

# THORN LIGHTING



COMPREHENSIVE CATALOGUE 1983



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# THORN LIGHTING

A MEMBER OF THE THORN EMI GROUP

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This catalogue lists and describes all fittings, equipment, accessories, lamps and tubes normally manufactured by THORN EMI 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 EMI Lighting Limited are supplied subject to the Company's General Conditions of Sale which are printed on pages 290-291 of this catalogue.

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 EMI 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 (1974) 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.

## Health and Safety at work

Essential guidance for safe installation, maintenance and disposal of Thorn lamps and lighting equipment is provided with the product. More detailed information is given in "The Thorn Lighting Safety Guide" available free on request from any THORN EMI Lighting Limited Branch Office.



# Classification of luminaires

**Classification of Luminaires**—as detailed in BS 4533 Part 1 Section 1.2. (IP numbers are the principal marking but symbols as shown in the table below may be used in addition to IP numbers).

## International Protection (IP) Code.

Protection of persons against contact with live or moving parts inside the enclosure and protection of equipment against ingress of solid foreign bodies. Protection against contact with moving parts inside the enclosure is limited to contact with moving parts inside the enclosure that might cause danger to persons.

First characteristic numeral	Second Degree of protection characteristic numeral
0	No protection of persons against contact with live or moving parts inside the enclosure. No protection of equipment against ingress of solid foreign bodies.
1	Protection against accidental or inadvertent contact with live or moving parts inside the enclosure by a large surface of the human body, eg a hand, but not protection against deliberate access to such parts. Protection against ingress of large solid foreign bodies.
2	Protection against contact with live or moving parts inside the enclosure by fingers. Protection against ingress of medium size solid foreign bodies.
3	Protection against contact with live or moving parts inside the enclosure by tools, wires or such objects of thickness greater than 2.5 mm. Protection against ingress of small solid foreign bodies.
4	Protection against contact with live or moving parts inside the enclosure by tools, wires or such objects of thickness greater than 1 mm. Protection against ingress of small solid foreign bodies.
5	Complete protection against contact with live or moving parts inside the enclosure. Protection against harmful deposits of dust. The ingress of dust is not totally prevented, but dust cannot enter in an amount sufficient to interfere with satisfactory operation of the equipment enclosed. (Dustproof).
6	Complete protection against contact with live or moving parts inside the enclosure. (Dust-tight). Protection against ingress of dust.

### Important

Luminaires must pass an extremely rigorous sequence of tests in order to obtain independent approval by either BSI or BASEEFA. This gives the user added assurance that luminaires bearing an approval mark such as the Safety Mark, have passed the specification tests laid down in the British Standard (see also page 7 Safety and Quality).

BS4533 Part 1—General Requirements and Tests covers general requirements for the classification and marking of luminaires and for their mechanical and electrical construction and photometric performance, together with related tests. This part of the standard is also for use in conjunction with individual specifications of Part 2 as indicated in those parts or sections.

Shown below are some of the more onerous tests detailed in Part 1 which illustrates the standard of quality required.

**Section 1.12. Operating temperatures and thermal endurance.**  
A thermal endurance test of 5 days operating at +10% overload supply voltage in an ambient temperature 10°C above rated ambient for the luminaire.

The luminaire is switched off for 3 hours during each 24 hour period thus creating thermal cycling conditions.

Immediately following the endurance test a voltage flash test is performed between body and all live parts as follows:

Class I (with earth conductor) 1.5 kV

Class II (double insulation—no earth) 4.0 kV

## Protection of equipment against ingress of liquid.

Second Degree of protection characteristic numeral	Protection of equipment against ingress of liquid.
0	No protection
1	Protection against drops of condensed water. Drops of condensed water falling on the enclosure shall have no harmful effect.
2	 Protection against drops of liquid (Drip-proof). Drops of falling liquid shall have no harmful effect when the enclosure is tilted at any angle up to 15° from the vertical.
3	 Protection against rain (Rainproof). Water falling in rain at an angle equal to or smaller than 60° with respect to the vertical shall have no harmful effect.
4	 Protection against splashing (Splashproof). Liquid splashed from any direction shall have no harmful effect.
5	 Protection against water jets (Jetproof). Water projected by a nozzle from any direction under stated conditions shall have no harmful effect.
6	Protection against conditions on ships decks (deck watertight equipment). Water from heavy seas shall not enter the enclosures under prescribed conditions.
7	 Protection against immersion in water. It shall not be possible for water to enter the enclosure under stated conditions of pressure and time.
8	Protection against indefinite immersion in water under specified pressure. It shall not be possible for water to enter the enclosure.

## Section 1.4. Construction.

Mechanical impact test of 0.35Nm using hammer on all accessible surfaces covering live parts.

**Section 1.9. Resistance to the ingress of moisture and dust.**  
IP Classification Code. (See table above) (follows impact test).

**Section 1.10. Insulation resistance and Electric Strength.**  
Tests conducted to ensure adequate resistance of insulation (follows humidity test 9.3 of Section 1.9).

For details on BASEEFA certification/approvals for certain types of Luminaires used in hazardous/explosive atmospheres see page 79

Note: In the new BS 4533 Part 101 1981 drip proof classification has been changed to IP 21

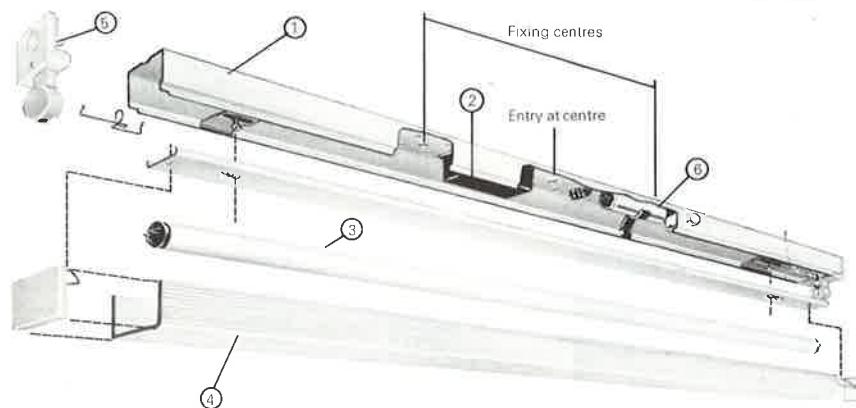
# Industrial, commercial and domestic fluorescent fittings

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Health and Safety at work.  
Refer to note on page seven.





## FEATURES

- 1 Range of 2400mm, 1800mm, 1500mm, 1200mm and 600mm single and twin tube fittings finished in white acrylic 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 PLUSLUX 3500 Tubes.
- 4 Diffusers and prismatic controllers in light-stabilised polystyrene with spring-mounted end plates. Metal reflector attachments have key-hole slot fixings. Wire guards are available.
- 5 Spring-mounted lampholders with knock-outs for end entry.
- 6 All fittings power factor corrected except 600mm single. Single 2400mm switchstart only fittings have leading power factor gear, whilst twin fittings have "100W only" lead/lag gear, with near unity power factor.
- 7 Fittings are switchstart with vivatronic switching available on 1800mm and 2400mm single and twin battens. Twin VS circuits are lead/lag with near unity power factor. Single battens are power factor corrected.

## Standards

Fittings comply with BS 4533—2.2 (IP20).

## Supply voltage

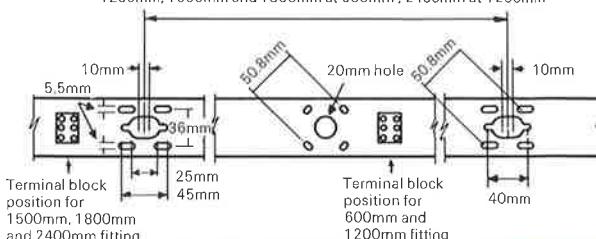
Standard fittings 230/240V 50Hz. The following fittings can be supplied to order at the voltage shown at no extra charge:

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

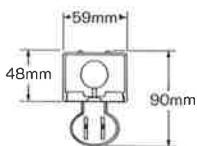
Indoor luminaires in general are designed to BS 4533 Part 1 Section 1.4 and, except where otherwise stated are 'Luminaires for use in normal atmospheres'. Where use in more onerous situations is contemplated, e.g. in part-completed buildings before drying out and made suitable for occupation—damp cellars,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

600mm = screw holes at 500mm, 1200mm, 1500mm and 1800mm at 600mm; 2400mm at 1200mm

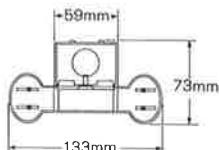
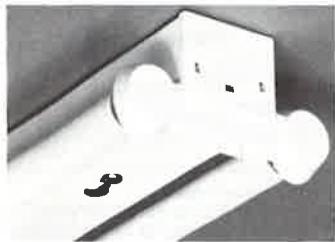


## Popular Pack ▲



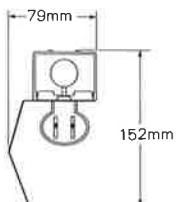
### PP battens

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.



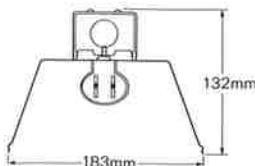
### PPA angle reflector

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.

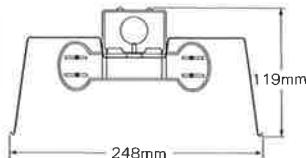


### PPR metal reflectors

Open-ended slotted metal trough reflectors in white stoved enamel. Attached to the batten by screws fitted into slideable spring nuts retained in the batten. Screws engage into keyhole slots in the reflector.



**Note:** Wire Guard for use with PPR reflectors see page 16.



## Popular Pack

### RANGE

Nominal length mm	Rating	Circuit	Batten Catalogue no.	Length mm	Approx. weight (incl. tubes) kg	Fixing centres mm
600	18W Single	Switchstart	PP 20	615	1.8	500
600	18W Twin	Switchstart	PP 220	615	2.16	500
1200	36W Single	Switchstart	PP 40	1224	2.6	600
1200	36W Twin	Switchstart	PP 240	1224	4.1	600
1500	58W Single	Switchstart	PP 65	1525	3.4	600
1500	58W Twin	Switchstart	PP 265	1525	5.45	600
1800	70W Single	Switchstart	PP 675	1788	3.7	600
1800	70W Twin	Switchstart	PP 2675	1788	6.12	600
1800	70W Single	Vivatronic	PPV 875	1788	3.7	600
1800	70W Twin	Vivatronic	PPV 2675	1788	6.12	600
2400	100W Single	Switchstart	PP 100	2398	5.23	1200
2400	100W Twin	Switchstart	PP 2100	2398	7.95	1200
2400	100W Single	Vivatronic	PPV 100	2398	5.4	1200
2400	100W Twin	Vivatronic	PPV 2100	2398	8.3	1200

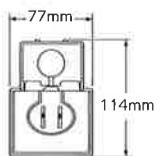
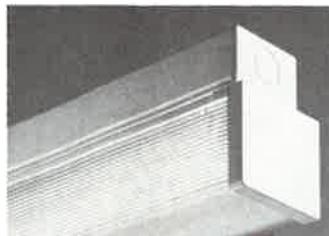
### RANGE

Nominal length mm	Rating	Circuit	Fitting Catalogue no.	Length mm	Approx. weight (incl. tubes) kg	Reflector Catalogue no.	Batten Catalogue no.
1200	36W Single	SS	PPA/40	1224	3.07	PPA 4	PP 40
1500	58W Single	SS	PPA/65	1525	5.1	PPA 5	PP 65
1800	70W Single	SS	PPA/875	1788	6.4	PPA 6	PP 675
1800	70W Single	VS	PPA/V875	1788	6.0	PPA 6	PPV 675
2400	100W Single	SS	PPA/100	2398	7.85	PPA 8	PP 100
2400	100W Single	VS	PPA/V100	2398	8.0	PPA 8	PPV 100

### RANGE

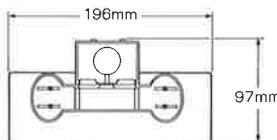
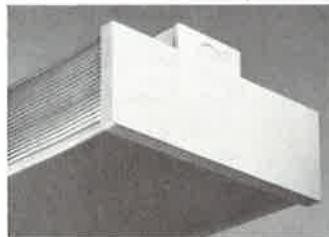
Nominal length mm	Rating	Circuit	Fitting Catalogue no.	Length mm	Approx. weight (incl. tubes) kg	Reflector Catalogue no.	Batten Catalogue no.
1200	36W Single	SS	PPR/40	1224	4.8	PPR 4	PP 40
1200	36W Twin	SS	PPR/240	1224	6.8	PPR 24	PP 240
1500	58W Single	SS	PPR/65	1525	6.3	PPR 5	PP 65
1500	58W Twin	SS	PPR/265	1525	8.3	PPR 25	PP 265
1800	70W Single	SS	PPR/675	1788	6.9	PPR 6	PP 675
1800	70W Twin	SS	PPR/2875	1788	9.6	PPR 26	PP 2675
1800	70W Single	VS	PPR/V675	1788	7.5	PPR 6	PPV 675
1800	70W Twin	VS	PPR/V2675	1788	10.2	PPR 26	PPV 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
2400	100W Single	VS	PPR/V100	2398	9.38	PPR 8	PPV 100
2400	100W Twin	VS	PPR/V2100	2398	14.35	PPR 28	PPV 2100

## Popular Pack ▲



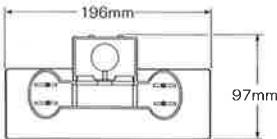
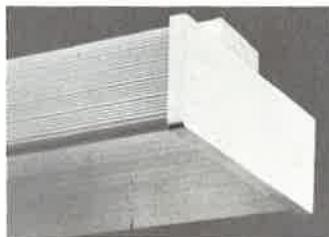
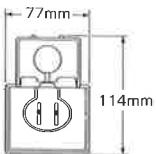
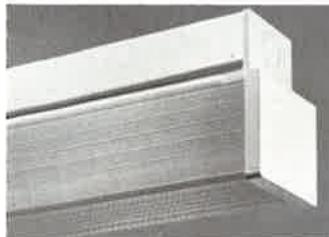
### PPC prismatic controllers

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.



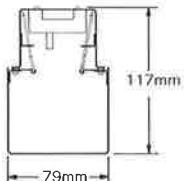
### PPD plastic diffusers

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 continuous structure of in-line lighting. Designed for ceiling mounting only, it can in certain circumstances be used for horizontal wall mounting as well. Your local Thorn Sales Office will advise.



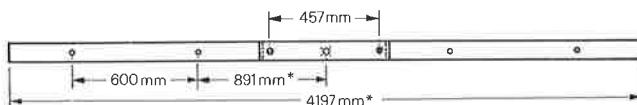
## Popular Pack

### RANGE

Nominal length mm	Rating	Circuit	Fitting Catalogue no.	Length mm	Approx. weight (incl. tubes) kg	Diffuser Catalogue no.	Batten Catalogue no.
600	18W Single	SS	PPC/20	638	2.1	PPC 2	PP 20
600	18W Twin	SS	PPC/220	638	2.84	PPC 22	PP 220
1200	36W Single	SS	PPC/40	1248	3.2	PPC 4	PP 40
1200	36W Twin	SS	PPC/240	1248	5.23	PPC 24	PP 240
1500	58W Single	SS	PPC/65	1550	4.2	PPC 6	PP 85
1500	58W Twin	SS	PPC/265	1550	6.2	PPC 25	PP 265
1800	70W Single	SS	PPC/875	1818	3.9	PPC 6	PP 675
1800	70W Twin	SS	PPC/2675	1818	5.9	PPC 26	PP 2675
1800	70W Single	VS	PPC/V675	1818	4.15	PPC 6	PPV 675
1800	70W Twin	VS	PPC/V2675	1818	6.15	PPC 26	PPV 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
2400	100W Single	VS	PPC/V100	2428	6.7	PPC 8	PPV 100
2400	100W Twin	VS	PPC/V2100	2428	10.15	PPC 28	PPV 2100

### RANGE

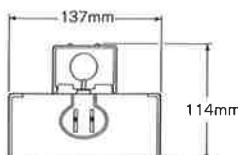
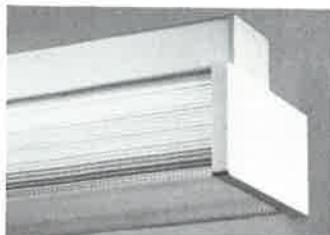
Nominal length mm	Rating	Circuit	Fitting Catalogue no.	Length mm	Approx. weight (incl. tubes) kg	Diffuser Catalogue no.	Batten Catalogue no.
600	18W Single	SS	PPD/20	638	2.0	PPD 2	PP 20
600	18W Twin	SS	PPD/220	638	2.8	PPD 22	PP 220
1200	36W Single	SS	PPD/40	1248	3.0	PPD 4	PP 40
1200	36W Twin	SS	PPD/240	1248	5.0	PPD 24	PP 240
1500	58W Single	SS	PPD/65	1550	4.0	PPD 6	PP 85
1500	58W Twin	SS	PPD/265	1550	6.6	PPD 25	PP 265
1800	70W Single	SS	PPD/875	1818	4.3	PPD 6	PP 675
1800	70W Twin	SS	PPD/2675	1818	7.2	PPD 26	PP 2675
1800	70W Single	VS	PPD/V675	1818	4.9	PPD 6	PPV 675
1800	70W Twin	VS	PPD/V2675	1818	7.8	PPD 26	PPV 2675
2400	100W Single	SS	PPD/100	2428	5.9	PPD 8	PP 100
2400	100W Twin	SS	PPD/2100	2428	9.8	PPD 28	PP 2100
2400	100W Single	VS	PPD/V100	2428	6.1	PPD 8	PPV 100
2400	100W Twin	VS	PPD/V2100	2428	9.95	PPD 28	PPV 2100



\* 1800mm PPC/PPD dimensions shown

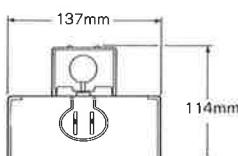
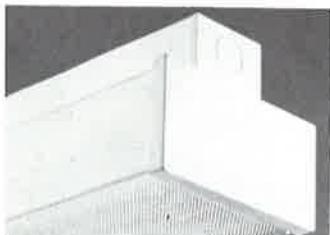
Catalogue no.	Length mm	Approx. weight kg	Fixing centres mm
PP 4621	610	1.5	457 and centre BS box piercing

## Popular Pack ▲



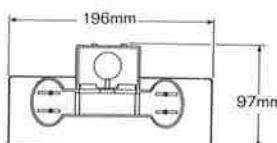
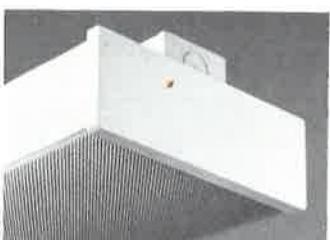
### PPL prismatic controller

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.



### Wire Guard for use with PPR reflectors

Catalogue No.	To fit
PPG 4	PPR 4
PPG 24	PPR 24
PPG 5	PPR 5
PPG 25	PPR 25
PPG 6	PPR 6
PPG 26	PPR 26
PPG 8	PPR 8
PPG 28	PPR 28

## Popular Pack

### RANGE

Nominal length mm	Rating	Circuit	Fitting Catalogue no.	Length mm	Approx. weight (incl. tubes) kg	Diffuser Catalogue no.	Batten Catalogue no.
1200	36W Single	SS	PPL/40	1248	3.6	PPL 4	PP 40
1500	58W Single	SS	PPL/65	1550	4.7	PPL 5	PP 65
1800	70W Single	SS	PPL/675	1818	5.2	PPL 6	PP 675
1800	70W Single	VS	PPL/V675	1818	5.4	PPL 8	PPV 675
2400	100W Single	SS	PPL/100	2428	7.0	PPL 8	PP 100
2400	100W Single	VS	PPL/V100	2428	7.2	PPL 8	PPV 100

### RANGE

Nominal length mm	Rating	Circuit	Fitting Catalogue no.	Length mm	Approx. weight (incl. tubes) kg	Diffuser Catalogue no.	Batten Catalogue no.
1200	36W Single	SS	PPE/40	1248	3.4	PPE 4	PP 40
1200	36W Twin	SS	PPE/240	1248	5.23	PPE 24	PP 240
1500	58W Single	SS	PPE/65	1550	4.42	PPE 5	PP 65
1500	58W Twin	SS	PPE/265	1550	6.2	PPE 25	PP 265
1800	70W Single	SS	PPE/675	1818	5.0	PPE 6	PP 675
1800	70W Twin	SS	PPE/2875	1818	6.9	PPE 28	PP 2875
1800	70W Single	VS	PPE/V675	1818	5.67	PPE 6	PPV 675
1800	70W Twin	VS	PPE/V2875	1818	7.5	PPE 26	PPV 2875
2400	100W Single	SS	PPE/100	2428	8.8	PPE 8	PP 100
2400	100W Twin	SS	PPE/2100	2428	9.8	PPE 28	PP 2100
2400	100W Single	VS	PPE/V100	2428	7.0	PPE 8	PPV 100
2400	100W Twin	VS	PPE/V2100	2428	10.15	PPE 28	PPV 2100

# 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 may be different from those marked on the control gear in the fitting, but the units are equally applicable for replacement purposes.

## Supply voltage

Standard gear 230/240V 50Hz. Alternative gear for the following fittings to work on a 220V 50Hz supply can be ordered at no extra charge.

18W 600mm  
36W 1200mm  
58W 1500mm

Fitting	Cat. no.	Rating	Circuit	Choke	Capacitor	Starter switch/ Vivatronic	Circuit diagram
PP20	1×18/20W	SS (LPF)	1×GCU18/20	—	1×GC2417	1×155/500	3
PP220	2×18/20W	SS (HPF)	1×GCU38/40	—	2×GC2417	2×155/200	7
PP40	1×36/40W	SS (HPF)	1×GCU38/40	1×GC2417	1×155/500	1	
PP240	2×36/40W	SS (HPF)	2×GCU38/40	1×GC2419	2×155/500	2×1	
PP65	1×58/65W	SS (HPF)	1×GCU58/65	1×GC2420	1×155/500	1	
PP265	2×58/65W	SS (HPF)	2×GCU58/65	1×GC2274	2×155/500	2×1	
PP675	1×70W	SS (HPF)	1×GCU70/75	1×GC2435	1×155/800	1	
PP2675	2×70W	SS (Lead Lag)	1×GCU70/75	1×GC2226	2×155/800	4	
PPV675	1×70W	VS (HPF)	1×GCU70/75	1×GC2420	1×G69570.4	11	
PPV2675	2×70W	VS (HPF)	2×GCU70/75	1×GC2409	2×G69570.4	2×11	
PP100	1×100W	SS (HPF)	1×GCU100	1×GC2419	1×155/800	1	
PP2100	2×100W	SS (Lead Lag)	1×GCU100/125+	1×GC2173	2×155/800	4	
PPV100	1×100W	VS (HPF)	1×GCU100	1×GC2419	1×G69517.4	11	
PPV2100	2×100W	VS (Lead Lag)	1×GCU100/125+	1×GC2173	2×G69517.4	11A	

SS=Switch start VS=Vivatronic start

For circuit diagrams see Control Gear and Accessories section



## GB 1665

Single bi-pin white plastic grip-pin lampholder. Complete with spring.



## GB 1666

Wide twin bi-pin white plastic grip-pin lampholder. Complete with spring.



## 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 Backmetal attachments.



## PP 4602

Reflector and coverplate fixing screw.

## Popular Pack accessories



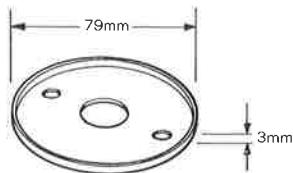
**GT 1281-3**  
Three way terminal block. Each way will accept one 2.5sq mm cable or two 1.5sq mm cables together.



**GA 5127**  
Current starter socket.



**GA 5019-X Starter Socket**  
Used in earlier Popular Pack fittings. Fixed by clip **GY 5285**.



**PP 4619:** Free on request.  
Patterned 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.



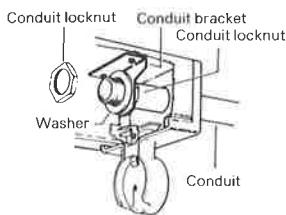
**PP 4616**  
Clip-in fused terminal block assembly with 3A fuse and protective terminal cover. Primary use for Popular Pack fitting when used on Trakline. Encroaches on centre entry on 600mm 20W twin only. Standard quantity 5 per pack.



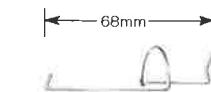
**PP 4609**  
Replacement plastic clip for Sentinel fittings.



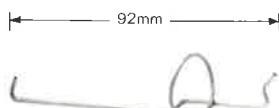
**GY 5283**  
Fixing clip for 35mm and 38mm dia. capacitors. **GY 5273** for 32mm dia. capacitors.



**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.



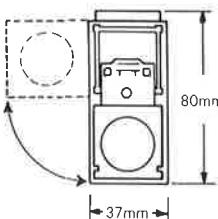
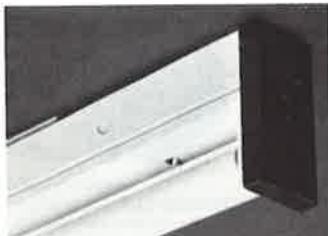
**PP 4600**  
Lampholder tension spring used on early single and wide twin fittings.



**PP 4625**  
Lampholder tension spring used on current single and twin fittings.

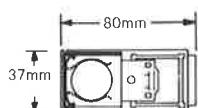
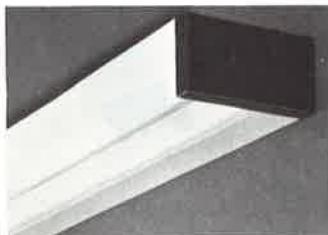
**FUSE**  
BS 1362 dimensions  
**GT 1299** 3 amp single and twin tube 1800mm 85W and earlier SRS fittings. Latest SRS circuits unfused. (Replacement use only).

## Arrowslim



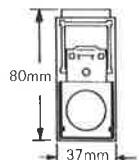
### AS battens

Single batten fitting with three position twist lampholder in 600mm 18W; 900mm 30W; 1050mm 40W 1200mm 36W and 1500mm 58W sizes. The 900mm 30W and 1050mm 40W are packed with a 26mm diameter Warm White tube and the remainder with 26mm diameter Pluslux 3000 tubes. All gear is switchstart and a push switch (Cat. no. AS 4601) is available for wall mounted fittings.



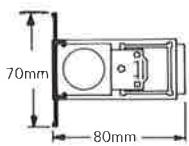
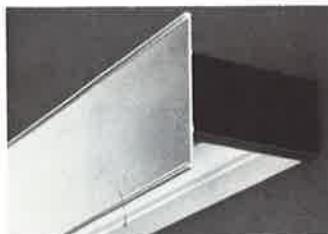
### ASD diffuser

Opal acrylic 'L' extrusion diffuser fixed to the basic fitting by engagement with the lampholders.



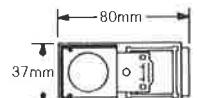
### ASU attachment

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.

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

**RANGE**

Nominal Length mm	Rating	Circuit	Complete Fitting Catalogue no.	Length mm	Fixing centres mm
600	18W Single	Switchstart	AS 18	608	400
900	30W Single	Switchstart	AS 30	914	600
1050	40W Single	Switchstart	AS 40	1066	600
1200	36W Single	Switchstart	AS 36	1218	600
1500	58W Single	Switchstart	AS 58	1519	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	Diffuser Catalogue no.	Batten Catalogue no.
900	30W Single	Switchstart	ASD/30	914	ASD 3	AS 30
1050	40W Single	Switchstart	ASD/40	1066	ASD 4	AS 40
1200	36W Single	Switchstart	ASD/36	1218	ASD 36	AS 36
1500	58W Single	Switchstart	ASD/58	1519	ASD 5	AS 58

**RANGE**

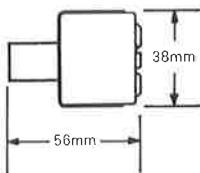
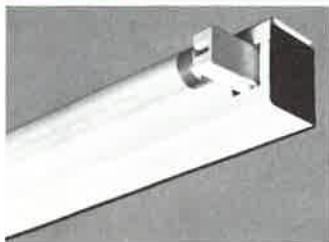
Nominal Length mm	Rating	Circuit	Complete Fitting Catalogue no.	Length mm	Attachment Catalogue no.	Batten Catalogue no.
900	30W Single	Switchstart	ASU/30	914	ASU 3	AS 30
1050	40W Single	Switchstart	ASU/40	1066	ASU 4	AS 40
1200	36W Single	Switchstart	ASU/36	1218	ASU 36	AS 36
1500	58W Single	Switchstart	ASU/58	1519	ASU 5	AS 58

**RANGE**

Nominal Length mm	Rating	Circuit	Complete Fitting Catalogue no.	Length mm	Attachment Catalogue no.	Batten Catalogue no.
900	30W Single	Switchstart	ASA/30	914	ASA 3	AS 30

**RANGE**

Nominal Length mm	Rating	Circuit	Complete Fitting Catalogue no.	Length mm	Attachment Catalogue no.	Batten Catalogue no.
900	30W Single	Switchstart	ASC/30	914	ASC 3	AS 30

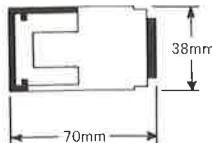
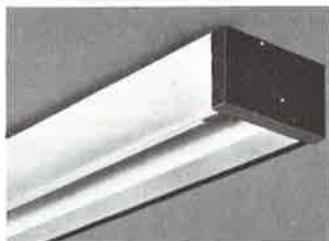


## LJ Series Minipack fittings

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. For use in ordinary indoor atmospheres where the ambient temperature does not exceed 25°C. Fittings comply with BS 4533-2-2. (IP20).

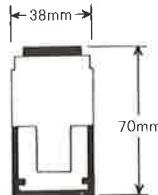
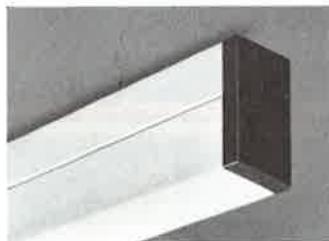
### Supply voltage

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.

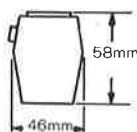
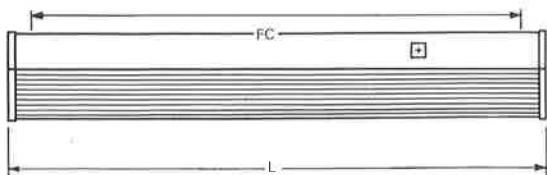


**RANGE**

Nominal Length mm	Rating	Circuit	Batten 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

**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



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 double insulated items, to BS 4533-2-2.

## RANGE

Rating	Volts (d.c. only)	Catalogue no.	Approx. weight (incl. tubes) kg	Length (L) mm	Fixing centres (FC) mm
8W Single	12	NOM 1008-12	0.34	343	318
13W Single	12	NOM 1013-12	0.49	569	551

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

## BATTERY INFORMATION

Rating	Supply current (amps)	38	Battery rating (amp/hours)	60
			42	
8W	12V	0.7	50	56
13W	12V	1.1	31	34

\*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.



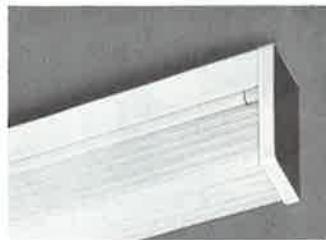
**GT 1281-3**  
Three way terminal block. Each way will accept one 2.5sq mm cable or two 1.5sq mm cables together.

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

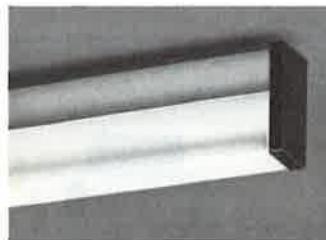
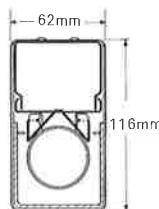
### Replacement control gear for 240V 50Hz supply

Tube size	Fitting	Choke	Capacitor	Starter Switch	Circuit Dia. no.
8W 300mm	Minipack	1×GCJ 8	—	1×155/500	1
13W 525mm	Minipack	1×GCJ 13	—	1×155/500	1
30W 900mm	Arrowslim AS 30	1×GCJ 30	—	1×155/500	1
40W 1050mm	Arrowslim AS 40	1×GCJ 36/40	—	1×155/500	1
50W 1500mm	Arrowslim AS 50	1×GCJ 50	1×GC 2229	1×155/501	2
50W 1500mm	Arrowslim ASQ 50	1×GBJ 50	1×GC 2420	—	13

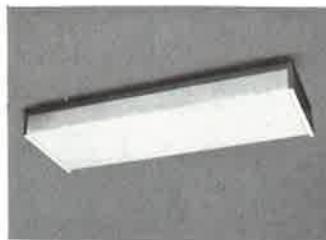
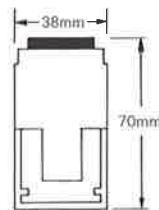
For circuit diagrams see control gear and accessories section.



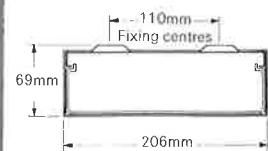
1200mm Homelite FHLD 40



Mini Homelite FHLD 13



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 FHLD 13). On/off switches are available as optional extras for Mini Homelite FHLD 13 (catalogue no. FMP 4600). 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.

These fittings are not power factor corrected.

#### Packaging

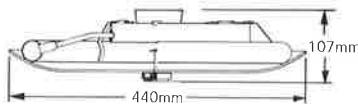
Supplied in decorative window pack showing fitting and suitable for off the shelf retail selling.

#### RANGE

Catalogue no.	Description	Length mm	Weight kg	Lamp length nominal mm	Rating	Fixing centres mm
FHLD 13	Mini Homelite c/w diffuser	571	1.25	525	13W	500
FHLD 40	1200mm Homelite c/w diffuser	1228	3.0	1200	40W	600
FHUD 40	Compact Homelite c/w diffuser	570	2.5	525*	40W	400

\*U-tube

## ▲ Circline Homelite fluorescent fittings



### CFLSG 60

This bowl diffuser is 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.

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

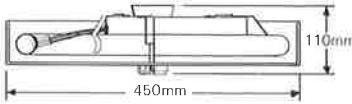
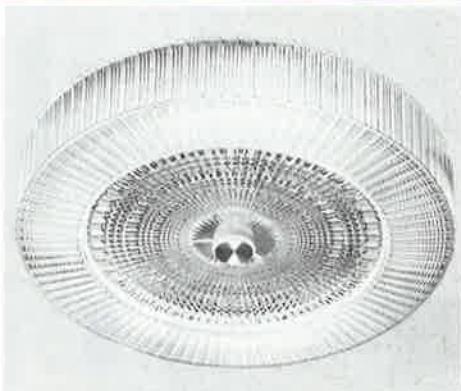
Fittings comply with BS 4533-2.2 (IP 20).

### Supply voltage

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

### Accessories

For accessories see overleaf.



### FHCP 60

This sparkle fitting has a prismatic diffuser in clear acrylic with a smooth upper and a patterned lower surface. The bowl is attached to the fitting by a white plastic knob.

### RANGE

Catalogue no.	Description	Rating	Weight (kg)	Circuit
CFLSG 60	Large sparkle glass fitting	60W Single	4.1	Switchstart
FHCP 60	Large sparkle acrylic fitting	60W Single	4.0	Switchstart

## Viewpoint 2 combined light and shaver point



### FLS 13 General purpose version

This model features a mains voltage shuttered shaver socket for use in all rooms except bathrooms.

### FLST 13 Bathroom version

This model has a dual voltage shaver socket (115/230V) and a pull switch. Conforms to BS 3052.

Each fitting is supplied complete with a 525mm Warm White tube. The body is of extruded aluminium alloy, painted silver-grey and mounted on a white painted steel backplate with black plastic end caps. Both fittings comply with BS4533:2.2.2.

### Supply voltage

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

### RANGE

Model	Circuit	Catalogue no.	Length mm	Weight kg	Fixing centres mm
General purpose (bedroom) type	Switchstart	FLS 13	548	1.5	460
Bathroom type	Switchstart	FLST 13	548	1.6	460

## Domestic fluorescent accessories



**GS 5139**  
Pull switch  
for Viewpoint 2.



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



**GS 5162 (FLST 13)**  
Rocker switch  
for Viewpoint 2.



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



**GS 5154 (FLS 13)**  
Rocker switch  
for Viewpoint 2.



**GA 5089**  
Starter socket for  
Mini Homelite.



**GA 5127**  
Starter socket for  
1200mm and 1500mm  
Homelite fittings.



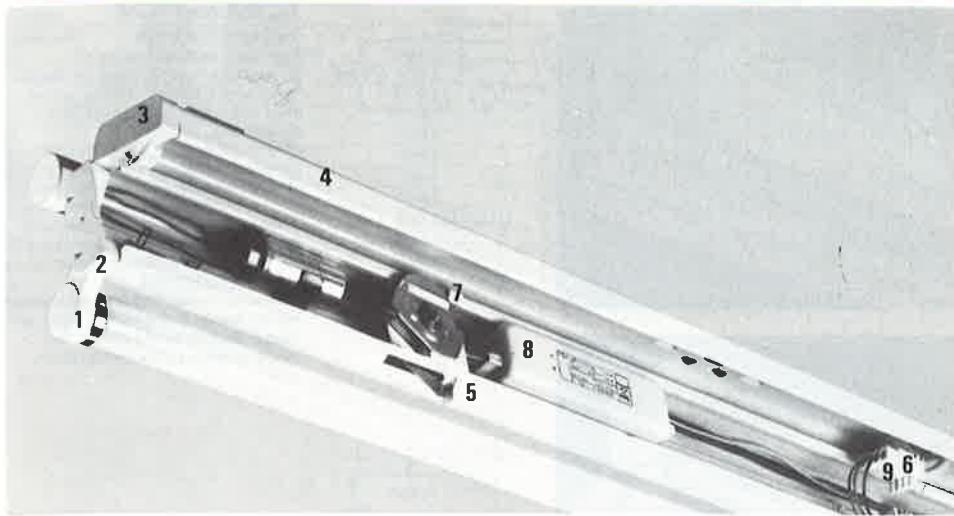
**GB 1598**  
Lampholder for  
Viewpoint 2 fittings.

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

Fitting catalogue no.	Lampholder	Starter switch	Choke	Diffuser	OS Transformer	End cap	End cap trim	Fixing knob	Circuit diagram no.
FLS 13	GB 1598	155/500	GCU 13	FLS 4600	—	—	—	—	1
FLST 13	GB 1598	155/500	GCU 13	FLS 4600	3230/5010*	—	—	—	1
FHLD 40	GB 1665	155/500	GCU 38/40	FHLD 4	—	1700/2704	1700/2708	—	1
FHLD 65	GB 1665	155/500	GCU 58/85	FHLD 5	—	1700/2704	1700/2708	—	1
FHLD 13	GB 1598-3S	155/500	GCD 13	LJU 121	—	1435/801	—	—	1
FHUD 40	GB 1841	155/500	GCU 38/40	FHUD 4	—	2040/5099	2040/5101	—	1
FHSD 40	GB 1588	155/500	GCU 38/40	ASU 4	—	—	—	—	1
CFLSG 60	GB 1623	155/500	GCU 58/85	LSG	—	—	—	CF 4607	19
FHCP 60	GB 1623	155/500	GCU 58/85	FHCPA	—	—	—	CF 4606	19
CFSPG 60	GB 1623	155/500	GCU 58/85	SPG	—	—	—	CF 4608	19
CFA 60	GB 1623	155/500	GCU 58/85	CF 4601 (Frame)	—	—	—	—	19
				CF 4603 (Dish)	—	—	—	—	

\*Double wound transformer.

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 36W, 1500mm 58W, 1800mm 70W and 2400mm 85W and 100W in single and twin-tube versions and a triple-tube 1800mm 70W spine. A full range of attachments is available. The newly introduced T8 spine range offers economy in operation together with the excellent colour rendering properties associated with Polylux fluorescent tubes.

Clipper is quick and easy to install. The only component to be fixed to the ceiling before making the electrical connection is a lightweight metal ceiling plate. This is easily screwed into position by one man. The spine, containing fuse protected control gear and lampholders, simply hooks on the ceiling plate, plugs into the terminal block socket, and clips up into place. The terminal block has been increased in size to accept  $2 \times 4.0\text{mm}^2$  cables per way and is now a 4 way block, the entry L1 offering a convenient circuit looping position. The same ceiling plate is suitable for any spines, of the same length. Maintenance is simple and a replacement can be installed without disturbing the rest of the lighting.

Clipper trunking acts as a substitute for the ceiling plate. The spine can be clipped to it in exactly the same way but saving the cost of a ceiling plate. There are 3 different Clipper trunking systems.

## Standards

Fittings comply with BS 4533—2.2 (IP20).

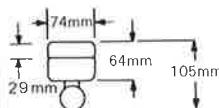
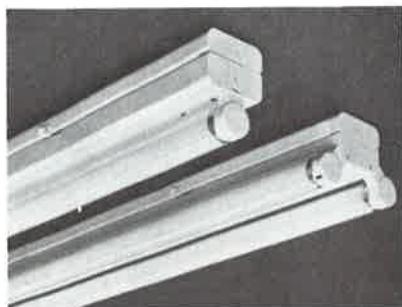
## Supply voltage

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 battens 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 positively 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. Easily accessible terminal block and socket for rapid mains connection.

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.



## FCMA and FCM batten fittings

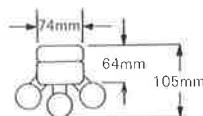
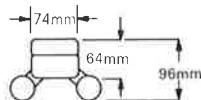
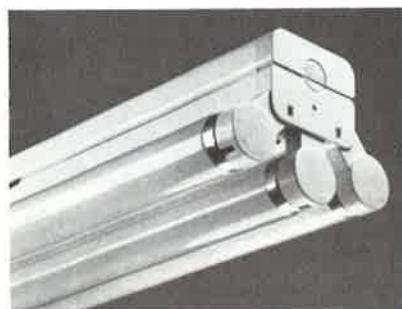
The basic batten consists of:

1. An FCMA ceiling plate for single, twin, and 1800mm 3-tube spines, (not required when using Clipper trunkings).

The metal channel contains a central terminal block and socket and plastic end plates with conduit knock-outs.

2. The FCM 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.

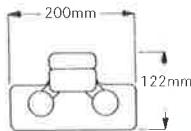
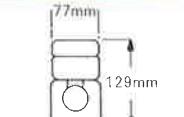
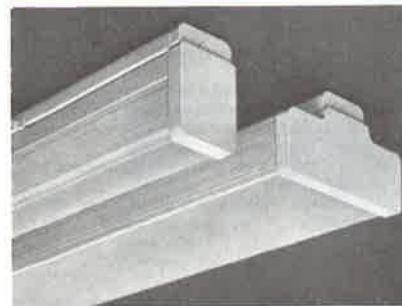
There is a flying lead plug connection to the socket in the ceiling plate, and finger latches locate and fix the hook-in spine to the ceiling plate.



## 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.

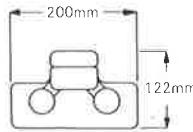
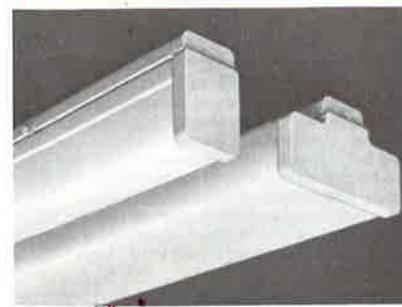
**Note:** There is a metal over cover FCMO where upward light is not required.



## 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.

**Note:** There is a metal over cover FCMO where upward light is not required.



**RANGE**

Nominal length mm	Rating	Circuit	Ceiling Plate Catalogue no.	Spine Catalogue no.	Fixing Centres	Length (mm)	Weight kg
1200	36W single	VS	FCMA 4	FCMV 36	600/610	1229	3.1
1200	36W twin	VS	FCMA 4	FCMV 236	600/610	1229	4.2
1500	58W single	VS	FCMA 5	FCMV 58	600/610	1529	3.6
1500	58W twin	VS	FCMA 5	FCMV 258	600/610	1529	4.5
1800	70W single	VS	FCMA 6	FCMV 670	600/610	1793	4.0
1800	70W twin	VS	FCMA 6	FCMV 2870	600/610	1793	5.2
1800	70W triple	VS	FCMA 6	FCMV 3870	600/610	1793	7.4
2400†	100W single	VS	FCMA 8	FCMV 100	1200/1220	2403	5.7
2400†	100W twin	VS	FCMA 8	FCMV 2100	1200/1220	2403	7.5
2400	85W single	QS	FCMA 8	FCMQ 885	1200/1220	2403	5.9
2400	85W twin	QS	FCMA 8	FCMQ 2885	1200/1220	2403	8.8

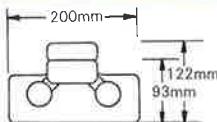
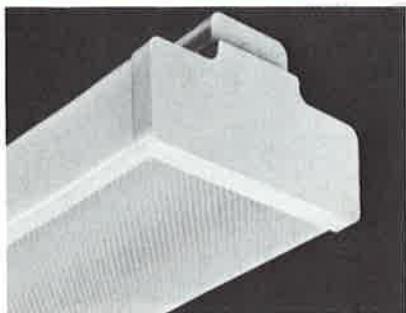
†Also available in SS to special order.

**RANGE**

Nominal length mm	Rating	Ceiling plate Catalogue no.	Spine Catalogue no.	Controller Catalogue no.	Length (mm)	Weight (kg)
1200	36W Single	FCMA 4	FCMV 36	FCMC 4	1242	4.6
1200	36W Twin	FCMA 4	FCMV 236	FCMC 24	1242	6.5
1500	58W Single	FCMA 5	FCMV 58	FCMC 5	1544	5.6
1500	58W Twin	FCMA 5	FCMV 258	FCMC 25	1544	7.8
1800	70W Single	FCMA 6	FCMV 670	FCMC 6	1812	6.1
1800	70W Twin	FCMA 6	FCMV 2870	FCMC 28	1812	8.5
2400	100W Single	FCMA 8	FCMV 100	FCMC 8	2424	5.9
2400	100W Twin	FCMA 8	FCMV 2100	FCMC 28	2424	8.0
2400	85W Single	FCMA 8	FCMQ 885	FCMC 8	2424	7.9
2400	85W Twin	FCMA 8	FCMQ 2885	FCMC 28	2424	11.0

**RANGE**

Nominal length mm	Rating	Ceiling plate Catalogue no.	Spine Catalogue no.	Diffuser Catalogue no.	Length (mm)	Weight (kg)
1200	36W Single	FCMA 4	FCMV 36	FCMD 4	1242	4.6
1200	36W Twin	FCMA 4	FCMV 236	FCMD 24	1242	6.5
1500	58W Single	FCMA 5	FCMV 58	FCMD 5	1544	5.6
1500	58W Twin	FCMA 5	FCMV 258	FCMD 25	1544	7.8
1800	70W Single	FCMA 6	FCMV 670	FCMD 6	1812	6.1
1800	70W Twin	FCMA 6	FCMV 2870	FCMD 26	1812	8.5
2400	100W Single	FCMA 8	FCMV 100	FCMD 8	2424	5.9
2400	100W Twin	FCMA 8	FCMV 2100	FCMD 28	2424	8.0
2400	85W Single	FCMA 8	FCMQ 885	FCMD 8	2424	7.9
2400	85W Twin	FCMA 8	FCMQ 2885	FCMD 28	2424	11.0

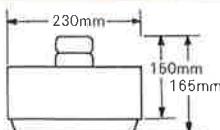
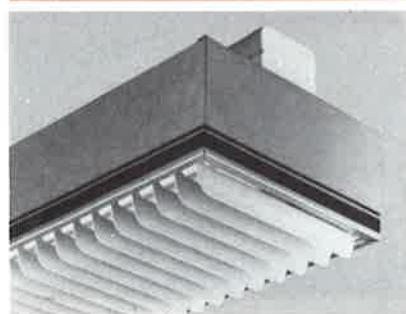
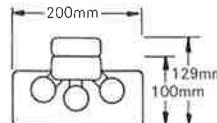
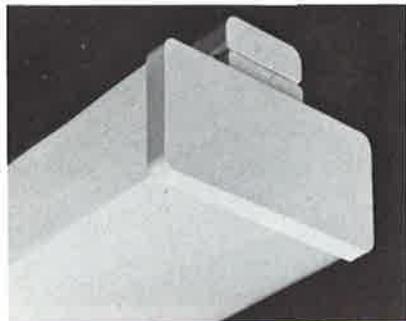


## FCME and FCMP diffusers

FCME a clear prismatic base with opal sides for situations where direct glare control is paramount. Extruded from acrylic there is one cross section which is suitable for use on twin spines.

FCMP a clear prismatic controller extruded in acrylic specifically for use with the 3 tube spine. The diffuser is held on by sprung loaded end caps which clip onto the lampholder assemblies.

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

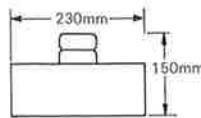
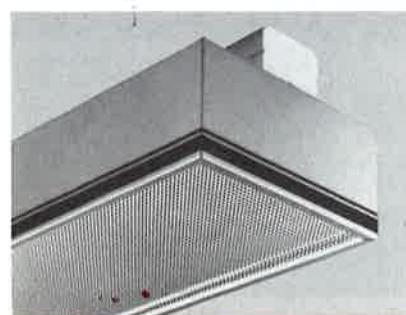


## FCFL baffle louvre and FCPP controller

Something special for that area where appearance is most important. This black lined metallic silver finished metal frame is the ideal attachment for twin clipper spines. There is a choice of control panels that drop into the frame, a prismatic panel or a white metal baffle. If upward light is not desired the standard wide cover plate FCMO available for other twin diffusers can be used.

Location of the frame is by the same cage nuts as used for the metal reflector version and once in position lamp replacement requires only the light controller to be removed.

**Note:** There is a metal over cover FCMO where upward light is not required.



RANGE						
Nominal Length	Rating	Ceiling Plate	Spine	Diffuser	Length (mm)	Weight (Kg)
1200*	1x38	FCMA 4	FCMV 38	FCME 24	1242	4.8
1200*	2x38	FCMA 4	FCMV 238	FCME 24	1242	6.5
1500*	1x58	FCMA 5	FCMV 58	FCME 25	1544	5.8
1500*	2x58	FCMA 5	FCMV 258	FCME 25	1544	7.8
1800	1x70	FCMA 6	FCMV 670	FCME 26	1812	8.4
1800	2x70	FCMA 6	FCMV 2670	FCME 26	1812	8.5
2400*	1x100	FCMA 8	FCMV 100	FCME 28	2424	7.9
2400*	2x100	FCMA 8	FCMV 2100	FCME 28	2424	9.9
2400*	1x85	FCMA 8	FCMO 885	FCME 28	2424	8.3
2400*	2x85	FCMA 8	FCMO 2885	FCME 28	2424	11.0

\*Made to special order.

RANGE						
Nominal Length	Rating	Ceiling plate	Spine	Controller	Baffle louvre	Length (mm)
1800	2x70	FCMA 6	FCMV 2670	FCFP 26	FCFL 26	1817
2400*	2x100	FCMA 8	FCMV 2100	FCFP 28	FCFL 28	2427
2400*	2x85	FCMA 8	FCMO 2685	FCFP 28	FCFL 28	2427

\*Made to special order.

There is also a wide cover plate as an optional extra for use with all twin and 3 lamp controllers where the upward light is not required and to minimise the accumulation of dust on the light transmitting surfaces.

#### Broad Cover Plate

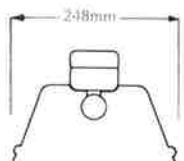
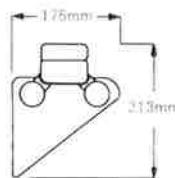
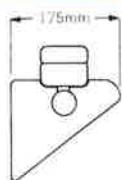
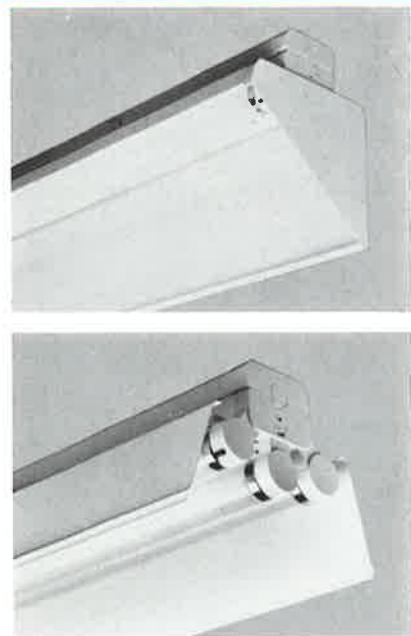
FCMO 24 (1200mm)\*

FCMO 25 (1500mm)\*

FCMO 26 (1800mm)

FCMO 28 (2400mm)\*

\*Made to special order.



## FCMY angle and FCMR dispersive metal reflectors

Sheet steel angle and open-ended-slotted trough reflectors finished with high reflectivity white acrylic enamel. For single, twin, and 3-tube (dispersive only) spines. Simply fixed with screws which engage cage nuts positioned in the knock-outs provided in the spine. Reflector has keyhole slots for easy removal.

**Note:** FCMR 8 is suitable for 8' 85W and 8' 100W spines.

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 and BS 1853.**

Nominal tube length	1200mm	1500mm	1800mm	2400mm	2400mm*
Nominal tube watts	36	58	70	85	2 x 100
Circuit type	VS	VS	VS	QS	SS or VS
Total circuit watts	47	71	80	103	229
Mains current amps	0.22	0.34	0.38	0.43	0.98
Total volt/amps	52	82	92	104	235
Logging power factor	0.90	0.87	0.87	0.99	0.98
Minimum starting temperature	0°C	0°C	0°C	+5°C	0°C
% harmonics/phase	19	19	19	8	11

\*Single spines supplied as matched pairs of twin lead/lag circuit.

## Replacement Control Gear

Nominal length	Circuit type	Rating	Ballast	Capacitor	Starter unit	Circuit Diagram No.
1200	VS	1 x 36W	GCU 40	GC 2417	G 69547.4	20 V
1500	VS	1 x 58W	GCU 65	GC 2420	G 69547.4	20 V
1800	VS	1 x 70W	G 69397.4	GC 2420	G 69570.4	20 V
2400	QS	1 x 85W	GCU 85	GC 2226	G 68586	17
2400	VS	1 x 100W (lag)	GCU 100	—	G 69517.4	21 V
2400	VS	1 x 100W (lead)	GCU 100/125	GC 2173	G 69517.4	22 V
2400	SS	1 x 100W (lag)	GCU 100	—	155/802	14
2400	SS	1 x 100W (lead)	GCU 100/125	GC 2173	155/802	13

For circuit diagrams see control gear and accessories section.

## RANGE

Nominal Length mm	Rating	Ceiling plate Catalogue no.	Spine Catalogue no.	Reflector Catalogue no.	Length (mm)	Weight (kg)
1200	36W Single	FCMA 4	FCMV 36	FCMY 4	1229	6.0
1200	36W Twin	FCMA 4	FCMV 236	FCMY 4	1229	7.5
1500	58W Single	FCMA 5	FCMV 58	FCMY 5	1529	7.3
1500	58W Twin	FCMA 5	FCMV 258	FCMY 5	1529	9.2
1800	70W Single	FCMA 6	FCMV 670	FCMY 6	1793	7.8
1800	70W Twin	FCMA 6	FCMV 2670	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	36W Single	FCMA 4	FCMV 36	FCMR 4	1229	6.1
1200	36W Twin	FCMA 4	FCMV 236	FCMR 4	1229	7.8
1500	58W Single	FCMA 5	FCMV 58	FCMR 5	1529	7.4
1500	58W Twin	FCMA 5	FCMV 258	FCMR 5	1529	9.5
1800	70W Single	FCMA 6	FCMV 670	FCMR 6	1793	8.3
1800	70W Twin	FCMA 6	FCMV 2670	FCMR 6	1793	10.4
1800	70W Triple	FCMA 6	FCMV 3670	FCMR 6	1793	12.6
2400	100W Single	FCMA 8	FCMV 100	FCMR 8	2403	9.6
2400	100W Twin	FCMA 8	FCMV 2100	FCMR 8	2403	12.4
2400	85W Single	FCMA 8	FCM 895	FCMR 8	2403	10.7
2400	85W Twin	FCMA 8	FCM 2885	FCMR 8	2403	13.5

## Clipper accessories

**GB 1621**  
Single lampholder



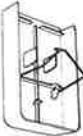
**GB 1622**  
Twin lampholder



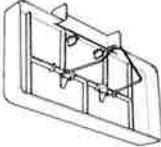
**GB 1624**  
Triple lampholder



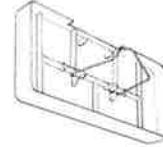
**FCM 4610**  
Single lamp diffuser/  
controller end cap



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



**FCM 4612**  
Triple lamp diffuser end cap



**GA 5123.3**  
Connecting plug with 200mm  
leads (for use with GA 5124  
sockets)



**FCMB**  
20mm conduit bush



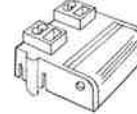
**FCM 4613**  
Lampholder  
retaining spring



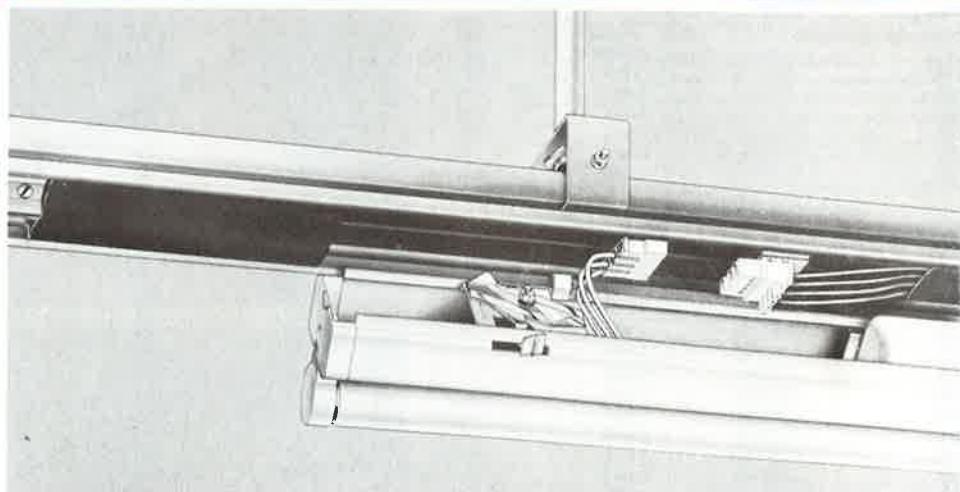
**GT 1367**  
Fused terminal block



**GT 1387**  
In line fuseholder



# 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 systems.

#### Finish

Suffix G indicates the standard hot dipped galvanised finish which is suitable for use in buildings where the trunking is installed during the construction stage or where humid interior atmospheres exist.

Both sections can be supplied galvanized and painted with a stove-enamelled light grey paint finish to BS 2660, 9094 (similar to BS 4800 10AO3) at extra cost.

#### 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; using these centres either section can be mounted continuously with the heaviest Clipper fittings.

#### Wiring

Cable supports FCM 4502 should be installed at 200 to 450mm centres to locate correctly the through wiring. In addition the fibro heat shield FCM 4514 may 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 40-45°C.

#### Cable capacity

Unit system factors are given below to enable the maximum capacity to be simply calculated. The table allows the necessary de-rating factors.

Unit size:

220 FCM

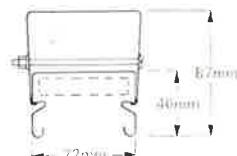
660 FCMX

#### Unit system factors

Cable size (mm <sup>2</sup> )	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

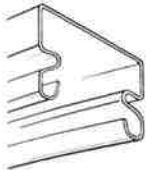


#### Note

- 1) the FCMX can accept side entry 20mm conduit.
- 2) the dotted areas indicate the respective cable enclosures.
- 3) to determine overall depth of trunking including Clipper fitting add fitting depth, less 29mm for ceiling plate.

# Clipper industrial trunking

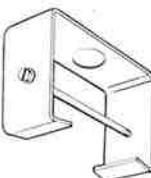
**FCM 4500/G**  
**FCMX 4500/G**  
4.5 metre length  
Clipper trunking



**FCM 4502\***  
Cable support



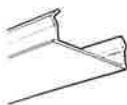
**FCM 4504**  
**FCMX 4504**  
Suspension hanger



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



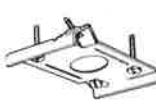
**FCM 4507W\***  
Cover strip  
1.8 metre length PVC



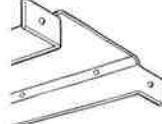
**FCMF 3620 MK.13\***  
Large capacity  
terminal socket



**FCM 4509\***  
Auxiliary suspension  
bracket



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



**FCM 4514\***  
Fibre heat shield



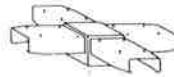
**FCM 4515**  
**FCMX 4515**  
Two way coupler



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



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



**FCM 4518 MK 13\***  
Temporary site light



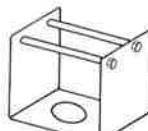
**FCM 4519**  
**FCMX 4519**  
Trunking straight coupler



**FCM 4521**  
**FCMX 4521**  
Girder Clamp



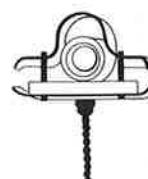
**FCMX 4522**  
Suspension clamp for  
Hi-bay fittings



**Note:** The MK 13 socket has a capacity of 2×4mm or 3×2.5mm cables per terminal, with a fourth terminal for looping; this makes the FCM 4520 large capacity terminal obsolete.

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

**FCMS 2**  
Pull switch



# Clipper ceilings

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 Clipper range of fittings allows proper co-ordinated fixing with all popular types of suspended ceilings, and with several benefits.

The section 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 section is semi-recessed into the ceiling.

The section is galvanised with visible surfaces below ceiling level painted semi-matt white to match the baffles and end plates.

## Cable capacity

Unit system factors are given below to enable the maximum capacity to be simply calculated, the table allows the necessary de-rating factors.

Unit size: 615.

## Unit system factors

Cable size (mm) <sup>2</sup>	Factor (Copper or Aluminium)
1.0	8.1
1.6	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.

### FCMF 3600

Ceiling section 3.6 metre length

### FCMF 3600S

Slotted for 'metsec' cross noggins



### FCMF 3610

Section end plate



### FCMF 3616

Fibre cable support



### FCMF 4507 W

Cover strip (PVC) 1.8 metre length



### FCMF 3602

Single point suspension hanger



### FCMF 3611

Bridge support 1200mm span  
Max. Spacing 1800mm



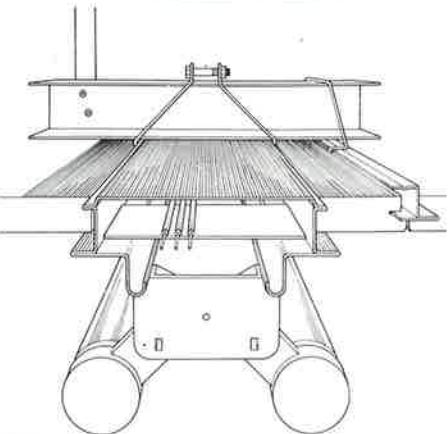
### FCMF 3617

Fibre heat shield



### FCMF 4581 MK.13

Temporary site light

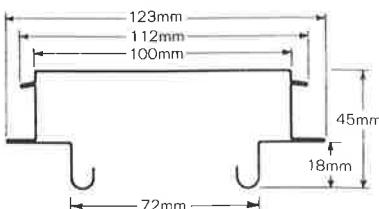


## Weight

Approximate weight of FCMF 3600—7.2kg

## Suspension

Maximum suspension centres—1800mm



### FCMF 3603

Channel suspension hanger



### FCMF 3606

Section coupler



### FCMF 3612

Baffle 1200mm span



### FCMF 3620 MK.13

Large capacity terminal socket  
(2x4mm cable)



### FCMS 2

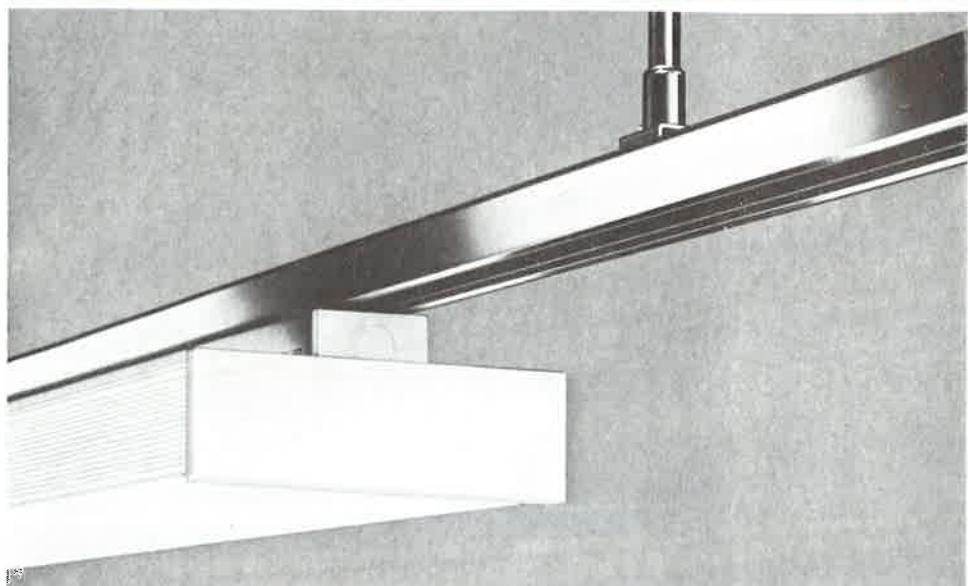
Pull switch



## Clipper ceilings



## Lightweight trunking

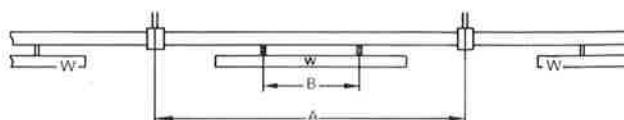


A satin anodized aluminium trunking for commercial interiors. Suitable for surface mounting or conduit suspension, one other profile is available for suspended ceilings (see illustration). Chain suspension is not recommended.

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

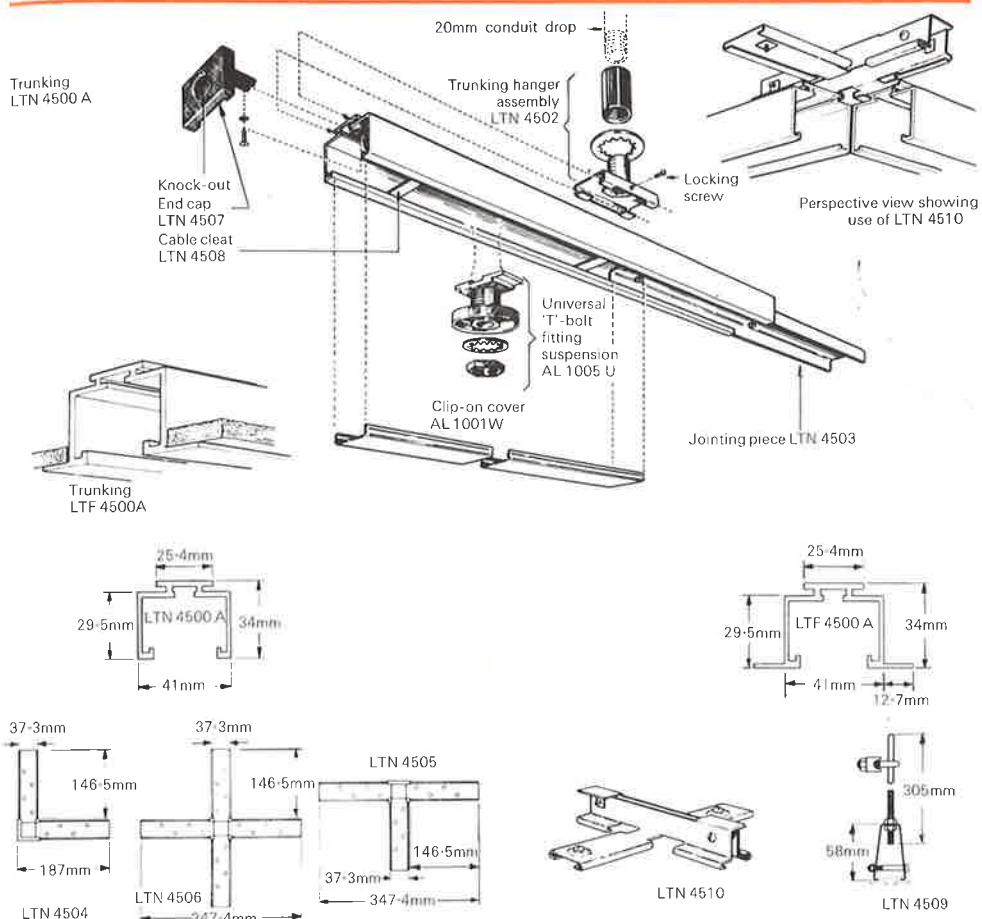
The above deflections were measured using maximum weight Popular Pack fittings. These figures assume that all loads are counter-balanced and the final trunking span will be adequately

supported at the termination point. It is important when designing trunking installations to ensure that the deflection between spans does not exceed 1/360th of the total span.

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

$$\text{deflection} = \frac{2440}{360} = 6.7\text{mm}$$

# Lightweight trunking

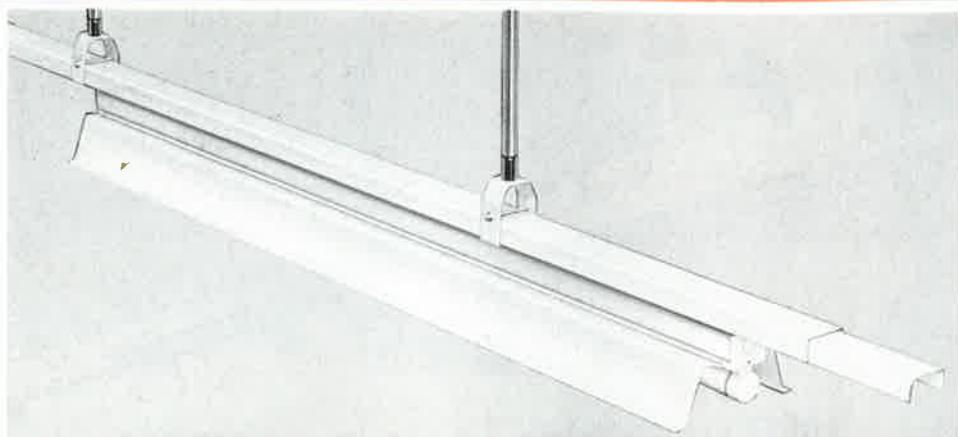


## Components table

Catalogue no.	Description	Weight kg
LTN 4500 A	4.5 metre length trunking	3.175
LTF 4500 A	4.5 metre length trunking for recessing	3.63
AL 1005 U	Universal T-bolt fitting suspension (also used with Liteline trunking)	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 1001W	1.8 metre PVC cover (also used with Liteline trunking)	0.17

\*Enables continuous runs of Trakline to be used with Lightweight trunking.

## Liteline trunking

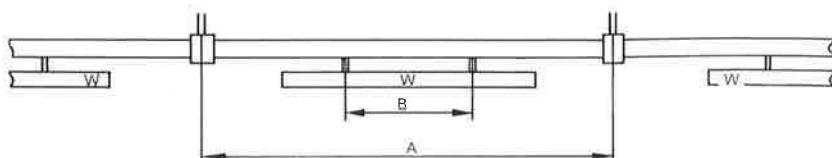


Liteline trunking can be suspended, fixed flush or recessed. Supplied in 4.5m lengths of galvanised cold rolled steel. An additional light grey paint finish to BS2660, 9094 (similar to BS4800 10AO3) can be supplied at extra cost.

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

screws for earth continuity. 'Clip-over' suspension stirrup suitable for conduit and clip-on 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
3.35m	1.22m	25kg	5.1mm

The above deflections are for Liteline carrying multi-tube luminaires and assume that all loads are counter-balanced and that the final trunking span is adequately supported at the terminal point. It is important when designing trunking installations to ensure that the deflection between spans does not exceed 1/360th of the total span. For example, an installation requires trunking to be suspended at 3.35m spans. Therefore maximum

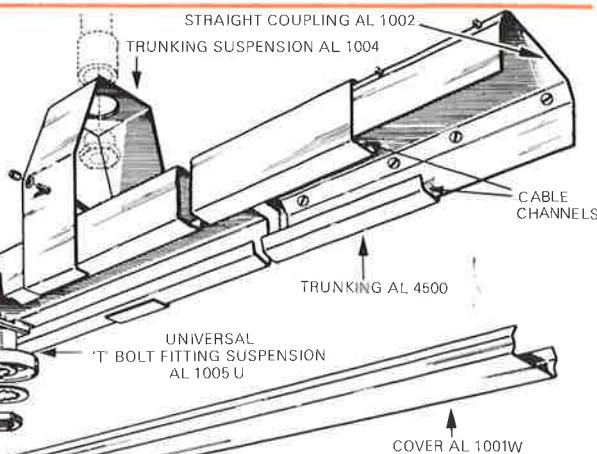
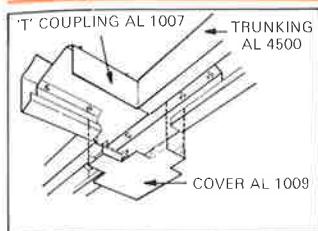
$$\text{deflection} = \frac{3350}{360} = 9.3\text{mm}$$

### Cable Capacity

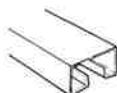
The cable channels provide an unit system factor of 86 allowing the necessary de-rating factors. To check the capacity multiply the quantities of each size of cable by the appropriate factor tabled below and the total should not exceed 86 or 43 for each cable channel.

Cable size (mm <sup>2</sup> )	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	33.1

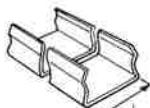
# Liteline trunking



END CAP AL 1003



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



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



Catalogue no.  
AL 1002  
Straight coupling  
Weight 0.5kg



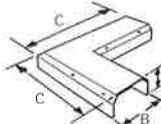
Catalogue no.  
AL 1003  
End cap  
Weight 0.01kg



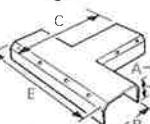
Catalogue no.  
AL 1004  
Trunking  
suspension  
Weight 0.11kg  
38mm wide x 86mm  
deep



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



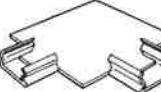
Catalogue no.  
AL 1006  
Horizontal coupling  
Weight 0.5kg



Catalogue no.  
AL 1007  
T' coupling  
Weight 0.7kg



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



Catalogue no.  
AL 1009  
Cover assembly  
Weight 0.06kg



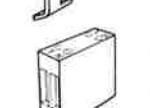
Catalogue no.  
AL 1010  
Girder clamp  
assembly  
Weight 0.14kg



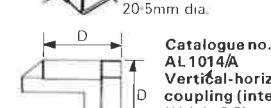
Catalogue no.  
AL 1011  
Suspension bracket  
Weight 0.03kg



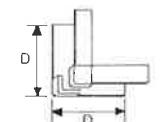
Catalogue no.  
AL 4512  
Top hat section  
4.5m length  
Weight 3.5kg  
106mm wide x 34mm  
deep



Catalogue no.  
AL 1013  
Parablock  
connector  
Weight 0.03kg



Catalogue no.  
AL 1014A  
Vertical-horizontal  
coupling (internal)  
Weight 0.5kg



Catalogue no.  
AL 1015A  
Vertical-horizontal  
coupling (external)  
Weight 0.5kg



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

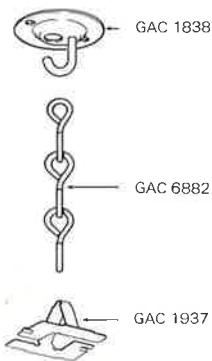


Catalogue no.  
AL 1016  
Stop-end junction  
Weight 0.5kg

## Suspension sets

Suspension sets are available for most Thorn Lighting fittings. Chain sets are available in multiples of one metre. 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.

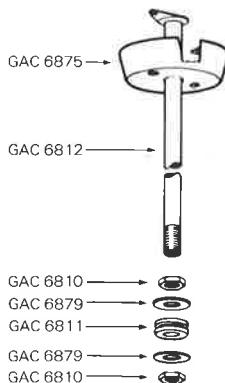


### Suspension Set A 1000 (Light Duty)

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

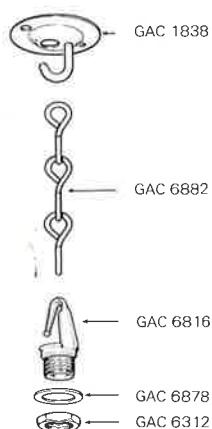
### Max. loading table

Catalogue No.	Maximum loading per set	
		Kg
A 1000	A set +2×GAC 6882	19.0
B 750	B set +2×GAC 6812	30.9
H 750	H set +2×GAC 6815	123.0
K 1000	K set +2×GAC 6882	28.1



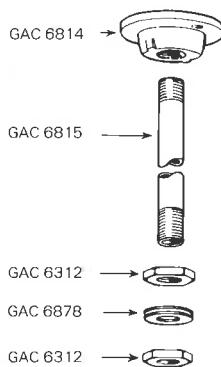
### Suspension Set B 750

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



### Suspension Set K 1000 (Heavy Duty)

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



### Suspension Set H 750

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

# Commercial Fluorescent and Discharge Luminaires Ceiling Products

## Index

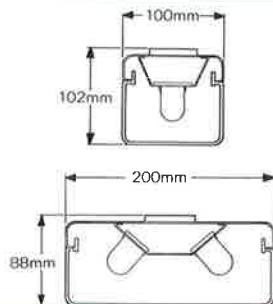
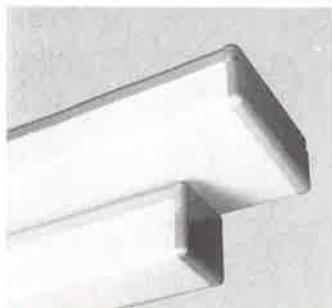
Thorn Formula One range	46-49
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### Health and Safety at work

Refer to note on page seven.

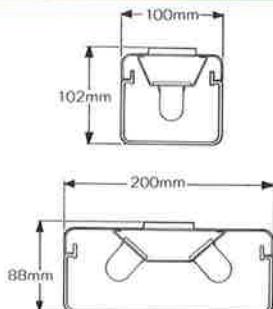


## Thorn Formula One ▲



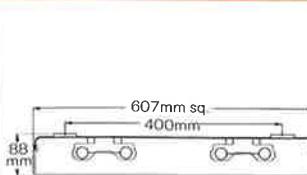
### F1DO

Slim section batten with opal diffuser. Finished grey with back cable entry. Available in single and twin lamp options in 1200, 1500 and 1800mm nominal body lengths. Fittings are supplied complete with Polylux 3500 white tubes.



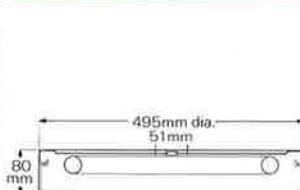
### F1DP

As the opal diffuser version above including vivatronic gear but Prismatic Controller option. Tubes are supplied (Polylux 3500), but diffusers and controllers are ordered and supplied separately.



### F1DO 240U

The square fitting in the range. Nominally 600mm square is supplied complete with T8 Krypton filled Polylux 3500 U-tubes and opal diffuser. Diffusers in all types are restrained by wishbone springs.



### F1DO 60

The circular fitting in the range. Nominal 500mm diameter it is similar to the square fitting in that it is supplied c/w a 60W Warm White Circular tube and opal diffuser. Note that this is a switchstart circuit.

# Thorn Formula One

## RANGE (Packed complete with Polylux 3500 tubes)

Nominal Size (mm)	Rating	Circuit	Fitting Cat. no.	Length mm	Diffuser Cat. no.	Body Cat. no.
1200	36W Single	VS	F1/036	1260	F100.14	F10.136
1200	36W Twin	VS	F1/0236	1260	F100.24	F10.236
1500	58W Single	VS	F1/058	1560	F100.15	F10.158
1500	58W Twin	VS	F1/0258	1560	F100.25	F10.258
1800	70W Single	VS	F1/070	1824	F100.16	F10.170
1800	70W Twin	VS	F1/0270	1824	F100.26	F10.270

## RANGE (Packed complete with Polylux 3500 tubes)

Nominal Size (mm)	Rating	Circuit	Fitting Cat. no.	Length mm	Controller Cat. no.	Body Cat. no.
1200	36W Single	VS	F1/P36	1260	F1DP.14	F10.136
1200	36W Twin	VS	F1/P236	1260	F1DP.24	F10.236
1500	58W Single	VS	F1/P58	1560	F1DP.15	F10.158
1500	58W Twin	VS	F1/P258	1560	F1DP.25	F10.258
1800	70W Single	VS	F1/P70	1824	F1DP.16	F10.170
1800	70W Twin	VS	F1/P270	1824	F1DP.26	F10.270

## RANGE (Packed complete with Polylux 3500 U-tubes)

Nominal Size (mm)	Rating	Circuit	Fitting Cat. no.	Size mm
600 sq.	40W Twin	VS	F100.240U	607 sq.

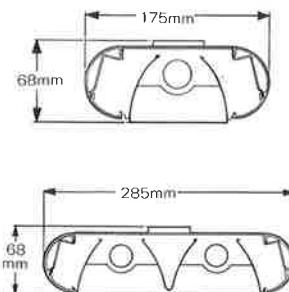
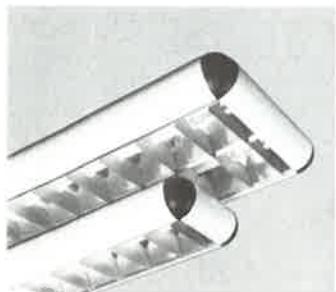
Fitting includes Opal diffuser.  
Spare diffuser: F100.SQ.

## RANGE (Packed complete with 60W Circular Warm White tube)

Nominal Size (mm)	Rating	Circuit	Fitting Cat. no.	Size mm
—	60W Single	SS	F100.60	500 dia.

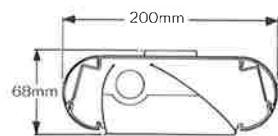
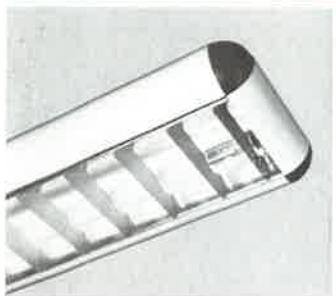
Fitting supplied c/w tube and Opal diffuser.  
Spare diffuser: F100.CIRC.

## Thorn Formula One



### F1X

Single and twin variations of symmetrical reflectors in a white body with black corner capping. Supplied with the high efficiency Polylux 3500 white tubes in three lengths—1200, 1500 and 1800mm. Excellent light output and distribution minimises the number of fittings for any given output.



### F1Y

The asymmetric version of the F1X above in white body with black corner capping. Available only in single lamp versions in the same three lengths to complement the F1X range.

## Thorn Formula One

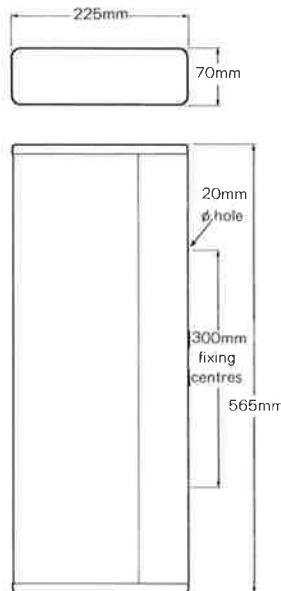
### RANGE (Packed complete with Polylux 3500 tubes)

Nominal Size (mm)	Rating	Circuit	Fitting Cat. no.	Length mm	Reflector Cat. no.	Body Cat. no.
1200	36W Single	VS	F1/X36	1288	F1X.14	F1X.136
1200	36W Twin	VS	F1/X236	1288	F1X.24	F1X.236
1500	58W Single	VS	F1/X58	1588	F1X.15	F1X.158
1500	58W Twin	VS	F1/X258	1588	F1X.25	F1X.258
1800	70W Single	VS	F1/X70	1852	F1X.16	F1X.170
1800	70W Twin	VS	F1/X270	1852	F1X.26	F1X.270

### RANGE (Packed complete with Polylux 3500 tubes)

Nominal Size (mm)	Rating	Circuit	Fitting Cat. no.	Length mm	Reflector Cat. no.	Body Cat. no.
1200	36W Single	VS	F1/Y36	1288	F1Y.14	F1Y.136
1500	58W Single	VS	F1/Y58	1588	F1Y.15	F1Y.158
1800	70W Single	VS	F1/Y70	1852	F1Y.16	F1Y.170

# Sign Luminaire ▲



An attractive, slim double-sided sign fitting incorporating a 26mm diameter Pluslux 3500 'U' tube. The fascia is supplied plain and a variety of transfers are available allowing the customer to select his own message. The sign may thus carry the same indicator on each side or different ones providing the utmost flexibility in use. The standard fitting is one size only but its concept and construction lends itself to being made to special order in any length to accommodate any tube. Thus providing an unusual fitting for general illumination or extended message carrier.

Fitting complies with BS 4533-2.2

## RANGE

Catalogue No.	Nominal Length (mm)	Rating	Circuit	Fixing Centres (mm)
FSX 140U	585	40W Single	Switchstart	300

## Accessories

Catalogue No.	Description	Message
FSXD	Plain Diffuser	—
FSXT 100	Self-adhesive Transfer	MALE Pictogram
FSXT 101	Self-adhesive Transfer	FEMALE Pictogram
FSXT 102	Self-adhesive Transfer	'LIFT'
FSXT 103	Self-adhesive Transfer	'ENQUIRIES'
FSXT 104	Self-adhesive Transfer	'RESERVATIONS'

Other Legends to order. \*

## Description

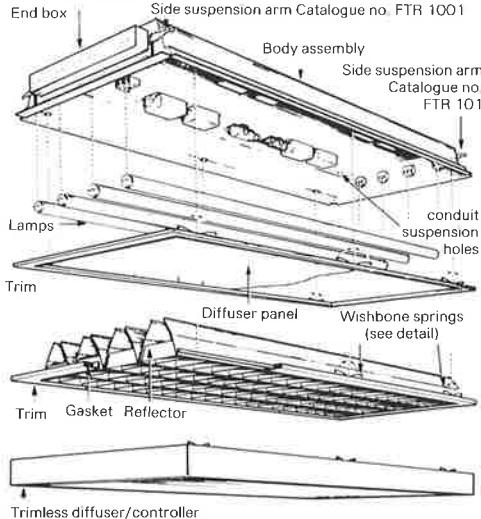
A range of modular recessed fluorescent luminaires for commercial interiors, with a comprehensive selection of light control attachments. Available in two widths:

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. 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)

## Linear luminaire



## Luminaire range

### 1. Linear tube

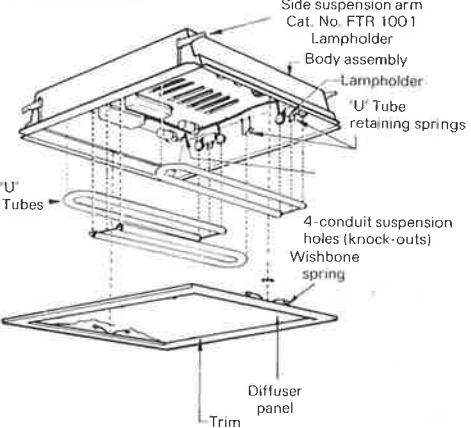
Two module widths are available, 300mm (FTRA) and 600mm (FTRB), suitable for imperial and metric ceilings. The attachments are available in overlap and metric sizes to suit the ceiling module. Care must be taken to select the correct item.

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.

### 2. U-tube

A square U-tube luminaire is available in the FTRB series. 600mm×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



## RANGE

### Table 1

#### Luminaires

	Nominal length mm ft	Rating	Circuit	Lamp-ways	Body catalogue no.
FTRA series	1200 4	40W	SRS	1	FTRA 140
(narrow version)	1200 4	40W	SRS	2	FTRA 240
300mm wide	1800 6	75W	SRS	1	FTRA 1875
nominal	1800 6	75W	SRS	2	FTRA 2675
FTRB series	600 2	40W	SRS	2	FTRB 240 U*
(wide version)	600 2	40W	SRS	3	FTRB 340 U*
600mm wide	1200 4	40W	SRS	2	FTRB 240
nominal	1200 4	40W	SRS	3	FTRB 340
	1200 4	40W	SRS	4	FTRB 440
	1800 6	75W	SRS	2	FTRB 2875
	1800 6	75W	SRS	3	FTRB 3675
	1800 6	75W	SRS	4	FTRB 4675

\*Supplied complete with White U-tubes.

# New Format ▲

## Attachments

Two models are available:

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

### Range

**FTRD** series—Dished opal trimless, polystyrene.

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

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

**FTRO** series—Flat opal panel in shallow white metal trim, polystyrene.

**FTRP** series—Flat prismatic (TL 12) panel in shallow

white metal trim, polystyrene.

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



FTRE attachment + FTRB body



FTRF air handling attachment + FTRB body



FTRX attachment + FTRB body



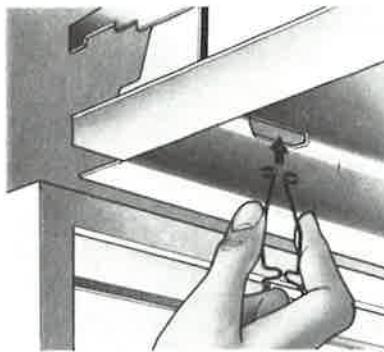
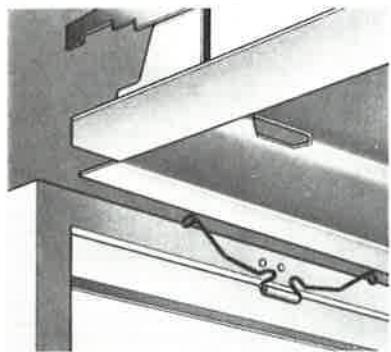
FTRD attachment + FTRA body



FTRP attachment + FTRA body

## Fixing Details

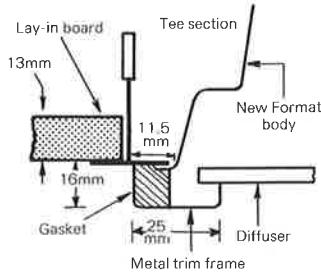
All attachments are fitted to the luminaires by wishbone springs giving quick, positive location and easy removal for maintenance and cleaning.



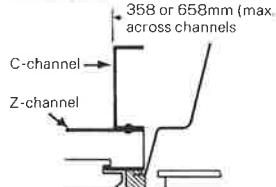
## Flange details with common suspended ceiling types

### Exposed tee (lay-in grid)

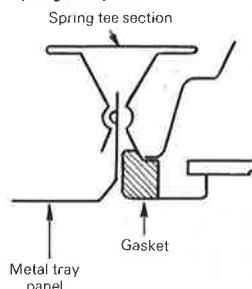
1) Metric Module



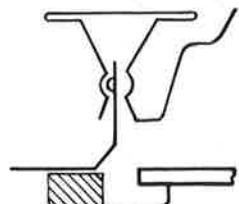
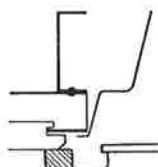
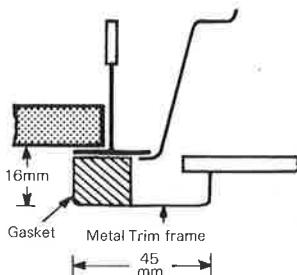
### Concealed fix



### Spring tee system



2) Overlap attachment  
(shown here with metric ceilings)



# New Format

## RANGE

Body c/w gear Cat. no.	Nominal Dims. (mm)	Attachments catalogue nos. for recessed trim					
		FTRD	FTRE	FTRF	FTRO	FTRP	FTRX
FTRA 140	300×1200	34	34		34	34	Metric Overlap
		34W	34W		34W	34W	
FTRA 240	300×1200	34	34		34	34	Metric Overlap
		34W	34W		34W	34W	
FTRA 1675	300×1800	36	36		36	36	Metric Overlap
		36W	36W		36W	36W	
FTRA 2675	300×1800	36	36		36	36	Metric Overlap
		36W	36W		36W	36W	
FTRB 240 U	600×600	62	62	62	62	62	Metric Overlap
		62W	62W	62	62W	62W	
FTRB 340 U	600×600	62	62	62	62	62	Metric Overlap
		62W	62W	62	62W	62W	
FTRB 240	600×1200	64	64	64	64	64	Metric Overlap
		64W	64W	64	64W	64W	
FTRB 340	600×1200	64	64	64	64	64	Metric Overlap
		64W	64W	64	64W	64W	
FTRB 440	600×1200	64	64	64	64	64	Metric Overlap
		64W	64W	64	64W	64W	
FTRS 2675	600×1800	66	66	66	66	66	Metric Overlap
		66W	66W	66	66W	66W	
FTRS 3675	600×1800	66	66	66	66	66	Metric Overlap
		66W	66W	66	66W	66W	
FTRB 4675	600×1800	66	66	66	66	66	Metric Overlap
		66W	66W	66	66W	66W	

**Note:** Table 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 by (W). e.g. To order recessed trim (opal trimless) for FTRB 340, quote FTRD 64. To order overlap trim for same luminaire quote FTRD 64W.

Overlap versions can be used with both metric and imperial module ceilings. Actual dimensions (mm) are ( $\pm 1$  mm):—

Nominal	Metric module	Overlap versions
300	298	338
600	598	638
1200	1197	1248
1800	1797	1848

Example: FTRD 64 nominally 600×1200mm is actually 598×1197mm. Where required attachments to imperial module dimensions can be supplied to special order.

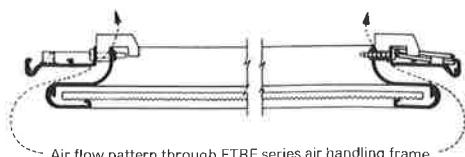
## Air handling

The FTRB series of luminaires (600mm wide) have air extract louvres as standard in the back of the body. When this facility is not required and it is considered necessary to blank off the louvres, 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.

## Accessories

Catalogue no.	Description
FTR 1001	Suspension arm set (4 per set).
FTR 1002	Blanking plates (2 per set).
FTR 1003	Ducting adaptor Box (1.8kg)
FTR 1004	Damper control kit.
KL 4601	Rod suspension set (4 per set).



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.

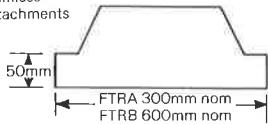
## Dimensions and suspension centres (All dimensions in mm)

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

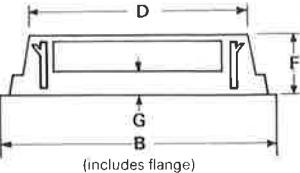
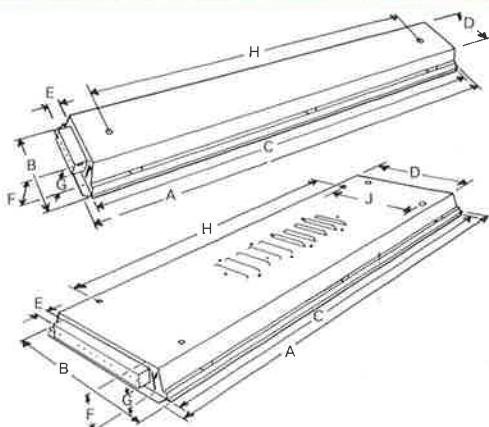
\*Extract louvres on FTRB version only—11mm high.

Ducting box added to FTRB version 150mm high.

Trimless attachments



Trimmed attachments



## Luminaire weights (approx.)

Body c/w control gear only	Complete luminaire with metal trim attachments (Types O & P)	Complete luminaire with trimless attachments (Types D & E)	Complete luminaire with batwing reflector (Type X)	Complete luminaire with air handling frame attachment (Type F)	Metric version kg
FTRA 140	5.5	FTR 34	7.4	FTR 34	7.4
FTRA 1675	7.3	FTR 36	10.9	FTR 36	10.6
FTRA 240	6.8	FTR 34	9.1	FTR 34	8.6
FTRA 2675	9.5	FTR 36	13.2	FTR 36	12.6
FTRB 240	9.5	FTR 64	13.2	FTR 64	12.6
FTRB 240 U	7.0	FTR 62	9.1	FTR 62	8.7
FTRB 2675	12.4	FTR 66	18.5	FTR 66	17.6
FTRB 340	11.3	FTR 64	15.0	FTR 64	14.6
FTRB 340 U	7.5	FTR 62	9.5	FTR 62	9.2
FTRB 3675	15.2	FTR 66	21.3	FTR 66	20.4
FTRB 440	13.1	FTR 64	16.6	FTR 64	16.5
FTRB 4675	18.0	FTR 66	23.8	FTR 66	22.7
				FTR 66	19.3
				FTR 66	27.0
				FTR 66	23.9

## Replacement control gear for 240V 50Hz supply

	1200mm 40W	1800mm 75W	600mm 40W U-tube
Ballast	GBU 40	GBU 65/75	GBU 40
Capacitor	GC 2420	GC 2419	GC 2420

For circuit diagrams see Control gear and accessories section. (One ballast and capacitor per tube)

## Replacement spares

Fuse (3A)	GT 1299	GT 1299	GT 1299
Fuseholder	GT 1387	GT 1387	GT 1367
Mains terminal block	GT 1364.4	GT 1364.4	GT 1364.4
Lampholder—spring mounted†	GB 1652	GB 1652	—
Lampholder—fixed†	GB 1651	GB 1651	—
U-tube lampholder	—	—	GB 1636

†Older luminaires used GB 1583 and GB 1582 for GB 1652 or GB 1651 respectively.

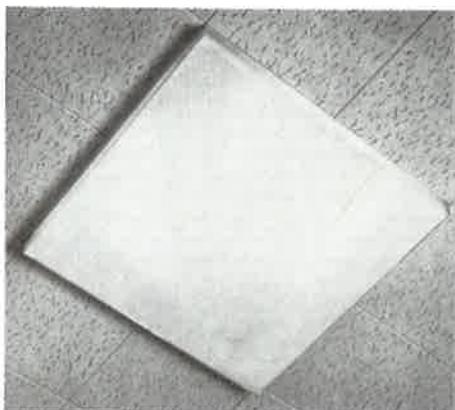
A recessed modular luminaire for 250W and 400W MBIF lamps. Available with two attachments—the DKG series of dished prismatic trimless controllers, and DKH series flat prismatic (TL 19) panels in shallow white metal frames. It is suitable for air extract from ventilated or air conditioned areas using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

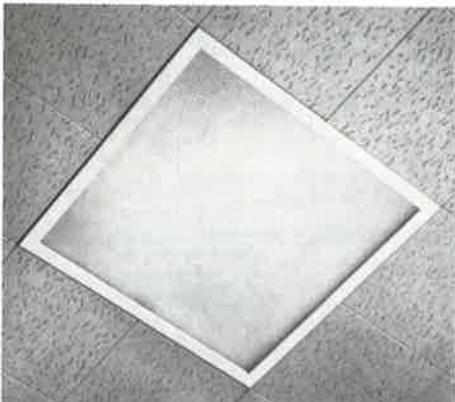
The luminaire, 600mm×600mm square (nominal), is compatible with most commercial ceiling systems and is suitable for all commercial applications particularly where good colour rendering is required.

One standard housing accommodating the full range of lamps including 125W, 250W and 400W MBF, and 150W SON 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).



DKG series attachment



DKH series attachment



DKF 62 or FTRF series attachment

## RANGE

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

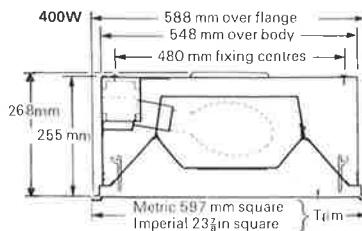
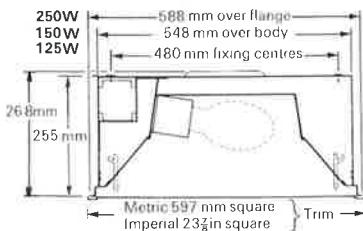
Nominal size mm	Watts	Lamp	Catalogue no.	Weight (approx) kg
600×600	250	MBIF	DKC 250	17.1
600×600	400	MBIF	DKC 400	19.1
600×600	125	MBF	DKK 125	15.0
600×600	250	MBF	DKK 250	15.5
600×600	400	MBF	DKK 400	19.0
600×600	150	SON	DKS 150	17.0

### 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 air-handling frame		DKF 62*

\*For use with DKC Luminaires, DKK and DKS luminaires can use FTRF 62 attachments.

## 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 adaptor box.
FTR 1004	Damper Control Kit.
KL 4601	Rod suspension set.
DK 1	Stand by lighting unit.
DK 2	MBF and SON Auxiliary lighting unit (Suitable for 250W circuits only).
DK 3	MBF Auxiliary Lighting unit

## Replacement control gear for 240V 50Hz supply

Catalogue no.	Ballast	Ignitor	Capacitor	Terminal block (fused)	Fuse (HRC)
OKC 250	G 53251 T or G 53321 T	G 53283	GC 2386	GT 1331	GT 1336 (10A)
OKC 400	G 53317.4	G 53283	GC 2346	GT 1331	GT 1336 (15A)
DKK 125	G 53306.4	—	GC 2383	GT 1331	GT 1268 (5A)
DKK 250	G 53198.4 or G 53315.4	—	GC 2370	GT 1331	GT 1336 (10A)
DKK 400	G 53317.4	—	GC 2331	GT 1331	GT 1336 (15A)
DKS 150	G 53335 T	G 53282/A	GC 2365	GT 1331	GT 1268 (6A)

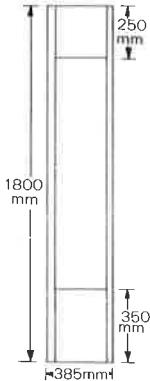
For circuit diagrams see Control gear and accessories section.

## Low Energy Task Lighting ▲

### Uplights

A free-standing Uplight in a white enamel finish with polished uprights. The lamp is housed in the top section where a small aperture also allows downward light. The unit has two 13A switched sockets in the base and comes complete with a plug and two metres of cable. The lamp is not supplied.

A glass shelf is available as an extra.



Horizontal Lamp



Horizontal Lamp

A free-standing Uplight with a polished metal reflector, black column and base. Comes complete with a plug and two metres of cable. The lamp is not supplied.



Vertical Lamp



Vertical Lamp

### RANGE

Catalogue no.	Description	Lamp Watts
DUSH 150	Uplighter for SONDL	150
DUSH 250	Uplighter for SONDL	250
DUCH 250	Uplighter for MBIF Kolorarc	250
DUCH/S	Glass Shelf	—

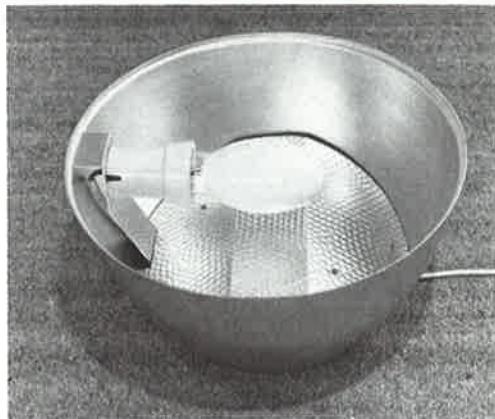
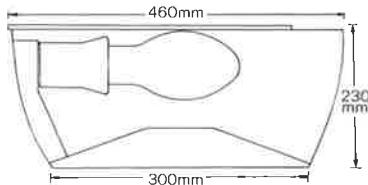
### RANGE

Catalogue no.	Description	Lamp Watts
DUSD 150	Uplighter for SONDL	150
DUSD 250	Uplighter for SONDL	250

## Low Energy Task Lighting

### Uplights

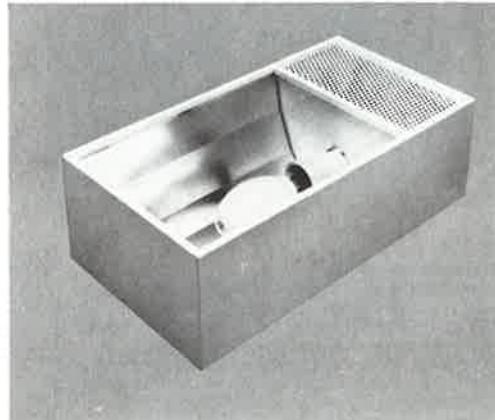
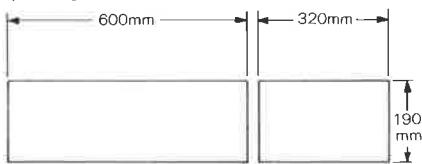
A circular uplight in polished metal for incorporation in to office furniture. The unit is complete with gear for operating the lamp (not supplied).



### RANGE

Catalogue no.	Description	Lamp Watts
DUCC 250	Uplighter for MBIF Kolorarc	250
DUSC 150	Uplighter for SONDL	150
DUSC 250	Uplighter for SONDL	250

A rectangular uplight for incorporation into office furniture and is finished in white. Complete with gear for operating the lamp (not supplied).



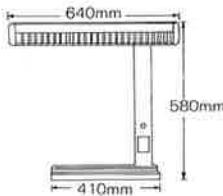
### RANGE

Catalogue no.	Description	Lamp Watts
DUSJ 150	Uplighter for SONDL	150
DUSC 250	Uplighter for SONDL	250
DUCJ 250	Uplighter for MBIF Kolorarc	250

### Desk Light

A desklight designed to provide glare free illumination across the working surface. A louvre prevents the view of the light source.

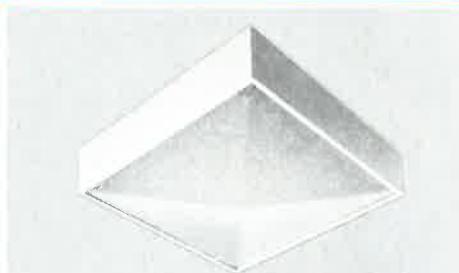
Designed for 18W T8 lamps. The stem of the fitting includes a switch and a 13A socket to power desk top equipment. Lamp not supplied.



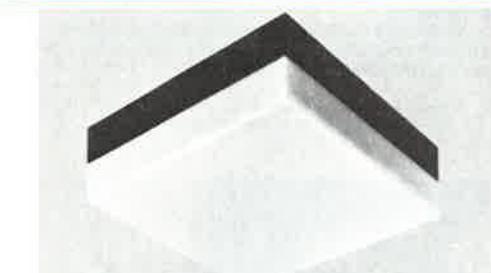
### RANGE

Catalogue no.	Description	Lamp Watts
FOD 18S	Desklight/Silver	18
FOD 18B	Desklight/Brown	18

## Topaz range

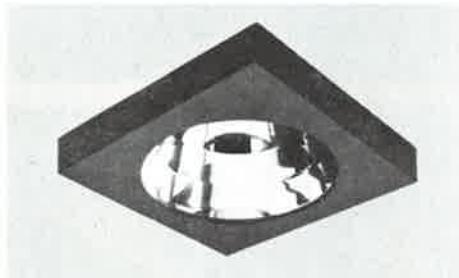


Surface mounted fitting



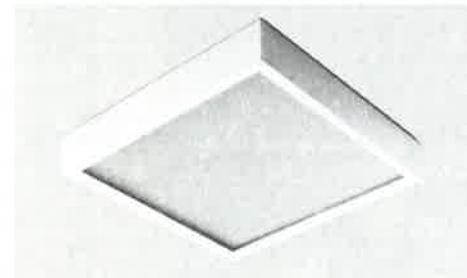
Recessed fitting with Semi-recess frame  
and Opal side, Prismatic base light controller

DBRM 125 + DARS  
+ DARP



Recessed fitting with Downlight reflector

DBRM 125 + DARR



Recessed fitting with Metal frame  
and Prismatic base light controller

DBRM 125 + DARP  
+ DARA

### General description

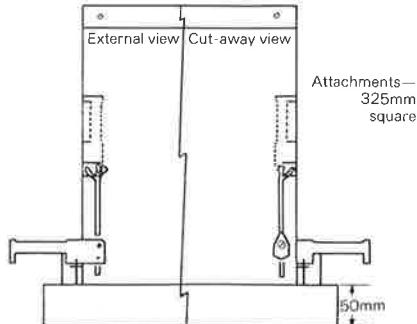
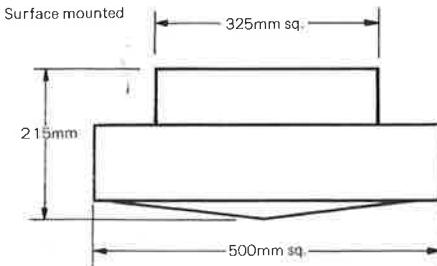
A range of small HID luminaires including surface and recess mounted versions, suitable for 80W MBF, 125W MBF or 70W SON Thorn Lamps. The surface mounted version employs a prismatic base, metal frame attachment, while the recessed mounted version can be used either as a downlight with a conical reflector or with a choice of simple frame or trimless attachment.

### Description

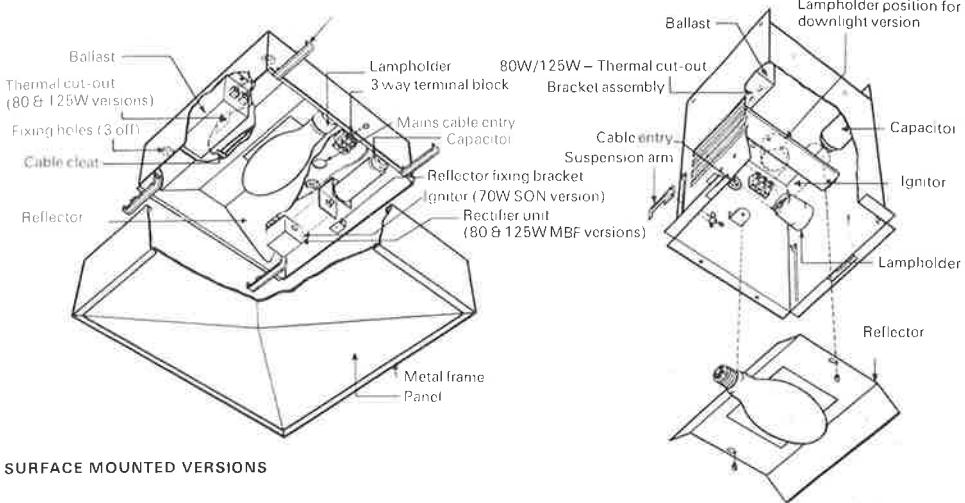
Surface fitting: 300mm square metal box painted white, containing appropriate control gear. A 500mm square white metal frame with pyramidal dished prismatic acrylic controller is hooked onto arms fixed to the luminaire housing.

Recessed fitting: square metal gear housing complete with side-suspension arms. An adjustable lampholder allows either horizontal or vertical lamp mounting, depending on the type of light controller. Attachments, except semi-recess frame, are held by wishbone springs to the luminaire housing.

Recessed Versions (Minimum Void Depth = 340mm or 290mm with semi-recess frame)



Diffuser suspension bracket (4 off)



SURFACE MOUNTED VERSIONS

RECESS MOUNTED VERSIONS

## RANGE Luminaire body

Lamp Type	Surface Version Cat. No.	Weight kg	Recessed Version Cat. No.	Weight kg
80W MBF	DBSM 80	3.4	DBRM 80	4.4
125W MBF	DBSM 125	4.0	DBRM 125	5.0
70W SON	DBSS 70	4.2	DBRS 70	5.2

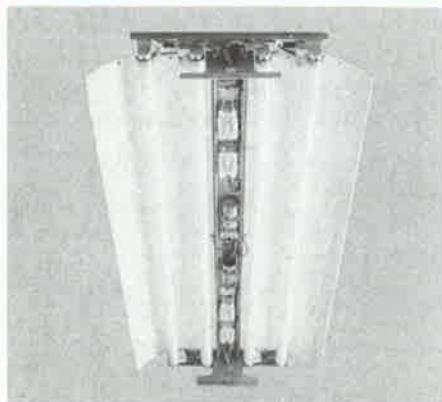
These luminaires are supplied complete with lamps (MBF deluxe, 70W SON as appropriate).

## Attachments

Catalogue Number	Weight kg	Description
DARA	0.1	Acrylic prismatic (TL 19) base for DARP.
DARF*	0.8	White metal-frame attachment for recessed version, complete with reflector.
DARP	0.7	Opal-side, prismatic (TL 19) base acrylic control for recessed versions, complete with reflector.
DARR	1.1	Polished aluminium downlight reflector in black frame for recessed versions.
DARS	0.5	Semi-recess frame for spacing luminaire down by 50mm to reduce void depth.
DASP	2.8	Prismatic pyramidal base in white metal frame for surface versions.

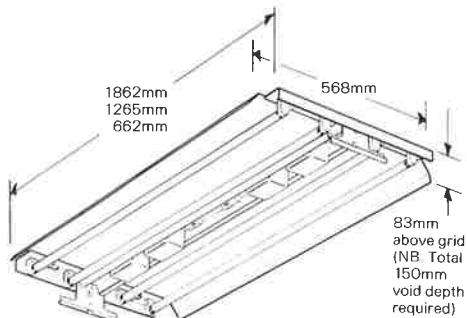
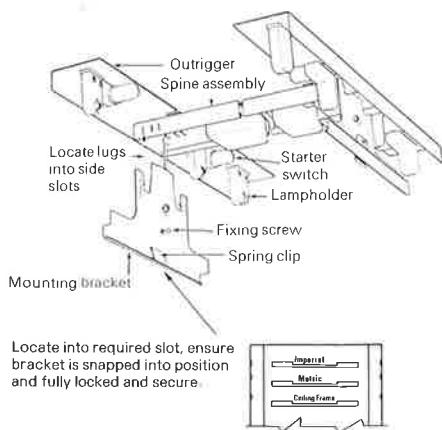
\*The DARF attachment can accept the use of controllers other than DARA. These should be 303mm  $\pm$  1mm square and not more than 13mm deep.

# Troffer Pack ▲



A lightweight Troffer for simple recessed lighting in lay-in exposed tee ceilings and most concealed-fix suspended 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.

Body sizes are available for metric and imperial modules of 1800mm×600mm, 1800mm×300mm, 1200mm×600mm, 1200mm×300mm, and 600mm×600mm. The luminaire is supplied complete with White tubes. In the case of the 600mm version these are Thorn T8 U-tubes. Twin tube and four tube (1200mm and 1800mm only) versions are available. Luminaires comply with BS 4533 2.2 (IP20).



## RANGE: Luminaires

Catalogue no.	Nominal length mm	Nominal width mm	Tube Rating	No. of tubes	Circuit	Approx. weight kg
FTP/N 240	1200	300	40W	2	SS HPF lag	4.3
FTP/N 275	1800	300	75W	2	SS HPF lead-lag	5.2
FTP/N 240U	600	600	40W	2	SS HPF lag	6.5
FTP 240	1200	600	40W	2	SS HPF lag	8.7
FTP 440	1200	600	40W	4	SS HPF lag	9.2
FTP 275	1800	600	75W	2	SS HPF lead-lag	9.7
FTP 475	1800	600	75W	4	SS HPF lead-lag	12.7

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

Luminaire	Lampholder with Starter Socket	Lampholder	Starter Switch	Choke Leading cct.	Choke Lagging cct.	Capacitor
FTP 240U	GB 1641	—	155/400	—	GCU 40	GC 2419
FTP/N 240/FTP 440	GB 1647	GB 1634	155/400	—	GCU 40	GC 2419
FTP/N 275/FTP 475	GB 1647	GB 1634	155/802	GCU 65	GCU 75	GC 2226

For circuit diagrams see Control Gear & Accessories Section.



### ATTACHMENTS

Two types of controller are available:—

- Pearl stippled opal flat panel (styrene)
- TL 12 prismatic flat panel (styrene)

These are also available in aluminium frames for use in concealed-fix ceilings.

The twin 1200mm and 1800mm Luminaires in Lay-In (exposed tee) ceilings can accept the use of Architectural Range ceiling panels for added visual effect.

### INSTALLATION

- i) Lay-in exposed Tee ceilings.

The luminaire replaces a standard mineral fibre ceiling tile, simply clipping to the main tees and requiring only 150mm void depth for installation. 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.

- ii) Concealed Fix Ceilings.

The luminaire is supported on the attachment's aluminium frame which is in turn supported from the soffit by means of hanger-clips. The ceiling opening should be prepared beforehand to ensure that the correct size is available; this may involve reversing the direction of some of the grid sections. Where appropriate tiles can rest on the table of the attachment frame.

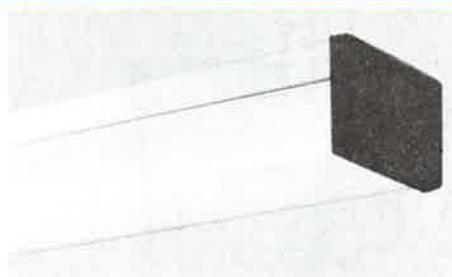
### ATTACHMENTS

Nominal size	Diffuser for Lay-In Ceilings		Frames for Concealed Fix Ceilings c/w diffusers	
Metric (mm)	Opal	Prismatic	Opal	Prismatic
1200×300	FTP0 312	FTPP 312	FTP0 312	FTPP 312
1800×300	FTP0 318	FTPP 318	FTP0 318	FTPP 318
600×600	FTP0 66	FTPP 66	FTP0 66 Mk II	FTPP 66 Mk II
1200×600	FTP0 612	FTPP 612	FTP0 612 Mk II	FTPP 612 Mk II
1800×600	FTP0 618	FTPP 618	FTP0 618 Mk II	FTPP 618 Mk II

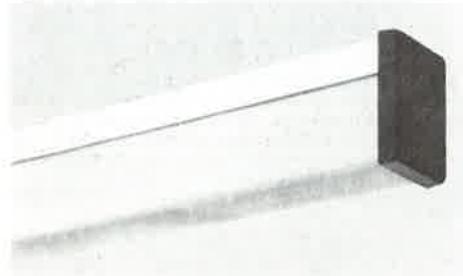
## Diffuser Pack



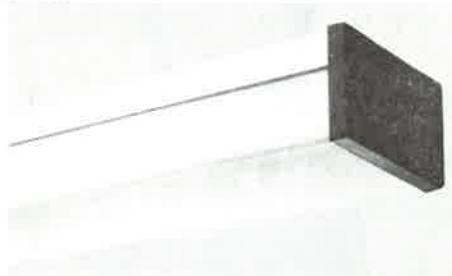
FPP 136



FPP 236

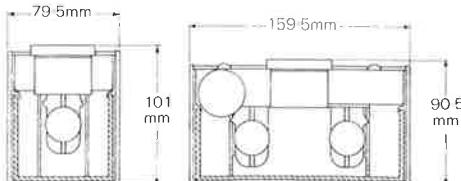


FPO 136



FPO 236

A power saving range of surface fluorescent fittings in an extremely slim white body with black end caps. Packed complete with Pluslux 3500 white tubes with either prismatic or opal attachments. Switchstart circuit only.



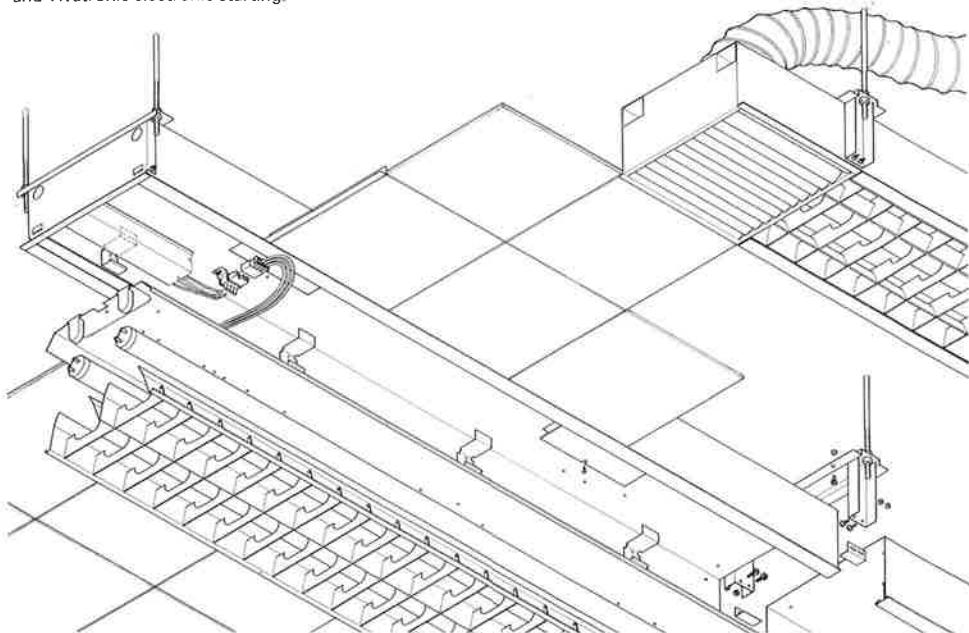
### RANGE (Packed complete with Pluslux 3500 White tubes)

Catalogue no.	Description	Overall length (mm)	Circuit
FPP 136	1200mm 36W Single batten and prismatic controller	1258	SS
FPP 236	1200mm 36W Twin batten and prismatic controller	1258	SS
FPP 158	1500mm 58W Single batten and prismatic controller	1559	SS
FPP 258	1500mm 58W Twin batten and prismatic controller	1559	SS
FPP 170	1800mm 70W Single batten and prismatic controller	1823	SS
FPP 270	1800mm 70W Twin batten and prismatic controller	1823	SS
FPO 136	1200mm 36W Single batten and opal diffuser	1258	SS
FPO 236	1200mm 36W Twin batten and opal diffuser	1258	SS
FPO 158	1500mm 58W Single batten and opal diffuser	1559	SS
FPO 258	1500mm 58W Twin batten and opal diffuser	1559	SS
FPO 170	1800mm 70W Single batten and opal diffuser	1823	SS
FPO 270	1800mm 70W Twin batten and opal diffuser	1823	SS



Arena 2 follows Arena 1 as an integrated system combining lighting and suspended ceilings. Significant gains have been made in lighting performance, and the system has far more flexibility in application. The basis is a 300mm wide body, into which gear trays can be fitted at modular or random locations to provide the required scheme. Individual fittings can be provided in 1200, 1500 and 1800mm lengths.

The system is based on the use of T8 fluorescent tubes and Vivatronic electronic starting.

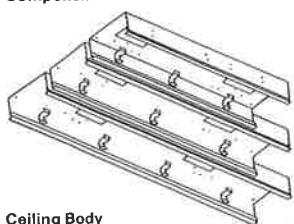


A typical assembly of components

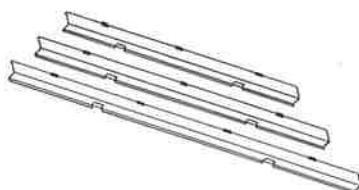
## Arena 2 ▲

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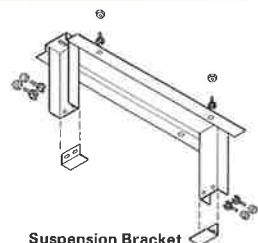
### Components



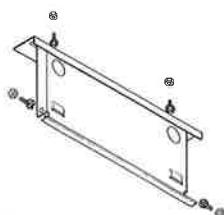
Ceiling Body



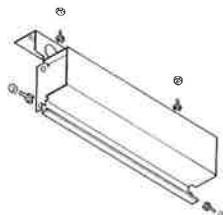
Cable Covers



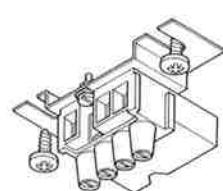
Suspension Bracket



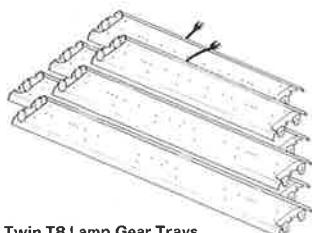
End Cap



Extended End Cap



Terminal Socket



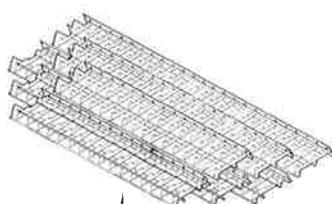
Twin T8 Lamp Gear Trays



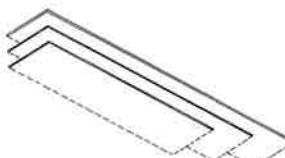
Blanking Plate  
(Fit for non air extract scheme)



Earth Chords  
(Support/Continuity for louvres)



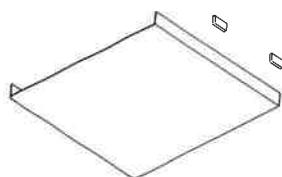
Batwing Louvres



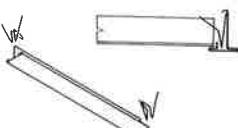
Prismatic Panels  
(Acrylic)



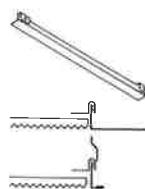
Prismatic/End extract panels



Blanking Plate

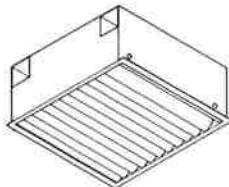


Cross Tee

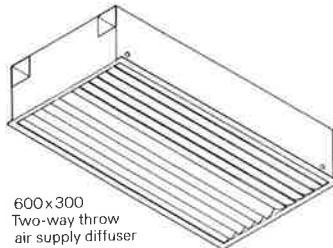


Light Baffle  
(Prismatic panel and blanking plate)

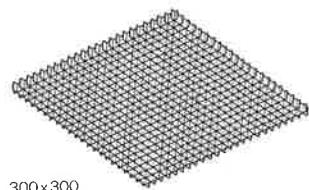
## Air Supply/Extract components



200x300  
Single throw  
air supply diffuser  
All dimensions in mm



600x300  
Two-way throw  
air supply diffuser



300x300  
Exhaust Grille

## RANGE

Module Length	1200mm	1500mm	1800mm	
Description		Weight (kg)	Weight (kg)	Weight (kg)
Ceiling Body	CAS 1020	5.5	6.8	CAS 1080
Gear Tray—Single	CAS 1021	3.6	5.0	CAS 1081
	1 x 36W		1 x 58W	1 x 70W
Gear Tray—Twin	CAS 1022	4.5	6.8	CAS 1082
	2 x 36W		2 x 58W	2 x 70W
Prismatic Panel (TL12)	CAS 1024	0.9	CAS 1054	1.0
Batwing Louver—Single	CAS 1025	1.4	CAS 1055	1.6
Batwing Louver—Twin	CAS 1026	0.9	CAS 1056	1.0
Prismatic Panel/End Extract Louver	CAS 1027	0.9	CAS 1057	1.0
				CAS 1087
				1.2

## Accessories (common to all lengths)

Catalogue No.	Description	Weight (kg)
CAS 1023	Cable Cover—1200mm	0.9
CAS 1053	Cable Cover—1500mm	1.0
CAS 1083	Cable Cover—1800mm	1.2
CAS 1101	Spare terminal socket	0.01
CAS 1102	End Cap	0.7
CAS 1103	End Cap (Extension for 1200/1500mm)	1.0
CAS 1104	Suspension bracket	0.7
CAS 1105	Blanking plate	0.2
CAS 1106	Light baffle	0.04
CAS 1107	Cross Tee	0.04
CAS 1108	Infill panel	2.5
CAS 1109	Earthing Chords	—
CAS 1110	Single throw 300mm air supply diffuser	2.0
CAS 1111	Single throw 600mm air supply diffuser	3.5
CAS 1112	Two-way throw 300mm air supply diffuser	2.0
CAS 1113	Two-way throw 600mm air supply diffuser	3.5
CAS 1114	Damper kit 300mm	0.5
CAS 1115	Damper kit 600mm	0.9
CAS 1116	Single throw Deflector kit 300mm	0.28
CAS 1117	Single throw Deflector kit 600mm	0.42
CAS 1118	Exhaust grille 300mm	0.3

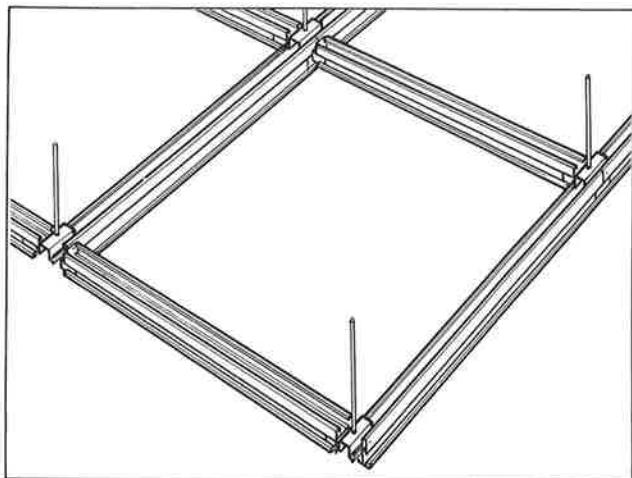
## Programme 2



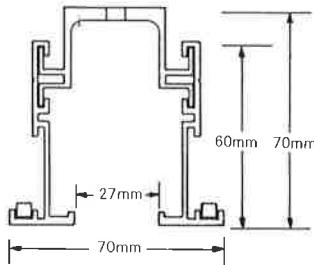
Programme 2 is a fully integrated, modular ceiling system designed to provide a wide range of lighting, air diffusion and acoustic performance from a standard range of components. The system is available in two module sizes—1500mm square and 1200mm square. It is also available to special order in non-standard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

### The grid

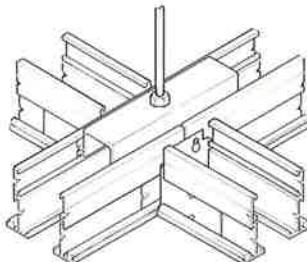
The basic framework which supports all components, is a satin anodized aluminium twin tee grid made up of main tees and cross noggin. The open slot between the extrusions can house air supply and exhaust components, electrical track, sprinklers and other components, or can be sealed by a black PVC strip.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



Cross section through grid at plain hanger coupler.



Junction of cross noggin and main tee. Hanger coupler at intersection.

### Moulded coffer

Using standard New Format fittings with FTRF air handling frames.



### Linear coffer

Using Clipper batten fitting and spine.



### Metal coffer

Using FTRB 34OU New Format luminaires and standard optic FTRP 62.



### Flat moulded panel

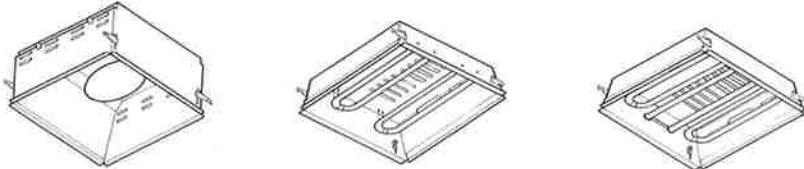
(Available also with mineral fibre tiles to special order.)



## Programme 2

### Square luminaires

600×600mm luminaires in Kolorformat and New Format Ranges available, together with standard optics for use with the range of Programme 2 ceiling infills accepting square luminaires.



### Linear coffer—1

A standard Clipper batten fitting and ceiling plate available with or without optic attached to saddle and coffer ends. All supported from Programme 2 grid.



### Linear coffer—2

A spine and gear tray of simplified construction for use in Programme 2 standard module sizes of grid. Available to special order in single- and twin-lamp versions, with or without optic.

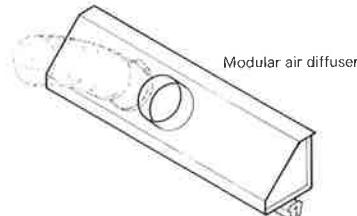


### Air diffusion

#### 1 Modular air diffuser

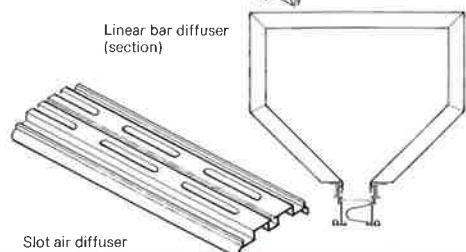
A linear air diffuser is supplied complete with plenum chamber and drops into either main tees or cross noggin. Split rollers in the diffuser are provided to adjust air pattern control.

125mm diameter circular spigot.



#### 2 Linear air bar diffuser

A continuous duct of foil backed insulation 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 exhaust air 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

Master-track can be incorporated in special grid members.

### 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.

For Component Data or further information refer to Programme 2 manual or to nearest Thorn Lighting Office.

For full details of range, catalogue numbers and performance details refer to Programme 2 Data Book, or nearest Thorn Lighting Office.

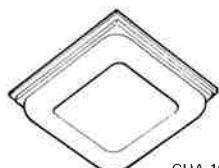
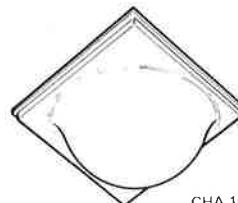
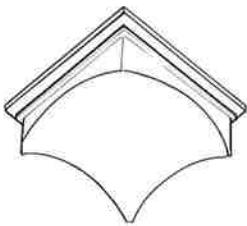
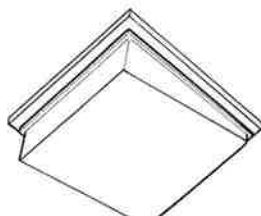
## Architectural range

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

### RANGE

Catalogue no.	Dimensions mm or ft	Description
CHA 1001 Mk 11	2×2	Wedge design
CHA 2004	600×600	Wedge design
CHA 1003	2×2	Flat pan design
CHA 2001	600×600	Flat pan design
CHA 1005 Mk 11	2×2	Minaret design
CHA 2005	600×600	Minaret design
CHA 1006	2×2	Bubble design
CHA 2002	600×600	Bubble design
CHA 1007	2×2	Magnum design
CHA 2003	600×600	Magnum design
CHA 2424	—	Dust cover
CHA 2000	—	Clip for dust cover

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



## Thermalucent ceiling panels



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 Thermalucent panel, and CVT numbers to the corresponding replacement skins.

The upper skin is normally 'natural', the lower is in high diffusion Daylight Blue material.

The PVC material used in Thermalucent panels has been tested by Method 508C, Part 5 of BS2782 and complies with Section E16 3(b) of the 1976 Building Regulations.

### Supporting grid

Panels in 600×600mm and 600×1200mm can be supported by proprietary 25mm table lay-in grid. The popular 40"×40" panel for industrial use is recommended to be supported by Firstliner\* grid, details of which are available on request.

\*Not manufactured by Thorn Lighting.

### Rear projection screens

Made from the same PVC film as used in Thermalucent 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.

### RANGE

Catalogue no.	Description
<b>THERMALUENT PANELS (Double skin)</b>	
CTH 2424	Double skin Thermalucent panel 24×24in
CTH 4824	Double skin Thermalucent panel 48×24in
CTH 0608	Double skin Thermalucent panel 0.6m×0.6m
CTH 1206	Double skin Thermalucent panel 1.2m×0.6m
CTH 4040	Thermalucent panel 40×40in
CT	Special size panels

### REPLACEMENT SKINS

Catalogue no.	Description
CVT 2424	PVC skin for Thermalucent panel 24×24in
CVT 4824	PVC skin for Thermalucent panel 48×24in
CVT 0606	PVC skin for Thermalucent panel 0.6m×0.6m
CVT 1206	PVC skin for Thermalucent panel 1.2m×0.6m
CVT 4040	PVC skin for Thermalucent panel 40×40in
CVX 5000	Special sizes for Thermalucent skins

### OTHER ITEMS

CTH 5001	Self-adhesive polyurethane foam plastic, 13ft roll, 1½in wide
CTH 5003	Special clip for Thermalucent

### Fluorescent Luminaires

This section identifies the Thorn products which conform to the requirements of the DHSS publication: "Standard Reference Luminaires for Hospital and Health Building use". Further detailed information is available in the appropriate product section of this catalogue. Some of the luminaires listed may be supplied, as standard, complete with lamps. These lamps may not comply with specific DHSS requirements and care should be taken to use the correct lamps.

#### Standard Reference A: General Purpose Fluorescent Luminaire.

DHSS Reference	Thorn Equivalent Cat. No.	DHSS Reference	Thorn Equivalent Cat. No.	DHSS Reference	Thorn Equivalent Cat. No.
A1	—	A1 PB	—	A1 P	FSPV 136
A2	FSOV 236	A2 PB	—	A2 P	FSPV 236
A3	—	A3 PB	—	A3 P	FSPV 158/165
A4	FSOV 258/265	A4 PB	—	A4 P	FSPV 258/265
A5	—	A5 PB	—	A5 P	FSPV 170/275
A6	FSOV 270/275	A6 PB	—	A6 P	FSPV 270/275

Note: Where dual numbers are quoted eg. FSPV 158/165 use FSPV 158 for T8 Powersaver tubes and FSPV 165 for T12 38mm diameter tubes.

Optional extra: GT 1367 Fused terminal block.

#### Standard Reference B: Fluorescent Luminaire for Bedded Areas—Surface Ceiling Mounted.

DHSS Reference	Thorn Equivalent Cat. No.	DHSS Reference	Thorn Equivalent Cat. No.
B1	FSPV 236	B4	FSPV 158/165
B2	FSPV 258/265	B5	FSPV 170/175
B3	FSPV 270/275	—	—

Note: Where dual numbers are quoted eg. FSPV 158/165 use FSPV 158 for T8 Powersaver tubes and FSPV 165 for T12 38mm diameter tubes.

Optional extra: GT 1367 Fused terminal block.

#### Standard Reference D: Fluorescent Modular Luminaire.

DHSS Reference	Thorn Equivalent Cat. No.	DHSS Reference	Thorn Equivalent Cat. No.
D1	FTRB 240U+FTRD 82	D1 P	FTRB 240U+FTRE 82
D2	FTRA 240+FTRD 34	D2 P	FTRA 240+FTRE 34
D3	FTRB 440+FTRD 64	D3 P	FTRB 440+FTRE 64
D4	FTRA 2675+FTRD 36	D4 P	FTRA 2675+FTRE 36
D5	FTRB 4675+FTRD 66	D5 P	FTRB 4675+FTRE 66

D1 and D1 P are supplied complete with White tubes.

### Notes

#### Kolor-rite tubes

1. Thorn Kolor-rite is the only lamp currently in production that complies with the Department's specification for good colour rendering to meet medical requirements.
2. This lamp is included in the Hospital Purchasing Guide NHS Vocabulary (pages 5400 to 5410A) in the following sizes; 6ft 85 watt, 5ft 65 watt and 4ft 40 watt.
3. Because of rising energy costs, the use of White or Warm White lamps may have been considered on the grounds of higher luminous efficacy, but this will result in a degradation of colour-rendering properties. Experiments have shown that illuminances can be reduced by up to 25% when using good colour-rendering sources when compared with high efficacy sources. This means that the lower lumens/watt output of the good colour rendering lamps need not involve an increase in the number of lamps and, thereby, should not result in a greater energy consumption.
4. For schemes originally based on high efficacy lamps the change to good colour rendering lamps can be considered on a one for one basis as the improved colour performance will balance the lower illuminance.

# Hospital lighting

## Incandescent luminaires

Standard Reference L—Tungsten Filament Night Light Luminaire to be used with 6-8W lamp.

DHSS Reference: L1

Thorn Equivalent Cat. No. WH 60

Standard Reference M—Tungsten Filament Wall Mounted Luminaire

DHSS Reference	M1	M2
Thorn Equivalent Cat. No.	OE01060	OE01060

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 17° either side. Wired complete with BC lampholder and arranged for BESA mounting.

Standard Reference O—Tungsten Filament Ceiling Mounted Bedhead Luminaire

DHSS Reference: O1

Thorn Equivalent Cat. No. TD 150

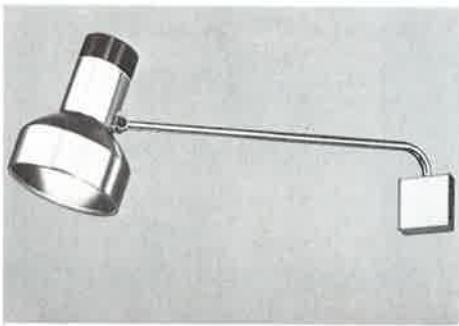
Standard Reference P—General Purpose Tungsten Filament lamp luminaire

DHSS Reference	Thorn Equivalent Cat. No.
P1 C	OOY 60
P1 W	OOY 60
P2 C	NM 100
P2 W	NM 100
P3 C	NM 200

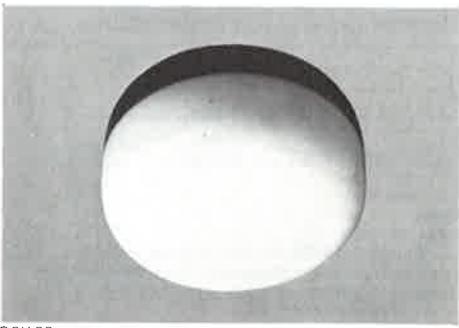
P1 C and P1 W are supplied complete with 60W lamp.



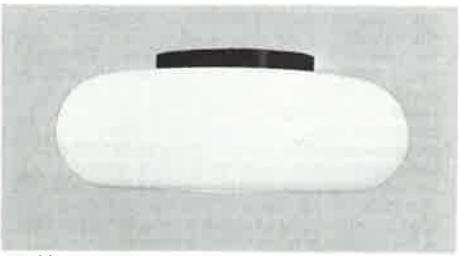
WH 60



OEO 1060



OGY 60



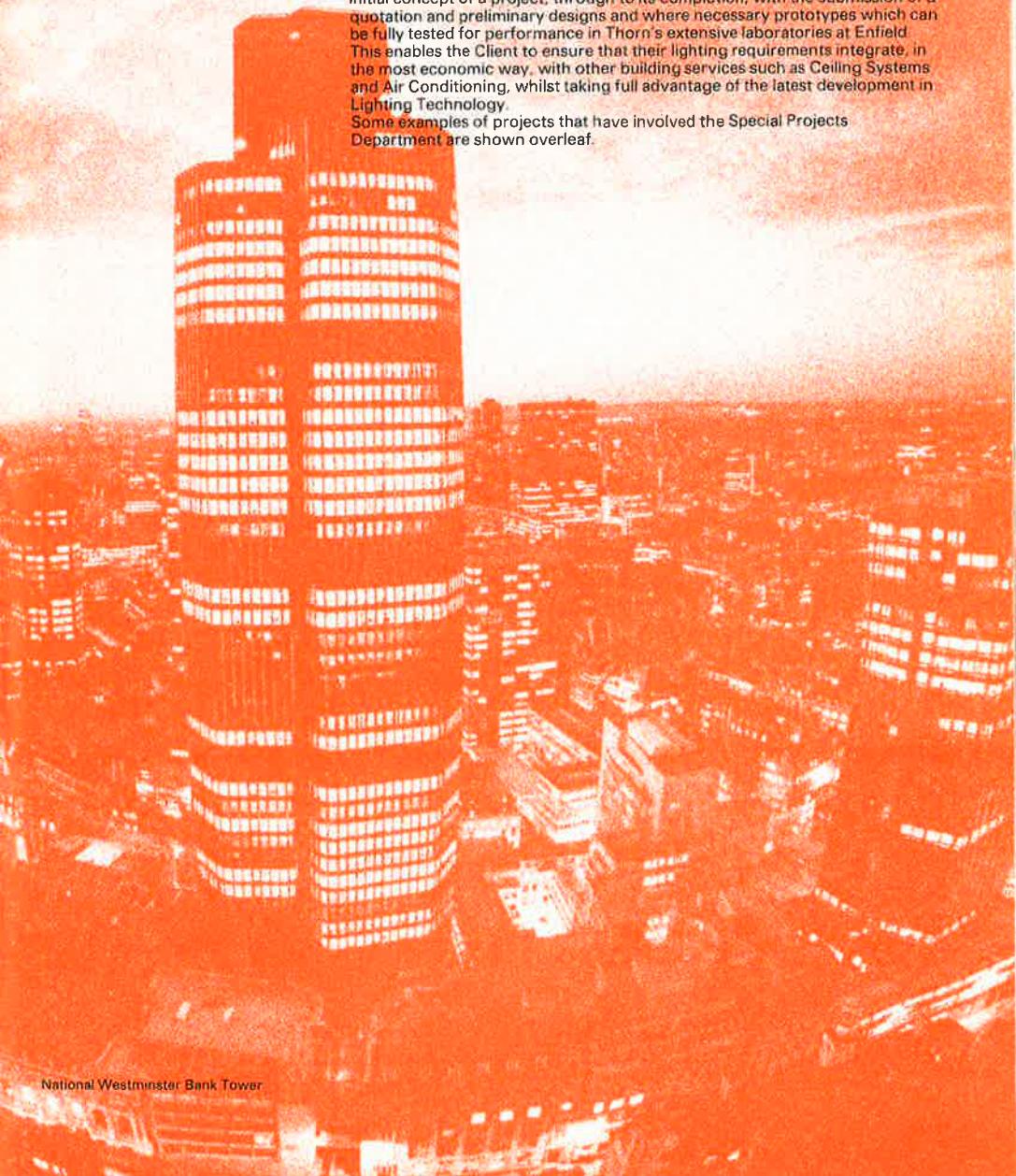
NM 100

## Special Projects

Thorn Lighting manufacture and market a wide range of standard lighting equipment but acknowledge that not all lighting needs can be satisfied from standard products. Thorn therefore make available through the Special Projects Department the services of Specialist Engineers, Designers and Technicians to develop, and produce light fittings and equipment to the Client's own specification.

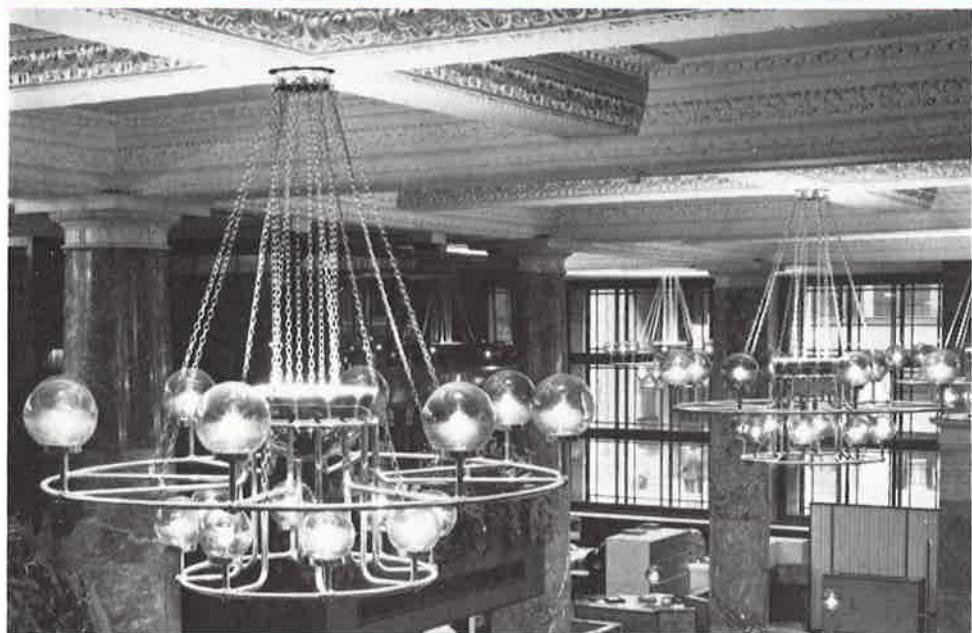
Special Projects Department provide a service which is available from the initial concept of a project, through to its completion, with the submission of a quotation and preliminary designs and where necessary prototypes which can be fully tested for performance in Thorn's extensive laboratories at Enfield. This enables the Client to ensure that their lighting requirements integrate, in the most economic way, with other building services such as Ceiling Systems and Air Conditioning, whilst taking full advantage of the latest development in Lighting Technology.

Some examples of projects that have involved the Special Projects Department are shown overleaf.



National Westminster Bank Tower

## Special Projects Installations



Barclays Bank — Gracechurch Street, London

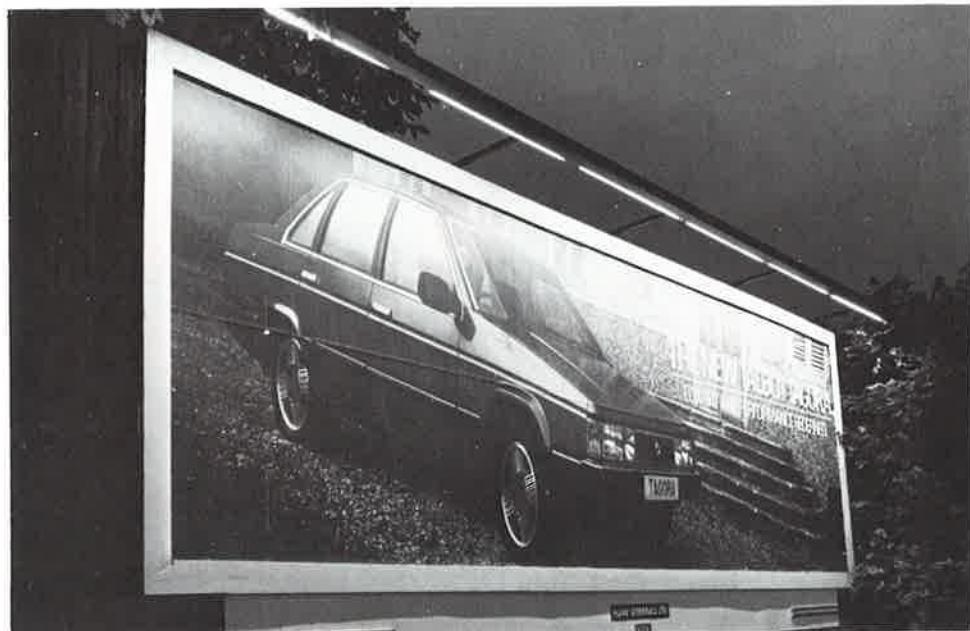


Kent County Council Offices — Maidstone

## Special Projects Installations



Debenhams Departmental Store—Telford



More O'Ferrall's Advertisement Hoardings

## Special Projects Installations



Woolgate House Project—London



Royal Liver Building—Liverpool

# High bay and Invincible range

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<b>Hipak DFLB 250/W and 400/W</b>	82-83
<b>Hipak DFLB 700/W and 1000/W</b>	82-83
<b>Hipak DFLD 250/W, 400/W and 1000/W</b>	82-83
<b>Hipak DFLC 250/W and 400/W</b>	84-85
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<b>Invincible LZ corrosion-resistant fittings</b>	88-89
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<b>Invincible FF food factory fitting</b>	90-91
<b>Invincible Renown wellglass</b>	92-93
<b>Invincible Glendale corrosion-resistant fittings</b>	94-95
<b>Invincible FND Type 'N' Zone 2 fittings</b>	94-95
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### BASEEFA

#### Certification/Approvals

Luminaires are submitted for approval by type test for coal mining use to the Safety in Mines Research Establishment (SMRE) of the Department of Trade and Industry. Equipment for surface hazardous areas is approved by British Approvals Service for Electrical Equipment in Flammable Atmospheres (BASEEFA). Equipment is tested to the appropriate British Standard and on compliance BASEEFA issue a Certificate of Assurance and licence to apply the certified mark.

In recent years the changes in the testing and certifying authorities in the

UK have resulted in a range of national standards available basically for the same type of equipment or protection. Whilst new luminaires are designed to the latest specifications, luminaires certified on approved previous standards may still be used. It must be recognised that with the issue of a new standard the older standard is not automatically superseded or cancelled or that the basic principle of the type of protection covered in the standard is changed.

#### Health and Safety at work.

Refer to note on page seven.

**Range description**

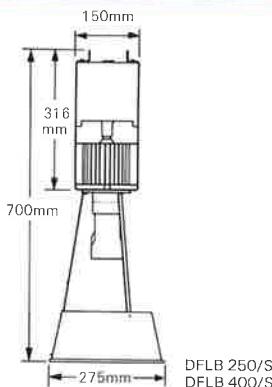
Industrial fittings with encapsulated ballast housed in an aluminium extrusion. The large wiring box has through wiring with top and side entry facilities and contains the capacitor, a large terminal block and an ignitor when required. Fittings are easily installed via a 25mm clearance hole for conduit 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.

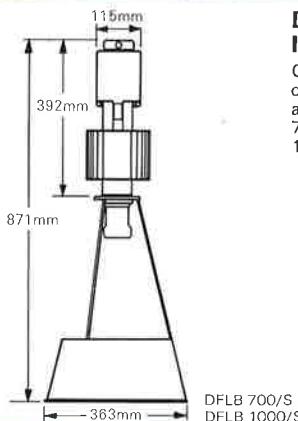
Slots in the top of the reflector allow a flow of air to pass over the lamp and reflecting surfaces. Protective wire guards are supplied with the skirt reflector, and as an optional extra for parabolic reflectors.

Made to BS 4533:2-2 (IP22) drip proof and safety marked.

IP Code Classification  
See page 8

**DFLB 250/S and 400/S  
IP22**

Operates 250W or 400W MBFR lamps continuously in ambient temperatures up to 45°C.

**DFLB 700/S and 1000/S  
IP22**

Operates MBFR lamps continuously in ambient temperatures as follows:

700W 45°C  
1000W 40°C

**RANGE**

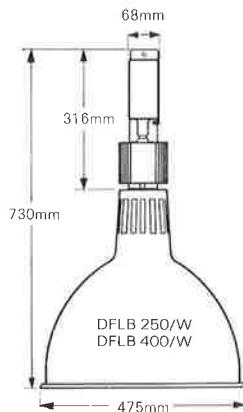
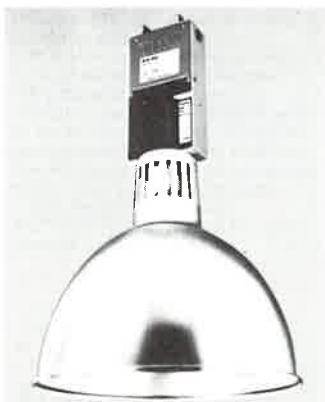
Rating	Lamp type	Complete fitting Catalogue no.	Control gear housing including gear Catalogue no.	Reflector Catalogue no.	Wire guard Catalogue no.	Approx. weight (inc. lamp) kg
250W	MBFR	DFLB 250/S	DFLB 250	DFLS 400	Included	6.3
400W	MBFR	DFLB 400/S	DFLB 400	DFLS 400	Included	7.2

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

**RANGE**

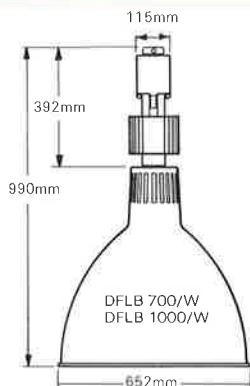
Rating	Lamp type	Complete fitting Catalogue no.	Control gear housing including gear Catalogue no.	Reflector Catalogue no.	Wire guard Catalogue no.	Approx. weight (incl. lamp) kg
700W	MBFR	DFLB 700/S	DFLB 700	DFLS 1000	Included	13.9
1000W	MBFR	DFLB 1000/S	DFLB 1000	DFLS 1000	Included	14.0

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



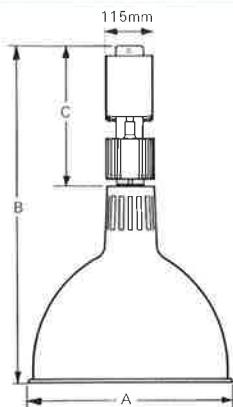
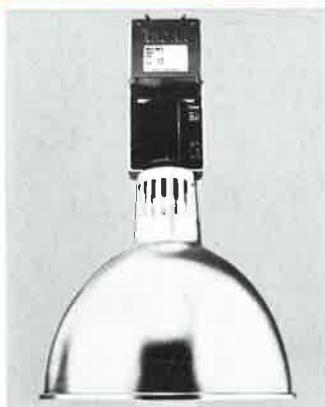
### DFLB 250/W and 400/W IP22

Operates 250W or 400W MBF lamps continuously in ambient temperatures up to 45°C.



### DFLB 700/W and 1000/W IP22

Operates MBF lamps continuously in ambient temperatures as follows:  
700W 45°C  
1000W 40°C



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

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.

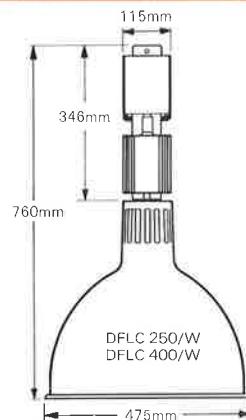
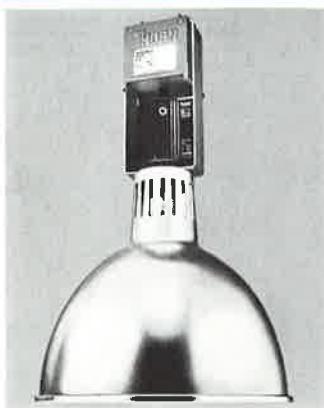
**RANGE**

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.

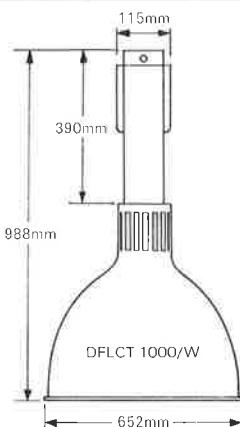
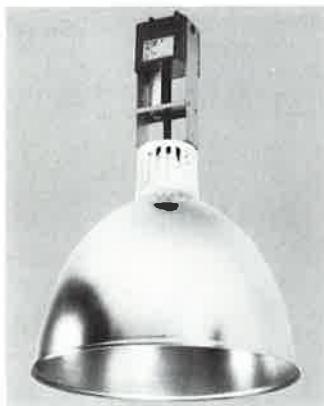
**RANGE**

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	8.65
1000W	MBI	DFLD 1000/W	DFLD 1000	DFLW 1000	DFLG 1000	15.8



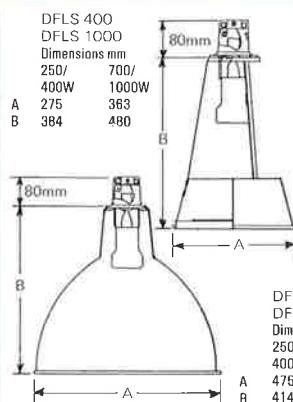
**DFLC 250/W and 400/W  
IP22**

Operates 250W and 400W SON lamps continuously in ambient temperatures up to 45°C.



**DFLCT 1000/W IP22**

Operates a 1kW SON lamp with remote gear continuously in ambient temperatures up to 40°C.



**DFLT 700/S, 700/W,  
1000/S and 1000/W  
IP22**

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

	DFLW 400	DFLW 1000
Dimensions mm	250/400W	700/1000W
A	475	652
B	414	598

**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 1000/A remote gear box. Ignitor is included in DFLCT 1000.

**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
250W	MBFR	DFLT 700/S	DFLT 700	DFLS 400	—
250W	MBF, MBI, SON	DFLT 700/W	DFLT 700	—	DFLW 400
700W	MBFR	DFLT 700/S	DFLT 700	DFLS 1000	—
700W	MBF	DFLT 700/W	DFLT 700	—	DFLW 1000
400W	MBFR	DFLT 1000/S	DFLT 1000	DFLS 400	—
400W	MBF, MBI, SON	DFLT 1000/W	DFLT 1000	—	DFLW 400
1000W	MBF, MBI	DFLT 1000/W	DFLT 1000	—	DFLW 1000
1000W	MBFR	DFLT 1000/S	DFLT 1000	DFLS 1000	—

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

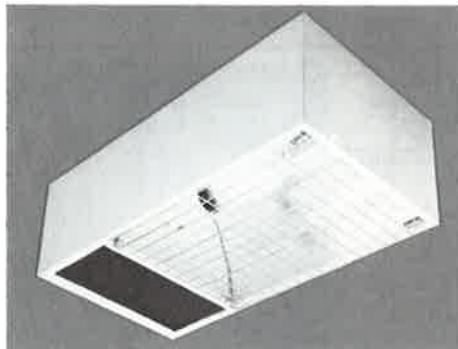
Both are suitable for continuous operation in ambient temperatures up to 45°C. Remotely mounted gear is required. Skirt or parabolic reflectors of the appropriate size can be used with the top assemblies.



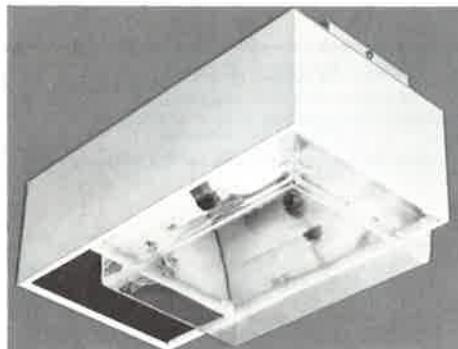
Basic open luminaire.



With DLL Transverse louvre.



With DLG Wire guard.



With DLV Clear Polycarbonate Cover.

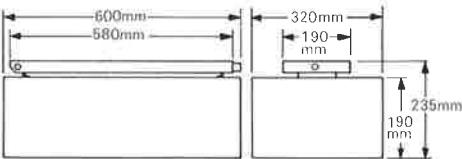
**Compact discharge luminaires for low mounting heights in industrial and commercial situations, comprising two items—the body, housing lamp and gear, and a ceiling plate. The control gear is mounted on a removable gear cover. The body is hooked onto the installed ceiling plate, swung into position and fixed by a captive screw. Reflector and pre-wired mains lead with plug and socket are supplied with body housing. Reflector gives batwing distribution enabling spacing/mounting height ratios up to 2:1. Takes 150W/250W/400W SON-T, 250W MBIF and 250W MBF lamps. Wide range of optional attachments include wire guard, clear polycarbonate cover, eggcrate and transverse louvres. For use in temperature range -40°C to +30°C (400W SON-T +25°C, when used with louvre or wireguard attachments).**

**Note:** When used with polycarbonate cover maximum ambient temperature is 30°C. 400W SON-T version maximum ambient temperature is +15°C.

Complies with BS 4533:2 IP22 drip proof and luminaires are safety marked. IP Code Classification see page eight.

#### Supply voltage

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



#### RANGE (Packed complete with lamp)

Fitting nominal length mm	Rating	Lamp type	Fitting Catalogue no.	Optional attachments					Fixing centres mm	Weight kg
				Catalogue no.	Wire guard	Transverse louvre	Cover	Eggcrate Louvre		
600	250W	SON-T	DLS 250	DLG	DLL	DLV	DLE	—	336	11.2
600	250W	MBF	DLK 250	DLG	DLL	DLV	DLE	—	336	11.2
600	150W	SON-T	DLS 150	DLG	DLL	DLV	DLE	—	336	11.2
600	400W	SON-T	DLS 400	DLG	DLL	—	DLE	—	336	13.5
600	250W	MBIF	DLC 250	DLG	DLL	—	DLE	—	336	11.2

\*See note above. †Safety glass attachment provided with DLC 250 MBIF luminaire.

# Hipak and Lopak accessories

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

Catalogue no.	Terminal block	Capacitor	Ballast	Ignitor	Lampholder
DFLB 250	GT 1362-2	GC 2370	G 53285	—	GL 1196
DFLB 400	GT 1362-2	GC 2331	G 53284	—	GL 1196
DFLB 700	GT 1362-2	GC 2382	G 53291	—	GL 1196
DFLB 1000	GT 1362-2	2×GC 2346	G 53292	—	GL 1196
DFLC 250	GT 1362-2	GC 2386	G 53287	G 53282/A	GL 1196
DFLC 400	GT 1362-2	2×GC 2331	G 53286	G 53282/A	GL 1196
DFLD 250	GT 1362-2	GC 2386	G 53289	G 53283	GL 1196
DFLD 400	GT 1362-2	GC 2331	G 53288	G 53283	GL 1196
DFLD 1000	GT1362-3 +GT 1362-2	2×GC 2386	G 53299	G 53342	GL 1196
DFLCT 1000	GT 1362-2	3×GC 2386*	3×G 53323 4*	G 53316†	GL 1196
DFLT 700‡	GT 1306	—	—	—	GL 1196
DFLT 1000‡	GT 1306	—	—	—	GL 1196
DLS 250	GT 1365-3 +GT 1362-2	GC 2386-BO	G 53321.T	G 53282/A	GL 1181
DLC 250	GT 1365-3 +GT 1362-2	GC 2386-BO	G 53321.T	G 53283	GL 1181
DLK 250	GT 1365-3 +GT 1362-2	GC 2370-TM	G 53315.4	—	GL 1181
DLS 150	GT 1365-3 +GT 1362-2	GC 2385	G 53335.T	G 53282/A	GL 1181
DLS 400	GT 1365-3 +GT 1362-2	GC 2331	G 53371.T	G 53282/A	GL 1181

\*Included in RBSG 1000/A gear box. †Included in DFLCT 1000 wiring box.

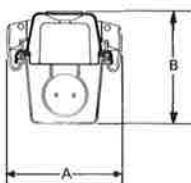
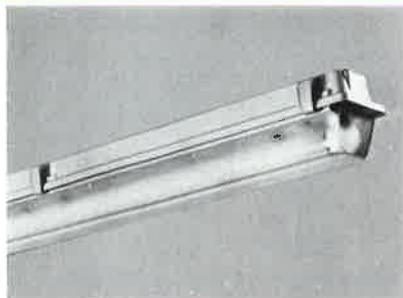
‡Gearless versions. Remote gear is used. See Control gear and accessories section for appropriate types.

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
DPLS 1000	Skirt reflector for 700/1000W Hipak
DFLG 400	Wire guard for 250/400W Hipak
DFLG 1000	Wire guard for 700/1000W Hipak
DLE	Square cell Louvre for Lopak
DLG	Wire guard for Lopak
DLL	Transverse louvre for Lopak
DLV	Polycarbonate cover for Lopak
DLP	Glass for DLC 250 Lopak

## Invincible range



### LU corrosion-resistant luminaires IP54

Suitable where excessive humidity or corrosive elements are present. Reflector-gear tray which has retaining safety chains is attached to GRP body by moulded bushes. The lamps are enclosed in a high impact resistant vacuum-formed acrylic cover which is secured by injection moulded toggles to the GRP canopy and sealed by a gasket.

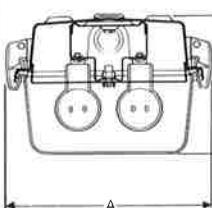
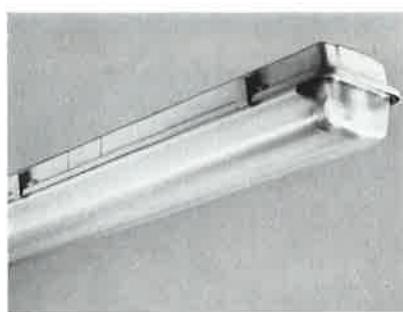
Luminaires comply with BS 4533-2-2 (IP 54) Dustproof, Splashproof and are safety marked.

#### Supply voltage

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

**Note:** Toggle clips (Cat. No. LU 4600—Polyphenylene oxide/styrene material 'Noryl') used for standard fittings are generally suitable for use in *inorganic environments* including acids such as hydrochloric phosphoric; alkalis such as sodium hydroxide ammonia; water, steam and salts.

For *organic environments* such as paraffins, petrol, motor oils; chlorinated solvents such as carbon tetrachloride, trichlorethylene, ethers, alcohols ketones; benzene and its derivatives; detergents, toggle clip LU 4603 (Acetal material—Delrin) is available on request.



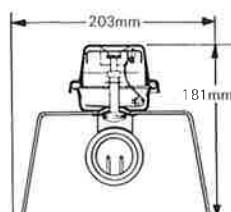
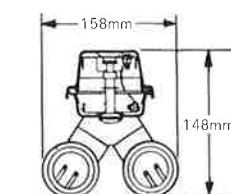
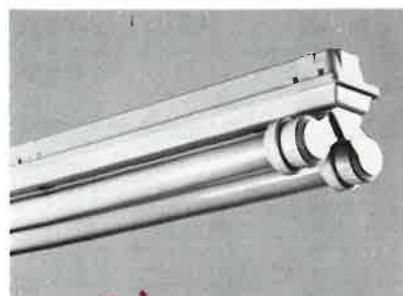
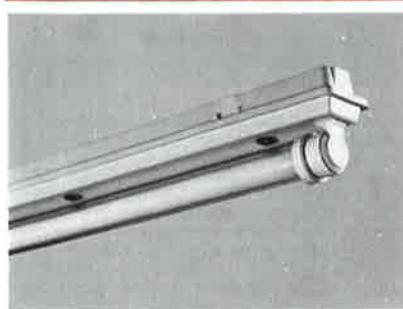
### LZ corrosion-resistant luminaires IP54

For conditions of high humidity or temperatures down to  $-30^{\circ}\text{C}$ . Working ambient temperature range for the various combinations of batten and/or cylinder(s) are shown in the table on the following page. Luminaires are for horizontal or vertical mounting.

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 acrylic cylinder to resist ingress of moisture. The LZC 15 and 16 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. Luminaires comply with BS 4533-2-2 (IP 54) Dustproof, Splashproof and are safety marked.

#### Supply voltage

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



## Invincible range

### RANGE Packed complete with White tubes

Nominal length mm	Rating	No. of Tubes	Circuit	Complete luminaire Catalogue no.	Diffuser Catalogue no.	Length mm	Weight kg	Fixing centres* mm	Dimensions mm A	Dimensions mm B
600	20W	ONE	QS	LUDQ 1020	LUD/FND 22	684	3.4	190	205	125
600	20W	TWO	QS	LUDQ 2020	LUD/FND 22	684	4.4	190	205	125
1200	40W	ONE	SRS	LUDR 1040	LUD/FND 24	1300	5.6	600	185	129
1200	40W	TWO	SRS	LUDR 2040	LUD/FND 24	1300	7.0	600	185	129
1500	65W	ONE	SRS	LUDR 1065	LUD 15	1587	8.9	600	105	116
1500	65W	TWO	SRS	LUDR 2065	LUD/FND 25	1595	9.8	600	185	129
1800	75W	ONE	SRS	LUDR 1675	LUD 16	1850	8.1	600	102	124
1800	75W	TWO	SRS	LUDR 2675	LUD 26	1850	10.2	600	145	124

Fixing holes: 600mm luminaire = 6.4mm dia. clear,

1200/1500mm/1800mm luminaire 25mm dia. clear fitted with grommet to take 20mm conduit.

**Note:** A single 5ft 80W luminaire is available to order for cold store use.

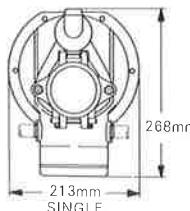
### RANGE

Nominal length mm	Rating	Circuit	Batten c/w lampholder ring and cylinder where applicable Catalogue no.	Description	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×LZM	1587	10.8	-5 to +25	600
1500	65W Single	SRS	LZCR 1065	Batten and cylinder	LZC 15	1587	9.0	-5 to +25	600
1500	65W Twin	SRS	LZCR 2065	Batten and cylinders	2×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 cylinder	LZC 15	1587	9.0	-10 to +5	600
1500	80W Single	SS	LZDS 1080	Batten and double 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×LZM	1850	12.5	-5 to +25	600
1800	75W Single	SRS	LZCR 1675	Batten and cylinder	LZC 16	1850	10.5	-5 to +25	600
1800	75W Twin	SRS	LZCR 2675	Batten and cylinder	2×LZC 16	1850	14.8	-5 to +25	600

**Note:** All 80W luminaires 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. ABS plastic trough reflectors are available for single and twin luminaires—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.

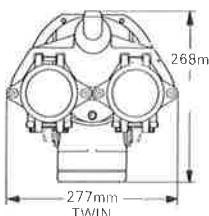
Temperature range Z at ambient temperature specified on fitting. Cast aluminium end boxes are rigidly supported by a steel connecting tube. Main casting incorporates switchless control gear on a removable tray, and underslung mains cable entry to facilitate installation. The remote end casting is removable 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. 2x20mm entries are standard but alternative entries can be supplied to special order. Reflectors with or without wire guards are available.

Luminaires comply fully with BS 229, BS 889 and are dust-tight and jetproof (IP65).

#### Supply voltage

240V 50Hz. Details of luminaire(s) for other supplies on application.



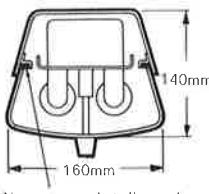
### FF food factory luminaire IP23

The heavy gauge sheet steel housing has spot welded ends and a white plastic finish, clear patterned high impact resistant acrylic enclosure with 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 which has self retaining safety chains is removable as a complete unit by loosening three screws. Luminaire(s) complies with BS 4533:2-2 IP23 rainproof and is safety marked.

#### Supply voltage

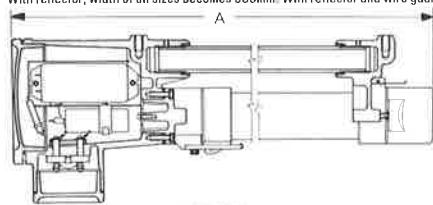
240V 50Hz. Details of luminaire(s) for other supplies on application.



## RANGE (Packed complete with white tubes)

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	1860

With reflector, width of all sizes becomes 303mm. With reflector and wire guard, width of all sizes becomes 328mm.



**FP4600** Adjustable suspension bracket for fitting and/or reflector.

## Optional extras and spares

Catalogue no.	Description	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	½" BSW 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

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

\*Used for fitting suspension or reflector mounting.

## 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

## Invincible range



DRNT 160



DRNT 125

### Renown wellglass IP65

#### Zone 2

Luminaire 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 chain) 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.

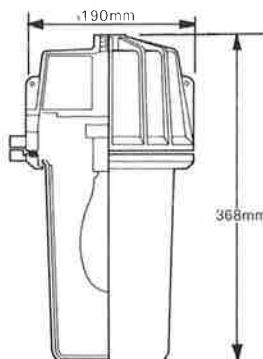
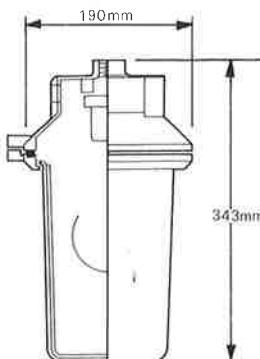
Complies with BS4533:2.1 (IP65), dust-tight jetproof, BASEEFA certificate no. 72057.

#### Supply voltage

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



DRNC Ceiling Strap Assembly



## RANGE

Rating	Lamp type	Complete luminaire 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

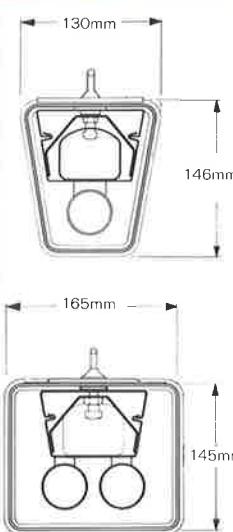
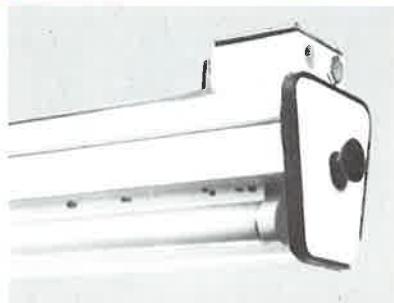
\*Nomenclature

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 (Diameter of fixing holes is 8mm)
DRNR	Vitreous enamel external reflector
DRNW	Wire guard
DRNG	Spare glass

## Invincible range



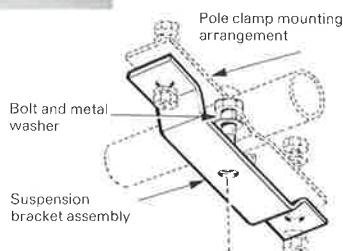
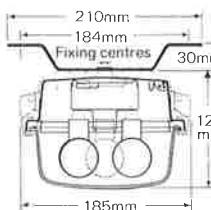
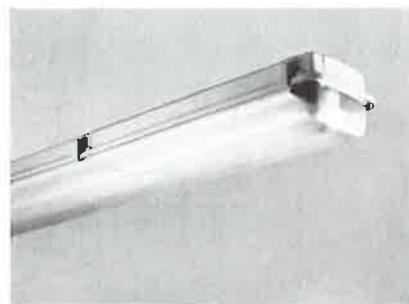
### Glendale corrosion-resistant luminaires IP55 Zone 2

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

Standard luminaires have two eyebolts for suspension and a nylon cable gland suitable for 0.200-0.275 o.d. cables. Luminaires with SB in their catalogue numbers have fixing studs and Zone 2 conduit boxes with two 20mm entries, one being removable. Luminaires 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 (IP55) dustproof, jetproof. BASEEFA certificate no. 72064.

#### Supply voltage

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



### FND Type 'N' Fluorescent luminaires IP54 Zone 2

A range of fluorescent luminaires designed for use in Zone 2 hazardous areas. Constructed of a glass reinforced plastic (GRP) canopy attached to a high impact resistant acrylic diffuser by toggles which are captive to the canopy. A high quality neoprene gasket is positioned between the canopy and diffuser to form a very effective seal.

Standard luminaires are supplied complete with white tubes, two seagull shaped galvanised brackets for surface mounting and two earth leads for earth continuity.

An auxiliary fixing clamp (Cat. No. FND 4621) for pole or pipe mounting is offered as an optional extra (see diagram).

Approved to BS 4533 Section 2.1 1976 Type N. BASEEFA certificate No 77277/B.

IP54 dustproof, splashproof, Restricted Breathing.

#### Important

Not suitable for high mounting in open exposed areas to gale force winds. In these conditions it is recommended to use luminaires with a minimum IP65 classification.

## Invincible range

RANGE		Complete luminaire(s)			Replacement	Length	Approx. weight	Fixing centres
Nominal length mm	Rating	Circuit	Catalogue no.†	Suspension*	Enclosures	mm	kg	mm
600	20W Single	QS	FGSB 20	stud/box	FGSB 12	688	6.35	457
600	20W Twin	QS	FGSB 220	stud/box	FGSB 22	688	7.25	457
600	20W Twin	QS	FGEA 220	eye/gland	FGEA 22	688	7.25	457
1500	65W Single	RS	FGSB 65	stud/box	FGSB 15	1595	12.7	610
1500	65W Twin	RS	FGSB 265	stud/box	FGSB 25	1595	17.25	610
1500	65W Single	RS	FGEA 65	eye/gland	FGEA 15	1595	12.7	610
1500	65W Twin	RS	FGEA 265	eye/gland	FGEA 25	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.

Note: All 40W Single and Twin versions available to order.

### RANGE Packed complete with White tubes 220/240/250V 50Hz Supplies

Nominal length mm	No. of tubes	Rating	Complete luminaire(s)	Diffuser Catalogue no.	Length mm	Weight kg	Fixing centres mm	
ft			Catalogue no.					
600	2	20W	Two	FNDO 2020	LUD/FND 22	684	4.4	190×184
1200	4	40W	One	SRS	FNDR 1040	1300	5.6	600×184
1200	4	40W	Two	SRS	FNDR 2040	1300	7.0	600×184
1500	5	65W	One	SRS	FNDR 1065	1595	8.9	600×184
1500	5	65W	Two	SRS	FNDR 2065	1595	9.8	600×184

Note: 184mm refers to the centres on the fixing bracket.

Optional Extra

FND 4621 Clamp for 50mm O/D pole or pipe.

Luminaires can be ceiling or wall mounted horizontally and are suitable for ambient temperatures and surface temperature classification as follows.

	220/240V	250V
	ta	T
	ta	T
Twin	20W 35°C 6	30°C 6
Single	65W 40°C 5	35°C 4
Twin	65W 25°C 5	15°C 5
Single	40W 50°C 6	45°C 5
Twin	40W 45°C 6	40°C 5

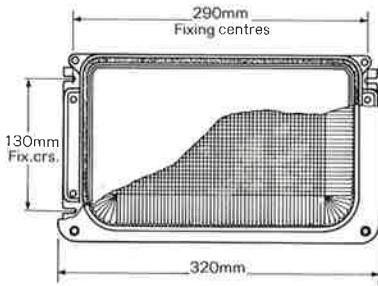
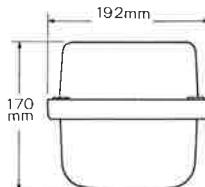
## Invincible range



DB 80

DB Version

DN Version



### Bulkhead Luminaires IP65

Dust-tight jetproof bulkhead design suitable for use in hostile and hazardous environments.

Pressure die-cast aluminium alloy LM6 body and frame, primed and stove enamelled light hammer grey. The frame assembly which contains a toughened borosilicate glass diffuser bowl is hinged to the body casting and secured against a silicone gasket by four captive stainless steel Allen screws (M5 x 15mm). Body is tapped top and bottom 20mm conduit. Zone 2 versions 2 x 20mm tapped holes adjacent at one end, one hole with removable plug.

Fixing is achieved by four M6 bolts, washers and nuts supplied with the luminaire. Zone 2 versions are supplied complete with fixing straps slotted for M6 bolts.

Heavy duty galvanised wireguard also available (Cat. No. DBW).

Complies with BS4533-2.1 IP65

Dust-tight Jetproof, Restricted Breathing, (Type N versions T4 classification).

DN Versions Section 2.1 BASEEFA Approved Certificate No. 81139.

DB Versions Section 2.2 BSI Safety Marked.

**Supply Voltages:** 220/240/250V 50Hz.

Luminaires can be supplied with polycarbonate diffuser bowls to order.

For more onerous environments such as offshore installations an alternative PTFE finish can be supplied to order.

#### RANGE Supplied complete with lamp & control gear

Catalogue no.	Lamp rating and type	Cable Entries	Approx. weight (incl. lamps) kg
DB 70	70W SON Elliptical	Single hole at each end of fitting	5.98
DB 80	80W MBF Elliptical	Single hole at each end of fitting	5.98
DB 50	50W MBF Elliptical	Single hole at each end of fitting	5.98
DB 160*	150/200W GLS or 160W MBTF	Single hole at each end of fitting	4.30

To order luminaires with polycarbonate bowl add letter M to standard catalogue no. e.g. DBM 70—50W MBF & 70W SON no restriction on mounting, 80W MBF restricted to ceiling mounting only. Polycarbonate bowl not suitable for GLS & MBTF lamps.

Catalogue no.	Lamp rating and type	Cable Entries	Approx. weight (incl. lamps) kg
DN 70	70W SON Elliptical	Twin adjacent at one end of fitting	5.98
DN 80	80W MBF Elliptical	Twin adjacent at one end of fitting	5.98
DN 50	50W MBF Elliptical	Twin adjacent at one end of fitting	5.98
DN 200*	150/200W GLS or 160W MBTF	Twin adjacent at one end of fitting	4.30

\*Supplied less lamp and control gear—other ratings supplied less lamp to order.  
DB 50 & DN 50 versions are available to special order only.

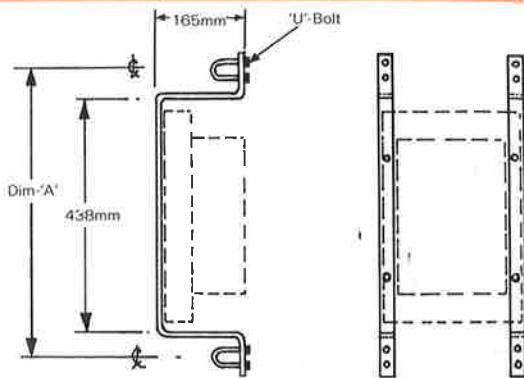
#### Optional extras and spares for both DN & DB luminaires

Catalogue no.	Description
DBW	Wire guard
DN 50	Spare glass
DBM	Polycarbonate bowl

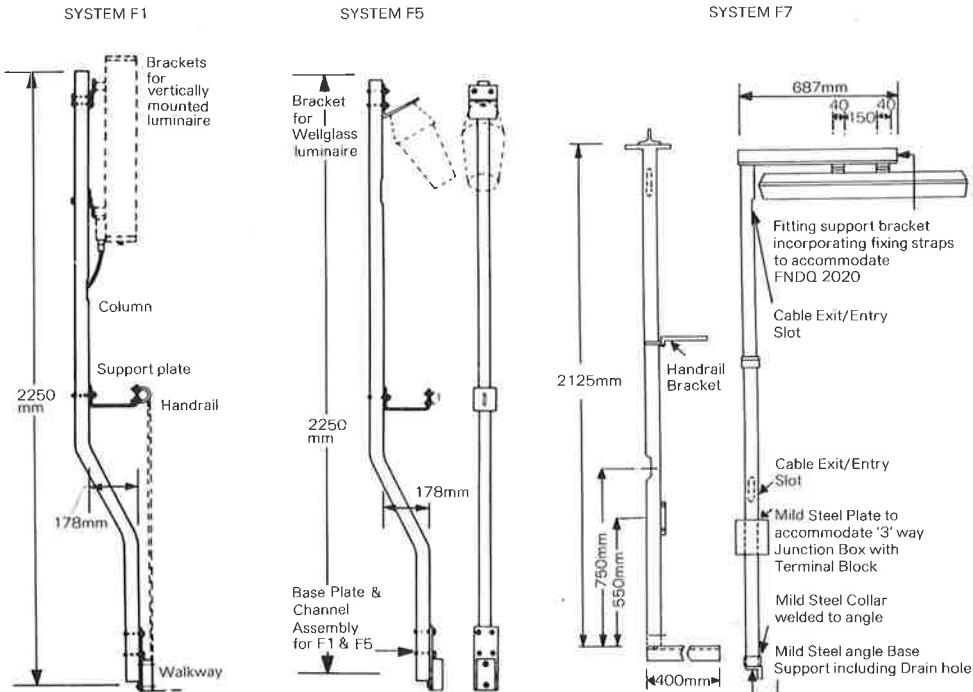
## Zone 2 pole mounting systems

A selection of the most popular mounting systems are illustrated. Systems are available on request to customer specifications and are suitable for a wide selection of luminaires from the Invincible Range. Pole systems are manufactured from 48mm o.d. pipe and are galvanised after cutting.

The F8A System is designed to allow bulkhead type luminaires to be mounted between horizontal rails in a recessed position to prevent obstruction of the walkway. These brackets are supplied in pairs as illustrated. When ordering please specify rail fixing centres (Dim. 'A') and outside diameter of rails. Material—Mild Steel. Finish—Hot Dip Galvanised.



### TYPICAL MOUNTING ARRANGEMENT



## Invincible range



DND 250 or 400 Luminaires c/w control gearbox.

### DND Type 'N' floodlight IP54 Zone 2 Ex

Floodlight designed for use in Zone 2 hazardous areas. Comprises a 250W or 400W SON-TD lamp, lamp housing and control gearbox.

The lamp housing is constructed of one-piece extruded aluminium body with an asymmetric faceted reflector profile—matt finish (diffuse). Specular version to order (see below).

The gearbox is cast aluminium alloy with aluminium lid secured by 2 captive screws. Fitting and gearbox can be mounted horizontally or vertically on floor, wall or pole in the following ambient temperatures at the supply voltages as follows:

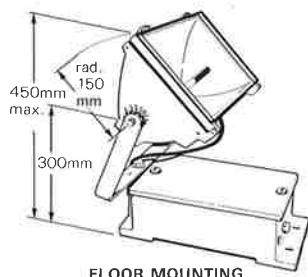
DND 250	50°C	220/250V
DND 400	35°C	220/240V
DND 400	25°C	250V

Fixing is achieved by means of four external fixing holes on the gearbox flanges.

For pole mounting, 2xOHA 4613 universal pole clamps can be used.

BASEEFA approved to BS 4533 Part 2 Section 2.1 1976 Type N.  
Certificate No. Ex 79334/X.

IP54 dustproof, splashproof—restricted breathing.  
Surface temperature Classification T3—200°C.

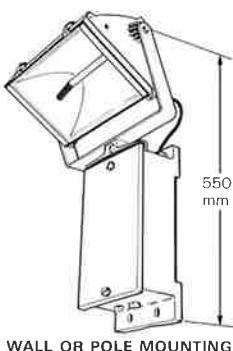


FLOOR MOUNTING

#### RANGE

Cat. No.	DND 250	DND 400
Description	250W SON-TD Luminaire and gearbox (Diffuse reflector)	400W SON-TD Luminaire and gearbox (Diffuse reflector)
Weight Kg	12.0	15.5

Note: Add S to Cat. No. for fittings with specular reflector.



WALL OR POLE MOUNTING



## MN25 Junior floodlight projector

### Zone 2

#### Applications

For Zone 2 hazardous areas.

#### Description

##### Reflector:

Super purity spun aluminium, polished and anodized. Secured internally to LM6-M aluminium alloy ring casting with stirrup fixing. Heat resisting toughened 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:

##### Lampholder

##### housing:

Pressure die-cast aluminium; lampholder position adjustable for focusing. End cap is detached for access to terminal block. Gland for 7.1 mm O/D cable. Lampholder is a porcelain enclosed break type.

##### Mounting:

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

#### Lamps

GLS	300/500W
MBF/U	250/400W
MBI/ and MBIF	250/400W
SON	250/400W

For control gear and circuit details see **Control gear and accessories** section, Gear box for Zone 2 application—to special order only.

#### Classification for protection

Against electric shock: Class I—earthing metalwork.

Against ingress of moisture or dust: IP 65, dust tight and jet proof.

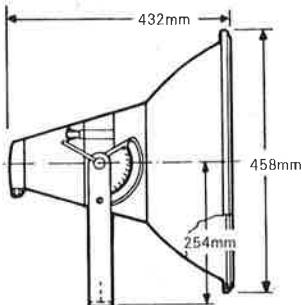
#### Approvals

Fitting complies with BS4533 Part 2 Sec. 2.1 1976.

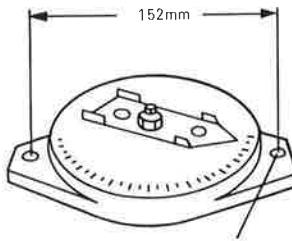
Type N. BASEEFA certificate No. Ex 76058/B.

Restricted Breathing. Surface temperature classification T4. Can be mounted in any position and is suitable for ambient temperatures up to 40°C.

\*BASEEFA approval applied for.



Single fixing M20 bolt (not supplied)

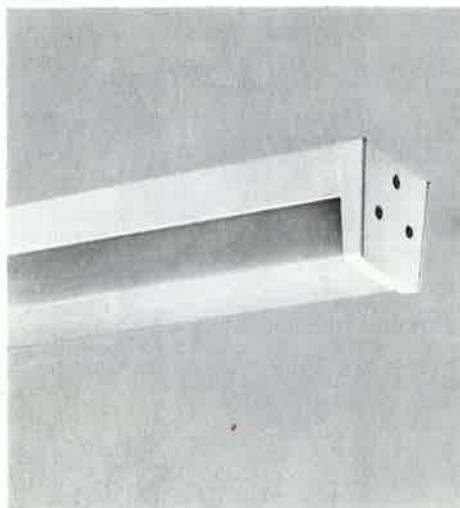


M25 BPJ base plate

## RANGE

Catalogue no.	Description	Weight kg	Projected area m <sup>2</sup>
MN25S	Specular reflector projector floodlight	9.07	0.16
MN25D	Diffuse reflector projector floodlight	9.07	0.16
M25 BPJ	Base plate (optional extra)	0.36	—
M25/TG 5275	Replacement glass for MN25S & MN25D	2.00	—

## Invincible range



### FV Impact Resistant Luminaire (IP40)

An impact resistant luminaire designed for use in areas of public access and similar locations where resistance to mechanical damage is required. The luminaire comprises an extruded aluminium alloy body with die cast end plates, an extruded polycarbonate diffuser which slides into the body and a removable gear tray. One end plate can be removed by undoing three screws with a special key and sliding the diffuser out.

The gear and lampholders are fixed to a tray which is removable and the mains supply is connected by means of a plug and socket.

The gear tray, by releasing a retaining screw can be slid out and left hanging on two studs, or completely removed simply by turning and lifting out of the fitting body.

The luminaire is supplied complete with two 3 ft 30W 1in diameter white fluorescent tubes.

#### Approvals

Luminaire complies with BS 4533 2.2 and is safety marked.

#### Classification for protection

IP40

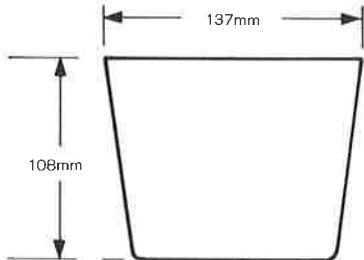
Maximum ambient temperature +30°C.

#### Supply voltage

240V 50Hz—details of luminaire for other supplies on application.

#### Important

It is essential to use a special key Cat. no. OB/FV supplied separate to luminaire (for security reasons) before installing or servicing a luminaire.



Fixing centres are 707 or 500mm with central besa box fixing.

#### RANGE

Catalogue No.	Lamp	Circuit	Length mm	Weight kg
FV 2030   	2 x 3ft 30W	S5	937	5.5

# Invincible range Control gear components

## 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	GGS 40, GCU 20	GC 2417	7
LUDQ 2020	GB 1580-B	—	GT 1367	GT 1281-3	GGS 220, GCU 40	GC 2417	9
LUDR 1040	GB 1580-A4	—	GT 1367-3	—	GBI 40	GC 2420	10
LUDR 2040	GB 1580-A4	—	GT 1367-3	—	GBI 40×2	GC 2420×2	2×10
LUDR 1065	GB 1580-B	—	GT 1367	GT 1281-3	GBU 65	GC 2419	11
LUDR 2065	GB 1580-A4	—	GT 1367	—	GBI 65×2	GC 2419	2×10
LUDR 1875	GB 1580-B	—	GT 1367	—	GBU 675	GC 2419	11
LUDR 2675	GB 1580-B	—	GT 1367	—	GBU 675×2	GC 2419	2×11
LZMR 1065	GB 1642	—	GT 1367	GT 1281-1	GBU 65	GC 2419†	11
LZMR 2065	GB 1642	—	GT 1367	GT 1281-1	GBU 65×2	GC 2419	2×11
LZMR 1875	GB 1642	—	GT 1367	GT 1281-1	GBU 675	GC 2419	11
LZMR 2675	GB 1642	—	GT 1367	GT 1281-1	GBU 675	GC 2419	2×11
LZMS 1080*	GB 1642	—	GT 1367	GT 1281-1	G 53333.2	GC 2187	13
FP 1240**	GT 1573	GT 1310-X	—	GT 1281-1	G 69101.T G 47014	GC 2419	8
FP 2240**	GB 1573	GT 1310-X	—	GT 1281-1	G 69035.T G 47001	GC 2419	9
FP 1040**	GB 1573	GT 1310-X	—	GT 1281-1	G 69240.4	GC 2420	11
FP 2040**	GB 1573	GT 1310-X	—	GT 1281-1	G 69284.4×2	GC 2420	2×11
FP 1065**	GB 1573	GT 1310-X	—	GT 1281-1	G 69163.4	GC 2419	10
FP 2065**	GB 1573	GT 1310-X	—	GT 1281-1	G 69163.4×2	GC 2419	2×10
FP 1685**	GB 1573	GT 1310-X	—	GT 1281-1	G 69165.4	GC 2419	10
FP 2865**	GB 1573	GT 1310-X	—	GT 1281-1	G 69165.4×2	GC 2419	2×10
FFD 265	GB 1548-B	—	GA 5079	—	GBI 85	GC 2419	2×10
FGSB 20**	GB 1548-B	GT 1310-X	—	GT 1363-3	G 69377.4 G 47048	GC 2417	8
FGSB 220**	GB 1548-B	GT 1310-X	—	GT 1363-3	G 69377.4 G 47048	GC 2417	9
FGEA 220**	GB 1548-B	GT 1310-X	—	GT 1363-3	G 69377.4 G 47048	GC 2417	9
FGSB 65**	GB 1548-B	GT 1310-X	—	GT 1363-3	G 69349.4	GC 2419	11
FGSB 265**	GB 1548-B	GT 1310-X	—	GT 1363-3	G 69349.4×2	GC 2419	2×11
FGEA 65**	GB 1548-B	GT 1310-X	—	GT 1363-3	G 69349.4	GC 2419	11
FGEA 265**	GB 1548-B	GT 1310-X	—	GT 1363-3	G 69349.4×2	GC 2419	2×11
FV 2030#‡	GB 1565	GT 1397/3	—	—	G 69481.4	GC 2419	2×1
DRN 80**	GL 1197	—	—	GT 1363-3	SK 23034.4	—	301‡
DRN 125**	GL 1197	—	—	GT 1363-3	SK 23033.4	—	301‡
DRN 160**	GL 1197	—	—	GT 1349-3	—	—	—
DB 70	GL 1194	—	—	GT 1364/2	G 53320.T Choke G 53353.4 or_2 Ignitor	GC 2383/BO	311
DB 80	GL 1194	—	—	GT 1384/2	G 53333.4 or_2	GC 2383/BO	301
DB 180	GL 1194	—	—	GT 1384/2	—	—	—
DB 60	GL 1194	—	—	GT 1364/2	G 53327.4 or_2	GC 2383/BO	301
DN 50**	GL 1194	—	—	GT 1385	G 53327.4 or_2	GC 2383/BL	301
DN 80**	GL 1194	—	—	GT 1385	G 53333.4 or_2	GC 2383/BL	301
DN 70**	GL 1194	—	—	GT 1385	G 53373 Choke G 53361 Ignitor	GC 2383/BL	311
DN 200**	GL 1194	—	—	GT 1385	—	—	—
DHA 800**	GL 1162	—	—	GT 1365	G 53250.T Ignitor×2 G 53230.T Choke×2	GC 2331×2	312×2
OGR 250**	42130	—	—	GT 1363	SK 23038.4	—	301‡
OGR 400**	42130	—	—	GT 1363	SK 23052.4	—	301‡
FNDO 2020**	GB 1580/A4	—	—	GT 1385	G 69354	GC 2417	9
FNDR 1040**	GB 1580/A4	—	—	GT 1385	G 69434.4	GC 2420	10
FNDR 2040**	GB 1580/A4	—	—	GT 1385	G 69434.4×2	GC 2420×2	2×10
FNDR 1065**	GB 1580/A4	—	—	GT 1385	G 69350.4	GC 2419	10
FNDR 2065**	GB 1580/A4	—	—	GT 1385	G 69350.4×2	GC 2419×2	2×10
DND 250**	—	—	—	GT 1385	G 53346.T Choke G 53372 Ignitor	GC 2986	311
DND 400**	—	—	—	GT 1385	G 53371.T Choke G 53250 Ignitor	GC 2331	311

\*LZMS 1080 has starter switch 155/802.

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

For circuit diagrams see Control gear and accessories section.

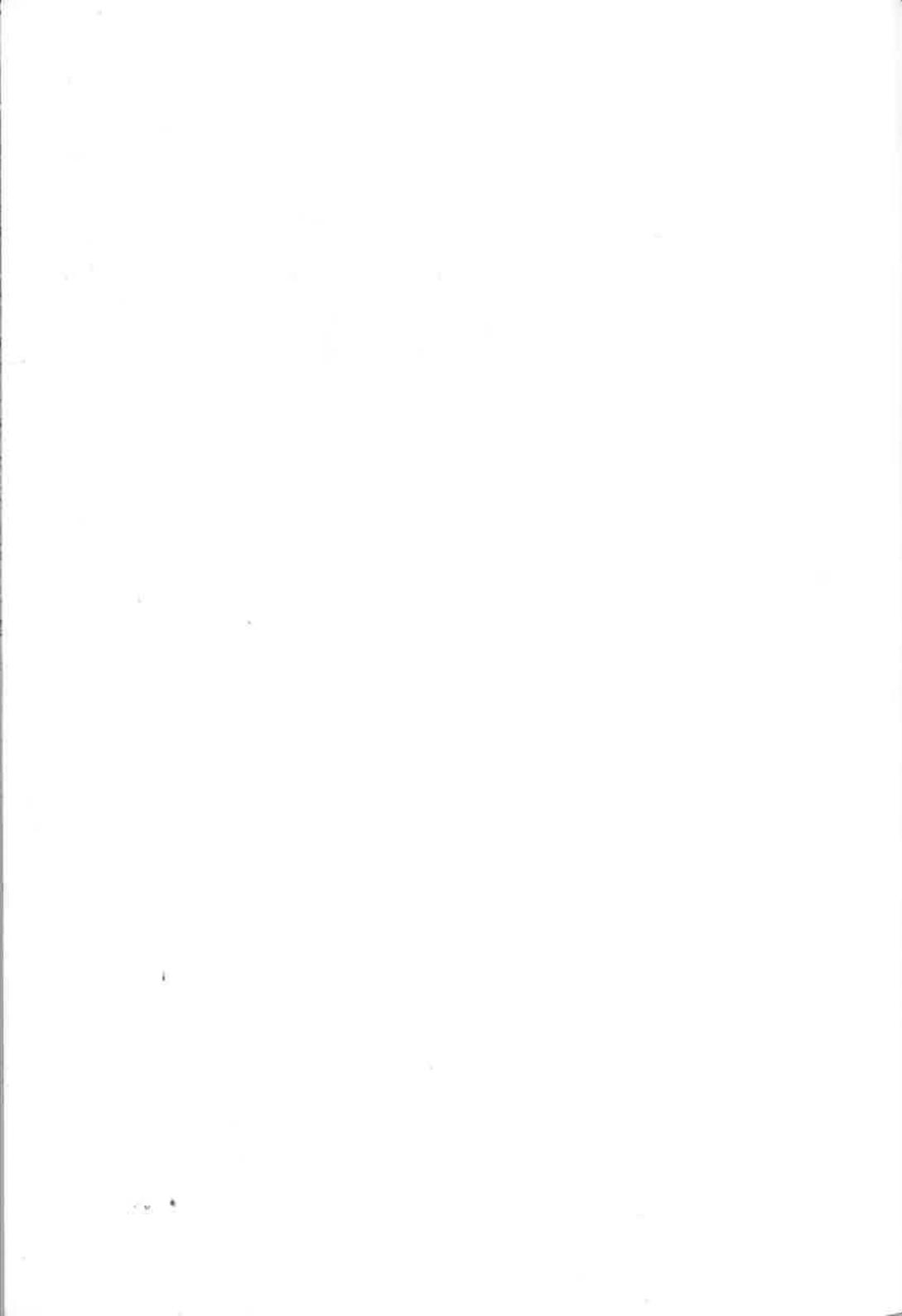
‡Capacitor not included.

†† FV 2030 has starter switch 155/600 with starter socket GA 5051.

\*\*Important: The component catalogue numbers shown must be used for

replacements in order to comply with BASEEFA requirements.

It is essential that no other alternative component is used.



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**Health and Safety at work.**  
Refer to note on page seven.

# Guard Light A range



All Thorn Guardlight Emergency Lighting fittings have full ICEL approval and are designed to meet a wide range of applications.



EFV 3

## Self-contained Bulkhead Luminaire

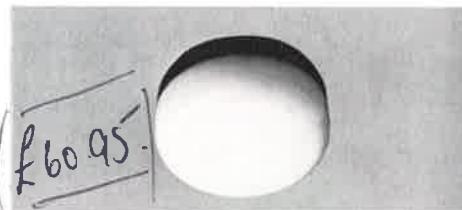
The bulkhead luminaire is suitable for interior and exterior use in industrial and commercial applications. It employs a single 300mm 8W white fluorescent tube and provides 3 hours non-maintained emergency lighting from a self-contained Nickel-Cadmium battery supply. Vandal resistant construction and tamper resistant diffuser fixing. IP23 rated.



EFJ 3

## Self-contained Square glass Luminaire

The Square glass luminaire employs a single 150mm 4W white fluorescent tube. For use in interiors it can be wall or ceiling mounted. IP20 rated it provides 3 hours non-maintained emergency lighting from a self-contained Nickel-Cadmium battery supply. An attractive crystal pattern square glass bowl makes it ideal for commercial premises such as Hotels and Offices.



EFY 3

## Self-contained Oyster Luminaire

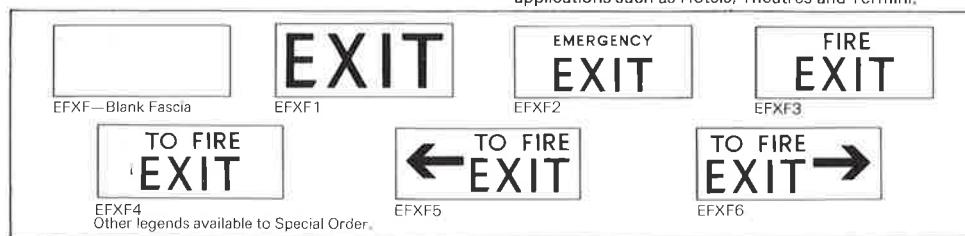
The Oyster luminaire employs a single 150mm 4W white fluorescent tube. Suitable for interior or under-canopy mounting and is IP23 rated. With a vandal resistant construction it provides three hours non-maintained emergency lighting from a Nickel-Cadmium battery supply.



EFX 3

## Self-contained Single-sided exit box

This single-sided exit box with a single 300mm 8W white fluorescent tube is for indoor use either wall or ceiling mounted. IP20 rated it provides 3 hours non-maintained emergency lighting from a self-contained Nickel-Cadmium battery supply. A white opal plastic fascia panel with a choice of green legends (ordered separately) makes this an ideal fitting for all commercial applications such as Hotels, Theatres and Terminals.



## RANGE

Catalogue no.	Description	Duration hours	Length mm	Width mm	Height mm
EFV3	Self-contained non-maintained Vandal resistant bulkhead IP23 c/w 8W White fluorescent tube	3	369	102	92
EFY3	Self-contained non-maintained polycarbonate bowl/diffuser. Vandal and corrosion resistant IP23 c/w 4W White fluorescent tube	3	220 dia	—	130
EFJ3	Self-contained non-maintained crystal glass fitting (IP20). c/w 4W White fluorescent tube	3	216	216	109
EFX3	Self-contained maintained single-sided exit box with 8W White fluorescent tube	3	515	58	180

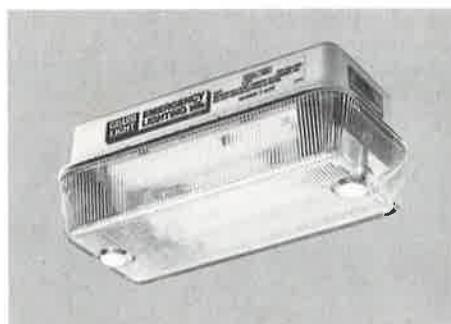
## Self-contained emergency lighting luminaires



EFK3

**Self-contained Round glass luminaire**

The round glass luminaire employs a single 150mm 4W white fluorescent tube and is for indoor use, either wall or ceiling mounted. IP20 rated it provides 3 hours non-maintained emergency lighting from a self-contained nickel-cadmium battery supply. An attractive crystal pattern round glass bowl makes it ideal for commercial applications such as hotels, restaurants and offices.



EFG3

**Self-contained Bulkhead luminaire**

This bulkhead luminaire with a single 150mm 4W white fluorescent tube is suitable for interior or exterior use in mainly industrial applications. It provides 3 hours non-maintained emergency lighting from a self-contained nickel-cadmium battery supply. Vandal resistant construction and is IP23 rated.



EFXX3

**Self-contained Double-sided Exit box**

This double-sided exit box with a single 8W white fluorescent tube is for indoor use, either wall or ceiling mounted. IP20 rated and ideal for all commercial premises, hotels, termini etc. Providing 3 hours maintained emergency lighting from a self-contained nickel-cadmium battery supply. Double-sided c/w plain white opal plastic fascia panel for green legends supplied as transfer sets for application on site, permitting a different legend on each side if required.

**Transfers**

Catalogue no.	Description	Qty. in pack
EFXT 1	Exit	2
EFXT 2	Emergency Exit	2
EFXT 3	Fire Exit	2
EFXT 4	To Fire Exit	2
EFXT 5	→	12

**Note:**

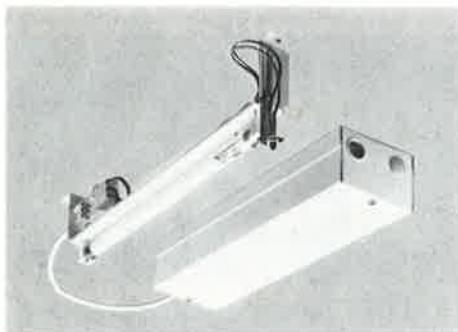
During the currency of this catalogue self-contained, long tube emergency lighting fittings will be introduced e.g. emergency versions of Popular Pack, Clipper and Formula One, plus other fittings will be available to special order.

Please consult the Lighting Engineering Dept. at your local Thorn Lighting sales office for the latest details.

**RANGE**

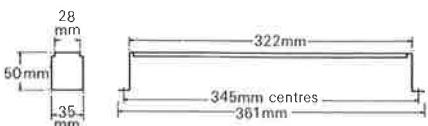
Catalogue no.	Mode	Duration hours	Lamp	Length mm	Width mm	Height mm
EFXX3	Maintained	3	8W	412	70	225
EFK3	Non-maintained	3	4W	225 dia	—	82
EFG3	Non-maintained	3	4W	254	114	106

# Guard Light

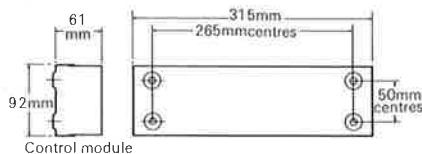


## Self-contained Conversion Pack

A kit comprising of a lampholder reflector assembly and separate charger/battery module for incorporation into standard surface mounted or recessed luminaires to provide a self-contained, non-maintained emergency lighting facility of 3 hours duration. Equipped with 300mm white fluorescent tube, the reflector assembly is complete with LED charge indicator. The control unit is mounted remotely and if mounted in the void should not be mounted on top of the luminaire or blanketed.



Lamp and Reflector assembly



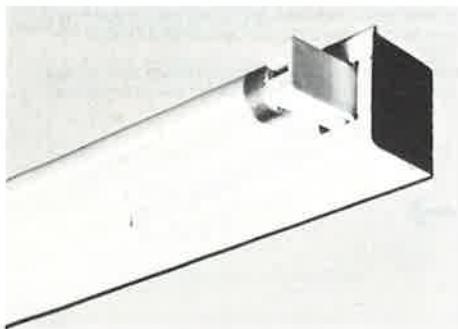
Control module

## RANGE

Catalogue no.	Description	Mode	Duration hours
ECP3	Emergency Lighting Conversion Pack	Non-maintained	3

## Slave Luminaires

All the luminaires in the Thorn Guard light range are also available in slave form, for use in central battery systems. Voltages available are 12V, 24V, 50V and 110V. Please contact your local Thorn area office for further details.



## Transistorised Luminaire

Also available is the Thorn Minipack adapted for 12V Central battery systems. See page 22 for constructional details.

## RANGE

Catalogue no.	Lamp	Description
EGH 1008	1 x 300mm 8W	12V DC Luminaire
EGH 1013	1 x 525mm 13W	12V DC Luminaire

# Thorn 2D Lamp and fittings

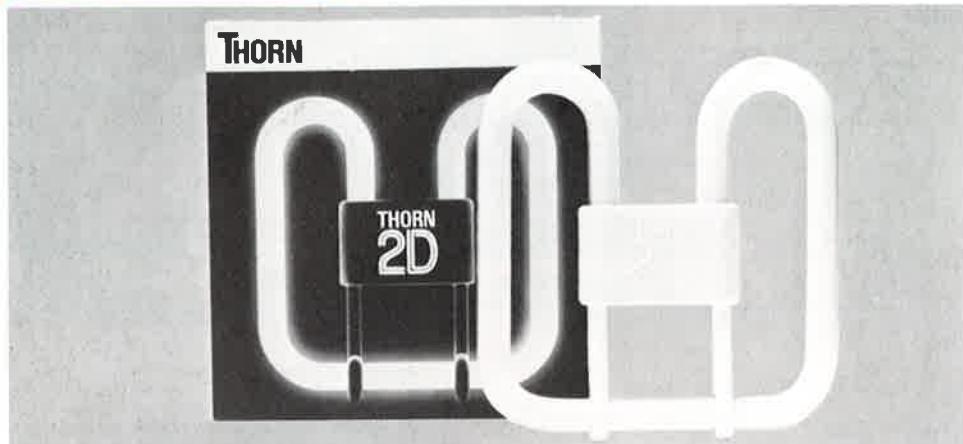
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Health and Safety at Work.  
Refer to note on page seven.



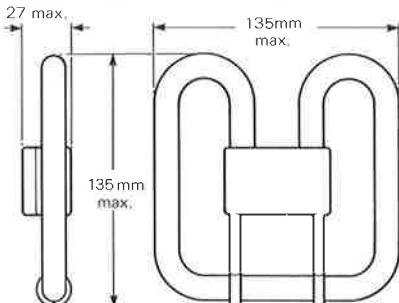
## Thorn 2D lamp



The incandescent light bulb or General Lighting Service lamp has been with us for more than a hundred years. Although improvements to shape, structure and light output have been made over this period the principle remains the same and this light source has served mankind well for most domestic and many commercial lighting applications.

A bulb capable of superseding the GLS bulb must therefore inspire attractive and fashionable designs of domestic and commercial light fittings as well as providing cheaper and more efficient lighting. The Thorn 2D bulb—an exciting new light source—has been specifically developed to meet these needs. Compared to a standard 100W GLS bulb, the Thorn 2D lamp offers a comparable light output an 80% reduction in power consumption with five times longer life. The main advantages of this new light source for the fittings designer are:

- Compact size—135mm square
- Slimness—only 27mm deep compared to 61mm for 100W GLS
- Low temperature of the light source.



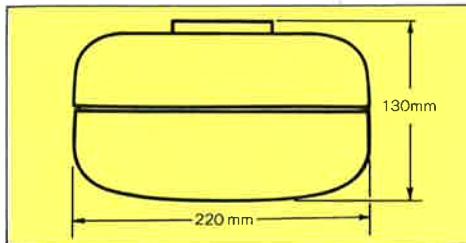
### Lamp Data

Lamp type	Thorn 2D
Lamp Watts	16W
Circuit Watts	21W
Light Output (lumens)	1050
Lamp Cap	Thorn 2D
Correlated Colour Temperature	2800K
Ra Index	82
Length (mm)	135
Width (mm)	135
Depth (mm)	27



## Oyster

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 a 16W 2D lamp and water-tight gasket.

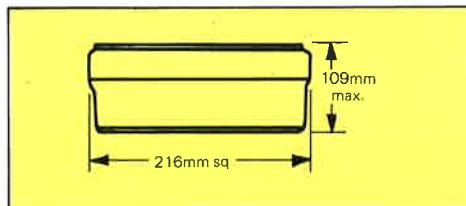


## RANGE

Catalogue no.	Description	Lamp Watts	Weight (kg)
2D OOV16	Wall/Ceiling fitting	16	1.08

## XJ Modern glass

A ceiling mounted unit of crystal pattern glass supported in black finished metal framing. Packed complete with a 16W 2D lamp.



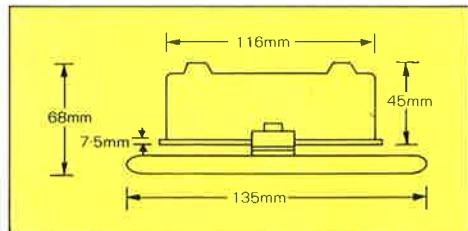
## RANGE

Catalogue no.	Description	Lamp Watts	Weight (kg)
2D XJ16	Ceiling fitting	16	3.6

## Thorn 2D Quarto range

### Basic 2D batten

A slim square form in all metal construction with a white finished faceplate. The batten can be adapted for use with other manufacturer's shade accessories as well as other items in the Quarto range. Packed complete with a 16W 2D lamp.

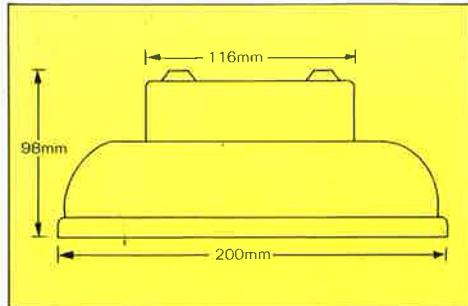


### RANGE

Catalogue no.	Description	Lamp Watts	Weight (kg)
2D Q16	Wall/Ceiling batten	16	0.7

### Ceiling fitting

A metal gearbox with a white plastic shade and diffuser. Packed complete with a 16W 2D lamp. Can be ceiling or wall mounted.



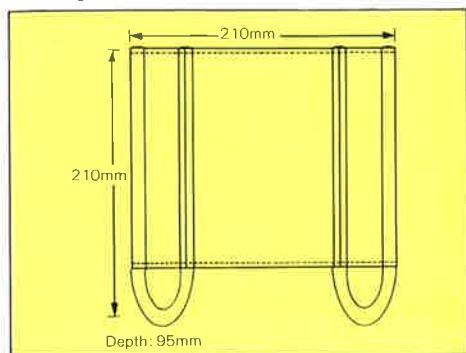
### RANGE

Catalogue no.	Description	Lamp Watts	Weight (kg)
2D QR16W	Ceiling fitting—White reflector	16	0.9
2D QR16R	Ceiling fitting—Red reflector	16	0.9

## Wall fitting

A Modern interpretation of the traditional wall bracket. A metal gearbox and frame with an easily fitted and removable fabric shade. Packed complete with a 16W 2D Lamp.

The shade can easily be exchanged for fabric exactly matching the interior decor.

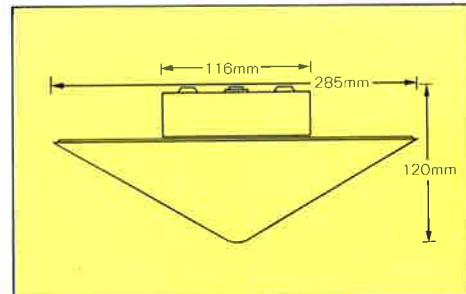


## RANGE

Catalogue no.	Description	Lamp Watts	Weight (kg)
2D QB16F	Wall fitting	16	0.95

## Pyramid fitting

A new shape with profiled diffusers complete with a metal gearbox and packed with a 16W 2D lamp.



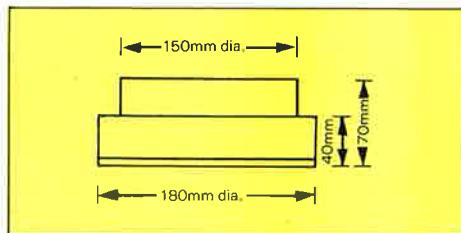
## RANGE

Catalogue no.	Description	Lamps Watts	Weight (kg)
2D OP16F	Wall/Ceiling fitting - Fabric shade	16	0.8
2D OP16P	Wall/Ceiling fitting - Plastic shade	16	0.8

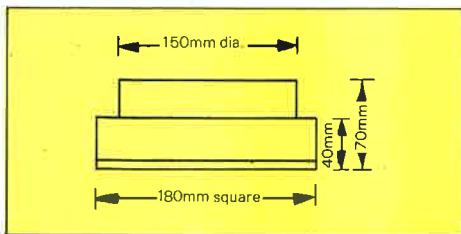
## Thorn 2D fittings

### Rondo fittings

Spill ring fittings allowing light to reflect on the ceiling surface. Metal construction in a brown enamel finish and available in circular or square form, both with prismatic or opal plastic attachments. Packed complete with a 16W 2D Lamp.



2D RC16P



2D RS16P

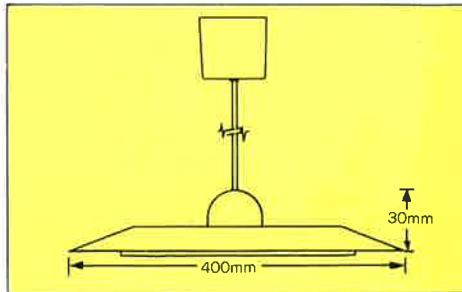
### RANGE

Catalogue no.	Description	Lamp Watts	Weight (kg)
2D RC16P	Circular fitting/Prismatic	16	1.1
2D RS16P	Square fitting/Prismatic	16	1.3

## Pendant fittings

The gear is contained in the ceiling rose and the unit comes complete with one metre of cable, lampholder and 16W 2D lamp.

The shade available is a very slim design that would only be achieved with the 2D lamp.

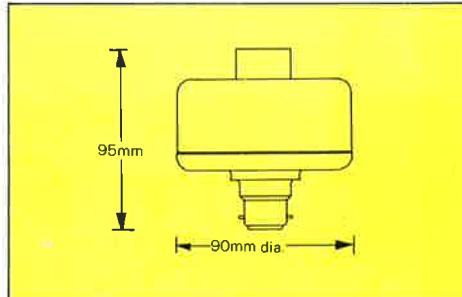


## RANGE

Catalogue no.	Description	Lamp Watts	Weight (kg)
2D P16	Pendant	16	0.6
2D PD16O	Pendant with shade (beige)	—	0.2

## Adaptor

The adaptor allows immediate conversion of existing BC sockets to 2D. It is plugged into the existing lampholder socket and can then accept the 2D lamp. Packed complete with a 16W 2D lamp.



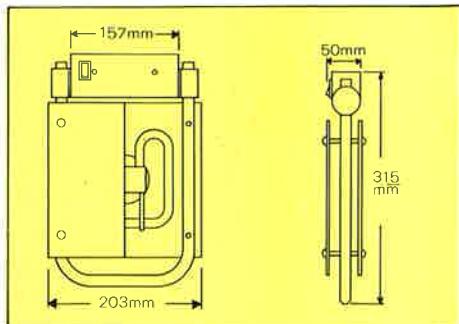
## RANGE

Catalogue no.	Description	Lamp Watts	Weight (kg)
2D A16	Adaptor	16	0.5

## Thorn 2D fittings

### Pivot

A novel design for wall or undershelf mounting where the inconspicuous light source can be varied at will by hingeing the fitting complete with on/off switch. Packed with a 16W 2D lamp.



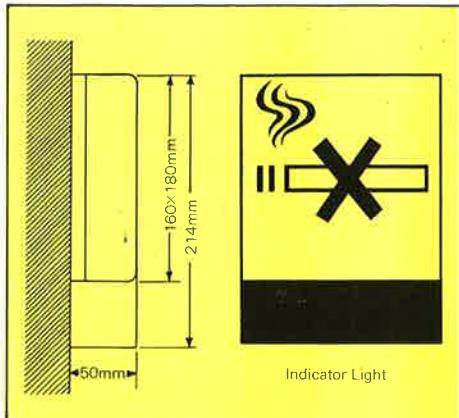
2D PV16

### RANGE

Catalogue no.	Description	Lamp Watts	Weight (kg)
2D PV16	Pivot fitting	16	1.7

### Domino

A slim commercial fitting with a depth of only 50mm making it very suitable for tight locations. Pairs of fittings can be fixed together with a joining plate to form a twin design. It can also be used as an indicator by attaching transfers. Packed complete with a 16W 2D lamp.



2D DO16

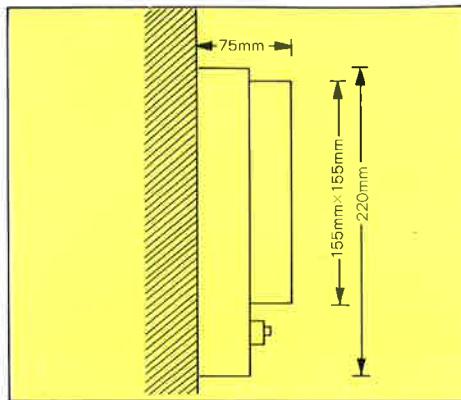
### RANGE

Catalogue no.	Description	Lamp Watts	Weight (kg)
2D DO16	Domino fitting	16	1.4
2D DOJ	Joining plate	—	0.1

## Outdoor fitting—Porch light

A rain-proof fitting in black enamelled metal, suitable for general outdoor use and packed complete with 16W 2D lamp. Rated IP23 (rainproof).

The fitting comes complete with an illuminated bell push.

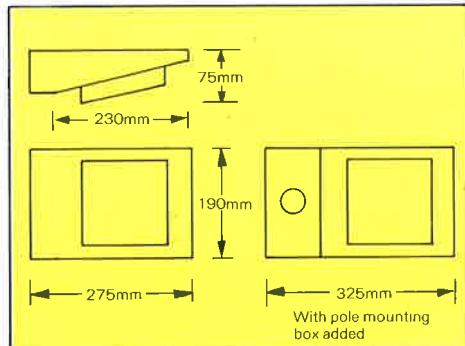


## RANGE

Catalogue no.	Description	Lamp Watts	Weight (kg)
2D OP16	Outdoor fitting	16	1.8

## Outdoor fitting—Wedge

An outdoor amenity fitting suitable for wall or pole mounting (pole not supplied). Packed complete with a 16W 2D lamp. A twin version of the pole mounted version can be made available to special order. Rated IP23 (rainproof).



## RANGE

Catalogue no.	Description	Lamp Watts	Weight (kg)
2D OW16	Wedge/Wall mounting	16	2.5
2D OWP	Pole mounting adaptor	—	0.5

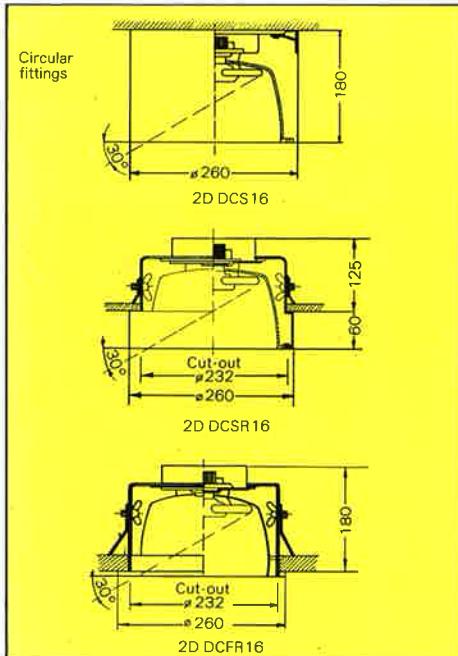
## Thorn 2D Fittings



2D DSFR16

### Downlights

Downlights that operate effectively with a 16W lamp are a practical reality with this range of fittings. All packed complete with a 16W 2D lamp. The range includes square and circular types for recessing and surface mounting.



All dimensions in mm

### RANGE

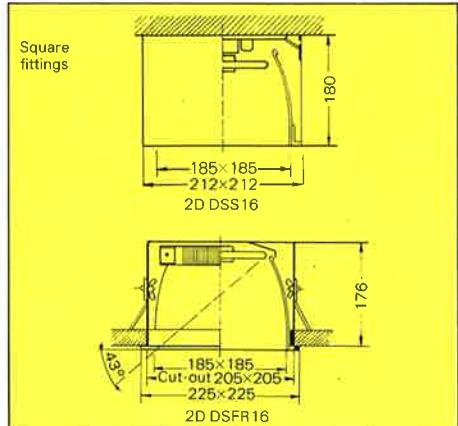
Catalogue No.	Description	Lamp Watts	Weight (kg)
2D DSS16	'Square' Surface-mounted fitting	16	1.6
2D DSFR16	'Square' Fully-recessed fitting	16	1.4
2D DCS16	'Circular' Surface-mounted fitting	16	1.6
2D DCSR16	'Circular' Semi-recessed fitting	16	1.5
2D DCFR16	'Circular' Fully-recessed fitting	16	1.4



2D DCFR16



2D DCSR16



## Incandescent fittings

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**Health and Safety at work.**  
Refer to note on page seven.

## Master-spot range



TCSD 40W



TCSD 100W



TCTD 40B



TCTD 100B

### 40W Crown Silver Reflector Spotlight

Packed complete with 40W SES Crown Silvered lamp.

#### Fittings

Catalogue no.	Cap	Watts	Fixing	Finish
TCSD 40B	SES	40	Surface	Black
TCSD 40W	SES	40	Surface	White
TCTD 40B	SES	40	Mastertrack	Black
TCTD 40W	SES	40	Mastertrack	White

#### Lamp

Watts	Description	Voltages
40	Crown Silvered (LS 45; Lemon shaped)	240/250

### 100W Crown Silver Reflector Spotlight

Packed complete with 100W ES Crown silvered lamp.

#### Fittings

Catalogue no.	Watts	Fixing	Finish
TCSD 100B	100	Surface	Black
TCSD 100W	100	Surface	White
TCTD 100B	100	Mastertrack	Black
TCTD 100W	100	Mastertrack	White

#### Lamp

Watts	Description	Voltages
100	Crown silvered	240/250



**TCSB 100W**



**TCSG 150W**



**TCTB 100B**  
**100W GLS Reflector Spotlight**  
 100W GLS Reflector Spotlight complete with Pearl Lamp.



**TCTG 150B**  
**150W PAR 38 Spotlight**  
 An all purpose spotlight for 100/150W reflector lamps or GLS lamps with auxiliary reflectors. (Cat. No. TPA 100 or TPA 150). ES cap and packed c/w 150W PAR 38 spot lamp.

**Fittings**

Catalogue no.	Cap	Watts	Fixing	Finish
TCSB 100B	ES	100	Surface	Black
TCSB 100W	ES	100	Surface	White
TCTB 100B	ES	100	Mastertrack	Black
TCTB 100W	ES	100	Mastertrack	White

**Lamps**

Watts	Description	Voltages
100	GLS, ES cap	110, 240/250

Catalogue no.	Watts (max.)	Fixing	Finish
TCSG 150B	150	Surface	Black
TCSG 150W	150	Surface	White
TCTG 150B	150	Mastertrack	Black
TCTG 150W	150	Mastertrack	White

**Auxiliary Reflectors**

Catalogue no.	Loop Watts	Length (mm)	Diameter (mm)	Weight (kg)
TPA 100	100	83	108	0.028
TPA 150	150	96	127	0.056

**Lamps**

This fitting accepts the full range of Thorn Decorspot 64, 80, 95 and 125 lamps plus PAR 38 (excluding 150W Cool-ray). Additionally up to 150W GLS lamps may be used, and 100W Cool-ray.

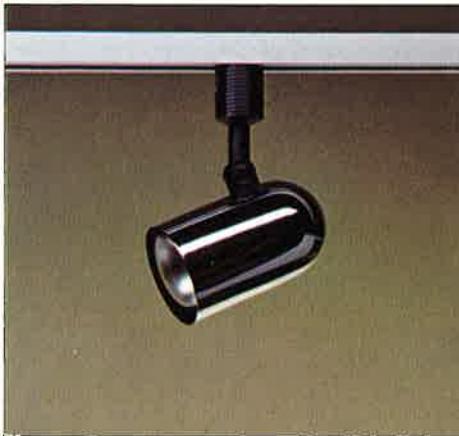
## Master-spot range



TCSE 60W



TCSE 150W



TCTE 60P



TCTE 150P

### 60W and 150W Bullnose Spotlights

**60W:** Available in a variety of finishes (see table) and packed complete with a 60W diffuse front Decorspot 64 lamp.

**150W:** Available in a variety of finishes (see table) and packed complete with a 150W PAR 38 Spotlamp (not suitable for Cool-ray lamps). This fitting will also accept 70W SON-R lamps (with remote control gear).

### Fittings

Catalogue no.	Watts (max.)	Fixing	Finish
TCSE 60B	60	Surface	Black
TCSE 60BR	60	Surface	Brass
TCSE 60P	60	Surface	Polished
TCSE 60W	60	Surface	White
TCTE 60B	60	Mastertrack	Black
TCTE 60BR	60	Mastertrack	Brass
TCTE 60P	60	Mastertrack	Polished
TCTE 60W	60	Mastertrack	White
TCSE 150B	150	Surface	Black
TCSE 150BR	150	Surface	Brass
TCSE 150P	150	Surface	Polished
TCSE 150W	150	Surface	White
TCTE 150B	150	Mastertrack	Black
TCTE 150BR	150	Mastertrack	Brass
TCTE 150P	150	Mastertrack	Polished
TCTE 150W	150	Mastertrack	White



TCSP 60W



TCSP 150W



TCTP 60P



TCTP 150P

#### 60W and 150W Spherical Spotlights

**60W:** Available in a variety of finishes (see table) and packed complete with a 60W diffuse front Decorspot 64 lamp.

**150W:** Available in a variety of finishes (see table) and packed complete with a 150W PAR 38 Spotlamp (not suitable for Cool-ray lamps). This fitting will also accept 70W SON-R lamps (with remote control gear).

#### Fittings

Catalogue no.	Watts (max.)	Fixing	Finish
TCSP 60B	60	Surface	Black
TCSP 60BR	60	Surface	Brass
TCTP 60P	60	Surface	Polished
TCSP 60W	60	Surface	White
TCTP 60B	60	Mastertrack	Black
TCTP 60BR	60	Mastertrack	Brass
TCTP 60P	60	Mastertrack	Polished
TCTP 60W	60	Mastertrack	White
TCSP 150B	150	Surface	Black
TCSP 150BR	150	Surface	Brass
TCTP 150P	150	Surface	Polished
TCSP 150W	150	Surface	White
TCTP 150B	150	Mastertrack	Black
TCTP 150BR	150	Mastertrack	Brass
TCTP 150P	150	Mastertrack	Polished
TCTP 150W	150	Mastertrack	White

## Master-spot range



TCSA 60W



TSPP 150W



TCTA 60B



TCTPP 150B

### 60W Decorspot 64 Spotlight

Supplied complete with a 60W diffuse front Decorspot 64 lamp.

### 150W Pendant sphere

For all 150W PAR 38 spotlamps except Cool-ray. Surface mounted version, cable terminates as flying leads; both types are packed complete with a PAR 38 Spot-lamp.

#### Fittings

Catalogue no.	Cap	Watts	Fixing	Finish
TCSA 60B	ES	60	Surface	Black
TCSA 60W	ES	60	Surface	White
TCTA 60B	ES	60	Mastertrack	Black
TCTA 60W	ES	60	Mastertrack	White

#### Fittings

Catalogue no.	Watts (max.)	Fixing	Finish
TSPP 150P MK 2	150	Surface	Polished
TSPP 150W MK 2	150	Surface	White
TSPP 150B MK 2	150	Surface	Black
TSPP 150BR MK 2	150	Surface	Brass
TCTPP 150P	150	Mastertrack	Polished
TCTPP 150W	150	Mastertrack	White
TCTPP 150B	150	Mastertrack	Black
TCTPP 150BR	150	Mastertrack	Brass

## ▲ Master-spot range



TCSIF 150B



TCSIF 300B



TCTIF 150B



TCTIF 300B

### 150W Tungsten Halogen Indoor flood

Clear linear tungsten halogen lamp mounted in a black stove-enamelled die-cast aluminium housing with a glass front. Supplied complete with a K12 150W lamp.

### 300W Tungsten Halogen Indoor flood

Clear Linear tungsten halogen lamp mounted in a black stove-enamelled die-cast aluminium housing. Can be used with barn door for maximum control, hood for general cut-off, or louvre for concealed lighting. A wire guard is available for bare lamp applications if required. Supplied c/w K11 200W lamp. (See overleaf for attachments).

#### Fittings

Catalogue no.	Watts (max.)	Fixing	Finish	Max. Wt. (Kg)
TCSIF 150B	150 (K12)	Surface	Black	0.45
TCTIF 150B	150 (K12)	Mastertrack	Black	0.45

#### Fittings

Catalogue no.	Watts (max.)	Fixing	Finish	Max. Wt. (Kg)
TCSIF 300B	300 (K9)	Surface	Black	0.90
TCTIF 300B	300 (K9)	Mastertrack	Black	0.90

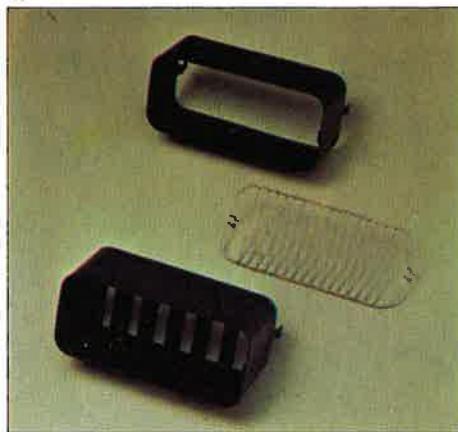
## Master-spot range



TCIFB



TCFB/B with TCTA 60 B



TCIFH TCIFL TCIGD

### Optional attachments for 300W Indoor Flood

Catalogue no.	Description	Max. Wt. (Kg)
TCIFB	Barn Door	0.30
TCIFH	Hood	0.10
TCIFL	Louvre	0.15
TCIGD	Wire guard	0.10



TCFB/W

### Free Standing Base

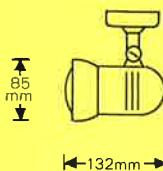
A kit comprising a base for free mounting of spotlight on floor or platform displays complete with insulating cover for the spotlight base and cable grommet.

### Range

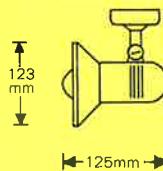
Catalogue no.	Description
TCFB/B	Base kit black
TCFB/W	Base kit white

**Dimensioned Line Drawings for Fittings in the Masterspot Range**

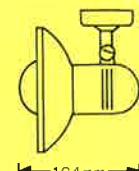
TCSA 60



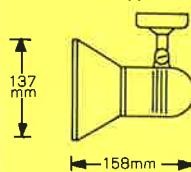
TCSD 40



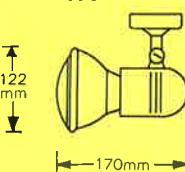
TCSD 100



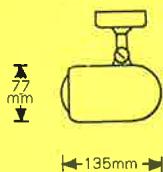
TCSB 100



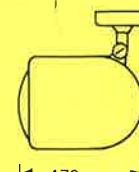
TCSG 150



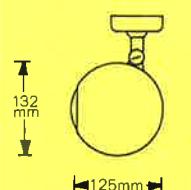
TCSE 60



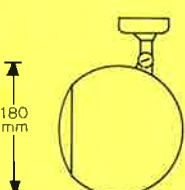
TCSE 150



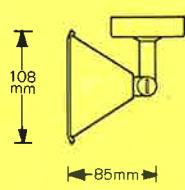
TCSP 60



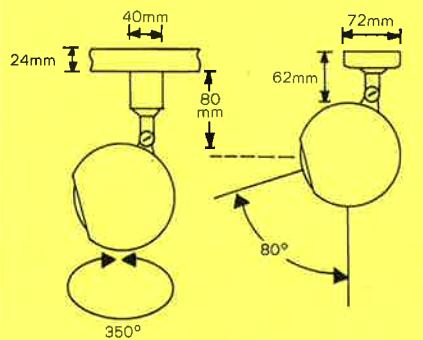
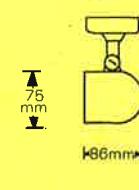
TCSP 150



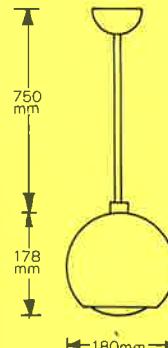
TCSIF 150



TCSIF 300



TSPP 150

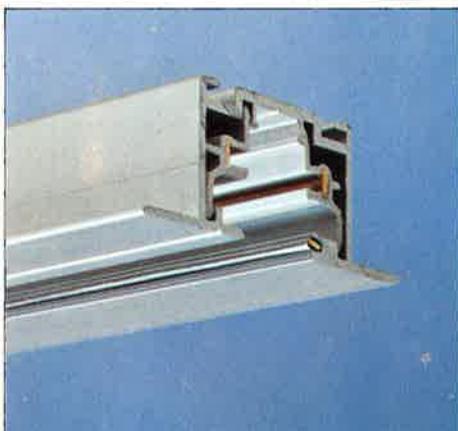


Degree of swivel: all types

## Master-track range



TKL 2400



TKLC 4500

A versatile, speedily erected single line track system housed in a high quality anodised aluminium extrusion. The 16 amps rated track may be conduit mounted, screwed directly to any mounting surface in any plane or mounted on a small clip designed for use on uneven surfaces.

The track is offered in 'starter packs' consisting of a length of track c/w with mains connector and end cap. Starter packs are available in 1.2 metres, 2.4 metres and 3.6 metres lengths. Additionally extension lengths are available separately in the same lengths for the longer scheme. Track may be obtained from stock in 4.5 metres lengths both surface mounted and in a flanged section for incorporation into a suspended ceiling.

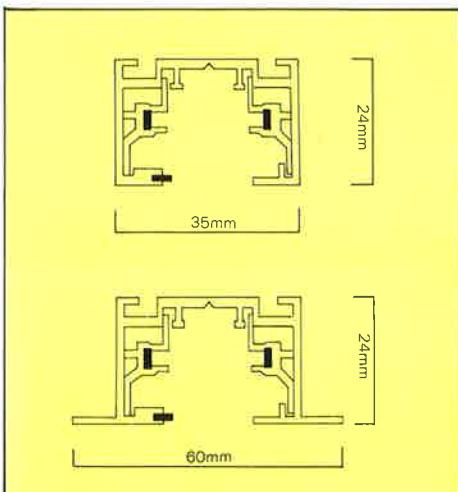
The fittings and components adaptor snaps quickly and positively into the track with a simple quarter turn—featured in the new Master spot display range which complements the track, the adaptor is available as a separate item either fused (5 amps) or unfused for those many applications for which track is so useful. e.g. power take off for cash registers, office equipment etc. Note the versatility of the connectors. All supplied pre-wired, all have ample loop-in/loop-out facilities, and may be simply rewired to permit separate supplies to be connected to *each* length of track. Master track supplies the no-nonsense approach of a single track system with a flexibility and adaptability approaching a multi-track system.

### Construction

Track: PVC extrusion with rolled copper conductors housed in an anodised aluminium extrusion containing the separate earth strip.

Components: High impact injection moulded plastic colour grey except adaptors, colour black.

A fully descriptive installers' guide is available without charge from any Sales branch. Ask for TK8050—Specification and Instruction Manual.



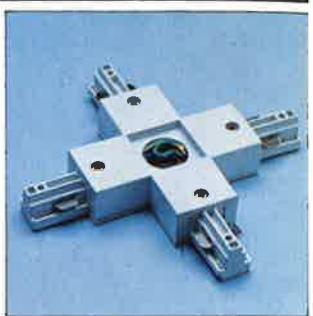
## Master-track range



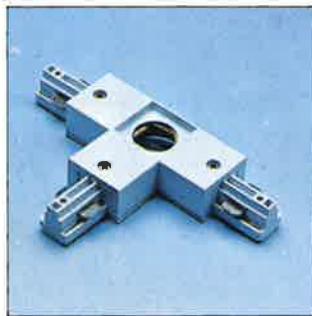
TK 8009



TK 8000/1



TK 8008



TK 8006/7



TK 8004/5



TK 8003

### RANGE

#### Track Lengths

Catalogue No.	Description
TKL1200	1.2m Starter Track
TKL2400	2.4m Starter Track
TKL3600	3.6m Starter Track
TKLE1200	1.2m Extension Track
TKLE2400	2.4m Extension Track
TKLE3600	3.6m Extension Track
TKLL4500	4.5m Extension Track
TKLC4500	4.5m Flanged Track

Note: Starter tracks are complete with mains connector and end cap.

#### Components

Catalogue No.	Description
TK8000	Connector Mains LH
TK8001	Connector Mains RH
TK8002	Coupler (Non-Modular)
TK8003	Coupler, Modular Straight
TK8004	Coupler, Modular 'L' Outside Earth
TK8005	Coupler, Modular 'L' Inside Earth
TK8006	Coupler, Modular 'T' LH Earth
TK8007	Coupler, Modular 'T' RH Earth
TK8008	Coupler, Modular '4'
TK8009	End Cap
TK8015B	Adaptor, Black
TK8016B	Adaptor, Fused 5 amps, Black
TK8017	Fluorescent Mounting Kit
TK8020	Track Mounting Clip
TK8025	Track Cover Strip 1m, grey
TK8026	Connector, Outlet, Cover Plate
TK8027	Flanged Trim, Mains Connector
TK8028	Flanged Trim, Modular Straight Coupler
TK8029	Flanged Trim, End Cap
TK8030	Display Hook
TK8031	Conduit Mount, Mains Connector and End Cap
TK8032	Conduit Mount, Straight Coupler and Intermediate Fixing
TK8033	Conduit Mount '4'
TK8034	Conduit Mount 'L'
TK8035	Conduit Mount 'T'
TK8050	Specification and Instruction Manual

## Mini Spot-on range ▲



TSM 60W



TSM 360B



TSMC 60B

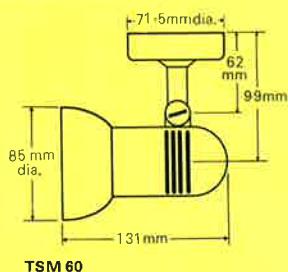


TSML 60W

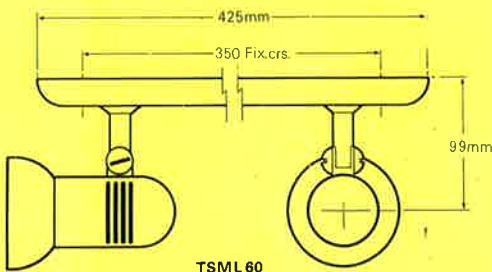


TSM 60B + TSMR

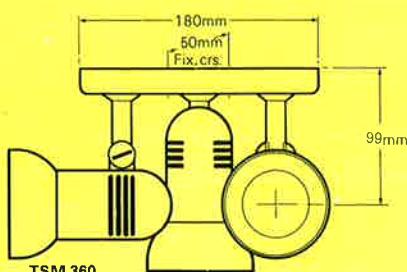
## ▲ Mini Spot-on range



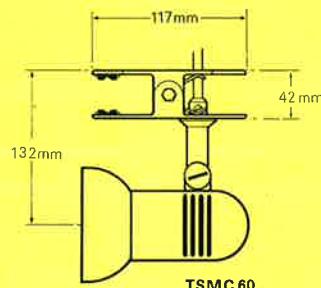
TSM 60



TSML 60



TSM 360



TSMC 60

### RANGE

Catalogue No.	Cap	Watts (max.)	Fixing	Description
TSM 60B	ES	60	Surface	Black Surface Spot
TSM 60W	ES	60	Surface	White Surface Spot
TSMC 60B	ES	60	Clamp	Black Clamp Spot
TSMC 60W	ES	60	Clamp	White Clamp Spot
TSML 60B	ES	60	Surface	Black Twin Lightbar
TSML 60W	ES	60	Surface	White Twin Lightbar
TSM 360B	ES	60	Ceiling	Black Ceiling Light
TSM 360W	ES	60	Ceiling	White Ceiling Light

### Accessories

Catalogue No.	Description	Finish
TSMR	Cowl for 60W max. lamp	Polished Aluminium

## Spot-on spotlights



TSRN 100 + TRCS



TCRN 100

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 spotlight, ceiling light, floor light, cable light and lightbars.

**Fittings** Packed complete with 60W clear Decor '80' Spot lamp(s)

Catalogue no.	Cap	Walls (max.)	Fixing	Description/finish	Weight kg
TSRN 100	ES	100	Surface	White spotlight	0.35
TCRN 100	ES	3x100	Ceiling	White ceiling light	0.91
TDRN 100	ES	100	Table	White table light	3.63
TFRN 100	ES	2x100	Floor	White floor light	4.65
TPRN 100	ES	2x100	Surface	White twin Lightbar	1.00
TRRN 100	ES	3x100	Surface	White triple Lightbar	1.50

### Optional attachments

Catalogue no.	Description	Finish	Weight kg
TRCB	Cowl for max. 60W Decor Spot lamp	Brown	0.06
TRCS	Cowl for max. 60W Decor Spot lamp	Silver	0.06
TRCW	Cowl for max. 60W Decor Spot lamp	White	0.06
TRCLS	Cowl for max. 100W Interior Display reflector lamp and Decor Spot lamp	Silver	0.07



TDRN 100 + TRCW



TFRN 100 + TRCB

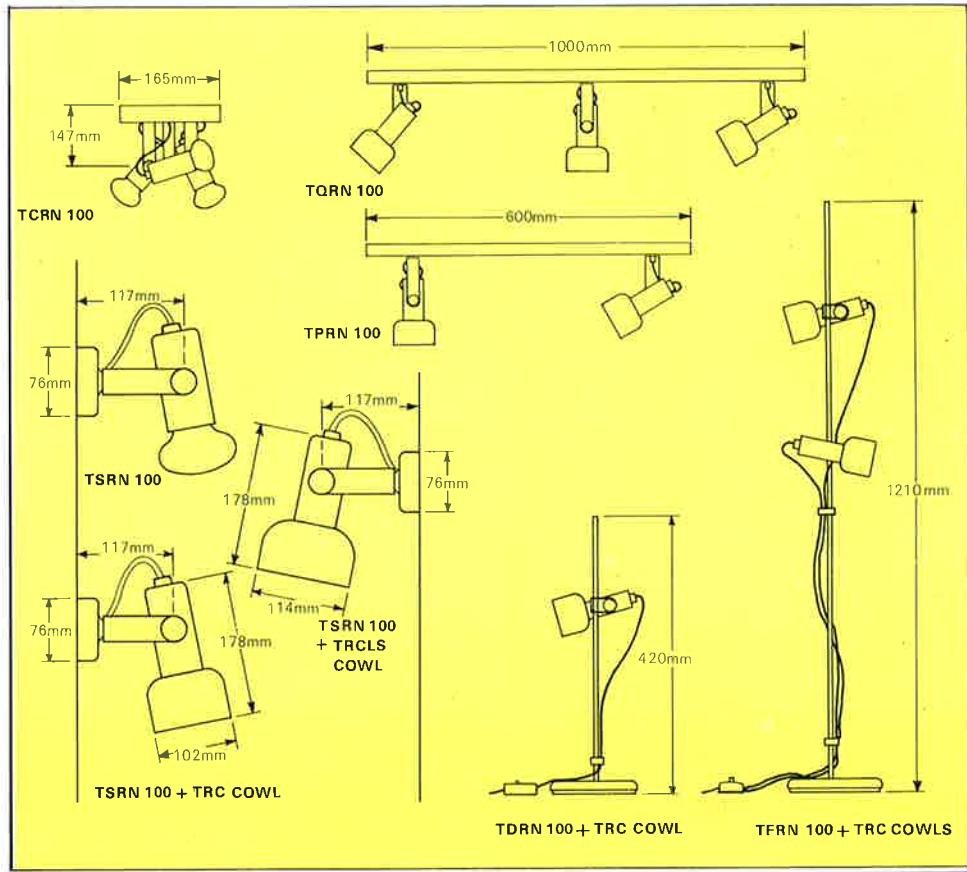
## ▲ Spot-on spotlights



TPRN 100



TQRN 100



## Nova range ▲



A range of white opal satin etched glasses for a shallow lever release gallery. Gallery and glass are required to be ordered separately. All types may be ceiling or wall mounted. All with BC lampholders.

Glassware Cat. No.	Gallery Cat. No.	Lamp Wattage	Max. dia. mm	Max. depth mm	Total Wt. kg.
NCG100	NSB100	100	203	119	1.24
NCG200	NSB2060	2×60	366	144	1.70



Glassware Cat. No.	Gallery Cat. No.	Lamp Wattage	Max. dia. mm	Max. depth mm	Total Wt. kg.
NFG100	NSB100	100	279	115	1.59
NFG200	NSB2060	2×60	387	141	2.49



Glassware Cat. No.	Gallery Cat. No.	Lamp Wattage	Max. dia. mm	Max. depth mm	Total Wt. kg.
NMG100	NSB100	100	302	145	1.59
NMG200	NSB2060	2×60	368	145	2.49



Glassware Cat. No.	Gallery Cat. No.	Lamp Wattage	Max. dia. mm	Max. depth mm	Total Wt. kg.
MRG1100	NSB100	100	244	137	1.47



A small screw neck heat resistant plastic gallery in two sizes with white opal glassware. BC cap only. Gallery and glassware must be ordered separately.

Glassware Cat. No.	Gallery Cat. No.	Lamp Wattage	Max. dia. mm	Max. depth mm	Total Wt. kg.
MTCG1060	MTCB1060	60	152	190	0.68
MTCG1100	MTCB1100	100	203	241	0.79

## ▲ Surface-mounted fittings/Oyster



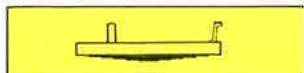
VSL 2060 A



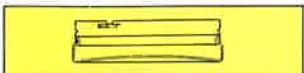
VSZ 2060 A



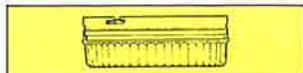
VSX 2060 B



Plastic louvre



Small satin etched opal glass bowl



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.

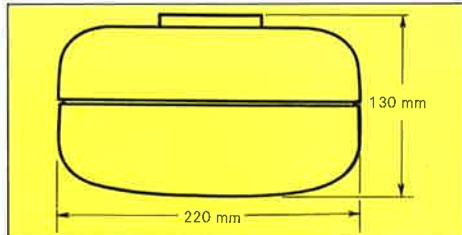
Catalogue no.	Watts	Finish
VS 2060 A	2x80	Natural anodized
VS 2060 B	2x80	Black painted

### RANGE

Description	Fitting catalogue no.	Attachment catalogue no.	Height mm	Diameter mm	Weight (ex lamps) kg
Plastic louvre	VSL 2060 A	VL 200	120	273	0.81
	VSL 2060 B	VL 200	120	273	0.81
Clear crystal glass dish	VSX 2060 A	VX 200	139	273	2.49
	VSX 2060 B	VX 200	139	273	2.49
Small satin etched opal glass bowl	VSZ 2060 A	VZ 200	120	273	1.47
	VSZ 2060 B	VZ 200	120	273	1.47



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, pre-wired porcelain lampholder with high temperature flying leads and a foam rubber watertight gasket for fixing at the rear of the fitting. Packed with 60W pearl BC lamp.

**Note:** For emergency lighting version see page 104.

Fitting complies with BS 4533-2.2 (IP23)

Max. Lamp rating 75W.

### RANGE

Catalogue no.	Description	Lamp watts	Weight kg
OOY 100	Wall/ceiling unit	75	0.88
OOY 4600	Spare gasket	—	—
OOYD	Spare diffuser	—	—

## Decorative Fittings

The following pages show a small selection from the Thorn range of decorative fittings made in their factories in the United Kingdom and Germany.

Using a wide variety of materials and finishes these fittings are suitable for applications ranging from hotels and restaurants to modern domestic settings. Well made and attractively designed there is a type to suit every taste and pocket.

The full range is shown in a separate publication available from your nearest Thorn Lighting office.





## Decorative Fittings



## Modern Glass ▲

## ▲ 150W Tungsten halogen fittings

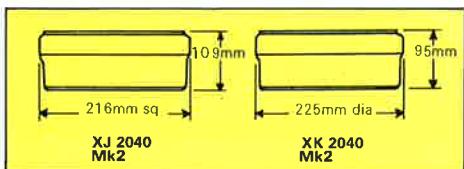


XJ 2040 Mk 2



XK 2040 Mk 2

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



### RANGE

Catalogue no.	Description	Watts	Weight [kg]
XJ 2040 MK 2	Square fitting	2×40	3.15
XK 2040 MK 2	Round fitting	2×40	2.25



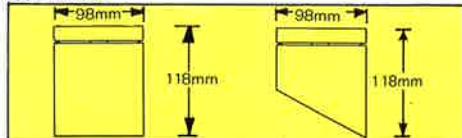
TDH 150

Surface mounted downlighter suitable for use in hotels, reception, and public amenity areas etc. Packed complete with the new 4000 hour life 150W K12 tungsten halogen lamp.



TWH 150

Wallwasher fitting similar in construction to the downlighter, but with offset lamp mounting and a different reflector. Particularly suitable for shop window applications, etc.



### RANGE

Catalogue no.	Description	Lamp	Weight [kg]
TDH 150	Tungsten-halogen Downlighter	150W K12	0.70
TWH 150	Tungsten-halogen Wallwasher	150W K12	0.65

## Recessed fittings ▲



VRY 100/VRY 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 no.	Cap	Watts
VR 100	BC	100 GLS
VR 100 ES	ES	80 Kolorlux
VR 200	ES	200 GLS/125 Kolorlux

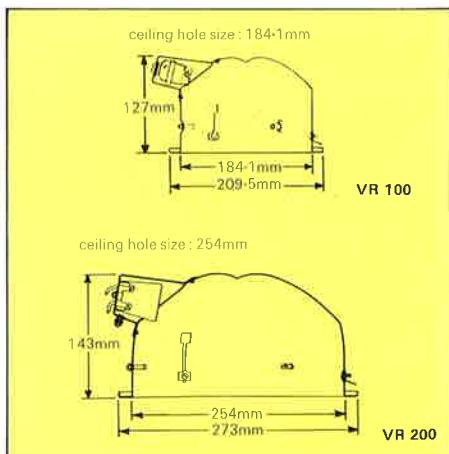
### Pin-hole attachment (100W only)

Two reflectors concentrate light through a very small aperture (70mm) to produce a wide angle beam. Spun aluminium construction, finished eggshell white. Not suitable for combustible ceilings.

### '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. Not suitable for combustible ceilings.

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	6	0.79
'O' lighter attachment†	VRO 200	VO 200	200	6	1.02
Plastic louvre†	VRL 100 VRL 200	VL 100 VL 200	100 200	20 20	0.45 0.57
Clear crystal glass dish	VRX 100 VRX 100 ES* VRX 200	VX 100 VX 100 VX 200	100 80 Kolorlux 200 GLS/125 Kolorlux	30 30 35	1.7 1.7 2.15
Large satin etched opal glass bowl	VRY 100 VRY 100 ES* VRY 200	VY 100 VY 100 VY 200	100 80 Kolorlux 200 GLS/125 Kolorlux	50 50 45	1.02 1.02 1.43
Small satin etched opal glass bowl	VRZ 100 VRZ 100 ES* VRZ 200	VZ 100 VZ 100 VZ 200	100 80 Kolorlux 200 GLS/125 Kolorlux	20 20 20	0.68 0.68 1.13

\*Available to special order only.

†Not available for use with Kolorlux lamp.



A new low cost downlight supplied complete as a single assembly. The pack also includes a Decor spot 95 100W ES spotlamp.

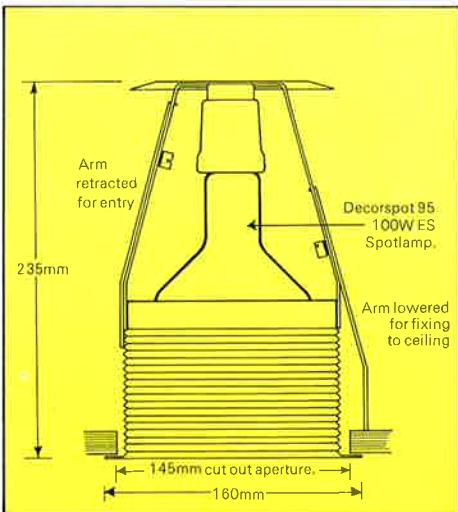
### Fully Recessed Fitting

The visible component is a black ceiling ring. The remainder of the fitting is offered into the circular aperture and secured by the two retractable locating arms. These provide a firm location in a wide variety of false ceilings up to 50mm thick.

The interior is semi matt with ribbed baffles. The lamp supplied is a 100W spotlamp, but all types of spotlamp up to 150W can be used, excepting 150W cool beam. The fitting is supplied with 450mm of trailing lead, and is Class 2, double insulated.

### RANGE

Cat. No.	Description	Weight kg
T150	Downlight fully recessed fitting c/w 100W ES Decorspot 95 lamp (240/250V)	0.5



# Darklight/Downlight cylinder and recessed fittings



## 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 semi-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.

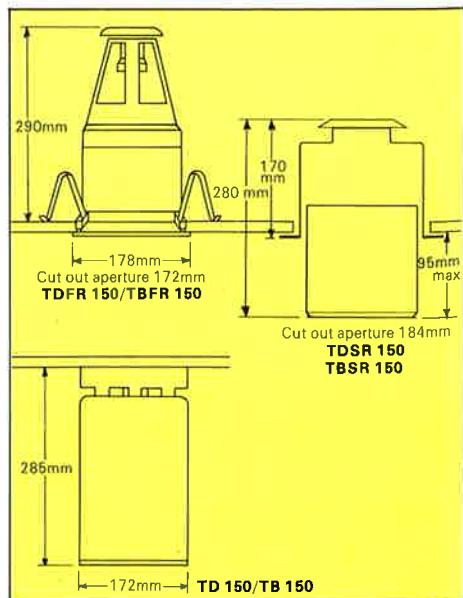
## RANGE

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	—
TOSP	Support plate set	—
TOHO	Hood	—
TDSR 150	Darklight semi-recessed fitting	1.5
TBSR 150	Downlight semi-recessed fitting	1.5
TOWW*	Downlight wallwasher attachment	—

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



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, TOFR 160	240/250
100	Interior Display Reflector	TB 150, TD 150, TBSR 150, TDSR 150	240/250
100	GLS with TPA 100	TBFR 150, TOFR 160	240/250

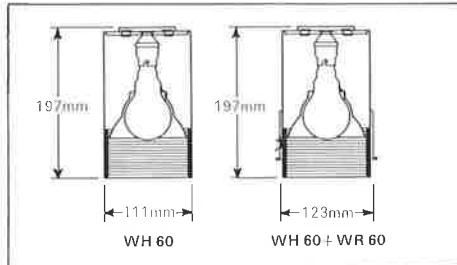




WH 60



WH 60 + WR 60

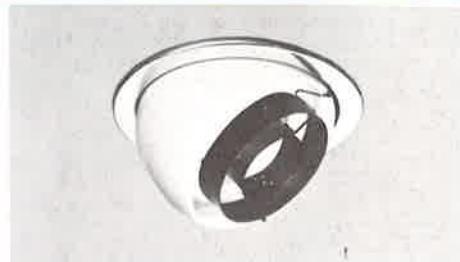


A surface mounted cylinder (WH 60) with brushed silver finish and integral baffles. Complete with 60W GLS lamp with clip-on auxiliary reflector (Cat. no. VA 100). Fitting can be recessed into the ceiling by using bezel ring (WR 60).

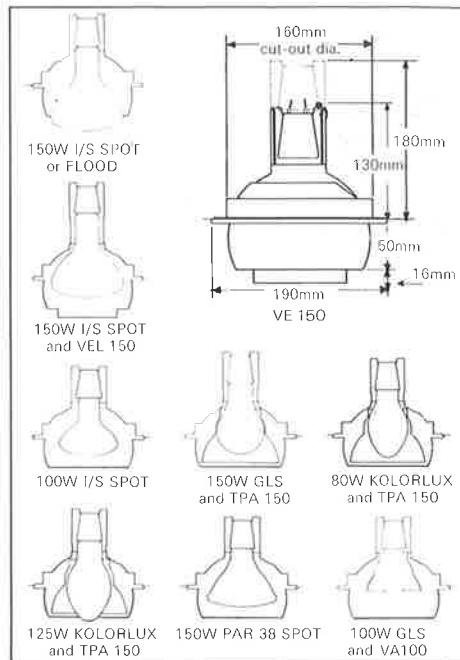
**Note:** 123mm dimension is size of cut-out required, not the fitting size.

## RANGE

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



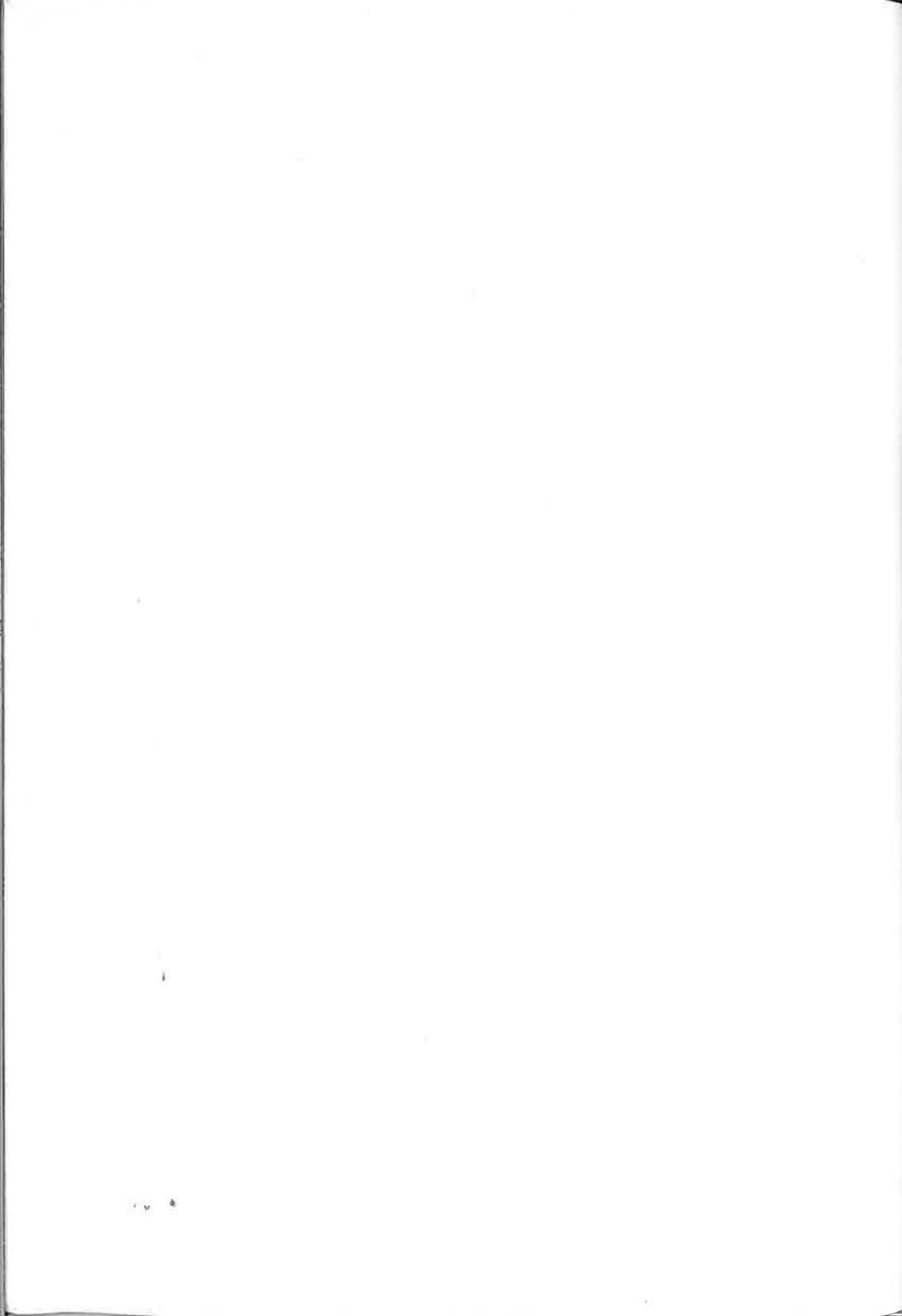
VE 150W + VEL 150



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	VA 100		0.028
150W auxiliary reflector	TPA 150		0.056



# Theatre and studio lighting

## Index

### Industrial, commercial and auditorium dimming

144

#### Health and Safety at work

Refer to note on page seven.



# Industrial, commercial and auditorium dimming

## J Series Unit Dimmers.

Wall mounted individual dimmers with a variety of remote control units. Very easy to install and service. Suitable to control both tungsten and fluorescent loads as depicted in the table below.

Type Number	Total Lamp or Tube Watts
JU 500	400W Fluorescent or 1000W Tungsten
JU* 2000	5000W Tungsten or 2000W Fluorescent

\*Insert A, B or C as shown in the Control Unit section and specify the required control unit eg. AZJ 1001. The above ratings assume a nominal 240V mains supply. At lower input voltages some reduction in maximum load may be necessary.

## Typical Fluorescent Loads (Maximum)

Tube Type	JU 500	JU 2000
1800mm 75W	14 Tubes	28 Tubes
1500mm 65W	16 Tubes	32 Tubes
1200mm 40W (including U-Tube)	24 Tubes	48 Tubes

## J Series Control Units

### Type

#### AZJ 1001 Hand Control

Rotary control knob for continuous adjustment between zero and maximum.

#### AZJ 1002 Raise/Hold/Lower

Two momentary action press switches initiate an automatic pre-timed fade from zero to maximum and vice versa. A third switch stops the fade action at any intermediate level. (Insert letter C in dimmer type code).

#### AZJ 1003 Raise/Preset/Hold/Lower

As above but with fourth switch which initiates a fade change to any pre-determined light level.

(Insert letter C in dimmer type code).

#### AZJ 1004 Raise/Preset 1/Preset 2/Lower

Initiates an automatic fade change to zero, maximum, or either of two pre-determined light levels.

(Insert letter B in dimmer type code).

#### AZJ 1006 Rotary hand controller

For use with JU 500 only. This dimmer cannot be used with other AZJ controls and is not available for automatic operation.

## Dimmable Fluorescent Fittings

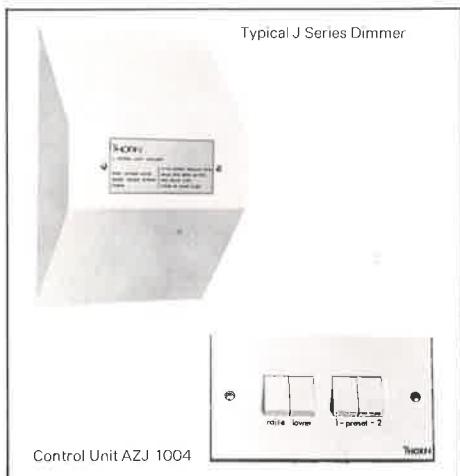
The dimming of fluorescent tubes requires the use of special control gear and the majority of Thorn fluorescent fittings can be supplied with this already incorporated. When ordering, the normal reference code must be followed by the letters/DIM.

It should be noted that in all cases wiring to the control gear must include both a direct and dimmer controlled mains feed.

## 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.



# Outdoor and street lighting

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**Health and Safety at work.**  
Refer to note on page seven.

### 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.

# Miniflood 150W PAR 38 floodlight ▲



ORB 1150

## Applications

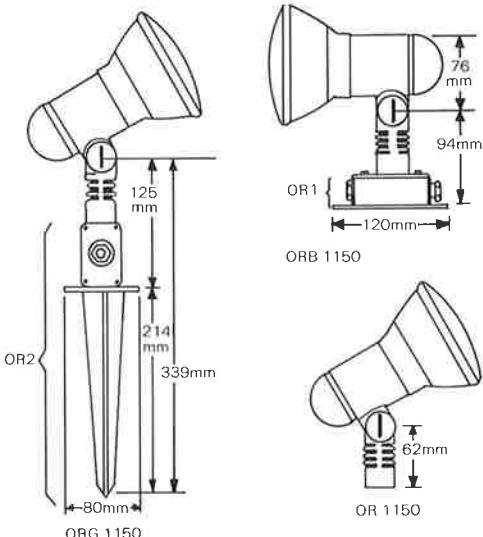
A compact, low cost, outdoor floodlight for achieving decorative effects in parks, gardens etc. or illuminating signs and other features where an inconspicuous floodlight is required.

## Description

Main body:	Injection moulded 30% glass filled black polyester.
Adaptor:	Injection moulded glass filled black nylon.
Mounting base/ wiring base:	OR1, Injection moulded glass filled black nylon.
Lampholder:	Porcelain E.S. Cat. no. GL 1131.
Mains terminal block:	2 way. Each terminal will accept a 1×2.5mm <sup>2</sup> cable. (Housed within the OR1 and OR2)
Wiring Entry*:	OR1†—via 2 M16 tapped holes. Each hole will accept cable 4.0mm to 7.00mm O/D. OR2 (Garden Spike)†—via 2 Pg 11 tapped holes. Each hole will accept cable up to 7.00mm O/D. *Note that the OR 1150 is supplied with 2, 1 metre flying leads.
Mounting:	ORB 1150—via 1 hole and 1 key hole slot, both suitable for 4mm diameter screws, situated on the base of OR1. OR 1150—Using a threaded length of 20mm conduit (maximum length 1 metre). Using the EKB Wall Bracket or the EKC Corner bracket. See Floodlighting Accessories section for further information.

## RANGE

Catalogue no.	Description	Weight kg
ORB 1150	Floodlight body c/w 2 single core high temperature cables each 1 metre in length	0.3
ORB 1150	Floodlight body c/w OR1 wiring box base and 150W PAR 38 lamp	0.7
ORG 1150	Floodlight body c/w OR2 garden spike and 150W PAR 38 lamp	0.73



Lamp to body sealing ring: ORS, Black Silicone rubber.

Lamp types:	PAR 38	150W	Spotlamp
	PAR 38	150W	Floodlamp
	PAR 38	150W	Coloray Spot (Blue, Green, Yellow, Red)
	PAR 38	100W	Spotlamp
	PAR 38	100W	Floodlamp
	PAR 38	100W	Lacquered (Blue, Green, Yellow, Red)

## Classification for protection

Against electric shock: Class II—double insulated (Earthing not required).

Against ingress of moisture or dust: IP 23, Rainproof. Complies with BS4533:2.2.

†Note that OR1 and OR2 are designed solely as spare items for ORB 1150 and ORG 1150. They are *not* to be used in the conversion of the OR 1150 to one of the other versions. Mounting of the OR 1150 should be via conduit only.

# ▲ Sunflood 200/1000W tungsten halogen floodlights



SUN 500 MK 12

## Applications

A low cost area floodlight for Car parks, forecourts, security, gardens, patios, work areas, display etc.

## Description

### Main body:

Pressure die-cast LM6 aluminium alloy finished in semi matt black heat resisting paint. All external screws/bolts are stainless steel.

### Reflector:

Hammer finish, chemically brightened and anodized aluminium.

### Lampholder:

GL 1208, Single fine silver tipped plated copper contact with high temperature coil spring and ceramic body.

### Wiring box:

Injection moulded black glass-filled polycarbonate. Houses 2 way terminal block. GT 1393/2 each terminal being suitable for 2.5mm<sup>2</sup> cable.

### Wiring entry:

Via a 20mm threaded hole situated at the base of the wiring box.

### Mounting:

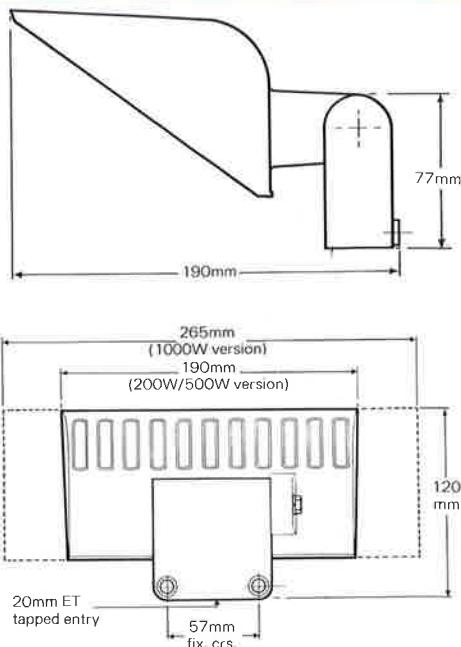
Using conduit screwed into the wiring box, using 2 screws through the holes provided in the wiring box or any of the other recognised methods. See Floodlighting Accessories section for further information.

### Lamp types:

Linear tungsten halogen 200W to 1000W with R7s caps.

SUN 500: 200, 300, 500W

SUN 1000: 750, 1000W



## Classification for protection

Against electric shock: Class 1 earthed metalwork.

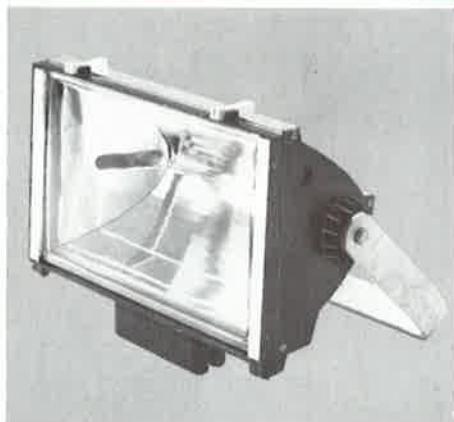
Against ingress of moisture or dust: IP 23, Rainproof.

Complies with BS4533:2.5.

## RANGE (Lamps supplied with fittings)

Catalogue no.	Description	Weight kg	Projected area m <sup>2</sup>	Lamp type
SUN 200	Sunflood fitting packed with 240V 200W lamp	0.68	0.015	K11
SUN 500	Sunflood fitting packed with 240V 500W lamp	0.68	0.015	K1
SUN 1000	Sunflood fitting packed with 240V 1000W lamp	0.85	0.02	K10

# Haline 1500/2000W tungsten halogen floodlights ▲



OHS 1500

## Applications

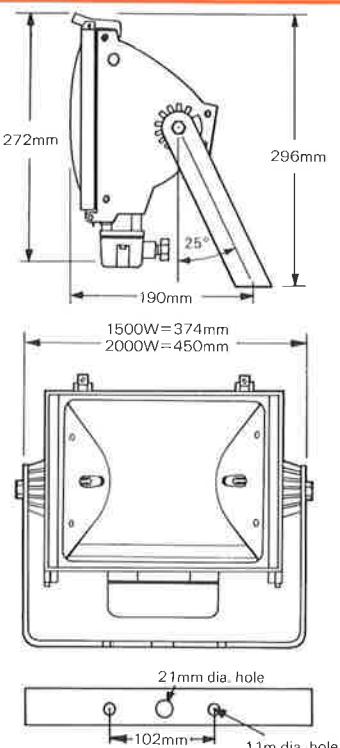
Area Lighting, buildings, sport, security or any area where wide horizontal beam spread and accurate vertical beam control are required.

## 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; enclose fitting and carry lampholders. Exterior finish semi matt black.
Cool wiring box:	Base; black thermoset plastic; Cover flame retardent glass filled nylon with moulded cable gland suitable for 9-11mm O/D cable. Gasket: Nitrile rubber.
Front frame and glass:	Hinged and secured by screw catches, with stainless steel screws. IP rating maintained provided by silicone rubber gaskets between glass and frame and between frame and body. Glass: borosilicate. Glazing trim in anodized aluminium.
Lampholder contacts:	Solid fine silver. Replacement lampholder kit, OHA 4620.
Mounting:	25° cranked stirrup is standard permitting floor, wall or pendant mounting and adjustment in 2 planes. See Floodlighting Accessories section for further information.
Lamp types:	Linear tungsten halogen: 1500W to 2000W with R7s caps.

## RANGE (Lamps ordered separately)

Catalogue no.	Description	Weight kg	Projected area m <sup>2</sup>	Lamp type
OHS 1500	1500W Fitting c/w specular reflector	4.7	0.08	K5
OHD 1500	1500W Fitting c/w diffuse reflector	4.7	0.08	K5
OHS 2000	2000W Fitting c/w specular reflector	4.9	0.09	K8
OHD 2000	2000W Fitting c/w diffuse reflector	4.9	0.09	K8



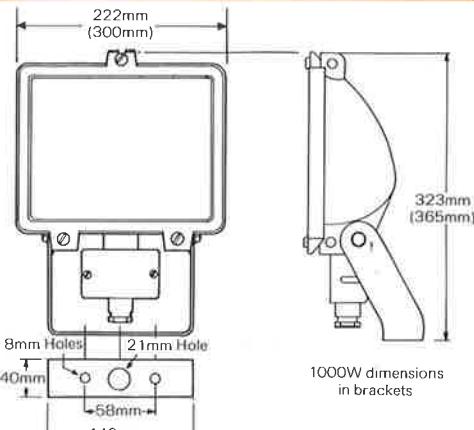
## Classification for protection

Against electric shock: Class I—earthing metalwork.  
Against ingress of moisture: IP34, splashproof.  
Complies with BS4533:2.5.

# ▲ Haline 500/1000W tungsten halogen floodlights



ODW 500



1000W dimensions in brackets

## Applications

Area lighting for sports halls, security applications, building sites, car parks, advertising hoardings, etc.

## Description

### Main body:

Pressure die-cast LM6 aluminium alloy finished in semi matt black heat resisting paint. All external screws/bolts are stainless steel.

### Reflector:

Hammer finish, chemically brightened and anodized aluminium.

### Lampholder:

GL 1208. Single fine silver tipped plated copper contact with high temperature coil spring and ceramic body.

### Wiring box base/cover:

Injection moulded black polyester PBT. Houses 3 way terminal block. GT 1393/3 each terminal being suitable for 2.5mm<sup>2</sup> cable.

### Wiring box gasket:

Closed cell sponge. Front frame and glass: Pressure die-cast LM6 aluminium alloy finished in semi matt black heat resisting paint hinged and secured by swivel bolts. Weather proofing provided by a silicone rubber gasket between main body and toughened soda lime front glass.

### Wiring entry:

Via a moulded cable gland suitable for 8-12mm O/D cable.

### Mounting:

At any angle (bearing in mind the lamp type used) via the semi matt black, painted stirrup or the stirrup used together with one of the standard mounting accessories. See Floodlighting Accessories section for further information.

Lamp types: \* Linear tungsten halogen 200W to 1000W with R7s caps.  
ODW 500: 200, 300, 500W.  
ODW 1000: 750, 1000W.

## Classification for protection

Against electric shock: Class 1 earthed metalwork.

Against ingress of moisture or dust: IP 54 Dustproof and Splashproof. Complies with BS4533:2.5.

\*The ODW 1000 is unsuitable for use with 250W SON-TD lamps. For details of luminaires suitable for SON-TD lamps refer to page 151.

## RANGE (Lamps supplied with fittings)

Catalogue no.	Description	Weight kg	Projected area m <sup>2</sup>	Lamp type
ODW 500	'Haline 5' fitting packed with a 240V 500W lamp	2.1	0.048	K1
ODW 1000	'Haline 10' fitting packed with a 240V 1000W lamp	3.1	0.079	K10

# Sunspot 300/500W tungsten halogen floodlight



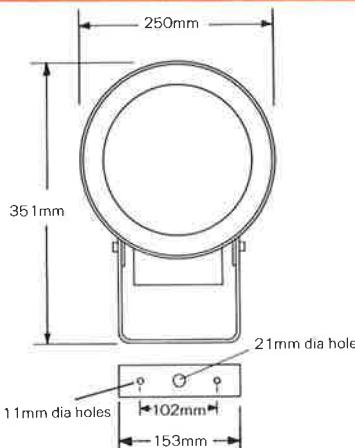
OSC 500

## Applications

A versatile, enclosed tungsten halogen splashproof outdoor floodlight, having a high intensity narrow beam performance which is particularly suited to highlighting features, at any of the following:— decorative areas, buildings, parks, sporting venues, churches etc. A special filter holder attachment is also available to special order for use with this fitting which together with coloured filters (not supplied) can further enhance the atmosphere at a particular location.

## Description

Body:	Aluminium, LM6 pressure die-casting, finished with semi-matt black heat resistant paint.
Reflector:	Mirror polished, anodized super pure Aluminium.
Glass ring casting/ front glass:	Aluminium LM6 ring attached to body with stainless steel screws and hinge pin; ring retains toughened borosilicate front glass.
Cool wiring box:	Black thermoset plastic base and flame retardant glass filled nylon cover with 3 way nylon terminal block (for 2.5mm <sup>2</sup> cables) and cable clamp.
Lamp-holder: Self-actuating bi-metallic heat-sink:	Catalogue Number GL 1177. Permits easy insertion and removal of lamp when cool and during lamp operation automatically clamps to lamp. British Patent Application No. 9887-74.
Mounting:	Via the stirrup which is zinc plated and finished in semi matt black paint or the stirrup used together with one of the standard mounting accessories.



See Floodlighting Accessories section for further information.  
 Lamp types:  
 M38 300W 240/250V single ended tungsten halogen.  
 M40 500W 240/250V single ended tungsten halogen.

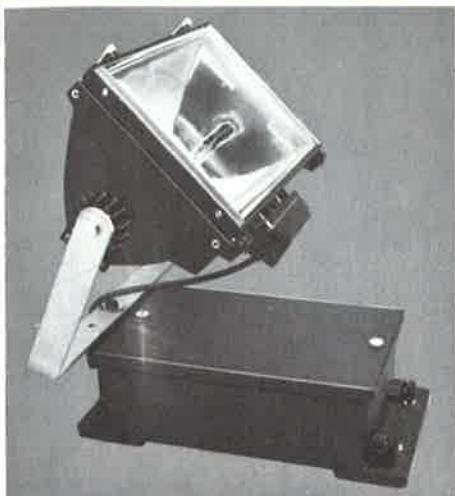
## Classification for protection

Against electric shock: Class I—earthing metalwork.  
 Against ingress of moisture: IP34, splashproof.  
 Complies with BS4533:2.5

## RANGE (Lamps supplied with fittings)

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) less lamp	2.5	0.05
OSP 500 LL	Sunspot (prismatic) less lamp	2.5	0.05

# ▲ Sonline 250/400W SON-TD floodlight



OHA 4615 with OHD 1500

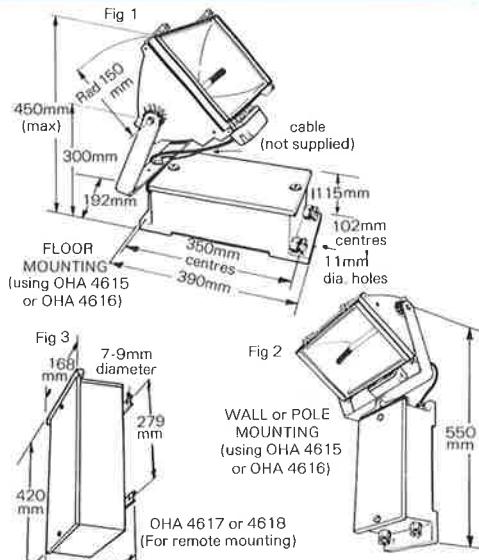
## Applications

This composite arrangement comprising a SON-TD lamp, a Haline floodlight (OHS/D 1000 or OHS/D 1500) and a control gear box (integral with the fitting or remotely mounted) is suitable for use in a wide range of exterior lighting situations particularly where economy of operation is essential e.g. Public Lighting, Area Lighting, Building Lighting etc.

## Description

Luminaire: Haline OHS/D 1000 for 250W  
(ordered separately) SON-TD  
Haline OHS/D 1500 for 400W SON-TD

Control gear box: (i) **Cast aluminium type:** This gear box supplied complete with stirrup fixing bolt and washer for fitting mounting, is rated IP 24 splashproof and contains one set of fully wired HPF 250W (OHA 4616) or 400W SON (OHA 4615) control gear. Mains entry is provided through 2 tapped 20mm holes and cable glands are provided which are suitable for 8-12mm O/D 3 core cable. Exterior finish is matt black. (ii) **Sheet steel type:** This gear box which is suitable for remote mounting is manufactured from zinc coated sheet steel with stove enamelled acrylic finish and rated IP 23 rainproof. As with (i) above a set of fully wired HPF 250W (OHA 4618) or 400W SON (OHA 4617) is contained within. Two 20mm diameter holes are provided in



one end of the box for supply and lamp connections. Cable glands are provided which are suitable for 8-12mm O/D 3 core cable.

## Mounting:

Fitting mounted to cast gear box (OHA 4615/OHA 4616) (see Figs 1 and 2 above)

- (i) Floor—Using bolts through the four 11mm holes on 102×350mm centres.
- (ii) Wall—Using bolts through the four 11mm holes on 102×350mm centres.
- (iii) Pole—Using 2 OHA 4613 pole clamps through the holes provided on the gear box.

250W or 400W SON-TD tubular double ended high pressure sodium.

## Important

MIICC cable must *not* be used for the connection between the fitting and control gear box. Furthermore the maximum capacitance of the cable used for the connection is limited on 240V supplies as follows:

2550 pf      250W

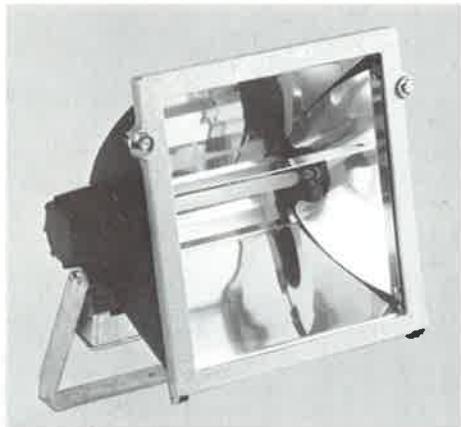
2000 pf      400W

Information on cable capacitance can be obtained from the cable manufacturer.

## RANGE of control gear boxes. (Lamps and Luminaires ordered separately)

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

# ON 1500 MBIL Floodlight



ON 1500

## Applications

This fitting is designed to provide high efficiency, even illumination of large areas with low glare and excellent colour rendering. It is ideally suited to lighting any of the following areas when mounted on buildings, poles or towers: Construction Areas, Sports stadia, Railway Marshalling yards, Shipping terminals, Buildings.

## Description

### Body:

Constructed of a highly polished faceted aluminium reflector which is held and sealed between 2 LM6 aluminium alloy end castings both of which are finished in semi matt black heat resisting paint.

### Front frame and glass:

Die-cast LM6 aluminium alloy finished in hammer grey heat resisting paint. Hinged for front re-lamping and secured by 2 swivel bolts. Weatherproofing is provided by a silicone rubber gasket between the main body and toughened soda lime front glass.

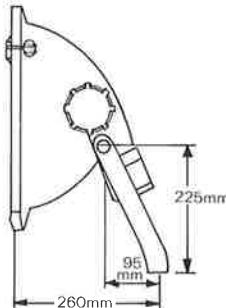
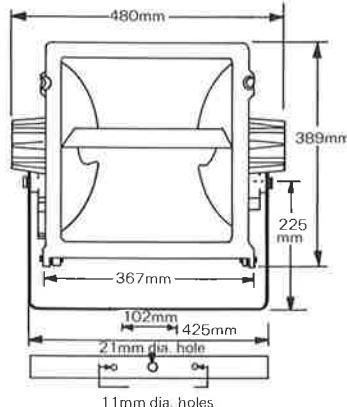
### Wiring box:

Aluminium alloy with gasketed lid housing a 2 way terminal block GT 1362/2, each terminal being suitable for 1 x 10mm<sup>2</sup> cable. Cable entry is provided via a combined cable gland/ cord grip suitable for 9-11mm O/D cable.

### Lampholder: Mounting:

Cat. No. GL 1205  
Using the mild steel galvanised stirrup together with an M20 bolt (not supplied) or the stirrup together with OHA 4613 pole clamp (ordered separately).

See Floodlighting Accessories section for further information.



### Aiming:

The fitting may be aimed at any angle about the horizontal. (Note that it will be necessary to reverse the stirrup to achieve this.) An aiming stop is provided on the fitting thus ensuring that the fitting aiming angle remains undisturbed even if the fitting is removed from the stirrup for servicing.

750W, 1500W or 1600W MBIL, 400W SON-TD.

### Lamp types:

Details of control gear to be used with this fitting can be obtained from the relevant catalogue section.

### Control gear:

### Classification for protection

Against electric shock: Class 1 earthed metalwork.

Against ingress of moisture or dust:

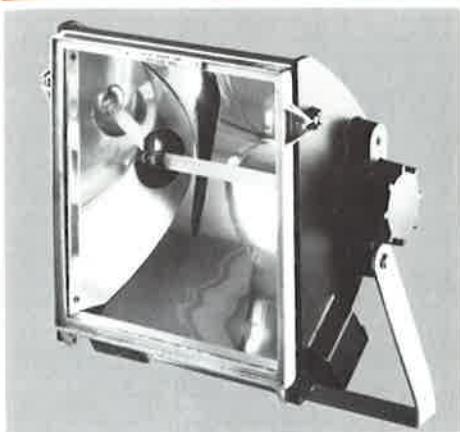
IP 34 splashproof.

Complies with BS4533:2.5.

## RANGE (Lamps ordered separately)

Catalogue no.	Description	Weight kg	Windage area m <sup>2</sup>
ON 1500	Floodlight c/w stirrup	7.9	0.154

# ▲ ONN 1500 MBIL and ONN 400/ONN 1000 SON-T Floodlights



ONN 1500

## Applications

The three fittings referred to on this page are designed to provide high efficiency, even illumination of large areas in instances where long offset distances require a narrow beam distribution. Areas particularly suited to these fittings include Construction Areas, Sports stadia, Railway Marshalling yards and car parks.

## Description

(Details common to all types unless otherwise stated).

### Body:

Constructed of a highly polished aluminium reflector which is held and sealed between 2 LM6 aluminium alloy end castings both of which are finished in semi matt black heat resisting paint. Die-cast LM6 aluminium alloy which is hinged for front re-lamping and secured by 2 swivel bolts. Weatherproofing is provided by a silicone rubber gasket between the main body and toughened soda lime front glass.

### Front frame and glass:

Aluminium alloy with gasketed lid housing a 2 way terminal block GT 1362/2, each terminal being suitable for 1 x 10mm<sup>2</sup> cable. Cable entry is provided via a combined cable gland/cord grip suitable for 9-11mm O/D cable.

### Wiring box:

Aluminium alloy with gasketed lid housing a 2 way terminal block GT 1362/2, each terminal being suitable for 1 x 10mm<sup>2</sup> cable. Cable entry is provided via a combined cable gland/cord grip suitable for 9-11mm O/D cable.

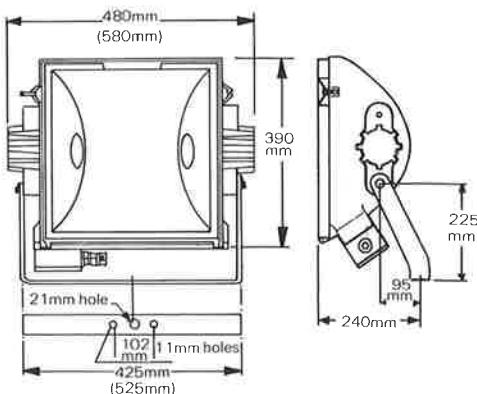
### Lampholder:

GL 1205—ONN 1500.  
GL 1196—ONN 400/ONN 1000.

### Mounting:

Using the mild steel galvanised stirrup together with an M20 bolt (not supplied) or the stirrup together with OHA 4613 pole clamp (ordered separately).

See Floodlighting Accessories section for further information.



Dimensions for ONN 1500 and ONN 400 are identical.

Dimensions for ONN 1000 in brackets.

## Aiming:

The fitting may be aimed at any angle about the horizontal. (Note that it will be necessary to change the stirrup fixing position on the end castings to achieve this.)

## Lamp types:

750W, 1500W or 1600W MBIL  
400W SON-TD—ONN 1500  
400W SON-T—ONN 400  
1000W SON-T—ONN 1000

## Control gear:

Details of control gear to be used with these fittings can be obtained from the relevant catalogue section.

## Classification for protection ▲ ▲

Against electric shock: Class 1

earthed metalwork.

Against ingress of moisture or dust:

IP 34 splashproof.

Complies with BS4533:2.5.

## RANGE (Lamps ordered separately)

Catalogued no.	Description	Weight kg
ONN 1500	Narrow beam floodlight c/w stirrup suitable for the lamp types indicated above	9.0
ONN 400	Narrow beam floodlight c/w stirrup for 400W SON-T lamps	9.0
ONN 1000	Narrow beam floodlight c/w stirrup for 1000W SON-T lamps	10.0

# SON-Pak 7 70W SON-T floodlight



SON-Pak 7

## Applications

A low cost discharge floodlight complete with integral control gear and 70W SON-T lamp, particularly suited for security applications, car parks, loading areas, building perimeters, precinct areas etc. where long burning hours are required with economical running.

## Description

### Main body:

Die-cast LM6 aluminium alloy finished in semi-matt black heat resisting paint.

### Reflector:

Diffuse aluminium with end reflectors.

### Lampholder:

GL 1194 E.S.—porcelain.

### Front visor:

Clear injection moulded polycarbonate. Via a combined cable gland/clamp situated at the base.

### Mains terminal block:

GT 1364/3 situated on gear tray.

Maximum cable capacity  $1 \times 6\text{mm}^2$  per terminal.

Maximum gland cable capacity—9mm. O/D.

### Mounting:

Using semi matt black painted stirrup supplied with fitting or the stirrup in conjunction with the mounting accessories shown in the Floodlighting Accessories section.

### Lamp type:

70W SON-T.

## Classification for protection

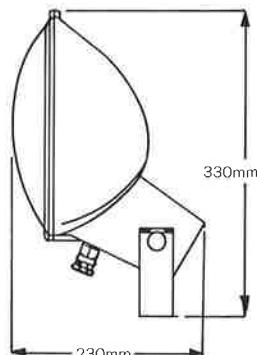
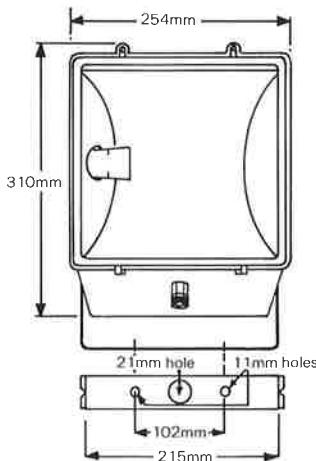


Against electric shock: Class 1  
earthered metalwork.

Against ingress of moisture or dust

IP 65. Dust-tight and Jetproof.

Complies with BS4533:2.5.



## RANGE (Lamp supplied with fitting)

Catalogue no.	Description	Weight kg	Projected area m <sup>2</sup>
OT 70.T	SON-Pak 7 floodlight complete with 70W SON-T lamp and pre-wired for 240V 50Hz operation *	5.25	0.075

\*Other voltages and frequencies to special order.

# OHD 150 and OHD 250 SON-T Floodlights



OHD 150

## Applications

The above two SON-T floodlights, one the OHD 150 being supplied with an integral control gear box and the other, the OHD 250 requiring a remote control gear box (OHA 4616 or OHA 4618), are suitable for use in a wide range of exterior lighting situations e.g. Car parks, Security Lighting, Building Lighting, etc.

## Description

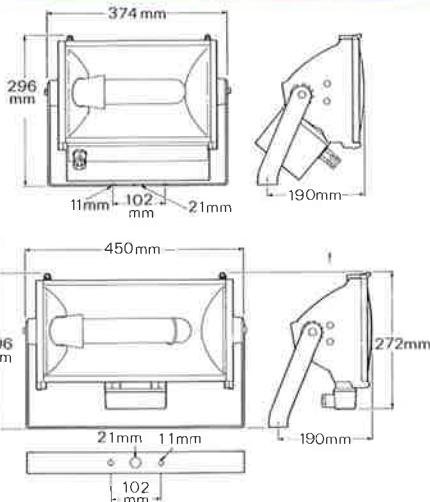
(Specifications apply to both fittings unless otherwise stated)

**Body reflector:** Constructed of a one piece matt finish aluminium extrusion having an asymmetric faceted profile which also acts as the reflector. This is held and sealed between 2 LM6-M aluminium alloy end castings which are externally finished in semi matt black heat-resistant paint. The end diaphragms are in specular aluminium.

**Wiring box:** OHD 150—Mains connections are made via a 3 way terminal block, GT 1364/3 (cable capacity  $1 \times 6\text{mm}^2$  per terminal) which is housed within the sheet steel control gear box attached to the rear of the fitting. Cable entry is provided via a combined cable gland/cord grip suitable for 9-11mm O/D cable.

OHD 250—Base; black thermoset plastic. Cover; Flame retardant glass filled nylon with moulded cable gland suitable for 9-11mm O/D cable.

**Gasket:** Nitrile rubber. Mains connections are made via a 3 way terminal block, GT 1323/3 (cable capacity  $1 \times 6\text{mm}^2$  per terminal) which is housed within the box.



Front frame and glass:

Hinged and secured by screw catches, with stainless steel screws.

Weatherproofing provided by silicon rubber gaskets between glass and frame and between frame and body.

Glass: borosilicate. Glazing trim in anodized aluminium.

GES, Porcelain, skirted E 40, Catalogue no. GL1196.

**Mounting\*:** At any angle via the  $25^\circ$  cranked stirrup or the stirrup used together with one of the standard mounting accessories.

See Floodlighting Mounting Accessories section for further information.

**Note:** When installing the OHD 150 it is essential to ensure that the gear box is not mounted above the fitting.

**Lamp types:**

OHD 150—150W SON-T

OHD 250—250W SON-T

**Important:** It is essential when mounting the OHD 250 that connections between the control gear, housed in either the OHA 4616 or OHA 4618 gear boxes, are not made using MICC cable. Furthermore the maximum capacitance of the cable used for this connection is limited on 240V supplies to 2650pf.

Information on cable capacitance can be obtained from the cable manufacturer.



## Classification for protection

Against electric shock: Class 1 earthed metalwork.

Against ingress of moisture or dust: IP 23, rainproof.

## RANGE

Catalogue no.	Description	Projected Area m <sup>2</sup>	Weight kg
OHD 150	Floodlight c/w stirrup, gear box and 150W SON-T lamp	0 093	9 5
OHD 250	Floodlight c/w stirrup and 250W SON-T lamp	0 090	6 0 (exc. gear)

## Area floodlight

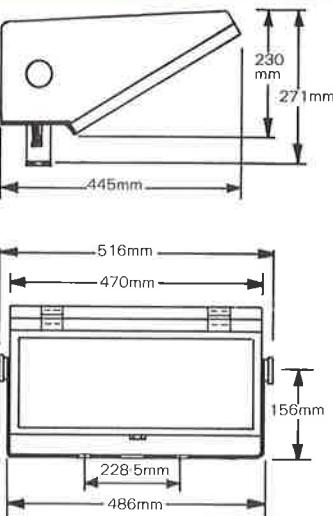


### Applications

General area lighting of car-parks, forecourts, industrial areas, security and streetlighting using column or wall mounting.

### Description

Body:	One-piece glass reinforced plastic (GRP) moulding.
Support casting:	LM6-M aluminium alloy casting with spigot entry sealed to body with silicone rubber adhesive and incorporating integral control gear.
Front glass assembly:	Toughened flat glass secured in GRP frame with stainless steel hinges at the top and two DZUS slotted clips to fasten frame at the bottom edge. Silicone rubber gaskets between glass and frame and body.
Reflector Assembly:	Specular anodized aluminium in two parts. Lower portion hinges down for access to gear and 4 way 10A terminal block. (GT 1364/4) (3 way on MBF versions)
Lampholder:	GES Porcelain, skirted E40 Cat No GL 1196
Mounting:	<ul style="list-style-type: none"> <li>(a) Post top—built in spigot cap in casting 76mm <math>\phi</math> <math>\times</math> 117mm and 2 socket head securing screws.</li> <li>(b) Bracket mounting—Wall brackets OAB 36 and OAB 310 locate in spigot entry.</li> <li>(c) Stirrup mounting—OAE hot dipped galvanised steel stirrup assembly fixes to side securing knobs.</li> </ul> <p>See Floodlighting Accessories section for further information.</p>



Note: The OAE stirrup is supplied as an optional accessory

Lamp types: 150/250/400W SON-T  
250/400W MBF/MBIF

### Classification for protection

Against electric shock: Class 1.

Against ingress of moisture or dust:

IP 23 rainproof.

Complies with BS4533:2.5.

### RANGE (Packed complete with lamp)

Catalogue no.	Description	Weight kg	Projected area m <sup>2</sup>
OAC 250	Area Flood c/w 250W MBF control gear and lamp	14.5	0.21
OAC 400	Area Flood c/w 400W MBF control gear and lamp	15.0	0.21
DAK 250	Area Flood c/w 250W MBF control gear and lamp	13.8	0.21
DAK 400	Area Flood c/w 400W MBF control gear and lamp	14.5	0.21
OAST 150	Area Flood c/w 150W SON-T control gear and lamp	12.5	0.21
OAST 250	Area Flood c/w 250W SON-T control gear and lamp	14.5	0.21
OAST 400	Area Flood c/w 400W SON-T control gear and lamp	16.5	0.21

## ▲ OQ 1000 and OQ 1000 HR CSI Floodlights



OQ 1000 with OQA

### Applications

Primarily designed for high tower installations where good illumination with excellent colour rendering is required.

In cases where instant lamp restrike is essential the OQ 1000 HR version of the fitting should be specified.

### Description

#### Main body:

Constructed of a two part aluminium casting with mounting lugs on the front section. The rear section which houses the lampholder is removable for re-lamping without disturbing the aiming angle. Both sections are secured by three equally spaced stainless steel toggles.

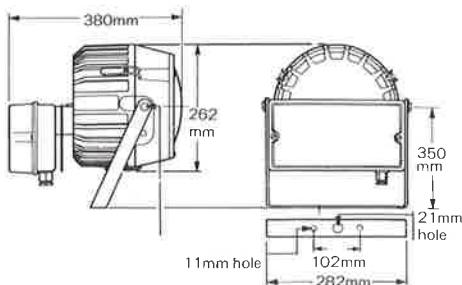
#### Front glass:

A range of 5 is available. An aluminium retaining ring secured to the front section of the main body by three screws holds the glass in position.

*Glasses should be ordered separately.*

#### Ignitor housing/ wiring box:

Fixed to rear section of main casting and contains either the G53319 ignitor (designed for standard lamps) or G53352 ignitor (designed for hot restrike lamps only). Cable entry is provided through a cable gland suitable for 8-12mm O/D cable and connections from ballast, mains etc. are made to a 4 way terminal block, GT 1364/4 (each terminal capacity being  $1 \times 6\text{mm}^2$ ) which is used on both ignitors. *Please note that a 4 core cable is required to connect both the OQ 1000 and OQ 1000 HR fittings.*



#### Lampholder:

#### Mounting:

#### GL 1198.

Using the stirrup OQA (ordered separately) or the OQB 4 way bracket (also ordered separately). See Floodlighting Accessories section for further information.

#### Lamps

- 1000W CSI PAR 64 sealed beam discharge lamp ref: 99-1222 which should be used only in the OQ 1000 fitting.
- 1000W CSI PAR 64 sealed beam hot restrike discharge lamp ref: 99-1422 which should be used only in the OQ 1000 HR fitting.

#### Classification for protection



Against electric shock: Class 1 earthed metalwork.

Against ingress of moisture or dust: IP 54, splashproof and dustproof. Complies with BS4533:2.5.

### RANGE (Lamps ordered separately)

Catalogue no.	Description	Weight kg	Projected area m <sup>2</sup>
OQ 1000	1kW CSI floodlight c/w standard ignitor, less glass	8.0	0.07
OQ 1000 HR	1kW CSI floodlight c/w hot restart ignitor, less glass	8.0	0.07

# M25 Junior floodlight projector



M25 FD 500

## Applications

Major floodlighting situations e.g. Railway marshalling yards, airfield aprons, sports grounds, buildings etc.

## Description

### Reflector:

Super purity spun aluminium, polished and anodized (available in specular or diffuse finishes), which is secured internally to the aluminium alloy ring casting with stirrup fixing. The heat resisting, clear toughened front glass is sealed into the reflector by a silicone rubber gasket and retained by a stainless steel visor band. Gasketed and fastened to body casting by stainless steel studs and wing nuts.

Polished aluminium

### Auxiliary reflector: Lampholder housing:

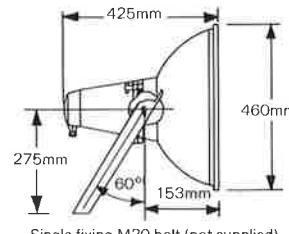
Pressure die-cast LM6 M aluminium having a detachable end cap for access to the terminal block via a cable gland suitable for 7-11mm O/D cable. The GES skirted lampholder is adjustable to cater for the different lamp types that can be used with this fitting.

### Mounting:

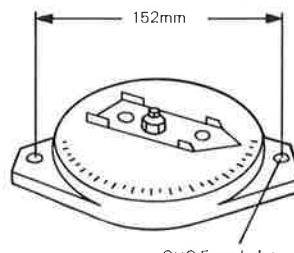
- (i) Using the galvanised steel 60° cranked stirrup with an M20 bolt (not supplied). An aiming quadrant marked  $\pm 60^\circ$  is provided which ensures accurate aiming in the vertical plane and spun galvanised

## RANGE (Lamps ordered separately)

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	Bass plate (optional extra)	0.36	—



Single fixing M20 bolt (not supplied)



M25 BPJ base plate

locking bolts/handles enable the fitting to be rigidly fixed in position.

- (ii) Using the galvanised steel 60° cranked stirrup and the baseplate, M25 BPJ, (available as an optional extra), which bolts directly to the stirrup.

See Floodlighting Accessories section for further information.

**Note:** Maximum downward inclination of fitting is 60°. Fittings of earlier manufacture having straight stirrups have a permissible maximum downward tilt of 30° from the horizontal.

Lamp types:	250/400W	MBF
	250/400W	MBI/MBIF
	150/250/400W	SON/SON-T
	300/500W	GLS

## Classification for protection

Against electric shock: Class 1

earthing metalwork.

Against ingress of moisture or dust:

IP 54 Dustproof and Splashproof.

Complies with BS4533:2.5.

For details of spare items and control gear to be used with this fitting see relevant sections.



EMF 1200 top entry with EKR 200 reflector and EKB bracket

#### Applications

General or localized lighting in outdoor industrial situations.

#### Description

Screw neck  
gallery:

Aluminium alloy, for top or side entry, also top BESA box mounting. Finished light hammer grey. 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—earthing metalwork.

Against ingress of moisture: IP23, rainproof.

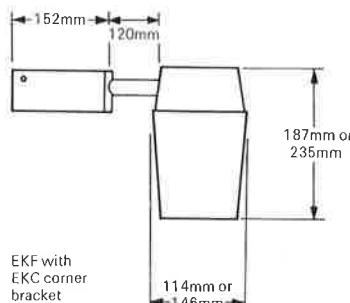
Complies with BS 4533:2-2.

#### RANGE (lamps ordered separately)

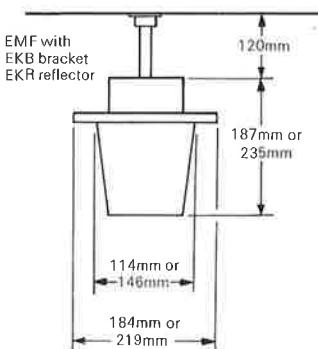
Catalogue no.	Description	Weight kg
EMF 1100	Wellglass, side entry with BC lampholder for 80/100W GLS	0.90
EMF 1100	Wellglass, top entry with BC lampholder for 80/100W GLS	0.90
EMF 1200	Wellglass, side entry with ES lampholder for 150/200W GLS and 80/125W MBF	1.02
EMF 1200	Wellglass, top entry with ES lampholder for 150/200W GLS and 80/125W MBF	1.02
EKR 100	Reflector for EMF 1100	0.06
EKR 200	Reflector for EMF 1200	0.09
EKB	Wall bracket	0.13
EKC	Corner bracket	0.34
EKG 100	Replacement glass for EMF 1100	0.57
EKG 200	Replacement glass for EMF 1200	0.90



EMF 1100 side entry using EKC corner bracket

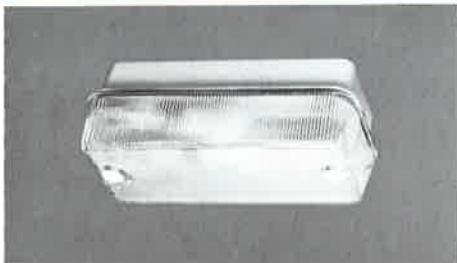


EMF with  
EKC corner  
bracket



EMF with  
EKB bracket

## Escort range bulkhead luminaires ▲



### Applications

Outdoor amenity lighting of public, commercial and industrial premises.

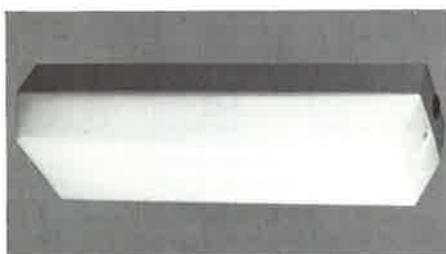
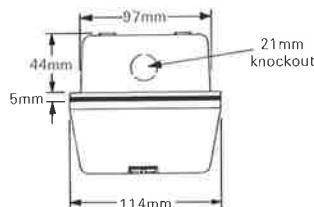
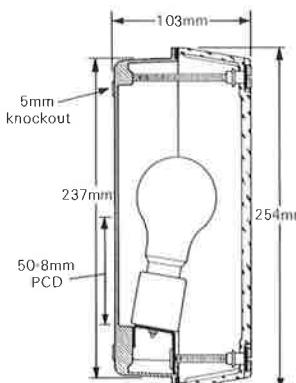
### OLG/OLV1100 Tungsten bulkhead

Body: Pressure die-cast aluminium alloy with white stove enamelled finish, 21mm knock-out for conduit entry at one end and provision for BESA box and conduit entry at the back. Gasket seals to glass for weatherproofing.

Diffuser: Either glass OLG or vandal-resistant OLV retained by two captive vandal-resistant nylon screws. Special key supplied.

Lampholder: BC version GL 1159.  
ES version GL 1131.

Lamps: 40W to 100W GLS (order separately).



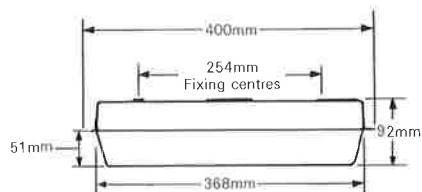
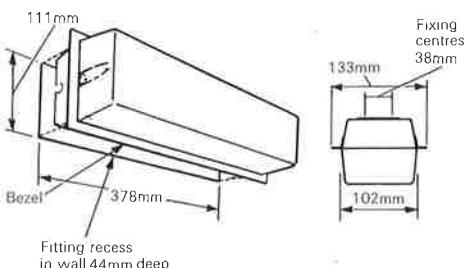
### OB 2008/3008 Fluorescent bulkhead

Body: Pressure die-cast aluminium alloy with hammer 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. Secured by two captive screws. 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). Luminaires comply with BS 4533, IP23 rainproof and are safety marked.

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

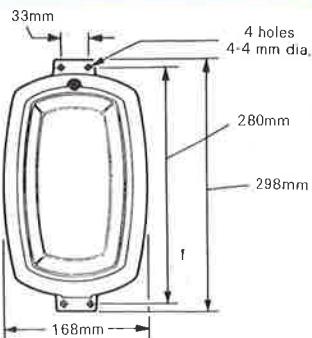


## ▲ Escort range bulkhead luminaires



### TG 4208 Heavy duty tungsten bulkhead

Body:	Aluminium alloy. Finished in aluminium paint. Neoprene gasket. Tapped for 20mm conduit, top or bottom entry.
Glazing ring:	Aluminium alloy in aluminium paint finish. Hinged to body by stainless steel pin and secured with single captive screw.
Diffuser:	Vandal resistant prismatic pattern.
Lamps:	100W GLS, ES cap. (ordered separately).



### Classified for protection

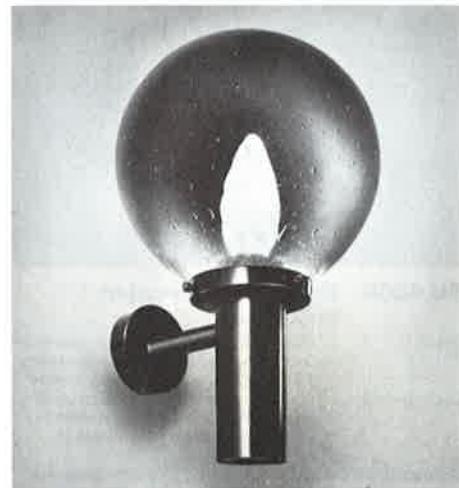
Against electrical shock: Class I—earthing metalwork.  
Against ingress of moisture or dust: OLG-IP23,  
rainproof—OB-IP23 rainproof. TG type  
is IP55 dustproof, jetproof.  
Complies with BS 4533:2-2.

### 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
OLV 1100 BC	Escort tungsten bulkhead with vandal resistant diffuser	0.65
OLG 4800	Spare glass diffuser (c/w fixing screws and key)	0.75
OLG 4801	Spare set of fixing screws and sealing washers for OLG 1100	0.02
OLV 4800	Spare vandal resistant diffuser	0.15
OBO 2008	Escort fluorescent bulkhead, acrylic diffuser c/w 2×8W tubes	2.03
OBG 3008	Escort fluorescent bulkhead, acrylic diffuser c/w 3×8W tubes	2.26
OBV 2008	Escort fluorescent bulkhead, vandal resistant diffuser c/w 2×8W tubes	2.03
OBV 3008	Escort fluorescent bulkhead, vandal resistant diffuser c/w 3×8W tubes	2.26
OBD	Spare acrylic diffuser	0.68
OBV	Spare vandal resistant diffuser	0.68
OBZ	Bezel trim	0.27
OB/FV	Spare key	0.01
TG 4208	GLS (ES) heavy duty tungsten bulkhead with vandal resistant prismatic diffuser	2.50
TG 4069	Spare vandal resistant diffuser	0.70



WPCR 1060 BC



WPWA 1060 BC

## Applications

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

## Description

### WPW version

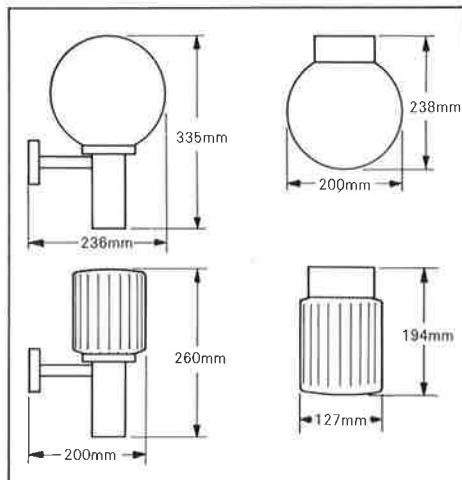
**Body:** Steel tube, zinc plated and finished matt black. Connected to zinc plated conduit support tube.  
**Lampholder:** GL 1085 2 BC.  
**Mounting plate:** Zinc plated mild steel with black plastic cover plate.  
**Glass:** Clear ribbed cylindrical or spherical amber aerated. Retained by three knurled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

### WPC version

**Top casting:** Aluminium. Finished matt black. For mounting to ceiling surfaces.  
**Lampholder:** GL 1085 2 BC.  
**Glass:** As for WPW.

### Lamp

60W standard GLS or decorative. (ordered separately)  
 Complies with BS 4533:2-2.



## RANGE

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

## Floodlighting Accessories

### RANGE

Catalogue no.	Description	Fig. (See overleaf)	Weight (kg)
OHA 4600*	51mm O/D Spigot Cap	1	0.24
OHA 4601*	Multi-use mounting bracket	2	0.34
OHA 4602†	Pair of 'U' clamps for use with OHA 4601	3	0.11
OHA 4603	Cross-arm bracket for 51mm O/D pole	4	1.3
OHA 4604	Floor bracket and spigot	5	0.48
OHA 4612*	76mm O/D Spigot Cap	1	0.35
OHA 4613	Universal pole clamp for 48-89mm O/D poles	6	0.48
SUB††	Wall mounting support bracket	13	0.2
SUP††	Pole clamp for 51mm O/D poles	10	0.15
SUC	Corner wall bracket	8	0.34
OAB 36	76mm dia. spigot/bracket with 152mm projection	12	1.34
OAB 310	76mm dia. spigot/bracket with 254mm projection	12	1.76
OAE	Stirrup assembly comprising stirrup, blanking plate and gland for 8-12 mm O/D cable	16	1.87
OAA2	Adaptor for 51mm spigot	—	0.46
ODA	Stirrup assembly	15	1.0
ODB4	Mounting bracket for up to 4 floodlights	14	2.49
M25 BPJ	Base plate	11	0.38
EKB	Flat wall bracket	9	0.1
EKC	Corner wall bracket with 89mm outreach	7	0.3

Catalogue no.	Miniflood	Sunflood	Haline 5/10	Haline 1500/2000W	Sunspot	Sonline	SDN-Pak 7	DHD 150/250	Area Flood	ON 1500	ONN 400/1000/1500	OD 1000	M25 'Junior'	
OHA 4600*	•	•	•	•	•	•	•	•	•	•	•	•	•	•
OHA 4601*	•	•	•	•	•	•	•	•	•	•	•	•	•	•
OHA 4602†	•	•	•	•	•	•	•	•	•	•	•	•	•	•
OHA 4603	•	•	•	•	•	•	•	•	•	•	•	•	•	•
OHA 4604	•	•	•	•	•	•	•	•	•	•	•	•	•	•
OHA 4612	•	•	•	•	•	•	•	•	•	•	•	•	•	•
OHA 4613	•	•	•	•	•	•	•	•	•	•	•	•	•	•
SUB††	•	•	•	•	•	•	•	•	•	•	•	•	•	•
SUP††	•	•	•	•	•	•	•	•	•	•	•	•	•	•
SUC	•	•	•	•	•	•	•	•	•	•	•	•	•	•
OAB 36	•	•	•	•	•	•	•	•	•	•	•	•	•	•
OAB 310	•	•	•	•	•	•	•	•	•	•	•	•	•	•
OAE	•	•	•	•	•	•	•	•	•	•	•	•	•	•
OAA 2	•	•	•	•	•	•	•	•	•	•	•	•	•	•
ODA	•	•	•	•	•	•	•	•	•	•	•	•	•	•
ODB 4	•	•	•	•	•	•	•	•	•	•	•	•	•	•
M25 BPJ	•	•	•	•	•	•	•	•	•	•	•	•	•	•
EKB	•	•	•	•	•	•	•	•	•	•	•	•	•	•
EKC	•	•	•	•	•	•	•	•	•	•	•	•	•	•

For further details on fittings on this page please refer to the relevant data sheets which are available on request from your local Thorn Lighting office.

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

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

●Indicates that the fitting may be used with the mounting accessory.

††Pack includes 20mm combined cable gland/clamp.

# Floodlighting Accessories

**OHA 4600 OHA 4612**  
51×51mm 76×76mm  
spigot cap spigot cap



Fig. 1

**OHA 4601** Wall-floor-pole  
mounting bracket

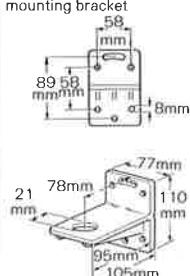


Fig. 2

**OHA 4602**  
Pair of clamps  
for 51mm  
O/D pole

Fig. 3

**OHA 4603** Cross arm  
mounting



Fig. 4

**OHA 4604**  
Floor mounting  
with azimuth  
adjustment

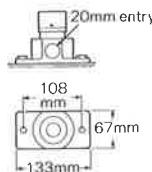


Fig. 5

**OHA 4613**  
Universal  
pole clamp

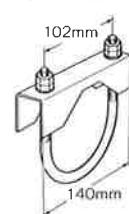


Fig. 6

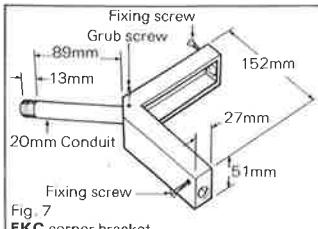


Fig. 7  
EKC corner bracket

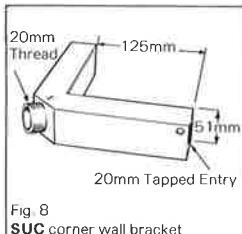


Fig. 8  
SUC corner wall bracket

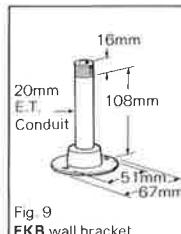


Fig. 9  
EKB wall bracket

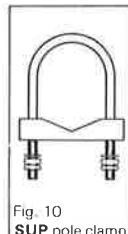


Fig. 10  
SUP pole clamp

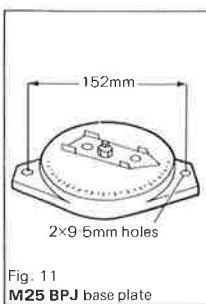


Fig. 11  
M25 BPJ base plate

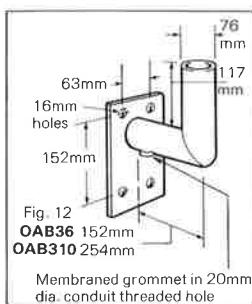


Fig. 12  
OAB36 152mm  
OAB310 254mm



Fig. 13  
SUB mounting bracket

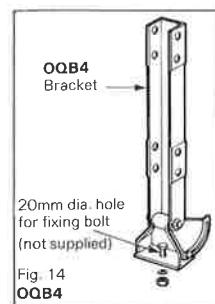


Fig. 14  
OQB4

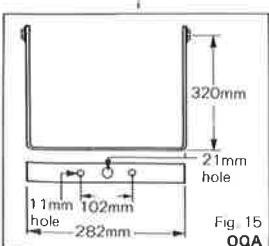


Fig. 15  
OQA

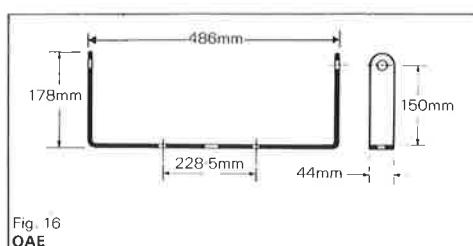


Fig. 16  
OAE



# 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 a 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 (replacement items only)
- I. Kolorarc (MBIF)
- J. Canopy with lugs—enclosed type
- L. Lampholder/bracket assembly—GL, lampholder only
- M. Bowl—stippled, pinspot or special
- N. High pressure sodium (SON)
- O. Bowl or cylinder—opal
- P. PE cell socket
- 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

## 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
- 1150—1×150W
- 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
- .T—200/250V tapped (supplied tapped for 240V)
- .A—ignitor circuit

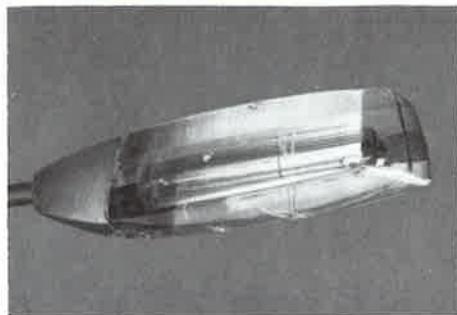
## Suffix Numbers—Lampholders

- B22—2BC
- E27—ES

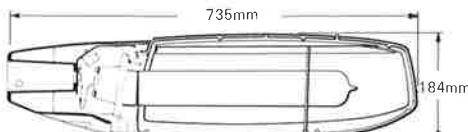
Mainly for reference information only.

**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



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 DLORL 70%.

#### Specification

To BS 4533:2-7, Kite marked, DoE and Design Council approved. Die-cast aluminium alloy end support with injection moulded clear acrylic and hermetically sealed 'opticell' enclosure. Other external components are stainless steel or aluminium. Control gear is mounted remotely.

#### Mounting

Side entry for 42mm dia. x 110mm (1 1/4 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.

#### RANGE

Cat. no.	Description
QA1 E	End support assembly
QA1 D 1055	55W SOX for opticell
QA1 D 1090	90W SOX for opticell
QA1 PE	End support c/w photocell socket

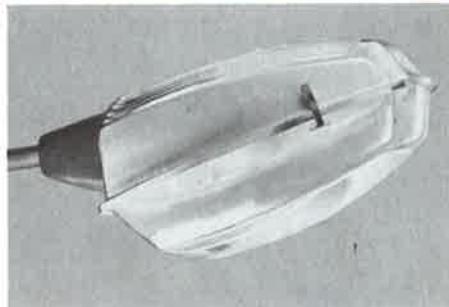
#### Control gear/circuit data

See control gear and accessories section.



QC8, OCB1125,  
QA1 D 1090,  
QA1 E + gear.

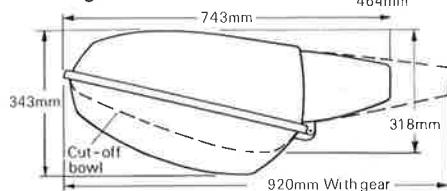
# Alpha Three SON/MBF



QA3 D/WS 1400

#### Remote gear semi-cut-off lantern

Overall width 464mm



#### Lamps

One 400W SON/MBF

#### Distribution

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

#### Specification

To BS 4533:2-7 Kite marked, DoE and Design Council approved. Aluminium canopy. Die-cast aluminium end support/gear slipper. Clear UV stabilised acrylic bowls.

#### Mounting

Side entry for 42mm dia. x 110mm (1 1/4 in BSP) spigot.

Recommended mt. ht. 10-12m.

Rec. columns: QC10 or QC12.

Average spacing/height ratio:

4:1 (SCO) 3:1 (CO)

#### Catalogue no.

All lanterns comprise fully assembled canopy with bowl in separate pack. For lanterns with 3 pin photocell socket add P after C or S in Cat. no.



#### Bowls

QA3 DS	Bowl for SCO Alpha 3	OC10, OCB1125
QA3 DC	Bowl for CO Alpha 3	QA3 WS 1400, QA3 DS + gear

#### Canopies less gear

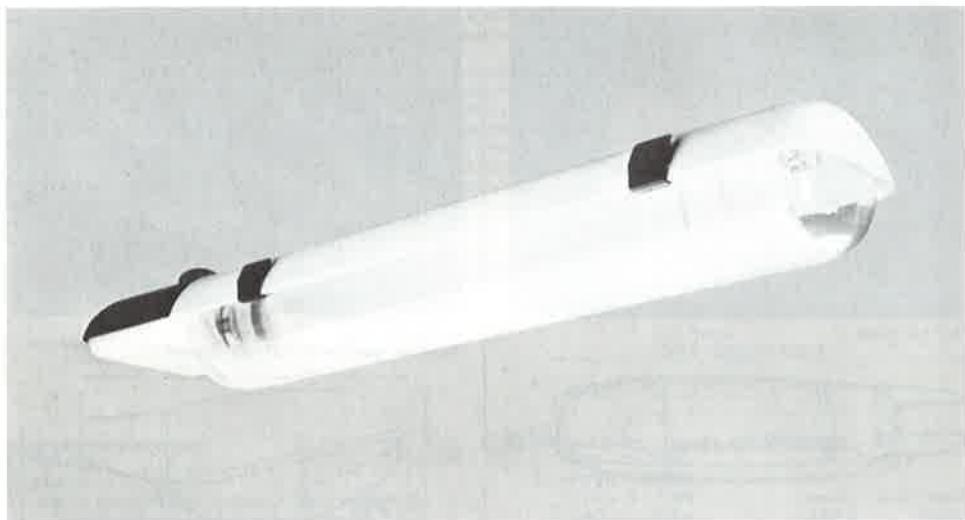
		Windage area m <sup>2</sup>	Weight kg (inc. bowl)
QA3 WS 1400	SCO canopy	0.170	5.44
QA3 WC 1400	CO Canopy	0.162	4.76

#### Canopies with gear

QA3 WSB 1400.4	SCO 400W MBF	0.198	12.56
QA3 WSNB 1400.T	SCO 400W SON	0.198	14.40
QA3 WCB 1400.4	CO 400W MBF	0.189	11.88
QA3 WCNB 1400.T	CO 400W SON	0.189	13.72

Canopy and separate bowl make complete lantern.

# Alpha Four SOX



OA4 S 1135

**Lamp:**  
135W SOX

**Distribution:**  
Semi Cut-Off DLORL 72%  
Cut-off DLORL 65%

**Specification:**  
Complies with BS 4533:2.7  
Safety-Mark; Kite-Mark. Canopy  
moulded in glass re-inforced plastic  
(GRP) with aluminium die cast spigot  
entry in versions for remote or  
integral control gear. Injection  
moulded acrylic bowl.

**Mounting**  
Side entry for 42mm diameter x 110  
mm (1 1/4 in BSP) spigot.  
Recommended mounting height:  
10m or 12m  
Suitable columns: QC10 and QC12.

**Packages**  
Complete lantern in one pack.

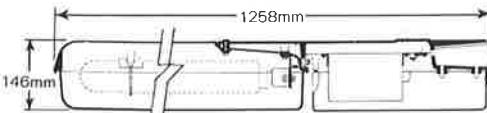
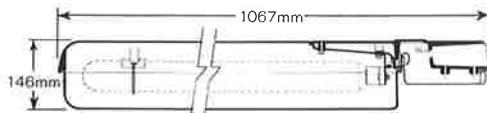


## RANGE

Cat. no.	Description	Wt. (kg)
OA4 S 1135	Lantern, SCO c/w bowl	5.0
OA4 SB 1135.T	Lantern, SCO c/w bowl and 135W SOX gear	12.5
OA4 C 1135	Lantern, CO c/w bowl	5.0
OA4 CB 1135.T	Lantern, CO c/w bowl and 135W SOX gear	12.5

NOTE: For versions wired complete with photocell socket insert "P" in Cat. No. e.g.  
OA4 SP 1135.

**Control Gear/circuit data**  
See control gear and accessories section.

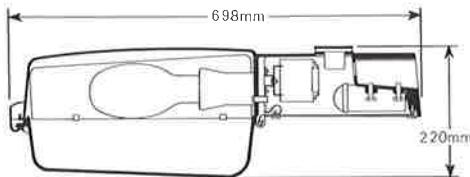


Windage  
area  
90W with gear version 0.14m<sup>2</sup>  
135W less gear version 0.14m<sup>2</sup>  
135W with gear version 0.17m<sup>2</sup>

## Alpha Eight SON/MBF ☰▲



QA8D/WCNB 1150.T



overall width 355 mm  
windage area : 0.11 m<sup>2</sup>

**Lamps:**  
150W and 250W SON; 250W MBF

**Distribution**  
Semi Cut-off DLORL 81%  
Cut-off DLORL 81%

**Specification:**  
Complies with BS 4533:2.7  
Safety-Mark; Kite-Mark. Aluminium  
pressure die cast canopy with  
integral control gear. Clear injection  
moulded acrylic bowl.

**Mounting**  
Side entry for 42 mm diameter x  
100 mm (1½in BSP)  
Recommended mounting height:  
8, 10 or 12 m  
Suitable columns: QC 8, QC 10,  
QC 12



**Packages**  
Canopy assembly and separate bowl  
make complete lantern.

QC10, QA8 WNB  
1250.T, QA8 DS,  
OCB 1075

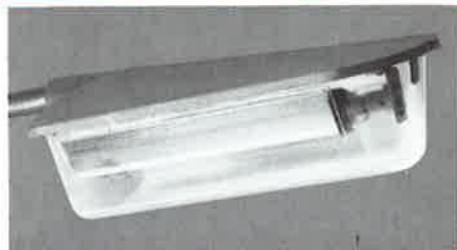
### RANGE

Cat. no.	Description	Wt (kg)
QA8 WNB 1150.T	Lantern, c/w 150W SON gear	8.5
QA8 WNB 1250.T	Lantern, c/w 250W SON gear	9.5
QA8 WB 1250.4	Lantern, c/w 250W MBF gear	9.3
QA8 DC	Bowl for Alpha 8 lantern CO	0.8
QA8 DS	Bowl for Alpha 8 lantern SCO	1.0

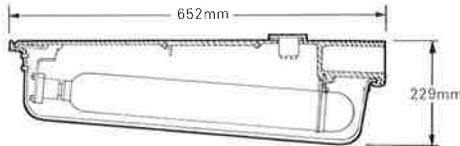
For versions wired complete with photocell socket insert "P" in Cat. no.  
e.g. QA8 WSPNB 1150.T.

**Control gear/circuit data**  
See control gear and accessories  
section.

## Alpha Nine ☰ semi-cut-off SOX



QA9 D/W 1090



Windage area  
Less gear  
0.126 m<sup>2</sup>  
Weight  
3.96kg  
Overall width 296mm

**Lamp**  
One 90W SOX.

**Distribution**  
Semi-cut-off DLORL 74%

**Specification**  
To BS 4533: 2.7, Kite marked and  
DoE approved. Aluminium alloy  
canopy and high impact resistant  
bowl.

**Mounting**  
Side entry for 42 x 100mm spigot.  
Recommended mounting height:  
8m.  
Recommended column: QC8.  
Average spacing/height ratio: 4.5:1.

**Packages**  
Canopy assembly and separate bowl  
make complete lantern.

### RANGE

Cat. no.	Description
QA9 W 1090	Canopy assembly (less gear).
QA9 WB 1090.4	Canopy assembly (with gear).
QA9 D	Bowl for less gear lantern.
QA9 DWB	Replacement bowl for QA9 WB 1090.
QA9 DB	Replacement bowl for QA9 B 1090.

**Control gear/circuit data**  
See control gear and accessories  
section.



OCB, QC8 1125,  
QA9 W 1090, QA9 D  
+ gear.

## Beta Four top entry SON/MBF

## Beta Five SOX



QB4 V/1200/E27



### Lamps

- a) One 70W SON
- b) One 80W MBF

### Specification

Aluminium alloy canopy and UV stabilised vandal resistant refractor bowl. Control gear for SON and MBF lamps mounted remotely.

### Mounting

Top entry for  $\frac{3}{4}$ in BSP thread  $\times 18$ mm.

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.

### RANGE

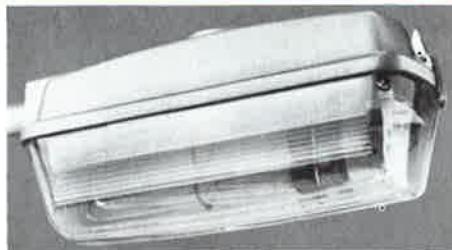
Cat. no.	Description
QB4 1200	Canopy assembly
QB4 V	Vandal resistant refractor bowl
GL1194-1	Lampholder (ES)

### Control gear/circuit data

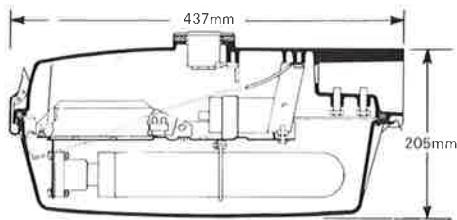
See control gear and accessories section.



QC3, QCBT 226,  
QB4 1200, QB4V +  
lampholder + gear



QB5V/ 1in B 1035.4A



### Lamp

One 35W SOX (or 18W SOX)

Overall width:

Weight:

160mm

3.11 kg

0.070 m<sup>2</sup>

### Specification

To BS 4533: 2.7 Pressure die-cast

Aluminium alloy canopy/gear housing and injection moulded vandal-resistant bowl.

Gear can be mounted remotely.

Note: 'With gear' lanterns complete with low loss ignitor circuit.

### Mounting

Side entry for 34mm dia.  $\times 80$ mm spigot.

Top entry for  $\frac{3}{4}$ in BSP threaded.

Also available to order 27mm side entry and 1in BSP top entry.

Recommended mounting height: 5m.

Recommended column: QC3 with QCB 534 bracket.

Average spacing/height ratio: 6:1.

### Packages

Canopy and separate bowl make complete lantern.

For lanterns with 3-pin photocell socket, add P after 1in or  $\frac{3}{4}$ in in catalogue no.

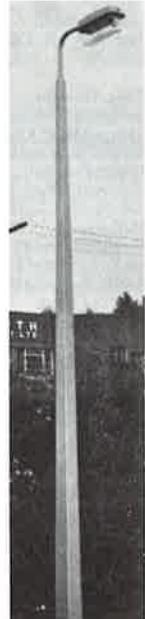
### RANGE

Cat. no.	Description
QB5 1in	Side entry canopy (less gear).
QB5 1in B 1035.4A	Side entry canopy (with gear).
QB5T $\frac{3}{4}$ in B 1035.4A	Top entry canopy (with gear).
QB5V	Vandal resistant bowl

Also available as 18W version Cat. No. QB5 1in B 1018.4.

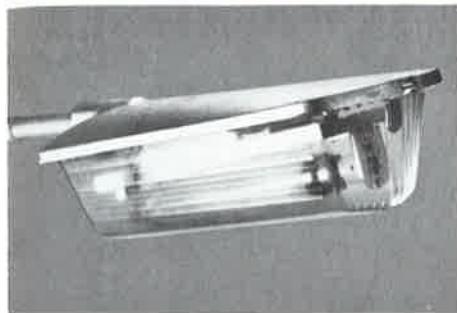
### NOTE:

QB5 P KIT: Box containing 1in side entry lantern 35W SOX lamp, photocell and wall bracket.

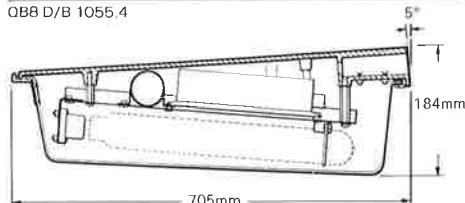


QC3, QCB 534,  
QB5 1in B 1035.4A,  
QB5 V.

## Beta Eight side entry SOX ▲



QB8 D/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 4533:2.7 Aluminium alloy canopy with impact resistant acrylic bowl.

### 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.

### RANGE

Cat. no.	Description
QB8 1055	Canopy assembly (less gear).
QB8 B1055.4	Canopy assembly (with gear).
QB8 D	Impact resistant bowl.

### Control gear/circuit data

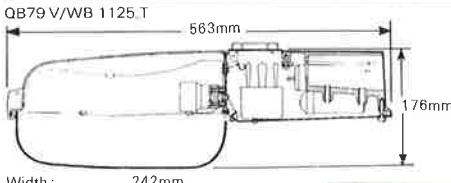
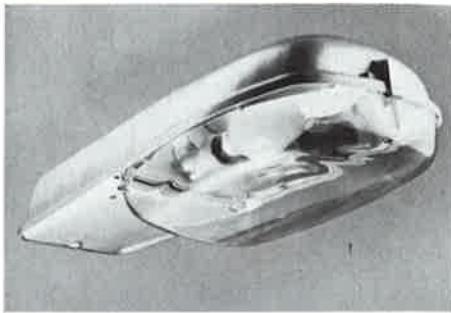
See control gear and accessories section.

QC3, QCBS 534,  
QB8 B1055.4,  
QB8 D.



QC3, QCBS 534,  
QB8 B1055.4,  
QB8 D.

## Beta Seventy-Nine side entry SON/MBF ▲



Width: 242mm  
Windage area: 0.075 m<sup>2</sup>

Weights  
less gear: 4.4kg.  
with gear: 5.9kg.

### Lamps

One 80W or 125W MBF, or 70W SON.

### Specification

To BS 4533:2.7. Pressure die-cast Aluminium alloy canopy and injection moulded vandal resistant bowl.  
Control gear integral or remote.

### Mounting

Side entry for 34mm dia.×110mm spigot.

### Packages

Body and separate bowl make complete lantern.

For lanterns supplied with photocell socket add P after W in catalogue no.  
All supplied complete with ES lampholder.

QB79 WB 1125 T

QB79 V

QC3, QCBS 534



Cat. no.	Description
QB79 WNB 1070.T	Body and gear for 70W SON
QB79 WB 1080.4	Body and gear for 80W MBF 240V
QB79 WB 1125.T	Body and gear for 125W MBF
QB79 W 1200	Body without gear for use with remote gear
QB79 V	Vandal resistant bowl

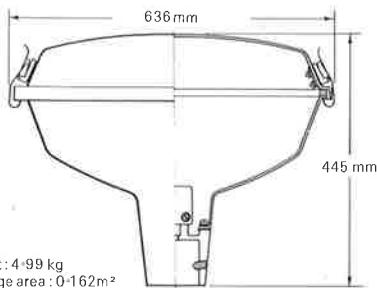
### Control gear/circuit data

See control gear and accessories section.

## Gamma Three SON/MBF



QG3 1400



Weight: 4.99 kg  
Windage area: 0.162 m<sup>2</sup>

### Lamps

- a) One 250W or 400W SON.
- b) One 250W or 400W MBF.

### Specification

Design Council approved.  
Aluminium alloy base, stove  
enamelled spun aluminium canopy  
and opal acrylic bowl with stainless  
steel toggle catches. Control gear  
mounted remotely.

### Mounting

Post top mounting for 76×130mm  
spigot.

Recommended mounting height:  
8m.

### RANGE

Cal. no.	Description
QG3 1400	Complete lantern
Replacement packages	
QG3 O	Opal bowl
QG3 F	Canopy assembly

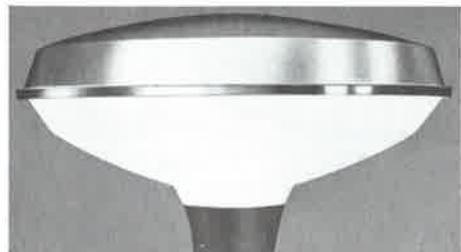
### Control gear/circuit data

See control gear and accessories  
section.

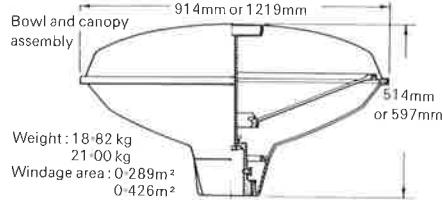


QC8, QFS 1  
QG3 1400+gear

## Gamma Four multi-lamp



QG4 O/W/3400



### Lamps

- a) Two or three 250W or 400W SON.
- b) Two or three 250W or 400W MBF.
- c) Two or three 400W MBIF.

### Distribution

Symmetrical.

### Specification

Design Council approved. Two  
alternative widths of sheet aluminium  
canopy attached by stem to base  
casting assembly. Acrylic bowl.  
Control gear mounted remotely.

### 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.

### RANGE

Cal. no.	Description
900mm version	
QG4 3400	2 or 3 lamp stem assembly
QG4 F	900mm canopy
QG4 O36	900mm bowl
1200mm version	
QG4 W3400	2 or 3 lamp stem assembly
QG4 W	1200mm canopy
QG4 O	1200mm bowl

Three packages for complete lantern

Control gear/circuit data  
See control gear and accessories  
section.

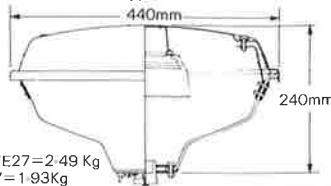


QC10 G4,  
QG4 W 3400,  
QG4 O,  
QG4 W+gear

## Gamma Five SON/GLS/MBF/SOX



QG5JV 1200/E27 with QCX base support



### Weight:

QG5 J/D/Y 1200/E27=2.49 Kg

QG5 O/1200/E27=1.93Kg

Windage area: 0.081m E27

### Lamps

- a) One 70W SON.
- b) One 80W or 125W MBF

### Distribution

- a) Asymmetrical
- b) Symmetrical

### Specification

Design Council approved. Acrylic enamelled spun aluminium canopy with vandal-resistant bowl and optional glass refractor. Control gear for discharge lamps mounted remotely.

### Mounting

On QC3 (or other Thorn Group B column) with QCX base support. Recommended mounting height: 5m.

### Packages

Body assembly, lampholder and support casting, plus refractor if required make complete lantern.

### Range

Cat. no.	Description
QG5 JV1200	Body, lampholder support, and clear vandal bowl
QY	Asymmetric refractor
QG5 E3×3	Support casting for 76mm×76mm spigot
QCX	Support casting for Thorn column
GL1085	Lampholder 28C (B22)
GL1194-1	Lampholder ES (E27)

### Replacements

Cat. no.	Description
QG5 V	Clear vandal-resistant bowl
QG5 J1200	Canopy

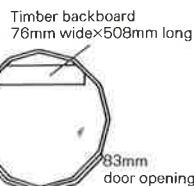
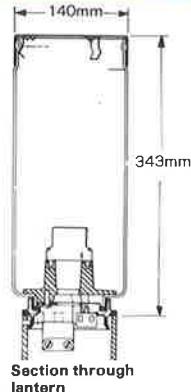


QC3, QCX,  
QG5 O 1200 +  
lampholder + gear.

## Gamma Seven SON/GLS/MBF



QG71100/E27



### Cross-section through base compartment of QCG7

Door opening length 457mm  
Depth in ground 610mm  
Cable entry 100mm×50mm situated 305mm below ground level

### Lamps

- a) One 70W SON
- b) One 100W GLS tungsten ES
- c) One 80W MBF ES

### Specification

Design Council approved. Aluminium alloy base casting and acrylic bowl with spun aluminium top cap. Control gear for discharge lamps mounted remotely.

### Mounting

- a) Pole top on QCG7 column specially designed for this lantern. Nominal column height 5m.
- b) Wall bracket QPRK 1100.

### Range

Catalogue no.	Description
QG7 1100 E27	Complete lantern

### Replacements

Catalogue no.	Description
QG7 D	Spare bowl
QG7 F	Spare top cap

Complete fitting in one pack.

### Control gear/circuit data

See control gear and accessories section.



QG7 1100 E27  
lantern and  
lampholder  
on QCG7 column

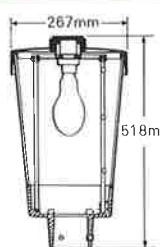
# Gamma Six SON/GLS/MBF/SOX ▲



QG6 PKIT



QG6 V/W/B 1080.4



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 1035.4A**

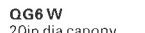
Post-top base casting assembly  
35W SOX geared.  
**QG6 B 1080.4**

Post-top base casting assembly  
70W SON geared.  
**QG6 B 1125.4**

Post-top base casting assembly  
125W MBF geared.  
**QG6 NB 1070.T**

Post-top base casting assembly  
80W MBF geared.

### CANOPIES



**QG6 W**  
20in dia canopy



**QG6 F**  
10.5in dia canopy

### BOWL



**QG6 V**  
Vandal-resistant bowl

### ACCESSORIES



**GL 1085**  
2BC lampholder



**GL 1194-1**  
ES lampholder

### REPLACEMENTS\*



**QG6T**  
Top cap for  
Photocell version.



**QP1**  
Twist and lock  
photocell socket

## Lamps

- a) One 70W SON
- b) One 100W, 150W or 200W GLS.
- c) One 80W or 125W MBF.
- d) One 35W SOX.

## Specification

Aluminium alloy base castings and spun aluminium alloy canopies with injection moulded opal acrylic or vandal resistant bowls. Control gear for 'with gear' lanterns mounted in base casting.

## Mounting

Post top mounting for 76×76mm spigot.

Recommended mounting height: 5m.  
Recommended columns: QC3 with QCS 76 spigot.

## Control gear/circuit data

See control gear and accessories section.

## Packages and spares

Cat.no.	Description
<b>QG6 1200</b>	Base assembly (less gear)
<b>QG6 B 1035.4A</b>	Base assembly with 35W SOX gear and 2BC lampholder
<b>QG6 B 1080.4</b>	Base assembly with 80W MBF gear and ES lampholder
<b>QG6 B 1125.4</b>	Base assembly with 125W MBF gear and ES lampholder
<b>QG6 NB 1070.T</b>	Base assembly with 70W SON gear and ES lampholder
<b>QG6V</b>	Bowl (Vandal resistant)
<b>QG6 W</b>	Large canopy
<b>QG6 F</b>	Small canopy
<b>GL 1085</b>	Lampholder (2BC-B22)
<b>GL 1194-1</b>	Lampholder (ES-E27)

NB: Each lantern requires:

- 1) A base casting assembly
- 2) A bowl
- 3) A canopy
- 4) A lampholder (for 'less gear' lanterns)

For lanterns requiring a photocell socket add letter P to base casting.

**Note:**  
**QG6 PKIT** Box containing 70W SON lamp, geared base assembly, bowl, and QG6F canopy and photocell.

\*Included with base casting assembly\*



QC3, QCS 76,  
QG6 B 1125.4,  
QG6 W, QG6 V.



OC1070.T  
+ OCA 1/2

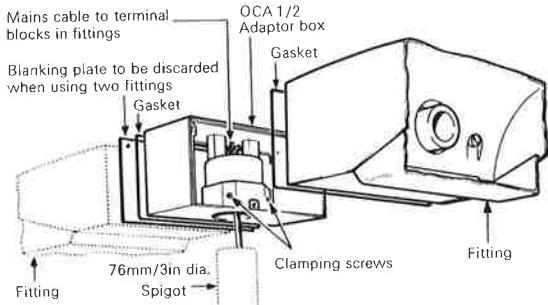


2x OC1070.T  
+ OCA 1/2



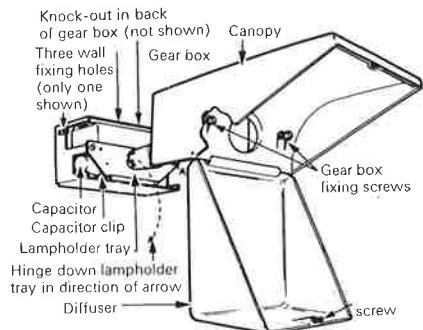
OC1070.T

### Pole mounting



Blanking plate to be discarded when using two fittings

### Wall mounting



### Lamps

One 70W SON, or 80W MBF.

### Specification

Wall mounted bulkhead fitting with adaptor box for column mounting either singly or in pairs. Pressure die-cast aluminium canopy with integral cast reflector housing separate gear tray with 240V gear and ES lampholder. Opal vandal resistant diffuser.

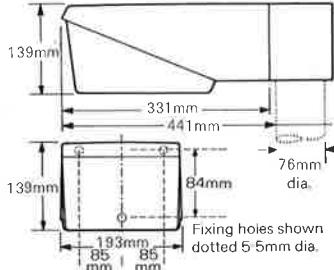
Complies with BS 4533:2-2.

### RANGE: 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+lamp	0.046	4.1	ES
OC 1070.T	70W SON Precinct c/w gear+lamp	0.046	4.9	ES

Catalogue no.	Description	Weight kg
OCA 1/2	Adaptor mounting	1.59
OCV	Spare vandal-resistant bowl	0.23
GL1194	Spare lampholder	0.11

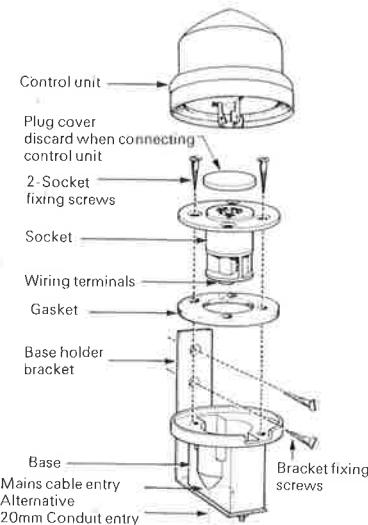
### Dimensions



## Photocell kit QPK



QPK Photocell Kit



The kit consists of 3 parts – control unit, socket and baseholder/bracket.

### PHOTOCELL CONTROL UNIT

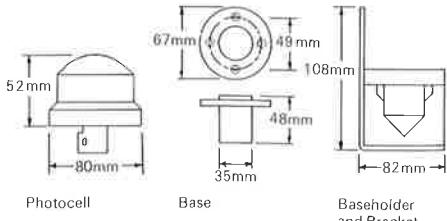
This control is designed to switch a lighting load on and off automatically at dusk and dawn. This unit is pre-calibrated to switch at light levels which ensure that outdoor lighting is on when required, allowing for a 10 minute warm-up period for sodium or mercury discharge lighting. It is, however, suitable for use with all types of lighting, i.e. tungsten, fluorescent or discharge.

### DATA

Voltage:	240 volts 50Hz
Rating:	1500 VA – maximum 1000 watts discharge lighting load
Switch on:	55 lux
Ratio:	12



OP Photocell



Components	Weight (kg)
Photocell	0.114
Base	0.084
Baseholder and bracket	0.241

### Two versions are available:

QP— Photocell. Fits directly into streetlighting fittings that have been fitted with a NEMA type socket at the factory. This is designated by the letter 'P' in the catalogue number of the lantern.

QPK— Photocell kit. Photocell packed with baseholder and bracket for mounting on walls, facias, etc.

The calibration is fixed in the factory and is not variable.

The unit switches with a ratio of 1:2, i.e. the switch on level is 55 lux and the switch off level is 110 lux.

# 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 (Renumbered Alloy 5251).

**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.

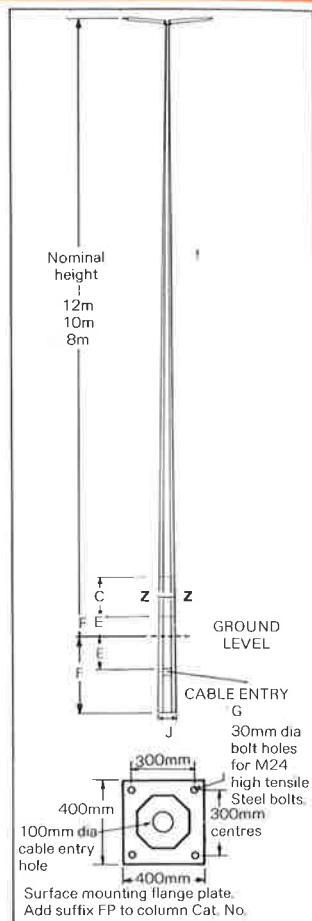
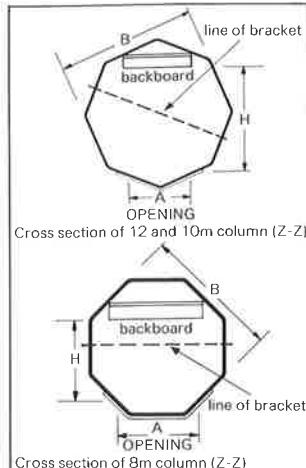
**Backboard:** Timber, 914mm x 152mm  
Door opening: 610mm x 130mm.

**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.



## Column dimensions (mm)

Catalogue No.	Nominal height	A	B	C	D	E	F	G	H	J	W1 (kg)
QC 12	12 metre	136	305	610	457	305	1500	152 x 76	230	375	113
QC 10	10 metre	136	249	610	457	305	1500	152 x 76	173	310	79
QC 8	8 metre	128	219	610	457	305	1218	152 x 76	130	270	62

## RANGE

### Streetlighting bracket arms

All Thorn Streetlighting luminaires are 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	*	*	*

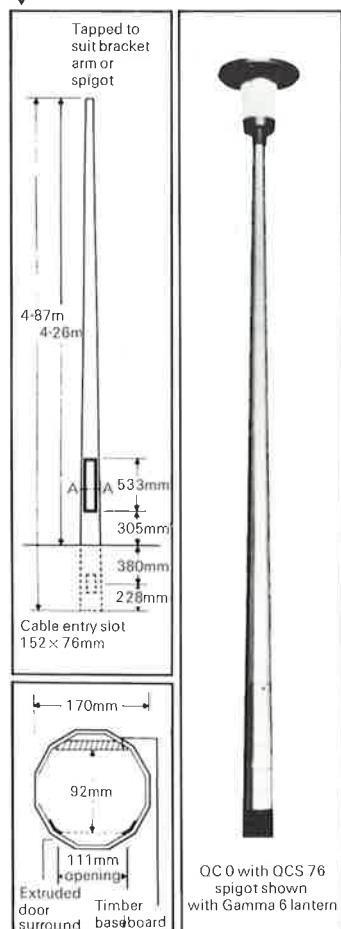
When ordering state the type of lantern(s) or floodlight(s) to be used with the column and site address for direct delivery in UK (excluding N. Ireland)

# Leader and Lucerna aluminium columns

## LUCERNA COLUMN QC0

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
------	---

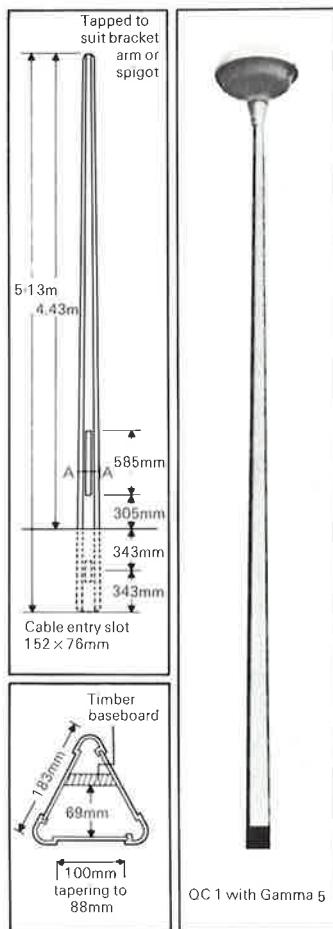
For surface mounting versions to special order add suffix "FP"  
See overleaf for floodlighting brackets.

## Data

Weight	14.5kg
Base compartment nominal dimensions	
Door opening	533x111mm
Depth	92mm
Baseboard dimensions	623x114mm
Clearance dimension at base of root	215mm

## LEADER COLUMN QC1

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

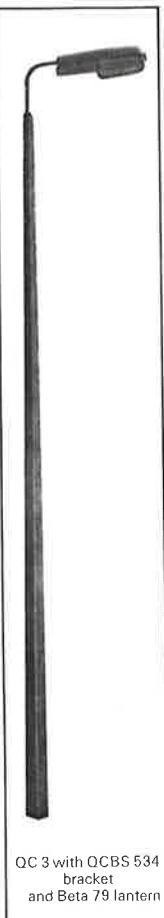
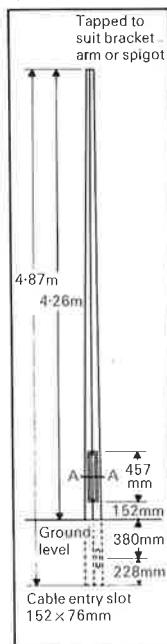
Weight	13.6kg
Base compartment nominal dimensions	
Door opening	585x88mm minimum
Depth	69mm
Baseboard dimensions	609x67mm
Clearance dimension at base of root	185mm

# Sheerline and Classic aluminium columns

## SHEERLINE COLUMN QC 3

Hexagonal section in aluminium alloy NS4. Control gear mounted on timber baseboard in base compartment.

BS 3989:1966

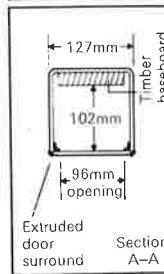
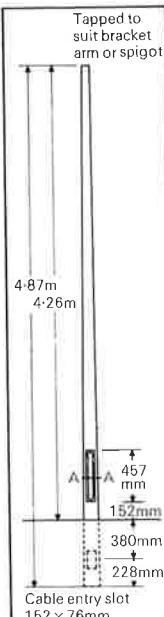


Section A-A

## CLASSIC COLUMN QC 4

Square section in aluminium alloy NS4. Control gear mounted on timber baseboard in base compartment.

BS 3989:1966



Section A-A

### 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 457x100mm

Depth 65mm

Baseboard dimensions 623x89mm

Clearance dimension at base of root 175mm

### 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 457x96mm

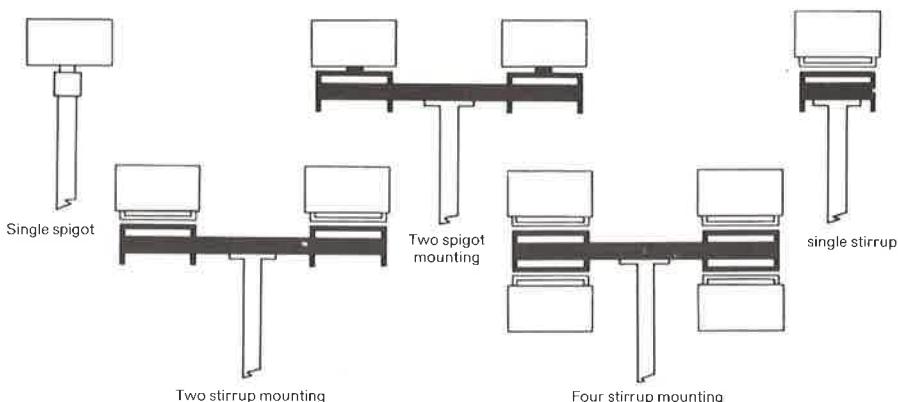
Depth 102mm

Baseboard dimensions 623x114mm

Clearance dimension at base of root 230mm

# 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
	QFS 1	Single spigot luminaire (a) 76x76mm (b) 152x76mm	1	Sunflood/Sunspot Area Flood	OHA 4612	•	•	•
	QFS 1 A		1			•	•	•
Above two catalogue nos. for specification purposes <b>only</b> ; column will be supplied with fixing arrangement as one complete unit. For those listed below, the bracket fixes to the standard streetlight shaft.								
	QFS 2	Two spigot mounting luminaires	2	Area flood	—	•	•	•
	QF 1	Single stirrup mounted luminaire – platform mounting to stirrup	1	Haline	—	•	•	•
	QF 1		1	Area Flood	OAE	•	•	•
	QF 1‡		1	ON 1500 flood	—	•	•	•
	QF 1		1	M25J	—	•	•	•
	QF 2	Two stirrup mounted luminaires – platform mounting to stirrup	2	Haline	—	•	•	•
	QF 2		2	Area flood	2×OAE	•	•	•
	QF 2‡		2	ON 1500 flood	—	•	•	•
	QF 2‡		2	M 25 J	—	•	•	•
	QF 3‡	Three stirrup mounted luminaires – Platform mounting to stirrup	3	Haline	—	•	•	•
	QF 4‡	Four stirrup mounted luminaires – platform mounting to stirrup	4	Haline	—	•	•	•

Special brackets are available to order for mounting up to eight Sunfloods.

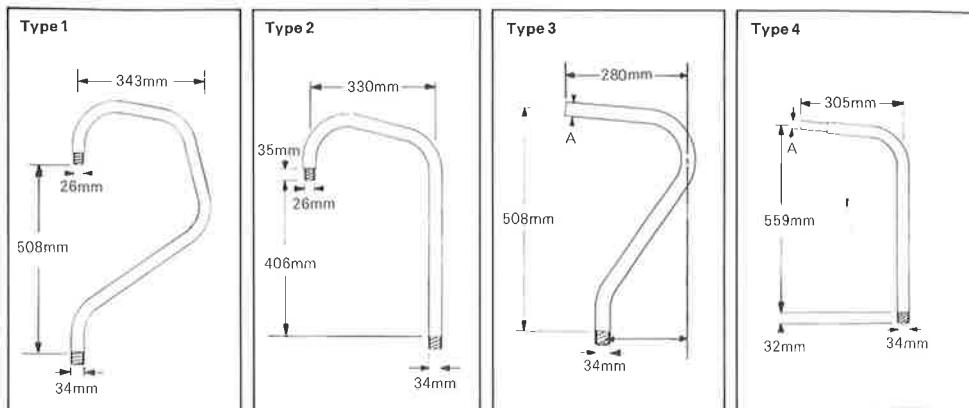
Adaptors for other floodlights not listed in the range table can be supplied to order.

\*When specifying columns for use with the floodlight arrangements listed both column and fixing references should be given, e.g. QF 4 with 12 metre column—thus QC 12/F4.

†In some cases where floodlights require separate control gear, it may be necessary to locate gear remotely from the column.

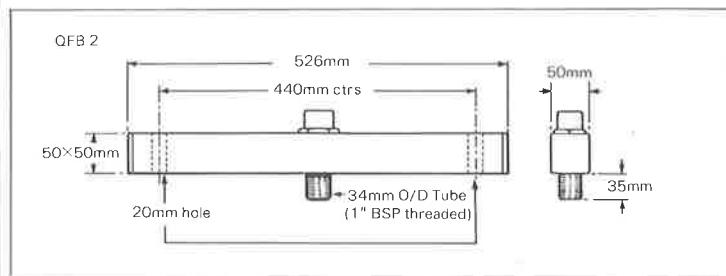
# Brackets and spigot castings for Group B columns

## BRACKETS FOR USE WITH THORN 5m COLUMNS



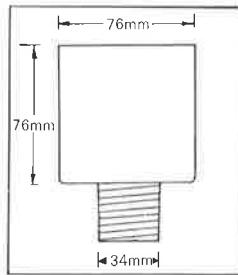
Type 5

## FLOODLIGHTING BRACKET FOR USE WITH THORN 5m COLUMNS



Note: QFB2—For mounting 2 Sunfloods on QC3, QC4 or QCO and for mounting 2 Haline or 2 SON-Pak 7 floodlights on QCO.

## SPIGOT CASTING FOR USE WITH THORN 5m COLUMNS



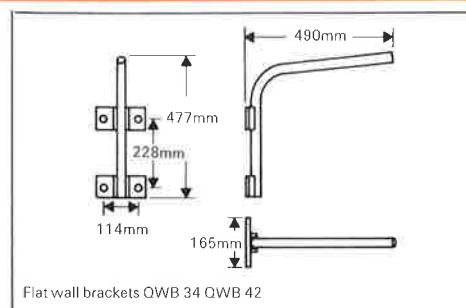
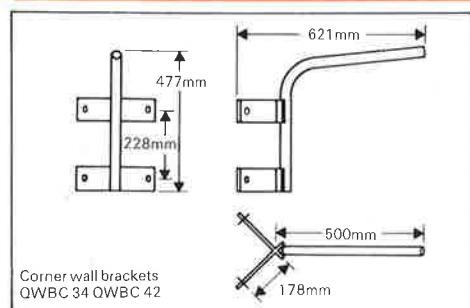
Catalogue no. QCS 76

Note: Spigot castings are threaded 34mm (1 in BSP) to screw into the standard column top when required for post-top lantern mounting.

Type	Catalogue no.	Dimension A
1	QCBT 126	Threaded 26mm (1/2 in BSP)
2	QCBT 226	Threaded 26mm (1/2 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 3 in x 3 in spigots into bracket arm types. When ordering please quote suffix (e.g. QCBS 334/SC).

# 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

Key—Type QCK

Base Compartment—533×102×99mm deep

Weight—5kg

Suitable for control gear up to and including 400W SON.

Suitable for Lanterns up to and including Alpha three.

## RANGE

Catalogue No.	BSP	Bracket Outside Dia.	Entry
QWGB 26	3/8in	26mm $\varnothing$	Top
QWGB 34	1in	34mm $\varnothing$	Side
QWGB 42	1 1/8in	42mm $\varnothing$	Side



## 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



### Choice of light source

Because each tunnel is different—in construction, dimensions, usage etc and because different Zones require a different lighting performance it is not possible to restrict choice to a single light source. But three of the most efficient light sources available today, can between them meet these needs with high efficacy and economy of performance.

### Low Pressure Sodium Lamps (SOX)

This is the most efficient light source with luminous efficacies up to 160 lumens per watt. The lamps enjoy long life, but have a characteristic monochromatic amber appearance which gives a very poor colour rendering. Lamps conform to BS 3767 and IEC 192.

### High Pressure Sodium Lamps (SON-T)

With luminous efficacies of 120 lumens per watt SON-T lamps are almost as efficient as SOX but without the drawback of monochromatic light. The colour appearance of SON-T is a golden white light. SON-T lamps are also very long lived, up to twice the life of SOX and are physically smaller. Lamps conform to IEC 662.

### Pluslux and Polylux Fluorescent Tubes (MCFA)

These are a new generation of slim (26mm diameter) fluorescent tubes 7-10% more efficient than their 38mm diameter predecessors, with the Polylux version giving excellent colour rendering due to the use of recently developed narrow band phosphors, achieving efficacies approaching 90 lumens per watt but with the same life as standard fluorescent tubes. Tubes conform to BS 1853.

### Luminaire Design and Development

Because tunnel lighting needs to meet a demanding specification luminaires are designed to retain their performance for long periods without maintenance. To maintain through life performance, the luminaire must be adequately sealed. Thorn's luminaires are tested in accordance with the BS 4533 specification in a BSI approved Test House. But the testing procedure includes also such matters as mechanical impact testing, insulation resistance and electrical strength, and measuring operating temperatures during a thermal endurance test to ensure components work within their design limits.

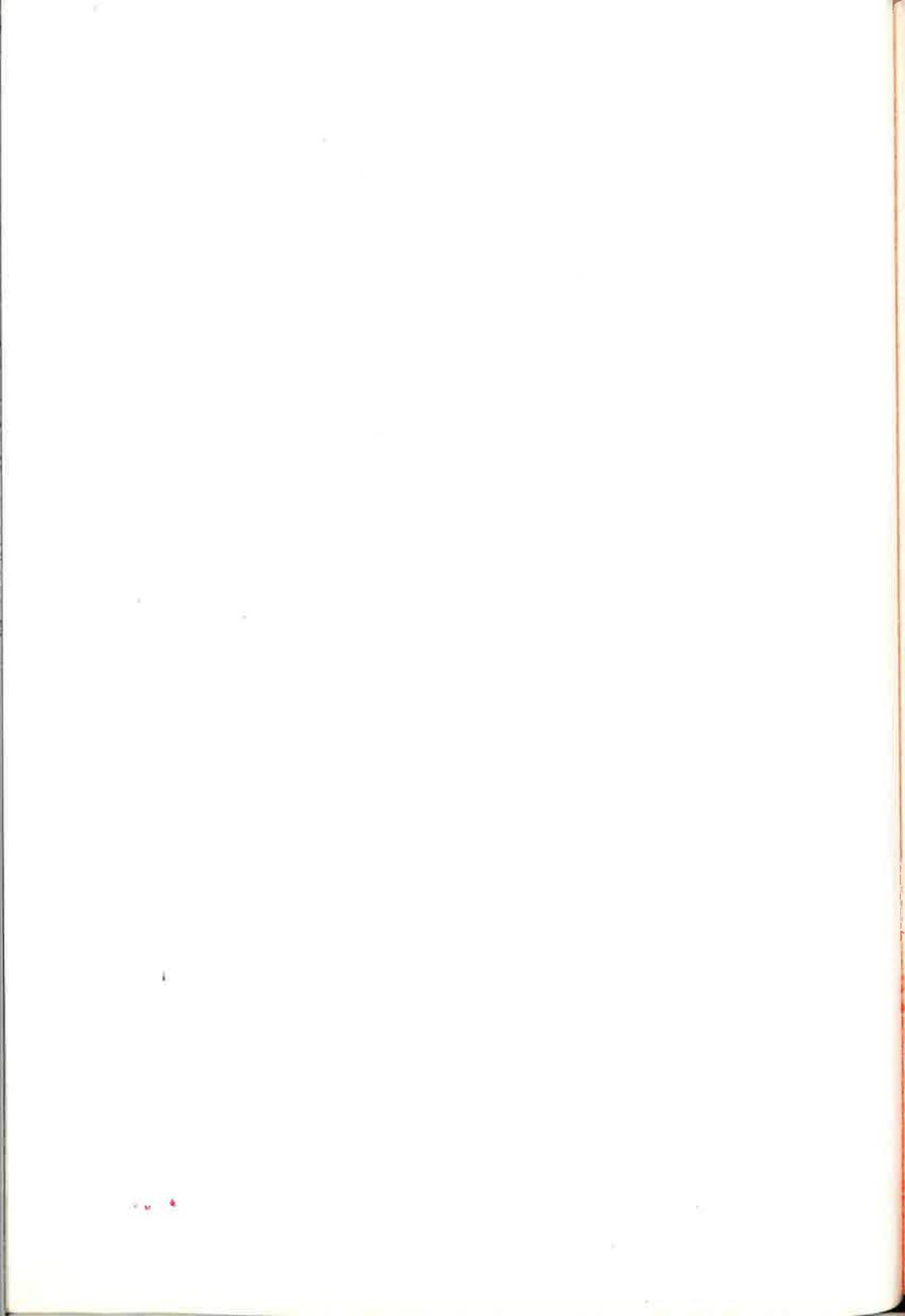
The luminaires are approved to Ta 35°C and starting is dependent on lamp type: —5°C for fluorescent, —20°C for SOX and —40°C for SON-T.

### The Principles of Tunnel Lighting

The main problem with a road tunnel is the effect on the driver's vision of the sudden change from daylight to tunnel surroundings. The aims of tunnel lighting are to maintain the driver's visibility during this transition and then to provide a reasonable standard of lighting in the main body or central zone of the tunnel. Thus in the entrance or threshold zone of the tunnel a very high level of lighting is required which reduces through transition zones as a driver progresses into the tunnel until the steady central zone level is reached.

It is also necessary that the lighting levels adjust automatically according to the outside ambient lighting. Thus at night a single line of fluorescent tubes throughout the tunnel is usually sufficient, but on the brightest day twin fluorescent tubes over the whole length are necessary, plus about four rows of 400W SON-T fittings in the threshold zone. Further transition zones would require fewer SON-T luminaires.

For more detailed information on planning, installation and maintenance please contact your local Thorn Lighting Office.



# Airfield Lighting

## Index

<b>Airfield lighting introduction</b>	<b>186</b>
<b>Mini PAPI Precision Approach Path Indicator</b>	<b>187</b>
<b>High Intensity Inset range</b>	<b>188-189</b>
<b>Elevated Airfield Lights</b>	<b>190</b>

**Health and Safety at work.**  
Refer to note on page seven.



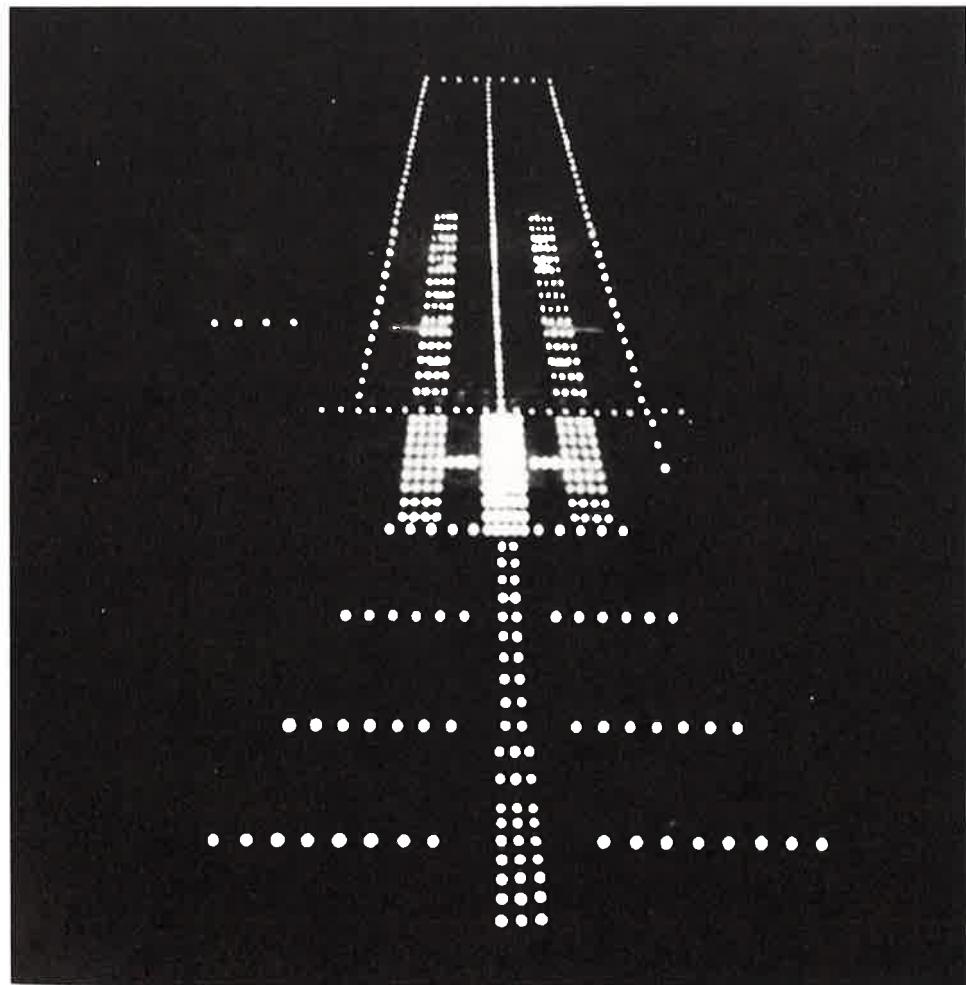
## Airfield lighting

Thorn Lighting offers a comprehensive range of lighting equipment for all categories of airfield lighting.

The range complies with ICAO recommendations and is easy to maintain, in particular the servicing time on active parts of the airfield has been considerably reduced. This is a direct result of the development by Thorn of lamps and fittings in conjunction with each other.

This method of development has led to Thorn airfield lighting equipment being installed in airports all over the world.

Enquiries relating to airfield lighting should be directed to the Airfield Lighting Division address at the rear of this catalogue.



## Mini PAPI Precision Approach Path Indicator



The Mini VASI system was developed by Thorn to meet the need of a more compact more easily installed and maintained visual approach slope indicator that is less susceptible to damage by jet eflux than the traditional VASI which Thorn introduced, while maintaining equal performance.

The unit has been progressively improved, and now has a performance that makes it equally suitable for use in either a PAPI configuration or a VASI configuration. Thus with this unit it is possible to install now in a VASI configuration and move into a PAPI configuration later. The fitting consists of a cast aluminium base fitted with a 2in. BSP frangible coupling for fitting on various mounting arrangements that is easy to set up and adjust, and interchangeable optical units that quickly and simply slot into place, connect and lock. The interchangeable optical units mean that the lamp change and other maintenance can simply be carried out, and the optical performance accurately checked in the workshop, whilst a replacement unit is in service.

The unit frame construction means simplified maintenance using factory assembled frame and attachments made on the same jig as the original equipment for accurate optical performance. The unit utilises two 200W 6.6 amps AF 7/2 Tungsten Halogen lamps as used in Thorn inset fittings.

Complies with ICAO performance recommendations.

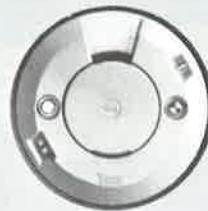
### Special Features

- Small size reduces risk of damage by jet eflux.
- Common lamp with Thorn inset fittings for minimum spare holding.
- Tungsten Halogen lamp for long life.
- Interchangeable quick release lighting units simplify maintenance.
- Wattage reduced by one third compared with ordinary VASI, saves on electrical equipment.
- Can be used as replacement for conventional VASI units.
- Transition width reduced for a more accurate signal.
- Can be used in a 'PAPI' configuration

## High Intensity Inset range



**CRH-C2** Bidirectional runway centre line inset fitting.



**CRH-C1** Unidirectional touchdown zone inset fitting.



**ERH-B2T** Bidirectional runway edge light.



**CTHCS-B2** Bidirectional high intensity taxiway inset fitting for leading in and out of curves.



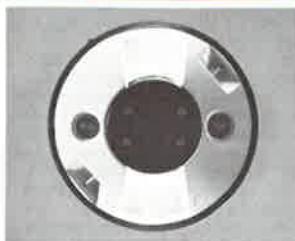
**CTHC-B2** Bidirectional high intensity taxiway inset fitting for bends and curves.

These fittings are designed to meet the ICAO recommendations and consist of three parts—base, light unit and cover. The castings are of anodised aluminium while other parts are stainless steel or other suitable material to protect against corrosion.

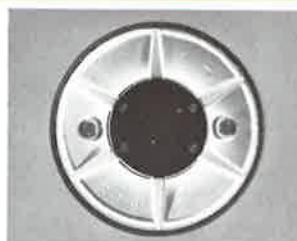
The range of inset fittings has the following advantages:

- \*Ease of maintenance. The self-contained light units can be exchanged on the runway in less than two minutes with just one spanner, with minimum interference to runway use.
- \*No watertight seals are broken on the runway during maintenance.
- \*Lamp does not require focusing in fitting.
- \*The cover is self-ejecting as bolts are released.
- \*The glass is protected from hydraulic pressure.
- \*Many common components used throughout the range.
- \*With the exception of taxiway lights, all use the AF 7/2 lamp. This long life tungsten halogen lamp (600 hrs. at full intensity when in fitting) is also used in the elevated approach light and Mini PAPI.
- \*Adaptor plates available to permit mounting directly on most standard transformer pits or conversion from existing bases.

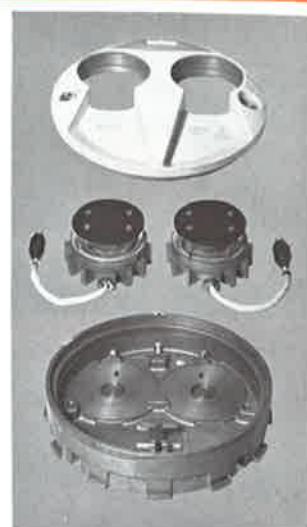
## High Intensity Inset range



**CTHS-B2** Bidirectional high intensity taxiway inset fitting for centre line guidance on straights.



**OLTF-1** Omnidirectional taxiway inset fitting.



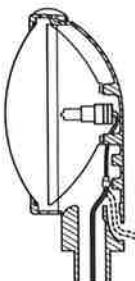
**HIA-B1** Unidirectional approach or threshold inset fitting.  
This fitting consists of four castings, i.e., base, 2 identical light units and cover.

### RANGE

Cat. No.	Description	Lamp used
CRH.C1	Unidirectional touchdown zone inset fitting	AF 7/2
CRH.C2	Bidirectional runway centreline inset fitting	AF 7/2
ERH.B2T	Bidirectional runway edge inset fitting	AF 7/2 or AF 6/6E
CTHCS.B2	Bidirectional high intensity taxiway inset fitting for leading in and out of curves	AF 8/6T
CTHC.B2	Bidirectional high intensity taxiway inset fitting for bends and curves	AF 8/6T
CTHS.B2	Bidirectional high intensity taxiway inset fitting for centreline guidance on straights	AF 6/2
OLTF.1	Omnidirectional taxiway inset fitting	AF 6/2
HIA.B1*	Unidirectional high intensity approach or threshold inset fitting	AF 7/2 x 2

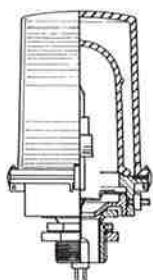
\*This fitting contains two light units.

## Elevated Airfield Lights



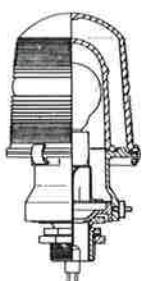
### HIA 6/1 Unidirectional high intensity approach light.

For use in a high intensity approach system. The optical system gives exceptionally good coverage in both vertical and horizontal beam spreads. Suitable for mounting on the ground, onto a 2in BSP frangible coupling or onto a frangible mast. Meets ICAO 1976 specification. Filters available in red and green signal. Cast aluminium body. The fitting employs a standard AF 7/2 200W 6.6 amp tungsten halogen lamp.



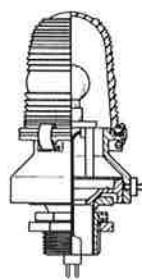
### HIR 4/3 Omnidirectional high intensity elevated runway light.

Omnidirectional light distribution with two principal high intensity beams. Suitable for threshold and stopway marking. Particularly for use where a high intensity system is required with circling guidance. Can be used in measuring runway visual range (RVR). Supplied with or without daylight marker cone. The fitting employs an AF 7/2 tungsten halogen lamp, or alternatively an AF 1/1.



### LIA 3/3 Omnidirectional low/medium intensity approach light.

For use in low or medium intensity approach system: ground or mast mounted to suit particular requirements. Can also be used as an obstruction light where a more powerful intensity is required. The fitting employs an AF 2/1 (200W 6.6 amps).



### LIR 4/3 Omnidirectional low intensity taxiway or apron edge light.

For edge lighting or runway, stopway, taxiway, apron, helipad and for threshold marking where high intensity is not required. Available with symmetrical lens glass. Blanking plates can be fitted to cut out any unwanted light. Supplied with or without daylight marker cone. The fitting employs an AF 4/2 45W lamp or alternatively AF 4/1 30W lamp.

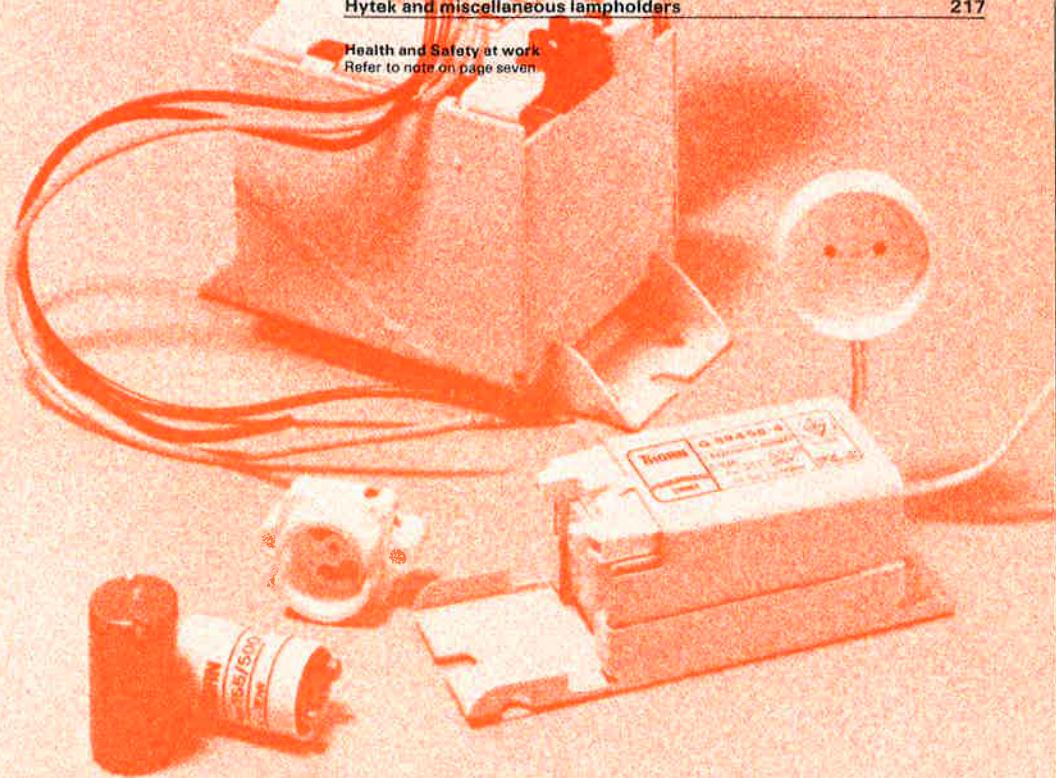
# Control gear and accessories

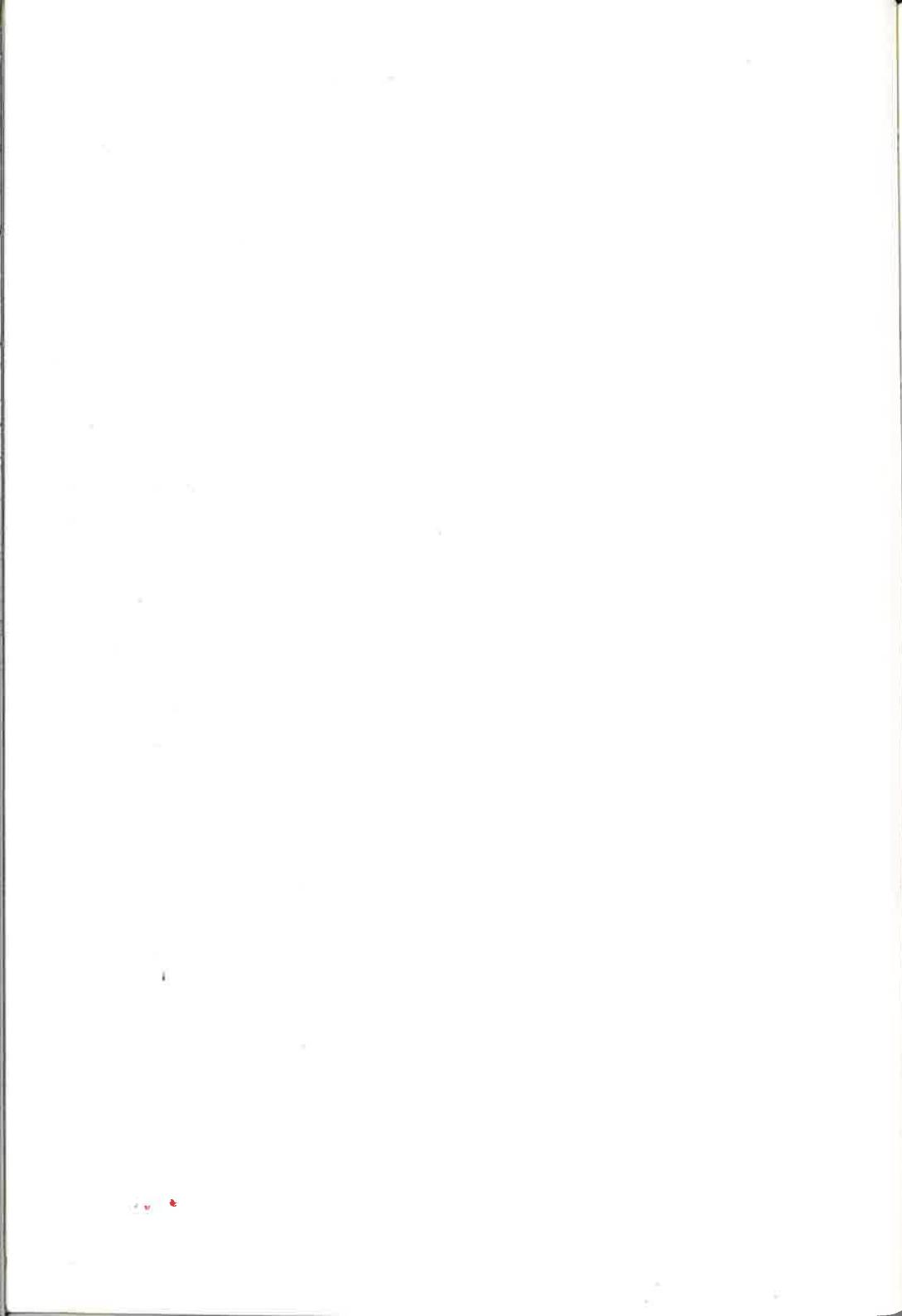
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### Health and Safety at work

Refer to note on page seven.





# Fluorescent lamp 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 17 per cent.

**5 Gear noise:** All control gear having a laminated iron core will produce noise due to the magnetisation of the laminations. The noise level varies according to the type of circuit and the wattage rating. Although all the control gear listed here is suitable for use in offices and factories having a normal background noise level, this control gear could become audible when the ambient noise becomes reduced, e.g. in an office outside normal working hours. Advice should be sought regarding suitable gear for use in exceptionally quiet locations.

*The method of mounting the fitting and the surface on which it is fixed play a very important part in securing satisfactory operation in difficult conditions.*

**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.

For more detailed information on installation and maintenance of fluorescent lighting equipment see the **Thorn Technical Hand-book**.

# Fluorescent lamp Switch Start control gear (240V 50Hz supply)

Lamp Length mm	Wattage	Circuit		Weight kg	Terminations†	Choke tw (°C)	Starter Switch Cat. no.	Capacitor		
		Type*	Diag. no. & Cat. no.					Cat. no.	μF	Working Voltage
2400	125 or 100	lead**	2 GCU 100/126	1.25	P.W.	130 66 2	155/800	GC2173	7.2±5%	440 35
2400	125 or 100	lead	8 GCB 125	2.60	S.T.B.	105 55 6	155/800	Inc. in choke can		
2400	100	HPF	1 GCU 100	1.60	P.W.	130 66 2	155/800	GC2419	8.4±5%	250 35
2400	100	LPF‡	3 GCU 100	1.60	P.W.	130 66 2	155/800	—	—	—
1800	85	HPF	8 GCB 85	2.40	S.T.B.	105 60 6	155/800 <sup>3</sup>	Inc. in choke can		
1800	70	lead**	2 GCU 70	1.09	P.W.	130 55 2	155/800	GC2228	5.0±5%	440 35
1800	75	lead**	2 GCU 58/65	1.09	P.W.	130 60 2	155/800	GC2228	5.0±5%	440 35
1800	70 or 75	HPF	1 GCU 70/75	1.25	P.W.	130 60 2	155/800	GC2435	6.0±10%	250 35
1800	70 or 75	LPF‡	3 GCU 70/75	1.25	P.W.	130 60 2	155/800	—	—	—
1500	58 or 65	HPF	1 GCU 58/65	1.09	P.W.	130 60 2	155/500	GC2420	5.5±10%	250 35
1500	58 or 65	HPF	1 GCS 58/65	0.99	P.W.	130 60 3	155/500	GC2429	6.0±10%	250 25
1500	58 or 65	HPF	8 GCB 65	1.00	S.T.B.	105 50 6	155/500 <sup>3</sup>	Inc. in choke can		
1500	58 or 65	HPF	1 GCJ 58	1.10	P.W.	130 55 5	155/500	GC2429	6.0±10%	250 25
1200	36 or 40	HPF	1 GCU 36/40	0.74	P.W.	130 60 1	155/500	GC2417	4.0±10%	250 35
1050 <sup>1</sup>	36 or 40	HPF	1 GCS 36/40	0.65	P.W.	130 55 3	155/500	GC2428	4.0±10%	250 25
525x120 U-lamp <sup>1</sup>	36 or 40	HPF	1 GCJ 36/40	0.69	P.W.	130 55 5	155/500	GC2428	4.0±10%	250 25
	36 or 40	HPF	8 GCB 40	1.10	S.T.B.	105 55 6	155/500 <sup>3</sup>	Inc. in choke can		
900 & 32W circular	30	HPF	1 GCU 30	0.74	P.W.	130 55 1	155/500	GC2417	4.0±10%	250 35
	30	HPF	1 GCS 30	0.65	P.W.	130 55 3	155/500	GC2428	4.0±10%	250 25
	30	HPF	1 GCJ 30	0.66	P.W.	130 60 5	155/500	GC2428	4.0±10%	250 25
	30	HPF	8 GCB 30	1.14	S.T.B.	105 45 8	155/500 <sup>3</sup>	Inc. in choke can		
600	18 or 20	HPF	1 GCU 18/20	0.74	P.W.	130 55 1	155/500	GC2417	4.0±10%	250 35
600	18 or 20	HPF	1 GCS 18/20	0.65	P.W.	130 55 3	155/500	GC2428	4.0±10%	250 25
600	18 or 20	HPF	1 GCJ 18	0.68	P.W.	130 60 5	155/500	GC2428	4.0±10%	250 25
600	18 or 20	HPF	8A GCB 20	1.02	S.T.B.	120 50 6	155/500	GC2417	4.0±10%	250 35
2x600	18 or 20	Ser pr <sup>2</sup>	7 GCU 36/40	0.74	P.W.	130 60 1	2x155/200	GC2417	4.0±10%	250 35
2x600	18 or 20	Ser pr <sup>2</sup>	7 GCS 36/40	0.65	P.W.	130 55 3	2x155/200	GC2428	4.0±10%	250 25
2x600	18 or 20	Ser pr <sup>2</sup>	9 GCB 40	1.10	S.T.B.	105 55 6	2x155/200 <sup>3</sup>	Inc. in choke can		

\*Type: HPF=Legging High Power Factor Circuit

LPF=Legging Low Power Factor Circuit

lead=Leading Power Factor Circuit

Ser pr=Series Pair Circuit

\*\*Circuit can be used as leading half of a lead-lag pair circuit (see circuit no. 4)

†Circuit can be used as lagging half of a lead-lag pair circuit (see circuit no. 4)

<sup>1</sup>Lamp available in 40W rating only

<sup>2</sup>For LPF circuit omit the capacitor

<sup>3</sup>Starter switches should be ordered separately—an additional starter switch socket will also be required for series pair circuits

†Terminations: P.W.=Push Wire

S.T.B.=Screw Terminal Block

\$See page 196 for circuit diagrams

See page 197 for choke illustrations

# Fluorescent lamp Switch Start control gear (240V 50Hz supply)

Length mm	Wattage	Type*	Circuit	Diag. no. \$	Cat. no.	Weight kg	Terminations†	Choke			Illustration§	Starter Switch Cat. no.	Capacitor			
								tw (°C)	Δt (°C)	Cat. no.		μF	Working Voltage	Diam. mm		
138x141	16 (2D)	HPF <sup>2</sup>	1 <sup>1</sup>	GCU 18/20	0.34	P.W.		120	60	6	—	1	GC2286	2.0±10%	250	25
450	15	HPF <sup>2</sup>	1	GCS 18/20	0.74	P.W.		130	55	1	155/200		GC2417	4.0±10%	250	35
450	15	HPF <sup>2</sup>	1	GCS 18	0.65	P.W.		130	55	3	155/200		GC2428	4.0±10%	250	25
450	15	HPF <sup>2</sup>	1	GCJ 18	0.68	P.W.		130	60	5	155/200		GC2428	4.0±10%	250	25
450	15	HPF	8A	GCBS 20	1.02	S.T.B.		120	50	6	155/200		GC2417	4.0±10%	250	35
2x450	2x15	Ser pr <sup>2</sup>	7	GCU 30	0.74	P.W.		130	55	1	2x155/200		GC2417	4.0±10%	250	35
2x450	2x15	Ser pr <sup>2</sup>	7	GCS 30	0.65	P.W.		130	55	3	2x155/200		GC2428	4.0±10%	250	25
2x450	2x15	Ser pr <sup>2</sup>	9	GCBS 30	1.14	S.T.B.		105	45	8	2x155/200 <sup>3</sup>		Inc. in choke can 1			
525	13	HPF <sup>2</sup>	1	GCD 13	0.31	F.L.		120	55	7	155/600		GC2286	2.0±10%	250	25
525	13	HPF <sup>2</sup>	1	GCJ 13	0.27	P.W.		130	50	5	155/600		GC2286	2.0±10%	250	25
300	8	HPF <sup>2</sup>	1	GCD 8	0.31	F.L.		120	50	7	155/500		GC2286	2.0±10%	250	25
300	8	HPF <sup>2</sup>	1	GCJ 8	0.27	P.W.		130	50	5	155/500		GC2286	2.0±10%	250	25
2x300	2x8	Ser pr <sup>2</sup>	7	GCD 13	0.31	F.L.		120	55	7	2x155/100		GC2286	2.0±10%	250	25
2x300	2x8	Ser pr <sup>2</sup>	7	GCJ 13	0.27	P.W.		130	50	5	2x155/100		GC2286	2.0±10%	250	25
225	6	HPF <sup>2</sup>	1	GCD 8	0.31	F.L.		120	50	7	155/600		GC2286	2.0±10%	250	25
225	6	HPF <sup>2</sup>	1	GCJ 8	0.27	P.W.		130	50	5	155/600		GC2286	2.0±10%	250	25
2x225	2x6	Ser pr <sup>2</sup>	7	GCD 8	0.31	F.L.		120	50	7	2x155/100		GC2286	2.0±10%	250	25
2x225	2x6	Ser pr <sup>2</sup>	7	GCJ 8	0.27	P.W.		130	50	5	2x155/100		GC2286	2.0±10%	250	25
150	4	HPF <sup>2</sup>	1	GCD 8	0.31	F.L.		120	50	7	155/600		GC2286	2.0±10%	250	25
150	4	HPF <sup>2</sup>	1	GCJ 8	0.27	P.W.		130	50	5	155/600		GC2286	2.0±10%	250	25
2x150	2x4	Ser pr <sup>2</sup>	7	GCD 8	0.31	F.L.		120	50	7	2x155/100		GC2286	2.0±10%	250	25
2x150	2x4	Ser pr <sup>2</sup>	7	GCJ 8	0.27	P.W.		130	50	5	2x155/100		GC2286	2.0±10%	250	25

\*Type: HPF=Legging High Power Factor Circuit

Ser pr=Series Pair Circuit

<sup>1</sup>Starter switch included within 2D lamp

<sup>2</sup>For LPF circuit omit the capacitor

<sup>3</sup>Starter switches should be ordered separately—an additional starter switch socket will also be required for series pair circuits

†Terminations: P.W.=Push Wire

S.T.B.=Screw Terminal Block

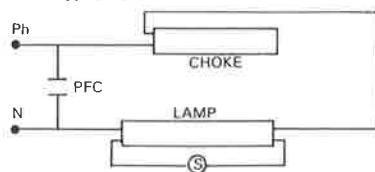
F.L.=Flying Leads

§See page 198 for circuit diagrams

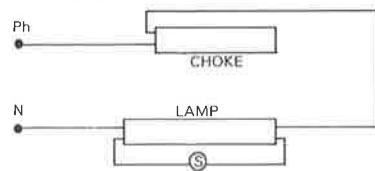
¶See page 197 for choke illustrations

# Fluorescent lamp switch start circuits

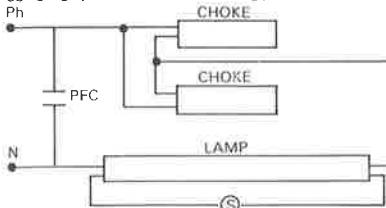
1 Standard lagging high power factor circuit



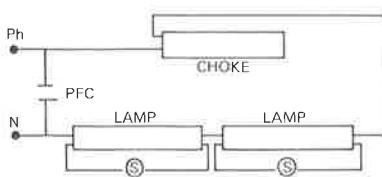
3 Standard lagging low power factor circuit



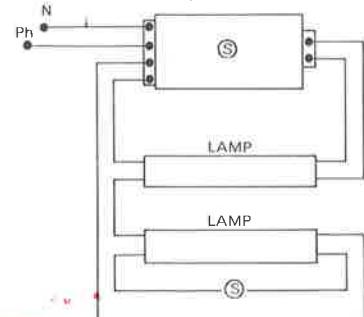
5 Lagging high power factor circuit using parallel half chokes



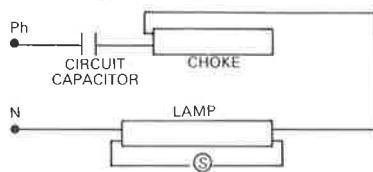
7 Lagging high power factor series pair circuit (omit PFC for lagging low power factor circuit)



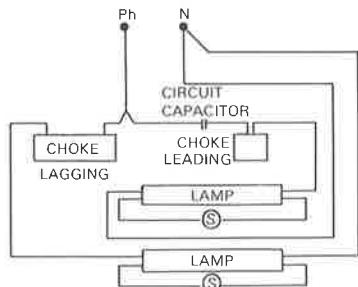
9 High power factor series pair circuit for ballast units with built in starter switch socket (GCB5 series)



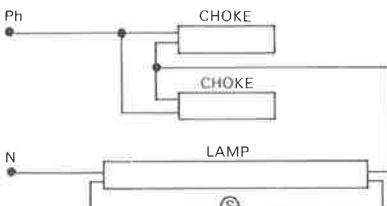
2 Standard leading power factor circuit



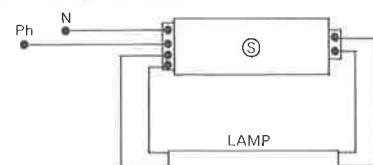
4 Lead-lag pair (Unity Power Factor) circuit (Circuits 2 and 3 combined)



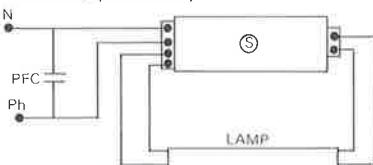
6 Lagging low power factor circuit using parallel half chokes



8 High power factor circuit for ballast units with built in starter switch socket. (GCB5 series)



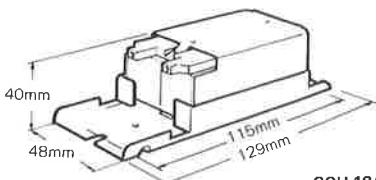
8a High power factor circuit for ballast units with built in starter switch socket. (GCB5 series)



# Fluorescent lamp Ballast illustrations

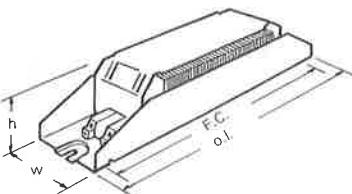
## GCU Series

1



GCU 18/20  
GCU 30  
GCU 36/40

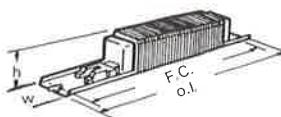
2



	h	w	fc	ol
GCU 58/65	40	48	150	170
GCU 70	40	48	150	170
GCU 70/75	40	48	165	185
GCU 100	40	48	204	217
GCU 100/125	40	48	165	185

## GCJ Series

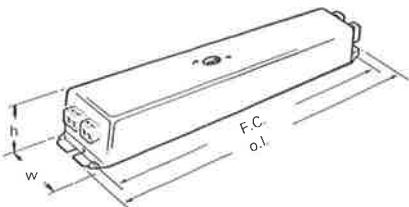
5



	h	w	fc	ol
GCJ 8	32	30	97	110
GCJ 13	32	30	97	110
GCJ 16	32	30	99	105
GCJ 18	32	30	197	231
GCJ 30	32	30	197	231
GCJ 36/40	32	30	197	231
GCJ 58/65	32	30	240	255

## GCBS Series

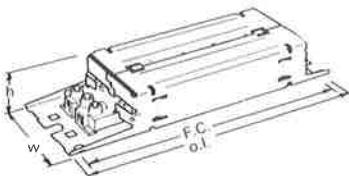
6



	h	w	fc	ol
GCBS 20	43	48	168	179
GCBS 30	43	48	216	229
GCBS 40	43	48	216	229
GCBS 65	48	64	229	248
GCBS 685	48	64	292	311
GCBS 125	48	64	317	336

## GCS Series

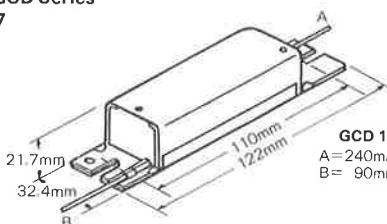
3



	h	w	fc	ol
GCS 18/20	28	42	140	150
GCS 30	28	42	140	150
GCS 36/40	28	42	140	150
GCS 58/65	28	42	180	190
GCS 70/75	28	42	180	190

## GCD Series

7



GCD 13 GCD 8  
A=240mm 150mm  
B= 90mm 90mm

# Fluorescent lamp Vivatronic Start control gear (240V 50Hz supply)

Length mm	Lamp Wattage	Type*	Circuit		Weight kg	Termination†	tw (°C)	Δt (°C)	Illustration§	Vivatronic Starter			Capacitor Working Voltage	Diem. mm
			Diag. no.¶	Cat. no.						Cat. no.	Cat. no.	μF		
2400	125 or 100	lead**	12	GCU 100/125	1.25	P.W.	130	65	2	G69517.4	GC2173	7.2±5%	440	35
2400	100	HPF	11	GCU 100	1.60	P.W.	130	65	2	G69517.4	GC2419	8.4±5%	250	35
2400	100	LPF‡	11	GCU 100	1.60	P.W.	130	65	2	G69517.4	—	—	—	—
1800	75	HPF	10	GCU 70/75	1.25	P.W.	130	60	2	G69532.4	GC2435	6.0±10%	250	35
1800	75	HPF	10A	2xGCS 70/75	0.63 each	P.W.	130	60	3	G69532.4	GC2429	6.0±10%	250	25
1800	70	HPF	11	GCU 70/75	1.25	P.W.	130	60	2	G69570.4	GC2435	6.0±10%	250	35
1800	70	HPF	11A	2xGCS 70/75	0.63 each	P.W.	130	60	3	G69570.4	GC2429	6.0±10%	250	25
1600	65	HPF	10	GCU 58/65	1.09	P.W.	130	60	2	G69523.4	GC2420	5.5±10%	250	35
1500	65	HPF	10	GCS 58/65	0.99	P.W.	130	60	3	G69523.4	GC2429	6.0±10%	250	25
1500	58	HPF	10	GCU 58/65	1.09	P.W.	130	60	2	G69547.4	GC2428	6.0±10%	250	25
1500	58	HPF	10	GCS 58/65	0.99	P.W.	130	60	3	G69547.4	GC2429	6.0±10%	250	25
1200	40	HPF	10	GCU 36/40	0.74	P.W.	130	60	1	G69523.4	GC2417	4.0±10%	250	35
1200	40	HPF	10	GCS 36/40	0.65	P.W.	130	55	3	G69523.4	GC2428	4.0±10%	250	25
1200	36	HPF	10	GCU 36/40	0.74	P.W.	130	60	1	G69547.4	GC2417	4.0±10%	250	35
1200	36	HPF	10	GCS 36/40	0.65	P.W.	130	55	3	G69547.4	GC2428	4.0±10%	250	25
600	20	HPF	10	GCU 18/20	0.74	P.W.	130	65	1	G69523.4	GC2417	4.0±10%	250	35
600	20	HPF	10	GCS 18/20	0.65	P.W.	130	55	3	G69523.4	GC2428	4.0±10%	250	25
600	18	HPF	10	GCU 18/20	0.74	P.W.	130	55	1	G69547.4	GC2417	4.0±10%	250	35
600	18	HPF	10	GCS 18/20	0.65	P.W.	130	55	3	G69547.4	GC2428	4.0±10%	250	25

\*Type: HPF=Legging High Power Factor Circuit

LPF=Legging Low Power Factor Circuit

lead=Leading Power Factor Circuit

\*\*Circuit can be used as leading half of a lead-lag pair circuit for 100W lamp only

‡Circuit can be used as lagging half of a lead-lag pair circuit

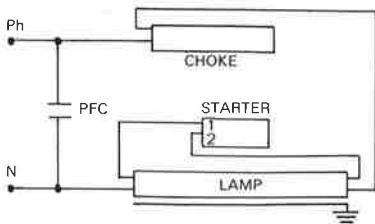
†Terminations: P.W.=Push Wire

§See page 189 for circuit diagrams

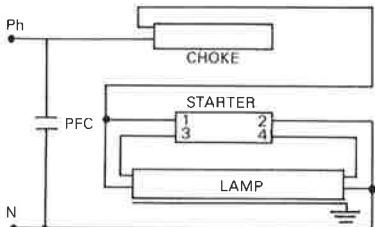
See page 187 for choke illustrations

# Fluorescent lamp Vivatronic circuits

10 Lagging high power factor circuit for a two terminal Vivatronic starter

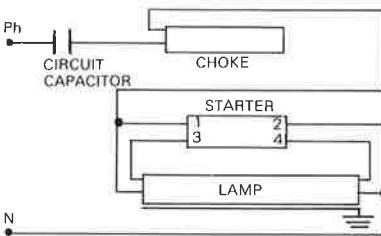


11 Lagging high power factor circuit for a four terminal Vivatronic starter

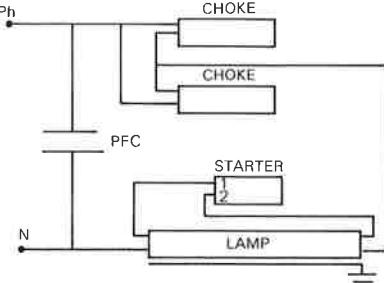


Omit the PFC capacitor when the circuit is used as a lagging power factor circuit in a lead-lag circuit arrangement.

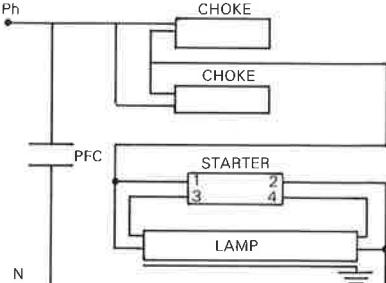
12 Leading power factor circuit for a four terminal Vivatronic starter



10A Lagging high power factor circuit for a two terminal Vivatronic starter and using parallel half chokes.



11A Lagging high power factor circuit for a four terminal Vivatronic starter and using parallel half chokes.



# Fluorescent lamp Starterless control gear (240V 50Hz supply)

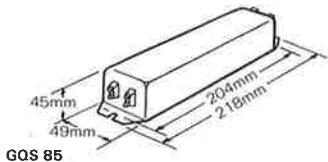
Lamp Length mm	Wattage	Type*	Circuit	Choke or ballast unit				Quickstart transformer		Capacitor				
				Diag. no.	Cat. no.	Weight kg	Termina-tions†	Iw (°C)	Δt (°C)	Cat. no.	Termina-tions†	Cat. no.	μF	
2400	85	HPF	14	GCQU 85	1-07	P.W.	130	50	GOS 85	P.W.	GC 2226	5.0±5%	440	35
1800	85	HPF	13	GBU 685	1-70	P.W.	120	70	—	—	GC 2419	8.4±5%	250	35
1800	75	HPF	13	GBU 65/75	1-70	P.W.	120	85	—	—	GC 2419	8.4±5%	250	35
1500	65	HPF	13	GBU 65/75	1-70	P.W.	120	85	—	—	GC 2419	8.4±5%	250	35
1500	50	HPF	13	GBJ 50	0.80	P.W.	130	70	—	—	GC 2420	5.5±10%	250	35
1200	40	HPF	13	GBU 40	1.30	P.W.	105	50	—	—	GC 2420	5.5±10%	250	35
600	20	HPF	15	GCU 18/20	0.74	P.W.	130	55	GOS 20/40/80	S.T.B.	GC 2417	4.0±10%	250	35
2×600	2×20	HPF	18	GCU 36/40	0.74	P.W.	130	60	GOS 220	S.T.B.	GC 2417	4.0±10%	250	35

\*Type: HPF=Lagging High Power Factor Circuit

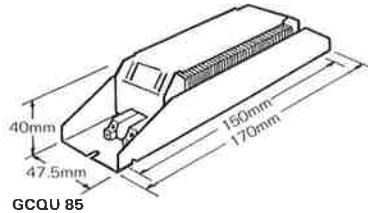
†Terminations: P.W.=Push wire

S.T.B.=Screw terminal block.

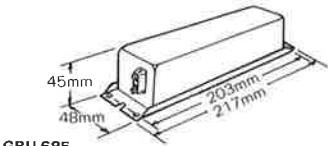
## STARTERLESS CONTROL GEAR ILLUSTRATIONS



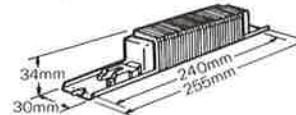
GOS 85



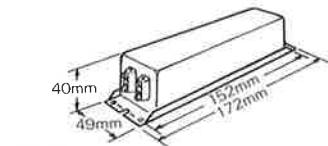
GCQU 85



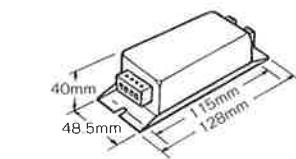
GBU 685  
GBU 65/75



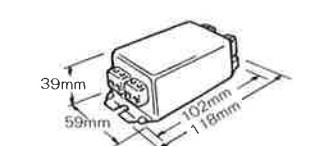
GBJ 50



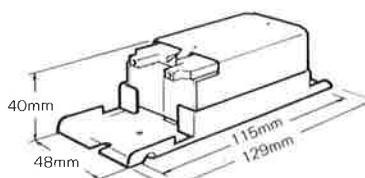
GBU 40



GOS 20/40/80



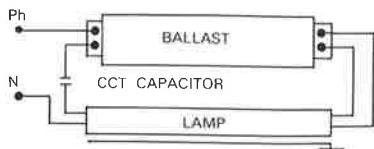
GOS 220



GCU 18/20  
GCU 36/40

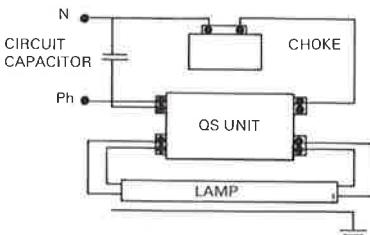
# Fluorescent lamp Semi-Resonant and Quick-start circuits

13 Semi-Resonant circuit

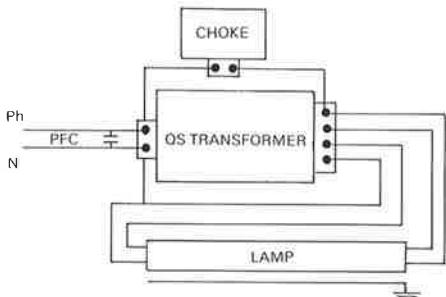


Note: Terminal arrangements vary with different ballasts. See wiring diagram on individual ballast for exact details.

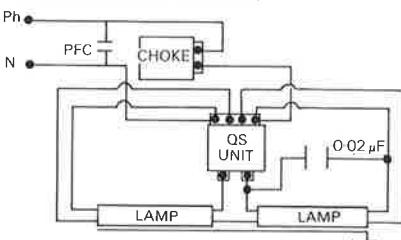
14 2400mm 85W Quick-start circuit



15 600mm 20W Quick-start circuit



16 2 x 600mm 20W Quick-start circuit

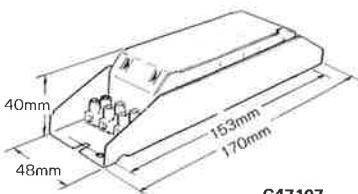
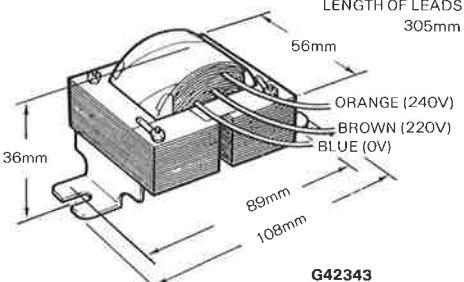


Where a voltage other than 240V 50 Hz is available the step-up transformers shown below may be used in conjunction with standard 240V 50 Hz control gear.

Catalogue no.	G42343	G47107
Voltage input	220V	116V
Maximum load	220VA	100VA
Weight (kg)	0.45	1.25
Insulation	Varnish	Varnish
Can colour	Natural	White
Terminals	Leads	Screw

Note that transformers G42343 and G47107 can be accommodated in Pop Pack/Clipper fittings.

## Step-up transformers

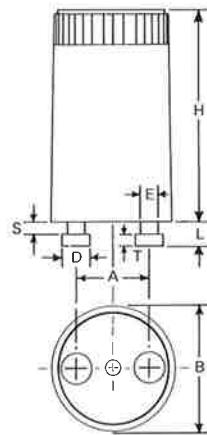


## Fluorescent lamp starter switches

This range of 2 pin, small can glowstarters in polycarbonate canisters incorporates constructional features resulting in switches of high quality, reliability and appearance. A high temperature grade of polycarbonate is used for the canister with brand detail in distinctive coloured inks. The canister is inherently electrically safe and non-corrodible. The polycarbonate moulding is tremendously tough, difficult to squash, virtually unbreakable and cannot be dented. Polycarbonate 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.



Dimensions in mm

	A	B	D	E	H	L	S	T
Max	12.9	21.5	5.0	3.2	36.0	4.3	—	2.2
Min	12.5	—	4.7	2.8	33.0	—	1.7	1.9

### RANGE

2-pin; small can; a.c. glow switch

Catalogue no.

Application

Operating voltage

155/800

2400mm, 125W leading circuit, 2400mm 100W (leading or lagging circuit),  
1800mm 70/75/85W (leading or lagging circuit)

230/250V

155/501

1500mm 50W leading circuit

240V

155/500

4W, 6W, 8W, 13W, 18W, 30W, 32W, 36W, 1200mm 40W, 58W, 65W, 80W

200/250V

155/100

Series pair 4W, 6W or 8W (two 155/100)

230/250V

Single 4W, 6W

110/130V

155/200

Series pair 15W, 18W, 20W or 600mm 40W (two 155/200)

200/250V

Single 15W, 20W, 22W or 600mm 40W

105/250V

Also available

Catalogue no.

Description

Application

Operating voltage

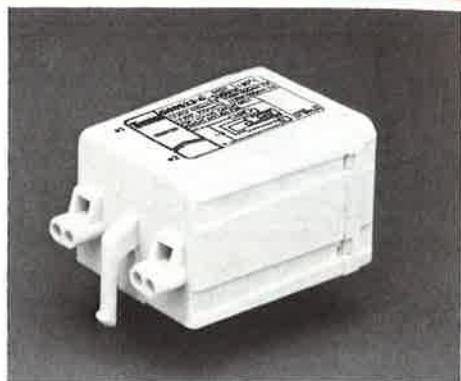
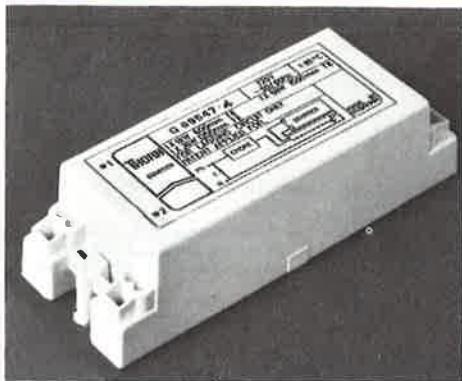
G32001

4 pin—large metal can

30W, 40W, 55W, 80W

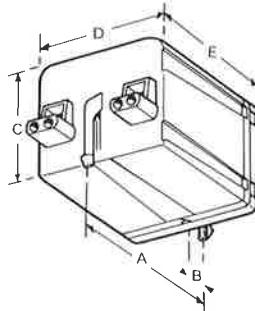
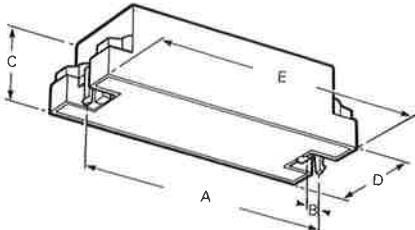
200/250V

# Fluorescent lamp Vivatronic starters



G69517.4  
G69547.4  
G69570.4

G69523.4  
G69532.4  
G69534.4  
G69537.4



A full range of electronic starters designed to cater for most fluorescent lamp sizes, including the new 26mm diameter 'Powersaver' lamps i.e. 'Pluslux' and 'Polylux'.

## RANGE

Cat no.	Applications	Operating Voltage
G69523.4	(i) 600mm 20W (ii) 1200mm 40W (iii) 1500mm 65W (iv) 400mm circular 40W (v) 400mm circular 60W	240V only
G69534.4	Twin lamp version of G69523.4 (above)	240V only
G69532.4	1800mm 75W	240V only
G69537.4	Twin lamp version of G69532.4 (above)	240V only
G69517.4	(i) 2400mm 100W (leading or lagging power factor circuits) (ii) 2400mm 125W (leading power factor circuit only)	240V only
G69547.4	(i) 600mm 18W (ii) 1200mm 36W (iii) 1500mm 58W	240V only
G69570.4	1800mm 70W	240V only

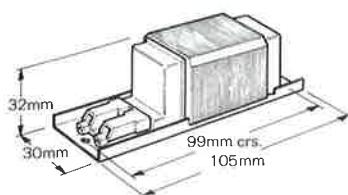
For details of circuit arrangements utilising Vivatronic starters refer to section headed: Fluorescent Lamp Vivatronic Start Control Gear.

Dimensions					
	A	B	C	D	E
G69523.4, G69532.4 G69534.4 & G69537.4	58	55	32	40	49
G69517.4					
G69547.4 G69570.4	93	55	28	38	105

**IMPORTANT NOTE: INSULATION RESISTANCE TESTING—Meggering**  
When carrying out the above test on an installation comprising of luminaires containing Vivatronic starters it is important that the test voltage does NOT EXCEED 500V d.c., otherwise damage to the electronic components of the Vivatronic starter may result.

# Thorn 2D lamp Control gear and lampholders

## BALLAST



**Fixing:** 2 5mm holes at 99mm centres for No. 4 type AB self-tapping screws

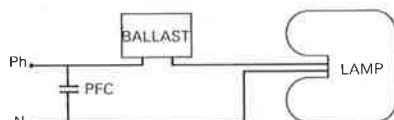
**Temperature Rating:**  
 $tw = 120^\circ\text{C}$   $\Delta t = 50^\circ\text{C}$

**Weight:** 330gm

**Connections:** Push-in-wire terminals suitable for 0.5—1.5mm single-strand conductor cable.

**Catalogue Number:** GCJ16

## CIRCUIT DIAGRAM



## POWER FACTOR CORRECTION CAPACITOR



**Catalogue No:** GC2286

**Rated Capacitance:**  $2 \mu\text{F} \pm 10\%$

**Voltage Rating:** 250 volt 50/60 Hz

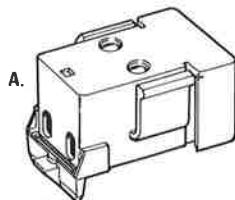
**Diameter:** 25.4mm

**Connections:** Solder tags

**Fixing:** A fixing clip (Cat. No. GY 5200) is available

## LAMPHOLDERS

(i) **GB 1664: Surface-mounted lampholder.** This lampholder is for mounting on sheet metal (1.0—1.2mm thick) pierced as shown

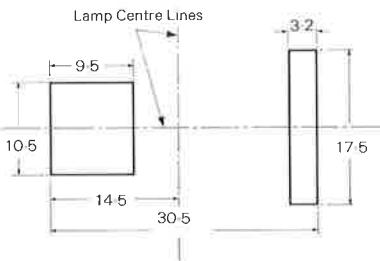
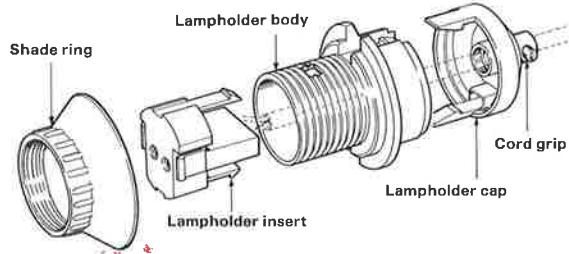


**Connections:** Push-in-wire into back or into end A. 0.5—1.0mm single or solder-tinned multi-strand conductor cable.

(ii) **GB 1669: Pendant lampholder**

**Connections:** Push-in-wire using single strand or solder-tinned multi-strand conductor cable, fastened by a 6mm cord-grip.

**Colour:** White



# Terminal blocks, fuse holders and starter switch sockets

## FUSES

### GT 1268, GT 1299

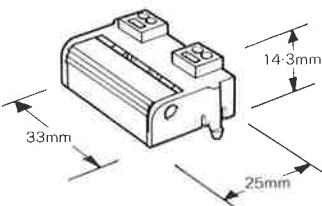
All fuses comply with BS 1362 dimensions and must be used with T 1265, A 5079 and T 1304 fuseholders.

Catalogue no.	Rating	Colour
GT 1299	3A	Red
GT 1268	5A	Black



### GT 1387

A 250V 5A rated in-line fuseholder with snap-in mounting action. The body moulding is of white polycarbonate. The fuse carrier is of clear glass filled nylon revealing the presence of a fuse and its colour coding. Push wire terminals provide looping facilities for 1 sq. mm. max. conductors. Fuses to be ordered separately.



### GM 6207/1 (1 litre)

### GM 6207/5 (5 litres)

An anti static cleaning fluid specially manufactured for cleaning plastic diffusers. Destatol is supplied in a plastic container in concentrated form. Dilute 1 part Destatol to 10 parts water.

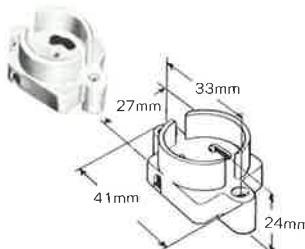
### GT 1306

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.



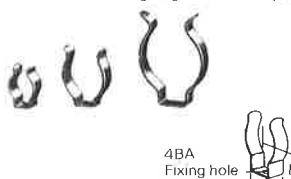
### GA 5019-X

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 5204, GY 5200, GY 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.

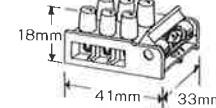


Catalogue no.	Tube dia. mm	A mm	B mm	C mm
GY 5204	16	7.5	10.3	7.9
GY 5200	26	12.7	17.8	9.6
GY 5201	38	16.7	26.2	9.0

### 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 shakeweight 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.



### GY 5257

A nickel plated sprung 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.

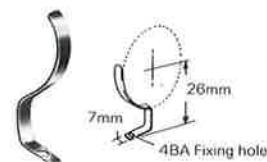
#### Fixing details

22W tube: 149mm radius

32W tube: 232mm radius

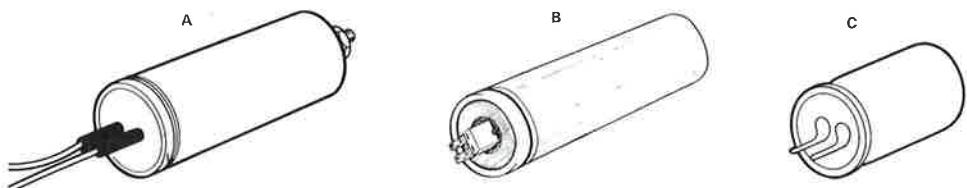
40W and

60W tubes: 333mm radius



# Fluorescent and Discharge lamp capacitors

## Capacitor Types



## Fluorescent Range

Catalogue no.	Rated Capacitance ( $\mu$ F) and tolerance	Type	Diameter (mm)	Can Length (mm)	Working Voltage A.C.
GC 2286	2 $\pm$ 10%	C	25	44 (48mm tags)	250
GC 2428	4 $\pm$ 10%	B	25	81	250
GC 2429	6 $\pm$ 10%	B	25	81	250
GC 2430	8 $\pm$ 10%	B	25	81	250
GC 2431	12 $\pm$ 10%	B	25	106	250
GC 2417	4 $\pm$ 10%	B	35	77	250
GC 2420	5.5 $\pm$ 10%	B	35	77	250
GC 2435	6.0 $\pm$ 10%	B	35	100	250
GC 2419	8.4 $\pm$ 5%	B	35	100	250
GC 2274	10 $\pm$ 10%	B	35	100	250
GC 2409	12 $\pm$ 10%	B	35	100	250
GC 2226	5 $\pm$ 6%	B	35	105	440
GC 2173	7.2 $\pm$ 5%	B	35	130	440

## Discharge Range

Catalogue no.	Rated Capacitance ( $\mu$ F) and tolerance	Type	Working Voltage A.C.	Diameter mm		Can Length (mm)		/BO	/BI
				/TM	/BO	/BI	/TM		
GC 2383	8 $\pm$ 10%	A	250	—	25	38	—	80	67
GC 2384	15 $\pm$ 10%	A	250	45	—	45	70	—	67
GC 2345	16 $\pm$ 10%	A	250	45	35	45	70	80	97
GC 2385	18 $\pm$ 10%	A	250	45	—	45	95	—	97
GC 2331	20 $\pm$ 10%	A	250	45	35	45	95	80	97
GC 2346	25 $\pm$ 10%	A	250	45	40	45	95	80	97
GC 2386	30 $\pm$ 10%	A	250	—	45	53	—	105	97
GC 2382	35 $\pm$ 10%	A	250	—	45	53	—	120	97
GC 2281	13 $\pm$ 10%	A	440	—	—	53	—	—	97
GC 2413	15 $\pm$ 10%	A	440	—	—	53	—	—	124
GC 2411	30 $\pm$ 10%	A	440	—	62	—	134	—	—

All capacitors listed comply with the requirements of BS 4017 and are of either the self healing metallised polypropylene (dry) film type, or the self healing metallised paper mineral oil filled leakproof type.

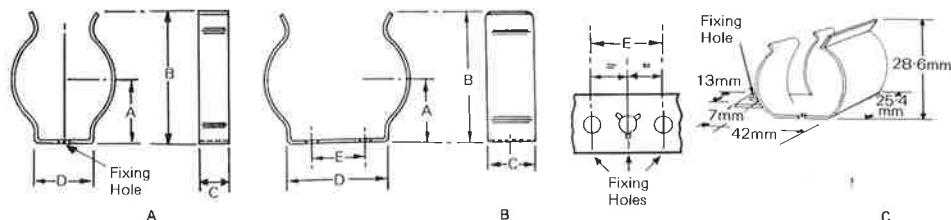
Rated Minimum/Maximum temperatures are  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  with the exception of GC 2281, GC 2413  $-40^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$ , and GC 2411  $-25^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$ . Type B capacitors have push wire terminals which protect 25 mm from the capacitor body and accept two  $0.5 \text{ mm}^2$  to  $1.0 \text{ mm}^2$  conductors per terminal. They can be supplied with an M8 $\times$ 1.25 $\times$ 8 min 12 max fixing stud, nut and shakeproof washer by the addition of /S after the catalogue number.

All type A capacitors are supplied with an M8 $\times$ 1.25 $\times$ 8 min 12 max fixing stud, nut and shakeproof washer.

Add /TM, /BO or /BI to type A capacitor catalogue numbers if particular dimensions are required. Dimensions shown under the 'Can Length' headings do not include fixing studs and connecting pins/terminal shrouds. When planning control gear layouts it is therefore necessary to allow at least 50 mm extra to ensure adequate accessibility. All type A capacitors are supplied with 300 mm flying leads.

# Capacitor clips and Radio interference suppression capacitors

## Capacitor Clip Types

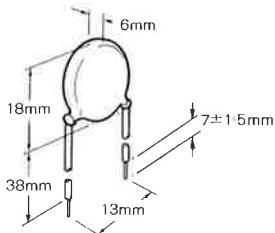


## RANGE

Catalogue no.	Type	Safety Strap Catalogue no.	Capacitor Diameter (mm)	Dimensions (mm)	A	B	C	D	E
GY 5200	A	—	25	See illustration	18	34	9.5	12	—
GY 5320	C	—	35	—	—	—	—	—	—
GY 5244	B	GY 5245	38/40	—	23	45	19	25	17
GY 5313	B	GY 5314	45	—	30	52	25	35	21
GY 5321	B	—	53	—	35	59	25	40	27

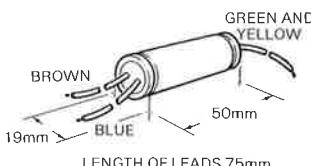
Fixing Holes: GY 5200, GY 5320 M4 clearance  
 GY 5313, GY 5321 M5 clearance  
 GY 5244 4 BA outer  
 2 BA inner

## Radio interference suppression capacitors



### GC 2139

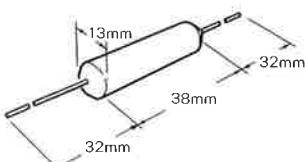
A ceramic disc 0.005 $\mu$ F 800V a.c. capacitor to BS 4017 with high temperature PVC sleeved 38mm leads.



### GC 2051

A radio interference suppression filter network comprising two 0.005 $\mu$ F and one 0.1 $\mu$ F delta connection for additional suppression where the GC 2139 fails to suppress the interference.

## Artificial Earth



### GC 2050

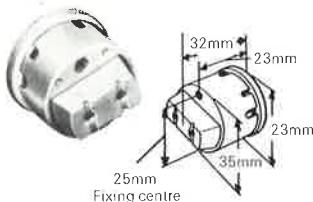
An artificial earth unit comprised of a 0.005 $\mu$ F ±20% 1000V DC capacitor for connection between a metal chassis in close proximity to the tube, and neutral when no earth is available.

# Fluorescent lampholders

## For T12 (38mm diameter) bi-pin fluorescent tubes

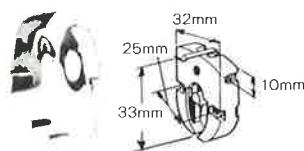
### GB 1502

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 5240 is available as an optional extra. This holder is not suitable for use with 2400mm tubes which have large tolerances in length.



### GB 1524

White urea moulding with paxolin backplate. Single-sided tube contacts with pinch screw terminal for incoming cables. 6BA tubular tapped nuts are provided for fixing. This lampholder is not suitable for use with 2400mm tubes which have large tolerances in length.



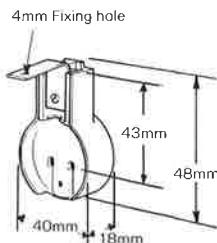
## GB 1632

White Polycarbonate moulding 0.5mm high-temperature white PVC lead-length 460mm.



## 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.



## FIXING DETAILS

Dimensions below are distances between backs of lampholders. The dimensions given for GB 1632 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 1632 mm	GB 1524 mm	GB 1580-A4 mm	GB 1502 mm	For T8 (25mm diameter) tubes GB 1628 mm	GB 1555-Z mm
2400	2410.5	—	2328	—	—	—
1800	1799.5	1784	1718	1827	—	—
1500	1535.5	1520	1454	1563	1535.5	1444
1200	1235	1220	1154	1263	—	—
1050	—	—	—	—	1082.5	991
900	930	915	849	958	930	840
600	625.5	610	544	653	—	—
450	473	458	392	501	473	382

# Fluorescent 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 4mm 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.

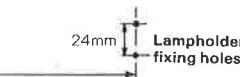
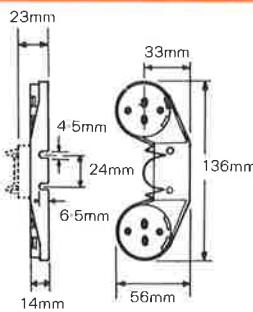
### GB 1636-A (not illustrated)

As GB 1635-A but less starter switch socket.

#### Fixing dimensions

##### Fixing hole for tube support clip

470mm



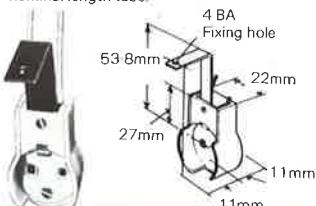
## For T8 (26mm diameter) bi-pin fluorescent tubes

### GB 1628

With 460mm lamp leads (similar to GB 1632 in appearance).

### 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 0.5mm PVC insulated solid conductor flexible in 300mm loop. Lampholder is vertical with a nominal length tube.



## For T5 (15mm diameter) miniature bi-pin fluorescent tubes

### GB 1625

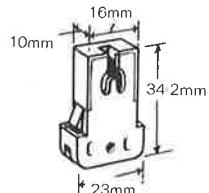
White Polycarbonate lampholder with 460mm lamp leads.



### 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.

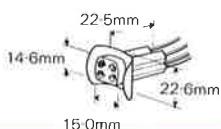
Tube size	mm
525mm	517
300mm	289
225mm	212
150mm	136



## Lampholder for circular fluorescent tubes

### GB 1623

A single moulding high-temperature white polycarbonate body with 300mm PVC insulated 0.5mm 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. Two adaptors required per tube.



# Discharge lamp control gear (240V, 50Hz supply)

Lamp Wattage	Type	Ballast Catalogue no.	Weight kg	Illustration (see pages 214/215)	$t_w$ °C	$\Delta t$ °C	Capacitor Catalogue No.	Value $\mu F$
50	MBF	G 53327.4 (v)	1.08	D7	130	60	GC 2223	6
80	MBF	G 53333.4 (ii)	1.25	D7	120	60	GC 2383	8
125 (x)	MBF	G 53306.4 (iv)	2.3	D6	105	55	GC 2383	8
125 (x)	MBF	G 53271.4 (i) (iv)	1.87	D25	120	55	GC 2383	8
250	MBF	G 53315.4 (i)	2.63	D22	130	80	GC 2370	13
400	MBF	G 53309.4 (ii)	4.2	D21	130	75	GC 2331	20
700	MBF	G 53315.4 (ii) +G 53309.4 (ii)	2.63 4.2	D22 D21	130 130	80 75	GC 2386	30
1000	MBF	G 53350.4	7.55	D4	120	75	2×GC 2346	25 (each)
250	MBI	G 53321.1 (ii)	4.4	D3	130	80	GC 2386	30
400	MBI	G 53309.4 (ii)	4.2	D21	130	75	GC 2331	20
1000	MBI	G 53351 (iii)	7.6	D18	120	80	GC 2413	15
1000	MBI	G 53351 -G 47102 (ii)	7.6 10.6	D18 D24	120	80 70	GC 2413 (vi)	15
750 (ix)	MBIL	G 53254.4 (i)	23.2	D5	—	—	3×GC 2346	25 (each)
1200 (ix)	MBIL	2×G 53254.4 (i)	23.2 (each)	D5	—	—	8×GC 2346	25 (each)
1200 (S) (vii) (ix)	MBIL	2×G 53254.4 (i)	23.2 (each)	D5	—	—	8×GC 2346	25 (each)
1500	MBIL	G 53308 (iii)	13.8	D23	120	70	GC 2411	30
1500	MBIL	G 53308 +G 47102 (ii)	13.8 10.5	D23 D24	120 120	70 70	GC 2411 (vi)	30
1600 (ix)	MBIL	2×G 53254.4 (i)	23.2 (each)	D5	—	—	6×GC 2346	25 (each)
1800	MBIL	4×G 53357.1 (ii)	4.6 (each)	D1	130	75	5×GC 2346	25 (each)
50	SON	*G 53389	—	—	—	—	GC 2383	8
70	SON	*G 53320.1 (ii)	1.87	D25	120	60	GC 2383	8
150	SON	*G 53335.1 (ii)	2.65	D8	130	80	GC 2385	18
250	SON	*G 53321.1 (ii)	4.4	D3	130	80	GC 2386	30
400	SON	*G 53357.1 (ii)	4.6	D1	130	75	2×GC 2331	20 (each)
1000	SON	*3×G 53323.4 (ii)	5.7 (each)	D2	130	65	2×GC 2346 +GC 2382	25 (each) 35
18	SOX	G 53378.4	1.1	D7	130	45	GC 2420	5.5
35	SOX	G 53331.4 (v)	1.08	D7	130	65	GC 2223	6
35	SOX	G 53182.4 (iv)	3.4	D9	105	60	GC 2384	15
35	SOX	G 53131.4 (v)	4.2	D10	105	50	GC 2384	15
55	SOX	G 53182.4 (iv)	3.4	D9	105	60	GC 2384	15
55	SOX	G 53131.4 (v)	4.2	D10	105	50	GC 2384	15
90	SOX	G 53365.4 (i)	4.0	D26	130	85	GC 2346	25
135	SOX	G 53369.4 (i)	5.7	D27	130	85	GC 2281	13
140	SLI/H	G 53365.4 (i)	4.0	D26	130	85	GC 2331	20
200	SLI/H	G 53261.1 (ii)	6.55	D12	120	85	GC 2362	35
400	CSI	G 53357.1 (ii)	4.6	D1	130	75	2×GC 2331	20 (each)
1000	CSI	G 53307.1 (ii)	19.0	D19	120	80	7×GC 2346	25 (each)
400	Graph-X	G 53357.1 (ii)	4.6	D1	130	75	2×GC 2331	20 (each)
400/800	Graph-X	2×G 53357.1 (ii)	4.6 (each)	D1	130	75	2×GC 2382	35 (each)

(S) Simmering

(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.

\* Choke for use with  (external ignitor) marked lamps only.

## Discharge lamp control gear (240V, 50Hz supply)

Ignitor/Starter Catalogue no.	Weight kg	Illustration (see pages 214/215)	Fuse rating	re-wireable	Circuit diagram no. (see pages 212/213)
—	—	—	4A	5A	301
—	—	—	4A	5A	301
—	—	—	4A	5A	301
—	—	—	4A	5A	301
—	—	—	10A	5A	301
—	—	—	15A	10A	301
—	—	—	16A	10A	302
—	—	—	20A	15A	301
G 53283	0.13	D13	10A	5A	303
G 53283	0.13	D13	15A	10A	303
G 53342 (vii)	0.15	D13	15A	10A	305
G 53342 (vii)	0.15	D13	25A	15A	309
—	—	—	15A	10A	304
—	—	—	20A	15A	306
—	—	—	20A	15A	307
G 53342 (vii)	0.15	D13	15A	10A	305
G 53342 (vii)	0.15	D13	25A	15A	309
—	—	—	20A	15A	306
G 53279	0.36	D16	30A	25A	310
G 53353 4 (vii)	0.085	D14	4A	5A	311
G 53353 4	0.085	D14	4A	5A	311
G 53282/A (vii)	0.085	D14	4A	5A	311
G 53282/A (vii)	0.085	D14	10A	5A	311
G 53282/A (vii)	0.085	D14	15A	10A	311
G 53316 (vii)	0.6	D17	20A	15A	312
—	—	—	3A	5A	320
G 53311	0.07	D15	4A	5A	313
—	—	—	4A	5A	314
—	—	—	4A	5A	314
—	—	—	4A	5A	314
—	—	—	4A	5A	314
—	—	—	4A	5A	314
—	—	—	4A	5A	315
—	—	—	4A	5A	314
—	—	—	4A	5A	316
G 53319 (vii)	1.2	D20	15A	10A	317
G 53319 (vii)	1.2	D20	20A	20A	317
G 53279	0.36	D16	15A	10A	318
G 53279	0.35	D16	15A	10A	319

(vii) Information regarding maximum permissible lamp/ignitor separation distances is available on request in Bulletin K11.

(viii) The changeover switch should be either— Crabtree 20A rocker grid switch type 2450.

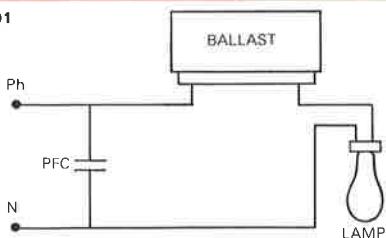
or— MK 15/20A rocker grid switch type 4891.

(ix) Ballasts used with these lamps must be mounted with lead-out wires down. Failure to do so will result in premature failure.

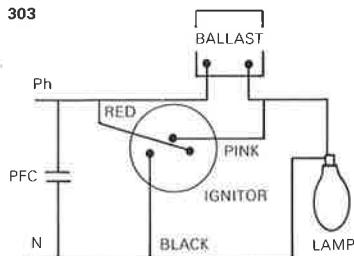
(x) Gear combination may also be used for 125W MBW/U lamps.

## Discharge lamp circuit diagrams

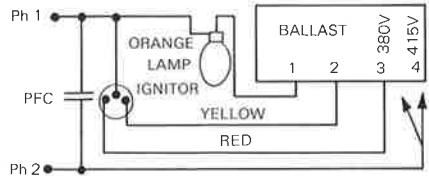
301



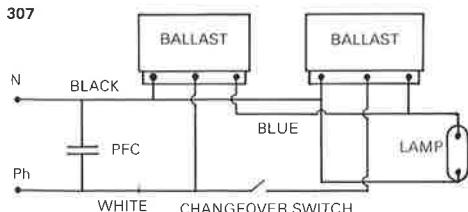
303



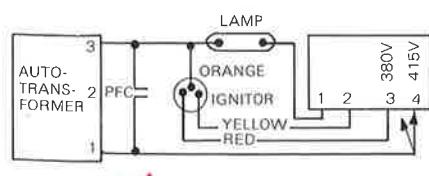
305



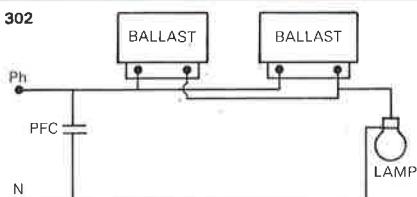
307



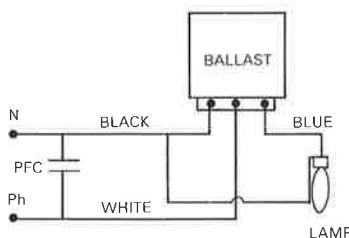
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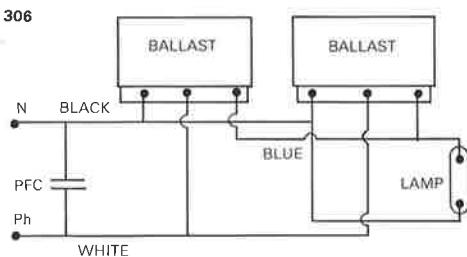
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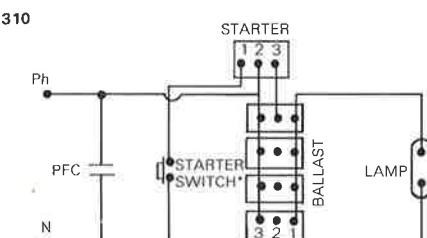
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306



310

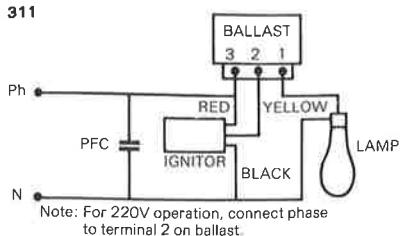


Note: For 220V operation reverse connections 2 and 3 on ballasts.

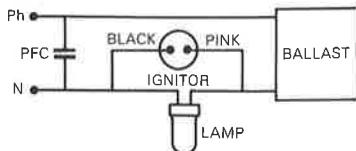
\*Starter Switch: 5A push to make 250V a.c. rated.

## Discharge lamp circuit diagrams

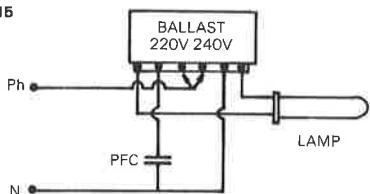
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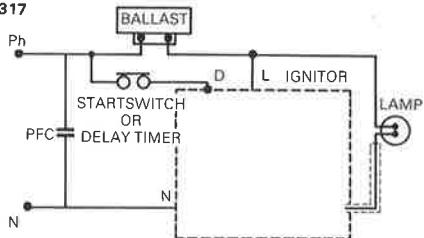
313



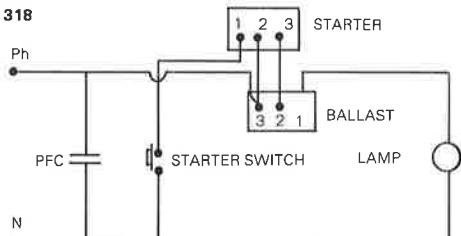
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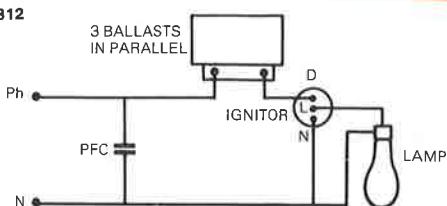
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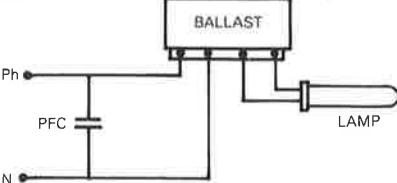
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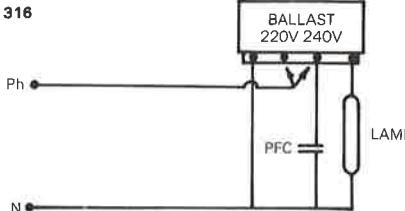
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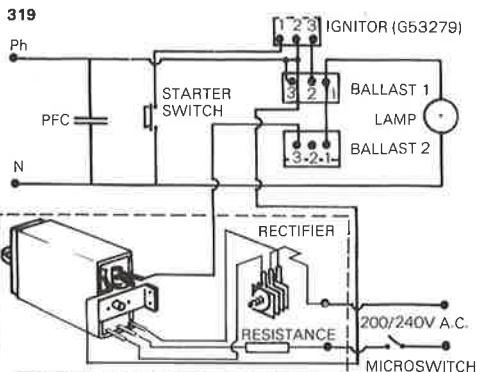
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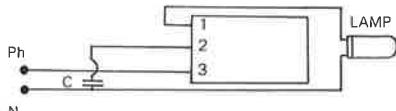
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319

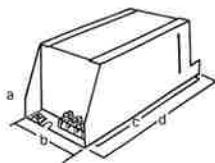


320



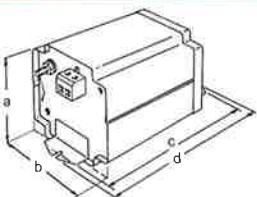
## Discharge lamp gear dimensions

D1



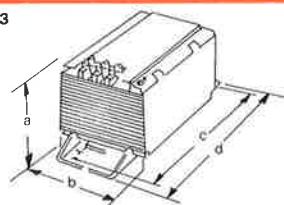
mm a b c d  
87 100 135 150

D2



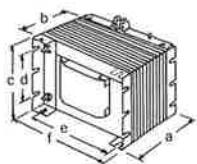
mm a b c d  
102 105 159 172

D3



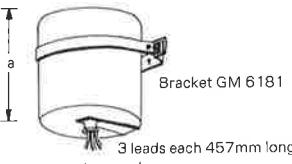
mm a b c d  
98 84 135 150

D4



mm a b c d e f  
126 70 116 93 120 150

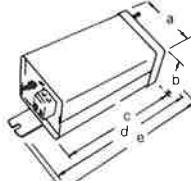
D5



mm a b  
235 207

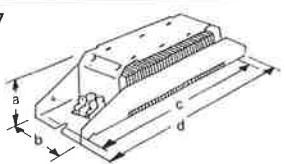
3 leads each 457mm long

D6



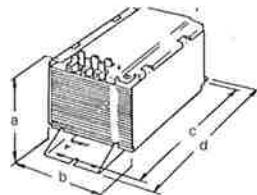
mm a b c d e  
72 58 140 172 184

D7



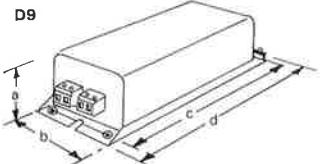
mm a b c d  
40 47.5 150 170

D8



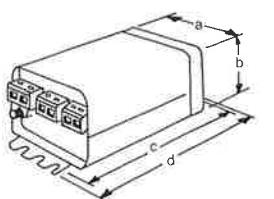
mm a b c d  
78 75 120 135

D9



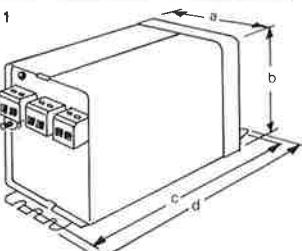
mm a b c d  
59 81 216 232

D10



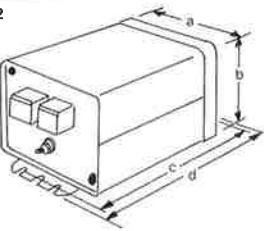
mm a b c d  
93 84 156 178

D11



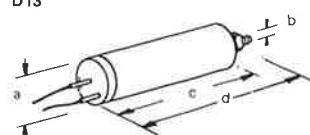
mm a b c d  
114 93 166 178

D12



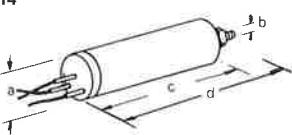
mm a b c d  
114 93 166 178

D13



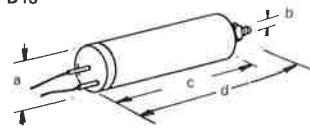
mm a b c d  
63 80 102 115

D14



mm a b c d  
37 80 102 115

D15

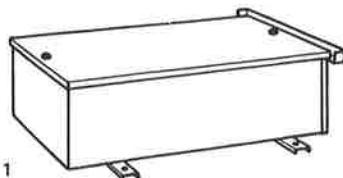


mm a b c d  
37 80 102 115

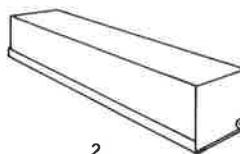
## Discharge lamp gear dimensions

D16		D17		D18	
	mm a 50 b 92 c 143 d 127		mm a 50 b 10 c 120 d 162		mm a 128 b 70 c 116 d 93 e 120 f 150
D19		D20		D21	
	mm a 169 b 120-125 c 29 d 50 e 50 f 155 g 160 h 190		mm a 85 b 205 c 140		mm a 84 b 96 c 6 d 120 e 135 f 150 g 96 h 35 i 55
D22		D23		D24	
	mm a 86 b 75 c 6 d 78 e 45 f 120 g 135		mm a 141 b 90-95 c 29 d 50 e 50 f 154 g 160 h 194		mm a 120 b 82 c 29 d 40 e 40 f 138 g 143 h 168
D25		D26		D27	
	mm a 48 b 64 c 140 d 153 e 172 f 55		mm a 88 b 92 c 185 d 178 e 45		mm a 86 b 109 c 185 d 178 e 51

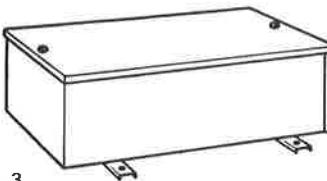
## Discharge lamp control gear boxes



1



2



3

Catalogue no.	Diagram no.	Applications	Fixing centres mm	Dimensions (l × w × d) mm Internal	External	Weight (kg)	Construction/Finish	$t_a$ (°C)*	Classification
GM 6174	1	700/1000W MBF 400W MBF/SON	279 × 279	425 × 244 × 130	437 × 247 × 155	5.84	See note (a)	15	A
GM 6172	1	80-400W MBF 35-200W SL/H or SOX	279 × 178	406 × 144 × 130	420 × 168 × 163	3.74	See note (a)	15	A
RBSG 400.4	3	400W SON	279 × 178	—	416 × 157 × 149	8.17	See note (c)	25	B
RBSG 250.4	3	250W SON	279 × 178	—	416 × 157 × 149	6.6	See note (c)	25	B
RBGR 125.4†	2	125W MBF	292 × 51	—	337 × 92 × 83	3.63	See note (d)	25	B
RBGR 80.4†	2	80W MBF	292 × 51	—	337 × 92 × 83	3.18	See note (d)	25	B
RBSG 70.4	2	70W SON	380 × 55	—	403 × 94 × 56	—	See note (d)	25	B
RBSG 1000-A‡	1	1 kW SON	324 × 415	—	501 × 390 × 150	24.0	See note (e)	40	C
RBSG 1000 B‡	1	1 kW SON	324 × 415	—	501 × 390 × 150	24.0	See note (e)	25	A

\*Maximum operating ambient temperature

†Rectified versions

‡Supplied less ignitor

### Notes

- (a) 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.
- (b) As per note (a) except the box is constructed of high quality cast aluminium.
- (c) 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.
- (d) 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.
- (e) As per note (a) except boxes are supplied complete with 240V 50Hz control gear and do not have wooden baseboards.
- A Suitable for exterior use.
- B Suitable for interior use only.
- C Suitable for interior use, drip-proof to IP22.

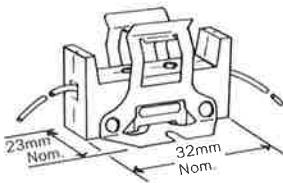
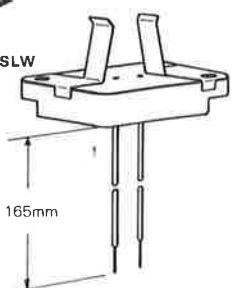
## Hytek and miscellaneous lampholders

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-W



GL 1079-SLW

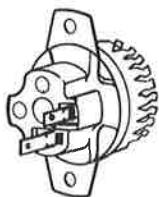


GL 1177

GL 1105 is superseded by GL 1177 (same mounting centres) suitable for GY9.5 caps e.g. A1/233, A1/247, and M38.

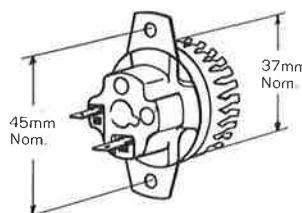
GL 1123-A

Suitable for use with low volt miniature tungsten lamps having G.4 caps, e.g. M29, M30, M34, M35.



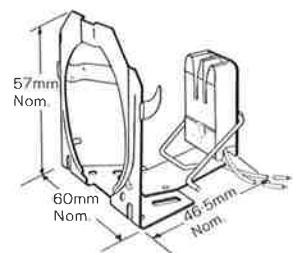
GL 1042-HV

For lamps voltages over 21.5V having G17q caps.



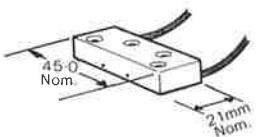
GL 1042-LV

For lamp voltages up to and including 21.5V. Suitable for use with lamps having G17q caps.



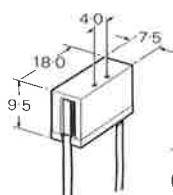
GL 1210

Lampholder for 50mm Multiflector™ Lamps e.g. M49, M50.



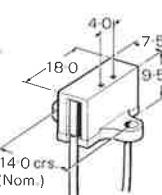
GL 1101

For use with 400W CSI lamps.



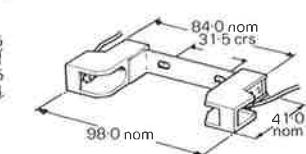
GL 1211

For lamps with G4/GZ4 Base e.g. M29, M35, M48 and M51.



GL 1212

For lamps with G4/GZ4 Base e.g. M29, M35, M48 and M51.



SUL 150

For use with 150W K12TH lamp.

All dimensions in mm

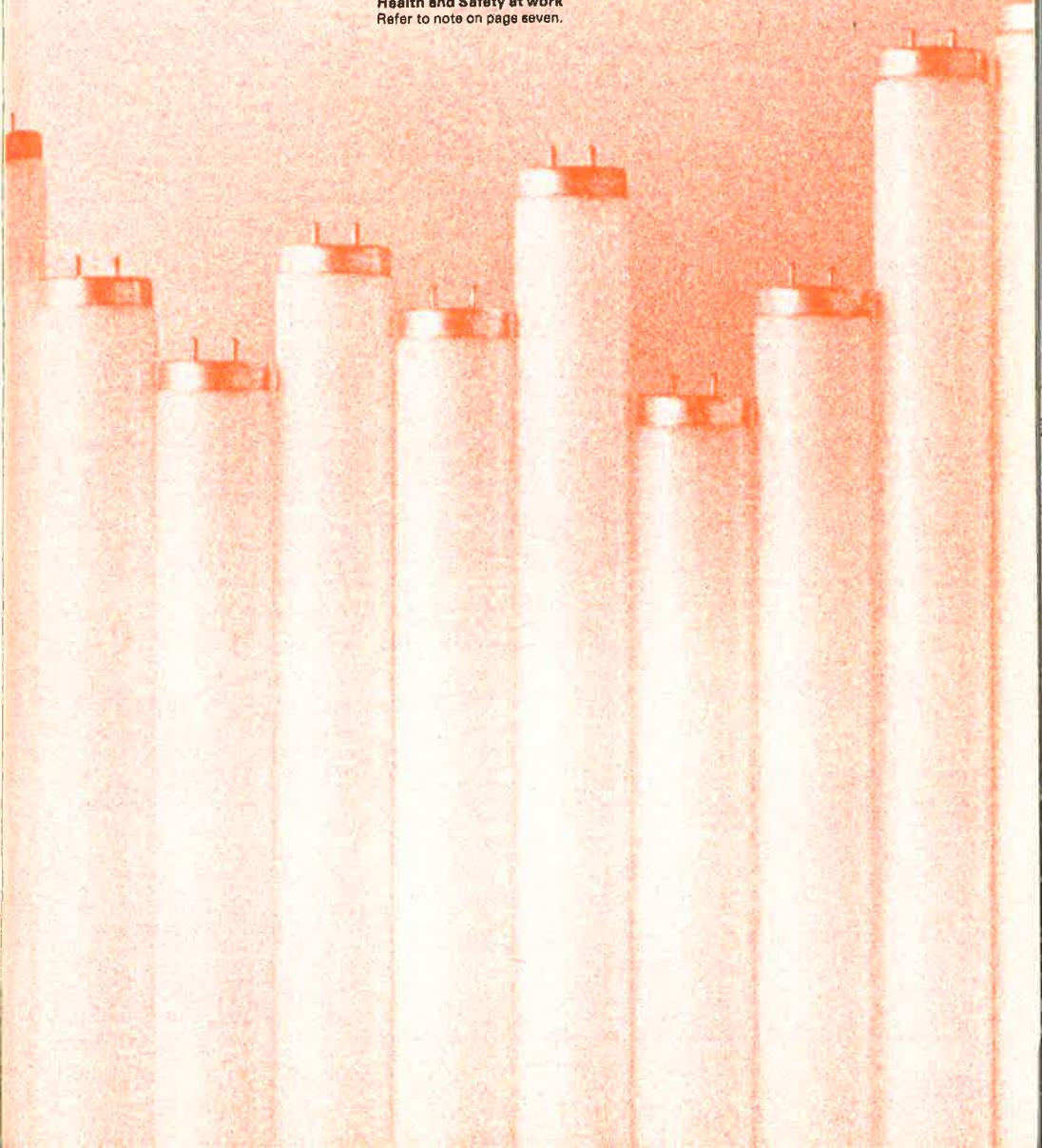


# Fluorescent tubes

## Index

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Miniature and U-Shaped fluorescent tubes	226
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**Health and Safety at work**  
Refer to note on page seven.



# General information

## British Standards

Fluorescent tubes described in this catalogue conform to British Standard 1853:1974 and International Standard IEC81 where applicable.

Thorn Lighting holds Licence no. 5247 for the manufacture of fluorescent tubes to BS 1853.

## 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.

## Lumen Outputs

Because tube lives vary considerably according to size, circuit and use, it is not possible to quote an average-through-life lumen output. Values given in this catalogue are those measured on normal life tests during early life i.e. at 100 hours and at 2000 hours. Note that lumen outputs of individual tubes are within the limits specified in BS 1853 according to rating.



## 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.



## Cathode Shield

Cathode shields are incorporated on the high loading tube range—600mm 40W, 1500mm 65/80W, 1800mm 75/85W, 2400mm 85W, 100W and 125W tubes and Power Savers. The shield traps evaporation from the cathode during life, preventing black marks from forming at the ends of the tube, and reducing flicker.

## 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  
All others: 25

## Power Saver Tubes

By adding krypton to the gas in a tube, and (except for 2400mm versions) reducing the tube diameter from 38mm to 26mm a new family of energy-saving fluorescent tubes is available with the same or even better light output as conventional tubes. Due to the presence of krypton in the gas-filling these tubes are restricted to operation on switchstart and approved electronic start circuits. If the latter are used then the metal chassis of the light fitting must extend the full length of the tube, be not more than 13mm from it, and be bonded to earth.

## 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.

## Spectral Distribution

Spectral distribution data is given in the following pages in graphical form. Horizontal scales are wavelengths in nanometres (10-9 metres). Vertical scales are power in milliwatts per 5 nanometre band width per 1000 lumens for a 1500mm tube at 58W or 65W as appropriate.

## 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.

## Lumens during life

Lamp outputs at 2000 hours are also included as a guide to lighting engineers planning scheme layouts. Lumen output beyond 2000 hours decreases by 2% to 4% per 1000 hours use according to the colour and loading (see curves on following pages).

## Electrical Data

This is given for standard control gear operated in 240V 50Hz tube circuits. Average performance is determined at 25°C in accordance with BS 2818. The circuit watts quoted may be reduced by up to 5% when operating in some fittings because circuit watts reduce as the lamp operating temperature rises.

## Colours and applications

To encourage rationalisation of the range of fluorescent tube colours available, two have been chosen by Thorn as being suitable for the majority of installations.

**White** (Pluslux 3500)—A high efficacy tube for general lighting purposes. Particularly efficient in Power Saver (Pluslux) versions.

**Power Saver Polylux 3500**—A very high efficacy tube with very good colour rendering qualities.

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.

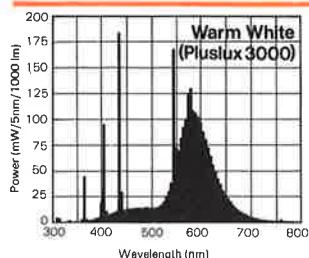
### Power Saver Colour Selector

Colour Appearance	Colour Rendering Quality
Fair	Very Good
<b>Intermediate</b>	<b>White</b> (Pluslux 3500)
Warm	Warm White (Pluslux 3000)
Cool	Cool White (Pluslux 4000)
Relative Efficiency	High Efficiency
	Maximum Efficiency

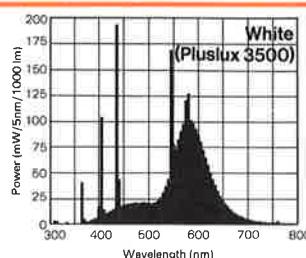
Tube Colour	Colour Rendering Quality	Colour Appearance	Preferred Power Saver Equivalent	Applications and Remarks
<b>White</b>	Fair	Intermediate	Pluslux 3500	General illumination at very high efficiency. Pluslux 3500 gives the same amount of light for less energy.
<b>Polylux</b>	Very Good	See table above	—	The maximum efficiency for all except the most specialised lighting requirements.
Plus White	Good	Intermediate	Polylux 3500	General illumination where good colour rendering is required. Polylux tubes offer better colour rendering, more light and less energy.
Warm White	Fair	Warm	Pluslux 3000	General illumination at high efficiency. Pluslux 3000 gives the same amount of light for less energy.
Cool White (Daylight)	Fair	Cool	Pluslux 4000	General illumination at high efficiency to blend with natural daylight, 300 lux minimum. Pluslux 4000 gives the same amount of light for less energy.
Natural	Very Good	Cool	Polylux 3500 or Polylux 4000	General illumination with good quality colour, especially in shops, offices etc. 300 lux minimum. Polylux tubes give substantially more light, with less energy for similar colour rendering quality.
DeLuxe Natural	Good	Intermediate	—	Butchers, fishmongers, supermarkets. Enhances the appearance of red objects.
Kolor-rite®	Excellent	Cool	—	Complies with DHSS requirements for hospital lighting.
Northlight/Colour Matching	Very 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 BS950 Part I).
Colours	Poor	Poor	—	Saturated colours for display, floodlighting, stage lighting.
Super-gro (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 (non-filter) but with no visible light.

\*See Hytek Lamps section for details of short and long-wave ultra-violet tubes.

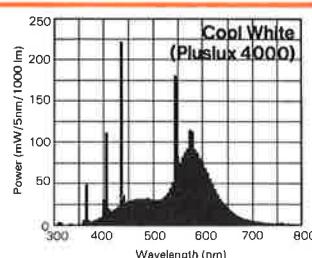
# Pluslux Power Saver Tubes



Colour Temp 3100K  
Ra Index 51



Colour Temp 3600K  
Ra Index 54

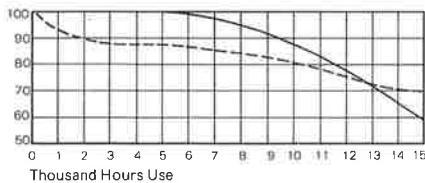


Colour Temp 4300K  
Ra Index 58

Thorn Power Savers now provide an energy saving alternative to standard white tubes—the Pluslux range. Pluslux tubes come in White (Pluslux 3500), Warm White (Pluslux 3000) and Cool White (Pluslux 4000) but they consume about 8% less energy than their traditional counterparts with little loss in light output.

## Lamp Survival and Lumen Maintenance

Typical lumen maintenance ——— % Life Survival  
and survival curves for  
Pluslux fluorescent tubes ——— % Lumen Maintenance



## Electrical Data for 240V 50Hz tube circuits. Average performance tested at 25°C to BS 2818 and BS 1853. Slim-section gear used in Popular Pack and Standard fittings.

Tube size (mm)	2400	2400	1800	1800	1600	1200	600
Tube Diameter (mm)	38	38	28	28	26	28	26
Nominal Tube Watts	100	2×100	2×70	70	56	36	18
Actual Lamp Watts	68	195	136	69	58	36	18
Average Tube Volts	128	125	130	128	113	104	58
Average Tube Amps	0.89	2×0.93	2×0.69	0.7	0.63	0.42	0.38
Circuit Type	SS+	SS Twin	SS	SS	SS	SS	SS
Total Circuit Wetts	112	229	162	80	71	47	28
Mains Current Amps	0.50+	0.98	0.71	0.38	0.34	0.22	0.38
Total Volt/Amps	120	235	170	92	82	52	91
Leading Power Factor	0.93+	0.98	0.96	0.67	0.67	0.90	0.31*
% 3rd Harmonics	17	11	18	18	19	19	19

\*This is a leading power factor corrected 100W circuit. For leading circuit mains current=0.96A, 0.62 leading power factor.

Uncorrected value. Allow 0.85 if power factor correction capacitor is fitted.

## LIGHT OUTPUT

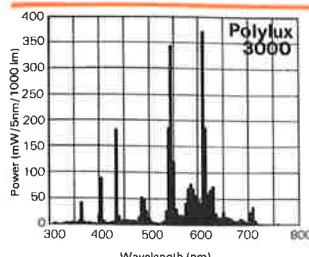
Initial Lumens (100 hours)

Lumens at 2000 hours

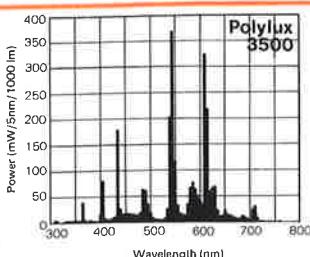
Length	Watts	Warm White (Pluslux 3000)	White (Pluslux 3500)	Cool White (Pluslux 4000)
2400mm	100W†	8400 7800	8500 8000	8100 7600
1800mm	70W	6650 5600	6050 5700	5750 5400
1500mm	58W	4950 4650	5100 4700	4800 4400
1200mm	36W	2850 2700	3050 2800	2900 2650
800mm	18W	1200 1100	1225 1100	1150 1050

†These tubes are 38mm diameter, all others are 28mm diameter.

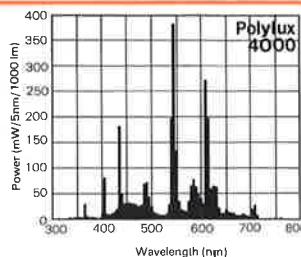
# Polylux Power Saver Tubes



Colour temp 3000K  
Ra Index 85



Colour temp 3400K  
Ra Index 85

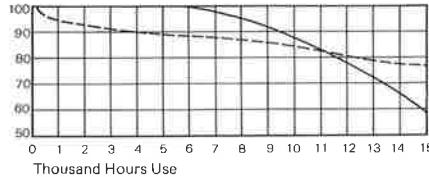


Colour temp 4100K  
Ra Index 85

Polylux tubes offer all the economy of operation of Pluslux tubes but have been specially developed for situations where colour rendering is important. As a result they have a very high colour rendering factor normally only associated with 'Natural' tubes. In addition they provide 10% more light output as compared with standard white tubes.

## Lamp Survival and Lumen Maintenance

Typical lumen maintenance ——— % Life Survival  
and survival curves for  
Polylux fluorescent tubes ----- % Lumen Maintenance



Polylux 3000  
(warm)

9400	8900
6550	6300
5400	5100
3450	3200
1450	1325

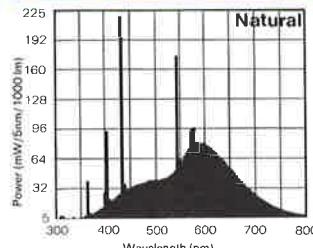
Polylux 3500  
(white)

9400	8900
6550	6300
5400	5100
3450	3200
1450	1325

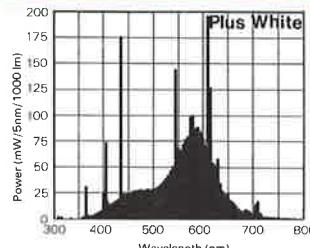
Polylux 4000  
(cool)

9400	8800
6550	6300
5400	5100
3450	3200
1450	1325

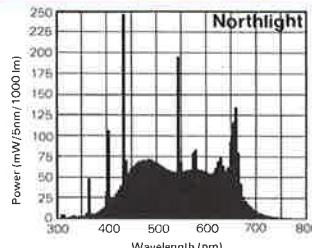
# Standard Fluorescent Tubes



Colour Temp 4000K  
Ra Index 85



Colour Temp 3600K  
Ra Index 74



Colour Temp 6500K  
Ra Index 94

## Electrical Data for 240V 50Hz tube circuits. Average performance tested at 25°C to BS 2818 and BS 1853.

Slim-section gear used in Popular Pack and Standard fittings.

Tube Size (mm)	2400	2400	1800	1800	1800	1500	1500	1200	1200	600
Tube Diameter (mm)	38	38	38	38	38	38	38	38	38	38
Nominal Tube Watts	125	85	75	2×75	75	65	65	40	40	20
Actual Lamp Watts	120	81	78	152	75	64	63	39	39	20
Average Tube Volts	152	123	127	129	131	113	113	104	104	58
Average Tube Amps	0.94	0.77	0.72	2×0.70	0.64	0.63	0.63	0.42	0.42	0.38
Circuit Type	SS	QS	SS	SS Twin	SRS	SS	SRS	SS	SRS	SS
Total Circuit Watts	138	103	91	180	90	78	82	51	55	30
Mains Current Amps	0.94	0.43	0.44	0.78	0.42	0.37	0.37	0.25	0.24	0.38
Total Volt/Amps	226	104	106	185	100	90	89	60	58	91
Lagging Power Factor	0.53 <sup>±</sup>	0.99	0.86	0.98	0.90	0.87	0.92	0.90	0.95	0.34*
% 3rd Harmonics	14	8	17	16	25	17	25	17	25	17

## Arrowslim and Minipack Gear

Tube Size (mm)	1050	900	450	450
Tube Diameter (mm)	26	26	26	26
Nominal Tube Watts	40	30	15	2×15
Actual Lamp Watts	39	30	15	30
Average Tube Volts	106	101	57	57
Average Tube Amps	0.42	0.36	0.34	2×0.34
Circuit Type	SS	SS	SS	SS Twin
Total Circuit Watts	52	39	25	40
Mains Current Amps	0.42	0.36	0.34	0.2
Total Volt/Amps	101	65	81	47
Lagging Power Factor	0.51*	0.47*	0.31*	0.85
% 3rd Harmonics	17	17	—	—

\*Uncorrected value. Allow 0.85 if power factor correction capacitor is fitted.

±Leading Power Factor.

## LIGHT OUTPUT

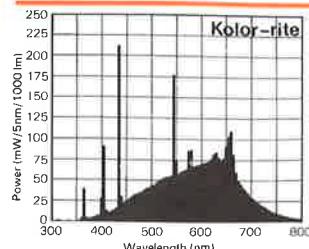
Initial Lumens (100 hours)

Lumens at 2000 hours

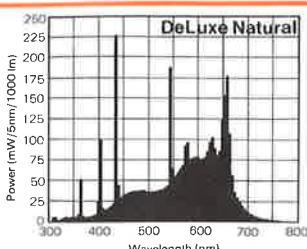
Length	Watts	White	Plus White	Warm White	Cool White (Daylight)	Natural
2400mm	125W	9500 8900	9000 8400	9400 8800	9000 8500	7150 6500
2400mm	100W	8500 8000	8100 7600	8400 7900	8100 7600	6400 5900
2400mm	85W	7350 6850	7000 6500	7250 6750	7000 6500	5500 5000
1800mm	75W	6050 5750	5800 5500	5950 5650	5750 5450	4400 4000
1600mm	65W	5100 4750	4800 4500	4950 4600	4800 4450	3700 3400
1500mm	50W†	3850 3600	— —	3800 3550	— —	2800 2400
1200mm	40W	3050 2800	2900 2700	2950 2700	2900 2650	2300 2100
1050mm	40W†	3050 2800	— —	2950 2700	— —	— —
900mm	30W†	2400 2150	— —	2400 2150	2300 2050	1800 1600
800mm	40W	2000 1700	— —	2000 1700	1900 1600	— —
600mm	20W	1225 1100	— —	1200 1100	1150 1050	900 800
450mm	15W†	950 800	— —	950 800	900 750	700 600

†These tubes are 26mm diameter, all others are 38mm diameter.

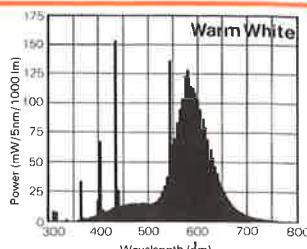
# Standard Fluorescent Tubes



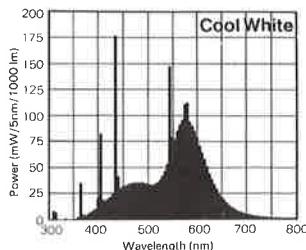
Colour Temp 4000K  
Ra Index 92



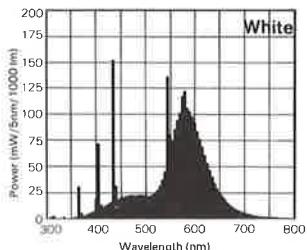
Colour Temp 3600K  
Ra Index 92



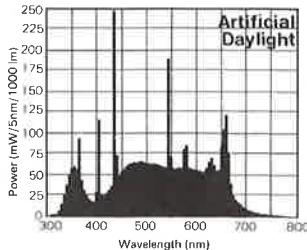
Colour Temp 3000K  
Ra Index 54



Colour Temp 4300K  
Ra Index 64



Colour Temp 3400K  
Ra Index 56



Colour Temp 6500K  
Ra Index 95\*

°Kolor-rite	Northlight Colour Matching	DeLuxe Natural	Artificial Daylight*	Length	Watts
6300 5700	6000 5600	5500 4800	4800 3800	2400mm	125W
5700 5200	5500 5000	4900 4400	— —	2400mm	100W
4800 4400	4500 4100	4300 3800	— —	2400mm	85W
3900 3500	3600 3200	3400 2900	3000 2400	1800mm	75W
3350 3000	3000 2700	2900 2500	2600 2100	1500mm	65W†
— —	— —	2300 1900	— —	1500mm	50W†
2000 1800	1900 1700	1750 1500	1500 1200	1200mm	40W
— —	— —	— —	— —	1050mm	40W†
— —	1500 1250	1400 1100	— —	900mm	30W†
— —	— —	— —	— —	600mm	40W
850 750	800 700	700 600	650 500	600mm	20W
— —	600 500	— —	— —	450mm	15W†

\*Due to the high content of UV phosphor in Artificial Daylight tubes the spectral distribution of these tubes will change rapidly through life, notably the high ultra-violet content will diminish to be negligible after 2000 hours use.

# Miniature and U-shaped Fluorescent Tubes

## MINIATURE TUBES

A range of 16mm diameter fluorescent tubes available in four lengths and wattages: 150mm 4W; 225mm 6W; 300mm 8W; 525mm 13W.

### Light output

Initial Lumens (100 hours)

Lumens at 2000 hours

Length	Watts	White	Warm White	Cool White (Daylight)
525mm	13W	850 750	850 750	800 700
300mm	8W	480 420	480 420	400 360
225mm	6W	300 250	280 250	275 240
150mm	4W	130 100	— —	— —

## Electrical data

The figures below apply to Minipack extra-slim section control gear.

Tube Size (mm)	525	300	300	225	225	150	150
Diameter (mm)	16	16	16	16	16	16	16
Nominal Tube Watts	13	8	2×8	6	2×8	4	2×4
Lamp Watts	13	8	2×8	6	2×8	4	2×4
Tube Volts	92	55	55	43	43	30	30
Tube Amps	0.17	0.17	0.17	0.16	0.16	0.15	0.15
Total Circuit Watts	19	14	22	12	18	10	14
Mains Current Amps	0.17	0.17	0.17	0.16	0.16	0.15	0.15
Total Volt/Amps	41	41	41	39	39	36	38
Legging Power Factor*	0.46	0.34	0.52	0.31	0.46	0.38	0.39
Minimum Starting Temperature	0°C						

\*Uncorrected value. Allow 0.85 if power factor correction capacitor is fitted.

## U-SHAPED TUBES

A range of 525mm×120mm×25mm 40W U-shaped fluorescent tubes operated on standard 1200mm 40W control gear.

### Light output

Initial Lumens (100 hours)

Lumens at 2000 hours

White	Plus White	Warm White	Polylux 3500 (White)
2875 2575	2725 2500	2825 2550	3250 3000

# Circular, Reflector and Special Colour Fluorescent tubes

## CIRCULAR TUBES

Warm White only

### Light Output

Initial Lumens (100 hours)

#### Lumens at 2000 hours

400mm 60W	400mm 40W	300mm 32W
3700	3400	2500

2300

1800

1600

### Electrical Data

These tubes operate on standard control gear:—

Circular Tube	Equivalent Standard Tube	Circular Tube Circuit Watts*
60W	65W	73
40W	40W	51
32W	30W	42

\*Switchstart circuit

## REFLECTOR TUBES

### Light Output

Initial Lumens (100 hours)

#### Lumens at 2000 hours

2400mm 125W	2400mm 85W	1800mm 75/85W (@ 75W)	1500mm 65/80W (@ 65W)	1200mm 40W
8400	7700	6500	6000	5300

4700

4500

4200

2700

2450

Reflector tubes should be used only in switchstart circuits

## COLOURED TUBES

Five standard colours—Red, Blue, Green, Gold and Pink are available. These are primarily designed for decorative and effect lighting purposes.

#### Lumens at 2000 hours

	1800mm 75/85W (@ 75W)	1500mm 65/80W (@ 65W)	1500mm 65/80W (@ 80W)	1200mm 40W	600mm 20W
Pink	1500	1400	1250	750	290
Red*	270	250	230	140	50
Gold*	2900	2700	2400	1450	550
Green	5600	5200	4600	2800	1100
Blue	1400	1300	1150	700	270

\*Red and Gold tubes should be used only in switchstart circuits.

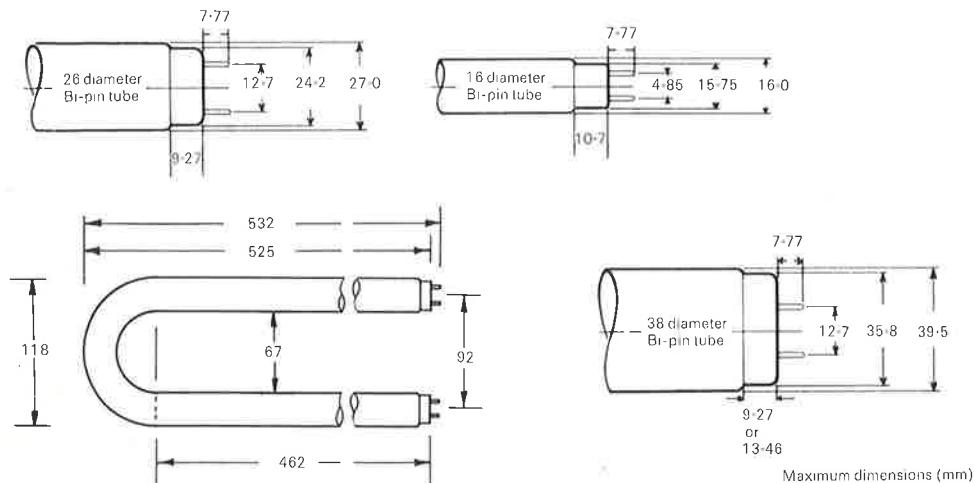
## GRO-LUX (SUPER-GRO)

#### Lumens at 2000 hours

	1500mm 65/80W (@ 65W)	1200mm 40W	900mm*	600mm 20W	450mm* 15W
	1300	810	530	340	200

\*26mm diameter.

# 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) max.	Length, base face to end of opposite cap pins (mm) min.	Length overall (mm)
100/125/85	2400×38	Bi-pin (G 13)	2374.9	2382.0	2378.4	2389.1
75/85	1800×38	Bi-pin (G 13)	1783.8	1770.9	1768.4	1778.0
85/80	1500×38	Bi-pin (G 13)	1500.0	1507.1	1504.8	1514.3
50/58	1500×28	Bi-pin (G 13)	1500.0	1507.1	1504.8	1514.3
40/38	1200×38/28	Bi-pin (G 13)	1199.4	1206.5	1204.1	1213.6
40	1050×28	Bi-pin (G 13)	1047.0	1054.1	1051.6	1061.2
40	800×38	Bi-pin (G 13)	589.8	596.9	594.5	604.0
30	900×28	Bi-pin (G 13)	884.6	901.7	899.3	908.8
20/18	800×38/26	Bi-pin (G 13)	589.8	596.9	594.5	604.0
15	450×26	Bi-pin (G 13)	437.4	444.5	442.1	451.6
13	525×18	Small bi-pin (G 5)	518.8	523.9	521.5	531.0
8	300×18	Small bi-pin (G 5)	288.2	295.3	292.9	302.4
6	225×18	Small bi-pin (G 5)	212.0	219.1	216.7	226.2
4	160×16	Small bi-pin (G 5)	135.8	142.9	140.5	150.0

## CIRCULAR TUBES

Lamp watts	Nominal diameter (mm)	Inside lamp diameter/glass (mm) max.	Inside lamp diameter/glass (mm) min.	Outside lamp diameter* (mm) max.	Outside lamp diameter* (mm) min.	Bulb diameter (mm) max.	Bulb diameter (mm) min.
32	300	245.6	237.3	246.1	239.7	311.2	298.5
40	400	346.9	338.9	347.7	341.3	412.8	400.0
60	400	346.9	338.9	347.7	341.3	412.8	400.0

## 'U'-SHAPED TUBE

40	525×120	2× Bi-pin	For dimensions see diagram above.
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\*Base and glass dimensions the same.

## Discharge lamps

### Index

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#### Health and Safety at work.

Refer to note on page seven.



# 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.

## 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.

## Lumen output values

The lumens quoted in this section are average values to be expected from a batch of lamps and the achievements are shown at 100 hours and 2000 hours life.

## Manufacturing tolerances

All performance and dimensional figures quoted in this section are subject to normal manufacturing tolerances and are allowed for in the relevant standards shown below where they exist.

## Standards

Lamps conform to the following standard where applicable.

BS 3677: High pressure mercury vapour lamps.

BS 3767: Low pressure sodium vapour lamps.

IEC Publication 188: High pressure mercury vapour lamps.

IEC Publication 192: Low pressure sodium vapour lamps.

IEC Publication 662: High pressure sodium vapour lamps.

## Dimensions

Those shown are maximum.

## Cap designations

ES-E27

GES-E40

BC-B22

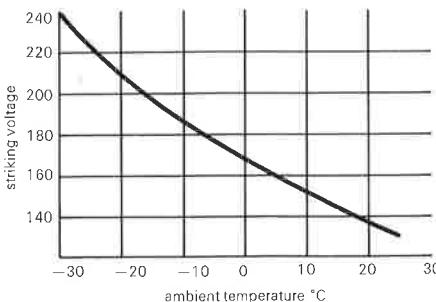
3 pin BC-B22-3

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, SONL, SON-R, SONS
50W	5 mins
80W	3 mins
125W	3 mins
250W	4 mins
400W	4 mins
700W	3 mins
1000W	2 mins
MBI, MBIF	SOX
250W	2 mins
400W	2 mins
1000W	2 mins
	65W
	90W
	135W
	5 mins
	6 mins
	7 mins
	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 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
80W	4 mins
125W	4 mins
250W	4½ mins
400W	5 mins
700W	5½ mins
1000W	7 mins
	All ratings 1 min

# 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

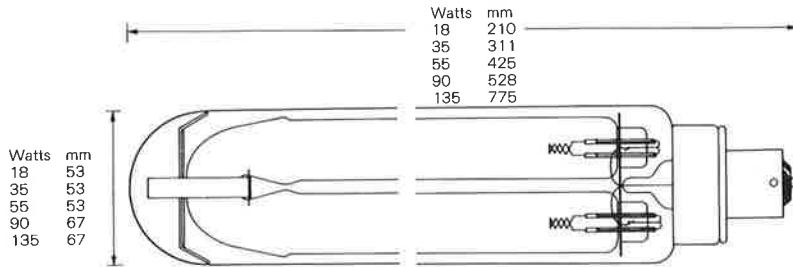
These highly efficient light sources, radiating in the yellow region of the spectrum, are primarily used for street lighting.

Of particular interest is the more recently introduced 18W SOX. This very low wattage source has growing applications for the bulkhead lighting of subways, stairwells, footpaths and courtyards etc.

## Operating position

Horizontal  $\pm 20^\circ$ . 18W, 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

Lamp reference	Nominal Lamp Voltage	Lamp Current Amps	Cap	Lumens at 100 hrs	Lumens at 2000 hrs	Standard Pack
18W SOX	56	0.35	BC	1800	1750	9
35W SOX	70	0.6	BC	4390	4300	9
55W SOX	109	0.59	BC	7650	7500	9
90W SOX	112	0.94	BC	12750	12500	9
135W SOX	164	0.95	BC	22000	21500	9

# SON high pressure sodium lamps

## Description

High pressure sodium discharge operating in a sintered aluminium oxide arc tube which withstands the intense chemical activity at high temperature.

Six types of SON lamps are available:

SON—Elliptical glass bulb with a diffusing coating.

SONDL—A de luxe colour version of SON.

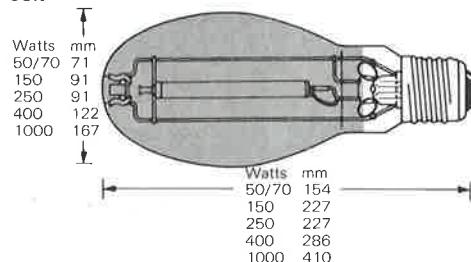
SON-T—Tubular clear glass bulb.

SON-TD—Tubular double-ended clear quartz outer jacket.

SON-R—Reflector bulb.

SONS-T—Tubular clear high lumen output

## SON



## 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. External starting simplifies lamp construction, ensuring immediate striking and reliability. The lamp takes about five minutes to run up to full brightness and has an average restrike time of 30 seconds from 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.

## Operating position

SON-TD—Horizontal  $\pm 20^\circ$  (May be operated vertically but full life may not be achieved).

All other types may be operated in any position.

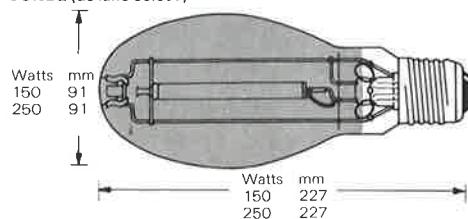
## SON

An elliptical hard glass high pressure sodium lamp with a diffusing coating. Increasing the vapour pressure in sodium discharge lamps results in a warm golden light in which it is possible to distinguish colours. These lamps are for use in situations where some colour discrimination is needed but accurate colour rendering is not required. Available in wattages from 50W to 1000W; with dimensions the same as equivalent high-pressure mercury lamps they may be accommodated in similar fittings and floodlight projectors with appropriate control gear.

## RANGE

Lamp Reference	Nominal Lamp Voltage	Lamp Current Amps	Cap	Nominal Lumens at 100 hrs	2000 hrs	Standard Pack
50W SON	85	0.75	E27	3500	3100	36
70W SON	90	0.98	E27	5800	5300	36
150W SON	100	1.8	E40	15500	15000	10
250W SON	100	3.0	E40	26500	25500	10
400W SON	105	4.4	E40	46000	45000	10
1000W SON	110	10.3	E40	120000	110000	4

## SONDL (de luxe colour)



## SONDL

These de luxe colour high pressure sodium lamps contain a specially designed arc tube that operates with the sodium at a higher temperature and pressure than is the case with standard SON lamps. This results in a light output that is whiter and has much better colour rendering properties.

SON de luxe lamps are electrically and dimensionally interchangeable with standard SON elliptical lamps of equivalent wattage.

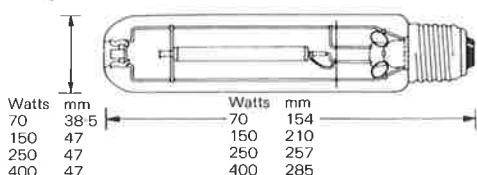
Details of 400W deluxe rating available on request.

## RANGE

Lamp Reference	Nominal Lamp Voltage	Lamp Current Amps	Cap	Nominal Lumens at 100 hrs	2000 hrs	Standard Pack
150W SONDL	100	1.8	E40	13000	12500	10
250W SONDL	100	1.8	E40	23000	22000	10

# SON high pressure sodium lamps

## SON-T



## SON-T

This is a tubular version of the SON lamp. Clear hard glass envelope and available in wattages from 70W to 400W.

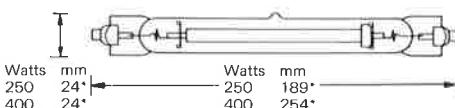
## SONS-T

A 150W high pressure sodium lamp with a clear tubular bulb. This lamp incorporates an advanced design of arc tube giving a gain of 10% in lumen output over the standard rating. For maximum performance these lamps require a special ignitor, details available on request.

## RANGE

Lamp Reference	Nominal Lamp Voltage	Lamp Current Amps	Cap	Nominal Lumens at 100 hrs	2000 hrs	Standard Pack
70W SON-T	90	0.98	E27	6000	5500	25
150W SON-T	100	1.8	E40	16000	15500	10
150W SONS-T	100	1.8	E40	17500	17000	10
250W SON-T	100	3.0	E40	28000	27000	10
400W SON-T	100	4.6	E40	48000	47000	10

## SON-TD



## SON-TD

A double ended tubular lamp with clear quartz sleeve. These lamps are specially designed for floodlighting use, and used in Thorn Haline fittings give a superbly efficient beam of light.

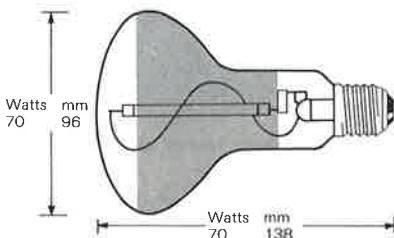
\*Nominal dimensions

## RANGE

Lamp Reference	Nominal Lamp Voltage	Lamp Current Amps	Cap	Nominal Lumens at 100 hrs	2000 hrs	Standard Pack
250W SON-TD	100	3.0	RX7s	26000	25000	10
400W SON-TD	105	4.4	RX7s	48000	46000	10

\*The lumen output and electrical characteristics of these lamps refer to operation under optimum conditions in a suitable fitting. The quoted performance will not be achieved in free air.

## SON-R



## SON-R

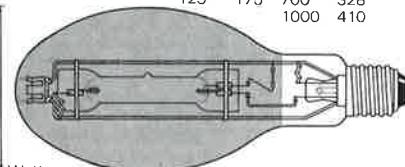
A 70W soft glass reflector bulb designed primarily for downlighter and display uses in commercial interior lighting.

## RANGE

Lamp Reference	Nominal Lamp Voltage	Lamp Current Amps	Cap	Nominal Lumens at 100 hrs	2000 hrs	Standard Pack
70W SON-R	90	0.98	E27	4000	3700	10

# Kolorlux MBF mercury fluorescent lamps

Watts	mm	Watts	mm
50	129	250	227
80	154	400	286
125	175	700	328
250	91	1000	410

Watts	mm	Watts	mm
50	56	250	122
80	71	400	122
125	76	700	143
250	91	1000	167

## RANGE

Lamp reference	Nominal Lamp Voltage	Lamp Current Amps	Cap	Nominal Lumens at 100 hrs	2000 hrs	Standard Pack
80W MBF de luxe	115	0.80	E27	3850	3650	36
125W MBF de luxe	125	1.15	E27	6500	6200	36
250W MBF de luxe	135	3.25	E40	14000	13300	10
400W MBF de luxe	140	5.60	E40	24000	22800	10
50W MBF	85	0.60	E27	2000	1900	50
80W MBF	115	0.80	E27*	3850	3650	36
125W MBF	125	1.15	E27*	6300	5800	36
250W MBF	130	2.15	E40	13500	12500	10
400W MBF	135	3.25	E40	23000	21500	10
700W MBF	140	5.60	E40	42000	38000	1
1000W MBF	145	7.60	E40	62000	58000	1

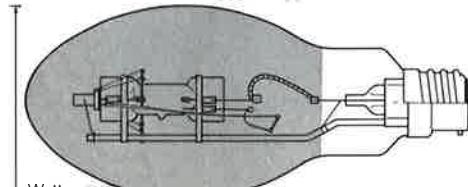
\*B22d - 3 Cap also available for replacement only.

# 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.

Watts	mm
160	175
250	227
500	286



Watts	mm
160	76
250	91
500	122

## RANGE

Lamp reference	Supply Voltage	Lamp Current Amps	Cap	Nominal Lumens at 100 hrs	2000 hrs	Standard Pack
160W MBTF	240/250	0.65	B22 or E27	2900	2560	36
250W MBTF	240/250	1.05	E40	5500	4640	10
500W MBTF	240/250	2.10	E40	12500	11500	10

## Description

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

## Applications

### MBF

Industrial and streetlighting, commercial and display lighting, shopping centre and concourse lighting, and area floodlighting.

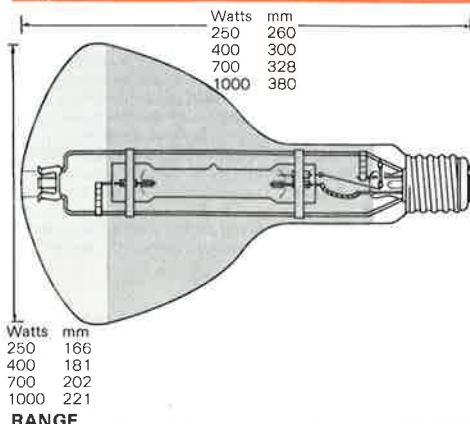
### MBF de luxe

The greatly improved colour appearance makes these lamps suitable for use in commercial interiors such as—Offices, Shops and Supermarkets, Public concourses, Lift lobbies and reception foyers.

## Operating position

Universal.

## Kolorlux MBFR mercury reflector lamps



### 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.

### RANGE

Lamp reference	Nominal Lamp Voltage	Lamp Current Amps	Cap	Nominal Lumens at 100 hrs	2000 hrs	Standard Pack
250W MBFR	130	2.15	E40	11500	10500	1
400W MBFR	135	3.25	E40	20500	18000	1
700W MBFR	140	5.60	E40	35000	32500	1
1000W MBFR	145	7.60	E40	52000	48000	1

## 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.

### 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, gymnasiums 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

BUH : Base up to horizontal: Operates in any position between cap up and cap 15° below horizontal.

H : Horizontal. These lamps have primarily been designed to be operated  $\pm 15^\circ$  of horizontal, but can be used up to  $\pm 60^\circ$  of the horizontal.

BU : Base up: Permitted operating position is cap up within  $\pm 30^\circ$  of the vertical.

U: Universal. Lamp may be operated in any position.

For further information see **General lamp information** at the beginning of this section.

### Note:

A suitable enclosed fitting should be used when operating these lamps in or near the horizontal position.

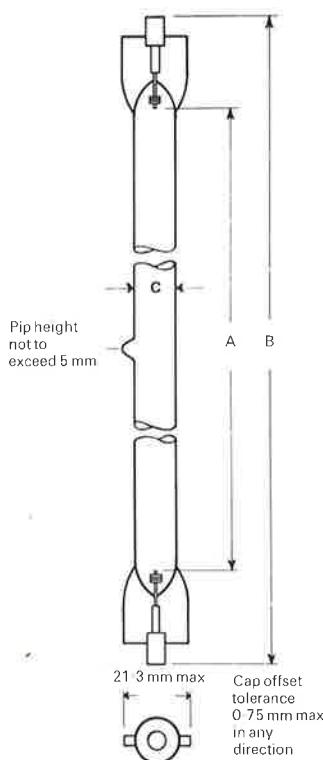
### RANGE

Lamp reference	Burning Position	Nominal Lamp Voltage	Lamp Current Amps	Cap	Nominal Lumens at 100 hrs	2000 hrs	Standard Pack
250W MBIF	BUH	100	2.9	E40	19000	16000	10
400W MBIF	H and BU	120	3.5	E40	29000	24000	10
1000W MBIF	U	250	4.2	E40	92000†	85000†	1
400W MBI	BUH	120	3.5	E40	29000	24000	10
1000W MBI	U	250	4.2	E40	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%.

# Linear metal halide lamps— Type MBIL 750W and 1500W



## 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 1500 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 1500 floodlight, see **Control gear and accessories** section for appropriate gear.

Lamp reference no.	750W 91-7461	1500W 91-7473
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## Physical characteristics

Arc length (mm) Dimension A	190±2	190±2
Overall length (mm) Dimension B	254±2	254±2
Contact length (mm)	Overall Length less 4mm	
Arc tube diameter (mm) Dimension C	13.3 max.	20.1 max.
Cap	Ceramic	Ceramic
Operating position	Horizontal	Horizontal
Bulb finish	Frosted	Frosted

## Electrical characteristics

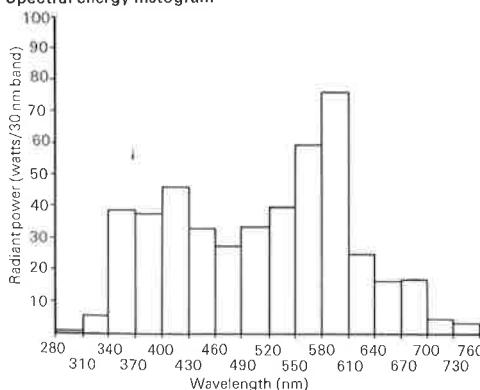
Supply voltage (a.c.)	200/250	380/415
Arc voltage	500±25	250±20
Operating current (amps)	1.75	6.7
Nominal rating (watts)	750	1500

## Luminous characteristics

Initial light output (lumens)	67000	120000
Light output throughout life (lumens)	58500	110000
Run-up time to 90% (mins)	2.5	2.0
Hot re-strike time (mins) in ON 1500 floodlight at 25°C ambient	8-12	15-20
Chromaticity co-ordinates x=	0.364	0.374
y=	0.392	0.373

For full technical details of these lamps, data sheets are available on application.

Spectral energy histogram



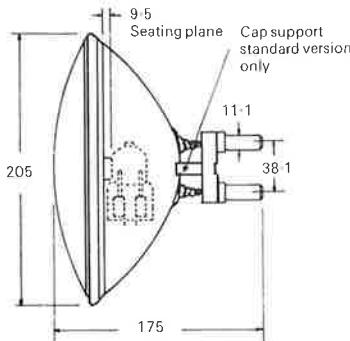
For details of other types of MBIL lamps see **Hytek lamps** section.

# Sealed beam compact source iodide lamps—1000W and 1000W hot re-strike

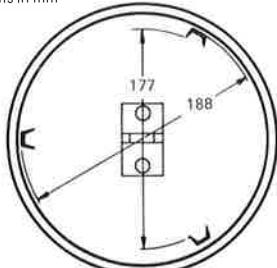
## Description

**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 8 in sealed beam reflector envelope. The additives ensure a high efficiency white light source of good colour rendering.

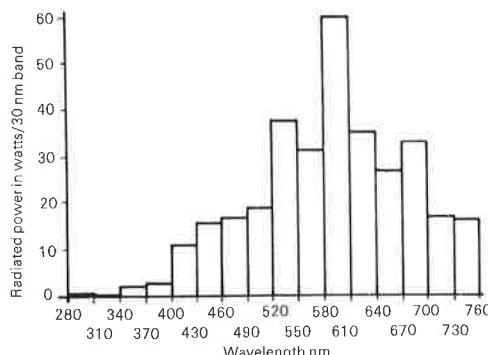
**1000W hot re-strike** A form of the standard 1000W CSI sealed beam lamp in which the construction has been modified to enable the lamp to be restarted immediately when hot.



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 QQ 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 QQ 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 $\frac{1}{3}$ peak $\frac{1}{5}$ peak $\frac{1}{10}$ peak 6°   8°   12°   18°
Light output (lumens)	Initial 76000 Design 67000
Colour rendering	Good
Chromaticity co-ordinates	$x=0.395$ $y=0.395$ CV 3.5%
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.

### Health and Safety at work.

Refer to note on page seven.

# 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. For d.c. operation of 250W lamps a choke and series resistance are required, the choke being retained for starting purposes. 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.

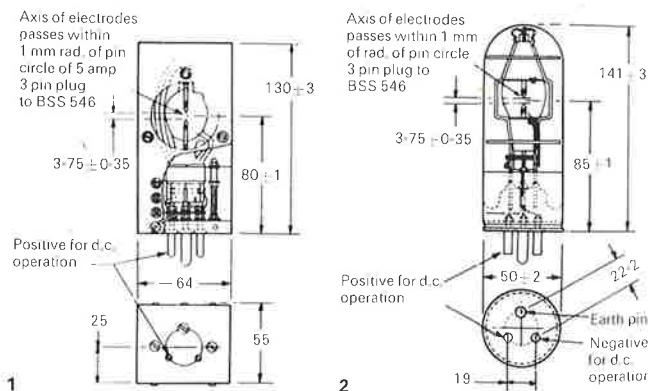
## Control gear

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. 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 Volts	Lamp operating Amps	Starting current Amps	Maximum brightness Stilbs	Mean HCP	Average Life Hours
94-0001	250	3.75	3-pin	Metal Box Glass Window	1	60/75	3.7/4.6	4/5	20000	1300	500
94-0006	250	3.75	3-pin	Metal Box Quartz Window	1	60/75	3.7/4.6	4/5	20000	1300	500
94-0051	250	3.75	3-pin	Tubular Glass Envelope	2	60/75	3.7/4.6	4/5	20000	1300	500

# 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.

## RANGE

Reference no.	Lamp	Watts	Cap	Lamp operating Volts	Amps	Starting current/ Amps	Average 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	B22/31×30 3-pin	110/140	1.15	15/2	1500

## 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.

## Applications

**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.



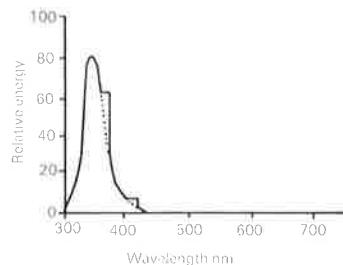
## Fittings and control gear

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

Type	Ratings
Ultra-violet	150mm/4W 225mm/6W 300mm/8W 450mm/15W
Blacklight blue	1200mm/40W

# Blacklight Blue tubes

Spectral energy distribution  
blacklight blue tubes



# 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	Standard pack
8W	92-1213	300x16	25
15W	92-2013	457x25	25
30W	92-4540	914x25	25

## Long-wave ultra-violet fluorescent type tubes

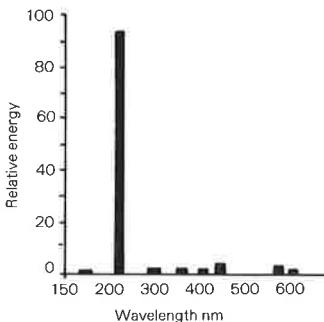
The germicidal tubes described above are short-wave ultra-violet sources. Long wave ultra-violet fluorescent type tubes are also available as below:

Type	Ratings
Ultra-violet (non-filter)	1500mm 85/80W; 1200mm/40W; 600mm/20W; 450mm/15W; 300mm/8W

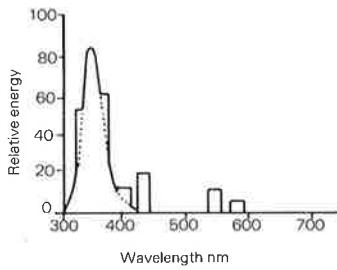
## Fittings and Control gear

All tubes listed above go into standard fittings and operate on standard fluorescent Control gear.

Spectral energy distribution  
germicidal tubes



Spectral energy distribution  
ultra-violet 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.

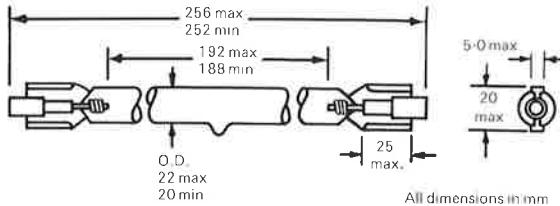
## Lamp performance

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.

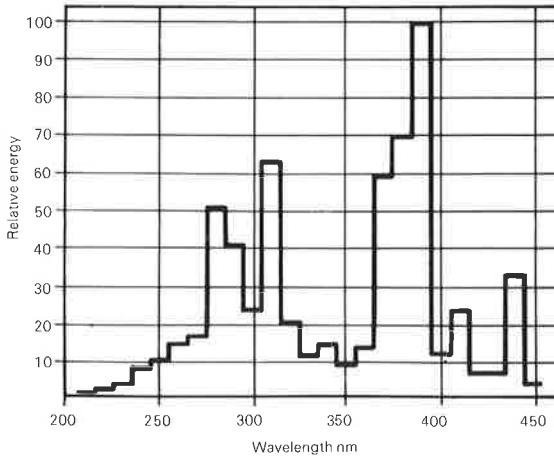
## Control gear

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	Average Life hours
91-7480	1800	256	22	190	R7s	500

# 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 420	91-9828
Graph-X 365	91-9827

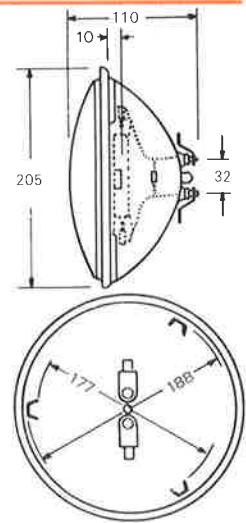
## Electrical characteristics

400W Operation	
Arc watts	400
Arc volts	105±15
Arc current (amps)	4.4
Run-up time (mins)	2
Restrike time (mins)	7/10
800W Operation	
Arc watts	800
Arc volts	110±15
Arc current (amps)	8
Run-up time	—
Restrike time	—
Switching from 400W to 800W.	Instantaneous extra u-v output.

## Average Life

400W	1000 hours nominal
800W	100/200 hours nominal (continuous operation)

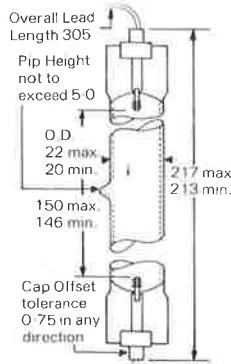
If run at 800W for the duration of the exposure, there is little reduction in total life.



# 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.



2kW

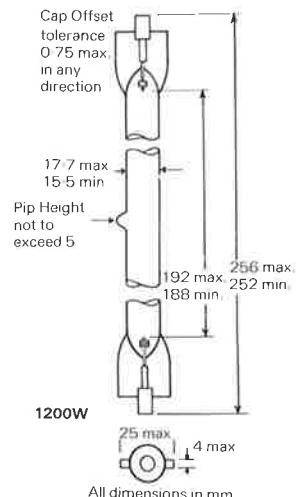


## Applications

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.

## 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.



## Characteristics

Lamp references nos.	91-7470	91-7484
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
Average Life 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

# 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 tube formed in to a helix to provide a more concentrated source.

**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 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

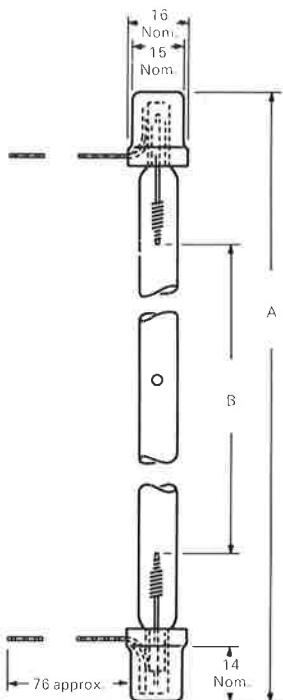
Photo reproduction. Until recently the standard light source for copy board illumination and platemaking has been the open carbon arc. Over the past few years special discharge lamps have been used, particularly pulsed xenon lamps.

## Control gear

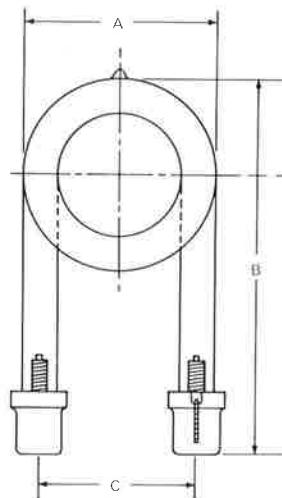
Details on application.

## Lamps specification

Type	Pulsed xenon arc
Supply volts	200/250V 50Hz
Pulse frequency	100Hz
Efficacy	25 (lumens/watt) (1500W, 3000W linear) 30 (4kW, 8kW helical)
Cap	Ceramic with flexible leads
Average Life Hours	500 (1500W, 2000W linear) 200 (4kW, 8kW helical)
Operating position	Universal (forced cooling essential)



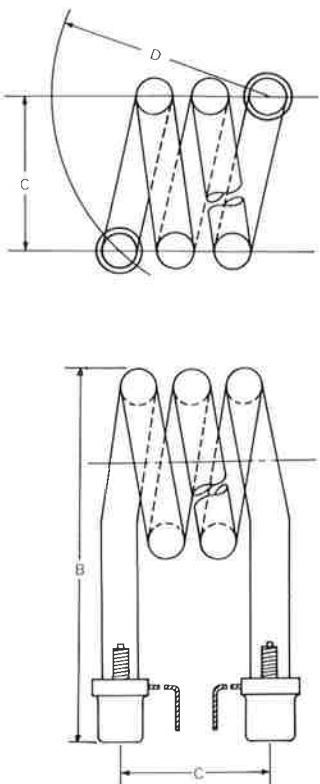
Linear	1500W	3000W
A	392±3	695±3
B	310 approx.	615 approx.



Linear	4kW	8kW
A	60 max	60 max
B	116 max	118 max
C	48	48
D	64.5	102

## Lamp reference nos.

Rating	Type	Reference no.
1500W	Linear	98-2015
3000W	Linear	98-2030
4kW	Helical	98-2050
8kW	Helical	98-2070



All dimensions in mm

# Linear source xenon lamp—Type XBU

## 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 the lamp, full output is given almost immediately.

The lamp requires a starter unit to initiate the arc, and a series inductance and power factor correction capacitor are also required.

## Applications

High speed photography and cinematography; colour matching; fadeometer testing; graphic arts; optical instruments; laboratory and general scientific purposes.

## Operating position

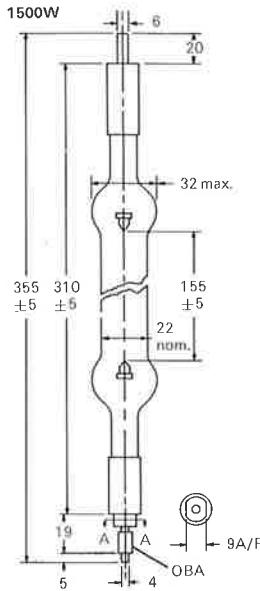
Vertical  $\pm 15^\circ$ .

## Cap

Special cylindrical.

## Control gear

Details on application.



## XBU

Reference no.	Rating	Supply Volts.	Arc Length (mm)	Lamp operating Volts	Amps	Lumens	Average Life Hours
98-0150	1500W	200/250V 50Hz	155 ± 5	65/80	20/25	33000	1500

# 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

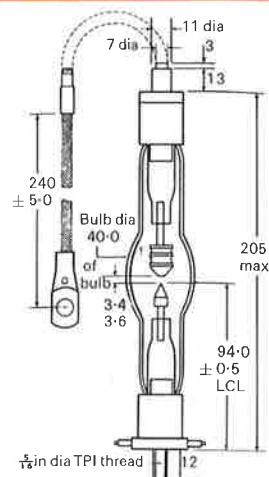
Vertical or horizontal  $\pm 15^\circ$

## Caps

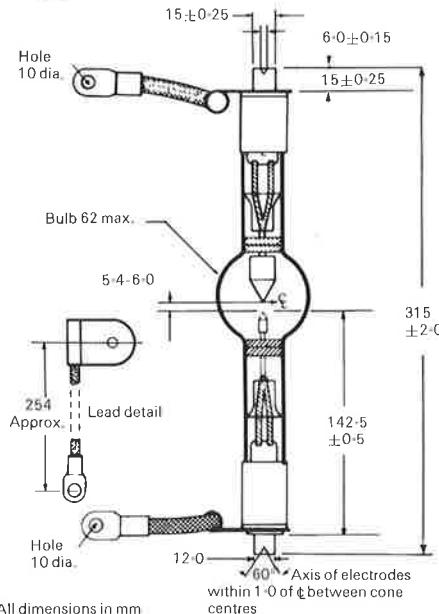
All lamps are fitted with special cylindrical caps with a cone centre for mounting, and a flexible lead.

## Control gear

Details on application.

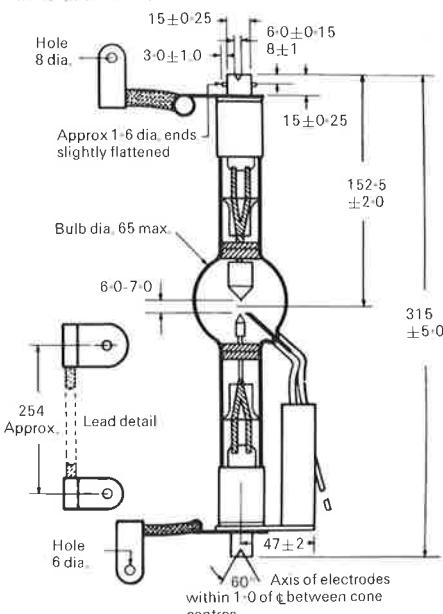


2kW D.C. 2 Electrodes



All dimensions in mm

2kW D.C. 3 electrodes



## RANGE

Reference no.	Rating Watts	Supply Volts	Arc size mm	Lamp operating Volts	Amgs	Lumens	Luminance*	Average Life Hours
98-1430	1kW 2 Electrodes	65 min d.c.	3.5	23	46	32000	48000	1500
98-1530	2kW 2 Electrodes	65 min d.c.	5.5×4	25	80	70000	90000	1500
98-1520	2kW 3 Electrodes	35 min d.c.	6×4	23.5	85	85000	70000	1500

\*Luminance=Average luminance of brightest circle of 2mm dia. in candelas/cm<sup>2</sup>

# 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.

## 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.

### Single flash operation

#### Electrical characteristics

Operating voltage: 1000-2000V

Maximum loading: 180 joules

Maximum repetition frequency: 1 every 10 seconds

Trigger voltage: 12kV.

#### Approximate luminous characteristics

Total light output: 1500 lm/sec.

Peak lumen output:  $2 \times 10^6$  lm.

Approx. flash duration to 1/3 peak: 1.0 millisecond.

Average objective life: 5000 flashes.

### Continuous operation

#### Electrical characteristics

Lamp rating 1 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

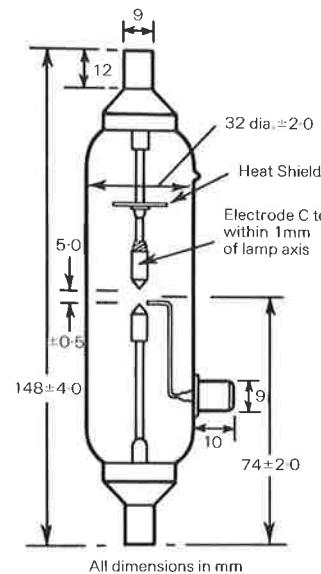
## Warning

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

### Lamp reference number 95-2005



All dimensions in mm

# 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.

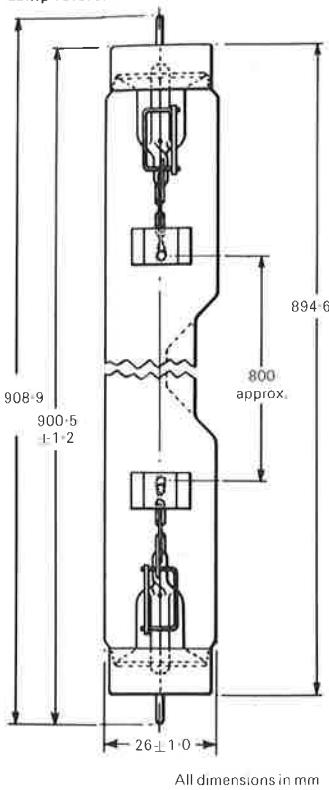
## Fittings and control gear

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

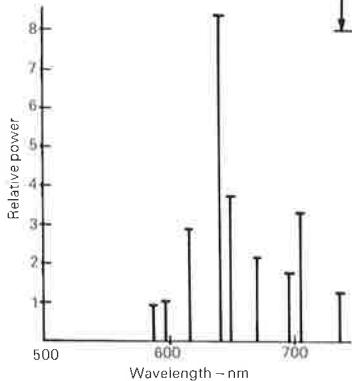
## Lamp characteristics

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
Average Rated life continuous burning	4000 hours
Average Rated life flashing	30 million flashes
Caps	G 13/10x24.2 bi-pin

Lamp reference number 98-4501



## Spectral energy diagram



# Metal halide MBI/BU Thallium lamp 250W

## Description

These lamps consist of an arc burning between tungsten electrodes, in an atmosphere of mercury vapour with additional metallic halides, enclosed in a quartz tube.

The choice of halides ensures maximum radiation in the 535 nanometre wave band.

## Application

The light emitted by these lamps is most suitable for underwater illumination.

These lamps should only be used in fittings specifically designed to withstand the exacting conditions met with in underwater lighting situations.

## Control Gear

Lamps must be operated on specific choke/ignitor control circuit:  
Full details on application.

## Lamp characteristics

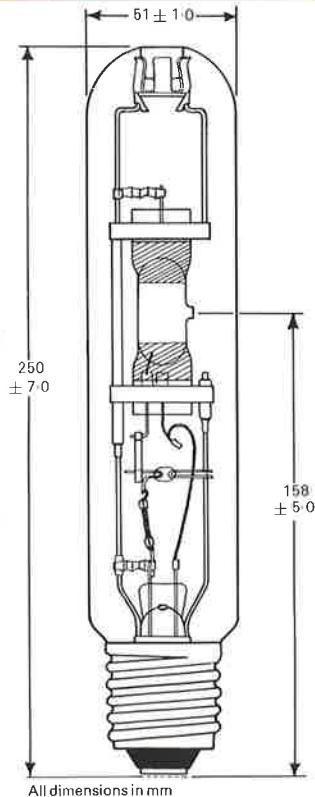
Type	MBI/BU
Voltage	240 a.c.
Finish	Clear
Cap	E40/45
Bulb	Hard Glass

## Operating position

Vertical, Base up to Base 15° below horizontal.

## Operating characteristics

Electrical	
Min. Supply Voltage	220
Starting Voltage at 20°C	220
Operating Voltage	95 ± 10
Operating Current	3.1A Nom.
Run-up time to 65%	3 mins.
Luminous (Horizontal Position),	
Lumen Output 100 hrs	16,000
Chromaticity x	.270 Nom.
Co-ordinates y	.540 Nom.
Performance	
Average Rated Life	500 Hours



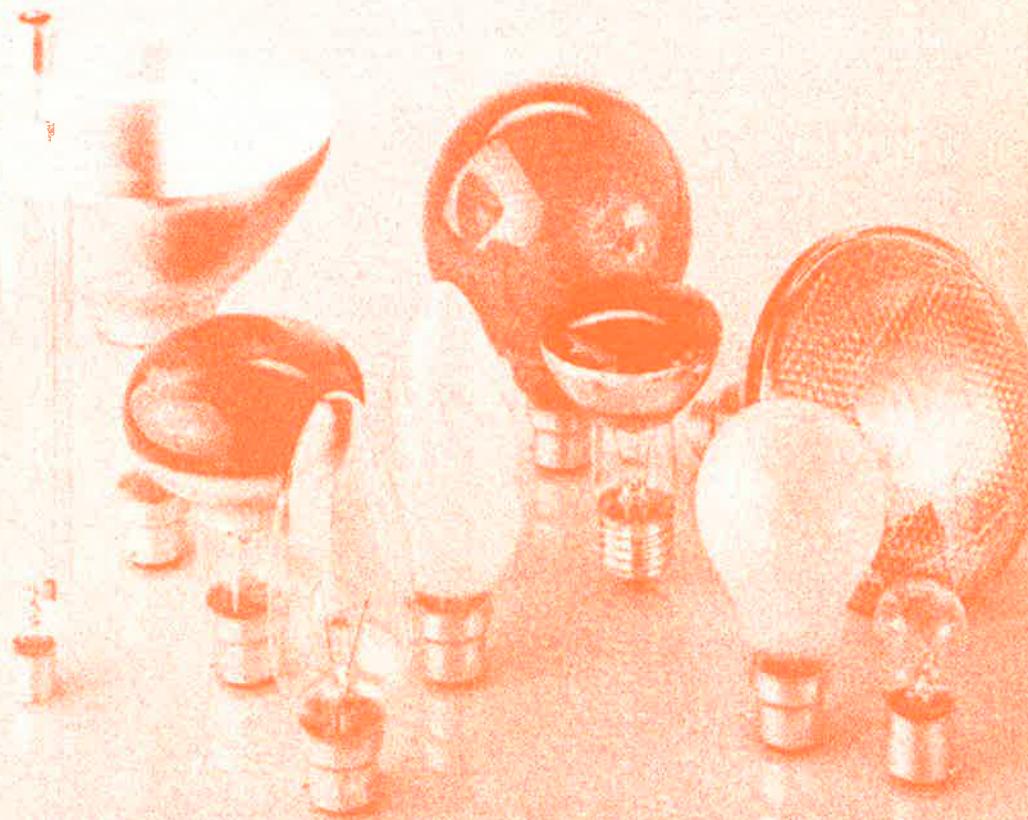
All dimensions in mm

# Incandescent lamps

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**Health and Safety at work.**  
Refer to note on page seven.



# 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 61719, Tungsten Filament General Service Lamps with lives of 2000 hours.
- BS 5971, Safety and Interchangeability of Tungsten Filament Lamps for domestic and similar General Lighting purposes.
- BS 98, Dimensions of Screw Lamp Caps and Lampholders.
- BS 52, Bayonet Lamp Caps, Lampholders and BC adaptors.

## International 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
B16d	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 outputs of GLS lamps

Initial Lumens—are the average lumen outputs at start of life. Lighting Design Lumens—are the average lumen outputs throughout life. Rated Life of Doublelife is 2000 hours, all others 1000 hours. All figures are derived from National and International specifications and are provided for the practical guidance of lighting engineers.

## Coiled Coil

Watts	Mazda 240V		Doublelife 240V		Netabulb 240V		Powersaver 240V	
	Initial Lumens	LDL*	Initial Lumens	LDL*	Initial Lumens	LDL*	Initial Lumens	LDL*
40W	420	400	375	355	385	365	—	—
54W	—	—	—	—	—	—	620	585
60W	710	675	630	595	660	625	—	—
75W	940	890	—	—	—	—	—	—
90W	—	—	—	—	—	—	1190	1130
100W	1360	1290	1220	1160	1250	1185	—	—
150W	2180	2070	—	—	—	—	—	—

## Single Coil

Watts	240V		110V		50V		25V	
	Initial Lumens	LDL*	Initial Lumens	LDL*	Initial Lumens	LDL*	Initial Lumens	LDL*
15W	115	105	—	—	—	—	—	—
25W	215	200	—	—	290	275	335	310
40W	340	320	445	410	495	465	620	580
60W	610	575	770	710	870	820	998	940
100W	1230	1160	1420	1300	1600	1500	1720	1610
150W	2080	1950	2380	2160	—	—	—	—
200W	2880	2730	3250	2980	—	—	—	—
300W	4550	4300	5050	4710	5400	5050	—	—
500W	8200	7700	8900	8270	—	—	—	—
750W	13100	12400	—	—	—	—	—	—
1000W	18400	17300	—	—	—	—	—	—

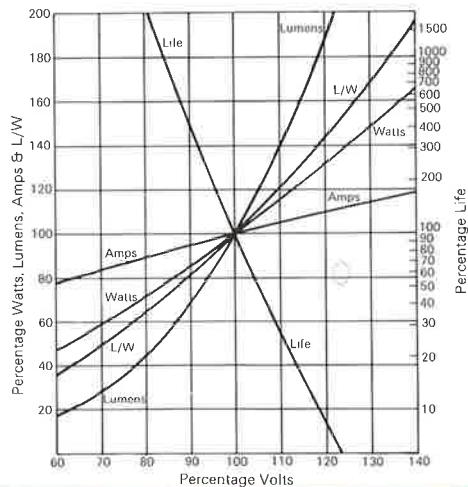
\*Lighting Design Lumens.

## Average Life and Initial Lumens

The quality control of G.L.S. lamps has been extremely well developed, but because minute variations within laid down production tolerances produce proportionally greater changes in average life and lumens, it is impossible to guarantee these figures for an *individual* lamp.

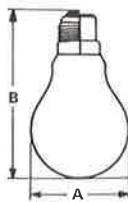
The average life and lumens quoted in our literature and on lamp cartons is calculated statistically by regularly measuring and life testing sample quantities of lamps to BS 161 and IEC 64, and taking these results as being representative of our whole production of the type. These results are recorded and over a period of time an on-going indication of quality is established. The average life of a small quantity of lamps should not be taken as typical unless the results are read in conjunction with BS 161 and IEC 64. Operating conditions, particularly supply voltage and burning position, will affect achieved life. As can be seen from the following graph, a 5% increase in supply voltage will reduce the expected life by 50%, correct matching of lamp and supply voltage is therefore essential.

## Variations of tungsten filament lamp characteristics with change in voltage



# General lighting service lamps

①



40-100W BC 61 108.5  
150W BC 69 128.5  
(For ES Caps add 1.5mm to length of BC equivalent)

## MAZDA—COILED COIL

Watts	Voltages	Cap	Finish	Diagram	Standard Pack*
40	240	BC	Pearl	1	ADE
60	240	BC	Pearl	1	ADE
100	240	BC	Pearl	1	ADE
150	240	BC	Pearl	1	BC

## OTHER COILED COIL

Watts	Voltages	Cap	Finish	Diagram	Standard Pack*
40	240	BC	Clear	1	A
40	250	BC	Pearl	1	A
60	240	BC	Clear	1	A
80	250	BC	Pearl	1	A
75	240	BC	Pearl	1	A
100	240	BC	Clear	1	A
100	240	ES	Pearl	1	A
100	250	BC	Pearl	1	A
150	240	BC	Clear	1	A
150	250	BC	Pearl	1	A
150	240	ES	Pearl	1	A

## DOUBLE LIFE—COILED COIL

Watts	Voltages	Cap	Finish	Diagram	Standard Pack*
40	240	BC	Pearl	1	BC
60	240	BC	Pearl	1	BC
100	240	BC	Pearl	1	BC
150	240	BC	Pearl	1	BC

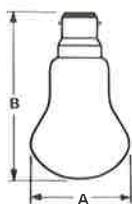
## COLOURED

Watts	Voltages	Cap	Finish	Diagram	Standard Pack*
15	200/250	BC	Amber, Blue, Green, Pink, Yellow, Red	1	E
25	200/250	BC	Amber, Blue, Green, Pink, Yellow, Red	1	E
40†	200/250	BC	Amber, Blue, Green, Pink, Yellow, Red	1	E
60†	200/250	BC	Amber, Blue, Green, Pink, Yellow, Red	1	E
100†	200/250	BC	Amber, Blue, Green, Pink, Yellow, Red	1	A

## NETABULB

Watts	Voltages	Cap	Finish	Diagram	Standard Pack*
40	240	BC	Silverlight	2	A
60	240	BC	Silverlight	2	A
100	240	BC	Silverlight	2	A
150	240	BC	Silverlight	2	A

†Not suitable for outdoor use unless enclosed for protection against rain.



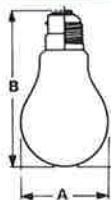
40, 60, 100W  
150W  
A 61  
B 103.5  
76 124.5

## Standard Packs

- A. 25 lamps in collar and sleeve in board pack.
- B. 25 lamps in tuckend cartons in board pack.
- C. 50 lamps in tuckend cartons in shrink wrapped display pack. (Stakpak).
- D. 100 lamps in Twinpacks, 50 Twinpacks per 100 lamp. Shrink wrapped display pack (Stakpak).
- E. 100 lamps in collar and sleeve, 10 "clusterpacks" of 10 lamps per board pack.

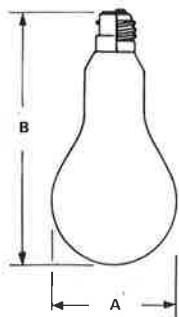
All dimensions in mm

# General lighting service lamps



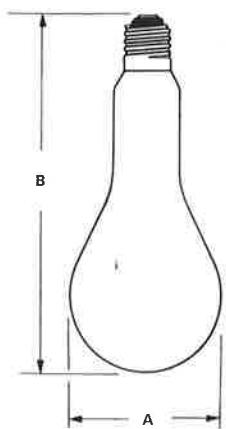
**SINGLE COIL / NIGHT LIGHT**

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**

300WES 111.5 B 245  
300- 500WGES 111.5 239

## SINGLE COIL

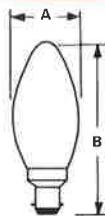
Watts	Voltages	Cap	Finish	Standard Pack
Nightlight	200/260	BC	Pearl	10
15	240, 250	BC	Pearl	25
25	240, 250	BC	Pearl	25
26	240	ES	Pearl	25
40	240	BC	Clear	25
40	110, 240, 250	BC	Pearl	25
40	110, 240	ES	Pearl	25
40	240	SBC	Pearl	25
60	110, 240, 250	BC	Clear	25
60	110, 240, 250	BC	Pearl	25
60	110, 240	ES	Clear	25
60	110, 240	ES	Pearl	25
60	240	SBC	Pearl	25
100	110, 240, 250	BC	Clear	25
100	110, 240, 250	BC	Pearl	25
100	240, 250	ES	Clear	25
100	110, 240, 250	ES	Pearl	25
150	110, 240, 250	BC	Pearl	25
150	110, 240	ES	Pearl	25
200	240	BC	Pearl	25
200	110, 240	ES	Pearl	25
300	110, 120, 240, 250	GES	Clear	10
300	110, 240	ES	Clear	10
500	110, 120, 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	3 pin 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

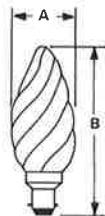
All dimensions in mm

# Decorative lamps



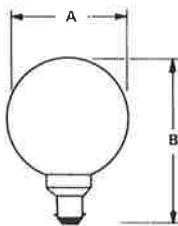
## PLAIN CANDLE

	A	B
25W-60W BC	36	97
SBC	36	103
SES	36	104
60W BC	46	128
SBC	46	133



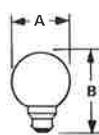
## TWISTED CANDLE

	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	BC, SBC	Clear	50*
25	240	BC, SBC, SES	Silverlight	50*
40	240	BC, SBC, SES	Clear	50*
40	240	BC, SBC, SES	Silverlight	50*
60	240	BC, SBC	Clear	50*†
60	240	BC, SBC	Pearl (46mm only)	50*
60	240	BC, SBC	Silverlight	50*†

†Available in 36mm and 46mm dia

## TWISTED CANDLE

Watts	Voltage	Cap	Finish	Standard Pack
25	240	BC, SBC	Clear	50*
25	240	BC, SBC	Pearl	50*
40	240	BC, SBC	Clear	50*
40	240	BC, SBC	Pearl	50*
60	240	BC, SBC	Clear	50*
60	240	BC, SBC	Pearl	50*

## DECOR ROUND (For Decor Spots see Reflector Lamps)

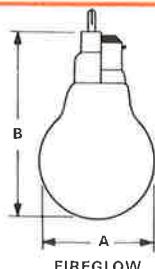
Watts	Voltage	Cap	Finish	Standard Pack
40	240	BC, ES	Clear	10
40	240	BC, ES	Silverlight	10
40	240	BC, ES	Amber, Red, Green, Purple	10
40	240	BC, ES	Crown Silvered	10
60	240	BC, ES	Silverlight	10
100	240	BC, ES	Silverlight	10

## ROUND BULB

Watts	Voltage	Cap	Finish	Standard Pack
25	240	BC, SBC, SES	Silverlight	50*
40	240	BC, SBC, ES, SES	Silverlight	50*

\*Standard pack consists of 5×10-way packs per container.

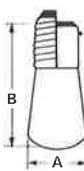
## Special service lamps



	A	B
BC	61	108.5
3-pin BC	61	108.5
2-prong	61	110.5

### 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



	A	B
BC	29	59
ES	29	61
SBC	29	65
SES	29	66

### PYGMY SIGN

Watts	Voltage	Cap	Finish	Standard Pack
15	25	BC, SBC	Clear	50
15	50	BC/SBC, ES	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

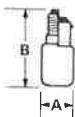
Watts	Voltage	Cap	Finish	Standard Pack
15	200/250	BC, SBC, SES	Clear	50

### SWITCHBOARD INDICATOR

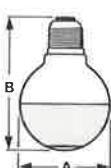
Watts	Voltage	Cap	Finish	Standard Pack
	200/260	BC	Clear	50

### PILOT INDICATOR

Watts	Voltage	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



	A	B
SBC	19	43
CAND	19	48
SES	19	49



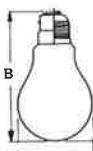
	A	B
ES	60	95

All dimensions in mm

### POLO CROWN SILVERED LAMP

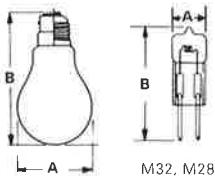
Watts	Voltage	Cap	Finish	Standard Pack
80	240	ES	Crown Silvered	25

## Special service lamps



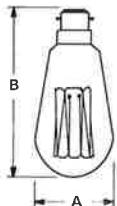
### ROUGH SERVICE

	A	B
40-60W	61	108.5
110/120V 100W	61	108.5
200/250V 100W	69	128.5



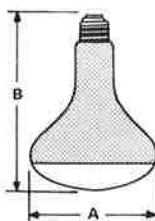
### TRAFFIC SIGNAL

	A	B	A	B
65W ES	61	110	M32	8.5
65W BC	61	115	M28	11



### 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

Watts	Voltages	Cap	Finish	Standard Pack
40	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

Watts	Voltages	Nominal L.C.L.	Cap	Finish	Standard Pack
65	240/250	62	ES	Clear	25
85	240/250	85	BC	Clear	25
Tungsten halogen					
50	12	M32	30	Bi-pin G6-35	Clear
100	12	M28	30	Bi-pin G6-35	Clear

### CAGE, NAVIGATION

Watts	Voltages	Cap	Finish	Standard Pack
40	220/240	BC	Clear	100
60	220/240	BC	Clear	72

### HEATING LAMPS

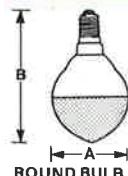
**INFRA-RED REFLECTOR** Standard bulb (NOT for domestic use)

Watts	Voltages	Cap	Finish	Standard Pack
150	200/250	ES	Satin	10
275	200/250	BC	Satin	10
275	200/250	ES	Satin	10
275	200/250	BC, ES	Clear	10

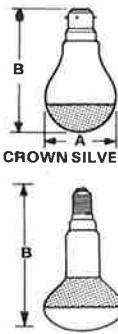
**INFRA-RED REFLECTOR** Hard glass bulb (Domestic and other uses)

Watts	Voltages	Cap	Finish	Standard Pack
275	200/250	BC, ES	Clear Front	10
275	200/250	BC, ES	Red Front	10

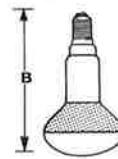
# Reflector lamps



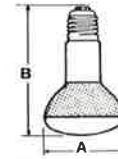
**ROUND BULB**  
A 46 40W  
B 77.5



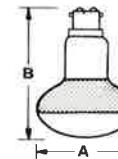
**CROWN SILVERED**  
A 61 60W  
69 100W  
B 108.5 60W  
128.5 100W



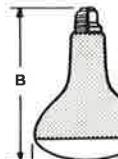
**DECORSPOT 50**



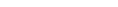
**DECORSPOT 64**



**DECORSPOT 80**



**DECORSPOT 95**



**DECORSPOT 125**

## ROUND BULB

Watts	Voltages	Cap	Finish	Standard Pack
40	240	SES	Crown Silvered	50*

\*Standard Pack consists of 5 x 10-way packs per container.

## CROWN SILVERED DISPLAY

Watts	Voltages	Cap	Finish	Standard Pack
80	240	BC, ES	Crown Silvered	25
100	240	3PBC, ES	Crown Silvered	25

## DECORSPOT 50

Watts	Voltages	Cap	Finish	Standard Pack
25	240	SES	Light Diffuse Front	50
40	240	SES	Light Diffuse Front	50

## DECORSPOT 64

Watts	Voltages	Cap	Finish	Standard Pack
40, 60	240	ES	Light Diffuse Front	50
40, 60	240	ES	Clear Front	50
40	240	ES	Light Diffuse Front, Lacquered Blue, Green, Red and Yellow	50
60**	240	ES	Disco Lamp, Clear Front, Lacquered Blue, Green, Red and Yellow	50

## DECORSPOT 80

Watts	Voltages	Cap	Finish	Standard Pack
60	240	BC, ES	Light Diffuse Front	10
60	240	BC, ES	Clear Front	10
100	240	BC, ES	Light Diffuse Front	10
60**	240	ES	Disco Lamp, Clear Front, Lacquered Blue, Green, Red and Yellow	10

## DECORSPOT 95

Watts	Voltages	Cap	Finish	Standard Pack
75	240	BC, ES	Light Diffuse Front	10
75	240	BC, ES	Lacquered Blue, Green, Red and Yellow	10
100	240	BC, ES	Light Diffuse Front	10
150	240	BC, ES	Light Diffuse Front	10

## DECORSPOT 125

Watts	Voltages	Cap	Finish	Standard Pack
150	240	BC, ES	Light Diffuse Front	10

\*\*This lamp is designed for non-continuous burning. If run continuously lacquer could deteriorate after 500 hours.

(For ES caps add 1.5mm to length of BC equivalent).

All dimensions in mm.

# Sealed beam lamps/Low volt display lamps

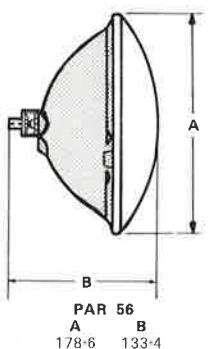
## PAR sealed beam spotlights and floodlights

These lamps, with the exception of the PAR 38 Coolray and PAR 56 are for indoor and outdoor applications. The Colorray spotlights have

internal thin film dichroic lenses which have a high transmission factor and maintain constant colour through life.

The Coolray 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

Watts	Voltages	Cap	Finish	Standard Pack
75	240	ES	Clear Front, Spot	10
75	240	ES	Clear Front, Flood	10
100	240	ES	Clear Front, Spot	10
100	240	ES	Clear Front, Flood	10
100	240	ES	Flood Lacquered Blue, Green, Red, Yellow	10
100	240	ES	Coolray Spot	10
150	240,110/115	ES	Clear Front, Spot	10
150	240,110/115	ES	Clear Front, Flood	10
150	240	ES	Colorray Spot, Blue, Green, Red, Yellow	10
150	240	ES	Coolray Spot	10

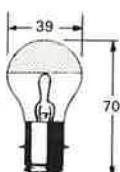
## PAR 56 SEALED BEAM

Watts	Voltages	Cap	Finish	Standard Pack
300	240	GX16d	Clear Front, Wide Beam	8
300	240	GX16d	Clear Front, Med-Beam	6
300	240	GX16d	Clear Front, Narrow Beam	6

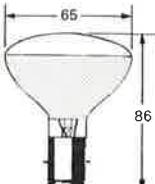
## LOW VOLTAGE DISPLAY

Volts	12	12	12	12
Watts	50	50	50	24
Cap.	Bosch	Bosch	ES	SBC
Ref.	11-7015	11-8012	11-7014	11-7005
Pack Qty.	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.

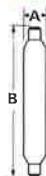


Parabolic internal reflector, diffused front for high intensity soft edged beam.

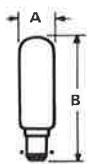


All dimensions in mm

## Tubular lamps



DOUBLE CAP  
TUBULAR      A      B  
30 and 60W 26 222  
30 and 60W 26 285



SINGLE CAP  
TUBULAR      A      B  
BC and SBC 26 85

### DOUBLE CAP TUBULAR—Striplites

Watts	Voltages	Cap	Finish	Standard Pack
30 or 60	240	S15s	Clear	25
30 or 60	240	S15s	Opal	25
60	240	S15s	Amber (285mm only)	25

### SINGLE CAP TUBULAR

Watts	Voltages	Cap	Finish	Standard Pack
25	240	BC, SBC	Clear	50
40	240	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

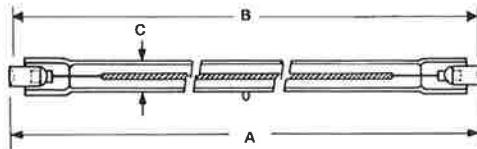
During operation the temperatures of the lamp pinch seal should not exceed 350°C, while the bulb wall temperature must not drop below 250°C in order to maintain the tungsten-halogen cycle.

## 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.

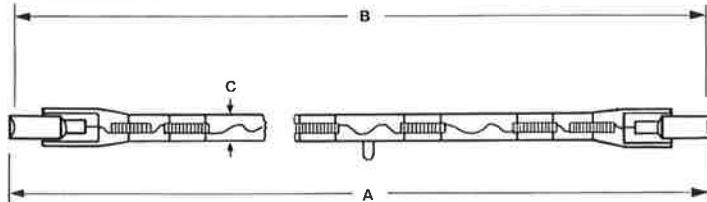
### NON-SEGMENTED FILAMENT TYPES



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	114.2±1.6	12.0	20800	3200 K	Horizontal
P2/18	800	240	R7s	117.6	114.2±1.6	12.0	20800	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
—	850	220/230	R7s	318.0	315±1.6	8.5	14300	3200 K	Horizontal
—	850	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.

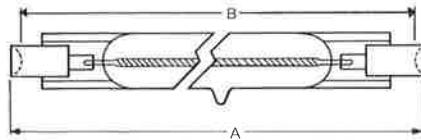
# Linear tungsten halogen lamps

## 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

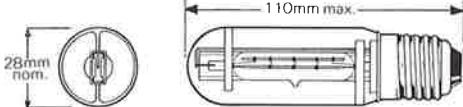
It is recommended that a suitably rated fuse be used in the fitting or external circuit.



## Fuse Ratings

It is recommended that the following ratings be used in the fitting or external circuit.

Lamp Watts	HV	LV
200	2.0	4.0
300	2.0	4.0
500	4.0	6.3
750	6.3	10.0
1000	6.3	10.0
1500	10.0	—
2000	10.0	—



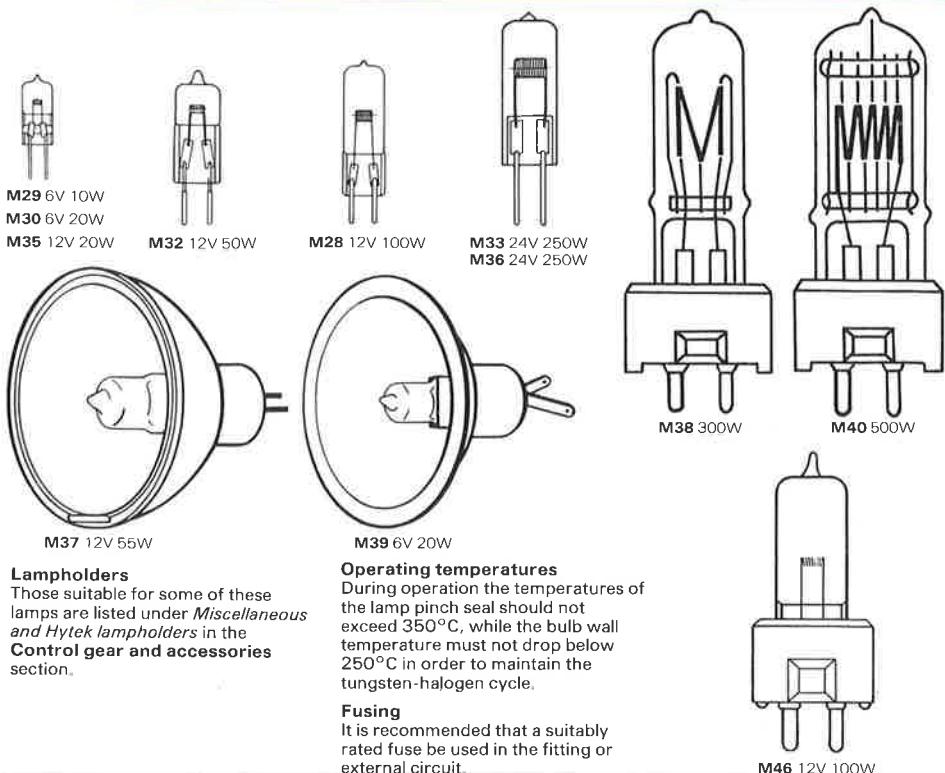
## RANGE

Lamp Type	Watts	Volts	Caps	Contact to Ceramic Max (A)	Contact to Contact (B)	Rated average life (Hrs)	Nom. Lumens*	Colour temp. °K	Operating position
K14	100	120	R7s	78.3	74.9±1.6	4000	1450	2850	Universal
K14	100	200/230	R7s	78.3	74.9±1.6	4000	1350	2850	Universal
K14	100	240/250	R7s	78.3	74.9±1.6	4000	1350	2850	Universal
K13	150	120	E27	110	28	4000	2300	2850	Universal
K13	150	200/230	E27	110	28	4000	2100	2850	Universal
K13	150	240/250	E27	110	28	4000	2100	2850	Universal
K12	150	120	R7s	78.3	74.9±1.6	4000	2300	2850	Universal
K12	150	200/230	R7s	78.3	74.9±1.6	4000	2100	2850	Universal
K12	150	240/250	R7s	78.3	74.9±1.6	4000	2100	2850	Universal
K11	200	120	R7s	117.6	114.2±1.6	4000	3200	2900	Universal
K11	200	200/230	R7s	117.6	114.2±1.6	4000	3100	2900	Universal
K11	200	240/250	R7s	117.6	114.2±1.6	4000	3100	2900	Universal
K9	300	110/115	R7s	117.6	114.2±1.6	4000	5250	2900	Universal
K9	300	200/230	R7s	117.6	114.2±1.6	4000	5000	2900	Universal
K9	300	240/250	R7s	117.6	114.2±1.6	4000	5000	2900	Universal
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
K10	1000	200/230	R7s	254.1	250.7±1.6	2000	21000	3000	Horizontal
K10	1000	240/250	R7s	254.1	250.7±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

\*The lumen output of individual lamps will be subject to normal commercial tolerances.

All dimensions in mm

# Single ended tungsten halogen lamps



## 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.

M46 12V 100W

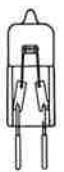
Lamp type	Watts	Volts	Overall length (max) mm	Bulb/Flange dia. (max) mm	Nom. Lumens‡	Rated Average Life (hours)	Base	Operating position	Description
M29	10	6	30.0	8.5	210	100	G4	Any	For 3200 K
M30	20	6	30.0	8.5	420	100	G4	Any	For 3200 K
M35	20	6	39.0	50.0	—	2000	2 Tab	Any	Ellipsoidal mirror
M35	20	12	30.0	8.5	400	250	G4	Any	
	23	13.2†			500	100			
M32	50	12	44.0	12.0	850	3000	GY6.35	Any	
M37	55	12	42.0	50.0	—	750	GY6.35	Any	Ellipsoidal dichroic mirror
M28	100	12	44.0	11.0	2400	2000	GY6.35	VBD±90°*	
M33	250	24	55.0	13.5	8400	300	GY6.35	VBD±90°	For 3400 K
M36	250	24	58.0	15.0	5750	2000	GY6.35	VBD±90°	
M38	300	120 220/230 240/250	80.0	30.0	5000	2000	GY9.5	Any	
M40	500	120 220/230 240/250	85.0	30.0	8500	2000	GY9.5	Any	
M46	100	12	57.0	13.0	2400	2000	GY9.5	VBD±90°	For 3050 K Microfiche readers

VBD Vertical base down.

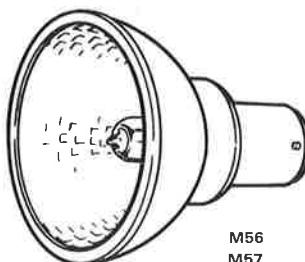
\*Can be operated in any position if heat sinks are used. †M35 can be operated at 13.2V. The characteristics for such operation are as above.

‡The lumen output of individual lamps will be subject to normal commercial tolerances.

## Single ended Halogen display lamps



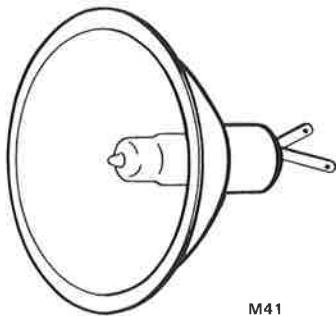
M34  
M47



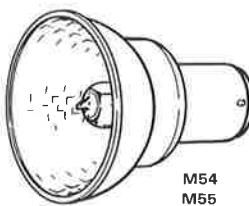
M56  
M57



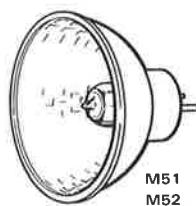
M49  
M50



M41



M54  
M55



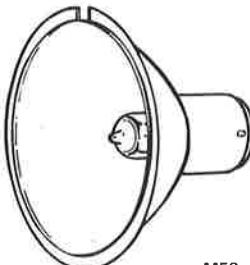
M51  
M52

### Advantages of low volt halogen

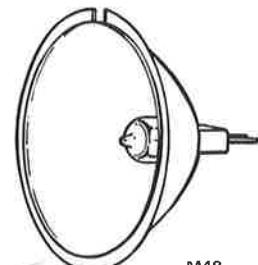
1. Compactness
2. High efficacy
3. Good colour rendering
4. Long life
5. Universal burning
6. Virtually 100% lumen maintenance
7. Robust construction
8. Low voltage safety
9. Coolbeam on dichroic types

### Lampholders

Appropriate lampholders covering part of this lamp range are listed under Miscellaneous and Hytek Lampholders in the Control Gear and accessories section.



M53



M48

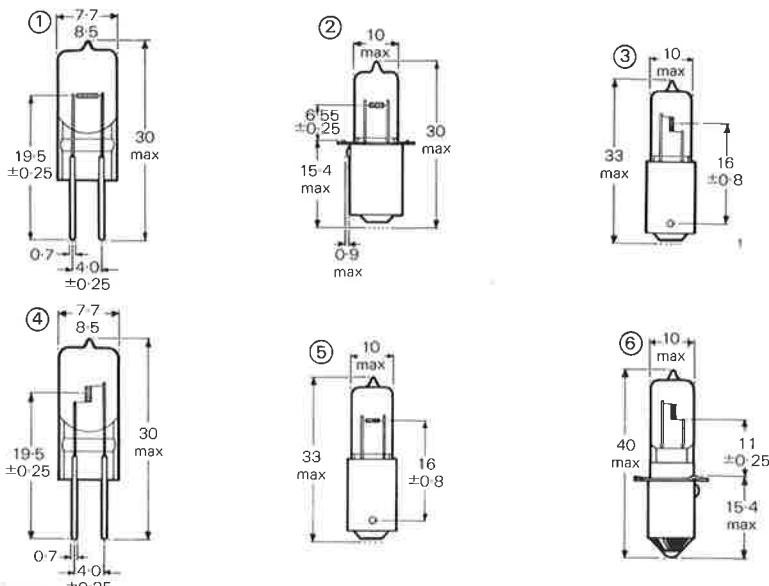
### RANGE

Lamp type	Watts	Volts	Max. (mm) of length	Bulb/Flange dia (max) mm	Nom. Lumens or Pk candelas	Inclusive angle to 1/2 Pk (°)	Base	Description
M34	20	6	30.0	8.5	350	—	G4	Bare lamp
M41	20	6	40.0	56.0	12,500	5.5	2 Tab	Metal mirror - spot
M47	20	12	30.0	8.5	350	—	G4	Bare lamp
M48	20	12	36.0	48.0	7,500	6.5	G4	Metal mirror - spot
M49	50	12	44.45	50.0	6,500	13.0	GX5.3	Dichroic mirror - spot
M50	50	12	44.45	50.0	4,175	H29.0 V17.0	GX5.3	Dichroic mirror - flood
M51	20	12	35.0	35.3	1,760	17.0	GZ4	Dichroic mirror - flood
M52	20	12	35.0	35.3	4,800	7.75	GZ4	Dichroic mirror - spot
M53	20	12	40.0	46.0	3,870	11.0	SBC	Dichroic mirror - flood
M54	20	12	38.0	35.3	1,760	17.0	SBC	Dichroic mirror - spot
M55	20	12	38.0	35.3	4,800	7.75	SBC	Dichroic mirror - spot
M56	50	12	50.0	50.0	4,175	H23.0 V17.0	SBC	Dichroic mirror - flood
M57	50	12	50.0	50.0	6,500	17.0	SBC	Dichroic mirror - spot

Note 1. 20W ratings 2000 hour average life, 50W ratings 3000 hour average life.

Note 2. Dichroic glass mirrors reduce the beam temperature by approx. 60%. Higher temperatures will be measured on materials behind the lamp, than for a conventionally eluminized lamp of the same rating.

## Low wattage Halogen lamps



All dimensions in mm

### Applications

These lamps are suitable for use as a light source in emergency lighting, marine, integrated mirrors, microscope illumination, fibre optics, microfiche viewers, miners cap lamps, rechargeable torches, moped head/tail lamps, cycle lighting etc.

### Description

A range of low wattage halogen lamps, with Bi-Pin, Bayonet, or Prefocus caps.

### Advantages

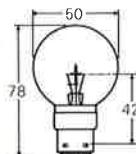
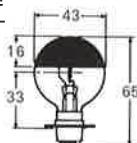
1. Compact
2. High lumen output
3. Virtually 100% lumen maintenance
4. Optical precision
5. Universal burning
6. Good colour rendering
7. Safe due to low voltage

Reference	Volts	Watts	Nominal Lumens	Base	Average Life Hours	Lamp-holder	Diagram
GH11	6	6	100	G4	100	GL1211/1212	1
GH41K	4	3.8	50	P13.5s	450	—	2
GH42	4	4	58	P13.5s	300	—	2
GH15	6	6	100	P13.5s	100	—	2
GH24	6	10	200	P13.5s	100	—	2
GH90	6	2.4	38	P13.5s	100	—	2
GH13	6	6	100	BA9s	100	—	3
GH33	12	20	400	BA9s	750	—	3
GH36	12	20	360	BA9s	2000	—	3
GH62	12	12	265	BA9s	100	—	3
GH32	12	20	400	G4*	750	GL1211/1212	4
GH35	12	20	360	G4*	2000	GL1211/1212	4
GH64	12	—	160	G4	1000	GL1211/1212	4
GH25	6	10	200	BA9s	100	—	5
GH50	6	15	320	P13.5s	200**	—	6

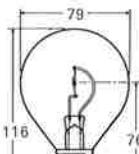
\* Gold plated pins. \*\* Average life hours at 6.75V.

# Lamps for special applications

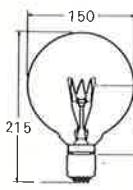
MORSE SIGNAL



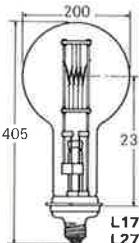
SL34



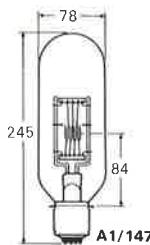
LOCO HEAD



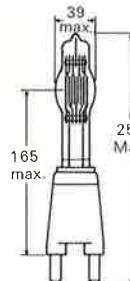
L25



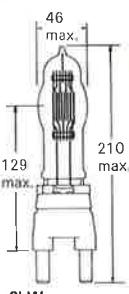
L26



A1/147



2.5kW  
SUEZ



3kW  
SUEZ

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

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

## RAILWAY SIGNAL

Reference	Volts	Watts	Cap	Description
	12	16	SCC,SBC	Twin filament (SL28) Dia = 36; QAL = 56; LCL = 32
SL33	110	25	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

## LIGHTHOUSE

Reference	Volts	Watts	Cap	Description
L25	100	1500	P40s	Cylindrical filament. Clear, pearl
L26	240	1500	P40s	Cylindrical filament. Clear
L17	100	3000	P89/82×45	Cruciform filament. Clear
L27	100	3500	P89/82×45	Cruciform filament. Clear

## MARINE SEARCHLIGHT/MASTHEAD

Reference	Volts	Watts	Cap	Description
A1/147	115/240	1500	P40s & tail	Masthead lamp
	115/120, 220,240	2500	G38	Tungsten halogen for Suez searchlights
	110/115 120,220, 240	3000	G38	Tungsten halogen for Suez searchlights

All dimensions in mm

Airfield lighting lamps: an extensive range is available through Thorn's Airfield Lighting Division.

# Photographic lamps

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### CAUTIONARY NOTICE

Tungsten halogen lamps of certain ratings are packed in cartons which contain an instruction leaflet.

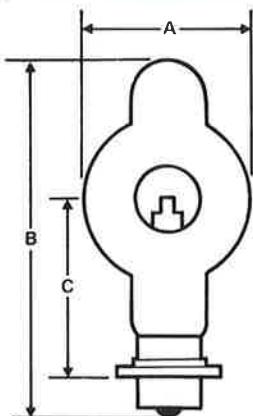
To ensure maximum safety, it is essential that the leaflet is studied before installing the lamp in the equipment.

### Health and Safety at work.

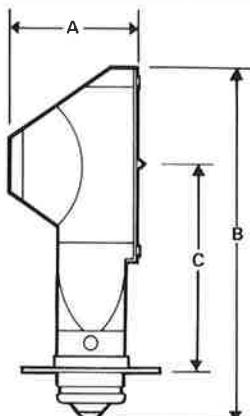
Refer to note on page seven.



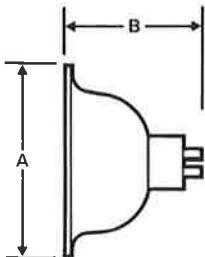
## Projector lamps, Class A1 50, 75 and 100W



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	33x44	96	47±0.5	—	Small Pre-Focus P30s	J	25	A B E F
A1/263	8	50	28x37	85	47±0.5	—	Small Pre-Focus P30s	H	50	B D F G I
A1/220†	12	50	11.5	44	30±0.25	1400	2 Pin G6.35	J	50	D G
A1/229	8	50	50	42	—	—	2 Pin G6.35	H	50	D F G I
A1/230	12	75	50	42	—	—	2 Pin G6.35	D	50	D F G J
A1/209	12	100	11	45	24+0 —0.5	3000	2 Pin Ceramic G6.35	J	50	D G
A1/215	12	100	11	44	30±0.25	3000	2 Pin G6.35	J	50	D G
A1/231	12	100	50	42	—	—	2 Pin G6.35	H	50	D F G J
A1/261	12	100	13	57	27±0.25	3000	GY9.5	J	100	D G

A Obscured top

B Forced cooling necessary. Maximum bulb wall temperature 500°C

D Operates on tungsten halogen principle

E Silvered bulb

† Minimum production requirement 100 Lamps.

F Due to integral mirror nominal lumens not shown

G Minimum bulb wall temperature 350°C

I External integral aluminised mirror

J External integral dichroic mirror

Operating position exceptions:

A1/220—Base down to horizontal A1/229—Horizontal

A1/230—Horizontal

A1/209—Base down to horizontal A1/231—Horizontal

A1/215—Base down to horizontal

A1/261—Base down to horizontal

A1/17 } Focal Distance 33.5mm

A1/263 } Focal Distance 32mm

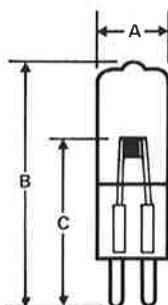
A1/229 }

A1/230 } Focal Distance 32mm

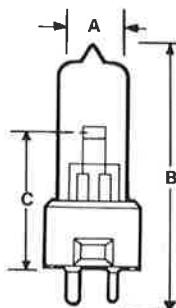
A1/231 }

All dimensions in mm

# Projector lamps, Class A1 150W



**A1/216** 24V 150W tungsten halogen lamp  
for 35mm slide projectors.



**A1/262** 24V 150W tungsten halogen  
lamp for microfiche readers.

## CLASS A1 150 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					
A1/216	24	150	19.5	47	32+0 -0.25	5000	2 Pin G6.35	J	50	E F
A1/232	15	150	50	42	—	—	2 Pin G6.35	H	50	E F G H
A1/234	15	150	11.5	46	30+0.25	4700	2 Pin G6.35	J	50	E F
A1/248	240	150	14	62	40.9+0.5	7200	2 Pin G6.35	F4	50	A E F
A1/262	24	150	15	60	33.3+0.25	5000	GY9.5	J	50	E F

E Operates on Tungsten Halogen principle

F Minimum bulb wall temperature 350°C

G External integral dichroic mirror

H Light centre length not specified.

Mirror rim to film gate 32 mm

I 3 or 4 amp H.B.C. fuse necessary

Operating position base down with the following exceptions:

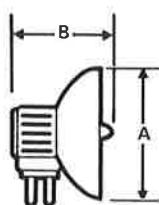
A1/216—Base down to horizontal

A1/234—Base down to horizontal

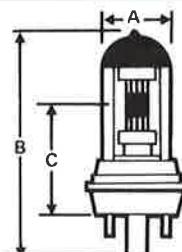
A1/232—Horizontal

All dimensions in mm

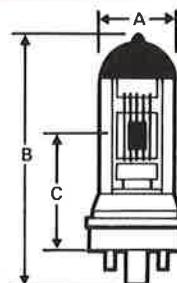
# Projector lamps Class A1 200, 250, 300 and 500W



**A1/258** 24V 250W tungsten halogen lamp  
Direct replacement for EMM



**A1/240** 300W mains voltage tungsten halogen lamp. Direct replacement for A1/178



**A1/241** 500 W mains voltage tungsten halogen lamp.  
Direct replacement for A1/205.

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					
A1/252	24	200	50	45	—	—	G5.3	G	50	DEF6
A1/223	24	250	13.5	55	33±0.25	8500	2 Pin 66 35	J	50	DF
A1/235	24	250	12.5	56	23±0.2	8500	2 Pin Pre-Focus PG22	J	50	DF
A1/246	24	250	50	50	—	—	2 Pin 66 35	J	50	DEF6
A1/258	24	250	44	47.5	—	—	GY 7.9	G	50	DEF6
A1/259	24	250	50	45	—	—	G5.3	G	25	DEF6
A1/240	240/250	300	15	87	39.7±1	7200	Tru-Focus G17t	F4	50	ADFJC
A1/249	240/250	300	15	82	40±0.5	7200	G6.35	F4	50	ADFJC
A1/241	240/250	500	23	94	39.7±1	—	Tru-Focus G17t	C10	50	ADFHIJC
A1/244	240/250	500	23	75	36.5±0.5	14500	GY9.5	A8	75	DFJC

A Obscured top

C Dual voltage

D Operates on tungsten halogen principle

E Due to integral mirror nominal lumens

not shown

† Minimum production requirement 100 Lamps.

\* Minimum production requirement 300 Lamps.

F Minimum bulb wall temperature 350°C

G External integral dichroic mirror

H Internal proximity reflector

I Due to internal reflector nominal lumens

not shown

J 3 or 4 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

A1/244—Base down to horizontal

A1/252—Horizontal

A1/258—Horizontal

A1/259—Horizontal

A1/252

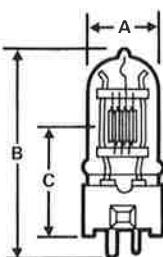
A1/259—Focal Distance 32mm

A1/246

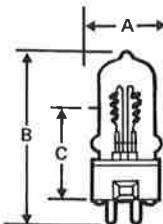
A1/258—Focal Distance 65.8mm

All dimensions in mm

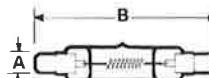
# Projector lamps, Class A1 600, 650, 800 and 1000W



**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.



**A1/228** 600W mains voltage tungsten halogen overhead projector lamp.

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					
A1/228	240/250	600	13.5	91.5	—	16250	Double Ended R7s	G	75	EFGJK
A1/284	120	600	23	85	36.5±1	16000	GY9.5	G	75	EFM
A1/265	240	625	23	87	44.5±0.55	—	GY9.5	A8	75	BEFH
A1/233	240/250	650	23	85	36.5±1	16500	GY9.5	E2	75	EFGK
A1/247	240	650	23	75	36.5±0.5	17750	GY9.5	A8	75	EFK
A1/245	240/250	800	23	84	44.5±0.5	21500	GY9.5	C8	75	EFGI
A1/242	240/250	1000	23	94	39.7±1	—	Tru-Focus G17t	C10	50	AEHIL

A Obscured top

E Operates on tungsten halogen principle

F Minimum bulb wall temperature 350°C

G Dual voltage

All dimensions in mm

H Internal proximity reflector

I Due to internal reflector nominal lumens not shown

J Linear overhead projector lamp

K 3 or 4 amp H.B.C. fuse necessary

L 5 or 6 amp H.B.C. fuse necessary

M 6 or 7 amp H.B.C. fuse necessary

Operating position base down with the following exceptions:

A1/228—Horizontal ±4°

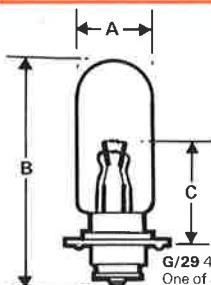
A1/233—Base down to horizontal

A1/247—Base down to horizontal

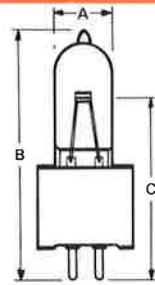
A1/245—Base down to horizontal

A1/265—Vertical to horizontal beam up

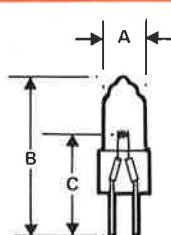
# Projector lamps, Class F, G & M and Micrographic Lamps



G/29 4V exciter lamp  
One of a range of high efficiency lamps for cinema projector sound heads.



FHR 12V 50W Micrographic lamp  
New range of tungsten halogen lamps for microfiche readers.



M29 Cine film editor tungsten halogen lamp

## CLASS F MICRO-PROJECTOR LAMPS AND MICROGRAPHIC LAMPS

Lamp Ref.	Volts	Watts	A Maximum Diameter	B Overall Length	C Light Centre Length	Focal Length	Nominal Lumens	Base	Average Life Hours	Special Features
F/77	12	50	40	70	48±3	—	950	S.E.S. E14s	50	D
F/14	12	100	62	91	55±5	—	2250	E.S. E27s	100	D
ELD	21.0	150	50.67	44.45	—	165.0	—	G5.3	40	GHIJK
EPV	14.5	80	50.67	44.45	—	155.0	—	G5.3	500	GHIJK
EPX	14.5	90	50.67	44.45	—	165.0	—	G5.3	500	GHIJK
EPZ	13.8	50	50.57	44.45	—	108.0	—	G5.3	1000	GHIJK
DED	13.8	85	50.67	44.45	—	165.1	—	G5.3	1000	GHIJK
FHR	12.0	50	11.50	44.00	29.4±0.25	—	1400	G5.3	50	GHK
FHX	13.8	25	50.67	44.45	—	108.0	—	G5.3	250	GHIJK

## CLASS G EXCITER LAMPS

Lamp Ref.	Volts	Watts	A Maximum Diameter	B Overall Length	C Light Centre Length	Nominal Lumens	Base	Filament Formation	Average Life Hours	Special Features
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/5	6	1	16.5	50	28.5±0.5	80	Small Pre-Focus P30s	H	100	C
G/40	6	1	18.5	57	28.5±0.5	80	Small Pre-Focus P30s	D	100	B
G/45	6	5	19	54	23.0±0.5	450	Small Pre-Focus P30s	D	100	B

A Any

B Vertical base down:-30°

C Vertical base down:-45°

D Vertical base down:=135°

F Horizontal:-30°

G Operates on Tungsten Halogen principle

H Minimum bulb wall temperature 250°C

I Due to integral mirror, nominal lumens not shown

J External, integral dichroic "Multiflector" mirror

K Vertical base down:-90°

\*Thorn Lighting Ltd. - Trade Mark

## CLASS M CINE FILM EDITOR LAMPS

Lamp Ref.	Volts	Watts	A Maximum Diameter	B Overall Length	C Light Centre Length	Nominal Lumens	Base	Filament Formation	Average Life Hours	Special Features
M29	6	10	8.5	30	19.5±0.25	200	2 Pin G4	D	100	ABC
M30	6	20	8.5	30	19.5±0.25	450	2 Pin G4	D	100	ABC
M46	12	100	13	57	27±0.25	2500	GY9.5	J	2000	ADE

A Operates on tungsten halogen principle

Operating Position

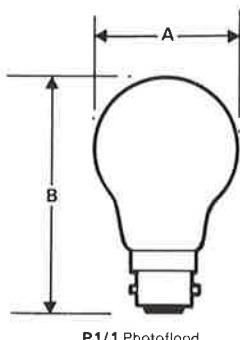
B Any

C Editor lamps

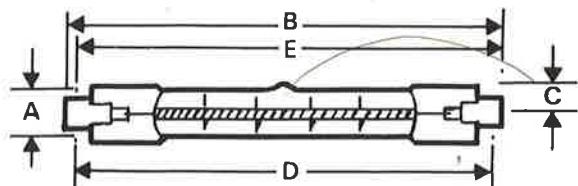
D Minimum bulb wall temperature 250°C

E Vertical base down:-90°

# Photographic lamps, Class P1



P1/1 Photoflood



P1/12 1000W mains voltage tungsten halogen lamp

## CLASS P1 PHOTOGRAPHIC LAMPS FOR MONOCHROME AND COLOUR FILM BALANCED FOR 3400K

Lamp Ref.	Volts	Watts	Maximum Dia.	Maximum Overall Length	Maximum pip protuberance from bulb axis	Nominal Contact Length	Maximum Clearance Length	Nominal Lumens	Base		Average Life Hours	Special Features
									E			
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	
P1/2	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	
P1/13	240/250	650	28	85	—	—	—	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	
P1/19	240/250	1250	28	75	—	—	—	40000	2 Pin Ceramic G6.35	15	A B L	

A Operates on tungsten halogen principle

B Dual voltage

C Voltage range in 10 volt steps

D Pearl bulb

G Light output measured in Centre Beam  
Candles

I 5 or 6 amp H.B.C. fuse necessary

K 6 or 7 amp H.B.C. fuse necessary

L 10 amp H.B.C. fuse necessary

Operating position: Any, with the following

exceptions:

P1/13, P1/15, P1/19—Base down to horizontal.

In the interest of safety tungsten halogen lamps above

130V rating should have a separate high breaking

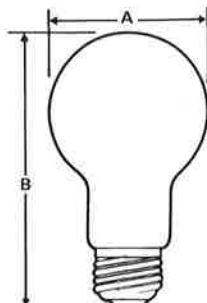
capacity fuse in the circuit. See special features

column for individual lamp requirements.

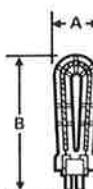
\*Minimum production requirement 100 lamps.

All dimensions in mm

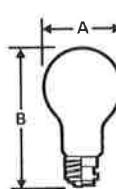
# Photographic lamps, Class P2, Class P3



P2/1 Photoflood



P2/26 1250W tungsten halogen lamp



P3/3 High intensity enlarger lamp (opacised)

All dimensions in mm

## CLASS P2 PHOTOGRAPHIC LAMPS FOR USE WITH COLOUR FILM BALANCED FOR 3200K AND FOR ALL MONOCHROME FILM STOCK

Lamp Ref.	Volts	Watts	A Maximum Bulb Diameter	B Maximum Overall Length	Max. pip protuberance from bulb axis.	Nominal Contact Length	Maximum Clearance Length	Nominal Lumens	Base	Average Life Hours	Special Features
P2/1	240/250	500	89	183.5	—	—	—	11000	E.S. E27s	100	B D
P2/31	240/250	500	11	117.8	10.2	114.2±1.6	119.2	12800	R7s	400	A E
P2/4	240/250	500	127.5	182	—	—	—	7200	E.S. E27s	12	E F G
P2/10	240/250	825	12	190	10.2	185.7±1.6	189.1	15500	Double ended R7s	200	A B H
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	A B H
P2/13	240	800	15	80	11.4	74.9±1.6	78.3	20000	Double ended R7s	75	A B I
P2/11	240	800	12	119.5	10.2	114.2±1.6	117.6	21000	Double ended R7s	150	A I
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	A B I
P2/17*	240/250	1000	28	75	—	—	—	28000	2 Pin Ceramic G6.35	50	A B I
P2/12	240/250	1250	12	190	10.2	185.7±1.6	189.1	33600	Double ended R7s	200	A B K
P2/26*	240/250	1250	28	75	—	—	—	35000	2 Pin Ceramic G6.35	50	A B K
P2/27	240	2000	30	143	25	138.5±1.6	141.3	50000	Double ended RX7s	300	A L
P2/27	115/120	2000	30	143	25	138.5±1.6	141.3	56600	Double ended RX7s	500	A L

A Operates on tungsten halogen principle

B Dual voltage

C Pearl bulb

D Satin etched bulb

E Reflector Photoflood

F Light output measured in Centre Beam Candles

G 3 or 4 amp H.B.C. fuse necessary

I 5 or 6 amp H.B.C. fuse necessary

K 6 or 7 amp H.B.C. fuse necessary

L 10 amp H.B.C. fuse necessary

Operating position: Any, with the following exceptions:

P2/16, P2/26, P2/17 and P2/26—Base down to horizontal.

P2/7 Horizontal±4°

P2/10 Horizontal±4°

P2/12 Horizontal±4°

P2/15 Horizontal±4°

P2/27 Horizontal±4°

In the interest of safety tungsten halogen lamps above 130V rating should have a separate high breaking capacity fuse in the circuit. See special features column for individual lamp requirements.

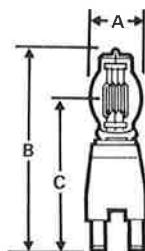
## CLASS P3 PHOTOGRAPHIC ENLARGER LAMPS HIGH INTENSITY

Lamp Ref.	Volts	Watts	A Maximum Bulb Diameter	B Maximum Overall Length	Base	Average Life Hours	Special Features
P3/3	240/250	75	61	108.5	B.C. B22d	100	A B
P3/3	240/250	75	61	110	E.S. E27s	100	A B
P3/4	240/250	150	61	108.5	B.C. B22d	100	A B
P3/4	240/250	150	61	110	E.S. E7s	100	A B

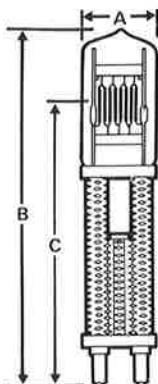
A Internally opalised bulb B Dual voltage Class P3 Operating Position: Any

\*Minimum production requirement 100 lamps.

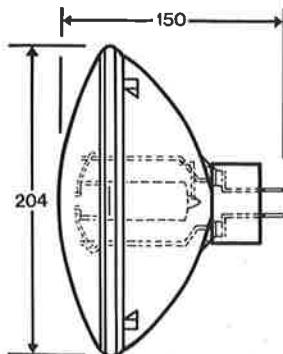
# Photographic lamps, Class CP



**CP/41** 2 kW studio tungsten halogen lamp  
For use in existing Fresnel spot-flood fittings.



**CP/54** 10kW studio tungsten halogen lamp



**CP/60 CP/61 CP/62**  
Sealed beam Par 64 tungsten halogen lamps

## 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	Maximum Diameter	Overall Length	Light Centre Length	Nominal Lumens	Average Life Hours	Cap	Special Features
CP/81	220/230, 240/250	300	9	80	46.5±1.0	6600	150	GY9.5	A E G
CP/82	220/230, 240/250	500	23	80	46.5±1.0	12500	150	GY9.5	A E G
CP/2	240	500	82	186	—	13750	15	E27s ES	B
CP/39	115/120, 220, 240	650	35	140	63.5±0.5	17000/16800	100	Med Bi-post G22	A C E G H *
CP/51	115/120, 220, 240	650	35	130	55.5±0.5	17000/16800	100	Med Pre-Focus P2Bs	A C E G H *
CP/3	240	1000	153	309	—	28000	25	GES E40s	B
CP/40	115/120, 220, 240	1000	35	140	63.5±0.5	27000/26000	200	Med Bi-post G22	A C E H I *
CP/77	120	1000	20	101	60.5±2.5	27500	300	GY9.5	A C I N
CP/77	220, 240	1000	20	101	60.5±2.5	26500	300	GY9.5	A I N
CP/30	220, 240	1250/1250	80	220	143±2	27000/56000	300	4 pin GX38q	A D F L
CP/58	220, 240	1250/2500	70	220	143±2	27000/59000	300	4 pin GX38q	A D F M
CP/41	115/120, 220, 240	2000	40	210	127±2	56000/54000	400	Bi-post G38	A C E I K *
CP/53	115/120, 220, 240	2000	40	200	87±0.5	54000/52000	400	Large Pre-Focus P40s	A C E I K *
CP/56	115/120, 220, 240	2000	40	210	127±2	58000/54000	400	Bi-post G38	A C E I K
CP/58	220, 240	2000	28	190	—	50000	300	GES E40s	A N
CP/78	220, 240	2000	40	145	70±2	52000	250	2 pin GY16	A E I
CP/32	220, 240	2500/2500	70	220	143±2	58000/127000	300	4 pin GX38q	A D F L M *
CP/29	115/120, 220, 240	5000	75	265	165±2	145000/135000	500	Bi-post G38	A C F L M *
CP/54	220, 240	10000	70	380	254±2	280000	400	Bi-post G38	A F M

### PAR 64 CP LAMPS

Lamp Ref.	Volts	Watts	Peak Beam Candle Power ×1000	Average Life Hours	Cap	Beam Angle to ½ peak	Field Angle to 1/10 peak	Lens	Operating Position
CP/60	220, 240	1000	320	300	E.M.E.P.	9°V×12°H	17°V×20°H	Clear Narrow Spot	Any
CP/61	220, 240	1000	270	300	E.M.E.P.	10°V×14°H	20°V×22°H	Stipple Spot	Any
CP/62	220, 240	1000	125	300	E.M.E.P.	11°V×24°H	20°V×38°H	Flood	Any

A Operates on tungsten halogen principle

B Pearl bulb

C High lumen/life figures apply to 1v. 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

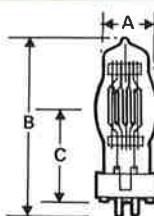
M 50 amp H.B.C. fuse necessary

N Operating position—Any

\*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 Overall Length	C Centre Length	Nominal Lumens	Base	Average Life Hours	Special Features
T/1	240	500	100	140	55.0±0.5	9500	Med Pre-Focus P28s	200	D
T/17	240	500	27	130	55.5±0.5	9500	Med Pre-Focus P28s	750	B D
T/18	240	500	25	90	46.5	11000	GY9.5	300	B D
T/12	240	850	35	110	55±2	13500	2 pin GX9.5	750	B D
T/28	220/240	650	23	90	46.5±1.0	15000	GY9.5	400	B D
T/13	240	850	35	130	55.5±0.5	13500	Med Pre-Focus P28s	750	B D
T/11	115/120 240	1000	35	110	55.2	23000	2 pin GX9.5	750	A B D H I
T/14	240	1000	35	130	55.5±0.5	23000	Med Pre-Focus P28s	750	B D H
T/15	240	1000	35	160	89±0.5	23000	Med Pre-Focus P28s	750	AB F H
T/18	240	1000	35	180	87±0.5	23000	Large Pre-Focus P40s	750	B D H

A Dual voltage for low volt lamps

B Operates on tungsten halogen principle

H 6 amp H.B.C. fuse necessary

I 10 amp H.B.C. fuse necessary

Operating Positions

C VBD±75°

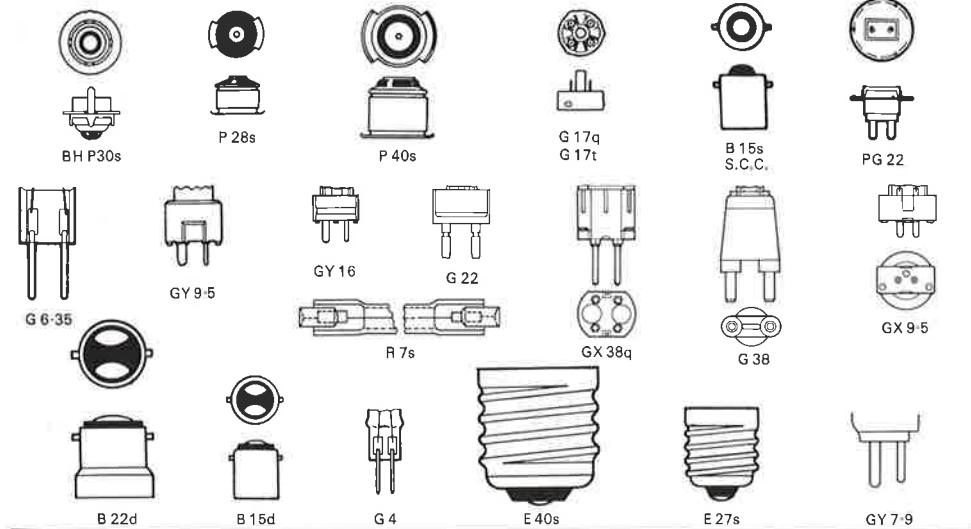
D VBD±90°

E VBU±15°

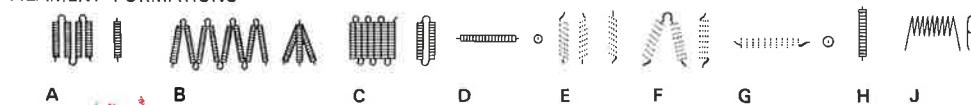
F Universal

All dimensions in mm

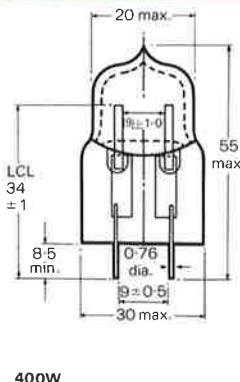
## LAMP BASES



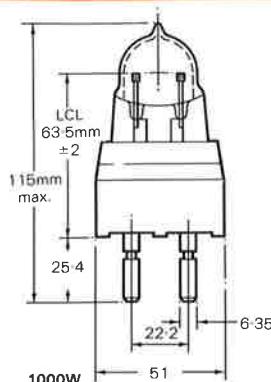
## FILAMENT FORMATIONS



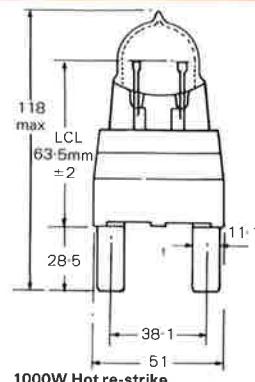
# Compact source iodide lamps—400W, 1000W and 1000W hot re-strike



400W



1000W



1000W Hot re-strike

All Dimensions in mm

## Description

**400W CSI** The 400W compact source iodide lamp gives white light of good colour rendering properties at an efficiency of 80L/W.

## Applications

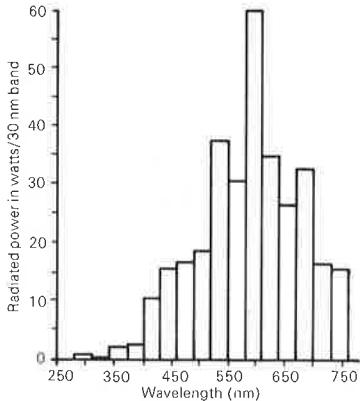
Overhead projectors, projection microscopes, enlargers and cine projectors. It is suitable for colour photography using daylight colour film stock.

## Lampholder

A lampholder, Catalogue no. L 1101, is available for use with this lamp.

## Characteristics

Lamp Reference	99-0201	99-0221	99-0421
Supply volts a.c.	220, 240	220, 240	220, 240
Arc watts nom.	400	1000	1000
Arc volts nom.	100	70-85	70-85
Arc current (amps) nom.	5	15	15
Run up time (secs)	50	30	30
Re-starting time (mins)	3.5	2.5	2.5
Re-start time hot re-strike (mins)	—	—	Instantaneous
Initial efficiency (lumens/watt)	80	90	90
Lumen maintenance	85%	90%	90%
Colour rendering	Good	Good	Good
Chromaticity co-ordinates	$x=0.432$ $y=0.382$	$0.395$ $0.395$	$0.395$ $0.395$
Average Life Hours	500	500	500
Operating position	Universal	Universal	Universal
Cap	2-pin	G22	G38



## Description

**1000W CSI** A compact source iodide lamp giving white light of good colour rendering at an efficacy of 90 L/W for 500 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.

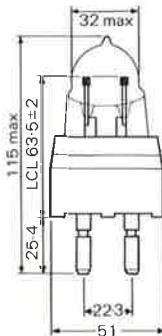
## Applications

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.

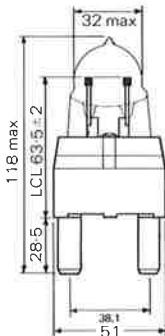
## Lamp reference nos.

400W	99-0201
1000W	99-0221
1000W hot re-strike	99-0421

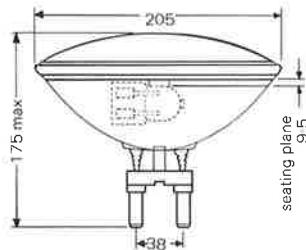
# CID Lamps (Compact Iodide Daylight)



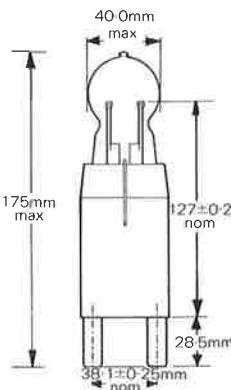
1 kW Standard Lamp  
99-0222



1 kW Hot Restrike  
99-0422



1kW Par 64  
99-1225



2 1/2 kW Hot Restrike  
99-0431

## Description

The CID lamp is a metal halide discharge arc lamp with a quartz envelope and is of extremely robust construction in single ended form of compact dimensions. The international standard G38 base ensures that the hot restrike lamp can be readily fitted into many existing luminaires and simplifies the design of new equipment. The CID Sealed Beam Hot Restrike lamp consists of a high pressure metal halide discharge lamp enclosed within an 8 inch sealed beam glass envelope with a dichroic coated reflector. The extremely accurate positioning of the arc tube within the outer envelope gives a beam candle power in excess of  $\frac{1}{4}$  million candelas with a total spread of  $20^\circ$  (to 1/10 peak).

## Applications

For use with colour film stock balanced for daylight of 5500K and for all colour or monochrome television productions. The CID lamp is designed for use in fresnel lens luminaires and ellipsoidal reflector spotlights, also for theatre lighting and allied applications where suitable lighting fittings can make good use of this high intensity compact light source.

## Lamp References

Reference	Rating	Description	Cap
99-0222	1000W	CID standard lamp	G22
99-0422	1000W	CID hot restrike lamp	G38
99-1425	1000W	CID hot restrike PAR 64 lamp	G38
99-1225	1000W	CID standard PAR 64 lamp	G38
99-0431	2500W	CID hot restrike lamp	G38

## RANGE

Lamp	Supply Voltage*	Arc Voltage	Arc Length (mm)	Nominal Arc Current	Initial Lumens	Lumen Maintenance	Average Life Hours	Operating Position	Correlated Colour Temp.(K)	Colour Rendering Index Ra
99-0222	100-240AC	70/85	14-15	15A	70000	90%	500	Any	5500±400	85
99-0422	100-240AC	70/85	14-15	15A	70000	90%	500	Any	5500±400	85
99-1425	100-240AC	70/85	14-15	15A	—	—	1500	Any	5500±400	85
99-1225	100-240AC	70/85	14-15	15A	—	—	1500	Any	5500±400	85
99-0431	100-240AC	95 nom.	16-18	30A	200000	90%	350	Any	5500±400	85

\*50-60 Hz dependent on control gear used.

# Vehicle and miniature lamps

## Index

Lamp number index	280-281
Tungsten halogen lamps	282
Prefocus headlamps; Bus lamps	283
Flasher, stop and stop/tail lamps; Side and tail lamps	284
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Modern vehicle exterior lamps are standardised in the European ECE Regulation 37 and have references eg. P25-1, R19/5,T8/4,W10/5, etc. (Shape, diameter in mm and wattage).

All relevant Thorn lamps have the necessary type approval shown by the  symbol on cap or glass thus meeting U.K. legislative requirements in full.

### Health and Safety at work

Refer to note on page seven.



# 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.

*The following abbreviations are used:*

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	283	291	P25-1	24	21	Stop, flasher H.D.	284
2		12	36	Head	283						
4		12	24	Head	283	319	P25-1	6	21	Stop, flasher	284
5		12	36	Head	283	323	F-1	12	48	Prefocus head	283
						330	F-1	24	44	Prefocus head	283
123		24	36	Head	283	331		24	44	Prefocus head	283
149	R19/5	24	5	Side, tail	284	334	P25-2	24	24/6	Stop/tail	284
150	R19/5	24	5	Side,tail	284	335	P25-1	12	21	Stop, flasher	284
185		12	48	Prefocus head	283	346	P25-1	24	21	Stop, flasher	284
						380	P25-1	12	21/5	Stop/tail	284
205	R19/5	6	5	Side, tail	284	382	P25-1	12	21	Stop, flasher	284
206	R19/5	6	5	Side, tail	284						
207	R19/5	12	5	Side, tail	284	410	R2	12	45/40	Prefocus head	283
209	R19/5	12	5	Side, tail	284	414		12	50/40	Prefocus head	283
227		24	5	Side, tail	284	429	R2	24	55/50	Prefocus head	283
233	T8/4	12	4	Side, tail	284	437		24	54/44	Prefocus head	283
239	C11	12	5	Festoon	285	448	H1	12	55	T.H. head auxiliary	282
241	P25-1	24	21	Stop, flasher	284	453	H3	12	55	T.H. auxiliary	282
242	C11	24	5	Festoon	285	455	H3	6	55	T.H. auxiliary	282
245	R19/10	12	10	Side, tail	284	460	H3	24	70	T.H. auxiliary	282
246	R19/5	24	10	Side, tail	284	465	H1	6	55	T.H. head auxiliary	282
247	R19/5	24	5	Side, tail H.D.	284	466	H1	24	70	T.H. head auxiliary	282
248	R19/5	24	5	Side, tail H.D.	284	472	H4	12	60/55	T.H. head	282
249	T8/4	24	4	Side, tail	284	475	H4	24	75/70	T.H. head	282
273	C15	12	21	Festoon	285	476	H4 Yellow	12	60/55	Yellow T.H. head	282
280		12	1.5	Instrument panel	285	478	H4 Yellow	24	75/70	Yellow T.H. head	282
281		12	2	Instrument panel	285	479	H2	12	55	T.H. head auxiliary	282
286		12	1.2	Instrument panel	285	482	H2	24	70	T.H. head auxiliary	282
288		12	2	Instrument panel	285						
289		24	2	Instrument panel	285						
290	P25-1 <sub>j</sub>	24	21	Stop, flasher H.D.	284						

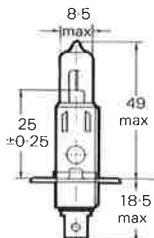
## Lamp number index

Lamp Reference no.	European Reference	Volts	Watts	Description	Page no.	Lamp Reference no.	European Reference	Volts	Watts	Description	Page no.
501	W10/5	12	5	W.B. side, tail	284	977		3.5	0.3A	Flashlamp	286
503		12	5	W.B. reversing	284	987		12	2.2	Instrument panel	285
504	W10/3	12	3	W.B. instr. panel	285	989		12	5	Side, tail	284
505	W10/3	24	3	W.B. instr. panel	285	990		6	3	Instrument panel	285
507	W10/5	24	5	W.B. side, tail	284						
508		24	1.2	W.B. instr. panel	285	2965		12	100	Halogen rally lamp	282
						2966		12	100	Halogen rally lamp	282
643		12	2.2	Instrument panel	285						
650		24	2.8	Instrument panel	285	9210		12	35	Emergency beacon lamp	282
						9215		12	55	Emergency beacon Lamp	282
804		12	12	Bus	283						
805		12	12	Bus	283						
809		12	24	Bus	283	1.02352		50	0.107A	Telephone visual	286
810		12	24	Bus	283						
816		24	12	Bus	283	2.02322		4	1A	Miners' lamp	286
817		24	12	Bus	283	2.76929		2.4	1A	Emergency lighting	286
821		24	20	Bus	283	2.77572		3.6	0.6A	Emergency lighting	286
822		24	20	Bus	283	2.79670		12	1.2	Integral optic reflector lamp	286
830		2.2	0.25A	Flashlamp	286						
835		4.5	0.3A	Flashlamp	286						
865		24	2.8	Instrument panel	285	3.02358		12	0.1A	Telephone visual	286
						3.70879		4	0.9A	Miner's lamp	286
917		3.6	0.5A	Flashlamp	286						
918		3.8	0.3A	Flashlamp	286	4.02384		50	2.5	Telewriter lamp	286
950		6	5	Instrument panel	285	4.02389		60	3.6	Telewriter lamp	286
954		6	0.25A	Cycle	286						
972		2.5	0.3A	Flashlamp	286	5.02315		3.6	1A	Miners' lamp	286
						6.02363		24	0.1A	Telephone visual	286
						6.02385		50	2.5	Telewriter lamp	286
						6.03097		12	0.117A	Telephone visual	286
						6.78029		4	1A	Miners' lamp	286
						7.02355		6	0.041A	Telephone visual	286

# Tungsten halogen lamps

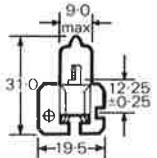
## Tungsten halogen Head, Fog, Spot

### European Types



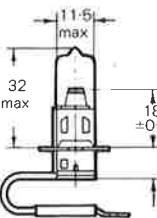
Lamp ref.	Volts	Watts	Cap	④ ref.
448	12	65		
465	6	55	P14.5s	H1
466	24	70		

Standard Pack 10



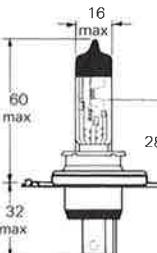
Lamp ref.	Volts	Watts	Cap	④ ref.
478	12	55		
482	24	70	X611	H2

Standard Pack 10



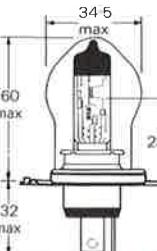
Lamp ref.	Volts	Watts	Cap	④ ref.
453	12	55		
455	6	55		
460	24	70	PK22s	H3

Standard Pack 10



Lamp ref.	Volts	Watts	Cap	④ ref.
472	12	60/55		
475	24	75/70	P43t	H4

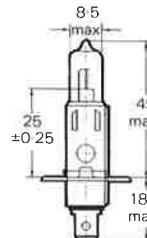
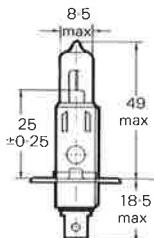
Standard Pack 10



Lamp ref.	Volts	Watts	Cap	④ ref.
476	12	60/55		
478	24	75/70	P43t	H4

Standard Pack 10

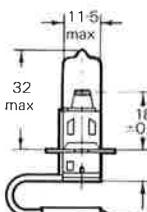
## Special Halogen Lamps



### Halogen Rally Lamp

Lamp ref.	Volts	Watts	Cap	④ ref.
2965	12	100	H1 Form	—

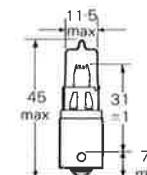
Standard Pack 10



### Halogen Rally Lamp

Lamp ref.	Volts	Watts	Cap	④ ref.
2966	12	100	H3 Form	—

Standard Pack 10



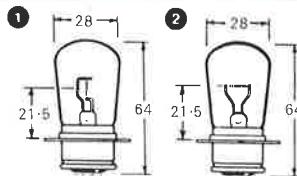
### Emergency Beacon Lamps

Lamp ref.	Volts	Watts	Cap	④ ref.
9216	12	55		
9210	12	35	BA15s/19	—

Standard Pack 10

All dimensions in mm

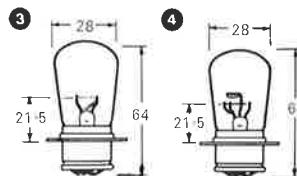
# Prefocus headlamps, Bus lamps



## PREFOCUS, BRITISH TYPES

### Single filament

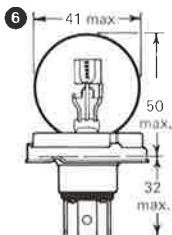
Lamp Reference	Volts	Watts	European Reference	Filament	Cap	Diagram	Standard pack
185	12	48		Axial	P36s	1	10
323	12	48	F1	Transverse	P36s	2	10
331	24	44		Axial	P36d	1	10
330	24	44	F1	Transverse	P36d	2	10



### Double filament

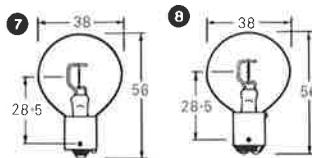
Lamp Reference	Volts	Watts	Drive	Dip	Cap	Diagram	Standard pack
414*	12	50/40	RH	Left	P36d	4	10
437*	24	54/44	RH	Left	P36d	4	10

\*These lamps have transverse shielded filaments



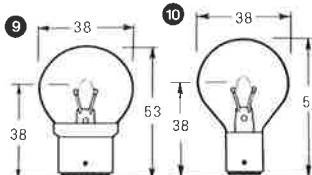
## PREFOCUS, EUROPEAN TYPES with UEC cap

Lamp Reference	Volts	Watts	European Ref.	Cap	Diagram	Standard pack
410	12	45/40	R2	P45l	6	10
429	24	55/50	R2	P45l	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

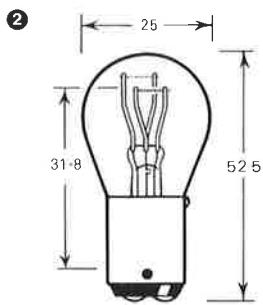
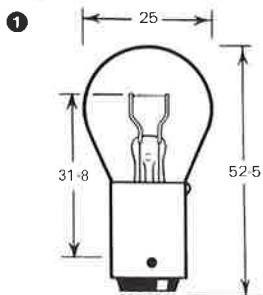
Lamp Reference	Volts	Watts	Cap	Finish	Diagram	Standard pack
804	12	12	B22d	Pearl	9	100
805	12	12	BA15d	Pearl	10	100
809	12	24	B22d	Pearl	9	100
810	12	24	BA15d	Pearl	10	100
816	24	12	B22d	Pearl	9	100
817	24	12	BA15d	Pearl	10	100
821	24	20	B22d	Pearl	9	100
822	24	20	BA15d	Pearl	10	100

All dimensions in mm

Caps: P36s: BPF s.c. BA15s: SCC  
P36d: BPF d.c. BA15d: SBC  
P45l: 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
319	P25-1	6	21	BA15d	1	10
382	P25-1	12	21	BA15s	1	10
335	P25-1	12	21	BA15d	1	10
380	P25-2	12	21/5	BAY15d	2	10
241	P25-1	24	21	BA15s	1	10
346	P25-1	24	21	BA15d	1	10
334	P25-2	24	24/6	BAY15d	2	10

### Heavy duty lamps

290	P25-1	24	21	BA15s	1	10
291	P25-2	24	21	BA15d	1	10

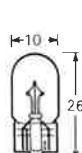
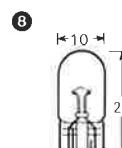
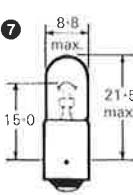
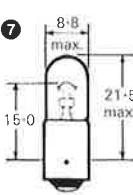
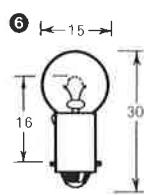
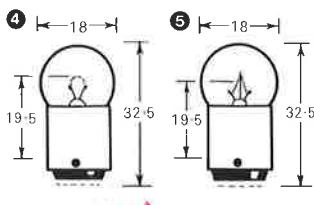
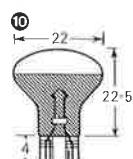
### SIDE AND TAIL

Lamp Reference	European Reference	Volts	Watts	Cap	Diagram	Standard pack
205	R19/5	6	5	BA15s	4	10
206	R19/5	6	5	BA15d	4	10
233	T8/4	12	4	BA9s	7	10
501	W10/5	12	5	W2-1×9.5d	8	10
503		12	5	W2-1×9.5d	10	10
988		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
246	R19/5	24	10	BA15s	5	10
249	T8/4	24	4	BA9s	7	10
507	W10/5	24	5	W2-1×9.5d	9	10
149	R19/5	24	5	BA15s	5	10
150	R19/5	24	5	BA15d	5	10
227		24	5	BA9s	6	10

### Heavy duty lamps

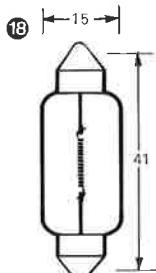
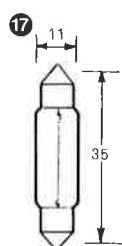
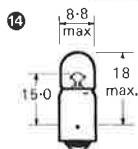
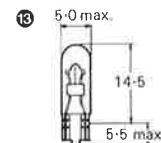
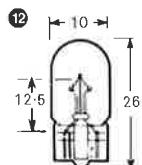
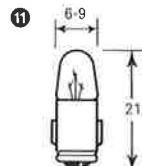
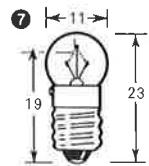
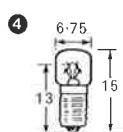
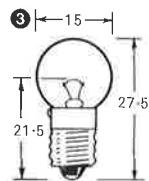
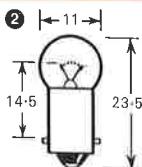
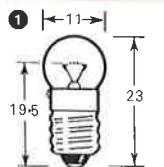
247	R19/5	24	5	BA15d	5	10
248	R19/5	24	5	BA15s	5	10

Caps  
 BA9s: MCC  
 BA15s: SCC  
 BA15d: SBC  
 BAY15d: SBC Index  
 W2-1×9.5d: Wedge



All dimensions in mm

# Panel and indicator lamps Festoon lamps



## INDICATOR, PANEL AND INSTRUMENT WARNING

Lamp Ref.	Euro. Ref.	Volts	Watts	Cap	Diagram	Standard pack
980		8	3	E10/13	1	10
950		6	5	E10/13	3	10
286		12	1.2	W2×4.6d	13	10
280		12	1.5	E5/8	4	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	12	10
504	W10/3	12	3	W2.1×9.5d	12	10
508		24	1.2	W2×4.6d	13	10
289		24	2	BA9s	14	10
650		24	2.8	E10/13	7	10
665		24	2.8	BA9s	2	10
505	W10/3	24	3	W2.1×9.5d	12	10

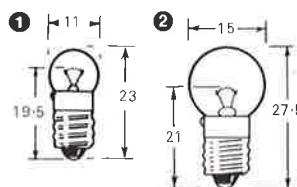
Caps      E5/8: LES      E10/13: MES  
 BA7s: 2 lug      W2.1×9.5d: Wedge 10mm  
 BA9s: MCC      W2×4.6d: Wedge 5mm

## FESTOON

Lamp Reference	European Reference	Volts	Watts	Cap	Diagram	Standard pack
239	C11	12	5	S8.5/8	17	10
273	C15	12	21	S8.5/8	18	10
242	C11	24	5	S8.5/8	17	10

All dimensions in mm

# Panel Lamps



## FLASHLAMPS Ordinary type

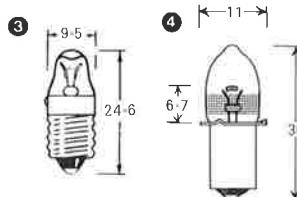
Lamp Reference	Volts	Amps	Cap	Diagram	Standard pack
972	2.5	0.3	E10/13	1	10
977	3.5	0.3	E10/13	1	10
835	4.5	0.3	E10/13	2	10

## Lens end type

830	2.2	0.25	E10/13	3	10
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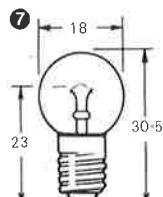
## Prefocus flashlights

917	3.6	0.5	P13.5s	4	10
918	3.8	0.3	P13.5s	4	10



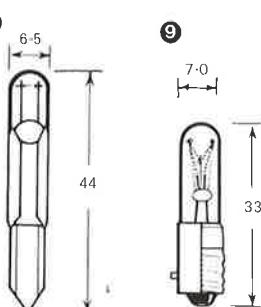
## MINERS' LAMPS

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
6.78029	4	1	P13.5s	Krypton	4	25



## EMERGENCY LIGHTING LAMPS

Lamp Reference	Volts	Amps	Cap	Type	Diagram	Standard pack
2.76929	2.4	1.0	E10/13	Krypton	7	25
2.77572	3.6	0.6	E10/13	Krypton	7	25



## 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
3.02356	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



## INTEGRAL OPTIC REFLECTOR LAMP

Accurately focused lamp with solid reflector and dispersive lensing. Surface brightness sufficient for clear visibility under incident sunlight. For dot matrix and other displays.

Lamp ref.	Volts	Watts	Cap	Diagram	Standard pack
2.79670	12	1.2	W2×4.6d	10	100

All dimensions in mm

Caps BA9s: MCC  
E10/13: MES  
P13.5s: Prefocus flash

## Auto and miniature lamp caps

E5/8  
(LES)



BA 7s



BA9s  
(MCC)



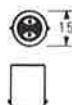
E10/13  
(MES)



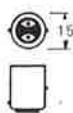
BA15s  
(SCC)



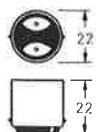
BA15d  
(SBC)



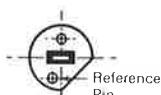
BAY 15d  
(SBC Index)



B22/22  
(BC)



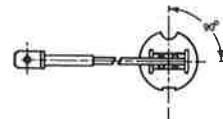
P14.5s



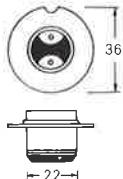
X 511



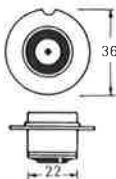
PK22s



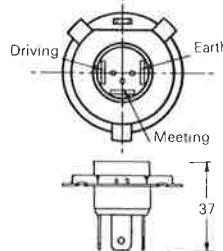
P36d  
(BPF dc)



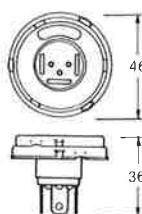
P36s  
(BPF sc)



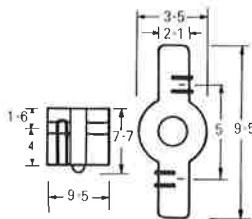
P43t-38



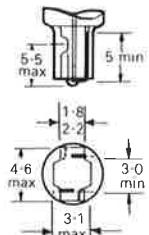
P45t/41  
(UEC)



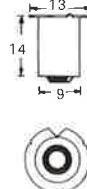
W2.1 x 9.5d  
(Wedge Base)



W2 x 4.6d  
(Wedge base)



P13.5s  
(Prefocus)



All dimensions in mm

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Data Sheets available at time of going to press are identified in **bold type**

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# THORN EMI 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) where payment is received by the Company by the last day 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

- (a) 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.
- (b) Where the price quoted does not include delivery and the Purchaser makes his own arrangements in this regard all the Company's goods are sent to the Purchaser at the Purchaser's own risk. The Company takes all responsibility, care and precautions in packaging the goods and therefore cannot accept responsibility for damage or delay during transit unless it has failed to take such reasonable care. It is the Purchaser's responsibility to arrange insurance cover unless otherwise agreed in writing between the parties.

### 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 4 days, this period extending from the date the goods are delivered in the event of a claim arising out of damage in transit or from receipt of the Company's invoice in the event of a claim arising out of non-delivery. Notwithstanding the above undertaking, the Company will only consider claims for alleged shortage if they are received within 4 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 and Force Majeur

- (a) 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.
- (b) The Company shall be under no liability for any loss or injury suffered by the Purchaser where the Company is prevented from carrying out any provisions of the contract as a result of any cause beyond its reasonable control including (but not limited to) Acts of God, legislation, war, fire, drought, failure of plant or power supply or collapse of structure, lock-out, strike or other action taken by employees in contemplation or furtherance of a trade dispute, or owing to any inability to procure materials required for the performance of the contract. The contract shall be suspended during such delay but upon cessation of the cause of delay, the contract shall again become fully operative provided that if such delay shall exceed a period of twelve months, either party may give written notice of termination of this contract and thereupon the contract shall terminate.

### 11. Passing of Property and Risk

- (a) Save where the price quoted to a Purchaser does not include delivery the risk in the goods forming the subject matter of this contract shall pass to the Purchaser when the Company delivers the goods in accordance with the terms hereof to the Purchaser or to any other person to whom the Company has been authorised by the Purchaser to deliver the goods whether expressly or by implication: thereafter the Company shall not be liable for the safety of the goods and the Purchaser should therefore insure the goods.
- (b) 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.

### 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 costs incurred by the Company in producing goods already 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 2 per cent per annum above the base rate for the time being of the Company's bankers.

### **13. Warranty**

(a) Nothing herein contained shall operate to exclude the liability of the Company to the Purchaser in contract or in tort except where it is reasonable in all the circumstances for the Company to rely upon any exclusion of liability contained herein and without prejudice to the generality of the foregoing 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 becoming the subject of a Consumer Sale as defined in the Supply of Goods (Implied Terms) Act 1973 as amended provided always that any claims under such warranty or condition shall not arise from any act or omission by the Purchaser or by any other 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 Orders' 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, or specifically provided for herein 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 written forwarding instructions sufficient to enable it to despatch within 14 days after the Company has notified the Purchaser in writing 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 and Winding-up**

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 purposes 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. The Company reserves the right to repossess goods for which payment has not been received in the event of bankruptcy, receivership or liquidation on the part of the Purchaser.

### **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. Arbitration**

If at any time any question, dispute or difference whatsoever shall arise between the Purchaser and the Company upon, in relation to or in connection with the contract, either the Purchaser or the Company may give to the other notice in writing of the existence of such question, dispute or differences and the same shall be referred to the arbitration of a person to be mutually agreed upon or failing agreement within 30 days of receipt of such notice, of some person appointed by the President for the time being of the Institution of Electrical Engineers.

### **25. Legal Construction**

These general conditions of sale shall be construed in accordance with the laws of England in force for the time being and in the event of a dispute or difference arising between the parties, subject to the right of arbitration hereinbefore provided, the High Court of Justice shall be the competent Court of Jurisdiction.

# Thorn Lighting UK Regions

## Head Office

Commercial House  
Lawrence Road, London N15 4EG  
Telephone 01-802 3151  
Telex 263201 THORN G

## Belfast

Prince Regent Road, Castlereagh  
Belfast BT5 6QR  
Telephone 0232-794122  
Telex 74695 TLLBt G

## Birmingham

Thorn House, Aston Church Road  
Sally Trading Estate, Birmingham B81 8E  
Telephone 021-327 1535  
Telex 337435 TLLBhm G

## Cardiff

Thorn House, Penarth Road  
Cardiff, Wales CF1 7YP  
Telephone 0222-44200  
Telex 49334 TLLCdf G

## Leeds

Thorn House, 3 Ring Road  
Lower Wortley, Leeds LS12 6EJ  
Telephone 0532-636321  
Telex 55110 TLLLds G

## London

Victoria Trading Estate, Victoria Way  
Charlton, London SE7 7PA  
Telephone 01-858 3281  
Telex 896171 TLLChn G

## Manchester

Thorn House, 2 Claytonbrook Road  
Clayton, Manchester M11 1BP  
Telephone 061-223 1322  
Telex 668642 TLLMcr G

## Scotland

Thorn House, Industrial Estate  
Larkhall, Lanarkshire ML9 2PA  
Telephone 0698 886007  
Telex 777930 TLLKh G

## Government Contracts & Order Office

Commercial House  
Lawrence Road, London N15 4EG  
Telephone 01-802 3151

## Airfield Lighting Division

Commercial House  
Lawrence Road, London N15 4EG  
Telephone 01-802 3151  
Telex 263201 THORN G



# Thorn Lighting Overseas Companies

## European Division Administration

Atlas House  
Lincoln Road, Enfield EN1 1UL  
Telephone 01-363 5353  
Telex 263201 THORN G ATL

## Subsidiaries in:

**Austria**  
THORN EMI Licht GmbH  
Erzherzog-Karl-Strasse 57, A-1220 Wien

## Denmark

Thorn Lampe A/S  
Brogrenen 8, DK-2635 Ishøj

## France

THORN EMI Eclairage S/A  
61 Rue Emile Zola  
69150 Decines

## Germany

THORN EMI Beleuchtungsges mbH  
Möhnenstraße 55  
Postfach 2580, 5760 Arnsberg 1

## Italy

Società Industriale Vicentina  
Illuminazione SpA  
Casella Postale 604, 36100 Vicenza

## Norway

THORN EMI Belysning A/S  
Brobekkeveien 107, Oslo 5

## Sweden

THORN EMI Belysning AB  
Anderstorpsvägen 4, Box 4203,  
S-17104 Solna

## Overseas Subsidiaries Administration

PO Box 18, 3 King George Close  
Eastern Avenue West, Romford  
Essex RM7 7PF  
Telephone 0708 66033  
Telex 897759 THLITE G  
Cables Thornlite Rford

## Subsidiaries in:

**Australia**  
THORN EMI Lighting  
210 Silverwater Road, Lidcombe  
New South Wales 2141

## Canada

THORN EMI Lighting Canada Limited  
1400 Meyerside Drive, Mississauga  
Ontario L5T 1H2

## Ireland

Thorn Lighting Ireland Limited  
320 Harolds Cross Road, Dublin 6

## New Zealand

THORN EMI Lighting (NZ) Limited  
PO Box 15150, 13a Veronica Street,  
New Lynn, Auckland 7

## South Africa

THORN EMI Lighting (Pty) Limited  
PO Box 43075  
corner Watt and Edison Streets  
Industria 2042, Transvaal

## USA

THORN EMI Lighting Inc.  
175 Route 46 West  
Madison Corporate Campus  
Fairfield  
New Jersey  
07006

## Direct Exports Administration

PO Box 18, 3 King George Close  
Eastern Avenue West, Romford  
Essex RM7 7PF  
Telephone 0708 66033  
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