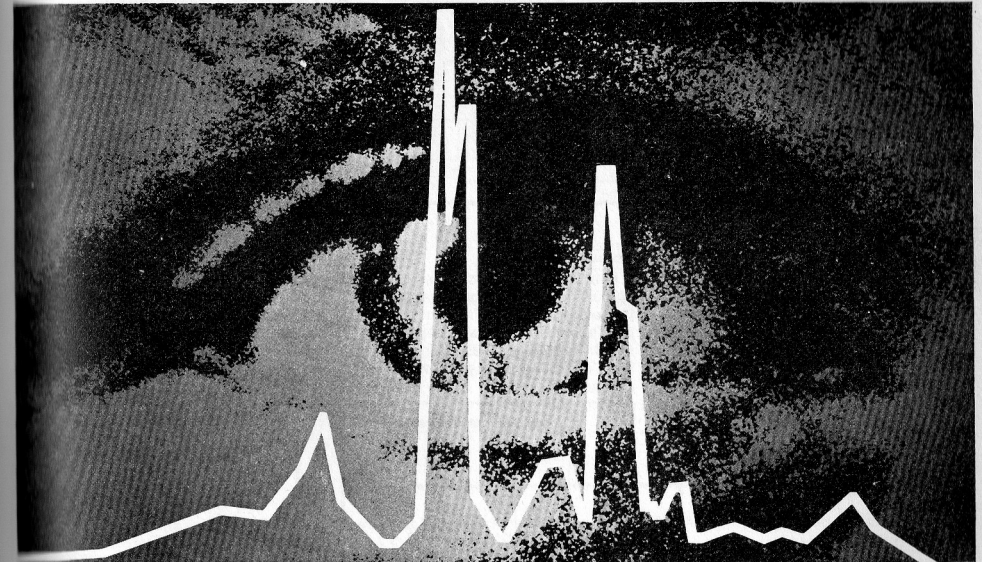


LAMPS FLUORESCENT

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GUIDE TO FLUORESCENT LAMP COLOURS



Guide to colours

Summary of Lighting Design Lumens

Dimensions & Electrical Data

Guide to lamp prefixes

Lamp equivalents

The most suitable colour of fluorescent lamp depends on the application. Lamps in factories, for example, are generally required to have high efficacy, even at the expense of colour rendering.

On the other hand, the efficacy of a lamp in a restaurant or social area is secondary to the creation of a pleasant atmosphere by means of good colour rendering.

In commercial applications such as offices and shops, colour fidelity and economical operation are of about equal importance; in dress shops, art galleries and design studios involved in colour matching, colour fidelity is of paramount importance.

To simplify stock holding by distributors, Philips have adopted a scheme of 'preferred types' which enables the majority of replacement lamp needs to be met by selecting from just three colours—White 35, Natural 25 and Softone 32.

Colour 84 lamps are a recent innovation by Philips. Although more expensive than ordinary lamps they combine the highest efficacy with the good colour rendering of De Luxe lamps and are especially suitable for new installations.

Handbook Ref.

6.2.1

To reorder this data sheet quote

PL 1784

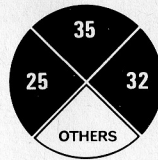
Replaces

NEW

Guide to Fluorescent Lamp colours

From the wide choice of lamp colours and types available, Philips has selected three colours which, between them, meet the requirements for 75% of replacement lamps. By adopting the colour philosophy shown

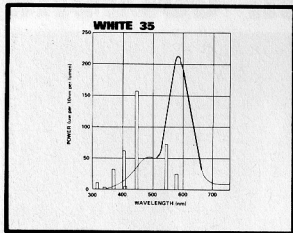
by the segmental diagram on the right, wholesalers can reduce their stock-holding variety, and their customers' problems of choice are greatly simplified.



The popular three replacement lamps

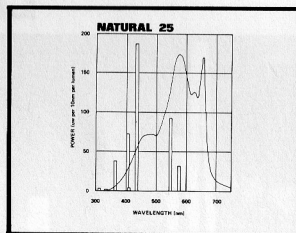
White 35

A high-efficacy lamp for use in factories, warehouses and similar applications where high light output at low cost is the priority. Also available in batten packs.



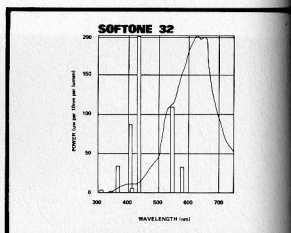
Natural 25

An improved rendering lamp of cool appearance for offices, shops and department stores. Helps to create a business-like atmosphere.



Softone 32

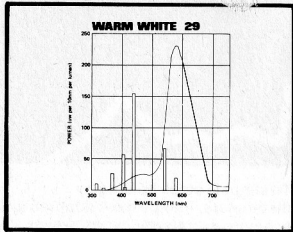
A lamp with warm appearance and good colour rendering, for a relaxing and welcoming atmosphere in hotel restaurants and other social areas, and for lighting food.



Other colours

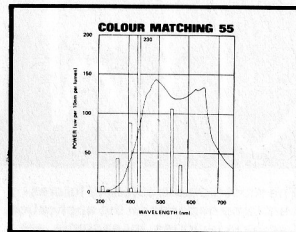
Warm White 29

Warm colour appearance and high light output. An early lamp colour. Tending to be replaced by White 35 (except in Circular lamps), or by Natural 25 or Softone 32 according to the application.



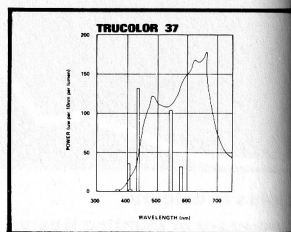
Colour Matching 55

A specialist lamp of cold appearance (6500K) for critical appraisal of colour in the paint and dye industries. Complies with the visible spectrum requirements of BS 950 Part 1, but does not include the optional UV component.



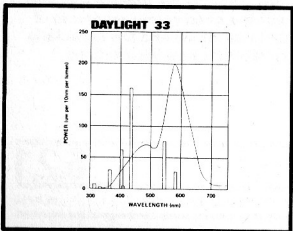
Trucolor 37

A cool lamp of the highest fidelity of colour rendering, for applications such as museums, art galleries and clinical areas in hospitals.



Daylight 33

Cool colour appearance and high light output. An early lamp colour. Mainly used for street lighting; otherwise, tending to be replaced by White 35.



Third-generation lamps

Colour 84

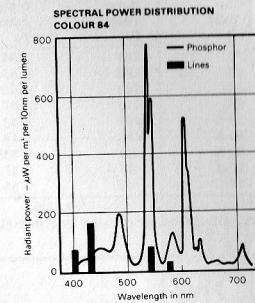
Colour 84 fluorescent lamps have three narrow bands of light output centred at wavelengths of about 450nm (blue), 540nm (green) and 610nm (red). These wavelengths have been carefully chosen for a high colour rendering index, and the concentration of energy in the narrow bands gives a light output in excess of that normally associated with high efficiency lamps. The mix of phosphors is chosen to give a colour temperature of 4,000K.

High light output for comparable CRI enables number of luminaires to be reduced by over 30% in many applications, giving large savings in maintenance and running costs.

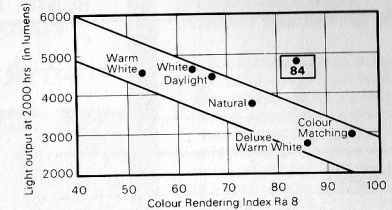
High colour rendering index improves visual clarity, enabling light level for comfortable working to be reduced and effecting further economies.

Low-efficacy lamps with high colour rendering indices, can often be replaced by MCFE 84 lamps on a one-for-two basis, giving a 50% reduction in energy consumption without reducing the overall lighting level. Colour 84 lamps are also made as TLH in sizes up to 1500mm (5ft) containing an amalgam of indium to maintain light output in high ambient temperatures such as may occur inside enclosed luminaires (Prefix TLH lamps - see Leaflet PL 1742).

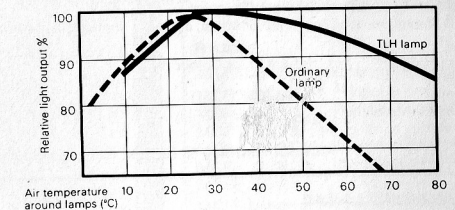
COLOUR 84



65W 1500mm (5ft) Fluorescent lamp



LIGHT OUTPUT - BARE LAMPS (BS conditions)



LIGHTING DESIGN LUMENS

Lighting Design Lumens are average values measured at 2000 hours under BS conditions. LDL values are those for use in lighting design calculations. The inclusion of a value is not a guide to availability.

Prefix/ dia.	Rating	Colour 84	White 35	Natural 25	Softone 32	Warm White 29	Daylight 33	Trucolor 37	Colour Matching 55
MCFE 18mm	125W 2400mm (8ft)	8900	8800	7000	5000	8800	8800	—	5600
	85W 2400mm (8ft)	7000	6800	5300	4000	6700	6500	—	3800
	75/85W 1800mm (6ft)	6300	6100	4400	3400	6100	5800	—	3000
	65/80W 1500mm (5ft)	4800	4700	3500	2800	4600	4500	2500	1900
MCFE 29mm	40W 1200mm (4ft)	3000	2800	2200	1800	2800	2800	1500	1200
	40W 600mm (2ft)	—	1700	1400	—	1700	1700	—	750
	20W 600mm (2ft)	1200	1100	850	700	1100	1100	600	2300
	30W 900mm (3ft)	—	2200	1700	1200	2200	2200	—	—
TL 18mm	15W 450mm (18in)	—	800	700	500	800	800	—	—
	13W 525mm (21in)	—	800	—	600	800	800	—	—
	8W 300mm (12in)	—	400	—	300	400	400	—	—
TL 18mm	6W 225mm (9in)	—	250	—	—	250	250	—	—
	4W 150mm (6in)	—	—	—	—	150	150	—	—

Notes:

- 75/85W lamps: LDL measured at 85W.
- 65/80W lamps: LDL measured at 65W (output is approximately 10% higher at 80W).
- Colour 34 lamps: the LDL is approximately that for Colour Matching 55. Tending to be replaced by Natural 25 or Colour 84.
- Colour 84: LDL applies to MCFE lamp and TLH lamp under standard conditions. When the TLH lamp is used in an enclosed luminaire, the amalgam factor of the luminaire should be applied. See Data Sheet PL 1741.
- Reflectalite lamps have a slightly lower output than standard lamps, better utilised. A useful procedure is to take Lighting Design Lumens as for non-reflector lamps, with an increased Maintenance Factor. See Data Sheet PL 1762.

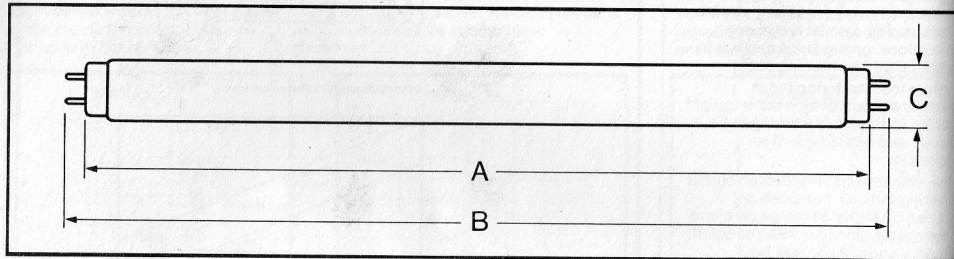
Circular fluorescent lamps

Type	Rating/ nominal dia.	Warm White 29
TLEK 60W/29	60W 415mm	3400
TLE(M) 40W/29	40W 415mm	2500
TLE 32W/29	32W 315mm	2500
TLE 22W/29	22W 215mm	900

LAMP DIMENSIONS & ELECTRICAL DATA

Rating	B.S. lamp power (W)	B.S. lamp volts (V)	B.S. lamp current (I)	Maximum dimensions			Approx. weight (g)
				Face-to-Face length (A) mm	Overall length (B) mm	Diameter (C) mm	
125W 2400mm (8ft)	123	149	0.94	2374.9	2389.1	40.5	610
85W 2400mm (8ft)	84	120	0.80	2374.9	2389.1	40.5	610
75/85W 1800mm (6ft)*	84	120	0.80	1763.8	1778.0	40.5	451
65/80W 1500mm (5ft)**	64	110	0.67	1500.0	1514.2	40.5	360
40W 1200mm (4ft)	39.5	103	0.43	1199.4	1213.6	40.5	292
40W 600mm (2ft)	39.5	103	0.43	589.8	604.0	40.5	156
30W 900mm (3ft x 1in)	30.0	96	0.365	894.6	908.8	28.0	145
20W 600mm (2ft)	19.3	57	0.37	589.8	604.0	40.5	156
15W 450mm (18in x 1in)	14.9	46	0.36	460.0	474.2	28.0	76

NOTES: All above lamps have bi-pin cap G13. *at 85W **at 65W
The dimensions and electrical data for circular and miniature tubular fluorescent lamps are given on the appropriate data sheets (PL 1794 and PL 1763).



EQUIVALENTS LIST

Other make	PHILIPS LAMPS
White	White 35
Warm White	Warm White 29
Daylight	Daylight 33
} or change to White 35	
Note: If above are used in a shop or office, consider changing to Natural 25 or Colour 84.	
Natural	Natural 25 or Colour 84
De Luxe Natural	
Plus White	Trucolor 37
Kolor-rite	
De Luxe Warm White	Softone 32
Warmtone	
Northlight	Colour Matching 55 (BS 950 Part I, visible part, not UV)
Artificial Daylight	

Lamps of different makes should not normally be mixed in an installation. When Philips lamps are being used to replace other types in an existing installation, the guide indicates a lamp that is approximately equivalent. The Philips lamp may be of higher output or improved colour rendering. The correct approach is not to seek a match, but to decide which of the Philips lamps is the best one for the particular application.

FLUORESCENT LAMPS

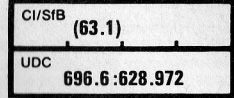
U.K. PREFIXES

MCF	Mercury low-pressure. Fluorescent coat. Applies to 38mm, 25mm or 15mm. For switch start circuits. Also used for 'fluorescent lamps in general'.
MCFE	MCF with silicone coating and 10V electrodes for switch start and 10V starter-less circuits. Exception: 85W 2400mm has 3V electrodes.
MCFRE	As MCFE but with internal reflective coating.
MCFA	As MCFE but with external metal strip - for earthing - instead of silicone coat.
MCFRA	As MCFA but with internal reflective coating.
MCFB	Equivalent to TLS.

INTERNATIONAL PREFIXES

TL	Mercury low-pressure. Either 38mm or 15mm. Switch start only unless followed by suffix "RS" or suffix "T". Also used for "fluorescent lamps in general".
TLA	As MCFA but only 38mm diameter.
TLAK	As TLA. The "K" signifies "short for the nominal wattage", e.g. TLAK 40W (600mm) but TLA 40W (1200mm).
TLAD	As MCFA but 25mm in diameter.
TLAKD	As TLAD but "K" signifies "short for the nominal wattage".
TLAF	As TLA but with internal reflective coating.
TLD	As TL but 25mm in diameter.
TLE	As TL but circular.
TLEK	As TLE but "K" signifies "short for the nominal wattage".
TLEM	As TLM but circular.

TLF	As TL but with internal reflective coating.
TLH	As TL but with amalgam.
TLM	As TL but with an external strip connected to one pin via a safety resistor. The external strip is not for earthing. For switch start or 3V starterless. Always followed by suffix "RS".
TLS	As TL with internal metal strip connected to one electrode. Recessed single-contact caps. Normally used with tungsten ballast lamp. (Replacement only).
TLU	As TL, but U-shape.
TLW	As TL, but W-shape.
TLX	As TLS but with single-pin caps. For Ex 'e' luminaires.
RS	As suffix after phosphor number denotes 3V electrodes, e.g. TL 20W/RS and TLM 20W/RS.
T	As suffix after phosphor number converts TL to MCFE (and TLF to MCFRE).



COLOUR 84 MCFE 84

High-output fluorescent lamps with high Colour Rendering Index

Colour 84 fluorescent lamps have three narrow bands of light output centred at wavelengths of about 450nm (blue), 540nm (green) and 610nm (red). These wavelengths have been carefully chosen for a high colour rendering index, and the concentration of energy in the narrow bands gives a light output in excess of that normally associated with high efficiency lamps. The mix of phosphors is chosen to give a colour temperature of 4,000K.

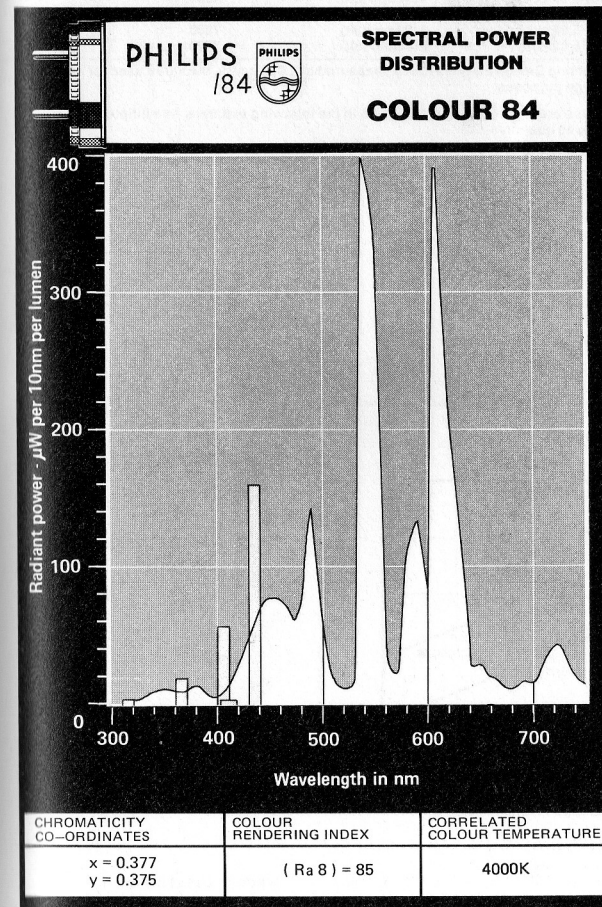
RANGE

Available in the following ratings:
MCFE 20W/84 600mm (2ft),
MCFE 40W/84 1200mm (4ft),
MCFE 65/80W/84 1500mm (5ft),
MCFE 75/85W/84 1800mm (6ft),
MCFE 85W/84 2400mm (8ft),
MCFE 125W/84 2400mm (8ft).
MCFE lamps are for general UK use.

Note: Colour 84 lamps are also made as TLH in sizes up to 1500mm (5ft) containing an amalgam of indium to maintain light output in high ambient temperatures such as may occur inside enclosed luminaires (Prefix TLH lamps - see Leaflet PL 1742).

APPLICATIONS

- Suitable for use wherever high-efficacy lamps with good colour rendering are appropriate, e.g.:
- Department stores, especially in food and fashion areas
- Retail shops
- General offices
- Board rooms and individual offices



FEATURES

- High light output for comparable CRI enables number of luminaires to be reduced by over 30% in many applications, giving large savings in maintenance and running costs.
- High colour rendering index improves visual clarity, enabling light level for comfortable working to be reduced and effecting further economies.
- Low-efficacy lamps with high colour rendering indices, can often be replaced by MCFE 84 lamps on a one-for-two basis, giving a 50% reduction in energy consumption without reducing the overall lighting level.

MATERIALS & FINISH

Tubing: 38mm diameter glass with externally applied silicone coating
Phosphors: New generation Colour 84 triphosphor coating

SPECIFICATION

■ Type compliance with BS 1853 where applicable.

To specify state:

High-efficacy (not less than 75 lm/W, 65W rating) fluorescent lamp with correlated colour temperature of 4,000K, and colour rendering index not less than 85, substantially as Philips MCFE 84.

RANGE OF OPERATION

Replacement for ordinary fluorescent lamps with conventional phosphors.

LAMP DATA

Correlated colour temperature: 4,000K
 Colour rendering index (Ra 8): 85
 Chromaticity co-ordinates: $x = 0.377$
 $y = 0.375$

All lamps are MCFE type, with bi-pin caps, and silicone coating, for use in switchstart or starterless circuits.

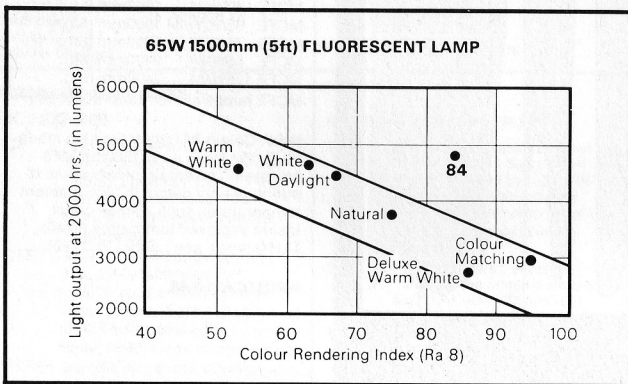
ORDERING DATA

Catalogue No.	Nominal length	Lighting Design Lumens*	Packing quantity
MCFE 20W/84	600mm (2ft)	1200	25
MCFE 40W/84	1200mm (4ft)	3000	25
MCFE 65/80W/84	1500mm (5ft)	4800	25
MCFE 75/85W/84	1800mm (6ft)	6300	25
MCFE 85W/84	2400mm (8ft)	7000	20
MCFE 125W/84	2400mm (8ft)	8900	20

*Lighting Design Lumens (LDL), measured at 2,000 hours, the value used for lighting design purposes.

Please order lamps in the form given in the following example, in multiples of the packing quantity:-

100 Philips fluorescent lamps MCFE 40W/84



Colour 84 lamps combine high output with high CRI

Made in Great Britain

CI/SIB	(63.9)
UDC	696.6:628.94

COLOUR 84

with amalgam TLH 84

Colour 84 fluorescent lamp with maintained performance at elevated temperatures inside luminaires

A range of indium amalgam lamps which maintain high efficiency at elevated temperatures (such as are reached within enclosed luminaires) and provide the high colour rendering of the Colour 84 triphosphor mix.

RANGE

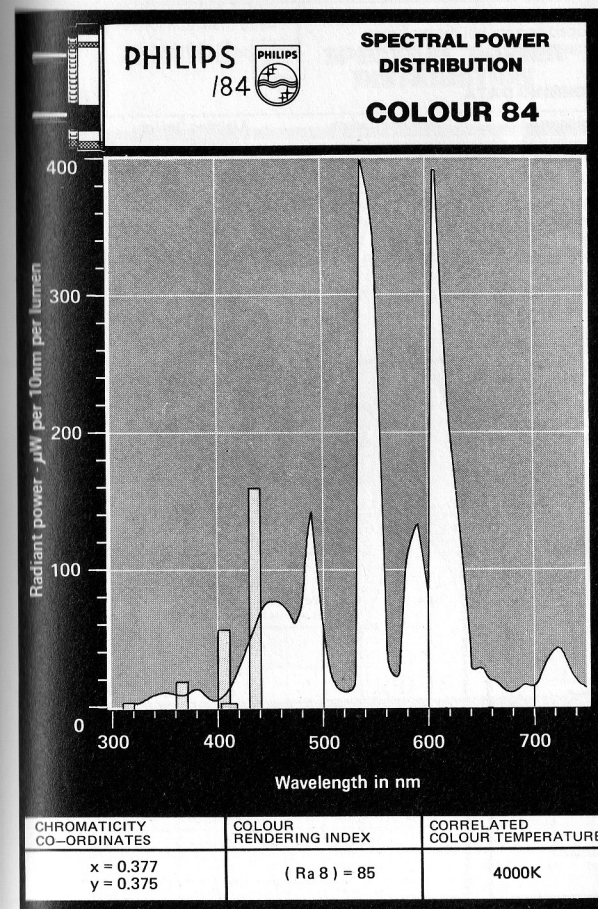
Available in the following ratings:
 TLH 40W/84 1200mm (4ft)
 TLH 65/80W/84 1500mm (5ft)
 switchstart circuits only.

Note: MCFE 84 lamps non-amalgam are available in a full replacement range up to 125W 2400mm (8ft), for use in switchstart or starterless circuits—see Leaflet PL 1253.

APPLICATIONS

Suitable for use wherever a high-efficacy lamp with good colour rendering is appropriate, particularly where enclosed luminaires are used, in situations such as:

- Department stores, especially in food and fashion areas
- Retail shops
- General offices
- Board rooms and individual offices



Handbook Ref

6.23

To reorder this data sheet quote 6.77 PL 1742

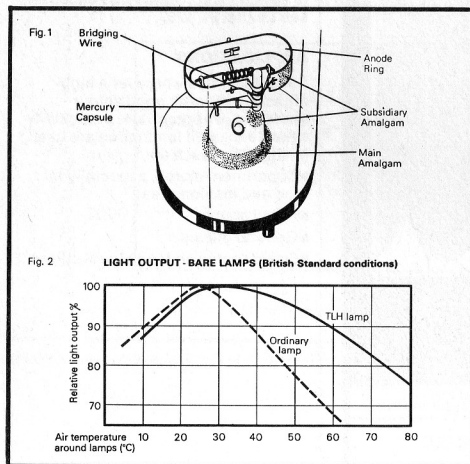
Replaces PL 9989/1

FEATURES

TLH 84 lamps are manufactured with deposits of indium near one electrode, and a precisely-controlled quantity of mercury which is sealed in a glass capsule attached to the anode ring. (See Figure 1).

After the lamp has been sealed, an external high-frequency coil induces a current in the anode ring to heat the bridging wire and break the mercury capsule. The mercury forms an amalgam with the indium, which has the property of controlling the mercury vapour pressure. As a result, the light output of the lamp does not fall off as rapidly with temperature rise as does that of an ordinary lamp (see Figure 2). The 'amalgam factor' is a function of the luminaire, and varies from unity for an open luminaire to about 1.3 for a highly enclosed luminaire. The amalgam factor for a typical 2 x 65W enclosed luminaire (such as the Philips A1715S Finesse) is about 1.15, i.e. a gain in light output of 15% if amalgam lamps are used instead of ordinary types (see Fig. 4). This gain, due to the amalgam, is in addition to the gain due to the Colour 84 triphosphor. In addition, amalgam (TLH 84) lamps possess all the advantages of the non-amalgam (MCFE) Colour 84 range, including:-

- High light output for comparable CRI (see Fig.3) enables number of luminaires to be reduced by over 30% in many applications, giving large savings in maintenance and running costs.
- High colour rendering index improves visual clarity, enabling light level for comfortable working to be reduced and effecting further economies.



■ Low-efficacy lamps with high colour rendering indices, can often be replaced by Colour 84 lamps on a one-for-two basis, giving a 50% reduction in energy consumption without reducing the overall lighting level.

New schemes

The amalgam factor of enclosed luminaires specified for new schemes should be applied to the calculations. Fewer luminaires can be used for a given lighting level, reducing installation costs and saving energy.

Existing schemes

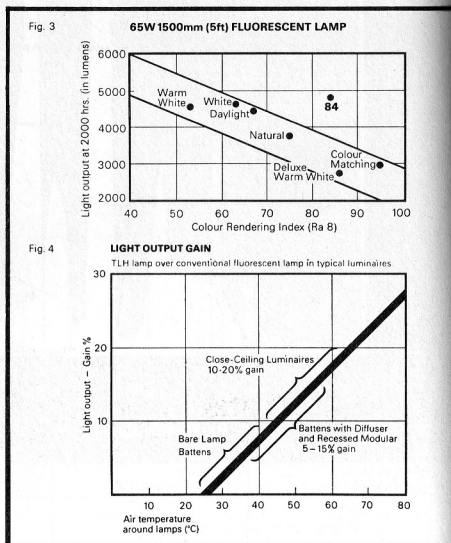
Amalgam lamps can be used in existing enclosed luminaires to give an increase in lighting level. Alternatively, fewer lamps can be used in some multi-lamp luminaires, giving a reduced energy bill for the same lighting level.

ORDERING DATA

Catalogue No.	Nominal length	Lighting Design Lumens*	Packing quantity
TLH 40W/84	1200mm (4ft)	3000	25
TLH 65/80W/84	1500mm (5ft)	4800	25

*Lighting Design Lumens (LDL), measured at 2,000 hours, the value used for lighting design purposes.

Please order lamps in the form given in the following example, in multiples of the packing quantity:-
50 Philips fluorescent lamps TLH 40W/84



LAMP DATA

Correlated colour temperature: 4,000K
Colour rendering index (Ra 8): 85
Chromaticity co-ordinates: x = 0.379 y = 0.384

All lamps have bi-pin caps and are for use with switchstart circuits only.

SPECIFICATION

■ Type compliance with BS 1853 will be applicable.

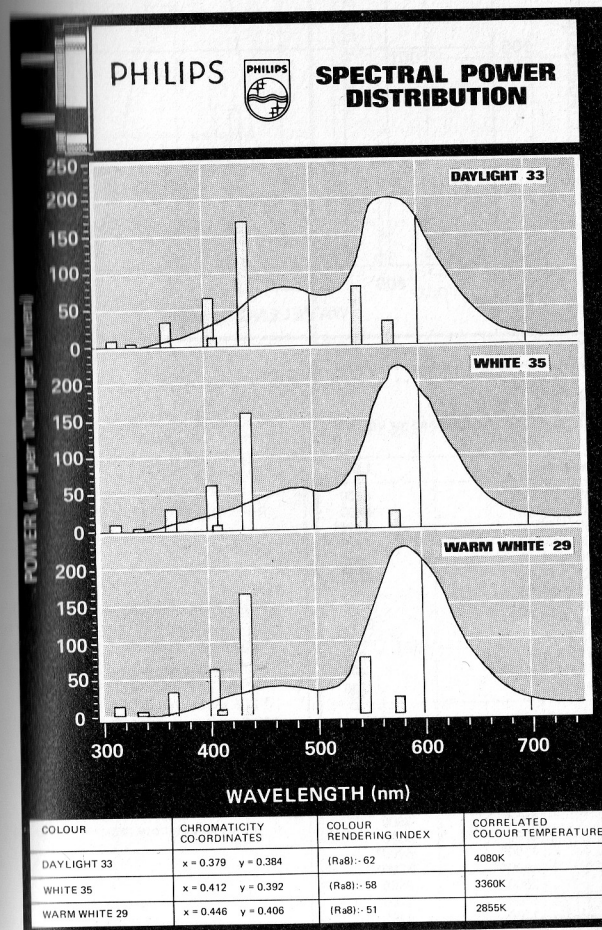
To specify state:

High-efficacy fluorescent lamp with indium amalgam, correlated colour temperature of 4,000K and colour rendering index not less than 85, substantially as Philips TLH 84.

RANGE OF OPERATION

Replacement for ordinary fluorescent lamps with conventional phosphors used in switchstart circuits.

Made in Holland



C/SIB (63.9)
UDC 696.6:628.94

**WHITE 35
WARM WHITE 29
DAYLIGHT 33
FLUORESCENT LAMPS**

A range of lamps for installations where high lumen output at low cost is the primary consideration, and where 'De Luxe' colour rendering is not required. Except where their colours are specifically needed, both Warm White 29 and Daylight 33 are tending to be replaced by White 35.

APPLICATIONS

White 35
A 'High Efficacy' lamp for use in factories, warehouses and similar applications where high light output at low lamp cost is the main requirement. White 35 is the lamp normally supplied in batten packs.

Warm White 29
A 'High Efficacy' lamp with a warmer colour appearance than White 35.

Daylight 33
A 'High Efficacy' lamp with a cooler colour appearance than White 35; now mainly used for road lighting.

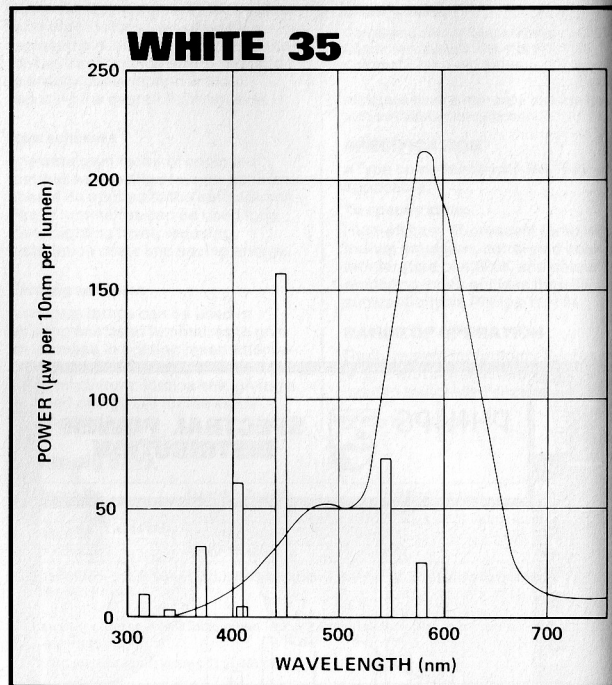
RANGE

A list of nominal lengths and ratings, together with the colours available in each rating, is given in the Ordering Data on the back page of this Data Sheet.

FEATURES

- 'High Efficacy' lamps provide high lumen output and moderate colour rendering at low cost.
- Carefully selected grain size of phosphors maintains light output at a high level.
- MCFE lamps are suitable for switch-start and starterless operation and are silicone-coated. Some ratings are available in MCFA form, with an external earth strip; also for switch-start and starterless operation.
- TL lamps (16mm diam.) are for switchstart circuits only.

A lamp with improved colour rendering, such as Natural 25 or Colour 84, is generally more suitable for replacement into installations in offices and shops.



WHITE 35 — LAMP DATA

LDL represents Lighting Design Lumens, the lumen value (at 2000 hours) used for lighting design purposes.

Catalogue Number	Nominal dimensions	LDL
MCFE 125W/35	2400 × 38mm (8ft. × 1½in.)	8800
MCFE 85W/35	2400 × 38mm (8ft. × 1½in.)	6800
MCFE 75/85W/35	1800 × 38mm (6ft. × 1½in.)	6100*
MCFE 65/80W/35***	1500 × 38mm (5ft. × 1½in.)	4700**
MCFE 80W/35***	1500 × 38mm (5ft. × 1½in.)	4900
MCFE 40W/35***	1200 × 38mm (4ft. × 1½in.)	2800
MCFE 40W/35†***	600 × 38mm (2ft. × 1½in.)	1700
MCFE 20W/35***	600 × 38mm (2ft. × 1½in.)	1100
MCFE 30W/35	900 × 26mm (3ft. × 1in.)	2200
MCFE 15W/35	450 × 26mm (18 × 1in.)	800
TL 13W/35	525 × 16mm (21 × ¾in.)	800
TL 8W/35	300 × 16mm (12 × ¾in.)	400
TL 6W/35	225 × 15mm (9 × ¾in.)	250

WARM WHITE 29, DAYLIGHT 33 — LAMP DATA

Catalogue Number	Nominal dimensions	LDL	
		W.White 29	Daylight 33
MCFE 125W/—	2400 × 38mm (8ft. × 1½in.)	8800	8800
MCFE 85W/—	2400 × 38mm (8ft. × 1½in.)	6700	6500
MCFE 75/80W/—	1800 × 38mm (6ft. × 1½in.)	6100*	5800*
MCFE 65/80W/—***	1500 × 38mm (5ft. × 1½in.)	4800**	4700**
MCFE 40W/—	1200 × 38mm (4ft. × 1½in.)	2800	2800
MCFE 40W/—†***	600 × 38mm (2ft. × 1½in.)	1700	1700
MCFE 20W/—	600 × 38mm (2ft. × 1½in.)	1100	1100
MCFE 30W/—	900 × 26mm (3ft. × 1in.)	2150	2150
MCFE 15W/—	450 × 26mm (18 × 1in.)	750	750
TL 13W/—	525 × 16mm (21 × ¾in.)	800	800
TL 8W/—	300 × 16mm (12 × ¾in.)	400	400
TL 6W/—	225 × 16mm (9 × ¾in.)	225	225
TL 4W/—	150 × 16mm (6 × ¾in.)	150	150

Notes:—

- MCFE 80W/35 lamps have BC caps.
- A TLM 140W lamp is available in Daylight 33.
- Circular lamps are available in Warm White 29 (Data Sheet PL 1794).
- * LDL measured at 85W.
- ** LDL measured at 65W.
- *** These ratings are also available in MCFA versions, with earth strip (not available in Warm White 29)
- † State length when ordering. Replacement type only.
- Insert lamp colour required (29 or 33).

White 35

The most popular fluorescent lamp colour for applications in which 'High Efficacy' lamps are used. The colour appearance is intermediate between Warm White 29 and Daylight 33. Main applications are in manufacturing and assembly plants, store rooms and loading bays.

Correlated colour temperature: 3360K
Colour rendering index (Ra8): 58
Chromaticity Co-ordinates: x=0.412
y=0.392

Warm White 29

One of the original fluorescent lamp colours, of warm appearance. Now tending to be replaced by White 35 in industry and by Natural 25 in shops and offices.

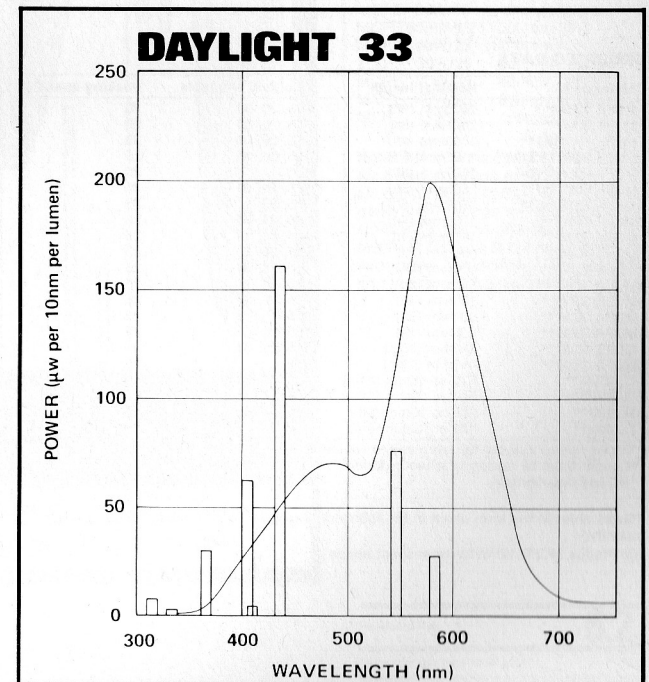
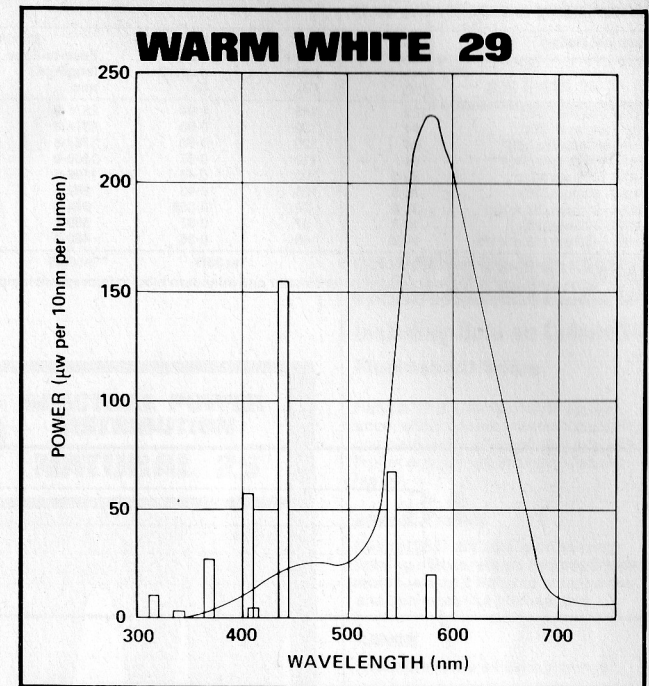
Correlated colour temperature: 2855K
Colour rendering index (Ra8): 51
Chromaticity co-ordinates: x=0.446
y=0.406

Daylight 33

One of the original fluorescent lamp colours of cool appearance. Daylight 33 is used mainly in heavy industry and in loading bays, and is of a colour appearance specified for road lighting.

Except where specifically required for its cool appearance, Daylight 33 should be replaced by White 35.

Correlated colour temperature: 4080K
Colour rendering index (Ra8): 62
Chromaticity co-ordinates: x=0.379
y=0.384

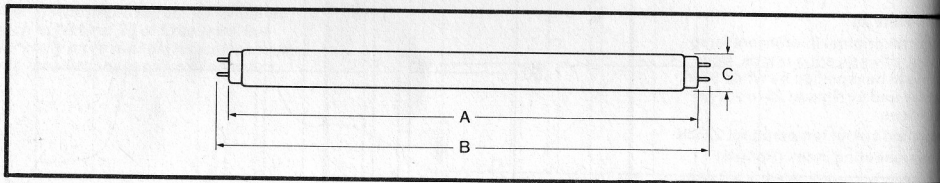


DIMENSIONS & ELECTRICAL DATA

Nominal Rating	B.S. lamp power (W)	B.S. lamp volts (V)	B.S. lamp current (l)	Maximum dimensions		Diameter (C) mm	Approx. Weight g
				Face-to-Face length (A) mm	Overall length (B) mm		
125W 2400mm (8ft)	123	149	0.94	2374.9	2389.1	40.5	610
85W 2400mm (8ft)	84	120	0.80	2374.9	2389.1	40.5	610
75/85W 1800mm (6ft)*	84	120	0.80	1763.8	1778.0	40.5	451
65/80W 1500mm (5ft)**	64	110	0.67	1500.0	1514.2	40.5	360
40W 1200mm (4ft)	39.5	103	0.43	1199.4	1213.6	40.5	292
40W 600mm (2ft)	39.5	103	0.43	589.8	604.0	40.5	156
30W 900mm (3ft x 1in)	30.0	96	0.365	894.6	908.8	28.0	145
20W 600mm (2ft)	19.3	57	0.37	589.8	604.0	40.5	156
15W 450mm (18in x 1in)	14.9	46	0.36	460.0	474.2	28.0	76

NOTES: All above lamps have bi-pin cap G13 *at 85W **at 65W

The dimensions and electrical data for circular and miniature tubular fluorescent lamps are given on the appropriate data sheets (PL 1794 and PL 1763).



ORDERING DATA

Catalogue No.	Nominal length	Colours available	Packing quantity
MCFE 125W/**	2400mm (8ft)	35, 29, 33	20
*MCFE 80W/**	2400mm (8ft)	35, 29, 33	20
MCFE 75/85W/**	1800mm (6ft)	35, 29, 33	25
MCFE 80W/**/BC	1500mm (5ft)	35, 29, 33	25
MCFA 80W/**/BC	1500mm (5ft)	35	25
MCFE 65/80W/**	1500mm (5ft)	35, 29, 33	25
MCFA 65/80W/**	1500mm (5ft)	35, 33	25
*MCFE 40W/**	1200mm (4ft)	35, 29, 33	25
*MCFA 40W/**	1200mm (4ft)	35, 33	25
*MCFE 40W/**	600mm (2ft)	35, 29, 33	25
*MCFE 20W/**	600mm (2ft)	35, 29, 33	25
*MCFA 40W/**	600mm (2ft)	35, 33	25
MCFE 30W/**	900mm (3ft)	35, 29, 33	25
MCFA 30W/**	900mm (3ft)	35	25
MCFA 20W/**	600mm (2ft)	35	25
MCFE 15W/**	450mm (18in)	35, 29, 33	25
MCFA 15W/**	450mm (18in)	35	25
TL 13W/**	525 x 16mm (21in)	35, 29, 33	25
TL 8W/**	300 x 16mm (12in)	35, 29, 33	25
TL 6W/**	225 x 16mm (9in)	35, 29, 33	25
TL 4W/**	150 x 16mm (6in)	29, 33	25

**Insert colour number for lamp colour required.
*Length must be specified when ordering.
BC cap obsolescent.

Please order in the form given in the following example, in multiples of the packing quantity:-
100 Philips MCFE 125W/35 fluorescent lamps.

REFLECTALITE

The lamps are also available in most 38mm ratings in Reflectalite form, in which an internal reflector directs light downwards and thereby reduces light loss caused through dust (see Leaflet PL 1762).

Made in Great Britain
30W rating and below in 25/16 mm dia.
Made in Holland

CI/SIB	(63.9)
UDC	696.6:628.94

NATURAL 25

Including Data on Colour 34
Fluorescent lamps

Natural 25 is a lamp of cool appearance, with improved colour rendering compared with white lamps, and with higher output than ordinary DeLuxe lamps.

APPLICATIONS

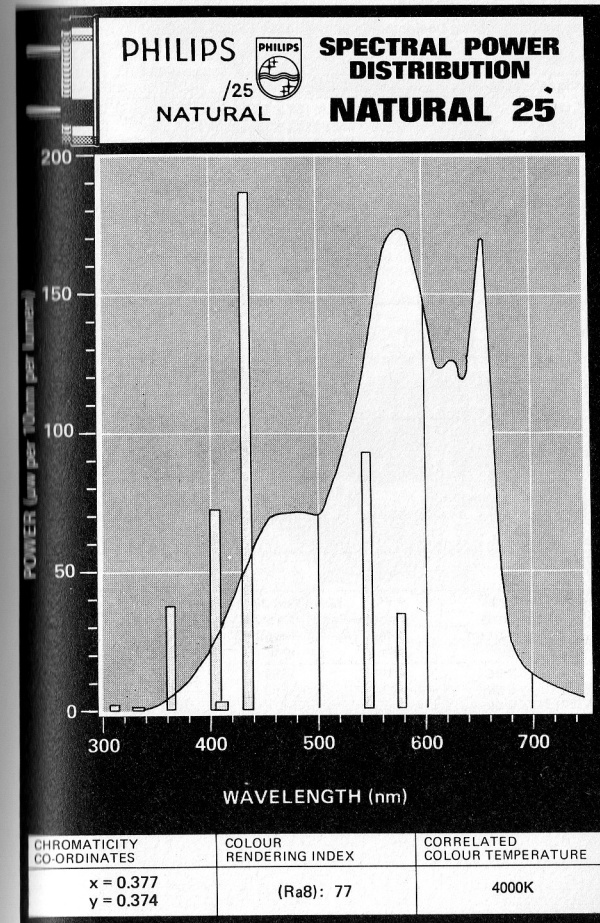
Natural 25 is especially suitable for lighting offices, shops and department stores, where it helps to create a cool and business-like atmosphere.

RANGE

Available in the following ratings:

- MCFE 125W/25 2400mm (8ft)
- MCFE 85W/25 2400mm (8ft)
- MCFE 65/80W/25 1500mm (5ft)
- MCFE 40W/25 1200mm (4ft)
- TLD 30W/25 900mm (3ft)
- MCFE 20W/25 600mm (2ft)
- MCFE 40W/25 600mm (2ft)
- MCFE 15W/25 450mm (18in.)

Note: Where new lighting installations are being planned, consideration should be given to the use of "third-generation" lamps such as Colour 84. Colour 84 has a higher output than ordinary DeLuxe lamps, and offers economies in numbers of luminaires and energy consumption.



Handbook Ref.

6.25

To reorder this data sheet quote 11.77 PL 1780

Replaces 8419/3 (572)

NATURAL 25

FEATURES

- Cool appearance creates a pleasant, businesslike atmosphere.
- Improved colour as rendering required for modern decoration schemes.
- Improved facial colour rendering: important for female staff and customers.

COLOUR DATA

Correlated colour temperature: approx. 4000K
 Colour rendering index (Ra8): 77
 Chromaticity co-ordinates: x=0.377
 y=0.374

LAMP DATA—NATURAL 25

LDL represents Lighting Design Lumens, the lumen value (at 2000 hours) used for lighting design purposes. All MCFE lamps are silicone-coated types, for switchstart and starterless circuits. TLD lamps are for switchstart circuits only.

Ordering reference	Nominal dimensions	LDL	Packing quantity
MCFE 125W/25	2400 x 38mm (8ft x 1½in.)	7000	20
MCFE 85W/25	2400 x 38mm (8ft x 1½in.)	5300	20
MCFE 75/85W/25	1800 x 38mm (6ft x 1½in.)	4700*	25
MCFE 65/80W/25	1500 x 38mm (5ft x 1½in.)	3600**	25
MCFE 40W/25	1200 x 38mm (4ft x 1½in.)	2300	25
MCFE 40W/25 600mm†	600 x 38mm (2ft x 1½in.)	1400	25
TLD 30W/25	900 x 26mm (3ft x 1in.)	1700	25
MCFE 20W/25	600 x 38mm (2ft x 1½in.)	850	25
MCFE 15W/25	900 x 26mm (3ft x 1in.)	700	25

Notes:— *Measured at 85W. †Length must be stated when ordering.
 **Measured at 65W.

COLOUR 34

Colour 34 has a slightly warmer appearance than Natural 25, and also slightly improved colour rendering, though at somewhat lower lumen output. This lamp is being superseded in most general-purpose applications by Natural 25.

COLOUR DATA

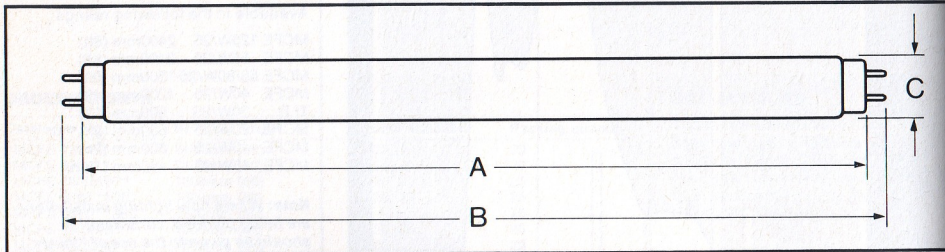
Correlated colour temperature: approx. 3700K
 Colour rendering index: (Ra8): 91
 Chromaticity co-ordinates: x=0.390
 y=0.369

LAMP DATA—COLOUR 34

LDL represents Lighting Design Lumens, the lumen value (at 2000 hours) used for lighting design purposes. All MCFE lamps are silicone-coated, for use in switchstart and starterless circuits.

Ordering reference	Nominal dimensions	Packing quantity
MCFE 125W/34	2400 x 38mm (8ft x 1½in.)	20
MCFE 85W/34	2400 x 38mm (8ft x 1½in.)	20
MCFE 75/85W/34	1800 x 38mm (6ft x 1½in.)	25
MCFE 65/80W/34	1500 x 38mm (5ft x 1½in.)	25
MCFE 40W/34	1200 x 38mm (4ft x 1½in.)	25
MCFE 30W/34	900 x 25mm (3ft x 1in.)	25
MCFE 20W/34	600 x 38mm (2ft x 1½in.)	25

Note:— Lumen output as for Colour Matching 55 (see data sheet PL 1773).



LAMP DIMENSIONS & ELECTRICAL DATA

Nominal Rating	B.S. lamp power (W)	B.S. lamp volts (V)	B.S. lamp current (I)	Maximum dimensions		Diameter (C) mm	Approx. Weight g
				Face-to-Face length (A) mm	Overall length (B) mm		
125W 2400mm (8ft)	123	149	0.94	2374.9	2389.1	40.5	610
85W 2400mm (8ft)	84	120	0.80	2374.9	2389.1	40.5	610
75/85W 1800mm (6ft)*	84	120	0.80	1763.8	1778.0	40.5	451
65/80W 1500mm (5ft)**	64	110	0.67	1500.0	1514.2	40.5	360
40W 1200mm (4ft)	39.5	103	0.43	1199.4	1213.6	40.5	292
40W 600mm (2ft)	39.5	103	0.43	589.8	604.0	40.5	156
30W 900mm (3ft x 1in.)	30.0	95	0.365	894.6	908.8	28.0	145
20W 600mm (2ft)	19.3	57	0.37	589.8	604.0	40.5	156

NOTES: All lamps have bi-pin cap G13. *at 85W. **at 65W

Not a guide to availability

ORDERING DATA

Please order lamps in accordance with the following example, in multiples of the packing quantity:-
 100 Philips MCFE 125W/25 fluorescent lamps.

Made in UK except for 15W and 30W lamps, which are made in Holland.



Eastern Electricity shows that savings can begin at home using 40W Colour 84 triphosphor lamps has enabled an average glare-free illumination of 990 lux to be achieved at an energy usage of only 33 w/m².



Colour rendering quality for prestige offices of Provincial Insurance Co. Ltd. Haverhill, lit with special recessed low brightness air handling luminaires.

CI/SfB	(63.9)
UDC	696.6:628.94

SOFTONE 32

Fluorescent lamp

Softone 32 lamps have a warm colour, similar to that of tungsten lamps, and good colour rendering.

The combination of a warm colour similar to that of tungsten lighting and good colour rendering produces a 'social' light that shows colours to good advantage. The lamp also has many applications in the home, eg. for lighting curtains, pictures, cupboards.

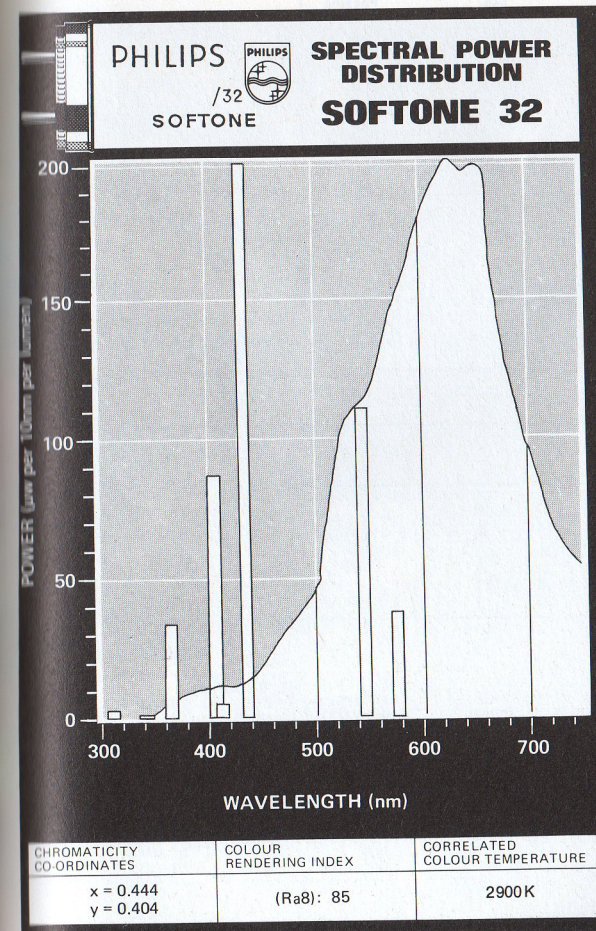
RANGE

Available in the following ratings:

- MCFE 125W/32 2400mm (8ft)
- MCFE 85W/32 2400mm (8ft)
- MCFE 75/85W/32 1800mm (6ft)
- MCFE 65/80W/32 1500mm (5ft)
- MCFE 40W/32 1200mm (4ft)
- MCFE 30W/32 900mm (3ft)
- MCFE 20W/32 600mm (2ft)
- MCFE 15W/32 450mm (18in.)
- TL 13W/32 525mm (21in.)
- TL 8W/32 300mm (12in.)

APPLICATIONS

Softone 32 lamps are used in hotels, restaurants and other social environments where they help to create a welcoming atmosphere; they are also a preferred lamp for lighting food in shops, and have many applications in the home.



Handbook Ref.

6.2.6

To reorder this data sheet quote 1.78 PL1783

Replaces PL8808 (969)

FEATURES

- Warm colour appearance – similar to filament lighting.
- Good colour rendering – for lighting foodstuffs such as meat, butter, bacon, cheese and fruit.

COLOUR DATA

Correlated colour temperature: approx. 2900K
 Colour rendering index (Ra8): 85
 Chromaticity co-ordinates: x=0.444
 y=0.404

LUMEN DATA

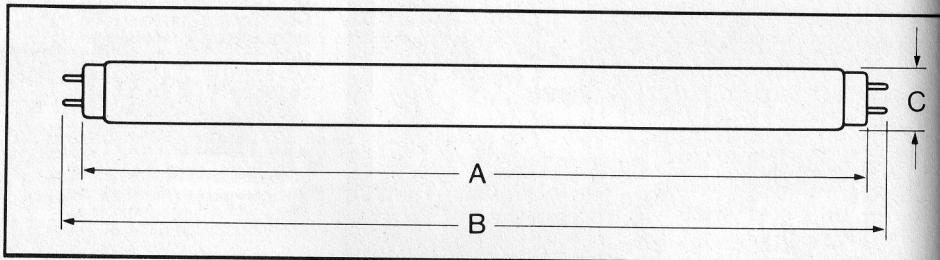
LDL represents Lighting Design Lumens, the lumen value after 2000 hours used for lighting design purposes.

Ordering reference	Nominal dimensions	LDL	Packing quantity
MCFE 125W/32	2400 x 38mm (8ft x 1½ in.)	5000	20
MCFE 85W/32	2400 x 38mm (8ft x 1½ in.)	4000	20
MCFE 75/85W/32	1800 x 38mm (6ft x 1½ in.)	3400*	25
MCFE 65/80W/32	1500 x 38mm (5ft x 1½ in.)	2800**	25
MCFE 40W/32	1200 x 38mm (4ft x 1½ in.)	1800	25
MCFE 20W/32	600 x 38mm (2ft x 1½ in.)	600	25
MCFE 30W/32	900 x 26mm (3ft x 1 in.)	1200	25
MCFE 15W/32	450 x 26mm (18 x 1 in.)	500	25
TL 13W/32	525 x 16mm (21 x ¾ in.)	600	25
TL 8W/32	300 x 16mm (12 x ¾ in.)	300	25

Notes:—MCFE lamps are silicone-coated for use in switchstart or starterless circuits.
 TL lamps are for switchstart circuits only.
 *LDL measured at 85W. **LDL measured at 65W.

ORDERING DATA

Please order lamps in accordance with the following example, in multiples of the packing quantity:—
 100 Philips MCFE 40W/32 fluorescent lamps.



LAMP DIMENSIONS & ELECTRICAL DATA

Nominal rating	B. S. lamp power (W)	B. S. lamp volts (V)	B. S. lamp current (I)	Maximum dimensions			Approx. weight g
				Face-to-Face length (A) mm	Overall length (B) mm	Diameter (C) mm	
125W 2400mm (8ft)	123	149	0.94	2374.9	2389.1	40.5	610
85W 2400mm (8ft)	84	120	0.80	2374.9	2389.1	40.5	610
75/85W 1800mm (6ft)*	84	120	0.80	1763.8	1778.0	40.5	451
65/80W 1500mm (5ft)**	64	110	0.67	1500.0	1514.2	40.5	360
40W 1200mm (4ft)	39.5	103	0.43	1199.4	1213.6	40.5	292
30W 900mm (3ft x 1in)	30.0	96	0.365	894.6	908.8	28.0	145
20W 600mm (2ft)	19.3	57	0.37	589.8	604.0	40.5	156
15W 450mm (18in x 1in)	14.9	46	0.36	460.0	474.2	28.0	76

NOTES: The above lamps have bi-pin cap G13. *at 85W. **at 65W

The dimensions and electrical data for miniature tubular fluorescent lamps are contained in Data Sheet PL 1763.

NOTE

Lamps of different makes should not normally be mixed in an installation.
 The Philips lamp may be of higher output or colour rendering.
 The correct approach is not to seek a match, but to decide which of the Philips lamps is the best one for the particular application.

38mm lamps Made in UK
 26mm and 16mm Made in Holland



CI/SIB	(63.9)
UDC	696.6:628.94

REFLECTALITE

Fluorescent Lamps

A lamp with an internal non-metallic coating between the phosphor and the envelope around approximately two-thirds of the inner circumference. The reflector reduces light losses resulting from dust settling on the lamp and luminaire.

RANGE

Available in White 35 in the following ratings:—

- *MCFRE 125W 2400mm (8ft)
 - MCFRE 85W 2400mm (8ft)
 - MCFRE 75/85W 1800mm (6ft)
 - *MCFRE 65/80W 1500mm (5ft)
 - MCFRA 65/80W 1500mm (5ft)
 - MCFRE 40W 1200mm (4ft)
 - MCFRE 20W 600mm (2ft)
- *Also available in Warm White 29 and Daylight 33.

APPLICATIONS

Reflectalite lamps are used to advantage in industrial and commercial areas such as factories, workshops, stores and garages, particularly where luminaire cleaning is difficult or costly. They are also used to provide directional lighting, in suitable luminaires, in shops, departmental stores, displays and showrooms.

FEATURES

- Internal reflector directs light mainly through a 120° window in the downward direction, greatly reducing the effect of dust on the upper surface of the lamp and on the luminaire.
 - Reflectalite maintains a higher service lux level between lamp changes in existing dusty installations.
 - A higher maintenance factor † can be allowed on new installations, thus saving energy and initial cost.
- † see IES Technical Report No. 9.

Dust can absorb more than 15% of the light output of conventional fluorescent lamps.

Handbook Ref

6.2.9

To reorder this data sheet quote

PL 1762

Replaces

PL 7728/5 (573)

The reflector layer occupies two-thirds of the circumference of the inner surface of the lamp, and increases light output in the required directions. (See Figures 1 and 2.)

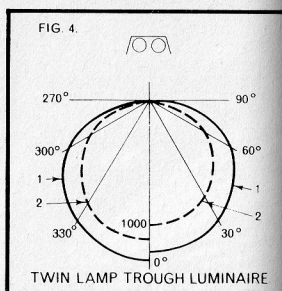
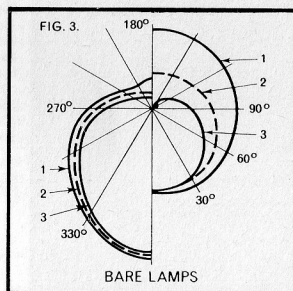
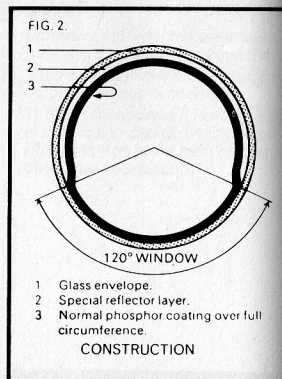
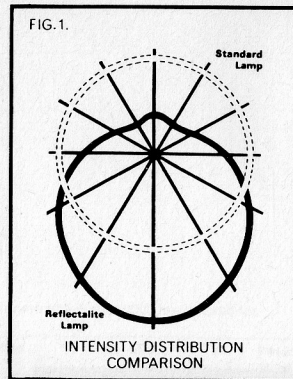
Luminous intensity of the bare lamp in the principal direction is approximately 1.8 times of that of ordinary fluorescent lamps. Dimensions and electrical characteristics are identical with those of standard fluorescent lamps of the same rating.

Reflectalite lamps have a rather lower total output than non-reflector lamps, but have higher light flux utilisation (they maintain about 15% higher lighting levels in service). Cleaning is best integrated with group lamp changes.

Influence of dust collection

In the diagrams Figures 3 and 4, the influence of dust is given for bare lamps and for lamps in a two-lamp trough reflector luminaire respectively. The light distribution pattern for Reflectalite lamps is on the left of the diagrams, and for non-reflective lamps on the right.

- Key: 1. Clean lamp (transmission factor = 1).
 2. Normal dust collection (transmission factor = 0.5).
 3. High dust collection (transmission factor = 0).



DIMENSIONS & ELECTRICAL DATA

Nominal Rating	B.S. lamp power (W)	B.S. lamp volts (V)	B.S. lamp current (I)	Face-to-Face length mm	Maximum dimensions		Approx. Weight g
					Overall length mm	Diameter mm	
125W 2400mm (8ft)	123	149	0.94	2374.9	2389.1	40.5	610
85W 2400mm (8ft)	84	120	0.80	2374.9	2389.1	40.5	610
75/85W 1800mm (6ft)	84	120	0.80	1763.8	1778.0	40.5	451
65/80W 1500mm (5ft)	64	110	0.67	1500.0	1514.2	40.5	360
40W 1200mm (4ft)	39.5	103	0.43	1199.4	1213.6	40.5	292
20W 600mm (2ft)	19.3	57	0.37	589.8	604.0	40.5	156

ORDERING DATA

Catalogue No.	Nominal length	Colours	Packing quantity
MCFRE 125W/**	2400 mm (8ft)	35, 29, 33	20
MCFRE 85W/35	2400 mm (8ft)	35	20
MCFRE 75/85W/35	1800 mm (6ft)	35	25
MCFRE 65/80W/**	1500 mm (5ft)	35, 29, 33	25
MCFRA 65/80W/35	1500 mm (5ft)	35	25
MCFRE 40W/35	1200 mm (4ft)	35	25
MCFRE 20W/35	600 mm (2ft)	35	25

All lamps are 38 mm dia., with bi-pin caps.

Notes: MCFRE lamps are silicone-coated, for use in switchstart or starterless circuits. MCFRA lamps have an external earthing stripe.

**Insert colour number for the lamp colour required: 35, 29, 33.

Please order lamps in accordance with the following example, in multiples of the packing quantity:

100 Philips MCFRE 125W/35 fluorescent lamps.

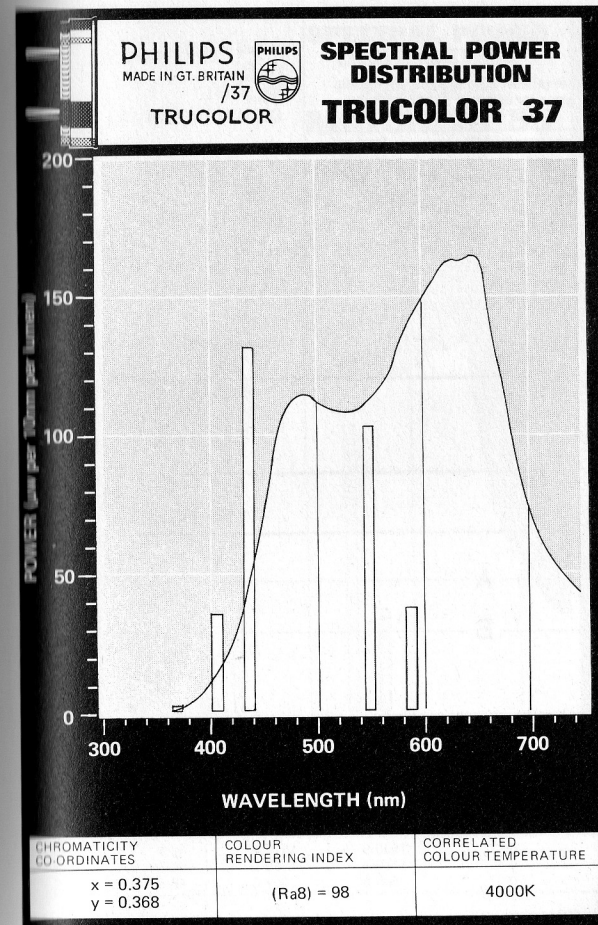
Lamp colours

White 35 A high-efficiency phosphor, now the preferred colour for the majority of industrial applications.

Warm White 29 A lamp of warm colour, now tending to be replaced by White 35.
 Daylight 33 Cool colour appearance which mixes with natural daylight. Now mainly used for road lighting; otherwise, tending to be replaced by White 35.

Notes: Because of the high luminance of the window in Reflectalite lamps, they should not be used in bare-lamp battens at mounting heights of less than 5 metres.

Relative Spectral Power Distribution diagrams for the three lamp colours, and a comparative guide to Lighting Design lumens, are given on Data Sheet PL 1781. Made in Great Britain.



CI/SIB	(63.9)
UDC	696.6 : 628.94

TRUCOLOR 37

Fluorescent lamp

A lamp for installations where it is essential that colours are rendered with the highest possible fidelity. Trucolor 37 has a Colour Rendering Index of almost 100 at a colour temperature of 4000K, and has a double phosphor coating giving UV reduction. The UV output is one-third of that from ordinary lamps.

RANGE

Available in the following ratings:
 MCFE 65/80W 1500mm (5ft)
 MCFE 40W 1200mm (4ft)
 MCFE 20W 600mm (2ft)

APPLICATIONS

Applications include:

- Lighting of exhibits in art galleries and museums
- Special areas of shops such as fitting booths for millinery and dresswear
- Clinical areas in hospitals.

Handbook Ref.

6.2.10

To reorder this data sheet quote 12.77 PL1782

Replaces 7793/3 (773)

FEATURES

■Extremely high colour rendering index (Ra8=98) at a correlated colour temperature of 4000K enables the lamp to be used in art galleries, clinical areas in hospitals and special areas in department stores to render colours with the highest possible fidelity.

■Double phosphor coating reduces long-wave UV content, which can cause colour fading, to one-third of that of ordinary fluorescent lamps.

COLOUR DATA

Correlated colour temperature: approx 4000K
 Colour rendering index (Ra8):=98
 Chromaticity co-ordinates: x=0.375
 y=0.368

LUMEN DATA

LDL represents Lighting Design Lumens, the lumen value (at 2000 hours) used for lighting design purposes. All lamps are MCFE silicone-coated types for use with switchstart and starterless circuits.

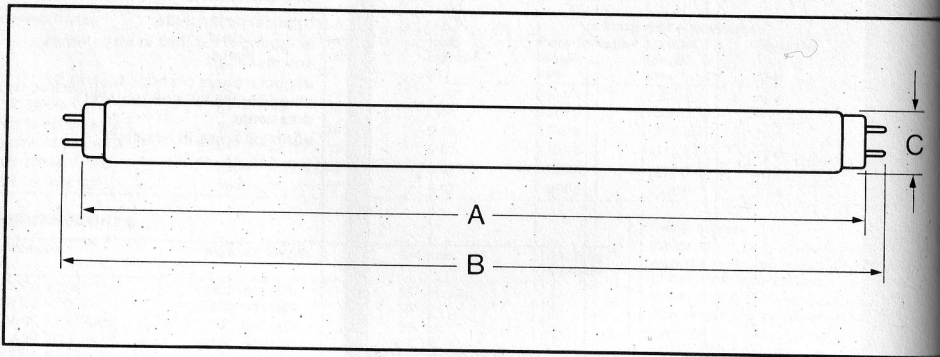
Ordering reference	Nominal dimensions and rating	LDL	Packing quantity
MCFE 65/80W/37	1500 x 38mm (5ft. x 1½in.) 65/80W	2500*	25
MCFE 40W/37	1200 x 38mm (4ft. x 1½in.) 40W	1500	25
MCFE 20W/37	600 x 38mm (2ft. x 1½in.) 20W	600	25

*LDL measured at 65W.

ORDERING DATA

Please order lamps in accordance with the following example, in multiples of the packing quantity:-

100 Philips MCFE 40W/37 fluorescent lamps.



Made in Great Britain.

LAMP DIMENSIONS & ELECTRICAL DATA

Nominal Rating	B.S. lamp power (W)	B.S. lamp volts (V)	B.S. lamp current (I)	Maximum dimensions			Approx. Weight g
				Face-to-Face length (A) mm	Overall length (B) mm	Diameter (C) mm	
65/80W 1500mm (5ft)**	64	110	0.67	1500.0	1514.2	40.5	360
40W 1200mm (4ft)	39.5	103	0.43	1199.4	1213.6	40.5	292
20W 600mm (2ft)	19.3	57	0.37	589.8	604.0	40.5	156

NOTES: All lamps have bi-pin cap G13. **at 65W

EQUIVALENTS LIST

Lamps of different makes should normally be mixed in an installation. The Philips lamp may be of higher output or colour rendering. The correct approach is not to seek match, but to decide which of the Philips lamps is the best one for the particular application.

CI/SIB	(63.9)
UDC	696.6:628.94

COLOUR MATCHING 55

Fluorescent Lamp

Colour Matching 55 has a colour temperature of 6500K and high-fidelity colour rendering—CRI of 95.

Colour matches made under this light source are similar to those made under common phases of north daylight, so that Colour Matching 55 can be used in the majority of applications for which daylight was previously the only suitable light source. It is important that a reasonably high level of illumination (see BS 950 Part 1) is maintained over the whole area where matching is taking place.

The lamp can also be used for special effects in display work. For example, it can be used where a cool background is required; the foreground is lit by warmer fluorescent lamps or tungsten lamps.

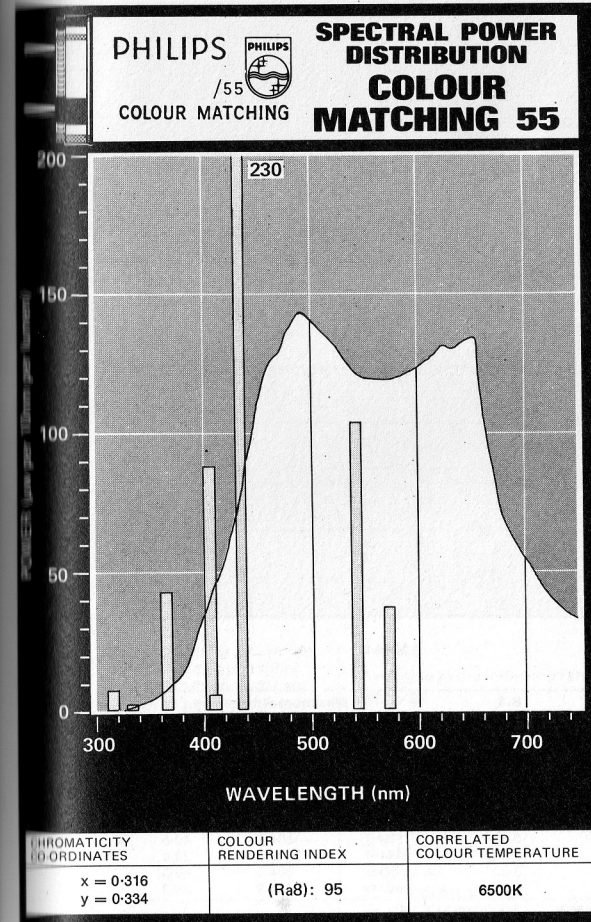
RANGE

Available in the following ratings:

MCFE 125W/55	2400mm (8ft)
MCFE 75/85W/55	1800mm (6ft)
MCFE 65/80W/55	1500mm (5ft)
MCFE 40W/55	1200mm (4ft)
MCFE 40W/55	600mm (2ft)
MCFE 30W/55	900mm (3ft)
MCFE 20W/55	600mm (2ft)
MCFE 15W/55	450mm (18in.)

APPLICATIONS

Applications include the critical colour appraisal of samples in the paint, dye and textile industries, and wherever small differences in colour must be detected, such as in the printing and tobacco trades.



FEATURES

- Replaces natural daylight for most colour-matching applications.
- Cool appearance makes possible colour effects in display work in conjunction with warmer lamps.

COLOUR DATA

Correlated colour temperature: approx 6500K
 Colour rendering index (Ra8): 95
 Chromaticity co-ordinates: x=0.316
 y=0.334

NOTE

Lamps of different makes should normally be mixed in an installation.

LUMEN DATA

LDL represents Lighting Design Lumens, the lumen value (at 2000 hours) used for lighting design purposes.

Ordering reference	Nominal dimensions	LDL	Packing quantity
MCFE 125W/55	2400 x 38mm (8ft x 1½in.)	5600	20
MCFE 75/85W/55	1800 x 38mm (6ft x 1½in.)	3800*	25
MCFE 65/80W/55	1500 x 38mm (5ft x 1½in.)	3000**	25
MCFE 40W/55	1200 x 38mm (4ft x 1½in.)	1900	25
MCFE 40W/55	600 x 38mm (2ft x 1½in.)	1200	25
MCFE 30W/55	900 x 26mm (3ft x 1in.)	1300	25
MCFE 20W/55	600 x 38mm (2ft x 1½in.)	750	25
MCFE 15W/55	450 x 26mm (18 x 1in.)	500	25

NOTES: In installations involving critical appraisal, it is recommended that lamps should be bulk-changed at 4000 hours.

*LDL measured at 85W.

**LDL measured at 65W.

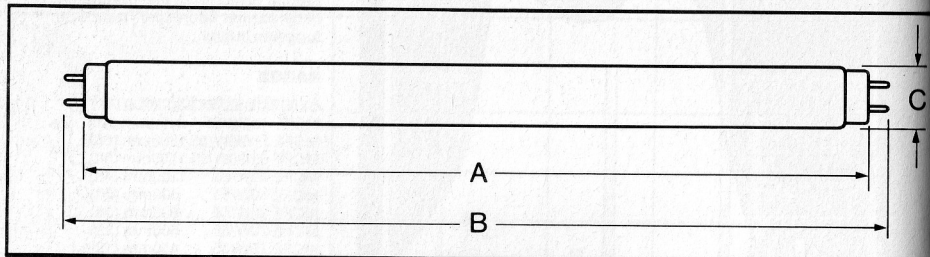
MCFE lamps are silicone-coated, and are for switchstart or starterless circuits.

ORDERING DATA

Please order lamps in accordance with the following example, in multiples of the packing quantity:-

100 Philips MCFE 125W/55 fluorescent lamps.

Made in Great Britain (except 15W and 30W which are made in Holland).



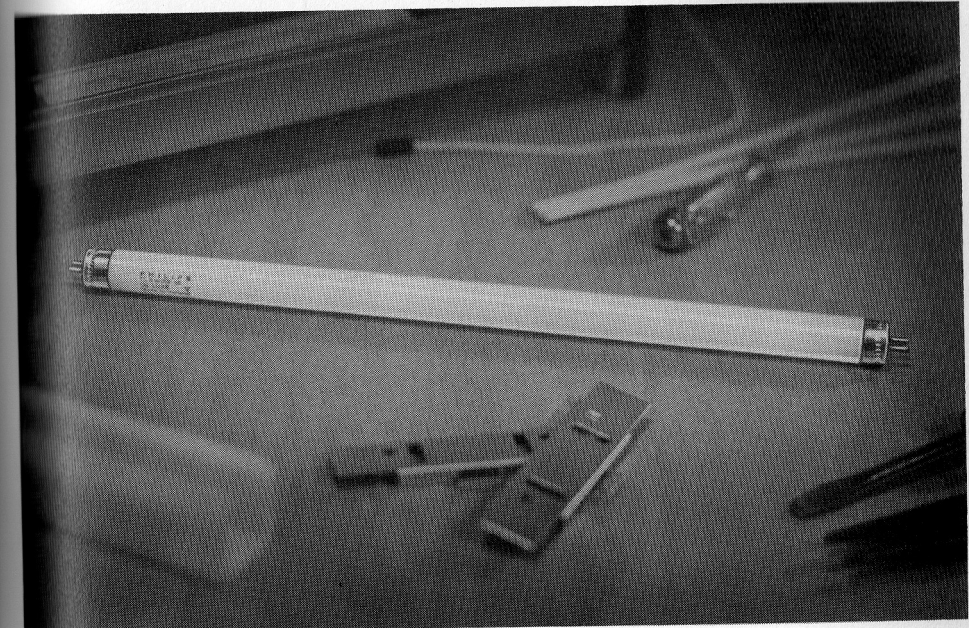
LAMP DIMENSIONS & ELECTRICAL DATA

Nominal rating	B.S. lamp power (W)	B.S. lamp volts (V)	B.S. lamp current (I)	Maximum dimensions		Diameter (C) mm	Approx. weight g.
				Face-to-Face length (A) mm	Overall length (B) mm		
125W 2400mm (8ft)	123	149	0.94	2374.9	2389.1	40.5	610
75/85W 1800mm (6ft)*	84	120	0.80	1763.8	1778.0	40.5	451
65/80W 1500mm (5ft)**	64	110	0.67	1500.0	1514.2	40.5	360
40W 1200mm (4ft)	39.5	103	0.43	1199.4	1213.6	40.5	292
40W 600mm (2ft)	39.5	103	0.43	589.8	604.0	40.5	156
30W 900mm (3ft x 1in)	30.0	96	0.365	894.6	908.8	28.0	145
20W 600mm (2ft)	19.3	57	0.37	589.8	604.0	40.5	156
15W 450mm (18in x 1in)	14.9	46	0.36	460.0	474.2	28.0	76

NOTES: The above lamps have bi-pin cap G13. *at 85W. **at 65W.

CI/SIB	(63.9)
UDC	696.6:628.94

MINIATURE FLUORESCENT LAMPS



A range of 16mm diameter (T5) lamps in a choice of lengths and phosphor colours that combine the fluorescent lamp advantages of high light output and long service period with slim shape.

RANGE

Available in the following ratings:-

White 35

- TL 13W 525mm (21in.)
- TL 8W 300mm (12in.)
- TL 6W 225mm (9in.)

Warm White 29 and Daylight 33

- TL 13W 525mm (21in.)
- TL 8W 300mm (12in.)
- TL 6W 225mm (9in.)
- TL 4W 150mm (6in.)

Softone 32

- TL 13W 525mm (21in.)
- TL 8W 300mm (12in.)

APPLICATIONS

Miniature fluorescent lamps are used in fluorescent striplights such as Philips Flair (see Data Sheet PL1743) in amenity bulkhead luminaires for lighting stairways and common parts of buildings and in lightboxes for photography and display. They also have applications in exhibition and display lighting, in picture lighting and in street furniture and signs.

Handbook Ref

6.2.12

To reorder this data sheet quote

PL 1763

Replaces

PL 8758/1 (272)

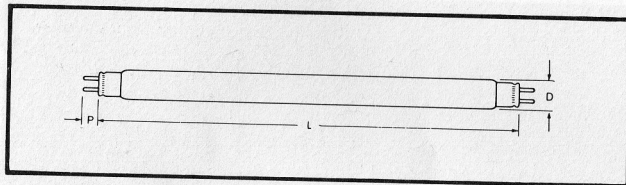
FEATURES

- Cool running and high efficacy relative to tungsten filament lamps. Lumen output 40W GLS=390 lumens compared with TL8W/35=400 lumens
- Choice of phosphors – warm or cool – to suit application.

LAMP DATA

LDL represents Lighting Design Lumens, the lumen value at 2000 hours used for lighting design purposes.

Lamp type	LDL White 35	LDL Warm White 29	LDL Daylight 33	LDL Softone 32
TL13W	800	800	800	600
TL8W	400	400	400	300
TL6W	250	250	250	—
TL4W	—	150	150	—



DIMENSIONS, WEIGHTS & ELECTRICAL DATA

Lamp type	Lamp volts (V)	Lamp current (A)	Lamp weight (g)	Dimensions			Cap (mini bi-pin)	
				L max. (mm)	D max. (mm)	P max. (mm)		
TL13W	525mm (21in.)	98	0.17	49	517	16	7	G5/15
TL8W	300mm (12in.)	58	0.17	31	288	16	7	G5/15
TL6W	225mm (9in.)	45	0.16	24	212	16	7	G5/15
TL4W	150mm (6in.)	30	0.15	17	136	16	7	G5/15

All data are averages, and refer to operation under standard conditions.

Note: For switchstart operation. Certain emergency luminaires and transistorised ballasts may not operate these lamps correctly.

ORDERING DATA

Catalogue No.	Nominal length	Colours	Packing quantity
TL13W/**	525mm(21in)	35, 29, 33, 32	25 *
TL8W/**	300mm(12in)	35, 29, 33, 32	25 *
TL6W/**	225mm(9in)	35, 29, 33	25 *
TL4W/**	150mm(6in)	29, 33	25 *

**Insert colour number for the lamp colour required.

*Also available in 300 way bulk pack (price and del. on application)

Please order lamps in the form given in the following example, in multiples of the packing quantity:

100 Philips TL13W/35 fluorescent lamps.

Made in Great Britain/Holland

CIV/SIB	(63.9)
UDC	696.6 : 628.94

CIRCULAR FLUORESCENT LAMPS

A range of circular fluorescent lamps for use in signs and equipment, and for incorporation in compact decorative luminaires.

Philips circular fluorescent lamps combine the advantages of conventional linear fluorescent lamps – long service and high efficacy – with a compact format that can be used to advantage in equipment and decorative luminaires. The lamp colour is Warm White 29, which combines high light output with a warm colour appearance.

RANGE

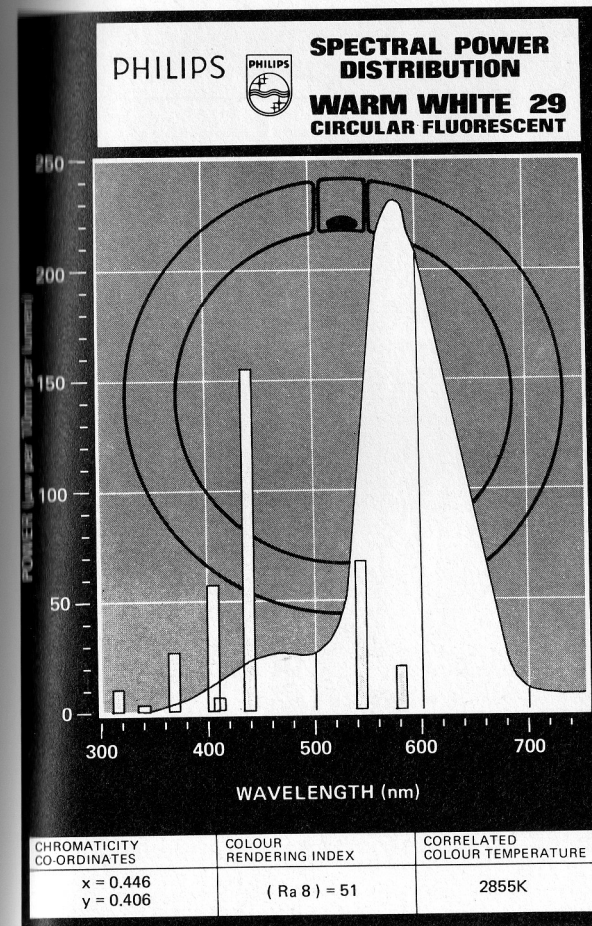
60W and 40W ratings – nominal o.d. 410mm (16in.).
32W rating – nominal o.d. 305mm (12in.).
22W rating – nominal o.d. 210mm (8½in.).

APPLICATIONS

For use in suitable luminaires, for commercial and social areas such as:

- Bars
- Hotels and reception areas
- Private offices
- Domestic

Also for use in signs, and in equipment such as vending machines.



FEATURES

■ Makes possible decorative fluorescent luminaires for use in locations where linear fluorescent lighting would not be suitable.

■ TLE and TLEK lamps operate from conventional switchstart control gear; the TLEM 40W lamp operates from switchstart or 3V electrode preheat starterless control gear.

ORDERING DATA

Please order lamps in accordance with the following example, in multiples of the packing quantity:—

24 Philips circular fluorescent lamps
TLEK 60W/29.

Made in Holland.

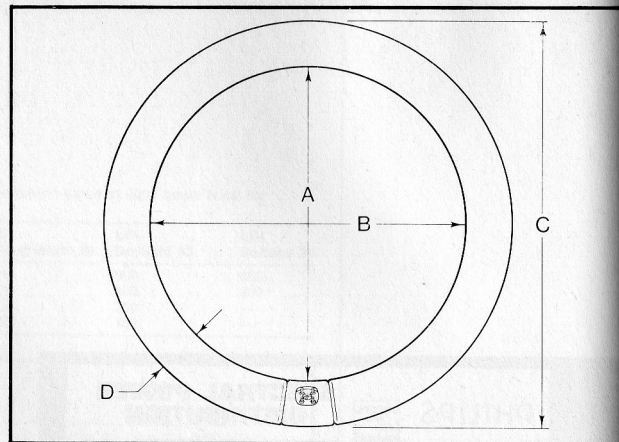
LAMP DATA

Ordering reference	Nom. o.d. (mm/in.)	A (min/max) (mm)	B (min/max) (mm)	C (min/max) (mm)	D (min/max) (mm)	LDL	B.S. Lamp Volts	B.S. Lamp Current	Weight (g)	Packing quantity
TLEK 60W/29	410/16	341.3/347.7	338.9/346.9	400/412.8	29.4/34.1	3400	92	0.75	333	6
TLE 40W/29	410/16	341.3/347.7	338.9/346.9	400/412.8	29.4/34.1	2480	110	0.42	333	6
*TLEM 40W/29	410/16	341.3/347.7	338.9/346.9	400/412.8	29.4/34.1	2480	110	0.42	333	6
TLE 32W/29	305/12	239.7/246.1	237.3/245.3	298.5/311.2	29.4/34.1	1670	82	0.45	250	6
TLE 22W/29	210/8½	150.7/155.6	151.1/160.4	203.2/215.9	26.2/30.9	840	62	0.4	183	6

Notes:—LDL represents Lighting Design Lumens, the lumen value after 2000 hours used for lighting design purposes.

All lamps are fitted with G10q four-pin caps.

*An external strip, connected to one cap pin via a resistor, permits this lamp to be used on starterless circuits with 3V preheat: not to be earthed.



CI/SIB	(63.9)
UDC	696.6 : 628.94

STARTERS

For Fluorescent Lamps

A range of starters for fluorescent lamps, for use as original equipment in new luminaires or as replacement spares. The starters are of the glow switch type; a capacitor is included.

RANGE

S10 (K3001)—for 65/80W, 40W 1200mm (4ft), 30W, 13W or single short lamp.

S2 (K3002)—for 40W 600mm (2ft), 20W, 15W, 8W, 6W, 4W single or twin.

S18 (K3125)—for 125W.

S12 (K3012)—for 140W 1500mm, 120W 1500mm.

FEATURES

■ Philips starters outlast several fluorescent lamp changes.

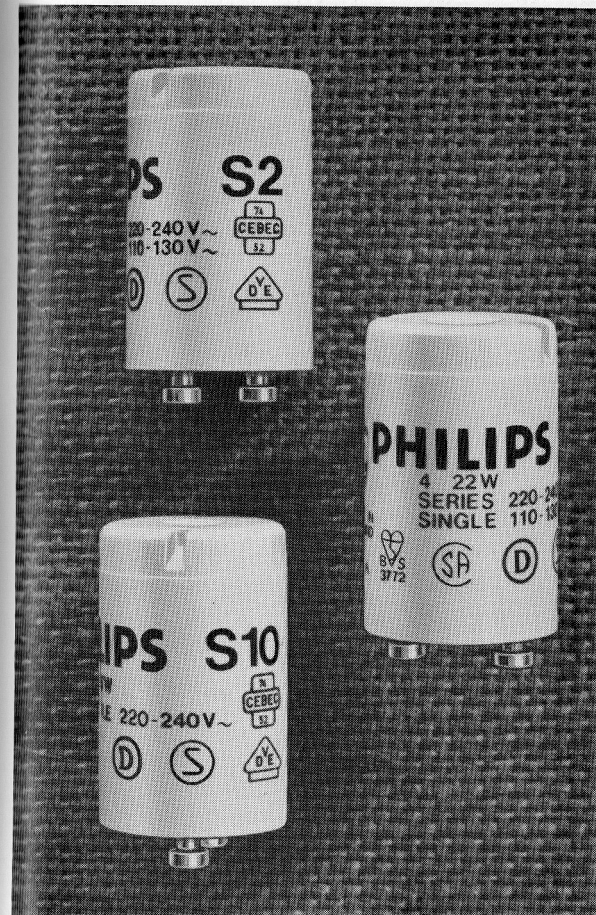
■ The S10 and S2, are housed in polycarbonate cases, giving the following benefits:

Impact-resistant – the housing cannot easily be damaged.

Electrically safe – no accessible metal parts.

The case is shrunk on to the base.

Polycarbonate has a high working temperature and is self-extinguishing.



MATERIALS & FINISH

Canister:

(S10, S2, S12): Polycarbonate, off-white.

(S18): Plastic, off-white.

SPECIFICATION

■ Type compliance with BS 3772.

■ In addition, Philips hold a Kitemark license for the manufacture of S10 and S2 starters to BS 3772.

To specify state:

Fluorescent lamp starter, with polycarbonate canister, similar to Philips S10 and S2.

RANGE OF OPERATION

For use in conventional fluorescent lamp luminaires, and similar equipment.

ORDERING DATA

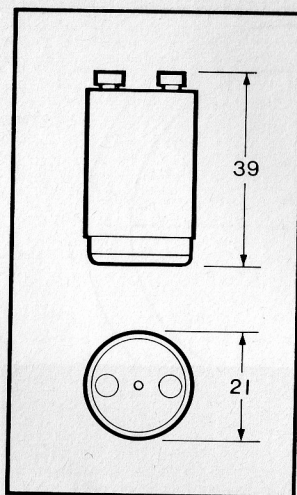
Please order in the form given in the following example, in multiples of the packing quantity:

1000 Philips starters S10.

LAMP APPLICATIONS

Ordering reference	For use with	Packing quantity
S10(K3001)	65/80W, 40W 1200mm (4ft), 30W, 13W or single short lamp. Also circular 60W, 40W, 32W	200 (20 x 10)*
S2(K3002)	40W 600mm (2ft), 20W, 15W, 8W, 6W, 4W single or twin lamps. Also circular 22W	200 (20 x 10)*
S18(K3125)	125W 2400mm (8ft) lamps	50
S12(K3012)	140W 1500mm (5ft), 120W 1500mm (5ft)	25

* Also 1000 way bulk pack available.



Weight: 30g.

LIST OF EQUIVALENTS

Philips Type	Replaces
S2(K3002)	155/100 155/101
S10(K3001)	155/400 155/401
S18(K3125)	155/501 155/502

Made in Holland/Great Britain.

CI/SIB	(63.9)
UDC	696.6:628.94

ES06 Electronic Starter

All-electronic starter for 125W 2400mm (8ft) fluorescent lamps in battens

The ES06, a Philips innovation, is an electronic starter for the 125W 2400mm (8ft) fluorescent lamp – the most difficult lamp to start in the conventional way. It is used with the standard 125W ballast and capacitor in the leading power factor circuit used for these lamps. The ES06 has introduced to fluorescent lamp circuits a third form of starting – Electronic E-Start.

APPLICATIONS

Incorporated as original equipment in 2400mm (8ft) battens to provide the benefit of fast, reliable starting, even at temperatures down to minus 10°C.

RANGE

Streamlite Popular

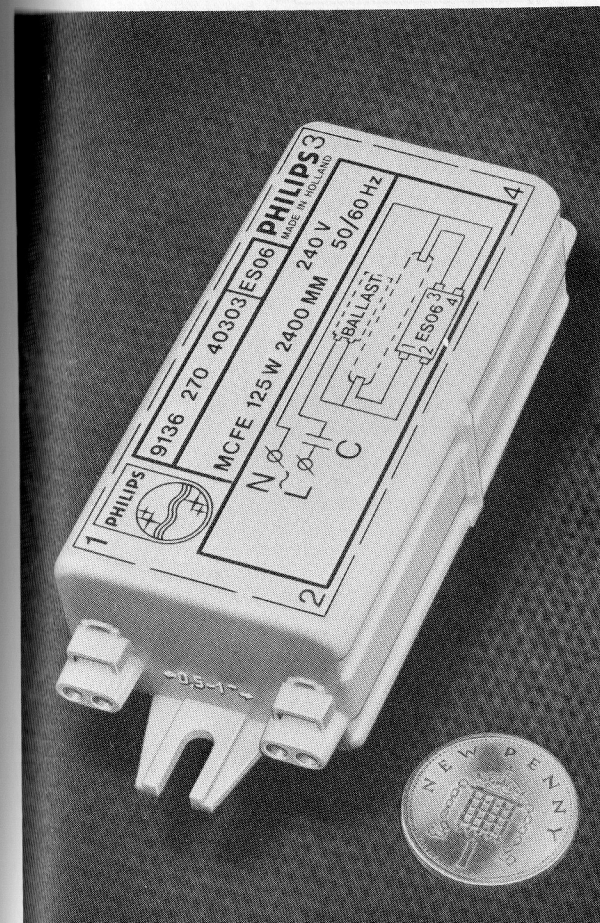
1 x 125W (8ft) 2400mm
2 x 125W (8ft) 2400mm

Feature Battens

1 x 125W (8ft) 2400mm
2 x 125W (8ft) 2400mm

Featureline Battens

1 x 125W (8ft) 2400mm
2 x 125W (8ft) 2400mm



Handbook Ref.

6.2.16

To reorder this data sheet quote

4.78 PL 1785/1

Replaces

PL 1785

FEATURES

Electronic start (E start) offers many advantages over conventional lamp circuits.

E start compared with switchstart circuits:-

- All-electronic construction eliminates moving parts; gives greater component reliability.
- A fixture inside the batten; does not require periodic changing so saves in maintenance time.
- With a failed lamp, the device cuts out, eliminating 'blinking'.
- Fast, reliable starting; less end-blackening of lamp.
- Reliable starting at lower temperatures.

E start compared with starterless circuits:-

- Circuit power is reduced by about 18 Watts, conserving energy.
- Leading power factor improves P.F. in lagging load of remainder of system.
- No increase in circuit cost.
- Less weight on the ceiling.

MATERIALS, FINISH & WEIGHT

Case: Moulded polypropylene, self-coloured white.

Terminals: Four twin-insert, with release mechanism, for solid conductors 0.5-1.0mm².

Weight: 50g.

CIRCUIT DATA

Lamp: MCFE 125W 2400mm (8ft)

Ballast: BBE 125

Capacitor: 7.2mfd $\pm 5\%$ 440V

Circuit power: 134W

Circuit current: 0.94A

Power Factor: 0.65 leading

Cut-off with failed lamp: after about 15 seconds.

Harmonics 4 wire supply: 3 \times 16%

Note: Also suitable for 100W 2400mm and 75/85W 1800mm lamps on appropriate ballasts.

SPECIFICATION

There is as yet no British Standard specification for electronic starters.

The ES06 is made to a rigorous Philips standard for performance and reliability.

To specify state:

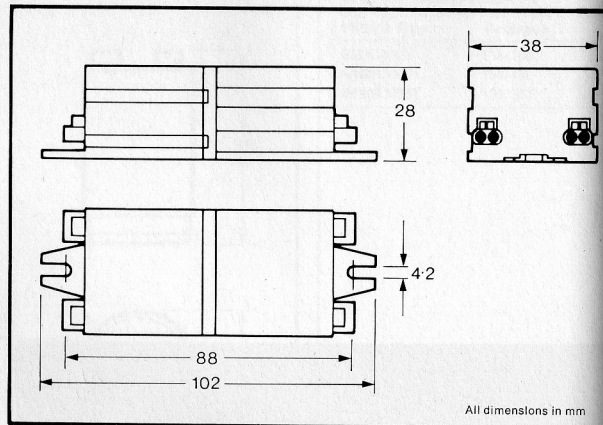
Battens incorporating all-electronic starter for 125W 2400mm fluorescent lamps; substantially as Philips ES06 electronic starter in Streamlite, Feature or Featureline battens.

RANGE OF OPERATION

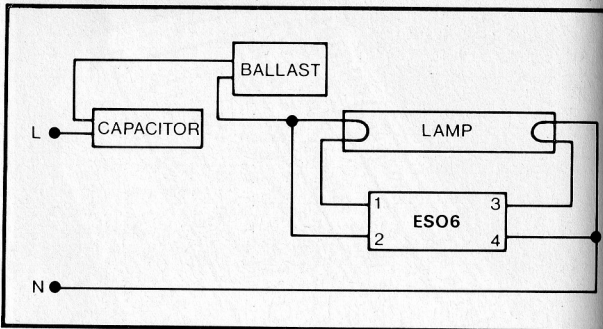
Circuit is for 240V 50Hz.

The ES06 will start an average lamp at temperatures down to minus 10°C.

DIMENSIONS



CIRCUIT DIAGRAM



LUMINAIRES INCORPORATING ES06

The ES06 electronic starter is fitted as original equipment in Philips Streamlite, Feature and Featureline battens as listed below:-

Catalogue No.	Description
PQ8E	Streamlite 1 \times 125W Popular (batten plus lamp)
PQ28E	Streamlite 2 \times 125W Popular (batten plus lamps)
FSQ8E	Feature 1 \times 125W batten
FSQ28E	Feature 2 \times 125W batten
TSQ8E	1 \times 125W batten for Featureline prewired trunking
TSQ28E	2 \times 125W batten for Featureline prewired trunking

Full information on these battens is contained in the following Data Sheets:-

- Streamlite - PL 1713
- Feature - PL 1719
- Featureline - PL 1729

ES06: Made in Holland
incorporated in
Luminaires: Made in UK

CI/SIB	(63.9)
UDC	696.6:628.94

FLUORESCENT BALLASTS

A range of ballasts for use with the Philips range of fluorescent lamps.

RANGE

Ballasts for switchstart circuits
- a range of LPF chokes for lamps from 4/6/8W to 125W.

Ballasts for starterless circuits
- a range of ballasts for use with series capacitors in semi-resonant start circuits.

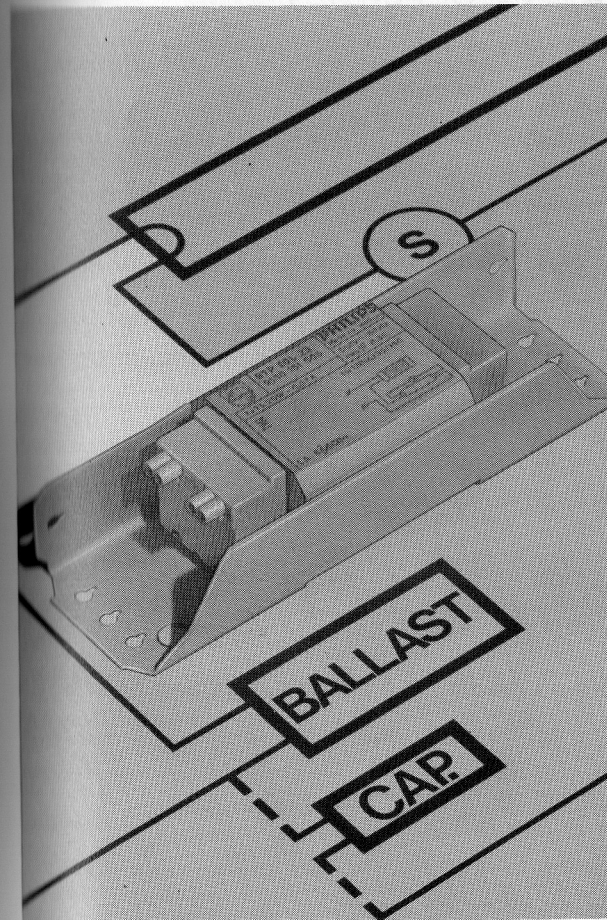
Ballasts for 220V switchstart circuits
- a small range of LPF chokes for use in equipment operating on 220V 50Hz supplies.

APPLICATIONS

* Stockholding as spares for ballasts in luminaires.

* Incorporation in fluorescent luminaires, and in equipment using fluorescent lamps.

Note:- For starters see Data Sheet PL 1792
For capacitors see Data Sheet PL 1859



Handbook Ref

6.2.17

To reorder this data sheet quote PL 1864

Replaces NEW

FEATURES

BAS, BBS & BBX Types

* Totally enclosed in drawn steel can.

* Polyester filling.

* Low ballast losses.

BTP Types

* Small cross-section.

* Varnish impregnated.

* Push-wire terminals.

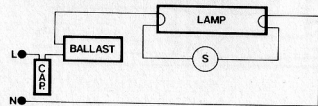
RANGE OF OPERATION

For nominal supplies of 240V 50Hz (220V 50Hz where listed).
Normal indoor conditions.

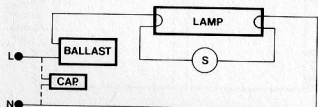
CIRCUIT DIAGRAMS

CIRCUITS FOR FLUORESCENT LAMPS Switch Start

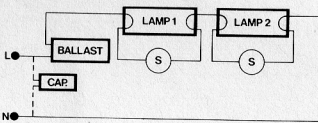
1. Single Lamp 125W 2400mm (8ft)



2. Single Lamp

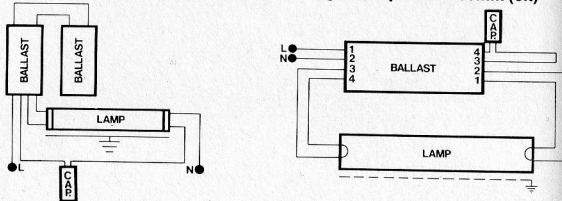


3. Twin Lamp Series

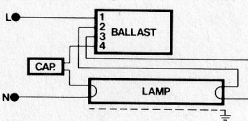


CIRCUITS FOR FLUORESCENT LAMPS Starterless

4. Single Lamp 125W 2400mm (8ft) 5. Single Lamp 85W 2400mm (8ft)



6. Single Lamp 40W, 65W and 85W 1800mm (6ft)



MATERIALS & FINISH

BAS, BBS & BBX Series

Housing - Drawn steel can, painted grey, on zinc-plated steel base.

Impregnation - Polyester.

Terminations: Twin push-wire block BBS 125 and BBX 125C; remainder pin terminals.

BTP Series

Frame - Sheet steel, finished white, spot-welded to laminations.

Impregnation - Varnish.

Terminations: Twin push-wire block.

SPECIFICATION

Type compliance with BS2818

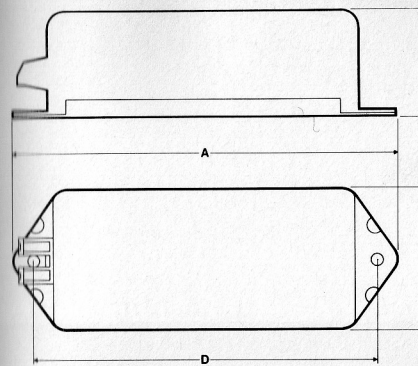
ORDERING DETAILS

Please order ballasts in the form given in the following example, in multiples of the packing quantity: - 50 Philips ballasts BTP 40 L25

COUNTRY OF ORIGIN:

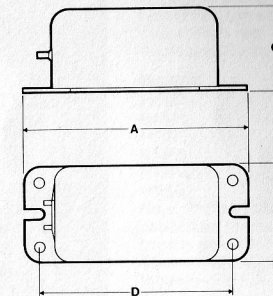
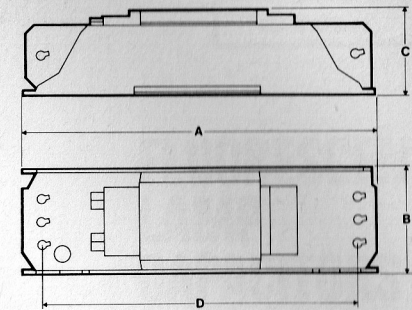
BAS, BBS & BBX Series - Made in UK.
BTP Series - Made in Holland.

DIMENSIONS



Types BBS & BBX

Type BTP



Type BAS,

DIMENSIONS & WEIGHTS

Catalogue No.	For lamp types	Overall Length A (mm)	Overall Width B (mm)	Overall Depth C (mm)	Fixing centres D (mm)	Weight (g)	Circuit Diagram	Packing Quantity
Ballasts for switchstart circuits - 240V								
BBS 125	1 x 2400mm (8ft) lamp	169	63	45	152	1800	1	5
BTP 65 L25	1 x 1500mm (5ft) lamp 1 x 415mm 60W circ. lamp	195	45.5	38	180	1150	2	5
BTP 40 L25	1 x 1200mm (4ft) lamp 2 x 600mm (2ft) lamps 1 x 415mm 40W circ. lamp	155	45.5	36.5	140	690	2 or 3	5
BTP 30 L25	1 x 900mm (3ft) lamp 2 x 450mm (18in) lamps 1 x 315mm 32W circ. lamp	155	45.5	36.5	140	690	2 or 3	5
BTP 20 L25	1 x 600mm (2ft) 20W lamp 1 x 525mm (18in) lamp 2 x 300mm (12in) lamps 2 x 225mm (9in) lamps	155	45.5	36.5	140	680	2	5
BAS 13	1 x 525mm (18in) lamp 2 x 300mm (12in) lamps 2 x 225mm (9in) lamps	99	41	36	85 x 29	460	2 or 3	5
BAS 8	1 x 300mm (12in) lamp 2 x 150mm (6in) lamps	99	41	36	85 x 29	460	2 or 3	5
Ballasts for switchstart circuits - 220V								
BTP 65 LO5	1 x 1500mm (5ft) lamp 1 x 415mm 60W circ. lamp	195	45.5	38	180	1150	2	5
BTP 40 LO5	1 x 1200mm (4ft) lamp 2 x 600mm (2ft) lamps 1 x 415mm 40W circ. lamp	155	45.5	36.5	140	690	2 or 3	5
BTP 30 LO5	1 x 900mm (3ft) lamp 2 x 450mm (18in) lamps 1 x 315mm 32W circ. lamp	155	45.5	36.5	140	690	2 or 3	5
BTP 20 LO5	1 x 600mm (2ft) 20W lamp 1 x 315mm 32W circ. lamp	155	45.5	36.5	140	680	2	5
Ballasts for starterless circuits - 240V								
BBX 125C	1 x 2400mm (8ft) lamp	168	63	46	152	1800	4	5
BBX 125T	1 x 2400mm (8ft) lamp	168	63	46	152	1800	4	5
BBX 85	1 x 2400mm (8ft) lamp	252	63	48	229 x 42	2750	5	5
BBXK 85	1 x 1800mm (6ft) lamp	168	63	46	152	1700	6	5
BBX 65	1 x 1500mm (5ft) lamp	168	63	46	152	1700	6	5
BBX 40	1 x 1200mm (4ft) lamp	147	63	46	127-137 slotted	1500	6	5

CI/SIB	(63.9)
UDC	696.6:628.94

FLUORESCENT LAMP CAPACITORS

A range of power factor capacitors and series capacitors for use in conjunction with the Philips range of fluorescent lamp ballasts.

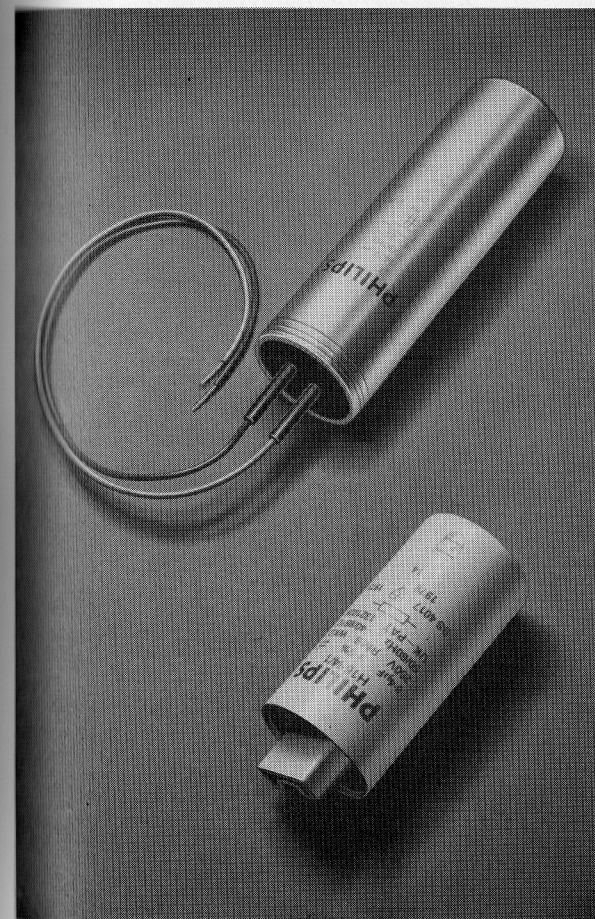
RANGE

H1684
H1678
H1672
H1655
H1650/1
H1635

Note: Philips Catalogue Nos. for capacitors for fluorescent lamp control gear start with the prefix H16. The next two digits give the capacitance in mfd (i.e. H1684 = 8.4 mfd).

APPLICATIONS

For use as original equipment, or as replacement spares, in fluorescent luminaires of the appropriate rating. Details of starters and ballasts for use in conjunction with these capacitors are given in Data Sheets PL 1792 and PL 1864 respectively. Circuit diagrams are printed on some ballasts, and are also contained in PL 1864.



Handbook Ref.	6.2.18
To reorder this data sheet quote	PL 1859
Replaces	PL 8813

FEATURES

- 250V capacitors have insulated canisters which require no earthing and are easily fixed (440V capacitors have aluminium canisters which require earthing).
- Windings of metallised polypropylene; no PCB's present.
- Rated for ambient temperatures up to 85°C.

MATERIALS & FINISH

Can: Tubular PPO for 250V rating, Aluminium for 440V rating.

Construction: Metallised polypropylene winding; fitted with discharge resistor.

Note: No liquid filling.

Terminations: 250V capacitors have grab terminals for 0.5–1.0mm² solid cable; insulation to be stripped back 11mm ± 1mm. 440V capacitors have 300mm flying leads.

SPECIFICATION

Type compliance with BS 4017; licensed to bear Kitemark.

To specify state:

Capacitor in 38mm dia. canister with dry metallised polypropylene winding; substantially as Philips H16** range.

RANGE OF OPERATION

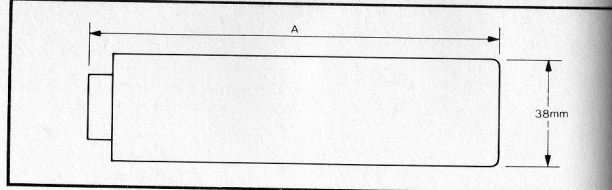
Voltage as specified in Table, 50 or 60 Hz.

Temperature —40°C to 85°C.

ORDERING DETAILS

Please order in the form given in the following example, in multiples of the packing quantity:—
50 Philips capacitors H1672.

DIMENSIONS, WEIGHTS & ELECTRICAL DATA



Catalogue No.	Length A (mm)	Capacitance (mfd)	Tolerance (%)	Working Volts (V a.c. r.m.s.)	Weight (g)	Packing quantity
PF Capacitors						
H1635	77	3.5	10	250	70	10
Series Capacitors						
H1678	202	7.8	5	440	350	10
H1672	189	7.2	5	440	250	10
H1684	77	8.4	5	250	100	10
H1655	77	5.5	5	250	90	10
H1650/1	150	5.0	5	440	350	10

All capacitors have a diameter of 38mm.

CIRCUIT APPLICATIONS

Lamp type	Circuit type	Suitable capacitor
1 x 15W 450mm	S/S	H1635
1 x 20W 600mm	S/S	H1650/1
2 x 20W 600mm	S/S	H1635
1 x 22W 215mm circ.	S/S	H1650/1
1 x 30W 900mm	S/S	H1635
1 x 32W 315mm circ.	S/S	H1635
1 x 40W 1200mm	S/S	H1635
1 x 40W 1200mm	X/S	H1655
1 x 40W 415mm circ.	S/S	H1635
1 x 40W 415mm circ.	X/S	H1655
1 x 60W 415mm circ.	S/S	H1655
1 x 65W 1500mm	S/S	H1655
1 x 65W 1500mm	X/S	H1684/1
1 x 85W 2400mm	X/S	H1650/1
1 x 85W 1800mm	X/S	H1684/1
1 x 100W 2400mm	S/S	H1672
1 x 125W 2400mm	S/S	H1672
1 x 125W 2400mm	X/S	H1678
1 x 140W 1500mm	S/S	2 x H1684

Power Factor capacitors (10% tolerance; 250V) are shunt-connected across the mains supply to raise the lagging power factor of an inductive load, and to reduce the current in the supply cables. Series capacitors (5% tolerance) are part of the fluorescent lamp circuit. A 5% capacitor may be used in place of a 10% capacitor of the same nominal value, but not vice versa.

C/SIB (63.9)
UDC 696.6:628.94

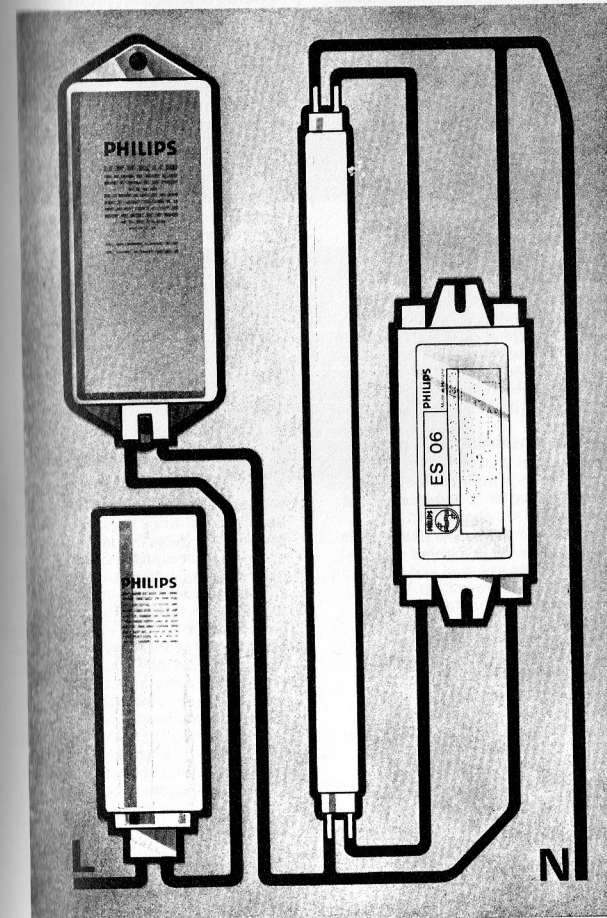
FLUORESCENT LAMP CIRCUITS & OPERATING DATA

For standard luminaires

Basic circuits as adopted in Philips standard luminaires, and a table of circuit components with circuit characteristics. Three forms of "start" are described:

- Switchstart
- Starterless
- Electronic Start.

Operating notes for luminaires and control gear are included.



Made in UK.

Handbook Ref	6.2.20
To reorder this data sheet quote	4/78 PL 1839
Replaces	PL 8865/1.20

FLUORESCENT LAMP CIRCUITS

Switchstart

Starting is accomplished by a glow-switch starter, which is a small discharge tube with bi-metallic electrodes connected in parallel with the fluorescent lamp, in such a manner that the lamp electrode heating current passes through the switch. When the circuit is energised with a cold lamp, a discharge is established within the glow switch, warming the bi-metallic electrodes which move into contact and establish a circuit through the lamp electrodes.

Since the discharge in the starter ceases when its electrodes come into contact, they cool down and spring apart after about a second, subjecting the lamp to mains voltage plus the inductive transient voltage due to the ballast. The arc in the lamp is established, reducing the voltage across the starter to a value below that at which a discharge can take place and rendering it cold and inoperative.

Should the lamp fail to start, the discharge will be re-established in the starter and the starting cycle will be repeated. It is this ability of the glow switch starter to 'try again' that causes the repeated blinking of a switchstart circuit with a failed lamp.

Once the lamp has started, the ballast acts as a current-limiting device.

The circuit is efficient and reliable, provided that starters are changed at occasional relampings.

Starterless

The SRS (semi-resonant start) circuit, introduced by Philips, has two windings on a common core. The windings are wound in opposition, and a capacitor is connected in series with one of them. Pre-heat current is passed round the lamp electrodes, and a voltage is developed across the lamp sufficient for starting even at low temperatures. Once the lamp has started, the windings act as a current-limiting ballast.

The circuit can have a Power Factor of almost unity, and, other than the lamp itself, uses no components that require regular replacement.

Electronic Start

This Philips innovation replaces either the glow switch starter or starterless circuits with a solid-state component that has no moving parts and lasts as long as the luminaire. Positive starting is assured, even at low temperatures. Circuit power is the same as for the switchstart circuit. Electronic Start therefore combines the advantages of both switchstart (lower power) and starterless (maintenance free), circuits, without the limitations of either of them. An added feature is automatic cut-out of the starter after about 15 seconds of non-starting of a failed lamp.

Electronic Start is available in 125W 2400mm (8ft) luminaires in the Philips Streamlite, Feature and Featureline ranges. The 125W lamp was previously considered to be the most difficult to start reliably.

OPERATING NOTES

Storage

Unless otherwise stated, Philips fluorescent luminaires are for use in dry interiors. Luminaires must be stored only in dry environments; if packaging is exposed to damp, it must be changed.

Mains supply

Standard fluorescent luminaires incorporate ballasts designed for a supply voltage of 240V 50Hz, subject to statutory tolerances. The supply voltage should be checked by measurement (at the load terminals), at maximum and minimum periods.

Ambient temperature

Luminaires and control gear give their rated service in ambient temperatures not exceeding 25°C, with occasional increases to not above 35°C. At higher temperatures (for example, in shop windows or on heated ceilings), service will be reduced and operation impaired. To improve heat dissipation, luminaires should be fixed to conducting rather than insulating surfaces, or should be suspended slightly below a ceiling rather than mounted directly on it. All data quoted refer to operation in a 25°C ambient at 240V, and are averages. At low temperatures, light output and service are normally reduced; with most circuits, ignition may not be reliable below 5°C.

Fuses and circuit breakers

Circuit breakers or HRC fuses rather than re-wireable fuses should be employed. The choice of current rating is a compromise between close protection against fault currents and spurious failure due to switching transients. An approximate guide to rating is 2-3 times steady current, with a minimum of 2A for an HRC fuse and 5A for a circuit breaker.

Operating noise

All fluorescent luminaires emit an operating noise which may be noticeable in situations where the ambient noise level is low, or if the luminaires are attached to resonant structures. Trials should be made before installing the less expensive luminaires in acoustically sensitive situations; a heavy-duty grade of luminaire is usually more suitable for these environments. Normally, the shorter the luminaire, the lower the operating noise.

Radio interference

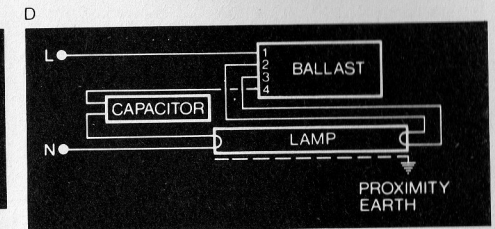
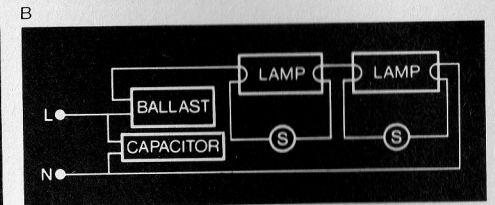
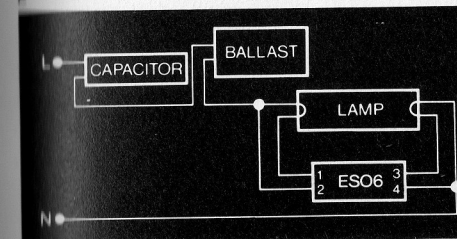
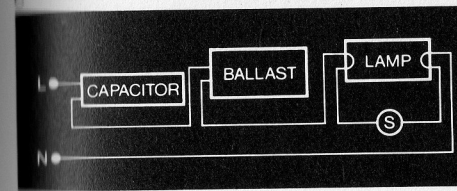
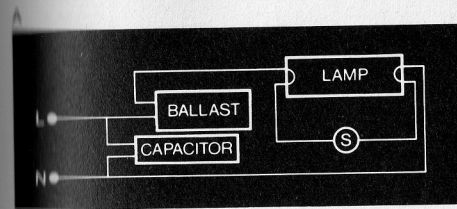
Fluorescent luminaires should not be installed in close proximity to radio sets or similar equipment. Some radio interference is inevitable, but diminishes with distance. AM sets without an external aerial are inherently susceptible to adjacent discharge lamp circuits; adding an external aerial usually gives better results than adding suppressors to the luminaire or to the set. FM sets are less susceptible to interference from electrical equipment.

Cables and switches

The current rating of cables for fluorescent luminaires should be determined in accordance with IEE Regulation G3. In a three-phase four-wire system, a full-size neutral should be employed since harmonic currents are additive in the neutral. All cables entering a luminaire, especially if passing alongside a ballast, must be suitable for the temperature involved. Ballasts may have surface temperatures up to 95°C. Supply cables should be arranged so that they do not pass alongside a ballast, but if this is not possible then cables with high-temperature PVC insulation should be used, or heat-resistant sleeving should be fitted over each individual supply cable. Switches should be generously rated, and should be suitable for inductive loads.

CIRCUIT DIAGRAMS

Modifications to luminaires may affect the validity of these diagrams. In case of doubt, use the diagram printed on the ballast.



ELECTRICAL DATA

Lamp rating & length	Circuit letter	Ballast Cat. No.	Capacitor	Starter Cat. No.	Circuit Watts (W)	Circuit current (A)	Harmonic content (%)	Power factor (min)
Switchstart – single lamp								
125W 2400mm	C	BBS 125	7.2mfd 5% 440V	S18	134	0.94	17	0.65 LDG
65W 1500mm	A	BCS 65	5.5mfd 10% 250V	S10	77	0.34	17	0.92
40W 1200mm	A	BCS 40	3.5mfd 10% 250V	S10	50	0.23	17	0.87
30W 900mm	A	BAS 30	3.5mfd 10% 250V	S10	38	0.18	17	0.90
20W 600mm	A	BCS 20	5.5mfd 10% 250V	S2 or S10	28	0.13	17	0.81
15W 450mm	A	BTP 15L 25	5.5mfd 10% 250V	S2 or S10	23	0.12	17	0.85
13W 525mm	A	BAS 13	2.0mfd 10% 250V	S10	18	0.10	17	0.90
8W 300mm	A	BAS 8	2.0mfd 10% 250V	S2 or S10	13	0.10	17	0.90
6W 225mm	A	BAS 8	2.0mfd 10% 250V	S2 or S10	11	0.10	17	0.90
4W 150mm	A	BAS 8	2.0mfd 10% 250V	S2 or S10	10	0.10	17	0.90
60W circular	A	BCS 65	5.5mfd 10% 250V	S10	75	0.4	17	0.90
40W circular	A	BCS 40	3.5mfd 10% 250V	S10	50	0.25	17	0.90
32W circular	A	BAS 30	3.5mfd 10% 250V	S10	40	0.25	17	0.90
22W circular	A	BCS 20	5.5mfd 10% 250V	S2 or S10	30	0.20	17	0.90
Switchstart – two lamps in series								
2 × 20W 600mm	B	BCS 40	3.5mfd 10% 250V	2 × S2	50	0.24	17	0.87
2 × 15W 450mm	B	BAS 30	3.5mfd 10% 250V	2 × S2	40	0.20	17	0.88
2 × 8W 300mm	B	BAS 13	2.0mfd 10% 250V	2 × S2	21	0.07	17	0.94
2 × 6W 225mm	B	BAS 13	2.0mfd 10% 250V	2 × S2	17	0.07	17	0.90
2 × 4W 150mm	B	BAS 8	2.0mfd 10% 250V	2 × S2	13	0.07	17	0.90
Starterless – single lamp								
85W 2400mm	—	BBX 85	5.0mfd 5% 440V	—	102	0.6	8	0.95
85W 1800mm	D	BBXK 85	8.4mfd 5% 250V	—	96	0.6	14	0.88
65W 1500mm	D	BBX 65	8.4mfd 5% 250V	—	77	0.6	16	0.95
40W 1200mm	D	BBX 40	5.5mfd 5% 250V	—	52	0.4	16	0.90
Electronic Start								
125W 2400mm	E	BBE 125	7.2mfd 5% 440V	ESO6	134	0.94	17	0.65 LDG