that of the ceiling box and it is supported directly from the grid by hook bolts attached to the plenum box flange. Split rollers are provided for adjusting air pattern control. Blanking sections are available.



## Gear tray

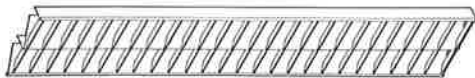
Sheet steel tray carrying gear for two or three fluorescent tubes, hooks on to wiring channels of the ceiling box. Plug and socket connection. The three-tube gear tray is intended only for use in air handling situations. The third tube is on a separate circuit and operates only if the exhaust fans are in operation.

Standard gear tray suitable for 240V 50Hz supply. Details for other voltages on application.



## Low brightness reflector assembly

Twin lamp assembly in polished aluminium with anodized cross baffles for situations where low glare ratings are specified. Allows free air-flow through the fitting.

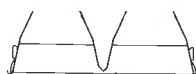


## Batwing reflector assembly

Twin lamp assembly in anodized aluminium with white cross baffles giving a 'batwing' light distribution, controlling reflected glare and allowing a wider spacing/mounting height ratio. Allows free air flow through the fitting.



Low brightness



Batwing

## Prismatic panels

Available in TL 15 and TL 12 prism types. Note that exhaust boxes are necessary.



# Programme 1 (Arena)

## Opal dish diffuser

Moulded acrylic dish. Exhaust boxes are required.



## Square cell louver

Conventional 13mm square cell satin anodized aluminium or white opal plastic louver.



## Polrized panel

A flat sheet of Polrized material to control 'veiling glare'. Air exhaust boxes are required.



## 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-fix tile
CAR 5675	Gear Tray Assembly (twin 1800mm 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-fix tile
CAR 3675	Gear tray assembly (triple 1800mm 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-fix tile
CAR 5440	1200mm Twin 1200mm 40W gear tray (c/w gear)
CAR 5420	1200mm Batwing reflector assembly
CAR 5501	300 × 1500mm Ceiling box for metal tray
CAR 5502	300 × 1500mm Ceiling box for lay-in tile
CAR 5503	300 × 1500mm Ceiling box for concealed-fix tile
CAR 5565	1500mm Twin 1500mm 65W gear tray (c/w gear)
CAR 5520	1500mm Batwing reflector assembly
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-fix tile
CAR 5885	2400mm Twin 2400mm 85W gear tray (c/w gear)
CAR 5820	2400mm Batwing reflector assembly
CAR 2612	1800mm Prismatic panel (TL15)
CAR 2613	1800mm Prismatic panel (TL12)
CAR 2614	1800mm Opal dish diffuser
CAR 2616	1800mm Plastic square louver
CAR 2617	1800mm Anodised aluminium louver
CAR 2619	1800mm Polrized panel

# Programme 1 (Arena)

## 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-tex 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-tex 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 tile
CAR 2693	1800mm long, Flowline for concealed-fix 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
CAR 5682	End-tile support plate

## Suspension and accessories

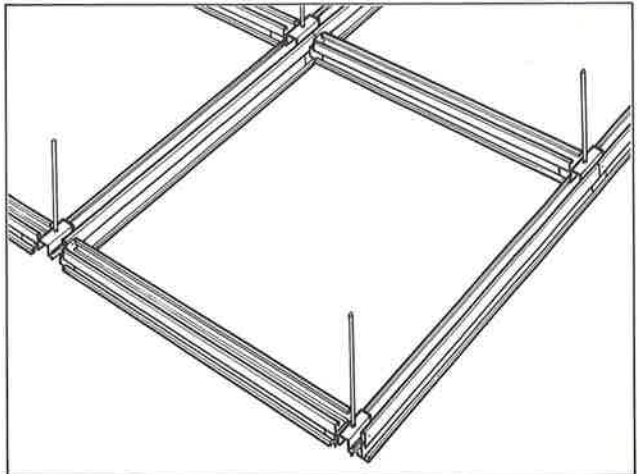
CAR 2659	Suspension hook bolt assembly
CAR 2658	Top-hat section for half spring tee on lightweight trunking
CAR 2657	Arena trunking suspension unit
CAR 2660	Trakline ceiling angle end bracket
CAR 2700	Clamp for trunking suspension unit
CAR 2690	Trunking to flowline jointing piece



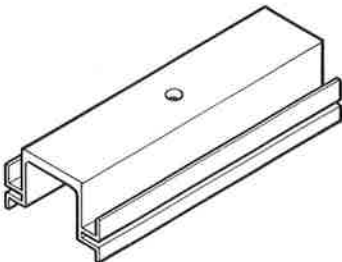
Programme 2 is a fully integrated, modular ceiling system designed to provide a wide range of lighting, air diffusion and acoustic performance from a standard range of components. The system is available in two module sizes – 1500mm square and 1200mm square.

## The grid

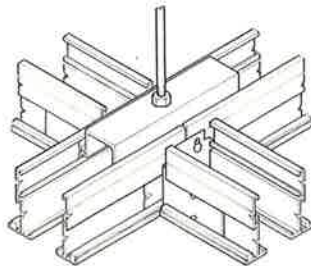
The basic framework which supports all components, is a satin anodized aluminium twin tee grid made up of main tees and cross noggins. The open slot between the extrusions can house air supply and exhaust components, electrical track, sprinklers and other components, or can be sealed by a black PVC strip. The main tees are supported from the soffit of the building by M6 studding in hanger couplers. The cross noggins lock into the main tees.



Section of supporting grid viewed from above. Hangers are placed on the main tees where they intersect with the cross noggins.



Plain hanger coupler. Two other types are available.



Junction of cross noggin and main tee.

## Programme 2

### Ceiling in-fills

#### 1 Moulded coffers

One-piece units constructed from fire-resistant inorganic material with a textured white surface and curved sides. With or without 600mm square aperture for luminaire or access panel. Blank coffers can also be supplied.

#### 2 Flat moulded panel

Constructed as above, with or without aperture.

#### 3 Metal coffer

A straight-sided unit of four identical panels clipped together to allow a 600mm aperture for luminaire or in-fill panel. Made from perforated sheet steel, finished white, with acoustic pads.

#### 4 Flat metal panel

A two-piece unit designed for blank modules only. Material and finish as above.

#### 5 Mineral fibre tiles

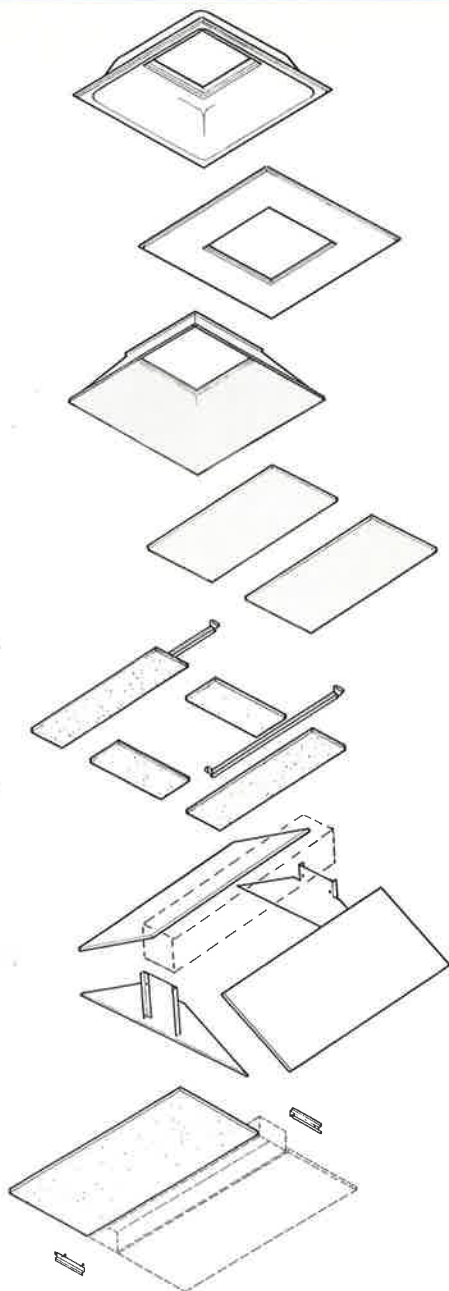
These can be fitted around a square luminaire to create a flat ceiling, or two larger panels used to create a flat blank module.

#### 6 Linear coffer

A centrally placed ceiling box supported on vertical metal ends, carries fluorescent lamps, gear and light controller. Where required, air is extracted through exhaust grilles at the ends of the luminaire. Mineral fibre boards make the sloping sides.

#### 7 Linear luminaire flat panels

The ceiling box may be mounted on the grid to form part of a flat ceiling. Mineral fibre board panels are used as in-fills.





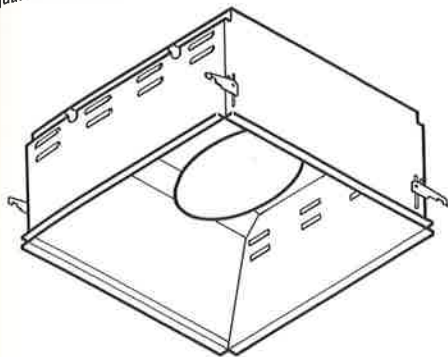
## Programme 2

### Luminaires

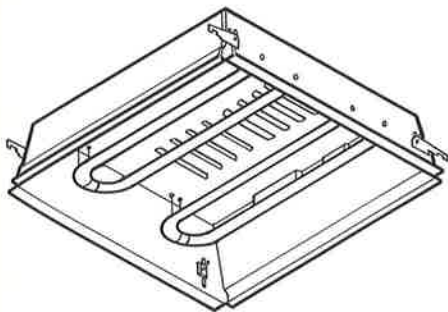
The 600mm square luminaires are part of the standard New Format and Kolorformat ranges of air-handling units. For details see pages 50-56.

The linear luminaire is unique to Programme 2 and is in two sizes to fit the 1500mm and 1200mm modules. The larger takes two 1200mm 40W lamps and the smaller two 1047mm 40W lamps. A range of optical controllers is available and the luminaire can be operated as an air handling unit.

#### Square luminaires

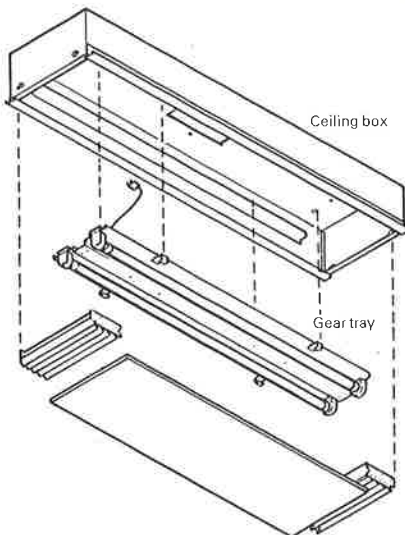


Square luminaire for discharge lamp

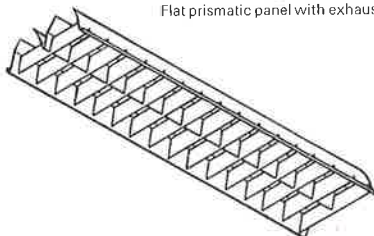


Square luminaire for fluorescent U-tubes

#### Linear luminaire



Flat prismatic panel with exhaust grilles



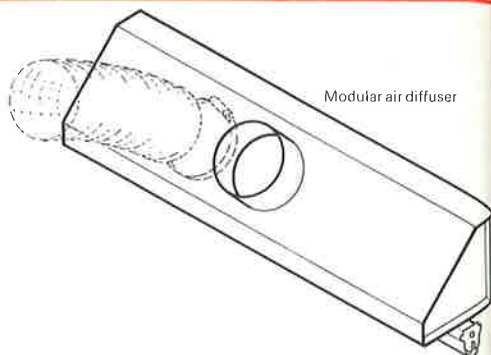
Batwing reflector

# Programme 2

## Air diffusion

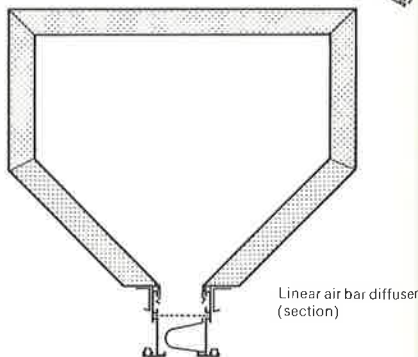
### 1 Modular air diffuser

A linear air diffuser is supplied complete with plenum chamber and drops into either main tees or cross noggins. Split rollers in the diffuser are provided to adjust air pattern control.



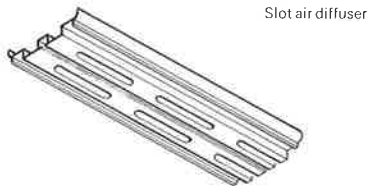
### 2 Linear air bar diffuser

A continuous duct of foil backed glass fibre material coated in neoprene. It is clipped on to the main grid with an equalising strip and air deflectors in half-module lengths. The ends of the duct are closed by pre-formed metal caps with or without spigots. When fed from one end, a run of ducts can be up to 10m in length.



### 3 Slot air diffuser

A slotted version of the blanking strip which can also give supplementary extract capacity, and is located between the aluminium tee sections.



## Fire prevention

Sprinkler heads and heat or smoke detectors can be mounted on the grid.

## Track systems

Trakline can be mounted in any grid member. Multi-trak can only be accommodated in special main tees.

## Access

Luminaires or ceiling in-fills can easily be removed for access to the void.

## Testing

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

## 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
CNF 5027	Fitting support rail : 1200 module
CNF 5007	Fitting support rail : 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 luminaire in 1200 (flat) module
CNF 3057	Side tile for linear luminaire in 1500 (flat) module
CNF 3056	Side tile for linear luminaire in 1200 (coffered) module
CNF 3058	Side tile for linear luminaire in 1500 (coffered) module

## Linear luminaires and accessories

Catalogue no.	Description
CNF 5021	Linear luminaire body : 1200 module
CNF 5028	Twin-lamp gear tray for CNF 5021
CNF 5022	TL 15 Prismatic panel for CNF 5021
CNF 5023	TL 19 Prismatic panel for CNF 5021
CNF 5005	Air grille for CNF 5022/5023
CNF 5024	Batwing reflector for CNF 5021
CNF 5026	Coffer end for 1200 module
CNF 5001	Linear fitting body : 1500 module
CNF 5008	Twin-lamp gear tray for CNF 5001
CNF 5002	TL 15 Prismatic panel for CNF 5001
CNF 5003	TL 19 Prismatic panel for CNF 5001
CNF 5005	Air grille for CNF 5002/5003
CNF 5004	Batwing reflector for CNF 5001
CNF 5006	Coffer end for 1500 module
CNF 6025	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

## Clipper ceiling trunking

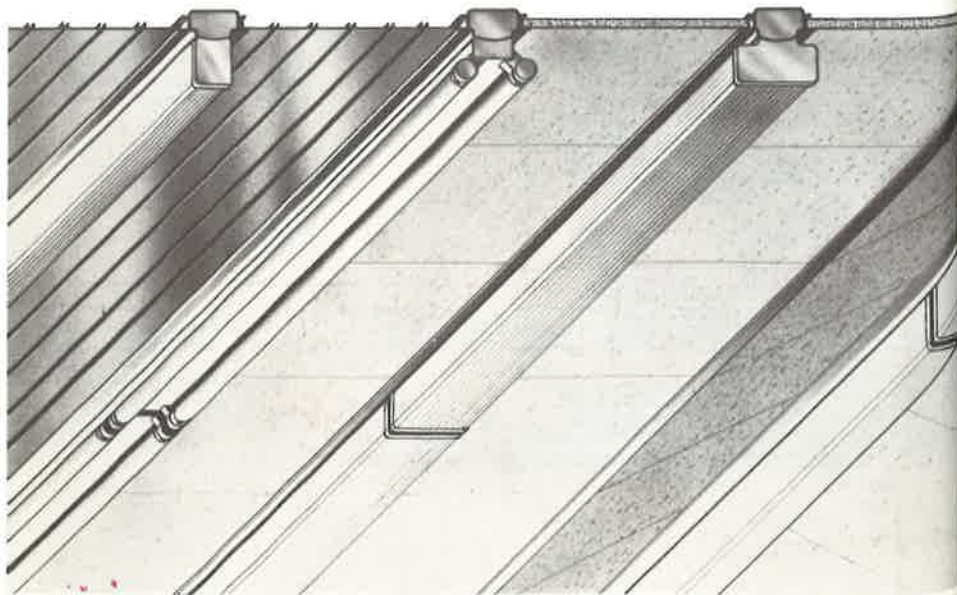
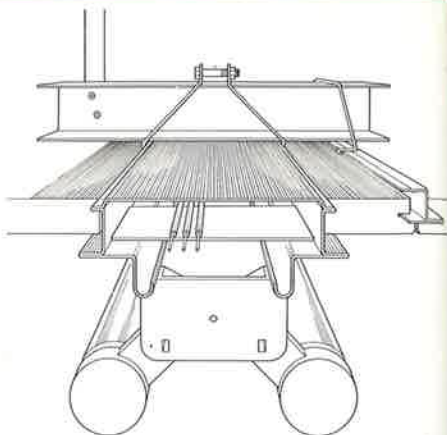
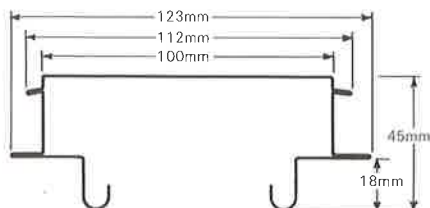
A major application for any batten fitting is where it is fixed to a suspended ceiling. Previously this has been achieved by several on site methods without any real integration with the ceiling, and without any quality of appearance in the detail fixing.

The new ceiling trunking for the Clipper range of fittings allows proper co-ordinated fixing with all popular types of suspended ceilings, and with several benefits.

The trunking is modular for easy co-ordination and scheme planning. It fixes into the standard construction of proprietary suspended ceilings with a very limited range of components.

It can be used to provide a new range of low cost vaulted ceilings. All the benefits of the Clipper fitting remain, but with a slimmer appearance, since the trunking is semi-recessed into the ceiling.

**Note:** For Clipper FCM and FCMX industrial trunking see pages 32-33



# Clipper ceiling trunking

## FCMF 3600

Ceiling trunking 3-6 metre length



## FCMF 3602

Single point suspension hanger



## FCMF 3603

Channel suspension hanger



## FCMF 3606

Trunking coupler



## FCMF 3610

Trunking end plate



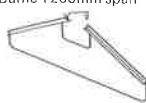
## FCMF 3611

Bridge support 1200mm span



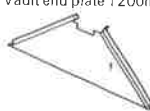
## FCMF 3612

Baffle 1200mm span



## FCMF 3613

Vault end plate 1200mm span



## FCMF 3616

Fibre cable support



## FCMF 3617

Fibre heat shield



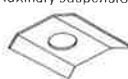
## FCMF 3620

Large capacity terminal socket



## FCMF 3621

Auxiliary suspension bracket



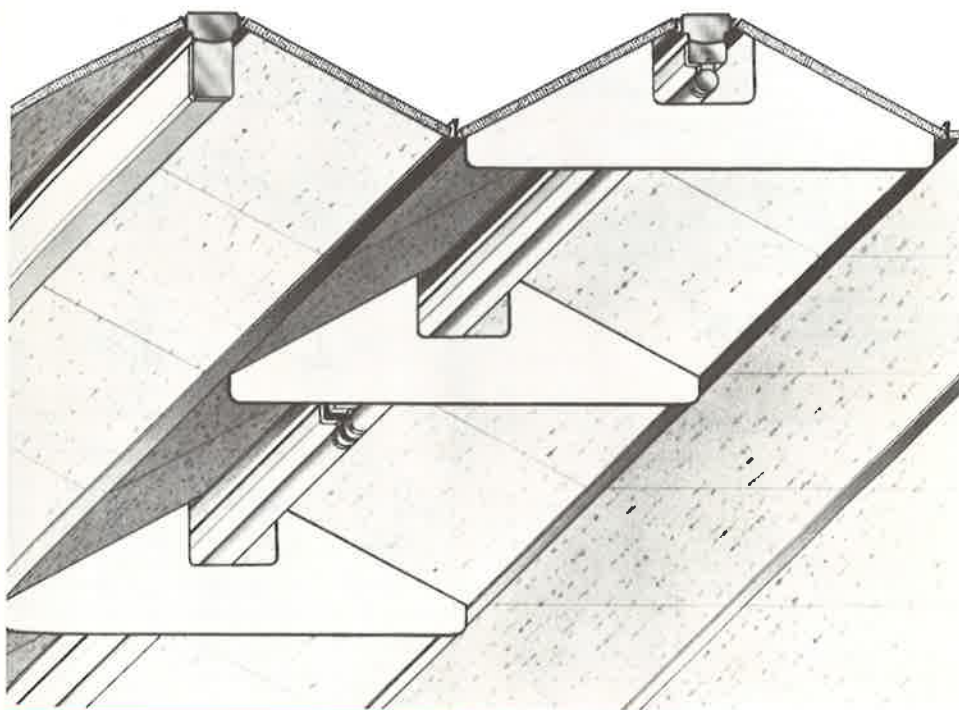
## FCM 4507

Cover strip (PVC) 1-8 metre length



## FCMF 4518

Temporary site light





# Circlgrid and Paragrid luminous ceiling systems

## Circlgrid

A unique louvered PVC lighting diffuser with circular cells. The sandwich construction gives great strength with minimum weight. Suitable for part or wholly luminous ceilings. The material meets the requirements of the Building Regulations (1973 amendments). Nominal panel size is 610mm (2 ft) square.

## Paragrid

A one-piece injection moulded louvre of bi-planar construction. The panels are treated with an anti-static solution after manufacture. Nominal panel size is 610mm square.

## Supporting grid

A specially designed extruded aluminium grid serves both systems. Paragrid tiles are supported on two sides only, the other sides interlocking. The edges of the tile are securely located by the upstand of the grid.

Circlgrid tiles must be supported on all four sides and therefore require cross tracks, which lock in to the main grid.

## RANGE

Catalogue no.	Description
<b>CIRCLGRID PANELS</b>	
CCG 4200	White perforated circular cell, 2 x 2ft louvre panel
CCG 4202	White unperforated circular cell, 2 x 2ft louvre panel

## PARAGRID PANEL

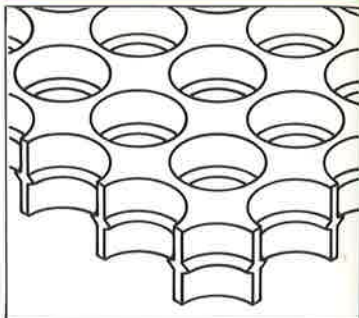
CPG 4140	Bi-planar opal louvre ( $\frac{1}{2}$ in cell), polystyrene 2 x 2ft
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## CIRCLGRID AND PARAGRID GRID

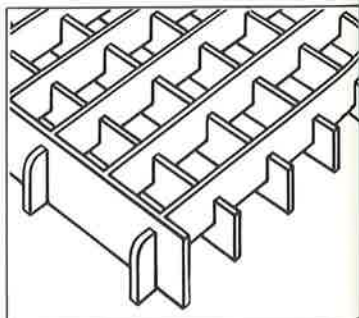
CIS 4215	Main track, anodized aluminium, 8ft long, $1\frac{1}{2} \times \frac{3}{4}$ in
CIS 4216	Cross track, anodized aluminium, 2ft long (with jointing sleeve) *
CIS 4217	Hanger assembly for wire suspension
CIS 4218	Joiner for main track
CIS 4219	Wall angle end clip *
CIS 4132	Wall angle end trim, anodized aluminium, 8ft long, $1\frac{1}{2} \times \frac{3}{4}$ 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.



Circlgrid



Paragrid



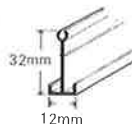
CIS 4212



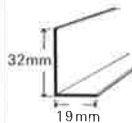
CIS 4219



CIS 4216



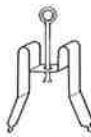
CIS 4215



CIS 4132



CIS 4218

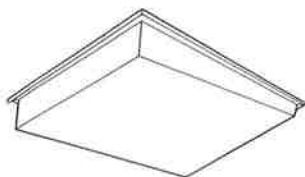


CIS 4217

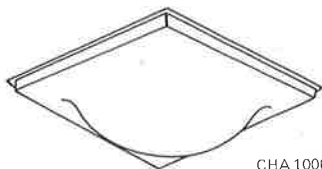


## Architectural range

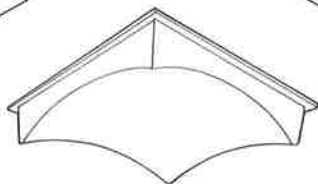
A range of vacuum formed light stabilised PVC ceiling tiles provides a variety of sculptured ceiling forms. All are available in 2ft x 2ft sizes, some also in 600mm x 600mm sizes. They are suitable for use in standard lay-in grids. All panels are supplied complete with dust covers.



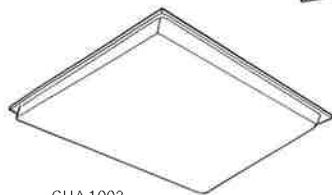
CHA 1001



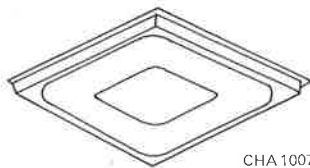
CHA 1006  
CHA 2002



CHA 1005



CHA 1003  
CHA 2001



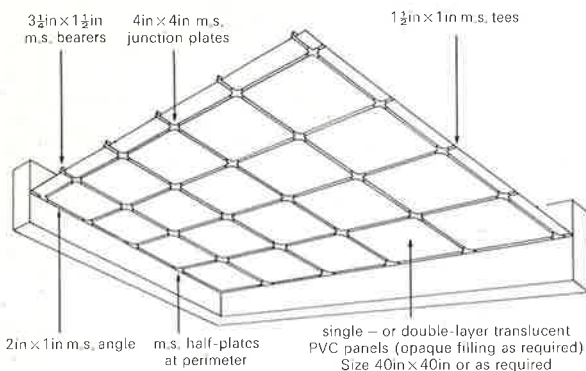
CHA 1007  
CHA 2003

### RANGE

Catalogue no.	Dimensions mm or ft	Description
CHA 1001	2 x 2	Wedge design
CHA 1003	2 x 2	Flat pan design
CHA 2001	600 x 600	Flat pan design
CHA 1005	2 x 2	Minaret design
CHA 1006	2 x 2	Bubble design
CHA 2002	600 x 600	Bubble design
CHA 1007	2 x 2	Magnum design
CHA 2003	600 x 600	Magnum design
CHD 2424	—	Dust cover
CHD 2000	—	Clip for dust cover

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

# 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.

A double-layer PVC film ceiling panel consisting of a channel frame over which the replaceable PVC skins are stretched, leaving a 30mm still air space between them. The skin is made from 0.004in thick PVC with a welded perimeter bead. CTH catalogue numbers apply to the complete Thermalucient panel, and CVT numbers to the corresponding replacement skins.

The following colours are available :

Natural	90% transmission
Daylight blue	78% transmission
Daylight blue high diffusion	54% transmission
Golden yellow	62% transmission

The upper skin is normally 'natural', 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).

## RANGE

Catalogue no.	Description
<b>THERMALUCIENT PANELS (Double skin)</b>	
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

Specially 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.

## Rear projection screens

Made from the same PVC film as used in Thermalucient panels and 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.

## 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
CVS 2000	Special sizes for Thermalucient panels

## OTHER ITEMS

CTH 5001	Self-adhesive polyurethane foam plastic, 13ft roll, 1/2 in wide
CTH 5002	Special clip for Spaceliner
CTH 5003	Special clip for Thermalucient

## High bay and Invincible range

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# Hipak

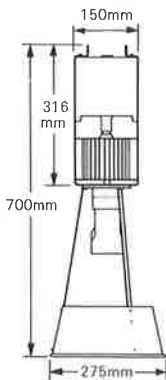
## Range description

Industrial fittings with encapsulated ballast housed in an aluminium extrusion. The large wiring box has through wiring with top and side entry facilities and contains the capacitor, a large terminal block and an ignitor when required. Fittings are easily installed via a 25mm clearance hole for conduit entry, with additional support lugs located on the steel frame. Range is suitable for 240V 50Hz supply (details for other supplies on application).

Maximum light output and distribution are achieved by reflector design and relative positioning of the lamp in the parabolic reflector. Maximum spacing/height ratio is 1.5:1.

Slots in the top of the reflector allow a flow of air to pass over the lamp and reflecting surfaces. Protective wire guards are supplied with the skirt reflector, and as an optional extra for parabolic reflectors.

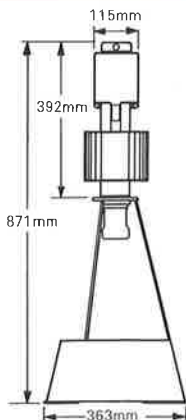
Made to BS 4533 - 2.2 (IP22) drip proof.



DFLB 250/S  
DFLB 400/S

## DFLB 250/S and 400/S IP22

For mounting heights between 3.5 and 9.0m. Operates 250W or 400W MBFR lamps continuously in ambient temperatures up to 45°C.



DFLB 700/S  
DFLB 1000/S

## DFLB 700/S and 1000/S IP22

For mounting heights between 9.0 and 18.0m. Operates MBFR lamps continuously in ambient temperatures as follows:

700W	45°C
1000W	40°C

## RANGE

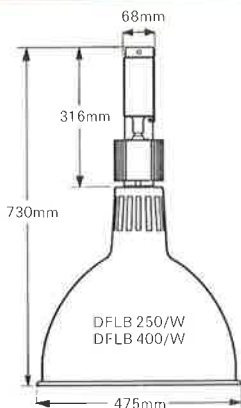
Rating	Lamp type	Complete fitting Catalogue no.	Control gear housing including gear Catalogue no.	Reflector Catalogue no.	Spare wire guard Catalogue no.	Approx. weight (incl. lamp) kg
250W	MBFR	DFLB 250/S	DFLB 250	DFLS 400	Included	6.3
400W	MBFR	DFLB 400/S	DFLB 400	DFLS 400	Included	7.2

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

## RANGE

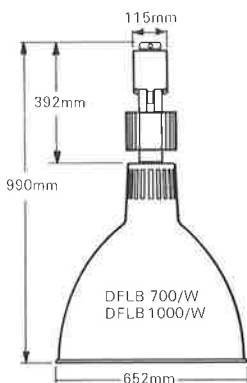
Rating	Lamp type	Complete fitting Catalogue no.	Control gear housing including gear Catalogue no.	Reflector Catalogue no.	Wire guard Catalogue no.	Approx. weight (incl. lamp) kg
700W	MBFR	DFLB 700/S	DFLB 700	DFLS 1000	Included	13.9
1000W	MBFR	DFLB 1000/S	DFLB 1000	DFLS 1000	Included	14.0

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



## DFLB 250/W and 400/W IP22

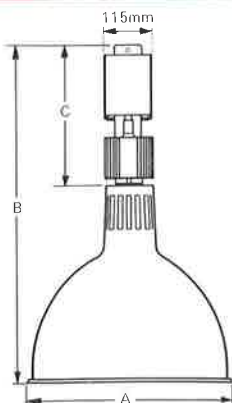
For mounting heights between 3.5 and 9.0m. Operates 250W or 400W MBF lamps continuously in ambient temperatures up to 45°C.



## DFLB 700/W and 1000/W IP22

For mounting heights between 9.0 and 18.0m. Operates MBF lamps continuously in ambient temperatures as follows:

700W	45°C
1000W	40°C



## DFLD 250/W, 400/W and 1000/W IP22

For mounting heights between 3.5 and 18.0m. 1000W version operates on 415V 50Hz supply (wiring arrangement can be changed for 380V supply). Operates MBI lamps continuously in ambient temperatures as follows:

250/400W	45°C
1000W	40°C

	Dimensions mm		
	A	B	C
DFLD 250/W	475	760	316
DFLD 400/W	475	730	316
DFLD 1000/W	652	990	392



## RANGE

Rating	Lamp type	Complete fitting Catalogue no.	Control gear housing incl. gear Catalogue no.	Reflector Catalogue no.	Optional Wire guard Catalogue no.	Approx. weight (incl. lamp) kg
250W	MBF	DFLB 250/W	DFLB 250	DFLW 400	DFLG 400	7.25
400W	MBF	DFLB 400/W	DFLB 400	DFLW 400	DFLG 400	8.15

Note: The DFLW parabolic reflector may be replaced by a DFLS skirt reflector for use with the MBFR lamps.

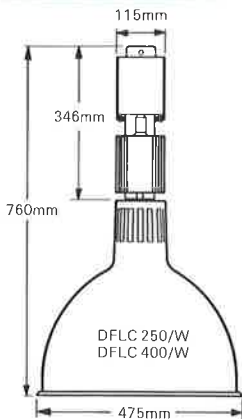
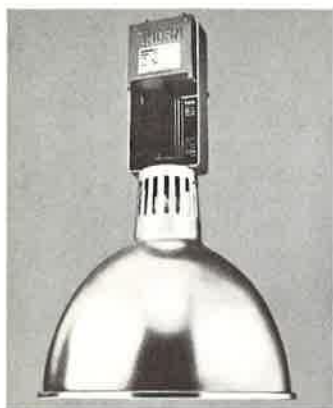
## RANGE

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

Note: The DFLW parabolic reflector may be replaced by a DFLS skirt reflector for use with the MBFR lamps.

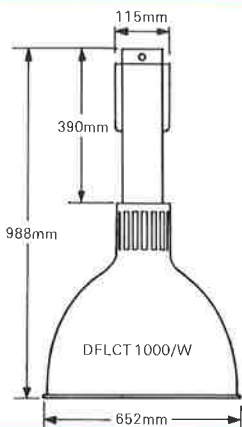
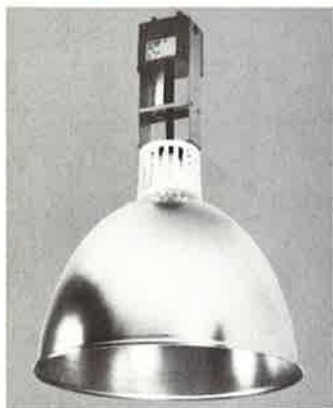
## RANGE

Rating	Lamp type	Complete fitting Catalogue no.	Control gear housing incl. gear Catalogue no.	Reflector Catalogue no.	Optional wire guard Catalogue no.	Approx. weight (incl. lamp) kg
250W	MBI	DFLD 250/W	DFLD 250	DFLW 400	DFLG 400	9.2
400W	MBI	DFLD 400/W	DFLD 400	DFLW 400	DFLG 400	8.55
1000W	MBI	DFLD 1000/W	DFLD 1000	DFLW 1000	DFLG 1000	15.8



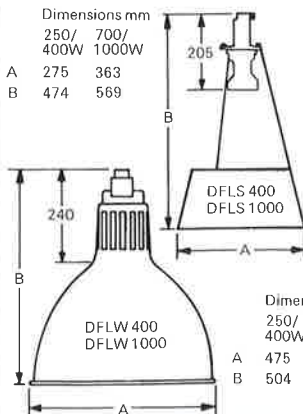
## DFLC 250/W and 400/W IP22

For mounting heights between 6·0 and 15·0m, Operates 250W and 400W SON lamps continuously in ambient temperatures up to 45°C.



## DFLCT 1000/W IP22

For mounting heights between 9·0 and 18·0m, Operates a 1kW SON lamp with remote gear continuously in ambient temperatures up to 40°C.



## DFLS 700/S, 700/W, 1000/S and 1000/W IP22

For mounting heights between 3·5 and 9·0m using 250W or 400W lamps, and 9·0 and 18·0m using 700W or 1000W lamps.

DFLT 700 accepts 250W or 700W MBF, MBFR, MBI and SON lamps. DFLT 1000 accepts 400W or 1000W MBF, MBFR, MBI and SON lamps.

Dimensions mm

	250/ 400W	700/ 1000W
A	475	652
B	504	688

A 475 652  
B 504 688

## RANGE

Rating	Lamp type	Complete fitting Catalogue no.	Control gear housing incl. gear Catalogue no.	Reflector Catalogue no.	Optional wire guard Catalogue no.	Approx. weight (incl. lamp) kg
250W	SON	DFLC 250/W	DFLC 250	DFLW 400	DFLG 400	9.15
400W	SON	DFLC 400/W	DFLC 400	DFLW 400	DFLG 400	10.25

## RANGE

Rating	Lamp type	Complete fitting Catalogue no.	Wiring box and lampholder assembly Catalogue no.	Reflector Catalogue no.	Approx. weight (incl. lamp) kg
1000W	SON	*	DFLCT 1000*	DFLW 1000*	7.0

\*For complete fitting order these items together with RBSG 100/A remote gearbox.

## RANGE

Rating	Lamp type*	Complete fitting Catalogue no.	Wiring box and lampholder assembly Catalogue no.	Reflector Catalogue no.	Approx. weight (incl. lamp and reflector) kg
250/700W	MBF, MBFR, MBI, SON	DFLT 700/S DFLT 700/W	DFLT 700	DFLS 400 for 250W or DFLW 400 DFLS 1000 for 700W or DFLW 1000	3.7
400/1000W	MBF, MBFR, MBI, SON	DFLT 1000/S DFLT 1000/W	DFLT 1000	DFLS 400 for 400W or DFLW 400 DFLS 1000 for 1000W or DFLW 1000	4.2

\*See Control gear and accessories section for appropriate gearbox.

Both are suitable for continuous operation in ambient temperatures up to 45°C. Remotely mounted gear is required. Skirt or parabolic reflectors of the appropriate size can be used with the top assemblies.

# Lopak

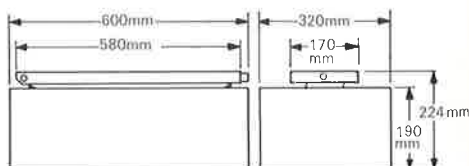


Compact discharge fittings for low mounting heights in industrial and commercial situations, comprising two items – the body, housing lamp and gear, and a ceiling plate. The body is hooked onto the installed ceiling plate, swung into position and fixed by a captive screw. Reflector and pre-wired mains lead are supplied with body housing. Reflector gives batwing distribution enabling spacing/mounting height ratios up to 2:1. Takes 250W SON, MBI/H or MBF lamps. Wire guard and transverse louvre are available as optional attachments. For use in ambient temperatures up to 30°C.

Complies with BS 4533 – 2.2 (IP22) drip proof.

## Supply voltage

240V 50Hz Details of fittings for other supplies on application.



## RANGE (Packed complete with lamp)

Fitting nominal length mm	Rating	Lamp type	Fitting Catalogue no.	Optional attachments Catalogue no.		Fixing centres mm
				Wire guard	Transverse louvre	
600	250W	SON	DLS 250	DLG	DLL	336
600	250W	MBI/H	DLC 250	DLG	DLL	336
600	250W	MBF	DLK 250	DLG	DLL	336

# Hipak and Lopak accessories

## Replacement spares and control gear for 240V 50Hz supply

Catalogue no.	Terminal block	Capacitor	Ballast	Ignitor	Lampholder	Circuit diagram no.
DFLB 250	GT 1362-2	GC 2370	G 53285	—	GL 1094	301
DFLB 400	GT 1362-2	GC 2331	G 53284	—	GL 1094	301
DFLB 700	GT 1362-2	GC 2382	G 53291	—	GL 1094	302
DFLB 1000	GT 1362-2	2 × GC 2346	G 53292	—	GL 1094	302
DFLC 250	GT 1362-2	GC 2386	G 53287	G 53282	GL 1094	311
DFLC 400	GT 1362-2	2 × GC 2331	G 53286	G 53282	GL 1094	311
DFLD 250	GT 1362-2	GC 2386	G 53289	G 53283	GL 1094	303
DFLD 400	GT 1362-2	GC 2331	G 53288	G 53283	GL 1094	303
DFLD 1000	GT 1362-3 GT 1362-2	2 × GC 2386	G 53299	G 53283	GL 1094	306
DFLCT 1000	GT 1362-2	3 × GC 2386*	3 × G 53323.4*	G 533161	GL 1094	312
DFLT 700†	GT 1306	—	—	—	GL 1094	—
DFLT 1000†	GT 1306	—	—	—	GL 1094	—
DLS 250	GT 1362-3 GT 1362-2	GC 2386-BO	G 53251.T	G 53282	GL 1181	311
DLK 250	GT 1362-3 GT 1362-2	GC 2386-BO	G 53251.T	G 53283	GL 1181	303
DLC 250	GT 1362-3 GT 1362-2	GC 2370-TM	G 53315.4	—	GL 1181	301

\*Included in RBSG 1000/A gear box.

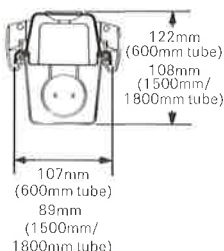
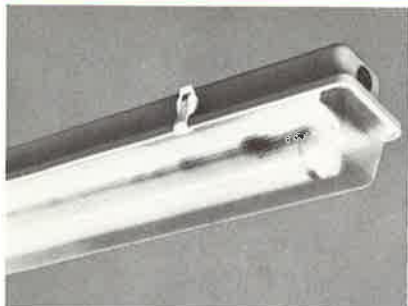
†Included in DFLCT 1000 wiring box.

†Gearless versions, Remote gear is used. See **Control gear and accessories** section for appropriate types.  
For circuit diagrams see **Control gear and accessories** section.

## Replacement attachments

Catalogue no.	Description
DFLW 400	Parabolic reflector for 250/400W Hipak
DFLW 1000	Parabolic reflector for 700/1000W Hipak
DFLS 400	Skirt reflector for 250/400W Hipak
DFLS 1000	Skirt reflector for 700/1000W Hipak
DFLG 400	Wire guard for 250/400W Hipak
DFLG 1000	Wire guard for 700/1000W Hipak
DLG	Wire guard for Lopak
DLL	Transverse louvre for Lopak

## Invincible range



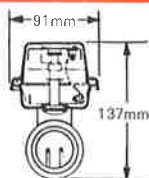
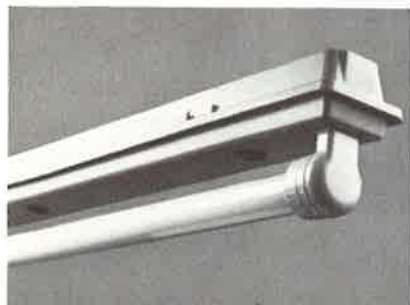
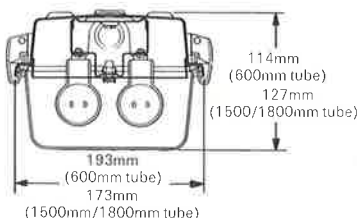
### LU corrosion-resistant fittings IP23

Suitable where excessive humidity or corrosive elements are present. When ceiling mounted they resist rain. Reflector-gear tray is attached to GRP body by moulded bushes. The lamps are enclosed in a vacuum-formed acrylic cover which is secured by injection moulded toggles to the GRP canopy and sealed by a gasket.

Fittings comply with BS 4533-2.2 (IP23) rainproof.

### Supply voltage

240V 50Hz. Details of fittings for other supplies on application.



### LZ corrosion-resistant fittings IP54

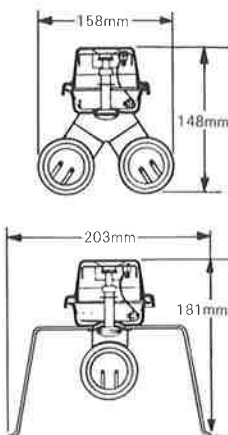
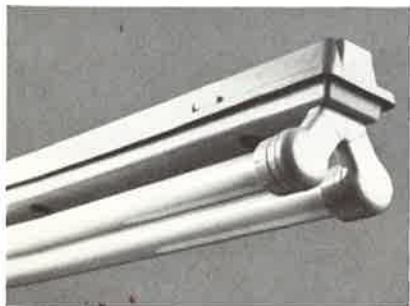
For conditions of high humidity or temperatures down to  $-30^{\circ}\text{C}$ . When special low temperature control gear is used, a double walled cylinder (catalogue no. LZD 15) is necessary. Fittings are for ceiling mounting only.

The GRP body is moulded in two halves screwed against a neoprene gasket with four nylon screws. Cable entry is at the top or end by grommeted holes. Special sealed lampholders grip either the glass of the tube (LZM types) or the outside of an LZC plastic cylinder to resist ingress of moisture. The LZC 15 and 16 plastic cylinder give complete mechanical protection to the fluorescent tube. All internal metal parts are coated to withstand adverse conditions during maintenance. PVC trough reflectors are available as optional attachments.

Fittings comply with BS 4533-2.2 (IP54) dustproof and splashproof.

### Supply voltage

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





# Invincible range

**RANGE:** Packed complete with White tubes

Nominal length mm	Rating	No. of tubes	Circuit	Complete fitting Catalogue no.	Diffuser Catalogue no.	Length mm	Weight kg	Fixing centres* mm
600	20W	One	QS	LUDQ 1020	LUD 12	711	3.4	500
600	20W	Two	QS	LUDQ 2020	LUD 22	711	4.4	500
1500	65W	One	SRS	LUDR 1065	LUD 15	1587	6.9	600
1500	65W	Two	SRS	LUDR 2065	LUD 25	1595	9.8	600
1800	75W	One	SRS	LUDR 1675	LUD 16	1850	6.1	600
1800	75W	Two	SRS	LUDR 2675	LUD 26	1850	10.2	600

\*Fixing holes: 600mm fitting = 6.4mm dia clear

1500mm/1800mm fitting = 25mm dia, clear fitted with grommet to take 20mm conduit.

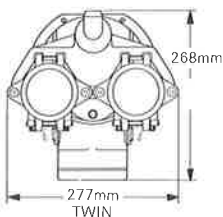
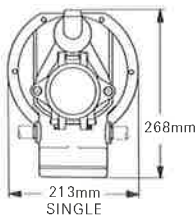
## RANGE

Nominal length mm	Rating	Circuit	Batten c/w lampholder ring and cylinder where applicable Catalogue no.	Description	Plastic cylinder or lampholder ring assembly Catalogue no.	Length mm	Approx. weight (incl. tubes) kg	Ambient temperature range °C	Fixing centres mm
1500	65W Single	SRS	LZMR 1065	Bare tube batten	LZM	1587	8.1	-5 to +25	600
1500	65W Twin	SRS	LZMR 2065	Bare tube batten	2 x LZM	1587	10.8	-5 to +25	600
1500	65W Single	SRS	LZCR 1065	Batten and plastic cylinder	LZC 15	1587	9.0	-5 to +25	600
1500	65W Twin	SRS	LZCR 2065	Batten and plastic cylinders	2 x LZC 15	1587	12.5	-5 to +25	600
1500	80W Single	SS	LZMS 1080	Bare tube batten	LZM	1587	8.1	-5 to +5	600
1500	80W Single	SS	LZCS 1080	Batten and plastic cylinder	LZC 15	1587	9.0	-10 to +5	600
1500	80W Single	SS	LZDS 1080	Batten and double plastic cylinder	LZD 15	1587	10.1	-30 to +5	600
1800	75W Single	SRS	LZMR 1675	Bare tube batten	LZM	1850	9.5	-5 to +25	600
1800	75W Twin	SRS	LZMR 2675	Bare tube batten	2 x LZM	1850	12.5	-5 to +25	600
1800	75W Single	SRS	LZCR 1675	Batten and plastic cylinder	LZC 16	1850	10.5	-5 to +25	600
1800	75W Twin	SRS	LZCR 2675	Batten and plastic cylinder	2 x LZC 16	1850	14.8	-5 to +25	600

Note: All 80W fittings can be used in ambient temperature of 15°C for up to 3 hours.

MS (Metal Strip) grade tubes MCFA/U are recommended for all the above. Plastic trough reflectors are available for single and twin fittings - 1500mm = LZU 25; 1800mm = LZU 26. Sealing ring for LZC/LZD cylinder sets is catalogue no. LZL.

## Invincible range



### FP flameproof range IP65

MoP Certificate no. 6055, for groups IIA, IIB.

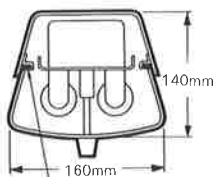
Temperature range Z at ambient temperature specified on fitting. Cast aluminium end boxes are rigidly supported by a steel connecting tube. Main casting incorporates switchless control gear on a removable tray, and underslung mains cable entry to facilitate installation. The remote end casting is removable for relamping. All visible joints are gasketed and external screws are of stainless steel socket headed type.

Maintenance or relamping is from either one end or below and the glass tube assembly or gear tray can be removed without disturbing the incoming mains supply.  $2 \times 20\text{mm}$  entries are standard but alternative entries can be supplied to special order. All-white exterior finish is applied to the fitting after assembly. Reflectors with or without wire guards are available.

Fittings comply fully with BS 229: 1957; BS 889: 1965; and are dust-tight and jetproof (IP65).

#### Supply voltage

240v 50Hz. Details of fittings for other supplies on application.



Neoprene gasket all round

### FF food factory fitting

The heavy gauge sheet steel housing has flush seam welded ends and a white plastic finish, clear patterned acrylic enclosure with 068 white acrylic ends. Smooth exterior minimises the collection of moisture or dirt. The closure is held by three captive screws and seats on to a fixed neoprene gasket. Lampholders and control gear are mounted on a reflector gear tray below.

Wiring is PVC insulated, colour coded, with three-way fused plug and socket earthed to the inside of the housing. The gear tray is removable as a complete unit by loosening three screws. Fitting complies with BS 4533-2.2.

#### Supply voltage

240v 50Hz. Details of fittings for other supplies on application.

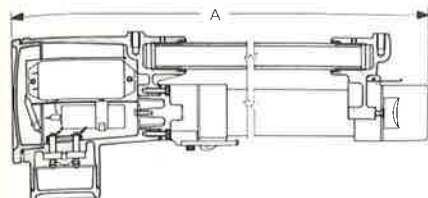
# Invincible range

## RANGE

Nominal tube length mm	Rating	Circuit	Complete fitting Catalogue no.	Dimension A length mm	Width mm	Approx. weight (incl. tube) kg	Fixing centres mm
600	40W Single	OS	FP 1240	971	212	17.0	690
600	40W Twin	OS	FP 2240	971	278	22.7	690
1200	40W Single	RS	FP 1040	1581	212	23.9	1300
1200	40W Twin	RS	FP 2040	1581	278	28.8	1300
1500	65W Single	RS	FP 1065	1882	212	26.3	1601
1500	65W Twin	RS	FP 2065	1882	278	32.1	1601
1800	85W Single	RS	FP 1685	2147	212	29.0	1866
1800	85W Twin	RS	FP 2685	2147	278	35.4	1866

With reflector, width of all sizes becomes 303mm.

With reflector and wire guard, width of all sizes becomes 328mm.



## Optional extras and spares

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

## RANGE

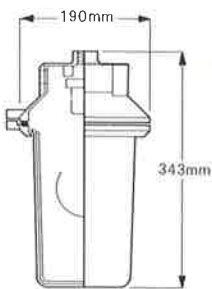
Nominal length mm	Rating	No. of tubes	Circuit	Complete fitting Catalogue no.	Enclosure Catalogue no.	Length mm	Weight (incl. tubes) kg	Fixing centres mm
1500	65W	Two	RS	FFD 265	FFD 25	1613	15.3	610

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

## Invincible range



DRNT160



### Renown wellglass IP63 Zone 2

Fitting for arduous environments with die-cast aluminium alloy LM6-M finned body and bezel. Fitted with internal choke to take 80W or 125W MBF lamp. Heat resisting glass with diffusing flutes cemented to bezel (with safety cord) and held against neoprene gasket by stainless steel Allen screws. Fixing by top entry tapped 20mm conduit or twin 20mm side entry with removable plug, or by suspension holes in two of the cooling fins. Fittings are low power factor.

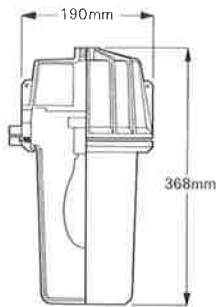
Made to BS 4533-2.1 (IP63), dust-tight, rainproof. BASEEFA certificate no. 72057.

#### Supply voltage

230/240V 50Hz supply. Details of fittings for other supplies on application.



DRNT125



### Dreadnought bulkhead fitting IP63 Zone 2

Dust-tight, rainproof fitting also for use in many arduous atmospheres. Die-cast aluminium alloy LM6-M body treated and stove enamelled grey. Bezel frame with a neoprene gasket carries the glass and is screwed to the body by four stainless steel Allen screws. Reflector, capacitor and choke are provided for MBF lamps. For MBTF and tungsten lamps the inside is sprayed white. Three-way terminal block, ES lampholder and fixing straps 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.

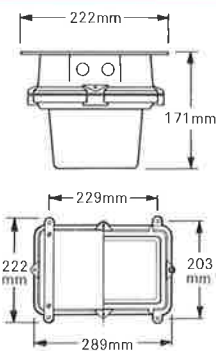
Made to BS 4533-2.1 (IP63), BASEEFA certificate no. 72061.

#### Supply voltage

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



DDRE 50



# Invincible range

## RANGE

Rating	Lamp type	Complete fitting Catalogue no. *	Cable entry	Approx. weight kg
80W	MBF	DRNT 80	Top	7.3
80W	MBF	DRNS 80/C	Twin (adjacent) side	7.3
125W	MBF	DRNT 125	Top	7.3
125W	MBF	DRNS 125/C	Twin (adjacent) side	7.3
200W	GLS	DRNT 160	Top	3.6
200W	GLS	DRNS 160/C	Twin (adjacent) side	3.6
160W	MBTF	DRNT 160	Top	3.6
160W	MBTF	DRNT 160/C	Twin (adjacent) side	3.6

\*Nomenclature

S=2 × 20mm side entry; T=1 × 20mm top entry; C= Ceiling fixing strap.

## Optional extras and spares

Catalogue no.	Description
DRNC	Ceiling fixing strap
DRNR	Vitreous enamel external reflector
DRNW	Wire guard
DRNG	Spare glass

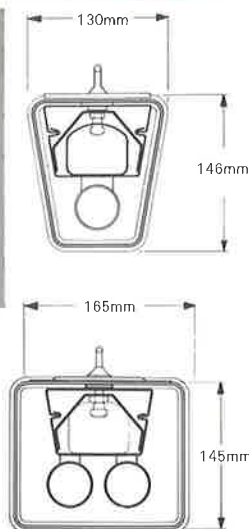
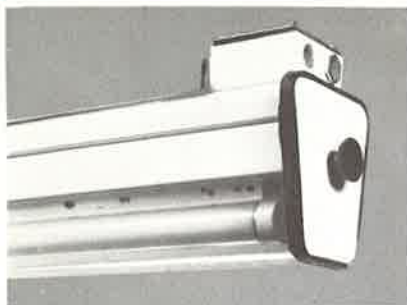
## RANGE

Rating	Lamp type	Complete fitting Catalogue no.	Cable entry	Approx. weight (incl. lamps) kg
50W	MBF	DDRE 50	Twin (adjacent) entries	6.35
80W	MBF	DDRE 80	Twin (adjacent) entries	6.35
200W	GLS	DDRE 160	Twin (adjacent) entries	4.54
160W	MBTF	DDRE 160	Twin (adjacent) entries	4.54

## Optional extras and spares

Catalogue no.	Description
DDRW	Wire guard
DDRG	Spare glass

## Invincible range



### Glendale corrosion-resistant fittings IP54 Zone 2

The thick acrylic enclosure has stainless steel gasketed end plates of which one can be removed to withdraw the gear channel for re-lamping. All internal parts are rustproofed and stoved enamelled white.

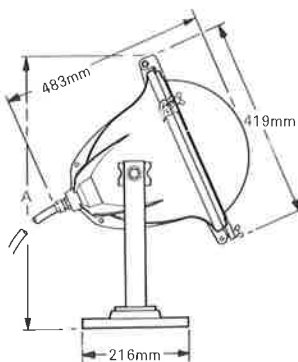
Standard fittings have two eyebolts for suspension and a nylon cable gland suitable for 0.200-0.275 o.d. cables. Fittings with SB in their catalogue numbers have fixing studs and Zone 2 conduit boxes with two 20mm entries, one being removable. Fittings can be mounted horizontally or vertically, in ambient temperatures up to 35°C (65W suitable only up to 25°C when mounted vertically). Made to BS 4533-2.1 (IP54) dust proof, splashproof, BASEEFA certificate no. 72064.

#### Supply voltage

240V 50Hz. Details of fittings for other supplies on application.



OGR 250/A



### Grenville floodlight IP65 Zone 2

Jetproof and dust-tight floodlight for use in chemically corrosive atmospheres and other arduous environments. Die-cast aluminium alloy body stoved enamelled grey, with plain heat-resisting glass bowl seated on a neoprene gasket in bezel secured by a floating hinge and three swing bolts.

A concentrating anodized internal reflector is used with the MBF (Kolorlux) lamp and the fitting is supplied with integral choke (no capacitor) and 2m of armour cable. Made to OCMA specification no. ELEC 7 - HMFI. Approved for use in Zone 2 areas. Complies with BS 4533-2.1 (IP65).

#### Supply voltage

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



# Invincible range

## RANGE

Nominal length mm	Rating	Circuit	Complete fitting Catalogue no. †	Suspension*	Length mm	Approx. weight kg	Fixing centres mm
600	20W Single	QS	FGSB 20	stud/box	686	6.35	457
600	20W Twin	QS	FGSB 220	stud/box	686	7.25	457
600	20W Twin	QS	FGEA 220	eye/gland	686	7.25	457
1500	65W Single	RS	FGSB 65	stud/box	1595	12.7	610
1500	65W Twin	RS	FGSB 265	stud/box	1595	17.25	610
1500	65W Single	RS	FGEA 65	eye/gland	1595	12.7	610
1500	65W Twin	RS	FGEA 265	eye/gland	1595	17.25	610

\*Suspension and mains entry

†Nomenclature

A=cable gland entry; B=Zone 2 box 2×20mm ET; E=eye bolt mounting; S=stud mounting.

For full mounting details see pole mounting systems.

## RANGE

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

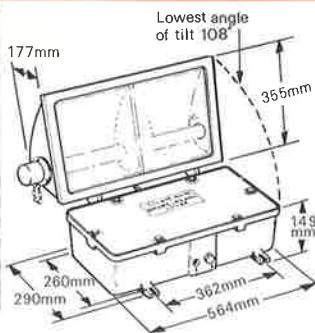
### Mountings for adjustable floodlight fitting with side bosses

- OGRA Cradle and circular baseplate (216mm dia.)
- OGRB Cradle and clamp for 102mm dia. column
- OGRC Cradle and handrail clamps
- OGGD Spare glass only

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

For full mounting details see pole mounting systems.

## Invincible range



### DHA 800 type 'N' floodlight IP55 Zone 2

Floodlight for use within a Zone 2 area on specialised land and oil tanker installations. Houses two 400W SON-T lamps in an asymmetric reflector unit. The LM6 cast aluminium alloy reflector housing is attached to a gasketed control gear box of similar material by an adjustable galvanised steel stirrup making the unit suitable for horizontal or vertical mounting. Fixing to mounting surface is by 4 lugs on the gearbox, which is supplied fully pre-wired and complete with gear. Fitting is suitable for continuous operation in ambient temperatures up to 40°C.

Complies with BS 4533 Part 2 Section 2.1 – restricted breathing with classification of IP 55 (dustproof and jetproof) and BS 4683 Part 3 – 1972.

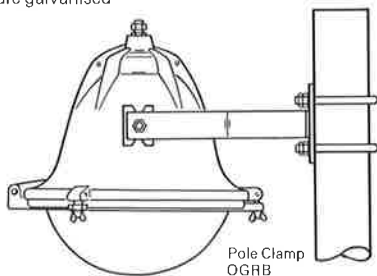
#### Supply voltage

240V 50Hz. Details of fittings for other supplies on application.

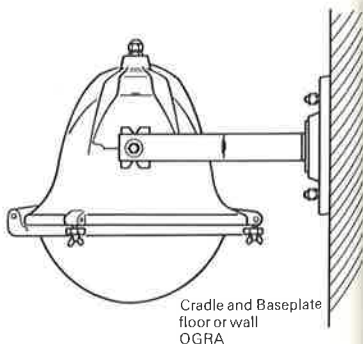
## Zone 2 pole mounting systems

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.

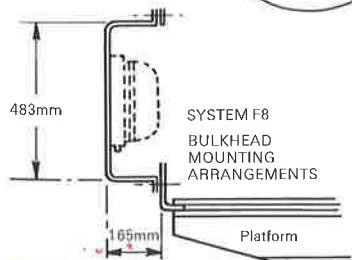
FLOODLIGHT MOUNTING ARRANGEMENTS



Pole Clamp OGRB

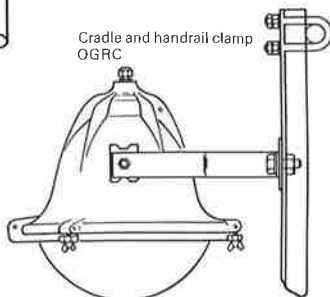


Cradle and Baseplate floor or wall OGRA



SYSTEM F8  
BULKHEAD  
MOUNTING  
ARRANGEMENTS

Platform

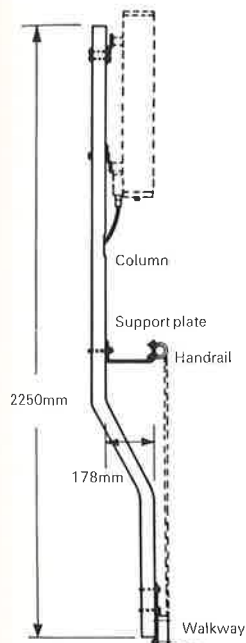


Cradle and handrail clamp OGRC

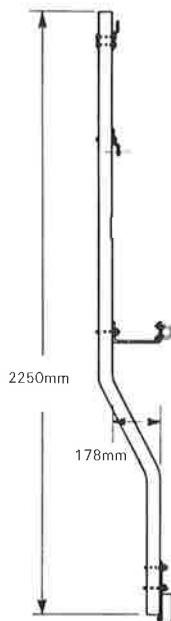
# Invincible range

RANGE			
Catalogue no.	Rating/lamp	Approx. weight (incl. lamps) kg	Gearbox fixing centres mm
DHA 800	2 x 400W SON-T	38.0	362 x 260

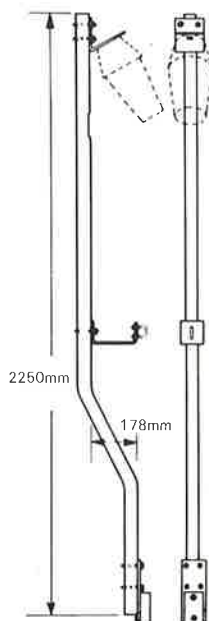
TYPICAL MOUNTING  
ARRANGEMENT



SYSTEM F1



SYSTEM F5



# Invincible range accessories and control gear

## RANGE

Fitting Catalogue no.	Lampholder	Fuse holder†	Fused terminal block	Terminal block	Quickstart ballast or choke	Capacitor	Circuit diagram no.
LUDQ 1020	GB 1580-B	—	GT 1367	GT 1281-3	GQS 40, GCU 20	GC 2224	8
LUDQ 2020	GB 1580-B	—	GT 1367	GT 1281-3	GQS 220, GCU 40	GC 2224	11
LUDR 1065	GB 1580-B	—	GT 1367	GT 1281-3	GBU 65	GC 2220	7
LUDR 2065	GB 1580-A4	—	GT 1367	—	GBI 65	GC 2220	2 × 7
LUDR 1675	GB 1580-B	—	GT 1367	—	GBU 675	GC 2220	7
LUDR 2675	GB 1580-B	—	GT 1367	—	GBU 675	GC 2220	2 × 7
LZMR 1065	GB 1642-X	—	GT 1367	GT 1281-1	GBU 65	GC 2220	7
LZMR 2065	GB 1642-X	—	GT 1367	GT 1281-1	GBU 65	GC 2220	2 × 7
LZMR 1675	GB 1642-X	—	GT 1367	GT 1281-1	GBU 675	GC 2220	7
LZMR 2675	GB 1642-X	—	GT 1367	GT 1281-1	GBU 675	GC 2220	2 × 7
LZMS 1080*	GB 1642-X	—	GT 1367	GT 1281-1	G 69229.5	GC 2167	2
FP 1240	GB 1573	GT 1310-X	—	GT 1281-1	GCI 240, GQS 80	GC 2222	8
FP 2240	GB 1573	GT 1310-X	—	GT 1281-1	GCI 2240, GQS 2240	GC 2222	11
FP 1040	GB 1573	GT 1310-X	—	GT 1281-1	GBI 40	GC 2273	7
FP 2040	GB 1573	GT 1310-X	—	GT 1281-1	GBI 40	GC 2273	2 × 7
FP 1065	GB 1573	GT 1310-X	—	GT 1281-1	GBI 65	GC 2220	7
FP 2065	GB 1573	GT 1310-X	—	GT 1281-1	GBI 65	GC 2220	2 × 7
FP 1685	GB 1573	GT 1310-X	—	GT 1281-1	GBI 685	GC 2220	7
FP 2685	GB 1573	GT 1310-X	—	GT 1281-1	GBI 685	GC 2220	2 × 7
FFD 265	GB 1548-B	—	GA 5079	—	GBI 65	GC 2220	2 × 7
FGSB 20	GB 1548-B	GT 1310-X	—	GT 1363-3	GQS 40, GCU 20	GC 2224	8
FGSB 220	GB 1548-B	GT 1310-X	—	GT 1363-3	GQS 220, GCU 20	GC 2224	11
FGEA 220	GB 1548-B	GT 1310-X	—	GT 1363-3	GQS 220, GCU 20	GC 2224	11
FGSB 65	GB 1548-B	GT 1310-X	—	GT 1363-3	GBU 65	GC 2220	7
FGSB 265	GB 1548-B	GT 1310-X	—	GT 1363-3	GBU 65	GC 2220	2 × 7
FGEA 65	GB 1548-B	GT 1310-X	—	GT 1363-3	GBU 65	GC 2220	7
FGEA 265	GB 1548-B	GT 1310-X	—	GT 1363-3	GBU 65	GC 2220	2 × 7
DRN 80	GL 1146	—	—	GT 1363-3	SK 23034.4	—	301
DRN 125	GL 1146	—	—	GT 1363-3	SK 23033.4	—	301
DRN 160	GL 1146	—	—	GT 1349-3	—	—	—
DDRE 50	GL 1146	—	—	GT 1363	G 53184.4	GC 2203	301
DDRE 80	GL 1146	—	—	GT 1363	G 53272.4	GC 2222	301
DDRE 160	GL 1146	—	—	GT 1363	—	—	—
DHA 800	—	—	—	—	G 53250.T Ignitor G 53230.T Choke	GC 2331	320

\*LZMS 1080 has starter switch 155/800.

†Where applicable, all fuses are 3A GT 1299.

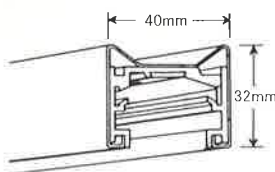
For circuit diagrams see Control gear and accessories section.

## Trakline and trunking systems

Index	Trakline	94
	Trakline components	95
	Trakline suspensions and parts list	96
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	Multi-trak components	98
	Multi-trak suspensions	99
	Lightweight trunking	100-101
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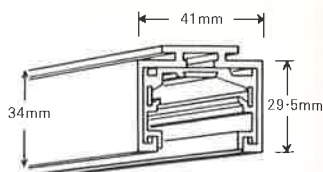
# Trakline

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**

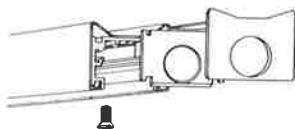
TK track in a white painted rolled steel section



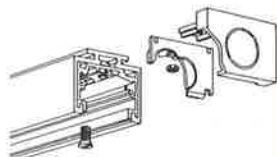
**TKN Trakline**

TK track in 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

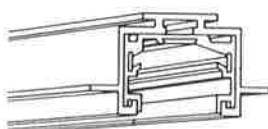


This section can be surface mounted or suspended

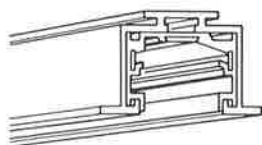
The PVC Trakline assembly TK 4500 can also be housed in four trunking systems, all 4.5 metre length only. Further details of these systems are given in the section on trunking.

## Current rating

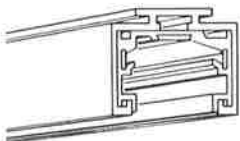
Trakline System	Rated Current
TKN	30A
Trakline in LTN, LTF, LTR	30A
TKS	16A
Trakline in AL 4500	16A



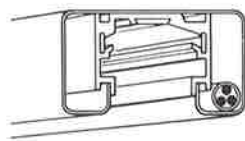
LTR 4500 A Lightweight trunking, extruded aluminium 4.5m long, to take TK 4500 track. Side flanged to accept concealed fix ceiling tiles.



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



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



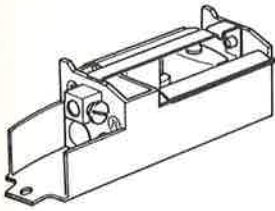
AL 4500 Liteline trunking. Grey painted cold rolled steel, 4.5m long, to take TK 4500 track. Can be suspended, fixed flush or incorporated into a suspended ceiling provided. Facilities for continuous unobstructed runways for cable.

## RANGE

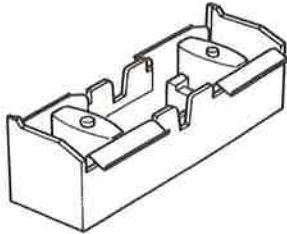
Catalogue no.	Description	Weight kg
TKS 1200	1.2 metre length Trakline c/w end caps; white painted steel	1.3
TKS 2400	2.4 metre length Trakline c/w end caps; white painted steel	2.4
TKS 3600	3.6 metre length Trakline c/w end caps; white painted steel	3.7
TKN 1200	1.2 metre length Trakline c/w end caps; 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 A	4.5 metre length flanged trunking section; anodized aluminium	3.63
LTF 4500 A	4.5 metre length flanged trunking section; anodized aluminium	3.63
LTN 4500 A	4.5 metre length trunking section; anodized aluminium	3.175
AL 4500	4.5 metre length trunking section; grey painted steel	6.3



# Trakline components



TK 1021 Mains connector  
Right handed 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.

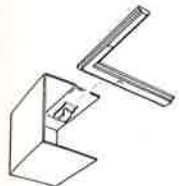


TK 106 Mechanical coupler.

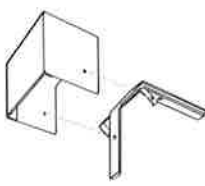


TK 127 Earth continuing strip.

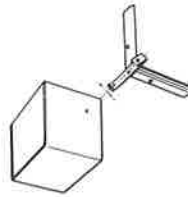
## Elbows for TKN/LTN track.



TK 107 Horizontal elbow assembly



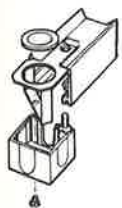
TK 108 Vertical internal elbow assembly



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

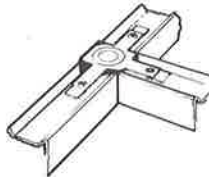
## Wiring boxes for surface mounted TKS and TKN track.



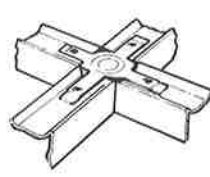
TK 121 End wiring box



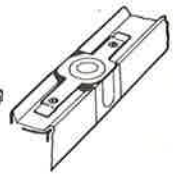
TK 122 Top entry 2-way 90 degree wiring boxes



TK 123 Top entry 3-way 'T' wiring box

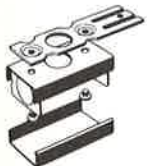


TK 124 Top entry 4-way 'X' wiring box

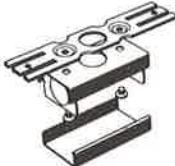


TK 126 Top entry 2-way in-line wiring box

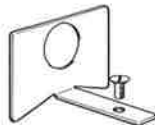
Electrical connection is made by the appropriate number of TK 1021 connectors each the same way as TK 107, 108 and 109 elbows. A steel hoop gives rigidity and plastic covers have knockouts.



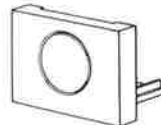
TK 115 End wiring box for TKN or LTN



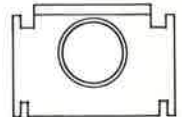
TK 116 Top entry wiring box for TKN or LTN continuous runs



TK 128 Spare metal end caps for TKS



LTN 4507 Spare metal end caps for TKN

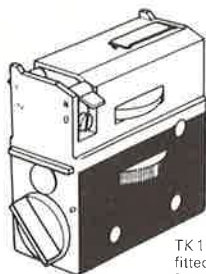


TK 1201 Plastic end plate

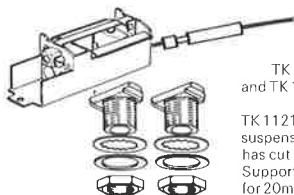
TK 1171 Similar to above for LTR

TK 1181 Similar to above for LTR

# 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 1121 F

TK 1121 Fluorescent fittings suspension set; TK 1121 F 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 (TKN or LTN with TK)
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 1021 L	Mains connector, left handed (for all TK sections)
TK 1021 R	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 fitting suspension set (for all sections)
TK 1121 F	Fluorescent fittings suspension set with cut-lead fuse (for all sections) c/w 3 amp fuse to BS1362 (GT1299)
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 TK 1121 F 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 ( $\frac{1}{2}$ ) 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:

- (a) 3 phase—15 amps per phase.
- (b) 3 circuit—10 amps per circuit.

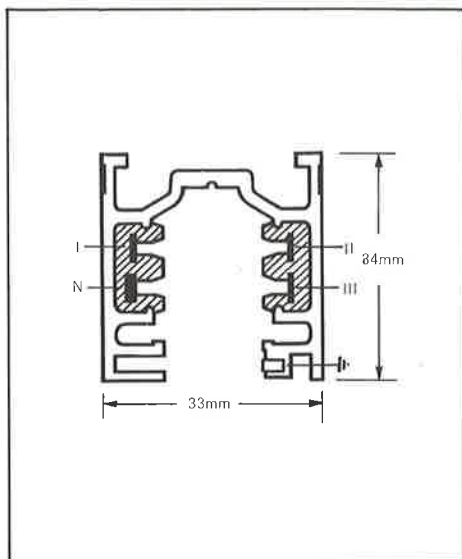
Generally, the system will be used as three separate single phase circuits and in that form the capacity is 2400 watts per circuit and 7200 watts in total.

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.



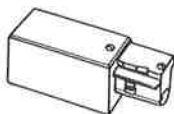
## RANGE

Catalogue no.	Description		
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.	
TK 7841	2.3 metre length Multi-trak		
TK 7842	3.5 metre length Multi-trak		
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



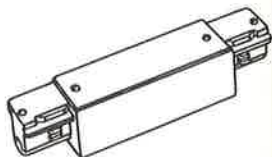
TK 7980 } Live ends  
TK 7977 }

For connecting supply to an in-line track 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

Used as a finishing trim to track end.



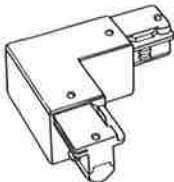
TK 7982  
Coupler

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



TK 7988  
Short coupler

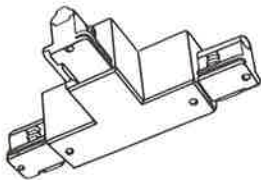
This non-modular coupler is used to connect two lengths of track.



TK 7983 } L-connector  
TK 7984 }

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

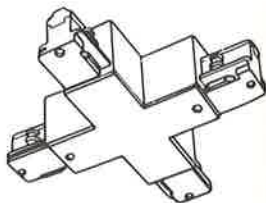
TK 7983: EARTH *INSIDE* 'L'  
TK 7984: EARTH *OUTSIDE* 'L'



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

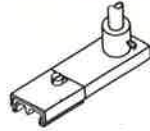
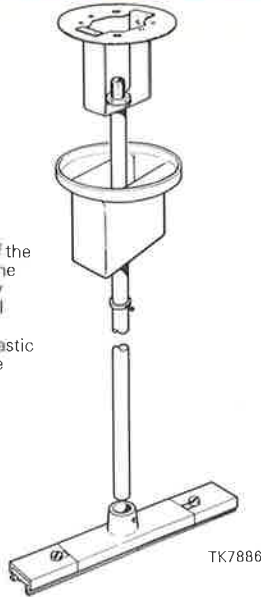
TK 7887 'L' connector mounting unit

TK 7888 'T' connector mounting unit

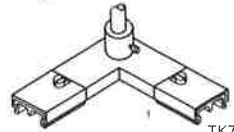
TK 7889 'X' connector mounting unit

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.

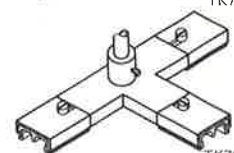
The ceiling end of the mounting consists of a grey plastic cover, over a metal bracket which has box fixing. The stem is painted grey metal. While Multi-trak can be drilled and screwed direct to the surface TK 7881 mounting clips provide means of fixing to less level surfaces.



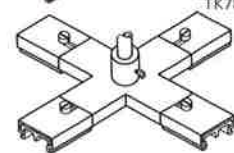
TK7885



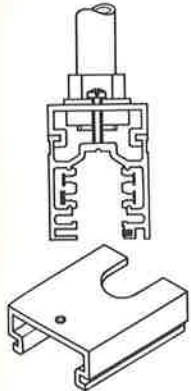
TK7887



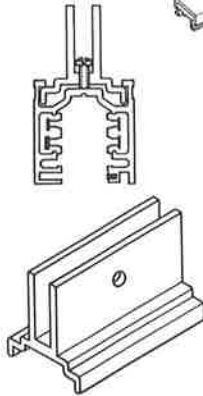
TK7888



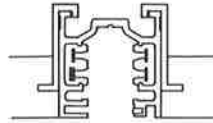
TK7889



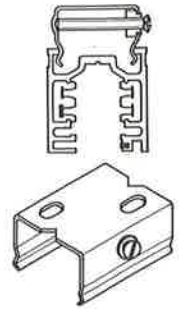
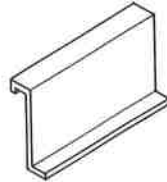
TK 7884



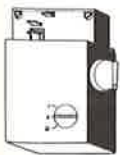
TK 7883 Recessed mounting support for track suspended with a normal wire suspension; anodized aluminium



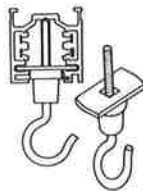
TK 7880 Support for concealed fix ceiling tiles; anodized aluminium; 100mm long



TK 7881 Mounting clip: Spring steel zinc plated bracket



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



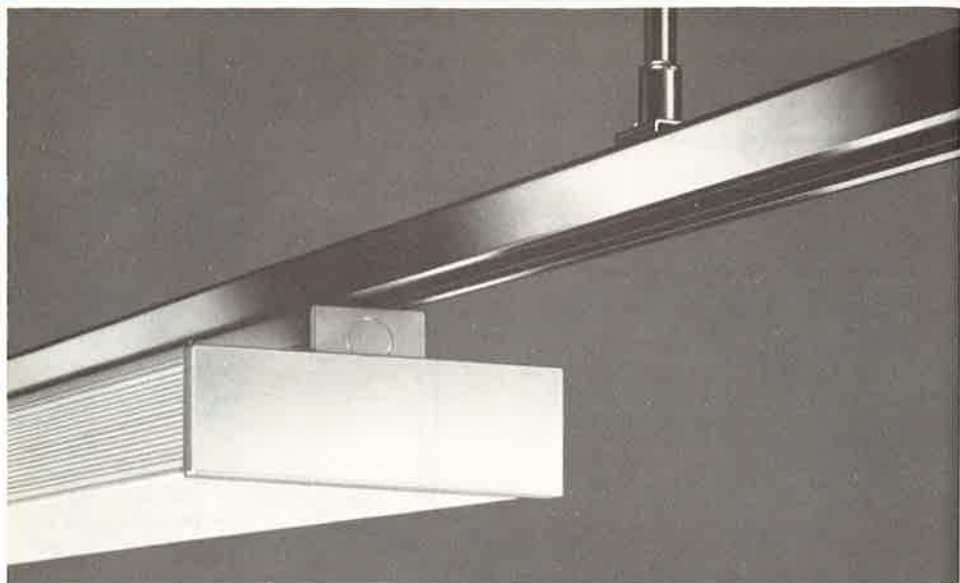
TK 7927 Galvanised steel display hook for a max. load of 10kg



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



# Lightweight trunking

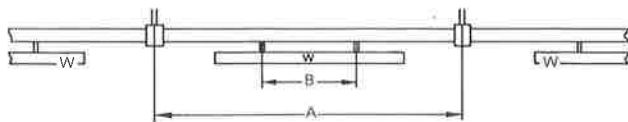


A satin anodized aluminium trunking for commercial interiors. Suitable for surface mounting or conduit suspension, two other profiles are available for suspended ceilings (see illustrations). Chain suspension is not recommended.

Fittings suspension assembly gives extreme flexibility of suspension centres for the trunking and spacing of the fittings along it. Through-wiring cables are retained by fibre support pieces. The trunking should be stored in a dry area.

**Maximum recommended trunking suspension centres – 2.44m.**

**Note:** An expansion gap of at least 6.35mm must be left between trunking lengths.



## Deflections for Lightweight trunking

A	B	Weight W	Deflection
2.44m	0.61m	9kg	5.7mm
2.44m	1.22m	13.6kg	5.7mm

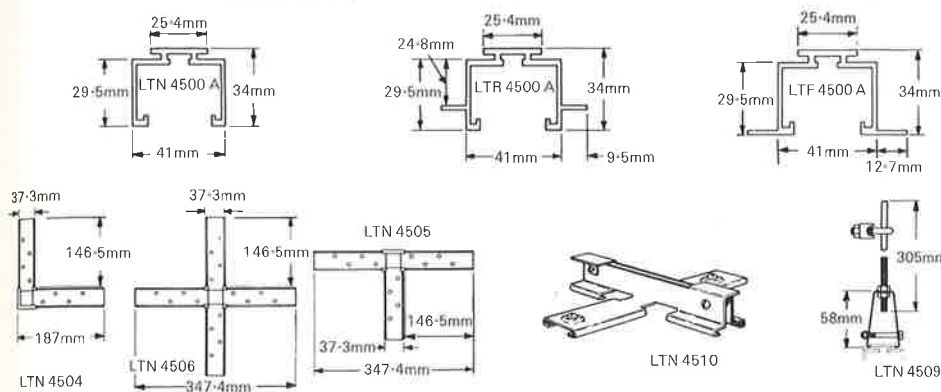
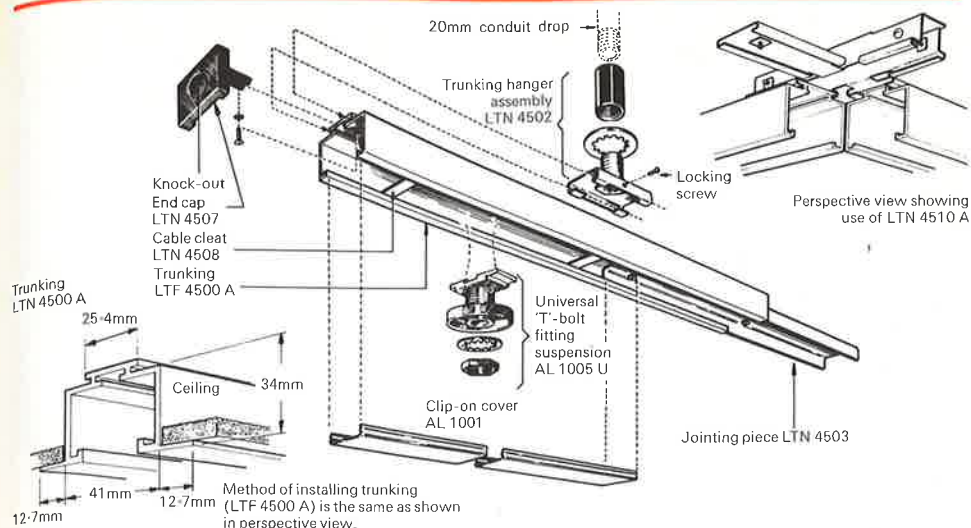
The above deflections were measured using maximum weight Popular Pack fittings. These figures assume that all loads are counter-balanced and the final trunking span will be

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 spans. Therefore maximum deflection =  $\frac{2440}{300} = 8.1\text{mm}$



# Lightweight trunking



## Components table

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

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

## Liteline trunking



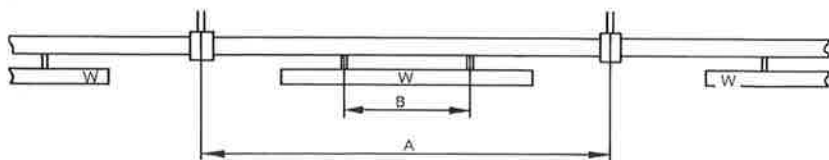
Liteline trunking can be suspended, fixed flush or recessed. Supplied in 4.5m lengths of galvanised cold rolled steel. A light grey paint finish to BS 2260.9-094 can be supplied at extra cost.

Joining is by slide-in straight coupling piece secured by eight

screws for earth continuity. 'Clip-over' suspension stirrup suitable for chain or conduit and clip-in PVC cover fillets. Universal girder clamps for RSJ mounting. Allows continuous unobstructed runways for the cables.

**Maximum recommended suspension centres 3.35m.**

Up to two light fittings can be supplied from any point by fitting a Parablock connector. Fittings with conduit hole fixing can be suspended anywhere by a special 'T' bolt assembly.



### Deflections for Liteline trunking

A	B	Weight W	Deflection
3.35m	0.61m	18kg	6.35mm
A	B	Weight W	Deflection
3.35m	1.22m	25kg	5.1mm

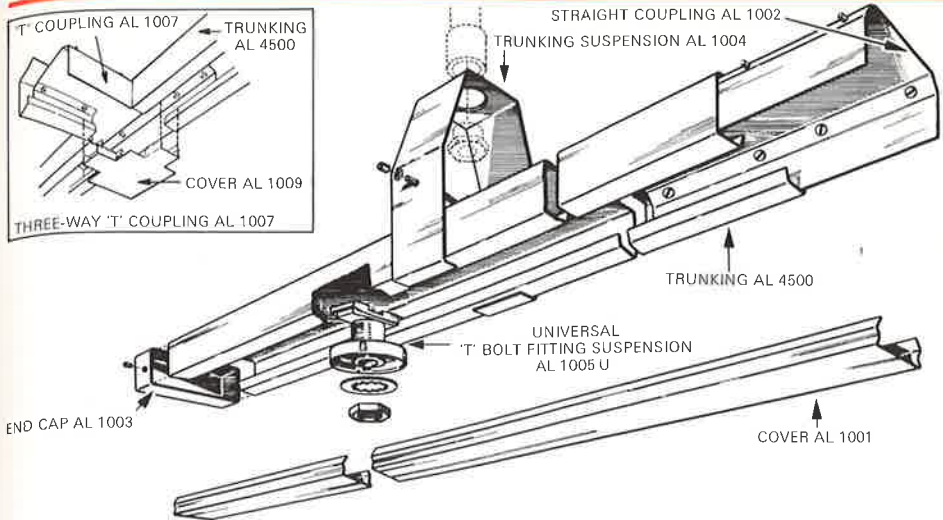
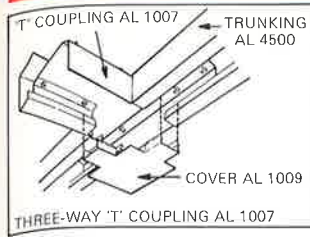
The above deflections were measured using standard range 4-tube fittings at 0.61m suspension centres and 1.22m centres, suspended as detailed above.

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

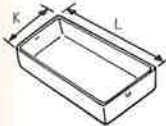
not exceed 1/300th of the total span. For example, an installation requires trunking to be suspended at 3.35m spans. Therefore maximum

$$\text{deflection} = \frac{3350}{300} = 11.2\text{mm}$$

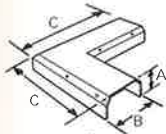
# Liteline trunking



**Catalogue no.  
AL 4500 G**  
Trunking sections  
4.5m length  
Weight 6.3kg  
66mm x 32mm deep



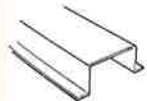
**Catalogue no.  
AL 1003**  
End cap  
Weight 0.01kg



**Catalogue no.  
AL 1006**  
Horizontal coupling  
Weight 0.5kg



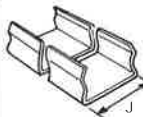
**Catalogue no.  
AL 1009**  
Cover assembly  
Weight 0.06kg



**Catalogue no.  
AL 4512**  
Top hat section  
4.5m length  
Weight 3.5kg  
106mm wide x 34mm deep



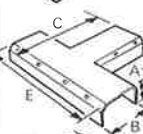
**Catalogue no.  
AL 1015**  
Vertical-horizontal  
coupling (external)  
Weight 0.7kg



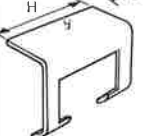
**Catalogue no.  
AL 1001**  
PVC cover fillet  
1.8m length  
Weight 0.17kg



**Catalogue no.  
AL 1004**  
Trunking  
suspension  
Weight 0.11kg  
38mm wide x 86mm deep



**Catalogue no.  
AL 1007**  
'T' coupling  
Weight 0.7kg



**Catalogue no.  
AL 1010**  
Girder clamp  
assembly  
Weight 0.14kg

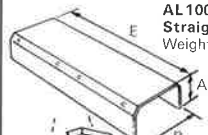


**Catalogue no.  
AL 1013**  
Parablock  
connector  
Weight 0.03kg  
takes cable up to 7/036

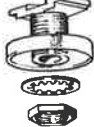
KEY

A=28.6mm  
B=63mm  
C=184mm  
D=229mm  
E=305mm  
F=35mm

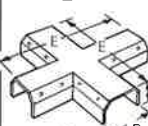
G=27.8mm  
H=87.3mm  
J=32mm  
K=32.5mm internal  
L=67.4mm internal



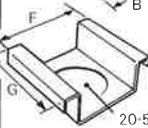
**Catalogue no.  
AL 1002**  
Straight coupling  
Weight 0.5kg



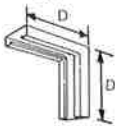
**Catalogue no.  
AL 1005 U**  
Universal 'T' bolt  
fitting suspension  
Weight 0.09kg



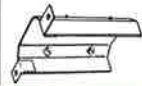
**Catalogue no.  
AL 1008**  
Four-way coupling  
Weight 0.9kg



**Catalogue no.  
AL 1011**  
Suspension bracket  
Weight 0.03kg



**Catalogue no.  
AL 1014**  
Vertical-horizontal  
coupling (internal)  
Weight 0.7kg



**Catalogue no.  
AL 1016**  
Stop-end junction  
Weight 0.5kg

# Suspension sets

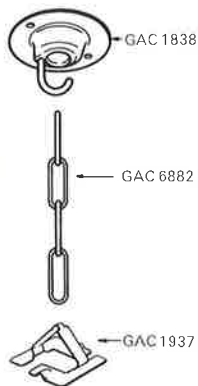
Suspension sets are available for most Thorn lighting fittings. Chain sets are available in multiples of one metre long. The standard length of rod sets is 0.75 metre but other lengths in multiples of 0.15 metre will be supplied on request. Half contents of the suspension sets are illustrated.

Catalogue numbers relate to complete set.

Catalogue numbers for individual parts of suspension sets are shown on the diagrams.

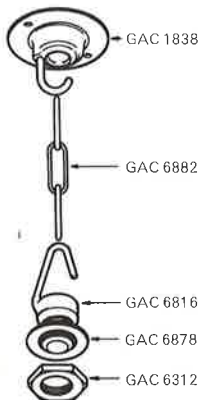
## Max. loading table

		Maximum loading per set
	Catalogue No.	Kg
A 1000	A set + 2 x GAC 6882	18.2
B 750	B set + 2 x GAC 6812	30.9
H 750	H set + 2 x GAC 6815	123.0
K 1000	K set + 2 x GAC 6882	27.3



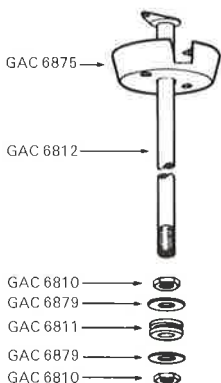
### Suspension Set A 1000 (Light Duty)

Two steel hooked ceiling plates, two 1 metre lengths of chain, two spring loops.



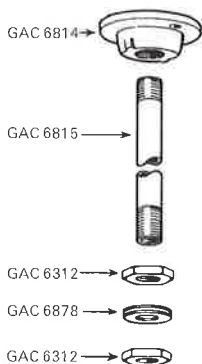
### Suspension Set K 1000 (Heavy Duty)

Two steel hooked ceiling plates, two 1 metre lengths of chain, two suspension hooks threaded M20 x 1.5, back nuts and washers.



### Suspension Set B 750

Two pressed ceiling plates, two 16mm by 750mm rods screwed M16 x 1.5, grommets, locknuts, washers. White finish.



### Suspension Set H 750

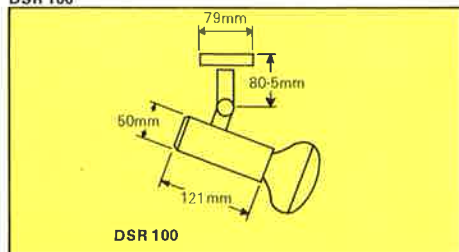
Heavy duty conduit suspension including two 20mm by 750mm rods screwed M20 x 1.5 with ball joint ceiling plates and back nuts. White finish.

Hi-Spot 100W reflector and GLS spotlights	106
H-Spot 200W universal and 100W crown silvered spotlights	107
Hi-Spot 150W PAR 38 spotlight	108
Hi-Spot 6V 20W tungsten halogen spotlight	108
Hi-Spot 300W M38 tungsten halogen spotlight	109
Hi-Spot Downlight adjustable cylinder	109
Hi-Spot 300W Indoor Flood	110
Mains voltage spotlights	111
New Spot-on spotlights	112-113
Spherical spotlights/Free standing base	114
Darklight/Downlight cylinder and recessed fittings	115
Cylinder range	116
Modern domestic cylinder	117
Eyeball spotlight	117
Dumpy range	118
Recessed fittings	119
Surface-mounted fittings	120
Nova range	121-123
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Chelsea range/Small recessed unit	126
Droplette pendants	127
Junior Modern	127
Junior Star	128
Link-lite	128
Cube light/Occasional lamp	129
Modern adjustable pendants	130-131
Oyster	132
Hospital low brightness fitting	132

## Hi-spot range



DSR 100



DSR 100

### 100W reflector spotlight

Accepts a number of 75W and 100W interior display reflector lamps. ES only.

#### Fittings

Catalogue no.	Cap	Watts	Fixing	Finish	Weight kg
DTR 100	ES	100	Trakline	Matt black, chrome trim	0.57
DSR 100	ES	100	Ceiling	Matt black, chrome trim	0.68
DMR 100*	ES	100	Multi-trak	Matt black, chrome trim	0.57

\*Made to special order only.

#### Optional attachment

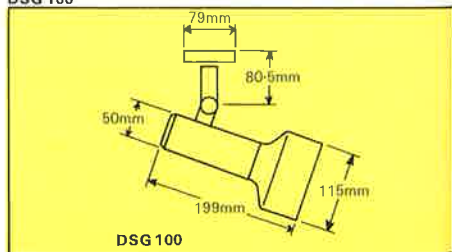
Catalogue no.	Description	Finish	Weight kg
DVH 100	Cowl	Brushed and lacquered aluminium	0.06

#### Lamps

Watts	Description	Voltages
75/100	Interior display reflector lamp ES	240
75 only	As above in colours red, yellow, green and blue	240



DSG 100



DSG 100

### 100W GLS spotlight

Uses 100W ES GLS lamp in reflector enclosed in a brushed and lacquered aluminium cowl.

#### Fittings

Catalogue no.	Cap	Watts	Fixing	Finish	Weight kg
DTG 100	ES	100	Trakline	Matt black, chrome trim	0.68
DSG 100	ES	100	Ceiling	Matt black, chrome trim	0.79
DMG 100*	ES	100	Multi-trak	Matt black, chrome trim	0.68

\*Made to special order only.

#### Lamps

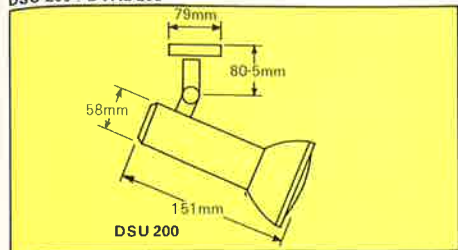
Watts	Description	Voltages
100	GLS, ES	110, 240 and 250



# Hi-spot range



DSU 200 + DVAL 200



## 200W universal spotlight

For 150W PAR 38, or 150/200W GLS lamp with an adjustable lampholder and choice of reflectors.

### Fittings

Catalogue no.	Cap	Watts	Fixing	Finish	Weight kg
DTU 200	ES	150/200	Trakline	Matt black, chrome trim	0.68
DSU 200	ES	150/200	Ceiling	Matt black, chrome trim	0.79
DMU 200*	ES	150/200	Multi-trak	Matt black, chrome trim	0.68

\*Made to special order only.

### Optional attachments

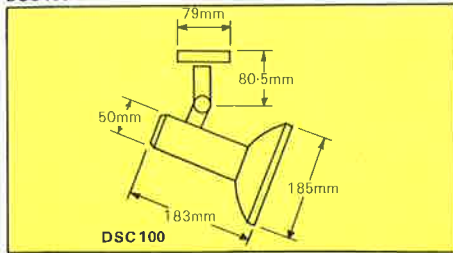
Catalogue no.	Description	Finish	Weight kg
DVH 150	Cowl. See lamp information for uses	Brushed and lacquered aluminium	0.06
DVHR 150	Cowl and reflector for 150W GLS lamp	Brushed and lacquered aluminium	0.06
DVAL 200	Reflector and louvre for 200W GLS lamp	Natural aluminium	0.34

### 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 DHV 150 can be used	240/250



DSC 100



## 100W crown silvered spotlight

For 100W ES crown silvered display lamp. Complete with natural anodized reflector. Alternative coloured reflectors available.

### Fittings

#### Packed with lamp

Catalogue no.	Cap	Watts	Fixing	Finish	Weight kg
DTC 100	ES	100	Trakline	Matt black, chrome trim	0.68
DSC 100	ES	100	Ceiling	Matt black, chrome trim	0.79
DMC 100*	ES	100	Multi-trak	Matt black, chrome trim	0.68

\*Made to special order only.

### Optional attachments

Catalogue no.	Description	Weight kg
DVA 100 R	Red reflector	0.11
DVA 100 A	Amber reflector	0.11
DVA 100 G	Green reflector	0.11
DVA 100 B	Blue reflector	0.11

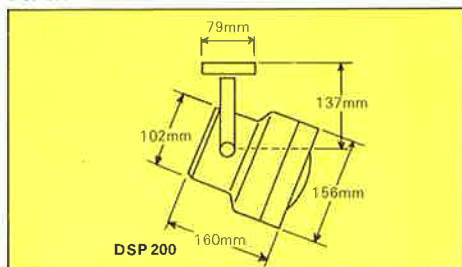
### Lamps

Watts	Description	Voltages
100	Crown silvered display lamp ES cap	240/250

## Hi-spot range



DSP 200 W



### 150W PAR 38 spotlight

For 100/150W PAR 38 lamps, Die-cast body finished in black or white with brushed and lacquered aluminium cowl and chrome trim.

#### Fittings

Catalogue no.	Cap	Watts	Fixing	Finish	Weight kg
DTP 200 W	ES	150	Trakline	White	1.7
DTP 200 B	ES	150	Trakline	Black	1.7
DSP 200 W	ES	150	Ceiling	White	1.81
DSP 200 B	ES	150	Ceiling	Black	1.81
DMP 200 W*	ES	150	Multi-trak	White	1.7
DMP 200 B*	ES	150	Multi-trak	Black	1.7

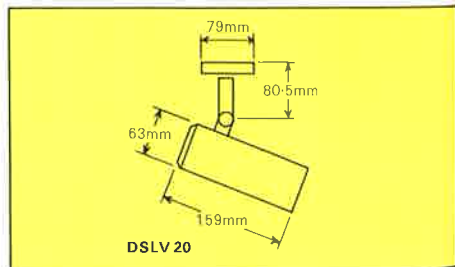
\*Made to special order only.

#### 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



DSLV 20



### Spotlight using 6V 20W TH lamp

Matt black with chrome trim, natural anodized aluminium reflector and integral transformer.

#### Fittings

Lamp caps all single-ended bi-pin

Catalogue no.	Watts	Voltages	Fixing	Finish	Weight kg
DTLV 20	20	240/250	Trakline	Black	0.91
DSLV 20	20	240/250	Ceiling	Black	1.02
DMLV 20*	20	240/250	Multi-trak	Black	0.91

220V versions are available to special order only.

\*Made to special order only.

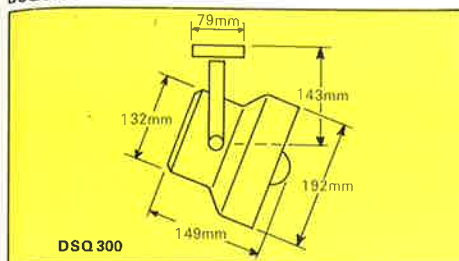
#### Lamps

Watts	Description	Voltage
20	Tungsten halogen display lamp	6
	Catalogue no. M34	

## Hi-spot range



DSQ 300 B



DSQ 300

### Spotlight using 300W M38 TH lamp

Gloss white or black with chrome trim.

#### Fittings

Packed with lamp

Lamp caps all single-ended bi-pin

Catalogue	Watts	Fixing	Finish	Weight
DTQ 300 B	300	Trakline	Black	1.7
DTQ 300 W	300	Trakline	White	1.7
DSQ 300 B	300	Ceiling	Black	1.81
DSQ 300 W	300	Ceiling	White	1.81
DMQ 300 B*	300	Multi-trak	Black	1.7
DMQ 300 W*	300	Multi-trak	White	1.7

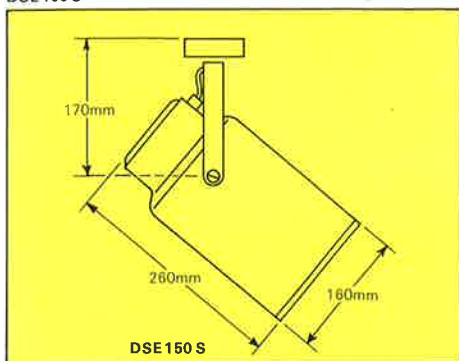
\*Made to special order only.

#### Lamp

Watts	Description	Voltages
300	Single-ended bi-pin tungsten halogen	120
	Catalogue no. M 38	200/230
		240/250



DSE 150 S



DSE 150 S

### Downlight adjustable cylinder

For 150W PAR 38 or up to 150W interior display reflector lamps. In brushed and lacquered silver finish, with black ribbed baffle.

#### Fittings

Catalogue no.	Cap	Watts (max)	Fixing	Weight kg
DSE 150 S	ES	150	Surface	1.0
DTE 150 S	ES	150	Trakline	1.0
DME 150 S*	ES	150	Multi-track	1.0

\*Made to special order only.

#### Lamps

Watts	Description	Voltages
150 max	Interior display reflector	240/250
150	PAR 38 including Cool-Ray	240/250

# Hi-Spot 300W Indoor Flood



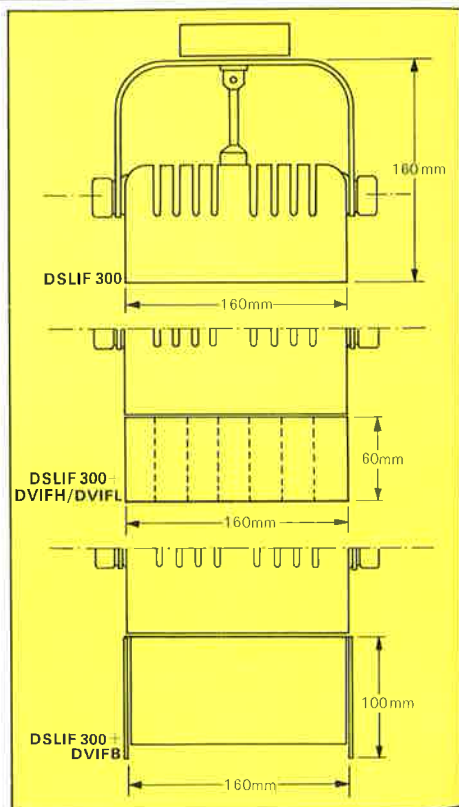
DSLIF 300 RD



DSLIF 300 RD + DVIFH



DSLIF 300 RD + DVIFB



Die-cast aluminium body, stove enamelled. Accepts clear K9 linear tungsten halogen lamp. Can be used with light controlling barn-door for maximum control ; hood for general cut-off ; louvre for hidden lighting.

## Fittings

Catalogue no.	Watts (max)	Fixing	Finish	Weight kg
DSLIF 300 BN	300	Surface	Brown	0.90
DSLIF 300 RD	300	Surface	Red	0.90
DSLIF 300 W	300	Surface	White	0.90
DTLIF 300 BN	300	Trakline	Brown	0.86
DTLIF 300 RD	300	Trakline	Red	0.86
DTLIF 300 W	300	Trakline	White	0.86
DMLIF 300 BN*	300	Multi-trak	Brown	0.86
DMLIF 300 RD*	300	Multi-trak	Red	0.86
DMLIF 300 W*	300	Multi-trak	White	0.86

\*Made to special order only

## Optional attachments

Catalogue no.	Description	Weight kg
DVIFB	Barn-door	0.30
DVIFH	Hood	0.095
DVIFL	Louvre	0.145

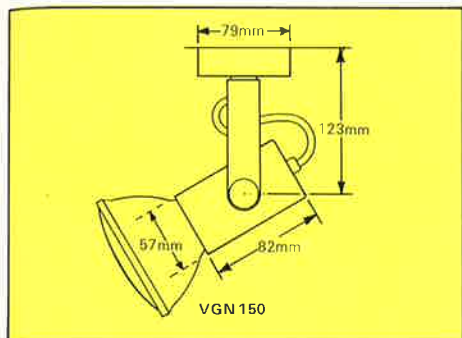
## Mains voltage spotlights



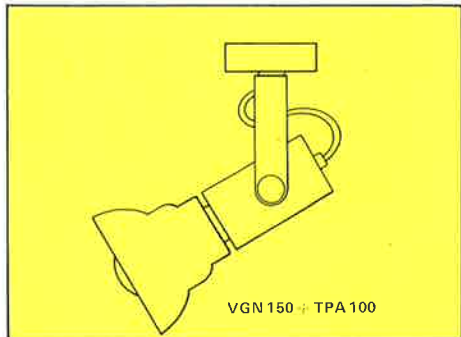
VGN150 + TPA100



VGNTK150



VGN150



VGN150 + TPA100

For 100/150W reflector spotlights or GLS lamp with auxiliary reflectors (catalogue no. TPA 100 or TPA 150). Can be used with Cool-Ray PAR 38 lamp (indoors). Supplied wired complete with ES lampholder.

### RANGE

Catalogue no.	Cap	Lamp watts	Length mm	Diameter mm	Weight (ex. lamp) kg
VGN150	ES	150	82	57	0.22
VGNTK150*	ES	150	82	57	0.22

\*For mounting on Trakline

### Auxiliary reflectors

Catalogue no.	Cap	Lamp watts	Length mm	Diameter mm	Weight (ex. lamp) kg
TPA100	ES	100	63	108	0.028
TPA150	ES	150	95	127	0.056



## New Spot-on spotlights



**TSRN 100 + TRCS**

Impact extruded aluminium body. Accepts full range of Decor Spot ES lamps and up to 100W Interior Display reflector lamps. Coloured cowls available separately. Range includes surface and Trak spotlight, ceiling light, floor light, table light and lightbar.

**Fittings** Packed complete with 60W clear Decor Spot lamp(s)

Catalogue no.	Cap	Watts (max)	Fixing	Description/finish	Weight kg
TSRN 100	ES	100	Surface	White spotlight	0.35
TSRNS 100*	ES	100	Surface	White spotlight and switch	0.35
TTRN 100	ES	100	Trakline	White spotlight	0.35
TCRN 100	ES	3 x 100	Ceiling	White ceiling light	0.91
TDRN 100	ES	100	Table	White table light	3.63
TFRN 100	ES	2 x 100	Floor	White floor light	4.65
TPRN 100	ES	2 x 100	Surface	White Lightbar	1.81

\*Made to special order only.

### Optional attachments

Catalogue no.	Description	Finish	Weight kg
TRCB	Cowl for max. 100W Decor Spot lamp	Brown	0.06
TRCS	Cowl for max. 100W Decor Spot lamp	Silver	0.06
TRCW	Cowl for max. 100W Decor Spot lamp	White	0.06
TRCY	Cowl for max. 100W Decor Spot lamp	Yellow	0.06
TRCLS	Cowl for max. 100W Interior Display reflector lamp	Silver	0.07



**TDRN 100 + TRCS**



**TFRN 100 + TRCS**



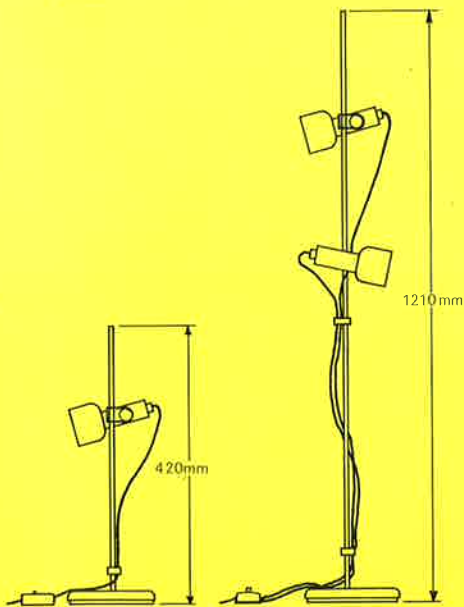
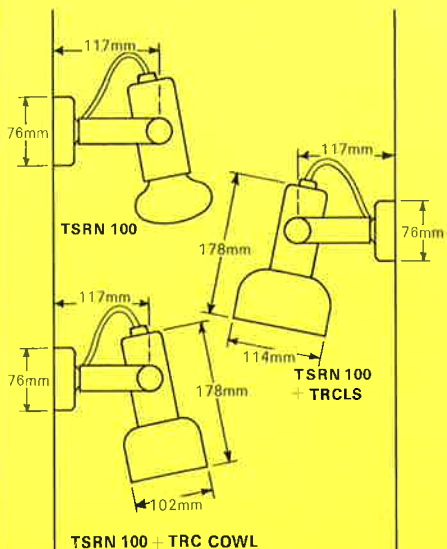
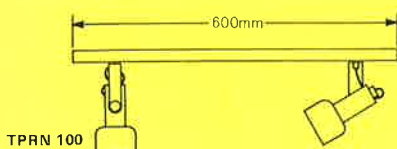
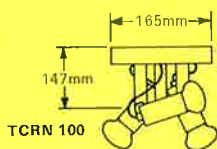
## New Spot-on spotlights



TCRN 100



TPRN 100



## Spherical spotlights/Free standing base



**TSPP 150 BN**

For all 150W PAR 38 spotlamps except Cool-ray, Wall, ceiling, track or pendant mounting. In brown and white finish. Silver, red and yellow to special order only.

### TTP & TSP

Wall and ceiling mounted versions with wired terminal block. 350° swivel and 180° horizontal angle adjustments.

### TTPP & TSPP

Pendant version. White cable suspension from white ceiling plate or Trak box.

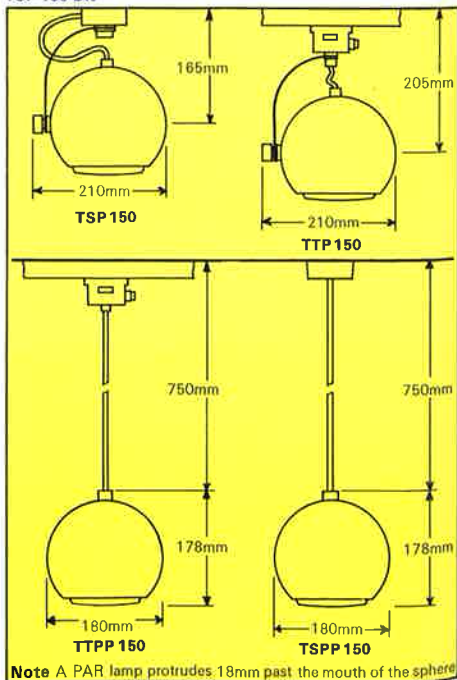
### RANGE

Catalogue no.	Description	Lamp/Watts	Weight kg
TSP 150 BN	Surface mounted, brown	150 PAR 38	0.62
TSP 150 W	Surface mounted, white	150 PAR 38	0.62
TTP 150 BN	Track mounted, brown	150 PAR 38	0.73
TTP 150 W	Track mounted, white	150 PAR 38	0.73
TSPP 150 BN	Surface mounted pendant, brown	150 PAR 38	0.40
TSPP 150 W	Surface mounted pendant, white	150 PAR 38	0.40
TTPP 150 BN *	Track mounted pendant, brown	150 PAR 38	0.51
TTPP 150 W *	Track mounted pendant, white	150 PAR 38	0.51

\* Made to special order only.



**TSP 150 BN**



### Free standing base

#### Range

Catalogue no.	Description	Finish	Weight kg
DVFB/B	Free standing base to fit all surface spotlights	Black	0.425
DVFB/W	Free standing base to fit all surface spotlights	White	0.425



# Darklight/Downlight cylinder and recessed fittings



TD 150

## Surface mounted cylinder

A brushed and lacquered cylinder with black ceiling plate. A suspension rod and plate (catalogue nos. GM 6113/18/B and TDSU) is available to suspend this fitting 457mm from the ceiling.

## Fully recessed fitting

A white ceiling ring is the only visible component. When the optional hood is used to seal the fitting, lamp size is limited to 60W. TDWW wallwasher attachment is available for use with PAR 38 lamp.

## Semi-recessed fitting

Variable depth recessed fitting for restricted ceiling voids. To locate in to wet plaster ceilings use 3 straps (TDPS) for fitting the ceiling ring.

**Note:** Downlight types have black ribbed baffles and the Darklight plain black reflectors.

## RANGE

Catalogue Number	Description	Weight kg
TD 150	Darklight surface mounted cylinder	1
TB 150	Downlight surface mounted cylinder	1
GM 6113/18/B	460mm suspension set	—
TDSU	Suspension plate	—
TDFR 150	Darklight fully recessed fitting	1.75
TBFR 150	Downlight fully recessed fitting	1.75
TDPS	Wet plaster strap	—
TDHO	Hood	—
TDSR 150	Darklight semi-recessed fitting	1.5
TBSR 150	Downlight semi-recessed fitting	1.5
TDWW*	Downlight wallwasher attachment	—

\*For use with TBFR 150 - PAR 38 only. Projects 4mm from fitting.



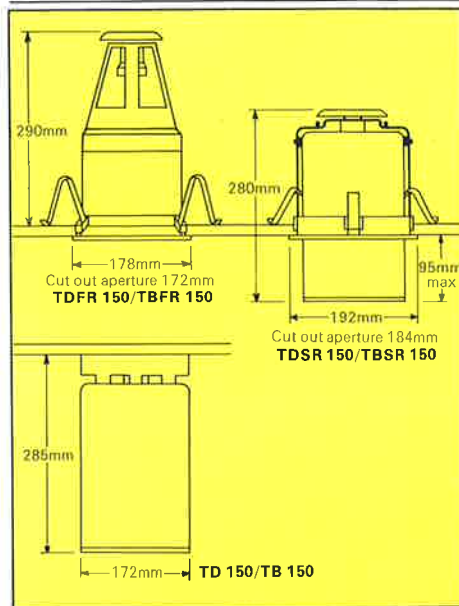
TBSR 150



TDFR 150

## LAMPS

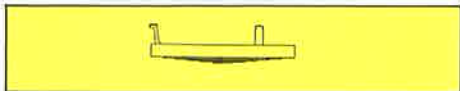
Watts (max)	Description	Fitting catalogue no.	Voltages
150	PAR 38, all types exc. Cool-ray	TB 150, TD 150 TBSR 150, TDSR 150	240/250
150	PAR 38, all types inc. Cool-ray, GLS with TPA 150, Interior Display Reflector	TBFR 150, TDFR 150	240/250
100	Interior Display Reflector	TB 150, TD 150, TBSR 150, TDSR 150	240/250
100	GLS with TPA 100	TBFR 150, TDFR 150	240/250



## Cylinder range



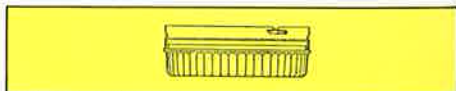
Suspended



Plastic louvre



Surface mounted



Clear crystal glass dish

In natural anodized or black spun aluminium for 60W internally silvered lamp, or 60W GLS lamp with TPA 100 auxiliary reflector. Fittings can be:

- (a) Suspended from GM 6113/18/B suspension rod.
- (b) Semi-recessed with ceiling ring assembly (catalogue no. VCM 60). Ceiling hole size 180mm dia.
- (c) Surface mounted.

Three attachments are available — a satin etched opal bowl, plastic louvre, and a clear crystal glass dish.

### Basic Unit

Catalogue no.	Watts	Finish
VC 60 A	60	Natural anodized
VC 60 B	60	Black painted

### RANGE

	Catalogue no.	Cap	Finish	Height mm	Diameter mm	Weight kg
Satin etched opal bowl	VCZ 60 A	BC	Anodized	301	162	1.1
	VCZ 60 B	BC	Black	301	162	1.1
Plastic louvre	VCL 60 A	BC	Anodized	289	162	0.8
	VCL 60 B	BC	Black	289	162	0.8
Clear crystal glass dish	VCX 60 A	BC	Anodized	311	162	2.1
	VCX 60 B	BC	Black	311	162	2.1



Semi-recessed



Satin etched opal bowl

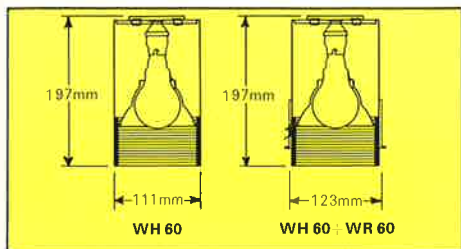
## Modern domestic cylinder



WH 60



WH 60 ÷ WR 60



A surface mounted cylinder (WH 60) with brushed silver finish and integral baffles. Complete with 60W GLS lamp with clip-on auxiliary reflector. Fitting can be recessed into the ceiling by using bezel ring (WR 60).

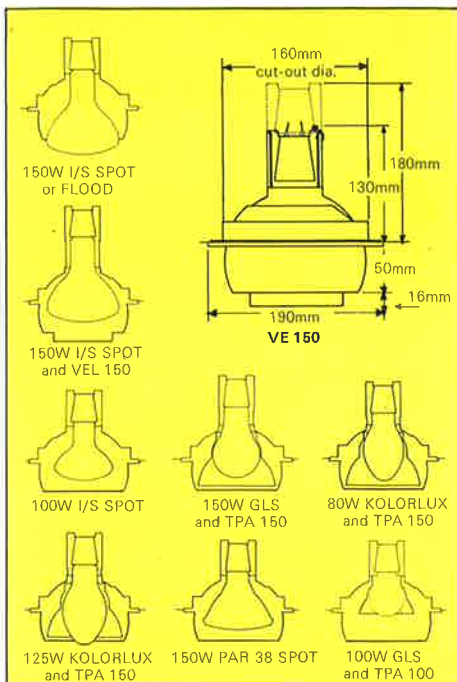
### RANGE

Catalogue no.	Description	Weight kg
WH 60	Ceiling cylinder	0.57
WR 60	Adjustable bezel ring	0.11

## Eyeball Spotlight



VE 150 W + VEL 150



Semi-recessed fully adjustable fitting taking a wide range of lamps at correct light centres as shown. Complete with porcelain ES lampholder wired with glass-braided flying leads. Anodized aluminium trim conceals ceiling ring with three-hole fixing. Body is stove enamelled black or white. Separate control gear is required if using Kolorlux lamps.

### RANGE

Description	Catalogue no.	Colour	Weight kg
Eyeball fitting	VE 150 B	Black	0.45
	VE 150 W	White	0.45
Louvre attachment	VEL 150		0.05
100W auxiliary reflector	TPA 100		0.028
150W auxiliary reflector	TPA 150		0.056



## Dumpy range



TDDS 60 BN



TDDS 60 R + TDSK



TDDR 60 W

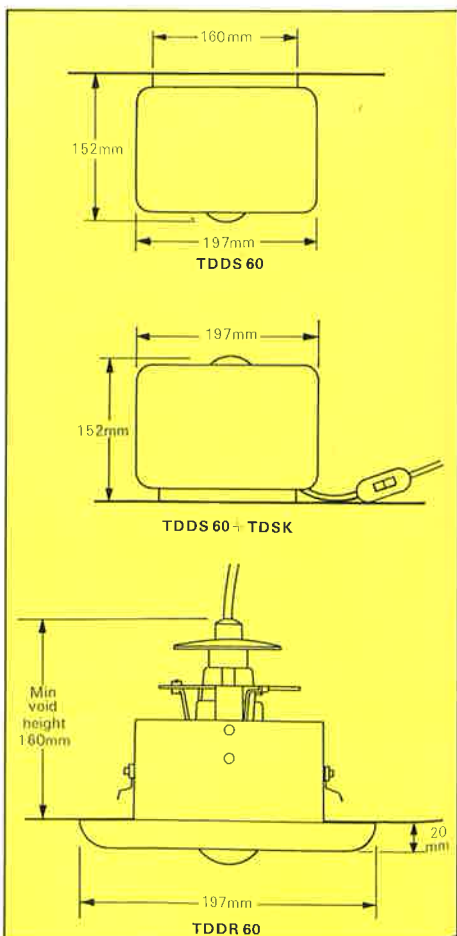
Spun aluminium body with aluminised reflector. Accepts 60W Crown Silvered lamp. Available in semi-recessed and surface mounted versions. Optional base kit provides uplighter fitting.

### Fittings

Catalogue no.	Cap	Watts (max)	Fixing	Finish	Weight kg
TDDR 60 BN	ES	60	Semi-recessed	Brown	0.40
TDDR 60 R	ES	60	Semi-recessed	Red	0.40
TDDR 60 W	ES	60	Semi-recessed	White	0.40
TDDS 60 BN	ES	60	Surface	Brown	0.60
TDDS 60 R	ES	60	Surface	Red	0.60
TDDS 60 W	ES	60	Surface	White	0.60

### Optional attachment

Catalogue no.	Description	Weight kg
TDSK	Switch, cable and felt base kit	0.23





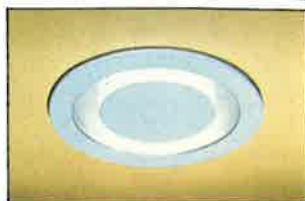
## Recessed fittings



VRY 100/VRX 200



VRX 100/VRX 200



VRO 200



VRP 100



VRL 100/VRL 200



VRZ 100/VRZ 200

Two sizes of recessed unit in spun aluminium with a polished rim. Adjustable support brackets for quick fixing from within the fitting. Support ring for attachments is fitted to the basic unit by bayonet slots.

### RANGE

Catalogue	Cap	Watts
VR 100	BC	100 GLS
VR 100 ES	ES	80 Kolorlux
VR 200	ES	200 GLS/125 Kolorlux

### Pin-hole attachment (100W only)

Two reflectors concentrate light through a very small aperture (70mm) to produce a wide angle beam. Spun aluminium construction, finished eggshell white.

### 'O' lighter attachment (200W only)

An annular slot with a centre disc giving glare free light of narrow distribution. In spun aluminium, finished eggshell white.

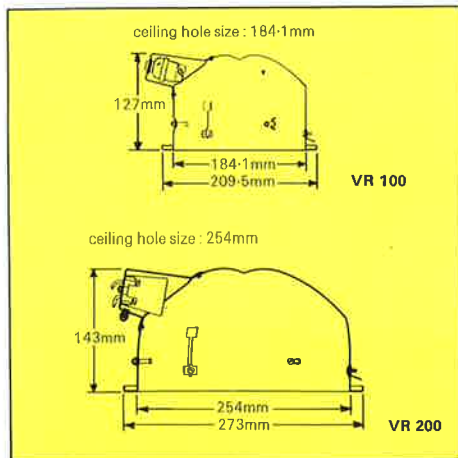
Kolorlux lamps can be used on a.c. circuits only and must be controlled by a ballast circuit.

### RANGE

Description	Fitting catalogue no.	Attachment catalogue no.	Watts	Protrusion below ceiling mm	Weight (ex lamp) kg
Pin-hole attachment†	VRP 100	VP 100	100	0	0.79
'O' lighter attachment†	VRO 200	VO 200	200	0	1.02
Plastic louvre†	VRL 100	VL 100	100	20	0.45
	VRL 200	VL 200	200	20	0.57
Clear crystal glass dish	VRX 100	VX 100	100	30	1.7
	VRX 100 ES*	VX 100	80 Kolorlux	30	1.7
	VRX 200	VX 200	200 GLS/125 Kolorlux	35	2.15
Large satin etched opal glass bowl	VRY 100	VY 100	100	50	1.02
	VRY 100 ES*	VY 100	80 Kolorlux	50	1.02
	VRY 200	VY 200	200 GLS/125 Kolorlux	45	1.43
Small satin etched opal glass bowl	VRZ 100	VZ 100	100	20	0.68
	VRZ 100 ES*	VZ 100	80 Kolorlux	20	0.68
	VRZ 200	VZ 200	200 GLS/125 Kolorlux	20	1.13

\*Available to special order only.

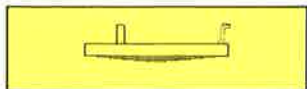
†Not available for use with Kolorlux lamp.



# Surface-mounted fittings



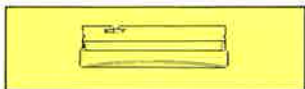
VSL 2060 A



Plastic louvre



VSZ 2060 A



Small satin etched opal  
glass bowl



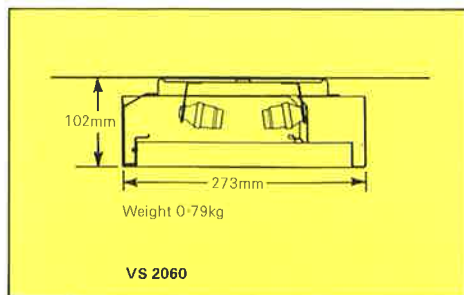
VSX 2060 B



Clear crystal glass dish

In natural anodized or black painted spun aluminium.  
Cable entry and fixing holes on 51mm BESA box centres.  
Supplied with BC lampholders. Attachments are fitted  
to the basic unit by three bayonet slots.

Catalogue no.	Watts	Finish
VS 2060 A	2 x 60	Natural anodized
VS 2060 B	2 x 60	Black painted



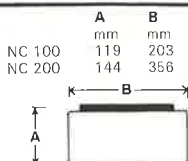
## RANGE

Description	Fitting catalogue no.	Attachment catalogue no.	Height mm	Diameter mm	Weight (ex lamps) mm
<b>Plastic louvre</b>	VSL 2060 A	VL 200	120	273	0.91
	VSL 2060 B	VL 200	120	273	0.91
<b>Clear crystal glass dish</b>	VSX 2060 A	VX 200	139	273	2.49
	VSX 2060 B	VX 200	139	273	2.49
<b>Small satin etched opal glass bowl</b>	VSZ 2060 A	VZ 200	120	273	1.47
	VSZ 2060 B	VZ 200	120	273	1.47

# Nova range



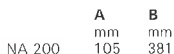
**NC** Two sizes of round white satin etched glasses, with lever release galleries for mounting directly on to walls and ceilings.



Fitting catalogue no.	Watts	Cap	Glassware catalogue no.	Gallery catalogue no.	Weight (ex lamps) kg
NC 100	100	BC	NCG 100	NSB 100	1.24
NC 200	2 x 60	BC	NCG 200	NSB 2060	1.70



**NA** A metal trim, finished in a lacquered gun-metal colour, to fit on to horizontally mounted NC and ND fittings.

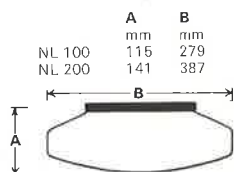


Catalogue no.	For use on	Weight kg
NA 200	NC 200, ND 200 ES	0.45

NOTE: Trims are to be ordered separately.



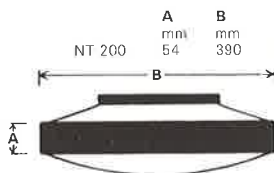
**NL** Two sizes of round white satin etched glasses with lever release galleries for mounting directly on to walls and ceilings.



Fitting catalogue no.	Watts	Cap	Glassware catalogue no.	Gallery catalogue no.	Weight (ex lamps) kg
NL 100	100	BC	NFG 100	NSB 100	1.59
NL 200	2 x 60	BC	NFG 200	NSB 2060	2.49



**NT** A black painted metal trim to fit on to horizontally mounted NL and NF fittings.

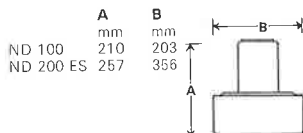


Catalogue no.	For use on	Weight kg
NT 200	NL 200, NF 200 ES	0.17

NOTE: Trims are to be ordered separately.



**ND** Two sizes of round white satin etched glasses, complete with flanged cap galleries for ceiling or rod suspension. The larger type will accept either GLS or KOLORLUX lamps. Kolorlux lamps require control gear.

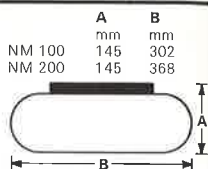


Fitting catalogue no.	Watts	Cap	Glassware catalogue no.	Gallery catalogue no.	Weight kg
ND 100	60	BC	NCG 100	NDB 1060	1.15
ND 200 ES	150 GLS 80 K	ES	NCG 200	NDB 150 ES	1.47

# Nova range



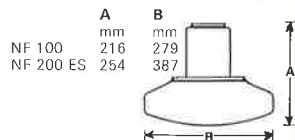
**NM** Two sizes of round white satin etched glasses with lever release galleries for mounting directly on to walls and ceilings.



Fitting catalogue no.	Watts	Cap	Glassware catalogue no.	Gallery catalogue no.	Weight kg
NM 100	100	BC	NMG 100	NSB 100	1.59
NM 200	2 x 60	BC	NMG 200	NSB 2060	2.49



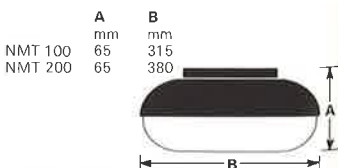
**NF** Two sizes of round white satin etched glasses, complete with flanged cap galleries for ceiling or rod suspension. The larger type will accept either GLS or KOLORLUX lamps. Kolorlux lamps require control gear.



Fitting catalogue no.	Watts	Cap	Glassware catalogue no.	Gallery catalogue no.	Weight kg
NF 100	60	BC	NFG 100	NDB 1060	1.49
NF 200 ES	150 GLS 80 K	ES	NFG 200	NDB 150 ES	2.26



**NMT** Two sizes of metal trim finished in a lacquered aluminium colour, to fit on to horizontally mounted NN and NM.

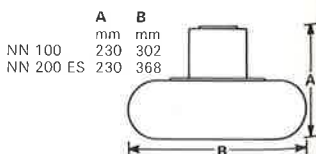


Catalogue no.	For use on:	Weight kg
NMT 100	NN 100, NM 100	0.11
NMT 200	NN 200 NM 200	0.17

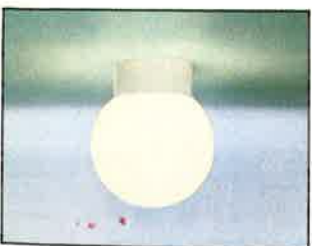
Trims to be ordered separately.



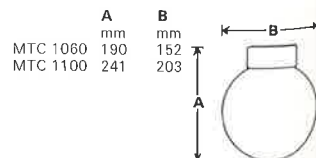
**NN** Two sizes of round white satin etched glasses, complete with flanged cap galleries for ceiling or rod suspension. The larger type will accept either GLS or KOLORLUX lamps. Kolorlux lamps require control gear.



Fitting catalogue no.	Watts	Cap	Glassware catalogue no.	Gallery catalogue no.	Weight (ex lamps) kg
NN 100	60	BC	NMG 100	NDB 1060	1.49
NN 200	150 GLS 80 K	ES	NMG 200	NDB 150 ES	2.26

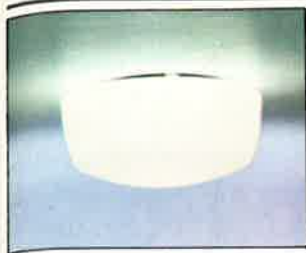


**MTC** Two sizes of polished opal white glass spheres, screw neck, complete with heat resistant white plastic galleries for mounting directly on to walls or ceilings.

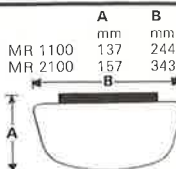


Fitting Catalogue no.	Watts	Cap	Glassware Catalogue no.	Gallery Catalogue no.	Weight (ex lamps) kg
MTC 1060	60	BC	MTGC 1060	MTCB 1060	0.68
MTC 1100	100	BC	MTGC 1100	MTCB 1100	0.79

## Nova range/Modern glass

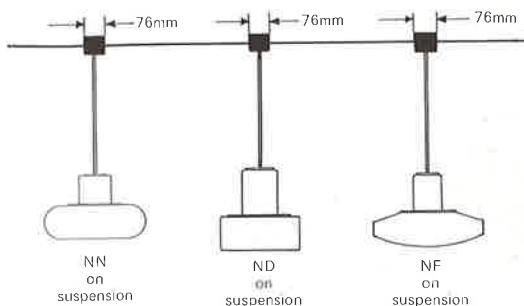


**MR** Two sizes of round, polished opal white glasses complete with lever release galleries for mounting directly on to walls and ceilings.



Fitting catalogue no.	Watts	Cap	Glassware catalogue no.	Gallery catalogue no.	Weight (ex lamps) kg
MR 1100	100	BC	MRG 1100	NSB 100	1.47
MR 2100	2 x 60	BC	MRG 2100	NSB 2060	2.49

**GM 6113/18/B** As an alternative to direct ceiling fixing, a 13mm black suspension rod is available for the ND, NF and NN fittings. The rod length is 457mm.



XJ 2040



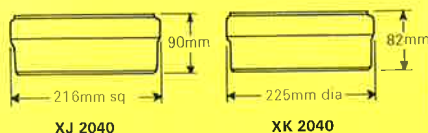
XK 2040

### Modern glass

Two ceiling mounted units of crystal pattern glass supported in black finished metal framing. For use with 2 x 40W GLS lamps.

### RANGE

Catalogue no.	Description	Watts	Weight kg
XJ 2040	Square fitting	2 x 40	3.15
XK 2040	Round fitting	2 x 40	2.25



# Aquarius range



TNP 5 + TNSO



TNP 1 + TNC SO



TNP 1 + TNC LY



TNTB + TNSLO

High design fittings for ceiling, surface or wall mounting with an extensive selection of glassware—cylinders in white opal and yellow, and spheres in white opal and smoked glass with chrome trim finishes. Accepts up to 100W ES lamps.

## Fittings

Catalogue no.	Cap	Fixing	Description	Weight kg
TNP1	ES	Ceiling	Single pendant	0.34
TNP3	ES	Ceiling	3-way pendant	1.81
TNP5	ES	Ceiling	5-way pendant	2.72
TNFS	ES	Surface	Floor stand	7.25
TNTB	ES	Surface	Table base	0.56
TNTS	ES	Surface	Table stand	3.17
TNWB	ES	Wall	Bracket	0.68

## Attachments

Catalogue no.	Description	Watts (max)	Finish	Weight kg
TNCLO	Large glass cylinder	100	White opal	1.63
TNC LY	Large glass cylinder	100	Yellow	1.63
TNC SO	Small glass cylinder	60	White opal	0.90
TNC SY	Small glass cylinder	60	Yellow	0.90
TNSLO	Large glass sphere	100	White opal	0.79
TNSLS*	Large glass sphere, lamp and trim	60	Smoke glass, chrome finish trim	0.81
TNSO	Small glass sphere	60	White opal	0.68
TNSSS*	Small glass sphere, lamp and trim	60	Smoke glass, chrome finish trim	0.70

\*Packed with 60W Crown Silvered lamp



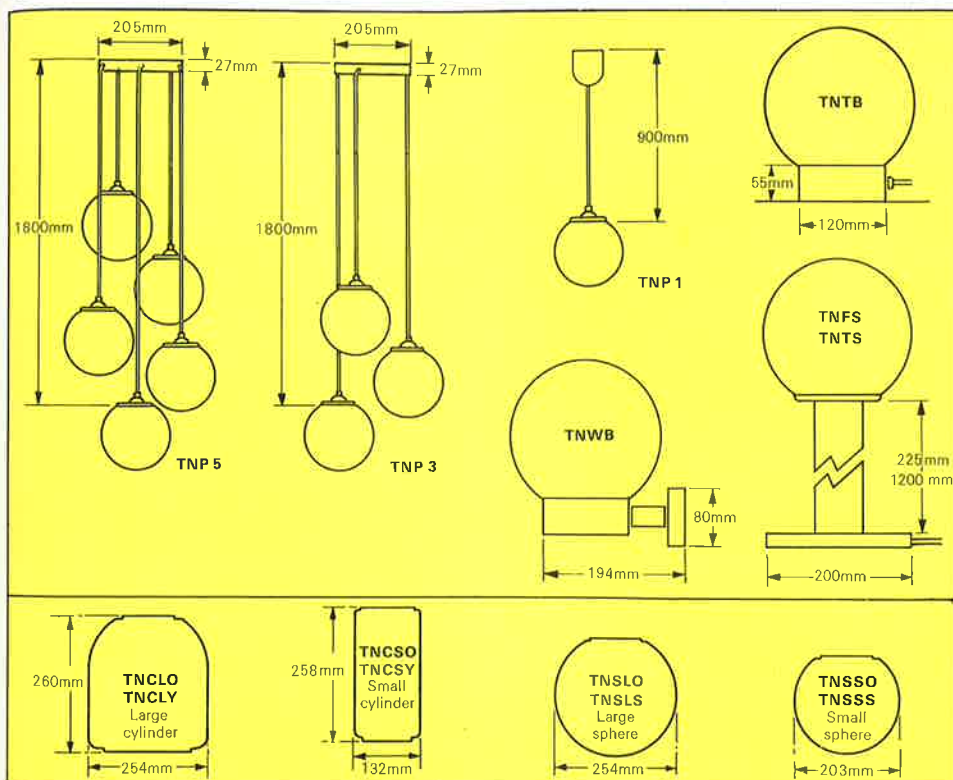
# Aquarius range



TNFS + TNSLS



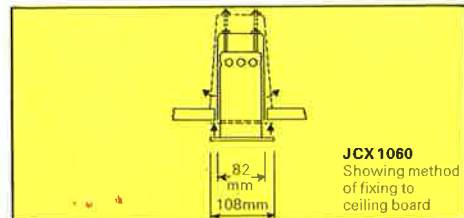
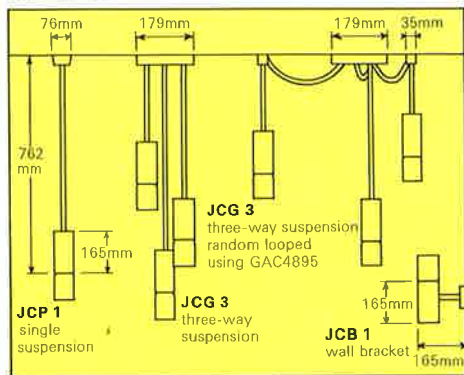
TNFS + TNSO



## Chelsea range/Small recessed unit



JCG 3+JYA



JCB 1+JZC

### Chelsea range

In clear or amber glass with silver finish sleeve. For single or three-way suspension, wall mounting with matching bracket, or recessing into ceiling using small recessed unit (catalogue no. JCX 1060). The Chelsea 40W reflector lamp is specially designed for use with these fittings.

### RANGE Glasses & suspension to be ordered separately.

Type	Catalogue no.	Description	Weight (ex glass and/or lamp) kg
Suspensions	JCP 1	Single pendant	0.23
	JCB 1	Wall bracket	0.23
	JCG 3	Three pendant group	1.36
	GAC 4895	Cable suspension holder	—
Glasses	JZC	Clear	0.68
	JZA	Amber	0.68
	JYC	Clear	0.79
	JYA	Amber	0.79



JCXG 1060+JZA

### Small recessed unit

For 60W BC lamp. Attachment (catalogue no. G 1060) enables use of any of the Chelsea glasses. Basic unit complete with bracket for clamping direct to ceiling board.

### RANGE

Catalogue no.	Description
JCX 1060	Recessed display fitting c/w mounting bracket
G 1060	Chelsea range glass holder for JCX 1060

## Droplette pendants

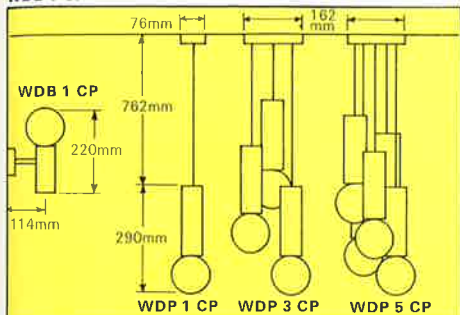
## Junior Modern



WDP 3 CP



WDB 1 CP



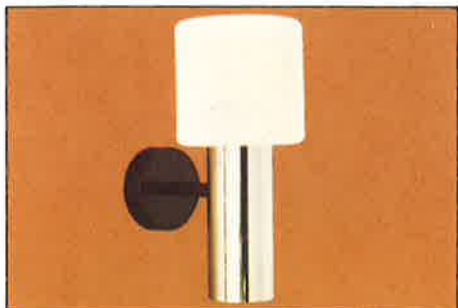
Single, three or five-way pendants with silver finish lampholder shrouds, suspended from black ceiling plates and cable. Matching wall bracket version. For 40W and 60W Decor round lamps.

### RANGE

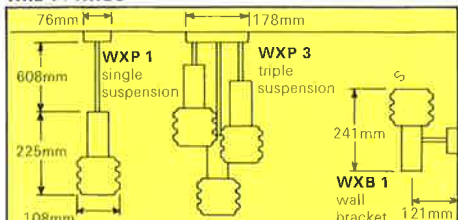
Catalogue no.	Description	Weight kg
WDP 1 CP	Single pendant with silver finish tube	0.3
WDP 3 CP	Triple pendant with silver finish tube	1.25
WDP 5 CP	Five way pendant with silver finish tube	1.6
WDB 1 CP	Single wall bracket with silver finish tube	0.3



WXP 3 : WXGR



WXB 1 : WXGO



Patterned amber and clear crystal, or white, orange and yellow flashed opal glasses with silver finish lampholder shroud. Single or three-way suspension from black ceiling plate and flex, and a matching wall bracket version. Glasses packed complete with 60W lamp.

### RANGE Glasses & suspensions to be ordered separately.

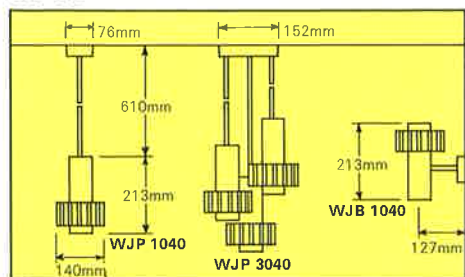
Type	Catalogue no.	Description	Weight kg
Glasses	WXGA	Amber	0.4
	WXGC	Clear	0.4
	WXGY	Yellow flashed opal	0.4
	WXGO	White opal satin etched	0.4
	WXGR	Orange flashed opal	0.4
Suspensions	WXP 1	Single	0.45
	WXP 3	Triple	1.2
	WXB 1	Wall bracket	0.45



WJP 1040



WJB 1040



Externally ribbed diffuser in clear acrylic mounted on sateened and lacquered tube. Single or three-way suspension from black ceiling plate and flex, and a matching wall bracket version. All complete with 40W candle lamp.

## RANGE

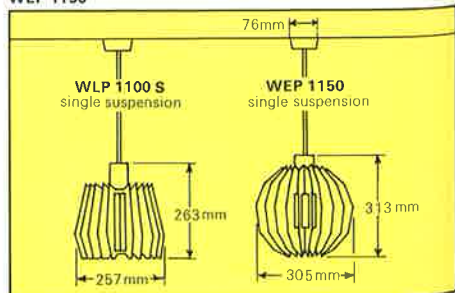
Catalogue no.	Description	Weight kg
WJP 1040	Single suspension	0.58
WJP 3040	Triple suspension	1.58
WJB 1040	Wall bracket	0.58
WJD	Spare diffuser	0.22



WLP 1100 S



WEP 1150



## Link-lite 1

Pendant having silver finish suspension cylinder with a black cable assembly supporting crystal styrene finned diffuser. Complete with 100W clear lamp. Registered design nos. 925530 and 025531.

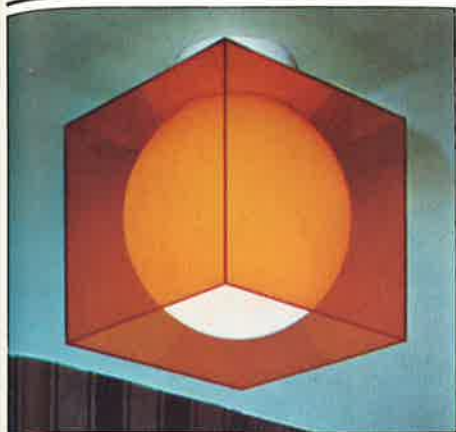
## Link-lite 2

Single pendant on a 762mm length of black cable with an overall drop of 1041mm. A reversible lampholder supports a 100W lamp at the same light centre as the clear 150W lamp supplied. Registered design no. 939946.

## RANGE

Catalogue no.	Description	Lamp Cap	Lamp Watts	Weight kg
WLP 1100 S	Link-lite 1	BC	100	1.6
WEP 1150	Link-lite 2	BC	100/150	1.8

## Cube light/Occasional lamp



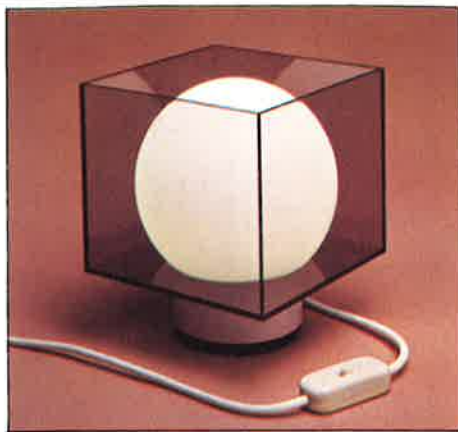
WM 100 A

### Cube light

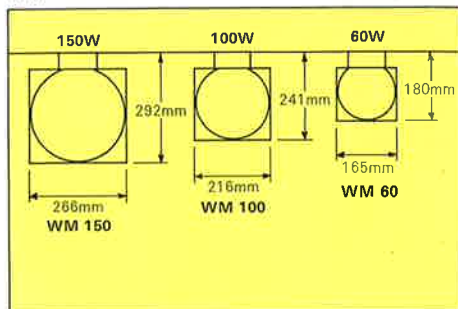
An acrylic cube outer in twilight or amber added to a satin etched or polished white opal screw neck sphere. In 60W, 100W and 150W sizes. Mounting to ceiling by a white gallery, or on a table stand complete with cable and switch.

### RANGE

Catalogue no.	Watts	Colour	Weight (ex lamp) kg
WM 60 A	60	Amber	0.9
WM 60 T	60	Twilight	0.9
WM 100 A	100	Amber	1.59
WM 100 T	100	Twilight	1.59
WM 150 A	150	Amber	2.49
WM 150 T	150	Twilight	2.49
WMT	Table stand adaptor		0.23



WM 60 T+ WMT



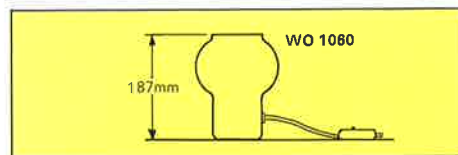
WO 1060 R

### Occasional lamp

Orange or white flashed opal glass complete with 60W lamp and switched lead.

### RANGE

Catalogue no.	Colour
WO 1060 R	Orange
WO 1060 W	White





## Modern adjustable pendants



TPASL 100 RD

### Pumpkin

Spun aluminium pendant painted red, yellow, white or silver with white painted reflector. Suspended by black curly cable from a black rise and fall unit. Complete with 40W crown silvered Decor round lamp.

### Pumpkin Major

Acrylic pendant in white or coffee finish with chromed handle. Suspended by black curly cable from a black rise and fall unit. For up to 100W pearl lamp.

### WZAC

Spun polished and lacquered copper, or spun brushed and lacquered aluminium 100W pendant with white painted reflector and white plastic louvre. Suspended by black curly cable from a black rise and fall unit.

### WAMC

Brushed and lacquered amber, silver or brass finish spun aluminium reflector with white opal plastic inner cylinder. Suspended by black curly cable from a black rise and fall unit. Silver finish lampholder surround. Complete with 100W lamp.

### WARC

Rise and fall suspension unit only.



TPAL 100 W

### RANGE

Catalogue no.	Description	Lamp Watts	Weight kg
TPASL 100 RD	Pumpkin shade, red outside, white inside	100	0.9
TPASL 100 W	Pumpkin shade, white outside and inside	100	0.9
TPASL 100 S	Pumpkin shade, silver outside, white inside	100	0.9
TPASL 100 Y*	Pumpkin shade, yellow outside, white inside	100	0.9
TPAL 100 C	Pumpkin Major shade, coffee outside, white inside	100	1.24
TPAL 100 W	Pumpkin Major shade, white outside and inside	100	1.24
WZAC 100 C	Copper shade and white louvre	100	2.8
WZAC 100 S	Brushed silver shade and white louvre	100	1.9
WAMC 1100 S	Brushed silver shade with opal cylinder	100	1.6
WAMC 1100 A	Amber shade with opal cylinder	100	1.6
WAMC 1100 LB	Brushed and lacquered brass shade with opal cylinder	100	1.6
WARC	Rise and fall suspension unit	—	—

\*Made to special order only.



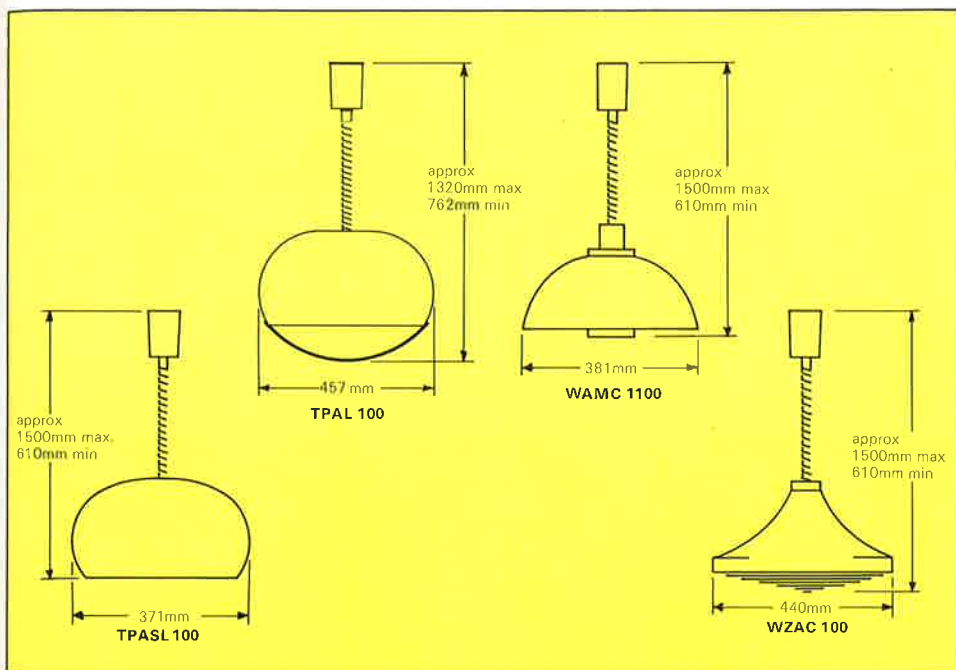
## Modern adjustable pendants



WAMC 1100 LB

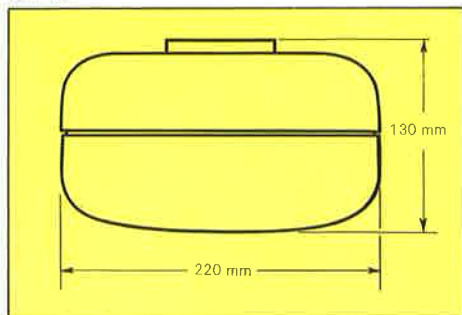


WZAC 100 S





OOY 100



A totally enclosed unit for wall or ceiling mounting. In two-tone polycarbonate with grey body and opal front diffuser—corrosion and vandal-resistant—which can be removed with a coin, and an internal reflector and pre-wired porcelain lampholder with high temperature flying leads. A foam rubber watertight gasket can be fitted at the rear of the fitting. Packed with 75W pearl BC lamp.

**Note:** For emergency lighting version see page 39.

Fitting complies with BS 4533-2.2 (IP23)

## RANGE

Catalogue no.	Description	Lamp watts	Weight kg
OOY 100	Wall/ceiling unit	75	0.68
OOY 4600	Gasket		



OEO 1060

For local lighting providing 300 lux 1.2m away, using a 60W lamp. Controlled reflector brightness provides comfortable conditions for opposite and adjacent patients. Spun aluminium, satin etched and anodized reflector supported by an anodized rod mounted on a cast aluminium stove enamelled back plate. Horizontal adjustment through an angle of approximately 160° and vertically through an angle of 20° either side. Wired complete with BC lampholder and arranged for BESA mounting.

## RANGE

Catalogue no.	Reflector diameter mm	Reflector height mm	Weight (ex lamp) kg	Projection to centre of reflector mm
OEO 1060	161	216	0.8	470

## Theatre and studio lighting

### Index

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Dimmer level memory systems for stage and television lighting control	138-139
Miscellaneous theatre and studio equipment	139

# Industrial, commercial and auditorium dimming

## Series H – Individual Dimmer Units

Wall mounted units in metal boxes. 'T' and 'F' prefixes signify tungsten or fluorescent lamp loads. Ratings as tables. Supplied to order with AZ 829 or AZ 830 remote control boxes. May also be used with AZ 831 autofader unit or AZ 834 auto colour change unit.

## Control Units for Series H dimmers

Standard remote control boxes with rotary control, on/off switch and indicator lamp.

AZ 830 Recessed mounting with matt chrome face plate.

Autofader with maximum, zero and preset levels. Full fade time variable from 2 to 30 seconds. Remote control box has three push buttons, on/off switch and indicator lamp.

AZ 831 Autofader unit (mounted adjacent to dimmer).

AZ 832 Master remote control box. Recessed mounting with matt chrome face plate.

AZ 833 Slave remote control box for additional control stations.

Auto colour changer for continuous crossfading between three H Series dimmers of the same type.

AZ 834 Control unit with one interchangeable timing plug.

## Series FP and TP Multipack Dimmers

Wall mounted or free standing enclosures housing from two to ten dimmers (see table). The latter can be of two types: type FP which corresponds electrically to type FH 50 for fluorescent lighting and type TP which corresponds to type TH 50 for tungsten lighting (see Series H). Both types can be combined in the same enclosure and can be controlled individually or in groups of any size. Three phase wiring is available if required.

These multipack dimmers may be used with any, or combinations of the control units listed under Series H dimmers. Additional forms of control include an UP, DOWN and STOP fade system, and the option of DIM/STATIC bypass relays in critical lighting applications.

Type no.	Total no. of dimmers	Mounting
FP 2	2	Wall
FP 3 or TP 3	3	Wall
FP 4 or TP 4	4	Wall
FP 6 or TP 6	6	Free Standing
FP 10 or TP 10	10	Free Standing

## Automatic Daylight Compensation

Any of the above dimmers can be controlled by a photocell system which compensates for variations in daylight.

## Dimmable Fluorescent Fittings

Fittings subject to dimmer control must be specially modified and should, if possible, be chosen from the Thorn CLIPPER range, Thorn FORMAT SM and FT fittings can also be supplied for dimmer control (Tube lengths of 600mm, 1200mm and 1800mm).

When ordering, add /DIM to the normal reference code for the fitting. Tubes, diffusers etc. should be obtained from usual suppliers.

## Control Gear Trays and Boxes

Used where the control gear is to be mounted remotely from the fluorescent tube. Trays and boxes are supplied complete with pre-wired control elements.

## CONTROL GEAR RANGE

Description	Catalogue no.	
	Boxes	Trays
Single 20 Watt tube	CBD 20	DGT 20
Twin 20 Watt tubes	CBD 220	DGT 220
Single 30 Watt tube	CBD 30	DGT 30
Twin 30 Watt tubes	CBD 230	DGT 230
Single 40 Watt tube	CBD 40	DGT 40
Twin 40 Watt tubes	CBD 240	DGT 240
Single 65 Watt tube	CBD 65	DGT 65
Twin 65 Watt tubes	CBD 265	DGT 265
Single 75 Watt tube	CBD 675	DGT 675
Twin 75 Watt tubes	CBD 2675	DGT 2675

## Dimming of Tungsten and Tungsten Halogen Lamps

All tungsten and most tungsten halogen lamps can be dimmed satisfactorily. In the case of certain tungsten halogen lamps, prolonged operation at low brightness may impair the halogen cycle and the expected life may not be fully realised. Low voltage transformer-fed lamps require special dimmers available from 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.

## SERIES H – TUNGSTEN LOADING (max.)

Dimmer Type No.	Dimmer Rating	Number of lamps per dimmer*							
		60W	100W	150W	200W	300W	500W	750W	1000W
TH 10 D	1kW	16	10	6	5	3	2	1	1
TH 40 D	2.5kW	41	25	16	12	8	5	3	2
TH 50 D	5kW	83	50	33	25	16	10	6	5
TH 100 D	10kW	166	100	66	50	33	20	13	10

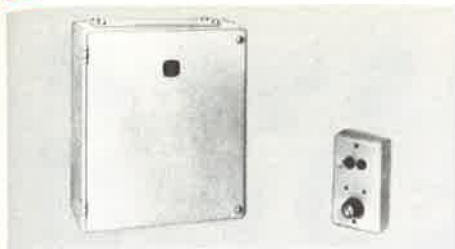
\*Or mixed wattages to not more than the rating of the dimmer.

## SERIES H – FLUORESCENT LOADING (max.)

Dimmer Type No.	No. of 38mm dia. tubes per dimmer			
	450mm 15W†	600mm 20W†	1200mm 40W	1800mm 75W
FH 10 D	20	16	8	5
FH 40 D	40	36	18	10
FH 50 D	110	100	50	28

†Wired in series pairs.

# Industrial, commercial and auditorium dimming



TH 40 dimmer  
2500W

Manual remote  
control unit



Series FP multipack dimmer unit and  
control equipment

## Club series portable manual control systems

### Club Series Dimmer Packs

Portable multiway dimmer packs with socket outlets feeding tungsten lamp loads.

Maximum load 2.5 kW per outlet.

C5B 5 independent dimmer channels\*

C10B 10 independent dimmer channels.

\*A 5-way 5kW version can be supplied to order.

These dimmer packs are used in conjunction with a variety of control units described below. Connection to these is by a multiway cable with plug and socket termination.

### Club Series Control Units

These take the form of miniature desks complete with 10 metre control cable.

- C5/2 Two-scene preset controller for five dimmer channels. Two faders per channel, two master faders, one blackout switch and indicator lamp. Used with one C5B dimmer pack.
- C10/2 Two-scene preset controller for ten dimmer channels. Two faders per channel, two master faders, blackout switch and indicator lamp. Used with one C10B dimmer pack.
- C20/2 Two-scene preset controller for twenty dimmer channels. Two faders per channel, two master faders, one blackout switch, two indicator lamps and dual control cable. Used with two C10B dimmer packs.
- Disco Three sound controlled channels (bass, middle and treble), two auto crossfaders (2 channels each) and three

manually controlled channels. Sound/light and autofade channels can also be switched to manual control. Used with one C10B dimmer pack or with one C5B dimmer pack for three sound/light and two autofade channels only.

### Club Cabaret System

A special 20-channel all-purpose Club type control desk with comprehensive manual, disco and auxiliary control.

— Two faders per channel with separate pairs of master faders for channels 1 to 10 and channels 11 to 20. Can thus be operated as a 20-way 2-scene preset system with two master faders per preset.

— Channels 11 to 20 can be individually switched to automatic control as follows:

- 11, 12, 13 Sound/light (bass, middle, treble)  
14, 15 Auto crossfade A  
16, 17 Auto crossfade B  
18, 19, 20 Flashing sequence.

In the automatic modes the maximum brightness of the lamps is still determined by the fader settings.

- Speed controls for auto crossfades and sequence flasher.  
— Individual 'flash off' switching for channels 11 to 20.  
— Off and 'flash on at maximum' switching for each master fader.  
— Dead blackout switch.  
— Two auxiliary dimmer channels with faders and On/Off switches.  
— Two groups of curtain control push buttons.  
— Four 10 amp switches for non-dim circuits.

Used with two C10B dimmer packs and H Series dimmers for auxiliary circuits.

### Club Series Accessories

- AZ 901 20 metre control extension cable for up to ten channels.  
AZ 902 30 amp plug top for 5kW circuits.  
AZ 751 15 amp 3-pin rubberclad plug top.

### Spare Parts for Club Series

- AZ 910 2.5kW Dimmer module  
AZ 911 2.5kW Dimmer control card  
AZ 912 2.5kW Triac stack  
AZ 913 2.5kW Fuse cartridges  
AZ 914 Main power supply  
AZ 915 Main power supply card  
AZ 916 Channel fader (flat scale type).



Club Disco 10  
control unit



Club 10 control unit

# Club series portable manual control systems

## Luminaires and Accessories

A wide range of luminaires includes profile spotlights, fresnel spotlights, special purpose spotlights and cyclorama lighting units. Details on application.

## Spotlight Mounting Accessories

- AZ 701 Hook clamp
- AZ 702 Boom bracket
- AZ 703 Medium telescopic stand
- AZ 704 Spigot adaptor (for 500/1000 Watt units)
- AZ 705 Spigot adaptor (for 2000 Watt units)
- AZ 706 Safety chain
- AZ 707 Wall bracket
- AZ 708 Side by side stand adaptor (Follow spot)
- AZ 709 TV hook clamp
- AZ 710 Heavy telescopic stand (Follow spot)
- AZ 711 Hand operated colour magazine (Follow spot)

## Connectors

- AZ 751 15 amp 3 pin rubberclad plug top
- AZ 752 15 amp 3 pin rubberclad cable socket.

## Colour Filters

Per sheet, size 1420×635mm

Colours normally stocked are :

- |                 |                  |
|-----------------|------------------|
| 3 Straw         | 35 Deep Golden   |
| 4 Medium Amber  | Amber            |
| 6 Primary Red   | 36 Pale Lavender |
| 8 Deep Salmon   | 43 Pale Navy     |
| 11 Dark Pink    | Blue             |
| 15 Peacock Blue | 47 Apricot       |
| 17 Steel Blue   | 49 Canary        |
| 23 Light Green  | 50 Pale Yellow   |
| 26 Mauve        | 52 Pale Gold     |
| 32 Medium Blue  | 54 Pale Rose     |
|                 | 58 Deep Orange   |
|                 | 63 Sky Blue      |



Club C10/2—C10B system with an assortment of luminaires and accessories.



# Multi-preset systems for stage and television lighting control

## Series SM

Basic 2 or 3-scene preset systems with two or three quadrant faders per channel. Master fader and blackout switch for each preset. Overall dead blackout switch.

2SM/20	2 presets	20 channels
2SM/30	2 presets	30 channels
3SM/40	3 presets	40 channels
3SM/60	3 presets	60 channels

May be used with any dimmers in the Thorn range.

## Series GM

2 or 3-scene preset systems with two or three quadrant faders per channel. Each channel fader has a three-position grouping switch allowing assignation to any one of three master faders per preset. Linear crossfade control allows 'dipless' crossfading between any master controlled groups. Includes switches for contactor controlled circuits, switched house-light faders and built-in cuelights with reply button. Option of override control for front of house lighting. Blackout switch for each master fader. Overall dead blackout switch.

2GM/40	2 presets	40 channels
2GM/50	2 presets	50 channels
2GM/60	2 presets	60 channels
3GM/80	3 presets	80 channels
3GM/100	3 presets	100 channels
3GM/120	3 presets	120 channels

May be used with any dimmers in the Thorn range.

## Series PM

2, 3 or 4-scene preset systems with two, three or four quadrant faders per channel. Master fader with blackout switch for each preset. Ten group master faders with plug matrix selector which allows any combination of channel faders to be assigned to any group master fader.

2PM/30	2 presets	30 channels
2PM/40	2 presets	40 channels
3PM/40	3 presets	40 channels
3PM/60	3 presets	60 channels
3PM/80	3 presets	80 channels
3PM/100	3 presets	100 channels
4PM/120	4 presets	120 channels
4PM/140	4 presets	140 channels

May be used with any dimmers in the Thorn range.



Simple preset system, type 3SM/40



Typical GM control desk.



Plug matrix grouping system, type 3PM/80

# Dimmer level memory systems for stage and television lighting control

## Q-File

Up to 390 dimmer channels with choice of 100 or 200 all-channel electronic memories.

### Principal Features

- Channel level adjustment by single fader lever with push button channel address selection. When not hand controlled, lever moves automatically to show existing level of selected channel.
- Complete lighting state instantly recorded in any selected memory.
- Memories may be played back singly or by addition or subtraction.
- Playback with instant effect or by automatic fade actions.
- Four automatic fades can take place simultaneously with independent timing.
- Mimic panel shows status of channels in use or in preview.
- Blind record facility allows memories to be prepared, reviewed or modified without affecting lighting in use.
- Instant manual override of any channel at any time.
- Independent standby system in which a plug matrix allows channel groups to be assigned to auxiliary faders.

## Q-File 1000

Standardised version for up to 198 channels. Metal desk with two blank panels to accommodate supplementary user controls or indicators.

### Options

- 100 or 200 memories.
- Portable remote control unit.
- Tape programming unit for library storage.

## Q-File 2000

Channel capacity to user requirements. Desk may be custom built or panels supplied for fitting to customer's own console.

### Options include:

- 100 or 200 memories.
- Various types of mimic display and auxiliary control systems.
- Portable remote control unit.
- Tape programming unit for library storage.
- Visual display unit (VDU).
- Print-out facility.
- Group master controls.
- Choice of flasher units.

Q-File systems comprise a desk with separate one or two-bay control equipment rack. They are normally used with Thorn type LAO or type C dimmers.

## Q-Master

Two versions Q-Master 1000 and 2000, offer up to 160 channels and 50/100 electronic memories or up to 240 channels with unlimited disc memories. In each version all control equipment excluding dimmers is housed within the desk. The control principles are easily learned by operators familiar with conventional systems.

### Principal Features

- Individual channel faders for setting up memories. Channels can be returned to manual control singly or



Q-File 1000 control desk



Q-File 2000 at London's Talk of the Town theatre restaurant.



Q-Master 1000 40 channel control desk including optional second preset.

# Dimmer level memory systems for stage and television lighting control

together at any time.

- Complete lighting state instantly recorded in any selected memory.
- Independent simultaneous memory playback via three master faders.
- Memory addition and subtraction facilities.
- Automatic fades and crossfades.
- Blind plotting and memory modification facility.
- Mimic lamps show status of active channels.
- Stand-by manual control.
- Direct manual to playback transfer allows use as a three preset system without involving the memories.

## Q-Master 1000

Very suitable for small to medium theatre or television applications where full memory facilities are required.

- 40 to 160 channels with choice of 50 or 100 electronic memories.

## Q-Master 2000

Specially designed for medium to large theatre applications requiring large memory capacity with repertoire 'library' storage of lighting plots.

- 80 to 240 channels.
- Interchangeable magnetic memory discs with 300 memories per disc.
- Can be supplied with two disc units allowing disc-to-disc copying and editing.

Q-Master systems are normally used with Thorn type LAO or type C dimmers.

## QT 120

A compact and portable memory system based on Q-Master 1000 and specially designed for touring or television outside broadcast applications. The desk top and pedestal are easily separated and can be placed in a car boot by one man.

### Principal Features

- 120 channels with 100 electronic memories.
- Single fader lever with decimally coded channel selector buttons. Channels may be selected singly or in groups.
- Channel level indicator.
- Complete lighting state instantly recorded in any selected memory.
- Independent simultaneous memory playback via three master faders.
- Memory addition and subtraction facilities.
- Linear 'dipless' crossfade facility
- Blind recording of manual state without affecting lighting in use.
- Blind playback to manual state for memory preview or modification.
- Direct transfer of manual states to playback master faders. This allows 3-preset control without involving memories.
- Switchable solid-state panel shows active channels in all playback and manual modes.
- Independent standby manual system.
- Desk unit may be operated separately from its pedestal in confined locations.

The QT 120 system is normally used with special portable dimmer packs.



QT 120 portable control system

## Dimmers for Stage and Television Applications

All Thorn dimmers have the same control voltage range and can therefore be used with any of the control systems. For professional installations preference is given to the following:

Type LAO 2.5, 5 and 10kW

Designed to the most rigorous technical specification, these dimmers are constructed as interchangeable modules which plug into recesses in cabinets holding up to 40 dimmers (number depends on rating).

Type C2.5 and 5kW

High performance dimmers in cabinets holding various combinations of dimmer ratings. Easily demountable dimmer modules.

## Aurama Son et Lumière Control System

A special memory system for dimmer controlled tungsten or fluorescent lighting. All lighting sequences are initiated by signals from a tape recorder.

## Miscellaneous Theatre and Studio Equipment

- Auxiliary multiway switch panels for lighting on/off control during the rigging of luminaires.
- Power patch panels which allow random interconnection between dimmer outputs and lighting circuits.
- Sound and intercom equipment.
- Curtain control and custom built auxiliary control panels.

For advice on the above and more elaborate systems consult the Theatre Lighting Division. Virtually any lighting control requirement can be accommodated.



# Outdoor and street lighting

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### IMPORTANT

Fittings shown in the Outdoor Lighting section of this catalogue are designed to be rainproof and suitable for operation in ambient temperatures of 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.

# Sunflood 300/1000W tungsten halogen floodlights



SUN 500

## Applications

Low cost area floodlighting : Car parks, forecourts, security, gardens, work areas, display etc.

## Description

- Main body :** Pressure die-cast LM6-M aluminium alloy finished in stove enamelled silver paint.
- Reflector :** Magnesium alloy, hammer finish, chemically brightened and anodized.
- Lampholders :** Single, fine silver 'button' contacts mounted on special alloy blades with stainless steel backing springs, tempered, plated and housed in porcelain shrouds.
- All external fixing screws are stainless steel.**
- Mounting :** Entry is 20mm ET. For mounting accessories and spares see page 157/158.

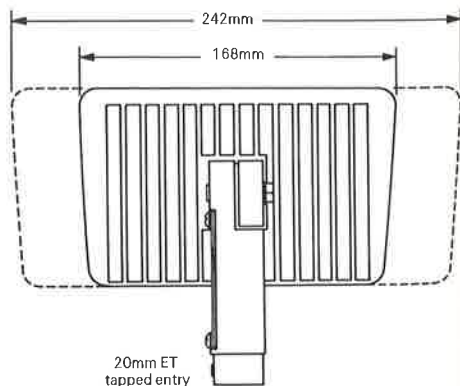
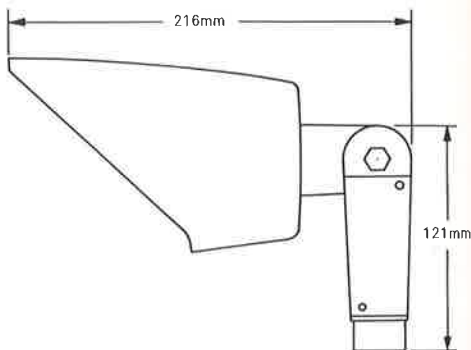
## Lamps

Linear tungsten halogen 300W to 1000W with R7s caps (see page 248 for full range).

## Classification for protection

Against electric shock : Class I — earthed metalwork.

Against ingress of moisture : IP23, rainproof.

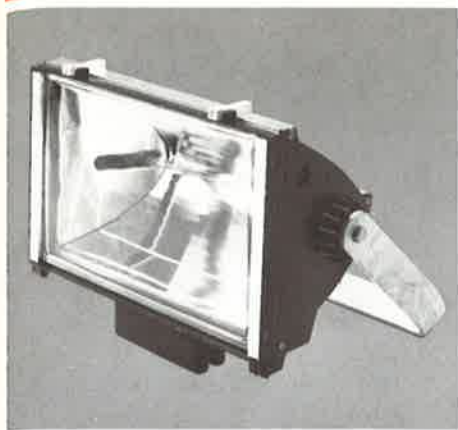


## RANGE

Catalogue no.	Description	Weight kg	Projected area m <sup>2</sup>
SUN 500	Sunflood fitting packed with 240V 500W lamp	1.02	0.03
SUN 1000	Sunflood fitting packed with 240V 1000W lamp	1.36	0.045



# Haline tungsten halogen floodlights



## Applications

Area lighting for buildings, sport, security or any area where wide horizontal beam spread and accurate vertical beam control are required.

## Description

**Body/reflector:** One-piece extruded aluminium with asymmetric faceted reflector profile. Fine polished (specular) or matt (diffuse). End diaphragms are specular aluminium.

**End plates:** Die-cast LM6-M aluminium alloy. They enclose fitting and carry lampholders. Exterior finish matt black.

**Cool wiring box:** Base – black thermoset plastic. Cover – flame retardant glass filled nylon with moulded cable gland suitable for 9-11 mm O/D cable. Gasket – nitrile rubber.

**Front frame and glass:** Hinged and secured by screw catches, with stainless steel screws. Full weatherproofing by silicone rubber gaskets between glass and frame, and between frame and body. Glass is borosilicate. Glazing trim in anodized aluminium.

**Lampholder contacts:** Solid fine silver (catalogue no. OHA 4614).

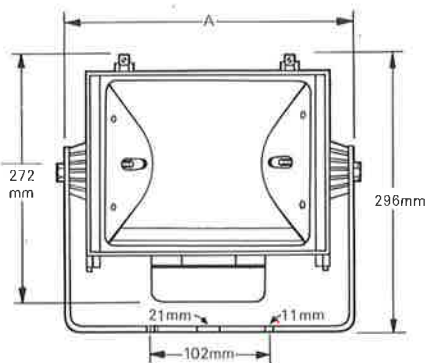
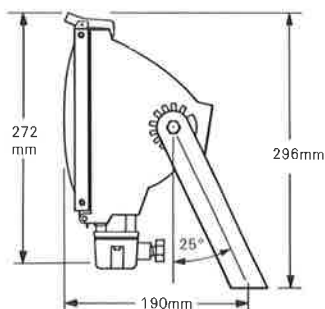
**Mounting:** 25° cranked stirrup is standard permitting floor, wall or pendant mounting and adjustment in 2 planes. For mounting accessories see page 157/158. For columns see pages 173 and 174.

## Lamps

Linear tungsten halogen 300W to 2000W with R7s caps (see page 248 for full range). 1000W and 1500W versions also suitable for use with SON-TD lamps (see page 217).

## Classification for protection

Against electric shock: Class I – earthed metalwork.  
Against ingress of moisture: IP24, splashproof.



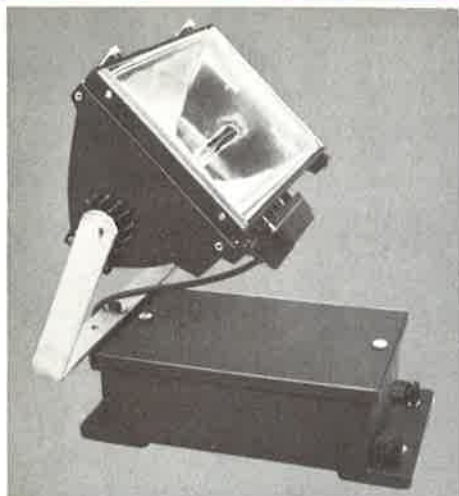
## RANGE

Catalogue no.	Description	Length Dimension A mm	Weight kg	Projected area m <sup>2</sup>
OHS 500	300/500W Specular reflector	237	2.9	0.05
OHD 500	300/500W Diffuse reflector	237	2.9	0.05
OHS 1000*	750/1000W Specular reflector	309	4.0	0.06
OHD 1000*	750/1000W Diffuse reflector	309	4.0	0.06
OHS 1500†	1500W Specular reflector	374	4.7	0.08
OHD 1500†	1500W Diffuse reflector	374	4.7	0.08
OHS 2000	2000W Specular reflector	450	4.9	0.09
OHD 2000	2000W Diffuse reflector	450	4.9	0.09

\*Also suitable for use with 250W SON-TD lamp.

†Also suitable for use with 400W SON-TD lamp.

# Sonline 250/400W SON-TD floodlight



OHA 4615 with OHD 1500

## Application

A composite package comprising SON-TD lamp, floodlight and control gear box. For economical operation where the system is in use for long periods : area, building, public lighting etc.

## Description

### Luminaire :

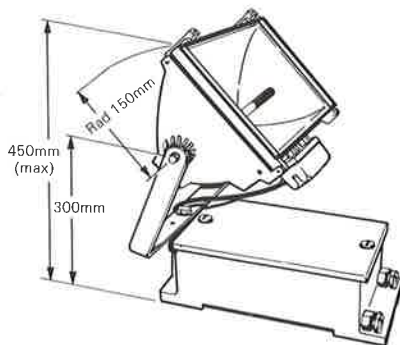
Haline OHS/D 1000 for 250W SON-TD.  
Haline OHS/D 1500 for 400W SON-TD.  
ON 1600 floodlight for 400W SON-TD (see page 151).

### Control gear box :

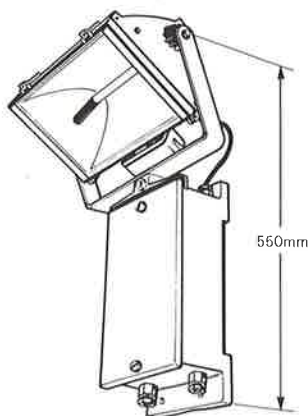
Rainproof cast aluminium alloy with aluminium lid secured by two captive screws. Contains one set of 220/240V 50Hz control gear, fully wired.  
OHA 4615 for 400W SON-TD.  
OHA 4616 for 250W SON-TD.  
Alternative gear boxes suitable for remote mounting, manufactured from zinc coated sheet steel with stove enamelled acrylic finish are available.  
OHA 4617 for 400W SON-TD.  
OHA 4618 for 250W SON-TD.  
Mains entry for both types is by nylon cable gland : 9-11mm O/D. Exterior finish matt black.

## Lamps

250W or 400W SON-TD tubular double ended high pressure sodium.  
For replacement control gear see page 158.



FLOOR MOUNTING



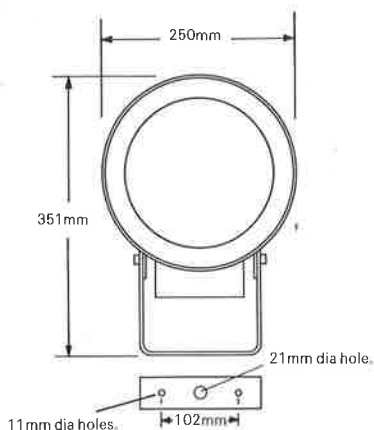
WALL OR POLE MOUNTING

## RANGE

Catalogue no.	Description	Weight kg
OHA 4615	400W SON-TD control gear box aluminium, complete	9.5
OHA 4616	250W SON-TD control gear box aluminium, complete	7.6
OHA 4617*	400W SON-TD control gear box steel, complete	9.4
OHA 4618*	250W SON-TD control gear box steel, complete	7.5

\* Dimension as GM 6172 gear box. See **Control gear and accessories** section.

# Sunspot 300/500W tungsten halogen floodlight



## Applications

High intensity narrow beam for decorative areas, buildings, parks, security, sporting venues, churches etc.

## Description

- Body :** Pressure die-cast LM24, finished in semi-matt black heat resisting paint.
- Reflector :** Mirror polished, super pure aluminium, sealed and anodized.
- Cool wiring box :** Base – black thermoset plastic.  
Cover – glass filled nylon with moulded gland for 9-11 mm O/D cable.
- Front glass :** Secured in pressure die-cast aluminium front ring. Clear and prismatic versions in toughened borosilicate glass.
- Mounting :** Stirrup zinc plated, finished in semi-matt black paint. For mounting accessories see pages 157/158.
- Lampholder :** GL1177.

## Lamps

- M38 300W 240/250V single ended tungsten halogen.
- M40 500W 240/250V single ended tungsten halogen.

## Classification for protection

- Against electric shock : Class I – earthed metalwork.
- Against ingress of moisture : IP24, splashproof.

## RANGE

Catalogue no.	Description	Weight kg	Projected area m <sup>2</sup>
OSC 500	Sunspot (clear) c/w M38 300W lamp	2.5	0.05
OSP 500	Sunspot (prismatic) c/w M38 300W lamp	2.5	0.05
OSC 500 LL	Sunspot (clear)	2.5	0.05
OSP 500 LL	Sunspot (prismatic)	2.5	0.05

## Spare front glasses

Catalogue no.	Description	Approx. weight kg
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

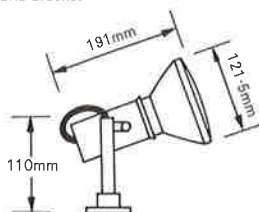
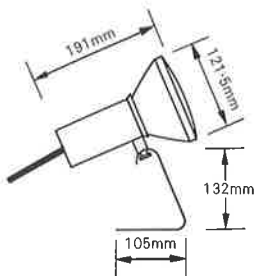
# Miniflood 150W PAR 38 floodlight



OP 1150



ER 1150 with EKB bracket



## Applications

Low cost outdoor lighting for decorative effects in parks and gardens etc. Illuminating signs and other features.

## Description

Body/lampholder housing:

Satin finished anodized aluminium extrusion supplied wired with 1.9m 3-core PVC cable.

Lamp-to-body sealing ring:

Silicone rubber (spare ring, catalogue no. ERS).

Lampholder:

GL 1131-M type ES.

Mounting:

OP 1150 Supplied complete with clear 150W PAR 38 floodlamp and black polythene coated steel bracket for wall or ground fixing. Secured and locked to body by slotted knurled plastic screw.

ER 1150 Supplied with conduit fixing adaptor suitable for use with EKB bracket (not supplied) or standard conduit.

## Lamps

Sealed beam reflector PAR 38 – 150W spot or flood version, ES cap, 220/230, 240 and 250V.

Color-Ray sealed beam reflector PAR 38 – 150W spot (blue, green, red and yellow) ES cap, 220/230, 240 and 250V.

## Classification for protection

Against electric shock: Class I – earthed metalwork.

Against ingress of moisture: IP23, rainproof.

## RANGE

Catalogue no.	Description	Weight kg
OP 1150	Miniflood c/w ERB bracket and PAR 38 floodlamp	0.5
ER 1150	Miniflood suitable for use with EKB bracket	0.4
EKB	Flat wall (conduit) bracket	0.1
EKC	Corner (conduit) bracket	0.3
ERB	Spare mounting bracket for OP 1150	0.2
ERS	Spare gasket for Miniflood	—

# M25 F Junior floodlight projector



## Applications

Major floodlighting situations e.g. railway sidings, airfield aprons, sports grounds, buildings etc.

## Description

### Reflector :

Super purity spun aluminium, polished and anodized. Secured internally to LM6-M aluminium alloy ring casting with stirrup fixing. Heat resisting front glass sealed in to reflector by gasket and stainless steel visor band. Gasketed and fastened to body casting by stainless steel studs and wing nuts.

**Auxiliary reflector :** Polished aluminium.  
**Lampholder housing :**

Pressure die-cast aluminium lampholder position adjustable for focussing. End cap is detached for access to terminal block. Gland for 7-11 mm O/D cable.

### Mounting :

- Galvanized steel stirrup with 21 mm central fixing hole. Plastic coated locking bolts/handles. Quadrant for aiming marked 0°-180°.
- Base plate (M25 BPJ) bolts direct to stirrup.

## Lamps

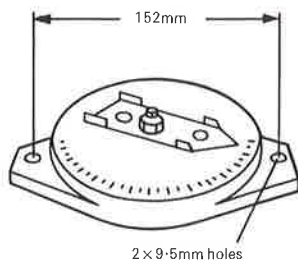
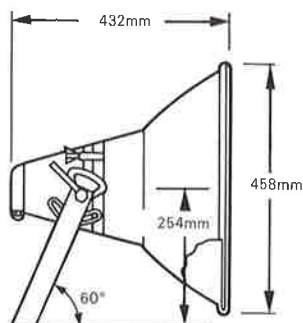
GLS	300/500W
B2/1	500W
MBF/U	250/400W
MBI and MBIF	250/400W
SON and SON-T	250/400W

For control gear and circuit details see **Control gear and accessories** section.

## Classification for protection

Against electric shock : Class I – earthed metalwork.

Against ingress of moisture or dust : IP54, dustproof and splashproof.



M25 BPJ base plate

## RANGE

Catalogue no.	Description	Weight kg	Projected area m <sup>2</sup>
M25 FS 500	Specular reflector projector floodlight	9.07	0.16
M25 FD 500	Diffuse reflector projector floodlight	9.07	0.16
M25 BPJ	Base plate (optional extra)	0.36	—

# M25 F Senior floodlight projector



## Applications

Major floodlighting e.g. sports stadia, large area lighting, railway marshalling yards, high tower mounting etc.

## Description

- Reflector :** Super purity spun aluminium, polished and anodized. Auxiliary reflector is fixed between main reflector and body casting.
- Body casting :** LM6-M aluminium.
- Front glass :** Heat resisting, with neoprene gasket seal to reflector.  
Specular glass (Y 13102-1).  
Diffuse glass (Y 13102-2).
- Lampholder housing :** LM6-M aluminium. Fastens to body casting by stainless steel studs and aluminium wing nuts through slotted cast-on lugs. Lamp focussing is by adjustment of 3 screws.
- Lampholder :** GL 1088 (GES).
- Cover plate :** LM6-M aluminium, removed for access to cool wiring chamber containing porcelain terminal block and earth connection. Entry via cable gland.
- Mounting :** Galvanized steel cranked stirrup pivoted to body casting and provided with locking bolts with plastic coated heads and handles. Bearing quadrant is marked in  $2\frac{1}{2}^\circ$  steps from  $0^\circ$ - $90^\circ$ . Centre fixing hole 21mm.

Base plate  
(catalogue no.  
M25 BP) :

Optional mounting. Supplied with bolt ( $\frac{3}{8}$  in. BSW x  $1\frac{1}{2}$  in.) and  $2 \times 13$ mm holes for ground fixing. Once aimed re-lamping can be carried out without disturbing aim of floodlight.

## Lamps

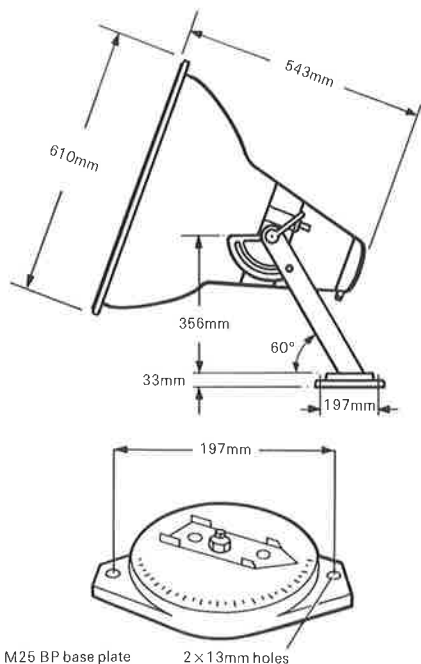
GLS	750/1500W
MB/U	1000W
MBF/U	1000W
MBI and MBIF	1000W

Luminaire is also suitable for 1000W SON with a suitable ignitor sited within 1 metre of the lamp.

For control gear and circuit details see **Control gear and accessories** section.

## Classification for protection

Against electric shock : Class I — earthed metalwork.  
Against ingress of moisture or dust : IP23, rainproof.



M25 BP base plate

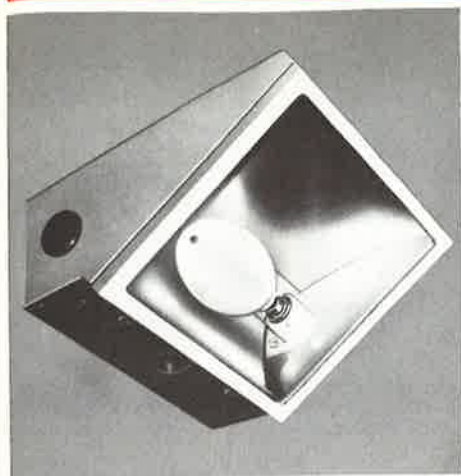
$2 \times 13$ mm holes

## RANGE

Catalogue no.	Description	Weight kg	Projected area m <sup>2</sup>
M25 FD 1500	Projector floodlight, diffuse	12.7	0.29
M25 FS 1500	Projector floodlight, specular	12.7	0.29
M25 BP	Base plate (optional extra)	0.91	—
<b>Spares</b>			
M25 GT	Glazing tool for M25 fittings	—	—
M25 FG	Front gasket and filler strip for M25 F 1500	—	—



# Area floodlight



## Applications

General area lighting of car parks, forecourts, industrial areas, security, wall mounted streetlighting etc.

## Description

Body : One-piece GRP moulding.  
Support casting : LM6-M aluminium alloy with spigot entry providing mounting for integral control gear. Sealed to body with silicone rubber adhesive.

## Front glass assembly :

Toughened flat glass secured in GRP hinges at the top and two DZUS slotted clips to fasten frame at the bottom edge. Silicone rubber gaskets between glass and frame, and frame and body.

## Reflector assembly :

Chemically polished aluminium in two parts. Lower portion hinges down for access to gear and 3-way 10A terminal block.

## Lampholder : Mounting :

GL 1181 (GES).  
a) Post top – built-in spigot cap in casting 76 x 117mm and secured by two Allen screws.  
b) Bracket mounting – wall brackets OAB 36 and OAB 310.  
c) Stirrup mounting – using OAE stirrup assembly, fixes to side securing knobs. Blanking plate for gland entry of mains cable is provided with hot dip galvanized steel stirrup.

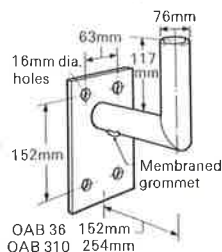
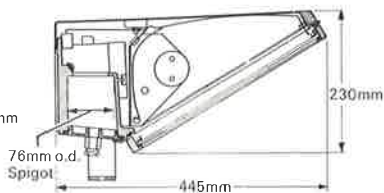
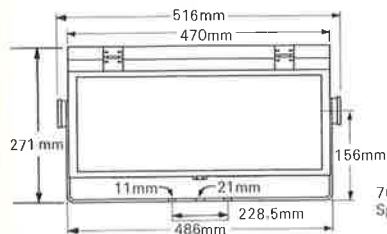
## Lamps

250W or 400W MBF, MBIF and SON.  
For replacement control gear see page 158.

## Classification for protection

Against electric shock : Class I – earthed metalwork (reflector).

Against ingress of moisture or dust : IP23, rainproof.



## RANGE

Catalogue no.	Description	Weight kg	Projected area m <sup>2</sup>
OACG 250	Area Flood c/w 250W MBIF control gear	15.0	0.21
OACG 400	Area Flood c/w 400W MBIF control gear	14.5	0.21
OAKG 250	Area Flood c/w 250W MBF control gear	13.6	0.21
OAKG 400	Area Flood c/w 400W MBF control gear	14.5	0.21
OASG 250	Area Flood c/w 250W SON control gear	14.5	0.21
OASG 400	Area Flood c/w 400W SON control gear	16.5	0.21

## Accessories

Catalogue no.	Description
OAB 36	76mm dia. spigot/bracket with 152mm projection
OAB 310	76mm dia. spigot/bracket with 254mm projection
OAG	Spare front glass
OAE	Stirrup assembly/comprises stirrup, blanking plate and gland for 9-11mm O/D cable.
OAA 2	Adaptor for 51mm spigot.

# M30 linear sodium floodlight



## Applications

General area lighting, security etc., where high efficacy of low pressure sodium is required and colour rendering is not critical.

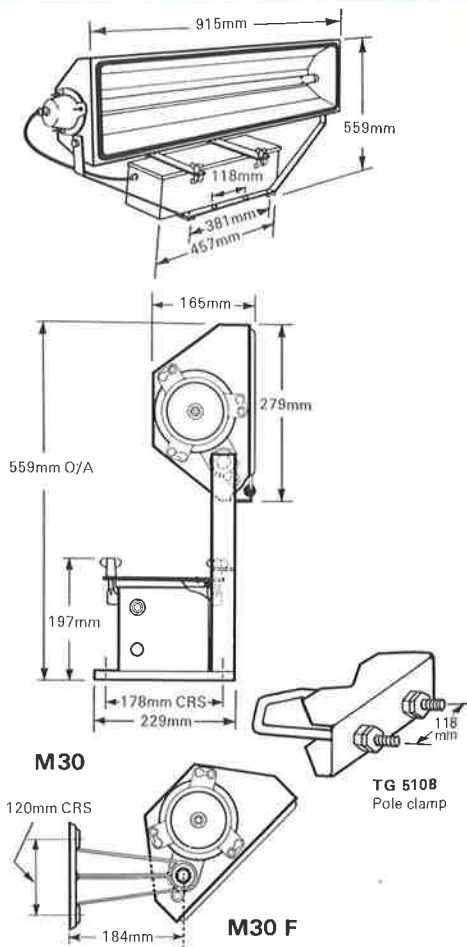
## Description

- Body:** Zinc coated sheet steel with grey enamel paint finish.  
**Internal reflector:** Specular aluminium.  
**Front glass:** Toughened, glazed to body with rubber weather strip.  
**Lampholder casting:** At one end only, removable for re-lamping. Quick release keyhole slots. Lampholders – GB 1512 (free end) and GB 1548-A3.  
**Mounting:** a) Using galvanized steel stirrup (M30).  
 b) Using pole mounting clamp (M30 FP arrangement).  
 c) Using pair of die-cast wall brackets (M30 F arrangement).  
**Gear box:** Galvanized sheet steel, fitted with hinged lid, fully gasketed and containing removable gear tray suitable for control gear fixing including mains terminal block. Gear not included.

## Lamps

140W or 200W SLI/H linear sodium discharge.

For control gear and circuit details see **Control gear and accessories** section.

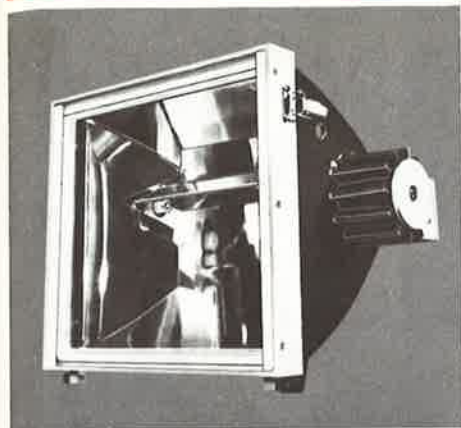


## RANGE

Catalogue no.	Description	Weight kg	Projected area m <sup>2</sup>
M30	Floodlight and gear box (less gear) for floor mounting Set comprises: 1 x TG 3116 floodlight housing 1 x TG 2855 stirrup 1 x TG 2630 gear box (less gear)	28.12*	0.36
M30 F	Floodlight for wall mounting Set comprises: 1 x TG 3116 floodlight housing 2 x TG 2586 wall bracket	12.03	0.36
M30 FP	Floodlight for pole mounting Set comprises: 1 x TG 3116 floodlight housing 1 x TG 2855 stirrup 1 x TG 5108 pole clamp	15.42	0.36
M30 GBP	Gear box (less gear) Set comprises: 1 x TG 2630 2 x TG 2585 pole clamps	16.78*	0.36
M30 GB	Gear box (less gear) 1 x TG 2630	—	—

\*Total weight when using control gear.

# ON 1600 MBIL floodlight



## Applications

Sports stadia, large-area lighting, construction areas, building floodlighting. High efficiency with excellent colour rendering suitable for colour television outside broadcasts.

## Description

**Reflector/body :** Contoured reflector, polished and anodized, forms back of body. Insert reflector (ONR) available to give broader beam spread.

**Mounting :** Galvanized steel stirrup supplied with fitting for direct mounting, or with pole clamp OHA 4613 for pole mounting.

**End plates :** LM6-M aluminium alloy, sealed to reflector and with cool chambers for special lampholders. Finished in black heat resisting paint.

**Wiring chamber :** LM6-M aluminium alloy with gasketed lid. Mains entry via gland for 9-11mm O/D cable.

**Front glass/frame :** Front glass sealed in aluminium frame and hinged for front re-lamping.

## Lamps

750W or 1500W MBIL\*

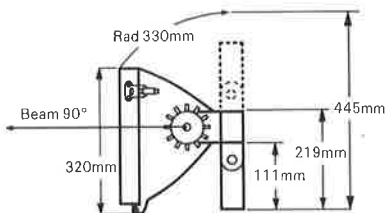
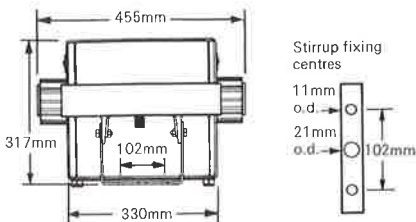
400W SON-TD

\*Also suitable for use with 1600W MBIL providing suitable control gear is used.

## Classification for protection

Against electric shock : Class I — earthed metalwork.

Against ingress of moisture or dust : IP23, rainproof.



## RANGE

Catalogue no.	Description	Weight kg	Projected area m <sup>2</sup>
ON 1600	Floodlight with stirrup	7.25	0.11

## Spares and accessories

OHA 4613	Clamp for 51-89mm dia. pole	0.45
ONS	Spare front glass	1.35
ONR	Diffuse reflector insert assembly	0.25

## Control gear

<b>750W MBIL</b>			
1 x G 53254.4	240V 50Hz ballast	24.95	
3 x GC 2346	240V 25µF capacitors	0.2 each	

<b>1500W MBIL</b>			
1 x G 53308.T	380/415V 50Hz ballast	13.8	
1 x G 53310	Ignitor	0.15	
1 x GC 2239	440V 30µF capacitor	2.39	
1 x G 47102*	220/240-380/415V 50Hz auto-transformer	10.5	

<b>400W SON-TD</b>			
OHA 4615	240V 50Hz 400W SON gear box (aluminium)	9.5	
OHA 4617	240V 50Hz 400W SON gear box (steel)	9.4	

\*Lamp normally operated between phases. Auto-transformer only required for 240V operation. For gear box and circuit details see Control gear and accessories section.

# 1000W CSI sealed beam floodlight



OM 1000 C 1 kW floodlight and OMA stirrup.

## Applications

Specially for high tower installations in large and small stadia where good illumination with excellent colour rendering is required to comply with colour television standards.

## Description

Glazing ring :

LM6-M aluminium casting with mounting lugs. Secured to lamp housing by 3 stainless steel catches. Glasses supplied separately.

Lamp housing :

Bi-post lampholder in cast LM6-M aluminium alloy housing. Lamp housing between lampholder casting and glazing ring is spun aluminium, finished matt black. Re-lamping from rear without disturbing aim of fitting.

Pulse starter

unit housing :

Cast LM6-M alloy mounted beside lampholder housing. Contains starter tray (replacement quote catalogue no. OMX). Mains entry by gland for 9-11 mm O/D cable.

Mounting :

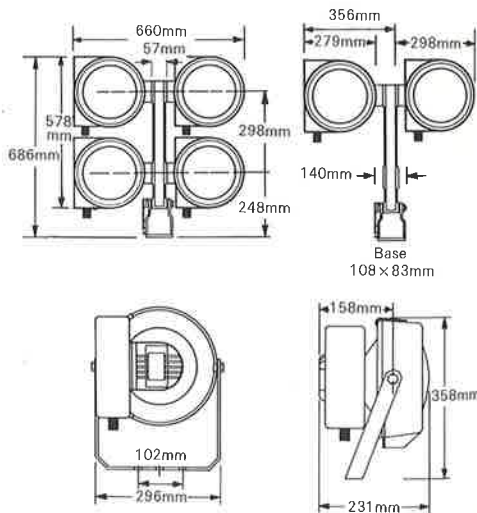
- Using stirrup OMA (not supplied).
- Using 4-way mounting bracket OMB 4.

## Lamp

1000W Compact Source Iodide PAR 64 sealed beam discharge lamp (ref. no. 99-1222) with special bi-post cap. *Use only this lamp.*

## Classification for protection

Against electric shock : Class I — earthed metal work.  
Against ingress of moisture : IP23, rainproof.



## RANGE

Catalogue no.	Description	Weight kg	Projected area m <sup>2</sup>
OM 1000 C*	1kW CSI floodlight with clear front glass	6.34	0.07
OM 1000 P*	1kW CSI floodlight with prismatic front glass	6.34	0.07
OM 1000 S*	1kW CSI floodlight with stippled front glass	6.34	0.07
OM 1000 W*	1kW CSI floodlight with 'wide' prismatic front glass	6.34	0.07
OM 1000 E*	1kW CSI floodlight with 'extra wide' front glass	6.34	0.07
OMA	Stirrup assembly	0.9	—
OMB 4	Multi-way mounting bracket assembly	2.49	—
OMD	Spill-ring attachment (to special order only)	0.5	—
OMC	Spare clear front glass	0.34	—
OMP	Spare prismatic front glass	0.34	—
OMS	Spare stippled front glass	0.34	—
OMW	Spare 'wide' prismatic front glass	0.34	—
OME	Spare 'extra wide' front glass	0.34	—
OHA 4613	Universal pole clamp	0.45	—
<b>Control gear †</b>			
G 53307.T	220/240V 50Hz choke (1 per lamp)	19.0	—
GC 2346	25µF capacitor (7 per lamp)	0.68	—
OMGC 16	Gear tray for remote indoor use with 16 x GC 2271, 17µF 440V capacitors	16.36	—
OMX	Replacement pulse starter unit gear tray	1.17	—

\*Glass is not supplied fitted in luminaire.

†For full details and circuit data see **Control gear and accessories** section.

# Escort Wellglass



EMF 1200 top entry with EKR 200 reflector and EKB bracket

## Applications

General or localized lighting in outdoor industrial situations.

## Description

Screw neck gallery:

LM6-M aluminium alloy, for top or side entry, also top BESA box mounting. Finished matt black.

Glass: Two sizes for a) 100W version and b) 200W version. Common screw neck detail to match galleries. Internally etched and fitted with a weatherproof seal.

Reflector: Optional. White nylon which fits over screw neck. Available in both sizes.

Mounting: Wall or corner brackets, or direct to BESA box.

Lamps: 60W – 200W GLS  
80W and 125W MBF (with appropriate control gear – see **Control gear and accessories** section).

## Classification for protection

Against electric shock: Class I – earthed metalwork.

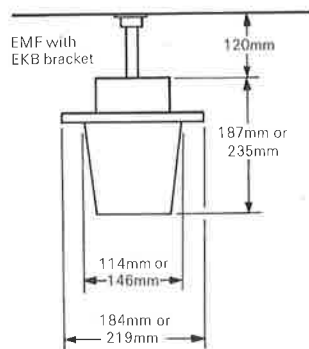
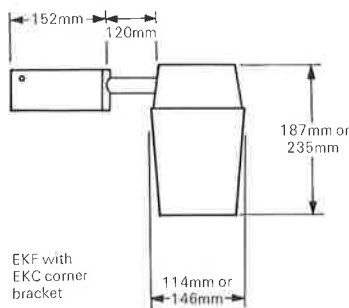
Against ingress of moisture: IP23, rainproof.

## RANGE

Catalogue no.	Description	Weight kg
EKF 1100	Wellglass, side entry with BC lampholder for 60/100W GLS	0.9
EMF 1100	Wellglass, top entry with BC lampholder for 60/100W GLS	0.9
EKF 1200	Wellglass, side entry with ES lampholder for 150/200W GLS and 80/125W MBF	1.02
EMF 1200	Wellglass, top entry with ES lampholder for 150/200W GLS and 80/125W MBF	1.02
EKR 100	Reflector for EKF/EMF 1100	0.06
EKR 200	Reflector for EKF/EMF 1200	0.09
EKB	Wall bracket	0.13
EKC	Corner bracket	0.34
EKG 100	Replacement glass for EKF/EMF 1100	0.57
EKG 200	Replacement glass for EKF/EMF 1200	0.9



EKF 1100 side entry using EKC corner bracket





# Escort range bulkhead fittings

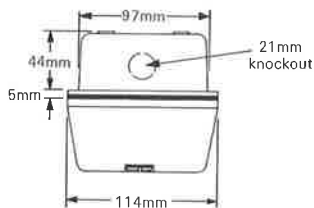
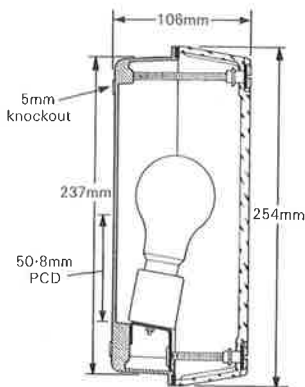
## Applications

Amenity lighting of public, commercial and industrial premises, including surface mounted and semi-recessed outdoor lighting situations.



### OLG 1100 Tungsten bulkhead

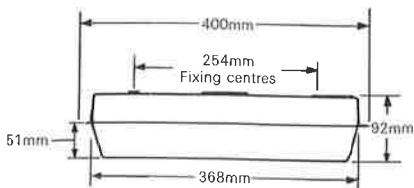
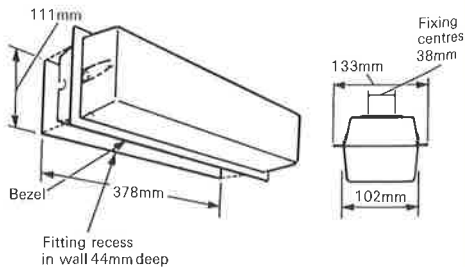
- Body : Pressure die-cast aluminium alloy with light grey stove enamelled finish, 21mm knock-out for conduit entry and provision for BESA box and conduit entry at the back. Gasket seals to glass for weatherproofing.
- Glass diffuser : Retained by two captive vandal-proof nylon screws. Special key supplied.
- Lampholder : BC version GL 1159, ES version GL 1131.
- Lamps : 40W to 100W GLS.



### OB 2008/3008 Fluorescent bulkhead

- Body : Pressure die-cast aluminium alloy with light grey stove enamelled finish, 20mm tapped entry conduit in each end, supplied with plugs. Suitable for through wiring. Centre knock-out in back for conduit, and drill locations for fixing holes.
- Diffuser : OBD type acrylic and OBV type (vandal-resistant) polycarbonate. Secured by two captive screws. Special key supplied. A bezel trim is available for recessed applications.
- Control gear : Switchstart for 2 or 3 fluorescent tubes. (HPF 2-lamp versions available to special order). For replacement control gear see page 158.

- Lampholder : GB 1598.
- Lamps : Supplied with 300mm 8W T5 fluorescent tubes.



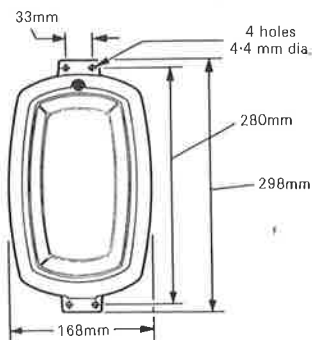


## Escort range bulkhead fittings



### TG 4208 Heavy duty tungsten bulkhead

- Body:** LM6-M aluminium alloy. Finished in aluminium paint. Neoprene gasket. Tapped for 20mm conduit, top or bottom entry.
- Glazing ring:** LM6-M aluminium alloy in aluminium paint finish. Hinged to body by stainless steel pin and secured with single captive screw.
- Diffuser:** Polycarbonate prismatic pattern.
- Lamps:** 100W GLS, ES cap.



### Classification for protection

Against electrical shock: Class I – earthed metalwork.  
Against ingress of moisture or dust: OLG and OB types are IP23, rainproof. TG type is IP55, jetproof.

### RANGE

Catalogue no.	Description	Weight kg
OLG 1100 BC	Escort tungsten bulkhead with BC lampholder	1.13
OLG 1100 ES	Escort tungsten bulkhead with ES lampholder	1.13
OLG 4800	Spare glass diffuser (c/w fixing screws and key)	0.75
OBV 2008	Escort fluorescent bulkhead, acrylic diffuser c/w 2 × 8W tubes	2.03
OBV 3008	Escort fluorescent bulkhead, acrylic diffuser c/w 3 × 8W tubes	2.26
OBV 2008	Escort fluorescent bulkhead, polycarbonate diffuser c/w 2 × 8W tubes	2.03
OBV 3008	Escort fluorescent bulkhead, polycarbonate diffuser c/w 3 × 8W tubes	2.26
OBV	Spare acrylic diffuser	0.68
OBV	Spare polycarbonate diffuser	0.68
OBV	Bezel trim	0.27
OBK	Spare key	0.01
TG 4208	GLS (ES) heavy duty tungsten bulkhead with polycarbonate prismatic diffuser	2.5
TG 4069	Spare polycarbonate diffuser	0.7

# Escort Patio



WPCR 1060 BC



WPWA 1060 BC

## Applications

Decorative outdoor fittings for wall mounting or under-canopy situations.

## Description

### WPW version

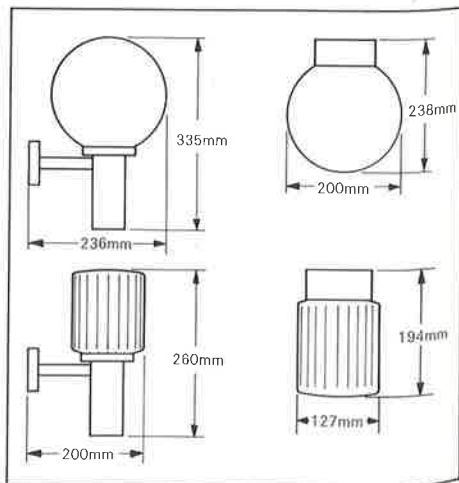
- Body : Steel tube, zinc plated and finished matt black. Connected to zinc plated conduit support tube.  
 Lampholder : GL 1085 2 BC.  
 Mounting plate : Zinc plated mild steel with black plastic cover plate.  
 Glass : Clear ribbed cylindrical or spherical amber aerated. Retained by three Allen head, knurled clamping screws.

### WPC version

- Top casting : LM6-M aluminium. Finished matt black. For mounting to ceiling surfaces.  
 Lampholder : GL 1085 2 BC.  
 Glass : As for WPW.

### Lamp

60W standard GLS or decorative.



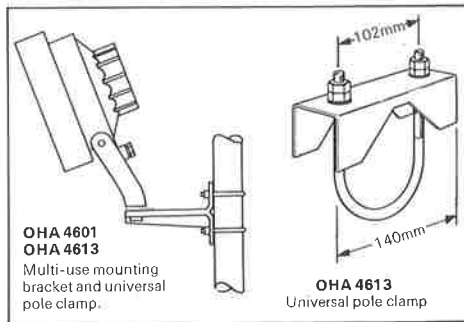
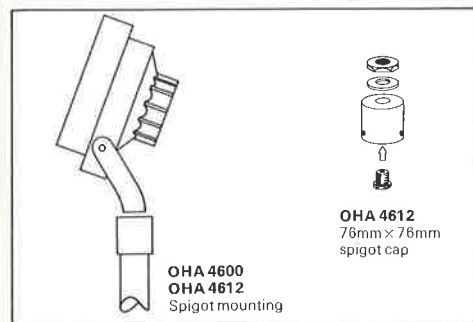
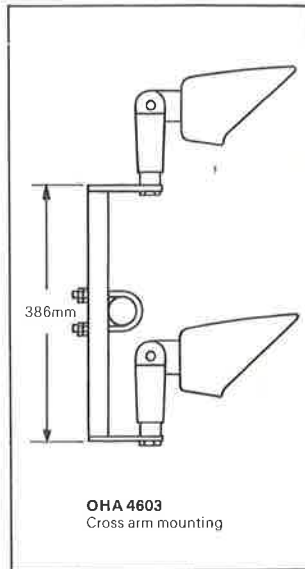
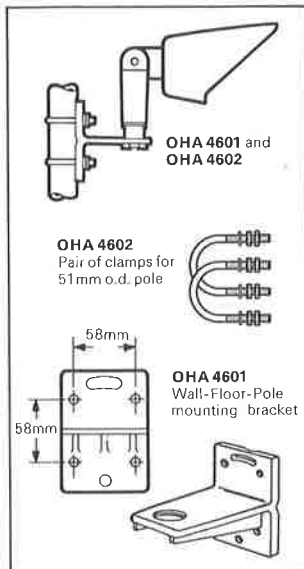
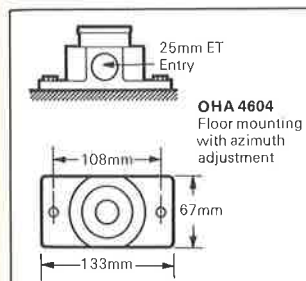
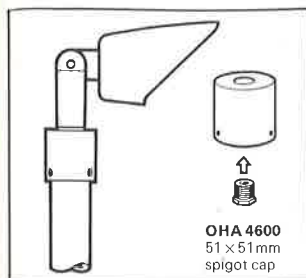
## RANGE

Catalogue no.	Description	Weight kg
WPCA 1060 BC	Under-canopy fitting with amber aerated sphere	1.46
WPCR 1060 BC	Under-canopy fitting with ribbed cylindrical glass	1.46
WPCS 1060 BC	Under-canopy fitting with opal spherical glass	1.46
WPWA 1060 BC	Wall bracket with amber aerated spherical glass	1.58
WPWR 1060 BC	Wall bracket with ribbed cylindrical glass	1.58
WPWS 1060 BC	Wall bracket with opal spherical glass	1.58
<b>Spare glasses</b>		
WPA	Amber aerated spherical	0.9
WPR	Ribbed spherical	0.9
WPS	Opal spherical	0.9

# Floodlight accessories

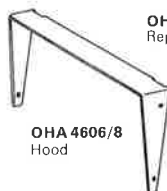
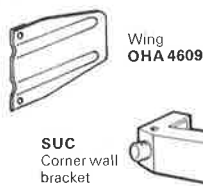
## Mounting accessories

For floodlight mounting brackets used with Thorn aluminium columns see page 174.



## Spares and accessories

Accessories are supplied packed in polythene bags containing necessary fixing screws etc.



**OHA 4614**  
Replacement lampholder contact



For range details see overleaf.

# Floodlight accessories and replacement control gear

## RANGE

Catalogue no.	Description	Weight kg	Sunflood	Sunspot	Haline
OHA 4600	51 mm O/D spigot cap : pole top mounting *	0.24	●	●	●
OHA 4601	Multi-use mounting bracket *	0.34	●	●	●
OHA 4602	Pair 'U' clamps for use with OHA 4601	0.11	●	●	●
OHA 4603	Cross-arm bracket for 51 mm O/D pole †	1.3	●	●	●
OHA 4604	Floor bracket	0.48	●		
OHA 4606	Hood for OHS/OHD 1000 (4 fixing screws)	0.14			●
OHA 4607	Hood for OHS/OHD 1500 (4 fixing screws)	0.15			●
OHA 4608	Hood for OHS/OHD 2000 (4 fixing screws)	0.15			●
OHA 4609	Wing universal for OHS/OHD 1000, 1500 and 2000	0.09			●
OHA 4612	76mm O/D spigot cap : pole top mounting *	0.35		●	●
OHA 4613	Universal pole clamp for 48-89mm O/D poles	0.48		●	●
OHA 4614	Replacement lampholder contact (pair). Cable length suitable for max. 2kW version	0.03			●
SUW 500	Wireguard for SUN 300/500	0.085	●		
SUW 1000	Wireguard for SUN 750/1000	0.11	●		
SUL 500	Replacement lampholder assembly for SUN 500	0.11	●		
SUL 1000	Replacement lampholder assembly for SUN 1000	0.14	●		
SUR 500	Replacement reflector for SUN 500	0.034	●		
SUR 1000	Replacement reflector for SUN 1000	0.06	●		
SUC	Corner wall bracket	0.34	●		

\*Pack includes Hex head steel bush, washer and nut.

†Pack includes 2 bushes, washers, nuts and a pair of OHA 4602 clamps.

## Replacement control gear

### Luminaires requiring remote control gear:

M25 range  
M30 linear sodium floodlight—(for GB gear box)  
MBIL floodlight  
CSI floodlight  
Escort Wellglass

For details of control gear and circuit diagrams, please refer to **Control gear and accessories** section under the appropriate lamp type and wattage.

### Luminaires incorporating control gear

Control gear normally fitted is for 240V 50Hz operation.

**Sonline** (gear normally fitted on OHA 4615/4616/4617 and 4618 gear boxes)

	250W SON	400W SON
Ballast	G 53251.T	G 53230.T
Capacitor	GC 2386	2 × GC 2331
Ignitor	G 53282	G 53282
Circuit diag. no.*	311	311

### Escort fluorescent bulkhead

	2-tube	3-tube
Ballast	2 × GCPX 8	GCPX 8 + GCPX 28
Starter switch	2 × 155/500	155/500 + 155/100
Circuit diag. no.*	10	1 and 10

## Area floodlight

	MBF 250W	MBF 400W	MBIF 250W	MBIF 400W	SON 250W	SON 400W
Ballast	G 53258.4	G 53309.4	G 53256.4	G 53309.4	G 53256.T	G 53259.T
Capacitor	GC 2370	GC 2331	GC 2386	GC 2331	GC 2386	2 × GC 2331
Ignitor	—	—	G 53283	G 53283	G 53282	G 53282
Circuit diag. no.†	301	301	303	303	311	311

\*For circuit diagrams see **Control gear and accessories** section.

# Street lighting numbering system

## 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.

Alpha—Group A lighting, side entry.  
Beta—Group B lighting, side or top entry.

Gamma—Post-top lanterns.

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 the Gamma Six lantern.

Gamma Six base casting with integral 125W 240V gear QG6 B1125,4

Gamma Six 20in. dia. canopy QG6 W

Gamma Six vandal resistant bowl QG6 V

The complete Gamma Six lantern becomes:

QG6 V/W/B1125,4

## 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
- L. Lampholder/bracket assembly—GL, 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
- 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—1×35W
- 1055—1×55W
- 1070—1×70W
- 1080—1×80W
- 1090—1×90W
- 1100—1×100W
- 1125—1×125W
- 1135—1×135W
- 1140—1×140W
- 1200—1×200W
- 1250—1×250W
- 1400—1×400W
- 2240—2×600mm 40W tubes.

Where more than one lamp is available for a fitting, the largest wattage is used for the reference number.

## Suffix Numbers—Control Gear

- 4—240V 50Hz
- H—230/250V tapped
- T—200/250V tapped
- A—ignitor circuit

## 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.

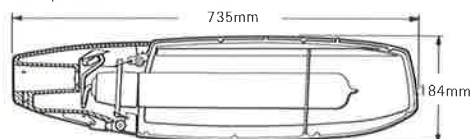
# Alpha One semi-cut-off SOX



# Alpha Five semi-cut-off SLI/H/SOX



QA1 E/D 1090



Overall width 241mm  
Weight 3.85kg  
Windage area 0.119m<sup>2</sup>

## Lamps

One 55W or 90W SOX.

## Distribution

Semi-cut-off DLOR 70%.

## Specification

To BS 1788, Kite marked, DoE and Design Council approved. LM6-M die-cast aluminium alloy end support with injection moulded clear acrylic and hermetically sealed 'opticell' enclosure. Other components are stainless steel or aluminium. Control gear is mounted remote.

## Mounting

Side entry for 42mm dia. x 110mm (1½ in BSP) spigot.  
Recommended mounting height: nominal 6-8m.  
Recommended column: QC8.  
Average spacing/height ratio: 4:1.

## Packages

End support and opticell make complete lantern.  
QA1 E End support assembly.  
QA1 D 1055 55W SOX opticell.  
QA1 D 1090 90W SOX opticell.

## Control gear/circuit data

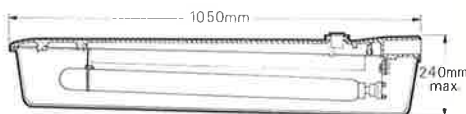
See control gear and accessories section.



QC8, QCB 1125,  
QA1 D 1090,  
QA1 E+gear.



QA5 1200



Overall width 248mm  
Weight 7.00 kg  
Windage area 0.2 m<sup>2</sup>

## Lamps

One 140W or 200W SLI/H, or 135W SOX.

## Distribution

Semi-cut-off DLOR 75%.

## Specification

To BS 1788, Kite marked and DoE approved. LM6-M die-cast aluminium alloy canopy with aluminium reflector. Acrylic bowl has sealed-in refractor plates and control gear is mounted remote.

## Mounting

Side entry for 42mm dia. x 110mm spigot.  
Recommended mounting height: 10-12m.  
Recommended columns: QC10 and QC12.  
Average spacing/height ratio: 4:1.

## Packages

QA5 1200 Complete lantern for 140W or 200W SLI/H or 200W SLI/H HO lamp.  
QA5 1135 Complete lantern for 135W SOX.  
QA5 D 1200 Replacement bowl for QA5 1200.  
QA5 D 1135 Replacement bowl for QA5 1135.

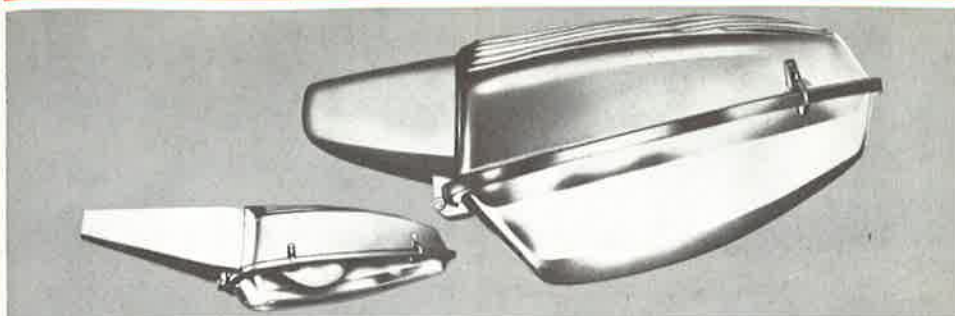
## Control gear/circuit data

See control gear and accessories section.



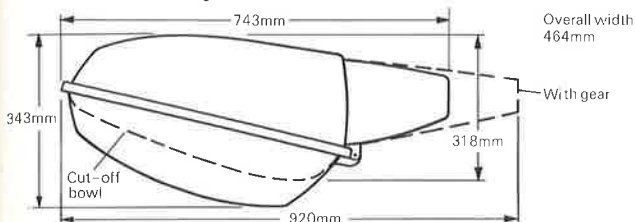
QC10, QCB 1125,  
QA5 1200+gear.





QA3 D/WCB 1400.4

QA3 D/WS 1400

**Remote gear semi-cut-off lantern****Lamps**

One 250W or 400W MBF/SON

**Distribution**

- (a) Cut-off  
(b) Semi-cut-off

**Specification**

To BS 1788. Kite marked, DoE and Design Council approved. Pressed aluminium canopy painted white internally, LM6-M die-cast aluminium alloy end support/gear slipper with porcelain lampholder. Clear UV stabilised acrylic plastic bowls.

**Canopies less gear****Mounting**

Side entry for 42mm dia. x 110mm (1 1/4 in BSP) spigot.  
Recommended mounting height: 8-12m.  
Recommended columns: QC8, QC10 or QC12.  
Average spacing/height ratio: 4.5:1 (SCO) 3:1 (CO)

**Catalogue no.**

All lanterns comprise fully assembled canopy with cover bowls in separate pack. They may be ordered separately.

**Control gear/circuit data**

See control gear and accessories section.



QC10, QCB 1125,  
QA3 WS 1400,  
QA3 DS + gear.

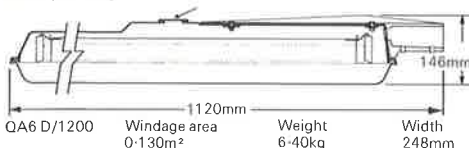
Without photocell		With Nema Photocell Socket	Windage area m <sup>2</sup>	Weight kg (inc. bowl)
QA3 WS 1400	Semi-cut-off canopy for 400W MBF/SON lamp	QA3 WSP 1400	0.170	5.44
QA3 WS 1250	Semi-cut-off canopy for 250W MBF/SON lamp	QA3 WSP 1250	0.170	5.44
QA3 WC 1400	Cut-off canopy for 400W MBF/SON lamp	QA3 WCP 1400	0.162	4.76
QA3 WC 1250	Cut-off canopy for 250W MBF/SON lamp	QA3 WCP 1250	0.162	4.76
<b>Canopies with gear</b>				
QA3 WSB 1400.4	Semi-cut-off 400W MBF 240V	QA3 WSPB 1400.4	0.198	12.56
QA3 WSB 1250.4	Semi-cut-off 250W MBF 240V	QA3 WSPB 1250.4	0.198	11.24
QA3 WSNB 1400.T	Semi-cut-off 400W SON 220/240V	QA3 WSPNB 1400.T	0.198	14.40
QA3 WSNB 1250.T	Semi-cut-off 250W SON 220/240V	QA3 WSPNB 1250.T	0.198	12.70
QA3 WCB 1400.4	Cut-off 400W MBF 240V	QA3 WCPB 1400.4	0.189	11.88
QA3 WCB 1250.4	Cut-off 250W MBF 240V	QA3 WCPB 1250.4	0.189	10.56
QA3 WCNB 1400.T	Cut-off 400W SON 220/240V	QA3 WCPNB 1400.T	0.189	13.72
QA3 WCNB 1250.T	Cut-off 250W SON 220/240V	QA3 WCPNB 1250.T	0.189	12.02
<b>Bowls</b>				
QA3 DS	Bowl for semi-cut-off Alpha 3			
QA3 DC	Bowl for cut-off Alpha 3			

Canopy and bowl make complete lantern.

## Alpha Six cut-off SLI/H



QA6 D/B 1140.4



### Data for lanterns with integral gear

Length	Windage area	Weight	13-58kg	140W
1410 mm	0.176m <sup>2</sup>		18-26kg	200W

### Lamps

One 140W or 200W SLI/H.

### Distribution

Cut-off DLOR 65% 140W,  
77% 200W.

### Specification

To BS 1788, Kite marked, DoE and Design Council approved, GRP canopy with UV stabilised acrylic bowl and LM6-M aluminium alloy end supports.

### Mounting

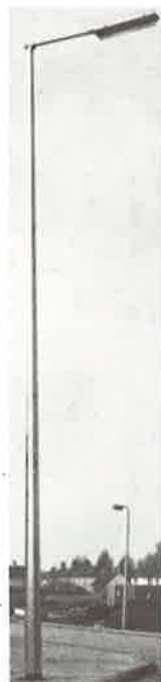
Side entry for 42 × 110mm spigot.  
Recommended mounting height :  
10-12m  
Recommended columns : QC10 or QC12.  
Recommended spacing approx. 3:1.

### Packages

Canopy/end support and separate bowl make complete lantern.  
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 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 D Bowl assembly.  
For lanterns with 3-pin photocell socket, add P after 6 in catalogue nos.  
Also available to special order with four-pin photocell sockets and cross-wiring facility.

### Control gear/circuit data

See control gear and accessories section.

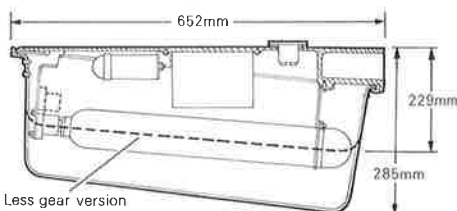


QC10, QCB 1125,  
QA6 1200, QA6 D+ gear.

## Alpha Nine semi-cut-off SOX



QA9 D/W 1090



Windage area	Less gear 0.126m <sup>2</sup>	With gear 0.147m <sup>2</sup>	Overall width 296mm
Weight	3.96kg	10.43 kg	

### Lamp

One 90W SOX.

### Distribution

Semi-cut-off DLOR 60%.

### Specification

To BS 1788, Kite marked and DoE approved, LM6-M aluminium alloy canopy and UV stabilised acrylic bowl. Vandal-resistant bowl is also available.

### Mounting

Side entry for 42 × 100mm spigot.  
Recommended mounting height  
8-10m.  
Recommended columns : QC8 or QC10.  
Average spacing/height ratio : 4:5:1.

### Packages

Canopy assembly and separate complete lantern.  
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/circuit data

See control gear and accessories section.

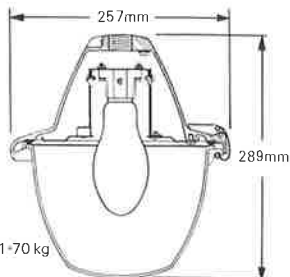


QC8, QCB 1125,  
QA9 W 1090, QA9 D+ gear.

# Beta Four top entry GLS/MBF/SON



QB4 V/1200/E27



Windage area  
0.047 m<sup>2</sup>

Weights  
enclosed lantern 1.70 kg

## Lamps

- a) Up to 200W GLS
- b) One 80W or 125W MBF
- c) One 70W SON

## Specification

LM6—M aluminium alloy canopy and UV stabilised polycarbonate refractor bowl. Control gear for MBF and SON lamps mounted remote.

## Mounting

Top entry for  $\frac{3}{4}$  in BSP thread  $\times$  18mm. Recommended mounting height: 5m.

Recommended column: QC3 with QCBT 126 bracket.

Average spacing/height ratio: 6:1.

## Packages

Canopy, bowl and lampholder make complete lantern.

QB4 1200 Canopy assembly  
QB4 V Polycarbonate refractor bowl.

GL 1085 Lampholder (2BC-B22).

GL 1086 Lampholder (3BC-B22-3).

GL 1087 Lampholder (ES-E27).

GL 1194-1 Lampholder (ES for 70W SON)

## Control gear/circuit data

See control gear and accessories section

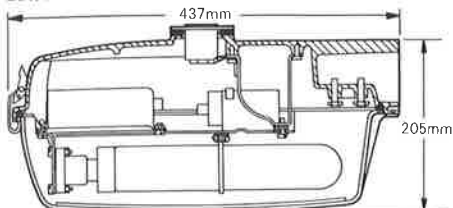


QC3, QCBT 226,  
QB4 1200, QB4 V +  
lampholder + gear.

# Beta Five SOX



QB5/D 1 in B 1035.4A



## Lamp

One 35W SOX

Overall width: 160mm  
Weight: 7.64kg  
Windage area: 0.070m<sup>2</sup>

## Specification

To BS 1788. Pressure die-cast LM6—M aluminium alloy canopy/gear housing and injection moulded acrylic or vandal-resistant polycarbonate bowl. Gear can be mounted remote.

Note: 'With gear' lanterns complete with low loss ignitor circuit.

## Mounting

Side entry for 34mm dia.  $\times$  80mm spigot.

Top entry for  $\frac{3}{4}$  in BSP threaded. Also available to order 27mm side entry and 1 in BSP top entry.

Recommended mounting height: 5m.

Recommended column: QC3 with QCBS 534 bracket.

Average spacing/height ratio: 6:1.

## Packages

Canopy and separate bowl make complete lantern.

QB5 1 in 1035—1 in BSP (34mm) side entry canopy (less gear).

QB5 1 in B 1035.4A—1 in BSP (34mm) side entry canopy (with gear).

QB5 T  $\frac{3}{4}$  in B 1035.4A— $\frac{3}{4}$  in BSP threaded top entry canopy (with gear).

QB5 D—Acrylic bowl.

QB5 V—Vandal-resistant bowl. For lanterns with 3-pin photocell socket, add P after 1 in or  $\frac{3}{4}$  in catalogue no.

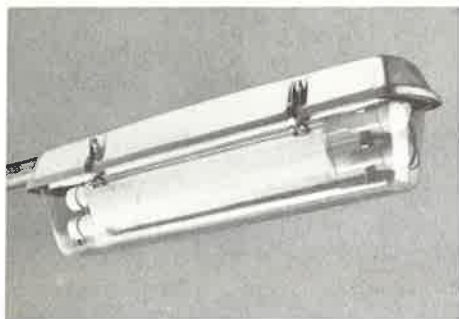
## Control gear/circuit data

See control gear and accessories section.

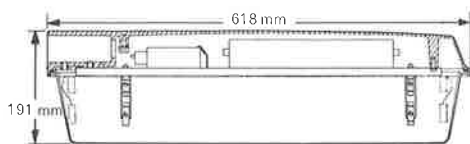


QC3, QCBS 534,  
QB5 1 in B 1035.4A,  
QB5 V.

## Beta Six side entry fluorescent



QB6 D/B 2240,4



Overall width : 171 mm  
Weight : 6.58 kg  
Windage area : 0.128 m<sup>2</sup>

### Lamps

Two 40W 600mm MCFA/U metal strip tubes 240V 50Hz.

### Specification

LM6-M aluminium alloy canopy housing control gear on white enamelled sheet steel tray. Acrylic bowl with internal refractor plates. Vandal-resistant version also available.

### Mounting

Side entry for 42mm dia. x 100mm spigot.  
Recommended mounting height : 5m  
Recommended column : QC3 with QCBS 542 bracket.  
Average spacing/height ratio : 6:1.

### Packages

Canopy and separate bowl make complete lantern.  
QB6 B 2240.4 Canopy with gear and gear tray.  
QB6 D Acrylic bowl.  
QB6 V Vandal-resistant bowl.

### Control gear/circuit data

Replacement ballast GCBO 2240  
Replacement capacitor GC 2222.  
See control gear and accessories section.

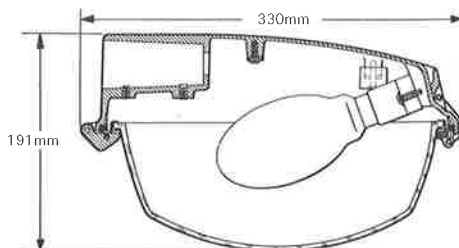


QB6 B 2240.4,  
QB6 D,  
QC3, QCBS 442.

## Beta Seven side entry MBF/SON



QB7 G/1125 E27



Overall width : 270mm  
Windage area : 0.047 m<sup>2</sup>  
Weights  
with glass bowl : 3.74 kg  
with vandal-resistant bowl : 2.15 kg

### Lamps

One 80W or 125W MBF, or 70W SON (with GL 1194-1 lampholder).

### Specification

To BS 1788, LM6-M aluminium alloy canopy, and glass or CAB vandal-resistant plastic bowl. Control gear is mounted remote.

### Mounting

Side entry for 34mm dia. x 86mm spigot.  
Recommended mounting height : 5m  
Recommended column : QC3 with QCBS 534 bracket.  
Average spacing/height ratio : 6:1.

### Packages

Body and separate bowl make complete lantern.  
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/circuit data

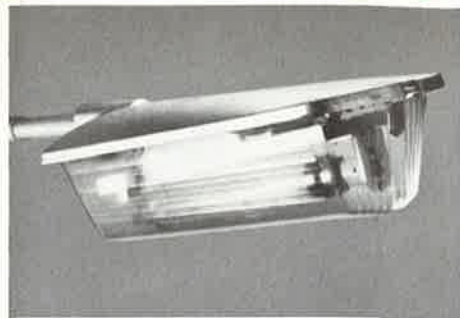
See control gear and accessories section.



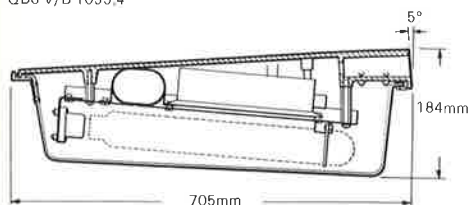
QC3, QCBS 534,  
QB7 1125 E27,  
QB7 G + gear.

## Beta Eight side entry SOX

## Beta Seventy-Nine side entry MBF/SON



QB8 V/B 1055.4



Width : 242mm  
Windage area : 0.086 m<sup>2</sup>

Weights  
less gear : 4.08 kg  
with gear : 8.49 kg

### Lamp

One 55W SOX

### Specification

To BS 1788. LM6-M aluminium alloy canopy with UV stabilised acrylic bowl with internal refractor plates. Vandal-resistant version is also available.

### Mounting

Side entry for 34mm dia. × 80mm spigot.

Recommended mounting height : 5m

Recommended column : QC3 with QCBS 534 bracket.

### Packages

Canopy and separate bowl make complete lantern.

QB8 1055 Canopy assembly (less gear).

QB8 B1055.4 Canopy assembly (with gear).

QB8 D Acrylic bowl.

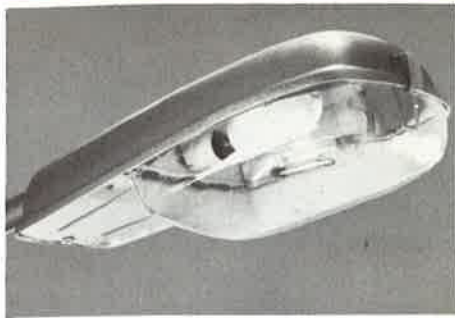
QB8 V Vandal-resistant bowl.

### Control gear/circuit data

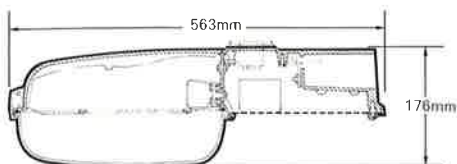
See control gear and accessories section.



QC3, QCBS 534,  
QB8 B1055.4, QB8 D.



QB79 V/WB 1125.T



Width : 242 mm  
Windage area : 0.075m<sup>2</sup>

Weights  
less gear : 5.9kg.  
with gear : 4.4kg.

### Lamps

One 80W or 125W MBF, or 70W SON.

### Specification

To BS 1788. Pressure die-cast LM6-M aluminium alloy canopy and injection moulded polycarbonate bowl. Control gear integral or remote.

### Mounting

Side entry for 48mm dia. × 110mm. A reducer (cat. no. QB79 E34) is available for 34mm brackets.

### Packages

Body and separate bowl make complete lantern.

QB79 WB 1080.4 Body and gear for 80W MBF 240V.

QB79 WB 1125.T Body and gear for 125W MBF.

QB79 WNB 1070.T Body and gear for 70W SON.

QB79 W 1200 Body without gear for use with remote gear (not SON).

QB79 V Polycarbonate vandal-resistant bowl.

For lanterns supplied with photocell socket add P after W in catalogue no. All supplied complete with ES lampholder.

### Control gear/circuit data

See control gear and accessories section.



QB79 WB 1125.T,  
QB79 V, QB79 E34,  
QC3, QCBS 534.



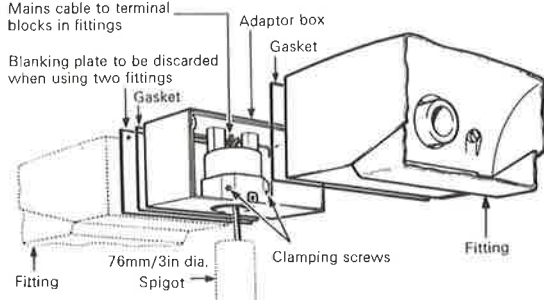
# Precinct MBF/SON



## Pole mounting

Mains cable to terminal blocks in fittings

Blanking plate to be discarded when using two fittings



## Wall mounting

Knock-out in back of gear box (not shown)

Three wall fixing holes (only one shown)

Capacitor

Capacitor clip

Lampholder tray

Hinge down lampholder tray in direction of arrow

Diffuser

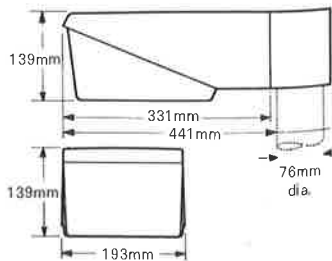
Canopy

Gear box

Gear box fixing screws

Allen screw

## Dimensions



## Lamps

One 80W or 125W MBF, or 70W SON.

## Specification

Wall mounted bulkhead fitting with adaptor box for column mounting either singly or in pairs. Pressure die-cast LM6-M aluminium canopy with integral cast reflector housing separate gear tray with 240V gear and ES lampholder. Diffuser is opal polycarbonate.

## Pole mounting adaptor

For one or two fittings as shown in diagram. Blanking-off plate used only when one fitting is installed. Recommended mounting height: 3-6m. Recommended column: QC4 with QCS 76 spigot and OCA 1/2.

## RANGE: Packed complete with lamp

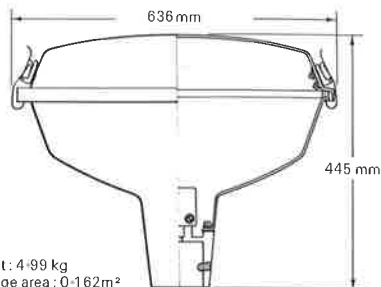
PARTS LIST - Packed Complete with Lamp				
Catalogue no.	Description	Windage Area (m <sup>2</sup> )	Weight kg	Cap
OC 1080.4	80W MBF Precinct c/w gear	0.064	4.1	ES
OC 1125.4	125W MBF Precinct c/w gear	0.064	4.8	ES
OC 1070.T	70W SON Precinct c/w gear	0.064	4.9	ES
Catalogue no.	Description		Weight kg	
OCA 1/2	Adaptor mounting		1.59	
OCV	Spare vandal-resistant bowl		0.23	
GL 1113	Spare lampholder (SON uses GL 1194-1)		0.11	



## Gamma Three MBF/SON



QG3 1400



Weight: 4.99 kg  
Windage area: 0.162m<sup>2</sup>

### Lamps

- a) One 250W or 400W MBF.
- b) One 250W or 400W SON.

### Specification

Design Council approved. LM6—M aluminium alloy base, stove enamelled spun aluminium canopy and opal acrylic bowl with stainless steel toggle catches. Control gear mounted remote.

### Mounting

Post top mounting for 76 × 76mm spigot.  
Recommended mounting height: 5–8m.

### Catalogue no.

Complete lantern in one pack  
QG3 1400.

### Replacement packages

QG3 O Opal bowl.  
QG3 F Canopy assembly.

### Control gear/circuit data

See See control gear and accessories section.

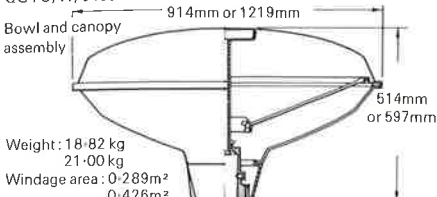


QC8 76,  
QG3 1400 + gear.

## Gamma Four multi-lamp



QG4 O/W/3400



Weight: 18.82 kg  
21.00 kg  
Windage area: 0.289m<sup>2</sup>  
0.426m<sup>2</sup>

### Lamps

- a) Two or three 250W or 400W MBF.
- b) Two or three 250W or 400W SON.
- c) Two or three 400W MBIF.

### Distribution

Symmetrical.

### Specification

Design Council approved. Two widths of sheet aluminium canopy attached by stem to base casting assembly. Acrylic bowl. Control gear mounted remote.

### Mounting

Post top mounting for 76 × 130mm spigot.

Recommended mounting height: 8m or 10m for 900mm lantern; 10m or 12m for 1200mm lantern. Recommended columns QC8 G4 for 900mm version only; or QC10 G4 or QC12 G4 for 1200mm version. Max. column diameter 113mm for a distance of 300mm below spigot. Provide column with three radial pegs at this point.

### Packages for 900mm fittings

Three required for complete lantern.  
QG4 3400 Stem assembly (3 lamps)  
QG4 F Canopy assembly (900mm)  
QG4 O 36 Opal bowl (900mm).

### Packages for 1200mm fittings

Three required for complete lantern.  
QG4 W3400 Stem assembly for 3—250/400W MBF/U,  
250/400W SON and 400W MBIF.  
QG4 O Opal bowl (1200mm).  
QG4 W Canopy assembly (1200mm).

### Control gear/circuit data

See control gear and accessories section.

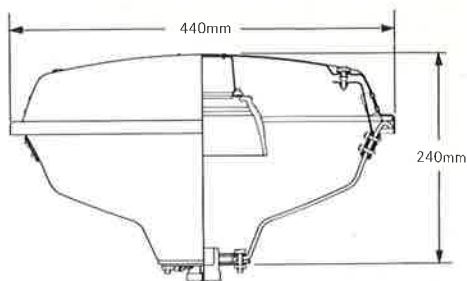


QC10 G4,  
QG4 W 3400,  
QG4 O, QG4 W + gear.

# Gamma Five GLS/MBF/SOX/SON



QG5 O/1200 / E27 with QCX adaptor.



Weight: QG5 J/ D/Y 1200/B22 = 2.49Kg  
QG5 O/1200/B22 = 1.93Kg

Windage area: 0.081m<sup>2</sup>

## Lamps

- a) One 100W or 200W GLS.
- b) One 80W or 125W MBF.
- c) One 35W SOX.
- d) One 70W SON.

## Distribution

- a) Asymmetrical.
- b) Symmetrical.

## Specification

Design Council approved. Acrylic enamelled spun aluminium canopy with acrylic or vandal-resistant bowl and optional glass refractor. Control gear for discharge lamps mounted remote.

## Mounting

On QC3 (or other Thorn Group B column) with QCX adaptor.  
Recommended mounting height: 5m.

## Packages

Body assembly, lampholder and support casting, plus refractor if required make complete lantern.  
QG5 JD 1200 Body, lampholder support and clear acrylic bowl.  
QG5 JV 1200 Body, lampholder support, and clear vandal bowl.  
QG5 O 1200 Body, lampholder support and opal acrylic bowl.  
QG5 O 1035 Body, lampholder and opal acrylic bowl – for 35W SOX.  
QX Symmetric refractor.  
QY Asymmetric refractor.  
QG5 E3 x 3 Support casting for 76mm x 76mm spigot.  
QCX Support casting for Thorn column.  
GL 1086 Lampholder 3BC (B22-3).  
GL 1085 Lampholder 2BC (B22).  
GL 1087 Lampholder ES (E27).  
GL 1194-1 Lampholder (ES for 70W SON).

## Replacements

QG5 D Clear acrylic bowl.  
QG5 O Opal acrylic bowl.  
QG5 V Clear vandal-resistant bowl.  
QG5 J 1200 Canopy.

## Control gear/circuit data

See control gear and accessories section.



QC3, QCX,  
QG5 O 1200 +  
lampholder + gear.

# Gamma Six GLS/MBF/SOX/SON



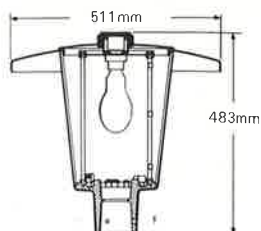
QG6 0/F/1200



QG6 V/W/B1080.4



Weight: 6.79kg  
Windage area: 0.104m<sup>2</sup>



Weight: 3.52kg  
Windage area: 0.105m<sup>2</sup>

## Catalogue number combinations for complete lanterns



### BASE CASTING ASSEMBLY

**QG6 1200**  
Post-top base casting assembly  
Less gear



**QG6 B 1125.4**  
Post-top base casting assembly  
125W MBF geared.

**QG6 B 1080.4**  
Post-top base casting assembly  
80W MBF geared.

**QG6 B 1035.4A**  
Post-top base casting assembly  
35W SOX geared.

**QG6 NB 1070.T**  
Post-top base casting assembly  
70W SON geared.

### CANOPIES, BOWLS



**QG6 W**  
20in dia canopy



**QG6 F**  
10.5in dia canopy



**QG6 O**  
Acrylic bowl



**QG6 V**  
Vandal-resistant bowl

### ACCESSORIES



**GL1085**  
2BC lampholder

**GL1086**  
3BC lampholder

**GL1087**  
ES lampholder

**GL1194-1**  
ES lampholder for 70W SON.



**QP1**  
Twist and lock photocell socket

## Lamps

- a) One 100W, 150W or 200W GLS.
- b) One 160W MBTF.
- c) One 80W or 125W MBF.
- d) One 35W SOX.
- e) One 70W SON.

## Specification

LM6-M aluminium alloy base castings and spun aluminium alloy canopies with injection moulded opal acrylic or polycarbonate bowls. Control gear for 'with gear' lanterns mounted in base casting.

## Mounting

Post top mounting for 76 x 76mm spigot.

Recommended mounting height: 5m.

Recommended columns: QC3 with QCS 76 spigot.

## Packages and spares

QG6 1200 Base casting assembly (less gear).

QG6 B 1035.4A Base casting assembly with 35W SOX gear and 2 BC lampholder.

QG6 B 1080.4 Base casting assembly with 80W MBF gear and ES lampholder.

QG6 B 1125.4 Base casting assembly with 125W MBF gear and ES lampholder.

QG6 NB 1070.T Base casting assembly with 70W SON gear and ES lampholder.

QG6 O Bowl (acrylic).

QG6 V Bowl (polycarbonate).

QG6 W Large canopy.

QG6 F Small canopy.

GL 1085 Lampholder (2BC-B22).

GL 1086 Lampholder (3BC-B22-3).

GL 1087 Lampholder (ES-E27).

GL 1194-1 Lampholder (ES for 70W SON).

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.

## Control gear/circuit data

See control gear and accessories section.



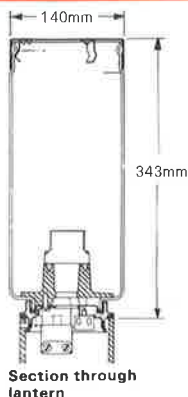
QC3, QCS 76,  
QG6 B 1125.4,  
QG6 W, QG6 V.

# Gamma Seven GLS/MBF/SON

# Gamma Eight GLS/MBF/SOX/SON



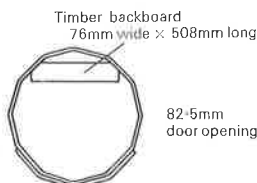
QG7 1100



Section through lantern

## Cross-section through base compartment of QCG7

Door opening length 457mm  
Depth in ground 610mm  
Cable entry 100mm x 50mm situated 305mm below ground level



## Lamps

- One 100W GLS tungsten.
- One 80W MBF.
- One 70W SON.

## Specification

Design Council approved, LM6-M aluminium alloy base casting and acrylic bowl with spun aluminium top cap. Control gear for discharge lamps mounted remote.

## Mounting

- Pole top on QCG7 column specially designed for this lantern. Nominal column height 5m.
- Wall bracket QPRK 1100.

## Catalogue no. Complete lanterns

Unit comprises lantern with separate lampholder. QG7 1100.

Lampholders: GL 1085 - 2BC  
GL 1086 - 3BC  
GL 1087 - ES  
GL 1194-1-for 70W SON

## Replacements

QG7 O Spare bowl.  
QG7 F Spare top cap.

## Control gear/circuit data

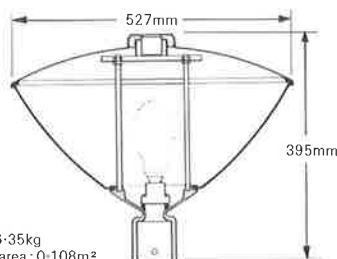
See control gear and accessories section.



QG7 1100 lantern and lampholder on QCG7 column



QG8 76 O/1200 E27



Weight: 6.35kg  
Windage area: 0.108m<sup>2</sup>

## Lamps

- Up to 200W GLS.
- One 80W or 125W MBF/U
- One 35W SOX.
- One 70W SON.

## Specification

Internally white spun aluminium alloy canopy with acrylic or vandal-resistant bowl and LM6-M aluminium alloy base casting. Control gear for discharge lamps mounted remote. Patented top cap accepts one-piece photocell. Recommended mounting height: 5m.

## Catalogue no. Complete lanterns

QG8 76 O 1200 Lantern (less lampholder) with 76mm dia. x 76mm spigot cap and opal bowl.

## Lampholders:

GL 1085 - 2BC	QG8 L 1035 -
GL 1086 - 3BC	for 35W SOX.
GL 1087 - ES	QG8 LB 1035.4A
GL 1194-1 - ES	- assembly/w
for 70W SON.	35W SOX gear.

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.

## Control gear/circuit data

See control gear and accessories section.



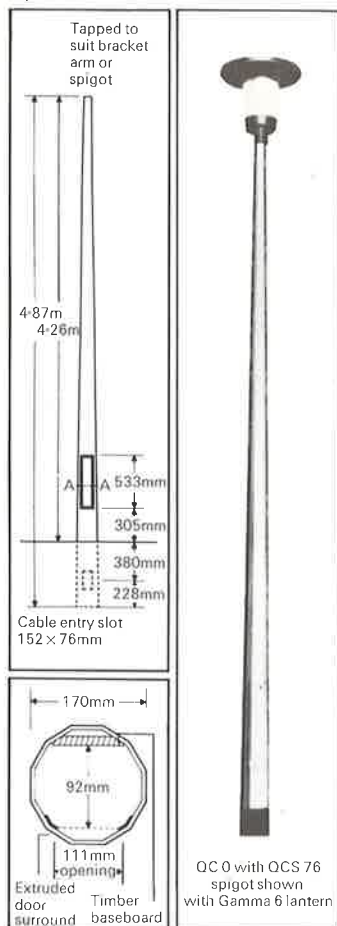
QC3, QCS 76, QG8 76 O 1200 - gear lampholder - gear

# Leader and Lucerna aluminium columns

## LUCERNA COLUMN QC 0

Twelve-sided section in NS4 aluminium alloy. Control gear mounted on timber baseboard in base compartment.

BS 3989: 1966



Section A-A

### Catalogue number

QC 0 Column with tapped top casting for use with bracket or spigot

For surface mounting versions to special order add suffix "FP".

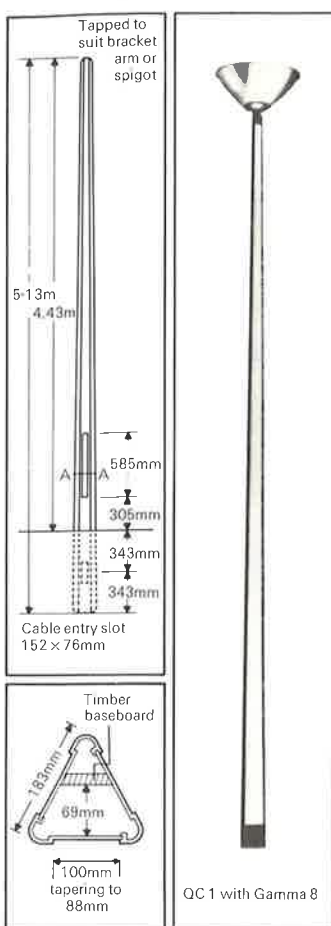
### Data

Weight	14.6kg
Base compartment nominal dimensions	
Door opening	533 x 111mm
Depth	92mm
Baseboard dimensions	623 x 114mm

See page 175 for spigots and brackets.

## LEADER COLUMN QC 1

Triangular section in HE9-P aluminium alloy and cast LM6-M aluminium alloy spigot. Control gear mounted on timber baseboard in base compartment.



Section A-A

### Catalogue number

QC 1 Column with tapped top casting for use with bracket or spigot

### Data

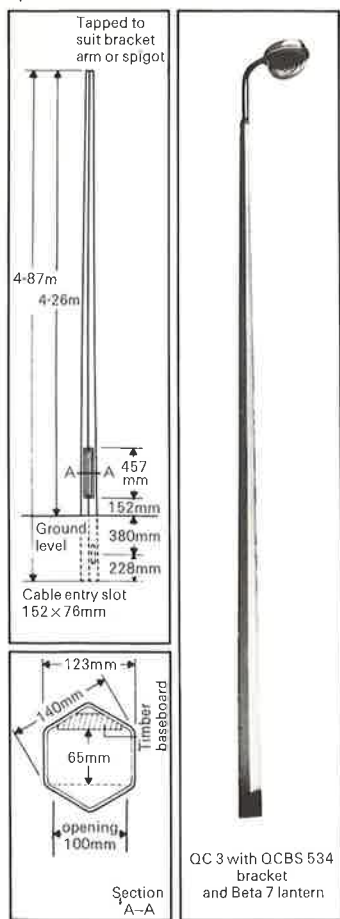
Weight	13.6kg
Base compartment nominal dimensions	
Door opening	585 x 88mm minimum
Depth	69mm
Baseboard dimensions	609 x 67mm

# Classic and Sheerline aluminium columns

## SHEERLINE COLUMN QC 3

Hexagonal section in aluminium alloy NS4. Control gear mounted on timber baseboard in base compartment.

BS 3989:1966



### Catalogue number

QC 3 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

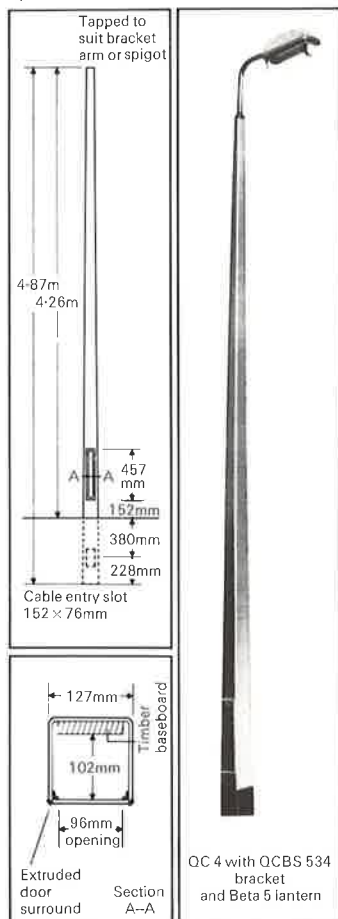
Weight	13.2kg
Base compartment nominal dimensions	
Door opening	457 × 100mm
Depth	65mm
Baseboard dimensions	623 × 89mm

See page 175 for spigots and brackets.

## CLASSIC COLUMN QC 4

Square section in aluminium alloy NS4. Control gear mounted on timber baseboard in base compartment.

BS 3989:1966



### Catalogue number

QC 4 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 × 96mm
Depth	102mm
Baseboard dimensions	623 × 114mm



# Group A aluminium lighting columns

## Introduction

8, 10 and 12m versions with a range of single and double outreach arm brackets for streetlighting lanterns, and a number of standard mountings for floodlights.

- Low weight for simplified erection and increased safety.
- No maintenance required.
- Approved by the DoE.
- Approved by the Design Council.
- Designed to BS 3989.



## 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 x 152mm

Door opening : 610mm x 130mm.

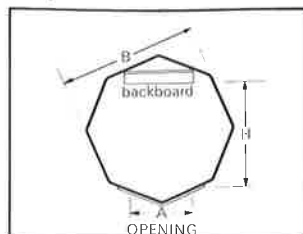
Earth connection : Stainless steel.

Column Section : Octagonal.

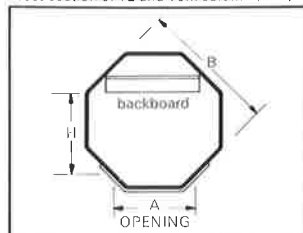
Spare Door Key : Catalogue no. QCK.

Bracket arms are supplied with spigot to suit lantern. Please give full catalogue number of lantern to be fitted when ordering brackets.

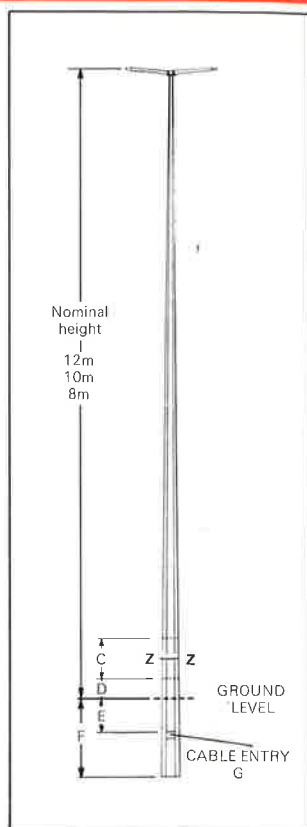
8, 10 and 12m columns are delivered direct to site within mainland UK. Please give full delivery address with order.



Cross section of 12 and 10m column (Z-Z)



Cross section of 8m column (Z-Z)



## Column dimensions (mm)

Catalogue No.	Nominal height	A	B	C	D	E	F	G	H
QC 12	12 metre	136	305	610	457	305	1500	152 x 76	230
QC 10	10 metre	136	249	610	457	305	1500	152 x 76	173
QC 8	8 metre	128	219	610	457	305	1219	152 x 76	130

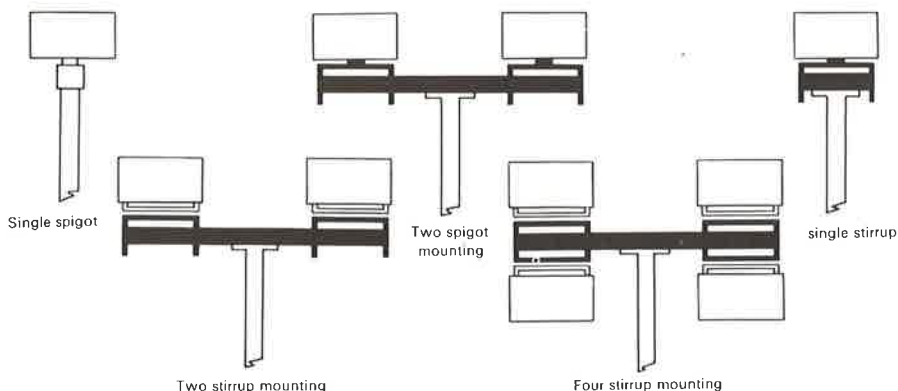
## RANGE

Streetlighting bracket arms Suitable for use where marked •






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	•	•	•

# Floodlighting brackets for 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— (a) 76 × 76mm (b) 152 × 76mm	1	Sunflood/Sunspot Area flood	OHA 4612 —	•	•	•
Above two catalogue nos. for specification purposes only; column will be supplied with fixing arrangement as one complete unit. For those listed below, the bracket fixes to the standard streetlighting shaft.							
	Two spigot mounting luminaires	2	Area flood	—	•	•	•
	Single stirrup mounted luminaire— platform mounting to stirrup	1	Haline	—	•	•	•
		1	Area flood	OAE	•	•	•
		1	ON 1600 flood	—	•	•	•
		1	M25 J	—	•	•	•
	Two stirrup mounted luminaires— platform mounting to stirrup	2	Haline	—	•	•	•
		2	Area flood	2 × OAE	•	•	•
		2	ON 1600 flood	—	•	•	•
		2	M25 J	—	•	•	•
	Four stirrup mounted luminaires— platform mounting to stirrup	4	Haline	—	•	•	•

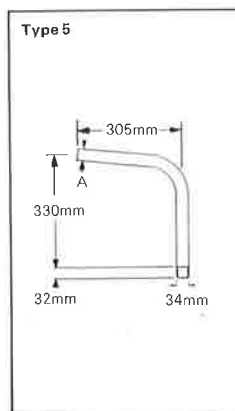
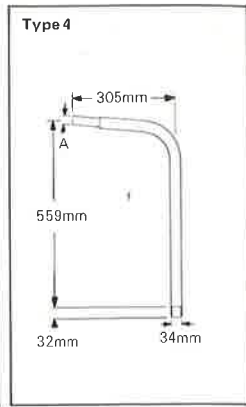
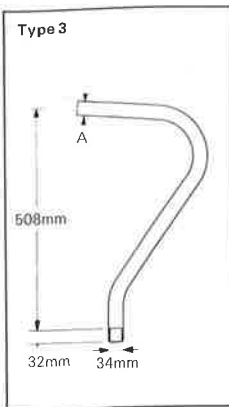
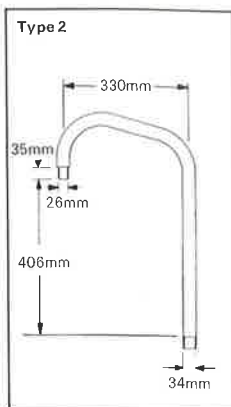
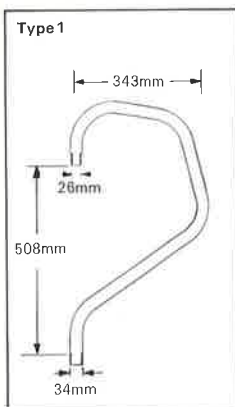
Special brackets are available to order for mounting up to eight Sunfloods.  
Adaptors for other floodlights not listed in the range table can be supplied to order.

\*When specifying columns for use with the floodlight arrangements listed both column and fixing references should be given, eg. QF 4 with 12 metre column—thus QC 12/F4.

†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 for Group B columns

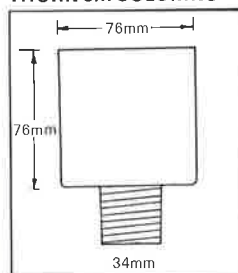
## BRACKETS FOR USE WITH THORN 5m COLUMNS



Type	Catalogue no.	Dimension A
1	QCBT 126	Threaded 28mm (3/4 in BSP)
2	QCBT 226	Threaded 26mm (3/4 in BSP)
3	QCBS 326	26mm
3	QCBS 334	34mm
3	QCBS 342	42mm
4	QCBS 426	26mm
4	QCBS 434	34mm
4	QCBS 442	42mm
5	QCBS 526	26mm
5	QCBS 534	34mm
5	QCBS 542	42mm

Note: Brackets are supplied threaded 34mm (1 in BSP) to screw into the standard column top of the following Thorn 5m aluminium columns: QC 0, QC 1, QC 3 and QC 4. Brackets can also be supplied to special order with a spigot cap to convert columns fitted with 3in x 3in spigots into bracket arm types. When ordering please quote suffix (e.g. QCBS 334/SC).

## SPIGOT CASTING FOR USE WITH THORN 5m COLUMNS



Catalogue no. QCS 76

Note: Spigot castings are threaded 34mm (1 in BSP) to screw into the standard column top when required for post-top lantern mounting.

## SPARE DOORS AND KEYS FOR THORN 5m ALUMINIUM COLUMNS

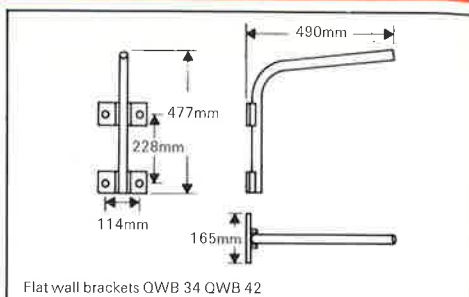
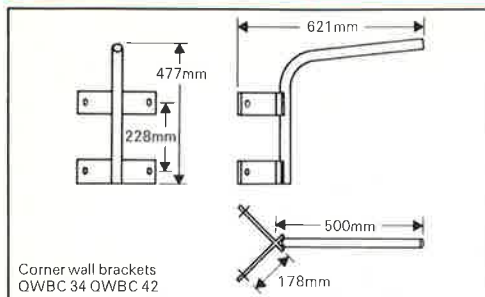
### Doors

Catalogue no.	Description
QCD 0	Door for QC 0
QCD 1	Door for QC 1
QCD 3	Door for QC 3
QCD 4	Door for QC 4

### Keys

Catalogue no.	Description
QCK	Spare keys
QCK LF	Spare keys for QC 0 and QC 4 only

# Aluminium wall brackets and boxes



## Wall brackets

In HT9 aluminium alloy tube for flat wall or corner mounting. For 34mm or 42mm side entry lanterns.

## 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.

## Outdoor Lighting Box

Material – aluminium alloy NS4

Brackets – HE9-P extruded tube, outreach 304mm

Backboard – timber 610 × 89mm

Lock – Dzus type

Base Compartment – 533 × 102 × 99mm deep

Weight – 5kg

## RANGE

Catalogue No.	BSP		Entry
QWGB 26	$\frac{3}{4}$ in	26mm $\phi$	Top
QWGB 34	1in	34mm $\phi$	Side
QWGB 42	$1\frac{1}{4}$ in	42mm $\phi$	Side



## Control gear and accessories

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# Fluorescent tube circuit installation notes

## 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 **Supply cables:** 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. Details of circuit currents can be found under electrical data in the **Fluorescent tubes** section of this catalogue. Overheating of standard PVC cables will occur if they are allowed to touch the surface of chokes, i.e. only cool-wiring ways or suitably protected cables should be used for through wire over or alongside control gear. When using low power factor or series capacitor circuits with MI cables, the advice of the cable manufacturer should be sought on voltage to earth protection.
- 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. When using standard domestic type fuses a single 3 amp fuse (GT 1299) should be used to protect up to four tubeways for all tube values except 4-tube 100/125W and 80W circuits, which require a 5 amp fuse (GT 1268).

- 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 1.7 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.*

- 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 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.
- 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. Alternatively, certain non-Thorn units are suitable for modification and your regional Thorn office will be pleased to advise you. Details of dimmers and dimming circuits can be found within the **Theatre and studio lighting** section of this catalogue.

For more detailed information on installation and maintenance of fluorescent lighting equipment see the Thorn Technical Pocket-book.

# Fluorescent tube control gear (240V, 50Hz supply)

Tube		Circuit		Ballast/Choke					Shape/Size (see pages 184/185 Choke/ballast dimensions)	
Length mm	Watts	Type	Diagram no. (see pages 182/183)	Cat. no.	Weight kg	Terminals	t <sub>w</sub> °C	Δt °C		
2400	125 or 100	SS	2	GCU 100/125*	1.25	Push-in-wire	120	70	A/a	
2400	125 or 100	SS	13	GCBS 125 (i)	2.6	Screw	105	55	B/a	
2400	125	QS	174	GBQI 125*	3.4	Screw	105	65	C/a	
2400	85	QS	183	GBQI 85	2.2	Screw (ii)	105	45	C/b	
2400	85	QS	239	GCOU 85	1.3	Push-in-wire	105	50	F/c	
1800	85	SS	13	GCBS 685 (i)	2.4	Screw	105	60	B/b	
1800	75†	SS	244 (lead)	GCU 65*	1.2	Push-in-wire	120	60	A/b	
1800	75†	SS	244 (lag)	GCU 75	1.25	Push-in-wire	120	65	A/a	
1800	75†	SRS	252	GBU 675	1.7	Push-in-wire	120	65	D/a	
1500	65	SS	1	GCU 65*	1.1	Push-in-wire	120	60	A/b	
1500	65	SS	13	GCBS 65 (i)	1.8	Screw	105	50	B/c	
1500	65	SRS	252	GBU 65*	1.72	Push-in-wire	120	65	D/a	
1500	65	SRS	16	GCBR 65	2.95	Screw	105	55	E/a	
1500	50†	SRS	18	GBJ 50	1.0	Screw	120	70	H/a	
1200, 1050 or 525 × 120 U-tube	40	SS	1	GCU 40*	0.9	Push-in-wire	120	55	G/a	
		SS	13	GCBS 40 (i)	1.1	Screw	120	55	B/d	
		SS	1	GCU 40	0.9	Screw	105	55	J/b	
		SRS	7	GBU 40*	1.3	Push-in-wire	105	50	D/b	
		SRS	16	GCBR 40*	1.8	Screw	105	50	E/a	
900	30	SS	1	GCU 30*	0.91	Push-in-wire	120	50	F/a	
900	30	SS	1	GCU 30*	0.81	Screw	105	55	J/a	
900	30	QS	219	GCBO 30*	1.6	Screw	105	50	C/c	
2 × 600	2 × 40†	Twin SS	10	GCI 2240	1.9	Screw	105	65	E/b	
2 × 600	2 × 40†	Twin QS	11	GCI 2240	1.9	Screw	105	65	E/b	
2 × 600	2 × 40†	Twin SS	15	GCBS 685 (i)	2.1	Screw	105	65	B/b	
2 × 600	2 × 40†	Twin QS	12	GCBO 2240	2.7	Screw	105	65	E/a	
600	40†	SS	1	GCI 240	1.9	Screw	105	65	E/b	
600	40†	QS	8	GCI 240	1.9	Screw	105	65	E/b	
2 × 600	2 × 20	Twin SS	15	GCBS 40 (i)	1.1	Screw	120	55	B/d	
2 × 600	2 × 20	Twin SS	10	GCU 40*	0.9	Push-in-wire	120	55	G/a	
2 × 600	2 × 20	Twin QS	11	GCU 40*	0.9	Push-in-wire	120	55	G/a	
2 × 600	2 × 20	Twin QS	12	GCBO 220*	1.2	Screw	105	55	C/d	
2 × 450	2 × 15	Twin SS	10	GCU 30*	0.9	Push-in-wire	120	50	F/a	
2 × 450	2 × 15	Twin QS	11	GCU 30*	0.9	Push-in-wire	120	50	F/a	
600	20	SS	17	GCBS 20*	1.02	Screw	120	50	B/e	
450	15									
600	20	SS	1	GCU 20*	0.9	Push-in-wire	120	50	F/b	
450	15									
600	20	QS	8	GCU 20*	0.9	Push-in-wire	120	50	F/b	
450	15									
600	20	QS	219	GCBO 20*	1.13	Screw	105	50	C/c	
450	15									
525	13	SS	1	GCD 13*	0.6	Flying leads	105	50	K/a	
525	13	SS	1	GCPX 28*	0.6	Screw	105	40	L/a	
2 × 300	2 × 8	Twin SS	10	GCPX 28*	0.6	Screw	105	40	L/a	
300	8	SS	1	GCD 8*	0.6	Flying leads	105	50	K/a	
300	8	SS	1	GCPX 8*	0.6	Screw	105	40	L/a	
2 × 225	2 × 6	Twin SS	10	GCPX 8*	0.6	Screw	105	40	L/a	
2 × 150	2 × 4									
225	6	SS	1	GCD 8*	0.6	Flying leads	105	50	K/a	
150	4									

SRS = Semi-Resonant Start SS = Switchstart QS = Quickstart  
 All wound gear listed here is white except GCU 30 which is natural varnish.  
 Starter switches should be ordered separately.

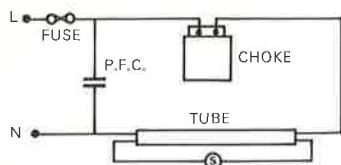
\* Choke or ballast approved to BS 2818: 1973  
 † Control gear for these tubes is not included in BS 2818: 1973

# Fluorescent tube control gear (240V, 50Hz supply)

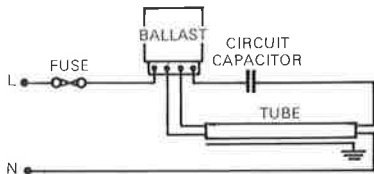
Starter Switch (where appropriate)	Quickstart Unit (where appropriate)		Terminals	tw °C	$\Delta t$ °C	Shape/ Size (see pages 184/185 Choke/ballast dimensions)	Capacitor (see page 187)
	Cat. no.	Weight kg					
155/800	—	—	—	—	—	—	GC 2173
155/800	—	—	—	—	—	—	Included in ballast
—	Included in ballast	—	—	—	—	—	GC 2228
—	Included in ballast	—	—	—	—	—	GC 2226
—	GQS 85	3.1	Push-in-wire	105	40	C/d	GC 2226
155/800	—	—	—	—	—	—	Included in ballast
155/800	—	—	—	—	—	—	GC 2226
155/800	—	—	—	—	—	—	—
—	—	—	—	—	—	—	GC 2220
155/600	—	—	—	—	—	—	GC 2245
155/600	—	—	—	—	—	—	Included in ballast
—	—	—	—	—	—	—	GC 2220
—	—	—	—	—	—	—	Included in ballast
—	—	—	—	—	—	—	GC 2368
155/400	—	—	—	—	—	—	GC 2224
155/400	—	—	—	—	—	—	Included in ballast
155/400	—	—	—	—	—	—	GC 2224
—	—	—	—	—	—	—	GC 2273
—	—	—	—	—	—	—	Included in ballast
155/400	—	—	—	—	—	—	GC 2224
155/400	—	—	—	—	—	—	GC 2227
—	Included in ballast	—	—	—	—	—	GC 2224
2x 155/200	—	—	—	—	—	—	GC 2222
—	GQS 2240	1.0	Screw	105	30	E/b	GC 2222
2x 155/200	—	—	—	—	—	—	Included in ballast
—	Included in ballast	—	—	—	—	—	GC 2222
155/200	—	—	—	—	—	—	GC 2222
—	GQS 80	1.0	Screw	105	30	E/c	GC 2222
2x 155/200	—	—	—	—	—	—	Included in ballast
2x 155/200	—	—	—	—	—	—	GC 2224
—	GQS 220	0.9	Screw	105	20	C/e	GC 2224
—	Included in ballast	—	—	—	—	—	GC 2224
2x 155/200	—	—	—	—	—	—	GC 2224
—	GQS 220	0.9	Screw	105	20	C/e	GC 2224
155/200	—	—	—	—	—	—	GC 2224
155/200	—	—	—	—	—	—	GC 2224
—	GQS 20	0.9	Screw	105	25	E/d	GC 2224
—	Included in ballast	—	—	—	—	—	GC 2224
155/500	—	—	—	—	—	—	GC 2286
155/500	—	—	—	—	—	—	GC 2286
2x 155/100 (iii)	—	—	—	—	—	—	GC 2286
155/500	—	—	—	—	—	—	GC 2286
155/500	—	—	—	—	—	—	GC 2286
2x 155/100 (iii)	—	—	—	—	—	—	GC 2286
155/500	—	—	—	—	—	—	GC 2286

- (i) GCBS type units have a starter socket built-in. Where they are used for twin circuits (diagram no. 15), an extra starter socket is required.  
(ii) Plus one flying lead 1016mm long.  
(iii) Due to the asymmetrical construction of these switches, they must be placed in the starter socket correctly orientated (i.e. if the switches refuse to operate, one must be removed and rotated through 180°).

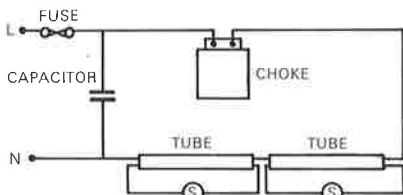
# Fluorescent tube circuit diagrams



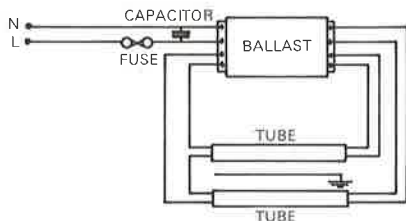
**1** Standard starter switch circuit with optional PFC capacitor.



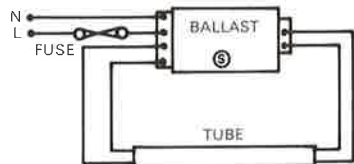
**7** Semi-resonant start circuit with essential circuit capacitor.



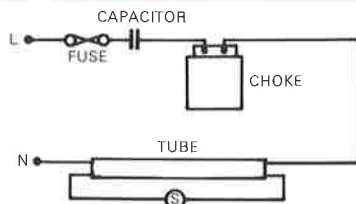
**10** Starter switch circuit for series pair tube operation with optional PFC capacitor.



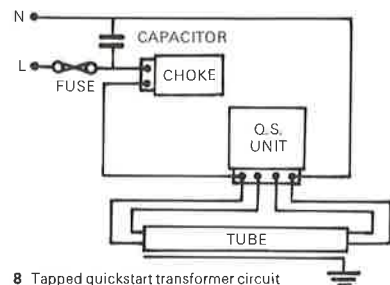
**12** Twin tube quickstart circuit for LPF ballast with optional PFC capacitor.



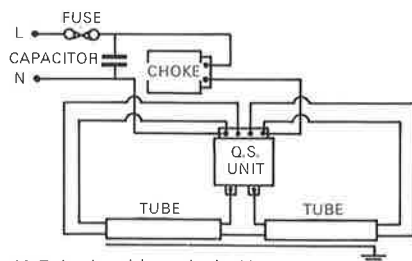
**13** Starter switch circuit for HPF ballast.



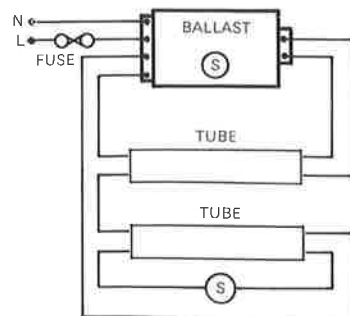
**2** Leading power factor starter switch circuit with essential series capacitor.



**8** Tapped quickstart transformer circuit with optional PFC capacitor.

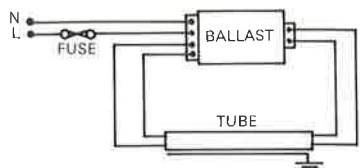


**11** Twin tube quickstart circuit with optional PFC capacitor.

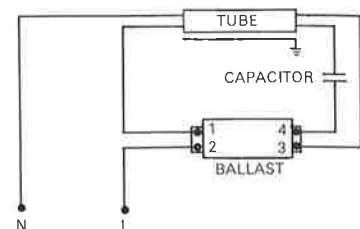


**15** Twin tube starter switch circuit for HPF ballast.

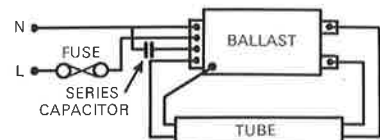
# Fluorescent tube circuit diagrams



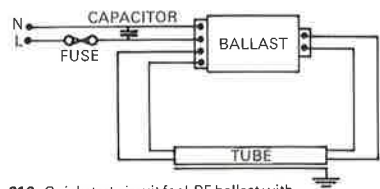
16 HPF ballast (SRS circuit).



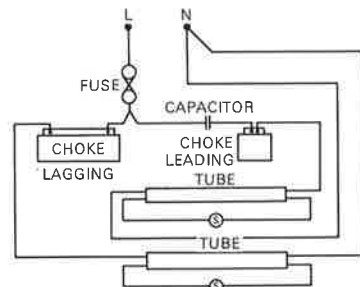
18 LPF ballast (SRS circuit).



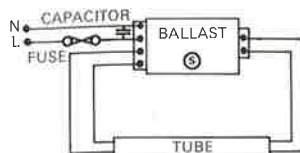
183 Quickstart circuit for combined choke and transformer with essential series capacitor.



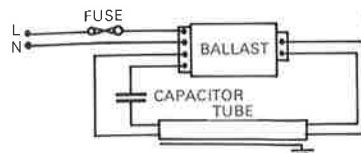
219 Quickstart circuit for LPF ballast with optional PFC capacitor.



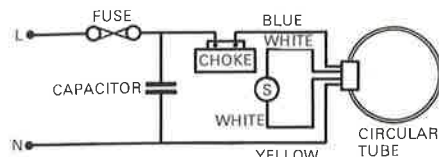
244 Lead/lag starter switch circuit.



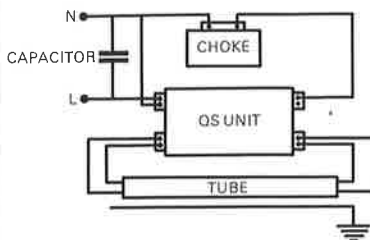
17 Starter switch circuit for LPF ballast with optional PFC capacitor.



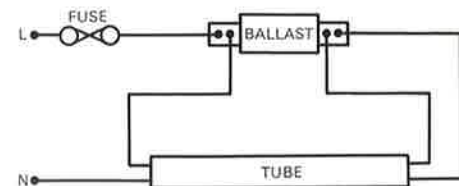
174 Quickstart circuit for LPF ballast with essential circuit capacitor.



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



239 Quickstart transformer circuit with essential series capacitor.

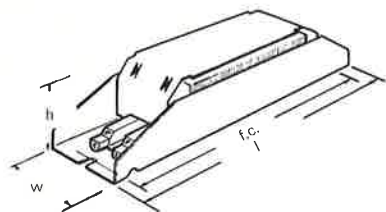


252 Semi-resonant circuit with essential circuit capacitor.

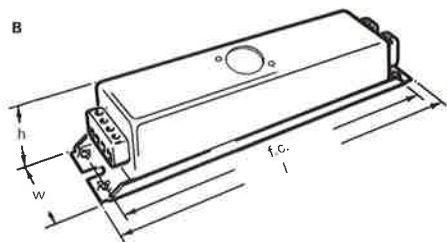
## Fluorescent tube choke/ballast dimensions

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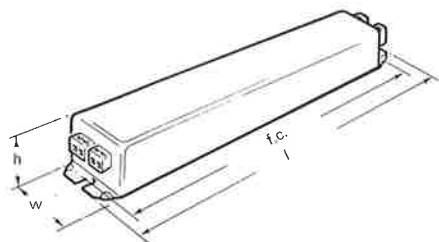
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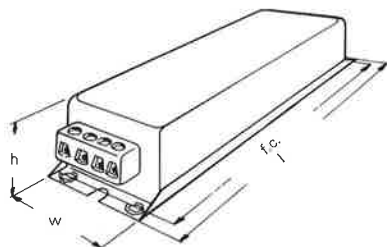
B



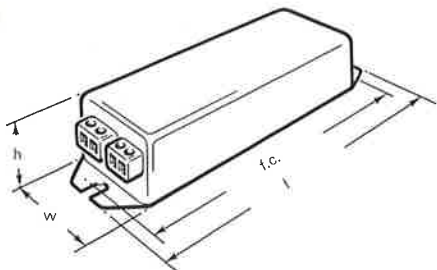
C



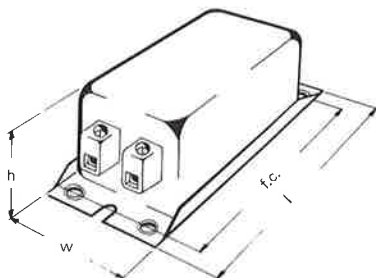
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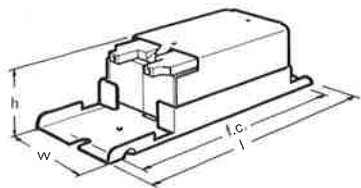
E



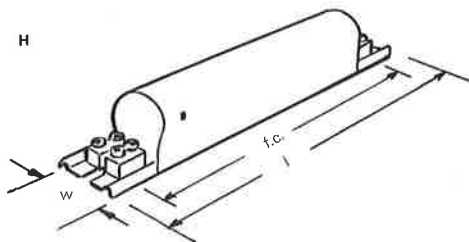
F



G

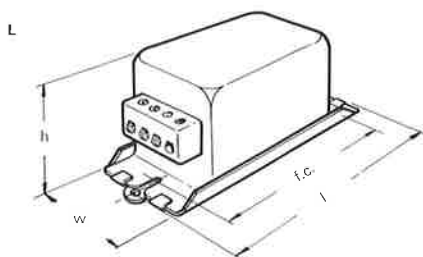
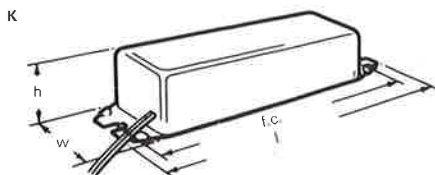
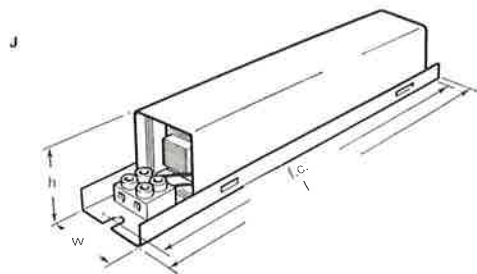


H





# Fluorescent tube choke/ballast dimensions



Details of terminals will, in certain cases, vary slightly from those illustrated.

Shape/Size	Length (l) mm	Width (w) mm	Height (h) mm	Fixing Centres (f.c.) mm	Choke/Ballast Catalogue nos.
A/a	185	48	43	165	GCU 100/125, GCU 75
A/b	172	48	40	152	GCU 65
B/a	336	64	48	317	GCBS 125
B/b	311	64	48	292	GCBS 685
B/c	248	64	48	229	GCBS 65
B/d	229	48	43	216	GCBS 40
B/e	179	48	43	166	GCBS 20
C/a	311	64	48	292	GBQI 125
C/b	248	64	48	229	GBQI 85
C/c	179	48	43	166	GCBQ 30, GCBQ 20
C/d	203	49	45	190	GCBQ 220, GQS 85
C/e	118	59	39	102	GQS 220
D/a	218	48	45	203	GBU 675, GBU 65
D/b	165	48	40	152	GBU 40
E/a	248	64	48	229	GCBR 65, GCBR 40, GCBQ 2240
E/b	172	64	48	152	GCI 240, GCI 2240, GQS 2240
E/c	105	64	48	89	GQS 80
E/d	105	59	39	89	GQS 20
F/a	218	48	40	203	GCU 30
F/b	129	48	43	114	GCU 20
F/c	172	49	40	153	GCQU 85
G/a	129	48	43	114	GCU 40
H/a	235	31	—	223	GBJ 50
J/a	205	31	34	197	GCJ 30
J/b	225	31	34	216	GCJ 40
K/a	197	33	23	184	GCD 13, GCD 8
L/a	89	43	41	70	GCPX 8, GCPX 28

# Fluorescent tube circuit voltage variations

All control gear listed elsewhere in this catalogue is suitable for 240V 50Hz operation. For other voltages and frequencies, the following equivalents may be used :

Circuit	Voltage/Frequency 240V 50Hz	250V 50Hz	240V 60Hz	220V 50Hz	220V 60Hz	200/210V 50Hz
1500mm 65W SS	<b>GCU 65</b>	G 69028.5	G 69418.1	G 69418.2	G 69469.2	G 69418.1
1500mm 65W SRS	<b>GBU 65</b>	—	—	GBU 685	—	—
1200mm 40W SS	<b>GCU 40</b>	G 69321.5	G 69321.1	G 69321.2	G 69374.2	G 69321.1
1200mm 40W SRS	<b>GBU 40</b>	—	—	G 69264.2	—	—
900mm 30W SS	<b>GCU 30</b>	G 69402.M	GCU 40	G 69367.2	—	GCU 40
900mm 30W SRS	<b>GCU 30</b>	—	—	G 66051.2	—	—
600mm 40W SS	<b>GCI 240*</b>	GCI 240	GCI 240†	GCI 240	—	GCI 240
2 × 600mm 40W SS	<b>GCI 2240*</b>	GCI 2240	GCI 2240†	GCI 2240	—	GCI 2240
2 × 600mm 20W SS	<b>GCU 40*</b>	G 69321.5	G 69321.1	G 69321.2	G 69374.2	G 69321.1
2 × 450mm 15W SS	<b>GCU 30*</b>	G 69402.M	—	G 69321.5	—	—
600mm 20W SS	<b>GCU 20*</b>	G 69402.H	G 69352.1	G 69368.2	G 69378.2	G 69352.1
525mm 13W SS	<b>GCD 13</b>	—	—	G 69160.L	G 69160.L	G 69160.L
300mm 8W SS	<b>GCD 8</b>	—	—	G 69159.L	G 69159.L	G 69159.L
1 × 8/6/4W SS	<b>GCPX 8</b>	—	GCPX 8	GCPX 28	—	GCPX 28
2 × 6/4W SS†	<b>GCPX 8</b>	—	GCPX 28	GCPX 28	—	GCPX 28

\*Where these units are used with Quickstart transformers, their different voltage equivalents may also be used with the same transformers.

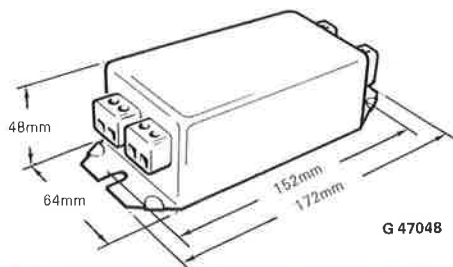
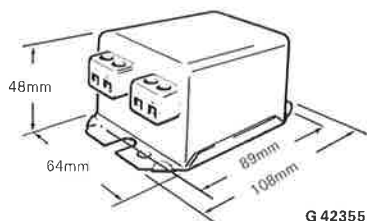
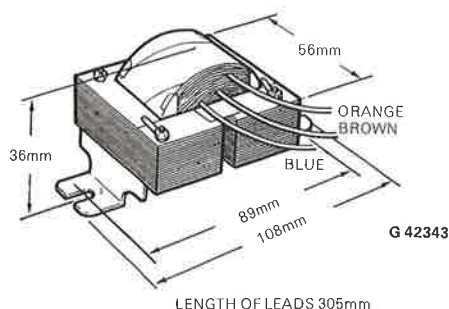
†Use 210V 50Hz tapping for 240V 60Hz operation.

†In addition, G 69346 (50Hz) and G 69347 (60Hz) are available for 110/115V operation of 4/6/8W circuits.

## STEP-UP TRANSFORMERS

Where no control gear is shown above for operating circuits at other than 240V 50Hz, then a step-up transformer may be used in conjunction with 240V circuits :

Catalogue no.	G 42343	G 42355	G 47048
Voltage input	220V	200/210V	110V
Maximum load	220VA	170VA	100VA
Weight (kg)	0.45	0.9	1.86
Insulation	Varnish	Polyester resin	Polyester resin
Can colour	Natural	White	White
Terminals	Leads	Screw	Screw



# Fluorescent tube capacitors

## STANDARD PFC AND SERIES CAPACITORS



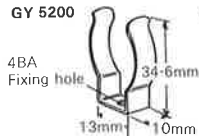
### CAPACITOR SUPPORT CLIPS

GY 5244 For 38mm dia. capacitors

GY 5245 Clip for GY 5244

GY 5200 For 26mm dia. capacitors

GY 5200



GY 5244



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.

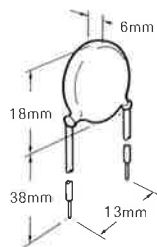
Type Q capacitors have push-wire terminals of the screwless, releasable, push-wire type and accept one or two 0.5 sq. mm. to 1.0 sq. mm. conductors per terminal; conductor release apertures are provided.

Catalogue no.	Rated capacitance ( $\mu$ F) and tolerance	Rated voltage (V)	Rated frequency (Hz)	Self-healing	Rated min/max temps. ( $^{\circ}$ C)	Type	Dia. (mm)	Length* (mm)	Use
GC 2173	7.2 $\pm$ 5%	440	50/60	Yes	-40/+85	Q	38	135	2400mm 100 and 125W SS
GC 2220	8.4 $\pm$ 5%	250	50/60	Yes	-40/+85	Q	38	100	1800mm 75 and 85W SS, 1500mm 65W SRS
GC 2222	8.0 $\pm$ 10%	250	50/60	Yes	-40/+85	Q	38	78	600mm 40W SS/QS
GC 2224	3.5 $\pm$ 10%	250	50/60	Yes	-40/+85	Q	38	48	600mm 20W, 900mm 30W, 1200mm 40W SS/QS
GC 2226	5.0 $\pm$ 5%	440	50/60	Yes	-40/+85	Q	38	104	2400mm 85W QS, 1800mm 75W leading SS
GC 2227	3.0 $\pm$ 10%	250	50/60	Yes	-40/+85	R	32	48	900mm 30W (for Arrowslim fitting)
GC 2228	7.8 $\pm$ 5%	440	50/60	Yes	-40/+85	Q	38	133	2400mm 125W QS
GC 2245	5.0 $\pm$ 10%	250	50/60	Yes	-40/+85	Q	38	78	1500mm 65W SS
GC 2273	5.5 $\pm$ 10%	250	50/60	Yes	-40/+85	Q	38	78	1200mm 40W SRS
GC 2274	10.0 $\pm$ 10%	250	50/60	Yes	-40/+85	Q	38	100	2 $\times$ 1500mm 65W SS
GC 2286	2.0 $\pm$ 10%	250	50/60	Yes	-40/+85	S	26	44	13/8/6/4W SS
GC 2368	5.7 $\pm$ 5%	250	50/60	Yes	-40/+85	R	32	78	1500mm 50W SRS

\*Can length only. Pin terminals project 9mm, push wire terminals project 21mm.

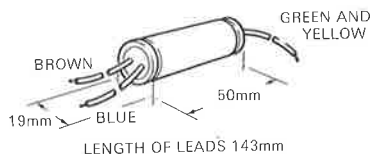
## RADIO INTERFERENCE SUPPRESSION CAPACITORS

All starter switches shown in this catalogue incorporate a 0.005 $\mu$ F radio interference suppressor. For additional suppression the following capacitors are available:



**GC 2139**

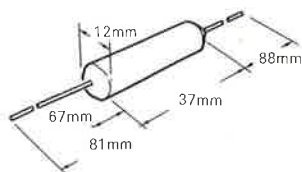
A ceramic base 0.005 $\mu$ F 800V a.c. capacitor to BS 4017 with high temperature PVC sleeved 38mm leads.



**GC 2051**

A radio interference suppression filter network comprising two 0.005 $\mu$ F and one 0.1 $\mu$ F delta connected for additional suppression where the GC 2139 fails to suppress the interference.

## ARTIFICIAL EARTH



**GC 2050**

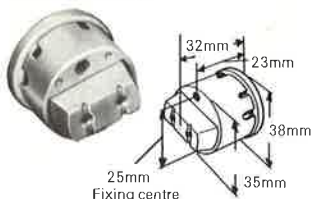
An artificial earth unit for connection between a metal chassis in close proximity to the tube, and neutral when no earth is available.

# Fluorescent tube lampholders

## For T12 (38mm diameter) bi-pin fluorescent tubes

### GB 1502

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 GY 5420 is available as an optional extra. This holder is not suitable for use with 2400mm tubes which have large tolerances in length.



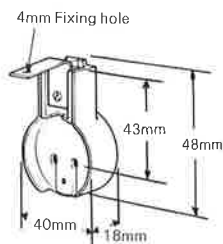
### GB 1512

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.



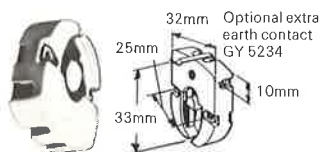
### GB 1580-A4

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.



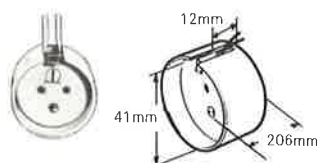
### GB 1524

White urea moulding with paxolin backplate. Single-sided tube contacts with pinch screw terminal for incoming cables. Earth contact GY 5234 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.



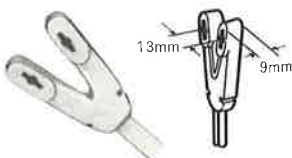
### GB 1573

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.



### GB 1529

A high temperature white PVC moulding with double-sided brass contacts crimped to 1220mm flat twin 16/0.2mm 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. This lampholder is also suitable for use with T8 and T5 tubes.



## FIXING DETAILS

Dimensions below are distances between backs of lampholders. The dimensions given for GB 1512 and GB 1573 are for lampholders when fitted to the fluorescent tube. The dimensions for GB 1524 and

GB 1502 are recommended distances between backs of lampholders when mounted on support brackets. Dimensions for GB 1580-A4 and GB 1555-Z are recommended distances between fixing centres.

## Fixing centres

For T12 (38mm diameter) tubes

Tube size mm	GB 1512 mm	GB 1573 mm	GB 1524 mm	GB 1580-A4 mm	GB 1502 mm	For T8 (25mm diameter) tubes GB 1555-Z mm
2400	2395.5	2398	—	2329	—	—
1800	1784	1786	1784	1718	1827	—
1500	1521	1523	1520	1454	1563	1444
1200	1220	1222	1220	1154	1263	—
1050	—	—	—	—	—	991
900	915	916	915	849	958	840
600	610	613	610	544	653	—
450	458	460	458	392	501	382

# Fluorescent tube lampholders

## For T8 (26mm diameter) bi-pin fluorescent 525mm x 120mm U-tubes

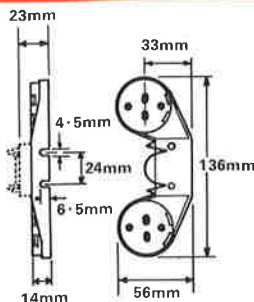
### GB 1635-A

White plastic moulding with retaining clip to hold bar of tube, side pressure lamp pin contacts and push-in-wire terminals for single conductors. Screw-mounted by two x 4M screws (not supplied).

Supplied with the lampholder is a tube retaining spring used to support the tube on its bend. The GB 1635-A comes complete with starter switch socket already wired in.

### GB 1636-A (not illustrated).

As GB 1635-A but less starter switch socket.



### Fixing dimensions



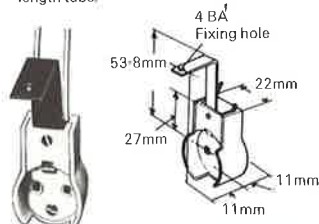
## For T8 (26mm diameter) bi-pin fluorescent tubes

### GB 1529

The GB 1529 tube holder shown for T12 tubes is also suitable for T8 tubes.

### GB 1555-Z

White urea moulding 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. Lampholder is vertical with a nominal length tube.



## For T5 (15mm diameter) miniature bi-pin fluorescent tubes

### GB 1529

The GB 1529 tube holder shown for T12 tubes is also suitable for T5 tubes.

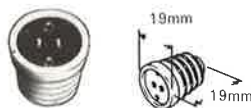
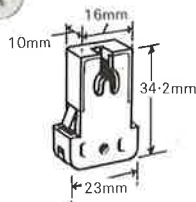
### GB 1561

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 in to the PVC moulding.

### GB 1598

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 22 SWG (0.7mm) metal. Dimensions between holes are shown below.

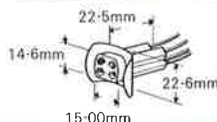
Tube size	mm
525mm	517
300mm	289
225mm	212
150mm	136



## Lampholder for circular fluorescent tubes

### GB 1623

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

### GB 1515

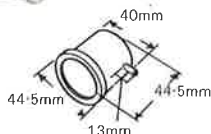
Bi-pin/BC adaptor with earth contact. A pair of these adaptors enables modern bi-pin tubes to be used where BC lampholders are fitted in a fitting. Two adaptors required per tube.



## Weatherproof sleeve (for T12 38mm diameter) bi-pin fluorescent tubes

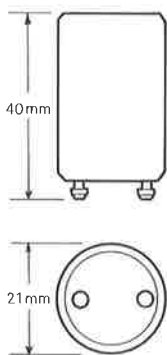
### GM 6028

White neoprene moulding suitable for use with GB 1512 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.



# Fluorescent tube starter switches

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, 2400mm 100W 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, 13W, 30W, 32W or 1200mm 40W	200/250V
155/200	Single 4W, 6W or 8W	110/130V
	Single 15W, 20W, 22W or 600mm 40W	105/250V
155/100	Series pair 4W, 6W or 8W (two 155/200) *	230/250V
	Series pair 15W, 20W or 600mm 40W (two 155/200)	200/250V

\* 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

### GT 1268, GT 1299

All fuses comply with BS 1362 dimensions and must be used with T 1265, A 5079 and T 1304 fuseholders.

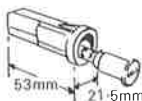
Catalogue no.	Rating	Colour
GT 1299	3A	Red
GT 1268	5A	Black



### GT 1334

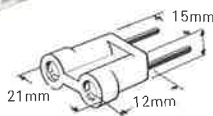
White polycarbonate end entry fuse holder which enables control units to be disconnected before maintenance. Fuse loading cap has bayonet-catch fixing and is finger or coin operated. Push wire terminals for single incoming and double outgoing. Fuses to be ordered separately.

### GT 1359 Replacement loading cap.



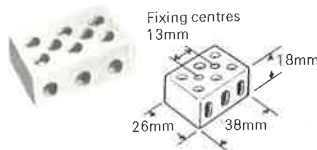
### GM 6064-12

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 GY 5274 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.



### GT 1306

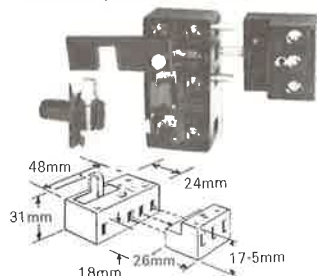
A 10A 250V 3-way white porcelain terminal block. Inserts are of extruded brass with 3-2mm x 3-0mm o.d. round bore barrels and pinch screw terminals. These inserts give facility for loop-in cables. Line, earth and neutral terminals clearly marked on terminal block.



### GA 5079

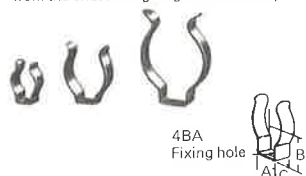
Combined fused terminal block with mains plug. Black phenolic moulded body with black polypropylene fuse carrier and fuse retaining plate. Wiring connections are by pinch screw terminals. Back fixing is achieved by a screw and shakeproof washer provided and this method of fixing makes earth connection to chassis. Fuses to be ordered separately.

### GA 5037 Replacement mains plug.



### GY 5204, GY 5200, G 5201

A flange 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.

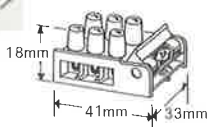


Catalogue no.	Tube dia. mm	A mm	B mm	C mm
GY 5204	16	7-5	10-3	7-9
GY 5200	26	12-7	17-8	9-5
GY 5201	38	16-7	26-2	9-0

### GT 1367

White polycarbonate moulding with grey nylon fuse carrier which swings open to release fuse. Earth and neutral connections are of the through-barrel type and two line connections are provided for mains input and circuit feed. All connections are by pinch screw terminals.

Back fixing is achieved by a screw and shakeproof washer provided. For front fixing a 2-5mm x 18mm screw must be used (not provided). Either method of fixing provides earth connection to chassis. Fuses to be ordered separately.



### GA 5019-X

White urea moulding with paxolin backplate. Side pressure switch contacts. Draw nut terminals giving side and rear cable entries. When mounted on 22mm distance pieces behind fitting chassis the starter switch projects enough for easy removal.



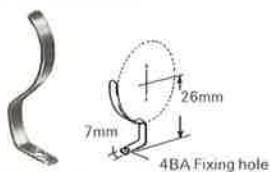
### GY 5257

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 and  
60W tubes : 333mm radius



# Discharge lamp control gear (240V, 50Hz supply)

Lamp	Ballast Catalogue no.	Weight kg	Illustration (see pages 196/197)	$I_w$ C	$\Delta t$ °C	Capacitor Cat no. (see page 200)	Value $\mu F$
Wattage	Type						
50	MBF	G 53185.4 (v)	1.36	D8	105	50	GC 2223
80	MBF	G 53162.4 (v)	1.82	D7	105	50	GC 2383
125	MBF	G 53306.4 (iv)	1.95	D6	105	55	GC 2383
250	MBF	G 53315.4 (i)	—	D22	130	80	GC 2370
400	MBF	G 53309.4 (i)	4.2	D21	130	80	GC 2331
700	MBF	G 53315.4 (i) + G 53309.4 (i)	4.2	D22 D21	130 130	80 80	GC 2386
1000	MBF	2 × G 53243.4 (v)	—	D4	130	95	2 × GC 2346
250	MBI	G 53251.T (ii)	3.8	D3	130	85	GC 2386
400	MBI	G 53309.4 (i)	4.2	D21	130	80	GC 2331
1000 (ix)	MBI	G 53247.4 (i)	24.0	D5	—	—	4 × GC 2346
1000 (ix)	MBI	G 53299 (iii)	—	D18	130	60	2 × GC 2386
750 (ix)	MBIL	G 53254.4 (i)	23.2	D5	—	—	3 × GC 2346
1200 (ix)	MBIL	2 × G 53254.4 (i)	23.2 (each)	D5	—	—	8 × GC 2346
1200 (S) (viii & ix)	MBIL	2 × G 53254.4 (i)	23.2 (each)	D5	—	—	8 × GC 2346
1500	MBIL	G 53308 (iii)	13.8	D23	130	70	GC 2239 (vi)
1500	MBIL	G 53308 (iii) + G 47102 (ii)	13.8 10.5	D23 D24	120 120	70 70	GC 2239 (vi)
1600 (ix)	MBIL	2 × G 53254.4 (i)	23.2 (each)	D5	—	—	6 × GC 2346
1800	MBIL	4 × G 53230.T (ii)	5.7 (each)	D1	—	—	5 × GC 2346
2000	MBIL	Details on application					
2000 (S)	MBIL	Details on application					
70	SON	G 53320.T	1.79	D25	105	60	GC 2383
250	SON	G 53251.T (ii)	3.8	D3	130	85	GC 2386
400	SON	G 53230.T (ii)	5.7	D1	130	90	2 × GC 2331
1000	SON	3 × G 53323.4 (v)	5.7 (each)	D2	130	85	2 × GC 2346 + GC 2382
35	SOX	G 53312.4 (v)	1.36	D8	105	55	GC 2223
35	SOX	G 53182.4 (iv)	3.4	D9	105	60	GC 2384
35	SOX	G 53131.4 (v)	4.2	D10	105	50	GC 2384
55	SOX	G 53182.4 (iv)	3.4	D9	105	60	GC 2384
55	SOX	G 53131.4 (v)	4.2	D10	105	50	GC 2384
90	SOX	G 53232.4 (i)	5.82	D1	120	75	GC 2346
135	SOX	G 53260.T (ii)	6.55	D11	120	85	GC 2281
180	SOX	G 53260.T (ii)	6.55	D11	120	85	GC 2281
140	SLI/H	G 53232.4 (i)	5.82	D1	120	75	GC 2331
200	SLI/H	G 53261.T (ii)	6.55	D12	120	85	GC 2382
400	CSI	G 53230.T (ii)	5.7	D1	130	90	2 × GC 2331
1000	CSI	G 53307.T (ii)	19.0	D19	120	80	7 × GC 2346
1000 (HR)	CSI	Details on application					
400	Graph-X	G 53230.T (ii)	5.7	D1	130	90	2 × GC 2331
400/800	Graph-X	2 × G 53230.T (ii)	5.7 (each)	D1	130	90	2 × GC 2382
1000	XB	Details on application					
1500	XB	Details on application					
2000 (2)	XE/D	Details on application					
2000 (3)	XE/D	Details on application					
250	ME/D	Details on application					
1000	ME/D	Details on application					
125	MB/D	Details on application					
125	MBL/D	Details on application					
125	MBW/U	Details on application					
	M1/M2	Details on application					

(S)=Simmering (HR)=Hot Restrike (2)=2-Electrode lamp (3)=3-Electrode lamp

(i) 220V ballast (i.e. 2) must be specified for 220V supplies.

(ii) Gear combination also suitable for 220V supplies.

(iii) Gear combination suitable for 380/415V 3-Phase operation only.

(iv) Tapped version of ballast (i.e. T) available on request for 200/250V supplies.

(v) Ballast available in 240V version only. Details for other voltages on application.

(vi) Essential component. Must be included in circuit to avoid overloading other components.

# Discharge lamp control gear (240V, 50Hz supply)

Ignitor/Starter Catalogue no.	Weight kg	Illustration (see pages 196/197)	Fuse rating		Circuit diagram no. (see pages 194/195)
			HRC	Re-wireable	
—	—	—	5A	5A	301
—	—	—	5A	5A	301
—	—	—	5A	5A	301
—	—	—	10A	5A	301
—	—	—	15A	10A	301
—	—	—	15A	10A	302
—	—	—	20A	15A	302
G 53283	0.13	D13	10A	5A	303
G 53283	0.13	D13	15A	10A	303
—	—	—	20A	15A	304
G 53283	0.13	D13	15A	10A	305
—	—	—	15A	10A	304
—	—	—	20A	15A	306
—	—	—	20A	15A	307
G 53310 (vii)	—	D13	15A	10A	308
G 53310 (vii)	—	D13	25A	15A	309
—	—	—	20A	15A	306
G 53279	0.35	D16	30A	25A	310
G 53282 (vii)	0.065	D14	5A	5A	311
G 53282 (vii)	0.065	D14	10A	5A	311
G 53282 (vii)	0.065	D14	15A	10A	311
G 53316 (vii)	0.55	D17	20A	15A	312
G 53311	0.07	D15	5A	5A	313
—	—	—	5A	5A	314
—	—	—	5A	5A	314
—	—	—	5A	5A	314
—	—	—	5A	5A	314
—	—	—	5A	5A	314
—	—	—	5A	5A	315
—	—	—	5A	5A	315
—	—	—	5A	5A	314
—	—	—	5A	5A	316
G 53319 (vii)	1.2	D20	15A	10A	317
G 53319 (vii)	1.2	D20	20A	20A	317
G 53279	0.35	D16	15A	10A	318
G 53279	0.35	D16	15A	10A	319

(vii) Maximum permissible lamp/ignitor separation distances are:

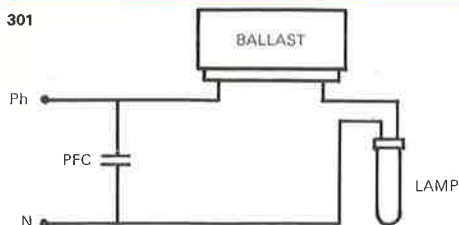
Ignitor	Lamp	Distance
G 53282	70W SON	20.0m
G 53282	250W SON	22.0m
G 53282	400W SON	17.0m
G 53316	1kW SON	3.0m
G 53319	400/1kW CSI	2.0m
G 53310	1500W MBIL	100.0m

(viii) The changeover switch should be either—Crabtree 20A rocker grid switch type 2450.  
or—MK 15/20A rocker grid switch type 4891.

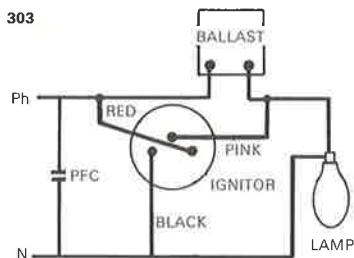
(ix) Ballasts used with these lamps must be mounted with lead-out wires down. Failure to do so will result in premature failure.

# Discharge lamp circuit diagrams

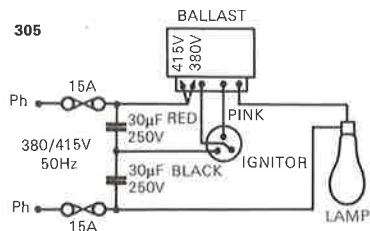
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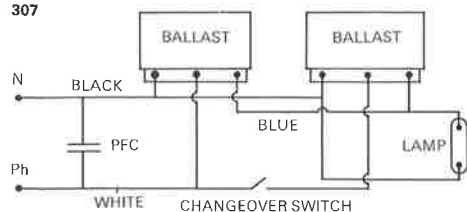
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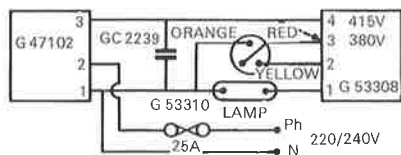
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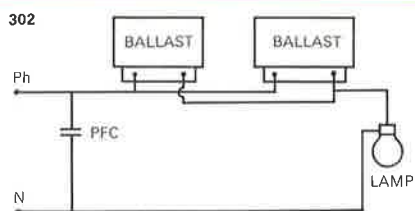
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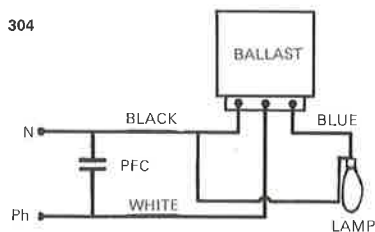
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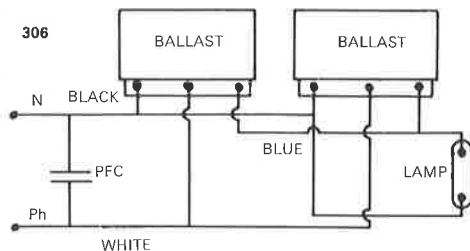
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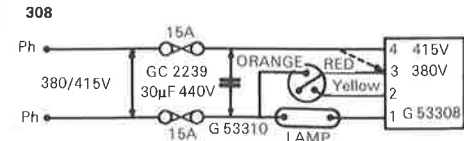
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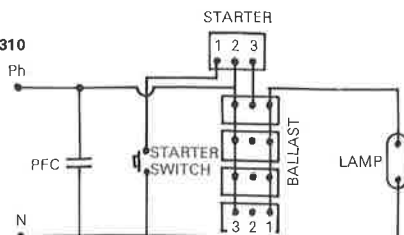
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308



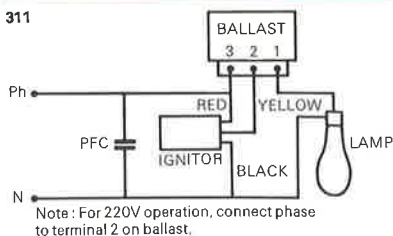
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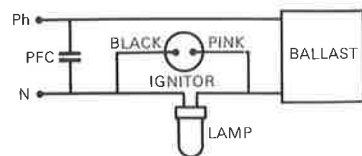
Note : For 220V operation reverse connections 2 and 3 on ballasts.

# Discharge lamp circuit diagrams

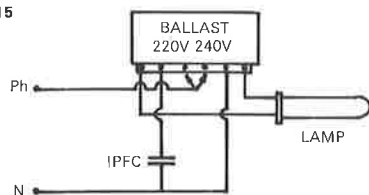
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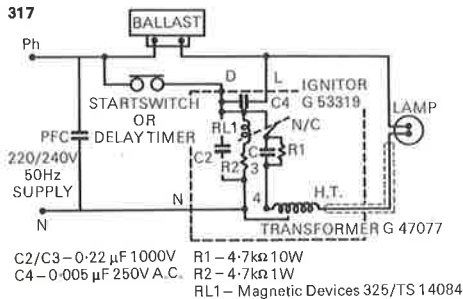
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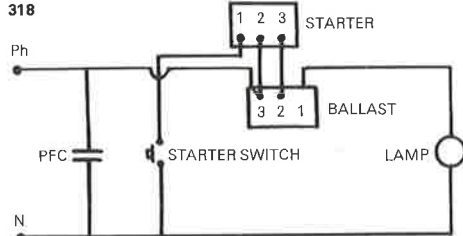
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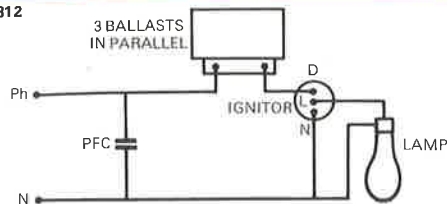
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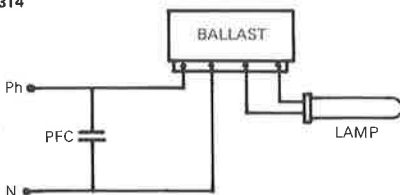
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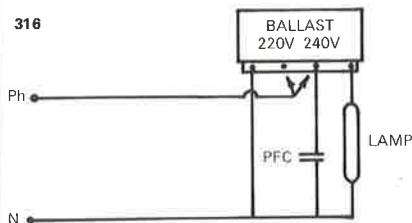
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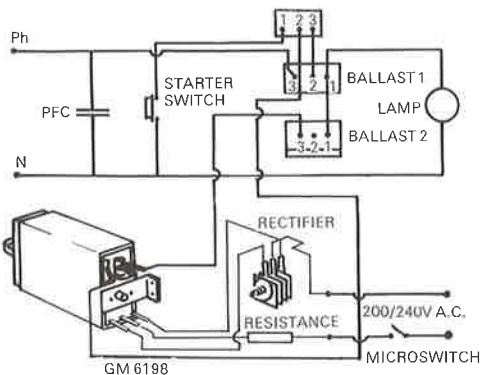
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316

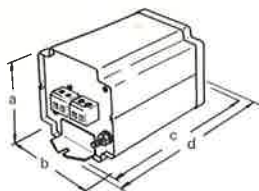


319



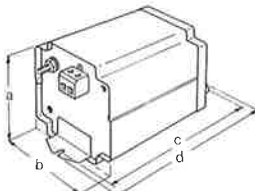
# Discharge lamp gear dimensions

D1



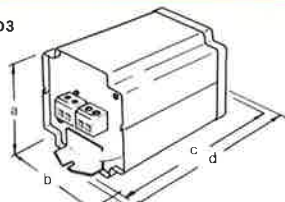
	a	b	c	d
mm	102	105	159	172

D2



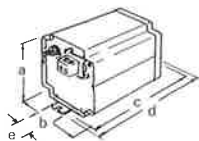
	a	b	c	d
mm	102	105	159	172

D3



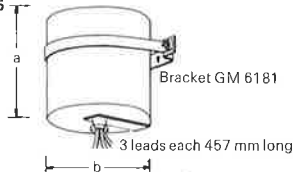
	a	b	c	d
mm	89	98	146	158

D4



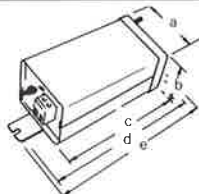
	a	b	c	d	e
mm	89	98	146	159	25

D5



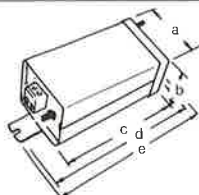
	a	b
mm	235	207

D6



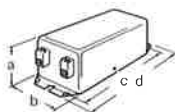
	a	b	c	d	e
mm	72	58	140	172	184

D7



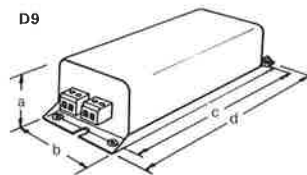
	a	b	c	d	e
mm	72	58	127	159	171

D8



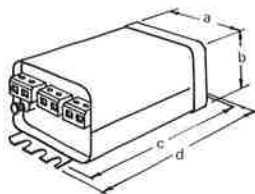
	a	b	c	d
mm	48	64	127	146

D9



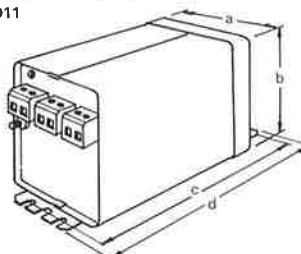
	a	b	c	d
mm	59	81	216	232

D10



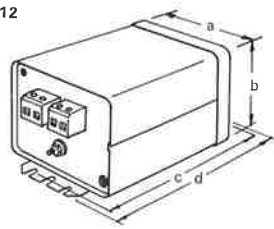
	a	b	c	d
mm	93	84	156	178

D11



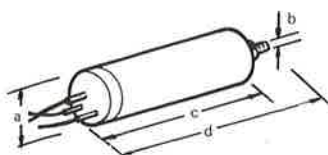
	a	b	c	d
mm	93	114	166	178

D12



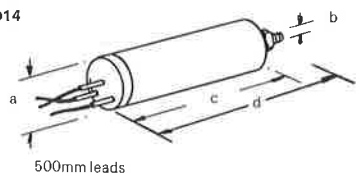
	a	b	c	d
mm	114	93	166	178

D13



	a	b	c	d
mm	53	8.0	102	115

D14

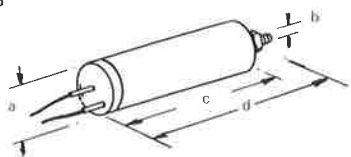


	a	b	c	d
mm	37	8.0	102	115



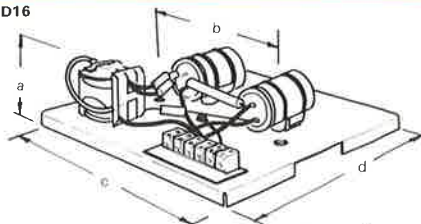
# Discharge lamp gear dimensions

D15



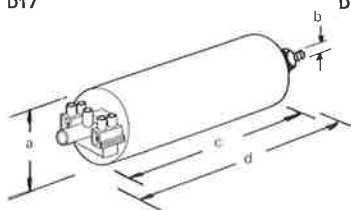
	a	b	c	d
mm	37	8.0	102	115

D16



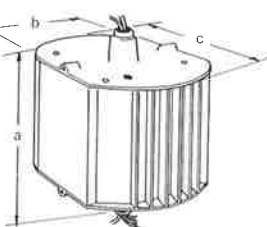
	a	b	c	d
mm	50	92	143	127

D17



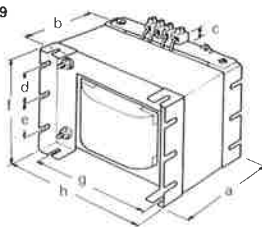
	a	b	c	d
mm	50	10	120	162

D18



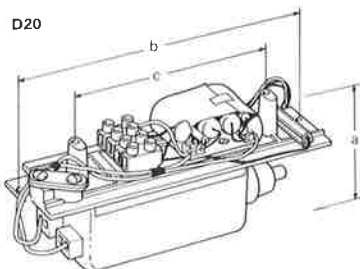
	a	b	c
mm	194	144	162

D19



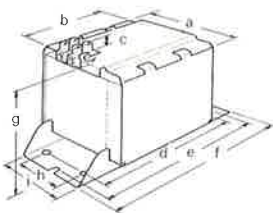
	a	b	c	d	e	f	g	h
mm	160	120-125	29	50	50	154	160	194

D20



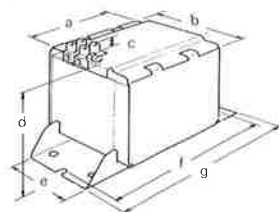
	a	b	c
mm	85	205	140

D21



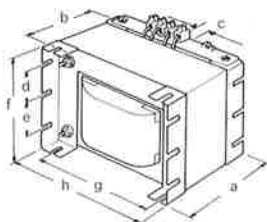
	a	b	c	d	e	f	g	h	i
mm	84	96	6	120	135	150	96	35	55

D22



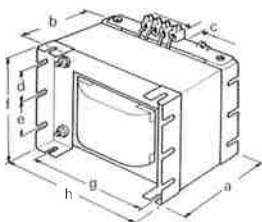
	a	b	c	d	e	f	g
mm	86	75	6	78	45	120	135

D23



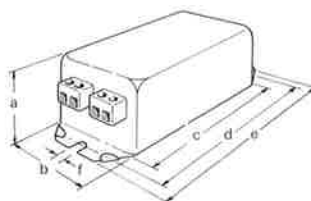
	a	b	c	d	e	f	g	h
mm	126	90-95	29	50	50	154	160	194

D24



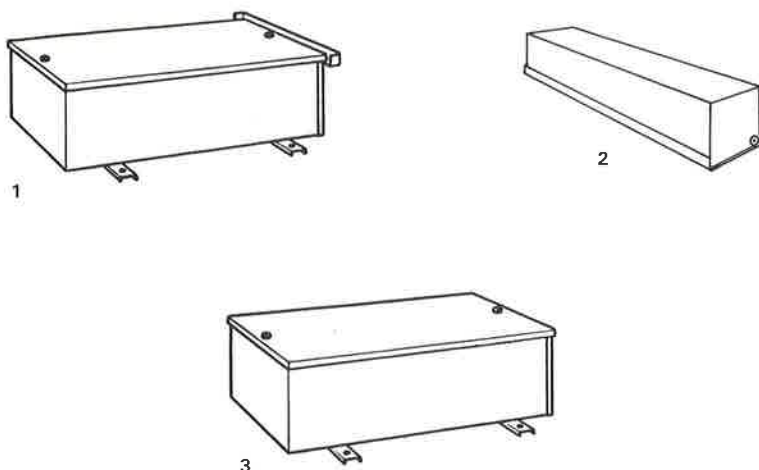
	a	b	c	d	e	f	g	h	i
mm	115	82	29	40	40	138	143	175	

D25



	a	b	c	d	e	f
mm	48	64	140	153	172	5.5

# Discharge lamp control gear boxes



Catalogue no.	Diagram no.	Applications	Fixing centres mm	Dimensions (l × w × d) mm	
				Internal	External
GM 6174	1	700/1000W MBF 400W MBI/SON	279 × 279	425 × 244 × 130	437 × 247 × 155
GM 6172	1	80-400W MBF 35-200W SLI/H or SOX	279 × 178	406 × 144 × 130	420 × 168 × 163
GM 6169	4	80-400W MBF 35/55W SOX 140/200W SLI/H	279 × 178	387 × 127 × 121	425 × 203 × 152
RBG 1000.4	3	1000W MBF	279 × 279	—	425 × 247 × 149
RBG 700.4	3	700W MBF	279 × 279	—	425 × 247 × 149
RBG 400.4	3	400W MBF	279 × 178	—	416 × 157 × 149
RBG 250.4	3	250W MBF	279 × 178	—	416 × 157 × 149
RBIG 400.4	3	400W MBI	279 × 178	—	416 × 157 × 149
RBIG 250.4	3	250W MBI	279 × 178	—	416 × 157 × 149
RBSG 400.4	3	400W SON	279 × 178	—	416 × 157 × 149
RBSG 250.4	3	250W SON	279 × 178	—	416 × 157 × 149
RBGR 125.4†	2	125W MBF	292 × 51	—	337 × 92 × 83
RBGR 80.4†	2	80W MBF	292 × 51	—	337 × 92 × 83
G 53255	6	1kW CSI	—	—	413 × 194 × 220
G 53196.T	5	400W CSI	279 × 178	—	416 × 159 × 159
GRBS 70.4	2	70W SON	292 × 51	—	337 × 92 × 83
RBSG 1000-A†	1	1 kW SON	324 × 415	—	501 × 390 × 150
RBSG 1000-B†	1	1 kW SON	324 × 415	—	501 × 390 × 150

\*Maximum operating ambient temperature

†Rectified versions

‡Supplied less ignitor

Notes :

- These boxes are made of zinc coated sheet steel finished stove enamelled acrylic grey to BS 4800 18B 25. A weatherproof seal is effected between lid and box by 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.
- As per note (a) except the box is constructed of high quality cast aluminium.
- These boxes are made of sheet steel finished stove enamelled 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.
- 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.
- As per note (a) except boxes are supplied complete with 240V 50Hz control gear and do not have wooden baseboards.

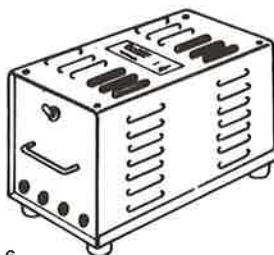
## Discharge lamp control gear boxes



4



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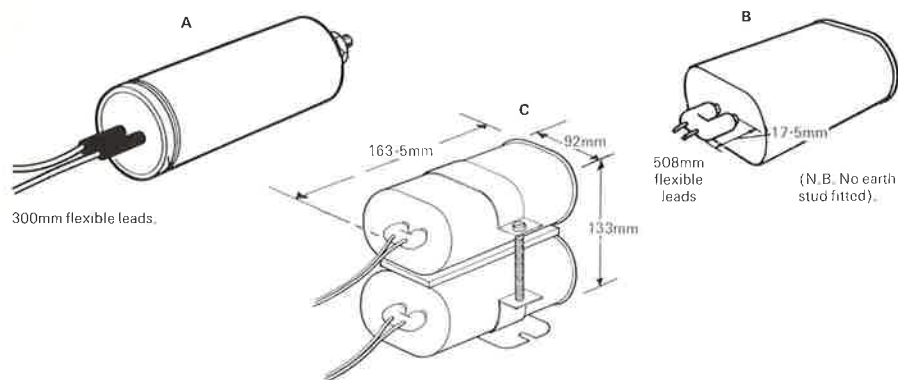


6

Weight kg	Construction/ Finish	$t_a$ (°C)*	Classification
5.84	See note (a)	15	Suitable for exterior use
3.74	See note (a)	15	Suitable for exterior use
3.63	See note (b)	15	Suitable for exterior use
17.92	See note (c)	25	Suitable for interior use only
13.95	See note (c)	25	Suitable for interior use only
8.05	See note (c)	25	Suitable for interior use only
6.35	See note (c)	25	Suitable for interior use only
8.59	See note (c)	25	Suitable for interior use only
—	See note (c)	25	Suitable for interior use only
8.17	See note (c)	25	Suitable for interior use only
6.8	See note (c)	25	Suitable for interior use only
3.63	See note (d)	25	Suitable for interior use only
3.18	See note (d)	25	Suitable for interior use only
27.2	—	25	Suitable for interior use only
11.8	—	25	Suitable for interior use only
—	See note (d)	25	Suitable for interior use only
24.0	See note (e)	40	Suitable for interior use, drip-proof to IP22
24.0	See note (e)	25	Suitable for exterior use

# Discharge lamp capacitors

## CAPACITOR TYPES

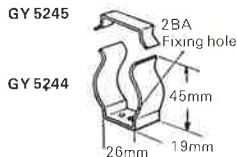


## RANGE

Catalogue no.	Rated capacitance ( $\mu$ F) and tolerance	Rated voltage (V)	Rated frequency (Hz)	Fused or unfused	Self healing	Rated min/max temperatures ( $^{\circ}$ C)	Type	Diameter mm	Length mm	Fixing clip
GC 2383	$8 \pm 10\%$	250	50	Unfused	Yes	$-40/+85$	A			
GC 2370	$13 \pm 10\%$	250	50	Unfused	Yes	$-40/+85$	A			
GC 2384	$15 \pm 10\%$	250	50	Unfused	Yes	$-40/+85$	A			
GC 2345	$16 \pm 10\%$	250	50	Unfused	Yes	$-40/+85$	A			
GC 2385	$18 \pm 10\%$	250	50	Unfused	Yes	$-40/+85$	A			
GC 2331	$20 \pm 10\%$	250	50	Unfused	Yes	$-40/+85$	A			
GC 2346	$25 \pm 10\%$	250	50	Unfused	Yes	$-40/+85$	A			
GC 2386	$30 \pm 10\%$	250	50	Unfused	Yes	$-40/+85$	A			
GC 2382	$35 \pm 10\%$	250	50	Unfused	Yes	$-40/+85$	A			
GC 2281	$13 \pm 5\%$	440	50	Unfused	Yes	$-40/+70$	B	$51 \times 76$	105	GY5279
GC 2278	$15 \pm 5\%$	350	50	Unfused	Yes	$-40/+70$	B	$51 \times 76$	121	GY5279
GC 2288	$17.5 \pm 5\%$	350	50	Unfused	Yes	$-40/+70$	B	$51 \times 70$	137	GY5279
GC 2239	$30 \pm 5\%$	500	50	Unfused	Yes	$-40/+80$	C	—	—	Supplied

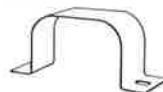
## CAPACITOR CLIP TYPES

### 1. GY 5245



### 2. GY 5279

For 76mm  $\times$  51mm capacitors



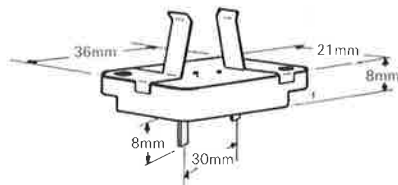
## RANGE

Capacitor diameter mm	Clip Catalogue no.	Safety strap Catalogue no.	Type
31.8	GY 5227	—	—
38	GY 5244	GY 5245	1
45	GY 5313	GY 5314	—
76 $\times$ 51	GY 5279	—	2

# Hytek and miscellaneous lampholders

The GL 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.

**GL 1079**



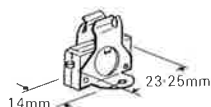
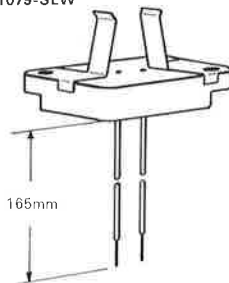
**GL 1079-SL**

Suitable for use with G6.35 caps.

**GL 1079-W**

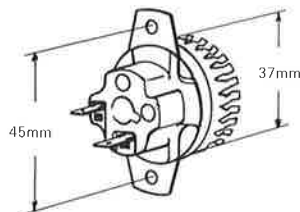
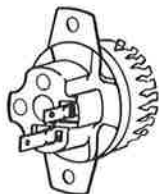


**GL 1079-SLW**



**GL 1123-A**

Suitable for use with low volt miniature tungsten lamps having G.4 caps, eg. M29, M30, M34, M35.



**GL 1042-HV**

For lamp voltages over 21.5V.

**GL 1042-LV**

For lamp voltages up to and including 21.5V. Suitable for use with lamps having G.17q caps.

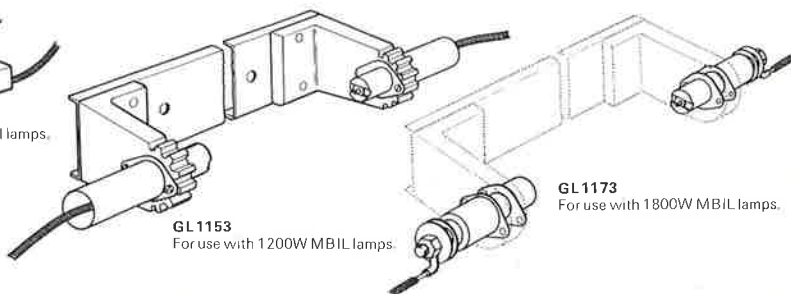


**GL 1177**

GL 1105 is superseded by GL 1177 (same mounting centres) suitable for GY9.5 caps e.g. A1/233, A1/247, and M38.

**GL 1101**

For use with 400W CSI lamps.



**GL 1153**

For use with 1200W MBIL lamps.

**GL 1173**

For use with 1800W MBIL lamps.





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# General information

## British Standards

Fluorescent tubes described in this catalogue conform to British Standard 1853: 1967 and International Standard IEC81 where applicable.

Thorn Lighting holds Licence no. 5247 for the manufacture of fluorescent tubes to BS. 1853.

## Rated Life and Group Replacement

The rated life of all 1200mm, 1500mm, 1800mm and 2400mm, 38mm 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.

## 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

**GB 1515** Adaptor converting bi-pin lamp cap to BC. The overall length of a 1500mm bi-pin tube with these adaptors does not exceed the length of a BC tube.



## 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.

## Braided Cathode

The braided cathode filament—British Patent 131059—is used in 1500mm 65/80W and 80W BC, 1800mm 75/85W and 2400mm 85, 100W and 125W tubes. It is a hollow mesh cylinder formed by braiding together eight very thin strands of tungsten wire, which holds the electron emitter thus forming a solid core, resulting in an approximately 70% greater electron emission than from a coiled cathode.

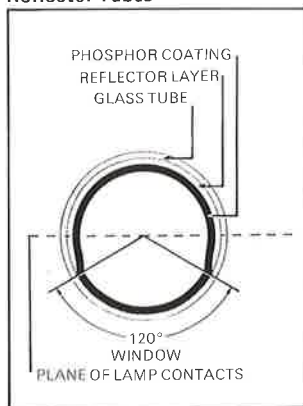


## Cathode Shield

Cathode shields are incorporated on the high loading tube range—600mm 40W, 1500mm 65/80W, 1800mm 75/85W, 2400mm 85, 100W and 125W tubes.

The shield traps evaporation from the cathode during life, preventing black marks from forming at the ends of the tube, and reducing flicker.

## Reflector Tubes



A highly reflective coating is added between the fluorescent powder and the inside of the glass tube. The majority of light is radiated through the aperture of 120° from the lamp centre. A reflector tube 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.

## 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)

All standard Thorn tubes are GP grade for use in all fittings. For switchless start circuits the metal chassis must extend the full length of the tube, be not more than 20mm from it, and be bonded to earth. Switchless start circuits must be used only on 200-250V 50Hz supplies where the neutral conductor is at earth potential.

**NOTE:** Red and Gold tubes are standard grade only i.e. for use on starter switch circuits and not switchless-start circuits.

## MS (Metal Strip) grade tubes (MCFA/U)

These are supplied to special order and for use where earthed metalwork is not adjacent to the tube. A metallic conducting strip is 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—1800mm lengths, can be supplied with metal strip—White, Warm White and Daylight colours only, to special order.

## Fluorescent Tube Packing Quantities

Circles: 12  
2400mm: 20  
Blacklight Blue: 24  
All others: 25

# 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.

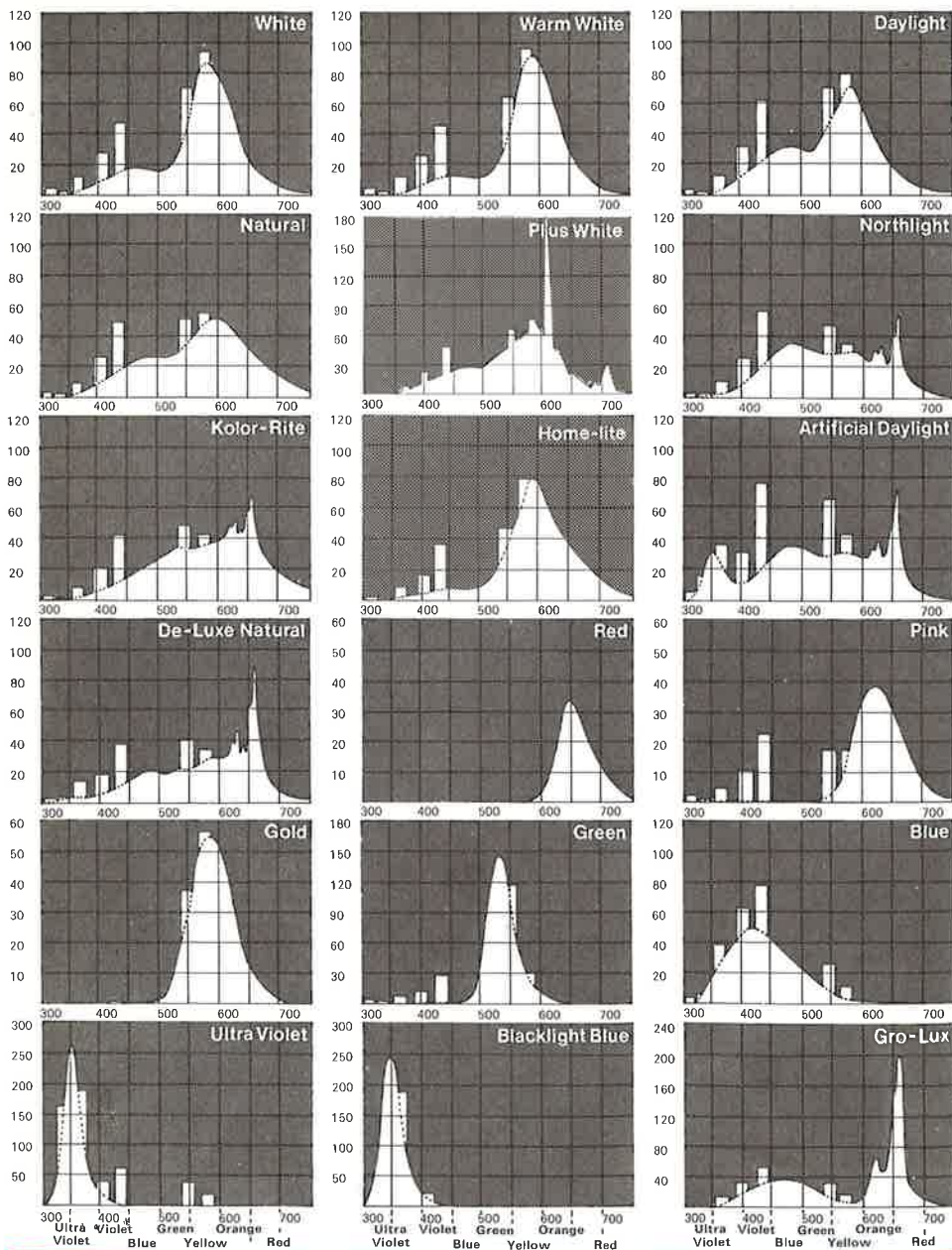
These colour names are identified in **bold type** in this catalogue. Their intermediate white appearance of around 3500K will prove suitable for normal illumination standards of between 200 lux and 1000 lux. The difference in lumen output between **White** and **Plus White** is sufficiently small for 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.

Tube Colour	Colour Rendering Quality	Colour Appearance	Applications and Remarks
<b>White</b>	Fair	Intermediate	General illumination at maximum efficiency.
<b>Plus White</b>	Good	Intermediate	General illumination where good colour rendering is required.
Warm White	Fair	Warm	General illumination at high efficiency.
Daylight (Cool White)	Fair	Cool	General illumination at high efficiency to blend with natural daylight, 300 lux minimum.
Natural	Good	Intermediate	General illumination with good quality colour, especially in shops, offices, etc, 300 lux minimum.
De Luxe Natural	Good	Warm	Butchers, fishmongers, supermarkets. Enhances the appearance of red objects.
*Kolor-rite	Excellent	Intermediate	Best colour rendering with the appearance of a sunny day. Complies with Medical Research Council requirements for use in hospitals (DOHSS).
Northlight/ Colour-Matching	Good	Cool	Areas for matching materials etc. Any application where a wintry effect or an impression of coolness is required.
Artificial Daylight	Excellent	Cool	Areas for exact colour matching. Best colour rendering with cool appearance, 900 lux minimum. (Meets BS 950 : Part 1)
Homelite	Good	Warm	All domestic uses, and restaurants, pubs and decorative applications. Gives a rosy effect.
De Luxe Warm White	Good	Warm	Applications where a blend with tungsten light is required.
Colours	Poor	Poor	Saturated colours for display, floodlighting, stage lighting.
Gro-lux	—	—	For aquarium lighting and plant growth purposes. Gives vivid colouring to plants, flowers, and tropical fish by enhancing reds and blues.
Radar Red	—	—	Bright magenta red colour. Originally for radar rooms, but gives a strong red effect to meat and bacon displays.
Ultra Violet (non-filter) *	—	—	Effect lighting with fluorescent materials and filters. Industrial uses for hidden laundry marks, etc.
Blacklight Blue*	—	—	As Ultra Violet but no need for filter.
Germicidal U.V.*	—	—	Sterilising processes for food and materials.

\*See Hytek lamps section for details of short and long wave ultra-violet tubes.

# Spectral distribution

Horizontal scales are wavelengths in nanometres ( $10^{-9}$  metres). Vertical scales are power in milliwatts per nanometre band width for a 1500mm 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 BS 1853, 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 (Cool White)	4300K
Kolor-rite	4000K
Natural	4000K
De Luxe Natural	3600K
Plus White	3600K
White	3400K
Warm White	3000K
De Luxe Warm White	3000K
Home-lite	2600K

Nominal percentage light output for 1500mm tubes at 65W

Table 1 - 8 Bands

CIE Bands	Artificial Daylight	Northlight/Colour Matching	Daylight (Cool White)	Natural	Kolor-rite	De Luxe Natural	Plus White	White	Warm White	De Luxe Warm White	Home-lite
1. Far Violet	380-420	0.017	0.014	0.014	0.017	0.011	0.1	0.010	0.007	0.017	0.008
2. Violet	420-440	1.06	0.42	0.31	0.33	0.13	0.37	0.25	0.25	0.30	0.24
3. Blue	440-460		0.65	0.38	0.37	0.48	0.39	0.31	0.22	0.10	0.12
4. Blue-Green	460-510	9.6	9.7	5.3	5.6	7.9	6.1	4.4	3.1	2.6	1.8
5. Green	510-560	44.9	44.5	37.2	38.0	38.0	38.7	36.0	32.3	29.5	29.0
6. Yellow	560-610	33.8	34.1	48.9	44.1	39.5	37.5	46.5	54.9	67.3	54.7
7. Light Red	610-660	9.9	10.0	7.8	11.2	13.0	15.8	12.4	9.1	10.2	14.9
8. Dark Red	660-760	0.63	0.63	0.17	0.69	1.06	1.2	0.18	0.19	0.21	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	0.43	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	0.380	0.399	0.414	0.435	0.437	0.454
Y	0.329	0.324	0.380	0.365	0.3767	0.356	0.382	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	0.47	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	4.5	3.3	2.7	2.6	1.8
3. Green	510-540	23.1	19.9	12.6	15.0	19.8	14.8	14.0	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	53.3	61.3	60.7	53.2	48.1
5. Orange	590-620	14.4	13.1	17.5	18.1	17.7	16.5	23.5	20.7	22.4	20.6	23.3
6. Red	620-760	6.8	7.2	4.1	7.3	9.4	11.8	4.25	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	0.239	0.251	0.252	0.268
v	0.3122	0.311	0.335	0.031	0.3344	0.329	0.339	0.343	0.347	0.347	0.344

Ra Index	95	94	67	85	92	92	74	56	54	79	72
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# 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 colour names identified in bold type (**White** and **Plus White**) are recommended for general lighting purposes.

## FLUORESCENT TUBES (Bi-pin)

Initial Lumens (100 hours)

Lighting Design Lumens (2000 hours)

	2400mm 125W	2400mm 100W	2400mm 85W	1800mm 85W*	1800mm 75W*	1500mm 80W*	1500mm 65W**	1500mm 50W†	1200mm 40W	1050mm 40W†
<b>White</b>	9500 8800	8500 8000	7350 6850	6550 6250	6050 5750	5750 5200	5100 4750	3850 3600	3050 2800	3050 2800
<b>Plus White</b>	9000 8350		7000 6500	6200 5850	5800 5500	5450 4950	4800 4500		2900 2700	2900 2700
<b>Warm White</b>	9400 8700		7250 6750	6500 6100	5950 5650	5600 5100	4950 4600	3800 3550	2950 2700	2950 2700
Daylight (Cool White)	9000 8400		7000 6500	6250 5800	5750 5450	5450 4950	4800 4450		2900 2650	
Home-lite						4400 3900	4000 3600		2450 2200	
<b>Natural</b>	7150 6500		5500 5000	4800 4350	4400 4000	4300 3900	3700 3400	2800 2400	2300 2100	
<b>De Luxe Warm White</b>	6800 6200		5300 4700	4600 4150	4200 3800	4100 3700	3500 3200		2150 1950	
<b>Kolor-rite</b>	6300 5700		4800 4400	4300 3850	3900 3500	3800 3400	3350 3000		2000 1800	
Northlight/Colour Matching	5800 5300		4500 4100	4000 3600	3600 3200	3400 3100	3000 2700		1900 1700	
<b>De Luxe Natural</b>	5500 4800		4300 3800	3700 3200	3400 2900	3200 2700	2900 2500	2300 1900	1750 1500	
Artificial Daylight	4800 3800			3300 2600	3000 2400	2900 2300	2600 2100		1500 1200	

	900mm 30W	900mm 30W†	600mm 40W	600mm 20W	525mm 13W†	450mm 15W	450mm 15W†	300mm 8W†	225mm 6W†	150mm 4W†
<b>White</b>	2100 1850	2400 2150	2000 1700	1225 1100	850 750	900 750	950 800	480 420	300 250	130 100
<b>Plus White</b>				1150 1050						
<b>Warm White</b>	2100 1850	2400 2150	2000 1700	1200 1100	850 750	900 750	950 800	480 420	290 250	
Daylight (Cool White)	2000 1750	2300 2050	1900 1600	1150 1050	800 700	850 700	900 750	400 360	275 240	
<b>Natural</b>	1600 1400	1800 1600	1500 1300	900 800			700 600	325 280	230 190	
<b>De Luxe Warm White</b>		1700 1450		850 750			650 550			
<b>Kolor-rite</b>		1550 1300	1300 1100	850 750						
Northlight/Colour Matching		1500 1250		800 700			600 500			
<b>De Luxe Natural</b>		1400 1100	1150 900	700 600						
Artificial Daylight				650 500						

\*The 1800mm tube is a dual-purpose 75/85W tube suitable for use in all 75W or 85W fittings.

\*\*The 1500mm tube is a dual-purpose 65/80W tube suitable for use in all 65W or 80W bi-pin fittings.

†These tubes are 26mm diameter.

‡These tubes are 16mm diameter. All others are 38mm diameter.



## Light output

Initial Lumens (100 hours)  
Lighting Design Lumens (2000 hours)

### CIRCULAR TUBES

Warm White only	400mm 60W	400mm 40W	300mm 32W
	3700	2500	1800
	3400	2300	1600

### U-SHAPED TUBE

525mm x 120mm x 25mm 40W only	
White	2875
	2575
Plus	2725
White	2500
Warm	2825
White	2550

### REFLECTOR TUBES (Bi-pin)

	2400mm 125W	2400mm 85W	1800mm 75/85W	1500mm 80W	1500mm 65W	1200mm 40W
White	8400	6500	5300/5800	5100	4500	2700
	7700	6000	4700/5200	4600	4200	2450
Warm White	8300	6400	5100/5600	5000	4400	2650
	7600	5900	4500/5000	4400	4000	2400
Daylight (Cool White)	—	—	5000/5500	4800	4200	2600
	—	—	4400/4900	4200	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 75/85W	1500mm 80W	1500mm 65W	1200mm 40W	900mm 30W	600mm 40W	600mm 20W
Pink	1500/1600	1400	1250	750	550	500	290
Red*	270/290	250	230	140	—	—	50
Gold*	2900/3100	2700	2400	1450	—	—	550
Green	5600/6000	5200	4600	2800	—	—	1100
Blue	1400/1500	1300	1150	700	—	—	270

\*Red and Gold tubes should be used only in switchstart circuits.

### GRO-LUX (Bi-pin)

#### Lighting design lumens (2000 hours)

	1500mm 80W	1500mm 65W	1200mm 40W	900mm* 30W	600mm 20W	450mm* 15W	525mm 13W	300mm 8W
	1450	1300	810	530	340	200	180	100

\*26mm diameter.

### TROPICAL DAYLIGHT

#### Lighting design lumens (2000 hours)

450mm 15W:550.

Ultra-violet tubes are also available. For details see Hytek lamps section.

**Note:** See latest Comprehensive Price List for full details of availability of sizes, colours and grades.

# 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 used in Popular Pack and Standard fittings.

Tube size (mm)	2400	2400	2400	1800	1800	1800	1800	1500	1500	1500	1200	1200	600
Diameter (mm)	38	38	38	38	38	38	38	38	38	38	38	38	38
Nominal tube watts	125	100	85	85	75	75	75	75	65	65	40	40	20**
Lamp cap	BP	BP	BP	BP	BP	BP	BP	BP or BC	BP	BP	BP	BP	BP
Actual lamp watts	120	99	84	81	78	152	73	76	63	63	39	39	19
Average tube volts	152	122	185	123	127	129	131	100	113	113	104	104	58
Average tube amps	0.94	0.96	0.54	0.77	0.72	2 x 0.70	0.64	0.87	0.63	0.63	0.42	0.42	0.38
Rated life (hours)	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	5000

Typical circuit diagram no. †	2	2	239	7	1	244	7	1	1	7	1	7	1
Circuit type	SS	SS	OS	SRS	SS	SS twin	SRS	SS	SS	SRS	SS	SRS	SS
Total circuit watts	138	117	103	103	91	180	90	96	78	82	51	55	30
Mains current amps	0.94	0.96	0.43	0.50	0.44	0.78	0.42	0.47	0.37	0.37	0.25	0.24	0.38
Total volt/amps	226	230	104	120	106	185	100	112	90	89	60	58	91
Lagging power factor	0.63†	0.52†	0.99	0.86	0.86	0.98	0.90	0.85	0.87	0.92	0.90	0.95	0.34*
Min. starting temp.	0°C	0°C	+5°C	-5°C	0°C	0°C	-5°C	0°C	0°C	-5°C	0°C	-5°C	0°C
% 3rd harmonics per phase	14	11	8	25	17	16	25	17	17	25	17	25	17

\*\*Series pair 20W=51 circuit watts (switchstart).

†Leading power factor.

Note: Use 75 x 2 lead-lag SS twin data for double-pack singles.

The figures below apply to Arrowslim and Minipack extra-slim section gear.

Tube size (mm)	1500	1050	900	450	525	300	225	150
Diameter (mm)	26	26	26	26	16	16	16	16
Nominal tube watts	50	40	30	15	13	8	6	4
Lamp cap	BP	BP	BP	BP	Min. BP	Min. BP	Min. BP	Min. BP
Actual lamp watts	50	39	30	15	13	8	6	4
Average tube volts	160	106	101	57	92	55	43	30
Average tube amps	0.38	0.42	0.36	0.34	0.17	0.17	0.16	0.15
Rated life (hours)	5000	7500	5000	5000	5000	5000	5000	5000

## SINGLE TUBE SWITCHSTART

Typical circuit diagram no. †	—	1	1	1	1	1	1	1
Total circuit watts	—	52	39	25	19	14	12	10
Mains current amps	—	0.42	0.36	0.34	0.17	0.17	0.16	0.15
Total volt/amps	—	101	46	81	41	41	39	36
Lagging power factor	—	0.51*	0.49*	0.31*	0.46*	0.34*	0.31*	0.28*
Minimum starting temperature	—	0°C	0°C	0°C	0°C	0°C	0°C	0°C
% harmonics per phase	—	17	17	—	—	—	—	—

## SINGLE TUBE SWITCHLESS START

Typical circuit diagram no. †	18	—	—
Total circuit watts	66	—	—
Mains current amps	0.31	—	—
Total volt/amps	75	—	—
Lagging power factor	0.88	—	—
Minimum starting temperature	+5°C	—	—
% harmonics per phase	32	—	—

## SERIES PAIR SWITCHSTART

10	—	10	10	10
40	—	22	18	14
0.20	—	0.17	0.16	0.15
47	—	41	39	36
0.85	—	0.52*	0.46*	0.39*
0°C	—	0°C	0°C	0°C
—	—	—	—	—

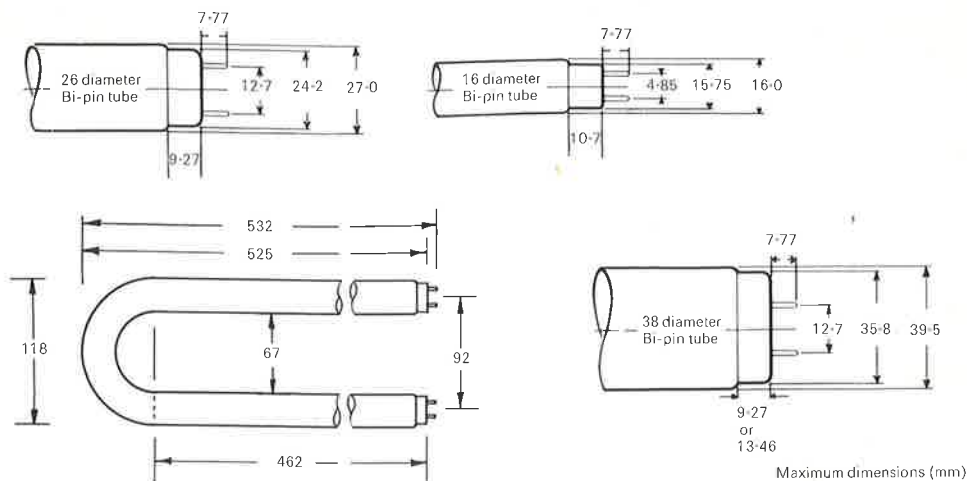
\*Uncorrected value. Allow 0.85 if power factor capacitor is fitted.

†For circuit diagrams see control gear and accessories section.

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 because the circuit watts reduce as the lamp operating temperature rises.

Note: 525mm U-tube. Data as for straight 40W tubes.

# Dimensions



## STRAIGHT TUBES

Rated wattage	Nominal dimensions* (mm)	cap	Length, base face to base face (mm) max.	Length, base face to end of opposite cap pins (mm)		Length overall (mm)	
				max.	min.	max.	min.
100/125	2400×38	Bi-pin	2374.9	2382.0	2376.4	2389.1	—
85	2400×38	Bi-pin	2374.9	2382.0	2378.4	2389.1	—
75/85	1800×38	Bi-pin	1763.8	1770.9	1768.4	1778.0	—
65/80	1500×38	Bi-pin	1500.0	1507.1	1504.8	1514.3	—
80	1500×38	BC	—	—	—	1530.4	1517.6
50	1500×26	Bi-pin	1500.0	1507.1	1504.8	1514.3	—
40	1200×38	Bi-pin	1199.4	1206.5	1204.1	1213.6	—
40	1050×25	Bi-pin	1047.0	1054.1	1051.6	1061.2	—
40	600×38	Bi-pin	589.8	596.9	594.5	604.0	—
30	900×38	Bi-pin	894.6	901.7	899.3	908.8	—
30	900×26	Bi-pin	894.6	901.7	899.3	908.8	—
20	600×38	Bi-pin	589.8	596.9	594.5	604.0	—
15	450×38	Bi-pin	437.4	444.5	442.1	451.6	—
15	450×26	Bi-pin	437.4	444.5	442.1	451.6	—
13	525×16	Small bi-pin	516.8	523.9	521.5	531.0	—
8	300×16	Small bi-pin	288.2	295.3	292.9	302.4	—
6	225×16	Small bi-pin	212.0	219.1	216.7	226.2	—
4	150×16	Small bi-pin	135.8	142.9	140.5	150.0	—

## CIRCULAR TUBES

Lamp watts	Nominal diameter (mm)	Inside lamp diameter/ glass (mm)		Inside lamp diameter/ base (mm)		Outside lamp diameter* (mm)		Bulb diameter (mm)	
		max.	min.	max.	min.	max.	min.	max.	min.
32	300	245.6	237.3	246.1	239.7	311.2	298.5	34.1	29.4
40	400	346.9	338.9	347.7	341.3	412.8	400.0	34.1	29.4
60	400	346.9	338.9	347.7	341.3	412.8	400.0	34.1	29.4

## 'U'-SHAPED TUBE

40	525×120	2× Bi-pin	For dimensions see diagram above.
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\* Base and glass dimensions the same.



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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

Those quoted are measured after 100 hours operation.

## Lighting design lumens

Those quoted are the 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 1-3% per 1000 hours use according to type.

## Supply voltage

All lamps are suitable for 220V and 240V supplies with control gear.

All mercury, metal halide, low and high pressure sodium lamps described in this section will start and operate with a 10% reduction in the rated voltage provided that the correct control gear is used. Kolor-Plus mercury tungsten lamps must be operated on the correct supply voltage.

## Fusing

For a very short period after switch-on, a discharge lamp may act as a rectifier and as a result the ballast may allow several times the normal circuit current to flow. To avoid fuse failures the ratings recommended in the **Control gear and accessories** section should be used.

## Ambient temperature

Minimum for starting  $-20^{\circ}\text{C}$  (SON  $-40^{\circ}\text{C}$ ). The graph 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 mercury vapour lamps.

IEC Publication 188: High pressure mercury vapour lamps.

IEC Publication 192: Low pressure sodium vapour lamps.

## Dimensions

Those shown are maximum.

## Cap designations

ES - E27

GES - E40

BC - B22

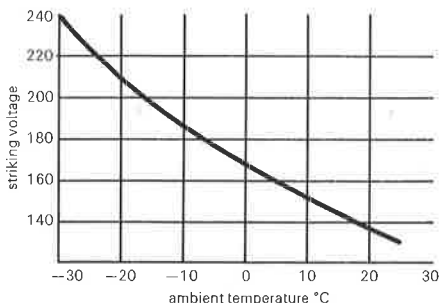
3 pin BC - B22-3

BIPIN - G13

## Run-up time

The following table shows typical run-up times to 90% light output. The time will vary depending on location and the type of fitting.

MB, MBF, MBFR		SON, SON-T, SON-TD	
50W	5 mins	70W	5 mins
80W	3 mins	250W	7 mins
125W	3 mins	400W	5 mins
250W	4 mins	1000W	10 mins
400W	4 mins		
700W	3 mins	SLI	
1000W	2 mins	140W	12 mins
		200W	7 mins
MBI, MBIF			
250W	2 mins	SOX	
400W	2 mins	35W	6 mins
1000W	2 mins	55W	6 mins
		90W	7 mins
		135W	8 mins



## Re-strike time

The following table shows typical re-strike times after momentary supply interruption. The time taken will vary depending on the ambient temperature and type of fitting. Values for SLI and SOX are not quoted because of the variability in re-strike time, but it is usual for at least 1 out of 5 lamps to re-strike instantaneously.

MB, MBF, MBFR		MBI, MBIF	
50W	4 mins	250W	7½ mins
80W	4 mins	400W	8½ mins
125W	4 mins	1000W	12 mins
250W	4½ mins		
400W	5 mins	SON, SON-T, SON-TD	
1000W	6 mins	All ratings	1 min

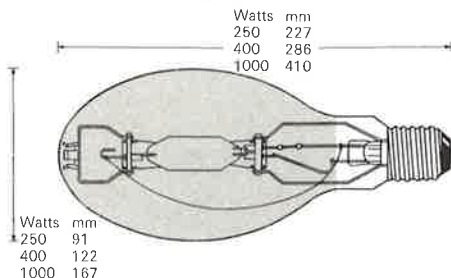


## Kolorarc MBIF and MBI metal halide lamps

### Description

High pressure discharge in mercury with metallic additives operating in a quartz arc tube.

Kolorarc (MBIF) lamps have elliptical bulbs coated on the interior surface with fluorescent phosphor giving increased light output, improved colour and diffusion. MBI lamps have clear bulbs.



### RANGE

	Watts	Burning Position	Nominal Lamp Voltage	Lamp Current Amps	Cap	Lumens		Standard Pack
						Initial	Lighting Design	
MBIF	250	BU and H	100	2.9	GES	19000	16000	10
	400 *	{ H BU and BD }	120	3.5	GES	{ 26000 29000 }	{ 21500 24000 }	10
	1000					92000†	85000†	
MBI	400 *	BU and BD	120	3.5	GES	29000†	24000†	10
	1000	BU and BD	250	4.2	GES	92000†	85000†	1

\*With appropriate Thorn control gear, lamp operates at 375W; lumen outputs as shown.

†Applies to vertical position. If operated horizontally reduce by 10%

### Applications

In situations where high light output must be combined with good colour rendering. Indoors for stores, supermarkets, offices, museums; area and high-bay lighting; sports halls, gymnasias and swimming pools etc. MBI lamps are suitable where precise optical control is required. Both Kolorarc and MBI lamps have proved suitable light sources for use with colour television cameras.

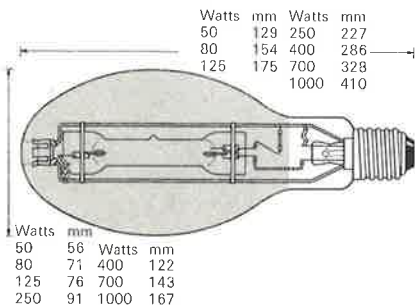
### Operating position

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.

For further information see **General lamp information** at the beginning of this section.

## Kolorlux MBF mercury fluorescent lamps



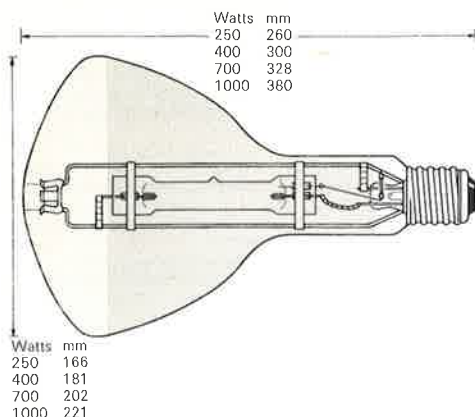
### RANGE

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



## 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

## Description

High pressure mercury vapour discharge operating in a quartz arc tube. A shaped outer bulb is coated with a reflecting layer which directs most of the light downwards but allows some upward light. This internal reflector is unaffected by atmospheric corrosion or dirt collection, so that the lamp requires minimum maintenance.

## Applications

For medium and high-bay lighting. The hard glass outer bulb permits external use.

## Operating position

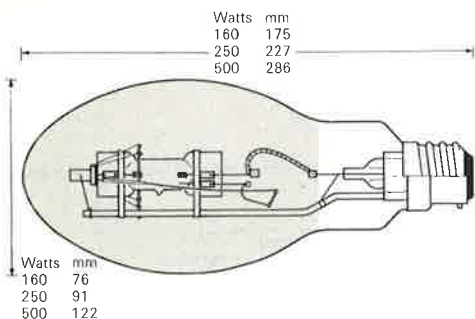
Universal.

For further information see **General lamp information** at the beginning of this section.

# Kolor-Plus MBTF mercury tungsten lamps

## Description

High pressure mercury discharge operating in a quartz arc tube. A coiled tungsten filament is connected in series with the arc tube and acts as a ballast to it. The lamp operates directly from the supply. The elliptical outer bulb is coated with a phosphor to give improved colour and light output.



## RANGE

MBTF	Watts	Supply Voltage	Lamp Current Amps	Cap	Lumens		Standard Pack
					Initial	Lighting Design	
	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

## Applications

Can be used as direct replacements for tungsten filament lamps, giving higher light output and longer life. Suitable where access is difficult – in Wellglass and flameproof fittings and for shop windows, garages, warehouses and streetlighting.

## Supply voltage

Available for 240/250V supplies. The lamps must be operated on the correct supply as sudden reductions in voltage may cause them to extinguish.

## Rated Life

8000 hours.

## Operating position

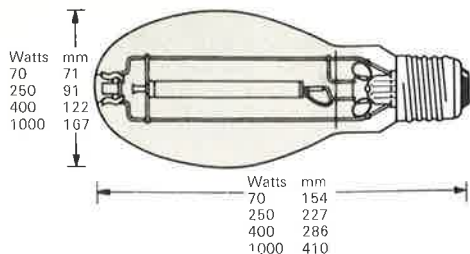
Cap up. 250W and 500W ratings may be operated in other positions provided there is negligible fluctuation in supply voltage.

For further information see **General lamp information** at the beginning of this section.

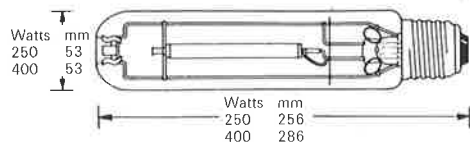
**Note:** For 'Black Light' MBW and MBTW mercury lamps see **Hytek lamps** section.

# KolorSON and SONline high pressure sodium lamps

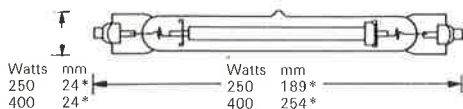
## SON



## SON-T



## SON-TD



\*Nominal dimensions

## Description

Sodium discharge operating in a sintered aluminium oxide arc tube to withstand the intense chemical activity at high temperature. Three types of outer bulb are available:

- 1 SON (KolorSON). Elliptical bulb with a diffusing coating. Can be used in the same fitting as an MBF lamp but requires different control gear.
- 2 SON-T. Tubular clear hard glass. For floodlighting.
- 3 SON-TD (SONline). Tubular double-ended clear quartz. The length and cap are equivalent to those of tungsten halogen floodlighting lamps.

## Applications

Public lighting; floodlighting; industrial and commercial lighting.

## 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 20m from a 70W lamp, 22m from a 250W lamp and 17m from a 400W lamp. External starting simplifies lamp construction, ensuring immediate striking and reliability. The lamp takes about five minutes to run up to full brightness and it will normally restrike within one minute of extinction, rapidly regaining full light output. This is an important feature for interior use and a considerable improvement on the restriking times of mercury lamps.

## Colour

A pleasant golden white appearance with reasonable colour rendering. Blues and greens are somewhat subdued, yellows and reds are enhanced. All colours are distinguishable.

## Operating position

SON and SON-T – Universal.  
SON-TD – Horizontal  $\pm 20^\circ$  (May be operated vertically but full life may not be achieved).

For further information see **General lamp information** at the beginning of this section.

## RANGE

Watts/Type	Nominal Lamp Voltage	Lamp Current Amps	Cap	Lumens		
				Initial	Lighting Design	Standard Pack
70 Elliptical SON I	95	0.93	ES	5800	5300	24
250 Elliptical SON	100	3.0	GES	25000	24000	10
400 Elliptical SON	105	4.4	GES	46000	44000	10
1000 Elliptical SON	110	10.3	GES	120000	110000	4
250 Tubular SON-T	100	3.0	GES	26000	25000	12
400 Tubular SON-T	100	4.6	GES	48000	46000	12
250 SON-TD*	100	3.0	RX7s	26000	25000	10
400 SON-TD*	105	4.4	RX7s	48000	46000	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.

†Clear version also available.

# Linear SLI/H sodium lamps

## Description

Low pressure sodium discharge operating in a linear arc tube enclosed in an evacuated tubular outer bulb which has an internal infra-red reflecting coating to provide thermal insulation.

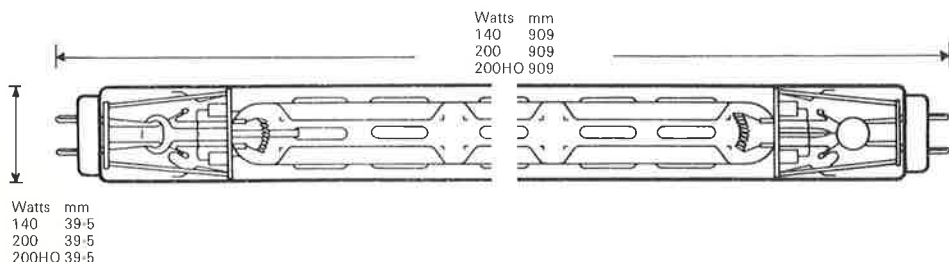
## Application

Streetlighting. Lamps comply with DoE requirements for principal and trunk roads, and motorways. Also floodlighting.

## Operating position

Horizontal  $\pm 20^\circ$

For further information see **General lamp information** at the beginning of this section.



## 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

# SOX sodium lamps

## Description

Low pressure sodium discharge operating in a U-shaped arc tube enclosed in a tubular outer bulb which has an internal infra-red reflecting coating to provide thermal insulation.

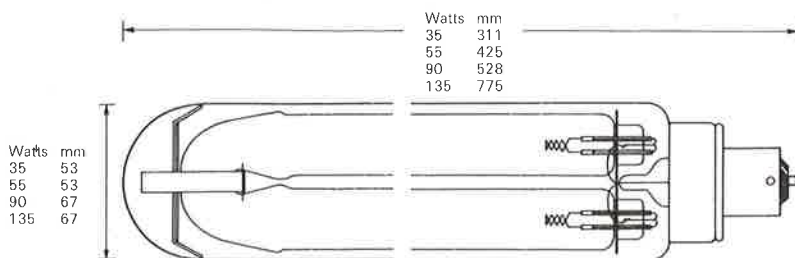
## Applications

High-efficiency roadlighting. Also floodlighting.

## Operating position

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

For further information see **General lamp information** at the beginning of this section.



## 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

# Linear metal halide lamps— Type MBIL 750W, 1500W and 1600W

## Description

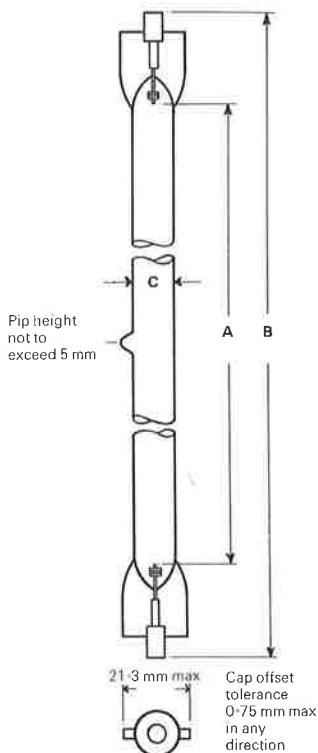
An arc burning between tungsten electrodes in an atmosphere of mercury and additional metal halides, enclosed in a tubular quartz bulb. The halides are chosen to give a high efficiency light output of good colour rendering and colour appearance approximating to daylight. The lamps are designed to operate as an integral unit with the ON 1600 floodlight (see **Outdoor and street lighting** section).

## Applications

Exterior, industrial, commercial and sports lighting. The colour rendering properties are well suited for use with colour television.

## Control gear

For operation in ON 1600 floodlight, see **Control gear and accessories** section for appropriate gear.



	750W	1500W	1600W
Lamp reference no.	91-7461	91-7473	91-7475

## Physical characteristics

Arc length (mm) Dimension A	190 ± 2	190 ± 2	190 ± 2
Overall length (mm) Dimension B	254 ± 2	254 ± 2	254 ± 2
Contact length (mm)	Overall length less 4mm		
Arc tube diameter (mm) Dimension C	13.3 max.	20.1 max.	17.7 max.
Cap	Ceramic	Ceramic	Ceramic
Operating position	Horizontal	Horizontal	Horizontal
Bulb finish	Frosted	Frosted	Frosted

## Electrical characteristics

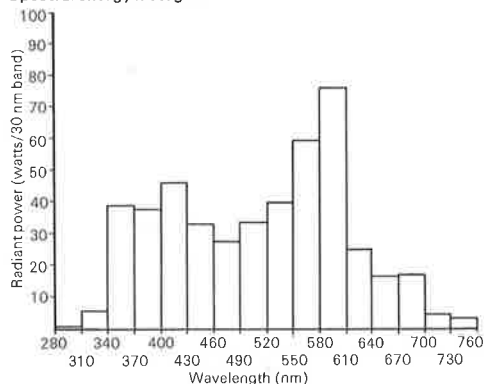
Supply voltage (a.c.)	200/250	380/415	200/250
Arc voltage	500 ± 25	250 ± 20	450 ± 30
Operating current (amps)	1.75	6.7	3.75
Nominal rating (watts)	750	1500	1600

## Luminous characteristics

Initial light output (lumens)	67000	120000	135000
Light output throughout life (lumens)	58500	110000	115000
Objective life (hours)	5000	3000	3000
Run-up time to 90% (mins)	2.5	2.0	2.0
Hot re-strike time (mins) in ON 1600 floodlight at 25°C ambient	8-12	15-20	15-20
Chromaticity co-ordinates x=	0.364	0.374	0.399
y=	0.392	0.373	0.373

For full technical details of these lamps, data sheets are available on application.

Spectral energy histogram



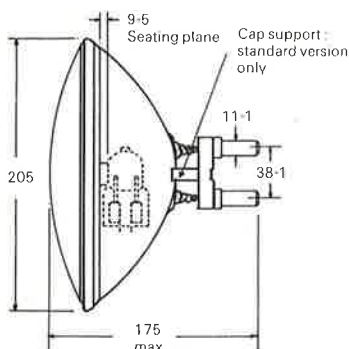
For details of other types of MBIL lamps see **Hytex lamps** section.

# Sealed beam compact source iodide lamps—1000W and 1000W hot re-strike

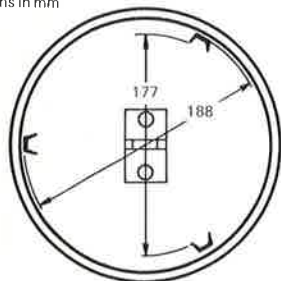
## Description

**1000W** An arc tube comprising a discharge in a quartz envelope operating between tungsten electrodes in an atmosphere of mercury vapour with additional metallic iodides. The arc tube is enclosed in an 8in sealed beam reflector envelope. The additives ensure a high efficiency white light source of good colour rendering.

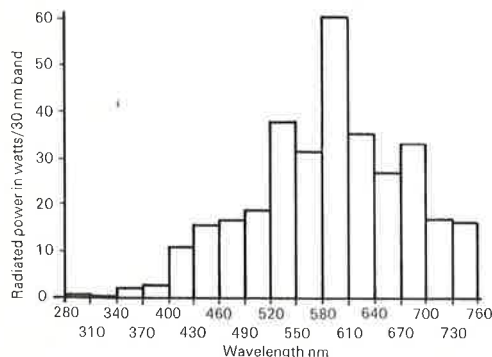
**1000W hot re-strike** A form of the standard 1kW CSI sealed beam lamp in which the construction has been modified to enable the lamp to be restarted immediately when hot.



All dimensions in mm



## Spectral energy histogram



## Applications

Floodlighting, specially for film and TV outside broadcasts. For use with daylight colour film stock. Also as general replacements for carbon arcs.

## Installation

**1000W** This lamp is designed for use with the Thorn OM 1000 floodlight.

**1000W hot re-strike** This lamp must **not** be used with this fitting and standard G38 lampholders are unsuitable as they will not necessarily carry the high pulse voltages required for hot restart. A lampholder with well insulated sockets is necessary and suitable types (ref. 938/223) may be obtained from Bender & Wirth. 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.

Clearance distance

- (1) Between smooth surfaces 15mm.
- (2) Between sharp projections 30mm.

Creepage distances i.e. bridged by an insulating surface 30mm.

## Control gear

Standard 1000W CSI sealed beam — See **Control gear and accessories** section.

1000W CSI sealed beam hot re-strike — Details on application.

Lamp reference nos.	1000W	— 99-1222
	1000W hot re-strike	— 99-1422

## Electrical characteristics

Supply voltage (a.c.)	220, 240
Arc watts	1000
Arc volts	70/85
Arc current approx. (amps)	15
Run-up time to 90% (secs)	50
Restarting time (mins)	10 (in OM 1000 floodlight)
Hot re-strike lamp instantaneous	
Cap	Bi-post G38

## Luminous characteristics

Initial beam candlepower (peak)	1.5 million cds
Beam spread	$\frac{1}{2}$ peak $\frac{3}{4}$ peak $\frac{1}{2}$ peak $\frac{1}{10}$ peak 6° 8° 12° 18°
Light output (lumens)	Initial Design 76000 67000
Colour rendering	Good
Chromaticity co-ordinates	x=0.395 y=0.395 CV 3.5%
Life (nominal objective—hours)	1000
Operating position	Any (preferred mounting position marked TOP)

For full technical details of these lamps, data sheets are available on application.

For details of other types of CSI lamps see **Hytek lamps** section.



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For full technical details of lamps shown within this section, data sheets are available on application.

# Mercury lamps for projection purposes — Type ME/D

## 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.

Supply voltage 200/250.

## Typical applications

Monochrome slide and film projectors, film printing, projection microscopes, profile projectors and industrial inspection purposes.

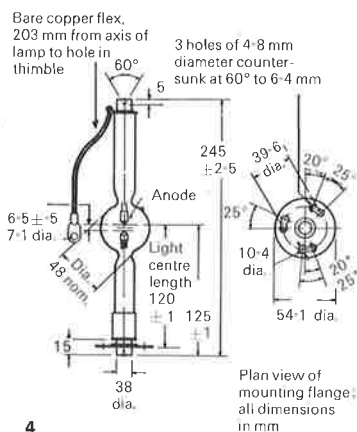
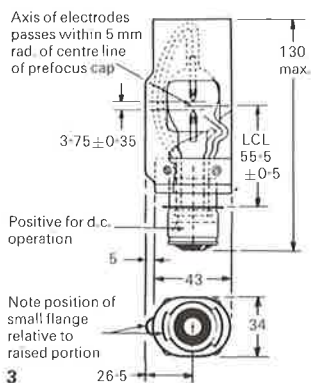
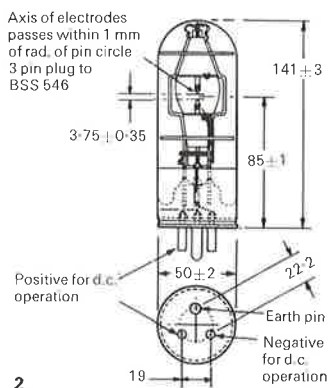
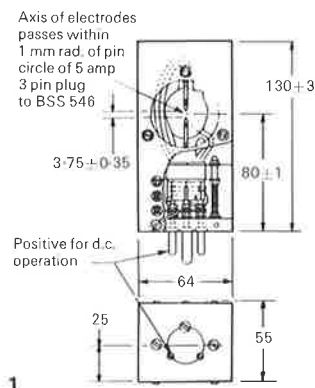
## Control gear

Details on application.

## 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.



## RANGE

Reference no.	Watts	Arc length mm	Cap	Outer casing	Illus.	Lamp operating		Starting current Amps	Maximum brightness Stilbs	Mean HCP	Life Hours
94-0001	250	3.75	3-pin	Metal Box Glass Window	1	Volts	Amps	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 long wave u-v – Types MBTW and MBW Black light

## Description

**MBTW** 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 pear-shaped Black Glass outer effectively obscures all visible radiation but emits long wave u-v ('Black Light'). No control gear is needed.

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

## Applications

**MBTW** As a source of long wave u-v for the excitation of fluorescent materials. Lighting for fluorescent effects – dance halls, clubs, discotheques etc. Can be used as a direct plug-in replacement for a tungsten lamp.

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

## Voltages

**MBTW** Can be supplied in two ratings – 220/230V and 240/250V. Must be operated on the correct supply. Sudden reductions in voltage or vibration may cause them to extinguish.

**MBW** For operation on 200/250V a.c. supplies with suitable control gear in the form of a series choke and power factor correction capacitor.

## Burning position

**MBTW** Vertical cap up.

**MBW** Universal.

## Control gear

**MBTW** No control gear is needed. Lamp operates direct from the supply.

**MBW** Details on application.



MBTW/MBW

## RANGE

Reference no.	Lamp	Watts	Cap	Lamp operating Volts	Amps	Starting current Amps	Life hours
91-5525	MBTW	175	BC	220/230	0.75	—	3000
91-5527	MBTW	175	BC	240/250	0.70	—	3000
91-6217	MBW	125	B22/31 x 30 3-pin	110/140	1.15	1.5/2	1500

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

## Description

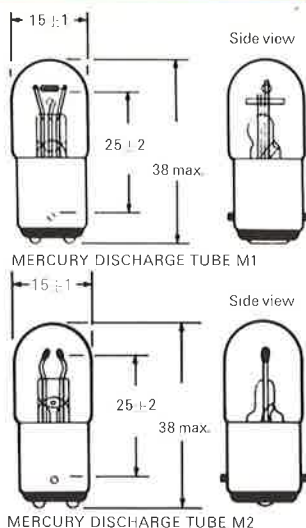
Low pressure discharge in mercury vapour between electrodes in a tubular glass envelope. These lamps provide both u-v and visible radiation especially useful in providing excitation of fluorescent materials at low illumination levels. The M1 lamp is for operation on 24V d.c. supplies with suitable series 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.

## Control gear

Details on application.

## Typical applications

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. 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.



All dimensions in mm

## RANGE

Reference no.	Type	Rating*	Cap	Filament current Amps	Arc current Amps	Life Hours
98-9001	M1	4.5W	SBC	0.8 (0.95 max)	0.75 max.	200
98-9002	M2	4.5W	SBC	—	0.5/1.5	200

\*At 0.75 Amp

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

## 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. Supply voltage 200/250.

## Typical applications

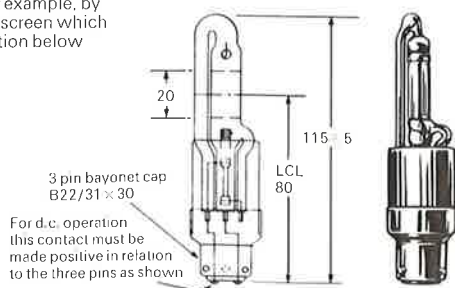
A stable linear source for optical purposes. As the light source is narrow and of uniform brightness along its length, it is very suitable for film printing or as a source of u-v radiation.

## Control gear

Details on application.

## 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.



All dimensions in mm

## RANGE

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

# Short and long wave u-v and germicidal lamps

## Fluorescent type germicidal lamps

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	Standard pack
8W	92-1213	300 x 16	25
15W	92-2013	457 x 25	25
30W	92-4540	914 x 25	25

## Long-wave ultra-violet fluorescent type tubes

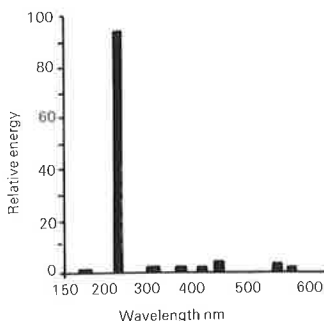
The germicidal tubes described above are short-wave ultra-violet sources. Long wave ultra-violet fluorescent type tubes are also available as below :

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

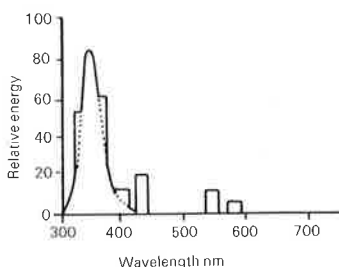
### Fittings and control gear

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.

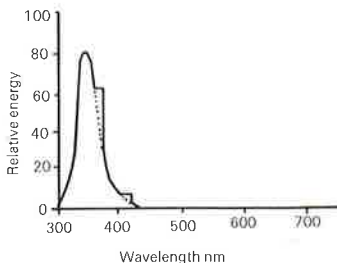
Spectral energy distribution germicidal tubes



Spectral energy distribution ultra-violet tubes



Spectral energy distribution blacklight blue tubes



# Metal halide u-v cure lamp—Type MBIL 1800W

## Description

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.

## 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 GL 1173 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.

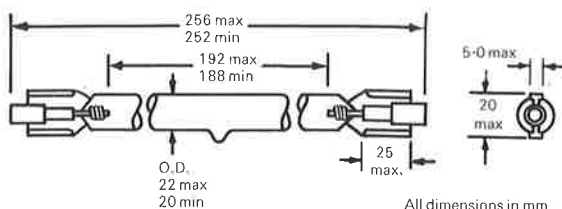
## Lamp performance

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.

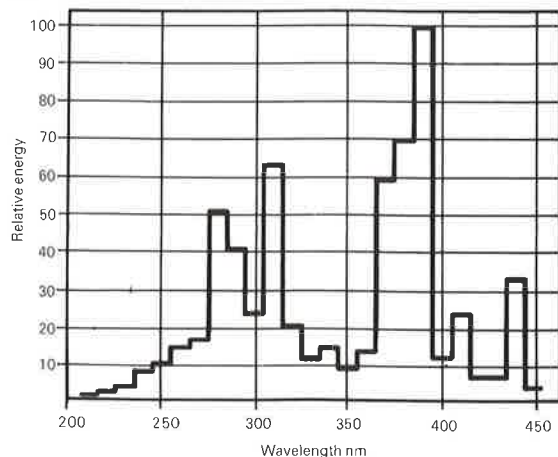
## Control gear

See Control gear and accessories section.

For details of other types of MBIL lamps see **Discharge lamps** section.



Typical spectral power distribution



## 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 80 l./W. The source size is approximately  $9 \times 5$  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.

## 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.

## Characteristics

Supply volts a.c.	220, 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
Initial lum. eff. (min)	80 lumens/watt
Lumen maintenance	85%
Colour rendering	Good
Chromaticity co-ordinates	$x=0.432$ $y=0.382$
Life (nominal objective-hours)	500
Operating position	Universal

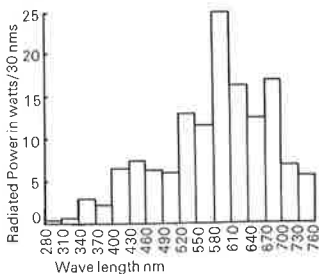
## Lampholder

A lampholder, Catalogue no. L 1101, is available for use with this lamp.

## Control gear

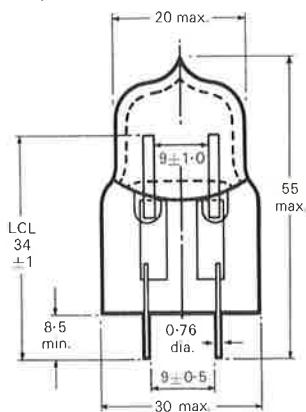
See Control gear and accessories section.

Typical spectral power histogram



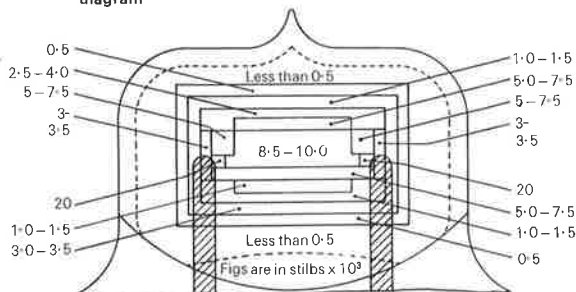
Lamp reference no.

99-0201



All dimensions in mm

Typical brightness distribution diagram



For details of other types of CSI lamps see **Discharge lamps** section.

# Compact source metal halide lamps—1000W and 1000W hot re-strike

## Description

**1000W CSI** A compact source iodide lamp giving white light of good colour rendering at an efficacy of 90 L/W for 200 hours life.

**1000W CSI hot re-strike** A version of the standard 1000W CSI 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 these lamps make them particularly suitable for projector purposes (such as follow spots), and cinema and television lighting use. For photographic purposes they are suitable for use with daylight colour film stock.

## Lamp reference nos.

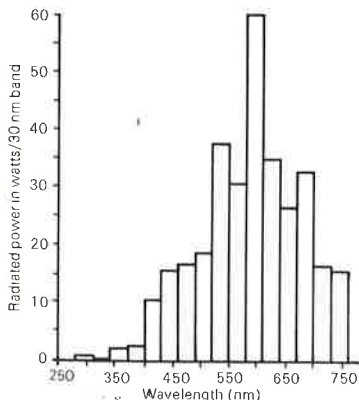
1000W	99-0221
1000W hot re-strike	99-0421

## Characteristics

Supply volts	220, 240
Arc watts	1000
Arc volts	70-85
Arc current (amps)	15
Run-up time (secs)	30
Re-start time (mins)	2-5
Re-start time hot re-strike (mins)	Instantaneous
Initial efficiency (lumens/watt)	90
Lumen maintenance	90%
Colour rendering	Good
Chromaticity co-ordinates	x=0.395 y=0.395 CV 3.5%

Cap	Medium bi-post G22
Cap (hot re-strike)	Bi-post G38
Life (nominal objective — hours)	200
Operating position	Universal

## Typical spectral power histogram



## Installation hot-restrike

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:

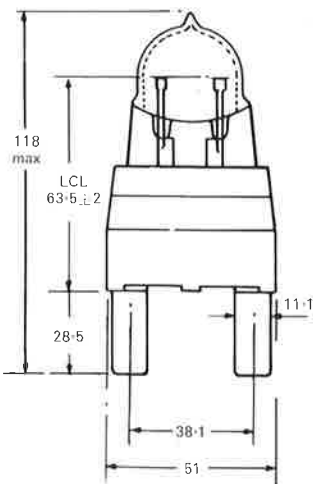
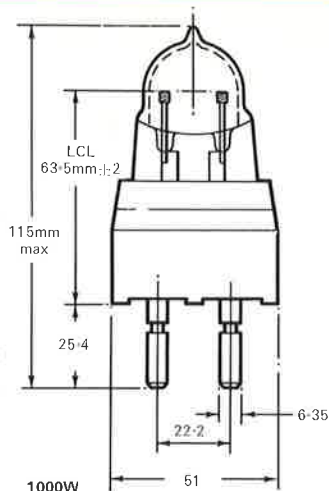
Clearance distance

- (1) Between smooth surfaces 15mm.
  - (2) Between sharp projections 30mm
- Creepage distances i.e. bridged by an insulating surface 30mm.

## Control gear

**1000W CSI** See Control gear and accessories section.

**1000W CSI hot re-strike** Details on application.



1000W Hot re-strike

All dimensions in mm

For details of other types of CSI lamps see **Discharge lamps** section.

# Metal halide photoprinting lamps — Type MBIL 1200W and 2kW

## Description

These lamps consist of an arc burning between tungsten electrodes in an atmosphere of mercury vapour and additional metallic halides enclosed in a tubular quartz arc tube. The halides are chosen to ensure maximum radiation in the 360 to 450 nanometre region.

The 1200W version is designed to operate in an enclosure in still air. The 2kW lamp is designed for use in an enclosure with some general air flow over and around the lamp.

Both lamps 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.

## Applications

For photoprinting in the graphic arts industry, encompassing diazo printing, photo-resists etc. The u-v output enables faster printing speeds than those obtained from conventional carbon arc lamps. The 1200W version is particularly recommended by Agfa-Gevaert as an exposure source for use with their colour proofing system.

## Lampholder

Lampholder assembly GL 1153 is available for the 1200W version.

## Control gear

**1200W** See Control gear and accessories section.

**2kW** Details on application.

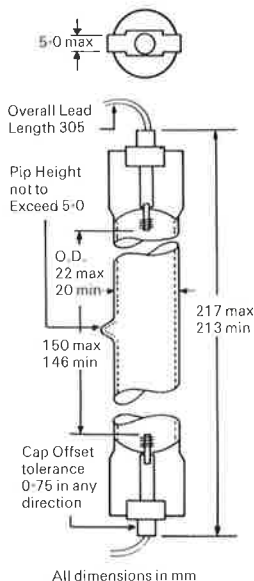
## Simmering conditions

These lamps may be operated on simmering circuits. Details on applications.

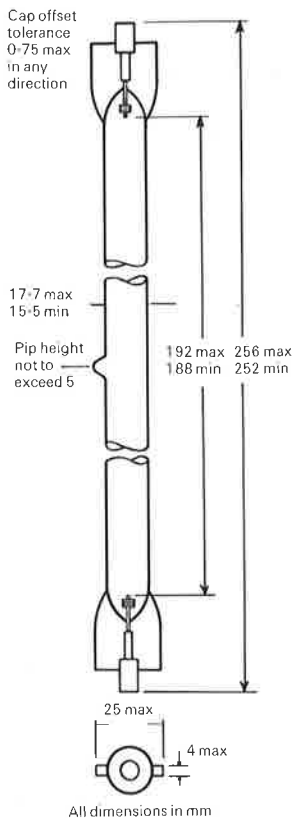
## Safety precautions

The light emitted from the lamps or reflector should not be observed with the naked eye. The lamp arc tubes should not be touched with the bare hand, but, if this is unavoidable, they should be cleaned with a methylated spirit damped cloth before operation.

2kW



1200W



Lamp reference nos.	1200W 91-7470	2kW 91-7484
<b>Characteristics</b>		
Supply voltage	240V 50Hz	380/415V 3 phase 50Hz
Arc watts	1200	2000
Arc volts	350 ± 30	250 ± 25
Arc current (amps) nom.	4	8.4
Run-up time (mins) approx.	2	1
Cap	Ceramic R7s	Ceramic with 12 in leads
Life (nominal objective – hours)	500	200 continuous burning at 2kW, 1000 hrs under simmering conditions with 2kW at exposure only.
Operating position	Horizontal	Horizontal with exhaust pip uppermost

For details of other types of MBIL lamps see **Discharge lamps** section.

# 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.

## Lamp reference nos.

Graph -X 400	91-9828
Graph-X 365	91-9827

## Electrical characteristics

<b>400W Operation</b>	
Arc watts	400
Arc volts	105 ± 15
Arc current (amps)	4.4
Run-up time (mins)	2
Restrike time (mins)	7/10

<b>800W Operation</b>	
Arc watts	800
Arc volts	110 ± 15
Arc current (amps)	9
Run-up time	—
Restrike time	—

Switching from 400W to 800W.  
Instantaneous extra u-v output.

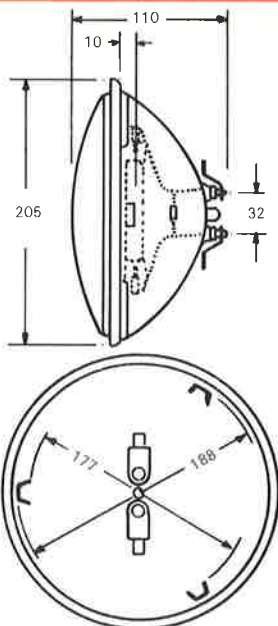
## Life

400W	1000 hours nominal
800W	100/200 hours nominal (continuous operation)

If run at 800W for the duration of the exposure, there is little reduction in total life.

## Control gear

See Control and gear accessories section.



## DHIPS 400 Graph-X Fitting

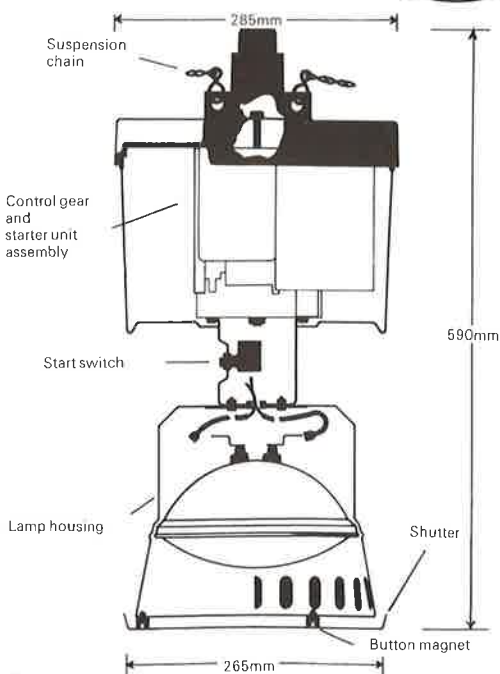
This fitting is designed for use in the Graphic Arts Industry to accommodate a 400/800W MBI Sealed Beam Photoprinting lamp (ref: 91-9827, 91-9828).

## Range

Rating	400W
Lamp type	400/800W MBI Sealed Beam GRAPH -X 365 and GRAPH-X 420
Cat. no.	DHIPS 400
Weight including lamp	23lb (10.5kg)

## Components

Control gear housing including gear	DHIP 400
Reflector/Shutter	DHS



All dimensions in mm

# Pulsed xenon photoprinting lamps— linear and helical types

## Description

**Linear types.** Consist of an arc between tungsten electrodes operating in an atmosphere of pure xenon contained in a tubular quartz bulb.

**Helical types.** Higher wattage versions of the linear types with the quartz tube formed in to a helix to provide a more concentrated source.

The spectrum of radiation from both lamps is virtually continuous extending from the ultra-violet through the visible in to the infra-red. The colour of the visible radiation is very similar to noon sunlight having a colour temperature of 5600°K. They are designed to operate on control gear providing 100 cps pulses.

Note: For some equipment it is necessary to include a striker starting device on the 4kW (helical) lamp.

## Application

Photo reproduction. Until recently the standard light source for copy board illumination and platemaking has been the open carbon arc. Over the past few years special discharge lamps have been used, particularly pulsed xenon lamps.

## Control gear

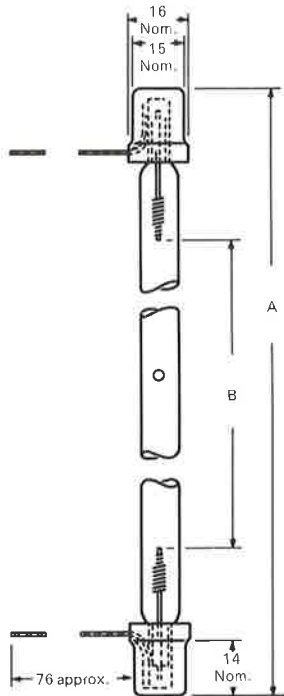
Details on application.

## Lamps specification

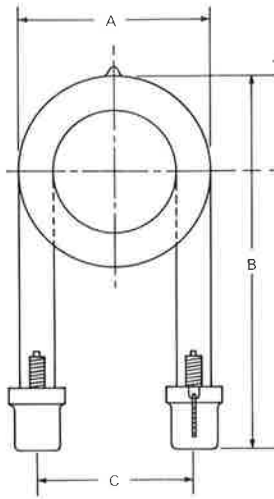
Type	Pulsed xenon arc
Supply volts	200/250V 50Hz
Pulse frequency	100Hz
Efficacy (lumens/watt)	25 (1500W, 3000W linear) 30 (4kW, 8kW helical)
Cap	Ceramic with flexible leads
Life (nominal objective - hours)	500 (1500W, 2000W linear) 200 (4kW, 8kW helical)
Operating position	Universal (forced cooling essential)

## Lamp reference nos.

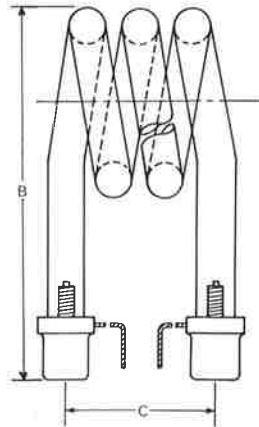
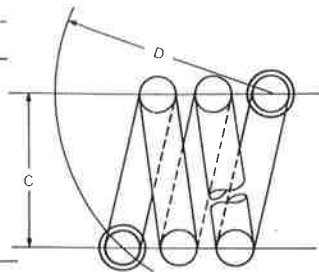
Rating	Type	Reference no.
1500W	Linear	98-2015
3000W	Linear	98-2030
4kW	Helical	98-2050
8kW	Helical	98-2070



	Linear 1500W	3000W
A	392±3	695±3
B	310 approx.	615 approx.



	Helical 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

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.

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.

## Operating position

Vertical  $\pm 15^\circ$

## Caps

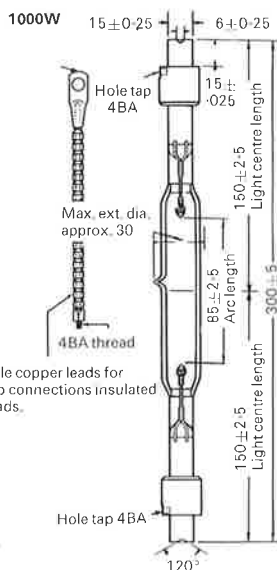
Special cylindrical.

## Control gear

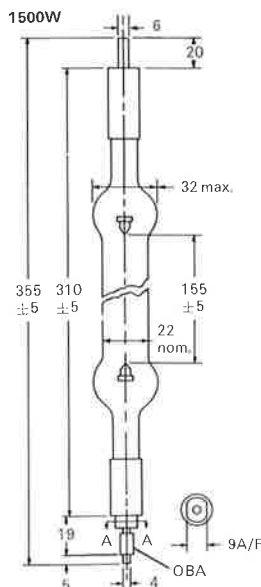
Details on application.

## Applications

High speed photography and cinematography; colour matching; fadeometer testing; graphic arts; optical instruments; laboratory and general scientific purposes.



Two 140mm flexible copper leads for top and bottom cap connections insulated with fish-spine beads.



All dimensions in mm

## RANGE

Reference no.	Rating	Supply Volts	Arc Length (mm)	Lamp operating		Lumens	Life Hours
				Volts	Amps		
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 glass envelope FA5 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.

## 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.

## Control gear

Details on application

## Applications

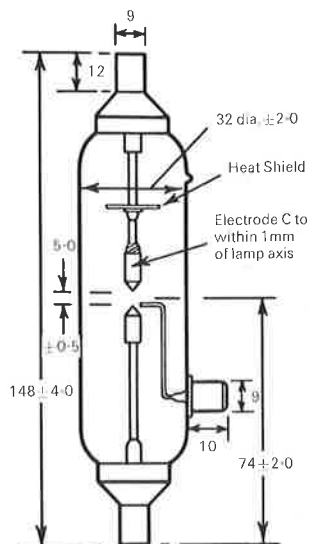
### 1. Flash tube

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 is 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.

Lamp reference number 95-2005



All dimensions in mm

## 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:  $2.0 \times 10^6$  lm.  
Approx. flash duration to  $\frac{1}{3}$  peak: 1.0 millisecond.  
Average objective life: 5000 flashes.

## 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 stilbs
Average objective life	500 hours

# Compact source xenon lamps—Type XE/D

## 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.

## Applications

Cinematography, Optical instruments, Laboratory and general scientific purposes.

## Operating position

Vertical or horizontal  $\pm 15^\circ$ .

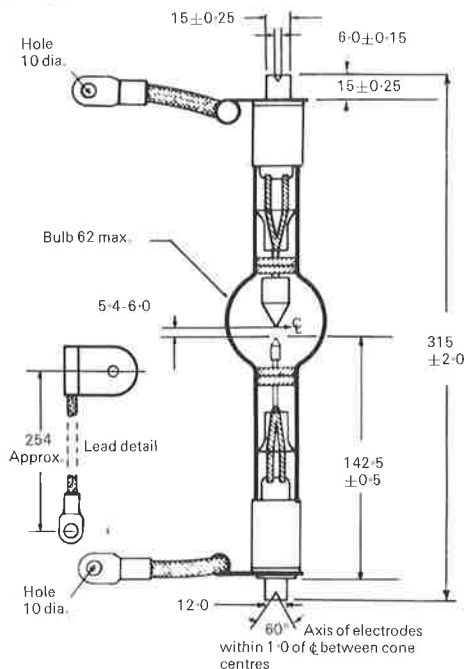
## Caps

All lamps are fitted with special cylindrical caps with a cone centre for mounting, and a flexible lead.

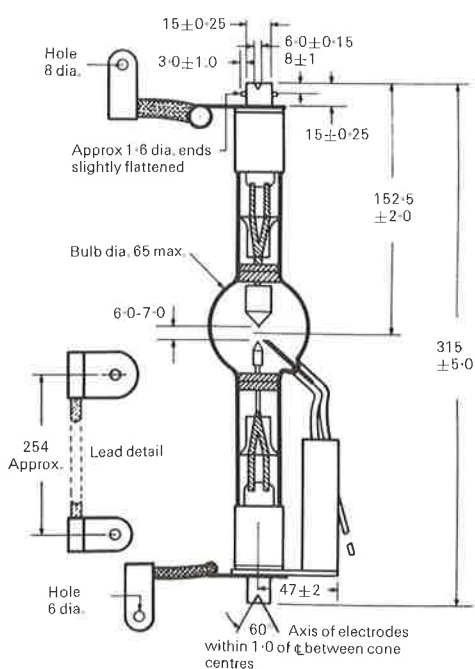
## Control gear

Details on application.

2kW D.C. 2 Electrodes



2kW D.C. 3 electrodes



All dimensions in mm

## RANGE

Reference no.	Rating Watts	Supply Volts	Arc size mm	Lamp operating Volts	Amps	Lumens	Luminance*	Life Hours
98-1530	2kW	65 min d.c.	5.5 × 4	25	80	70000	90000	1500
	2 Electrodes							
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/cm<sup>2</sup>

# 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.

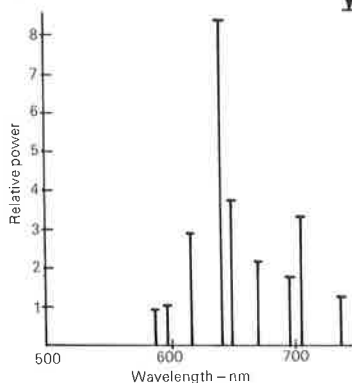
## Fittings and control gear

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

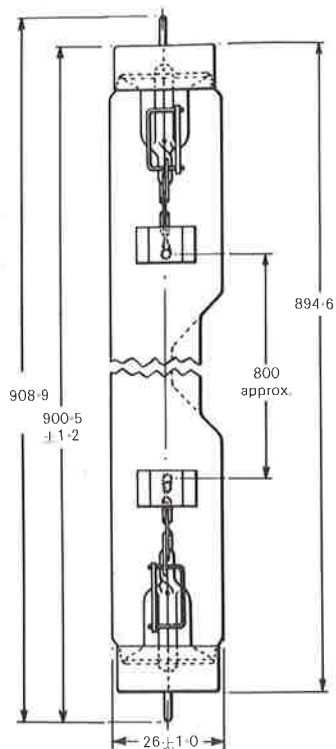
## Lamp characteristics

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
Caps	G 13/10 x 24 2 bi-pin

## Spectral energy diagram



Lamp reference number 98-4501



All dimensions in mm



## Standard incandescent lamps

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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
BA20d	—	Bosch
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 barrel in millimetres.

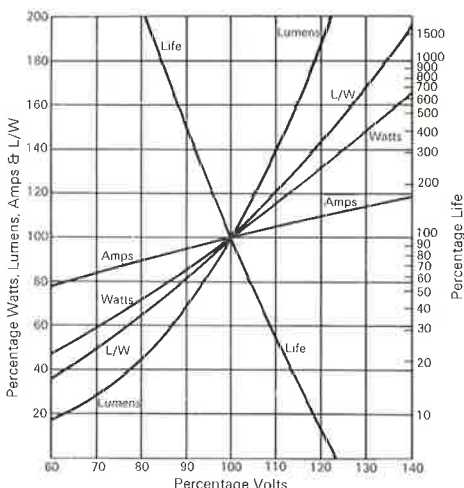
## Lumen output

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	Brightlight* / Coiled Coil	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.

## 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 comparatively 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.

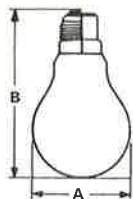
The regenerative cycle performs a 'self-cleaning' action on the inner surface of the bulb resulting in nearly 100% lumen maintenance.

### Advantages

- 1 Greater light output and considerably longer life than a corresponding standard GLS lamp.
- 2 Virtually constant light output throughout life.
- 3 Compact, easily controllable light source.

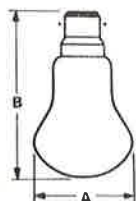


# General lighting service lamps



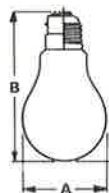
## BRIGHTLIGHT/COILED COIL

40-100W	BC	A 61	B 108.5
150W	BC	69	128.5
(For ES Caps add 1.5mm to length of BC equivalent)			



## NETABULB

40, 60, 100W	A 61	B 103.5
150W	76	124.5



## COLOURED

15W-60W	A 61	B 108.5
100W	69	128.5
(For ES caps add 1.5mm to length of BC equivalent)		

All dimensions in mm

## BRIGHTLIGHT—COILED COIL

Watts	Voltage	Cap	Finish	Standard Pack
40	240	BC	Pearl	Stakpak=50×Twinpack
60				Tenway=10×10 Singles
100				25 Singles
150				

## COILED COIL

Watts	Voltages	Cap	Finish	Standard Pack
40	240	BC	Clear	25
40	250	BC	Pearl	25
60	240	BC	Clear	25
60	250	BC	Pearl	25
75	240	BC	Pearl	25
100	240	BC	Clear	25
100	240	ES	Pearl	25
100	250	BC	Pearl	25
150	240	BC	Clear	25
150	250	BC	Pearl	25
150	240	ES	Pearl	25

## NETABULB

Watts	Voltage	Cap	Finish	Standard Pack
40	240	BC	Silverlight	25
60	240	BC	Silverlight	25
100	240	BC	Silverlight	25
150	240	BC	Silverlight	25

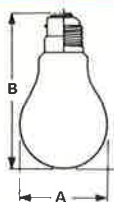
## COLOURED

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	Amber, Blue, Green, Pink, Yellow, Red	100*
60†	200/250	BC	Amber, Blue, Green, Pink, Yellow, Red	100*
100†	200/250	BC	Amber, Blue, Green, Pink, Yellow, Red	25

\*Standard pack consists of 10×10 way packs per container.

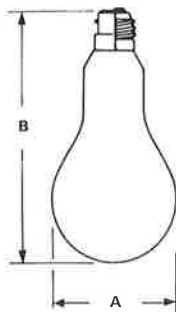
†Not suitable for outdoor use unless enclosed for protection against rain.

# General lighting service lamps



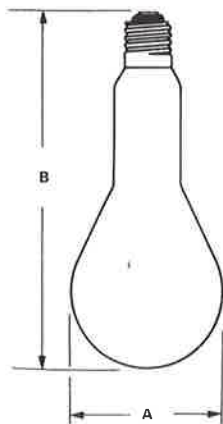
**SINGLE COIL**

15- 100W BC 61 B 108-5  
(For ES Caps add 1.5mm to length of BC equivalent)



**SINGLE COIL**

150- 200W BC 81 B 164-5  
(For ES Caps add 1.5mm to length of BC equivalents)



**SINGLE COIL**

300W ES 111-5 B 245  
300- 500W GES 111-5 B 239  
750-1000W GES 131-5 B 299

All dimensions in mm

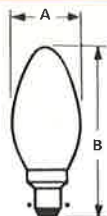
## SINGLE COIL

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	ES	Clear	25
60	110	220/230 240 250	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

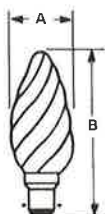
Watts	Voltages	Cap	Finish	Standard Pack
25	25 50	BC	Pearl	25
40	25 50	BC	Pearl	25
40	25	3pin BC	Pearl	25
40	25 50	ES	Pearl	25
60	25 50	BC	Pearl	25
60	25 50	ES	Pearl	25
100	25 50	BC	Pearl	25
300	50	GES	Clear	10

# Decorative lamps



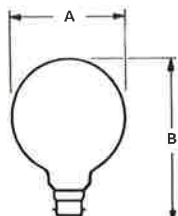
PLAIN CANDLE

	A	B
25W-40W BC	36	97
SBC	36	103
SES	36	104
60W BC	46	128
SBC	46	133



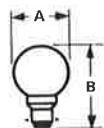
TWISTED CANDLE

	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

## 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*†

†Also available in 36 mm dia.

## 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 Reflector Lamps)

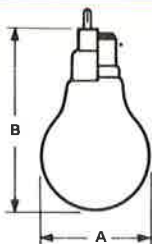
Watts	Voltage	Cap	Finish	Standard Pack
40	240/250	BC, ES	Clear	10
40	240/250	BC, ES	Silverlight	10
40	240/250	BC, ES	Amber, Red, Green, Purple	10
40	240/250	BC, ES	Crown Silvered	10
60	240/250	BC, ES	Silverlight	10

## ROUND BULB

Watts	Voltage	Cap	Finish	Standard Pack
25	240/250	BC, SBC, SES	Silverlight	50*
40	240/250	BC, SBC, ES, SES	Silverlight	50*

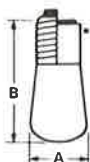
\*Standard pack consists of 5 × 10-way packs per container.

# Special service lamps



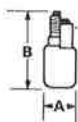
**FIREGLOW**

	A	B
BC	61	108.5
3-pin BC	61	108.5
2-prong	61	110.5



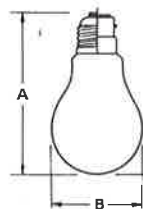
**PYGMY SWITCHBOARD INDICATOR**

	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

All dimensions in mm

## 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	110/120	BC, SBC, ES, SES	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

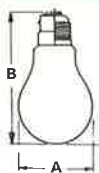
## PILOT INDICATOR

Watts	Voltages	Cap	Finish	Standard Pack
10	50	SBC, CAND	Clear	25
10	100/130	SBC, SES, CAND	Clear	25
10	200/250	SBC, SES, CAND	Clear	25

## OVEN LAMPS

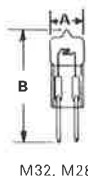
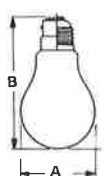
Watts	Voltage	Cap	Finish	Standard Pack
60	240/250	BC, ES	Clear	10

# Special service lamps



## ROUGH SERVICE

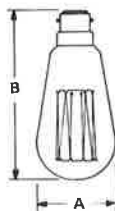
	A	B
40-60W	61	108.5
110/120V 100W	61	108.5
200/250V 100W	69	128.5



M32, M28

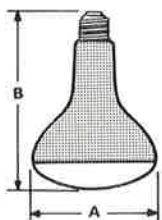
## TRAFFIC SIGNAL

	A	B	A	B
65W ES	61	110	M32	8.5 44
65W BC	61	115	M28	11 45



## NAVIGATION

	A	B
40W	59	128
60W	65	145



## INFRA-RED REFLECTOR

	A	B
150-275W	127.5	182.5

All dimensions in mm

## ROUGH SERVICE

ROUGH SERVICE					Standard
Watts	Voltages		Cap	Finish	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

## TRAFFIC SIGNAL

TRAFFIC SIGNAL					Standard	
Watts	Voltages		Nominal L.C.L.	Cap	Finish	Pack
65	240/250		62	ES	Clear	25
65	240/250		85	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

## CAGE, NAVIGATION

Watts	Voltages	Cap	Finish	Standard Pack
40	220/240	BC	Clear	100
60	220/240	BC	Clear	72

## HEATING LAMPS

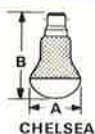
### INFRA-RED REFLECTOR Standard bulb (NOT for domestic use)

INTA-RED REFLECTOR Standard bulb (100W per domestic use)				Standard Pack
Watts	Voltages	Cap	Finish	
150		200/250	ES	Satin 10
275		200/250	BC	Satin 10
275	100/130	200/250	ES	Satin 10
275		200/250	BC, ES	Clear 10

### 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

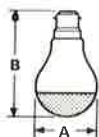
# Reflector lamps



40W      A      B  
61      103.5

## CHELSEA For use with Chelsea Glass

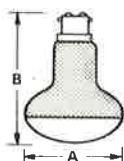
Watts	Voltages	Cap	Finish	Standard Pack
40	240/250	BC	Clear Front	25



**MAINS VOLTAGE DISPLAY**  
60W      A      B  
100W      61      108.5  
69      128.5

## CROWN SILVERED DISPLAY High volt

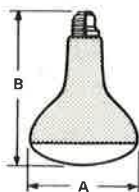
Watts	Voltages	Cap	Finish	Standard Pack
60	240/250	BC, ES	Crown Silvered	25
100	240/250	3PBC, ES	Crown Silvered	25



**DECOR SPOT**  
40, 60 & 100W      A      B  
81      113

## DECOR SPOT

Watts	Voltages	Cap	Finish	Standard Pack
40	240/250	BC, ES	Light Diffuse Front or Lacquered Blue, Green, Red, Yellow	10
60	240/250	BC, ES	Light Diffuse Front	10
100	240/250	BC, ES	Light Diffuse Front	10



**REFLECTOR DISPLAY**  
75W and 100W      A      B  
150W      96      139  
127.5      181  
(For ES caps add 1.5mm to length of BC equivalent)

## 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

All dimensions in mm



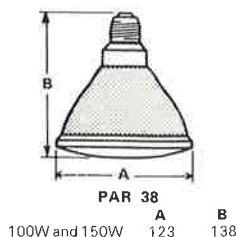
# Sealed beam lamps/Low volt display lamps

## 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

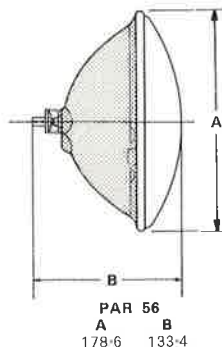
thin film dichroic lenses which have a high transmission factor and maintain constant colour through life. The Cool-ray lamp has a dichroic reflector, allowing much of the heat to pass through the back of the lamp

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	Flood Lacquered Blue, Green, Red, Yellow	10
150	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 Spot, Blue, Green, Red, Yellow	10
150	240/250	ES	Cool-Ray, Spot	10



## 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

## 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

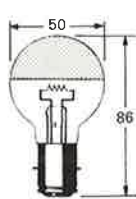
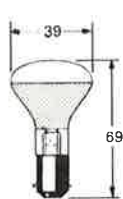
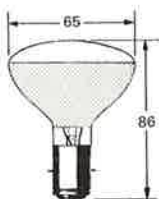
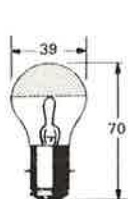
Internal crown reflector for narrow no-spill beam.

Parabolic internal reflector, diffusing front for high intensity soft edged beam.

Parabolic internal reflector, clear front for narrow beam.

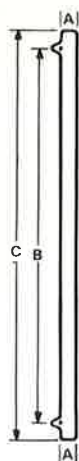
Parabolic internal reflector, diffused front for high intensity soft edged beam.

Internal crown reflector for narrow non-spill beam.



All dimensions in mm

# Tubular lamps



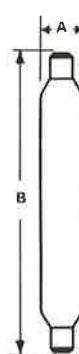
## ARCHITECTURAL

		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	1114	1220

Nominal Dimensions

## ARCHITECTURAL

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



## DOUBLE CAP TUBULAR

	A	B
30 and 60W	26	222
30 and 60W	26	285

## 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



## SINGLE CAP TUBULAR

	A	B
BC and SBC	26	85

## SINGLE CAP TUBULAR

Watts	Voltages	Cap	Finish	Standard Pack
25	240/250	BC, SBC	Clear	50
40	240/250	BC, SBC	Clear	50

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.

## Operating temperatures

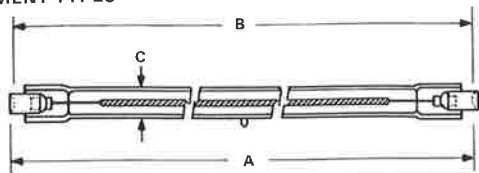
During operation the temperatures of the lamp pinch seal should not exceed 350°C, while the bulb wall temperature must not drop below 250°C in order to maintain the tungsten-halogen cycle.

## Fusing

It is recommended that a suitably rated fuse be used in the fitting or external circuit.

**Principles of operation and advantages of use** are as indicated at the beginning of this section.

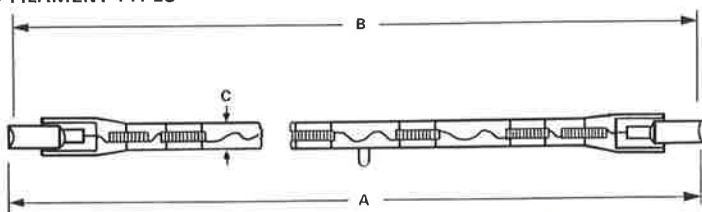
## NON-SEGMENTED FILAMENT TYPES



Lamp Type	Watts	Volts	Caps	Contact to Ceramic Max (A) mm	Contact to Contact (B) mm	Max Bulb Dia (C) mm	Nom Lumens	Colour Temp	Operating Position
K1	500	110	R7s	117-6	114-2 ± 1-6	11-0	10500	2900 K	Horizontal
K1	500	120	R7s	117-6	114-2 ± 1-6	11-0	10500	2900 K	Horizontal
DC1/1	500	120	R7s	117-6	114-2 ± 1-6	8-5	13000	3200 K	Horizontal
P2/18	800	220	R7s	117-6	114-21 ± 6	12-0	20600	3200 K	Horizontal
P2/18	800	240	R7s	117-6	114-2 ± 1-6	12-0	20600	3200 K	Horizontal

Min. life of above lamps 50,000 switchings at 6 seconds on 6 seconds off.

## SEGMENTED FILAMENT TYPES



Lamp Type	Watts	Volts	Caps	Contact to Ceramic Max (A) mm	Contact to Contact (B) mm	Max Bulb Dia (C) mm	Nom Lumens	Colour Temp	Operating Position
---	650	220/230	R7s	318-0	315 ± 1-6	8-5	14300	3200 K	Horizontal
---	650	240/250	R7s	318-0	315 ± 1-6	8-5	14300	3200 K	Horizontal
---	1000	220/230	R7s	267-0	264 ± 1-6	8-5	23000	3200 K	Horizontal
---	1000	240/250	R7s	267-0	264 ± 1-6	8-5	23000	3200 K	Horizontal
DC1/8	1000	220/230	R7s	318-0	315 ± 1-6	8-5	23000	3200 K	Horizontal
DC1/8	1000	240/250	R7s	318-0	315 ± 1-6	8-5	23000	3200 K	Horizontal
DC1/9	1500	220/230	R7s	368-0	365 ± 1-6	8-5	32250	3200 K	Horizontal
DC1/9	1500	240/250	R7s	368-0	365 ± 1-6	8-5	32250	3200 K	Horizontal

Min. life of above lamps 50,000 switchings at 6 seconds on 6 seconds off.

# Linear tungsten halogen lamps

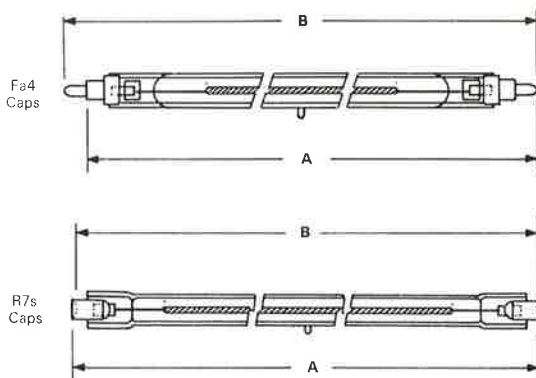
## Operating temperatures

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.

## Fusing

It is recommended that a suitably rated fuse be used in the fitting or external circuit.

**Principles of operation and advantages of use** are as indicated at the beginning of this section.



Lamp Type	Watts	Volts	Caps	Contact to Ceramic Max (A)	Contact to Contact (B)	Rated Life (Hrs)	Nom Lumens	Colour Temp °K	Operating Position
K9	300	110/115	R7s	117.6	114.2 ± 1.6	2000	5250	2900	Horizontal
K9	300	200/230	R7s	117.6	114.2 ± 1.6	2000	5000	2900	Horizontal
K9	300†	240/250	R7s	117.6	114.2 ± 1.6	2000	5000	2900	Horizontal
K1	500	110	R7s	117.6	114.2 ± 1.6	2000	10500	2900	Horizontal
K1	500	120	R7s	117.6	114.2 ± 1.6	2000	10500	2900	Horizontal
K1	500	200/230	R7s	117.6	114.2 ± 1.6	2000	9500	2900	Horizontal
K1	500	240/250	R7s	117.6	114.2 ± 1.6	2000	9500	2900	Horizontal
K3	750	200/230	R7s	189.1 ‡	185.7 ± 1.6	2000	15000	3000	Horizontal
K3	750	240/250	R7s	189.1 ‡	185.7 ± 1.6	2000	15000	3000	Horizontal
K4	1000	110	R7s	189.1	185.7 ± 1.6	2000	22000	3000	Horizontal
K4	1000	200/230	R7s	189.1	185.7 ± 1.6	2000	21000	3000	Horizontal
K4	1000	240/250	R7s	189.1	185.7 ± 1.6	2000	21000	3000	Horizontal
K5	1500	200/230	R7s	254.1	250.7 ± 1.6	2000	33000	3000	Horizontal
K5	1500	240/250	R7s	254.1	250.7 ± 1.6	2000	33000	3000	Horizontal
K8	2000	200/230	R7s	331.0	327.4 ± 1.6	2000	44000	3000	Horizontal
K8	2000	240/250	R7s	331.0	327.4 ± 1.6	2000	44000	3000	Horizontal
K6	2000	200/230	Fa4	324.1	334.4 max	2000	44000	3000	Horizontal
K6	2000	240/250	Fa4	324.1	334.4 max	2000	44000	3000	Horizontal

†Frosted version available. Please specify when ordering.

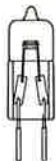
‡Lamps with a length of 178mm also available. Please specify when ordering.

All dimensions in mm

# Single-ended tungsten halogen lamps



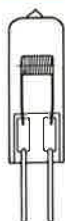
M29 6V 10W  
M30 6V 20W  
M34 6V 20W  
M35 12V 20W



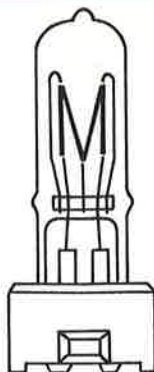
M32 12V 50W



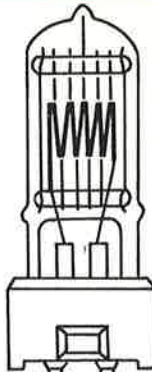
M28 12V 100W



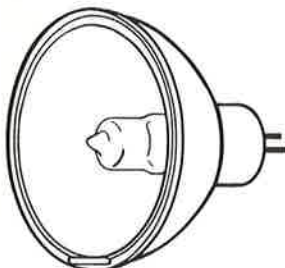
M36 24V 250W



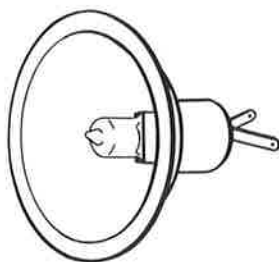
M38 300W



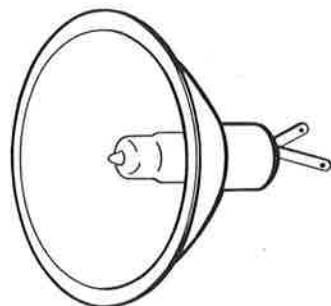
M40 500W



M37 12V 55W



M39 6V 20W



M41 6V 20W

**Principles of operation and advantages of use** are as indicated at the beginning of this section.

## Lampholders

Those suitable for some of these lamps are listed under *Miscellaneous and Hytek lampholders* in the **Control gear and accessories** section.

## 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.

## Fusing

It is recommended that a suitably rated fuse be used in the fitting or external circuit.

Lamp type	Watts	Volts	Overall length (max) mm	Bulb/Flange dia. (max) mm	Nom. Lumens	Rated life (hours)	Base	Operating position	Description
M29	10	6	30.0	8.5	210	100	G4	Any	For 3200 K
M30	20	6	30.0	8.5	420	100	G4	Any	For 3200 K
M34	20	6	30.0	8.5	350	2000	G4	Any	
M39	20	6	39.0	50.0	—	2000	2 Tab	Any	Ellipsoidal mirror
M41	20	6	40.0	56.0	—	2000	2 Tab	Any	Parabolic mirror
M35	20	12	30.0	8.5	450	250	G4	Any	
	23	13.2†			600	100			
M32	50	12	44.0	12.0	900	2000	GY6-35	Any	
M37	55	12	42.0	50.0	—	750	G26-35	Any	Ellipsoidal dichroic mirror
M28	100	12	45.0	11.0	2150	2000	GY6-35	VBD - 90%*	
M36	250	24	58.0	15.0	5750	2000	GY6-35	VBD - 90%	
M38	300	115/120 220/230 240/250	80.0	30.0	5000	2000	GY9-5	Any	
M40	500	115/120 220/230 240/250	85.0	30.0	8500	2000	GY9-5	Any	

VBD - Vertical, base down.

\*Can be operated in any position if heat sinks are used.

†M35 can be operated at 13.2V. The characteristics for such operation are as above.

# Lamps for special applications

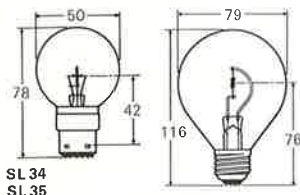
A representative selection of lamps made for specialist applications is shown. Some of these, and similar types are made to special order only and may be subject to minimum order quantities.

## MORSE SIGNAL



## MORSE SIGNAL

Reference	Volts	Watts	Cap	Description
29-9003	11	60	P30d	Internally aluminised with black top
29-9005	24	60	P30d	Internally aluminised with black top



SL 34  
SL 35

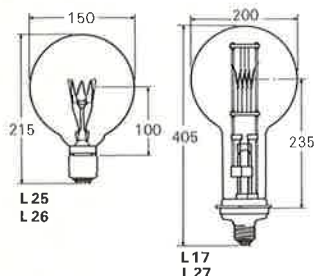
## LOCO HEAD

## RAILWAY SIGNAL

Reference	Volts	Watts	Cap	Description
	12	16	SCC, SBC	Twin filament (SL28) Dia=38; OAL=56; LCL=32
SL33	110	35	3 pin BC	As illustrated except filament
SL34	12	16/24	3 pin BC	—
SL35	12	24/24	3 pin BC	—

## LOCO HEAD/OPERATING THEATRE

Reference	Volts	Watts	Cap	Description
19-1205	24	150	ES	Axial coiled coil filament

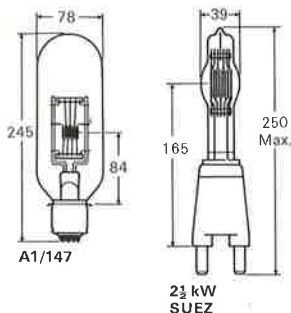


L 25  
L 26

L 17  
L 27

## LIGHTHOUSE

Reference	Volts	Watts	Cap	Description
L25	100	1500	P40s	Cylindrical filament. Clear, pearl
L26	240	1500	P40s	Cylindrical filament. Clear
L17	100	3000	P89/82 x 45	Cruciform filament. Clear
L27	100	3500	P89/82 x 45	Cruciform filament. Clear



A1/147

2½ kW  
SUEZ

## MARINE SEARCHLIGHT/MASTHEAD

Reference	Volts	Watts	Cap	Description
A1/147	115, 240	1500	P40s & tail	Masthead lamp
	115, 130, 220, 230	2000	E40/82 x 75	Suez searchlight. Internal aluminised disc 5in or 7½in. Dia=240; OAL=400; LCL=280
	115/120, 220, 240	2500	G38	Tungsten halogen for Suez searchlights

All dimensions in mm

Airfield lighting lamps: an extensive range is available through Thorn's Airfield Lighting Division.



## Index

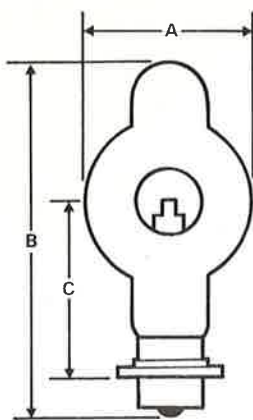
Projector lamps, Class A1 50-100W	252
Projector lamps, Class A1 150W	253
Projector lamps, Class A1 200-500W	254
Projector lamps, Class A1 600-1200W	255
Projector lamps, Class F, Class G and Class M	256
Photographic lamps, Class P1	257
Photographic lamps, Class P2	258
Photographic lamps, Class P3 and Class CP	259
Photographic lamps, Class T	260
Lamp bases and filament formations	260
Photo-flashbulbs	261
Flashcubes and Magicube X	262

### CAUTIONARY NOTICE

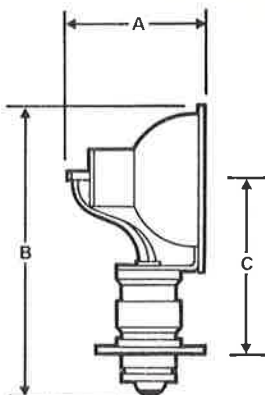
Tungsten halogen lamps of certain ratings are packed in cartons which contain an instruction leaflet.

To ensure maximum safety, it is essential that the leaflet is studied before installing the lamp in the equipment.

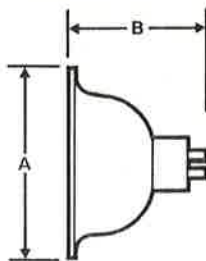
# Projector lamps, Class A1 50, 75 and 100W



A1/17 8V 50W projector lamp



A1/263 8V 50W tungsten halogen lamp  
For use with Super 8 and Standard 8 cine projectors. Direct replacement for the 8V 50W A1/17.



A1/231 12V 100W tungsten halogen projector lamp

## CLASS A1 50, 75 and 100 WATT

Lamp Ref.	Volts	Watts	A	B	C	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 ± 1	—	Small Pre-Focus P30s	J	25	A B F I
A1/263†	8	50	36	85	47 ± 0.5	—	Small Pre-Focus P30s	H	50	E I J L
A1/220	12	50	11.5	44	30 ± 0.25	1400	2 Pin G6.35	J	50	E J
A1/225	240/250	50	26	67	35 ± 1	675	S.C.C. BA15s	F4	100	A K
A1/229	8	50	50	42	—	—	2 Pin G6.35	H	50	E I J L
A1/250	8	50	50	50	—	—	Special 2 Tab	H	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	55.5 ± 0.5	2700	Med Pre-Focus P28s	J	25	A
A1/4	115	100	26	135	55.5 ± 0.5	1850	Med Pre-Focus P28s	F3	25	A
A1/4	240, 250	100	26	135	55.5 ± 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 Pie-Focus PG22	J	50	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	—
					24 ± 0					
A1/209	12	100	11	45	—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	H	50	E I J M

†New Lamp direct replacement for A1/17

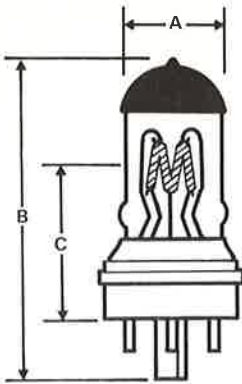
- A Obscured top
- B Forced cooling necessary. Maximum bulb wall temperature 500 °C
- C Voltage range in 10 volt steps
- D Offset filament
- E Operates on tungsten halogen principle
- F Internal aluminised mirror
- G Internal dichroic mirror
- H Silvered bulb
- I Due to integral mirror nominal lumens 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

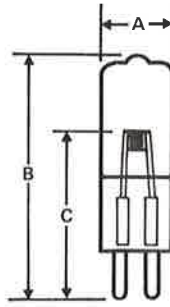
- Q 3 or 4 amp H.B.C. fuse necessary
  - R 5 or 6 amp H.B.C. fuse necessary
  - S 6 or 7 amp H.B.C. fuse necessary
- Operating position base down with the following exceptions:
- A1/220 – base down to horizontal A1/229 – horizontal
  - A1/45 – base down to horizontal A1/230 – horizontal
  - A1/209 – base down to horizontal A1/231 – horizontal
  - A1/215 – base down to horizontal A1/250 – horizontal
  - A1/17 } Focal Distance 33.5mm
  - A1/202 }
  - A1/263 }
  - A1/229 }
  - A1/230 } Focal Distance 32mm
  - A1/231 }
  - A1/250 }

All dimensions in mm

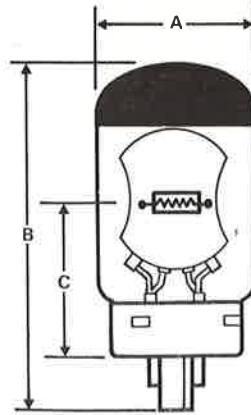
# Projector lamps, Class A1 150W



**A1/243** 150W mains voltage tungsten halogen lamp



**A1/216** 24V 150W tungsten halogen lamp For 35mm slide projectors.



**A1/184** 21.5V 150W projector lamp

## CLASS A1 150 WATT

Lamp Ref.	Volts	Watts	A Maximum Bulb Diameter	B Maximum Overall Length	C Light Centre Length	Nominal Lumens	Base	Filament Formation	Average Life Hours	Special Features
A1/18	21.5	150	39	81	39.7 ± 1	—	Tru-Focus G17q	G	25	BFI
A1/24	125	150	39 × 42	81	39.7 ± 1	—	Tru-Focus G17q	G	25	BDFI
A1/167	240, 250	150	26	90	35 ± 1	2700	S.C.C. BA16s	F4	25	AC
A1/175	240, 250	150	26	135	55.5 ± 0.5	2700	Med Pro-Focus P28s	F4	25	AC
A1/182	240, 250	150	30	76	33.5 ± 1	2700	Tru-Focus G17q	F4	25	AC
A1/184	21.5	150	39	91	39.7 ± 1	—	Tru-Focus G17q	G	25	ABFI
A1/194	21.5	150	48	86	39.7 ± 1	—	Tru-Focus G17q	G	25	BFI
A1/210	21.5	150	39	91	39.7 ± 1	—	Tru-Focus G17q	G	25	BDFI
A1/211	21.5	150	39	91	39.7 ± 1	—	Tru-Focus G17q	G	25	ABGI
A1/212	24	150	33	103	39.7 ± 0 —1.5	4100	Tru-Focus G17q	J	25	ABD
A1/216	24	150	13.5	47	32 ± 0 —0.25	5000	2 Pin G6.35	J	50	EJ
A1/232	15	150	50	42	—	—	2 Pin G6.35	H	50	EIJMN
A1/234	15	150	11.5	45	30 ± 0.25	4700	2 Pin G6.35	J	50	EJ
A1/243	240	150	15	76	33.5 ± 1	3000	Tru-Focus G17t	F4	50	AERJ

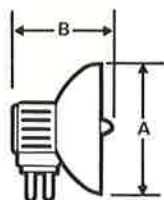
A Obscured top  
B Forced cooling necessary. Maximum bulb wall temperature 500 °C  
C Voltage range in 10 volt steps  
D Off-set filament  
E Operates on Tungsten Halogen principle  
F Internal integral aluminised mirror  
G Internal integral dichroic mirror  
H Silvered bulb  
I Due to integral mirror 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  
Mirror rim to film gate 32 mm  
O Internal proximity reflector  
P Due to internal reflector nominal lumens not shown  
Q Linear overhead projector lamp

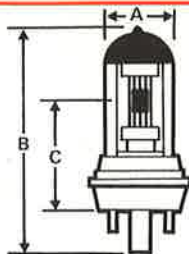
R 3 or 4 amp H.B.C. fuse necessary  
S 5 or 6 amp H.B.C. fuse necessary  
T 6 or 7 amp H.B.C. fuse necessary  
Operating position base down with the following exceptions:  
A1/211 – base down to horizontal A1/18 – horizontal  
A1/216 – base down to horizontal A1/24 – horizontal  
A1/234 – base down to horizontal A1/194 – horizontal  
A1/232 – horizontal  
A1/18  
A1/184 } Focal Distance 43.5mm  
A1/194 }  
A1/211 }  
A1/24 – Focal Distance 57.2mm  
A1/210 – Focal Distance 56.0mm

All dimensions in mm

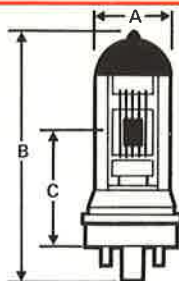
# Projector lamps Class A1 200, 250, 300, 420 and 500W



A1/258 24V tungsten halogen lamp  
Direct replacement for EMM



A1/240 300W mains voltage tungsten  
halogen lamp



A1/241 500W mains  
voltage tungsten  
halogen lamp

## CLASS A1 200, 250 and 300 WATT

Lamp Ref.	Volts	Watts	A Maximum Bulb Diameter	B Maximum Overall Length	C Light Centre Length	Nominal Lumens	Base	Filament Formation	Average Life Hours	Special Features
A1/252	24	200	50	45	—	—	G5-3	G	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	J	50	E J
A1/246	24	250	50	50	—	—	2 Pin G6-35	J	50	E I J M
A1/258	24	250	44	47.5	—	—	GX7-9	G	50	E I J M
A1/259	24	250	50	45	—	—	G5-3	G	25	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	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  
A1/258 - Horizontal  
A1/259 - Horizontal  
A1/252 } Focal Distance 32mm  
A1/259 }  
A1/246 - Focal Distance 32mm  
A1/258 - Focal Distance 65.8mm

## CLASS A1 420 and 500 WATT

Lamp Ref.	Volts	Watts	A Maximum Bulb Diameter	B Maximum Overall Length	C Light Centre Length	Nominal Lumens	Base	Filament Formation	Average Life Hours	Special Features
A1/227	120	420	13.5	65.5	—	11000	Double-ended R7s	G	75	E J Q
A1/7	115*	500	33	135	55.5 ± 0.5	12500	Med Pre-Focus P28s	C8	25	A B
A1/7	240, 250	500	33	135	55.5 ± 0.5	11400	Med Pre-Focus P28s	C11	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	C11	25	A B C
A1/205	240, 250	500	33	103	39.7 ± 1	—	Tru-Focus G17q	C11	25	A B C O P
A1/241	240	500	23	94	39.7 ± 1	—	Tru-Focus G17t	C10	50	A E J O P R
A1/244	240	500	23	75	36.5 ± 0.5	14500	GY9-5	A8	75	E J R
A1/254	240	500	23	75	36.5 ± 0.5	—	GY9-5	A8	75	E J O P R

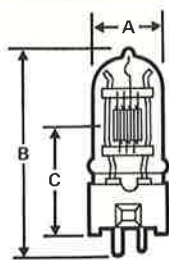
- A Obscured top  
B Forced cooling necessary. Maximum bulb wall temperature 500°C  
C Voltage range in 10 volt steps  
E Operates on tungsten halogen principle

- 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

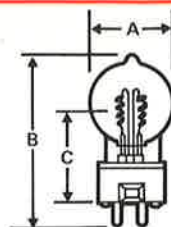
- R 3 or 4 amp H.B.C. fuse necessary  
S 5 or 6 amp H.B.C. fuse necessary  
Operating position base down with the following exceptions:  
A1/227 - Horizontal.  
A1/244 - Base down to horizontal.  
A1/254 - Base down to horizontal.

All dimensions in mm

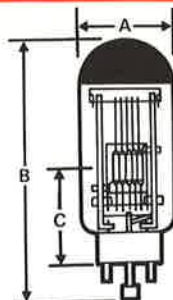
# Projector lamps, Class A1 600, 650, 750, 800, 1000 and 1200W



A1/247 650W mains voltage tungsten halogen overhead projector lamp



A1/233 650W mains voltage tungsten halogen overhead projector lamp  
Direct replacement for the DYR.



A1/208 115V 1200W proximity reflector tru-focus lamp

## CLASS A1 600, 650 and 750 WATT

Lamp Ref.	Volts	Watts	A Maximum Bulb Diameter	B Maximum Overall Length	C Light Centre Length	Nominal Lumens	Base	Filament Formation	Average Life Hours	Special Features
A1/228	120	600	13-5	93-5	—	17000	Double Ended R7s	G	75	EJP
A1/228	240/250	600	13-5	93-5	—	16250	Double Ended R7s	G	75	EJKPQ
A1/264†	120	600	23	65	36-5±1	17500	GY9-5	G	75	EJS
A1/233	240/250	650	23	65	36-5±1	16500	GY9-5	E2	75	EJKQ
A1/247†	115	650	23	75	36-5±0-5	18250	GY9-5	A6	75	EJS
A1/247	240/250	650	23	75	36-5±0-5	17750	GY9-5	A8	75	EJKQ
A1/257	240/250	650	23	75	36-5±0-5	—	GY9-5	A8	75	EJKNQ
A1/9	115	750	39	140	55-5±0-5	19500	Med Pre-Focus P28s	C8	25	AB
A1/9	240, 250	750	39	140	55-5±0-5	18000	Med Pre-Focus P28s	C10	25	ABC
A1/52	115	750	37	153	81±0-5	19500	3 Fin Ring P39s	C8	25	BD
A1/53	115	750	39	135	59±0-5	19500	Large B.H. P46s	C8	25	AB
A1/53	240, 250	750	39	135	59±0-5	18000	Large B.H. P46s	C10	25	ABC
A1/206	115	750	39	118	39-7±1	—	Tru-Focus G17q	C8	25	ABNO
A1/206	240, 250	750	39	118	39-7±1	—	Tru-Focus G17q	C10	25	ABCNO
A1/256	240	750	23	94	39-7±1	—	G17†	C10	50	AENOR

## CLASS A1 800, 1000 and 1200 WATT

Lamp Ref.	Volts	Watts	A Maximum Bulb Diameter	B Maximum overall length	C Light centre length	Nominal lumens	Base	Filament formation	Average life hours	Special features
A1/245	240/250	800	23	84	44-5±0-5	21500	GY9-5	C8	75	EJKR
A1/255	240/250	800	23	84	44-5±0-5	—	GY9-5	C8	75	EJKNOR
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	AC
A1/59	115	1000	39	140	55-5±0-5	27000	Med Pre-Focus P28s	C8	25	AB
A1/59	240, 250	1000	39	140	55-5±0-5	25000	Med Pre-Focus P28s	C10	25	ABC
A1/91	115	1000	39	135	59±0-5	27000	Large BH P46s	C8	25	AB
A1/91	240, 250	1000	39	135	59±0-5	25000	Large BH P46s	C10	25	ABC
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	ABNO
A1/207	240, 250	1000	39	118	39-7±1	—	Tru-Focus G17q	C10	25	ABCNO
A1/242	240, 250	1000	23	94	39-7±1	—	Tru-Focus G17†	C10	50	AENOR
A1/208	115	1200	39	118	39-7±1	—	Tru-Focus G17q	C10	10	ABNO

†New Lamp

- 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

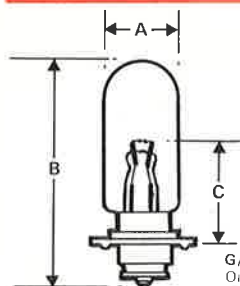
- R 3 or 4 amp H.B.C. fuse necessary
- S 5 or 6 amp H.B.C. fuse necessary
- S 6 or 7 amp H.B.C. fuse necessary

Operating position base down with the following exceptions:

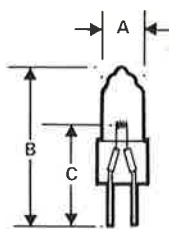
- A1/228 - Horizontal
- A1/52 - Base up
- A1/233 - Base down to horizontal
- A1/247 - Base down to horizontal
- A1/245 - Base down to horizontal
- A1/255 - Base down to horizontal
- A1/257 - Base down to horizontal

All dimensions in mm

# Projector lamps, Class F, Class G & Class M



**G/29 4V exciter lamp**  
One of a range of high efficiency lamps for cinema projector sound heads.



**M29 Cine film editor tungsten halogen lamp**

## CLASS F MICRO-PROJECTOR LAMPS

Lamp Ref.	Volts	Watts	Dimensions mm			Crown of bulb to Filament	Nominal Lumens	Base	Average Life Hours	Special Features
			Maximum Diameter	Maximum Overall Length	Light Centre Length					
F/10	6	24	39	65	—	10 2	410	S.E.S. E14s	100	D
F/10	12	24	39	65	—	10 2	440	S.E.S. E14s	100	D
F/3	12	24	39	65	—	10 2	440	S.B.S. BA15d	100	D
F/25†	6	30	39	69	—	10 2	600	E.S. 27s	25	F
F/58	6	48	40	65	—	7 2	675	S.E.S. E14s	200	D G
F/59	6	48	40	70	—	7 2	675	E.S. E27s	200	D G
F/81	6	48	39	63	41 0.5	—	675	Small Pre-Focus P30s	200	D G
F/4	12	48	52	81	40 3	—	950	S.E.S. E14s	100	D
F/38	12	48	40	65	40 3	—	850	S.B.C. BA15d	100	D
F/77	12	50	40	70	48 3	—	950	S.E.S. E14s	50	D
F/14	12	100	62	91	55 6	—	2250	E.S. E27s	100	D
F/63	12	100	62	98	37 0.5	—	2250	Med Pre-Focus P28s	100	D

†New Lamp

## CLASS G EXCITER LAMPS

Lamp Ref.	Volts	Amps	Dimensions mm			Nominal Lumens	Base	Filament Formation	Average Life Hours	Special Features
			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	F
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/45	6	5	19	54	23 0.5	450	Small Pre-Focus P30s	D	100	B
G/48	7	0.2	16.5	50	28.5 0.25	13 10	Small Pre-Focus P30s	H	50	A

- A Universal
- B Vertical base down  $\pm 30$
- C Vertical base down  $\pm 45$
- D Vertical base down  $\pm 135$
- E Horizontal
- F Horizontal  $\pm 30$
- G Solid source filament

## 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	B E
M30	6	20	8.5	30	19.5 0.25	450	Special 2 Pin	D	100	B E

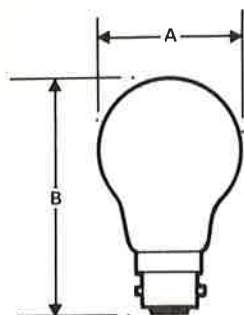
B Operates on tungsten halogen principle

Operating Position  
E VBU  $\pm 15$

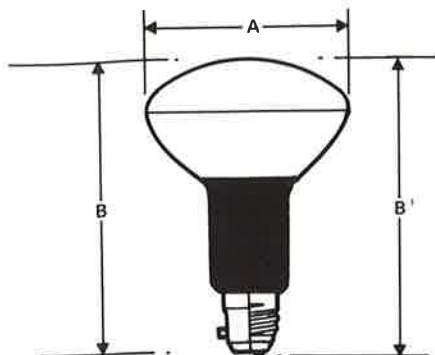
All dimensions in mm



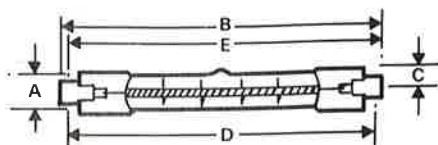
# Photographic lamps, Class P1



P1/1 Photoflood



P1/6 Reflector photoflood



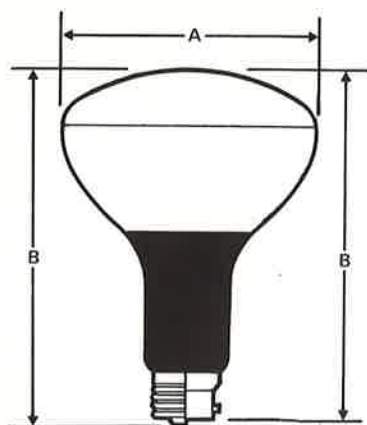
P1/12 1000W mains voltage tungsten halogen lamp

## CLASS P1 PHOTOGRAPHIC LAMPS FOR MONOCHROME AND COLOUR FILM BALANCED FOR 3400K

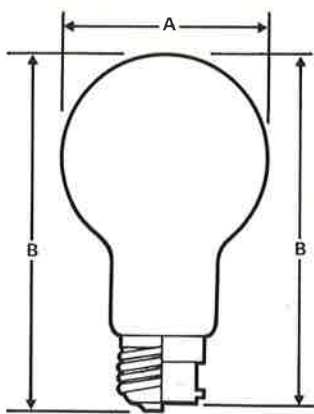
Lamp Ref.	Volts	Watt	A	B	C	D	E	Nominal Lumens	Base	Average Life Hours	Special Features
P1/8	30	250	12	80	10.2	74.9 ± 1.6	78.3	8000	Double ended R7s	12	A
P1/1	240/250	275	61	108.5	—	—	—	8300	BC B22d	3	B D
P1/1	240/250	275	61	110	—	—	—	8300	ES E27s	3	B D
P1/6	240/250	375	97	133.5	—	—	—	13000	BC B22d	4	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 E27s	6	B C
P1/9	120	650	15	80	11.4	74.9 ± 1.6	78.3	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	80	11.4	74.9 ± 1.6	78.3	24500	Double ended R7s	12	A B K
P1/12	240/250	1000	12	127	10.2	121.7 ± 1.6	125.1	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	127	10.2	121.7 ± 1.6	125.1	39000	Double ended R7s	15	A B L
P1/19	240/250	1250	28	75	—	—	—	40000	2 Pin Ceramic G6.35	15	A B L

All dimensions in mm

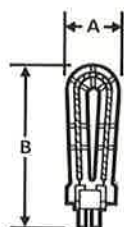
# Photographic lamps, Class P2



**P2/4 Reflector photoflood**  
For film and TV studio lighting



**P2/1 Photoflood**



**P2/26 1250W tungsten halogen lamp**

## CLASS P2 PHOTOGRAPHIC LAMPS FOR USE WITH COLOUR FILM BALANCED FOR 3200K AND FOR ALL MONOCHROME FILM STOCK

Lamp Ref.	Volts	Watt	A		B		Nominal Contact Length	Maximum Clearance Length	Nominal Lumens	Base	Average Life Hours	Special Features
			Maximum Bulb Diameter	Maximum Overall Length	Max. protuberance from bulb	Max. pip						
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	CD
P2/4	115	500	127.5	182	—	—	—	—	7200	E.S. E27s	20	EFH
P2/4	240, 250	500	127.5	182	—	—	—	—	7200	E.S. E27s	12	CEFH
P2/5	115	500	127.5	182	—	—	—	—	12000	E.S. E27s	20	EGH
P2/5	240, 250	500	127.5	182	—	—	—	—	12000	E.S. E27s	12	CEGH
P2/10	240/250	625	12	190	10.2	185.7	1.6	189.1	15500	Double ended R7s	200	ABI
P2/15	240	625	12	119.5	10.2	114.2	1.6	117.6	16250	Double ended R7s	75	AI
P2/6	120	650	15	80	11.4	74.9	1.6	78.3	17000	Double ended R7s	100	A
P2/16	240/250	650	28	75	—	—	—	—	17500	2 Pin Ceramic: G6.35	50	AB I
P2/13	240	800	15	80	11.4	74.9	1.6	78.3	20000	Double ended R7s	75	AB K
P2/14	240	800	15	93.5	12	88.4	1.6	91.8	20000	Double ended R7s	50	AK
P2/11	115/240	800	12	119.5	10.2	114.2	1.6	117.6	21000	Double ended R7s	150	AK
P2/25	115	850	28	75	—	—	—	—	23000	2 Pin Ceramic: G6.35	50	A
P2/7	240/250	1000	12	190	10.2	185.7	1.6	189.1	26000	Double ended R7s	200	AB K
P2/17	240/250	1000	28	75	—	—	—	—	28000	2 Pin Ceramic: G6.35	50	AB K
P2/12	240/250	1250	12	190	10.2	185.7	1.6	189.1	33500	Double ended R7s	200	AB L
P2/26	240/250	1250	28	75	—	—	—	—	35000	2 Pin Ceramic: G6.35	50	AB L
P2/27†	240	2000	30	143	25	138.5	1.6	141.3	50000	Double ended RX7s	300	AM

††New lamp replaces lamp No. P2/18.  
†New lamp

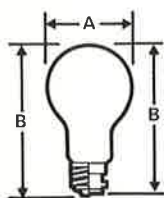
- A Operates on tungsten halogen principle
- B Dual voltage
- C Voltage range in 10 volt steps
- D Pearl bulb
- E Satin etched bulb
- F Reflector Photoflood
- G Reflector Photo Spot
- H Light output measured in Centre Beam Candelas
- I 3 or 4 amp H.B.C. fuse necessary
- K 5 or 6 amp H.B.C. fuse necessary
- L 6 or 7 amp H.B.C. fuse necessary
- M 10 amp H.B.C. fuse necessary

Operating position: Universal, with the following exceptions:  
P1/13, P1/15, P1/19, P2/25, P2/17 and P2/26 — Base down to horizontal.  
P2/7 Horizontal  $\pm 4^\circ$   
P2/10 Horizontal  $\pm 4^\circ$   
P2/12 Horizontal  $\pm 4^\circ$   
P2/15 Horizontal  $\pm 4^\circ$

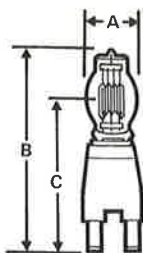
In the interest of safety tungsten halogen lamps above 130V rating should have a separate high breaking capacity fuse in the circuit. See special features column for individual lamp requirements.

All dimensions in mm

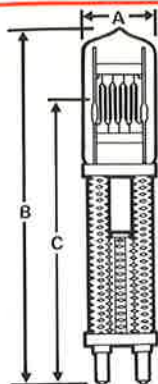
# Photographic lamps, Class P3, Class CP



P3/3 High intensity enlarger lamp (opalised)



CP/41 2kW studio tungsten halogen lamp  
For use in existing Fresnel spot-flood fittings.



CP/54 10kW studio tungsten halogen lamp

## CLASS P3 PHOTOGRAPHIC ENLARGER LAMPS HIGH INTENSITY

Lamp Ref.	Volts	Watts	A		B		Base	Average Life Hours	Special Features
			Maximum Diameter	Maximum Overall Length	Maximum Overall Length	Maximum Overall Length			
P3/3	240, 250	75	61	108.5	108.5	108.5	B.C. B22d	100	AB
P3/3	240, 250	75	61	110	110	110	E.S. E27s	100	AB
P3/4	240, 250	150	61	108.5	108.5	108.5	B.C. B22d	100	AB
P3/4	240, 250	150	61	110	110	110	E.S. E27s	100	AB

A Internally opalised bulb  
B Voltage range in 10 volt steps

Class P3 Operating Position: — Universal

## 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	A		B		C	Nominal Lumens	Average Life Hours	Cap	Special Features
			Maximum Diameter	Maximum Overall Length	Maximum Overall Length	Maximum Overall Length	Light Centre Length				
CP/1	115	275	61	110	110	110	—	7500	8	BC or ES	B
	240	275	61	110	110	110	—	7500	5	BC or ES	B
CP/2	115	500	82	166	166	166	—	14000	20	BC or ES	B C
	240	500	82	166	166	166	—	13750	15	BC or ES	B C
CP/39	115/120, 220, 240	650	35	140	140	140	63.5 ± 0.5	17000/16800	100	Med Bi-post G22	ACFGH*
CP/23†	115/120, 220, 240	650	35	110	110	110	55 ± 2	17000/16800	100	2 pin GX9-5	ACFGH*
CP/51	115/120, 220, 240	650	35	130	130	130	55.5 ± 0.5	17000/16800	100	Med Pre-Focus P28s	ACEGH*
CP/3	115	1000	153	309	309	309	—	30000	30	GES E40s	B C
	240	1000	153	309	309	309	—	28000	25	GES E40s	B C
CP/40	115/120, 220, 240	1000	35	140	140	140	63.5 ± 0.5	27000/26000	200	Med Bi-post G22	ACFHI*
CP/24†	115/120, 220, 240	1000	35	110	110	110	55 ± 2	27000/26000	200	2 pin GX9-5	ACFHI*
CP/52	115/120, 220, 240	1000	35	130	130	130	55.5 ± 0.5	27000/26000	200	Med Pre-Focus P28s	ACFHI*
CP/30	115/120	1250/1250	60	220	220	220	143 ± 2	28000/59000	250	4 pin GX38q	ADFLM*
	220, 240	1250/1250	60	220	220	220	143 ± 2	25000/53000	250	4 pin GX38q	ADFLM*
CP/41	115/120, 220, 240	2000	40	210	210	210	127 ± 2	54000/52000	400	Bi-post G38	ACEIK*
CP/43	115/120, 220, 240	2000	40	145	145	145	70 ± 2	54000/52000	400	2 pin GY16	ACEIK*
CP/53	115/120, 220, 240	2000	40	200	200	200	87 ± 0.5	54000/52000	400	Large Pre-Focus P40sA	ACEIK*
CP/55	115/120, 220, 240	2000	40	160	160	160	75 ± 0.5	54000/52000	400	Med Bi-Post G22	ACEIK*
CP/56	115/120, 220, 240	2000	40	210	210	210	127 ± 2	54000/52000	400	Bi-post G38	ACEIK*
CP/32	220, 240	2500/2500	70	220	220	220	143 ± 2	55000/117000	250	4 pin GX38q	ADFLM*
CP/29	115/120, 220, 240	5000	75	265	265	265	165 ± 2	145000/135000	400	Bi-post G38	ACFLM*
CP/54	220, 240	10000	70	380	380	380	254 ± 2	280000	400	Bi-post G38	AFM

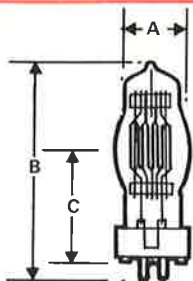
†CP/47 & CP/48 lamps are now obsolete and are replaced by CP/23 & CP/24 respectively.

A Operates on tungsten halogen principle  
B Pearl bulb  
C High lumen/life figures apply to l.v. lamps  
D Twin filament lamp, higher lumen figures apply to twin filament operation  
E Operating position VBD ± 90°  
F Operating position VBD ± 45°

G 4 amp H.B.C. fuse necessary  
H 6 amp H.B.C. fuse necessary  
I 10 amp H.B.C. fuse necessary  
J 15 amp H.B.C. fuse necessary  
K 20 amp H.B.C. fuse necessary  
L 30 amp H.B.C. fuse necessary  
M 50 amp H.B.C. fuse necessary  
\*Fuse values for low volt lamps

All dimensions in mm

# Photographic lamps, Class T



T/12 650W mains voltage tungsten halogen theatre spotlight lamp

## CLASS T THEATRE SPOTLIGHT LAMPS

Lamp Ref.	Volts	Watts	A Maximum Diameter	B Maximum Overall Length	C Light Centre Length	Base	Average Life Hours	Special Features
T/3	240, 250	250	78	124	55.5 ± 0.5	Med Pre-Focus P28s	200	D
T/1	240, 250	500	100	140	55.5 ± 0.5	Med Pre-Focus P28s	200	D
T/17	115/120 220, 240	500	27	130	55.5 ± 0.5	Med Pre-Focus P28s	750	A B D
T/12†	115/120 220, 240	650	35	110	55 ± 2	2 pin GX9-5	750	A B D
T/13	115/120 220, 240	650	35	130	55.5 ± 0.5	Med Pre-Focus P28s	750	A B D
T/2	240, 250	1000	132	200	87 ± 0.5	Large Pre-Focus P40s	200	D
T/4	240, 250	1000	39	155	89 ± 0.5	Med Pre-Focus P28s	200	E
T/6	240, 250	1000	102	140	55.5 ± 0.5	Med Pre-Focus P28s	200	C
T/11†	115/120 220, 240	1000	35	110	55 ± 2	2 pin GX9-5	750	A B D
T/14	115/120 220, 240	1000	35	130	55.5 ± 0.5	Med Pre-Focus P28s	750	A B D
T/15	115/120 220, 240	1000	35	160	89 ± 0.5	Med Pre-Focus P28s	750	A B F
T/16	115/120 220, 240	1000	35	180	87 ± 0.5	Large Pre-Focus P40s	750	A B D

A Dual voltage for low volt lamps

B Operates on tungsten halogen principle

### SPECIAL NOTE

T/9 & T/10 lamps with 400 hrs life are now obsolescent.

T/11 & T/12 are identical in all respects but with an extended average life of 750 hrs.

### Operating Positions

C VBD ± 75°

D VBD ± 90°

E VBU ± 15°

F Universal

All dimensions in mm

## LAMP BASES



BH P30s



P 28s



P40s



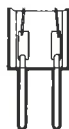
G 17q



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

# Photo-flashbulbs

**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.

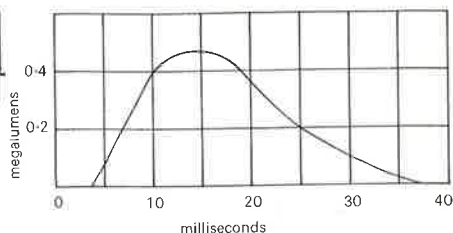
**Precision manufacture:** Dependability is of prime importance in flash photography. These bulbs are of consistent high quality, thanks to precision manufacture and rigorous test standards.

**Super AG3B flashbulbs** will work to perfection with a reflector only 50mm/2in in diameter. Many cartons can easily be carried in the pocket.

## 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

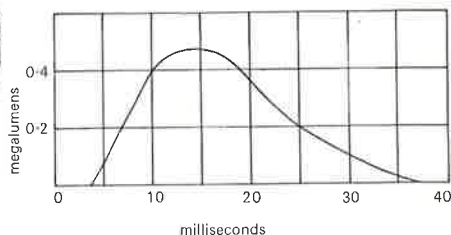


Full exposure data is printed on every flash carton

## Mini-Flash Super AG3B

### Specification

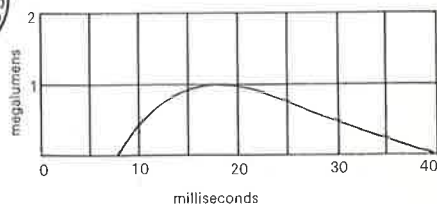
Class	MF
Colour of bulb	Blue
Total light output (lumen secs)	7500
Peak light output (megalumens)	0.45
Time to peak (milliseconds)	13
Duration above half peak (milliseconds)	15
Voltage range	3-45
Maximum bulb diameter (mm)	11.9
Maximum overall length (mm)	33.3
Bulbs per pack	5
Bulbs per outer container	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 and 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.

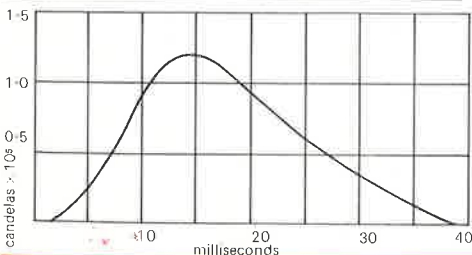
## Exposure Data

	10	25	40	100	160	320
ASA to	12	32	64	125	200	500
Film Speed	12	15	17	21	23	26
DIN to	13	16	19	22	24	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 Synchronisation

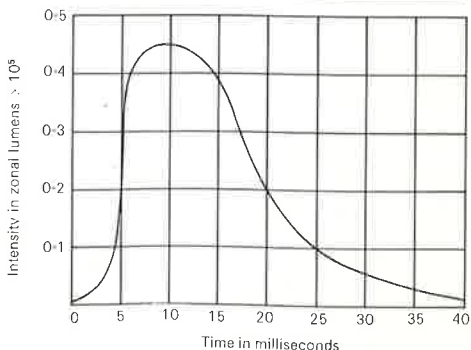
Film	ASA	25-32	40-50	64-80	100-125	160-200
Speed	DIN	15-16	17-18	19-20	21-22	23-24
1/30 sec		45	56	72	90	125
1/60 sec		40	50	64	80	100

## Flash to subject distance for single speed cameras

Monochrome film stock	1.2m-4.5m
Colour film stock	1.2m-2.7m

## 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	60





## Vehicle and miniature lamps

<b>Index</b>	
Lamp number index	264-265
Sealed beam headlamps	266
Tungsten halogen lamps	267
Prefocus headlamps; Bus lamps	268
Flasher, stop and stop/tail lamps; Side and tail lamps	269
Panel and indicator lamps; Festoon lamps	270
Flashlamps and cycle dynamo lamps; Miners' and emergency lamps	271
Radio and Subminiature lamps; Telephone visual and Telewriter lamps	272
Auto and miniature lamp caps	273

# 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.

*The following abbreviations are used:*

S.B. Sealed Beam  
T.H. Tungsten Halogen  
W.B. Wedge Base  
H.D. Heavy Duty

Lamp Reference no.	European Reference	Volts	Watts	Description	Page no.	Lamp Reference no.	European Reference	Volts	Watts	Description	Page no.
1		12	24	Head	268	289		24	2	Instrument panel	270
2		12	36	Head	268	290	P25-1	24	21	Stop, flasher H.D.	269
4		12	24	Head	268	291	P25-1	24	21	Stop, flasher H.D.	269
5		12	36	Head	268	293	T8/4	6	4	Side, tail	269
123		24	36	Head	268	295		6	0.2A	Cycle	271
149	R19/5	24	5	Side, tail	269	296		6	0.25A	Cycle	271
150	R19/5	24	5	Side, tail	269	297		12	2	W.B. instr. panel	270
185		12	48	Prefocus head	268	298		24	2	W.B. instr. panel	270
205	R19/5	6	5	Side, tail	269	312		6	30/24	Prefocus head	268
206	R19/5	6	5	Side, tail	269	317	P25-1	6	21	Stop, flasher	269
207	R19/5	12	5	Side, tail	269	319	P25-1	6	21	Stop, flasher	269
209	R19/5	12	5	Side, tail	269	323		12	48	Prefocus head	268
222		12	4	Side, tail	269	330		24	44	Prefocus head	268
227		24	6	Side, tail	269	331		24	44	Prefocus head	268
228		28	6	Side, tail	269	334		24	24/6	Stop/tail	269
233	T8/4	12	4	Side, tail	269	335	P25-1	12	21	Stop, flasher	269
239	C11	12	5	Festoon	270	346	P25-1	24	21	Stop, flasher	269
241	P25-1	24	21	Stop, flasher	269	380	P25-2	12	21/5	Stop/tail	269
244	R19/10	6	10	Side, tail	269	381		12	21	Stop/tail	269
245	R19/10	12	10	Side, tail	269	382	P25-1	12	21	Stop, flasher	269
247	R19/5	24	5	Side, tail H.D.	269	384	P25-2	6	21/5	Stop/tail	269
248	R19/5	24	5	Side, tail H.D.	269	410		12	45/40	Prefocus head	268
249	T8/4	24	4	Side, tail	269	411		12	45/40	Prefocus head	268
256		12	3	Festoon	270	414		12	50/40	Prefocus head	268
260		24	6	Festoon	270	423		6	45/40	Prefocus head	268
265		12	10	Festoon	270	429		24	55/50	Prefocus head	268
270		12	18	Festoon	270	437		24	54/44	Prefocus head	268
273	C15	12	21	Festoon	270	448	H1	12	55	T.H. head/aux	267
275		6	0.1A	Cycle	271	450		12	55	T.H. auxiliary	267
280		12	1.5	Instrument panel	270	453	H3	12	55	T.H. auxiliary	267
281		12	2	Instrument panel	270	454		6	55	T.H. auxiliary	267
286		12	1.2	Instrument panel	270	455	H3	6	55	T.H. auxiliary	267
287		6	2	Instrument panel	270	458		24	70	T.H. auxiliary	267
288		12	2	Instrument panel	270						

# Lamp number index

Lamp Reference no.	European Reference	Volts	Watts	Description	Page no.
459		24	70	T.H. auxiliary	267
460	H3	24	70	T.H. auxiliary	267
463		12	60/55	T.H. head	267
465	H1	6	55	T.H. head auxiliary	267
466	H1	24	70	T.H. head auxiliary	267
471		12	75/60	Prefocus head	268
472	H4	12	60/55	T.H. head	267
479	H2	12	55	T.H. head auxiliary	267
501	W10/5	12	5	W.B. side, tail	269
503		12	5	W.B. reversing	269
504		12	3	W.B. instr. panel	270
505		24	3	W.B. instr. panel	270
507	W10/5	24	5	W.B. side, tail	269
508		24	1.2	W.B. instr. panel	270
641		6	3	Instrument panel	270
643		12	2.2	Instrument panel	270
650		24	2.8	Instrument panel	270
651		24	2.8	Instrument panel	270
653		24	6	Festoon	270
695		24	2.8	Instrument panel	270
804		12	12	Bus	268
805		12	12	Bus	268
809		12	24	Bus	268
810		12	24	Bus	268
816		24	12	Bus	268
817		24	12	Bus	268
821		24	20	Bus	268
822		24	20	Bus	268
830		2.2	0.25A	Flashlamp	271
831		2.5	0.3A	Flashlamp	271
835		4.5	0.3A	Flashlamp	271
837		5.5	0.3A	Flashlamp	271

Lamp Reference no.	European Reference	Volts	Watts	Description	Page no.
847		6	0.5A	Cycle	271
853		6.3	0.15A	Radio panel	272
854		6.3	0.25A	Radio panel	272
855		6.5	0.3A	Radio panel	272
856		6.5	0.3A	Radio panel	272
865		24	2.8	Instrument panel	270
867		24	2.8	Instrument panel	270
917		3.6	0.5A	Flashlamp	271
918		3.8	0.3A	Flashlamp	271
950		6	6	Instrument panel	270
951		6	6	Side, tail	269
954		6	0.25A	Cycle	271
972		2.5	0.3A	Flashlamp	271
974		3.5	0.15A	Flashlamp	271
977		3.5	0.3A	Flashlamp	271
987		12	2.2	Instrument panel	270
989		12	5	Side, tail	269
990		6	3	Instrument panel	270
991		6	0.04A	Cycle	271
993		24	2.8	Instrument panel	270
998		6	0.1A	Cycle	271
5712		12	50	S.B. head	266
5725		12	55	Halogen S.B. aux.	266
5726		12	55	Halogen S.B. aux.	266
5731		12	50/35.5	S.B. head	266
5733		12	75	Halogen S.B. head	266
5734		12	55	Halogen S.B. head	266
7002		12	60/45	S.B. head	266
7014		12	60/45	S.B. head	266
7019		12	75/50	S.B. head	266
7022		12	60/55	Halogen S.B. head	266

# Sealed beam headlamps



## HEADLAMPS 5 3/4 in diameter

Lamp reference	Volts	Watts	Drive	Dip	Description	Illustration	Standard pack
5712	12	50	RH	Left	—	1	10
5731	12	50/37.5	RH	Left	With pilot aperture	1	10



## HEADLAMPS 7 in diameter

7002	12	60/45	RH	Left	—	2	10
7014	12	60/45	RH	Left	With pilot aperture	2	10
7019	12	75/50	RH	Left	High intensity with pilot aperture	2	10



## TUNGSTEN HALOGEN HEADLAMPS

5733	12	75	RH	—	5 3/4 in main beam (inner)	1	10*
5734	12	55	RH	Left	5 3/4 in dip beam (outer) with pilot aperture	1	10*
7022	12	60/55	RH	Left	7 in dia. with pilot aperture	3	10*

\*Ortwinpack



## TUNGSTEN HALOGEN AUXILIARIES

5725	12	55	Halogen foglamp			4	10
5726	12	55	Halogen spotlamp			4	10

# Tungsten halogen lamps

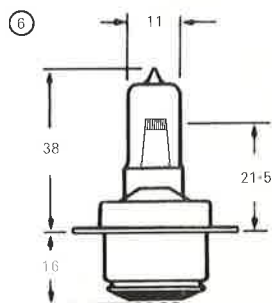
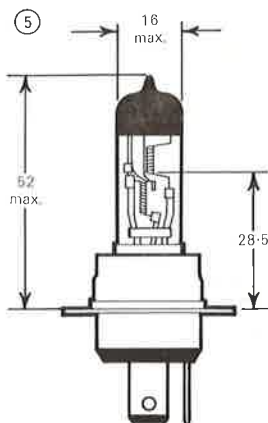
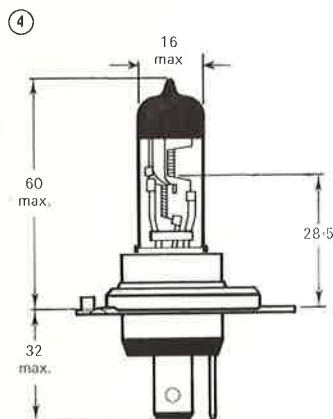
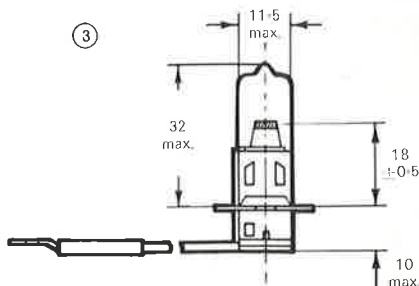
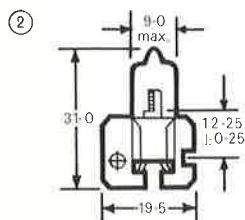
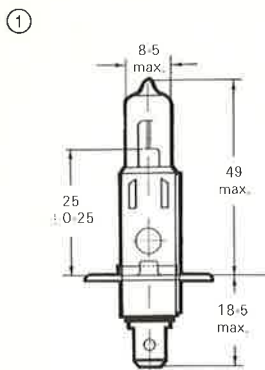
## European types

Lamp Reference	European Reference	Volts	Watts	Cap	Diagram	Standard pack
465	H1	6	55	P14-5s	1	10
455	H3	6	55	PK22s	3	10
448	H1	12	55	P14-5s	1	10
479	H2	12	55	X511	2	10
453	H3	12	55	PK22s	3	10
466	H1	24	70	P14-5s	1	10
460	H3	24	70	PK22s	3	10
472	H4	12	60/55	P43t-38	4	10

## British prefocus types

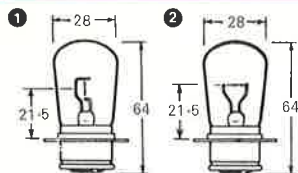
Lamp Reference	Volts	Watts	Cap	Diagram	Standard pack
454	6	55	P36s	6	10
450	12	55	P36s	6	10
458	24	70	P36d	6	10
459	24	70	P36s	6	10
463	12	60/55	P36t	5	10

Caps P36s: BPF s.c.  
P36d: BPF d.c.



All dimensions in mm

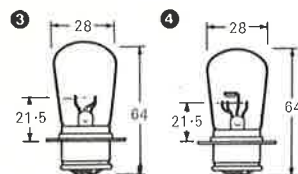
# Prefocus headlamps, Bus lamps



## PREFOCUS, BRITISH TYPES

### Single filament

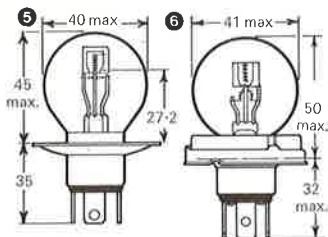
Lamp Reference	Volts	Watts	European Reference	Filament	Cap	Diagram	Standard pack
185	12	48		Axial	P36s	1	10
323	12	48	F1	Transverse	P36s	2	10
331	24	44		Axial	P36d	1	10
330	24	44	F1	Transverse	P36d	2	10



### Double filament

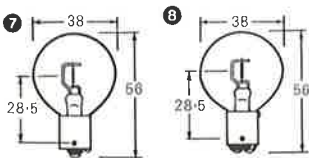
Lamp Reference	Volts	Watts	Drive	Dip	Cap	Diagram	Standard pack
312	6	30/24	Either	Vertical	P36d	3	10
414*	12	50/40	RH	Left	P36d	4	10
437*	24	54/44	RH	Left	P36d	4	10
471	12	75/60	RH	Left	P50t	5	10

\*These lamps have transverse shielded filaments



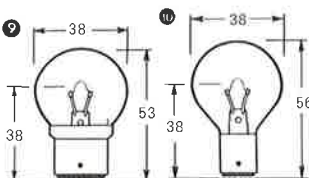
## PREFOCUS, EUROPEAN TYPES with UEC cap

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

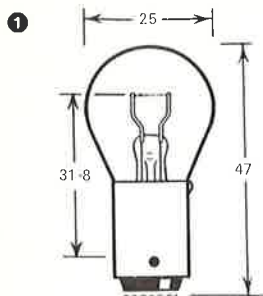
Lamp Reference	Volts	Watts	Cap	Finish	Diagram	Standard pack
804	12	12	B22d	Pearl	9	100
805	12	12	BA15d	Pearl	10	100
809	12	24	B22d	Pearl	9	100
810	12	24	BA15d	Pearl	10	100
816	24	12	B22d	Pearl	9	100
817	24	12	BA15d	Pearl	10	100
821	24	20	B22d	Pearl	9	100
822	24	20	BA15d	Pearl	10	100

All dimensions in mm

Caps P36s: BPF s.c. BA15s: SCC  
P36d: BPF d.c. BA15d: SBC  
P45t: UEC B22d: BC



# Flasher, stop and stop/tail lamps Side and tail lamps

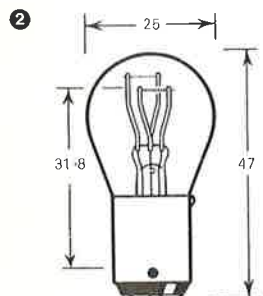


## FLASHER, STOP AND STOP/TAIL

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



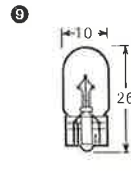
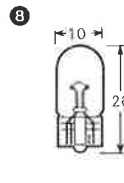
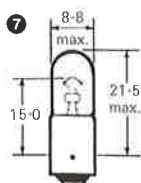
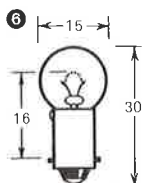
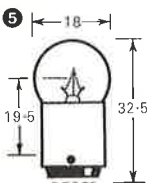
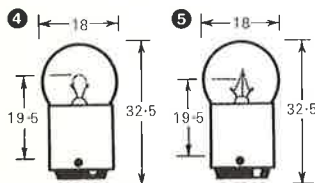
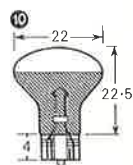
## SIDE AND TAIL

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

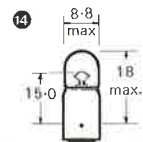
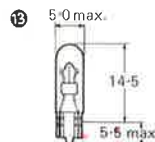
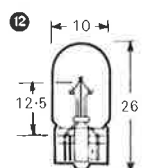
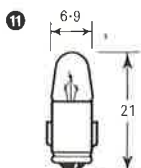
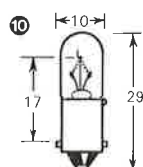
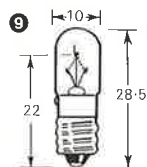
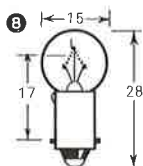
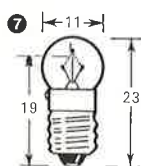
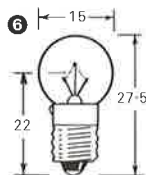
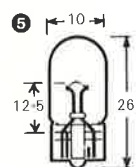
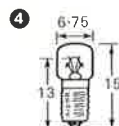
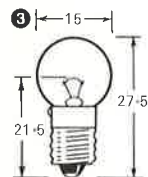
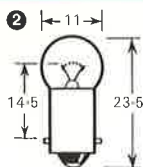
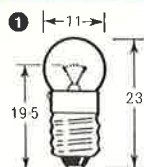
247	R19/5	24	5	BA15d	5	10
248	R19/5	24	5	BA15s	5	10

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

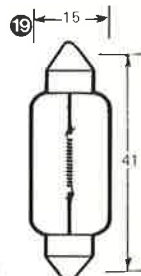
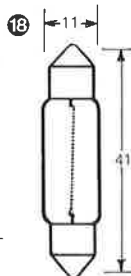
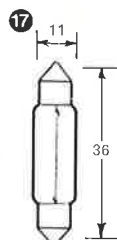
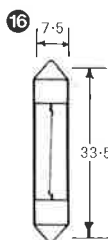


## INDICATOR, PANEL AND INSTRUMENT WARNING

Lamp Reference	Volts	Watts	Cap	Diagram	Standard pack
287	6	2	BA9s	14	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	13	10
280	12	1.5	E5/8	4	10
297	12	2	W2-1×9-5d	12	10
288	12	2	BA9s	14	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
508	24	1.2	W2-1×9-5d	13	10
298	24	2	W2-1×9-5d	12	10
289	24	2	BA9s	14	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

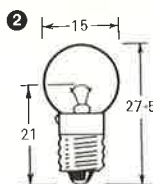
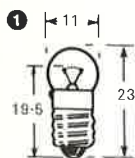


## FESTOON

Lamp Reference	European Reference	Volts	Watts	Cap	Diagram	Standard pack
256		12	3	S7/8	16	10
239	C11	12	5	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
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

831	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	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
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

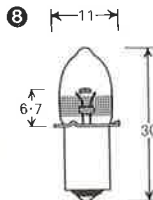
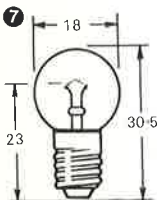
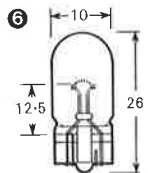
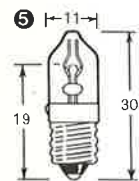
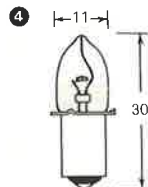
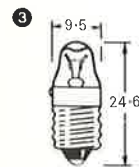
6.78029	4	1	P13-5s	Krypton	8	25
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## EMERGENCY LIGHTING LAMPS

Lamp Reference	Volts	Amps	Cap	Type	Diagram	Standard pack
2.76829	2.4	1.0	E10/13	Krypton	7	25
2.77572	3.6	0.6	E10/13	Krypton	7	25

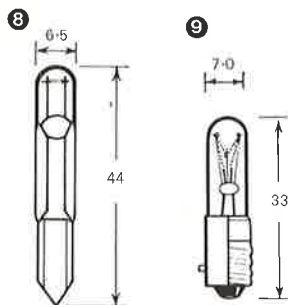
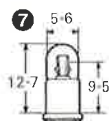
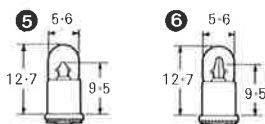
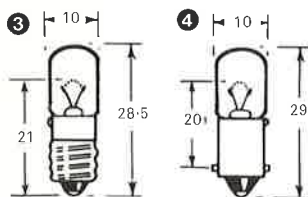
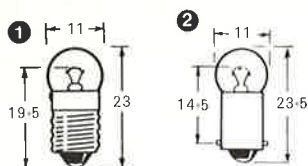
Caps E10/13: MES  
P13-5s: Prefocus flash

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

### 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

Type GPO No. 2 with side contact plates and coloured endpieces

Lamp Reference	Volts	Amps	Filament	Endpiece colour	Diagram	Standard pack
7.02355	6	0.041	Metal	Grey	8	100
3.02358	12	0.10	Metal	Red	8	100
6.02363	24	0.10	Metal	Yellow	8	100
6.03097	12	0.117	Carbon	Red	8	100
1.02352	50	0.107	Carbon	White	8	100

### TELEWRITER LAMPS

Lamp Reference	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

Caps BA9s: MCC  
E10/13: MES  
S6s/8: Midget flange

All dimensions in mm

# Auto and miniature lamp caps

E6/8  
(LES)



BA 7s



BA9s  
(MCC)



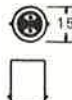
E10/13  
(MES)



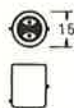
BA15s  
(SCC)



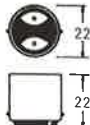
BA15d  
(SBC)



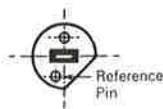
BAY 15d  
(SBC Index)



B22/22  
(BC)



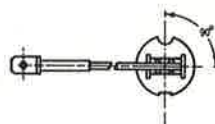
P14-5s



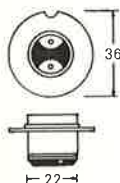
X 511



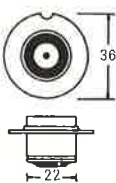
PK22s



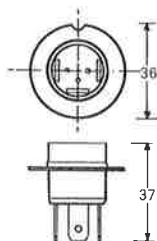
P36d  
(BPF dc)



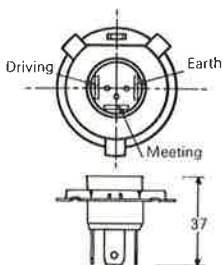
P36s  
(BPF sc)



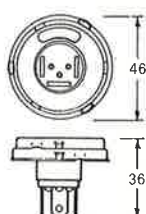
P36t



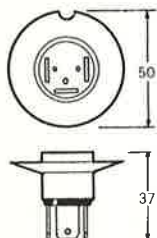
P43t-38



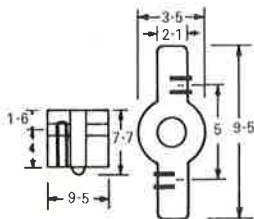
P45t/41  
(UEC)



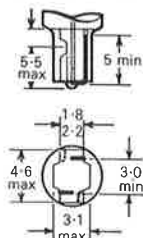
P50t  
(Prefocus)



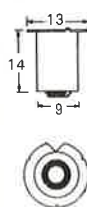
W2.1 × 9.5d  
(Wedge Base)



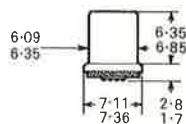
W2 × 4.6d  
(Wedge base)



P13-5s  
(Prefocus)



S6s/8  
(Midget flange)



All dimensions in mm

# THORN LIGHTING LIMITED

(hereinafter referred to as the Company)

## 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 these General Conditions of Sale. Where there is any inconsistency between these Conditions of Sale and any Conditions which the Purchaser seeks to impose these General Conditions of Sale shall prevail.

### 2. Validity of Quotation

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. In the event that no quotation is given by the Company and it has received an order from the Purchaser, all deliveries are made subject to these General Conditions of Sale.

### 3. Prices

Unless otherwise agreed in writing all orders are executed subject to prices and any relevant discounts ruling at the date of despatch and any price list of the Company whether published or not shall not affect the right of the Company to charge for goods in accordance with this clause. All prices are subject to the addition of Value Added Tax at the appropriate rate.

### 4. Payments

- (a) Unless otherwise agreed in writing, payment is due in full on delivery of the goods, 2½% 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.
- (b) Where the contract is to be or may be fulfilled in separate instalments, deliveries or parts, payment for each such instalment, delivery or part shall be made as if the same constituted a separate contract.

### 5. Credit

Any contract shall be subject to the Company being satisfied as to the Purchaser's credit references.

### 6. Carriage

Unless otherwise specified the price quoted includes delivery to the Purchaser within the mainland of Great Britain. The Company reserves the right to choose the method of transport and to charge for deliveries outside the mainland of Great Britain.

### 7. Packing

Where it is necessary to despatch goods in crates, cases, pallets, stillages or skids or other such packing, a charge will be made for this. Unless otherwise specified, this amount will be credited in full on the return, within one month, of such crates, cases, pallets, stillages and skids etc. in good condition carriage paid. No charge is made for any other form of packaging and no credit will be allowed for its return.

### 8. Loss or Damage in Transit

When the price quoted includes delivery, the Company shall repair or replace free of charge goods damaged in transit or not delivered in accordance with the Advice Note provided that the Company is sent written notification of such damage or non delivery within such time (being not more than 3 days) as will enable the Company to comply with the carrier's conditions of carriage as affecting loss or damage in transit or, where delivery is made by the Company's own transport, within 3 days after receipt of the Advice Note. Notwithstanding the above undertaking, the Company will only consider claims for alleged shortage if they are received within two working days of the receipt of the goods by the Purchaser together with sufficient information to enable the Company properly to identify the shortage including the Advice Note number, case number and condition of case.

### 9. Samples

Any samples submitted with the Company's quotation or at the Purchaser's request must be returned within ninety days of receipt and may be charged if not so returned.

### 10. Delivery

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 prior to despatch 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 be quoted or not, the time for despatch shall be extended by reasonable period having regard to all the circumstances if delay in despatch is caused by instructions or lack of instructions or other necessary particulars from the Purchaser, or by industrial dispute, or by any cause whatsoever beyond the Company's reasonable control.

### 11. Passing of Property and Risk

Unless otherwise agreed the property in the goods supplied shall pass to the Purchaser when the goods are delivered to the Purchaser or to any third party on the Purchaser's instructions, and the goods shall be at the entire risk of the Purchaser from the time of such delivery.

### 12. Default

Should the Purchaser default in paying sums due for goods supplied, the Company reserves the right in its absolute discretion to suspend all further deliveries until the default is made good or cancel the balance of the order. In either case, the Company shall hold the Purchaser liable for the cost of the goods in course of manufacture or ready for despatch.

Should the Purchaser fail punctually to comply with the terms of payment, the Company shall be entitled to charge interest on any amount overdue at the rate of 1 per cent per annum above the basic rate of National Westminster Bank Limited for the time being in force.



### 13. Warranty

- (a) Nothing herein contained shall operate to exclude any warranty or condition implied by Law as to the quality of goods in the event of the goods when sold by the Purchaser or sold by any person or persons to whom the Purchaser 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 the Purchaser 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 a replacement, defects which, under proper storage and use, appear in the goods within the period of twelve 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 10 the Company shall not be under any liability in respect of defects in goods delivered or for any injury, loss or damage resulting from such defect 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.

### 14. Special Orders

All orders for lamps of non-standard voltages or 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% at the price quoted per unit.

### 15. Return of Goods

In no circumstances may goods supplied against a firm order be returned without the Purchaser having first applied for and obtained the written consent of the Company. A handling charge may be deducted from any credit allowed where it is established that the reason for their return was not the subject of the provisions of Clause 8 or 13 hereof or through any error on the part of the Company.

### 16. Rejection

Unless otherwise agreed in writing, goods rejected by the Purchaser as not complying with the Contract must be rejected within 14 Working days of delivery.

### 17. Storage

If the Company does not receive forwarding instructions sufficient to enable it to despatch within 14 days after notification that the goods are ready for delivery the Purchaser shall take delivery or arrange for storage. If the Purchaser does not so take delivery or arrange for storage, the Company shall be entitled to invoice and be paid for the goods as though the goods had been duly delivered in accordance with these conditions and the Company may arrange storage either at the Company's own works or elsewhere on the Purchaser's behalf and all charges for storage, for insurance or for demurrage shall be payable by the Purchaser.

### 18. 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 the contract.

### 19. Variations

In the event of variation or suspension of the work by the Purchaser's instructions or lack of instructions, the contract price shall be adjusted to reflect costs involved. Where a price per unit has been quoted and the Purchaser requires a smaller number of units to be delivered than those quoted for, the Company reserves the right to adjust the rates of prices applicable thereto.

### 20. 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 shall notify the Company immediately and the Company is to be at liberty with the 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 supplied them, the Company will indemnify the Purchaser in respect of any such claims.

### 21. Bankruptcy

In the event of the Purchaser committing any breach of this contract, or if any distress or execution is levied upon the goods of the Purchaser or if he offers to make any arrangement with or for the benefit of his creditors, or commits any act of bankruptcy or (being a limited company) has a receiver appointed of its undertaking or assets or any part thereof, or (save for the purpose of a reconstruction or amalgamation without insolvency) goes into liquidation, the Company shall thereupon be entitled without prejudice to their other rights, forthwith to suspend all further deliveries until the default has been made good, or determine the contract or any unfulfilled part thereof, or at the Company's option to make partial deliveries.

### 22. Performance

Any performance figures given by the Company are based on its experience and are such as the Company expects to obtain on test in its works. The Company shall be under no liability for damages or failure to attain such figures unless the Company has specifically guaranteed performance figures subject to the recognised tolerances applicable to such figures. The Purchaser assumes responsibility that goods stipulated by it are sufficient and suitable for its purposes save insofar as the Purchaser may have relied on the Company's advice in connection therewith.

### 23. Copyright

All drawings, descriptions and other information submitted by the Company shall remain the property of the Company together with the copyright therein.

### 24. 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 of their rights or duties heretofore, 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

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## **Belfast**

Prince Regent Road, Castlereagh  
Belfast BT5 6QR  
Telephone 0232-54122  
Telex 74695 Thlite G

## **Birmingham**

Thorn House, Aston Church Road  
Saltley Trading Estate, Birmingham  
B81 BE  
Telephone 021-327 1535  
Telex 337435 Thlite G

## **Cardiff**

Thorn House, Penarth Road  
Cardiff, Wales CF1 7YP  
Telephone 0222-44200  
Telex 49334 Thlite G

## **Glasgow**

Thorn House, Lawmoor Street  
Glasgow G5 0TT  
Telephone 041-429 6222  
Telex 77630 Thlite G

## **Leeds**

Thorn House, 3 Ring Road  
Lower Wortley, Leeds LS12 6EJ  
Telephone 0532-636321  
Telex 55110 Thlite G

## **London**

Victoria Trading Estate, Victoria Way  
Charlton, London SE7 7PA  
Telephone 01-858 3201  
(order office) or 01-858 3281  
(all other enquiries)  
Telex 896171 Thlite G

## **Manchester**

Thorn House, 2 Claytonbrook Road  
Clayton, Manchester M11 1BP  
Telephone 061-223 1322  
Telex 668642 Thlite G

## **Reading**

10 Richfield Avenue, Reading  
RG1 8PA  
Telephone 0734-53257  
Telex 849269 Thlite G

## **Southampton**

West Quay Trading Estate, West  
Quay Road, Southampton SO9 1FF  
Telephone 0703-27401  
Telex 477728 Thlite G

## **Government Contracts and Order Office**

Progress House, Great Cambridge  
Road, Enfield EN1 1UL  
Telephone 01-363 5353  
Telex 263201 TEI Enf G

## **Head Office and Showroom**

Thorn House  
Upper Saint Martin's Lane  
London WC2H 9ED  
Telephone 01-836 2444  
Telex 24184/5 TEI Ldn G

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# Thorn Lighting Overseas Companies

## **Australia**

Thorn Lighting Industries Pty Limited  
210 Silverwater Road, Lidcombe  
NSW 2141

## **Austria**

Thorn Electrical Industries GmbH  
Erzherzog-Karl-Strasse 57, A-1220  
Vienna

## **Canada**

Thorn Lighting Canada Limited  
7621 Bath Road, Mississauga  
Ontario L4T 3T1

## **Denmark**

Thorn Lampe A/S  
Fabriksparken 4, 2600 Glostrup  
Copenhagen

## **France**

Thorn Electrique SA  
26 Rue de la Baisse, F-69625  
Villeurbanne

## **Germany**

Thorn Licht Beleuchtungsges mbH  
D-2000 Hamburg 61  
Borsteler Chaussee 287

## **Italy**

Societa Industriale Vicentina  
Illuminazione SpA  
Casella Postale 604, I-36100 Vicenza  
Societa Italiana Distribuzione  
Articoli Illuminazione SpA,  
Via Venezia 55, Padua, I-35100

## **New Zealand**

Thorn Electrical Industries (NZ)  
Limited  
PO Box 15150, New Lynn,  
13a Veronica Street, Auckland 7

## **Norway**

Norske Thorn A/S  
Pilestredet 75c, Postboks 7065  
Oslo 3

## **Republic of Ireland**

Thorn Lighting Limited  
Grand Canal Place, Dublin 8

## **South Africa**

Thorn Lighting (SA) (Pty) Limited,  
Thorn House,  
PO Box 43075 corner Watt and  
Edison Streets, Industria, Transvaal

## **Sweden**

Thorn Belysning AB  
Anderstorsvägen 2-6  
Fack  
S-171, 04 Solna

## **Thorn Lighting Limited**

### **International Division**

#### **Head Office and Showroom**

Thorn House  
Upper Saint Martin's Lane  
London WC2H 9ED  
Telephone 01-836 2444  
Telex Thorn London 24184/5  
Cables Eleclampo WC2

