
HALOGEN LAMPS

LOW VOLTAGE & MAINS VOLTAGE



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Sealed 50mm & 35mm \emptyset Neodymium

	lamp	voltage	wattage	lamp cap	life average hrs	beam angle to half peak degrees	diameter mm max	length mm max	operating position	standard pack quantity	bulk quantity
50mm	M104	12	50	GU5.3	3500	10	50.7	47.5	univ	10	100
	M105					21					
35mm	M148	12	20	GU4	3500	10	35.3	42.5		10	100

20W M148	50W M104	50W M105
10°	10°	21°
.17	.17	.37
.35	.35	.74
.52	.52	1.11
.70	.70	1.48
.87	.87	1.48



Neodymium



Halogen

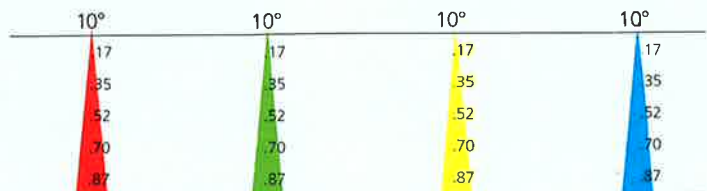
The front glass on these lamps is specially treated to reduce the yellow content of the light output, greatly enhancing the colour rendition of illuminated material.

This can be put to dramatic use in the display of food, jewellery, flowers and clothes.

50mm & 35mm \emptyset colours

	lamp	voltage	wattage	lamp cap	life average hrs	beam angle to half peak degrees	diameter mm max	length mm max	operating position	standard pack quantity	bulk quantity
50mm	Red M249R	12	50	GU5.3	3500	10	50.7	47.5	univ	10	100
	Green M249G										
	Yellow M249Y										
	Blue M249B										
35mm	Red M252R	12	20	GU4	3500	10	35.3	42.5	univ	10	100
	Green M252G										
	Yellow M252Y										
	Blue M252B										

New colours. Red, yellow, green and blue, applied to the front glass of the sealed lamp, give saturated colours superior to reflector-coated lamps



Sealed dichroic mirror lamps

lamp	ANSI code	voltage	wattage	lamp cap	life average hrs	peak beam cd	beam angle to half peak degrees	diameter mm max	length mm max	colour K	operating position	filament type	bulb finish
50mm													
M268		12	20	GU5.3	3500	4500	11	50.7	47.5	2900	univ	trans	clear
M294						900	24						frosted
M269						450	36						frosted
M271		12	35	GU5.3	3500	8100	8	50.7	47.5	2900	univ	trans	clear
M270						3240	18						clear
M281						873	38						frosted
M249	FXK	12	50	GU5.3	3500	10800	10	50.7	47.5	3000	univ	trans	clear
M250	FXJ					3330	21						trans
M258	FXH					1395	38						trans
M280						630	60						axial
M260		12	65	GU5.3	3500	12960	12	50.7	47.5	3000	univ	axial	clear
M282						6075	18						axial
M261						1822	38						axial
M298						729	60						trans
35mm													
M264		12	12	GU4	2000	5760	7	35.3	42.5	2900	univ	trans	clear
M252			20		3500	4950	10		42.5				
M251			20			1584	17		39.5				
M262			20			540	30		39.5				
M265			35			8100	8		42.5				
M266			35			2700	20		33.5				

new standard

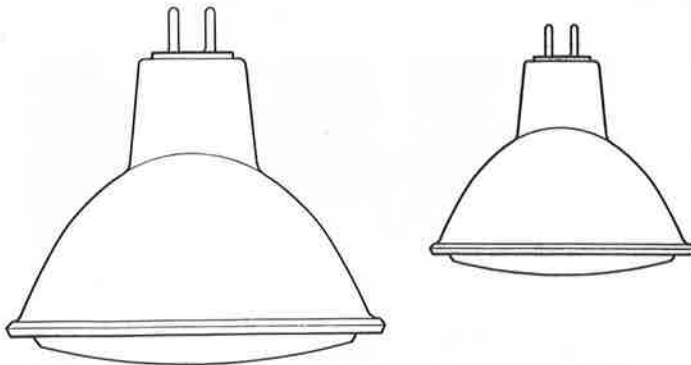
Sealed lamps are 3mm longer than open types, this demands a new international specification – to ensure all manufacturers' products are dimensionally compatible.

THORN is leading the industry to set a world standard for sealed dichroic lamps. To specify a sealed lamp just add the prefix '2' to the current open lamp reference, eg 'M50' is specified as 'M250' for the sealed version.

GU5.3 lamp bases are compatible with GX5.3 lampholders.

GU4 lamp bases are compatible with G24 lampholders.

THORN sealed mirror lamps are suitable for exterior applications in luminaires designed to relevant IP class.



50mm ∅

35mm ∅

These cones indicate the angle at which the intensity of the beam is at 50% of peak. Peak illuminance (lux) and beam diameter are given for planes at right angles and at various distances (m) from the source.

m	20W M268		35W M271		50W M249		65W M260	
	11°	lux	8°	lux	10°	lux	12°	lux
1	.19	4500	.14	8100	.17	10800	.21	12960
2	.39	1125	.28	2025	.35	2700	.42	3240
3	.58	500	.42	900	.52	1270	.63	1440
4	.77	282	.56	504	.70	675	.84	810
5	.96	180	.70	324	.87	432	1.05	518

m	M294		M270		M250		M282	
	24°	lux	18°	lux	21°	lux	18°	lux
1	.43	900	.32	3240	.37	3330	.32	6075
2	.85	225	.63	810	.74	833	.63	1518
3	1.28	100	.95	360	1.11	370	.95	675
4	1.70	57	1.27	203	1.48	208	1.27	380
5	2.13	36	1.58	130	1.85	133	1.58	243

m	M269		M281		M258		M261	
	36°	lux	38°	lux	38°	lux	38°	lux
1	.65	450	.69	873	.69	1395	.69	1822
2	1.30	113	1.38	219	1.38	349	1.38	455
3	1.95	50	2.07	97	2.07	155	2.07	202
4	2.60	28	2.75	55	2.75	87	2.75	113
5	3.25	18	3.44	35	3.44	56	3.44	72

m	M280		M298	
	60°	lux	60°	lux
1	1.15	630	1.15	729
2	2.31	158	2.31	182
3	3.46	70	3.46	81
4	4.62	40	4.62	45
5	5.77	25	5.77	29

m	12W M264		20W M252		35W M265	
	7°	lux	10°	lux	8°	lux
1	.12	5760	.17	4950	.14	8100
2	.24	1440	.35	1238	.28	2025
3	.37	640	.52	550	.42	900
4	.49	360	.70	310	.56	507
5	.61	230	.87	198	.70	324

m	M251		M266	
	17°	lux	20°	lux
1	.30	1584	.35	2700
2	.60	396	.71	675
3	.90	176	1.06	300
4	1.20	99	1.41	169
5	1.49	63	1.76	108

m	M262	
	30°	lux
1	.54	540
2	1.07	135
3	1.61	60
4	2.14	34
5	2.68	22

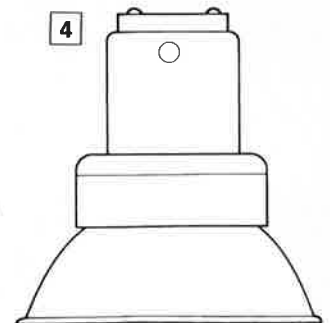
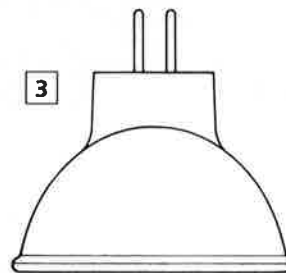
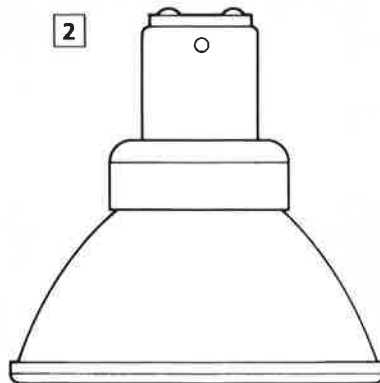
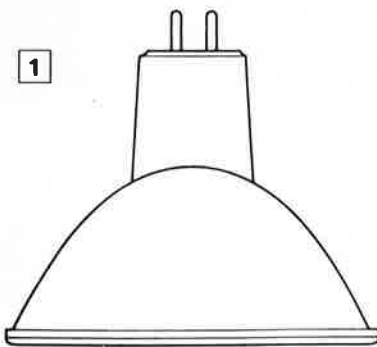
Open dichroic mirror & special reflector lamps

lamp	ANSI code	voltage	wattage	lamp cap	life average hrs	peak beam cd	beam angle to half peak degrees	diameter mm max	length mm max	colour K	operating position	filament type	bulb finish	illustration	
50mm															
M68	ESX	12	20	GU5.3	3500	5000	11	50.7	44.5	2900	univ	trans	clear	1	
M94	BBF					1000	24						frosted		
M69	BAB					500	36						frosted		
M71	FRB	12	35	GU5.3	3500	9000	8	50.7	44.5	2900	univ	trans	clear	1	
M70	FRA					3600	18						clear		
M81	FMW					970	38						frosted		
M49	EXT	12	50	GU5.3	3500	12000	10	50.7	44.5	3000	univ	trans	clear	1	
M57	—			SBC B15D	3000	12000	10						trans	clear	2
M50	EXZ			GU5.3	3500	3700	21						trans	clear	1
M56	—			SBC B15D	3000	3700	21						trans	clear	2
M58	EXN			GU5.3	3500	1550	38						trans	frosted	1
M80	FNV			GU5.3		700	60						axial	frosted	1
M60	EYF	12	75	GU5.3	3500	16000	12	50.7	44.5	3000	univ	axial	clear	1	
M82	FNW					7500	18						axial	clear	
M61	EYC					2250	38						axial	frosted	
M98	—					900	60						trans	frosted	
35mm															
M64	FTA	12	12	GU4	2000	6400	7	35.3	38.5	2900	univ	trans	clear	3	
M52	FTB	12	20	GU4	3500	5500	10	35.3	38.5	2900	univ	trans	clear	3	
M55	FSS			SBC B15D		5500	10	42.0						4	
M51	FTC			GU4		1760	17	35.5						3	
M54	FST			SBC B15D		1760	17	42.0						4	
M62	FTD			GU4		600	30	35.5						3	
M63	FSV			SBC B15D		600	30	42.0						4	
M65	FTE	12	35	GU4	3500	9000	8	35.3	38.5	2900	univ	trans	clear	3	
M66	FTF					3000	20	35.5							
Special reflector lamps															
M37	—	12	55	GY6.35	750	NA	NA	50.7	42.0	3000	univ	trans	clear	5	
M39	—	6	20	2 TAB	2000	NA	NA	49.8	39	2950	univ	trans	clear	6	
M48	—	12		G4		7500	6.5	48	36					7	

lampholders

GU5.3 lamp bases are compatible with GX5.3 lampholders

GU4 lamp bases are compatible with GX4 lampholders



50mm \varnothing

35mm \varnothing

These cones indicate the angle at which the intensity of the beam is at 50% of peak. Peak illuminance (lux) and beam diameter are given for planes at right angles and at various distances (m) from the source.

20W M68		35W M71		50W M49 M57*		75W M60	
m	11° lux	8° lux	10° lux	12° lux			
1	.19 5000	.14 9000	.17 12000	.21 16000			
2	.39 1250	.28 2250	.35 3000	.42 4000			
3	.58 556	.42 1000	.52 1333	.63 1778			
4	.77 313	.56 560	.70 750	.84 1000			
5	.96 200	.70 360	.87 480	1.05 640			

M94		M70		M50 M56*		M82	
m	24° lux	18° lux	21° lux	18° lux			
1	.43 1000	.32 3600	.37 3700	.32 7500			
2	.85 250	.63 900	.74 925	.63 1875			
3	1.28 111	.95 400	1.11 411	.95 833			
4	1.70 63	1.27 225	1.48 231	1.27 469			
5	2.13 40	1.58 144	1.85 148	1.58 300			

M69		M81		M58		M61	
m	36° lux	38° lux	38° lux	38° lux			
1	.65 500	.69 970	.69 1550	.69 2250			
2	1.30 125	1.38 243	1.38 388	1.38 562			
3	1.95 56	2.07 108	2.07 172	2.07 250			
4	2.60 31	2.75 61	2.75 97	2.75 140			
5	3.25 20	3.44 39	3.44 62	3.44 90			

M80		M98	
m	60° lux	60° lux	
1	1.15 700	1.15 900	
2	2.31 175	2.31 225	
3	3.46 78	3.46 100	
4	4.62 44	4.62 56	
5	5.77 28	5.77 36	

*SBC base

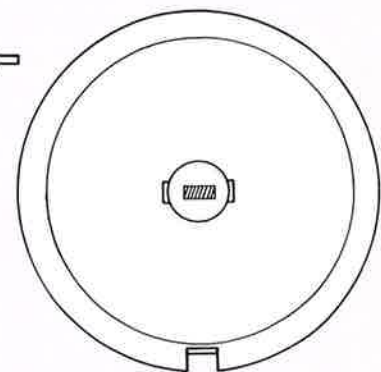
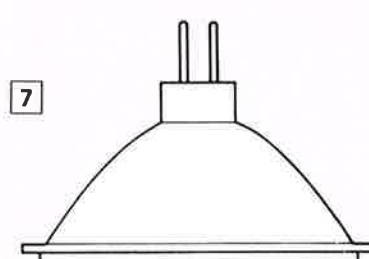
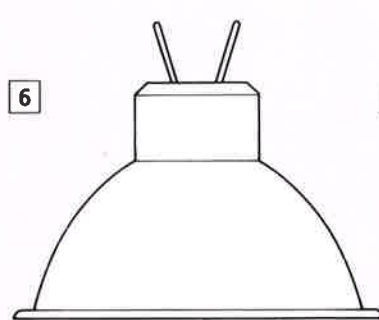
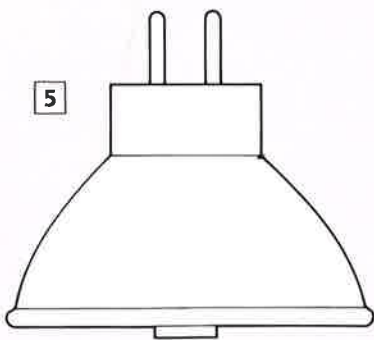
12W M64		20W M52 M55*		35W M65	
m	7° lux	10° lux	8° lux		
1	.12 6400	.17 5500	.14 9000		
2	.24 1600	.35 1375	.28 2250		
3	.37 711	.52 611	.42 1000		
4	.49 400	.70 344	.56 563		
5	.61 256	.87 220	.70 360		

M51 M54*		M66	
m	17° lux	20° lux	
1	.30 1760	.35 3000	
2	.60 440	.71 750	
3	.90 196	1.06 333	
4	1.20 110	1.41 188	
5	1.49 70	1.76 120	

M62 M63*	
m	30° lux
1	.54 600
2	1.07 150
3	1.61 67
4	2.14 38
5	2.68 24

M48 Special reflector	
m	6.5° lux
1	.11 7500
2	.23 1875
3	.34 833
4	.45 470
5	.57 300

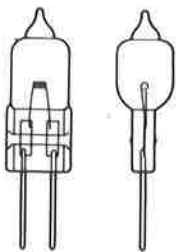
*SBC base



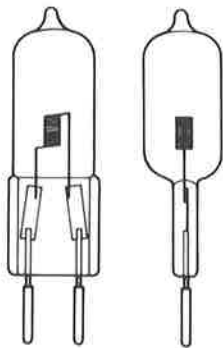
Capsule lamps

lamp	ANSI code	voltage	wattage	lamp Cap	life average hrs	nominal lumens	light centre length	length mm	width mm	colour K	operating position	filament type	bulb finish	drawing
M29	ESA	6	10	G4	100	210	19,5	30	10	3200	univ	trans	clear	1
M30	ESB	6	20	G4	100	420	19,5	30	10	3200	univ	trans	clear	1
M34	FHE				2000	350				3000		trans	clear	
M91	-	12	12	G4	2000	150	19,5	32	10	2950	univ	trans	clear	1
M47	-	12	20	G4	2000	350	19,5	30	10	3000	univ	trans	clear	1
M35	-				200	400				3100		trans	clear	1
M76*	-			GY6,35	3000	300	28,5	44	12	3000	univ	axial	clear	2
M75*	-	12	35	GY6,35	3000	600	28,5	44	12	3000	univ	axial	clear	2
M95	-					550	30,0					trans	clear	3
M32	-	12	50	GY6,35	3000	850	30,0	44	12	3000	univ	trans	clear	3
M74*	-					900	28,5					axial	clear	2
M73*	-	12	75	GY6,35	3000	1350	28,5	44	12	3000	univ	axial	clear	2
M28	EVA	12	100	GY6,35	2000	2400	30,0	44	12	3000	univ	flatgrid	clear	4
M67	-	24		GY6,35		1800	30,0	44	12	3200	VBD±90°	trans	clear	4
M33	-	24	250	GY6,35	300	8400	33,0	55	13,5	3000	VBD±90°	flatgrid	clear	5
M36	-			GY6,35	2000	5750	37,0	58	16		VBD	flatgrid	clear	6

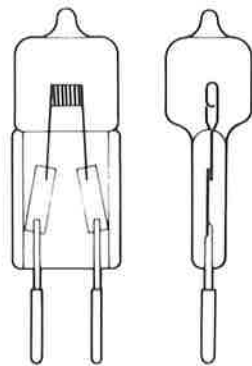
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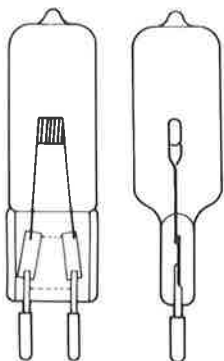
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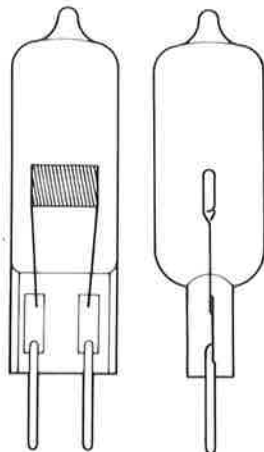
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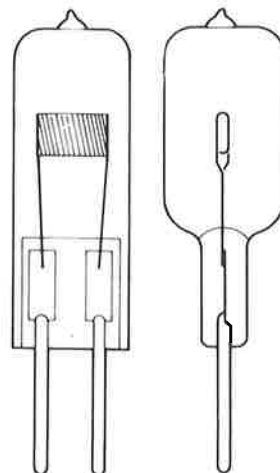
4



5



6



Linear lamps class K

lamp	voltage	wattage	lamp cap	life average hrs	nominal lumens	contact to ceramic	width mm max	length mm max	colour K	operating position	drawing
78mm											
K14†	120 220/230 240/250	100	R7s	4000	1350	78.3	80.3	12	2850	univ	1
K12†		150			2100				2850		
K15†		250			4000				2900		
117 mm											
K11†	120 220/230 240/250	200	R7s	4000	3200	117.6	119.6	11	2900	univ	2
K9†	110/115 220/230	300		4000	5000						
K1	110 120 220/230 240	500		2000	9500					horiz ±4deg	3
Other											
K3	220/230 240	750	R7s	2000	15000	189.1	191.1	12	3000	horiz ±4deg	
K4	110 220/230 240/250	1000			21000						
K10	220/230 240/250	1000			21000	254.1	256.1				
K5		1500			33000						
K8		2000			44000	331.0	333.0				

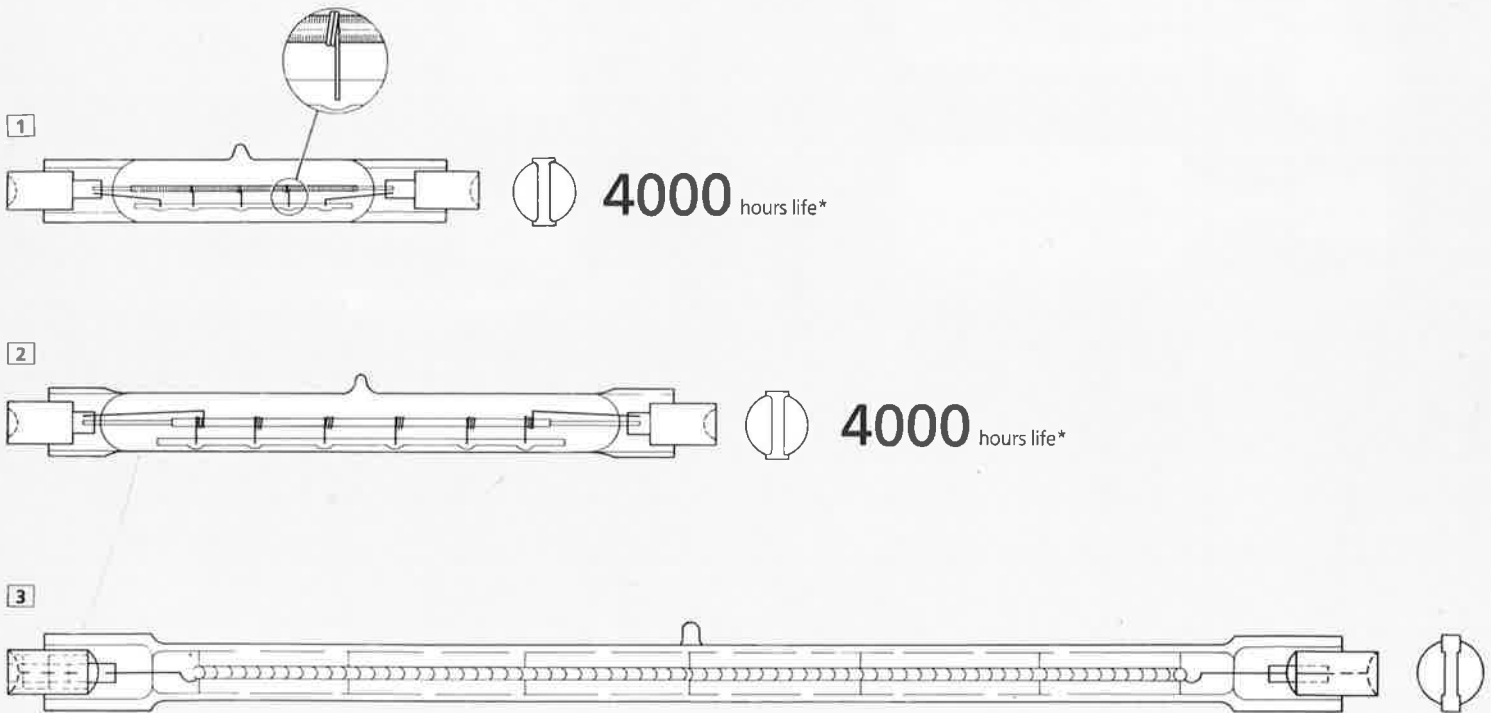
† These lamps utilise the award-winning quartz spine filament support system. The supporting technique allows an improved halogen cycle which permits a greater efficiency and longer life. The spine allows universal burning of the lamp.

All lumen figures are for 220/230 and 200/250 volt lamps. For 120v lamps add 10%.

Fusing

All these lamps are fused internally above 120 volts, in order to prevent arcing. This is not necessary below 120 volts; or in lamps greater than 117mm in length, where an arc is unable to travel the length of the tube. All lamps should be operated with a suitable HBC fuse.

* average hours life



drawings not to full size
see table for dimensions

Mains voltage lamps

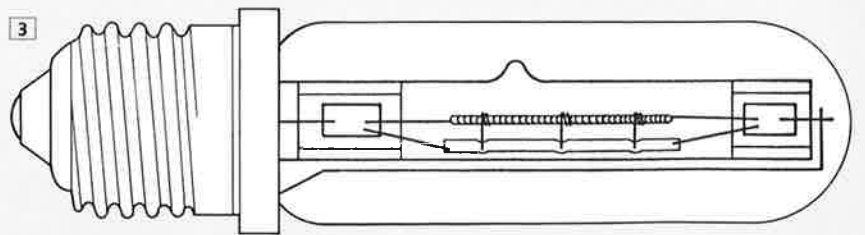
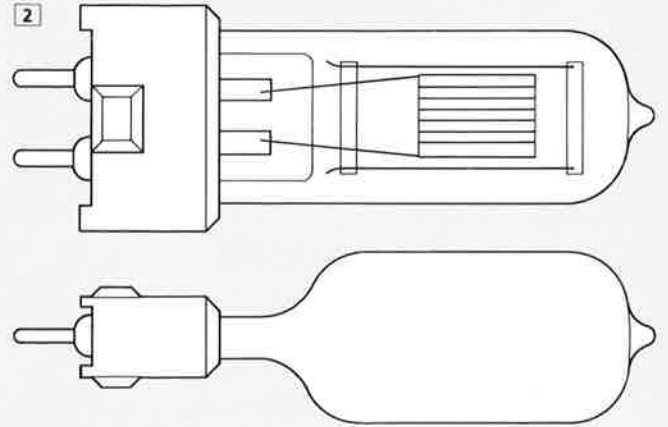
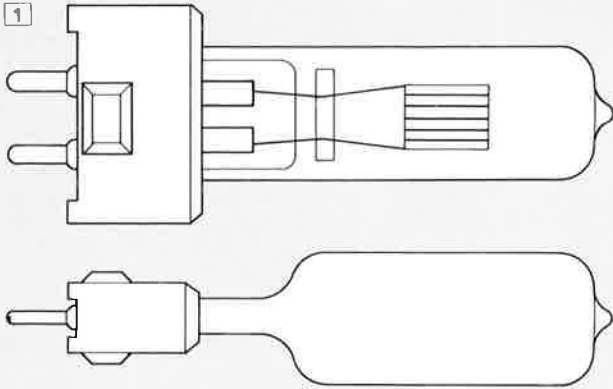
	lamp	voltage	wattage lamp cap	life average hrs nominal lumens	light centre length	length mm max	width mm max	colour K	operating position	illustration
Capsule lamps	M38	120 220/230 240/250	300 GY9.5	2000 5000	45.5	80 28,5	2900	univ	1	
	M40		500	8500	85	30			2	
Mains voltage single-ended tubular lamps: class K	K13*†	120 220/230 240/250	150 E27	4000 2100	69	110 28	2850	univ	3	
	K16*†		100	1350			2900			
Mains voltage PAR 64 lamps	M165	220 240	500 EMEP	2000 96000	12 × 9	175 205	2750	univ	4	
	M166		European	36000	25 × 13					
	M167		Mogul	12000	51 × 20					
	M168		Extended Prong	6000	64 × 66					

*These lamps are internally fused with a ballotini fuse. Bulb finish – clear.

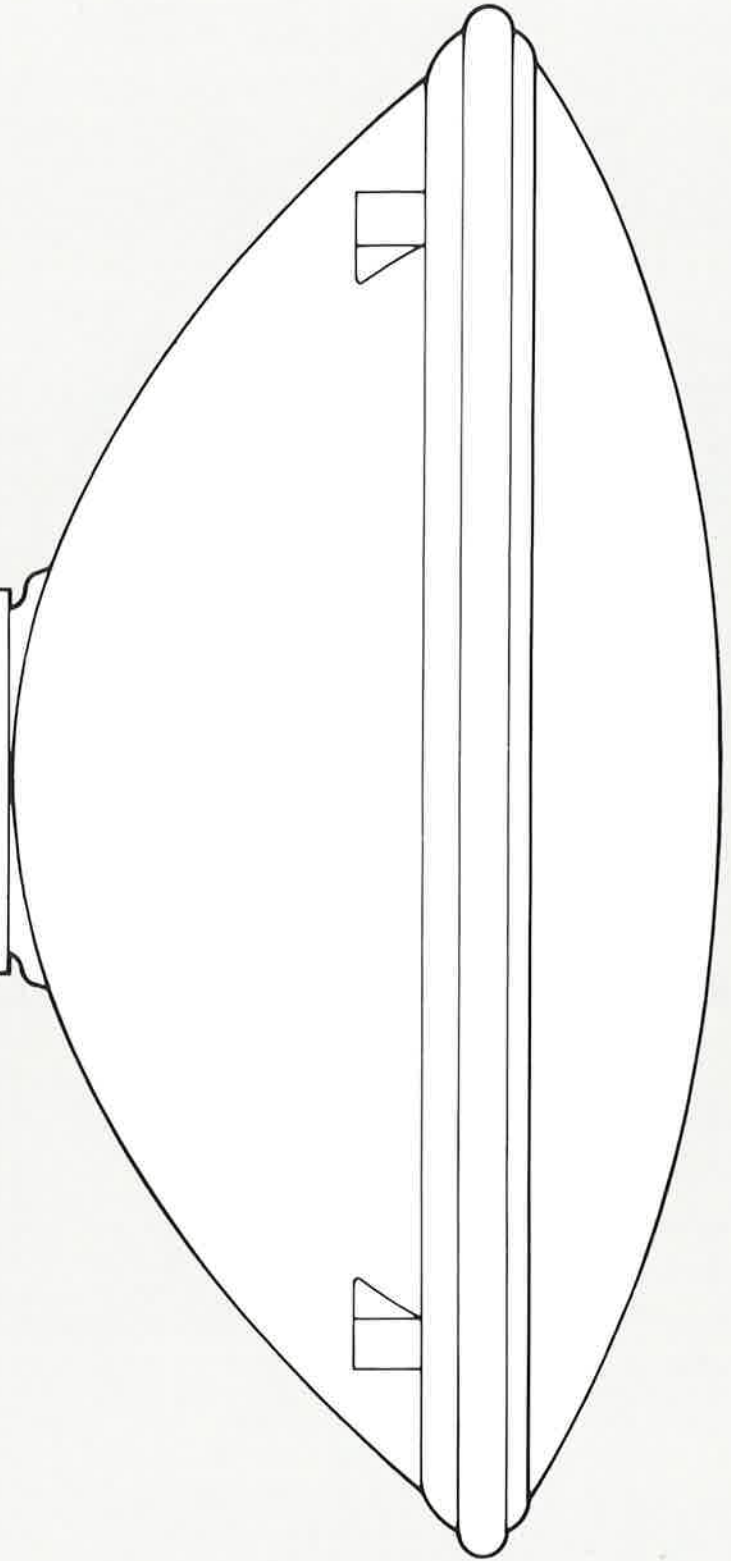
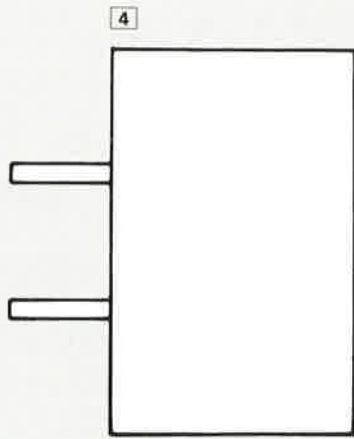
Lumen figures are for 220/230 and 240/250 volt lamps. For 120 volt lamps add 10%.

† These lamps utilise the award-winning quartz spine filament support system. The supporting technique allows an improved halogen cycle which permits a greater efficiency and longer life. The spine allows universal burning of the lamp.

peak beam candlepower
beam angle to half peak
in degrees



vertical axis			horizontal axis		
M165	9°	lux	12°	lux	
5m	0.79	3840	1.05	3840	
10m	1.57	960	2.10	960	
15m	2.36	430	3.15	430	
20m	3.15	240	4.20	240	
M166	13°	lux	25°	lux	
5m	1.14	1440	2.22	1440	
10m	2.28	360	4.43	360	
15m	3.42	160	6.65	160	
20m	4.56	90	8.87	90	
	beam width metre		beam width metre		



vertical axis			horizontal axis		
M167	20°	lux	51°	lux	
5m	1.76	480	4.77	480	
10m	3.53	120	9.54	120	
15m	5.29	53	14.31	53	
20m	7.05	30	19.08	30	
M168	66°	lux	64°	lux	
5m	6.49	240	6.25	240	
10m	12.99	60	12.50	60	
15m	19.48	27	18.75	27	
20m	25.98	15	24.99	15	
	beam width metre		beam width metre		

UK Regional Sales Offices and Showrooms

For more details on THORN products please consult your nearest THORN Lighting office.

Northern Ireland

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Telex 498334 TLL Cdf G

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