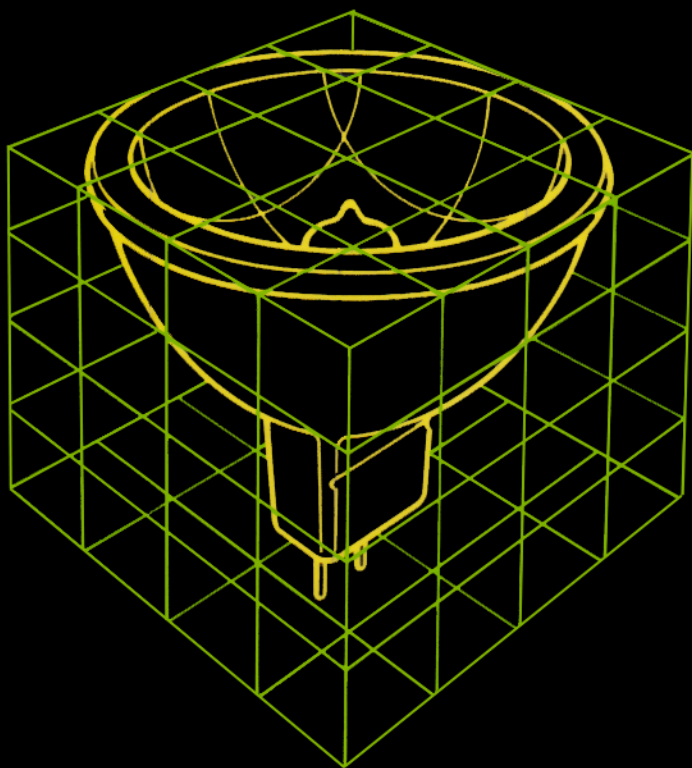


THE  
COMPREHENSIVE  
CATALOGUE  
**1987/8**



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 **THORN EMI Lighting**

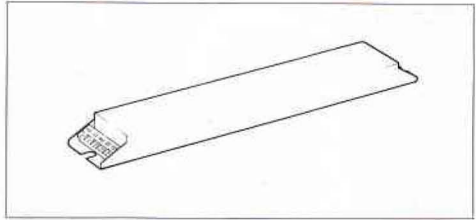
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## FLUORESCENT CONTROL GEAR & ACCESSORIES

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# HIGH FREQUENCY ELECTRONIC BALLASTS FOR FLUORESCENT LAMPS – A LIGHTING MANAGEMENT PRODUCT



**APPLICATIONS:** suitable for all 26mm and 38mm diameter fluorescent lamps in the range 36–75W. See table below for details.

- MAIN FEATURES:**
- Rapid starting of lamps
  - Improved circuit efficiency
  - Total electronic filtering
  - Low component count for high reliability
  - Elimination of stroboscopic effects due to high frequency (32kHz) lamp operation
  - High power factor (in excess of 0.95) without the need for separate power factor correction capacitor.

**PHYSICAL DETAILS:** Height – 28mm  
 Width – 42mm  
 Length – 422mm  
 Fixing centres – 401mm  
 Case – mild steel finished in white paint  
 Terminations – grab type suitable for both solid and stranded conductors  
 Weight – 600 grams

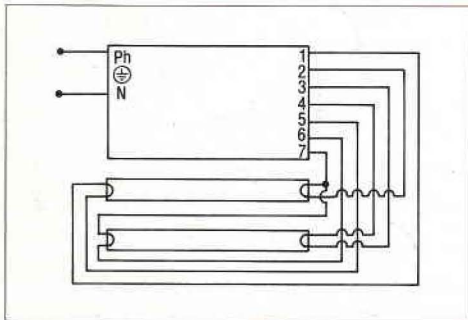
**OPERATING VOLTAGE:** 240V – 10% + 6% a.c./d.c.  
 (Note there is a separate range available for 220V operation)

**ELECTRICAL CHARACTERISTICS:**  
 (see *Fluorescent Lamp* section for details.)

**LUMINAIRES INCORPORATING ELECTRONIC BALLASTS:** a limited range of luminaires is currently available to order with electronic ballasts fitted. For details see relevant fittings sections.

RANGE	
Cat. no.	Application
G 81004	2 x 36W or 2 x 40W
G 81005	2 x 58W or 2 x 65W
G 81006	2 x 70W or 2 x 75W
G 81014	1 x 36W or 1 x 40W
G 81015	1 x 58W or 1 x 65W
G 81016	1 x 70W or 1 x 75W

For further information on the above products please ask at your local THORN EMI Lighting Sales Office.



CIRCUIT DIAGRAM FOR A TWIN LAMP ELECTRONIC BALLAST

# CONTROL GEAR SETS FOR FLUORESCENT TUBES

## SWITCHSTART CIRCUITS RANGE FOR 240V 50Hz SUPPLIES †

Lamp length mm	Wattage W	Circuit type*	Dia. †	Choke Cat. no.	Weight kg	Terminations§	tw °C	Δt °C	Illus. ‡	Starter switch Cat. no.	Capacitor Cat. no.	Rating μF	Working voltage	Diam. mm
2400	125 or 100	lead <sup>2</sup>	2	GCU 100/125	1.25	P.W.	130 65	3	155/800	GC2173	7.2 ± 5%	440	35	
2400	125 or 100	lead <sup>2</sup>	11	2 x GCSH 100/125	0.63 <sup>3</sup>	P.W.	130 50	2	155/800	GC2173	7.2 ± 5%	440	35	
2400	125 or 100	lead	8	GCBS 100/125	2.60	S.T.B.	130 65	4	155/800 <sup>4</sup>	Inc'd in ballast can.				
2400	100	HPF	1	GCU 100	1.60	P.W.	130 65	3	155/800	GC2419	8.4 ± 5%	250	35	
2400	100	HPF	5	GCSH 100/6 + GCSH 100/4	0.99 0.63	P.W.	130 55	2	155/800	GC2419	8.4 ± 5%	250	35	
2400	100	LPF <sup>5</sup>	3	GCU 100	1.60	P.W.	130 65	3	155/800	—	—	—	—	
2400	100	LPF <sup>5</sup>	6	GCSH 100/6 + GCSH 100/4	0.99 0.63	P.W.	130 55	2	155/800	—	—	—	—	
1800	75 or 70	lead <sup>2</sup>	2	GCU 70	1.09	P.W.	130 55	3	155/800	GC2226	5.0 ± 5%	440	35	
1800	75 or 70	lead <sup>2</sup>	2	GCS 70	0.99	P.W.	130 60	2	155/800	GC2226	5.0 ± 5%	440	35	
1800	75 or 70	HPF	1	GCU 70/75	1.25	P.W.	130 60	3	155/800	GC2435	6.0 ± 10%	250	35	
1800	75 or 70	HPF	1	GCS 70/75	0.99	P.W.	140 60	2	155/800	GC2429	6.0 ± 10%	250	25	
1800	75 or 70	HPF	5	2 x GCSH 70/75	0.63 <sup>3</sup>	P.W.	130 60	2	155/800	GC2429	6.0 ± 10%	250	25	
1800	75 or 70	LPF <sup>5</sup>	3	GCU 70/75	1.25	P.W.	130 60	3	155/800	—	—	—	—	
1800	75 or 70	LPF <sup>5</sup>	3	GCS 70/75	0.99	P.W.	140 60	2	155/800	—	—	—	—	
1800	75 or 70	LPF <sup>5</sup>	6	2 x GCSH 70/75	0.63 <sup>3</sup>	P.W.	130 60	2	155/800	—	—	—	—	
1800	75 or 70	HPF	8	GCBS 70/75	2.40	S.T.B.	130 60	4	155/800 <sup>4</sup>	Inc'd in ballast can.				
1500	65 or 58	HPF <sup>6</sup>	1	GCU 58/65	1.09	P.W.	130 60	3	155/500	GC2435	6.0 ± 10%	250	35	
1500	65 or 58	HPF <sup>6</sup>	1	GCS 58/65	0.99	P.W.	130 60	2	155/500	GC2429	6.0 ± 10%	250	25	
1500	65 or 58	HPF <sup>6</sup>	5	2 x GCJH 58	0.66	P.W.	130 70	1	155/500	GC2429	6.0 ± 10%	250	25	
1500	65 or 58	HPF	8	GCBS 58/65	1.80	S.T.B.	130 60	4	155/500 <sup>4</sup>	Inc'd in ballast can.				
1200 <sup>7</sup>	40 or 36	HPF <sup>6</sup>	1	GCS 36/40	0.65	P.W.	130 55	2	155/500	GC2428	4.0 ± 10%	250	25	
1200 <sup>7</sup>	40 or 36	HPF <sup>6</sup>	1	GCJ 36/40	0.66	P.W.	130 55	1	155/500	GC2428	4.0 ± 10%	250	25	
1200 <sup>7</sup>	40 or 36	HPF	8	GCBS 36/40	1.10	S.T.B.	130 55	4	155/500 <sup>4</sup>	Inc'd in ballast can.				
2D	38	HPF <sup>6</sup>	1	GCS 36/40	0.65	P.W.	130 55	2	155/500	GC2428	4.0 ± 10%	250	25	
900	30	HPF <sup>6</sup>	1	GCS 30	0.65	P.W.	130 55	2	155/500	GC2428	4.0 ± 10%	250	25	
900	30	HPF <sup>6</sup>	1	GCJ 30	0.53	P.W.	130 65	1	155/500	GC2428	4.0 ± 10%	250	25	
900	30	HPF	8	GCBS 30	1.10	S.T.B.	130 55	4	155/500 <sup>4</sup>	Inc'd in ballast can.				
2D	28	HPF <sup>6</sup>	1	GCS 28	0.65	P.W.	130 50	2	155/500	GC2428	4.0 ± 10%	250	25	
600	20 or 18	HPF <sup>6</sup>	1	GCS 18/20	0.65	P.W.	130 50	2	155/500	GC2428	4.0 ± 10%	250	25	
600	20 or 18	HPF <sup>6</sup>	1	GCJ 18	0.48	P.W.	130 80	1	155/500	GC2428	4.0 ± 10%	250	25	
600	20 or 18	HPF <sup>6</sup>	9	GCBS 18/20	1.02	S.T.B.	130 55	4	155/500 <sup>4</sup>	GC2417	4.0 ± 10%	250	35	
2 x 600	2 x 20 or 18	Ser pr <sup>8</sup>	7	GCS 36/40	0.65	P.W.	130 55	2	2 x 155/200	GC2428	4.0 ± 10%	250	35	
2 x 600	2 x 20 or 18	Ser pr <sup>8</sup>	10	GCBS 36/40	1.10	S.T.B.	130 55	4	2 x 155/200 <sup>4</sup>	GC2417	4.0 ± 10%	250	35	
2D	16	HPF <sup>6</sup>	12	GCS 16	0.35	P.W.	130 55	2	— <sup>8</sup>	GC2286/PW	2.0 ± 10%	250	25	
450	15	HPF <sup>6</sup>	1	GCS 18/20	0.65	P.W.	130 50	2	155/500	GC2428	4.0 ± 10%	250	25	
450	15	HPF <sup>6</sup>	1	GCJ 15	0.48	P.W.	130 70	1	155/500	GC2428	4.0 ± 10%	250	25	
450	15	HPF <sup>6</sup>	9	GCBS 18/20	1.02	S.T.B.	130 55	4	155/500 <sup>4</sup>	GC2417	4.0 ± 10%	250	35	
2 x 450	2 x 15	Ser pr <sup>8</sup>	7	GCS 30	0.65	P.W.	130 55	2	2 x 155/200	GC2428	4.0 ± 10%	250	25	
2 x 450	2 x 15	Ser pr <sup>8</sup>	10	GCBS 30	1.10	S.T.B.	130 55	4	2 x 155/200 <sup>4</sup>	GC2417	4.0 ± 10%	250	35	

FOR NOTES SEE OVERLEAF

# CONTROL GEAR SETS FOR FLUORESCENT TUBES

## SWITCHSTART CIRCUITS (continued) RANGE FOR 240V 50Hz SUPPLIES<sup>1</sup>

Lamp length mm	Wattage W	Circuit type*	Dia. †	Choke Cat. no.	Weight kg	Terminations‡	tw °C	Δt °C	Illus. †	Starter switch Cat. no.	Capacitor Cat. no.	Rating μF	Working voltage	Diam mm
525	13	HPF <sup>4</sup>	1	GCS 13	0.35	P.W.	130	50	2	155/500	GC2286	2.0 ± 10%	250	25
525	13	HPF <sup>4</sup>	1	G CJ 13	0.27	P.W.	130	50	1	155/500	GC2286	2.0 ± 10%	250	25
300	8	HPF <sup>4</sup>	1	GCS 8	0.35	P.W.	130	50	2	155/500	GC2286	2.0 ± 10%	250	25
300	8	HPF <sup>4</sup>	1	G CJ 8	0.27	P.W.	130	50	1	155/500	GC2286	2.0 ± 10%	250	25
2 x 300	2 x 8	Ser pr <sup>5</sup>	7	GCS 13	0.35	P.W.	130	50	2	2 x 155/100	GC2286	2.0 ± 10%	250	25
2 x 300	2 x 8	Ser pr <sup>5</sup>	7	G CJ 13	0.27	P.W.	130	50	1	2 x 155/100	GC2286	2.0 ± 10%	250	25
225	6	HPF <sup>4</sup>	1	GCS 8	0.35	P.W.	130	50	2	155/500	GC2286	2.0 ± 10%	250	25
225	6	HPF <sup>4</sup>	1	G CJ 8	0.27	P.W.	130	50	1	155/500	GC2286	2.0 ± 10%	250	25
2 x 225	2 x 6	Ser pr <sup>5</sup>	7	GCS 8	0.35	P.W.	130	50	2	2 x 155/100	GC2286	2.0 ± 10%	250	25
2 x 225	2 x 6	Ser pr <sup>5</sup>	7	G CJ 8	0.27	P.W.	130	50	1	2 x 155/100	GC2286	2.0 ± 10%	250	25
150	4	HPF <sup>4</sup>	1	GCS 8	0.35	P.W.	130	50	2	155/500	GC2286	2.0 ± 10%	250	25
150	4	HPF <sup>4</sup>	1	G CJ 8	0.27	P.W.	130	50	1	155/500	GC2286	2.0 ± 10%	250	25
2 x 150	2 x 4	Ser pr <sup>5</sup>	7	GCS 8	0.35	P.W.	130	50	2	2 x 155/100	GC2286	2.0 ± 10%	250	25
2 x 150	2 x 4	Ser pr <sup>5</sup>	7	G CJ 8	0.27	P.W.	130	50	1	2 x 155/100	GC2286	2.0 ± 10%	250	25

## VIVATRONIC CIRCUITS RANGE FOR 240V 50Hz SUPPLIES<sup>1</sup>

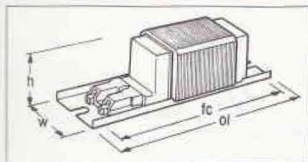
Lamp length mm	Wattage W	Circuit type*	Dia. †	Choke Cat. no.	Weight kg	Terminations‡	tw °C	Δt °C	Illus. †	Vivatronic starter Cat. no.	Capacitor Cat. no.	Rating μF	Working voltage	Diam mm
2400	125 or 100	lead <sup>2</sup>	13	GCU 100/125	1.25	P.W.	130	65	3	G69517-4	GC2173	7.2 ± 5%	440	35
2400	125 or 100	lead <sup>2</sup>	14	2 x GCSH 100/125	0.63 <sup>3</sup>	P.W.	130	50	2	G69517-4	GC2173	7.2 ± 5%	440	35
2400	100	HPF	15	GCU 100	1.60	P.W.	130	65	3	G69517-4	GC2419	8.4 ± 5%	250	35
2400	100	HPF	17	2 x GCSH 100/125	0.63 <sup>3</sup>	P.W.	130	50	2	G69517-4	GC2419	8.4 ± 5%	250	35
2400	100	LPF <sup>5</sup>	16	GCU100	1.60	P.W.	130	65	3	G69517-4	—	—	—	—
2400	100	LPF <sup>5</sup>	18	2 x GCSH 100/125	0.63 <sup>3</sup>	P.W.	130	50	2	G69517-4	—	—	—	—
1800	75 or 70	HPF	19	GCU 70/75	1.25	P.W.	130	60	3	G69577-4	GC2435	6.0 ± 10%	250	35
1800	75 or 70	HPF	19	GCS 70/75	0.99	P.W.	140	60	2	G69577-4	GC2429	6.0 ± 10%	250	25
1800	75 or 70	HPF	20	2 x GCSH 70/75	0.63 <sup>3</sup>	P.W.	130	60	2	G69577-4	GC2429	6.0 ± 10%	250	25
1500	65 or 58	HPF	19	GCU 58/65	1.09	P.W.	130	60	3	G69577-4	GC2435	6.0 ± 10%	250	35
1500	65 or 58	HPF	19	GCS 58/65	0.99	P.W.	130	60	2	G69577-4	GC2429	6.0 ± 10%	250	25
1200	40 or 36	HPF	19	GCS 36/40	0.65	P.W.	130	55	2	G69577-4	GC2428 or GC2417	4.0 ± 10% 4.0 ± 10%	250 250	25 35
2D	28	HPF	19	GCS 28	0.65	P.W.	130	50	2	GC 69577-4	GC 2428	4.0 ± 10%	250	25
2D	36	HPF	19	GCS 36/40	0.65	P.W.	130	55	2	GC 69577-4	GC 2428	4.0 ± 10%	250	25
600	20 or 18	HPF	19	GCS 18/20	0.65	P.W.	130	55	2	G69577-4	GC2428 or GC2417	4.0 ± 10% 4.0 ± 10%	250 250	25 35

### Notes:

- \* HPF=Lagging high power factor circuit.
- LPF=Lagging low power factor circuit.
- lead=Leading power factor circuit.
- Ser pr=Series pair lagging power factor circuit.
- † See pages 226-227 for circuit diagrams
- ‡ P.W.=push wire. S.T.B.=screw terminal block.
- § See page 225 for choke illustrations.

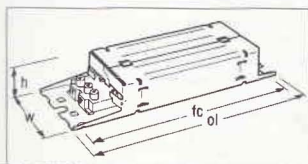
- <sup>1</sup> Details of control gear for other electricity supplies are available on request.
- <sup>2</sup> Circuit can be used as leading half of a lead/lag pair circuit.
- <sup>3</sup> Weight (kg) each.
- <sup>4</sup> Starter switches must be ordered separately — an additional switch socket will also be required for series pair circuits.
- <sup>5</sup> Circuit can be used as lagging half of a lead/lag pair circuit.
- <sup>6</sup> Omit capacitor for LPF (low power factor) circuit.
- <sup>7</sup> Control gear set also suitable for 40W 26mm dia. tube and 40W 'U' tube.
- <sup>8</sup> Starter switch included within 2D 16W lamp.

# FLUORESCENT TUBE BALLAST ILLUSTRATIONS



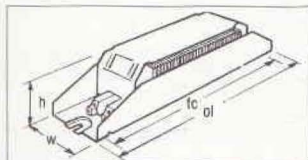
**GBJ AND GCJ SERIES**

Cat. no.	h	w	fc	ol
GBJ 50	34	30	240	255
GCJH 58	34	30	170	180
GCJ 36/40	34	30	170	180
GCJ 30	34	30	170	180
GCJ 18	34	30	170	180
GCJ 15	34	30	170	180
GCJ 13	32	30	97	110
GCJ 8	32	30	97	110



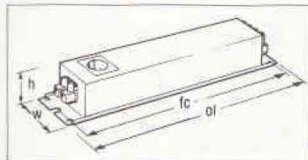
**GCS SERIES**

Cat. no.	h	w	fc	ol
GCSH 100/125	28	42	140	150
GCSH 100/4	28	42	140	150
GCSH 100/6	28	42	180	190
GCS 70	28	42	180	190
GCS 70/75	28	42	180	190
GCSH 70/75	28	42	140	150
GCS 58/65	28	42	180	190
GCS 36/40	28	42	140	150
GCS 30	28	42	140	150
GCS 28	28	42	140	150
GCS 18/20	28	42	140	150
GCS 16	28	42	97	105
GCS 13	28	42	97	105
GCS 8	28	42	97	105



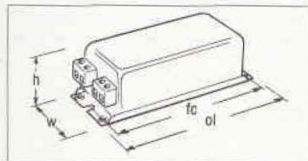
**GCU SERIES**

Cat. no.	h	w	fc	ol
GCU 100/125	40	48	165	180
GCU 100	40	48	204	217
GCU 70	40	48	150	170
GCU 70/75	40	48	165	185
GCU 58/65	40	48	150	170



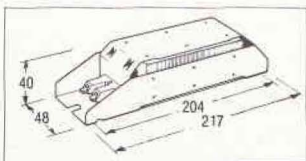
**GCBS SERIES**

Cat. no.	h	w	fc	ol
GCBS 100/125	48	64	395	415
GCBS 70/75	48	64	395	415
GCBS 58/65	43	49	395	408
GCBS 36/40	43	49	355	368
GCBS 30	43	49	355	368
GCBS 18/20	43	49	250	263

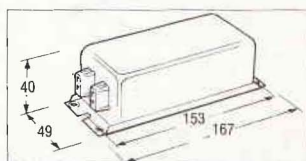


**GQS SERIES**

Cat. no.	h	w	fc	ol
GQS 220	39	59	102	118
GQS 20/40/80	40	49	115	128



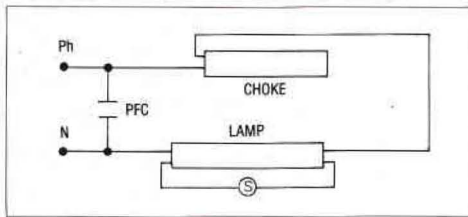
**GBU65/75 AND GBU685**



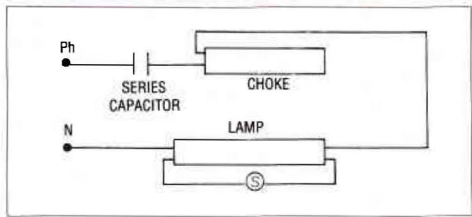
**GBU 40**

All dimensions shown in mm

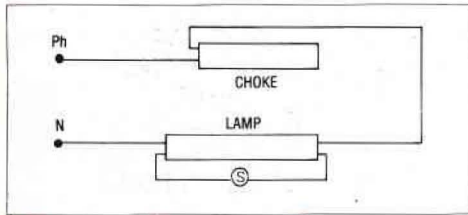
# FLUORESCENT TUBE CIRCUIT DIAGRAMS



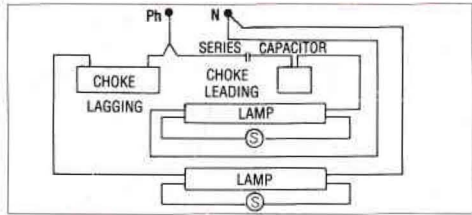
1. Standard lagging high power factor circuit



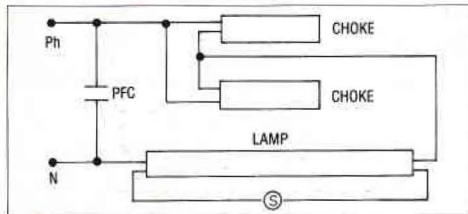
2. Standard leading power factor circuit



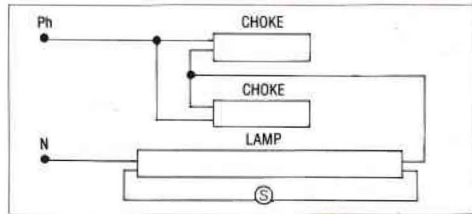
3. Standard lagging low power factor circuit



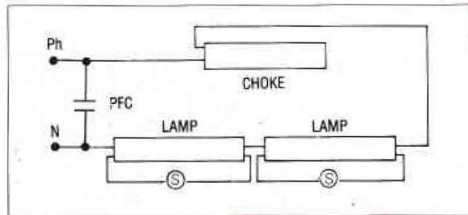
4. Lead-lag pair (Unity Power Factor) circuit (Circuits 2 and 3 combined).



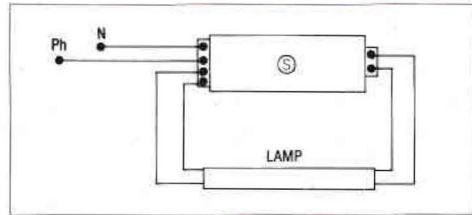
5. Lagging high power factor circuit using parallel half chokes



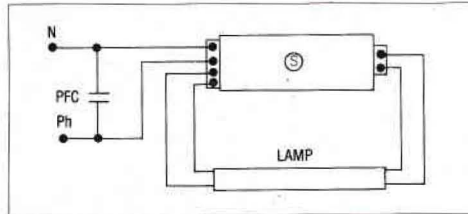
6. Lagging low power factor circuit using parallel half chokes



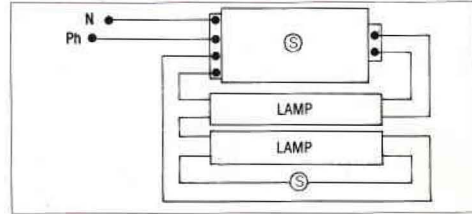
7. Lagging high power factor series pair circuit (omit PFC for lagging low power factor circuit)



8. High power factor circuit for ballast units with built in starter switch socket. (GCBS series)

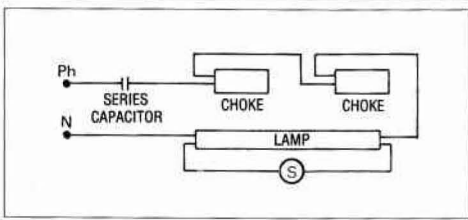


9. High power factor circuit for ballast units with built in starter switch socket. (GCBS series)

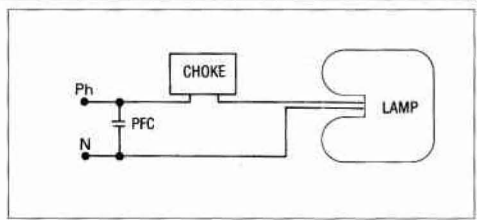


10. High power factor series pair circuit for ballast units with built in starter switch socket (GCBS series).

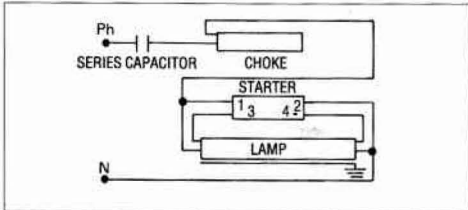
# FLUORESCENT TUBE CIRCUIT DIAGRAMS



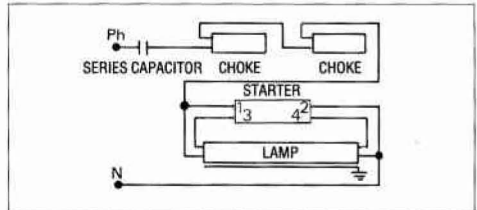
11. Leading power factor circuit using series connected half chokes.



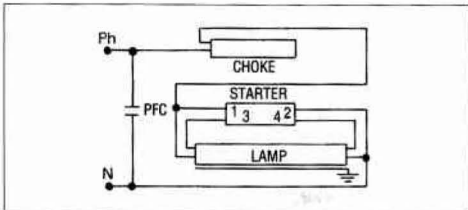
12. Lagging high power factor circuit for 2D 16W lamp.



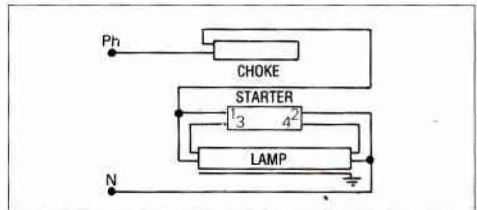
13. Leading power factor circuit for a four terminal Vivatronic starter.



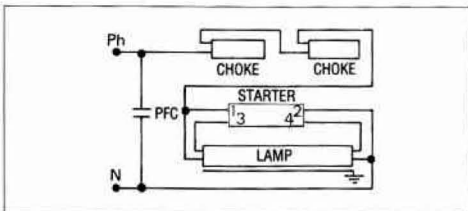
14. Leading power factor circuit for a four terminal Vivatronic starter and using series connected half chokes.



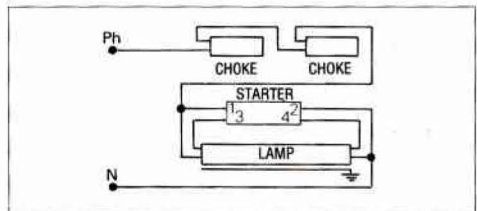
15. Lagging high power factor circuit for a four terminal Vivatronic starter.



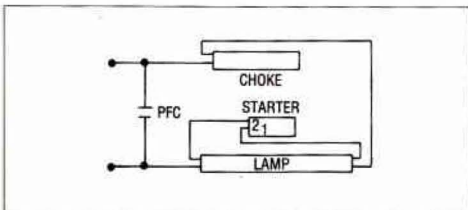
16. Lagging low power factor circuit for a four terminal Vivatronic starter.



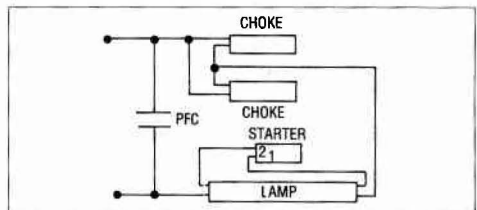
17. Lagging high power factor circuit for a four terminal Vivatronic starter and using series connected half chokes.



18. Lagging low power factor circuit for a four terminal Vivatronic starter and using series connected half chokes.



19. Lagging high power factor circuit for a two terminal Vivatronic starter.



20. Lagging high power factor circuit for a two terminal Vivatronic starter and using parallel half chokes.



# CONTROL GEAR SETS FOR FLUORESCENT TUBES

## SRS (SEMI-RESONANT-START) AND QS (QUICKSTART) CIRCUITS

The circuits shown here are being superseded by Vivatronic circuits with all the advantages described on Page 230. The details below are for the convenience of customers servicing older starterless luminaires.

### RANGE FOR 240V 50Hz SUPPLIES<sup>1</sup>

Lamp length mm	Watts W	Circuit type*	Diag	Choke or ballast Cat. no.	Wt kg	Terminations†	tw °C	Δt °C	Illus. §	Quickstart transformer Cat. no.	Terminations†	Illus. §	Capacitor Cat. no.	Rating μF	Working voltage	Diam mm
1800	85	HPF	21	GBU 685	1.70	P.W.	130	70	6	—	—	—	GC 2419	8.4 ± 5%	250	35
1800	75	HPF	21	GBU 65/75	1.70	P.W.	130	55	6	—	—	—	GC 2419	8.4 ± 5%	250	35
1500	65	HPF	21	GBU 65/75	1.70	P.W.	130	55	6	—	—	—	GC 2419	8.4 ± 5%	250	35
1500	50	HPF	21	GBJ 50	0.80	P.W.	130	70	1	—	—	—	GC 2420	5.5 ± 10%	250	35
1200 <sup>3</sup>	40	HPF	24	GBU 40	1.30	P.W.	130	60	5	—	—	—	GC 2435	6.0 ± 10%	250	35
2 x 600	2 x 20	HPF	22	GCS 36/40	0.65	P.W.	130	55	2	GQS 220	S.T.B.	7	GC 2417 <sup>2</sup>	4.0 ± 10%	250	35
600	20	HPF	23	GCS 18/20	0.65	P.W.	130	50	2	GQS20/40/80	S.T.B.	7	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

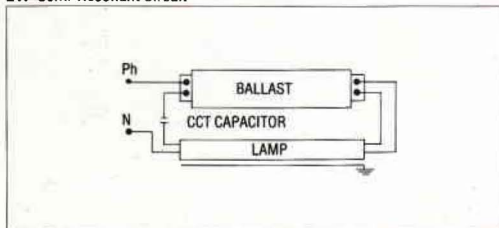
‡ Details of control gear for other electricity supplies are available on request

<sup>2</sup> Starting capacitor GC 2423 also required

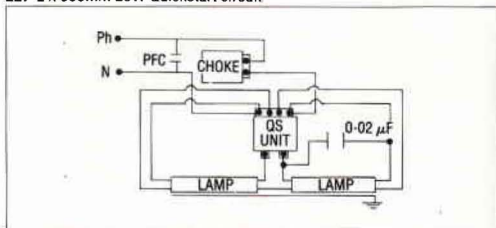
<sup>3</sup> Control gear also suitable for 40W 26mm and 40W 'U' tubes

§ See page 225 for illustrations

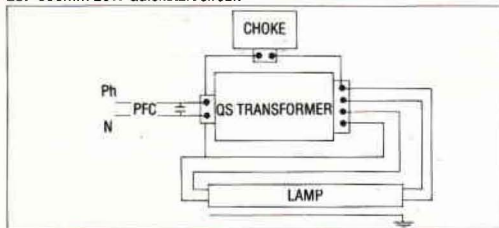
21. Semi-Resonant Circuit



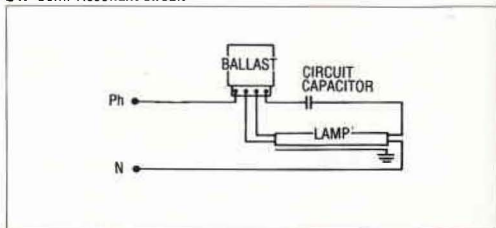
22. 2 x 600mm 20W Quickstart circuit



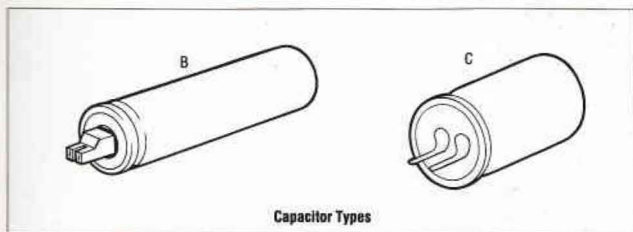
23. 600mm 20W Quickstart circuit



24. Semi-Resonant Circuit



# CAPACITORS FOR FLUORESCENT TUBE CIRCUITS

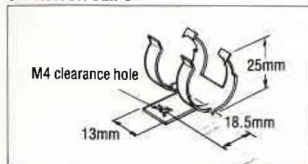


A range of capacitors for fluorescent tube circuits in cases of aluminium or approved plastics. All capacitors detailed below are fitted with a suitable discharge resistor. Capacitors listed comply with BS 4017. Type B capacitors have push wire terminals which accept two 0.5mm<sup>2</sup> to 1.0mm<sup>2</sup> conductors per terminal. They can be supplied with an M8 x 1.25 x 8 min 12 max fixing stud, nut and shakeproof washer by the addition of /S after the Catalogue number. Type C capacitors have solder tag connections.

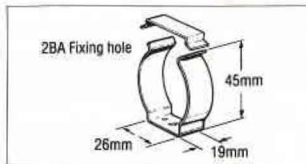
## RANGE

Rated capacitance $\mu\text{F}$	Rated voltage V	Cat. no.	Rated frequency Hz	Self-healing	Rated min./max. temps $^{\circ}\text{C}$	Type	Diameter mm	Max overall length incl terminations mm
2 $\pm$ 10%	250	GC2286	50/60	Yes	-40/+85	C	25	52
2 $\pm$ 10%	250	GC2286/PW	50/60	Yes	-40/+85	B	25	70
2 $\pm$ 10%	250	GC2426	50/60	Yes	-40/+85	B	35	85
4 $\pm$ 10%	250	GC2428	50/60	Yes	-40/+85	B	25	115
4 $\pm$ 10%	250	GC2417	50/60	Yes	-40/+85	B	35	102
5 $\pm$ 5%	440	GC2226	50/60	Yes	-40/+85	B	35	143
6 $\pm$ 10%	250	GC2429	50/60	Yes	-40/+85	B	25	110
6 $\pm$ 10%	250	GC2435	50/60	Yes	-40/+85	B	35	102
7.2 $\pm$ 5%	440	GC2173	50/60	Yes	-40/+85	B	35	155
8 $\pm$ 10%	250	GC2430	50/60	Yes	-40/+85	B	25	110
8.4 $\pm$ 5%	250	GC2419	50/60	Yes	-40/+85	B	35	125
10 $\pm$ 10%	250	GC2274	50/60	Yes	-40/+85	B	35	125
12 $\pm$ 10%	250	GC2431	50/60	Yes	-40/+85	B	25	160
12 $\pm$ 10%	250	GC2409	50/60	Yes	-40/+85	B	35	125

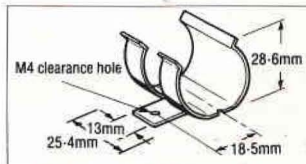
## CAPACITOR CLIPS



**GY 5330**  
For 25mm diameter capacitors.

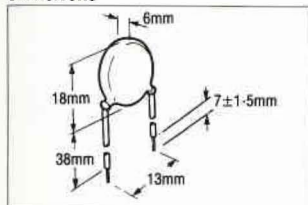


**GY 5244 CLIP GY5325 STRAP**  
For 35mm diameter capacitors

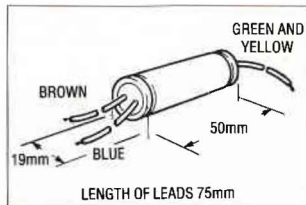


**GY 5320**  
For 35mm diameter capacitors.

## RADIO INTERFERENCE SUPPRESSION CAPACITORS



**GC 2139**  
A ceramic disc 0.005 $\mu\text{F}$  800V a.c. capacitor to BS 4017 with high temperature PVC sleeved 38mm leads.



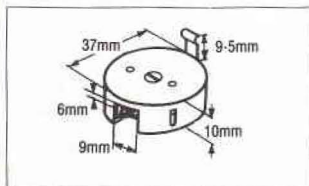
**GC 2051**  
A radio interference suppression filter network comprising two 0.005 $\mu\text{F}$  and one 0.1 $\mu\text{F}$  delta connection for additional suppression where the GC 2139 fails to suppress the interference.

# FLUORESCENT TUBE LAMPHOLDERS

## LAMPHOLDERS FOR 38MM DIAMETER (T12) BI-PIN FLUORESCENT TUBES

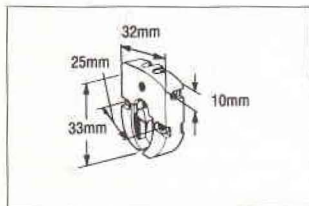
### GB 1512

A white urea two piece moulding with earth clip and double-sided lamp pin contacts. Pinch screw cable terminals. A recess allows a neat termination of 2-core or 3-core flexible cable.



### GB 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.

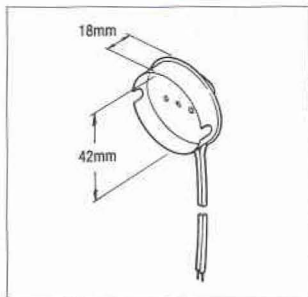


### FIXING DETAILS

The dimensions for GB 1524 and GB 1502 are recommended distances between backs of lampholders when mounted on support brackets. Dimensions for GB 1680/A are recommended distances between fixing centres.

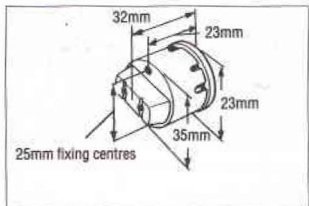
### GB 1632/460

A white polycarbonate grip-pin lampholder with 460mm 0.5 sq mm conductor, high-temperature white PVC insulated cable, crimped to double sided side pressure lamp pin contacts.



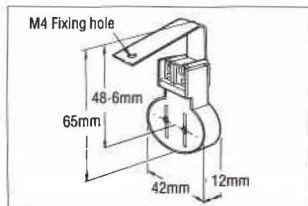
### GB 1502

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. This holder is not suitable for use with 2400mm tubes which have large tolerances in length.



### GB 1680/A

White polycarbonate mouldings designed to blend with 38mm diameter (T12) tubes or 26mm diameter (T8) tubes. Side pressure lamp pin contacts. Pushwire supply terminals for 0.5 sq mm - 1 sq mm conductors. Lampholder is vertical with a nominal length tube fitted.



### FIXING CENTRES

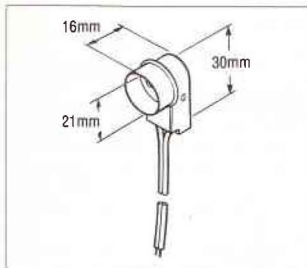
Tube size mm	GB 1524 mm	GB 1680/A mm	GB 1502 mm
2400	—	2329	—
1800	1784	1718	1827
1500	1520	1454	1563
1200	1220	1154	1263
1050	1067	1001	1110
900	915	849	958
600	610	544	653
450	458	392	501

# FLUORESCENT TUBE LAMPHOLDERS

## LAMPHOLDERS FOR 16MM DIAMETER (T5) MINIATURE BI-PIN FLUORESCENT TUBES.

### GB 1625/460

A white polycarbonate grip-pin lampholder with 460mm 0.5 sq mm conductor, high-temperature white PVC insulated cable, crimped to double sided side pressure lamp pin contacts.



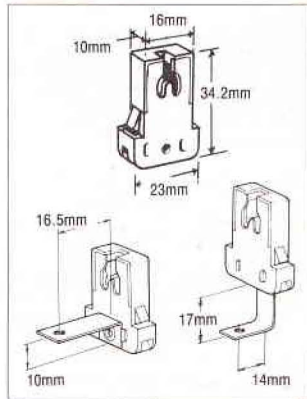
### GB 1598

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:

### GB 1598/2, GB 1598/3S

Lampholders similar to GB 1598 above but with fixing brackets added. Fixing centres are given below.

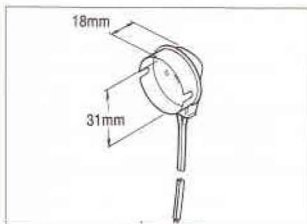
Tube size mm	GB1598 mm	GB1598/2 mm	GB1598/3 mm
525	517	484	510
300	289	256	282
225	212	179	205
150	136	103	129



## LAMPHOLDERS FOR 26MM DIAMETER (T8) BI-PIN FLUORESCENT TUBES

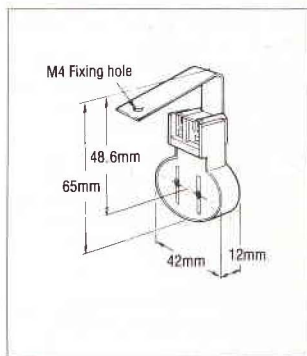
### GB 1628/1200

A white polycarbonate grip-pin lampholder with 1200mm 0.5 sq mm conductor, high-temperature white PVC insulated cable, crimped to double sided side pressure lamp pin contacts.



### GB 1680/A

White polycarbonate mouldings designed to blend with 38mm diameter (T12) tubes or 26mm diameter (T8) tubes. Side pressure lamp pin contacts. Push-wire supply terminals for 0.5 sq mm-1 sq mm conductors. Lampholder is vertical with a nominal length tube fitted. See opposite for fixing centres.



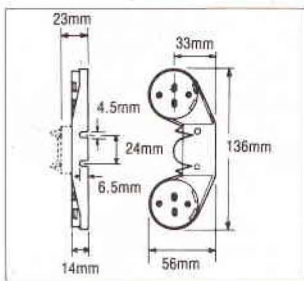
## LAMPHOLDERS FOR 26MM DIAMETER (T8) BI-PIN 525MM x 120MM FLUORESCENT U-TUBES

### 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 solid 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

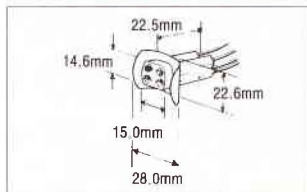
As GB 1635-A but less starter switch socket.



## LAMPHOLDER FOR CIRCULAR FLUORESCENT TUBES

### GB 1623

A single moulding high-temperature white polycarbonate body with 300mm PVC insulated 0.5 sq mm 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.

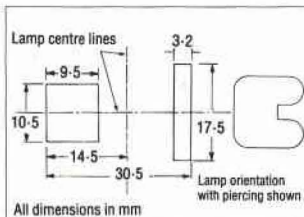
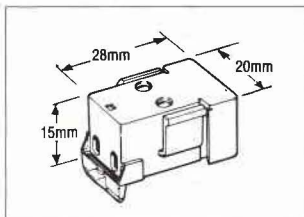


# FLUORESCENT TUBE LAMPHOLDERS

## LAMPHOLDERS FOR 2-PIN 2D LAMPS

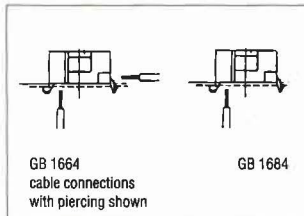
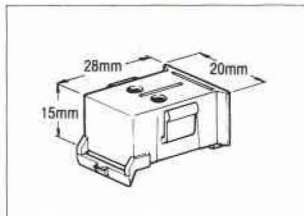
### GB 1664

Surface-mounted lampholder with housing of white polycarbonate. Push wire terminals permit back or side entry of 0.5–1.0 sq. mm single conductor cable. This lampholder is for mounting on sheet metal 0.5–1.0 mm thick pierced as shown.



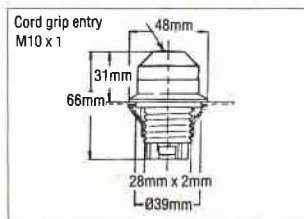
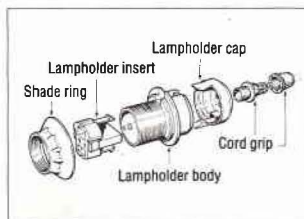
### GB 1684

Similar to GB 1664 but with back cable entry only.



### GB 1669

Pendant lampholder of white thermoplastic material for 2-pin lamps. Push wire terminals accept single conductor cable, or solder-tinned multi-strand conductor cable, fastened by a 6mm cord-grip.

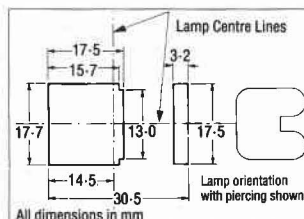
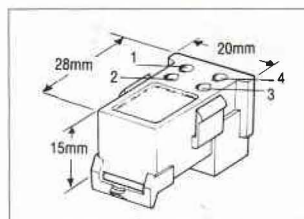


## LAMPHOLDERS FOR 4-PIN 2D LAMPS

### GB 1685

Surface-mounted lampholder with housing of white polycarbonate. Push wire terminals permit back entry of 0.5–1.0 sq. mm single conductor cable. This lampholder is for mounting on sheet metal 0.5–1.0 mm thick pierced as shown.

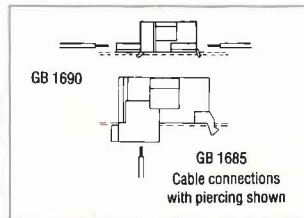
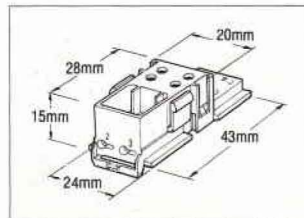
Connect suitable starter switch or electronic starter across terminals 1 and 4. Connect neutral and ballast leads to terminals 2 and 3.



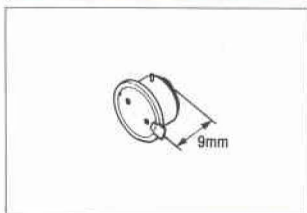
### GB 1690

Surface-mounted lampholder with housing of white polycarbonate. Push wire terminals permit side entry of 0.5–1.0 sq. mm single conductor cable. This lampholder is for mounting on sheet metal 0.5–1.0 mm thick pierced as for the GB 1664 lampholder for 2-pin 2D lamps.

Connect suitable starter switch or electronic starter across terminals 1 and 4. Connect neutral and ballast leads to terminals 2 and 3.

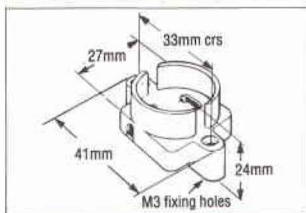


# MISCELLANEOUS ACCESSORIES FOR FLUORESCENT TUBES



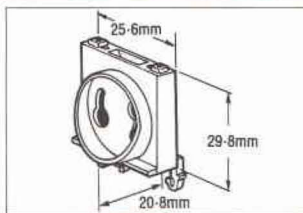
## BI-PIN TO BC ADAPTOR GB 1515

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.



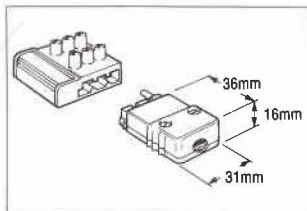
## STARTER SWITCH SOCKET GA 5019/X

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 luminaire chassis the starter switch projects enough for easy removal.



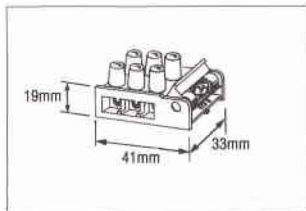
## STARTER SWITCH SOCKET GA 5136

A white polycarbonate moulding to hold starter switch parallel to mounting surface. Pushwire connections for 0-5 sq mm - 1 sq mm conductors. Side pressure switch contacts. Mounting - 2 x 4-8mm diameter holes at 20mm centres in 0-5mm-0-9mm thick material.



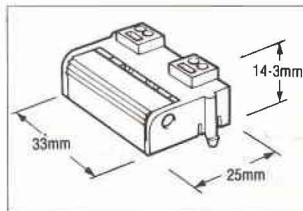
## FUSED TERMINAL BLOCK AND ADAPTOR GA 5109

A 250V 5A rated assembly with mains supply via free adaptor (GA 5117) to fixed fused terminal block (GT 1368). White polycarbonate adaptor has earth pin and line and neutral sockets. Pinchscrew terminals accept 1 sq mm cable. Fused terminal block generally as GT 1367 but earth socket and pins for supply connection. Also available (GA 5110) as assembly with supply via fixed fused terminal block with earth pin and supply sockets (GT 1381) to free plug with supply pins and earth socket (GA 5126).



## FUSED TERMINAL BLOCK GT 1367

White polycarbonate moulding with clear glass filled 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 pinchscrew terminals suitable for 2 x 2-5 sq mm cables. Back fixing is by a screw and shakeproof washer provided. For front fixing a 2-5mm x 18mm screw must be used (not provided). Either method of fixing provides earth connection to chassis. Fuses to be ordered separately.



## FUSEHOLDER 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 top looping facilities for 1 sq mm max conductors. Recommended strip length 8mm. Mounting - 2 x 4mm diameter holes at 31-7mm centres in 0-5mm - 0-9mm thick material. Fuses to be ordered separately.

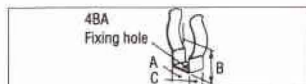
## FUSES GT 1268, GT 1299

All fuses comply with BS 1362 dimensions and must be used with GT 1367, GA 5109 and GT 1387 fuseholders.

Cat. no.	Rating	Colour
GT 1299	3A	Red
GT 1268	5A	Black

## CLEANING FLUID (DESTATOL) GM 6207/1 (1 LITRE) GM 6207/5 (5 LITRES)

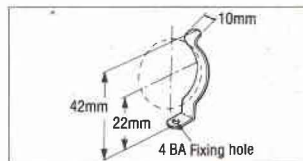
An anti-static cleaning fluid specially manufactured for cleaning plastic diffusers. Destatol is supplied in a plastic container in concentrated form. Dilute 1 part Destatol to 10 parts water.



## SUPPORT CLIPS GY 5204, GY 5200, GY 5201

A range of bright zinc plated spring steel tube support clips which can be used around the glass of the tube or around the metal cap. When used to earth the cap to the metalwork of the luminaire chassis any paint should be scraped from the chassis to give good continuity.

Cat. no.	Tube dia mm	A mm	B mm	C mm
GY 5204	16	7-5	10-3	7-9
GY 5200	26	12-7	17-8	9-5
GY 5201	38	16-7	26-2	9-0



## SUPPORT CLIP GY 5332

A bright zinc plated spring steel support clip for circular fluorescent tubes. Three clips are required per tube, mounted outside the tube circumference. Fixing details - 32W tube: 275mm radius - 40W and 60W tubes: 375mm radius.

# DIMMING SYSTEMS

## UNIT DIMMERS

**GENERAL:** The range consists of 6 unit dimmers suitable for the control of both tungsten (including low voltage) and fluorescent loads in commercial and architectural situations. Remote control is provided via a variety of units with the manual and slider options being available if required with a 'Take Control' facility enabling control of an installation to be achieved from a number of positions.

### RANGE

Cat no.	Description
G 81023	5A with remote manual control
G 81024	5A with 4 level automatic control*
G 81025	10A with remote manual control
G 81026	10A with 4 level automatic control*
G 81027	20A with remote manual control
G 81028	20A with 4 level automatic control*

\* 4 level dimmers are provided with 4 pre-sets, one being OFF and the other 3 adjustable from OFF to FULL. Fade rates from one preset to another are adjustable up and down from 1 to 16 or 10 to 160 seconds.

**OPERATING VOLTAGES** All dimmers listed are suitable for operation on 220/240V 50/60 Hz supplies.

**MAXIMUM AMBIENT OPERATING TEMPERATURE** Operation at full load levels in ambient temperatures up to 40°C is permissible providing the area around the dimmer is well ventilated.

**RADIO INTERFERENCE** All dimmers comply with the limits laid down in BS 800.

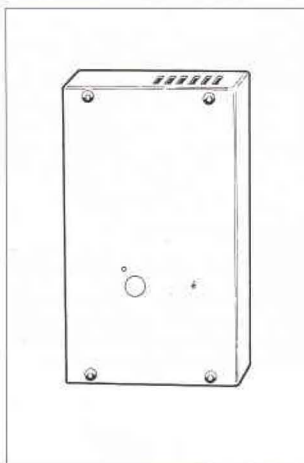
**FUSE PROTECTION** All dimmers are protected by HRC fuses of the appropriate rating located on the front panel. A spare fuse is also provided in the case of dimmers G 81025 - G 81028 inclusive.

**CABLE ENTRY** 20mm knockouts are provided in the top and rear of the dimmer housing in the case of G 81023 and G 81024. For dimmers G 81025 to G 81028 inclusive an additional knockout is also provided in the bottom.

### CONTROL RANGES

i. Tungsten/Tungsten Halogen Lamps: a smooth transition from full to zero output may be achieved. **Note:** operation of certain tungsten halogen lamps at low levels of brightness for prolonged periods of time may impair the halogen cycle and the expected life may not be fully realised.

ii. Fluorescent Lamps: smooth dimming is possible from full light output to 5% of full light output for lamps up to 1800mm 70W (both 26mm and 38mm diameter) providing the appropriate control gear as detailed below is utilised.



G 81023



G 81024

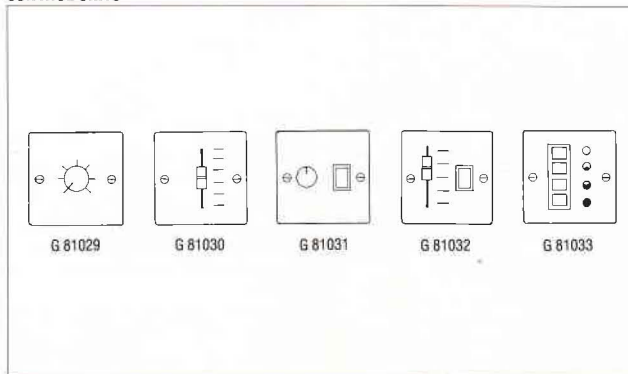
### MAXIMUM LOAD RATINGS

Dimmer Cat no.	Tungsten†	Fluorescent
G 81023 and G 81024	1.1 kW (1.0 kW)	36W 1200mm tubes* x 11 58W 1500mm tubes* x 7 70W 1800mm tubes* x 6
G 81025 and G 81026	2.2 kW (2.0 kW)	36W 1200mm tubes* x 22 58W 1500mm tubes* x 14 70W 1800mm tubes* x 12
G 81027 and G 81028	4.4 kW (4.0 kW)	36W 1200mm tubes* x 44 58W 1500mm tubes* x 28 70W 1800mm tubes* x 24

\* Includes 'U' Tubes and 28W 2D 4 Pin lamps.

† Maximum load figures are for 240V input mains supply, 220V figures in brackets.

### CONTROL UNITS



## NOTES

- 1 Any combination up to a maximum of 6 control units with the 'Take Control' facility (i.e. G 81031 or G 81032) may be used with a remote manual dimmer.
- 2 Up to a maximum of 6 G 81033 may be used with a 4 level automatic control dimmer.
- 3 All control units are satin aluminium anodised finish. Alternative finishes can be supplied to order.
- 4 Control units may be mounted in standard 86mm x 86mm mounting boxes.
- 5 For multiple dimmer installations, up to 4 channels may be controlled from any one location. Control units of this type can be supplied to order.

## RANGE

Cat no.	Description
G 81029	Single channel rotary potentiometer for use with G 81023, G 81025 and G 81027
G 81030	Single channel slider fader for use with G 81023, G 81025 and G 81027
G 81031	As G 81029 but with 'Take Control' facility
G 81032	As G 81030 but with 'Take Control' facility
G 81033	Single channel push button control for use with G 81024, G 81026 and G 81028

## WEIGHTS AND DIMENSIONS

Dimmer Cat no.	Weight kg	Dimensions mm
G 81023 / G 81024	0.75	175 (h) x 100 (w) x 60 (d)
G 81025 / G 81027	2.0	250 (h) x 200 (w) x 60 (d)
G 81026 / G 81028	2.2	250 (h) x 200 (w) x 60 (d)

## DIMMABLE FLUORESCENT LUMINAIRES

In order to dim a fluorescent lamp the use of a special electronic dimming transformer and appropriate choke (see below for details) is required for **each** lamp to be dimmed. Luminaires can be supplied to order with the relevant gear already fitted. To obtain a converted fitting the catalogue number for the fitting should be followed by /DIM, eg. FCLV 58 becomes FCLV 58/DIM. Customers are strongly advised to consult the Lighting Engineering Department of their local THORN EMI Lighting Ltd. Sales Office when specifying dimming equipment.

## DIMMABLE CONTROL GEAR

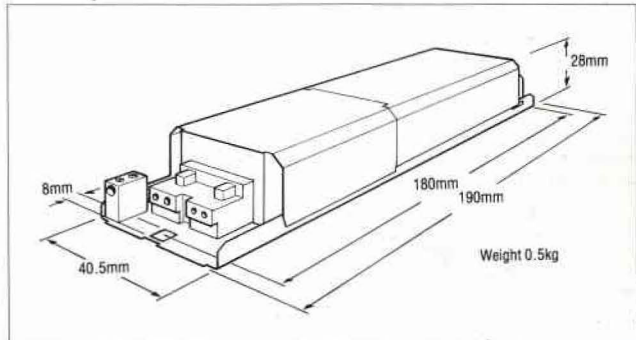
Lamps up to 1800mm 70W (both 26mm and 38mm diameter) may be dimmed by the use of the following. One set of control gear is required per fluorescent lamp.  
G 81013 Electronic Dimming Transformer plus relevant switchstart choke for lamp (see p. 223).

## DIMMING OF 2D LAMPS

The 16W 2D lamp is not suitable for dimming applications. However, the 28W 4 pin 2D lamp can be successfully dimmed using the control gear illustrated and detailed above. It is unlikely that any of the current range of 28W 2D luminaires will be capable of accommodating this gear, and alternative arrangements will be required.

## LUMINAIRES CONVERTED FOR DIMMING AND EMERGENCY OPERATION

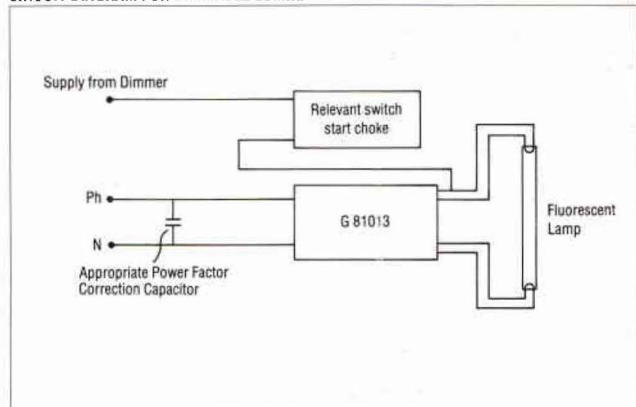
On some occasions fittings with the above facilities will be required. These can be supplied to special order, however, customers should consult their local THORN EMI Lighting Sales Office before doing so, as accommodation of all the relevant gear may not always be possible with some fittings' ranges.



G 81013

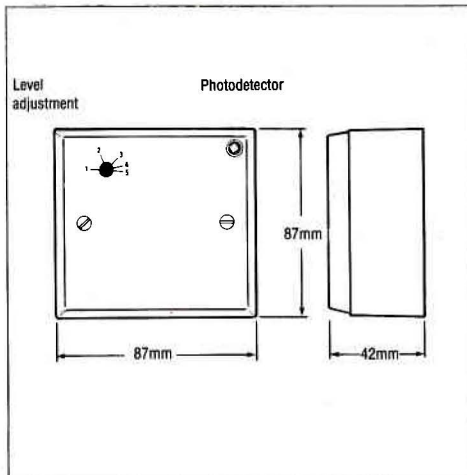
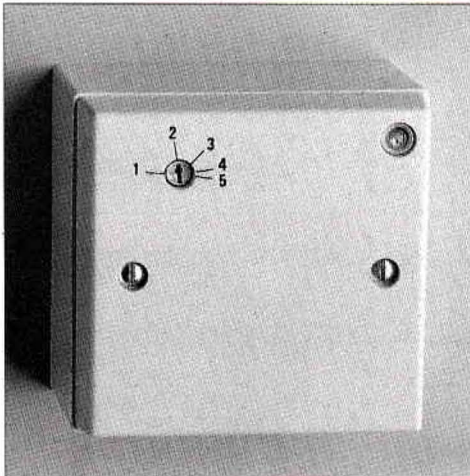
**Note:** G 81013 is suitable for 240V 50/60Hz supplies and operation in locations where its case temperature will not exceed 50°C.

## CIRCUIT DIAGRAM FOR DIMMABLE LUMINAIRE





# 'MAGIC EYE' PHOTOCELL SWITCH — A LIGHTING MANAGEMENT PRODUCT



**APPLICATION:** the photocell switch is designed for any interior application where the artificial lighting is supplemented by a high level of daylight. It can be used to automatically control a luminaire or group of luminaires adjacent to a window area, resulting in savings as high as 75%.

## DESCRIPTION

**HOUSING:** standard single white plastic surface mounted box.

**CABLE ENTRY:** via a single 20mm knockout hole located in the rear of the box.

**ELECTRICAL CONNECTIONS:** via a 3-way block (each terminal being suitable for 2 x 2.5mm<sup>2</sup> cables) mounted inside the rear of the box. An earthing point is also provided.

**MOUNTING FACILITIES:** using one or more of the available push-out screw holes provided in the rear of the housing.

**OPERATING VOLTAGE:** 240V ± 10% 50Hz.

**LEVEL ADJUSTMENT:** a manually adjustable control is provided enabling lighting levels between 20 and 500 lux to be maintained.

**OPERATING TEMPERATURE RANGE:** 0–50°C

**CATALOGUE NUMBER:** LMPC1

**OFF/ON SWITCHING RATIO:** 3:1

## MAXIMUM FLUORESCENT LAMP LOAD PER MAGIC EYE

Lamp length	1.8m	1.5m	1.2m
Lamp wattage	70W/75W/85W	58W/65W	36W/40W
Maximum number of lamps	6	8	10

\* Alternatively a tungsten load up to 1000W may also be operated.

For further information please request data sheet 5.EM.1 from your local THORN EMI Lighting Sales Office.

